

ADDITIONAL

 PIONEER®

Service Manual

ORDER NO.
ARP1237 - A

STEREO AMPLIFIER

A-X420(BK) HEZ

- For servicing this type, please refer to the A-X420(BK) service manual (ARP1236) with the exception of this additional service manual.
- This additional service manual is applicable to the HEZ type.

1. CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- Parts without part number cannot be supplied.
- The Δ 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 $\star\star$ and \star .
 $\star\star$ **GENERALLY MOVES FASTER THAN \star**
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by " \odot " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

The A-X420 (BK)/HEZ type is the same as the A-X420 (BK)/HE type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		A-X420(BK) HE type	A-X420(BK) HEZ type	
	Screw	ABA-115	For SP terminal, CD terminal and chassis
C3	Ceramic capacitor (0.047 μ F/150V)	.....	ACG-009
C2	Capacitor (2200P/150V)	.....	CQMA222K50
R1	Resistor	.....	RD1/4PM100J
	Operating instructions (English/German/French/Italian) (German) AF assembly	ARE1032 AWZ1131 ARC1025 AWZ1207	

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2. ELECTRICAL PARTS LIST

NOTES:

- 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 56×10^1 561 RD½PS $\begin{matrix} \square & \square & \square \\ \square & \square & \square \end{matrix}$ J
 $47k\Omega$ 47×10^3 473 RD½PS $\begin{matrix} \square & \square & \square \\ \square & \square & \square \end{matrix}$ J
 0.5Ω 0R5 RN2H $\begin{matrix} \square & \square & \square \\ \square & \square & \square \end{matrix}$ K
 1Ω 010 RS1P $\begin{matrix} \square & \square & \square \\ \square & \square & \square \end{matrix}$ K
Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).
 $5.62k\Omega$ 562×10^1 5621 RN½SR $\begin{matrix} \square & \square & \square & \square \\ \square & \square & \square & \square \end{matrix}$ F
- The Δ 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.

**AF assembly (AWZ1207)
SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
★★	IC101 OP-AMP IC	M5218P
★★	IC501 OP-AMP IC	M5218PF
★★	IC201, IC202	PA0016
★★	Q306	RN2201
★★	Q217, Q218	2SA1264N
★★	Q213, Q214	2SA965(A)
★★	Q201—Q204	2SA992
★★	Q209, Q210	2SC1845
★★	Q211, Q212	2SC2235(A)
★★	Q301, Q302	2SC2240
★★	Q205, Q206, Q303, Q304, Q503—Q506	2SC2603 (2SC1740S) (2SC2458)
★★	Q215, Q216	2SC3181N
★★	Q305	2SD438(A)
★	D401	RBV402
★	D307	RD13EB (HZ13EB)
★	D402, D403	RD16EB (HZ16EB)
★	D411, D412	RD3.0EB (HZ3.0EB)
★	D203, D204, D209, D210	RD5.6EB (HZ5.6EB)
★	D301—D306	1SS131
★	D215, D216, D219, D220, D404, D405	11E2 (S5566)

SWITCHES AND RELAY

Mark	Symbol & Description	Part No.
★★	S3 Push switch (DIRECT CD INPUT)	ASG1010
★★	S1 Push switch (CD/TUNER/TAPE1/ TAPE2/ADAPTOR/PHONE)	ASG1015
★★	S7 Push switch (MUTING)	SUYL2S
★★	RY301 Relay (PROTECTION)	ASR1005

COILS

Mark	Symbol & Description	Part No.
	L301, L302, L601—L604 AF choke coil (1μH)	ATH-133

CAPACITORS

Mark	Symbol & Description	Part No.
	C621 Ceramic (0.01μF/50V)	ACG-019
	C401, C402 Electrolytic (6800μF/56V)	ACH1018
	C215, C216	CCCSL030C50 (CCDSL030C50)
	C203, C204	CCCSL101J50 (CCDSL101J50)
	C223—C226	CCCSL101K500 (CCDSL101K500)
	C239, C240	CCCSL121J50 (CCDSL121J50)
	C241, C242	CCCSL150K500 (CCDSL150K500)
	C207, C208	CCCSL220J50 (CCDSL220J50)
	C206	CCCSL470J50 (CCDSL470J50)

3. SCHEMATIC DIAGRAM

Mark	Symbol & Description	Part No.
	C235—C238	CCCSL680J50 (CCDSL680J50)
	C301, C302	CEANP010M50
	C515, C516	CEASR47M50
	C309	CEAS010M100
	C310, C511, C512	CEAS010M50
	C411, C412	CEAS101M10
	C308, C513, C514	CEAS101M16
	C211, C212	CEAS101M63
	C101, C102, C113, C114, C501—C504	CEAS2R2M50
	C404, C405	CEAS221M25
	C105, C106	CEAS470M10
	C115, C116	CEAS470M25
	C219, C220, C407	CEAS470M50
	C406	CEAS470M63
	C307	CEAS471M6
	C201, C202, C217, C218	CEYA010M50
	C213, C214	CEYA330M16
	C121	CKCYB103K50 (CKDYB103K50)
	C103, C104	CKCYB331K50 (CKDYB331K50)
	C408	CKCYX473M25 (CKDYX473M25)
	C107, C108, C601—C614	CKCYB391K50 (CKDYB391K50)
	C209, C210	CKCYB681K50 (CKDYB681K50)
	C509, C510, C517, C518	CQMA154K50
	C109, C110	CQMA222J50
	C111, C112	CQMA822J50
	C303—C306	CQMA823K50
	C615—C620	CQMA472K50
	C205	CCDSL470J50

Mark	Symbol & Description	Part No.
△	R415, R416	RS1MF561J
	R317, R318	RS1LMF331J
△	R401, R402, R417	RS2LMF□□□J
	Other resistors	RD1/8PM□□□J

