

Service Manual

Stereo Integrated Amplifier

Amplifier

SU-V450

Color

(S) Silver Type
(K) Black Type



Area

Color	Area
(S)(K)	(E) Continental Europe.
(S)(K)	(Ei) Italy.
(S)(K)	(EG) F.R.Germany.
(S)(K)	(EB) Belgium.
(S)(K)	(EK) United Kingdom.
(S)(K)	(EF) France.
(S)(K)	(EH) Holland.
(S)(K)	(XL) Australia.
(S)(K)	(XA) Asia, Latin America, Middle Near East, Africa and Oceania.

SPECIFICATIONS

(DIN 45 500)

■ AMPLIFIER SECTION

1 kHz continuous power output both channels driven	2 x 90 W (4Ω) 2 x 65 W (8Ω)
20 Hz ~ 20 kHz continuous power output both channels driven	2 x 50 W (8Ω)
Total harmonic distortion	
rated power at 20 Hz ~ 20 kHz	0.003% (8Ω)
rated power at 1 kHz	0.005% (4Ω) 0.0009% (8Ω)
half power at 20 Hz ~ 20 kHz	0.003% (8Ω)
half power at 1 kHz	0.002% (4Ω) 0.0008% (8Ω)
Intermodulation distortion	
rated power at 50 Hz:7 kHz = 4:1, SMPTE, 8Ω	0.007%
Power bandwidth	
both channels driven, -3dB	5 Hz ~ 50 kHz (8Ω, 0.05%)
Residual hum and noise	0.8 mV
Damping factor	30 (4Ω), 60 (8Ω)
Input sensitivity and impedance	
PHONO	2.5mV/47 kΩ
TUNER, CD, AUX, TAPE 1/DAT, TAPE 2/EXT	150mV/22 kΩ
PHONO maximum input voltage (IHF'66 1 kHz, RMS)	160 mV
S/N	
rated power(4Ω)	
PHONO	76 dB (81 dB:IHF'66)
TUNER, CD, AUX, TAPE 1/DAT, TAPE 2/EXT	91 dB (100 dB:IHF'66)
-26 dB power (4Ω)	
PHONO	68 dB
TUNER, CD, AUX, TAPE 1/DAT, TAPE 2/EXT	70 dB
50 mW power (4Ω)	
PHONO	64 dB
TUNER, CD, AUX, TAPE 1/DAT, TAPE 2/EXT	64 dB

Frequency response PHONO

RIAA standard curve
± 0.8dB(30 Hz ~ 15 kHz)

TUNER, CD, AUX, TAPE 1/DAT, TAPE 2/EXT

3 Hz ~ 100 kHz (-3 dB)
+0, -0.2 dB (20 Hz ~ 20 kHz)

Tone controls

BASS

50 Hz, +10 dB ~ -10 dB

TREBLE

20 kHz, +10 dB ~ -10 dB

Subsonic filter

20 Hz, -6 dB/oct.

Loudness control (volume at -30 dB)

50 Hz, +9 dB

Output voltage

TAPE 1/DAT, TAPE 2/EXT REC OUT

150 mV

Channel balance, AUX 250 Hz ~ 6,300 Hz

±1 dB

Channel separation, AUX 1 kHz

50 dB

Headphones output level

and impedance

500 mV/330 Ω

Load impedance

MAIN or REMOTE

4 Ω ~ 16 Ω

MAIN and REMOTE

8 Ω ~ 16 Ω

■ GENERAL

Power consumption

450 W

Power supply

For United Kingdom and Australia

AC 50 Hz/60 Hz,
240 V

For continental Europe

AC 50 Hz/60 Hz, 220 V

For others

AC 50 Hz/60 Hz,
110 V/127 V/220 V/240 V

Dimensions (W x H x D)

430 x 126 x 311 mm
(16-15/16" x 4-15/16" x 12-7/32")

Weight

6.9 kg (15.2 lb.)

Notes:

- Specifications are subject to change without notice.
- Weight and dimensions are approximate.
- Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).

Technics

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

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BEFORE REPAIR AND ADJUSTMENT

- (1) Turn off the power supply. Using a 10Ω, 10W resistor, shortcircuit both ends of power supply capacitors (C705,C706)in order to discharge the voltage.
- (2) Before turning on the power switch of the unit.
 - A. Connect the voltage controller to the primary side.
 - B. Connect the AC ampere meter to the primary side or connect the DC voltage meter to the "±B" circuit of the secondary side.
 - C. Turn the VR of ICQ(VR401 and VR402)to minimum(counterclockwise).
 - D. After setting the output to zero of the voltage contoller,turn on the power switch of the unit.
And increase the output of voltage controller gradually.
Then, check carefully whether the current value of primary side become more than following value or whether the DC voltage of secondary side is increasing slowly.
 - E. If the value of current is increasing unusually or the DC voltage is not increasing,lower the output level of voltage contoller immediately.
- The current value of the primary side at no signal. (Confirm the power supply voltage of each area and provided voltage of the unit.)

Power supply voltage	AC110V	AC127V	AC220V	AC240V
Consumed current 50/60Hz	230 ~ 460mA	210 ~ 420mA	110 ~ 230mA	100 ~ 200mA

PROTECTION CIRCUITRY

The protection circuitry of the amplifier may have operated if either of the following conditions is noticed:

- No sound is heard when the power is turned on.
- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of the amplifier are used.

If this occurs, follow the procedure outlined below:

- 1.Turn off the power.
- 2.Determine the cause of the problem and correct it.
- 3.Turn on the power once again.

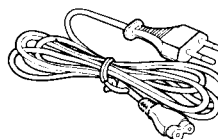
Note:

When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again.

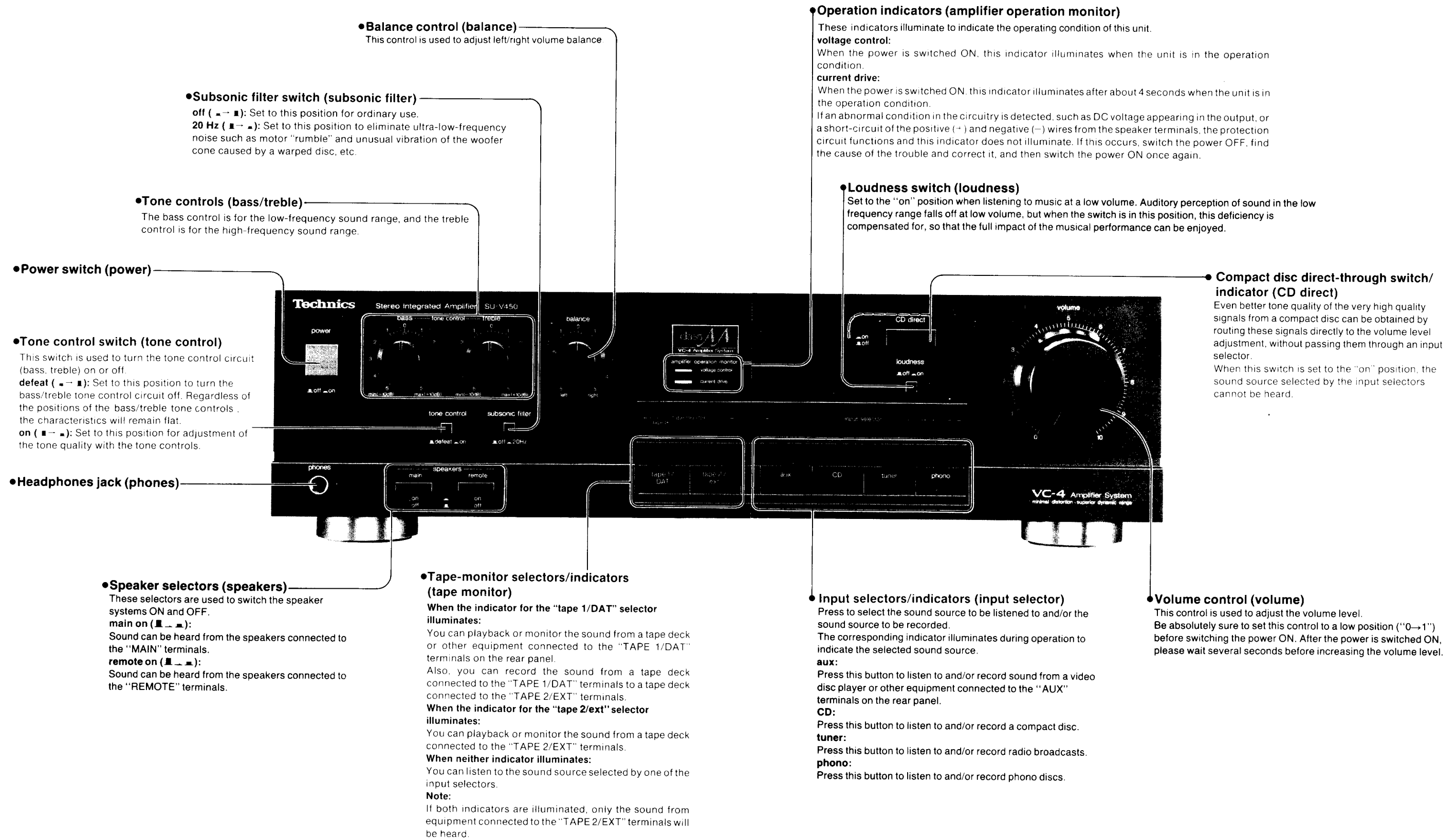
ACCESSORY

- AC power supply cord..... 1

(SJA168) For (XA) area only.
 (SJA173) For (XL) area only.
 (SJA193) For (EK) area only.
 (SFDAC05E03) For others.



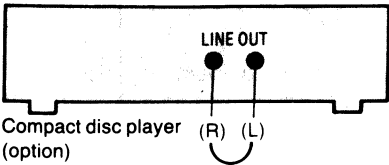
• LOCATION OF CONTROLS



CONNECTIONS

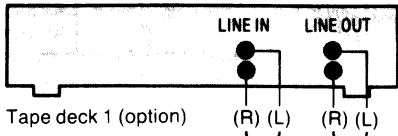
"CD" terminals

Connect a compact disc player.



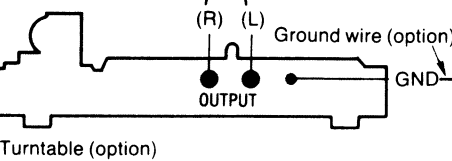
"TAPE 1/DAT" terminals

In addition to a tape deck, the analog terminals of a digital audio tape deck (DAT) can be connected here. If the digital audio tape deck is connected, connect the tape deck to the "TAPE 2/EXT" terminals.



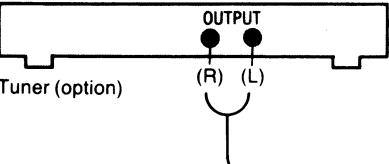
"PHONO" terminals

Connect a turntable.



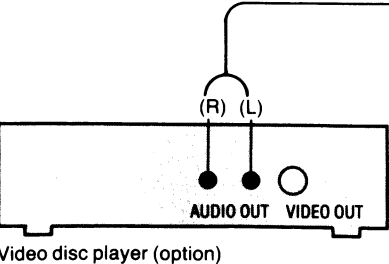
"TUNER" terminals

Connect a tuner.



