

Service Manual

Digital Integrated Amplifier

Amplifier

SU-X980D

Color

(K)Black Type



Area

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

SPECIFICATIONS

(DIN 45 500)

■ AMPLIFIER SECTION

DIN power output 1 kHz THD:1%	2 x 100 W (8Ω)
Total harmonic distortion rated power at 1 kHz	1% (8Ω)
Harmonic distortion half power at 1 kHz	0.009% (8Ω)
Residual hum and noise	0.2 mV
Damping factor	30 (8Ω)
Input sensitivity and impedance	
PHONO	3mV/47 kΩ
TUNER,AUX,TAPE 1,TAPE 2	150mV/22 kΩ
CD	200mV/22 kΩ
Maximum input voltage (1 kHz,RMS)	
PHONO	100 mV
S/N (rated power 8Ω)	
PHONO	75 dB (IHF,A:79 dB)
TUNER,CD,AUX,TAPE 1,TAPE 2	82 dB (IHF,A:83 dB)
Frequency response	
PHONO	RIAA standard curve ± 0.8dB(30 Hz ~ 15 kHz)
TUNER,CD,AUX,TAPE 1,TAPE 2	15 Hz ~ 55 kHz (-3 dB)
CD,DAT (digital section)	15 Hz ~ 20 kHz (-0.5 dB)
Tone controls	
BASS	50 Hz, +10 dB ~ -10 dB
TREBLE	20 kHz, +10 dB ~ -10 dB

Muting	-20 dB
Super bass	70 Hz, +10 dB
Output voltage	
TAPE 1,TAPE 2,REC OUT	150 mV
Channel balance,AUX 250 Hz ~ 6,300 Hz	±1.0 dB
Channel separation, AUX 1 kHz	60dB
Headphones output level and impedance	590 mV/330 Ω
Load impedance	
MAIN or REMOTE	8 Ω ~ 16 Ω
SURROUND	8 Ω ~ 16 Ω

■ GENERAL

Power consumption	370 W
Power supply	
For United Kingdom and Australia	AC 50 Hz/60 Hz,240V
For continental Europe	AC 50 Hz/60 Hz,220V
For others	AC 50 Hz/60 Hz,110V/127V/220V/240V
Dimensions (W x H x D)	360 x 128 x 300 mm (14-3/16" x 5-1/32" x 11-13/16")
Weight	6.8 kg (15 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

- Turn off the power supply. Using a 10Ω, 5W resistor connect both ends of power supply capacitors(C701,C702,6800μF) in order to discharge the voltage.
- Before turning the power supply on , after completion of repair , slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed current at 50Hz/60Hz in NO SIGNAL mode should be shown below with respect to supply voltage 110V/127V/220V/240V.

Power supply voltage	AC110V	AC127V	AC220V	AC240V
Consumed current 50Hz	241 ~ 733mA	223 ~ 669mA	122 ~ 365mA	112 ~ 336mA
Consumed current 60Hz	233 ~ 698mA	217 ~ 650mA	119 ~ 356mA	110 ~ 330mA

■ PROTECTION CIRCUITRY

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

- * No sound is heard when the power is switched 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 this unit are used.

If this occurs, follow the procedure outlined below:

- Switch OFF the power.
- Determine the cause of the problem and correct it.
- Switch ON the power once again.

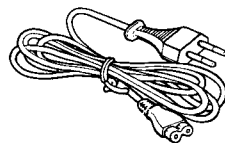
Note:

When the protection circuitry functions, the unit will not operate unless the power is first switched OFF and then ON again.

■ ACCESSORY

- AC power supply cord 1
Configuration of AC power supply cord differs according to area.

- SJA173.....For (XL) area only.
- SJA183.....For (XB) area only.
- SJA168For (XA) area only.
- SJA188For (EK) area only.
- SFDAC05E03.....For (E),(EG),(EF),(EH),(EB) and (Ei) areas.



■ LOCATION OF CONTROLS

● Front panel

• Audio muting switch/indicator (MUTING)

Press this switch when a disc is being changed or to temporarily reduce the volume level (approx. 1/10).

• Speaker selector (SPEAKERS)

This selector is used to select the speaker systems to be used.

MAIN (— —):

Sound can be heard from the speakers connected to the "MAIN" and "SURROUND" terminals,

REMOTE (— —):

Sound can be heard from the speaker systems connected to the "REMOTE" terminals.

In this position, sound cannot be heard from the speaker systems connected to the "SURROUND" terminals.

• Power switch (POWER)

Technics
POWER
ON

• Surround-sound switch (SURROUND)

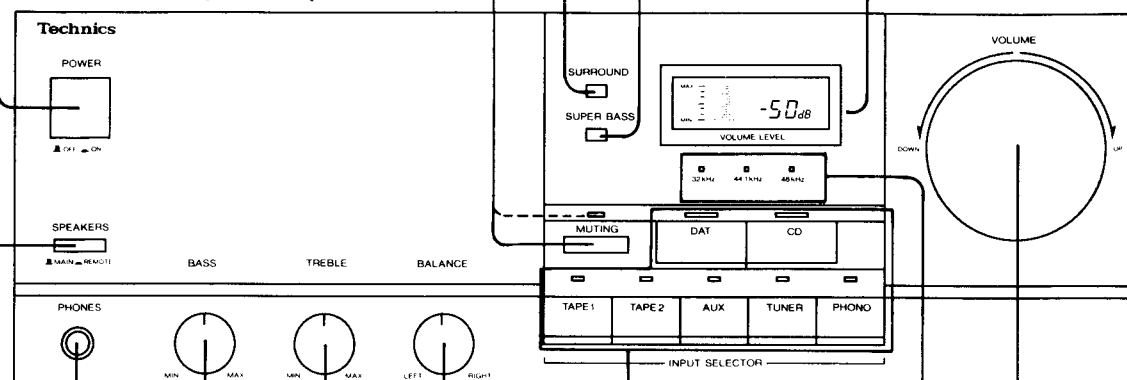
This switch is used to switch the surround sound effect on and off. (The switch itself will be illuminated.)

• Super bass switch (SUPER BASS)

When this switch is switched ON (the switch itself will be illuminated.), the ultra-low frequency range can be reinforced.

• Volume-level indicator (VOLUME LEVEL)

The volume level is indicated in decibels (dB). The dB indication numerically shows the attenuation characteristic of the amplifier; the indication ranges from " - dB" (minimum) to "0 dB" (maximum). The volume level becomes greater as the indication proceeds from -76 to -74 to -72 dB.



• Balance control (BALANCE)

This control is used to adjust left/right volume balance.

• Tone controls (BASS/TREBLE)

The bass control is for the low-frequency sound range, and the treble control is for the high-frequency sound range.

• Headphones jack (PHONES)

• Input selectors/indicators (INPUT SELECTOR)

These selectors are used to select the sound source to be heard, such as a disc, radio broadcasts, etc. The corresponding indicator illuminates during operation to indicate the selected sound source.

• Volume control (VOLUME)

This control is used to adjust the volume level.

• Sampling frequency indicators

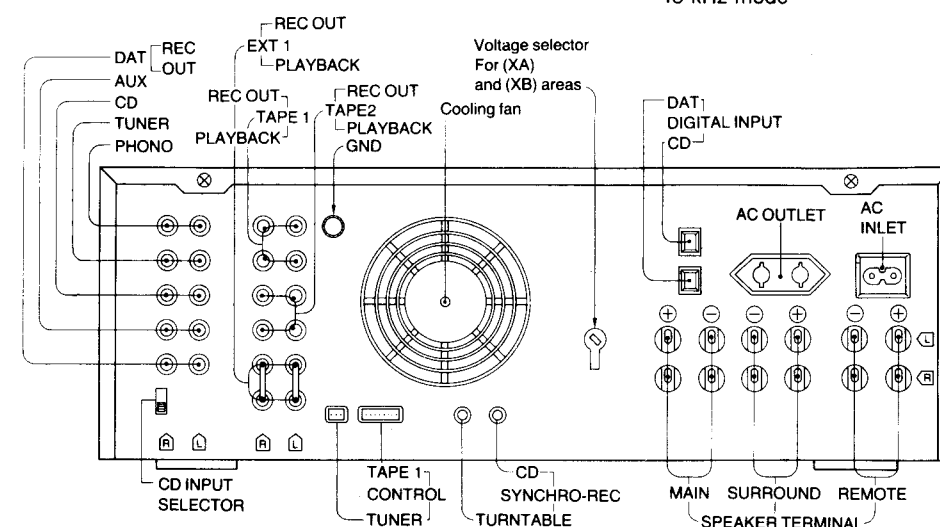
These indicators function to illuminate to indicate the detection of the sampling frequency of the digital signals input to the "DIGITAL INPUT" terminals on the rear panel of this unit. (Illumination occurs when digital signals are received.)

32 kHz: For digital signals with the sampling frequency of 32 kHz mode

44.1 kHz: CD and others

48 kHz: For digital signals with the sampling frequency of 48 kHz mode

● Rear panel



*Phono input capacitance is about 100 pF.

LOCATION OF CONTROLS

Front panel

Audio muting switch/indicator (MUTING)

Press this switch when a disc is being changed or to temporarily reduce the volume level (approx. 1/10).

Speaker selector (SPEAKERS)

This selector is used to select the speaker systems to be used.

MAIN (MAIN):

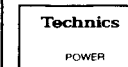
Sound can be heard from the speakers connected to the "MAIN" and "SURROUND" terminals.

REMOTE (REMOTE):

Sound can be heard from the speaker systems connected to the "REMOTE" terminals.

In this position, sound cannot be heard from the speaker systems connected to the "SURROUND" terminals.

Power switch (POWER)



Balance control (BALANCE)

This control is used to adjust left/right volume balance.

Tone controls (BASS/TREBLE)

The bass control is for the low-frequency sound range, and the treble control is for the high-frequency sound range.

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These selectors are used to select the sound source to be heard, such as a disc, radio broadcasts, etc. The corresponding indicator illuminates during operation to indicate the selected sound source.

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This switch is used to switch the surround sound effect on and off. (The switch itself will be illuminated.)

Super bass switch (SUPER BASS)

When this switch is switched ON (the switch itself will be illuminated.), the ultra-low frequency range can be reinforced.

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The volume level is indicated in decibels (dB). The dB indication numerically shows the attenuation characteristic of the amplifier; the indication ranges from "-dB" (minimum) to "0 dB" (maximum). The volume level becomes greater as the indication proceeds from -76 to -74 to -72 dB.

Volume control (VOLUME)

This control is used to adjust the volume level.

Sampling frequency indicators

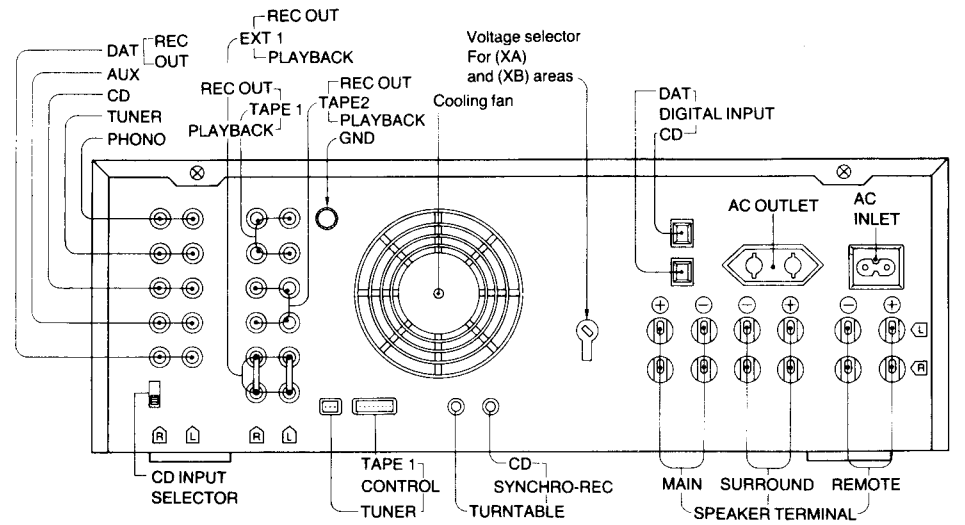
These indicators function to illuminate to indicate the detection of the sampling frequency of the digital signals input to the "DIGITAL INPUT" terminals on the rear panel of this unit. (Illumination occurs when digital signals are received.)

32 kHz: For digital signals with the sampling frequency of 32 kHz mode

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Rear panel

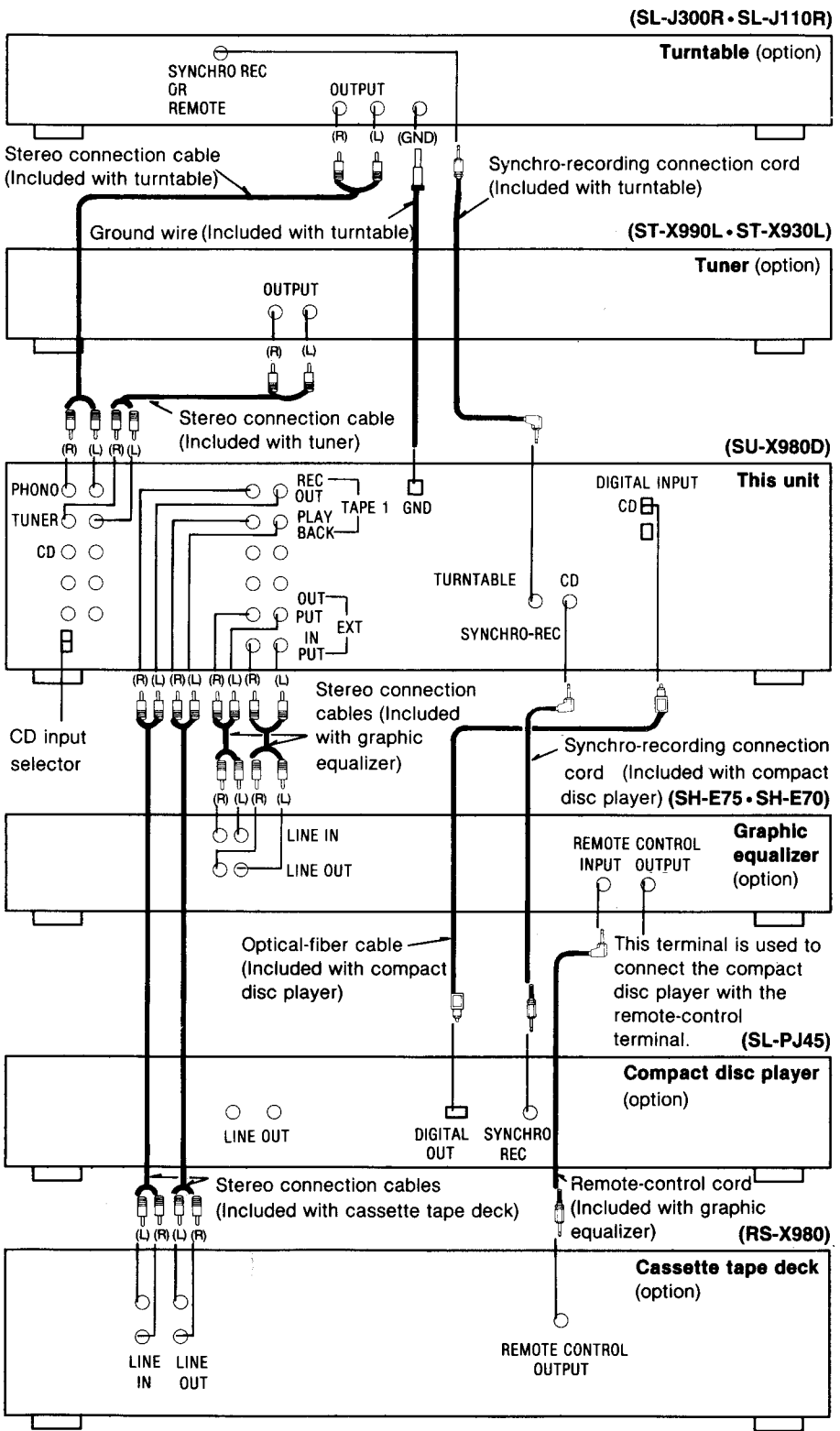


*Phono input capacitance is about 100 pF.

CONNECTIONS

1. Make the connections of the stereo connection cables, the synchro-recording connection cords (option), and the remote-control cord (option). Then, set the CD input selector of this unit to the "DIGITAL" position. (See below.)

Note: Although the synchro-recording connection cords and the remote-control cord are differentiated in the figure below, actually they are the same shape.



Compact disc player connections

If your compact disc player does not include optical-fiber cable, use stereo connection cables (option) to make the connections between the "CD" terminals of this unit and the "LINE OUT" terminals of the compact disc player. If this type of connection is made, the amplifier's CD input selector should be set to "ANALOG".

CD input selector of this unit

This selector is used for selection of the format (analog or digital) of the input signals from the compact disc player.

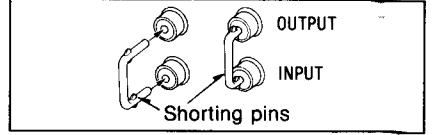
ANALOG: Set to this position if stereo connection cables are used.

DIGITAL: Set to this position if optical-fiber cable is used.

- Notes:**
1. Be sure the power switch of this unit is switched OFF before changing the setting of this selector. (Interference noise may be emitted if the power switch is ON.)
 2. The setting of this selector must be made correctly; if not, no sound will be emitted when the "CD" setting of the input selector on this unit is selected.

"EXT" terminals of this unit

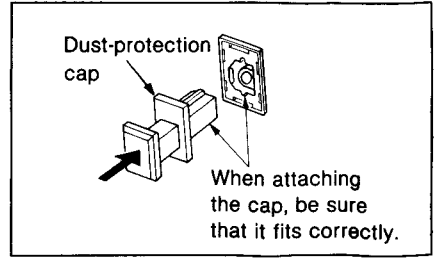
When these terminals are not in use, be sure to insert the shorting pins (included).



"DIGITAL INPUT" terminals of this unit

The dust-protection caps are used to cover and protect these terminals. Remove the caps only when the "DIGITAL INPUT" terminals are to be used.

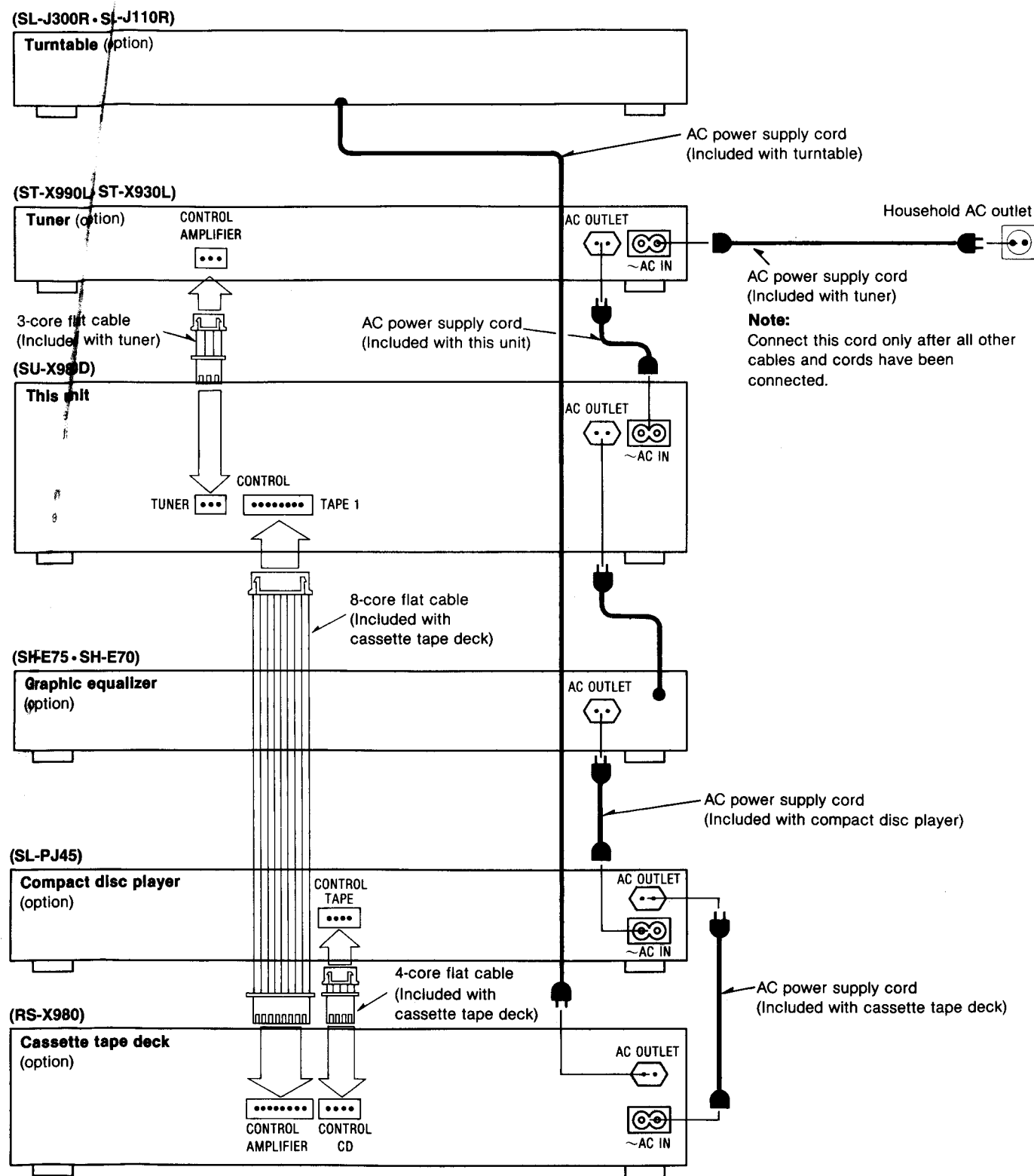
Note: Be sure to use the dust-protection caps to again cover these terminals when that are not being used. These covers serve to prevent the entry of dust, etc. into the terminals, because such foreign material can cause incorrect operation.



2. Make the connections of the flat cables and the AC power supply cords.

1. Do not connect video-related equipment (such as a TV, etc.) to the AC outlets of these components. (These outlets are especially for audio equipment.) Also do not exceed the indicated power ratings when connecting to these outlets.
2. The tuner's power outlet is interlocked with the power "STANDBY ϕ /ON" switch of the tuner.
3. If the graphic equalizer is not used in combination with these components, connect the AC power supply cord of the compact disc player to the AC outlet of the amplifier. If the compact disc player is not used in combination with these components, connect the AC power supply cord of the cassette tape deck to the AC outlet of the graphic equalizer.

