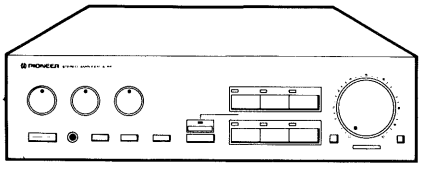
PIONEER®
The future of sound and vision.

Service Manual



ORDER NO.
ARP1358

STEREO AMPLIFIER

A-441
A-441-S

MODEL A-441 COMES IN FIVE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Applicable model		Power requirement	Export destination
	A-441	A-441-S		
KC	○	–	AC120V only	Canada
HE	○	–	AC220V, 240V (switchable)*	European continent
HB	○	–	AC220V, 240V (switchable)*	United Kingdom
SD	○	–	AC110V, 120V–127V, 220V, 240V (switchable)	Kingdom of Saudi Arabia and general market
HEZ	○	○	AC220V, 240V (switchable)	West Germany

*Change the primary wiring of the power transformer

- **This service manual is applicable to the A-441/KC, HE, HB, SD and HEZ types.**
- **As to the HE, HB, SD and HEZ types, please refer to page 25.**
- **A-441-S is silver versions of A-441.**

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1. SPECIFICATION

AMPLIFIER SECTION

Continuous Average Power Output is 60 Watts* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz, with no more than 0.015% total harmonic distortion.

**Measured pursuant to the Federal Trade Commission's Trade Regulation rules on Power Output Claims for Amplifiers.*

Continuous power output (both channels driven)
- 20 Hz to 20 kHz, T.H.D. 0.008%, 8Ω ..... 58W + 58W

DIN continuous power output (both channels driven)
- 1 kHz, T.H.D. 1%, 8Ω ..... 70W + 70W
- 1 kHz, T.H.D. 1%, 4Ω ..... 100W + 100W

IEC continuous power output (both channels driven)
- 63 Hz to 12.5 kHz, T.H.D. 0.7%, 8Ω ..... 68W + 68W
- 63 Hz to 12.5 kHz, T.H.D. 0.7%, 4Ω ..... 98W + 98W

Dynamic power output (on EIA dynamic test signal)
- 8Ω ..... 70W + 70W
- 4Ω ..... 105W + 105W
- 2Ω ..... 150W + 150W

Total harmonic distortion (measured by Audio Spectrum Analyzer)
- 20 Hz to 20 kHz, 58W, 8Ω 0.008%

Input sensitivity/impedance
- PHONO (MM) ..... 2.5 mV/50 kΩ
- PHONO (MC) 0.2 mV/100Ω
- CD, TUNER, AUX, TAPE ..... 150 mV/33 kΩ

PHONO overload level
- 1 kHz, T.H.D. 0.008% (MM/MC) 150 mV/12mV

Output level/impedance
- TAPE REC ..... 150 mV/2.2 kΩ

Frequency response
- PHONO (MM), 20 Hz to 20 kHz ..... ±0.3 dB
- PHONO (MC), 20 Hz to 20 kHz ..... ±0.5 dB
- CD, TUNER, AUX, TAPE 5 Hz to 80 kHz ..... $^{+0}_{-3}$ dB

Tone control
- BASS ..... ±8 dB (100 Hz)
- TREBLE ..... ±8 dB (10 kHz)

Loudness contour (volume control set at −40dB position)
+ 7 dB (100 Hz)/+ 4 dB (10 kHz)

Filter (SUBSONIC) ..... 15 Hz (−6 dB/oct.)

Signal-to-Noise ratio (IHF short circuit, A network)
- PHONO (MM, 5 mV input/MC, 0.5 mV input) ..... 93 dB/74 dB
- CD (DIRECT) ..... 105 dB
- CD, TUNER, AUX, TAPE ..... 100 dB

Signal-to-Noise ratio (DIN, continuous power/50 mW)
- PHONO (MM) ..... 74 dB/60 dB
- CD (DIRECT) ..... 86 dB/63 dB
- CD, TUNER, AUX, TAPE ..... 86 dB/60 dB

Power Supply/Miscellaneous

Power requirements
- U.S., Canadian models ..... AC 120V, 60 Hz
- European model ..... a.c. 220 V~, 50/60 Hz
- U.K., Australian models ..... a.c. 240 V~, 50/60 Hz
- Other destination models ..... AC 110 V/120~127 V/ 220 V/240 V (switchable), 50/60 Hz

Power consumption
- European, U.K., Australian models ..... 550 W
- Canadian model ..... 430VA (CSA)
- Other destination models ..... 530 W

Dimensions ..... 420 (W) x 316.5 (D) x 122 (H) mm
16-1/2 (W) x 12-1/2 (D) x 4-3/4 (H) in

Weight ..... 8.1 kg (17 lb 14 oz)

Accessories

Operating instructions 1

- *Specifications and design subject to possible modification without notice due to improvements.*

2. PANEL FACILITIES

FRONT PANEL

POWER switch
Press to turn power to the unit ON and OFF.

TREBLE tone control
Use to adjust the high-frequency tone.
The center position is the flat (normal) position. When moved to the right, high-frequency tones are emphasized; when moved to the left, high-frequency tones are de-emphasized.

NOTE:
This function does not operate when the CD DIRECT FUNCTION switch is in the ON position.

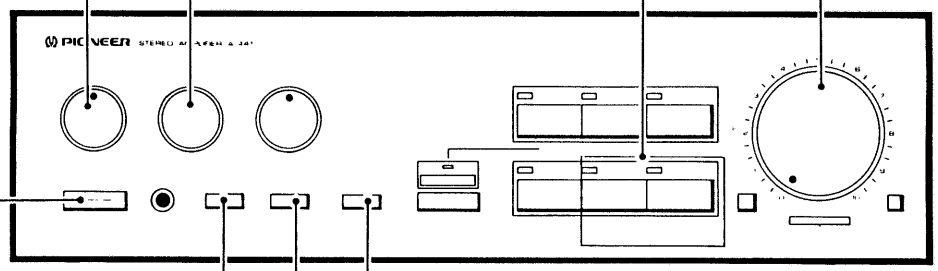
BASS tone control
Use to adjust the low-frequency tone. The center position is the flat (normal) position. When moved to the right, low-frequency tones are emphasized; when moved to the left, low-frequency tones are de-emphasized.

NOTE:
This function does not operate when the CD DIRECT FUNCTION switch is in the ON position.

TAPE MONITOR switches/indicators
Use this switch to listen to tape playback, or to listen to the sounds being recorded during tape recording.
[TAPE 1] – Press when listening to the playback sound of the tape deck connected to the TAPE 1 PLAY terminals, or to monitor the sound being recorded on the tape deck connected to the TAPE 1 REC terminals.
[TAPE 2] – Press when listening to the playback sound of the tape deck connected to the TAPE 2 PLAY terminals, or to monitor the sound being recorded on the tape deck connected to the TAPE 2 REC terminals.