"AUX" terminals

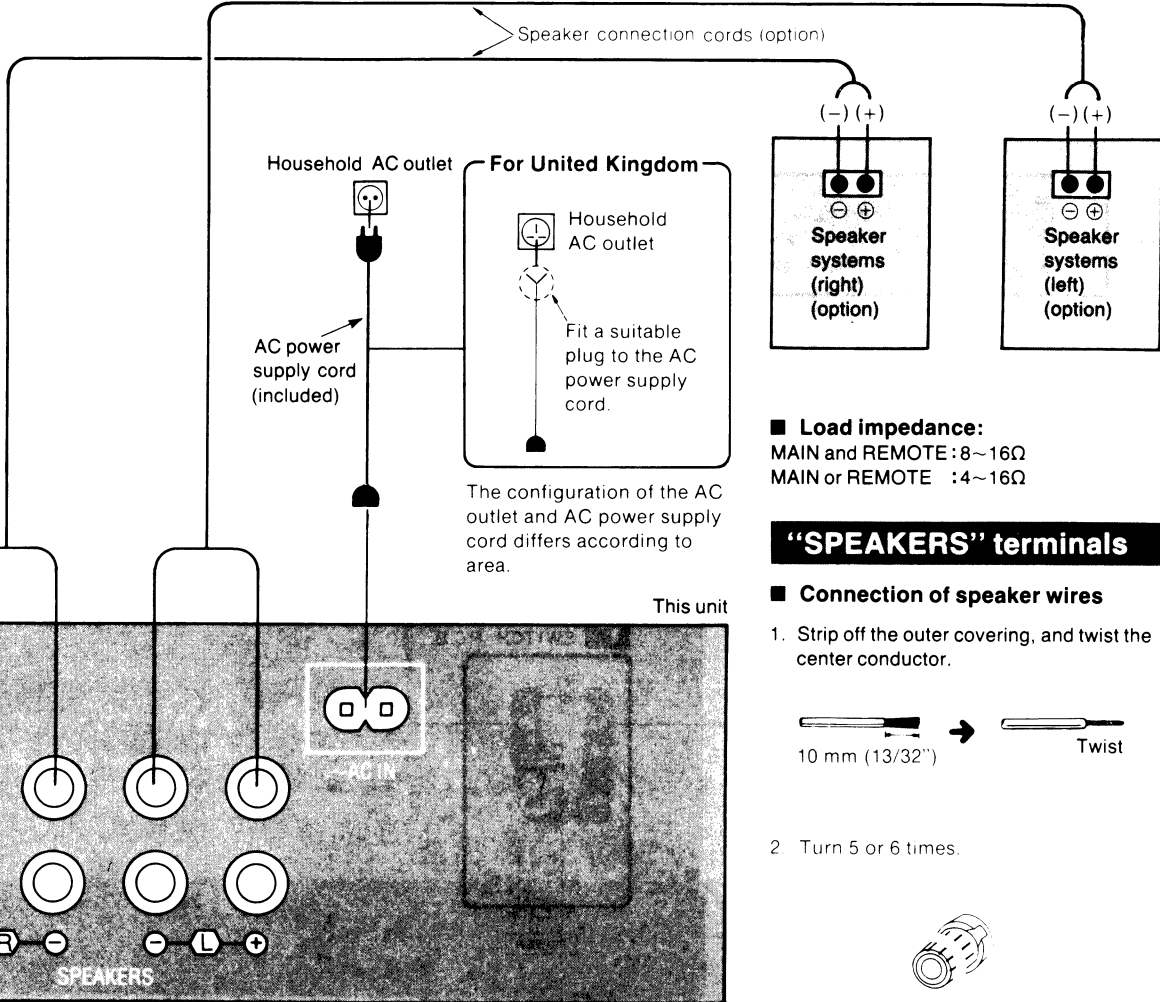
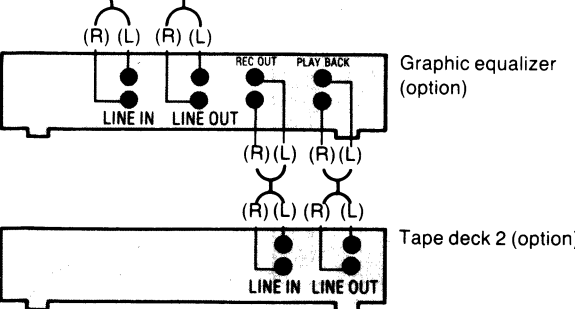
Connect a video disc player etc. These terminals are audio playback only.



*Phono input capacitance is about 100 pF.

"TAPE 2/EXT" terminals

Connect a graphic equalizer or a second tape deck, etc.

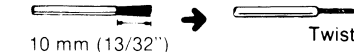


■ **Load impedance:**
MAIN and REMOTE: 8~16Ω
MAIN or REMOTE : 4~16Ω

"SPEAKERS" terminals

Connection of speaker wires

1. Strip off the outer covering, and twist the center conductor.



2. Turn 5 or 6 times.

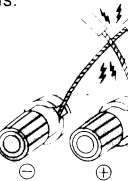


3. Insert wire and tighten screw completely. Pull the wire to assure a proper connection.



Notes:

1. To prevent damage to circuitry, never short plus (+) and minus (-) speaker terminals.

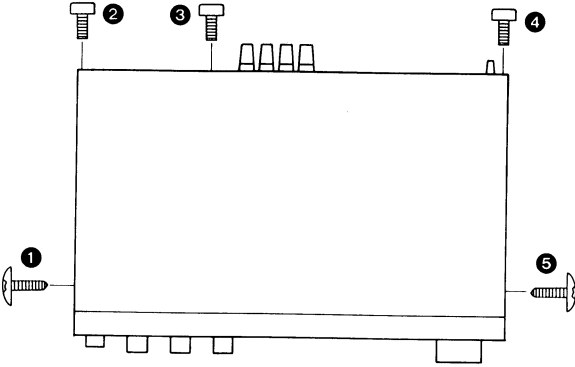
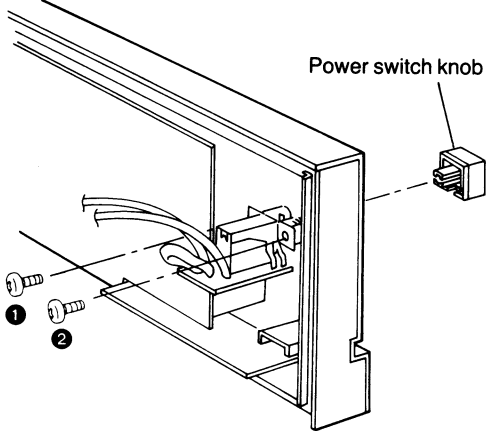
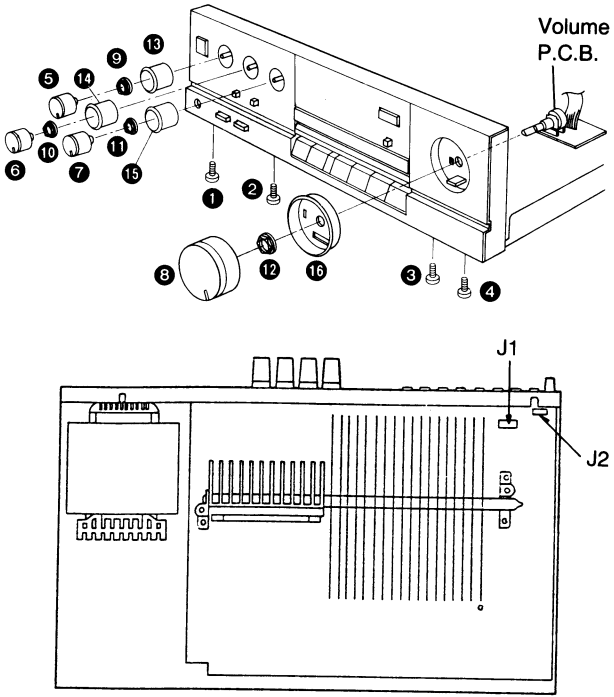
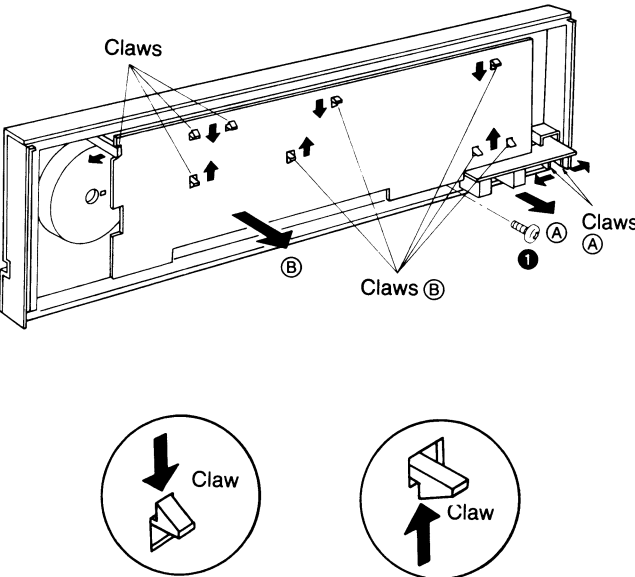


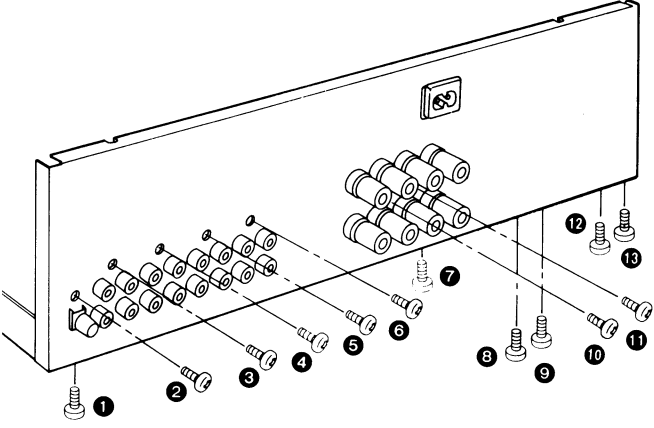
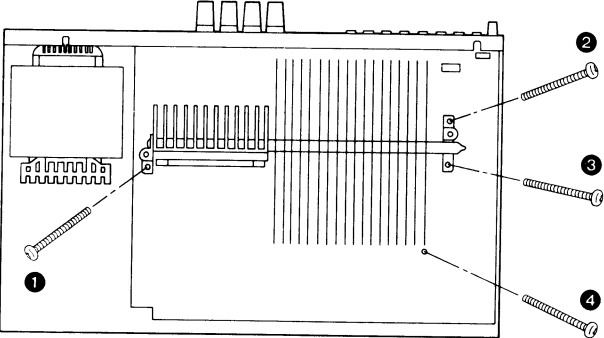
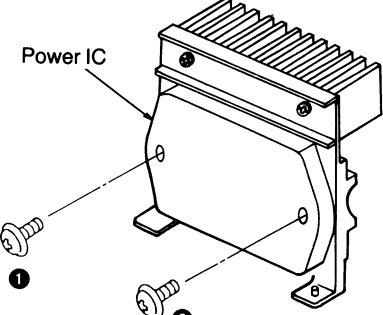
2. Be sure to only connect positive (+) cords to positive (+) terminals, and negative (-) cords to negative (-) terminals.

"REMOTE" terminals

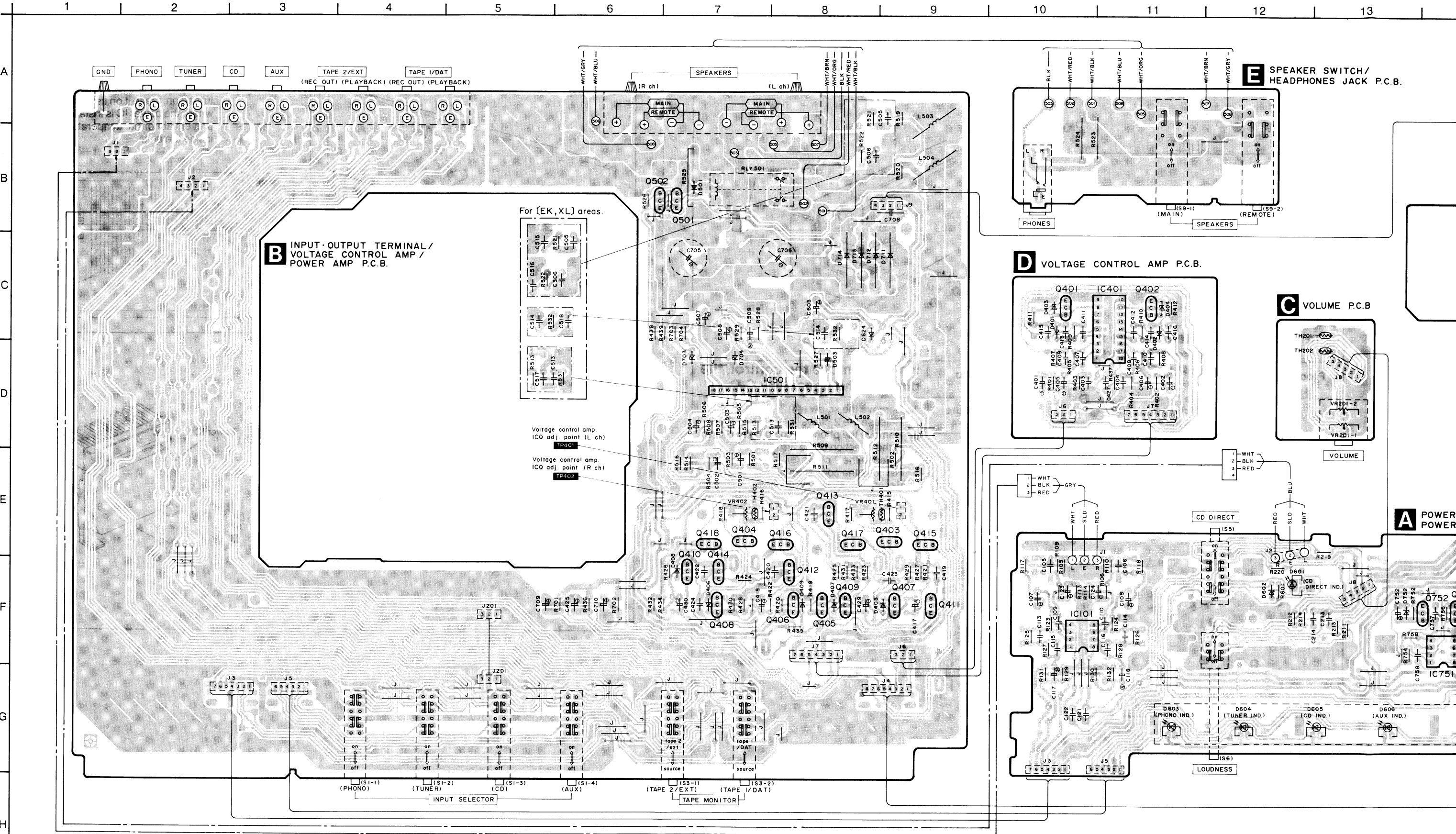
Connection to second pair of speakers.

