

Service Manual

Stereo Integrated Amplifier

SU-7600

(X), (XG), (XGH), (XE)



TECHNICAL SPECIFICATIONS (IHF) Specifications are subject to change without notice for further improvement.

AMPLIFIER SECTION

1kHz continuous power :	both channels driven	55W + 55W (4Ω) 43W + 43W (8Ω)
40Hz ~ 20kHz continuous power :	both channels driven	50W + 50W (4Ω) 41W + 41W (8Ω)
Total harmonic distortion :		0.2%
Intermodulation distortion :		0.2%
Power bandwidth (both channels driven at 8Ω) :		5Hz ~ 65kHz, -3dB
Residual hum and noise :		0.6mV
Damping factor :		40 (8Ω), 20 (4Ω)
Load impedance :	MAIN or REMOTE	4 ~ 16Ω
	MAIN + REMOTE	8 ~ 16Ω
Input sensitivity and impedance :	PHONO	2mV/47kΩ
	TUNER, AUX	150mV/47kΩ
	PLAYBACK, REC/PLAY input	150mV/47kΩ

PHONO maximum input voltage (1kHz RMS) :		120mV
Signal to noise ratio (IHF, A) :	PHONO	72dB
	TUNER, AUX	92dB
Frequency response :	PHONO RIAA standard curve	±0.5dB
	TUNER, AUX	7Hz ~ 75kHz, +0dB, -3dB
Tone controls :	BASS	50Hz, +13dB ~ -13dB
	TREBLE	20kHz, +13dB ~ -13dB
Loudness control (volume at -30dB) :		100Hz, +8dB
High filter :		7kHz, -6dB/oct.
Output voltage :	REC OUT	150mV
	REC/PLAY output	30mV

GENERAL

Power consumption :		350W
Power supply :		50/60Hz, 110/120/220/240V
Dimensions (W × H × D) :		410 × 140 × 332mm (16 1/8" × 5 1/2" × 13 1/8")
Weight :		7.5kg (16.53lb.)

TECHNISCHE DATEN (DIN 45 500) Spezifikationen können infolge von Verbesserungen ohne Ankündigung geändert werden.

VERSTÄRKERTEIL

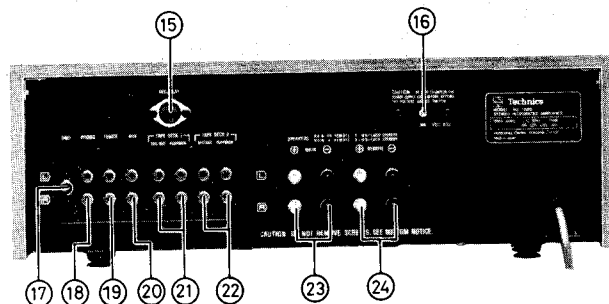
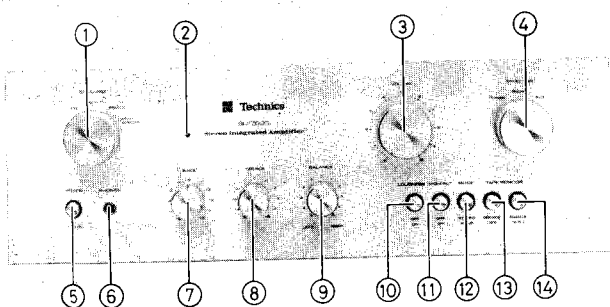
RMS-Dauerleistung bei 1kHz :		
beide Kanäle zusammen angesteuert	2 × 55W (4Ω) 2 × 43W (8Ω)	
RMS-Dauerleistung bei 40Hz ~ 20kHz :		
beide Kanäle zusammen angesteuert	2 × 50W (4Ω) 2 × 41W (8Ω)	
Leistungsbandbreite (beide Kanäle zusammen angesteuert bei 4Ω) :		5Hz ~ 65kHz, -3dB
Intermodulationsverzerrung :		
Nennleistung bei 250Hz : 8000Hz -4 : 1, 4Ω		0.2%
Hum & Noise :		0.6mV
Harmonische Verzerrungen :		
Nennleistung bei 1kHz, 4Ω		0.2%
Nennleistung bei 40Hz ~ 16000Hz, 4Ω		0.2%
Dämpfungsfaktor :		40 (8Ω), 20 (4Ω)
Endimpedanz :	MAIN oder REMOTE	4 ~ 16Ω
	MAIN + REMOTE	8 ~ 16Ω
Frequenzgang :		7Hz ~ 75kHz, +0dB, -3dB