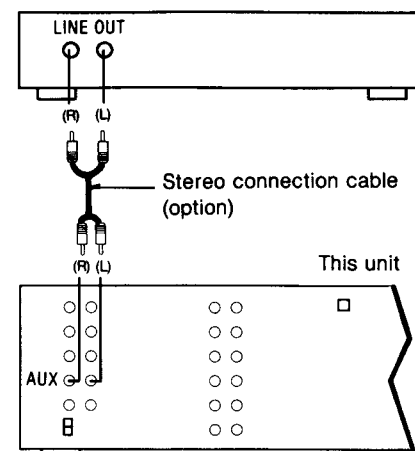
Note: The configurations of the AC outlets and AC power supply cords differ according to area.



Connections to other equipment

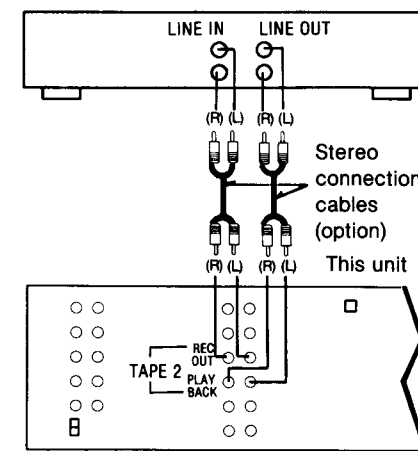
"AUX" terminals

Connect a second compact disc player, etc.
Second compact disc player (option)



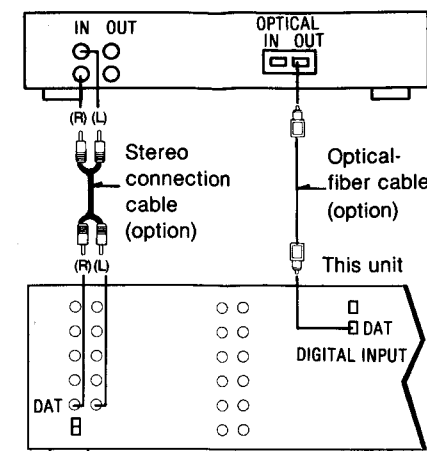
"TAPE 2" terminals

Connect a video cassette recorder (for audio only) or a second audio tape deck.
Second tape deck (option)



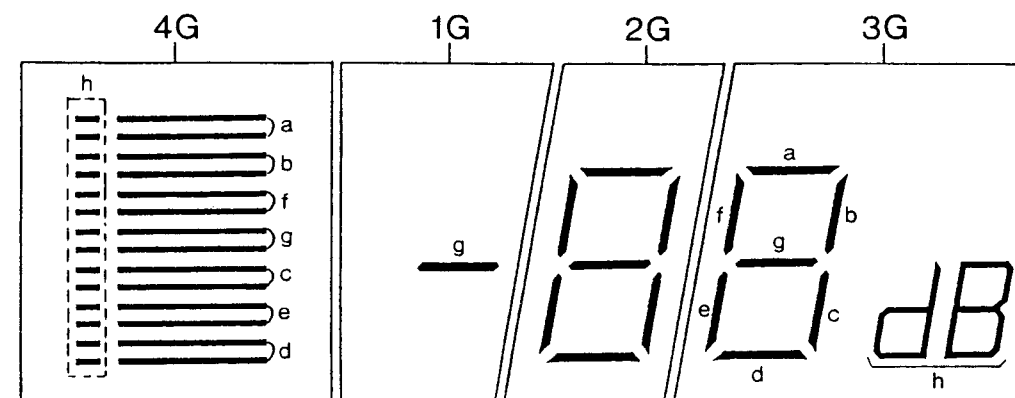
"DAT" terminals

Connect a digital audio tape deck (DAT).
Digital audio tape deck (DAT) (option)



DESCRIPTION OF FL PANEL

GRID ASSIGNMENT



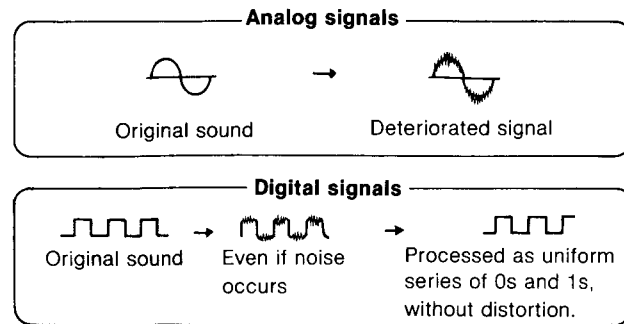
PIN CONNECTION

Pin No.	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Connection	F	F	N	a	4	b	c	d	1	e	f	2	g	3	N	h	3	N	F	F

■ DIGITALIZATION OF AUDIO SIGNALS

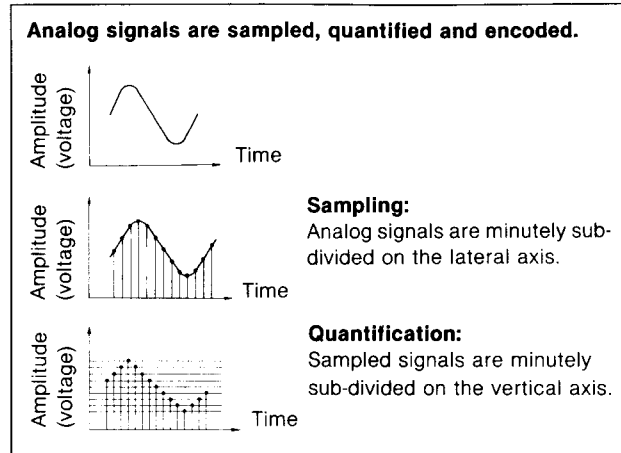
■ Why digitize?

- Audio signals are analog signals with a continuous form.
- When these audio signals are subjected to repeated electronic processing (recording, playback, etc.), they become noisy and distortion occurs, thus resulting in deterioration of the sound quality.
- When these signals are first digitized before processing, they have the following advantages that prevent deterioration of the sound quality:
 - ① Resistance to noise
 - ② Extremely low distortion
 - ③ Flat, even frequency response



■ How signals are digitized

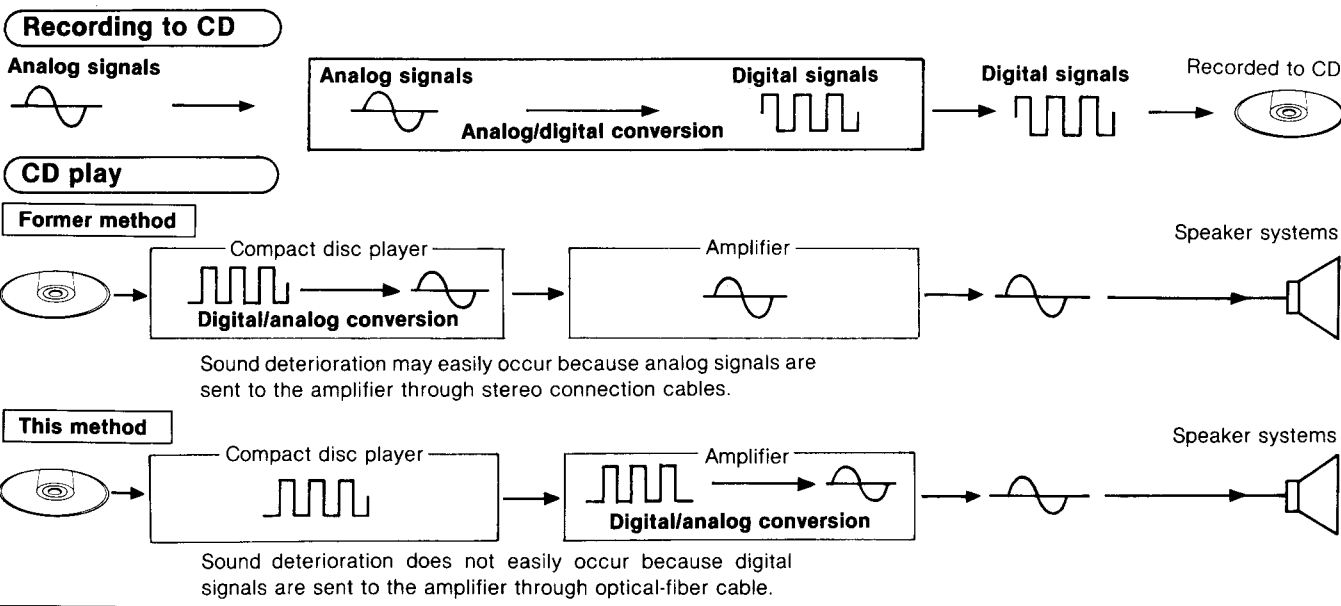
If it is known to what degree of minuteness the human ear can distinguish sounds, it is then possible, by using that data as the standard reference, to digitize them by dividing analog signals into minute pieces, after which they can be transmitted with a high degree of precision, and thereafter recorded and played back in the digitized format.



■ DISASSEMBLY INSTRUCTIONS

<p>Ref. No. 1</p> <p>Procedure 1</p>	<p>How to remove the cabinet</p> <p>● Remove the 6 screws.</p>	<p>Ref. No. 2</p> <p>Procedure 1→2</p>	<p>How to remove the front panel</p> <ol style="list-style-type: none"> 1. Remove the 3 screws (①~③). 2. Remove the flat cable (J501). 3. Pull out the 1 connector (J801). 4. Remove the front panel in the direction of the arrow. <p>How to remove the flat cable</p> <p>Pull out the flat cable while pressing the connector.</p>
<p>Ref. No. 3</p> <p>Procedure 1→2→3</p>	<p>How to remove the power switch P.C.B.</p> <ol style="list-style-type: none"> 1. Remove the power switch knob by pushing it from behind the front panel. 2. Remove the 2 screws (①, ②). 	<p>How to remove the microcomputer/FL P.C.B.</p> <ol style="list-style-type: none"> 1. Remove the 3 knobs (①~③). 2. Remove the 3 nuts (④~⑥). 3. Remove the 2 screws (⑦, ⑧). 4. Push the 3 claws and remove the microcomputer/FL P.C.B. 	<p>How to remove the microcomputer/FL P.C.B. and volume P.C.B.</p> <ol style="list-style-type: none"> 1. Remove the 1 knob (⑨). 2. Remove the 1 nut (⑩). <p>● Use a wrench of the dimensions shown in the illustration above to remove nuts.</p>

■ Digitalization example (recording to CD and play of CD)



■ What the sampling frequency is

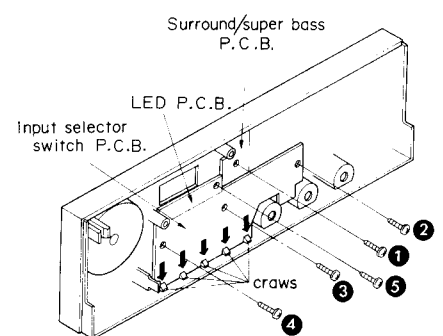
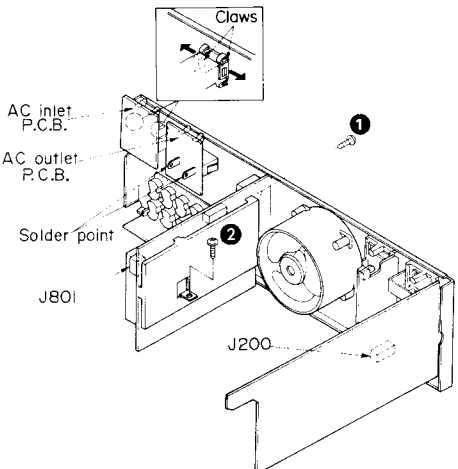
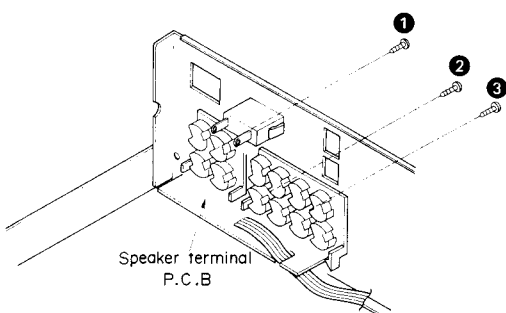
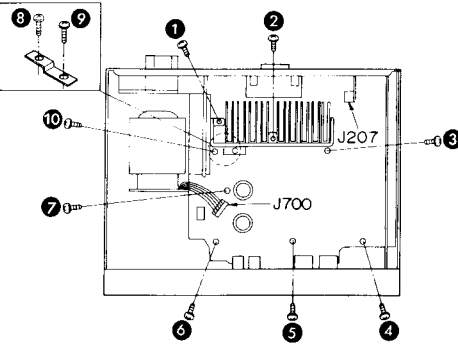
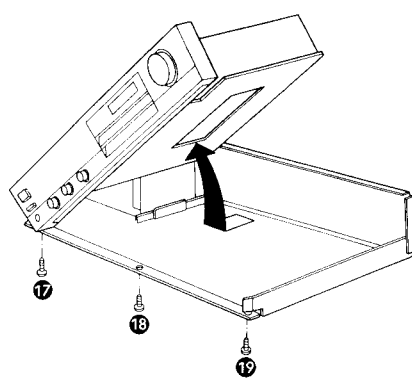
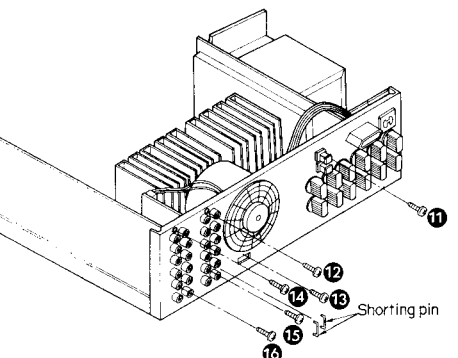
The sampling frequency expresses the degree of minuteness to which signals can be cut, relative to a certain specified time interval, during sampling. For compact disc sound: Analog signals are cut 44,100 times (i.e., 44.1 kHz) during one second. This 44.1 kHz is, therefore, the sampling frequency for compact disc sound.

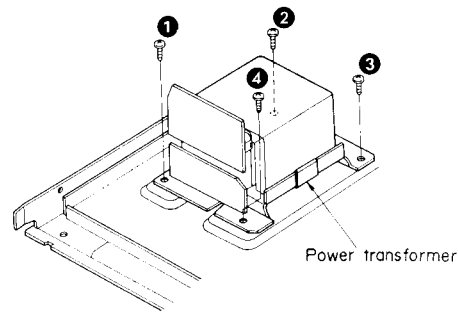
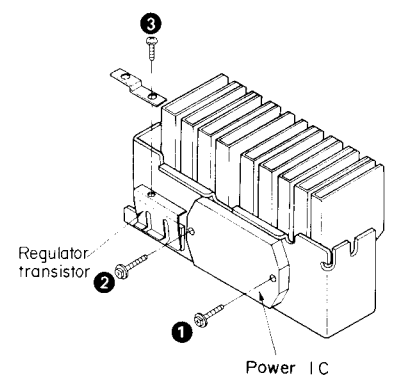
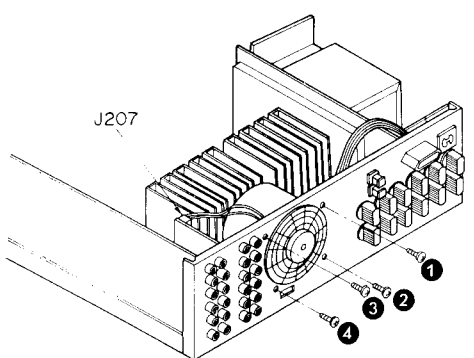
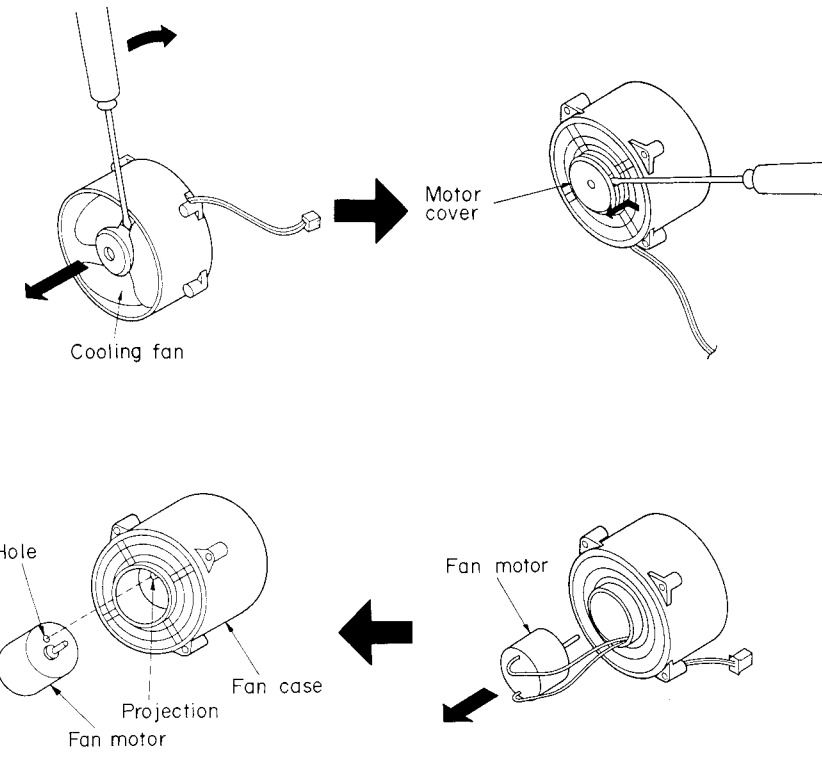
■ What analog/digital conversion is

Audio signals (analog signals) are taken out (sampled) at certain fixed time intervals. The points at which this sampling frequency occurs are digitally encoded and converted to digital signals.

■ What digital/analog conversion is

Each sampling frequency point is returned (converted) to voltage, thus converting digital signals to the analog signals that we can hear.

<p>Ref. No. 5 How to remove the surround/super bass P.C.B., input selector switch P.C.B. and LED P.C.B.</p> <p>Procedure 1→2→4→5</p> <p>How to remove the surround/super bass P.C.B. ●Remove the 1 screw (1).</p> <p>How to remove the input selector switch P.C.B. 1. Remove the 3 screws (2~4). 2. Push the 5 claws and remove the input selector switch P.C.B.</p> <p>How to remove the LED P.C.B. ●Remove the 1 screw (5).</p> 	<p>Ref. No. 6 How to remove the digital input P.C.B. AC outlet P.C.B. and AC inlet P.C.B.</p> <p>Procedure 1→6</p> <p>How to remove the digital input P.C.B. 1. Pull out the 2 connectors (J200, J801). 2. Remove the 2 screws (1, 2).</p> <p>How to remove the AC inlet ●Pull out the 2 claws in the direction of the arrow.</p> <p>How to remove the AC outlet ●Unsolder the 2 terminals.</p> 
<p>Ref. No. 7 How to remove the speaker terminal P.C.B.</p> <p>Procedure 1→6→7</p> <p>●Remove the 3 screws (1~3).</p> 	<p>Ref. No. 8 How to remove the main P.C.B.</p> <p>Procedure 1→8</p> <p>1. Remove the 8 screws (1~10). 2. Remove the flat cable (J207, J700).</p> 
<p>Procedure 1→6→7</p>  <p>5. Remove the 3 screws (17~19).</p>	<p>Procedure 1→8</p>  <p>3. Remove the 6 screws (11~16). 4. Remove the shorting pin.</p>

<p>Ref. No. 9 How to remove the power transformer</p> <p>Procedure 1→6→7→9</p> <p>●Remove the 4 screws (1~4).</p> 	<p>Ref. No. 10 How to remove the power IC and regulator transistor</p> <p>Procedure 1→8→10</p> <p>1. Unsolder the power IC or regulator transistor. 2. Remove the 3 screws (1~3).</p>  <p>●When mounting the power IC or regulator transistor. Apply silicone compound (SZZOL15) to the rear side of power IC or regulator transistor.</p>
<p>Ref. No. 11 How to remove the fan motor</p>	<p>4. Insert a screwdriver at the root of the cooling fan. Force it out of the motor shaft. 5. Remove the motor cover by used ⊖ screwdriver. 6. Remove the motor from the fan casing. 7. When mounting the motor fan, align the fan casing's projection with the hole of the fan motor.</p>
<p>Procedure 1→11</p> <p>1. Pull out the 1 connector (J207). 2. Remove the 4 screws (1~4). 3. Press the rear cabinet in the direction of the arrow to remove the fan motor.</p> 	

direction of

anet

Flat cable

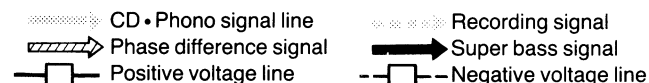
ter/FL P.C.B.

11 mm
16 mm
longer than
18 mm
wrench of the
sions shown in
stration above
ove nuts.

■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

- Notes:**
- S201 : CD input selector switch in "digital" position.
 - S501 : Speaker selector switch in "main" position.
 - S601~S607 : Input selector switches.
 - { S601: Phono, S602: Tuner, S603: CD, S604: Tape 1
 - { S605; Tape 2, S606: AUX, S607: DAT,
 - S608 : Audio muting selector switch.
 - S609 : Surround selector switch.
 - S610 : Super bass switch.
 - S700 : Power source switch in "on" position.