■ DISASSEMBLY INSTRUCTIONS

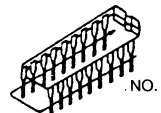
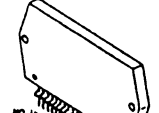
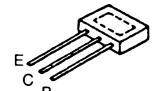
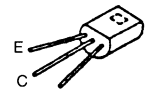
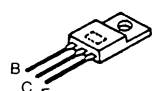
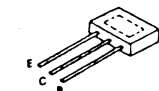
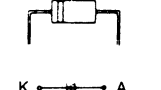
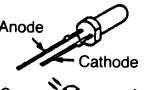
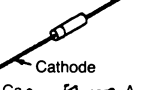
Ref. No. 1	How to remove the cabinet • Remove the 5 screws (①~⑤).	Ref. No. 3	How to remove the power switch P.C.B. Procedure 1→3
Procedure 1		Procedure 1→3	
Ref. No. 2	How to remove the front panel, the rec selector and the volume P.C.B. Procedure 1→2	Ref. No. 4	How to remove the control, the phones and speaker P.C.B. Procedure 1→2→4
Procedure 1→2	1. Remove the 4 screws (①~④). 2. Pull out the 4 knobs (⑤~⑧). 3. Remove the 4 nuts (⑨~⑫) and the 4 ornaments (⑬~⑯). 4. Remove the 2 connectors (J1, J2). 	Procedure 1→2→4	1. Remove the screw (①). 2. Release the 2 claws (A). 3. Remove the phones and speaker P.C.B., in the direction of the arrow (A). 4. Release the 9 claws (B). 5. Remove the control P.C.B., in the direction of the arrow (B). 

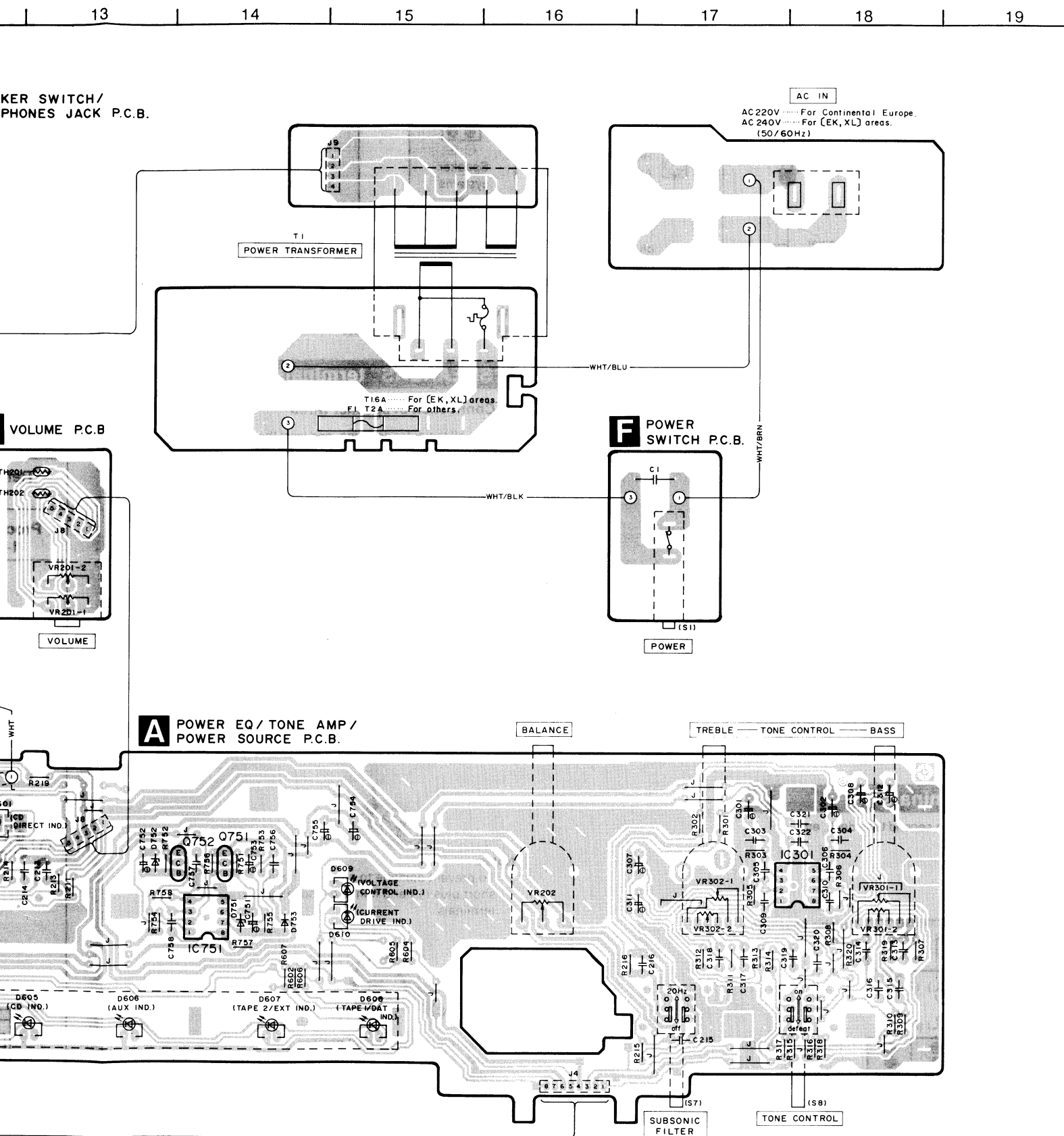
Ref. No. 5	How to remove the rear panel Procedure 1→2→5	Ref. No. 6	How to remove the main P.C.B. Procedure 1→2→5→6
Procedure 1→2→5	• Remove the 13 screws (①~⑬). 	Procedure 1→2→5→6	• Remove the 4 screws (①~④). Note: To check the unit for continuity when it is turned on, place it on its right side panel where the power IC is installed. This will prevent abnormal temperature from rising inside the unit. 
Ref. No. 7	How to remove the power IC Procedure 1→2→5→6→7		
Procedure 1→2→5→6→7	1. Remove the 2 screws (①, ②). 2. Unsolder the terminals of the power IC. • When mounting the power IC or regulator transistor. Apply silicone compound (SZZ0L15) to the rear side of power IC or regulator transistor.		

CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

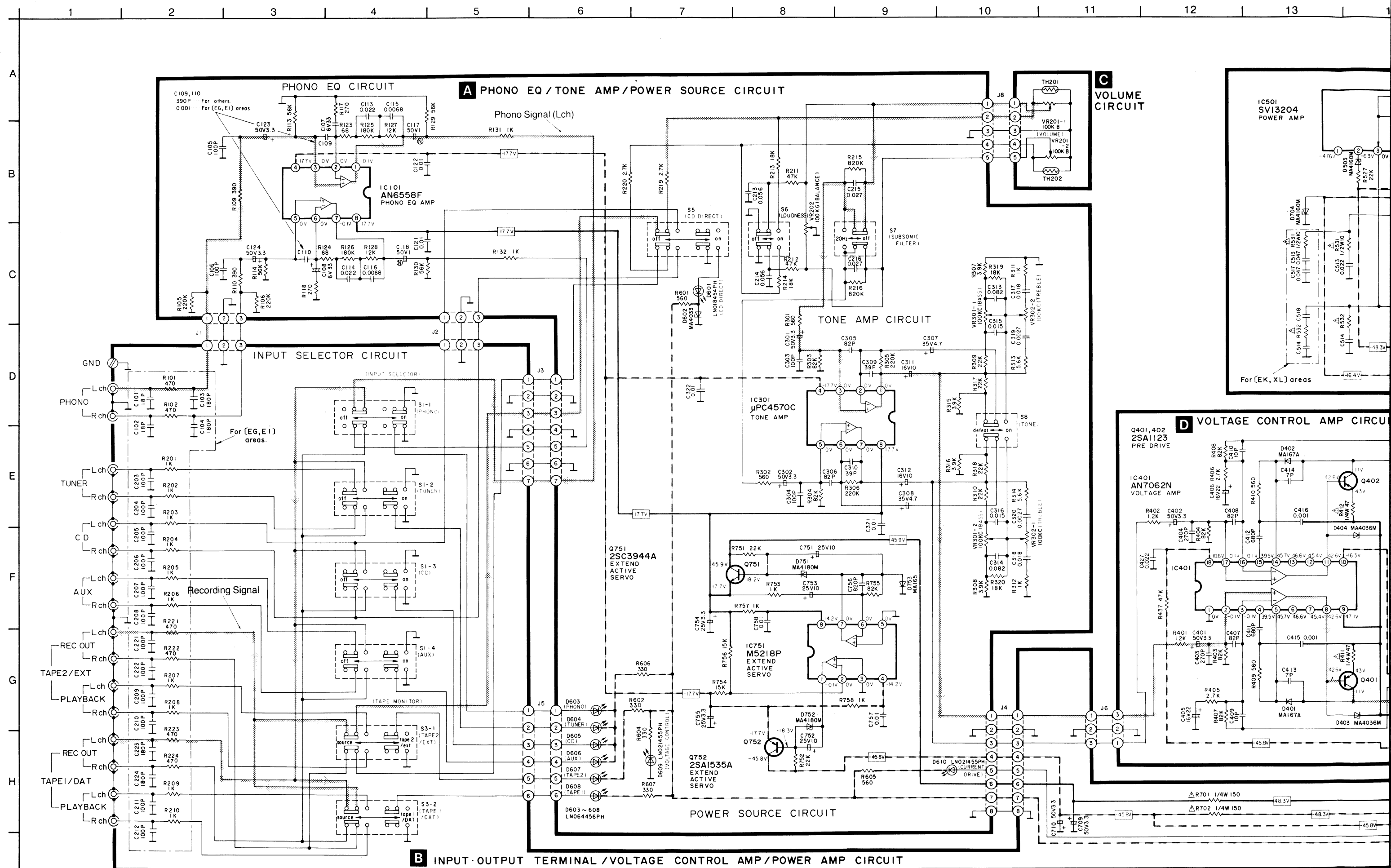


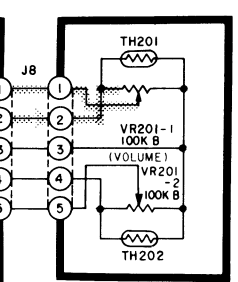
■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

 AN6558F 8 pin UPC4570C 8 pin M5218P 8 pin AN7062N 18 pin	 SV13204	 2SC3311, 2SA1309
 2SA1123, 2SC1685 2SC2631, 2SA992	 2SC3944, 2SA1535	 UN4112
 SVD1SR35200A	 LN018454 LN064456 LN021455	 MA4036M, MA4160M MA4033M, MA4180M
 K → A	 Anode Cathode Ca → A	 Anode Cathode Ca → A

