

# JVC

# SERVICE MANUAL

MODEL  
**JA-S31**

STEREO INTEGRATED AMPLIFIER



No. 2368  
MAR. 1976

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# 1. Specifications

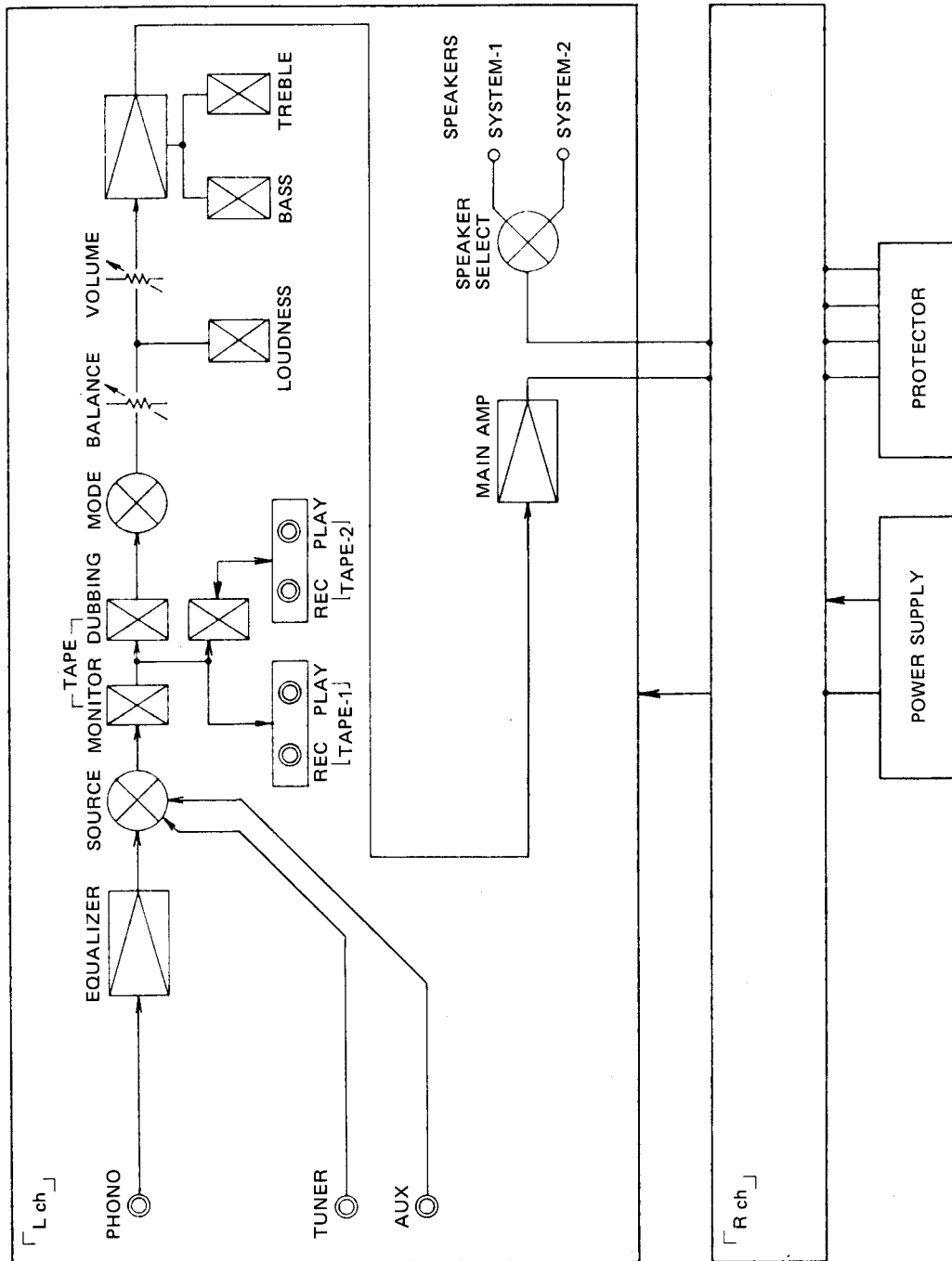
## Power Amplifier Section

- Output Power (both channels driven) : 40 watts per channel, min. RMS into 8 ohms, from 20Hz – 20kHz with no more than 0.2% total harmonic distortion  
45 watts per channel into 8 ohms at 1kHz. THD = 0.2%
- Total Harmonic Distortion (at 40W) (both channels driven) : 0.06% at 1kHz
- Intermodulation distortion : 0.2% at rated output
- Load Impedance : 4 $\Omega$  – 16 $\Omega$  (SYSTEM-1 or SYSTEM-2)  
8 $\Omega$  – 16 $\Omega$  (SYSTEM-1+2)
- Damping Factor : More than 30 at 8 $\Omega$  (20Hz – 20kHz)

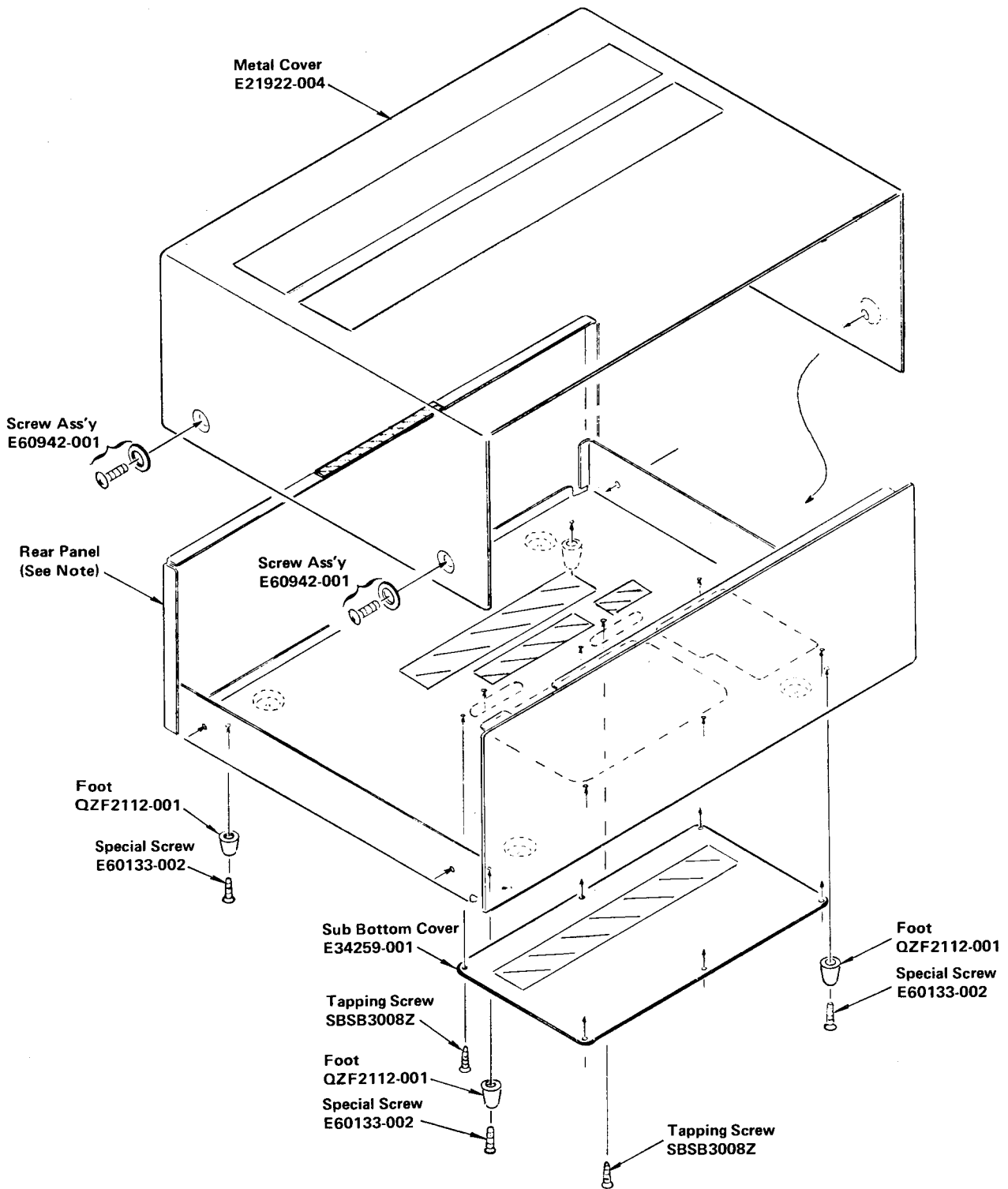
## Pre-Amplifier Section

- Input Sensitivity/Impedance : PHONO 2.5mV/47k $\Omega$   
AUX, TUNER, TAPE PLAY 160mV/50k $\Omega$
- Output Level : TAPE REC.-1, -2 160mV  
DIN REC. 30mV (only on modes intended for areas other than U.S.A.)
- Phono Equalizer Deviation :  $\pm 0.5$ dB from RIAA curve (20Hz – 15kHz)
- Phono Overload : 180mV (RMS) at 1kHz
- Signal to Noise Ratio : PHONO 65dB (RMS)  
AUX 85dB (RMS)
- Frequency Response : AUX, TUNER, TAPE PLAY 20Hz – 30kHz $^{+0}_{-2}$ dB
- Loudness Control : +10dB at 100Hz  
(at -30dB Volume Control) +4dB at 10kHz
- Tone Controls : Bass  $\pm 8$ dB at 100Hz  
Treble  $\pm 8$ dB at 10kHz
- Power Source : AC 120V, 50/60Hz (See page 18.)
- Power Consumption : 120W (See page 18.)
- Dimensions : 5-3/32"(H) x 15-11/32"(W) x 13"(D)  
(15.2cm x 39.0cm x 33.0cm)
- Weight : 17.6 lbs. (8.0kg)