Fremdspannungsabstand :	Nennleistung	PHONO	60dB
		AUX	80dB
	50mW Ausgangsleistung	PHONO	55dB
		AUX	58dB
Eingangsempfindlichkeit & Impedanz :	PHONO	2mV/47k Ω	
	AUX, TUNER	150mV/47k Ω	
	PLAYBACK, REC/PLAY Wiedergabe	150mV/47k Ω	
PHONO Maximale Eingangsspannungen (1kHz RMS) :			120mV
Frequenzgang :	PHONO RIAA Standardkurve		±0.5dB
	AUX, TUNER	7Hz ~75kHz,	+0dB, -3dB
Klangregler :	BASSE	50Hz,	+13dB, -13dB
	HÖHEN	20kHz,	+13dB, -13dB
Gehörgerechte Lautstärkekorrektur(Lautstärke -30dB) :		100Hz,	+8dB
Hochtonfilter :		7kHz,	-6dB/oct.
Ausgangsspannungen :	TAPE REC OUT		150mV
	REC/PLAY Aufnahme		30mV

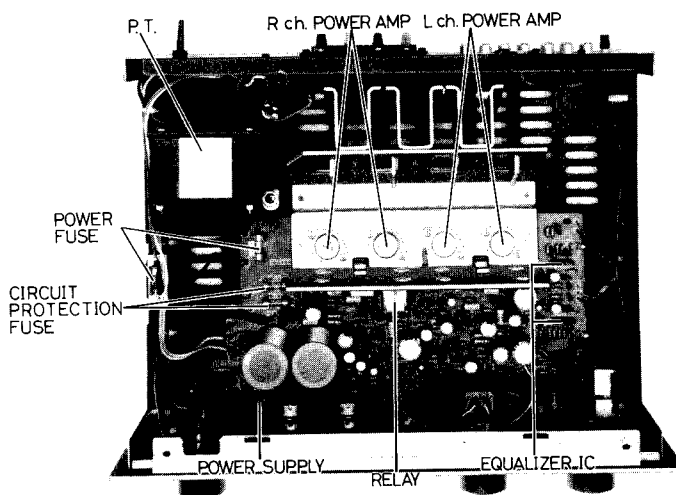
ALLGEMEINE DATEN

Leistungsaufnahme :		350W
Netzspannung umschaltbar :		50/60Hz, 110/120/220/240V
Abmessungen (B × H × T) :		410 × 140 × 332mm
Gewicht :		7.5kg

LOCATION OF CONTROLS



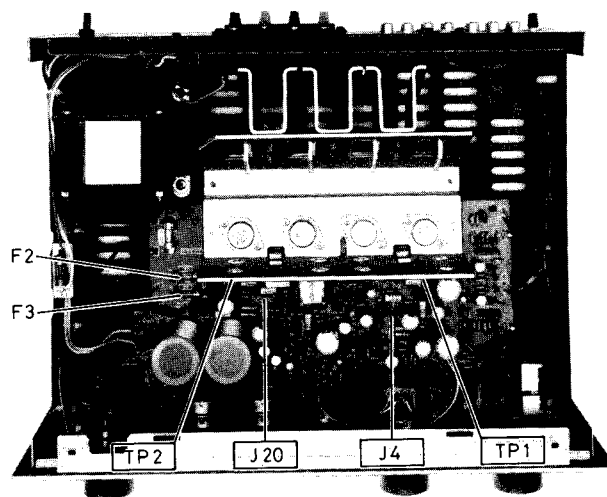
- ① SPEAKERS SELECTOR SWITCH
- ② POWER INDICATOR
- ③ VOLUME CONTROL
- ④ SELECTOR SWITCH
- ⑤ POWER PUSH SWITCH
- ⑥ HEADPHONES JACK
- ⑦ BASS CONTROL
- ⑧ TREBLE CONTROL
- ⑨ BALANCE CONTROL
- ⑩ LOUDNESS PUSH SWITCH
- ⑪ HIGH FILTER PUSH SWITCH
- ⑫ MODE PUSH SWITCH
- ⑬ TAPE MONITOR (TAPE 1) PUSH SWITCH
- ⑭ TAPE MONITOR (TAPE 2) PUSH SWITCH
- ⑮ TAPE DECK CONNECTION SOCKET (REC/PLAY)
- ⑯ VOLTAGE SELECTOR SWITCH
- ⑰ GROUND TERMINAL
- ⑱ PHONO INPUT TERMINALS
- ⑲ TUNER INPUT TERMINALS
- ⑳ AUX INPUT TERMINALS
- ㉑ TAPE DECK 1 CONNECTION TERMINALS
- ㉒ TAPE DECK 2 CONNECTION TERMINALS
- ㉓ MAIN SPEAKER TERMINALS
- ㉔ REMOTE SPEAKER TERMINALS