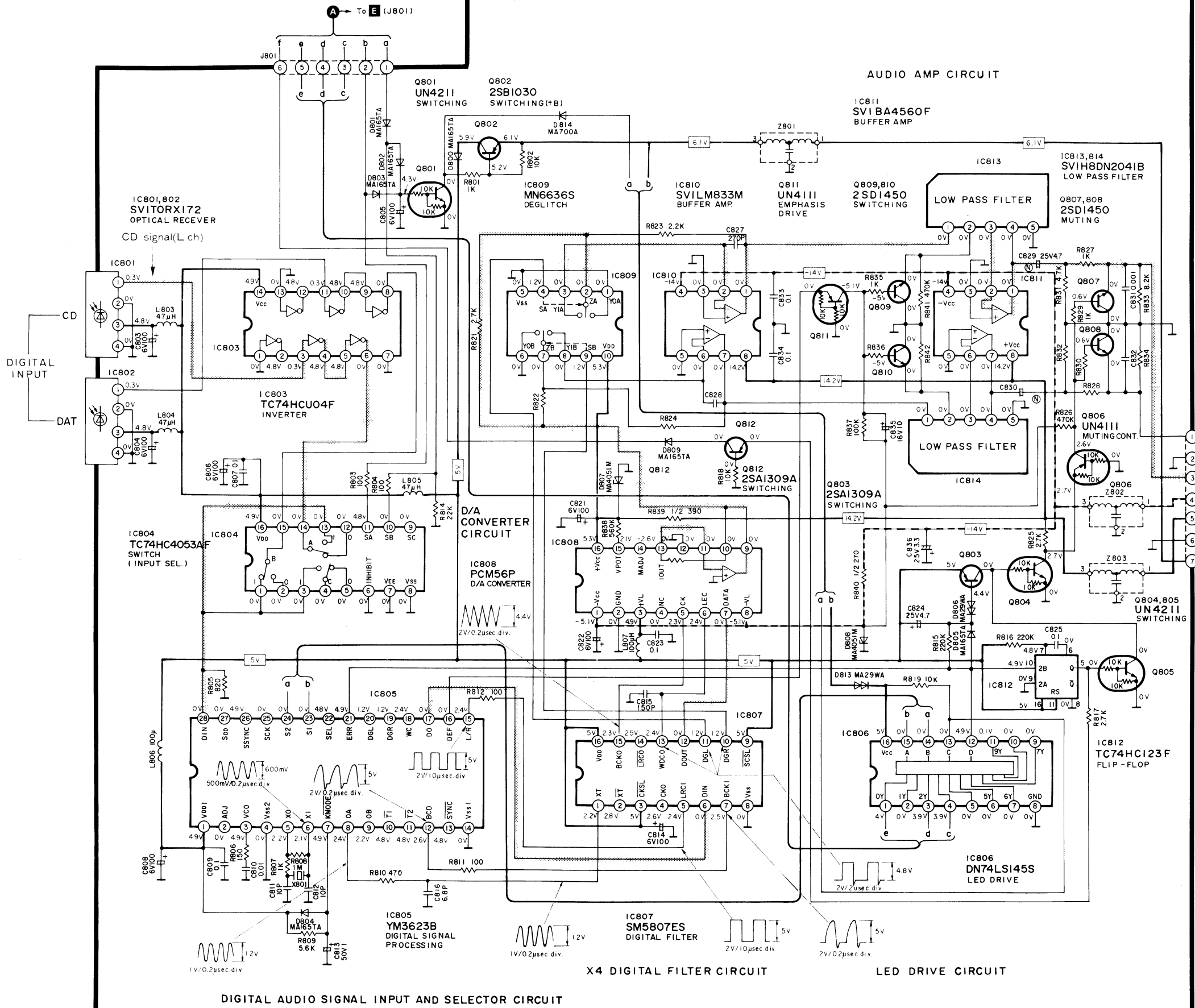


●Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

●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.

***Caution!**
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
*Cover the parts boxes made of plastics with aluminum foil.
*Ground the soldering iron.
*Put a conductive mat on the work table.
*Do not touch the legs of IC or LSI with the fingers directly.

A D/A CONVERTER CIRCUIT

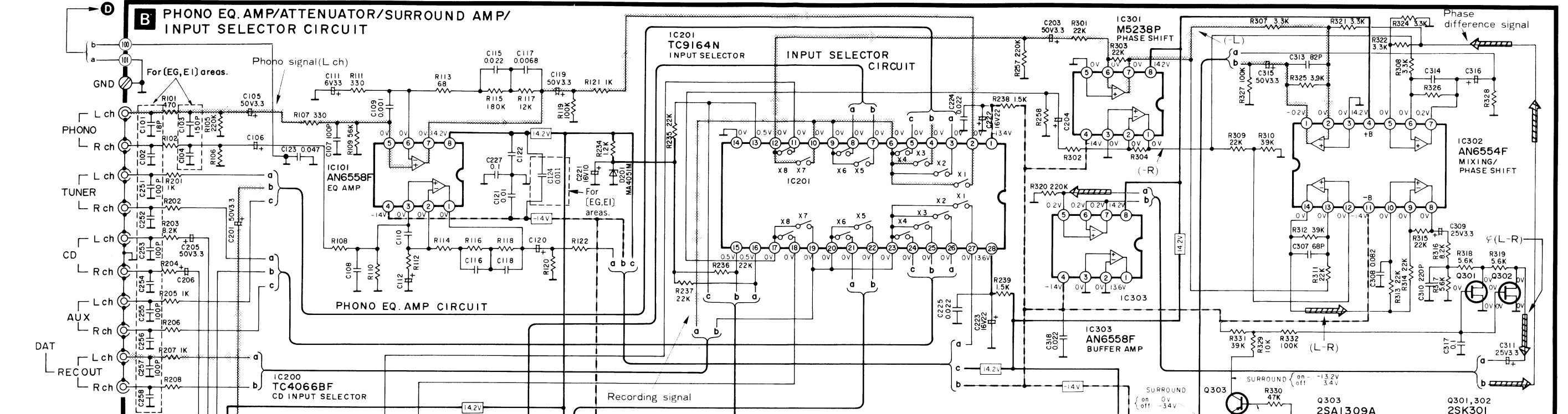


DIGITAL AUDIO SIGNAL INPUT AND SELECTOR CIRCUIT

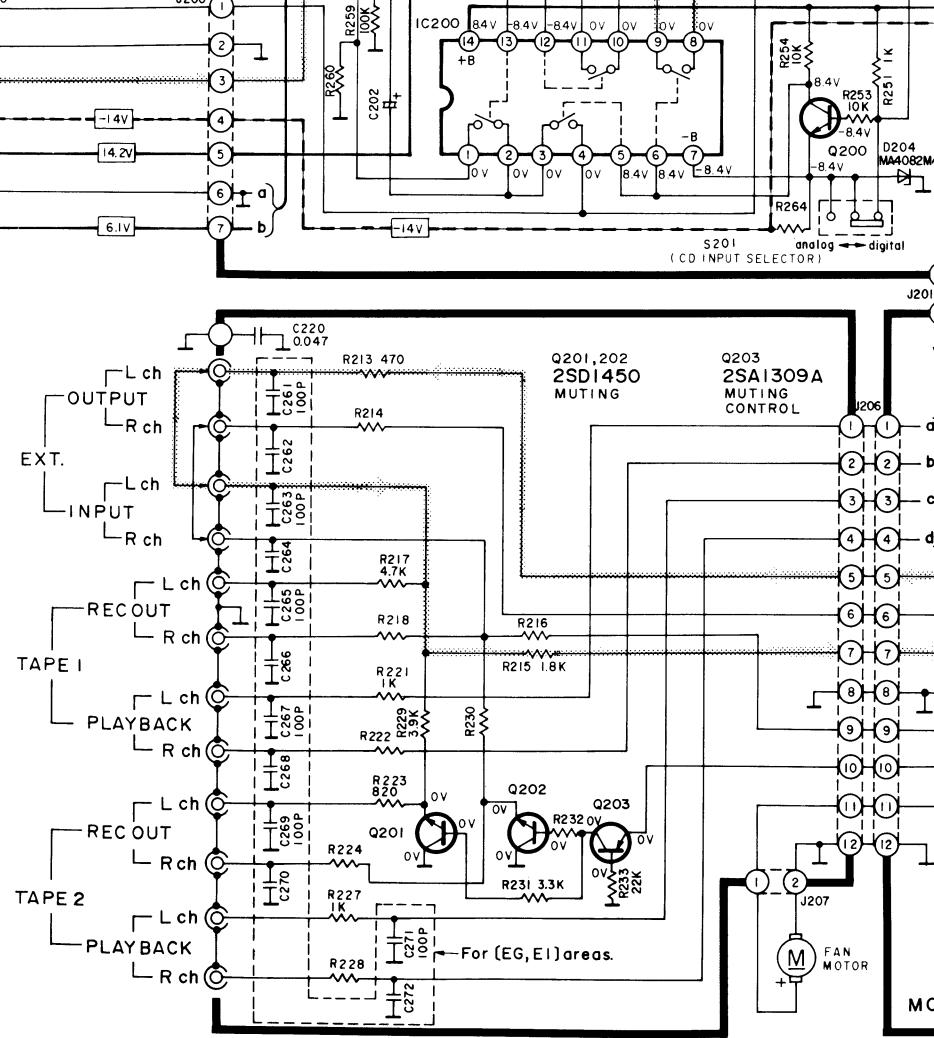
X4 DIGITAL FILTER CIRCUIT

LED DRIVE CIRCUIT

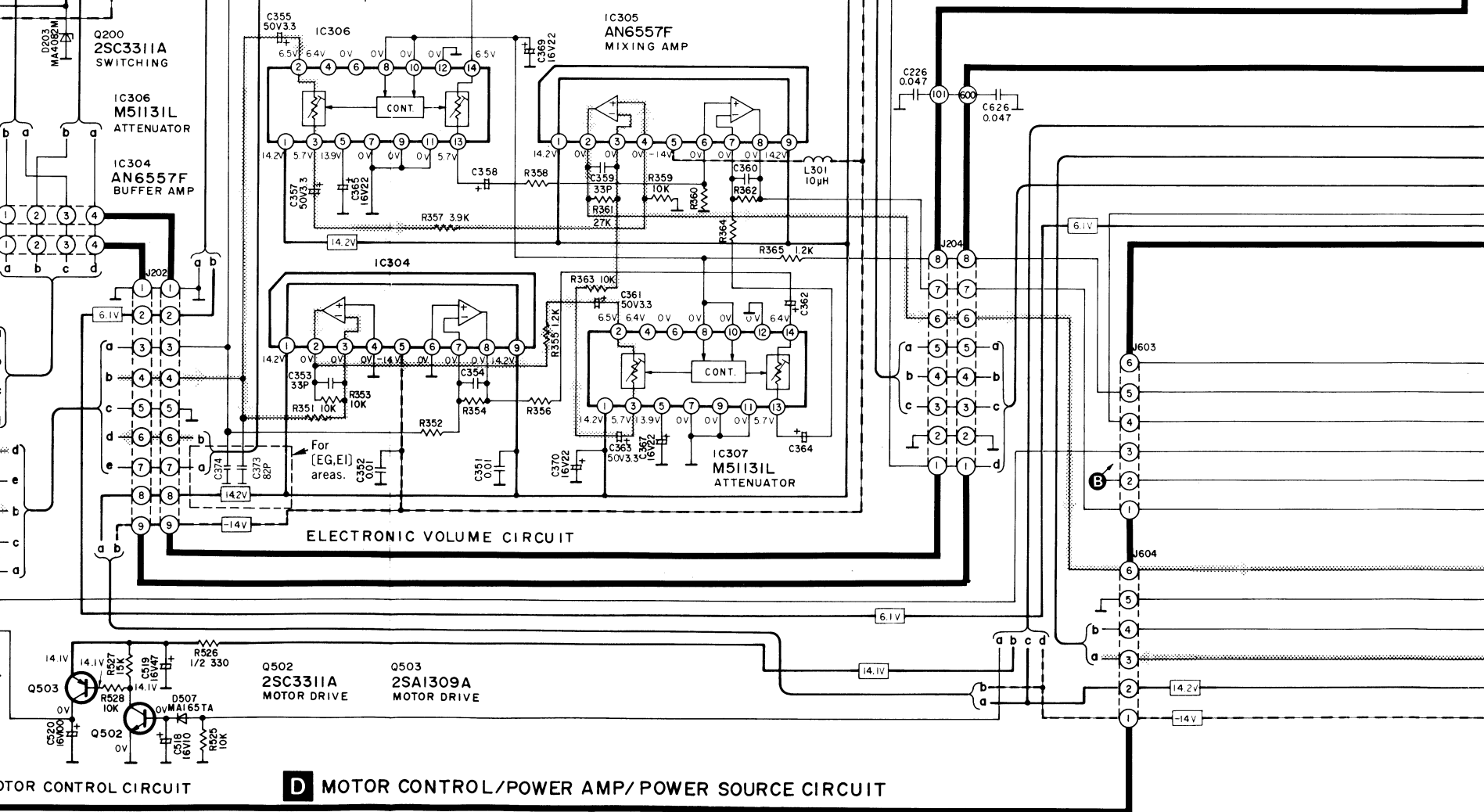
B PHONO EQ. AMP/ATTENUATOR/SURROUND AMP/ INPUT SELECTOR CIRCUIT



C INPUT/OUTPUT TERMINAL CIRCUIT



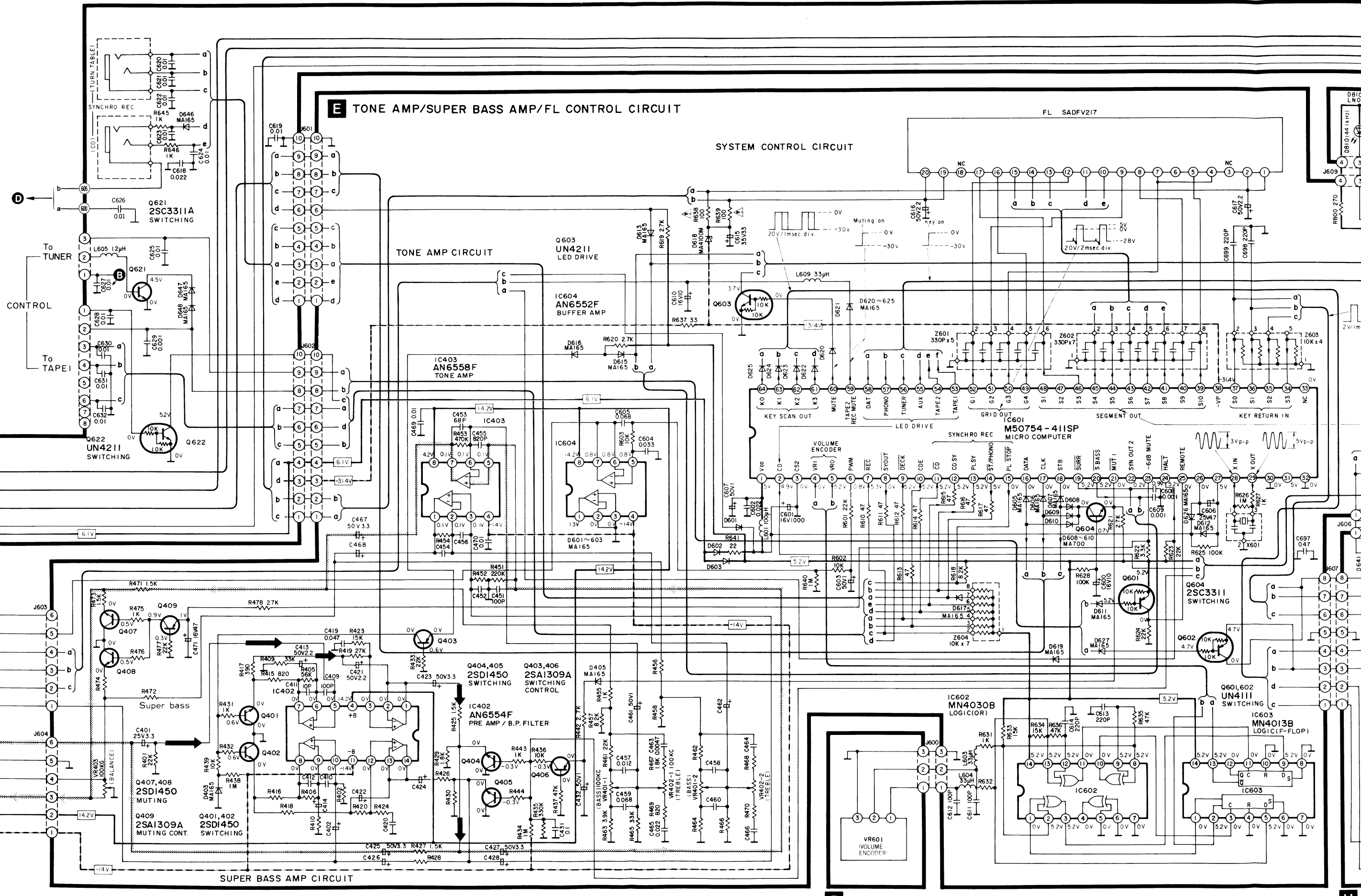
D MOTOR CONTROL/POWER AMP/ POWER SOURCE CIRCUIT