## 2. Block Diagram



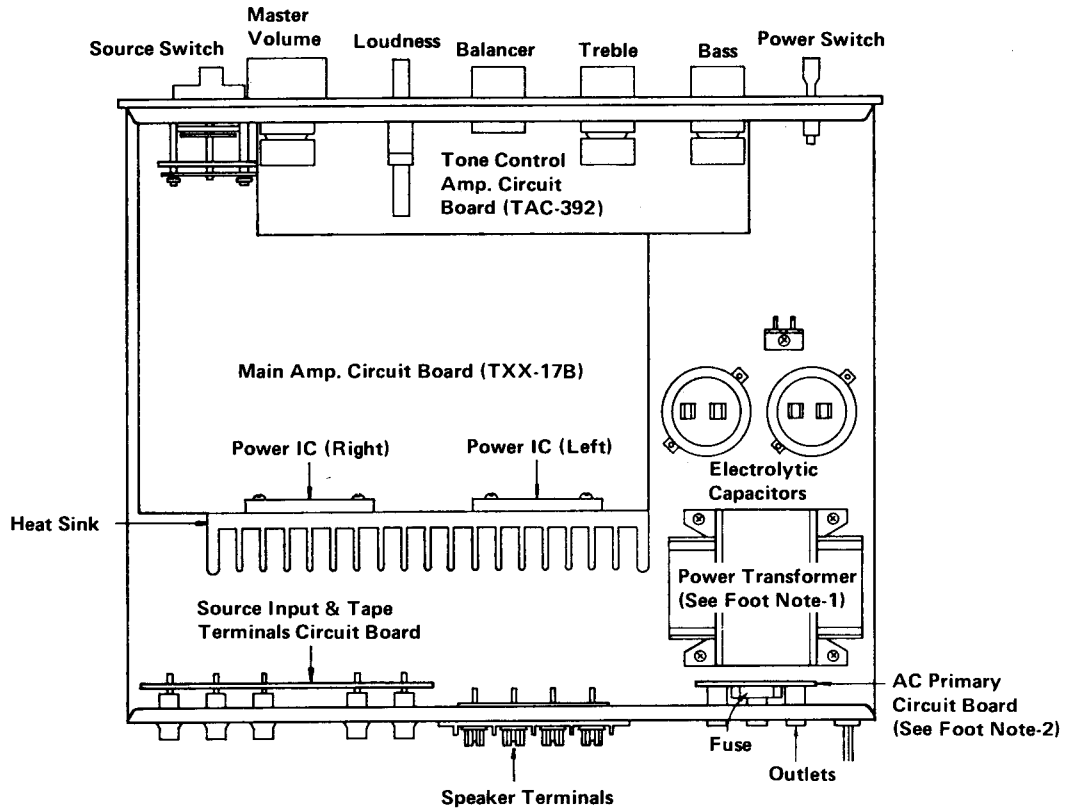
### 3. Removal of Top Cover and Bottom Plate



**Note:** Rear Panel  
 E21921-006: used for J-type  
 E21921-004: used for the types other than J-type

# 4. Main Parts Location and Part Numbers

Top View

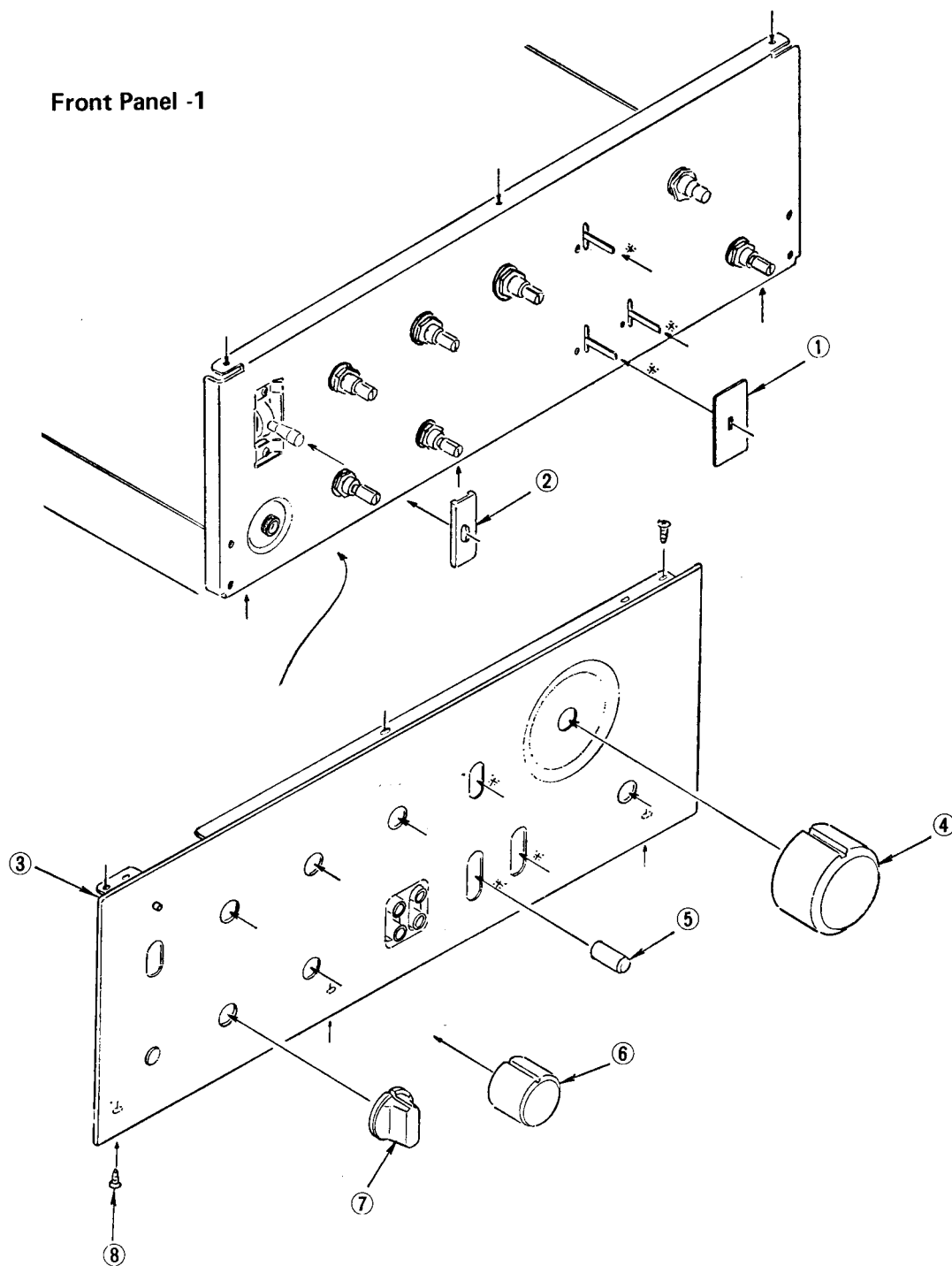


**Note-1** Power Transformer  
E03075-30C: used for U-, F- and P-types  
E03075-30D: used for E- and A-types  
E03075-30E: used for J-type

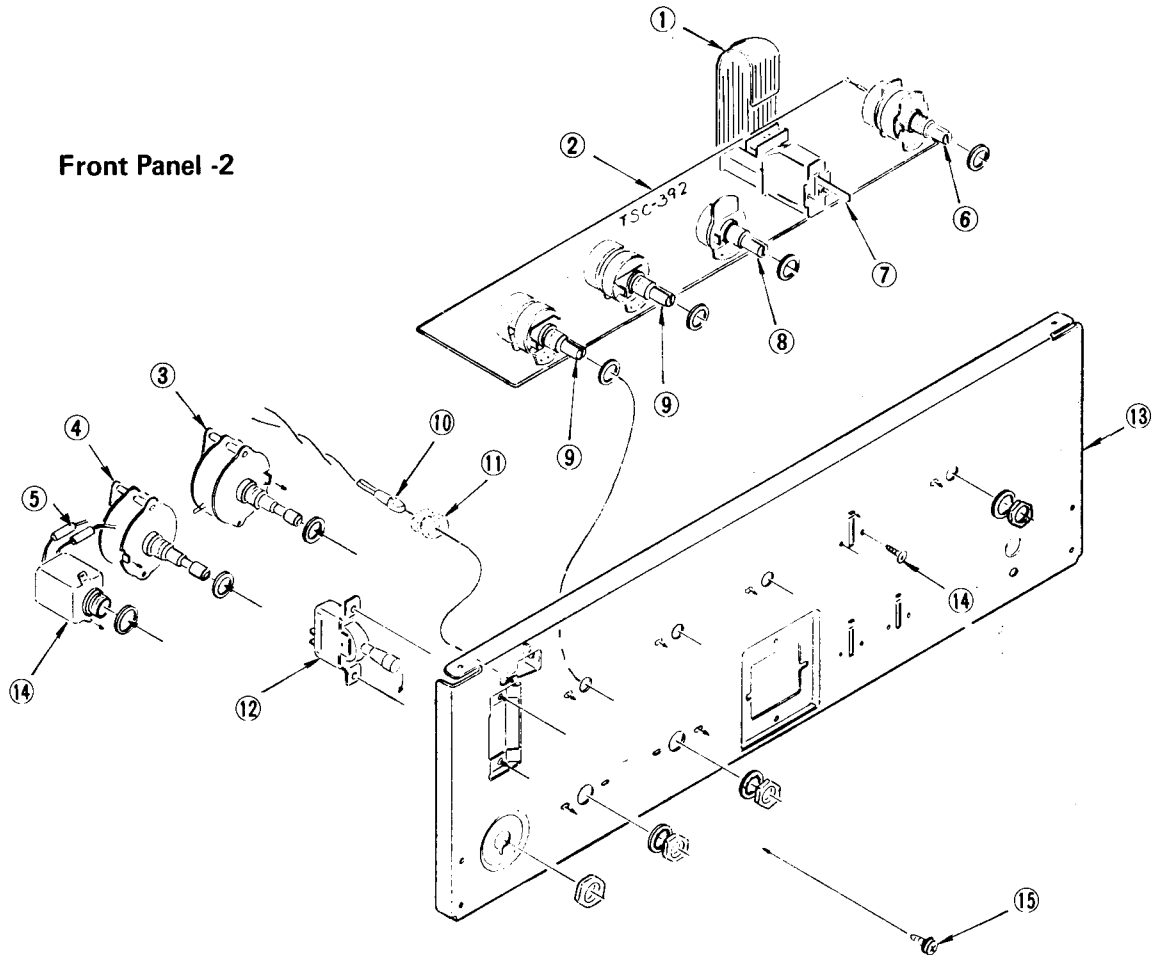
**Note-2** AC Primary Circuit Board  
TPS-43B: used for J-type  
TPS-62: used for U-, F- and P-types