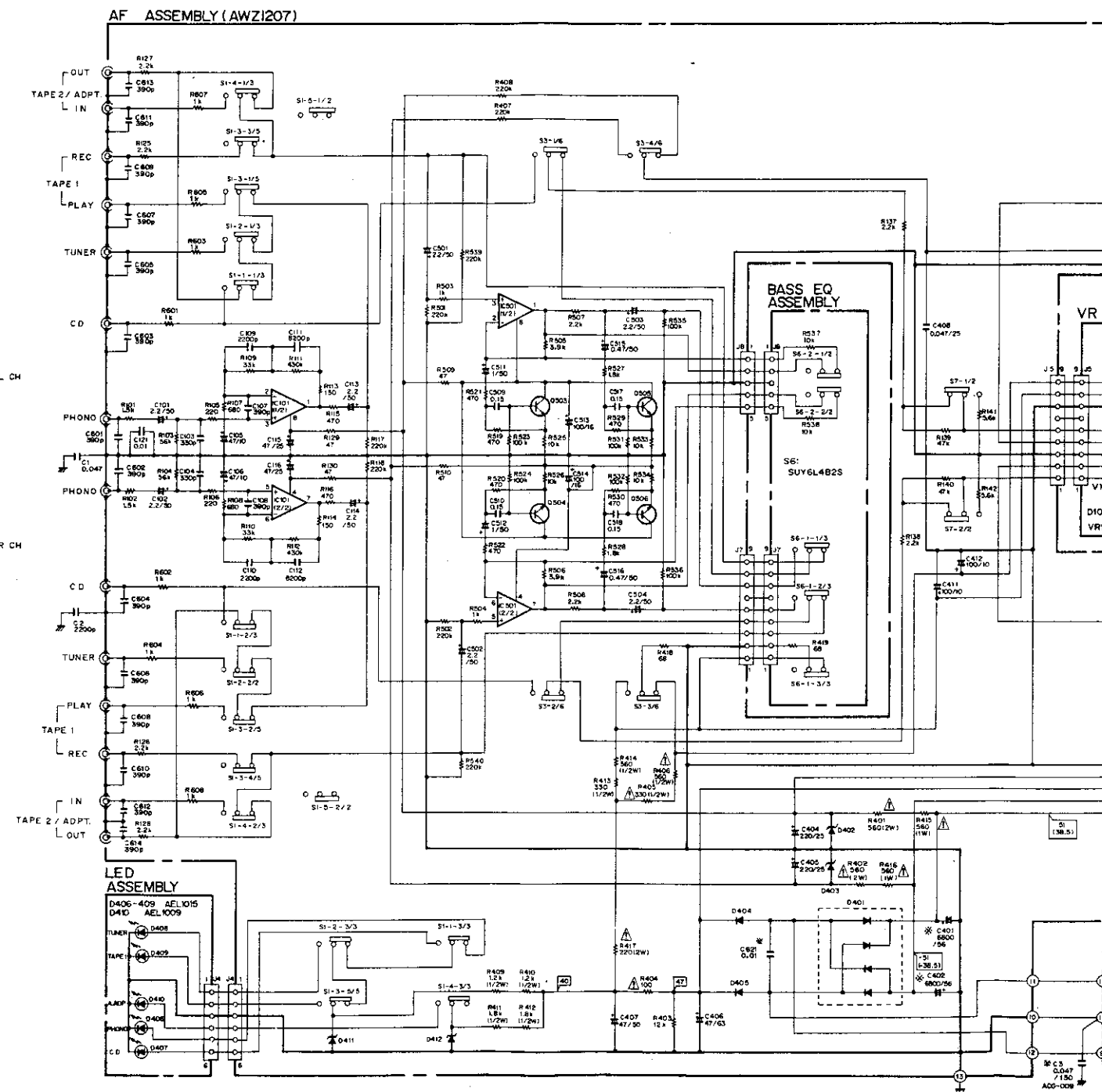
OTHERS

Mark	Symbol & Description	Part No.
	Terminal (4P) (TAPE1 REC/PLAY, TAPE2 ADAPTOR IN/OUT)	AKB-115
	Terminal (6P) (PHONO/CD/TUNER)	AKB-117
	Terminal (8P) (SPEAKERS R/L)	AKE-111

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R249, R250(0.22k×2/2W)	ACN-131
△	R406, R414	RD1/2PMFL561J
	R405, R409—R413	RD1/2PM□□□J
△	R239, R240, R307—R310	RD1/4MFL□□□J
	R245—R248, R277, R278	RD1/4PMF□□□J
△	R404	RD1/4PMF101J
	R101, R102, R105—R118, R125—R130, R137, R138, R203—R226, R233—R235, R238, R265—R272, R275, R276, R279—R284, R301—R304, R312, R314, R316, R321—R325, R403, R407, R408, R418, R509, R510, R601—R610	RD1/4PM□□□J
△	R241, R242	RFA1/4PS4RJ
△	R236, R237	RFA1/4PS470J

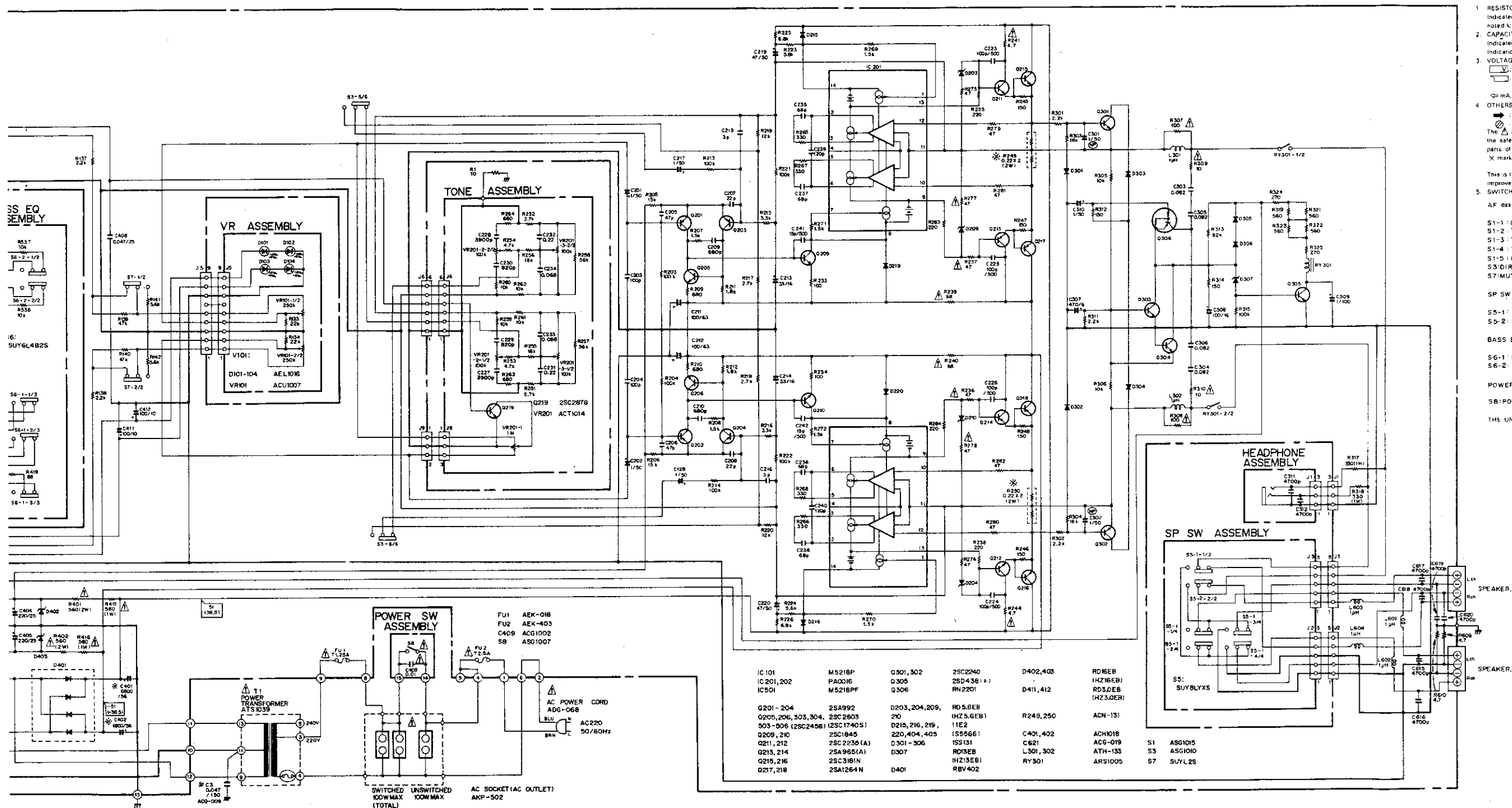


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NOTE: The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