NOTE:
This function does not operate when the CD DIRECT FUNCTION switch is in the ON position.

VOLUME control
Use to adjust volume level.



SPEAKERS A selector switch
Use this switch to listen to the speaker systems connected to the SPEAKERS A terminals.
[ON] – Depressed position: Sound is heard from the speaker systems.
[OFF] – Released position: No sound is heard from the speaker systems. Set to this position when listening with headphones.

SPEAKERS B selector switch
Use this switch to listen to the speaker systems connected to the SPEAKERS B terminals.
[ON] – Depressed position: Sound is heard from the speaker systems.
[OFF] – Released position: No sound is heard from the speaker systems. Set to this position when listening with headphones.

SUBSONIC filter switch
Use this switch when playing records with coarse grooves.
[OFF] – Released position; leave in this position for normal playback.
[ON] – Depressed position; in this position, frequencies of 15 Hz and below are cut, thus eliminating super-low-frequency noise caused by coarse record grooves, and thus helping prevent sound distortion.

NOTE:
This function does not operate when the CD DIRECT FUNCTION switch is in the ON position.

REC SELECTOR switch

Switch to select recording signal. When set at other than SOURCE position, signals of other equipment can be recorded during playback on the equipment selected by INPUT selector switches.

[PHONO] – To record the equipment of PHONO terminals.
[CD] – To record the equipment of CD terminals.
[SOURCE] – To record the equipment selected by INPUT selector switches.
[TUNER] – To record the equipment of TUNER terminals.
[TAPE COPY]
1 ▶ 2 – To record (copy) from the tape deck of TAPE 1 terminals, over to the tape deck of TAPE 2 terminals.
2 ▶ 1 – To record (copy) from the tape deck to TAPE 2 terminals, over to the tape deck of TAPE 1 terminals.

INPUT selector switches/indicators

Use to select playback source.

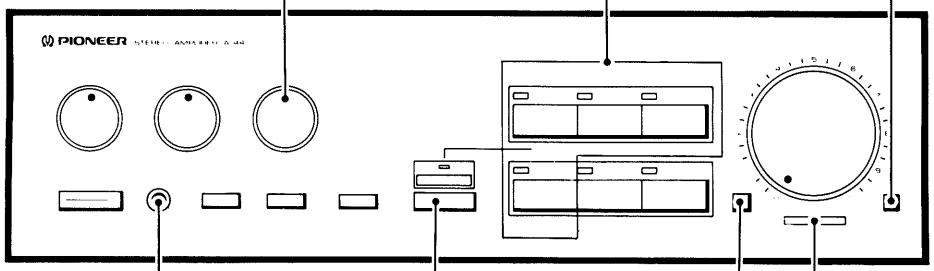
[CD] – Press when listening to a compact disc playback with a CD player.
[PHONO] – Press when listening to record playback on a turntable.
[TUNER] – Press when listening to AM or FM broadcasts with a tuner.
[VIDEO/AUX] – Press when listening to the programs from a component connected to the VIDEO/AUX terminals.

NOTE:
This function does not operate when the CD DIRECT FUNCTION switch is in the ON position.

PHONO selector switch (PHONO)

Set in accordance with the type of cartridge used in your record turntable.

[MM] – Released position; set to this position when using an MM (moving magnet) cartridge, or an MC (moving coil) cartridge with high output of 1 mV or more.
[MC] – Depressed position; set to this position when using an MC (moving coil) cartridge.



PHONES jack

When using headphones, insert their plug into this jack.

CD DIRECT FUNCTION switch/indicator

Use this switch/indicator when you do not wish to pass the output from CD terminal equipment through the various frequency adjusting circuits (INPUT selector, TAPE MONITOR, BASS, TREBLE, BALANCE, SUBSONIC filter).

[ON] – When the switch is in this position, the indicator lights and the signals input from the CD terminals are reproduced without passing through the various frequency adjusting circuits.
This results in flat, pure sound which is a more faithful reproduction of the digital source.
[OFF] – When the switch is in this position, the indicator goes out, and the signal selected by INPUT selector or TAPE MONITOR switches is played back.

BALANCE control

Should normally be left in the center position. Adjust balance if the sound is louder from one of the speakers. If the right side is louder, move toward the LEFT position and if the left side is louder, move toward the RIGHT position.

NOTE:
This function does not operate when the CD DIRECT FUNCTION switch is in the ON position.

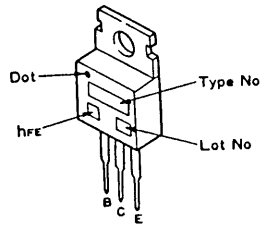
LOUDNESS switch

Use when listening at low volume levels.

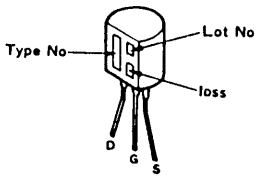
[OFF] – Released position: Should normally be left in this position.
[ON] – Depressed position: Boosts low and high frequencies to give added punch to playback even at low volume.

External Appearance of Transistors and ICs

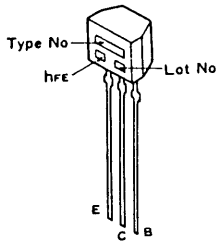
2SC2591
2SA1111



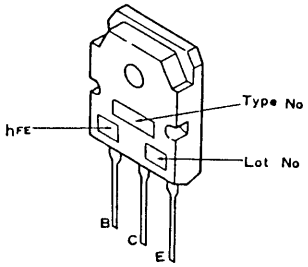
2SK170



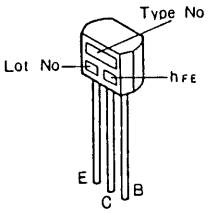
2SC2458



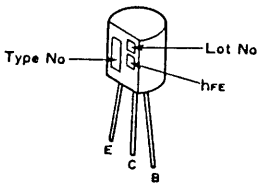
2SC3907
2SA1516



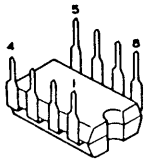
2SA1115
2SC2603



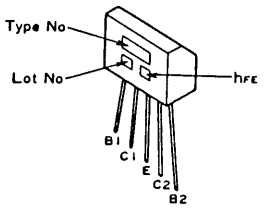
2SA992
2SC1845



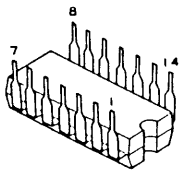
M5210P



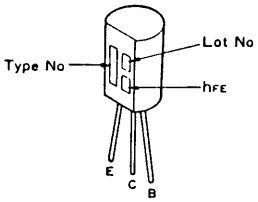
2SA979



PA0016



2SA1145
2SC2705



3. CHANGE OF LINE VOLTAGE

Line voltage selection (HE, HEZ and HB types)

Line voltage can be changed with following steps.