# 5. Exploded Views of Mechanical Parts

## 5-(1) Front Panel



## Front Panel -2



### Parts List (Front Panel-1)

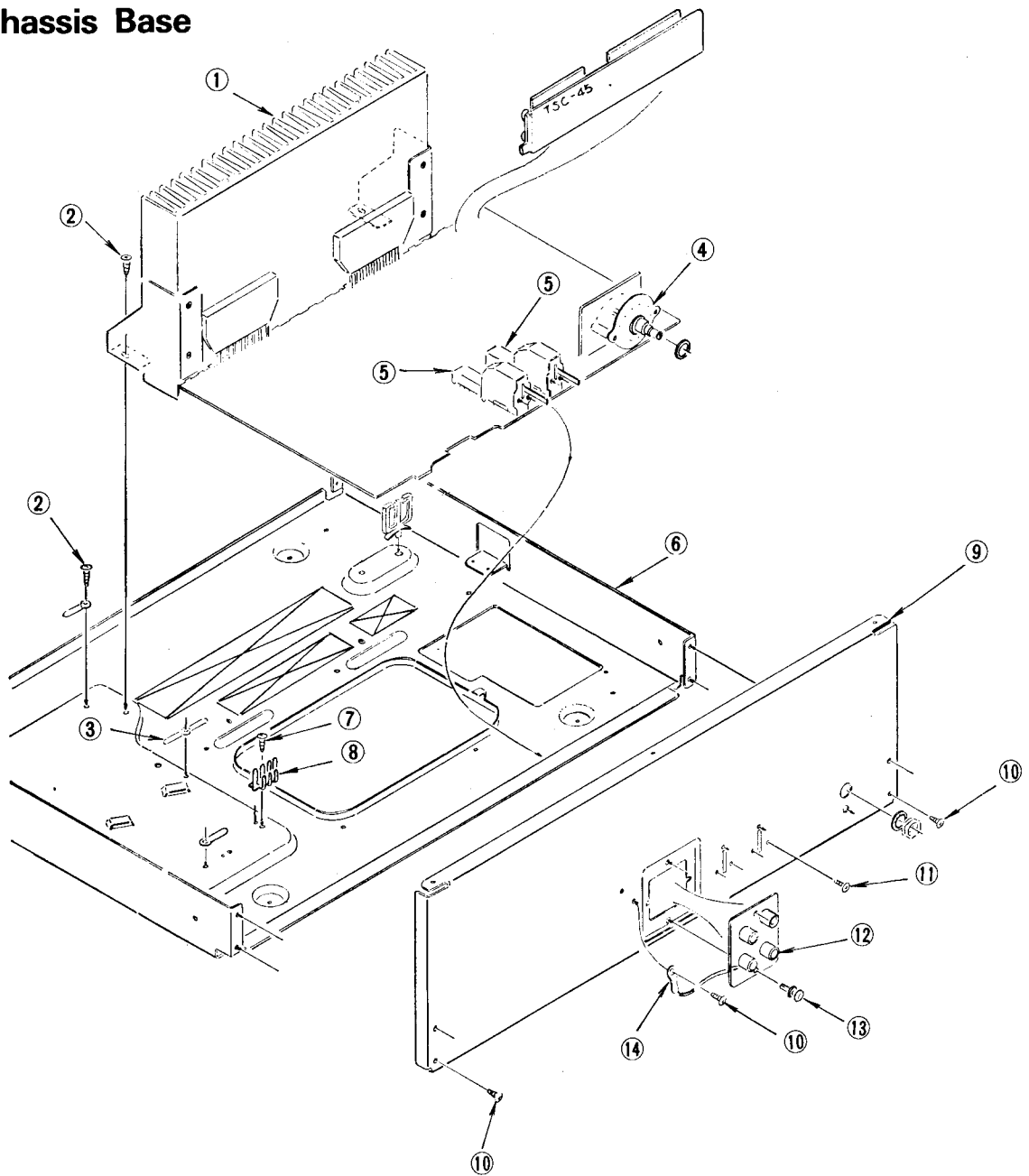
Item No.	Part Number	Description
1	E60482-001	Spacer (Loudness, Monitor, Dubbing)
2	E45979-008	Spacer (Power)
3	E21918-006	Front Panel Ass'y
4	E60441-001	Knob (Master Volume)
5	E60319-001	Lever Knob (Loudness, Monitor, Dubbing)
6	E60442-001	Knob (Balance, Bass, Treble)
7	E60318-001	Knob (Source, Mode, Speakers)
8	SBSB3008Z	Tapping Screw

### Parts List (Front Panel-2)

Item No.	Part Number	Description
1	E03632-003	Flat Cable Ass'y (6 Pin)
2	TAC-392	Tone Control C.B. Ass'y
3	QSR0017-005	Rotary Switch (Mode: S3a~b)
4	QSR0060-004	Rotary Switch (Speakers: S2a~b)
5	QRD126J-221	Unflamable Carbon Resistor 220Ω, 1/2W
6	EVC4A2B-9F5	Variable Resistor (Volume: R406a~b)
7	QSL2212-003	Lever Switch (Loudness: S401a~b)
8	QVB8A2W-6F5E	Variable Resistor (Balance: R405)
9	QVC3A2C-215	Variable Resistor (Bass, Treble: R531a~b, R532a~b)
10	QLP3105-001	Pilot Lamp
11	E60176-001	Rubber Bushing
*12	QSL1135-012	Lever Switch (Power: S1) J-Type
12	QSL1135-011G	Lever Switch U-, P- and F-Type
12	QSL2235-103	Lever Switch E- and A-Type
13	E21920-001	Front Bracket
14	SSSP3006NS	Screw (Lever Switch)
15	SSSP3006NS	Screw (Power Switch)



## 5-(2) Chassis Base

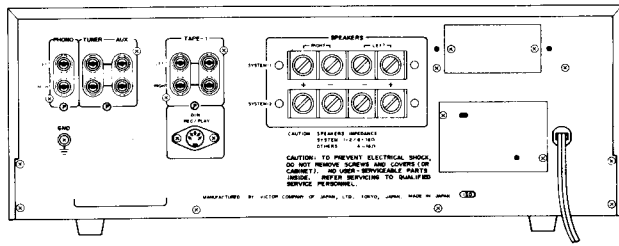


### Parts List

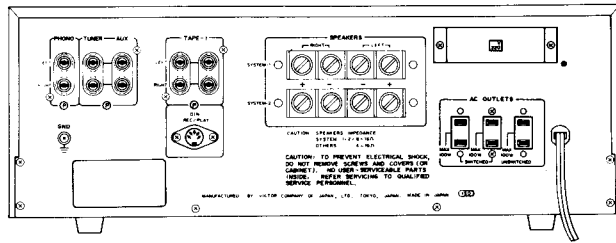
Item No.	Part Number	Description
1	E34260-001	Heat Sink
2	E60133-001	Special Screw
3	E47203-005	Wire Clamp
4	QSR0072-001	Rotary Switch (Source: S301a~b)
5	QSL4312-003	Lever Switch (Monitor: S302a~b) (Dubbing: S303a~b)
6	E10041-001	Chassis Base
7	E60133-001	Special Screw
8	E46651-001	Wrapping Terminal
9	E21920-001	Front Bracket
10	SBSB3008M	Tapping Screw
11	SSSP3006NS	Screw
13	E48729-001	Plastic Rivet
14	52868-3	Terminal

# 5-(3) Rear Panel

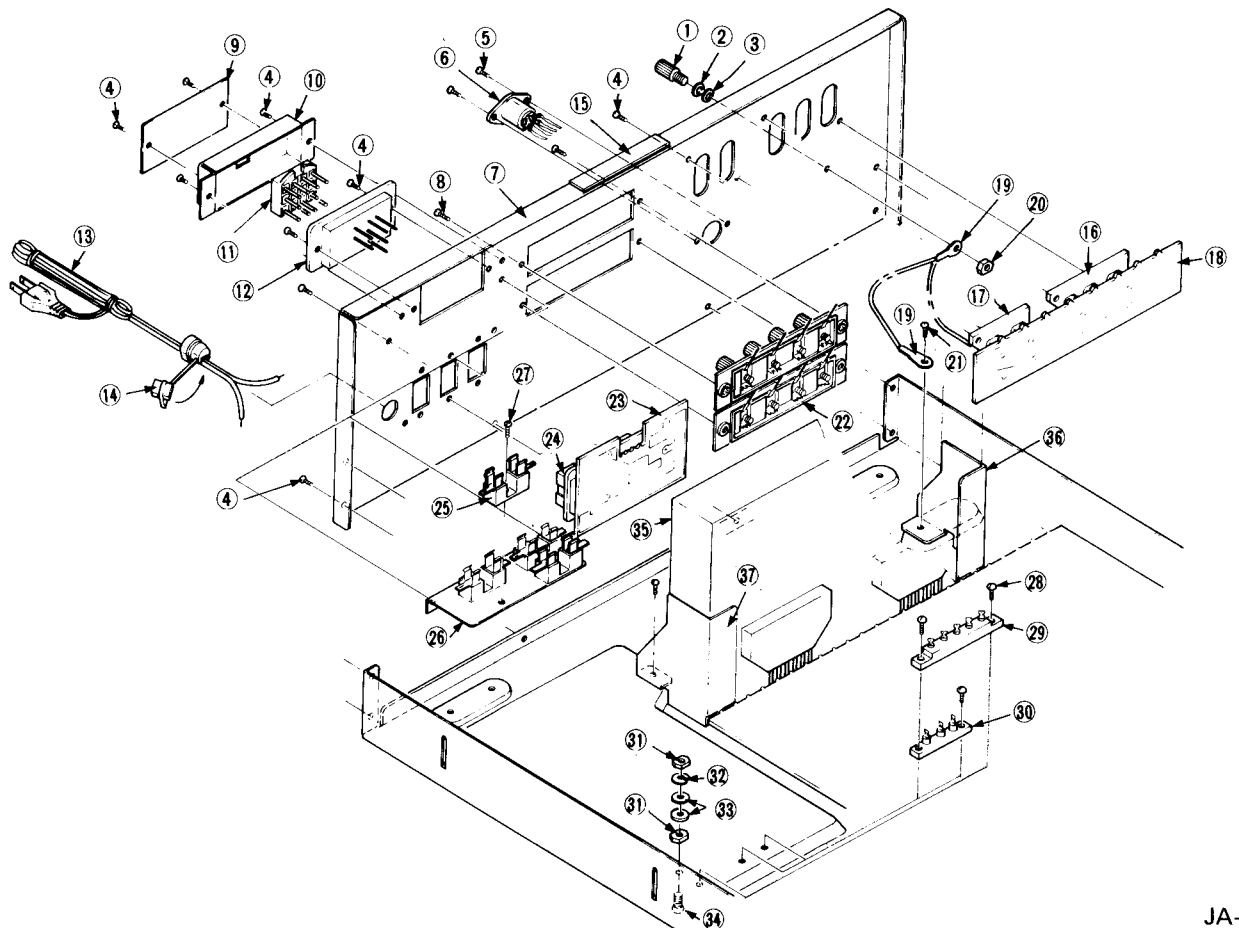
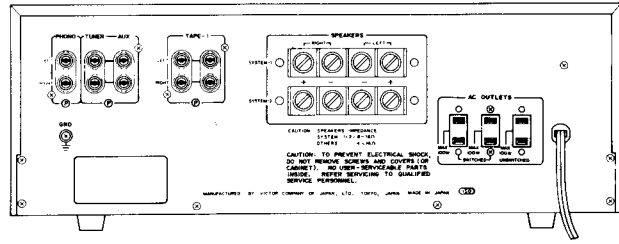
E- and A-types