- 1. RESISTORS: Indicated in Ω, 1/4W, 1/6W and 1/8W. ±5% tolerance unless otherwise noted. K: kΩ, M: MΩ, F: ±1%, G: ±2%, J: ±5%, 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:
 - ⏏: Signal voltage at 62 W + 62 W, 8Ω output (1 kHz)
 - ⏏: 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.
 - X 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
- AF assembly (AWZ1207)
- S1-1 CD ON - OFF
 - S1-2 TUNER ON - OFF
 - S1-3 TAP E1 ON - OFF
 - S1-4 TAP E2 / ADAPT ON - OFF
 - S1-5 PHONO ON - OFF
 - S3 DIRECT CD INPUT ON - OFF
 - S7 MUTING (-20dB) ON - OFF
- SP SW assembly
- S5-1 SPEAKERS A ON - OFF
 - S5-2 SPEAKERS B ON - OFF
- BASS EQ assembly
- S6-1 BASS EQUALIZER ON - OFF
 - S6-2 TYPE 1 / TYPE 2 1 - 2
- POWER SW assembly
- S8 POWER ON - OFF
- THE UNDERLINED INDICATES THE SWITCH POSITION

IC101	M5218P	Q301, 302	2SC2240	D402, 403	RD16EB
IC201, 202	PA001E	Q305	2SD438 (A)	D411, 412	(HZ16EB)
IC501	M5218PF	Q306	RN2201		RD32EB
Q201 - 204	2SA992	D203, 204, 209,	RD5.6EB	R249, 250	ACN-131
Q205, 206, 303, 304,	2SC2603	210	(HZ5.6EB)		ACH101B
503 - 506 (2SC2456)	(2SC1740S)	D215, 216, 219,	11E2	C401, 402	ACG-019
Q208, 210	2SC1645	220, 404, 405	(S5566)	C621	ATH-133
Q211, 212	2SC2236 (A)	D301 - 306	IS5131	L301, 302	RS1005
Q213, 214	2SA965(A)	D307	RD13EB	RY301	
Q215, 216	2SC3181N		(HZ13EB)		
Q217, 218	2SA1264N	D401	RBV402		

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4. P.C. BOARDS CONNECTION DIAGRAM

NOTE

- This P.C.B. connection diagram is viewed from the parts mounted side.
- 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.

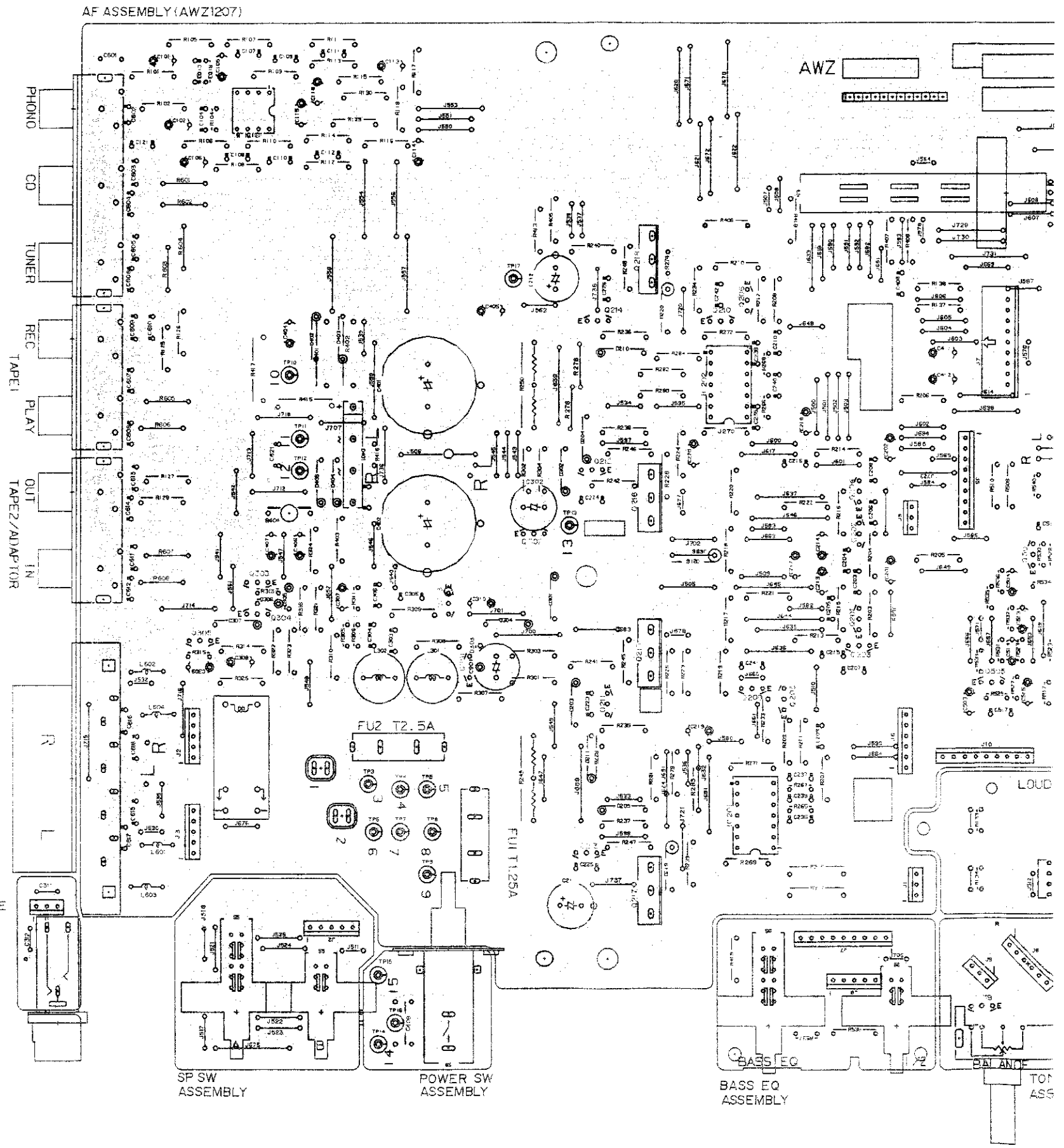
P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
		Transistor
		Radiator type transistor
		Diode
		Resistor
		Capacitor (Polarity)
		Capacitor (Non-polarity)