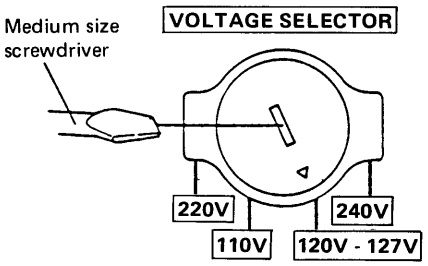
1. Desconnect the AC power cord.
2. Remove the top cover.
3. Change the connection wire (To Power transformer) of Terminal No. 3 (WHITE) as follows.

Voltage	Terminal No. 3	Terminal No. 5
220V	White wire	. . . . .
240V	. . . . .	White wire

Line voltage selection (SD type)

When changing of line voltage, change the line voltage selector switch.

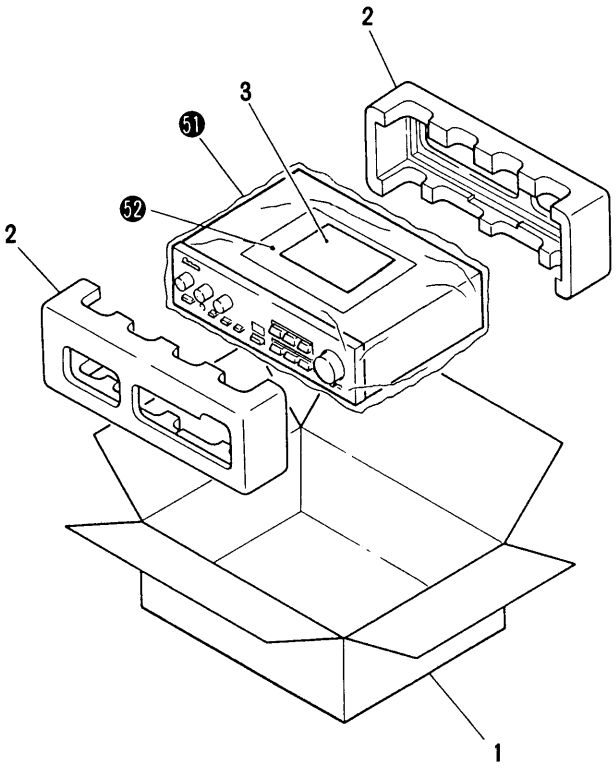
1. Provide yourself with a medium size screwdriver.
2. Insert the screwdriver into the arrow and turn until it points to the voltage value of your area.



4. PACKING

Parts List of Packing

Mark	No.	Part No.	Description
	1.	AHD1222	Packing case
	2.	AHA1015	Front rear pad
	3.	ARE1046	Operating instructions
	51.		Seat
	52.		Warranty card



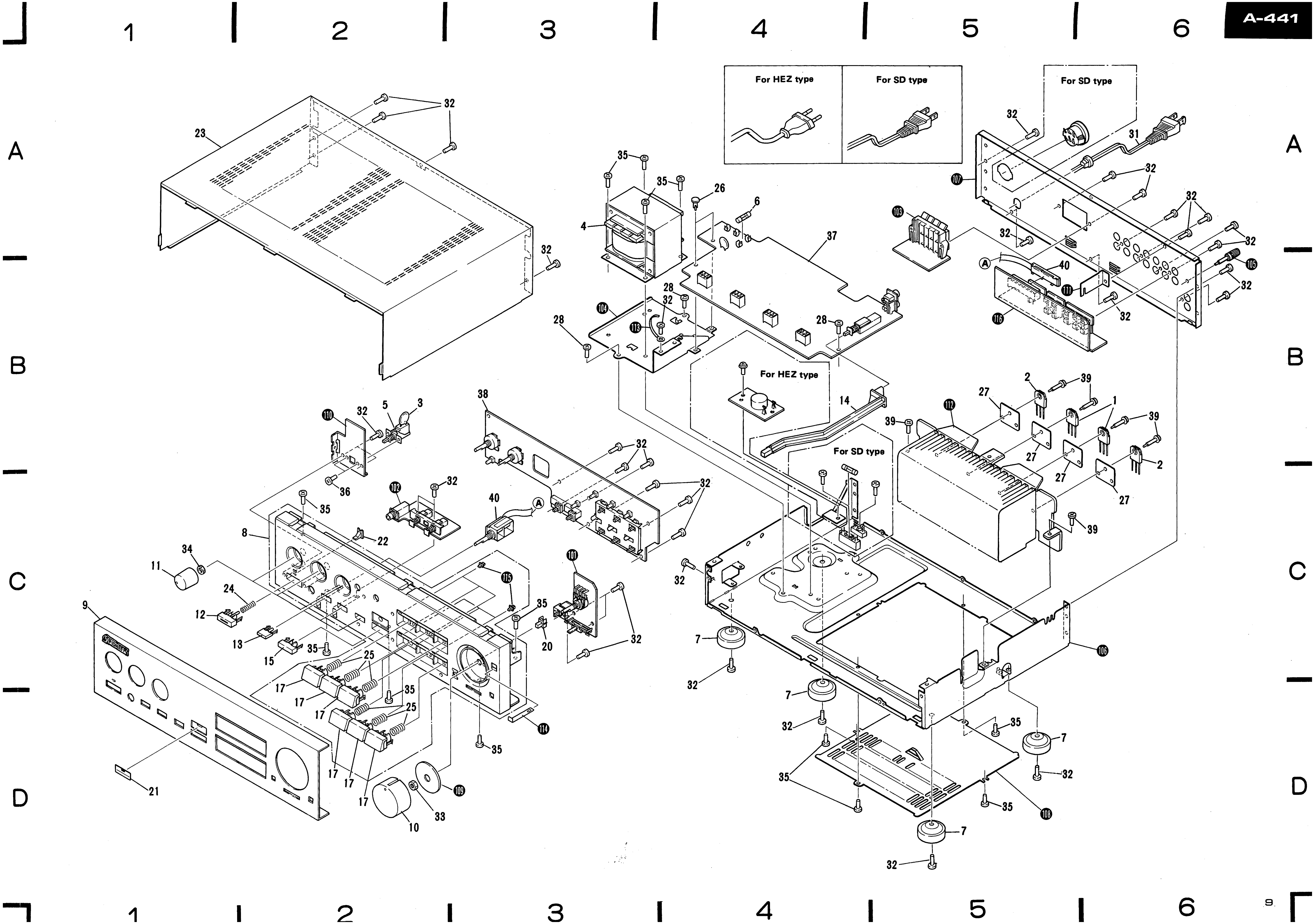
5. EXPLODED VIEWS AND PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Parts List of Exterior