U-, P- and F-types



J-type

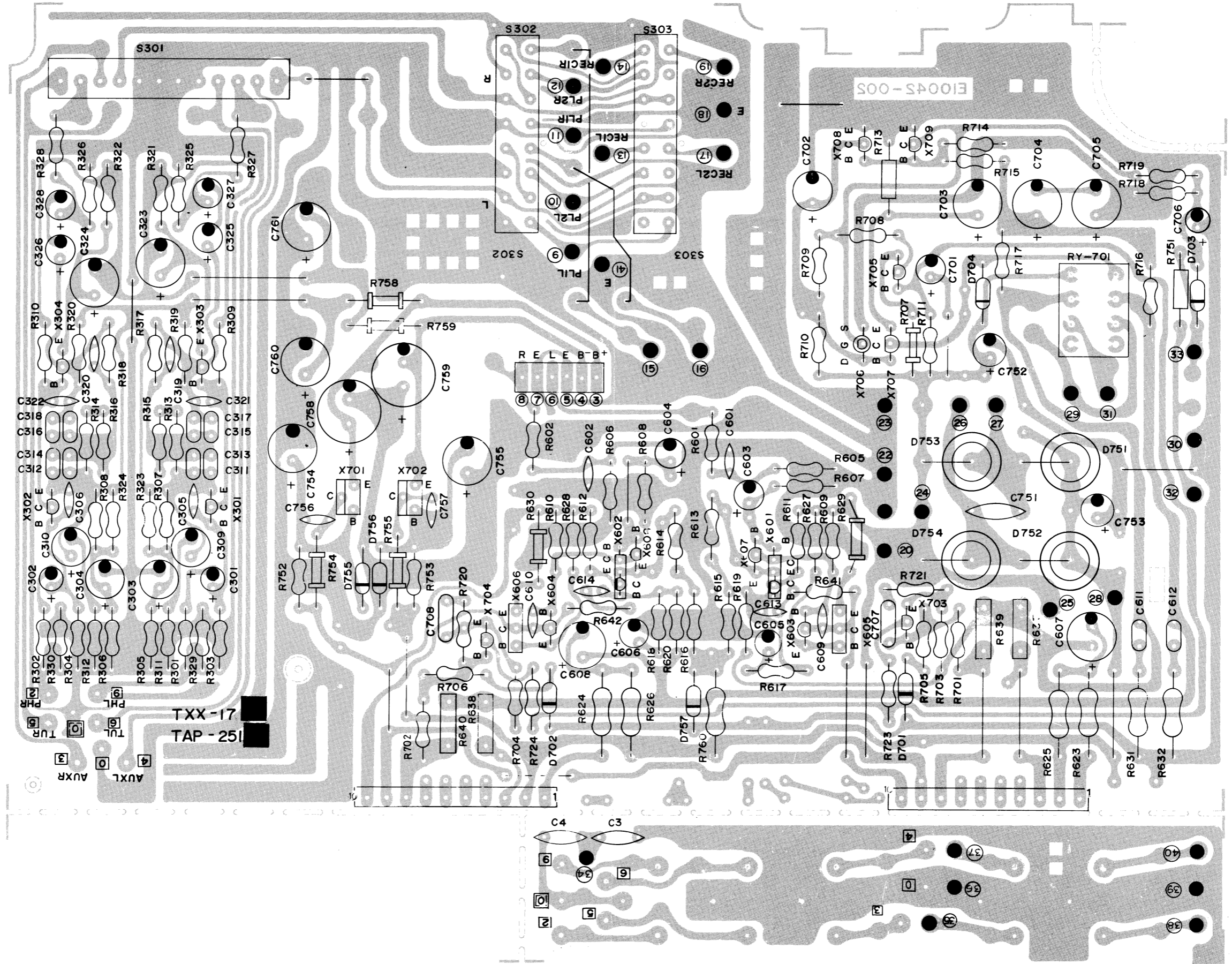


**Parts List**

Item No.	Part Number	Description
1	E49973-001	Ground Terminal
2	WSS4000N	Washer
3	E60215-001	Ground Washer
4	SBSB3008M	Tapping Screw
5	SBSB3008N	Tapping Screw
6	QMC0589-001UB	DIN Socket (U),(P),(F),(E),(A)
7	E21921-006	Rear Panel (J)
7	E21921-004	Rear Panel (U),(P),(F),(E),(A)
8	SPSP3008MS	Screw
9	E47150-054	Rating Plate (E)
9	E47150-055	Rating Plate (A)
10	E60841-001	Cover (U),(P),(F)
11	E03676-001	Voltage Select Plug (U),(P),(F)
12	E03676-002	Voltage Select Socket (U),(P),(F)
*13	QMP1200-244	Power Cord (UL)
13	QMP3800-240	Power Cord (SEV)
13	E03544-001	Power Cord (SEMKO)
13	E03551-002	Power Cord (SAA)
14	QHS3876-162	Cord Stopper (J),(U),(P),(F),(E)
14	QHS6374-252	Cord Stopper (A)
15	E3400-316	Felt Spacer
16	E03519-60D	Pin Jack Ass'y (J1)
17	E03519-40D	Pin Jack Ass'y (J2)
18	TSC-45B	Pin Jack C.B. Ass'y
19	52868-4	Terminal
20	NTB4000NS	Nut
21	E60133-001	Special Screw
22	E03572-004C	Speaker Terminal
*23	TPS-43B	AC Primary C.B. Ass'y (J)
23	TPS-62	AC Primary C.B. Ass'y (U),(P),(F)
24	QMC0637-001	AC Socket (J4)
25	QMG1321-002	Fuse Holder (E),(A)
26	E60843-001	Bracket (E),(A)
27	SBSB3008Z	Tapping Screw
28	E60133-002	Special Screw
29	T41479-00B	Terminal Board (A)
30	T42693-00B	Terminal Board (E)
31	NNZ3000ZS	Nut
32	WLS3000N	Washer
33	WNS3000N	Washer
34	LPSP3012NS	Ass'y Screw
35	E34260-001	Heat Sink
36	E60484-001	Heat Sink Bracket (Right)
37	E60484-002	Heat Sink Bracket (Left)

# 6. Circuit Board Ass'y and Parts List

## 6-(1) TAP-251B Main Amp. C.B. Ass'y



### Transistors

Item No.	Part Number	Rating		Description
		Pc	fT	
X301, 302	2SA872AV (E)	300mW	200MHz	Silicon Transistor
X303, 304	2SC1775AV (F)	"	"	"
X601, 602	2SC1775AV (F1)	"	"	"
X603, 604	2SA872AV (E)	"	"	"
X605, 606	2SA794 (R)	1.2W	120MHz	"
X607, 608	2SC1775AV (F1)	300mW	200MHz	"
X701	2SD330V (D)	20W	8MHz	"
X702	2SB514V (D)	"	"	"
X703, 704	2SC1775AV (F)	300mW	200MHz	"
X705	2SA872AV (E)	"	"	"
X706	2SK30Y			FET
X707	2SD438 (E)	750mW	100MHz	Silicon Transistor
X708	2SC1775AV (F)	300mW	200MHz	"
X709	2SA872AV (E)	"	"	"

### Integrated Circuit

Item No.	Part Number	Rating	Description
IC601, 602	STK0040		Darlington Transistor Power IC

### Diodes

Item No.	Part Number	Rating	Description
D701~703	1S2473		Silicon Diode
D751~754	S-3		"
D755, 756	WZ-240		Zener Diode
D757	WZ-017A		"

### Resistors

Item No.	Part Number	Rating		Description
R301, 302	QRD141J-222	2.2k $\Omega$	1/4W	Carbon Resistor
R303, 304	QRD141J-224	220k $\Omega$	"	"
R305, 306	QRD141J-473	47k $\Omega$	"	"
R307, 308	QRZ0019-104	100k $\Omega$	"	Carbon Resistor (Low Noise)
R309, 310	QRD141J-153	15k $\Omega$	"	Carbon Resistor
R311, 312	QRD141J-331	330 $\Omega$	"	"
R313, 314	QRD141J-273	27k $\Omega$	"	"
R315, 316	QRD141J-224	220k $\Omega$	"	"
R317, 318	QRD141J-183	18k $\Omega$	"	"
R319, 320	QRD141J-562	5.6k $\Omega$	"	"
R321, 322	QRD141J-221	220 $\Omega$	"	"
R323, 324	QRD141J-333	33k $\Omega$	"	"
R325, 326	QRD141J-683	68k $\Omega$	"	"
R327, 328	QRD141J-471	470 $\Omega$	"	"
R329, 330	QRD141J-683	68k $\Omega$	"	"
R601, 602	QRD141J-222	2.2k $\Omega$	"	"
R605, 606	QRZ0019-104	100k $\Omega$	"	Carbon Resistor (Low Noise)
R607, 608	QRD141J-154	150k $\Omega$	"	Carbon Resistor
R609~612	QRD141J-182	1.8k $\Omega$	"	"
R613, 614	QRD141J-121	120 $\Omega$	"	"
R615, 616	QRD141J-222	2.2k $\Omega$	"	"
R617, 618	QRD141J-272	2.7k $\Omega$	"	"
R619, 620	QRD141J-473	47k $\Omega$	"	"
R623, 624	QRG017J-392	3.9k $\Omega$	1W	Unflamable O.M.F. Resistor
R625, 626	QRG017J-222	2.2k $\Omega$	"	"
R627, 628	QRD141J-182	1.8k $\Omega$	1/4W	Carbon Resistor
R629, 630	QRD126J-100	10 $\Omega$	1/2W	Unflamable Carbon
R631, 632	QRG017J-100	"	1W	Unflamable O.M.F. Resistor
R637~640	QRM054K-R47	0.47 $\Omega$	5W	Metal Plate Resistor
R641, 642	QRD141J-103	10k $\Omega$	1/4W	Carbon Resistor
R701, 702	QRD141J-222	2.2k $\Omega$	"	"