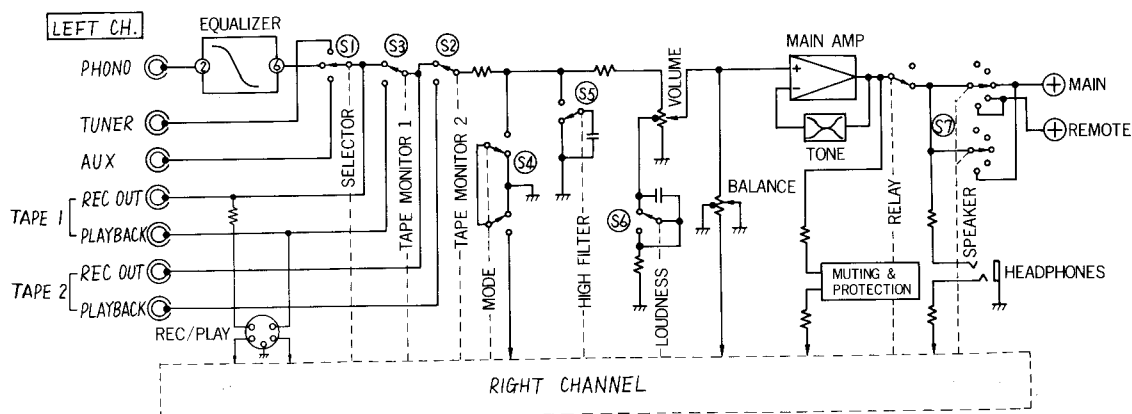
ALIGNMENT INSTRUCTIONS

The circuit protection fuses are included in set.
F2 is protection fuse of left channel and F3 is protection fuse of right channel as shown in right photo.

- **Ico alignment** Note: () indicates in right channel.
- (1) Speakers switch to MAIN position.
- (2) Connect $\ominus$ terminal of DC voltmeter to Lch. speaker $\oplus$ terminal (Rch. speaker $\oplus$ terminal), and $\oplus$ terminal of DC voltmeter to test point TP1 (TP2).
- (3) If indication on DC VTVM becomes over 35mV when passing over 5 minutes after setting the power switch to the ON position, remove the jumper wires J4 (J20).



BLOCK DIAGRAM



■ TO REMOVE CABINET

- (1) Remove four (4) cabinet mounting screws (side) Nos 1~4, as shown in fig. 1.
- (2) Remove metal fitting of cabinet from holes A and B of front panel in arrow direction ①, as shown in fig. 1.
- (3) Remove cabinet from chassis in arrow direction ②, as shown in fig. 1.
- (4) To reassemble, reverse above procedure.

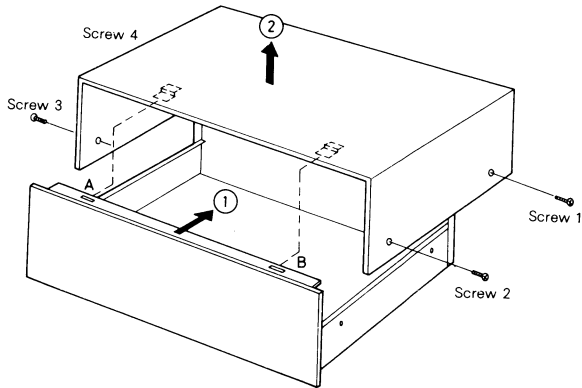


Fig. 1

■ TO REMOVE PC BOARD

Note : When checking the circuit and replacing the parts, follow these steps.

Be sure to turn off the power when a printed circuit board is removed or installed. When a continuity test is made with the printed circuit board dismantled from the chassis, "short" the heat-radiation plate and the chassis by using a lead wire with clips.