04,805
14211
ITCHING
Q805
23F

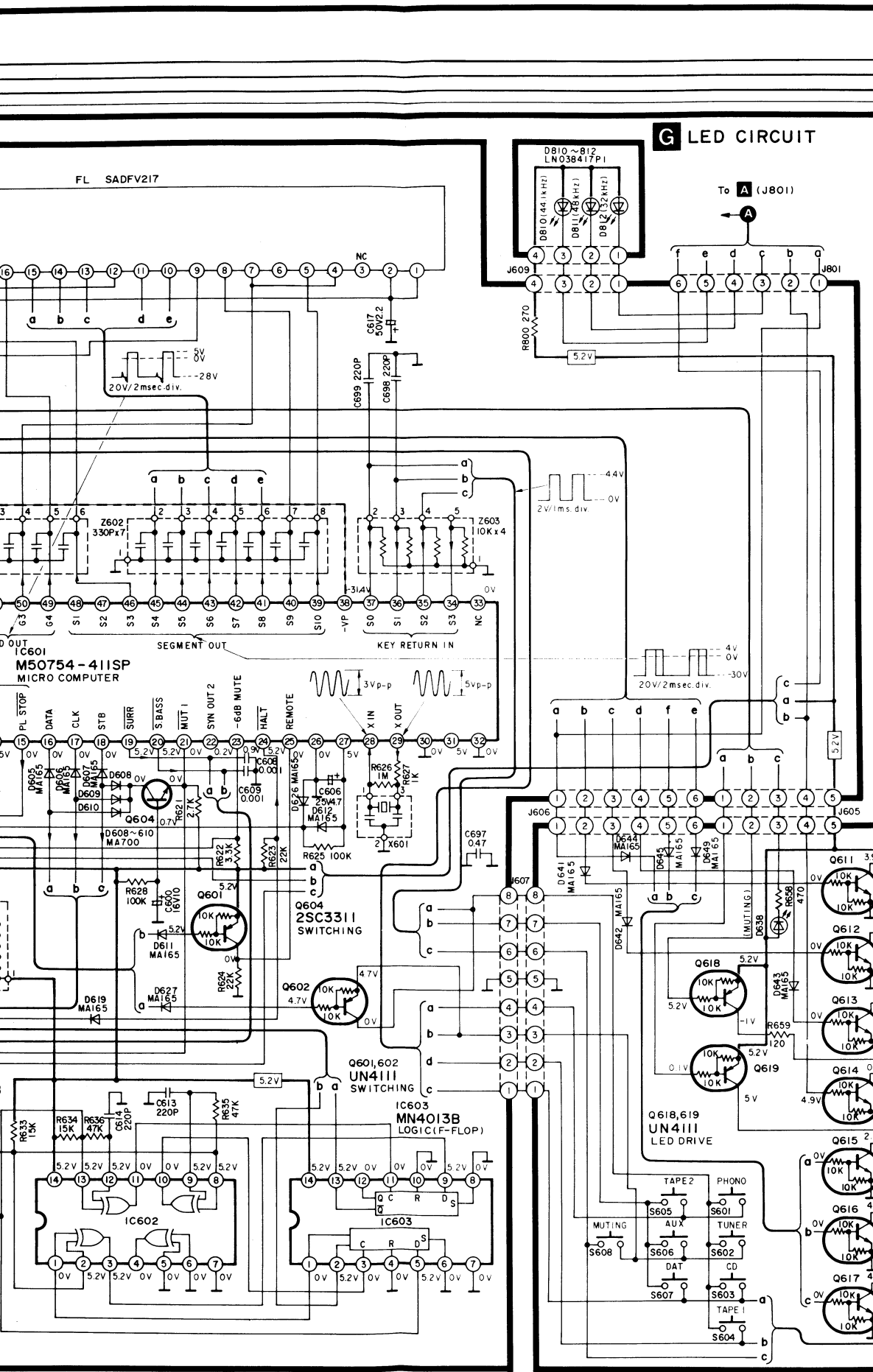
C INPUT/OUTPUT TERMINAL CIRCUIT

D MOTOR CONTROL/POWER AMP/ POWER SOURCE CIRCUIT

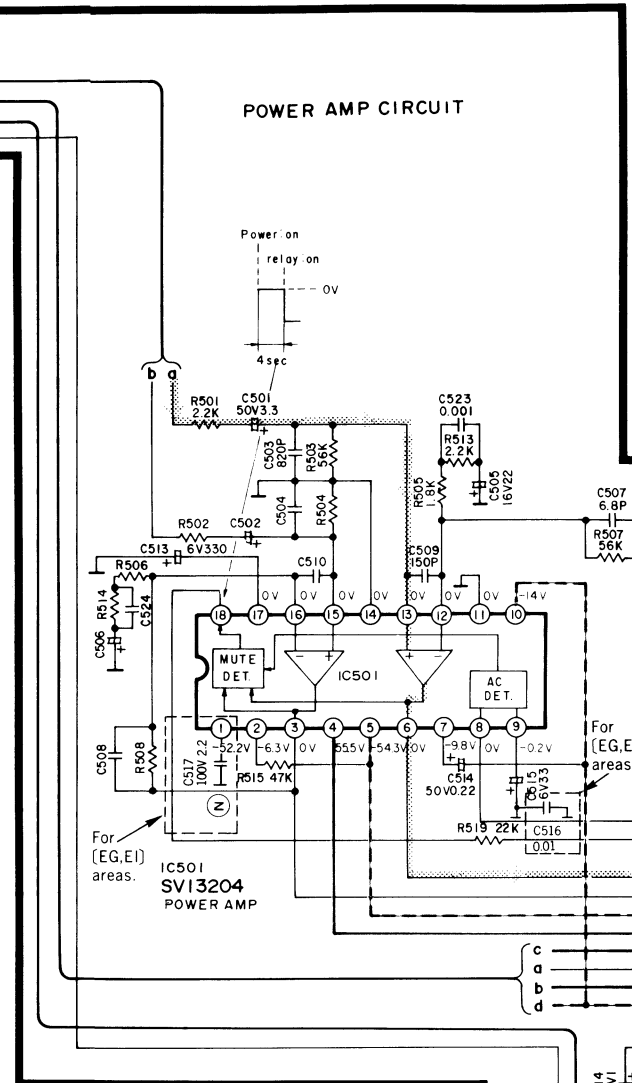


F VOLUME CIRCUIT

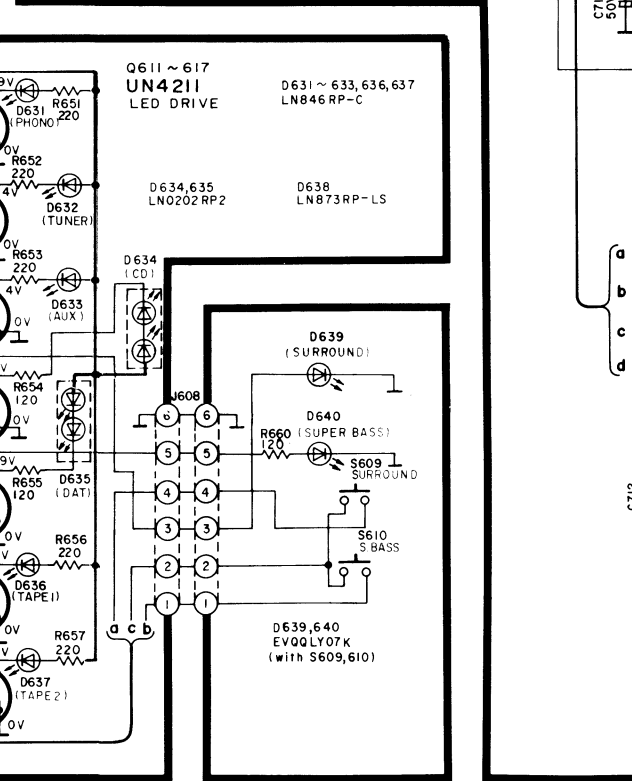
H INF



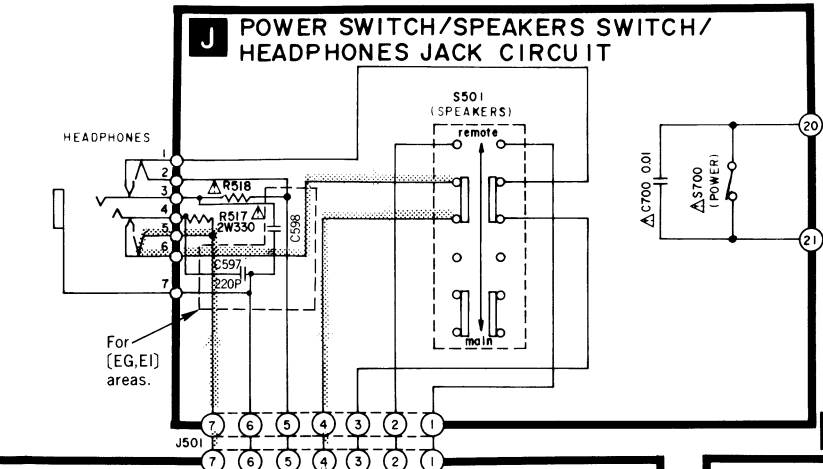
H INPUT SELECT SWITCH/LED DRIVE CIRCUIT



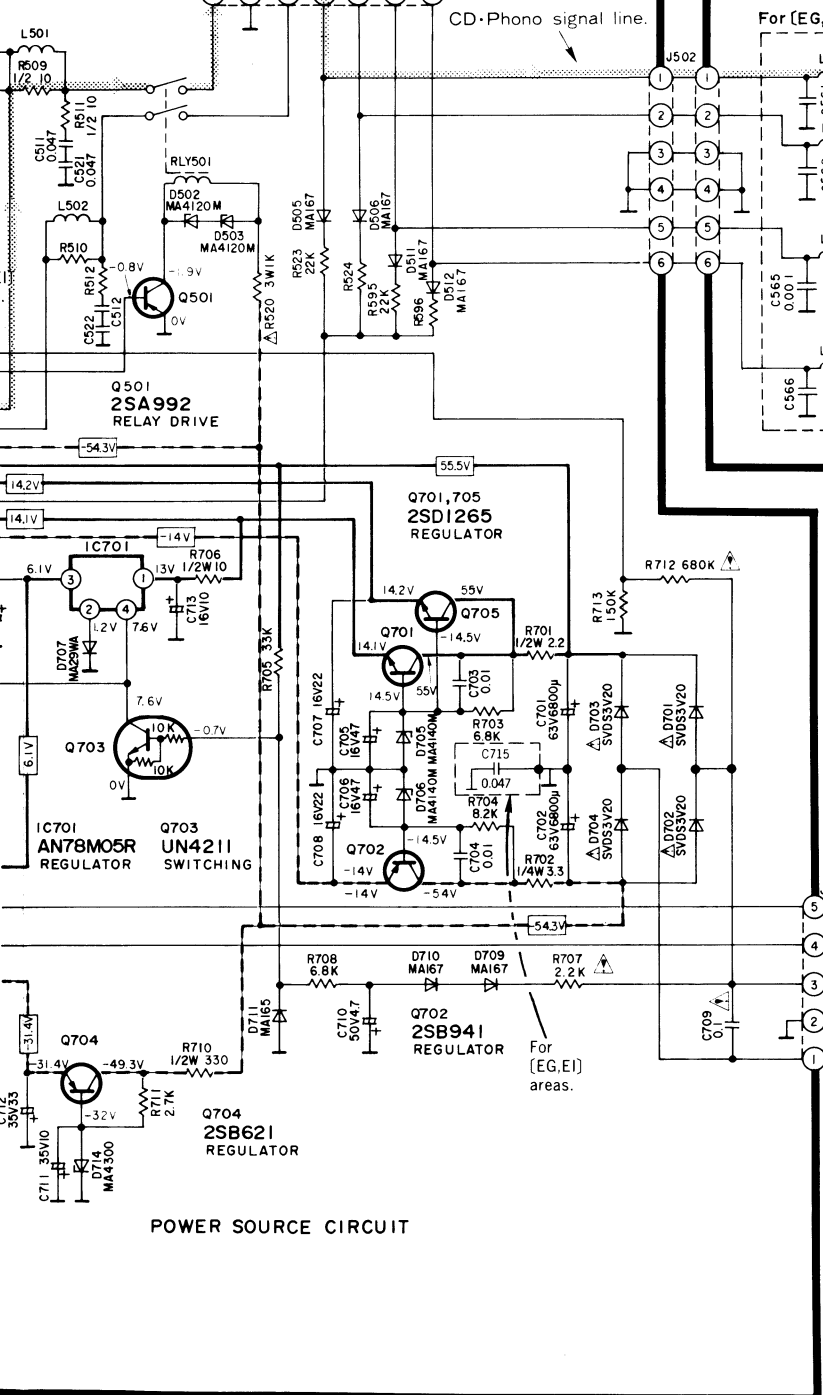
I SURROUND/SUPER BASS SWITCH CIRCUIT



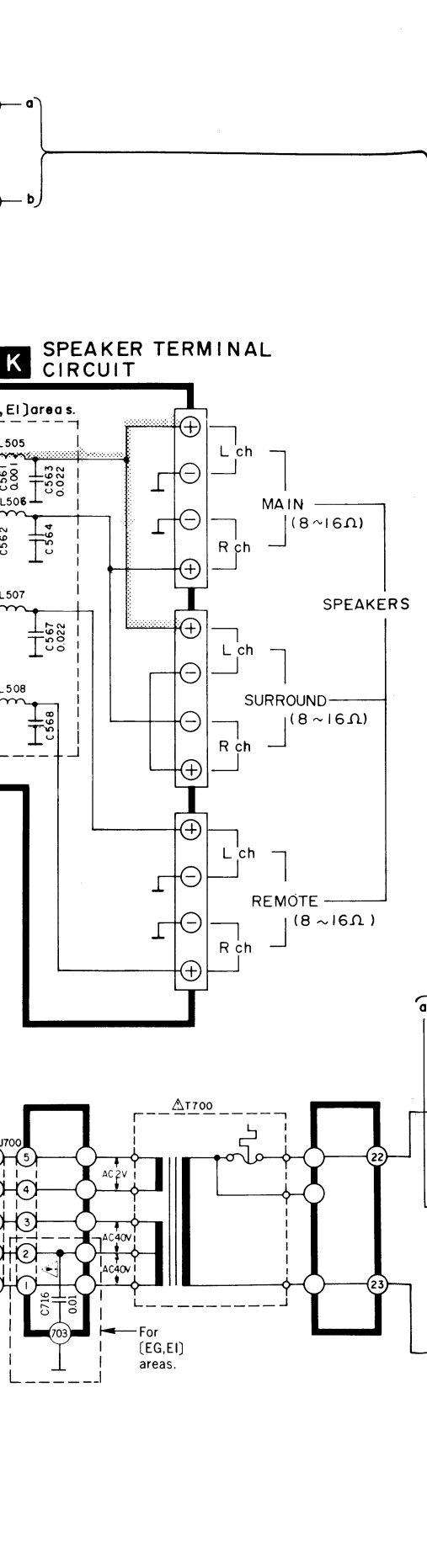
POWER AMP CIRCUIT



K POWER SWITCH/SPEAKERS SWITCH/HEADPHONES JACK CIRCUIT

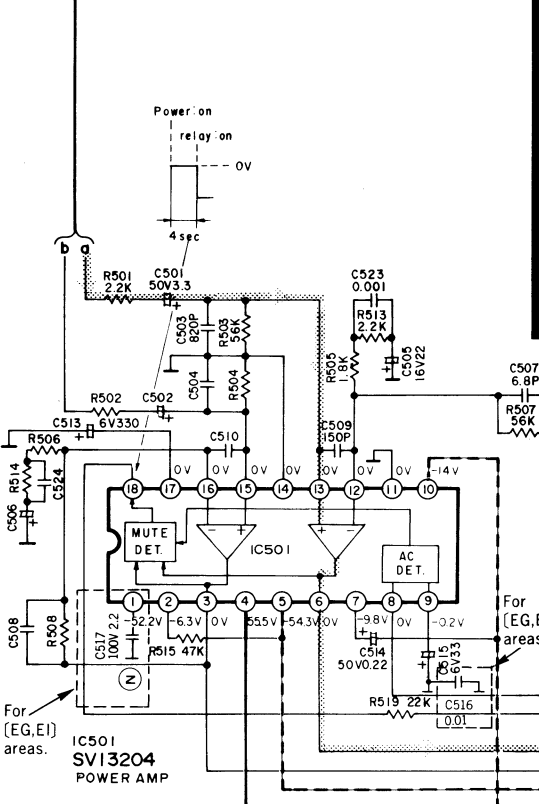


POWER SOURCE CIRCUIT

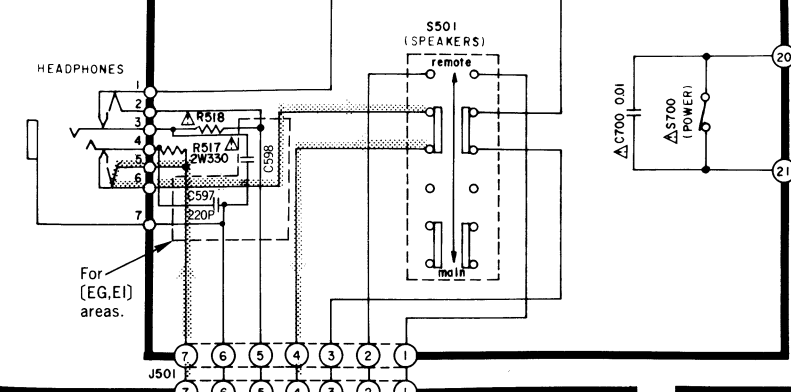


M SPEAKER TERMINAL CIRCUIT

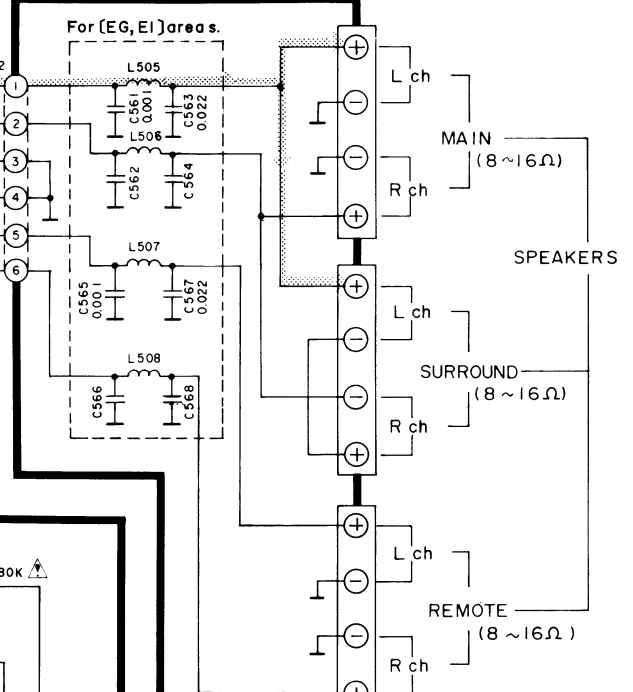
POWER AMP CIRCUIT



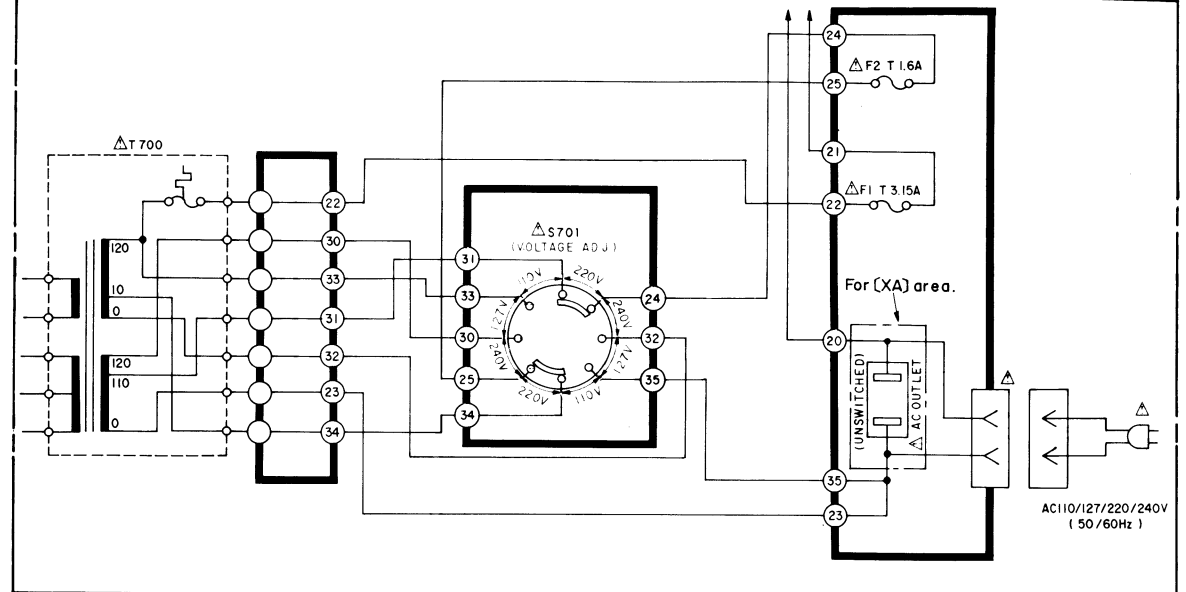
POWER SWITCH/SPEAKERS SWITCH/ HEADPHONES JACK CIRCUIT



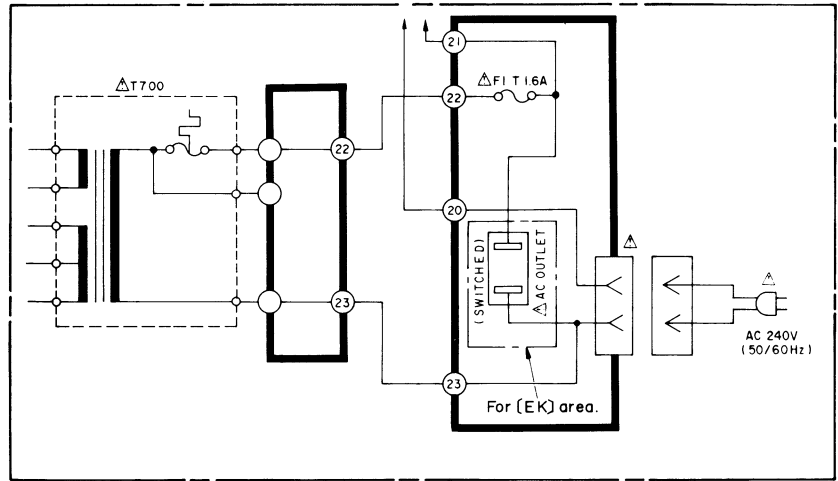
SPEAKER TERMINAL CIRCUIT



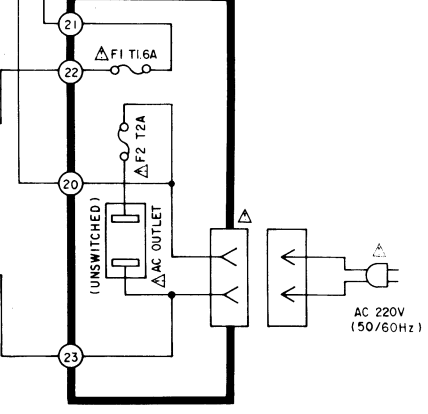
Power Source For [XA, XB] areas.



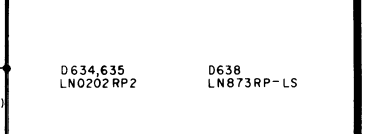
Power Source For [EK, XL] areas.



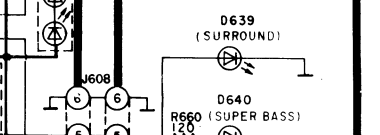
AC IN/AC OUTLET TERMINAL CIRCUIT



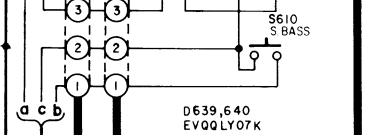
Q611~617 UN4211 LED DRIVE



Q634, 635 LN0202 RP2



Q639 (SURROUND)



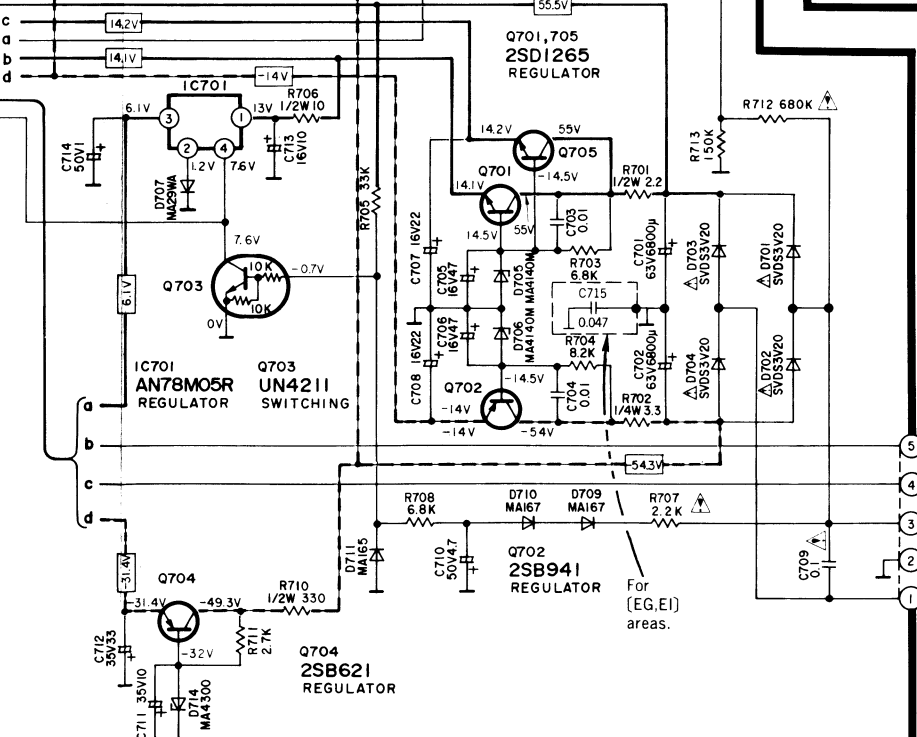
Q639, 640 EV00LY07K (with S609, 610)



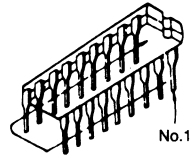
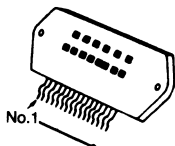
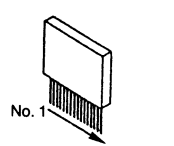
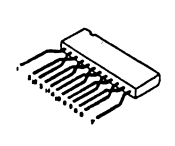
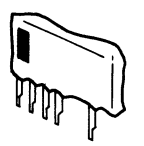
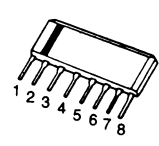
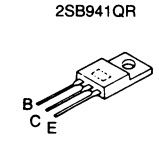

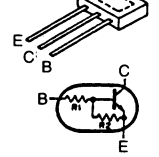
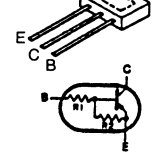
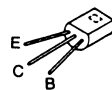
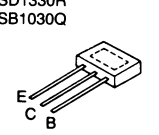
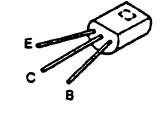
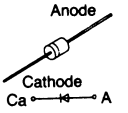
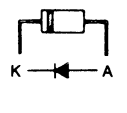
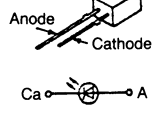
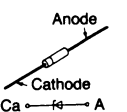
SURROUND/SUPER BASS SWITCH CIRCUIT