## Resistors

Item No.	Part Number	Rating	Description
R703, 704	QRD141J-471	470Ω 1/4W	Carbon Resistor
R705, 706	QRD141J-562	5.6kΩ "	"
R707	QRD126J-471	470Ω 1/2W	Unflamable Carbon Resistor
R708	QRD141J-473	47kΩ 1/4W	Carbon Resistor
R709	QRD141J-224	220kΩ "	"
R710	QRD141J-823	82kΩ "	"
R711	QRZ0019-104	100kΩ "	Carbon Resistor (Low Noise)
R713	QRG011J-181	180Ω 1W	Oxide Metal Film Resistor
R714	QRD141J-822	8.2kΩ 1/4W	Carbon Resistor
R715	QRD141J-562	5.6kΩ "	"
R716, 717	QRD141J-223	22kΩ "	"
R718	QRD141J-152	1.5kΩ "	"
R719	QRD141J-822	8.2kΩ "	"
R720, 721	QRD141J-101	100Ω "	"
R751	QRD126J-330	33Ω 1/2W	Unflamable Carbon Resistor
R752, 753	QRD141J-392	3.9kΩ 1/4W	Carbon Resistor
R754, 755	QRD126J-221	220Ω 1/2W	Unflamable Carbon Resistor
R758, 759	QRD126J-560	56Ω "	"

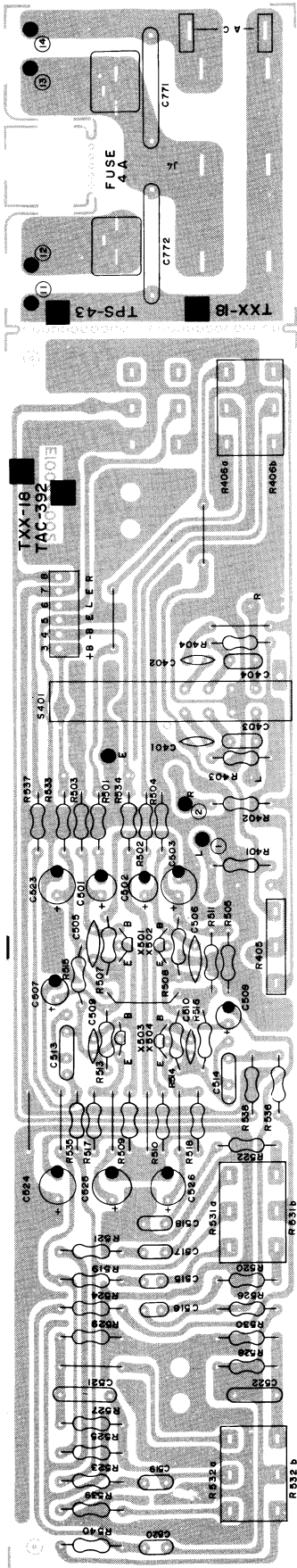
## Capacitors

Item No.	Part Number	Rating	Description
C301, 302	QEB41EM-225	2.2μF 25V	L.L.C. Electrolytic Capacitor
C303, 304	QEW41CA-476	47μF 16V	Electrolytic Capacitor
C305, 306	QCS11HJ-471	470pF 50V	Ceramic Capacitor
C309, 310	QEW41AA-107	100μF 10V	Electrolytic Capacitor
C311, 312	QFM41HJ-123	0.012μF 50V	Mylar Capacitor
C313~316	QFM41HJ-272	0.0027μF "	"
C317, 318	QFM41HJ-152	0.0015μF "	"
C319, 320	QCS11HJ-181	180pF "	Ceramic Capacitor
C321, 322	QCS11HJ-100	10pF "	"
C323, 324	QEW41AA-227	220μF 10V	Electrolytic Capacitor
C325~328	QEB41EM-106	10μF 25V	L.L.C. Electrolytic Capacitor
C601, 602	QCS11HJ-271	270pF 50V	Ceramic Capacitor
C603, 604	QEB41EM-475	4.7μF 25V	L.L.C. Electrolytic Capacitor
C605, 606	QEW41AA-476	47μF 10V	Electrolytic Capacitor
C607, 608	QEW41HA-476	" 50V	"
C609, 610	QCS11HJ-390	39pF "	Ceramic Capacitor
C611, 612	QFM41HK-473	0.047μF "	Mylar Capacitor
C613, 614	QCS11HJ-220	22pF "	Ceramic Capacitor
C701	QEW41EA-106	10μF 25V	Electrolytic Capacitor
C702	QEW41AA-107	100μF 10V	"
C703~705	QEW41AA-227	220μF "	"
C706	QEW41CA-106	10μF 16V	"
C707, 708	QFM41HK-104	0.1μF 50V	Mylar Capacitor
C751	QCF12HP-103	0.01μF 500V	Ceramic Capacitor
C752, 753	QEW41HA-106	10μF 50V	Electrolytic Capacitor
C754, 755	QEW41HA-476	47μF "	"
C756, 757	QCF11HP-103	0.01μF "	Ceramic Capacitor
C758, 759	QEW41EA-227	220μF 25V	Electrolytic Capacitor
C760, 761	QEW41EA-476	47μF "	"

## Others

Item No.	Part Number	Rating	Description
S301	QSR0072-001		Rotary Switch (Source Selector)
S302	QSL4312-003		Lever Switch (Tape Monitor)
S303	QSL4312-003		" (Tape Dubbing)
RY701	ESK1D24-216		Relay
	E49768-001		6 Pin Socket
	E49545-001		Pin

## 6-(2) TAC-392 Tone Control C.B. Ass'y



### Transistors

Item No.	Part Number	Rating		Description
		Pc	fT	
X501, 502	2SA872AV (E)	300mW	200MHz	Silicon Transistor
X503, 504	2SC1775AV (E)	"	"	"

### Resistors

Item No.	Part Number	Rating		Description
		Value	Power	
R401, 402	QRD141J-472	4.7k $\Omega$	1/4W	Carbon Resistor
R403, 404	QRD141J-223	22k $\Omega$	"	"
R405	QVB8A2W-6F5E	250k $\Omega$	"	Variable Resistor (Balance)
R406	EVC4A2B-9F5	"	"	" (Master Volume)
R501, 502	QRD141J-222	2.2k $\Omega$	1/4W	Carbon Resistor
R503, 504	QRD141J-224	220k $\Omega$	"	"
R505	QRD141J-273	27k $\Omega$	"	"
R507, 508	QRD141J-104	100k $\Omega$	"	"
R509, 510	QRD141J-223	22k $\Omega$	"	"
R511	QRD141J-393	39k $\Omega$	"	"
R513, 514	QRD141J-224	220k $\Omega$	"	"
R515, 516	QRD141J-392	3.9k $\Omega$	"	"
R517, 518	QRD141J-221	220 $\Omega$	"	"
R519, 520	QRD141J-152	1.5k $\Omega$	"	"
R521, 522	QRD141J-101	100 $\Omega$	"	"
R523, 524	QRD141J-562	5.6k $\Omega$	"	"
R525, 526	QRD141J-472	4.7k $\Omega$	"	"
R527, 528	QRD141J-183	18k $\Omega$	"	"
R529, 530	QRD141J-102	1k $\Omega$	"	"
R531, 532	QVC3A2C-215	100k $\Omega$	"	Variable Resistor (Bass, Treble)

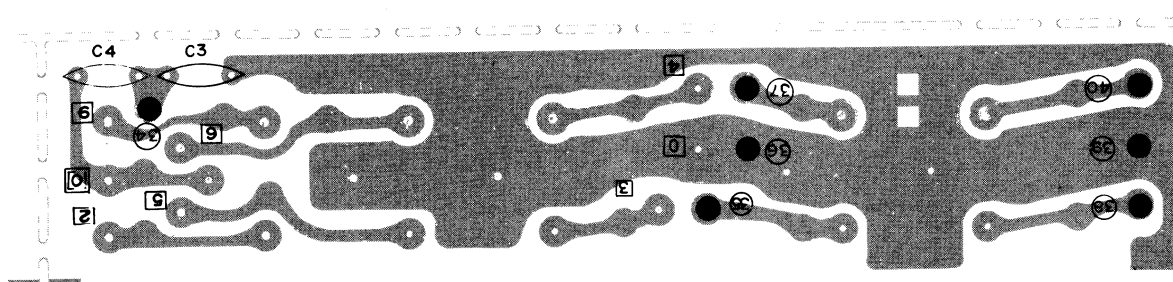
### Capacitors

Item No.	Part Number	Rating		Description
		Value	Voltage	
C401, 402	QCS11HJ-181	180pF	50V	Ceramic Capacitor
C403, 404	QFM41HK-103	0.01 $\mu$ F	"	Mylar Capacitor
C501, 502	QEB41EM-335	3.3 $\mu$ F	25V	Electrolytic Capacitor
C503	QEW41CA-476	47 $\mu$ F	16V	"
C505, 506	QCS11HJ-471	470pF	50V	Ceramic Capacitor
C507, 508	QEW41CA-106	10 $\mu$ F	16V	Electrolytic Capacitor
C509, 510	QCS11HJ-100	10pF	50V	Ceramic Capacitor
C513, 514	QFM41HK-224	0.22 $\mu$ F	"	Mylar Capacitor
C515, 516	QFM41HK-272	0.0027 $\mu$ F	"	"
C517~520	QFM41HK-223	0.022 $\mu$ F	"	"
C521, 522	QFM41HK-224	0.22 $\mu$ F	"	"
C523, 524	QEW41EA-476	47 $\mu$ F	25V	Electrolytic Capacitor

### Others

Item No.	Part Number	Rating	Description
	E49768-001		6 Pin Socket
	E49545-001		Pin

### 6-(3) TSC-45B Pin Jack C.B. Ass'y



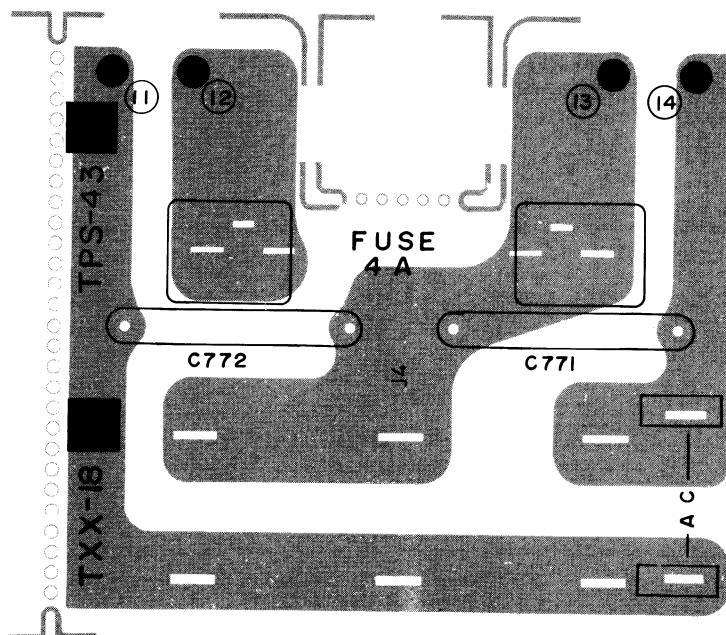
#### Capacitor

Item No.	Part Number	Rating	Description
C3, 4	QCF11HP-473	0.047 $\mu$ F 50V	Ceramic Capacitor