Others

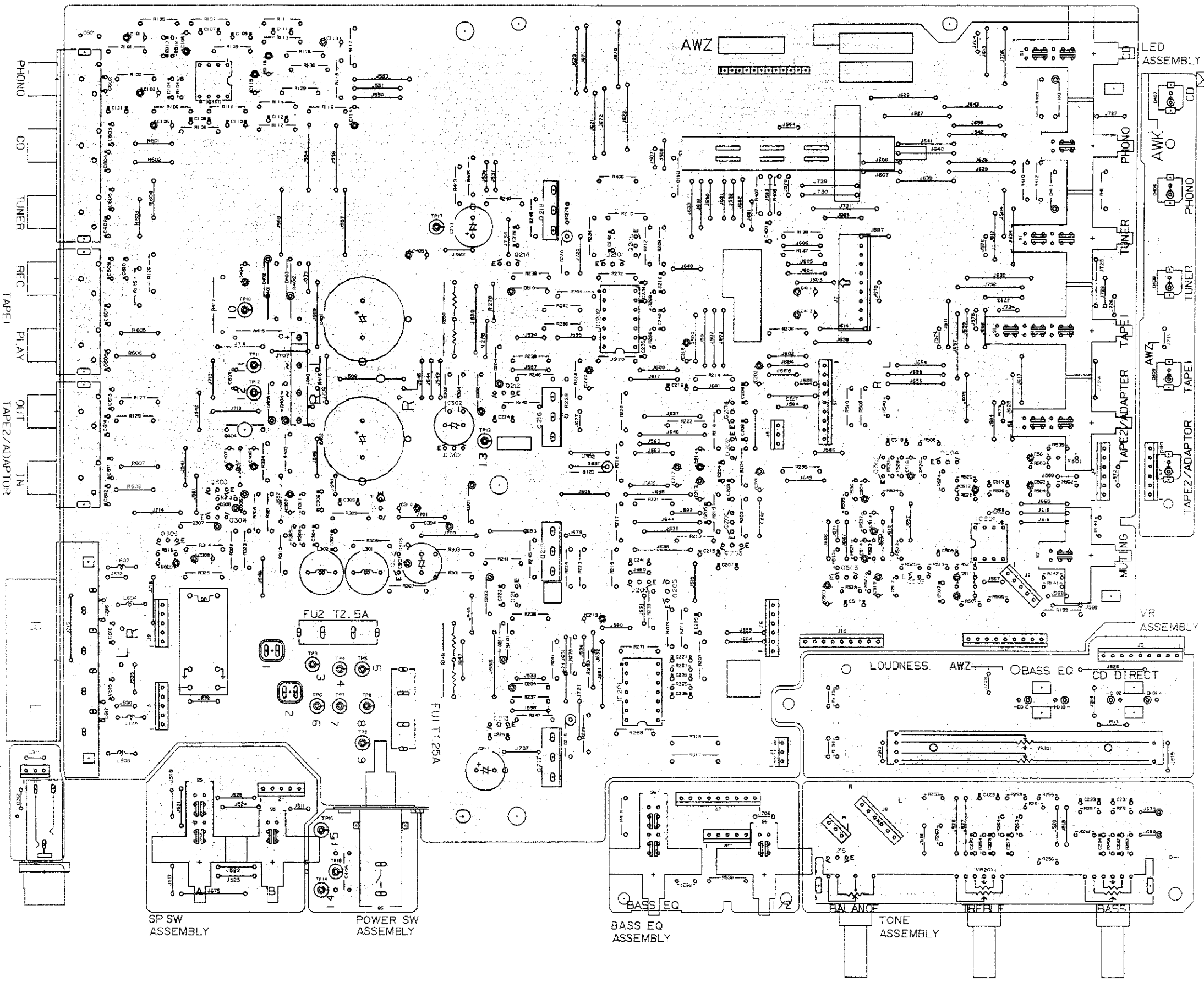
P.C.B. pattern diagram indication	Part Name
	IC
	Switch
	Relay
	Coil
	Filter
	Variable resistor or Semi-fixed resistor

- The capacitor terminal marked with "double circles" shows negative terminal.
- The diode terminal marked with "double circles" shows cathode side.
- The transistor terminal marked with "E" is affixed shows the emitter.

IC101	M5218P
IC201, IC202	PA0016
IC501	M5218PF
Q201-204	2SA992
Q205, 206, 303, 304,	2SC2603
502-506	2SC1740S(1) 2SC245B(1)
Q209, 210	2SC1845
Q211, 212	2SC2235(A)
Q213, 214	2SA963(A)
Q215, 216	2SC3181N
Q217, 218	2SA1264N
Q301, 302	2SC2240
Q305	2SD458-4
Q306	2N2201
D203, 204, 206, 210	RD5.6EB (HZ 5.6EB)
D215, 216, 219	11E2
D20, 404, 405	IS5566
D301-306	IS5131
D307	RD13EB (HZ13EB)
D401	RBV402
D402, 403	RD16EB (HZ16EB)
D411, 412	RD3.0EB (HZ3.0EB)
G219	2SC267B
G101-104	4EL1016
R406-409	4E-1015
R410	4E11009



AF ASSEMBLY (AWZ1207)



10-01	0218	0219	0220	0221	0222	0223	0224	0225	0226	0227	0228	0229	0230	0231	0232	0233	0234	0235	0236	0237	0238	0239	0240	0241	0242	0243	0244	0245	0246	0247	0248	0249	0250	0251	0252	0253	0254	0255	0256	0257	0258	0259	0260	0261	0262	0263	0264	0265	0266	0267	0268	0269	0270	0271	0272	0273	0274	0275	0276	0277	0278	0279	0280	0281	0282	0283	0284	0285	0286	0287	0288	0289	0290	0291	0292	0293	0294	0295	0296	0297	0298	0299	0300
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HEADPHONE
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PHONO