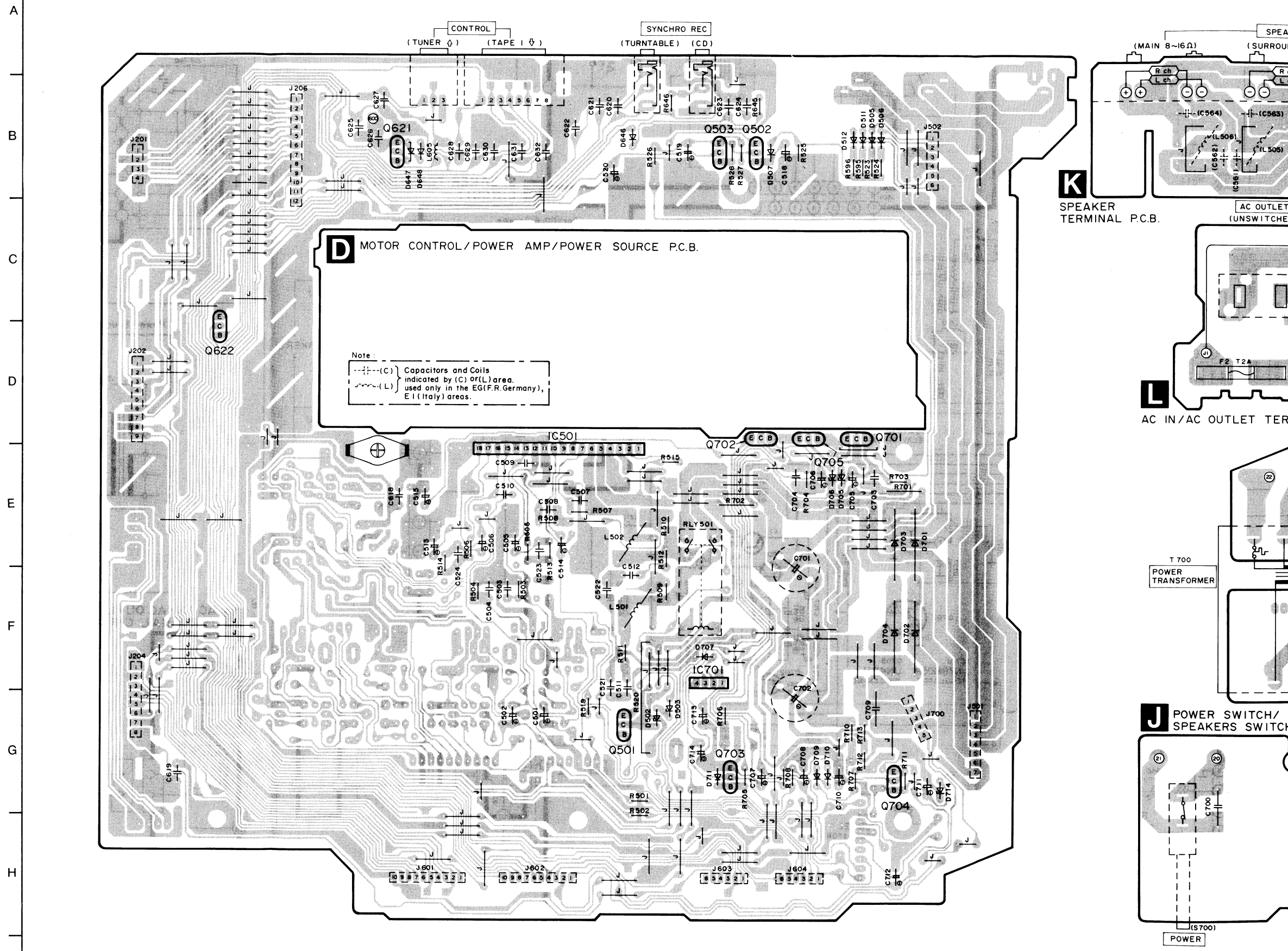
POWER SOURCE CIRCUIT

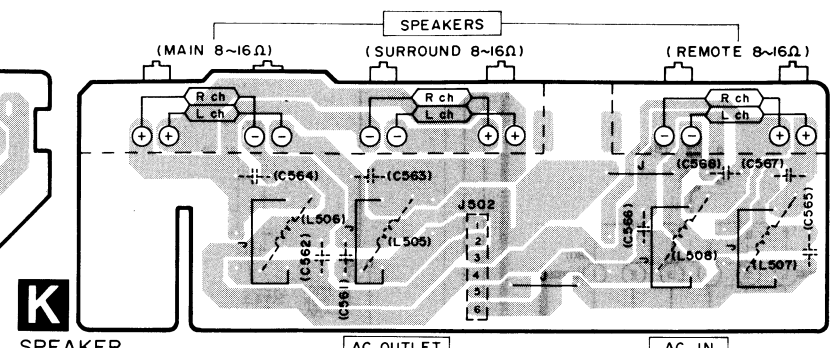
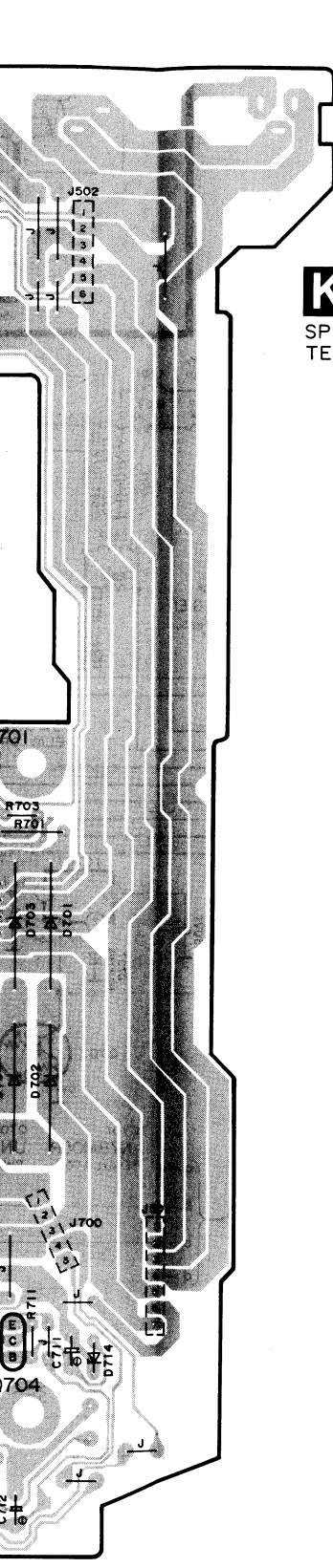


TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

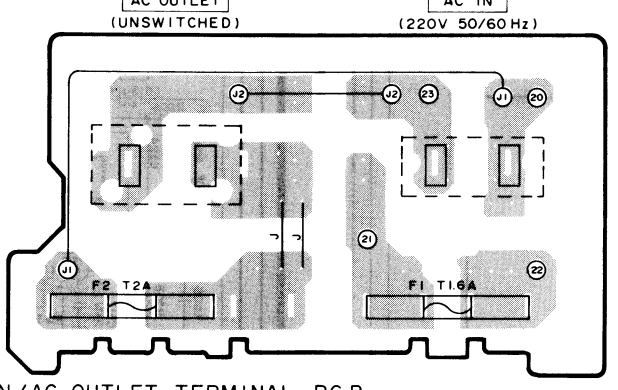
AN6552F AN6558F TC4066BF M5238P SVILM833M SVIBA4560F MN6636S	8 pin	TC74HC4053AF TC74HC123F DN74LS145S SM5807ES PCM56P-J	16 pin	
AN6554 MN4030B MN4013B TC74HCU04F	10 pin	TC9164N YM3623B M50754-411SP	28 pin 64 pin	
SV13204	18 pin	AN78M05R	4 pin	M5113L
				
SVIH8DN2041B		AN6557		2SD1265 2SB941QR
				
2SK301	UN4211	UN4111		
 1. DRAIN 2. GATE 3. SOURCE				
2SA992	2SC331A-Q 2SA1309AQS 2SD1450RS 2SD1330R 2SB1030Q	2SB621A-R		
				
MA167 MA29WA MA165 MA700A	SVDS3V40	LN846RP-C LN873RP-LS		
 Anode Cathode Ca → A	 K → A	 Anode Cathode Ca → A		
MA4051, MA4120 MA4082M, MA4100M MA4140M, MA4300M				 Anode Cathode Ca → A

PRINTED CIRCUIT BOARDS

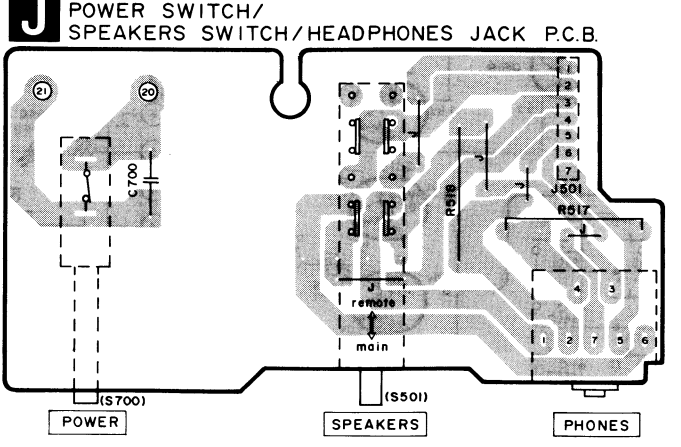
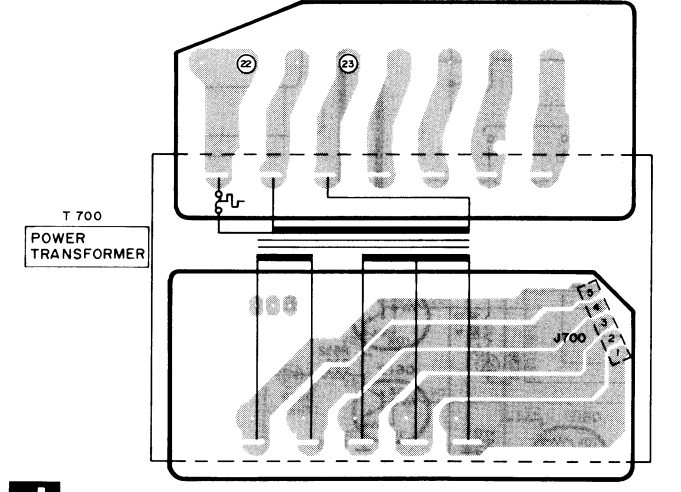




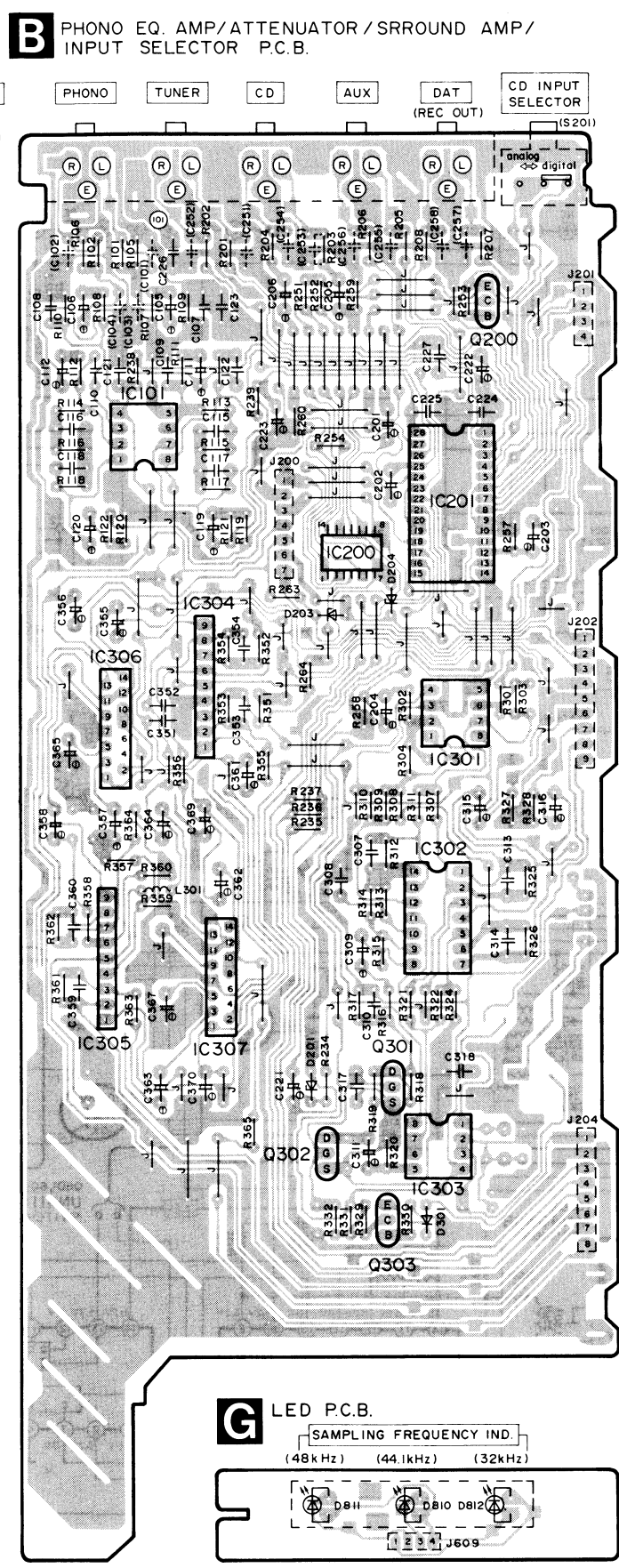
K SPEAKER TERMINAL P.C.B.



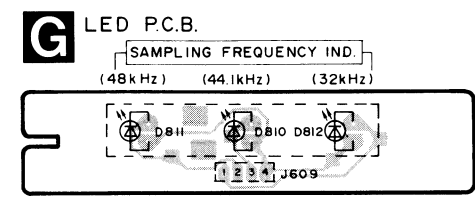
L AC IN/AC OUTLET TERMINAL P.C.B.



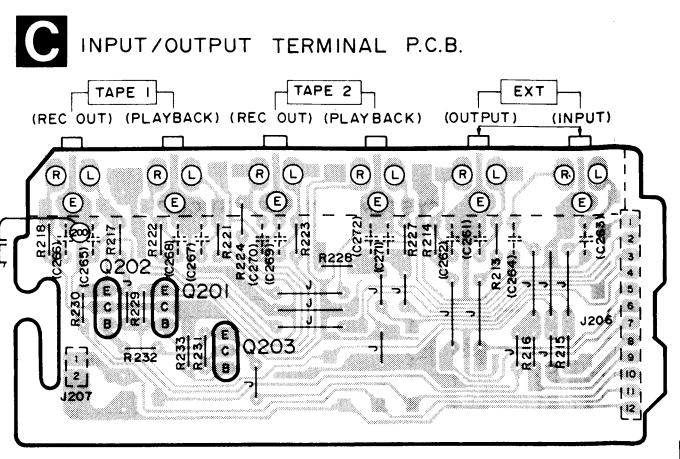
J POWER SWITCH/SPEAKERS SWITCH/HEADPHONES JACK P.C.B.



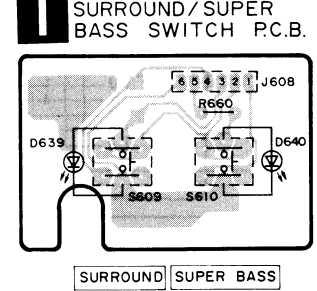
B PHONO EQ. AMP/ATTENUATOR/SURROUND AMP/INPUT SELECTOR P.C.B.



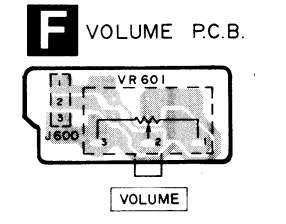
G LED P.C.B.



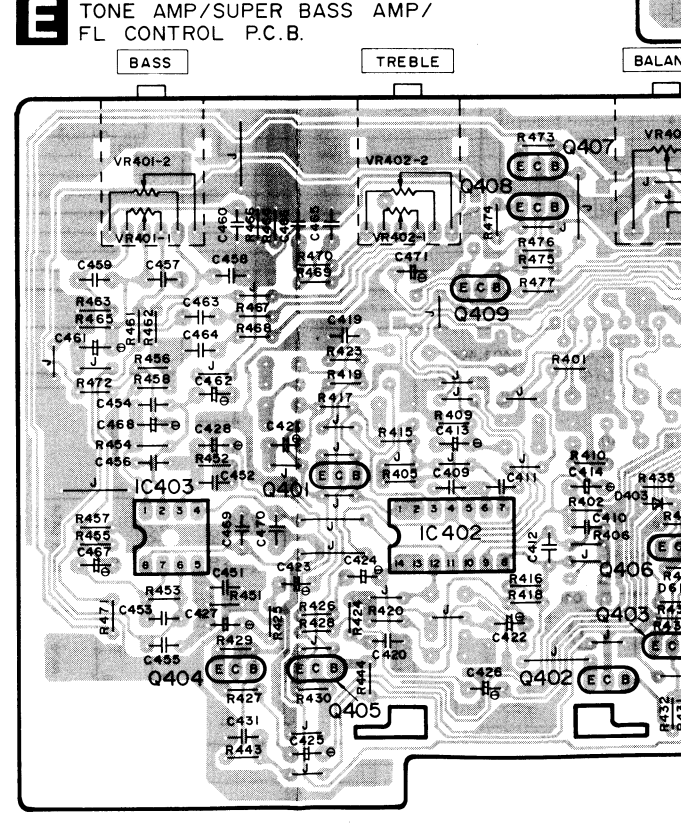
C INPUT/OUTPUT TERMINAL P.C.B.



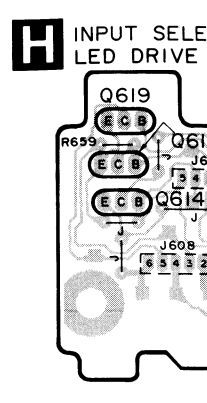
I SURROUND/SUPER BASS SWITCH P.C.B.



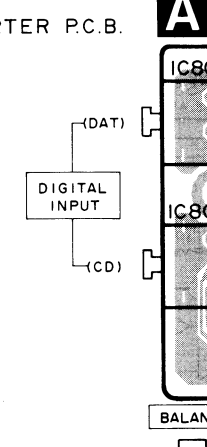
F VOLUME P.C.B.



E TONE AMP/SUPER BASS AMP/FL CONTROL P.C.B.



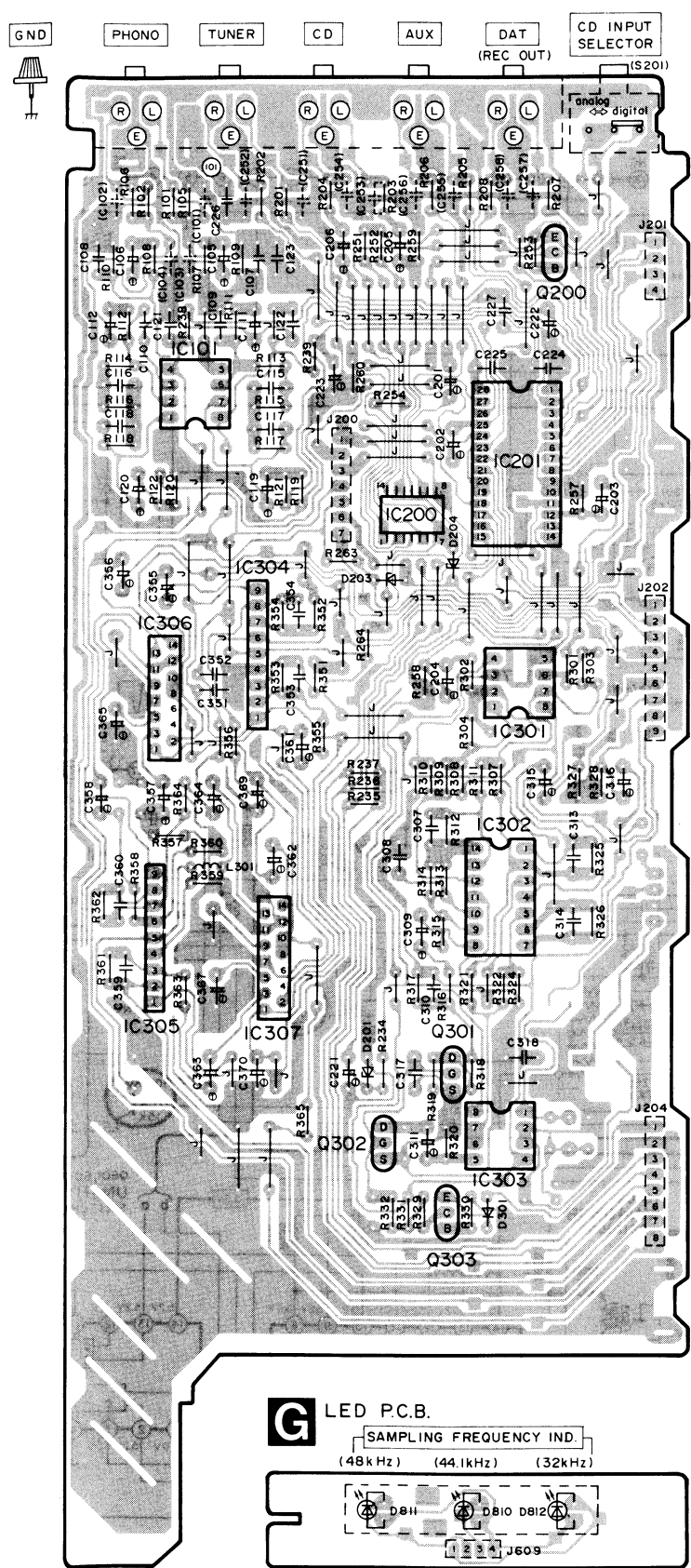
H INPUT SELECTOR LED DRIVE P.C.B.



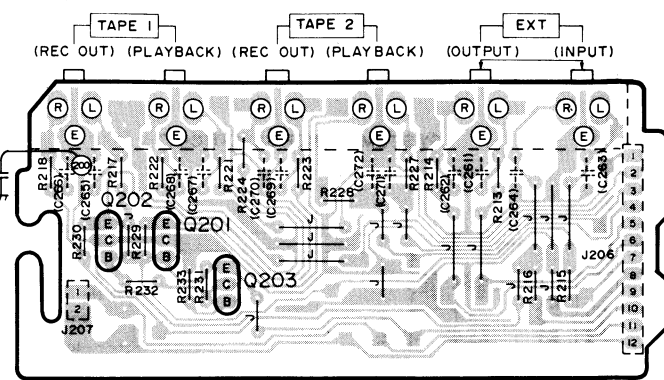
A D/A CONVERTER P.C.B.

Note: Capacitors indicated by (C) area used only in the EG(FR, German, EI (Italy) areas.