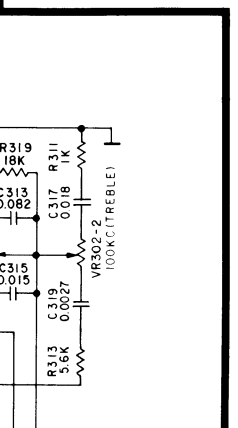


SCHEMATIC DIAGRAM

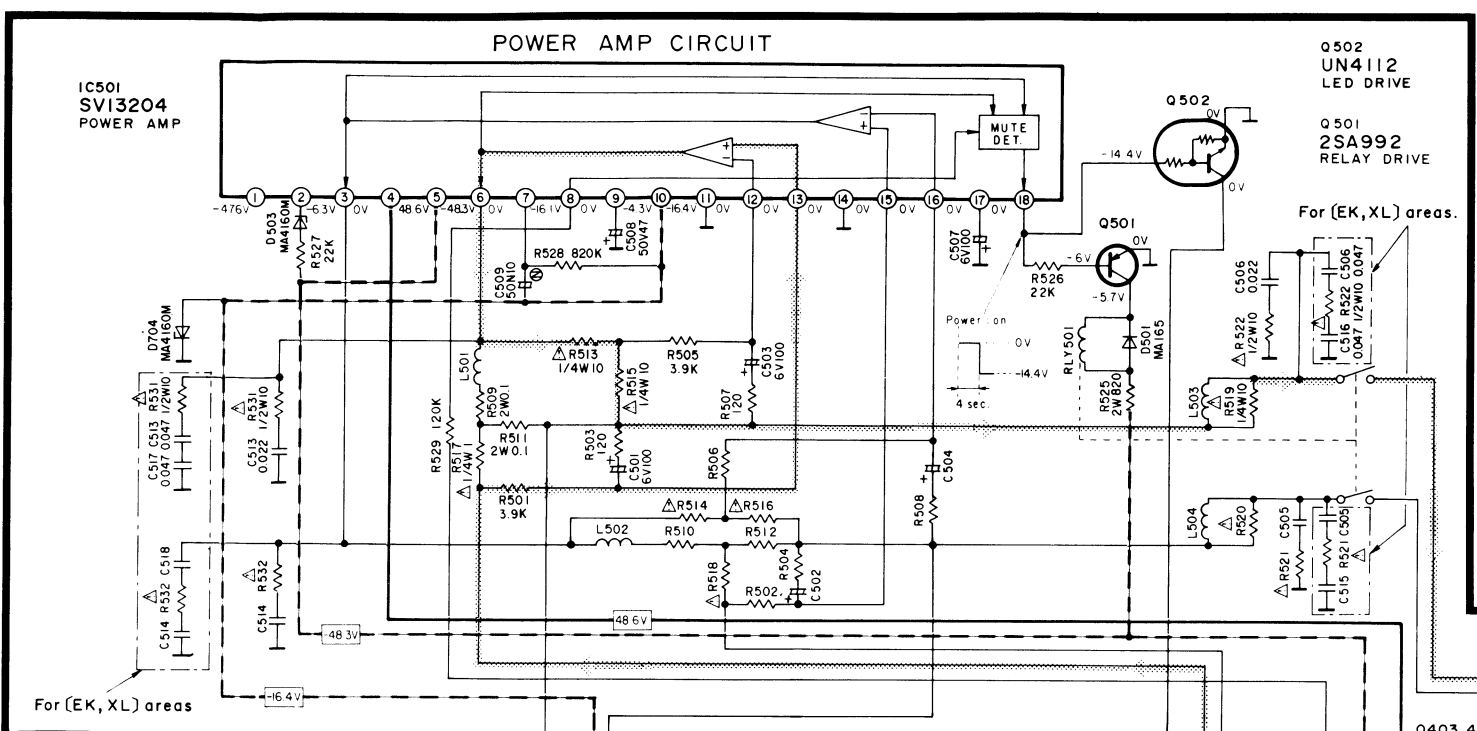




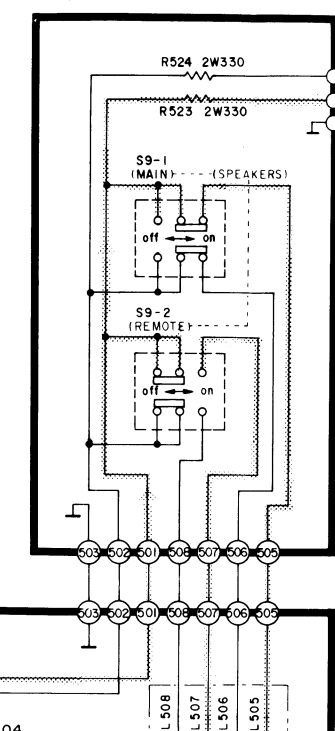
C VOLUME
CIRCUIT



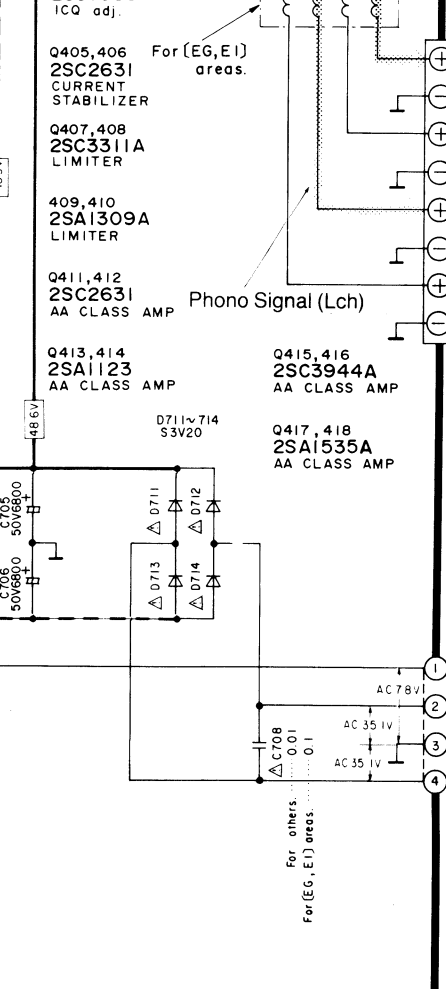
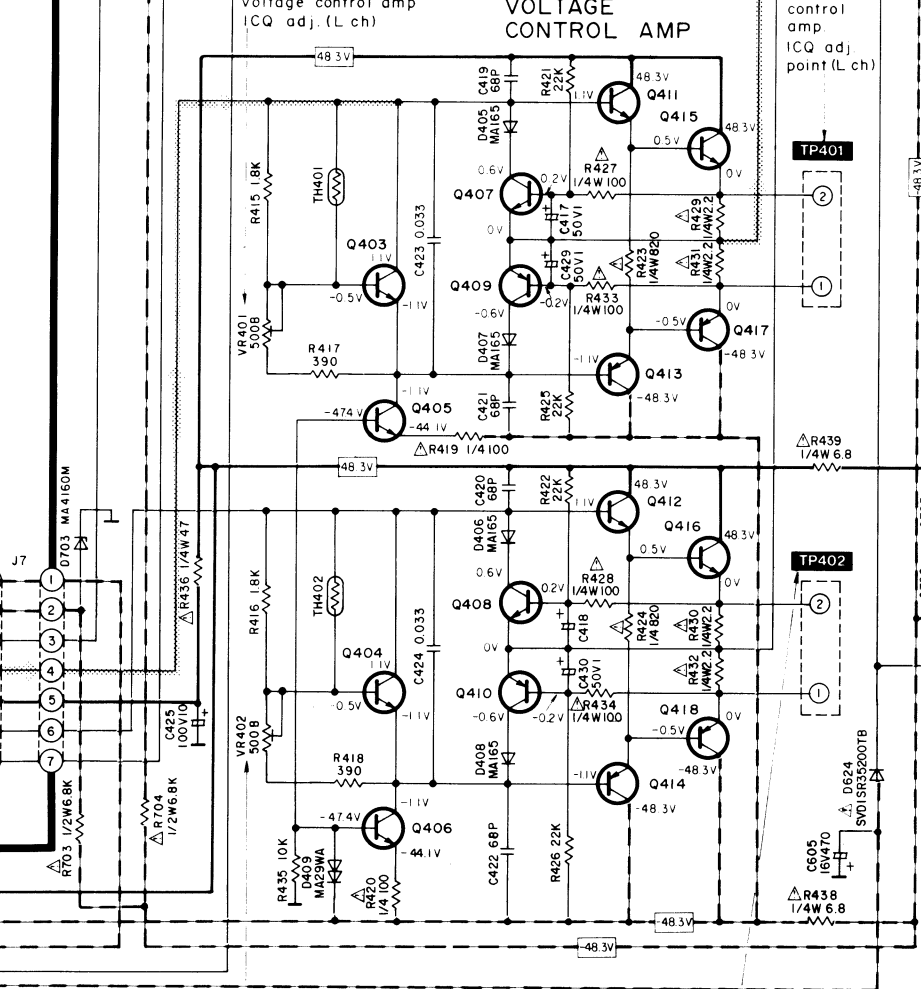
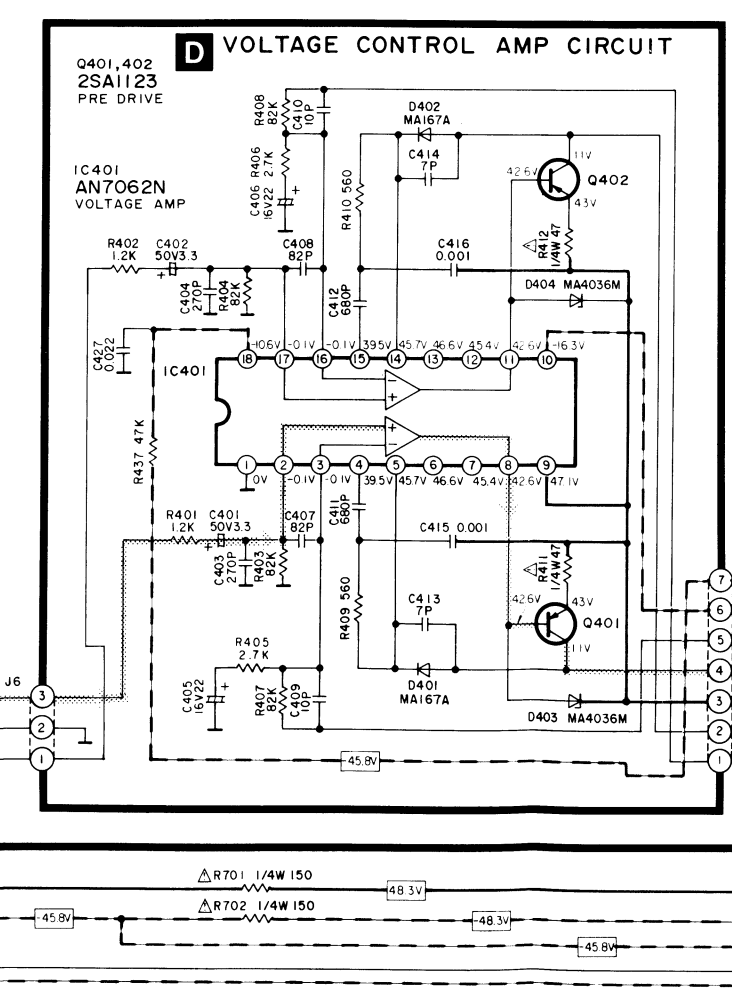
D VOLTAGE CONTROL AMP CIRCUIT



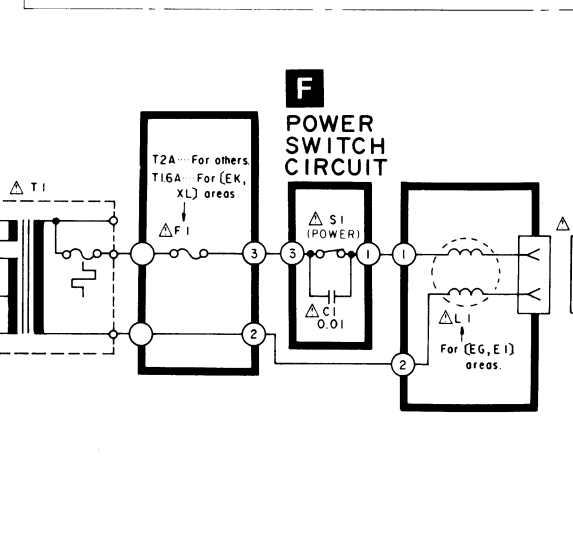
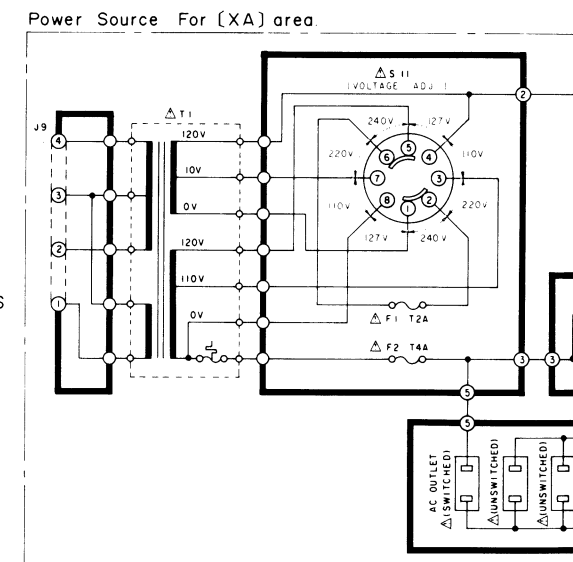
POWER AMP CIRCUIT