- (1) Remove the cabinet.
- (2) Loosen two screws ① and ② holding the front panel.
- (3) Loosen two screws ③ and ④ holding the heat sink as shown in fig. 2.
- (4) Remove the P.C.B. with panel.
- (5) When installing the front panel, insert the bottom chassis into groove of panel, and tighten screws after checking to fit the headphone jack and push switch button to hole of panel as shown in fig. 3.

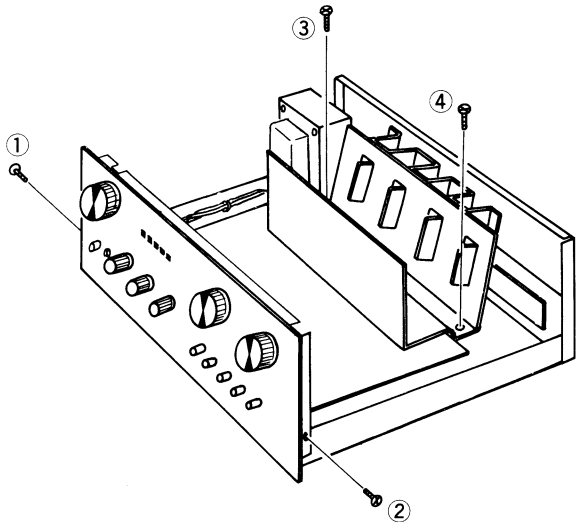


Fig. 2

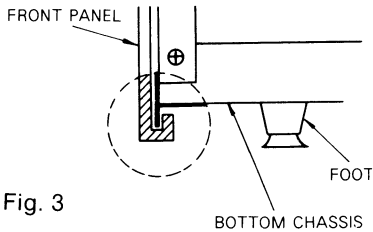


Fig. 3

■ SERVICE AID

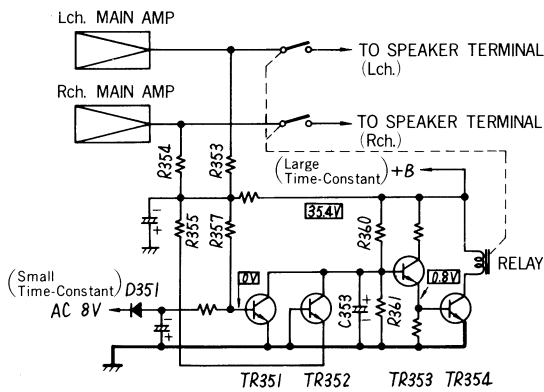
Muting circuitry ("shock" sound prevention)

(a) When power is turned ON

The small negative voltage of the time-constant which passed through D351 is applied to the base of TR351, and, because the bias of TR351 is reversed, it does not operate. On the other hand, the large time-constant + B voltage for the main amplifier passes through R360 and charges C353, and the voltage (voltage at both ends of the capacitor) is increased between the base of TR353 and the earth. Bias is soon applied to TR353 and it becomes in the operating condition. Bias is also applied by the emitter current to TR354, and the relay becomes "on" (contact points connect). This unit is constructed so that approximately 6 seconds will elapse between the time that power is activated and the relay begin to operate, although there may be some slight difference resulting from non-uniformity of components.