#### Others

Item No.	Part Number	Rating	Description
J1	E03591-60D		Pin Jack Ass'y (6 Pins)
J2	E03591-40D		" (4 Pins)

### 6-(4) TPS-43B AC Primary C.B. Ass'y (J-type only)



#### Capacitors

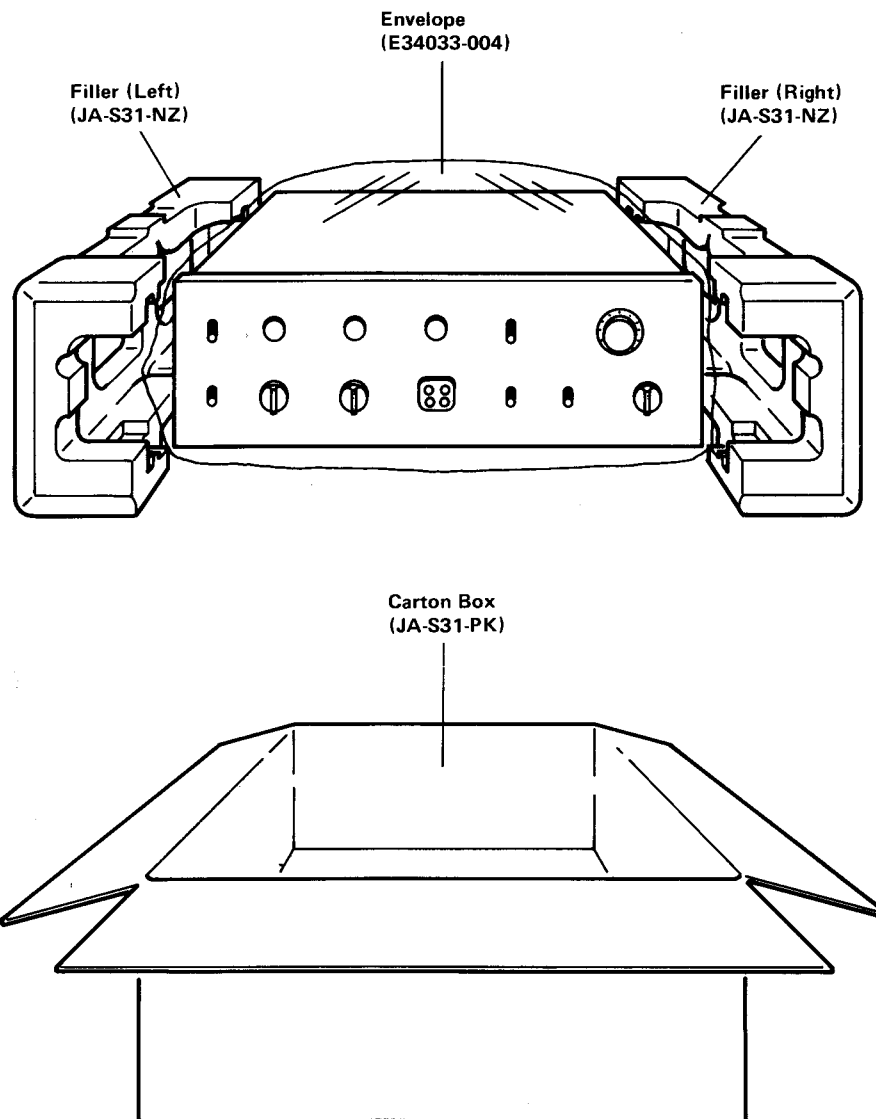
Item No.	Part Number	Rating	Description
C771	QFH52BM-103	0.01 $\mu$ F AC 125V	Metalized Mylar
C722	QFH72BM-103	" "	" (UL Approved)

#### Others

Item No.	Part Number	Rating	Description
J4	QMC0637-001 E03675-003		AC Socket Fuse Clip



## 7. Packing Materials List



## 8. Accessories List

Part Number	Part Name	Q'ty	Description
E30580-510A	Instruction Book	1	
E64207-002	Envelope	1	for Accessories
BT-20020C	Warranty Card	1	for J-type only
QMF60R1-2R3	Fuse	1	2.3A
QMF60R1-4R0	Fuse	1	4A
E7958-L	Fuse Label	1	} for U-, F- and P-types only
E64208-001	Envelope for Fuses	1	
BT20014B	Warranty Card	1	for P-type only

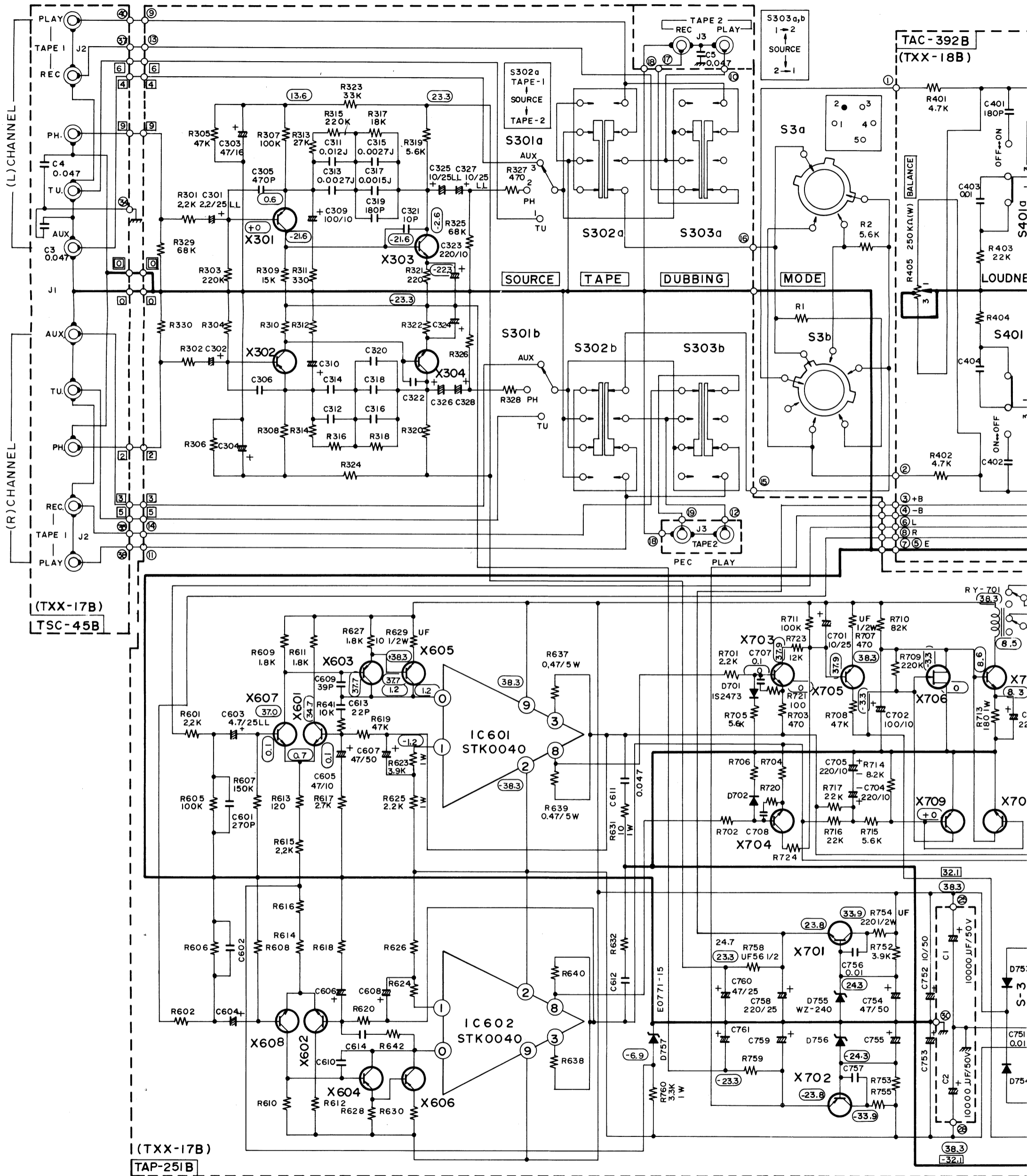
## 9. Parts List with Specified Numbers for Designated Areas