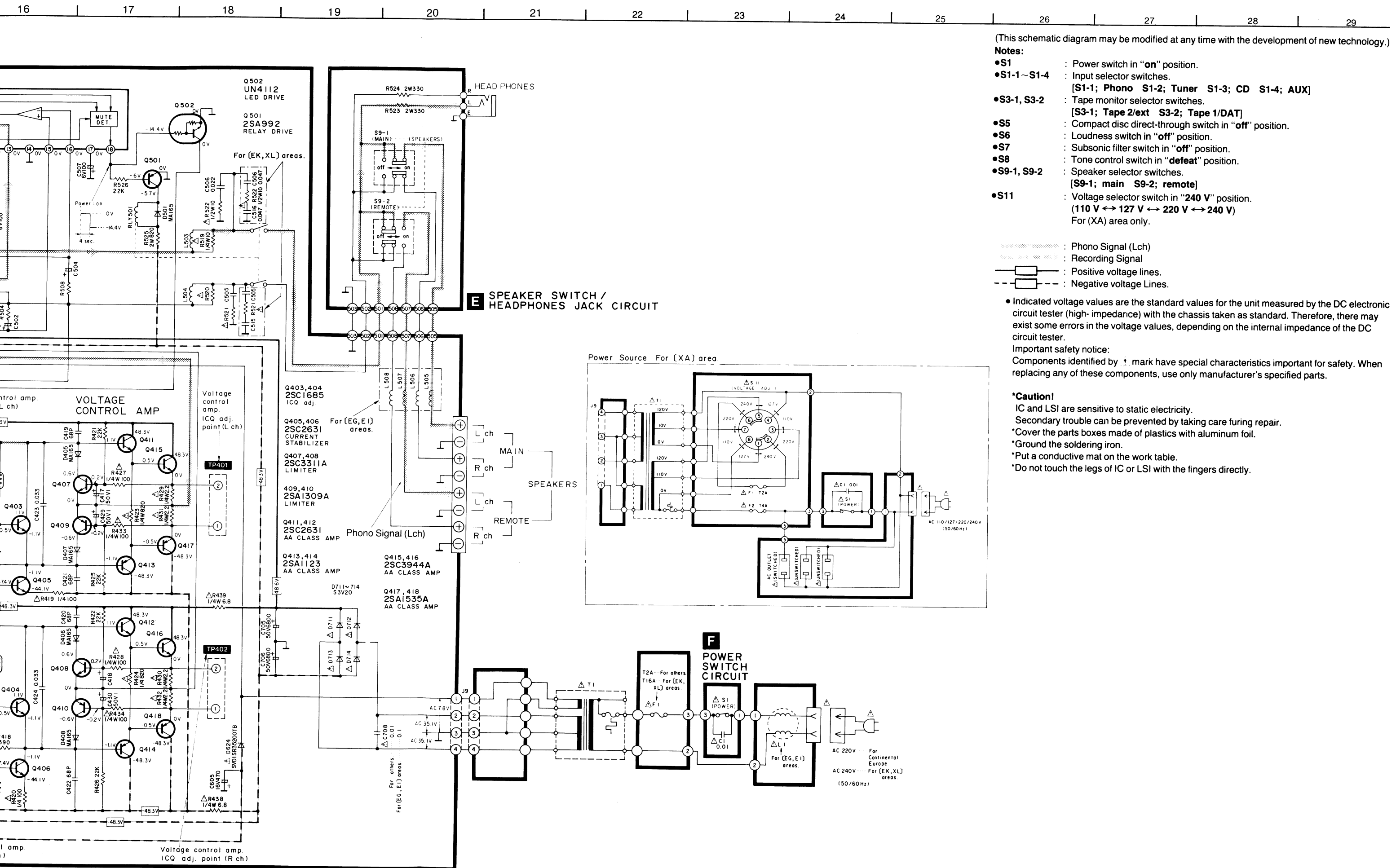


E SPEAKER SWITCH /
HEADPHONES JACK CIRCUIT

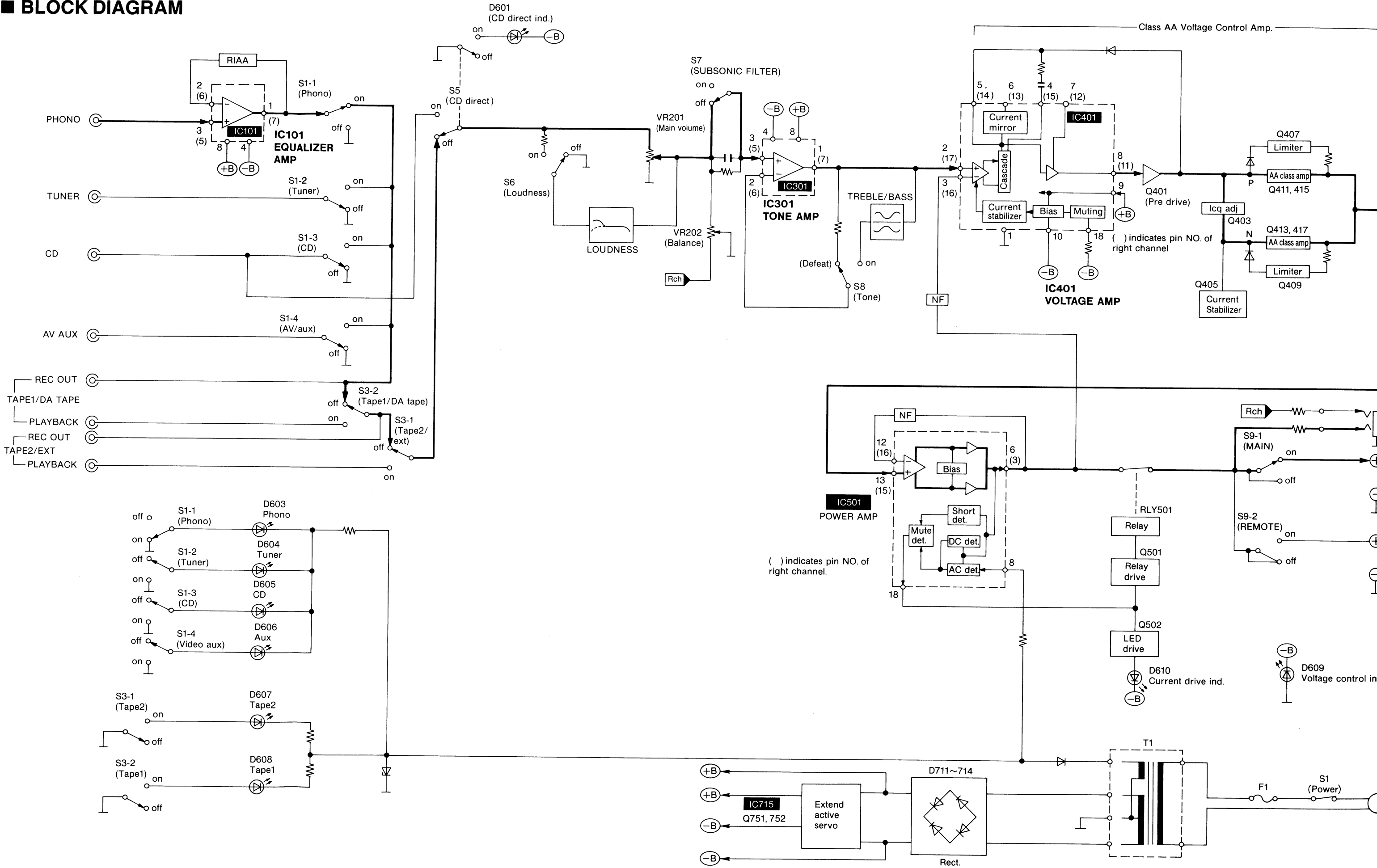


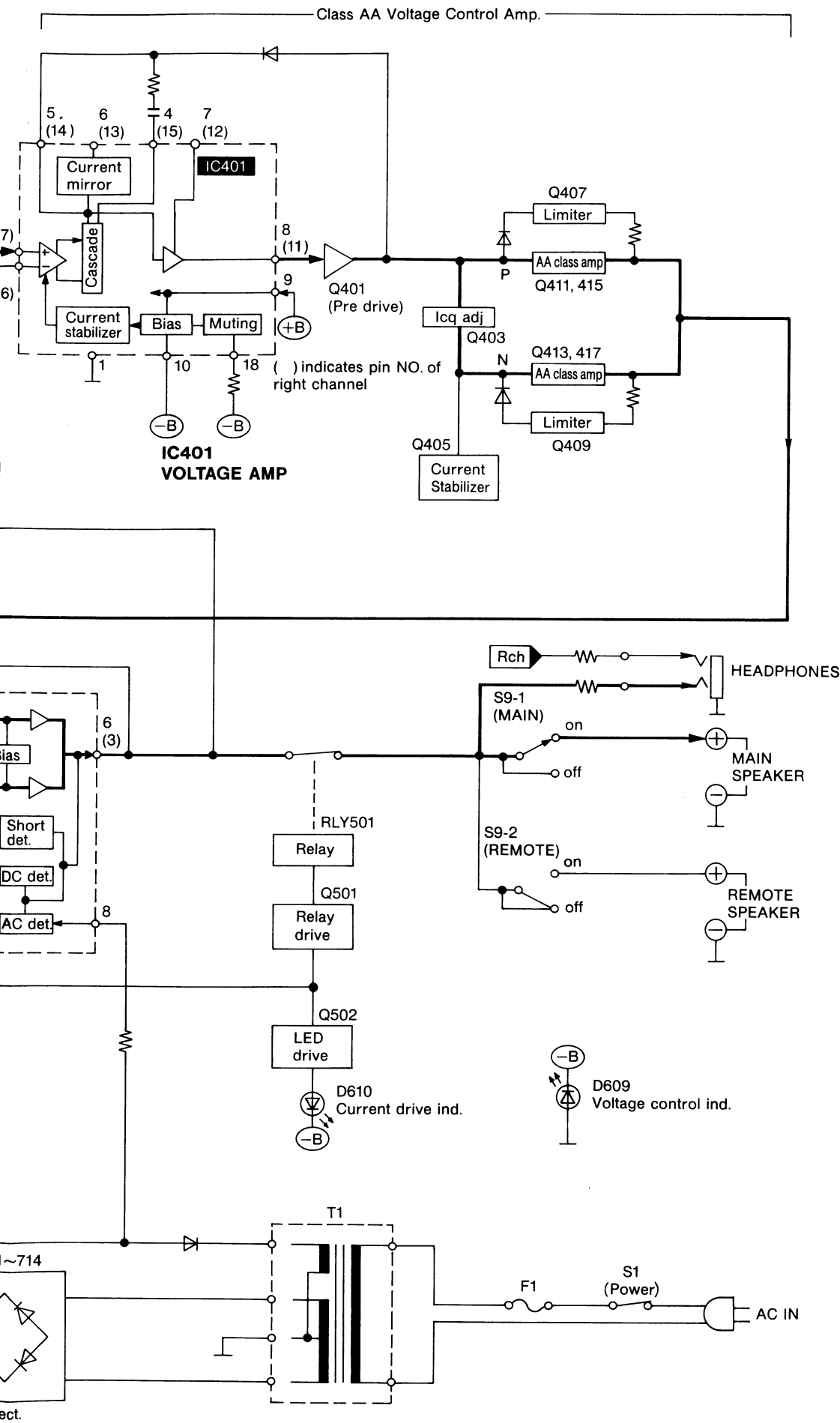
F POWER
SWITCH
CIRCUIT





BLOCK DIAGRAM





MEASUREMENTS AND ADJUSTMENTS

Control positions and equipment used.

- Volume knob.....∞ (Minimum)
- Main speaker selector.....off
- Remote speaker selector.....off
- DC electronic voltmeter(EVM)

VOLTAGE CONTROL(V)AMP.IDLING(ICQ) ADJUSTMENT

1.Test equipment connection is shown in figure. (Connect the DC EVM on both channels.)

2.Completely turn the (V) amp. adjusting volumes (VR401, VR402) counter-clockwise.

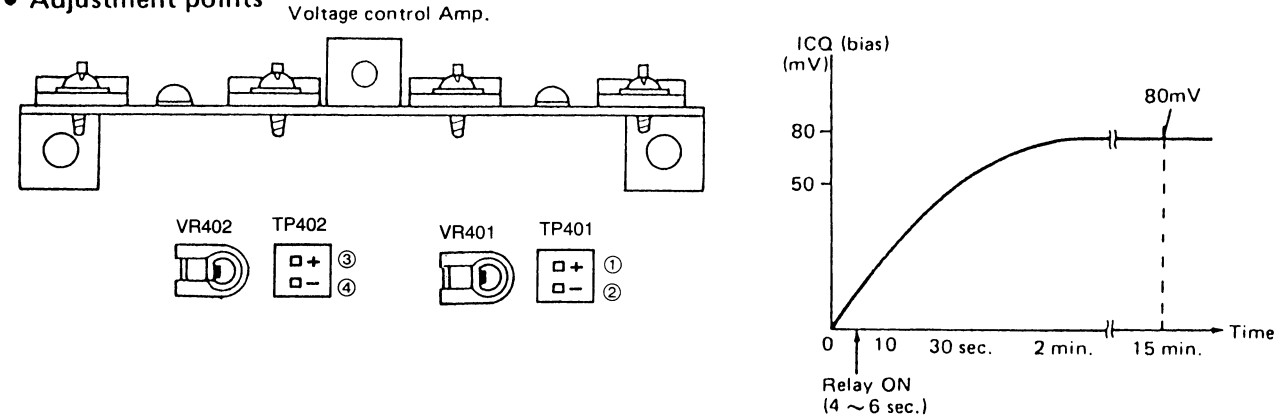
3.Turn ON the set when it is cold, and 15 sec.later, adjust VR401 and VR402 so that the voltage is 50mV.