Mark		No.	Part No.	Description
⚠	★★	1.	2SA1516	Transistor (Q3, Q4)
⚠	★★	2.	2SC3907	Transistor (Q1, Q2)
⚠		3.	ACG1003	Power capacitor (0.01μF/125V, C1)
⚠	★	4.	ATS1080	Power transformer (120V, T1)
⚠	★★	5.	ASG-552	Push switch (POWER, S1)
⚠	★★	6.	AEK-308	Fuse (5A/125V, FU1)
		7.	AEP-280	Leg assembly
		8.	AMD1006	Panel base assembly A
		9.	ANB1107	Front panel assembly
		10.	AAB1035	Knob (VOLUME)
		11.	AAB1028	Knob (TONE)
		12.	AAD1146	Knob (POWER)
		13.	AAD1061	Knob (SPEAKER, SUBSONIC)
		14.	AMR1088	Joint bar
		15.	AAD1063	Knob (CD DIRECT)
		16.	.....	.....
		17.	AAD1136	Function knob (PHONO, CD, TUNER, VIDEO/AUX, TAPE 1, TAPE 2)
		18.	.....	.....
		19.	.....	.....
		20.	AAD1070	Knob (LOUDNESS)
		21.	AAK1216	CD Direct plate
		22.	AAT-110	Indicator lens C
		23.	ANE1059	Bonnet
		24.	ABH1015	Coil spring
		25.	ABH1019	Coil spring
		26.	AEC-525	Nylon rivet
		27.	AEP-313	Mica seat
		28.	ABA1011	Screw
		29.	.....	.....
		30.	.....	.....
⚠		31.	ADG-089	AC power cord
		32.	BBZ30P080FZK	Screw
		33.	NK70FUC	Nut
		34.	NK90FUC	Nut
		35.	ABA-298	Screw
		36.	VMZ30P060FMC	Screw
		37.	AWZ1447	AF complex assembly
		38.	AWZ1446	Tone, Function assembly
		39.	ABA-297	Screw
	★★	40.	ASU1001	Remote slide rotary switch (REC SELECTOR)
		101.		Volume assembly
		102.		Speaker switch assembly
		103.		SP Terminal assembly
		104.		Transformer frame
		105.		Terminal (GND)
		106.		Chassis
		107.		Rear panel
		108.		Bottom plate
		109.		Ring (EARTH)
		110.		Switch holder
		111.		P.C.B. Holder
		112.		Heat sink
		113.		Binder
		114.		Plate (EARTH)
		115.		Indicater lens A
		116.		Pin Jack assembly


For HEZ type
For SD type
For SD type
For HEZ type
For SD type
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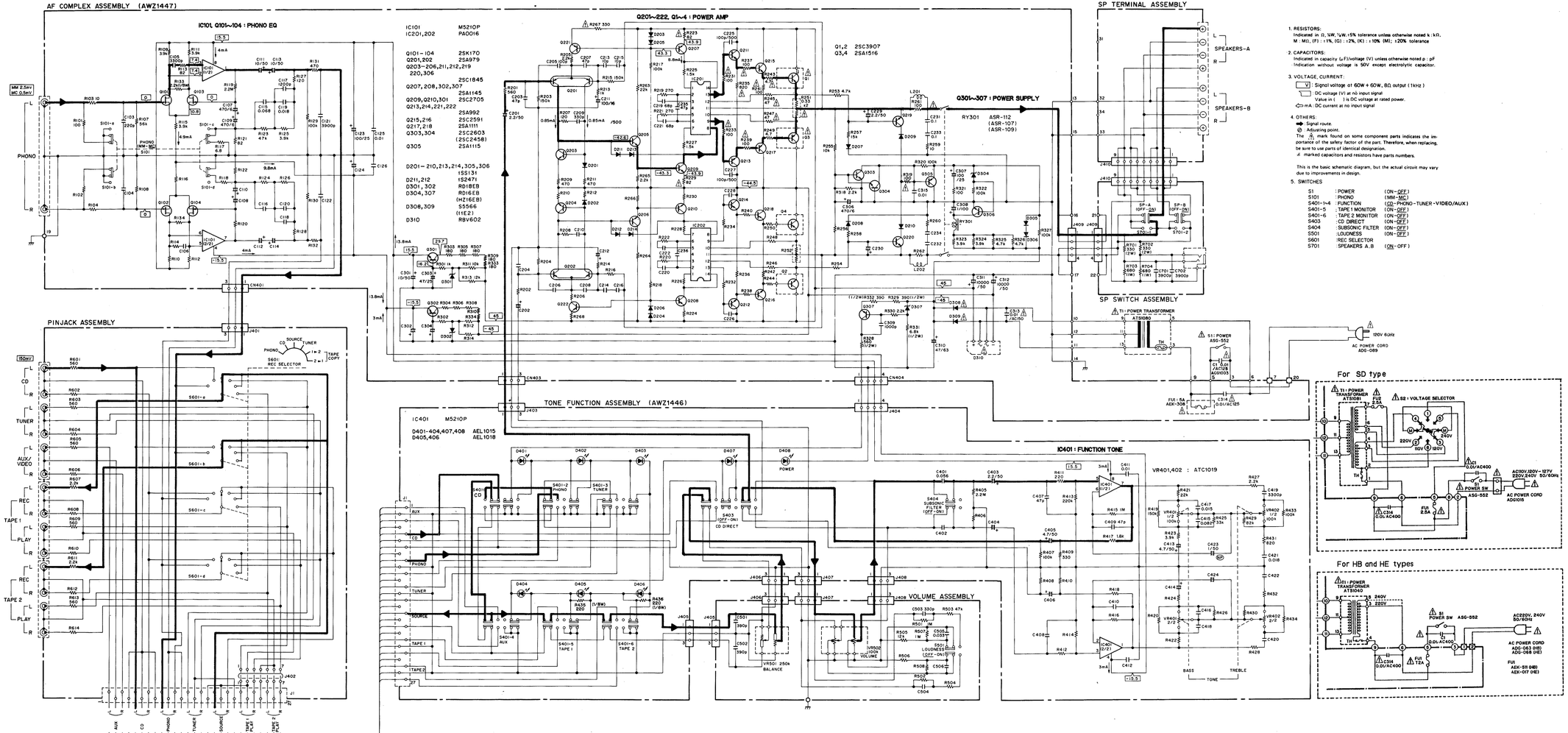
6. SCHEMATIC DIAGRAM



1. RESISTORS:
Indicated in Ω, ¼W, ½W ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10% (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
(V) Signal voltage at 60W + 60W, 8Ω output (1kHz)
DC voltage (V) at no input signal
Value in ( ) is DC voltage at rated power.
mA : DC current at no input signal