CD

TUNER

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FLYA

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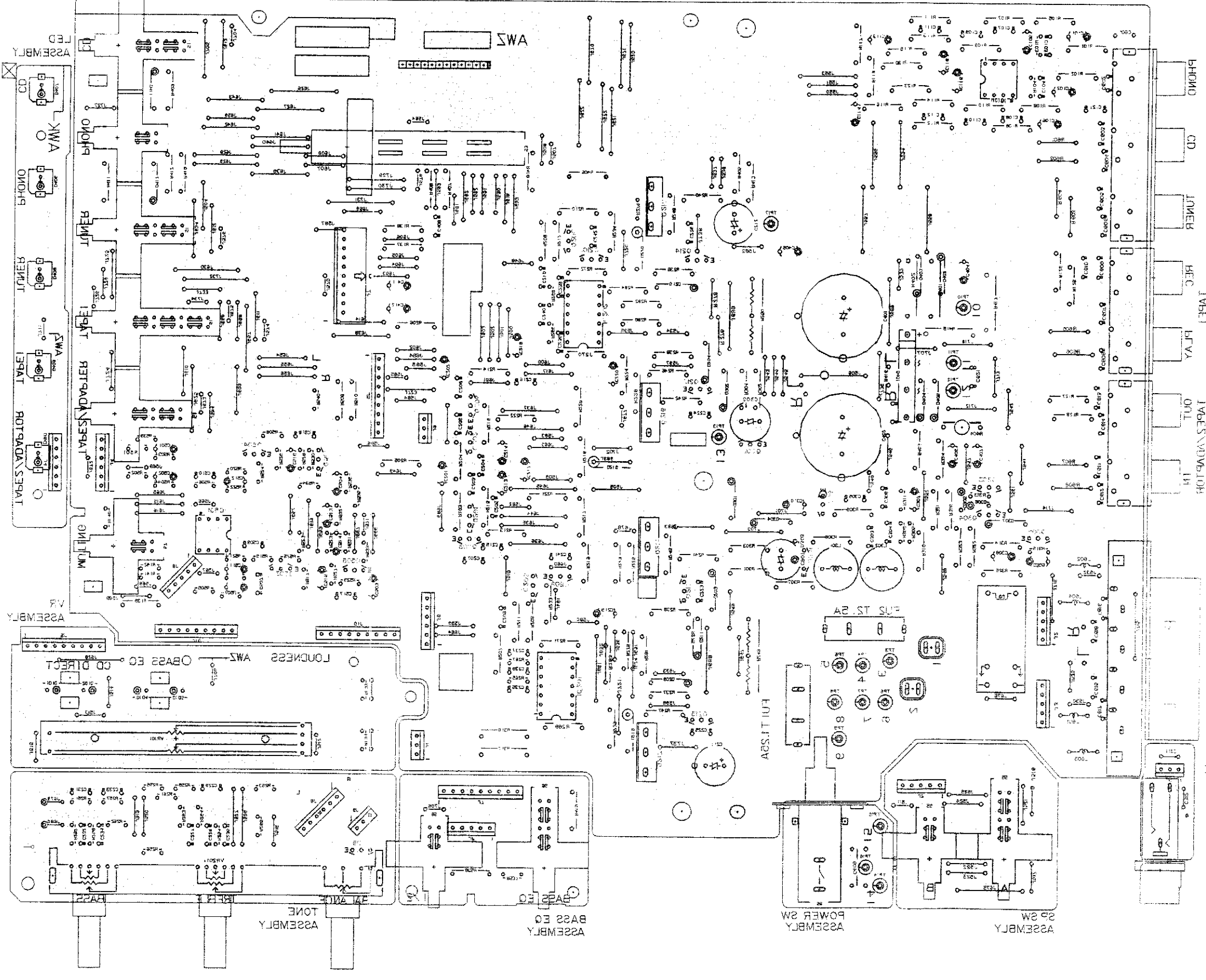
LH

ASSEMBLY
2a SW

ASSEMBLY
POWER SW

FULL T. I. SW

FUS ST BA



DE ASSEMBLY (AW 2102)

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A. P.C. BOARDS CONNECTION DIAGRAM

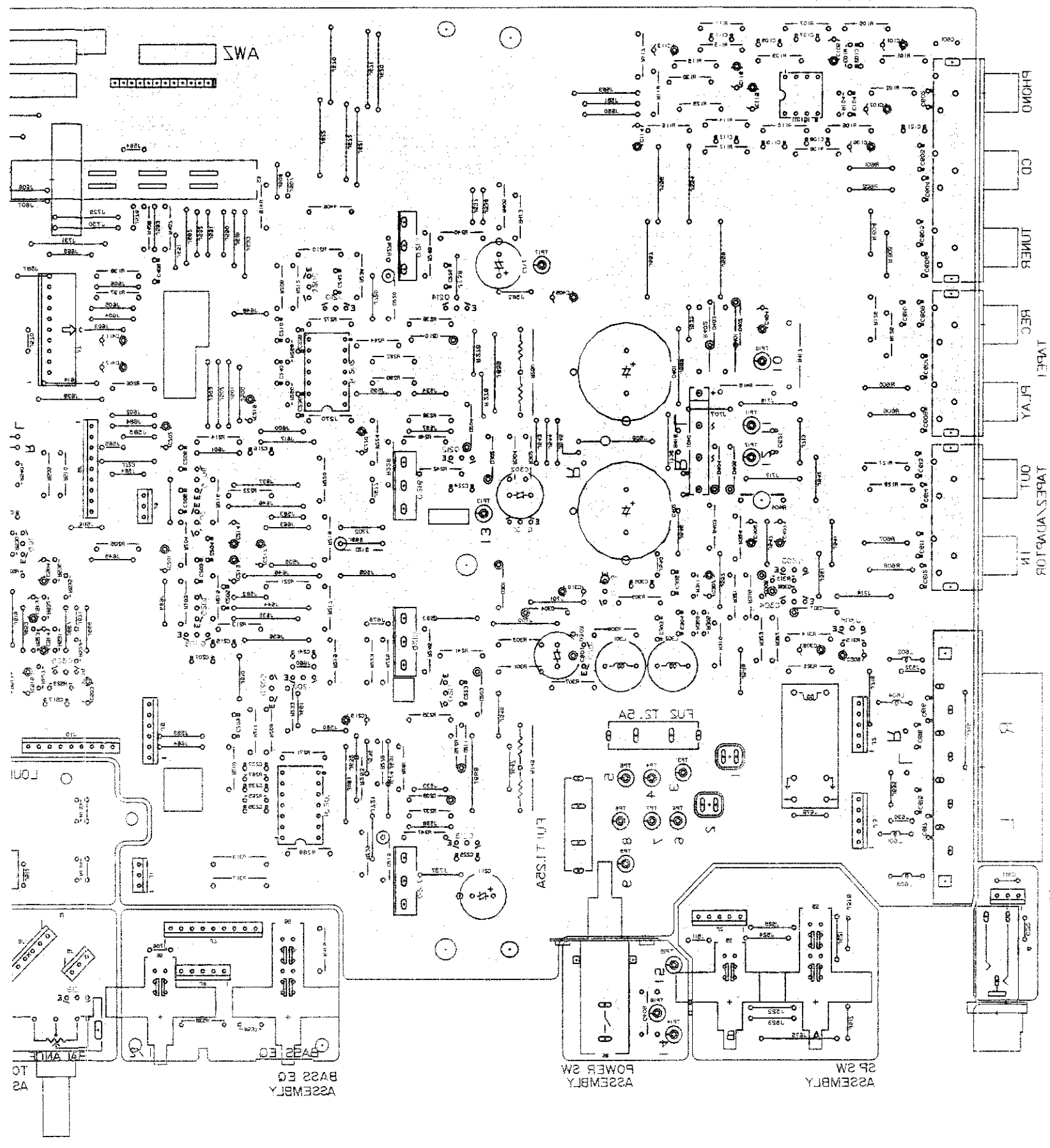
NOTE
 1. The P.C.B. connect on diagram is view from the parts mounted side.
 2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
		Variable resistor
		Filter
		Coil
		Relay
		Switch
		IC

P.C.B. pattern diagram indication	Part Name
	Variable resistor
	Filter
	Coil
	Relay
	Switch
	IC

3. The conductor, terminal mark with the number "1" and the double circle show head the terminal.
 4. The holes for mounting parts are shown by the symbol as shown in the drawing.
 5. The wiring symbol for the board is shown by the symbol as shown in the drawing.