Also, check that the voltage is 60 ~ 85mV (standard : 80mV) after lapse of 10 - 15 minutes. (Below 85mV after lapse of 60 min.)

Unit

TPA = ①TP401(+) ,TPB = ③TP402(+)
②TP401(-) ④TP402(-)

Adjustment points



REPLACEMENT PARTS LIST

Notes : * Important safety notice :
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

PACKING PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
PACKING MATERIAL					
P1	$\otimes$ SPG6394	PACKING CASE	A1	SQF13383	INSTRUCTION BOOK
(E, EG, EK, EH)			(E, EF, EH, EB)		
(EB, EI, XL)			A1	SQF13384	INSTRUCTION BOOK
(XA)			(EG)		
P1	$\otimes$ SPG6395	PACKING CASE	A1	SQF13385	INSTRUCTION BOOK
(EF)			(EK, XL)		
P1	$\otimes$ SPG6396	PACKING CASE	A1	SQF13386	INSTRUCTION BOOK
(E, EG, EK, EH)			(XA)		
(EB, EI, XL)			A1	SQF13389	INSTRUCTION BOOK
(XA)			(EI)		
P1	$\otimes$ SPG6397	PACKING CASE	A2	Δ RJP120ZBS-H	AC PLUG ADAPTOR
(EF)			(XA)		
P2	SPS5255	PAD	A3	Δ SFDAC05E03	POWER CORD
P3	SPS5256	PAD	(E, EG, EF, EH)		
P4	SPS5185	PAD	(EB, EI)		
P5	$\otimes$ SPP723	PROTECTION COVER	A3	Δ SJA168	POWER CORD
P5	$\otimes$ SPP723	PROTECTION COVER	(XA)		
ACCESSORIES					
			A3	Δ SJA173	POWER CORD
			(XL)		
			A3	Δ SJA193	POWER CORD
			(EK)		

CABINET

Ref. No.	CABINET AND C
1	(EF, EH, EB)
(EI)	
1	(XA)
1	(E)
1	(EG)
1	(EK)
1	(XL)
3	(E, EG, EK, EF)
(EH, EB, EI)	
(XA)	
3	(XL)
4	(XA)
5	(XA)
5	(E, EG, EK, EF)
(EH, EB, EI)	
(XL)	
6	$\otimes$
6	$\otimes$
7	
8	
9	
10	
11	(XA)
13	$\otimes$
13	$\otimes$
14	$\otimes$
14	$\otimes$
15	$\otimes$
16	$\otimes$
16	$\otimes$
17	$\otimes$
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21	$\otimes$
22	
23	
24	
25	
26	
(XA)	

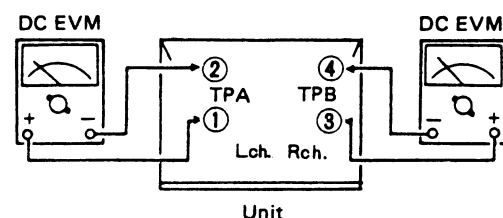
MEASUREMENTS AND ADJUSTMENTS

Control positions and equipment used.

- Volume knob.....∞ (Minimum)
- Main speaker selector.....off
- Remote speaker selector.....off
- DC electronic voltmeter(EVM)

VOLTAGE CONTROL(V)AMP.IDLING(ICQ) ADJUSTMENT

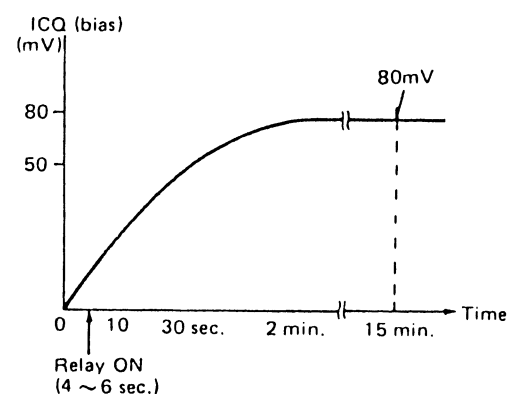
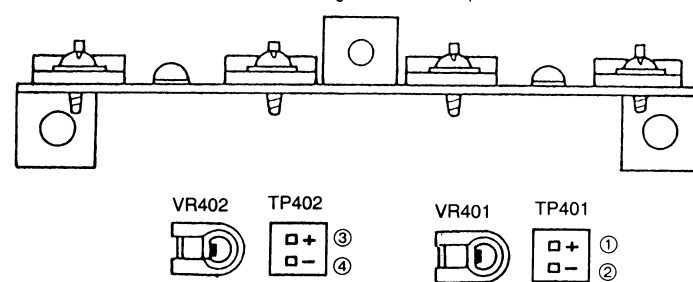
1. Test equipment connection is shown in figure. (Connect the DC EVM on both channels.)
2. Completely turn the (V) amp. adjusting volumes (VR401, VR402) counter-clockwise.
3. Turn ON the set when it is cold, and 15 sec. later, adjust VR401 and VR402 so that the voltage is 50mV. Also, check that the voltage is 60 ~ 85mV (standard : 80mV) after lapse of 10 - 15 minutes. (Below 85mV after lapse of 60 min.)



TPA = ① TP401(+), TPB = ③ TP402(+)
② TP401(-) ④ TP402(-)

Adjustment points

Voltage control Amp.



CABINET PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
CABINET AND CHASSIS					
1	SGPUV450-KE	REAR PANEL ASS'Y	27	SNE4021-1	NUT
(EF, EH, EB)			28	SKC2220K991	CABINET
(E1)			28	SKC2220S981	CABINET
1	SGP7430-1A	PANEL, REAR	29	SBN1246	KNOB, M.VOL
(XA)			29	SBN1246-1	KNOB, M.VOL
1	SGP7430A	PANEL, REAR	30	SBN1247	KNOB, TONE
(E)			30	SBN1248	KNOB, TONE
1	SGP7430B	PANEL, REAR	31	SNE2129-3	SCREW
(EG)			31	SNE2129-2	ORNAMENT SCREW
1	SGP7430C	PANEL, REAR	35	SJF3070NJ	TERMINAL, PHONO IN
(EK)			36	SJF3071NJ	TERMINAL, INPUT
1	SGP7430D	PANEL, REAR	37	SJJD17B	JACK, HEADPHONES
(XL)			38	SJF4819	TERMINAL, SP
3	SJS9231A	AC INLET COVER	39	SMC1299	SHIELD PLATE
(E, EG, EK, EF)			40	SJS305-1	JACK
(EH, EB, E1)					
(XA)			(E, EG, EK, EF)		
3	SJS9234A	AC INLET COVER	(EH, EB, E1)		
(XL)			(XL)		
4	SJS9238A	AC OUTLET COVER	41	SJT388	FUSE HOLDER
(XA)			42	SJS9231-1B	AC INLET
5	SKU11280-3	BOTTOM BOARD			
(XA)			(E, EG, EK, EF)		
5	SKU11280-4	BOTTOM BOARD	(EH, EB, E1, XA)		
(E, EG, EK, EF)			42	SJS9234B	AC INLET
(EH, EB, E1)			(XL)		
(XL)			45	SUS227	SPRING
6	SBC666-5	BUTTON, POWER	47	SJS50780WL	CONNECTOR(7P)
6	SBC666	BUTTON, POWER	48	SJS50880WL	CONNECTOR(8P)
7	SUB254	ROD	49	SJS50680WL	CONNECTOR(6P)
8	SKL308	SET FOOT(L)	50	SJS50378JQ	CONNECTOR(3P)
9	SKL309	SET FOOT(R)	51	SJS50778JQ	SOCKET(7P)
10	SHE187-2	HOLDER, P.C.B	52	SJT3319	CONNECTOR(3P)
11	SHE237	HOLDER, P.C.B	53	SJT3415	CONNECTOR(4P)
(XA)			54	SJT3209	TERMINAL, TEST POINT
13	SBC439-2	BUTTON, SPEAKER	55	SHR415	LOCK PIN
13	SBC439	BUTTON, SPEAKER	56	XTW3*8T	SCREW
14	SBC719-1	BUTTON, TONE/SUB/LOUD	57	SMC1300	SHIELD PLATE
14	SBC719	BUTTON, TONE/SUB/LOUD	58	SJT30747WL	CONNECTOR(7P)
15	SBC820	BUTTON, CD	59	SJT30847WL	CONNECTOR(8P)
15	SBC820-1	BUTTON, CD	60	SJT30647WL	CONNECTOR(6P)
16	SGX7982-2	HOLDER, M.VOL	61	SJT30345JQ	TERMINAL(3P)
16	SGX7982-3	HOLDER, M.VOL	62	SJT30745JQ	CONNECTOR(7P)
17	SGX8007	ORNAMENT, TONE	63	SME103-4	SHIELD PLATE
17	SGX8007-1	ORNAMENT, TONE	65	SJS702-1	JACK, SOCKET(7P)
18	SHW82S25A	WASHER	(XA)		
19	XTB3*8FFZ	SCREW	68	SJS9238B	SOCKET, OUTLET
20	XTB3*10G	SCREW	(XA)		
21	SMC6407-1	SHIELD COVER	69	SGMUV450-KE	FRONT PANEL
22	XTBS3*10JFZ1	TAPPING SCREW	69	SGMUV450-SE	FRONT PANEL
23	XTB3*20J	SCREW	70	SGXUV450-KE1	FRONT GRILLE(R)
24	XYN3*F14	TAPPING SCREW	70	SGXUV450-SE1	FRONT GRILLE(R)
25	XTW3*10T	SCREW	70A	SBC796-8	BUTTON, INPUT
26	XTB3*30J	SCREW	70A	SBC796-9	BUTTON, INPUT
(XA)			72	SGXUV450-KE2	FRONT GRILLE(L)
			72	SGXUV450-SE2	FRONT GRILLE(L)

REPLACEMENT PARTS LIST

Notes : * Important safety notice :

Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

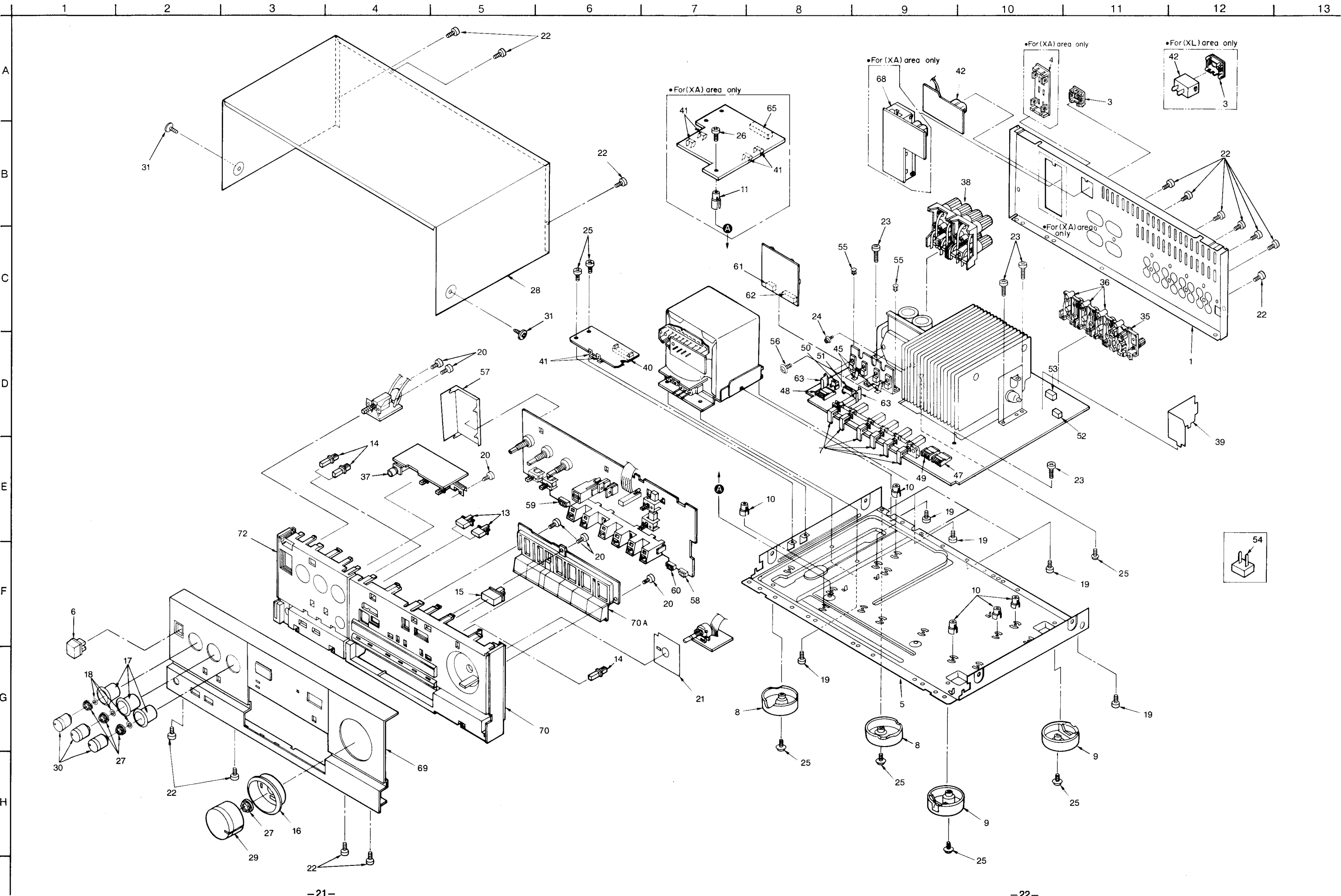
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)

Parts without these indications can be used for all areas.