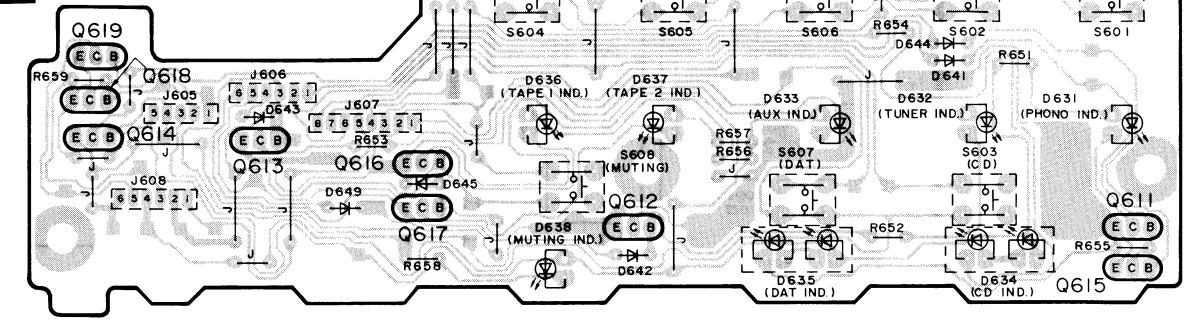
B PHONO EQ. AMP/ATTENUATOR /SRROUND AMP/ INPUT SELECTOR P.C.B.



C INPUT/OUTPUT TERMINAL P.C.B.

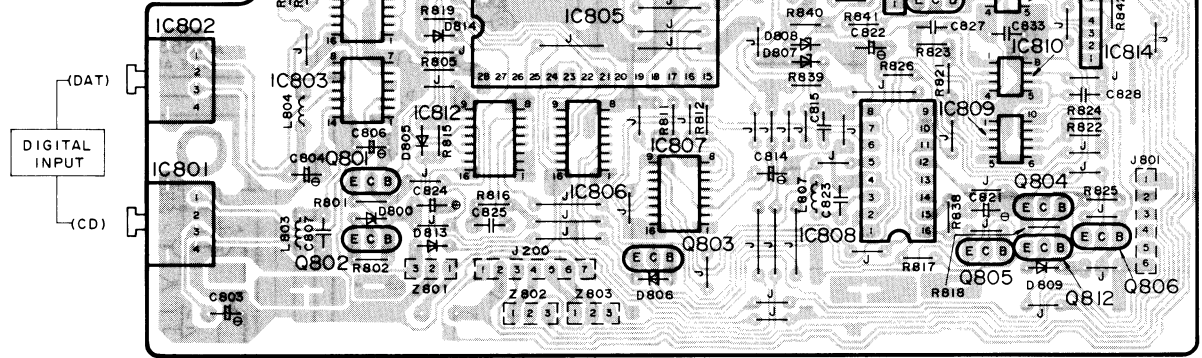


H INPUT SELECT SWITCH / LED DRIVE P.C.B.

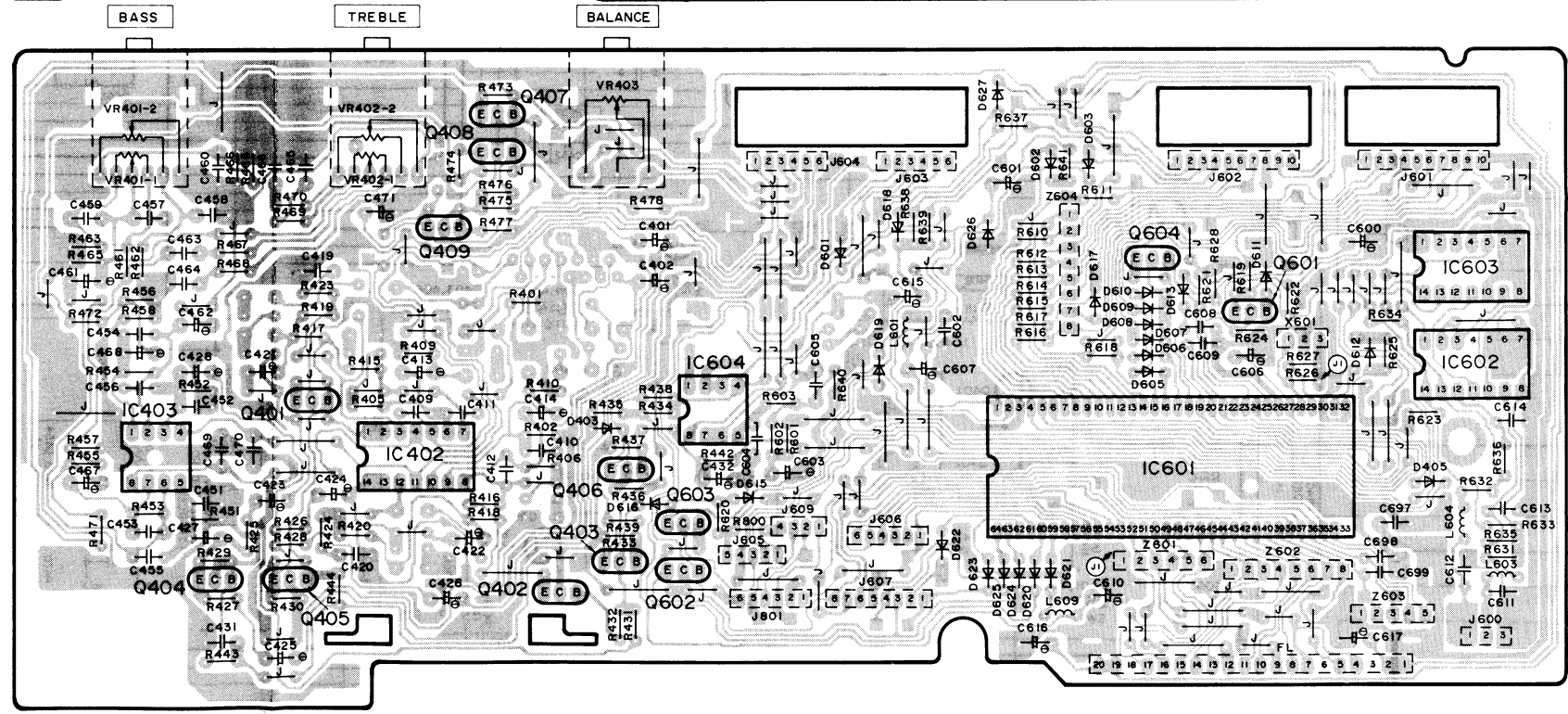


Note:
---(C)
Capacitors indicated by (C) area, used only in the EG(F.R.Germany), E1 (Italy) areas.

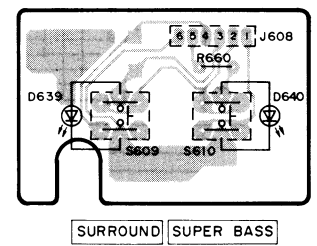
D/A CONVERTER P.C.B.



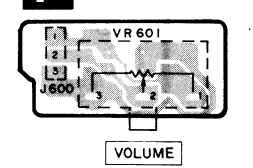
E TONE AMP/SUPER BASS AMP/ FL CONTROL P.C.B.



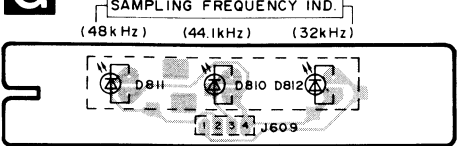
I SURROUND/SUPER BASS SWITCH P.C.B.



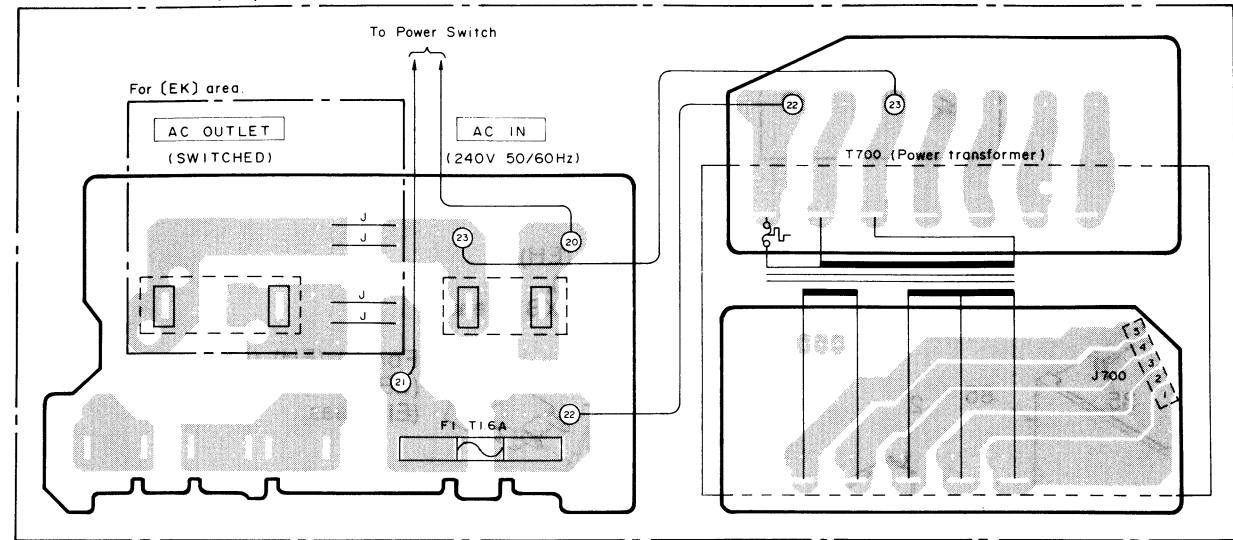
F VOLUME P.C.B.



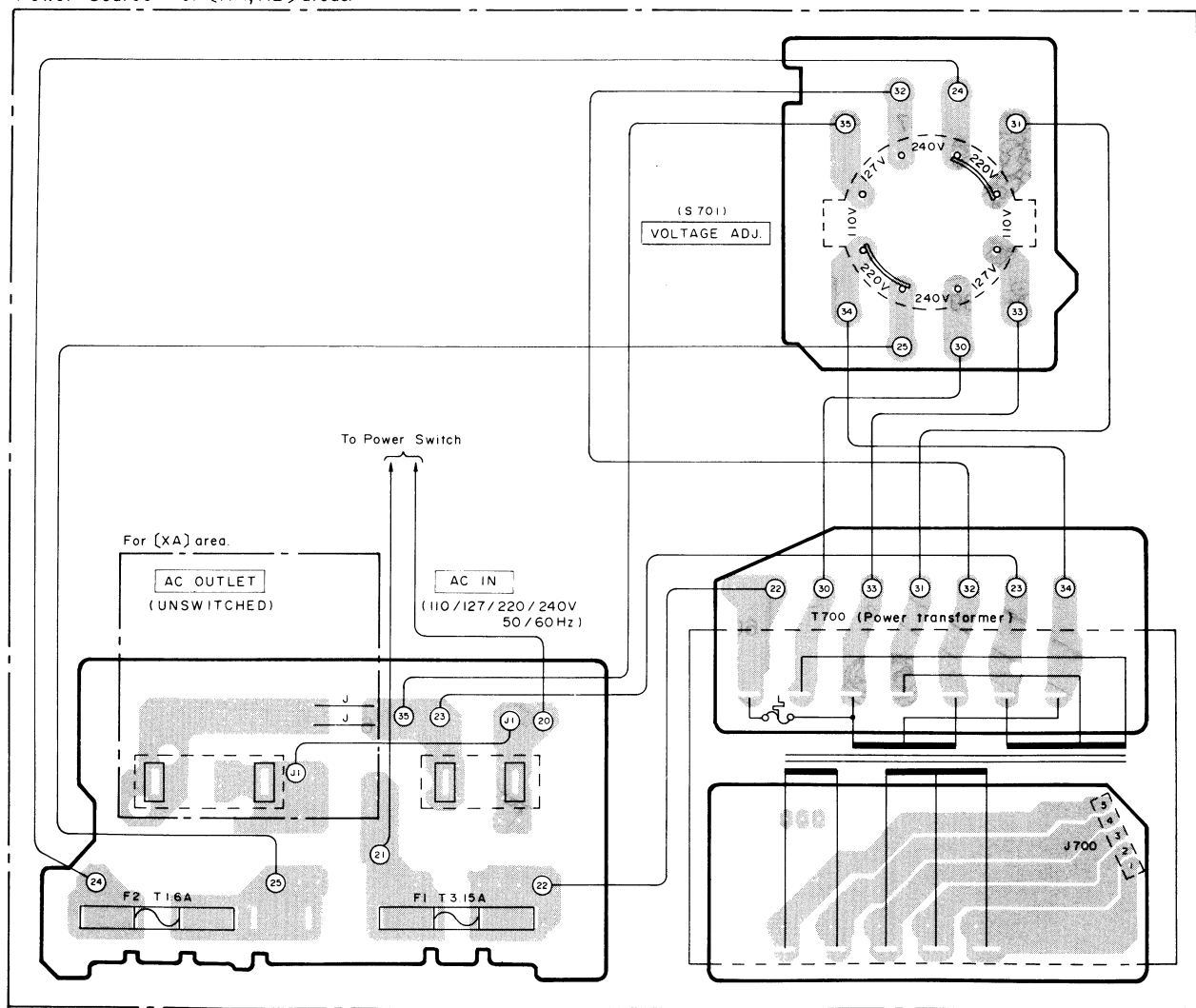
G LED P.C.B.



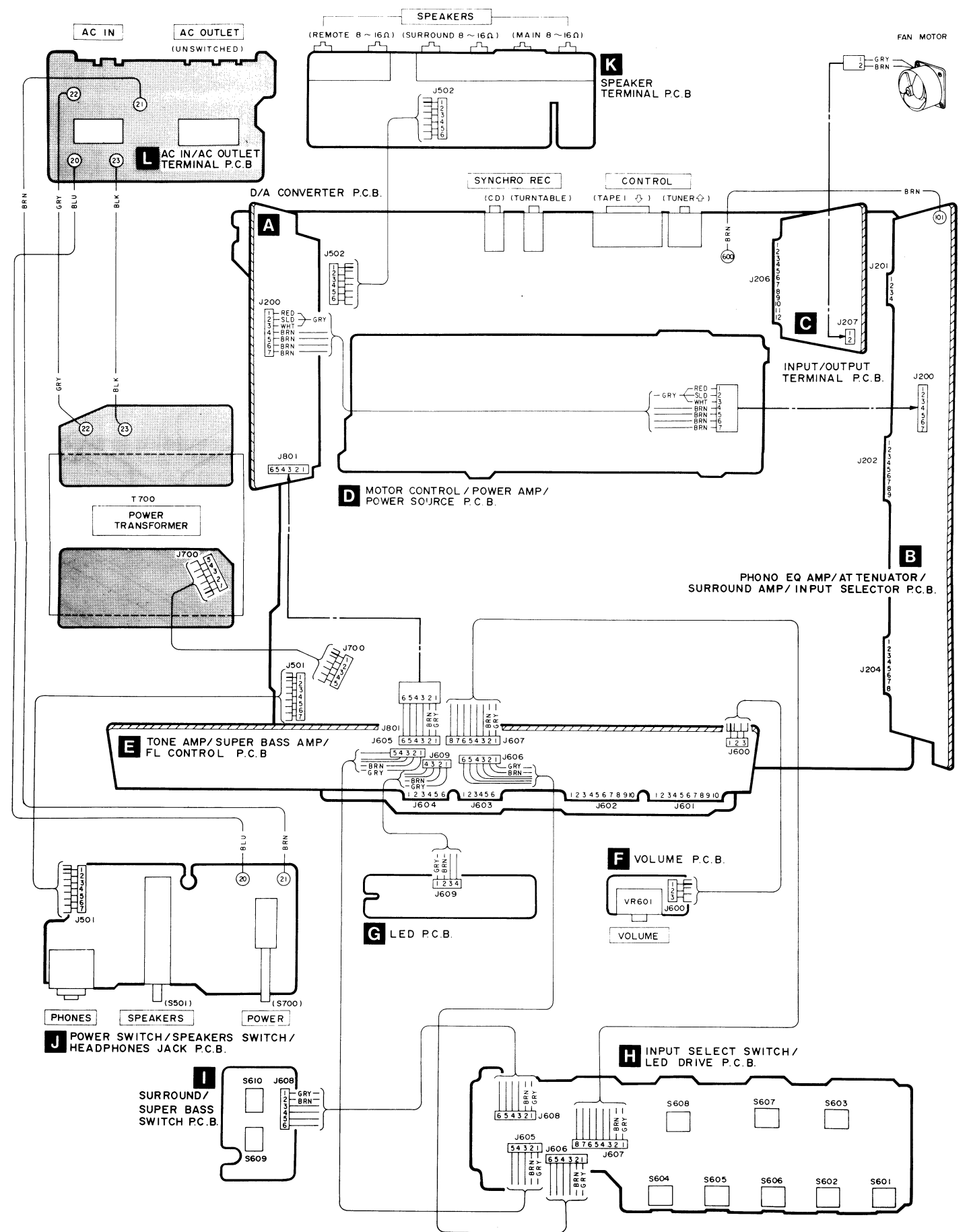
Power Source For (EK,XL) areas.



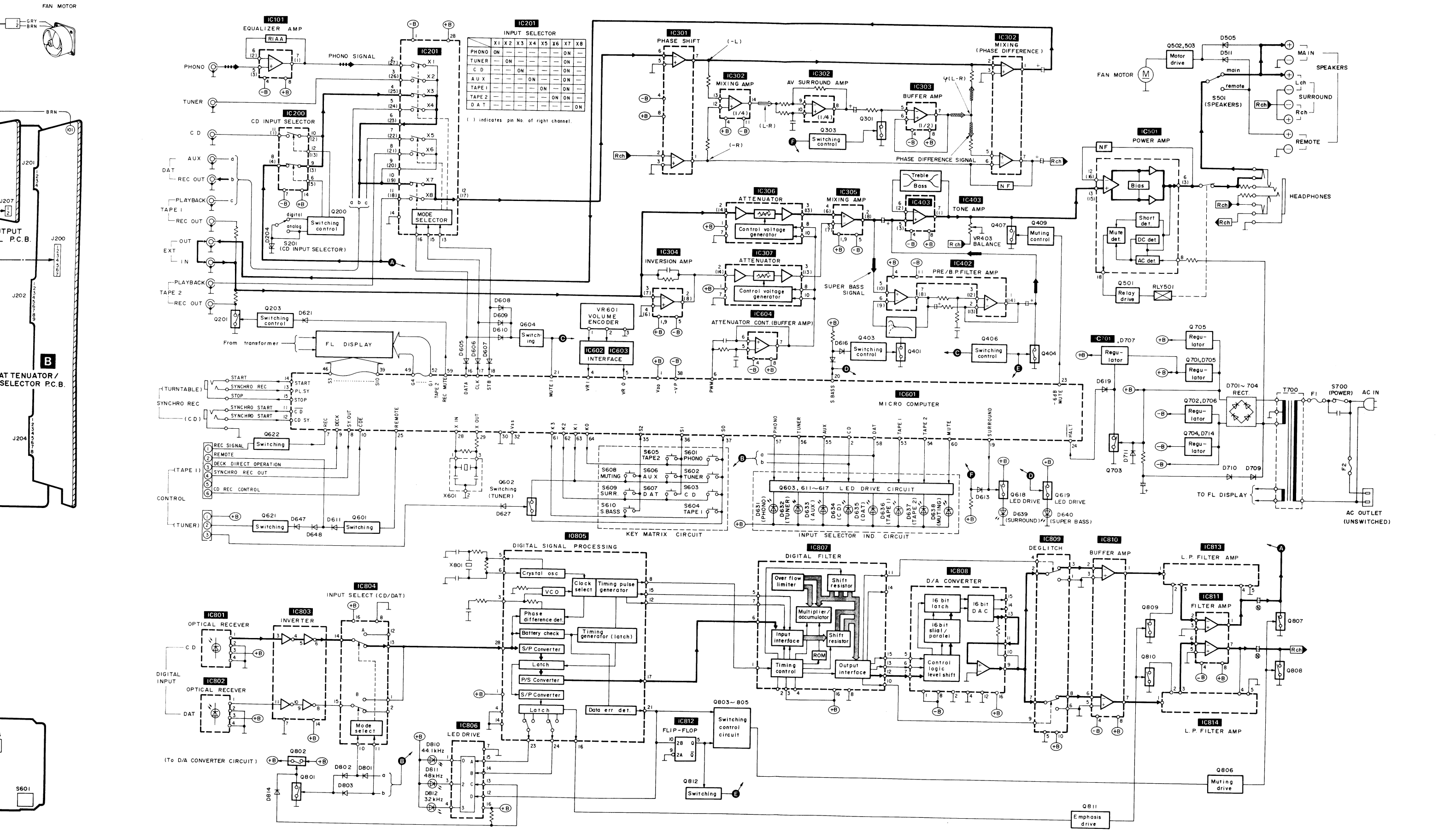
Power Source For (XA, XB) areas.