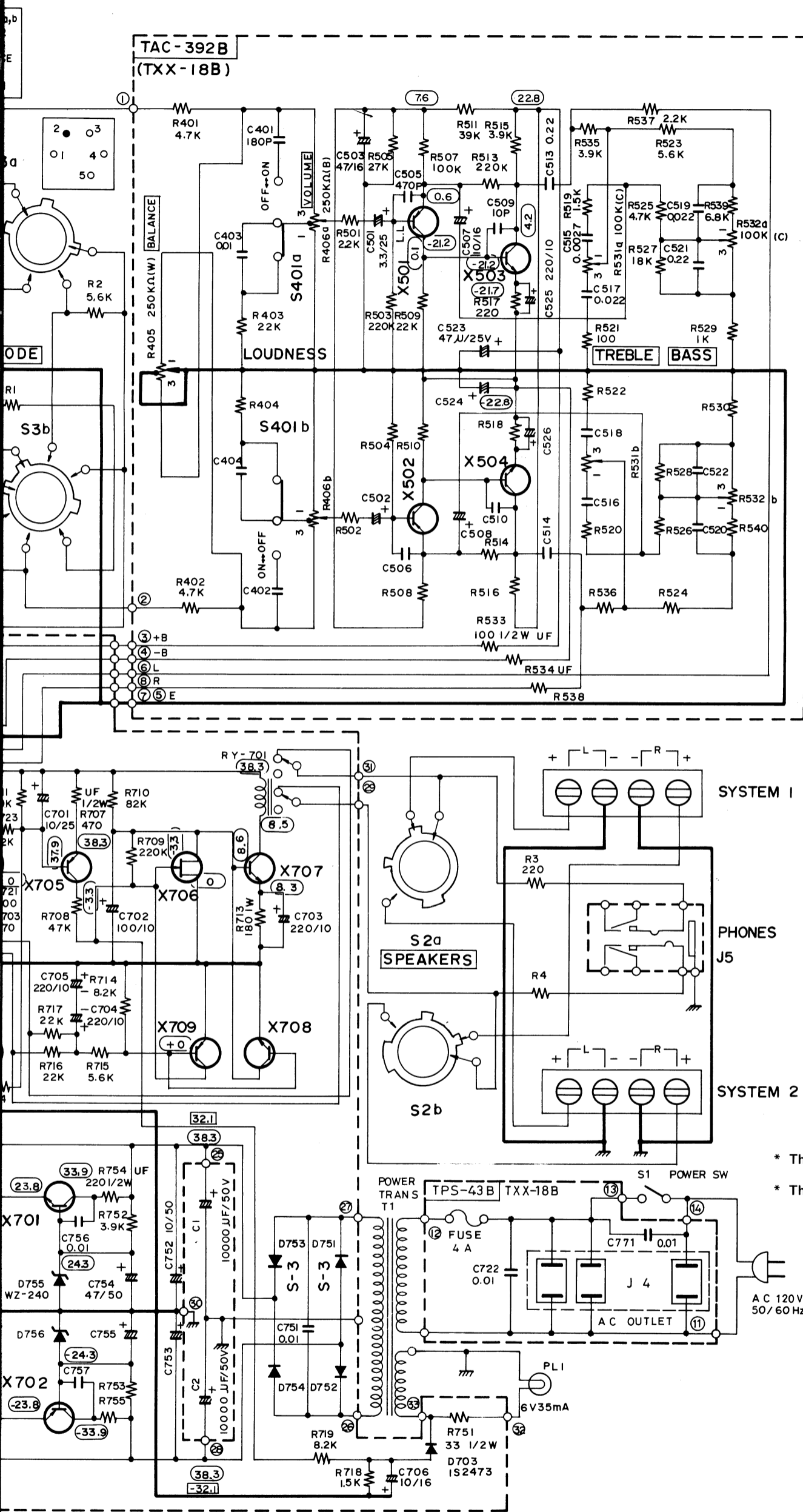
Page	Item No.	Description	For U.S.A.	For Europe Sweden Norway Finland Switzerland and Denmark	For Australia	For Other Countries
5	12	Power Transformer	E03075-30E	E03075-30D	E03075-30D	E03075-30C
7		Power Switch	QSL1135-012	QSL2235-103	QSL2235-103	QSL1135-011G
16		AC Primary C.B. Ass'y	TPS-43B			TPS-62
9		Rear Panel	E21921-003	E21921-004	E21921-004	E21921-004
10	24	AC Socket	QMC0637-001			
10	13	Power Cord	QMP1200-244	QMP3800-240 (Switzerland) E03544-001 (Sweden)	E03551-002	QMP1200-244 E03329-001 (Europe)
10	14	Cord Stopper	QHS3876-162	QHS3876-162	QHS6374-252	QHS3876-162
10	25	Fuse Holder	E03675-003	QMG1321-002	QMG1321-002	E03675-003
17		Fuse (Primary)	QMF61U1-4R0	QMF51A2-2R0	QMF51A2-2R0	100V/120V: QMF60R1-4R0 220V/240V: QMF60R1-2R3
17		Fuse (Secondary) 200mAT 4AT		QMF51A2-R20 QMF51A2-4R0	QMF51A2-R20 QMF51A2-4R0	
10	12	Voltage Select Socket				E03676-002
10	11	Voltage Select Plug				E03676-001
10	26	Bracket (for Primary Fuse)		E60843-001	E60843-001	
10	29, 30	Terminal Strip (for Primary Wiring)		T42693-00B	T41479-00B	
10	6	DIN Socket		QMC0589-001UB	QMC0589-001UB	QMC0589-001UB
17		Warranty Card	BT-20020C			BT20014B (P-Typ only)

**Comparison Table for Line Voltage, Power Consumption, Primary Fuse Rating**

JA-S31	Line Voltage	Power Consumption	Primary Fuse Rating
U.S.A.	AC 120V, 50/60Hz	120W	4A
AUSTRALIA	AC 240V, 50Hz	330W	2AT
SCANDINAVIA & SWITZERLAND	AC 220V, 50Hz	330W	2AT
OTHER AREAS	AC 100V/120V/220V/240V, 50/60Hz	330W	100V/120V: 4A 220V/240V: 2.3A

# 10. Schematic Diagram





※ FUNCTION (S301a-b)

- 1. TUNER
- 2. PHONO
- 3. AUX

※ MODE SW (S3a-b)

- 1. REVERSE } STEREO
- 2. NORMAL }
- 3. L+R } MONO
- 4. L }
- 5. R }

※ SPEAKERS (S2a-b)

- 1. OFF
- 2. SYSTEM-1
- 3. SYSTEM-2
- 4. SYSTEM-1+2

※ TRANSISTORS LIST

- [EQUALIZER]  
 X301, X302 — 2SA872AV(E)  
 X303, X304 — 2SC1775AV(F)

[TONE CONTROL]

- X501, X502 — 2SA872AV(E)  
 X503, X504 — 2SC1775AV(F)

[POWER AMP]

- X601, X602 — 2SC1775AV(F1)  
 X603, X604 — 2SA872AV(E)  
 X605, X606 — 2SA794(R)

[POWER SUPPLY]

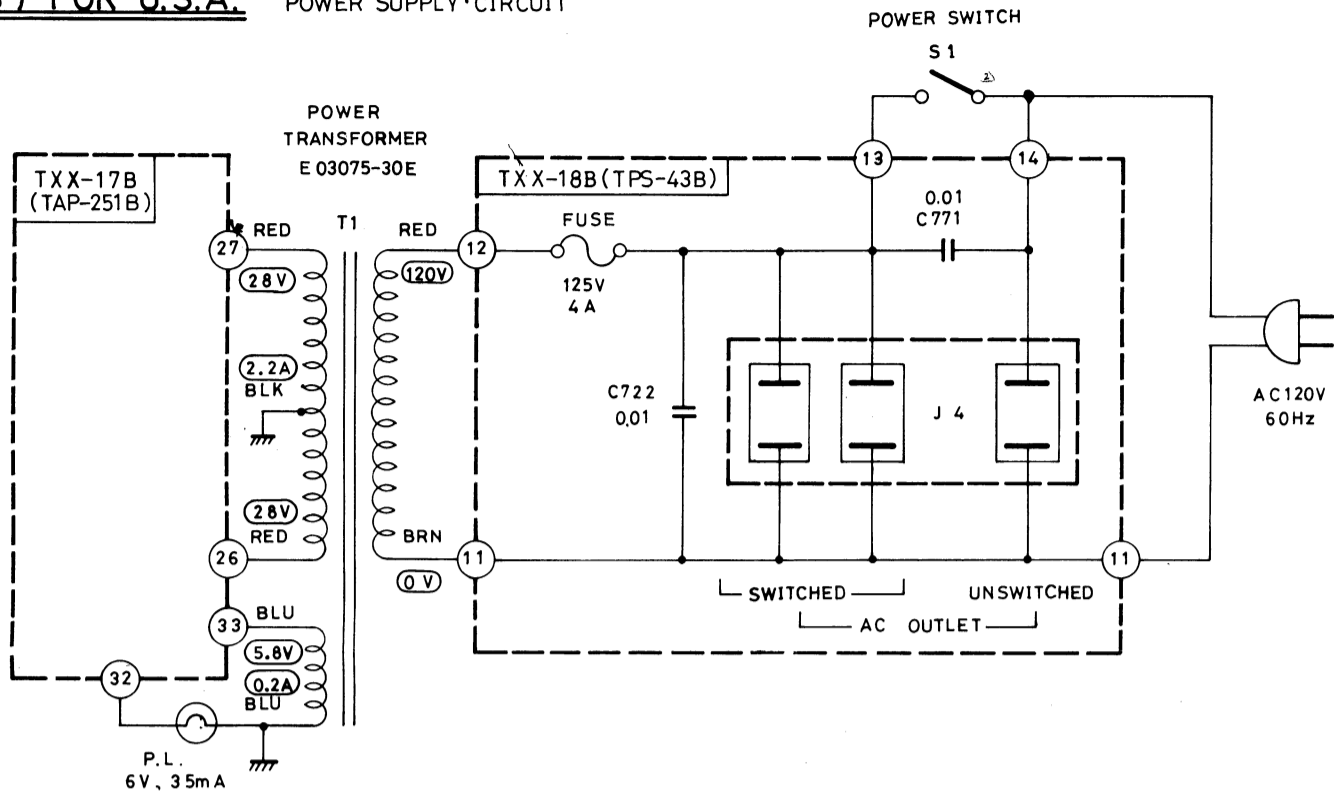
- X701 — 2SD330V(D)  
 X702 — 2SB514V(D)

[PROTECTOR]

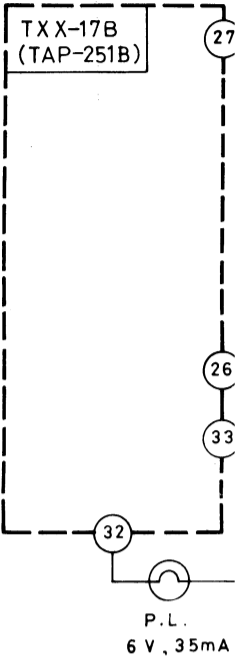
- X703, X704 — 2SC1775AV(F)  
 X705, X709 — 2SA872AV(E)  
 X706 — 2SK30Y  
 X707 — 2SD438(E)

\* The voltages in    were measured at no load with DC VTVM.  
 \* The voltages in    were measured at EIAJ output power with DC VTVM.