PACKING PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
PACKING MATERIAL					
P1	SPG6394	PACKING CASE	A1	SQF13383	INSTRUCTION BOOK
(E, EG, EK, EH)			(E, EF, EH, EB)		
(EB, E1, XL)			A1	SQF13384	INSTRUCTION BOOK
(XA)			(EG)		
P1	SPG6395	PACKING CASE	A1	SQF13385	INSTRUCTION BOOK
(EF)			(EK, XL)		
P1	SPG6396	PACKING CASE	A1	SQF13386	INSTRUCTION BOOK
(E, EG, EK, EH)			(XA)		
(EB, E1, XL)			A1	SQF13389	INSTRUCTION BOOK
(XA)			(E1)		
P1	SPG6397	PACKING CASE	A2	RJP120ZBS-H	AC PLUG ADAPTOR
(EF)			(XA)		
P2	SPS5255	PAD	A3	SFDAC05E03	POWER CORD
P3	SPS5256	PAD	(E, EG, EF, EH)		
P4	SPS5185	PAD	(EB, E1)		
P5	SPP723	PROTECTION COVER	A3	SJA168	POWER CORD
P5	SPP723	PROTECTION COVER	(XA)		
ACCESSORIES					
			A3	SJA173	POWER CORD
			(XL)		
			A3	SJA193	POWER CORD
			(EK)		

EXPLODED VIEW



●ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
INTEGRATED CIRCUITS			VARIABLE RESISTORS		
IC101	AN6558F	I.C. PHONO EQ	VR201	EWJKBAS39B15	V.R. MAIN VOL
IC301	UPC4570C	I.C. TONE CONTROLL	VR202	EVH0YA015G15	V.R. BALANCE
IC401	AN7062N	I.C. V.AMP	VR301	EWCRYA023C15	V.R. TONE
IC501	SV13204	I.C. P.AMP C.AMP	VR302	EWCRYA023C15	V.R. TONE
IC751	MS218P	I.C. ACTIVE SERVO	VR401	EVND4AA00B52	V.R. I.C.Q ADJUST
TRANSISTORS			VR402	EVND4AA00B52	V.R. I.C.Q ADJUST
Q401	2SA1123R	TRANSISTOR	THERMISTORS AND VARISTORS		
Q402	2SA1123R	TRANSISTOR	TH201	ERTD2WHL104S	THERMISTOR
Q403	2SC1685NCQRS	TRANSISTOR	TH202	ERTD2WHL104S	THERMISTOR
Q404	2SC1685NCQRS	TRANSISTOR	TH401	ERTD2WHL104S	THERMISTOR
Q405	2SC2631-Q	TRANSISTOR	TH402	ERTD2WHL104S	THERMISTOR
Q406	2SC2631-Q	TRANSISTOR	COILS AND TRANSFORMERS		
Q407	2SC3311A-Q	TRANSISTOR	L1	SLQZ650MH49	CHOKE COIL
Q408	2SC3311A-Q	TRANSISTOR	(EG, E1)		
Q409	2SA1309Q	TRANSISTOR	L501	SLQY07G-50	COIL
Q410	2SA1309Q	TRANSISTOR	L502	SLQY07G-50	COIL
Q411	2SC2631-Q	TRANSISTOR	L503	SLQY18G-20	COIL
Q412	2SC2631-Q	TRANSISTOR	L504	SLQY18G-20	COIL
Q413	2SA1123R	TRANSISTOR	L505	SLQY07G-50	COIL
Q414	2SA1123R	TRANSISTOR	(EG, E1)		
Q415	2SC3944AQRS	TRANSISTOR	L506	SLQY07G-50	COIL
Q416	2SC3944AQRS	TRANSISTOR	(EG, E1)		
Q417	2SA1535AQRS	TRANSISTOR	L507	SLQY07G-50	COIL
Q418	2SA1535AQRS	TRANSISTOR	(EG, E1)		
Q501	2SA992EFP	TRANSISTOR	L508	SLQY07G-50	COIL
Q502	UN4112TA	TRANSISTOR	(EG, E1)		
Q751	2SC3944AQRS	TRANSISTOR	T1	SLT5N487	POWER TRANSFORMER
Q752	2SA1535AQRS	TRANSISTOR	(E, EG, EF, EH)		
DIODES			(EB, E1)		
D401	MA167	DIODE	T1	SLT5N488	POWER TRANSFORMER
D402	MA167	DIODE	(EK, XL)		
D403	MA4036M	DIODE	T1	SLT5N489	POWER TRANSFORMER
D404	MA4036M	DIODE	(XA)		
D405	MA165	DIODE	FUSES		
D406	MA165	DIODE	F1	XBA2C16TB0	FUSE 250V, T1.6A
D407	MA165	DIODE	(EK, XL)		
D408	MA165	DIODE	F1	XBA2C20TB0	FUSE 250V, T2A
D409	MA29WA	DIODE	(E, EG, EF, EH)		
D501	MA165	DIODE	(EB, E1, XA)		
D503	MA4160M	DIODE	F2	XBA2C40TB0	FUSE 250V, T4A
D601	LN018454PH	DIODE, L.E.D	(XA)		
D602	MA4033M	DIODE	SWITCHES		
D603	LN064456PH	DIODE, L.E.D	S1	ESB8249V	SW. POWER
D604	LN064456PH	DIODE, L.E.D	S1-1	SSH4102	SWITCH, PHONO
D605	LN064456PH	DIODE, L.E.D	S1-2	SSH4102	SWITCH, TUNER
D606	LN064456PH	DIODE, L.E.D	S1-3	SSH4102	SWITCH, CD
D607	LN064456PH	DIODE, L.E.D	S1-4	SSH4102	SWITCH, AUX
D608	LN064456PH	DIODE, L.E.D	S2	ESE37263	SW. VOLTAGE SELECTOR
D609	LN021455PH	DIODE, L.E.D	(XA)		
D610	LN021455PH	DIODE, L.E.D	S3-1	SSH2111	SWITCH, TAPE2/EXT
D624	SV01SR35200A	DIODE	S3-2	SSH2111	SWITCH, TAPE1/DAT
D703	MA4160M	DIODE	S5	SSH1215	SWITCH, CD.DIRECT
D704	MA4160M	DIODE	S6	SSH1218	SWITCH, LOUDNESS
D711	SVDS3V40	DIODE	S7	SSH1218	SWITCH, SUBSONIC
D712	SVDS3V40	DIODE	S8	SSH1218	SWITCH, TONE
D713	SVDS3V40	DIODE	S9-1	SSH2115	SWITCH, MAIN SP
D714	SVDS3V40	DIODE	S9-2	SSH2115	SWITCH, REMOTE SP
D751	MA4180-M	DIODE	RELAYS		
D752	MA4180-M	DIODE	RL501	SSY126	RELAY
D753	MA165	DIODE			

■ RESISTORS AND CAPACITORS

Notes : * Important safety notice :

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* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)

Parts without these indications can be used for all areas.

Numbering System of Resistor

Example:

ERD	25	F	J	102
Type	Wattage (1/4W)	Shape	Tolerance	Value (1K Ω)
ERX	2	AN	J	471
Type	Wattage (2W)	Shape	Tolerance	Value (470 Ω)

Numbering System of Capacitor

Example:

ECKD	1H	102	Z	F
Type	Voltage (50V)	Value (0.001 μ F)	Tolerance	Peculiarity
ECEA	50	M	330	
Type	Voltage (50V)	Peculiarity	Value (33 μ F)	

● Capacity values are in microfarads (μ F) unless specified otherwise. P = Pico-farads (pF) F = Farads (F).● Resistance values are in ohms (Ω), unless specified otherwise. 1K = 1,000 Ω , 1M = 1,000k Ω

Resistor Type	Wattage		Tolerance
ERD : Carbon	10 : 1/8W	12 : 1/2W	J : $\pm 5\%$
ERG : Metal Oxide	14 : 1/4W	25 : 1/4W	F : $\pm 1\%$
ERQ : Fuse Type Metal	1A : 1W	18 : 1/8W	G : $\pm 2\%$
ERX : Metal Film	S2 : 1/4W	S1 : 1/2W	J : $\pm 5\%$
ERD L : Carbon (chip)	2F : 1/4W	50 : 1/2W	K : $\pm 10\%$
ERO K : Metal Film (chip)	2A : 2W	3A : 3W	M : $\pm 20\%$
ERC : Solid	6G : 1/10W	8G : 1/8W	
ERF : Incombustible Box-Shaped			
ERM : Wire-Wound			
RRJ : Cip Resistor			
ERJ : Cip Resistor			

Capacitor Type	Voltage		Tolerance
ECE : Electrolytic	0J : 6.3V	1A : 10V	K : ±10%
ECCD : Ceramic	1C : 16V	1E : 25V	M : ±20%
ECKD : Ceramic Capacitor	1H : 50V	1V : 35V	Z : ±80 %
ECQM : Polyester	50 : 50V	05 : 50V	—20
ECQP : Polypropylene	2H : 500V	2A : 100V	J : ±5%
ECG : Ceramic	1 : 100V	1J : 63V	G : ±2%
ECEA N : Non Polar Electrolytic	KC : 400V AC		F : ±1%
QCU : Ceramic (Chip Type)	KC : 125V AC		C : ±0.25pF
ECUX : Ceramic (Chip Type)	(UL)		D : ±0.5pF
ECF : Semiconductor			
EECW : Liquid electrolyte double layer capacitor			