REF: 040
 040-000
 040-001
 040-002
 040-003
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 040-006
 040-007
 040-008
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A

B

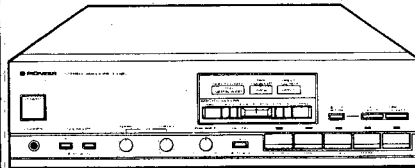
C

D

 **PIONEER®**

Service Manual

**CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS**



**ORDER NO.
ARP1236-A**

STEREO AMPLIFIER

A-X420(BK)

MODEL A-X420[BK] COMES IN THREE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Power requirement	Export destination
HE	AC220V, 240V (Switchable)*	European continent
HB	AC220V, 240V (Switchable)*	United Kingdom
HEZ	AC220V, 240V (Switchable)	West Germany

*Change the primary wiring of the power transformer.

- This service manual is applicable to the HE and HB types.
- As to the HEZ type, please refer to the additional service manual (ARP1237).

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TEL: (03) 580-9911

SI© JULY 1986 Printed in Japan

1. SPECIFICATIONS

Amplifier Section

DIN continuous power output (both channels driven)
 1 kHz, 1%, 8 Ω 62 W + 62 W

DIN music power (both channels driven)
 1 kHz, 1%, 8 Ω 128 W + 128 W

Total harmonic distortion
 1 kHz, 30 W, 8 Ω * 0.005%

Input (sensitivity/impedance)
 PHONO MM 2.5 mV/50 kΩ
 TUNER, CD, TAPE PLAY, ADP 150 mV/50 kΩ

Overload level
 PHONO MM 1 kHz, 0.1% 150 mV

Output (level/impedance)
 TAPE REC 150 mV/2.2 kΩ

Frequency Response
 PHONO MM 20 Hz to 20 kHz ±0.5 dB
 TUNER, CD, AUX 10 Hz to 70 kHz +1 dB
 -3 dB

Tone Control
 BASS ±8 dB 100 Hz
 TREBLE ±8 dB 10 kHz
 MUTING -20 dB

Hum and Noise (IHF short circuited, A network)
 PHONO MM 72 dB
 TUNER, CD, TAPE PLAY, ADP 100 dB

Hum and Noise (DIN, continuous power/50 mW)
 PHONO MM 68 dB/60 dB
 TUNER, CD, TAPE PLAY, ADP 82 dB/62 dB

Power Supply/Miscellaneous

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

Power consumption
 European model 360 W
 U.K., Australian models 360 W

AC outlets
 Switched (x 2) 100 W
 UN Switched (x 1) 100 W

Dimensions 360 (W) x 337 (D) x 100 (H) mm
 14-3/16 (W) x 13-1/4 (D) x 3-7/8 (H) in

Weight 5.6 kg (12 lb 6 oz)

Accessories

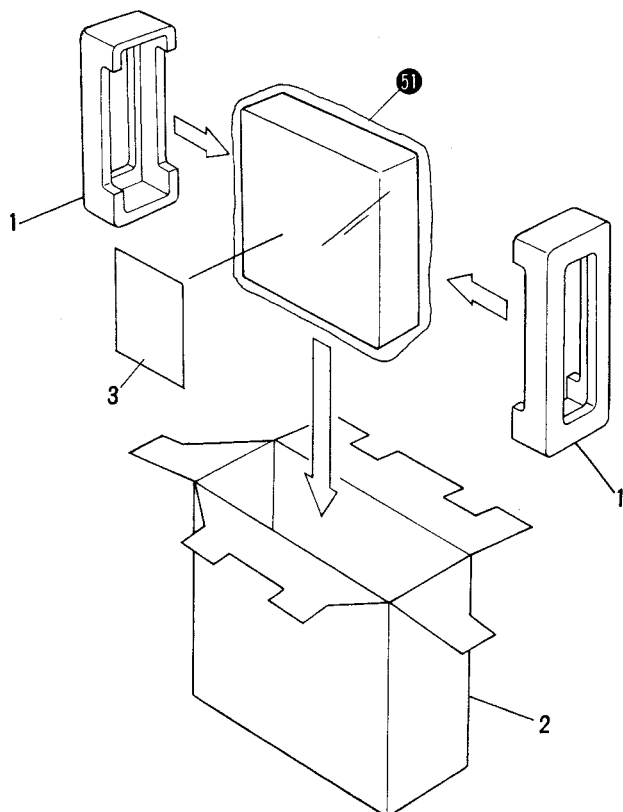
Operating instructions 1

- Specifications and design subject to possible modification without notice due to improvements.
- * Measure by Audio Spectrum Analyzer.