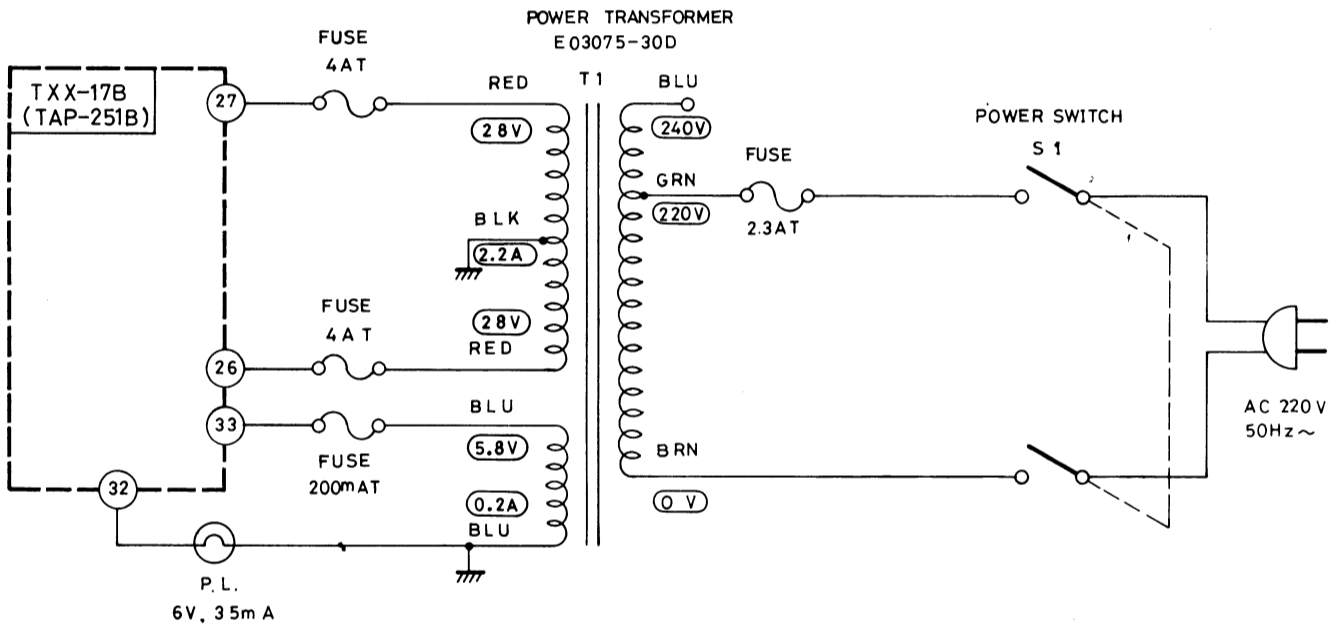
**(J) FOR U.S.A.** POWER SUPPLY CIRCUIT



**(U)(P)(F)**



**(E) FOR EUROPE** POWER SUPPLY CIRCUIT

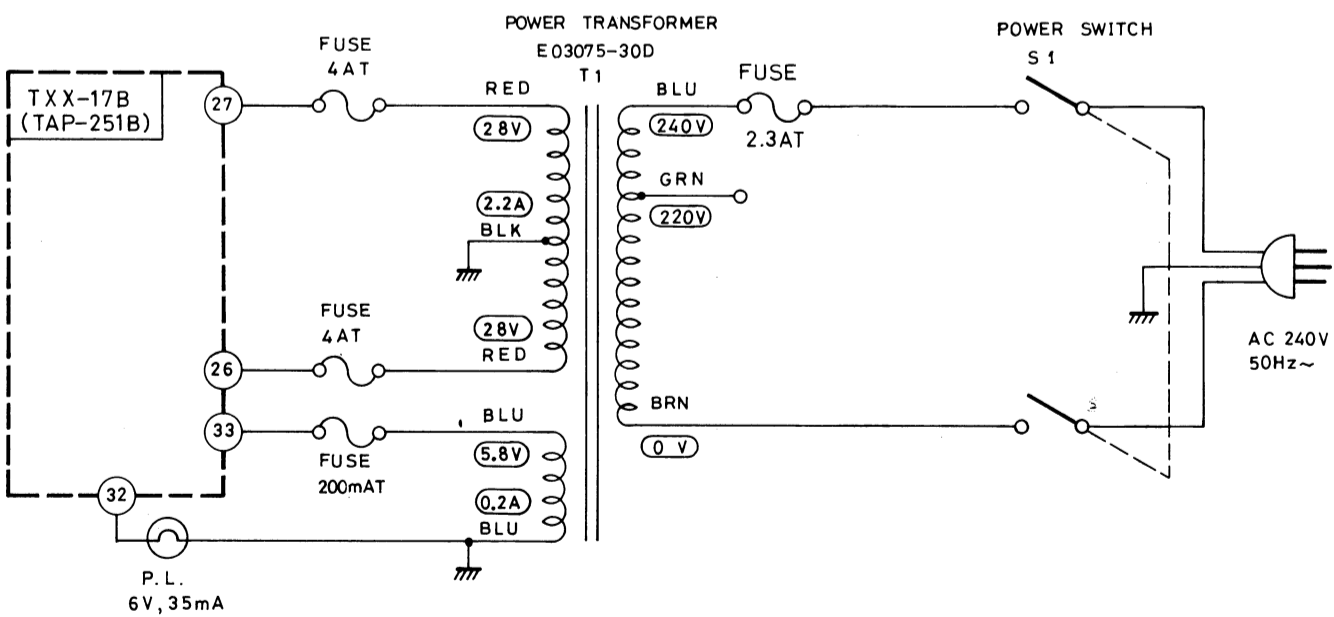


**(E)(A)(U)(P)**

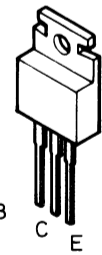
TO  
RIGHT CHANNEL  
TAPE-1 PLAYBACK  
TERMINAL

TO  
LEFT CHANNEL  
TAPE-1 PLAYBACK  
TERMINAL

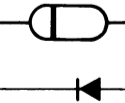
**(A) FOR AUSTRALIA** POWER SUPPLY CIRCUIT



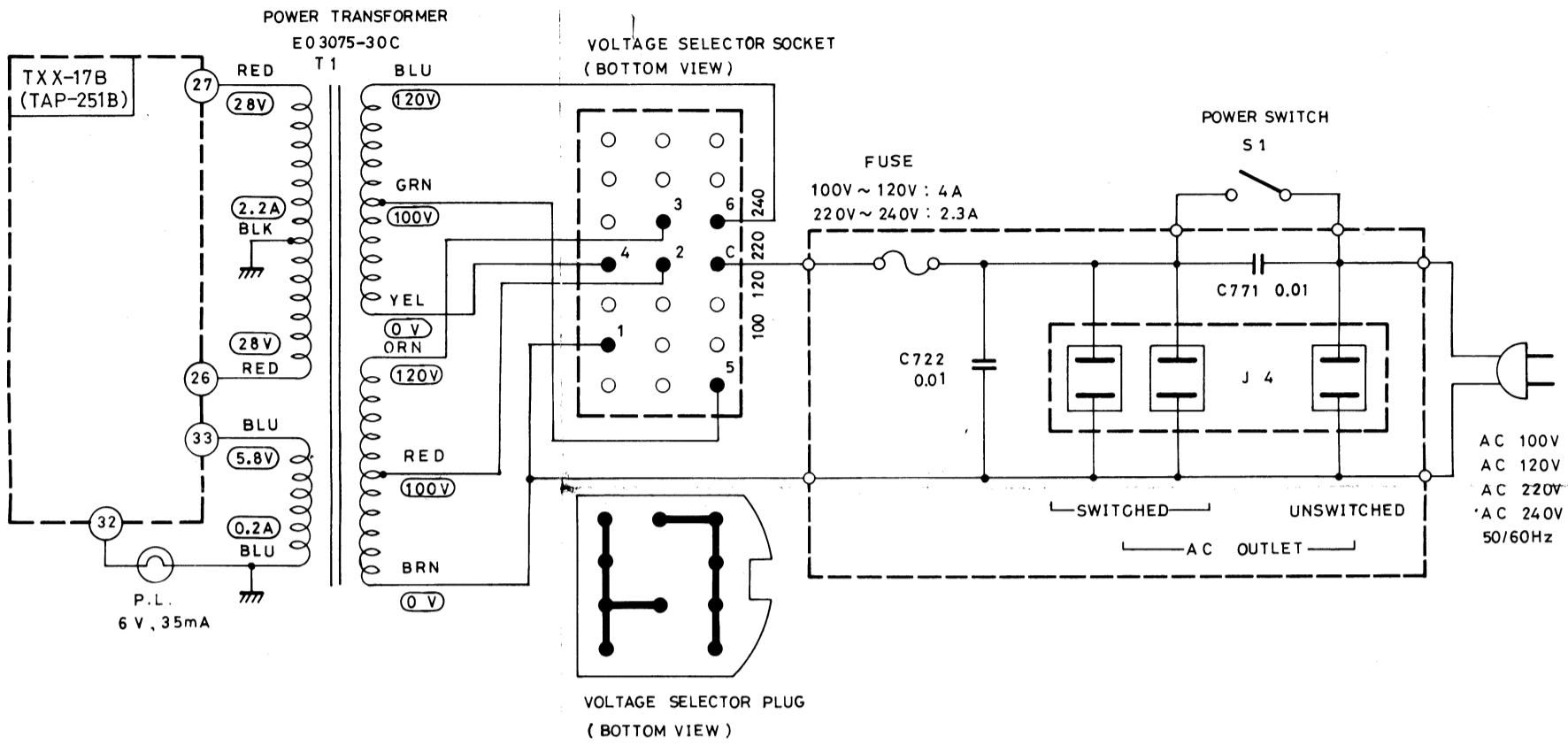
2SB514  
2SD330V



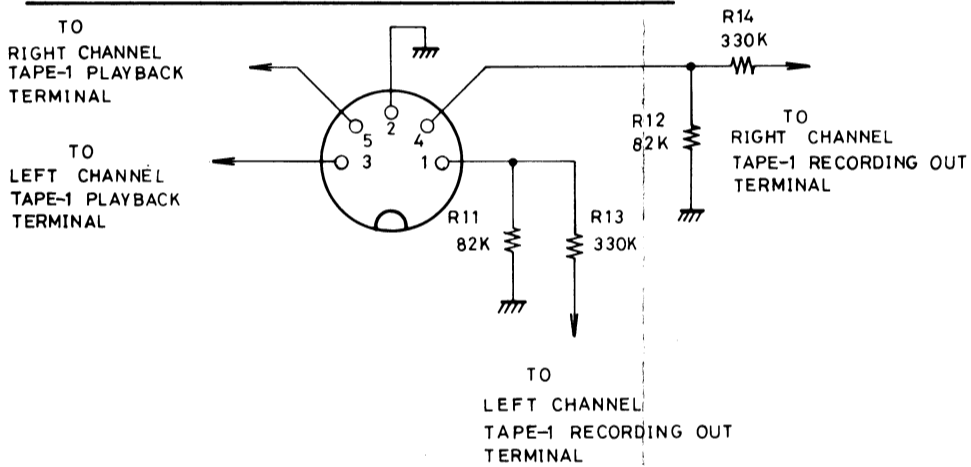
1S273



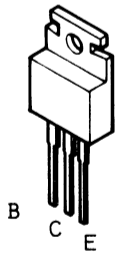
(U)(P)(F) FOR PACEX, NEX AND OTHER COUNTRIES POWER SUPPLY CIRCUIT



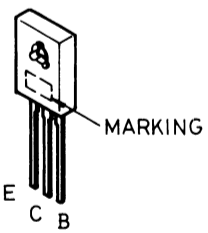
(E)(A)(U)(P)(F) DIN TAPE TERMINAL



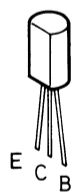
2SB514  
2SD330V



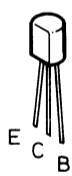
2SA794



2SD438



2SA872AV  
2SC1775AV



2SK30



1S273

1S273

WZ-240

WZ-240