4. OTHERS
Signal route.
Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES

S1	: POWER	(ON-OFF)
S101	: PHONO	(MM-MC)
S401~1~4	: FUNCTION	(CD-PHONO-TUNER-VIDEO/AUX)
S401~5	: TAPE 1 MONITOR	(ON-OFF)
S401~6	: TAPE 2 MONITOR	(ON-OFF)
S403	: CD DIRECT	(ON-OFF)
S404	: SUBSONIC FILTER	(ON-OFF)
S501	: LOUDNESS	(ON-OFF)
S601	: REC SELECTOR	
S701	: SPEAKERS A, B	(ON-OFF)

7. P.C. BOARDS CONNECTION DIAGRAM

NOTE

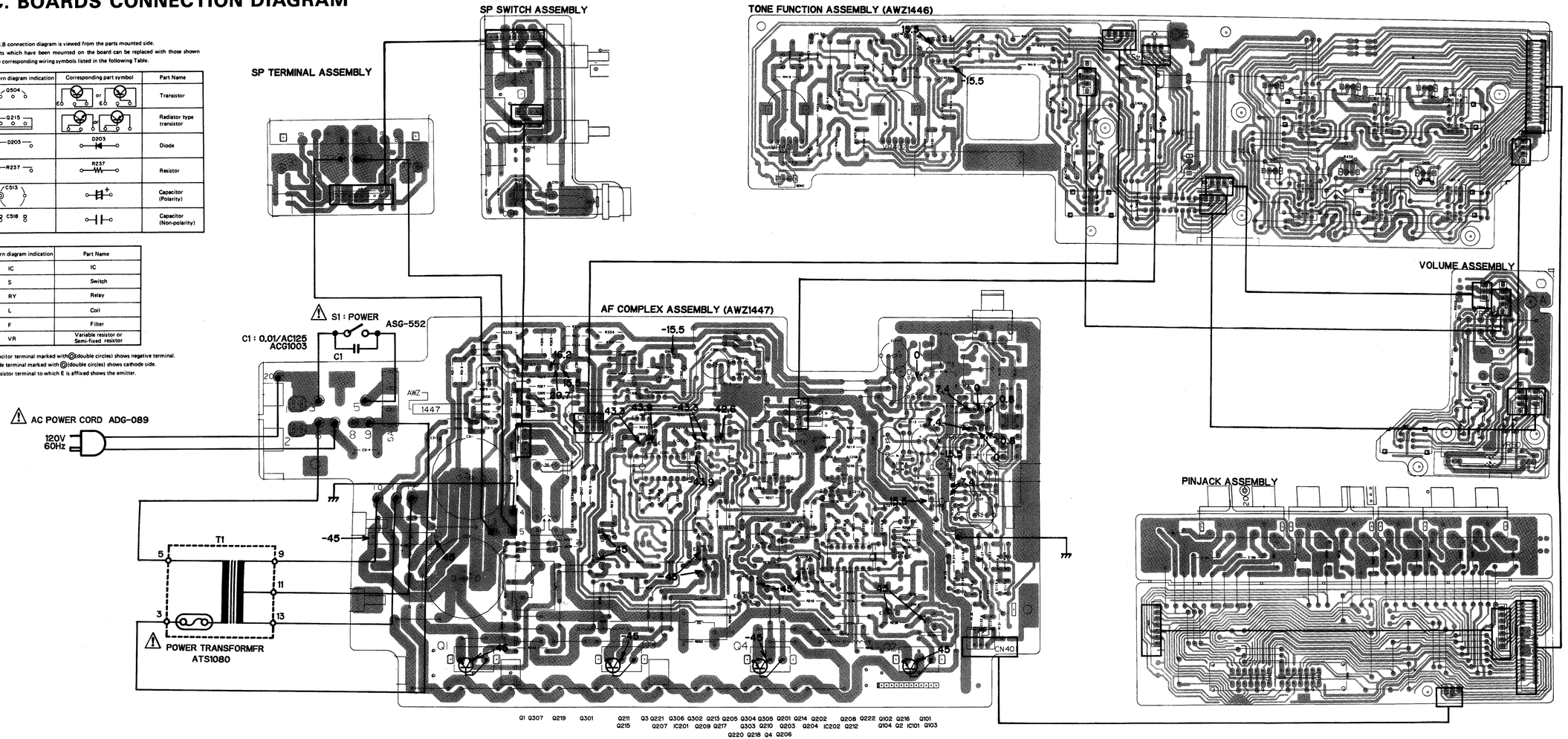
1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 E C B	E C B or E C B	Transistor
Q215 E C B	E C B or E C B	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	C513	Capacitor (Polarity)
C518	C518	Capacitor (Non-polarity)

Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with ⊖(double circles) shows negative terminal.
4. The diode terminal marked with ⊖(double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.



8. ELECTRICAL PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621*	*RN1/4SR 5 6 2 1 F*

Miscellaneous Parts

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	AF complex assembly	AWZ1447
	Tone, Function assembly	AWZ1446
	Volume assembly	
	Pin jack assembly	
	Speaker switch assembly	
	SP terminal assembly	

SEMICONDUCTORS

Mark	Symbol & Description		Part No.
⚠ ★★	Q3, Q4	Transistor	2SA1516
⚠ ★★	Q1, Q2	Transistor	2SC3907

SWITCHES

Mark	Symbol & Description		Part No.
⚠ ★★	S1	Push switch (POWER)	ASG-552 (ASG-550)
★★	S601	Remote slide rotary switch (REC SELECTOR)	ASU1001

TRANSFORMER

Mark	Symbol & Description		Part No.
⚠ ★	T1	Power transformer (120V)	ATS1080

CAPACITOR

Mark	Symbol & Description		Part No.
⚠	C1	Power capacitor (0.01μF/AC 125V)	ACG1003

OTHERS

Mark	Symbol & Description		Part No.
⚠ ★★	FU1	Fuse (5A/125V)	AEK-308
⚠		AC power cord	ADG-089

AF Complex Assembly (AWZ1447)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC101	M5210P
★★	IC201, IC202	PA0016
★★	Q217, Q218	2SA1111
★★	Q305	2SA1115
★★	Q207, Q208, Q302, Q307	2SA1145
★★	Q201, Q202	2SA979
★★	Q213, Q214, Q221, Q222	2SA992
★★	Q203–Q206, Q211, Q212, Q219, Q220, Q306	2SC1845
★★	Q215, Q216	2SC2591
★★	Q303, Q304	2SC2603 (2SC2458)
★★	Q209, Q210, Q301	2SC2705
★★	Q101–Q104	2SK170
⚠ ★	D310	RBV602
★	D304, D307	RD16EB (HZ16EB)
★	D301, D302	RD18EB (HZ18EB)
⚠ ★	D308, D309	S5566 (11E2)
★	D201–D210, D213, D214, D305, D306	1SS131
★	D211, D212	1S2471

SWITCH, RELAY

Mark	Symbol & Description		Part No.
★★	S101	Push switch (MM, MC)	ASG1012
★★	RY301	Relay	ASR-112 (ASR-107) (ASR-109)