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
RESISTORS (VALUE, WATTAGE)			R208	ERDS2TJ102	1K 1/4	R401	ERDS2TJ122	1.2K 1/4
R101	ERDS2TJ471	470 1/4	(EG, E1)			R402	ERDS2TJ122	1.2K 1/4
(EG, E1)			R209	ERDS2TJ102	1K 1/4	R403	ERDS2TJ823	82K 1/4
R102	ERDS2TJ471	470 1/4	(EG, E1)			R404	ERDS2TJ823	82K 1/4
(EG, E1)			R210	ERDS2TJ102	1K 1/4	R405	ERD25FJ272	2.7K 1/4
R103	ERDS2TJ102	1K 1/4	(EG, E1)			R406	ERD25FJ272	2.7K 1/4
(EG, E1)			R211	ERDS2TJ473	47K 1/4	R407	ERD25TJ823	82K 1/4
R104	ERDS2TJ102	1K 1/4	R212	ERDS2TJ473	47K 1/4	R408	ERD25TJ823	82K 1/4
(EG, E1)			R213	ERDS2TJ183	18K 1/4	R409 Δ	ERDS2TJ561	560 1/4
R105	ERDS2TJ224	220K 1/4	R214	ERDS2TJ183	18K 1/4	R410 Δ	ERDS2TJ561	560 1/4
R106	ERDS2TJ224	220K 1/4	R215	ERDS2TJ824	820K 1/4	R411 Δ	ERD25FJ470	47 1/4
R109	ERDS2TJ391	390 1/4	R216	ERDS2TJ824	820K 1/4	R412 Δ	ERD25FJ470	47 1/4
R110	ERDS2TJ391	390 1/4	R219	ERD25FJ272	2.7K 1/4	R415	ERDS2TJ182	1.8K 1/4
R113	ERDS2TJ563	56K 1/4	R220	ERD25FJ272	2.7K 1/4	R416	ERDS2TJ182	1.8K 1/4
R114	ERDS2TJ563	56K 1/4	R221	ERDS2TJ471	470 1/4	R417	ERDS2TJ391	390 1/4
R117	ERDS2TJ271	270 1/4	(EG, E1)			R418	ERDS2TJ391	390 1/4
R118	ERDS2TJ271	270 1/4	R222	ERDS2TJ471	470 1/4	R419 Δ	ERD25FJ101	100 1/4
R123	ERDS2TJ680	68 1/4	(EG, E1)			R420 Δ	ERD25FJ101	100 1/4
R124	ERDS2TJ680	68 1/4	R223	ERDS2TJ471	470 1/4	R421	ERDS2TJ223	22K 1/4
R125	ERDS2TJ184	180K 1/4	(EG, E1)			R422	ERDS2TJ223	22K 1/4
R126	ERDS2TJ184	180K 1/4	R224	ERDS2TJ471	470 1/4	R423 Δ	ERD25FJ821	820 1/4
R127	ERDS2TJ123	12K 1/4	(EG, E1)			R424 Δ	ERD25FJ821	820 1/4
R128	ERDS2TJ123	12K 1/4	R301	ERD25FJ561	560 1/4	R425	ERDS2TJ223	22K 1/4
R129	ERDS2TJ563	56K 1/4	R302	ERD25FJ561	560 1/4	R426	ERDS2TJ223	22K 1/4
R130	ERDS2TJ563	56K 1/4	R303	ERDS2TJ823	82K 1/4	R427 Δ	ERD25FJ101	100 1/4
R131	ERDS2TJ102	1K 1/4	R304	ERDS2TJ823	82K 1/4	R428 Δ	ERD25FJ101	100 1/4
R132	ERDS2TJ102	1K 1/4	R305	ERDS2TJ224	220K 1/4	R429 Δ	ERD25FJ2R2	2.2 1/4
R201	ERDS2TJ102	1K 1/4	R306	ERDS2TJ224	220K 1/4	R430 Δ	ERD25FJ2R2	2.2 1/4
(EG, E1)			R307	ERDS2TJ392	3.9K 1/4	R431 Δ	ERD25FJ2R2	2.2 1/4
R202	ERDS2TJ102	1K 1/4	R308	ERDS2TJ392	3.9K 1/4	R432 Δ	ERD25FJ2R2	2.2 1/4
(EG, E1)			R309	ERDS2TJ223	22K 1/4	R433 Δ	ERD25FJ101	100 1/4
R203	ERDS2TJ102	1K 1/4	R310	ERDS2TJ223	22K 1/4	R434 Δ	ERD25FJ101	100 1/4
(EG, E1)			R311	ERDS2TJ102	1K 1/4	R435	ERDS2TJ103	10K 1/4
R204	ERDS2TJ102	1K 1/4	R312	ERDS2TJ102	1K 1/4	R436 Δ	ERD25FJ470	47 1/4
(EG, E1)			R313	ERDS2TJ562	5.6K 1/4	R437	ERDS2TJ473	47K 1/4
R205	ERDS2TJ102	1K 1/4	R314	ERDS2TJ562	5.6K 1/4	R438 Δ	ERD25FJ6R8	6.8 1/4
(EG, E1)			R315	ERD25FJ392	3.9K 1/4	R439 Δ	ERD25FJ6R8	6.8 1/4
R206	ERDS2TJ102	1K 1/4	R316	ERD25FJ392	3.9K 1/4	R501	ERDS2TJ392	3.9K 1/4
(EG, E1)			R317	ERD25FJ223	22K 1/4	R502	ERDS2TJ392	3.9K 1/4
R207	ERDS2TJ102	1K 1/4	R318	ERD25FJ223	22K 1/4	R503	ERDS2TJ121	120 1/4
(EG, E1)			R319	ERDS2TJ183	18K 1/4	R504	ERDS2TJ121	120 1/4
			R320	ERDS2TJ183	18K 1/4	R505	ERDS2TJ392	3.9K 1/4

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
R506	ERDS2TJ392	3.9K 1/4	C113	ECQM1H223JZ	0.022 50	C408	RCBS1H820KBY	82P 50
R507	ERDS2TJ121	120 1/4	C114	ECQM1H223JZ	0.022 50	C409	ECCD1H100KC	10P 50
R508	ERDS2TJ121	120 1/4	C115	ECQM1H682JZ	0.0068 50	C410	ECCD1H100KC	10P 50
R509	ERF2AKR10P	0.1 2	C116	ECQM1H682JZ	0.0068 50	C411	ECKD1H681K	680P 50
R510	ERF2AKR10P	0.1 2	C117	ECEA1HKN010B	1 50	C412	ECKD1H681K	680P 50
R511	ERF2AKR10P	0.1 2	C118	ECEA1HKN010B	1 50	C413	ECCD2H070D	7P 500
R512	ERF2AKR10P	0.1 2	C121	ECKD1H103PF	0.01 50	C414	ECCD2H070D	7P 500
R513 Δ	ERD25FJ100	10 1/4	C122	ECKD1H103PF	0.01 50	C415	ECQM1H102JZ	0.001 50
R514 Δ	ERD25FJ100	10 1/4	C123	ECEA1HPS3R3	3.3 50	C416	ECQM1H102JZ	0.001 50
R515 Δ	ERD25FJ100	10 1/4	C124	ECEA1HPS3R3	3.3 50	C417	ECEA1HK010	1 50
R516 Δ	ERD25FJ100	10 1/4	C125	ECKD1H102KB	0.001 50	C418	ECEA1HK010	1 50
R517 Δ	ERD25FJ180	1 1/4	(EG, E1)			C419	ECCD2H680K	68P 500
R518 Δ	ERD25FJ180	1 1/4	C203	RCBC1H101KBY	100P 50	C420	ECCD2H680K	68P 500
R519 Δ	ERD25FJ100	10 1/4	(EG, E1)			C421	ECCD2H680K	68P 500
R520 Δ	ERD25FJ100	10 1/4	C204	RCBC1H101KBY	100P 50	C422	ECCD2H680K	68P 500
R521 Δ	ERDS1FJ100	10 1/2	(EG, E1)			C423	ECKD1H333PF	0.033 50
R522 Δ	ERDS1FJ100	10 1/2	C205	RCBC1H101KBY	100P 50	C424	ECKD1H333PF	0.033 50
R523	ERG2SJ331H	330 2	(EG, E1)			C425	ECEA2AU100	10 100
R524	ERG2SJ331H	330 2	C206	RCBC1H101KBY	100P 50	C427	ECKD1H223PF	0.022 50
R525	ERG2ANJP821S	820 2	(EG, E1)			C429	ECEA1HK010	1 50
R526	ERDS2TJ223	22K 1/4	C207	RCBC1H101KBY	100P 50	C430	ECEA1HK010	1 50
R527	ERDS2TJ223	22K 1/4	(EG, E1)			C501	ECEA0JPS101B	100 6.3
R528	ERDS2TJ824	820K 1/4	C208	RCBC1H101KBY	100P 50	C502	ECEA0JPS101B	100 6.3
R529	ERDS2TJ124	120K 1/4	(EG, E1)			C503	ECEA0JPS101B	100 6.3
R531 Δ	ERDS1FJ100	10 1/2	C209	RCBC1H101KBY	100P 50	C504	ECEA0JPS101B	100 6.3
R532 Δ	ERDS1FJ100	10 1/2	(EG, E1)			C505	ECKD1H223PF	0.022 50
R601	ERDS2TJ561	560 1/4	C210	RCBC1H101KBY	100P 50	(E, EG, EF, EB)		
R602	ERDS2TJ331	330 1/4	(EG, E1)			(E1, XA)		
R604	ERDS2TJ331	330 1/4	C211	RCBC1H101KBY	100P 50	C505	ECKD1H473ZF	0.047 50
R605	ERDS2TJ561	560 1/4	(EG, E1)			(EK, XL)		
R606	ERDS2TJ331	330 1/4	C212	RCBC1H101KBY	100P 50	C506	ECKD1H223PF	0.022 50
R607	ERDS2TJ331	330 1/4	(EG, E1)			(E, EG, EF, EH)		
R613 Δ	ERDS1FJ180	18 1/2	C213	ECQV1H563JZ	0.056 50	(EB, E1, XA)		
R701 Δ	ERD25FJ151	150 1/4	C214	ECQV1H563JZ	0.056 50	C506	ECKD1H473ZF	0.047 50
R702 Δ	ERD25FJ151	150 1/4	C215	ECQM1H273JZ	0.027 50	(EK, XL)		
R703 Δ	ERDS1FJ682	6.8K 1/2	C216	ECQM1H273JZ	0.027 50	C507	ECEA0JPS101B	100 6.3
R704 Δ	ERDS1FJ682	6.8K 1/2	C221	RCBS1H181KBY	180P 50	C508	ECEA1HU470	47 50
R751	ERDS2TJ223	22K 1/4	(EG, E1)			C509	ECEA1HN100S	10 50
R752	ERDS2TJ223	22K 1/4	C222	RCBS1H181KBY	180P 50	C513	ECKD1H223PF	0.022 50
R753	ERDS2TJ102	1K 1/4	(EG, E1)			(E, EG, EF, EH)		
R754	ERDS2TJ153	15K 1/4	C223	RCBS1H181KBY	180P 50	(EB, E1, XA)		
R755	ERDS2TJ823	82K 1/4	(EG, E1)			C513	ECKD1H473ZF	0.047 50
R756	ERDS2TJ153	15K 1/4	C224	RCBS1H181KBY	180P 50	(EK, XL)		
R757	ERDS2TJ102	1K 1/4	(EG, E1)			C514	ECKD1H223PF	0.022 50
R758	ERDS2TJ102	1K 1/4	C301	ECEA1HPS3R3	3.3 50	(E, EG, EF, EH)		
CAPACITORS(VALUE, VOLTAGE)			C302	ECEA1HPS3R3	3.3 50	(EB, E1, XA)		
C1 Δ	ECKWNS103ZVS	0.01	C303	RCBC1H101KBY	100P 50	C514	ECKD1H473ZF	0.047 50
(E, EG, EK, EF)			C304	RCBC1H101KBY	100P 50	(EK, XL)		
(EH, EB, E1)			C305	RCBS1H820KBY	82P 50	C515	ECKD1H473ZF	0.047 50
(XL)			C306	RCBS1H820KBY	82P 50	(EK, XL)		
C101	RCBC1H180JLY	18P 50	C307	ECEA1VPS4R7	4.7 35	C516	ECKD1H473ZF	0.047 50
(EG, E1)			C308	ECEA1VPS4R7	4.7 35	(EK, XL)		
C102	RCBC1H180JLY	18P 50	C309	RCBS1H390JLY	39P 50	C517	ECKD1H473ZF	0.047 50
(EG, E1)			C310	RCBS1H390JLY	39P 50	(EK, XL)		
C103	RCBS1H181KBY	180P 50	C311	ECEA1CPS100	10 16	C518	ECKD1H473ZF	0.047 50
(EG, E1)			C312	ECEA1CPS100	10 16	(EK, XL)		
C104	RCBS1H181KBY	180P 50	C313	ECQV1H823JZ	0.082 50	C605	ECEA1CU471	470 16
(EG, E1)			C314	ECQV1H823JZ	0.082 50	C705	ECES1HV682UY	6800 50
C105	RCBC1H101KBY	100P 50	C315	ECQM1H153JZ	0.015 50	C706	ECES1HV682UY	6800 50
C106	RCBC1H101KBY	100P 50	C316	ECQM1H153JZ	0.015 50	C708 Δ	ECKD2H103PE	0.01 500
C107	ECEA0JPS330	33 6.3	C317	ECQM1H183JZ	0.018 50	(E, EK, EF, EH)		
C108	ECEA0JPS330	33 6.3	C318	ECQM1H183JZ	0.018 50	(EB, XL, XA)		
C109	RCBS1H102KBY	0.001 50	C319	ECQM1H272JZ	0.0027 50	C708 Δ	ECQE2104KS	0.1 250
(EG, E1)			C320	ECQM1H272JZ	0.0027 50	(EG, E1)		
C109	RCBS1H391KBY	390P 50	C321	ECKD1H103PF	0.01 50	C709	ECEA1HPS3R3	3.3 50
(E, EK, EF, EH)			C322	ECKD1H103PF	0.01 50	C710	ECEA1HPS3R3	3.3 50
(EB, XL, XA)			C401	ECEA1HPS3R3	3.3 50	C751	ECEA1EK100	10 25
C110	RCBS1H102KBY	0.001 50	C402	ECEA1HPS3R3	3.3 50	C752	ECEA1EK100	10 25
(EG, E1)			C403	ECKD1H271KB	270P 50	C753	ECEA1EK100	10 25
C110	RCBS1H391KBY	390P 50	C404	ECKD1H271KB	270P 50	C754	ECEA1EK3R3B	3.3 25
(E, EK, EF, EH)			C405	ECEA1CPS220	22 16	C755	ECEA1EK3R3B	3.3 25
(EB, XL, XA)			C406	ECEA1CPS220	22 16	C756	ECKD1H821KB	820P 50
			C407	RCBS1H820KBY	82P 50	C757	ECKD1H103PF	0.01 50
						C758	ECKD1H103PF	0.01 50