WIRING CONNECTION DIAGRAM



BLOCK DIAGRAM



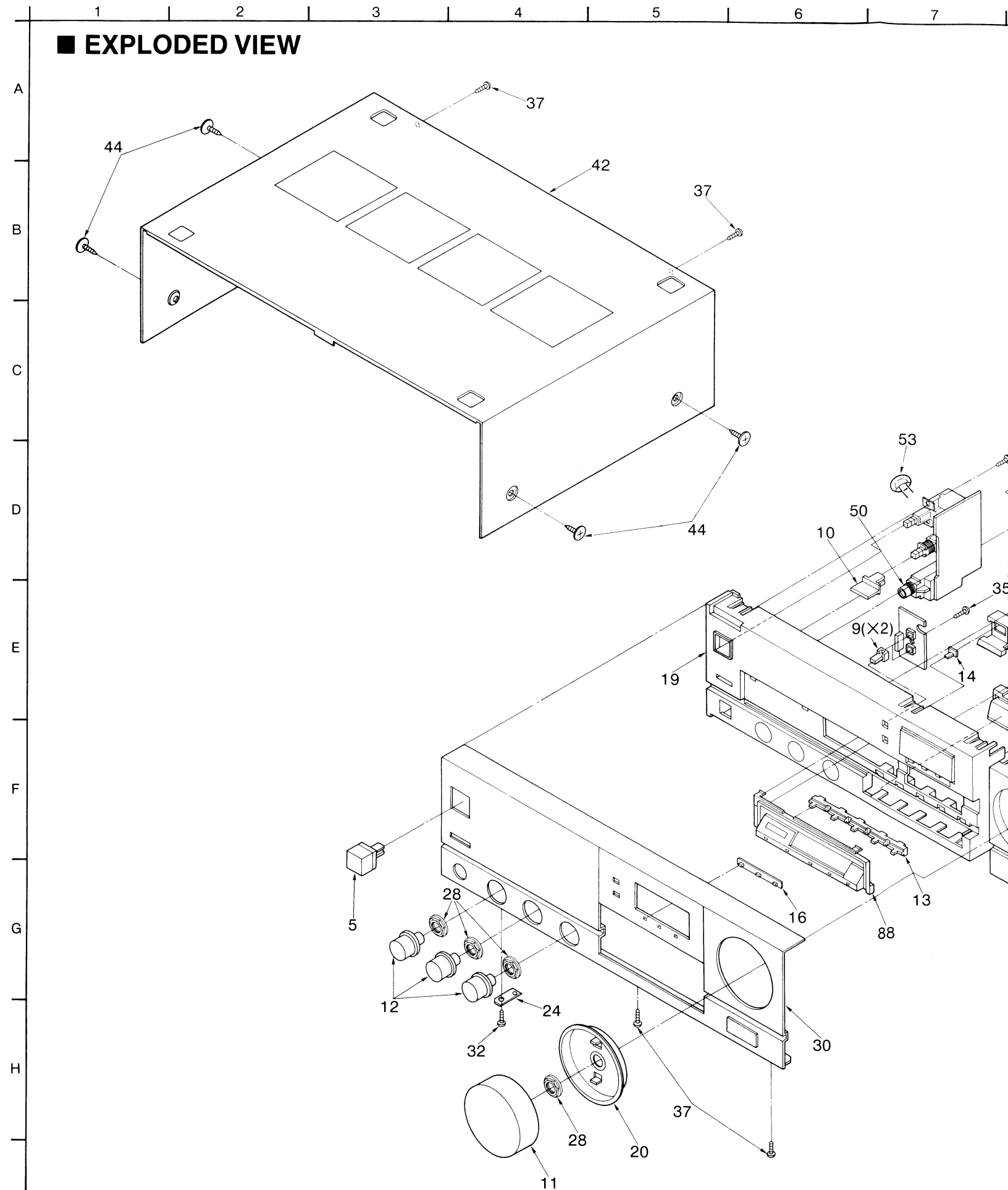
REPLACEMENT PARTS LIST

Notes : * Important safety notice :
 Components identified by \triangle 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.

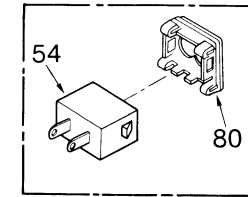
CABINET PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
CABINET AND CHASSIS					
1	SJS9231A	AC INLET COVER	38	XTW3+8T	SCREW
(E, E, EH, EF)			39	XTWS3+8T	SCREW
(EB, EG, E1)			40	XYN3+C6FZ	SCREW
(XA, XB)			42	SKC2070K162	CABINET
2	SGP7170-10A	PANEL	44	SNE2129-1	SCREW
(XA)			47	SJF4818-1	TERMINAL BOARD
2	SGP7170-6A	REAR PANEL	48	SJF4442-1	TERMINAL BOARD
(E, EH, EF, EB)			49	SJJ141	M3 JACK
(E1)			50	SJJ71E	JACK
2	SGP7170-6B	REAR PANEL	51	SJS306	SOCKET
(EG)			52	SJS804	SOCKET(8P)
2	SGP7170-7A	REAR PANEL	53	SMX897	COVER
(EK)			54 \triangle	SJS9231-1B	AC INLET
2	SGP7170-8A	REAR PANEL	54 \triangle	SJS9234B	AC INLET
(XL)			55 \triangle	SJS9232B	AC OUTLET
2	SGP7170-9A	REAR PANEL	(XA)		
(XB)			55	SJS9332B	AC OUTLET
3	SKL307	FOOT	56	SJT388	FUSE HOLDER
4	SKUUX980D-KE	BOTTOM BOARD	58	XTW3+8T	SCREW
(E)			59	SMN2056	BRACKET
4	SKUUX980D-KH	BOTTOM BOARD	60	SMN2043	ANGLE
(EH, EF, EB)			61	SJF3062-13N	TERMINAL BOARD
(EG, E1)			62	SMC6453	SHIELD PLATE
4	SKUUX980D-KK	BOTTOM BOARD	63	SMC6441	SHIELD PLATE
(EK)			64	SME95	COVER
4	SKUUX980D-KL	BOTTOM BOARD	65	SME97-1	COVER
(XL)			66	SHE143	FAN
4	SKUUX980D-KX	BOTTOM BOARD	67	MMN6C2RKMS	DC MOTOR
(XA, XB)			68	SUS271	SPRING
5	SBC666-1	BUTTON, POWER	69	SGXUX950-KE2	FRONT GRILLE
6	SBC983B	BUTTON, SELECTOR	70	SJS50680WL	CONNECTOR(6P)
7	SBC1023	BUTTON, MUTING	70	SJS51080WL	CONNECTOR(10P)
8	SBC1024A	BUTTON, DIGITAL	72	SJT30543-V	CONNECTOR(5P)
9	SBC1025	BUTTON, BASS	72	SJT30740LX-V	CONNECTOR(7P)
10	SBC928	BUTTON, SPEAKER	74	SJF3062-22N	TERMINAL
11	SBN1224	KNOB, VOLUME	75	SJT30439MB	CONNECTOR (4P)
12	SBN1235	KNOB, TONE	75	SJT30839MB	CONNECTOR(8P)
13	SDL97	SMOKE PLATE	75	SJT30939MB	CONNECTOR(9P)
14	SDL98	SMOKE PLATE	75	SJT31239MB	CONNECTOR (12P)
15	SDL99	SMOKE PLATE	76	SJT30647WL	CONNECTOR(6P)
16	SDL100	SMOKE SLATE	76	SJT31047WL	CONNECTOR(10P)
19	SGXUX950-KE1	FRONT GRILLE	77	SJT3213	CONNECTOR(2P)
20	SGX9036	ORNAMENT	77	SJT3613	CONNECTOR(6P)
21	SHE187-2	HOLDER	77	SJT3709	CONNECTOR(7-P)
23	SJP9205-2Y	SHORTING PIN	80	SJS9234A	AC INLET COVER
24	SMC1274	BRACKET	(XL)		
25	SMN2040	ANGLE	81 \triangle	SJS9225	AC OUTLET
26	SNE2118	SCREW	(E, EH, EF, EB)		
27	SNE2123	SCREW	(EG, E1)		
28	SNE4021-1	NUT	82	SJS9330A	AC OUTLET COVER
29	SUS832	SPRING	(XA)		
30	SGWUX980-KE	FRONT PANEL	82	SJS9332A	AC OUTLET COVER
31	XTB3+8FFR1	SCREW	(EK)		
32	XTB3+8JFZ1	SCREW	83	SMN2056-1	BRACKET
33	XTB3+20J	SCREW	84	SMC6459	SHIELD PLATE
34	XTB3+6FFZ	SCREW	85	SMC6460	SHIELD PLATE
35	XTB3+8G	SCREW	86	SGX7967	ORNAMENT
36	XTB3+8J	SCREW	87	SUM3124	SHIELD PLATE
37	XTB3+8JFZ	SCREW	88	SGX7977	ORNAMENT
			89	SHD3X36J	BRACING STRUT

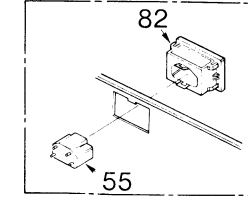
EXPLODED VIEW



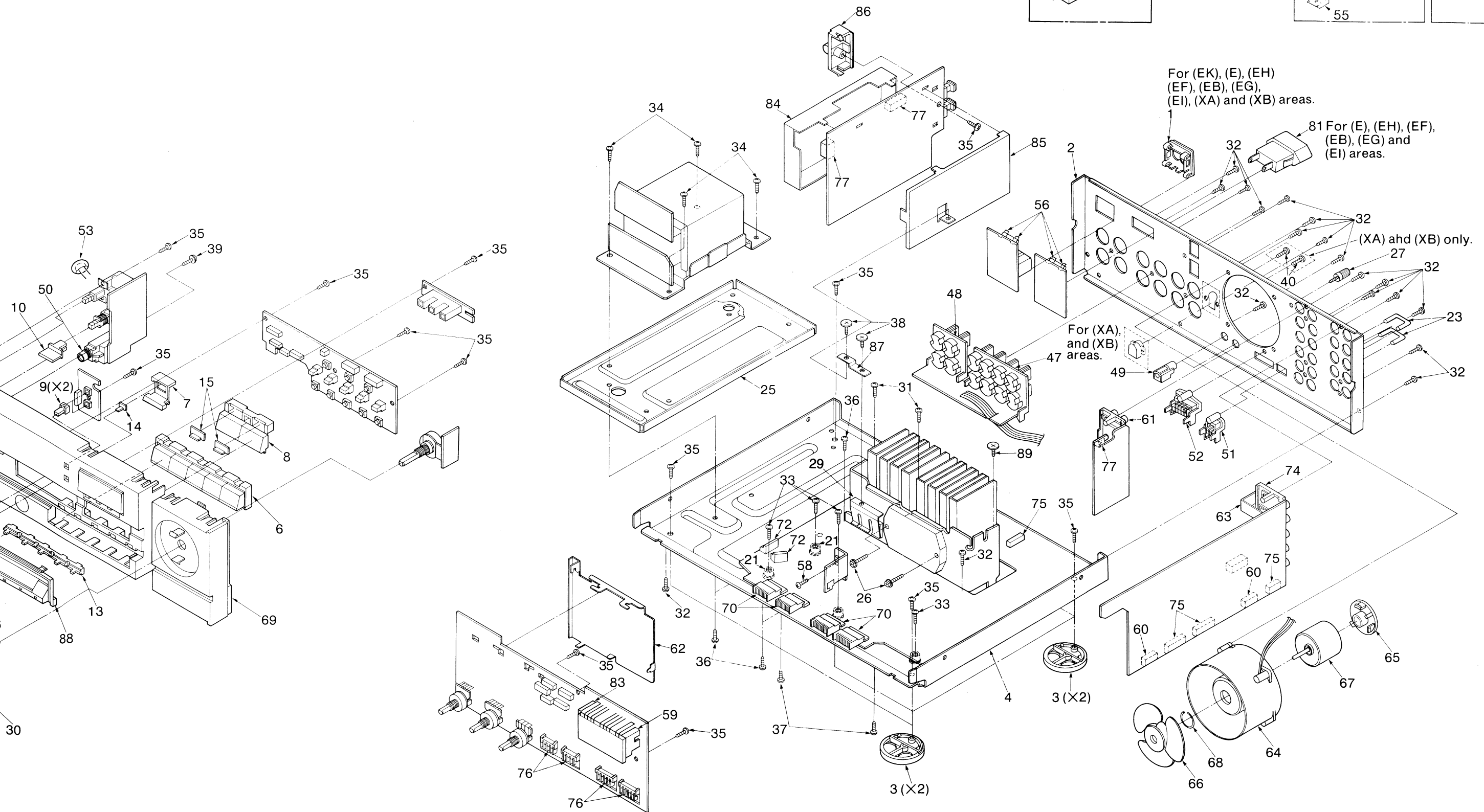
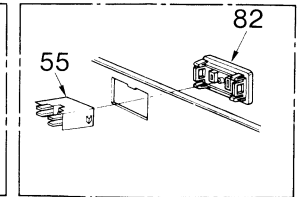
● For (XL) only.



● For (EK) only.



● For (XA) area only.



FUNCTIONS OF IC TERMINALS

●IC806 (YM3623B) DIGITAL INTERFACE RECEPTION

(PU) terminals are "pulled up".

Pin No.	Terminal Name	I/O	Function																									
1	VDD1	—	This is the power connection terminal (+5 V).																									
2	ADJ	I	This terminal is for the adjustment of the VCO oscillation frequency, but it is not used in this unit.																									
3	VCO	I/O	This is the external condenser terminal for the VCO circuitry.																									
4	VSS2	—	This is the ground connection terminal of the system.																									
5	XO	O	This is the output terminal for the crystal vibrator (16.9344 MHz).																									
6	XI	I	This is the input terminal for the crystal vibrator.																									
7	KMODE	I (PU)	At a high level... the PLL circuitry is activated when the DIN terminal receives an input signal. Otherwise, the crystal vibrator is activated. At a low level... the crystal vibrator is activated, regardless of the DIN terminal input.																									
8	∅A	O	This terminal outputs a 16.9344-MHz frequency when the crystal vibrator functions. When the PLL circuitry is activated, the frequency varies according to the speed of input data of the DIN terminal (fs=about 16.9344 MHz when it is 44.2 kHz).																									
9	∅B	O	The frequency of this terminal is divided into a third of that of terminal ∅A when the crystal vibrator functions. When the PLL circuitry is activated, the frequency varies according to the speed of input data of the DIN terminal (fs=about 16.9344 when it is 44.2 kHz).																									
10	T1	I (PU)	This is the input terminal for checking the internal circuitry.																									
11	T2	I (PU)	This is the input terminal for checking the internal circuitry.																									
12	BCO	O	Used to output the time-clock signal from the DO terminal.																									
13	SYNC	O	Used to output the synchronization signal.																									
14	VSS1	O	This is the ground connection terminal of the system (+0 V).																									
15	L/R	O	At a high level... data on the left channel is output from the DO terminal. At a low level... data on the right channel is output from the DO terminal.																									
16	DEF	O	At a high level... input data is emphasized. At a low level... input data is not emphasized.																									
17	DO	O	Outputs 16-bit data.																									
18	WC	O	This is the terminal for checking data output to the DO terminal.																									
19	DIGR	O	This terminal outputs the signal for the right channel.																									
20	DIGL	O	This terminal outputs the signal for the left channel.																									
21	ERR	O	Error detection terminal. H=Error is found during parity check L=No errors																									
22	SEL	I (PU)	<table border="1"> <thead> <tr> <th>Input</th> <th colspan="2">Output</th> </tr> <tr> <th>SEL</th> <th>S1</th> <th>S2</th> </tr> </thead> <tbody> <tr> <td rowspan="2">L</td> <td>L</td> <td>Copying is not possible</td> </tr> <tr> <td>H</td> <td>Copying is possible</td> </tr> <tr> <td rowspan="4">H</td> <td>L</td> <td>DC (except DAT)</td> </tr> <tr> <td>L</td> <td>DAT</td> </tr> <tr> <td>H</td> <td>The sampling frequency of the DIN input signal is 44.1 kHz.</td> </tr> <tr> <td>H</td> <td>48 kHz</td> </tr> <tr> <td rowspan="2">H</td> <td>H</td> <td>32 kHz</td> </tr> <tr> <td>L</td> <td>—</td> </tr> </tbody> </table>	Input	Output		SEL	S1	S2	L	L	Copying is not possible	H	Copying is possible	H	L	DC (except DAT)	L	DAT	H	The sampling frequency of the DIN input signal is 44.1 kHz.	H	48 kHz	H	H	32 kHz	L	—
Input	Output																											
SEL	S1	S2																										
L	L	Copying is not possible																										
	H	Copying is possible																										
H	L	DC (except DAT)																										
	L	DAT																										
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	H	48 kHz																										
H	H	32 kHz																										
	L	—																										
23	S1	O																										
24	S2	O																										
25	SCK	O	Terminal for the clock-signal of the sub code output.																									
26	SSYNC	O	For the signal of the sub code.																									
27	SDO	O	For the output of sub code data.																									
28	DIN	I (PU)	For the input of data.																									

●IC601 (M50754-411SP)

Pin No.	I/O	Terminal Name	Function
1	I	V _{DD}	To be connected to a power supply.
2	O	LCD	This is the output terminal for the LED selector indicator of the CD player. At a "HI" level the LED lights up.
3	—	CS2	For ground connection.
4	I	VR1	These are the terminals for the rotary encoder of the volume of VR601.
5		VR0	
6	O	PWM	This terminal outputs the signal for the control of the volume and balance
7	I	REC	This is the terminal for the detection of recording on the deck.
8	O	SY OUT	This is the terminal for synchro recording on the deck.
9	I	DECK	This is the terminal for direct operations on the deck.
10	I	CDE	Outputs the signal for the control of CD editing.
11	I	CD	These are the terminals for the start of synchronization on the CD unit.
12		CD. SY.	
13	I	PL. SY.	These are the terminals for sync recording on the player.
14	O	PL. START	
15	O	PL. STOP	
16	O	DATA	CLK: This terminal outputs the clock signal for reading serial data. DATA: This terminal outputs the serial data. STB: This terminal outputs the pulse for the control of the setting of the analog switch. The serial data inputted into IC201 is latched by the STB pulse and the switch is set to ON according to data.
17		CLK	
18		STB	
19	O	SURR	Outputs the signal for the control of SURROUND. At a "LOW" level SURROUND is ON.
20	O	S. LOUD	Outputs the signal for the control of SUPER DYNAMIC SOUND. At a "LOW" level SUPER DYNAMIC SOUND is ON.
21	O	MUT 1	Outputs the signal for the control of muting.
22	—	SYN OUT 2	Unused.
23	O	MUTE	Outputs the -6 dB signal for the control of attenuated muting.
24	I	HALT	This is the terminal for the detection of power supply.
25	I	REMOTE	Inputs data from the remote controller.
26	—	CN VSS	For ground connection.
27	I	RESET	This terminal inputs the reset signal.
28	I	X IN	These are the I/O terminals for the oscillating clock signal.
29	O	X OUT	
30	—	X _c IN	Unused.
31		X _c OUT	

●IC601 (M50754-411SP)

Pin No.	I/O	Terminal Name	Function
1	I	V _{DD}	To be connected to a power supply.
2	O	LCD	This is the output terminal for the LED selector indicator of the CD player. At a "HI" level the LED lights up.
3	—	CS2	For ground connection.
4	I	VR1	These are the terminals for the rotary encoder of the volume of VR601.
5		VR0	
6	O	PWM	This terminal outputs the signal for the control of the volume and balance
7	I	REC	This is the terminal for the detection of recording on the deck.
8	O	SY OUT	This is the terminal for synchro recording on the deck.
9	I	DECK	This is the terminal for direct operations on the deck.
10	I	CDE	Outputs the signal for the control of CD editing.
11	I	CD	These are the terminals for the start of synchronization on the CD unit.
12		CD. SY.	
13	I	PL. SY.	These are the terminals for sync recording on the player.
14	O	PL. START	
15	O	PL. STOP	
16	O	DATA	CLK: This terminal outputs the clock signal for reading serial data. DATA: This terminal outputs the serial data.
17		CLK	STB: This terminal outputs the pulse for the control of the setting of the analog switch.
18		STB	The serial data inputted into IC201 is latched by the STB pulse and the switch is set to ON according to data.
19	O	SURR	Outputs the signal for the control of SURROUND. At a "LOW" level SURROUND is ON.
20	O	S. LOUD	Outputs the signal for the control of SUPER DYNAMIC SOUND. At a "LOW" level SUPER DYNAMIC SOUND is ON.
21	O	MUT 1	Outputs the signal for the control of muting.
22	—	SYN OUT 2	Unused.
23	O	MUTE	Outputs the -6 dB signal for the control of attenuated muting.
24	I	HALT	This is the terminal for the detection of power supply.
25	I	REMOTE	Inputs data from the remote controller.
26	—	CN VSS	For ground connection.
27	I	RESET	This terminal inputs the reset signal.
28	I	X IN	These are the I/O terminals for the oscillating clock signal.
29	O	X OUT	
30	—	X _c IN	Unused.
31		X _c OUT	

Pin No.	I/O	Terminal Name	Function
32	—	V _{SS}	For ground connection.
33	—	NC	Unused.
35 } 37	O	S0 } S2	These are the key matrix terminals for input selection.
61 } 64		I	
38	I		V _P
39 } 46 } 49 } 52	O	S3 } S10 } G0 } G3	These terminals output the signals for the control of the multi-digit display.
53		O	
54	O	L VTR	Outputs the signal for the control of the VTR LED. At a "HI" level the LED lights up.
55	O	L VD	Outputs the signal for the control of the VD LED. At a "HI" level the LED lights up.
56	O	L TUNER	Outputs the signal for the control of the TUNER LED. At a "HI" level the LED lights up.
57	O	L PHONO	Outputs the signal for the control of the PHONO LED. At a "HI" level the LED lights up.
58	O	L DAT	Outputs the signal for the control of the DAT LED. At a "HI" level the LED lights up.
59	O	VTR REC MUTE	Outputs the signal for muting the VTR recording.
60	O	L MUTE	Outputs the signal for the control of the MUTING LED. At a "HI" level the LED lights up.

	O	35	36	37
61		SUPER DYNAMIC SOUND	—	TAPE
62		SURROUND	DAT	CD
63		MUTING	VD	TUNER
64		—	VTR	PHONO

● SM5807ES (Digital Filter)

Pin No.	Mark	I/O	Function	Pin No.	Mark	I/O	Function
1	XT	I	Oscillator input circuit	9	SCSL	I	SCSL = H: System clock=192fs (fs: sampling frequency) SCSL = L: System clock=196fs (fs: sampling frequency)
2	XT	O	Oscillator output circuit				
3	CKSL	I	CKSL = H: 16.9344MHz or 17.2872MHz crystal oscillator for XT or external input CKSL = L: 8.4672MHz or 8.6436MHz crystal oscillator for XT or external input	10	DGR	O	Rch deglitch signal (176.4kHz)
4	CKO	O	Clock output	11	DGL	O	Lch deglitch signal (176.4kHz)
5	LRCI	I	Synchronous clock input	12	DOUT	O	Serial data output
6	DIN	I	Serial data input	13	WDCO	O	Output control clock (352.8kHz)
7	BCKI	I	Serial input bit clock input	14	LRCO	O	Output control clock (176.4kHz)
8	VSS	—	GND terminal (0V)	15	BCKO	O	Serial output bit clock (8.4672MHz or 8.6436MHz)
				16	VDD	—	Power supply terminal

RESISTORS AND CAPACITORS

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.