(b) When power is turned off

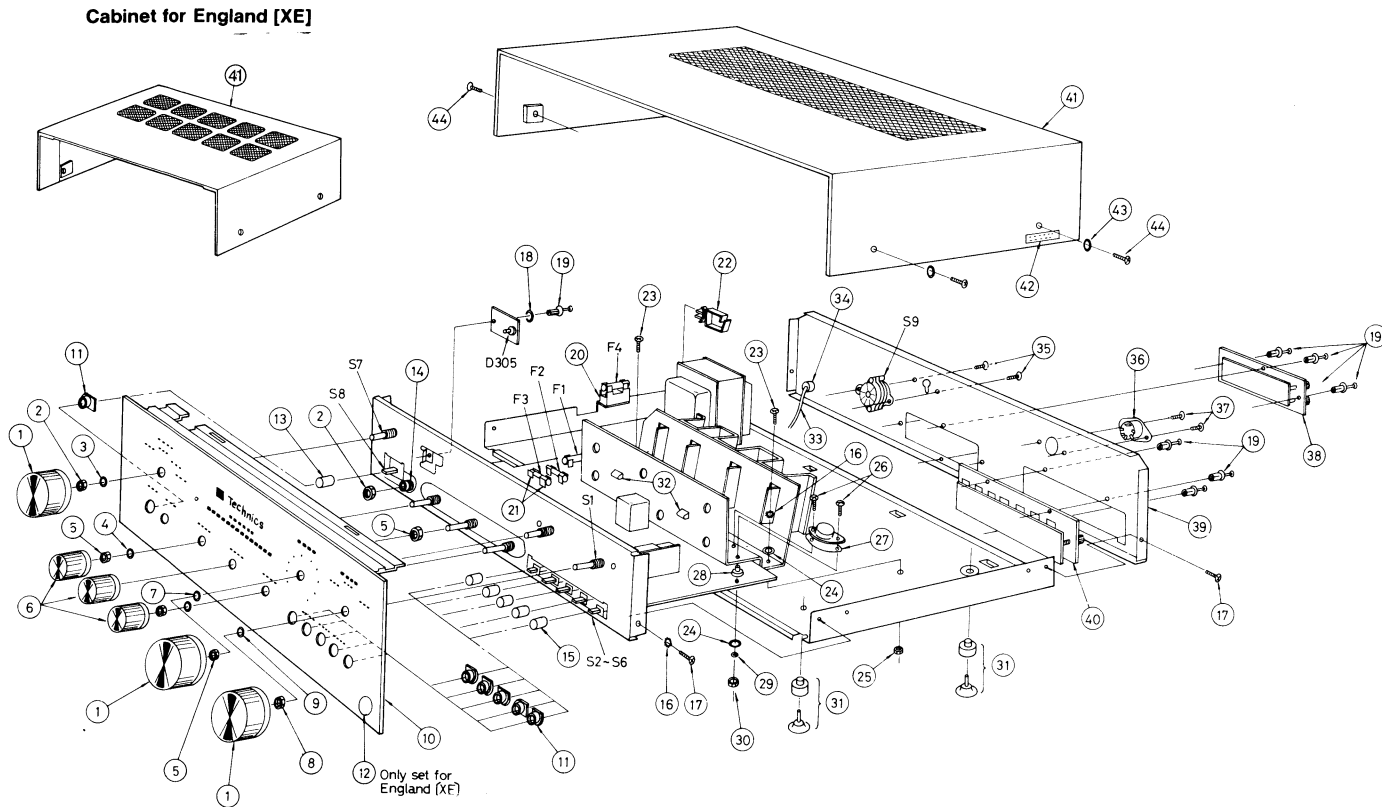
Normally, the negative and positive voltages are balanced, and there is 0V at the base of TR351. However, because the small time-constant negative voltage decreases soon after the power is turned off, bias is applied to TR351. As a result, the base of TR353 is earthed and cut off, TR354, operation stops and, because current no longer flows to the relay, the output of the main amplifier becomes "open" at the same time that power is turned off.



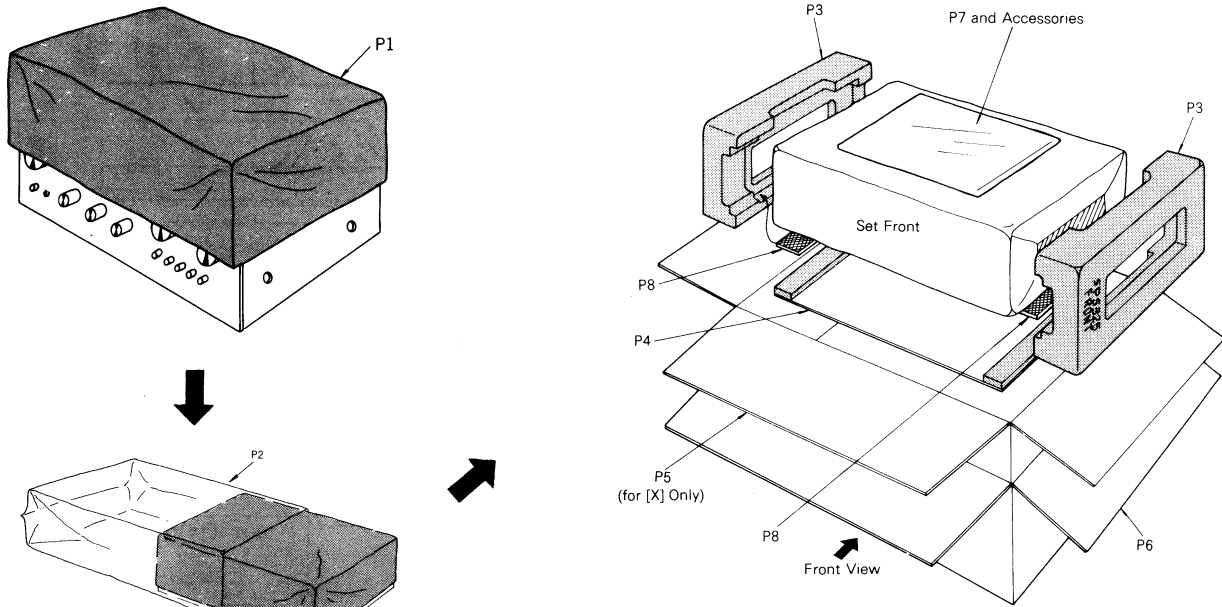
(Muting and Speaker Protection Circuit)