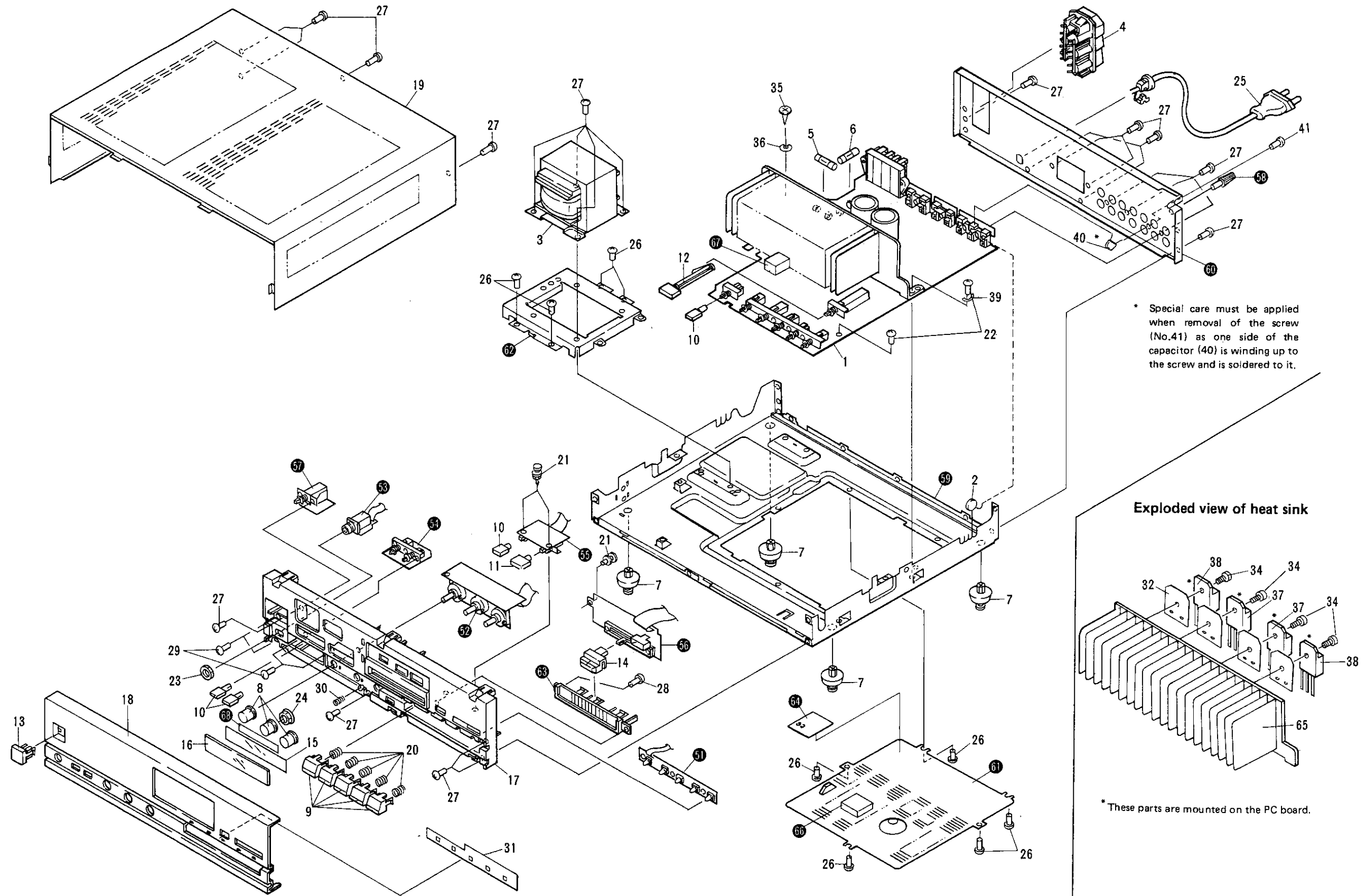
2. PACKING

Parts List of Packing

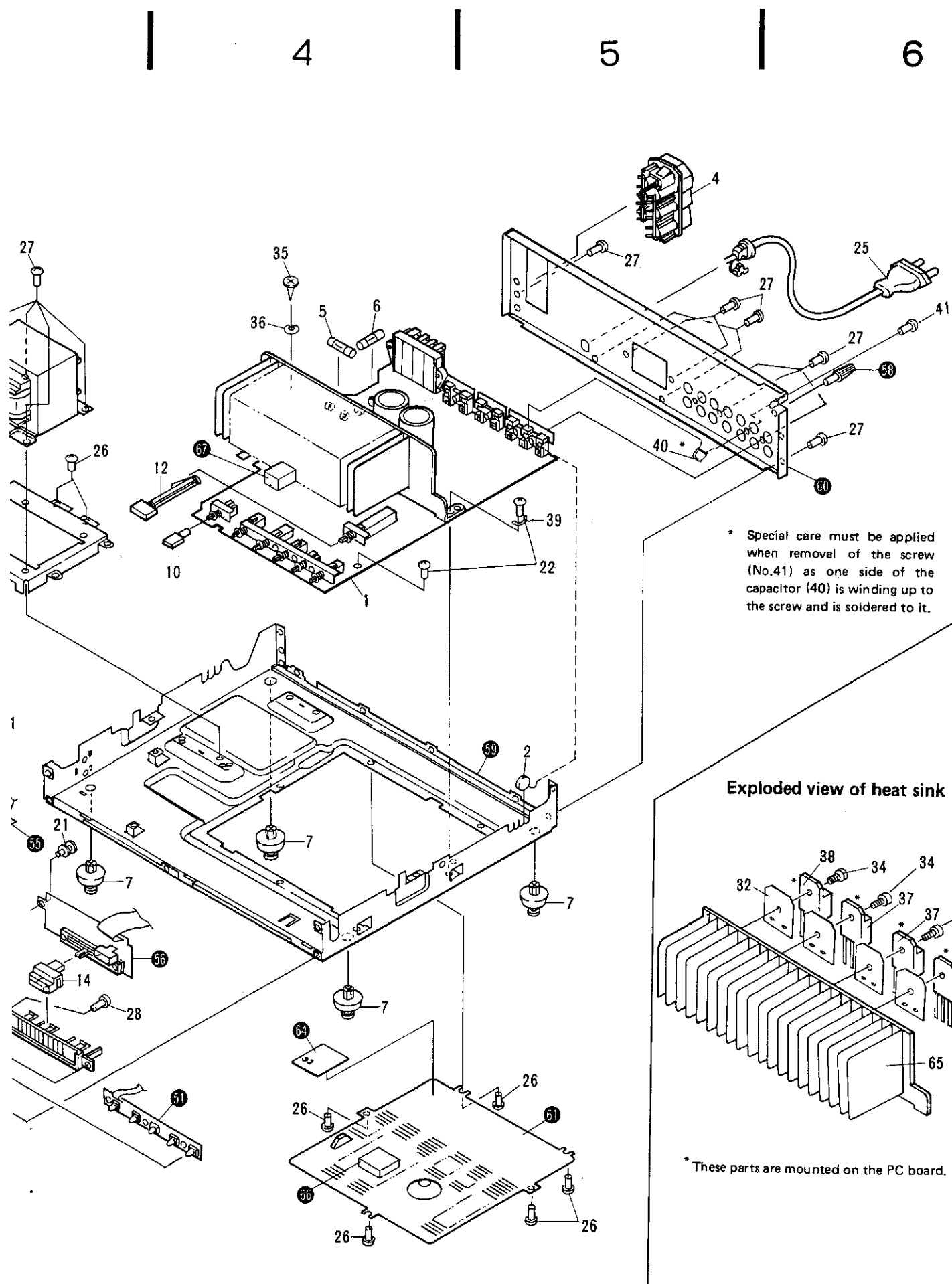
Mark	No.	Part No.	Description
	1	AHA1024	Front Rear pad
	2	AHD1111	Packing case
	3	ARE1032 (HE type)	Operating instructions (English/French German/Italian)
		ARB1039 (HB type)	Operating instructions (English)
	51		Packing sheet