COILS

Mark	Symbol & Description	Part No.
	L201, L202 AF choke coil (0.7μH)	ATH1004

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C314 (0.01μF/AC125V)	ACG1003
⚠	C313 (0.01μF/AC150V)	ACG1005
	C311, C312 (10000μF/50V)	ACH1020
	C213–C216	CCCSL100D50
	C205, C206	CCCSL101J50
	C225–C228	CCCSL101K500
	C203, C204, C207, C208, C235, C236	CCCSL470J50
	C219–C222	CCCSL680J50
	C103, C104	CCDSL221J50
	C308	CEAS010M100
	C111–C114, C301, C302	CEAS100M50
	C123, C124, C307	CEAS101M25
	C229, C230	CEAS2R2M50
	C303, C304	CEAS470M25
	C310	CEAS470M63
	C107–C110, C306	CEAS471M6
	C211, C212	CEYA101M16
	C201, C202	CEYA2R2M50
	C309	CKCYB102K50
	C209, C210	CKCYB331K50
	C315	CKCYF103Z50
	C125, C126	CKDYF103Z50
	C231–C234	CQMA104K50
	C117, C118	CQMA122J50
	C119, C120	CQMA183J50
	C105, C106	CQMA332K50
	C121, C122	CQMA392K50
	C115, C116	CQMA683J50

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R251, R252 (0.33Ω x 2 5W)	ACN-139
	R201–R204, R213–R216	RDR1/4PM□□□J
	R328, R329, R331, R332	RD1/2PM□□□J
⚠	R235, R236, R259–R262, R267, R268, R253, R254	RD1/4PMF□□□J
	R133, R134	RD1/8PM222J
⚠	R223, R224, R229–R234, R237–R250, R319	RFA1/4PS□□□J
	Other resistors	RD1/4PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	2P terminal (PHONO)	AKB-119
	Transistor socket	AKH-017

Tone, Function Assembly (AWZ1446)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC401	M5210P
★	D401–D404, D407, D408	AEL1015
★	D405, D406 (TAPE1, 2)	AEL1018

SWITCHES

Mark	Symbol & Description		Part No.
★★	S401	Push switch (FUNCTION)	ASG1013
★★	S404	Push switch (SUBSONIC)	SEAV2S
★★	S403	Push switch (CD DIRECT)	SECV6S

CAPACITORS

Mark	Symbol & Description	Part No.
	C407–C410	CCCSL470J50
	C423, C424	CEANP010M50
	C403, C404	CEAS2R2M50
	C405, C406, C413, C414	CEAS4R7M50
	C411, C412	CKCYF103Z50
	C417, C418	CQMA153K50
	C421, C422	CQMA183K50
	C419, C420	CQMA332K50
	C401, C402	CQMA563K50
	C415, C416	CQMA823K50

RESISTORS

Mark	Symbol & Description		Part No.
★	VR401, VR402	Variable resistor (100 kΩ x 2: BASS, TREBL)	ACT1019
	R435, R436		RD1/8PM221J
		Other resistors	RD1/4PM□□□J

Volume Assembly

SWITCH

Mark	Symbol & Description		Part No.
★★	S501	Push switch (LOUDNESS)	SEAV2S

CAPACITORS

Mark	Symbol & Description	Part No.
	C503, C504	CKCYB331K50
	C501, C502	CKCYB391K50
	C505, C506	CQMA333K50

RESISTORS

Mark	Symbol & Description		Part No.
★	VR502	Variable resistor (100 kΩ x 2: VOLUME)	ACT1016
★	VR501	Variable resistor (250 kΩ x 2: BALANCE)	ACU1008
	R501–R508		RD1/4 PM□□□J

Pin Jack Assembly

SWITCH

Mark	Symbol & Description		Part No.
★★	S601	Remote slide switch	ASU1002

RESISTOR

Mark	Symbol & Description	Part No.
	R601, R602	RDR1/4PM561J
	R603–R614	RD1/4PM□□□J

OTHERS

Mark	Symbol & Desciption	Part No.
	4P terminal (TAPE1, 2)	AKB-115
	6P terminal (CD, TUNER, VIDEO/AUX)	AKB-117

Speaker Switch Assembly

SWITCH

Mark	Symbol & Description		Part No.
★★	S701	Push switch (SPEAKER A, B)	SUL6LXBXSC

CAPACITORS

Mark	Symbol & Description	Part No.
	C701, C702	CKCYB392K50

RESISTORS

Mark	Symbol & Description	Part No.
	R703, R704	RS1PMF681J
	R701, R702	RS2LMF331J

OTHERS

Mark	Symbol & Description	Part No.
	Phone jack (HEADPHONE)	AKN1002

SP Terminal Assembly

OTHERS

Mark	Symbol & Description	Part No.
	8P terminal (SPEAKERS)	AKE-111

9. FOR HE, HB, SD, HEZ AND A-441-S/HEZ TYPES

9.1 CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

The A-441/HE, HB, SD, HEZ and A-441-S/HEZ types are the same as A-441/KC type with the exception of the following sections:

Mark	Symbol & Description	Part No.						Remarks
		A-441/KC	A-441/HE	A-441/HB	A-441/SD	A-441/HEZ	A-441-S/HEZ	
	AF complex assembly	AWZ1447	AWZ1447	AWZ1447	AWZ1447	AWZ1208	AWZ1208	
	SP terminal assembly	Non supply	Non supply	Non supply	Non supply	Non supply	Non supply	
	Pin jack assembly	Non supply	Non supply	Non supply	Non supply	Non supply	Non supply	
	Line filter assembly	...	...	...	...	AWT1003	AWT1003	
⚠ ★★	FU1 Fuse (5A/125V)	AEK-308	...	...	...	...	...	
⚠ ★★	FU1 Fuse (T2A/250V)	...	AEK-017	AEK-511	...	AEK-017	AEK-017	
⚠ ★★	FU1, FU2 Fuse (2.5A/125V)	...	...	...	AEK-123	...	...	
⚠ ★	T1 Power transformer (AC 120V)	ATS1080	...	...	...	...	...	
⚠ ★	T1 Power transformer (AC 220V/240V)	...	ATS1040	ATS1040	...	ATS1040	ATS1040	
⚠ ★	T1 Power transformer (AC 110V/120-127V/ 220V/240V)	...	...	...	ATS1081	...	...	
	Operating instructions (English/French)	ARE1046	ARE1046	...	...	...	...	
	Operating instructions (German/Italian)	...	ARC1044	...	...	ARC1044	ARC1044	
	Operating instructions (English)	...	...	ARB1060	ARB1060	...	...	
	Operating instructions (German)	...	ARC1045	...	...	...	...	
	Operating instructions (Spanish)	...	...	...	ARC1035	...	...	
★★	Line voltage selector	...	...	...	AKX-507	...	...	
	Fuse holder	...	...	...	AKR-038	...	...	
	Screw (For line filter assembly)	...	...	...	...	ABA-256	ABA-256	
	2P terminal	...	...	...	Non supply	...	...	
⚠	AC power cord	ADG-089	ADG-068	ADG-063	ADG1015	ADG-068	ADG-068	
	Knob (VOLUME)	AAB1035	AAB1035	AAB1035	AAB1035	AAB1035	AAB1029	
	Knob (TONE)	AAB1028	AAB1028	AAB1028	AAB1028	AAB1028	AAB1030	
	Knob (POWER)	AAD1146	AAD1146	AAD1146	AAD1146	AAD1146	AAD1153	
	Knob (SPEAKER)	AAD1061	AAD1061	AAD1061	AAD1061	AAD1061	AAD1154	
	Knob (CD DIRECT)	AAD1063	AAD1063	AAD1063	AAD1063	AAD1063	AAD1155	
	Knob (LOUDNESS)	AAD1070	AAD1070	AAD1070	AAD1070	AAD1070	AAD1156	
	CD direct plate	AAK1216	AAK1216	AAK1216	AAK1216	AAK1216	AAK1271	
	Packing case	AHD1222	AHD1222	AHD1222	AHD1222	AHD1222	AHD1223	
	Screw (For fuse holder)	...	...	...	BBZ30P060FZK	...	...	
	Screw (For 2P terminal)	...	...	...	BBZ30P100FZK	...	...	
	Screw (For speaker terminal)	BBZ30P080FZK	BBZ30P080FZK	BBZ30P080FZK	BBZ30P080FZK	AAB-115	AAB-115	
	Panel base assembly A	AMD1006	AMD1006	AMD1006	AMD1006	AMD1006	AMD1019	
	Joint bar	AMR1088	AMR1088	AMR1008	AMR1008	AMR1008	AMR~~1177~~1197 (Si-A45012)	
	Bonnet	ANE1059	ANE1059	ANE1059	ANE1059	ANE1059	ANE1071	
	Front panel assembly	ANB1107	ANB1107	ANB1107	ANB1107	ANB1107	ANB1093	
	Function knob (PHON, CD, TUNER, VIDEO/AUX, TAPE1, TAPE2)	AAD1136	AAD1136	AAD1136	AAD1136	AAD1136	AAD1171	

9.2 ELECTRICAL PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621*	*RN1/4SR 5 6 2 1 F*

Line Filter Assembly (AWT1003)

COIL

Mark	Symbol & Description		Part No.
⚠	L1	Line filter	ATF-151

Pin Jack Assembly

SWITCH

Mark	Symbol & Description		Part No.
★★	S601	Remote slide switch	ASU1002

CAPACITORS

Mark	Symbol & Description	Part No.
	C601–C614	CKDYB391K50

RESISTORS

Mark	Symbol & Description	Part No.
	R601, R602	RDR1/4PM561J
	R603–R614	RD1/4PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	4P terminal (TAPE 1, 2)	AKB-115
	6P terminal (CD, TUNER, VIDEO/AUX)	AKB-117

SP Terminal Assembly

CAPACITORS

Mark	Symbol & Description	Part No.
	C801–C804	CKDYB472K500

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R801, R802	RD1/4PMF100J

OTHERS

Mark	Symbol & Description	Part No.
	8P terminal (SPEAKERS)	AKE-111

AF Complex Assembly (AWZ1208)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC101	M5210P
★★	IC201, IC202	PA0016
★★	Q217, Q218	2SA1111
★★	Q305	2SA1115
★★	Q207, Q208, Q302, Q307	2SA1145
★★	Q201, Q202	2SA979
★★	Q213, Q214, Q221, Q222	2SA992
★★	Q203–Q206, Q211, Q212, Q219, Q220, Q306	2S1845
★★	Q215, Q216	2SC2591
★★	Q303, Q304	2SC2603 (2SC2458)
★★	Q209, Q210, Q301	2SC2705
★★	Q101–Q104	2SK170

Mark		Symbol & Description	Part No.
⚠	★	D310	RBV602
	★	D304, D307	RD16EB (HZ16EB)
	★	D301, D302	RD18EB
⚠	★	D308, D309	S5566 (11E2)
	★	D201–D210, D213, D214, D305, D306	1SS131
	★	D211, D212	1S2471

SWITCH, RELAY

Mark		Symbol & Description		Part No.
	★★	S101	Push switch (MM, MC)	ASG1012
	★★	RY301	Relay	ASR-112 (ASR-107) (ASR-109)

COILS

Mark	Symbol & Description		Part No.
	L201, L202	AF choke coil (5.3μH)	ATH1009
	L101, L102	Inductor (270μH)	ATH1023

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C314 (0.01μF/AC400V)	ACG1003
⚠	C313 (0.01μF/AC150V)	ACG1005
	C311, C312 (10000μF/50V)	ACH1020
	C213–C216	CCCSL100D50
	C205, C206	CCCSL101J50
	C225–C228	CCCSL101K500
	C203, C204, C207, C208, C235, C236	CCCSL470J50
	C219–C222	CCCSL680J50
	C101, C102	CCDSL181J50
	C103, C104	CCDSL221J50
	C308	CEAS010M100
	C111–C114, C301, C302	CEAS100M50
	C123, C124, C307	CEAS101M25
	C229, C230	CEAS2R2M50
	C303, C304	CEAS470M25
	C310	CEAS470M63
	C107–C110, C306	CEAS471M6
	C211, C212	CEYA101M16
	C201, C202	CEYA2R2M50
	C309	CKCYB102K50
	C209, C210	CKCYB331K50
	C315, C318, C319	CKCYF103Z50
	C255, C256	CKDYB331K500
	C125, C126	CKDYF103Z50
	C257	CKDYF473Z50
	C231–C234	CQMA104K50
	C117, C118	CQMA122J50
	C119, C120	CQMA183J50
	C105, C106	CQMA332K50
	C121, C122	CQMA392K50
	C115, C116	CQMA683J50