Fig. 4

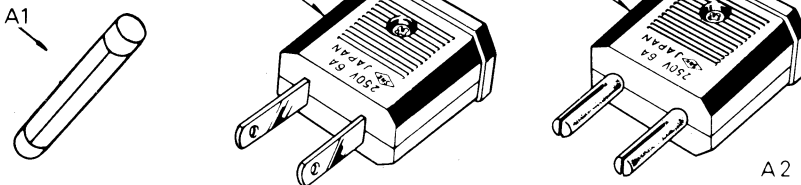
■ CABINET & CHASSIS PARTS LOCATION

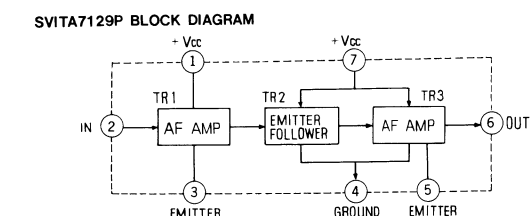


■ PACKING PARTS

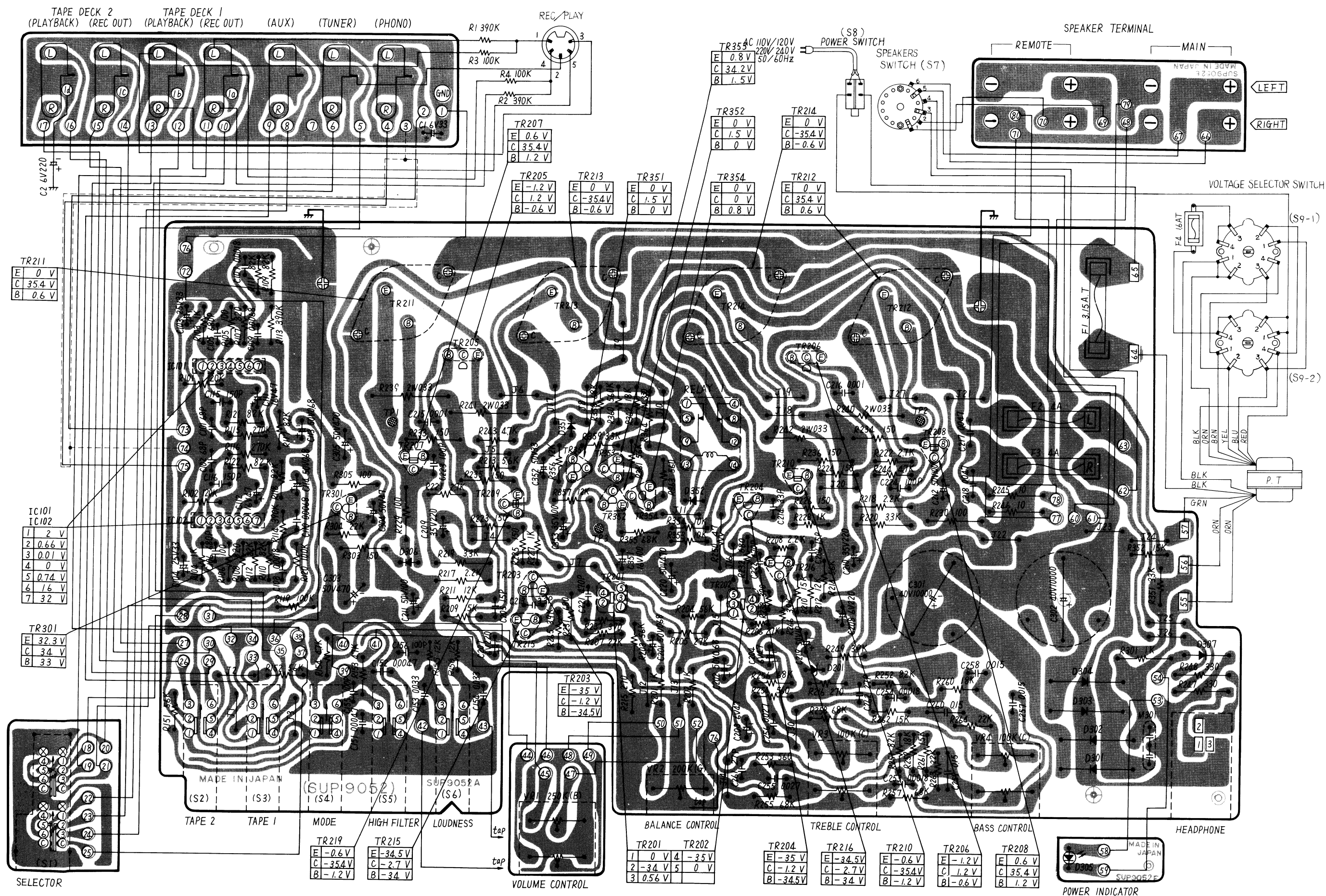


■ ACCESSORIES





Circuit Board Wiring View.....Model SU-7600



SU-7600

Printed in Japan
76.3-5000(K)

Ref. No.	Part No.	Description	Per Set	Remarks
C255,256	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	2	
C153,154	ECQM05333KZ	0.033μF, 50WV, ±10%, Polyester	2	
C217,218	ECQM05473KZ	0.047μF, 50WV, ±10%, Polyester	2	
C259,260	ECQM05154KZ	0.15μF, 50WV, ±10%, Polyester	2	
C113,114,201,202	ECEA50MR68	0.68μF, 50WV, Electrolytic	4	
C352	ECEA50V3R3	3.3μF, 50WV, Electrolytic	1	
C103,104	ECSZ25EF3R3	3.3μF, 25WV, Electrolytic	2	
C219	ECEA50V10L	10μF, 50WV, Electrolytic	1	
C1	ECEA6V33L	33μF, 6.3WV, Electrolytic	1	
C203,204	ECEA6V47L	47μF, 6.3WV, Electrolytic	2	
C111,112	ECEA16V47V	47μF, 16WV, Electrolytic	2	
C304	ECEA50V47V	47μF, 50WV, Electrolytic	1	
C351	ECEA16V100V	100μF, 16WV, Electrolytic	1	
C353	ECEA35V100V	100μF, 35WV, Electrolytic	1	
C211,212	ECEA50V100V	100μF, 50WV, Electrolytic	2	
C2,207,208	ECEA6V220V	220μF, 6.3WV, Electrolytic	3	
C209,210	ECEA35V220V	220μF, 35WV, Electrolytic	2	