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 are in microfarads (μ F) unless specified otherwise, P = Pico-farads (pF) F = Farads (F).
- Resistance 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%
ERD 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 : Chip Resistor		
ERJ : Chip Resistor		

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

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
D648	MA165	DIODE	L805	ELEXT470KA	COIL
D649	MA165	DIODE	L806	ELEXH101KA	COIL
D701	SVDS3V40	RECTIFIER	L807	ELEXH101KA	COIL
D702	SVDS3V40	RECTIFIER	T700	SLT5N484-W	POWER TRANSFORMER
D703	SVDS3V40	RECTIFIER	(EK, XL)		
D704	SVDS3V40	RECTIFIER	T700	SLT5N485-W	POWER TRANSFORMER
D705	MA4140-M	DIODE	(E, EH, EF, EB)		
D706	MA4140-M	DIODE	(EG, EI)		
D707	MA29WA	DIODE	T700	SLT5N486-W	POWER TRANSFORMER
D709	MA167	DIODE	(XA, XB)		
D710	MA167	DIODE			
D711	MA165	DIODE	COMPONENT COMBINATIONS		
D714	MA4300M	DIODE	Z601	EXFP5331MW	COMBINATION PART
D800	MA165	DIODE	Z602	EXFP7331MW	COMBINATION PART
D801	MA165	DIODE	Z603	EXBF5E103J	COMBINATION PART
D802	MA165	DIODE	Z604	EXBF8E103J	10K Ω x 8
D803	MA165	DIODE	Z801	EXCEMT103DC	COMBINATION COM
D804	MA165	DIODE	Z802	EXCEMT103DC	COMBINATION COM
D805	MA165	DIODE	Z803	EXCEMT103DC	COMBINATION COM
D806	MA29WA	DIODE	DISPLAYS		
D807	MA4051-M	DIODE	FL1	SADVF217	DISPLAY TUBE
D808	MA4051-M	DIODE	FUSES		
D809	MA165	DIODE	F1	XBA2C16TB0	FUSE 250V, A1.6A
D810	LNQ38417P1	DIODE	F1	XBA2C31TB0	FUSE 250V, T3.15A
D811	LNQ38417P1	DIODE	(XA, XB)		
D812	LNQ38417P1	DIODE	F2	XBA2C16TB0	FUSE 250V, A1.6A
D813	MA29WA	DIODE	(XA, XB)		
D814	MA700A	DIODE	F2	XBA2C20TB0	FUSE 250V, T2A
			(E, EH, EF, EB)		
			(EG, EI)		
VARIABLE RESISTORS					
VR401	EW2XAF20C15	V.R	SWITCHES		
VR402	EW2XAF20C15	V.R	S201	SSS153	SW
VR403	EW2XAF20G15	V.R	S501	SSH1073	SW, SPEAKER
VR601	EVQWX2F2045B	V.R	S601	EVQQB005R	SW
COILS AND TRANSFORMERS					
L301	ELEXT100KA	COIL	S602	EVQQB005R	SW
L501	SLQY07G-40	CHOKE COIL	S603	EVQQB005R	SW
L502	SLQY07G-40	CHOKE COIL	S604	EVQQB005R	SW
L505	SLQY07G-40	CHOKE COIL	S605	EVQQB005R	SW
(EG, EI)			S606	EVQQB005R	SW
L506	SLQY07G-40	CHOKE COIL	S607	EVQQB005R	SW
(EG, EI)			S608	EVQQB005R	SW
L507	SLQY07G-40	CHOKE COIL	S609	EVQQLY07K	SPECIAL SW
(EG, EI)			S610	EVQQLY07K	SPECIAL SW
L508	SLQY07G-40	CHOKE COIL	S700	SSH1071	SW, POWER
(EG, EI)			S701	ESE37263	SW, VOLTAGE SEL.
L601	ELEXH101KA	COIL	(XA, XB)		
L603	ELEXH330KA	COIL	RELAYS		
L604	ELEXH330KA	COIL	RL501	SSY134	RELAY
L605	ELEPK1R2MA	COIL	OTHERS		
L609	ELEXH330KA	COIL	X601	EF0FC4004A4	CERAMIC FILTER
L803	ELEXT470KA	COIL	X801	SVQAT1923	CRYSTAL OSCILLATOR
L804	ELEXT470KA	COIL			

PACKING PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
PACKING MATERIAL					
P1	SPP753	PROTECTION COVER	(XL)		
P2	SPG6354	PACKING CASE	A2	SJA183	POWER CORD
(EK, E, EH, EB)			(XB)		
(EG, EI, XL)			A2	SJA188	POWER CORD
(XA, XB)			(EK)		
P2	SPG6355	PACKING CASE	A2	RJP120ZBS-H	AC PLUG ADAPTOR
(EF)			(XA, XB)		
P3	SPS5182	PAD, FRONT	OPERATING INSTRUCTIONS		
P4	SPS5183	PAD, REAR	A1	SQF13296	INSTRUCTION BOOK
P5	SPS5184	PAD	(E, EH, EB)		
P6	XZB10X30A02	PROTECTION COVER	A1	SQF13297	INSTRUCTION BOOK
ACCESSORIES					
A2	SFDAC05E03	POWER CORD	(EK)		
(E, EH, EF, EB)			A1	SQF13298	INSTRUCTION BOOK
(EG, EI)			(EF, XA)		
A2	SJA168	POWER CORD	A1	SQF13299	INSTRUCTION BOOK
(XA)			(EG)		
A2	SJA173	POWER CORD	A1	SQF13300	INSTRUCTION BOOK
			(EI)		
			A1	SQF13301	INSTRUCTION BOOK
			(XL, XB)		

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
RESISTORS(VALUE, WATTAGE)								
R101	ERDS2TJ471	470 1/4	R229	ERDS2TJ392	3.9K 1/4	R325	ERDS2TJ392	3.9K 1/4
R102	ERDS2TJ471	470 1/4	R230	ERDS2TJ392	3.9K 1/4	R326	ERDS2TJ392	3.9K 1/4
R105	ERDS2TJ224	220K 1/4	R231	ERDS2TJ332	3.3K 1/4	R327	ERDS2TJ104	100K 1/4
R106	ERDS2TJ224	220K 1/4	R232	ERDS2TJ332	3.3K 1/4	R328	ERDS2TJ104	100K 1/4
R107	ERDS2TJ331	330 1/4	R233	ERDS2TJ223	22K 1/4	R329	ERDS2TJ103	10K 1/4
R108	ERDS2TJ331	330 1/4	R234	ERDS2TJ122	1.2K 1/4	R330	ERDS2TJ473	47K 1/4
R109	ERDS2TJ563	56K 1/4	R235	ERDS2TJ223	22K 1/4	R331	ERDS2TJ393	39K 1/4
R110	ERDS2TJ563	56K 1/4	R236	ERDS2TJ223	22K 1/4	R332	ERDS2TJ104	100K 1/4
R111	ERDS2TJ271	270 1/4	R237	ERDS2TJ223	22K 1/4	R351	ERDS2TJ103	10K 1/4
R112	ERDS2TJ271	270 1/4	R238	ERDS2TJ152	1.5K 1/4	R352	ERDS2TJ103	10K 1/4
R113	ERDS2TJ680	68 1/4	R239	ERDS2TJ152	1.5K 1/4	R353	ERDS2TJ103	10K 1/4
R114	ERDS2TJ680	68 1/4	R251	ERDS2TJ103	10K 1/4	R354	ERDS2TJ103	10K 1/4
R115	ERDS2TJ184	180K 1/4	R252	ERDS2TJ102	1K 1/4	R355	ERDS2TJ122	1.2K 1/4
R116	ERDS2TJ184	180K 1/4	R253	ERDS2TJ103	10K 1/4	R356	ERDS2TJ122	1.2K 1/4
R117	ERDS2TJ123	12K 1/4	R254	ERDS2TJ103	10K 1/4	R357	ERDS2TJ392	3.9K 1/4
R118	ERDS2TJ123	12K 1/4	R257	ERDS2TJ224	220K 1/4	R358	ERDS2TJ392	3.9K 1/4
R119	ERDS2TJ104	100K 1/4	R258	ERDS2TJ224	220K 1/4	R359	ERDS2TJ103	10K 1/4
R120	ERDS2TJ104	100K 1/4	R259	ERDS2TJ104	100K 1/4	R360	ERDS2TJ103	10K 1/4
R121	ERDS2TJ102	1K 1/4	R260	ERDS2TJ104	100K 1/4	R361	ERDS2TJ273	27K 1/4
R122	ERDS2TJ102	1K 1/4	R263	ERDS2TJ331	330 1/4	R362	ERDS2TJ273	27K 1/4
R201	ERDS2TJ102	1K 1/4	R264	ERDS2TJ331	330 1/4	R363	ERDS2TJ103	10K 1/4
R202	ERDS2TJ102	1K 1/4	R301	ERDS2TJ223	22K 1/4	R364	ERDS2TJ103	10K 1/4
R203	ERDS2TJ822	8.2K 1/4	R302	ERDS2TJ223	22K 1/4	R365	ERDS2TJ122	1.2K 1/4
R204	ERDS2TJ822	8.2K 1/4	R303	ERDS2TJ223	22K 1/4	R401	ERDS2TJ223	22K 1/4
R205	ERDS2TJ102	1K 1/4	R304	ERDS2TJ223	22K 1/4	R402	ERDS2TJ223	22K 1/4
R206	ERDS2TJ102	1K 1/4	R307	ERDS2TJ332	3.3K 1/4	R405	ERDS2TJ563	56K 1/4
R207	ERDS2TJ102	1K 1/4	R308	ERDS2TJ332	3.3K 1/4	R406	ERDS2TJ563	56K 1/4
R208	ERDS2TJ102	1K 1/4	R309	ERDS2TJ223	22K 1/4	R409	ERDS2TJ333	33K 1/4
R213	ERDS2TJ471	470 1/4	R310	ERDS2TJ393	39K 1/4	R410	ERDS2TJ333	33K 1/4
R214	ERDS2TJ471	470 1/4	R311	ERDS2TJ223	22K 1/4	R415	ERDS2TJ821	820 1/4
R215	ERDS2TJ182	1.8K 1/4	R312	ERDS2TJ393	39K 1/4	R416	ERDS2TJ821	820 1/4
R216	ERDS2TJ182	1.8K 1/4	R313	ERDS2TJ223	22K 1/4	R417	ERDS2TJ391	390 1/4
R217	ERDS2TJ472	4.7K 1/4	R314	ERDS2TJ223	22K 1/4	R418	ERDS2TJ391	390 1/4
R218	ERDS2TJ472	4.7K 1/4	R315	ERDS2TJ223	22K 1/4	R419	ERDS2TJ273	27K 1/4
R221	ERDS2TJ102	1K 1/4	R316	ERDS2TJ822	8.2K 1/4	R420	ERDS2TJ273	27K 1/4
R222	ERDS2TJ102	1K 1/4	R317	ERDS2TJ562	5.6K 1/4	R423	ERDS2TJ153	15K 1/4
R223	ERDS2TJ821	820 1/4	R318	ERDS2TJ562	5.6K 1/4	R424	ERDS2TJ153	15K 1/4
R224	ERDS2TJ821	820 1/4	R319	ERDS2TJ562	5.6K 1/4	R425	ERDS2TJ152	1.5K 1/4
R227	ERDS2TJ102	1K 1/4	R320	ERDS2TJ224	220K 1/4	R426	ERDS2TJ152	1.5K 1/4
R228	ERDS2TJ102	1K 1/4	R321	ERDS2TJ332	3.3K 1/4	R427	ERDS2TJ152	1.5K 1/4
			R322	ERDS2TJ332	3.3K 1/4	R428	ERDS2TJ152	1.5K 1/4
			R324	ERDS2TJ332	3.3K 1/4	R429	ERDS2TJ182	1.8K 1/4

RESISTORS AND CAPACITORS

Important safety notice: Components identified by a triangle 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.

Color Coding System of Resistor

Table with 5 columns: Color, Wattage (1/4W), Shape, Tolerance, Value (1KΩ). Example: 25 F J 102.

Color Coding System of Capacitor

Table with 5 columns: Color, Voltage (50V), Pecularity, Value (330), Peculiarity. Example: 50 M 330.

Capacitance are in microfarads (μF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F). Resistance are in ohms (Ω), unless specified otherwise, 1K=1,000Ω, 1M=1,000kΩ

Table with 3 columns: Resistor Type, Wattage, Tolerance. Lists types like ERD (Carbon), ERG (Metal Oxide), ERQ (Fuse Type Metal), etc.

Table with 3 columns: Capacitor Type, Voltage, Tolerance. Lists types like ECE (Electrolytic), ECCD (Ceramic), ECKD (Ceramic Capacitor), etc.

Main resistor table with 9 columns: Ref. No., Part No., Value, Ref. No., Part No., Value, Ref. No., Part No., Value. Lists various resistor part numbers and their specifications.

Main capacitor table with 9 columns: Ref. No., Part No., Value, Ref. No., Part No., Value, Ref. No., Part No., Value. Lists various capacitor part numbers and their specifications.

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
C263	RCBC1H101KBY	100P 50	C453	RCBC1H680JLY	68P 50	C608	ECBT1H102KB5	0.001 50
(EG, E1)			C454	RCBC1H680JLY	68P 50	C609	ECBT1H102KB5	0.001 50
C264	RCBC1H101KBY	100P 50	C455	ECBT1H821KB5	820P 50	C610	ECEA1CKS100	10 16
(EG, E1)			C456	ECBT1H821KB5	820P 50	C611	RCBC1H101KBY	100P 50
C265	RCBC1H101KBY	100P 50	C457	ECFTD123KXL	0.012 25	C612	RCBC1H101KBY	100P 50
(EG, E1)			C458	ECFTD123KXL	0.012 25	C613	RCBS1H221KBY	220P 50
C266	RCBC1H101KBY	100P 50	C459	ECFTD683KXL	0.068 25	C614	RCBS1H221KBY	220P 50
(EG, E1)			C460	ECFTD683KXL	0.068 25	C615	ECEA1VKA330	33 35
C267	RCBC1H101KBY	100P 50	C461	ECEA1HPS010	1 50	C616	ECEA1HK2R2B	2.2 50
(EG, E1)			C462	ECEA1HPS010	1 50	C617	ECEA1HK2R2B	2.2 50
C268	RCBC1H101KBY	100P 50	C463	ECFTD472KXL	0.0047 25	C618	ECKD1H223PF	0.022 50
(EG, E1)			C464	ECFTD472KXL	0.0047 25	C619	ECFTD103KXL	0.01 25
C269	RCBC1H101KBY	100P 50	C465	ECFTD223KXL	0.022 25	C620	ECKD1H103PF	0.01 50
(EG, E1)			C466	ECFTD223KXL	0.022 25	C621	ECKD1H103PF	0.01 50
C270	RCBC1H101KBY	100P 50	C467	ECEA1HPS3R3	3.3 50	C622	ECKD1H103PF	0.01 50
(EG, E1)			C468	ECEA1HPS3R3	3.3 50	C623	ECKD1H103PF	0.01 50
C271	RCBC1H101KBY	100P 50	C469	ECFTD103KXL	0.01 25	C624	ECKD1H103PF	0.01 50
(EG, E1)			C470	ECFTD103KXL	0.01 25	C625	ECKD1H103PF	0.01 50
C272	RCBC1H101KBY	100P 50	C471	ECEA1CK470	47 16	C626	ECKD1H103PF	0.01 50
(EG, E1)			C501	ECEA1HPS3R3	3.3 50	C627	ECKD1H103PF	0.01 50
C307	RCBC1H680JLY	68P 50	C502	ECEA1HPS3R3	3.3 50	C628	ECKD1H103PF	0.01 50
C308	ECFTD823KXL	0.082 25	C503	ECBT1H821KB5	820P 50	C629	ECKD1H102KB	0.001 50
C309	ECEA1EK3R3B	3.3 25	C504	ECBT1H821KB5	820P 50	C630	ECKD1H103PF	0.01 50
C310	RCBS1H221KBY	220P 50	C505	ECEA1CPS220	22 16	C631	ECKD1H103PF	0.01 50
C311	ECEA1EK3R3B	3.3 25	C506	ECEA1CPS220	22 16	C632	ECKD1H103PF	0.01 50
C313	RCBS1H820KBY	82P 50	C507	RCBS1H6R8KLY	6.8P 50	C637	ECQM1H474JZ	0.47 50
C314	RCBS1H820KBY	82P 50	C508	RCBS1H6R8KLY	6.8P 50	C638	RCBS1H221KBY	220P 50
C315	ECEA1HPS3R3	3.3 50	C509	RCBC1H151KBY	150P 50	C639	RCBS1H221KBY	220P 50
C316	ECEA1HPS3R3	3.3 50	C509	RCBS1H271KBY	270P 50	C700	ECKDKC103PF2	0.01 125
C317	ECFTD104KXL	0.1 25	(EG, E1)			C701	ECETS1JU682U	6800
C318	ECKD1H223PF	0.022 50	C510	RCBC1H151KBY	150P 50	C702	ECETS1JU682U	6800
C351	ECBT1E103ZF	0.01 25	C511	ECFTD473KXL	0.047 25	C703	ECFTD103KXL	0.01 25
C352	ECBT1E103ZF	0.01 25	C512	ECFTD473KXL	0.047 25	C704	ECFTD103KXL	0.01 25
C353	RCBS1H330JLY	33P 50	C513	ECEA0JS331	330 6.3	C705	ECEA1CU470	47 16
C354	RCBS1H330JLY	33P 50	C514	ECEA1HKR22	0.22 50	C706	ECEA1CU470	47 16
C355	ECEA1HPS3R3	3.3 50	C515	ECEA0JK330	33 6.3	C707	ECEA1CK220	22 16
C356	ECEA1HPS3R3	3.3 50	C516	ECKD1H103PF	0.01 50	C708	ECEA1CK220	22 16
C357	ECEA1HPS3R3	3.3 50	(EG, E1)			C709	ECQ2104KS	0.1 250
C358	ECEA1HPS3R3	3.3 50	C517	ECEA1HN2R2S	2.2 50	C710	ECEA1HK4R7	4.7 50
C359	RCBS1H330JLY	33P 50	(EG, E1)			C711	ECEA1VK100B	10 35
C360	RCBS1H330JLY	33P 50	C518	ECEA1CKS100	10 16	C712	ECEA1VU330	33 35
C361	ECEA1HPS3R3	3.3 50	C519	ECEA1CK470	47 16	C713	ECEA1CKS100	10 16
C362	ECEA1HPS3R3	3.3 50	C520	ECEA1CK101	100 16	C714	ECEA1HK010	1 50
C363	ECEA1HPS3R3	3.3 50	C521	ECFTD473KXL	0.047 25	C715	ECFTD473KXL	0.047 25
C364	ECEA1HPS3R3	3.3 50	C522	ECFTD473KXL	0.047 25	(EG, E1)		
C365	ECEA1CK220	22 16	C523	ECKD1H102KB	0.001 50	C716	ECKD1H103PF	0.01 50
C367	ECEA1CK220	22 16	C524	ECKD1H102KB	0.001 50	(EG, E1)		
C369	ECEA1CK220	22 16	C561	ECKD1H102KB	0.001 50	C803	ECEA0JU101	100 6.3
C370	ECEA1CK220	22 16	(EG, E1)			C804	ECEA0JU101	100 6.3
C373	RCBS1H820KBY	82P 50	C562	ECKD1H102KB	0.001 50	C805	ECEA0JU101	100 6.3
(EG, E1)			(EG, E1)			C806	ECEA0JU101	100 6.3
C374	RCBS1H820KBY	82P 50	C563	ECKD1H223PF	0.022 50	C807	ECQV1H104JZ	0.1 50
(EG, E1)			(EG, E1)			C808	ECEA0JU101	100 6.3
C401	ECEA1EK3R3B	3.3 25	C564	ECKD1H223PF	0.022 50	C809	ECQV1H104JZ	0.1 50
C402	ECEA1EK3R3B	3.3 25	(EG, E1)			C810	ECQM1H103JZ	0.01 50
C409	RCBC1H101KBY	100P 50	C565	ECKD1H102KB	0.001 50	C811	RCBS1H100JLY	10P 50
C410	RCBC1H101KBY	100P 50	(EG, E1)			C812	RCBS1H100JLY	10P 50
C411	RCBS1H100JLY	10P 50	C566	ECKD1H102KB	0.001 50	C813	ECEA1HK010	1 50
C412	RCBS1H100JLY	10P 50	(EG, E1)			C814	ECEA0JU101	100 6.3
C413	ECEA1HK2R2B	2.2 50	C567	ECKD1H223PF	0.022 50	C815	RCBC1H151KBY	150P 50
C414	ECEA1HK2R2B	2.2 50	(EG, E1)			C816	RCBS1H6R8KLY	6.8P 50
C419	ECFTD473KXL	0.047 25	C568	ECKD1H223PF	0.022 50	C821	ECEA0JU101	100 6.3
C420	ECFTD473KXL	0.047 25	(EG, E1)			C822	ECEA0JU101	100 6.3
C421	ECEA1HK2R2B	2.2 50	C597	RCBS1H221KBY	220P 50	C823	ECQV1H104JZ	0.1 50
C422	ECEA1HK2R2B	2.2 50	(EG, E1)			C824	ECEA1EK4R7	4.7 25
C423	ECEA1HPS3R3	3.3 50	C598	RCBS1H221KBY	220P 50	C825	ECFTD104KXL	0.1 25
C424	ECEA1HPS3R3	3.3 50	(EG, E1)			C827	RCBS1H271KBY	270P 50
C425	ECEA1HPS3R3	3.3 50	C600	ECEA1CKS100	10 16	C828	RCBS1H271KBY	270P 50
C426	ECEA1HPS3R3	3.3 50	C601	ECEA1CK101	100 16	C829	ECEA1EN4R7S	4.7 25
C427	ECEA1HPS3R3	3.3 50	C602	ECKD1H223PF	0.022 50	C830	ECEA1EN4R7S	4.7 25
C428	ECEA1HPS3R3	3.3 50	C603	ECEA1HK010	1 50	C831	ECBT1H102KB5	0.001 50
C431	ECFTD104KXL	0.1 25	C604	ECFTD333KXL	0.033 25	C832	ECBT1H102KB5	0.001 50
C432	ECEA1HK010	1 50	C605	ECFTD683KXL	0.068 25	C833	ECQV1H104JZ	0.1 50
C451	RCBC1H101KBY	100P 50	C606	ECEA1EK4R7	4.7 25	C834	ECQV1H104JZ	0.1 50
C452	RCBC1H101KBY	100P 50	C607	ECEA1HK010	1 50	C835	ECEA1CKS100	10 16
						C836	ECEA1EK3R3	3.3 25