RESISTORS

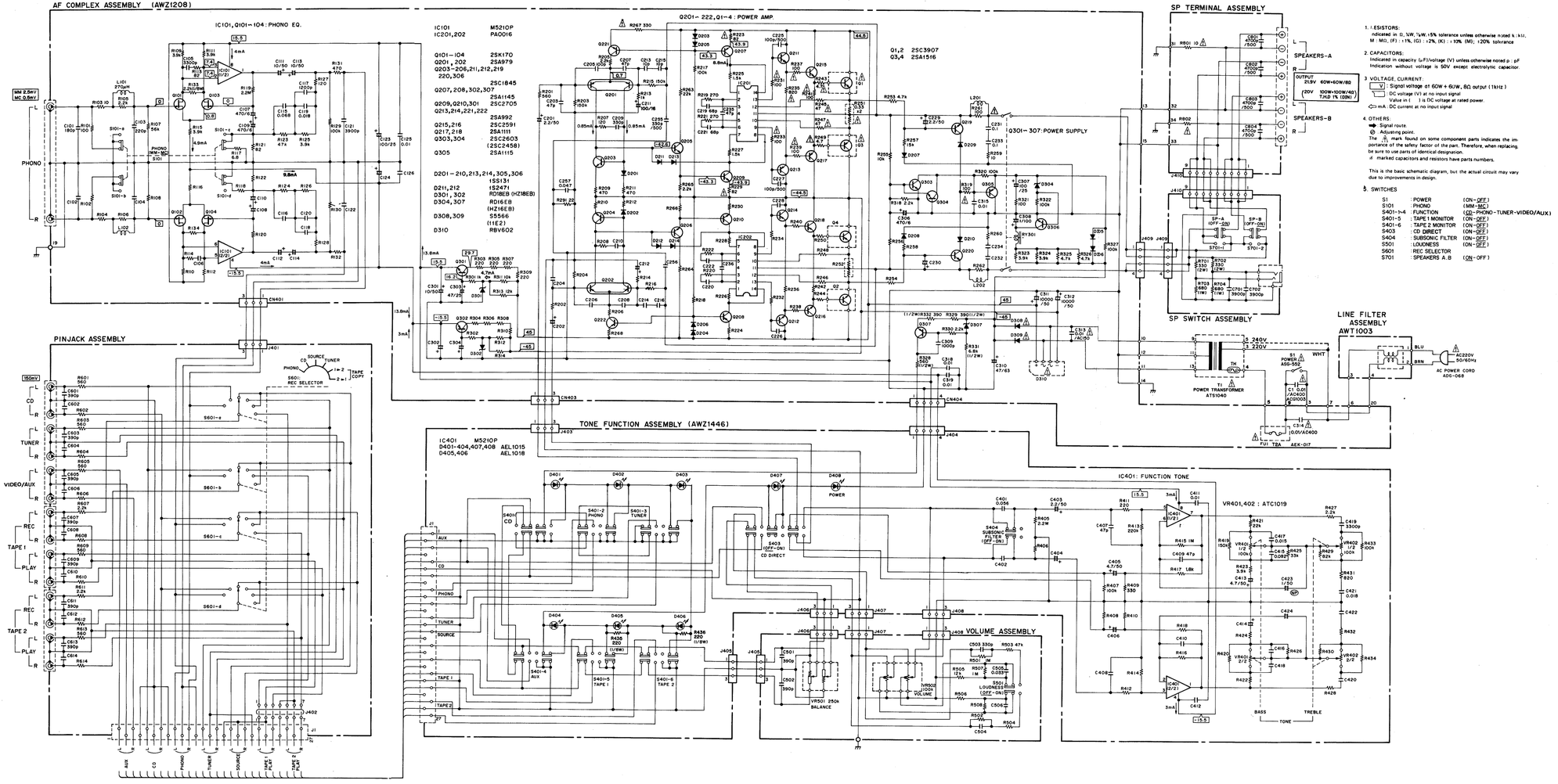
Mark	Symbol & Description	Part No.
⚠	R251, R252	ACN-139
	R201–R204, R213–R216	RDR1/4PM□□□J
	R328, R329, R331, R332	RD1/2PM□□□J
⚠	R223, R224, R229, R230, R235, R267, R268, R319, R236, R245–R248, R259–R262	RD1/4PMF□□□J
	R133, R134	RD1/8PM222J
⚠	R231–R234, R237–R244, R249, R250	RFA1/4PS□□□J
	Other resistors	RD1/4PM□□□J

OTHERS

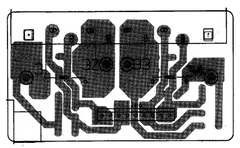
Mark	Symbol & Description	Part No.
	2P terminal (PHONO)	AKB-119
	Transistor socket	AKH-017

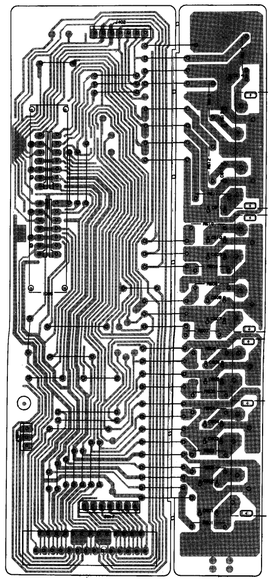
9.3 SCHEMATIC DIAGRAM

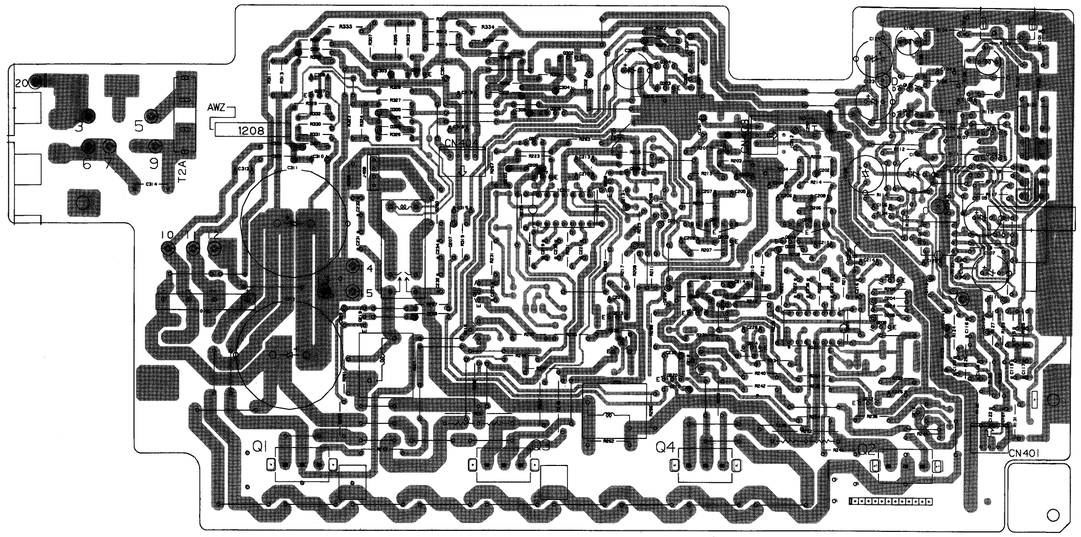
- For HEZ type



9.4 P.C. BOARD PATTERNS







NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504		Transistor
Q215		Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513		Capacitor (Polarity)
C518		Capacitor (Non-polarity)

Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with ⊖ (double circles) shows negative terminal.
4. The diode terminal marked with ⊖ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.