C220,303,305	ECEA50V470V	470μF, 50WV, Electrolytic	3	
C301,302	ECET40R103Y	10000μF, 40WV, Electrolytic	2	○
COMPONENT COMBINATION				
M301	RXAF103P22HD	0.01μF(X2), 500WV, Hum Cancel	1	
SWITCHES				
S1	SSR35	Switch, Selector	1	
S2,3,4,5,6	SSH507S	Push Switch, Tape Monitor 1, 2, Mode, High Filter & Loudness	1	○
S7	ESRC124F25A	Switch, Speaker	1	
S8 [X,XG,XGH]	ESB7047	Push Switch, Power Source	1	
S8 [XE]	ESB7017	Switch, Power(for England [XE] only)	1	○
S9	SSR53S	Switch, Voltage Selector	1	
RELAY				
	SSY13	Relay, Speakers Protection	1	
FUSES				
F1	XBA2C31TR0	3.15A(T) Fuse, Power Source	1	
F2,3	XBA2C40SS0	4A Fuse, Circuit Protection	2	
F4	XBA2C16TR0	1.6A(T) Fuse, Power Source	1	
CABINET AND CHASSIS PARTS				
1	SBN595	Knob, Volume Control, Speaker & Selector Switch	3	
2	XNS9	Nut, Specker Switch & Headphones	2	
3	XWV9	Washer, Speaker Switch	1	
4	XWS8AW	Washer, Bass & Balance Control	2	
5	XNS8	Nut, Bass, Treble, Balance & Volume Control	4	
6	SBN533	Knob, Bass, Treble & Balance Control	3	
7	XWV8	Spring Washer, Volume Control	1	
8	XNS7	Nut, Selector Switch	1	
9	XWV7	Spring Washer, Selector Switch	1	
10	SGW6970	Panel, Front	1	○
11	SGX6433	Sleeve, Push Switches Button	6	

Ref. No.	Part No.	Description	Per Set	Remarks
12 [XE]	QQC0689	Label, Made in Japan (for England [XE] Only)	1	
13	SBC141	Button, Power Push Switch	1	
14	SJJA15	Jack, Headphones	1	
15	SBC139	Button, Push Switches	5	
16	XWC3B	Toothed Ring, Chassis & Heat Sink	4	
17	XTB3+8B	Screw, Front & Rear Panel M'tg.	4	
18	SNWA352	Nilon Washer	1	
19	SHR401-1	Lock Pin, Printed Circuit Board	8	
20	SJFA5101	Holder, Fuse(F4)	1	
21	SJFA108	Holder, Fuse(F1~F3)	6	
22	SHRA306	Clamp, Lead Wire	2	
23	XTN3D10F	Screw, Heat Sink M'tg.	2	
24	XWG3FN	Washer, Heat Sink & Power Transistor	10	
25	XNG3BS	Nut, Heat Sink M'tg.	2	
26	XSB3+14BNS	Screw, Power Transistor M'tg.	8	
27	SMXA1	Mica Plate, Power Transistors	4	
28	SMXA56	Sleeve, Power Transistor M'tg. Screw	8	
29	XWA3BFN	Spring Washer, Power Transistor	8	
30	XNG3BNS	Nut, Power Transistor M'tg.	8	
31	SKL149	Foot, Set(with Lock Pin)	4	
32	SUW873	Spring, Transistor Press	2	
33 [X,XG]	SJA97	AC Cord(for [X] & Germany[XG])	1	○ SAFETY
33 [XGH]	SJA81	AC Cord(Set for Holland [XGH] Only)	1	○ SAFETY
33 [XE]	SJA73	AC Cord(Set for England [XE] Only)	1	○ SAFETY
34	RHR106	Bushing, AC Cord	1	
34 [XE]	SHR113	Bushing, AC Cord (for England [XE] Only)	1	
35	XSB3+8FZS	Screw, Voltage Selector M'tg.	2	
36	RJS31-1	DIN Connector, Tape Deck	1	
37	XTB3+8BFZ	Screw, DIN Connector M'tg.	2	
38	SJF4803	Terminal, Speakers	1	
39 [X,XG,XGH]	SGP410A	Rear Panel	1	○
39 [XE]	SGP410-1A	Rear Panel(Set for England [XE] Only)	1	○
40	SJF3009-1	Terminal, Input & Tape Deck	1	○
41 [X]	SKA8250	Cabinet, Brown Wood(for [X] Only)	1	
41 [XE]	SKA8470	Cabinet, Brown Wood(for England [XE] Only)	1	○
41 [XG,XGH]	SKA8251	Cabinet, Black Wood	1	
42 [X,XE]	SQXA4067	Caution Label, for Brown Cabinet	1	
42 [XG,XGH]	SQXA4112	Caution Label, for Black Cabinet	1	
43	XWG4FZ	Washer, Cabinet Screw	4	
44	XTB4+16FFZ	Screw, Cabinet M'tg.	4	
ACCESSORIES				
A1	XBA2C40SS0	4A Fuse, Circuit Protectinn	2	○ SAFETY
A2 [X]	SJP5213	AC Plug(Set for [X] Only)	1	○
A3 [X]	SJP5215	AC Plug(Set for [X] Only)	1	○
PACKINGS				
P1	SPPA16-1	Soft Cover	1	
P2	SPP163	Polyethylene Bag	1	
P3	SPS325	Pad, Left & Right Side	2	
P4	SPS333	Pad, Under Side	1	
P5 [X]	SPN5153	Carton Box, Inner(Set for [X] Only)	1	○
P6 [X]	SPG623	Carton Box, Outer (Set for [X] Only)	1	○
P6 [XE]	SPG635	Carton Box (Set for England [XE] Only)	1	○
P6 [XG,XGH]	SPG633	Carton Box (Set for Germany [XG] & Holland [XGH])	1	○
P7 [X,XG,XGH]	SQF1185	Printed Matter	1	○
P7 [XE]	SQF1217	Printed Matter(for England [XE] Only)	1	○
P8	SPS481	Pad, Bottom Side	2	