3. EXPLODED VIEW



Pa
Ma
△
△
△
△



NOTES:

- Parts without part number cannot be supplied.
- The Δ 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 $\star\star$ and \star .
 $\star\star$ **GENERALLY MOVES FASTER THAN \star**
 This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by " \odot " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List of Exploded view

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	AWZ1131	AF Assembly	Δ	25	ADG-068	AC Power cord
	2	CKDYF473Z50	Ceramic capacitor (C1)		26	BBZ30P060FZK	Screw
$\Delta \star\star$	3	ATS1039	Power transformer (220V/240V, T1)		27	BBZ30P080FZK	Screw
Δ	4	AKP-502 (HE type) AKP-505 (HB type)	AC Socket 3P (AC OUTLET)		28	BPZ30P080FZK	Screw
					29	VMZ30P060FMC	Screw
					30	ABH1018	Coil spring
					31	AMR1090	Indicator Lens
					32	AEC-818	Mica sheet
$\Delta \star\star$	5	AEK-018 (HE type) AEK-509 (HB type)	Fuse (T1.25A, FU1)		33	AEP-230	Rivet
					34	ABA-258	Screw
$\Delta \star\star$	6	AEK-403 (HE type) AEK-512 (HB type)	Fuse (T2.5A, FU2)		35	BYC40P120FMC	Screw
					36	WS40P120FMC	Washer
				$\star\star$	37	2SA1264N	Transistor(Q217, Q218)*
				$\star\star$	38	2SC3181N	Transistor(Q215, Q216)*
	7	AEP-320	Leg assembly		39	WS30FMC	Washer
	8	AAB1010	Rotary knob (BASS, TREBLE, BALANCE)		40	CQMA222K50	Capacitor
	9	AAD1056	Function knob (ADAPTOR/TEPE2, TAPE1, TUNER, PHONE, CD)		41	ABA-115	Screw
	10	AAD1057	Push knob (A) (SPEAKERS, TYPE1, TYPE2)		51		LED assembly
	11	AAD1058	Push knob (B) (DIRECT CD INPUT)		52		Tone assembly
	12	AAD1059	Push rod		53		Headphone assembly
	13	AAD1069	Knob (POWER)		54		SP SW assembly
	14	AAE1034	Knob (MASTER VOLUME)		55		Base EQ assembly
	15	AAK1127	Display plate (B)		56		VR assembly
	16	AAK1128	Display plate (A)		57		Power SW assembly
	17	AMB1090	Front panel Base		58		Terminal (GND)
	18	AMB1092	Front panel		59		Chassis
	19	ANE1044	Bonnet case		60		Rear panel
	20	ABH1017	Coil spring		61		Bottom plate
	21	AMR1066	Rivet		62		Transformer holder
	22	BBZ30P100FZK	Screw		63		Coil spring
	23	ABN-065	Nut		64		Balire
	24	ABN-072	Nut (M9)		65		Heat sink
					66		Cushion rubber
					67		Cushion rubber
					68		Display filter

A

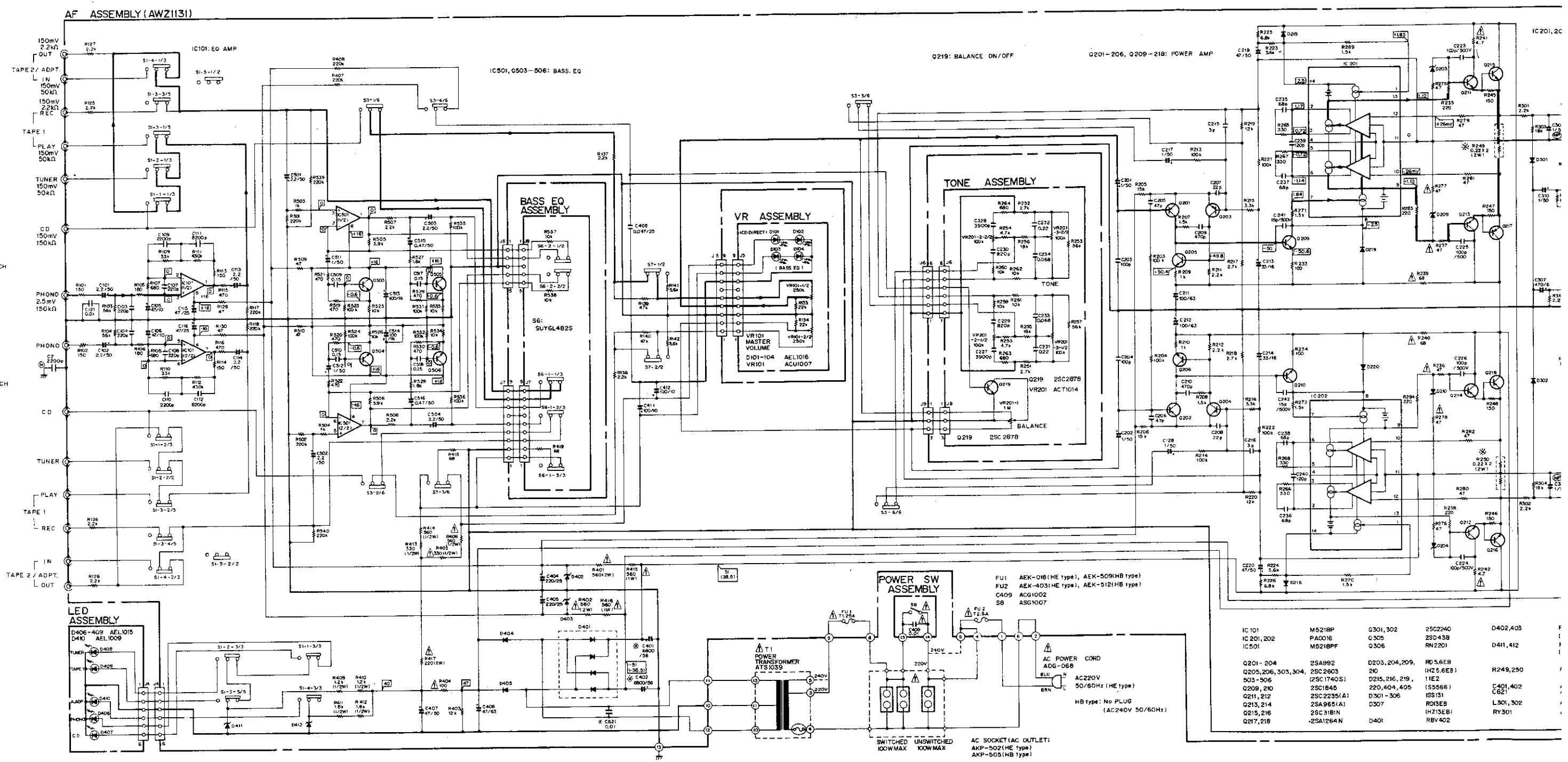
B

C

D

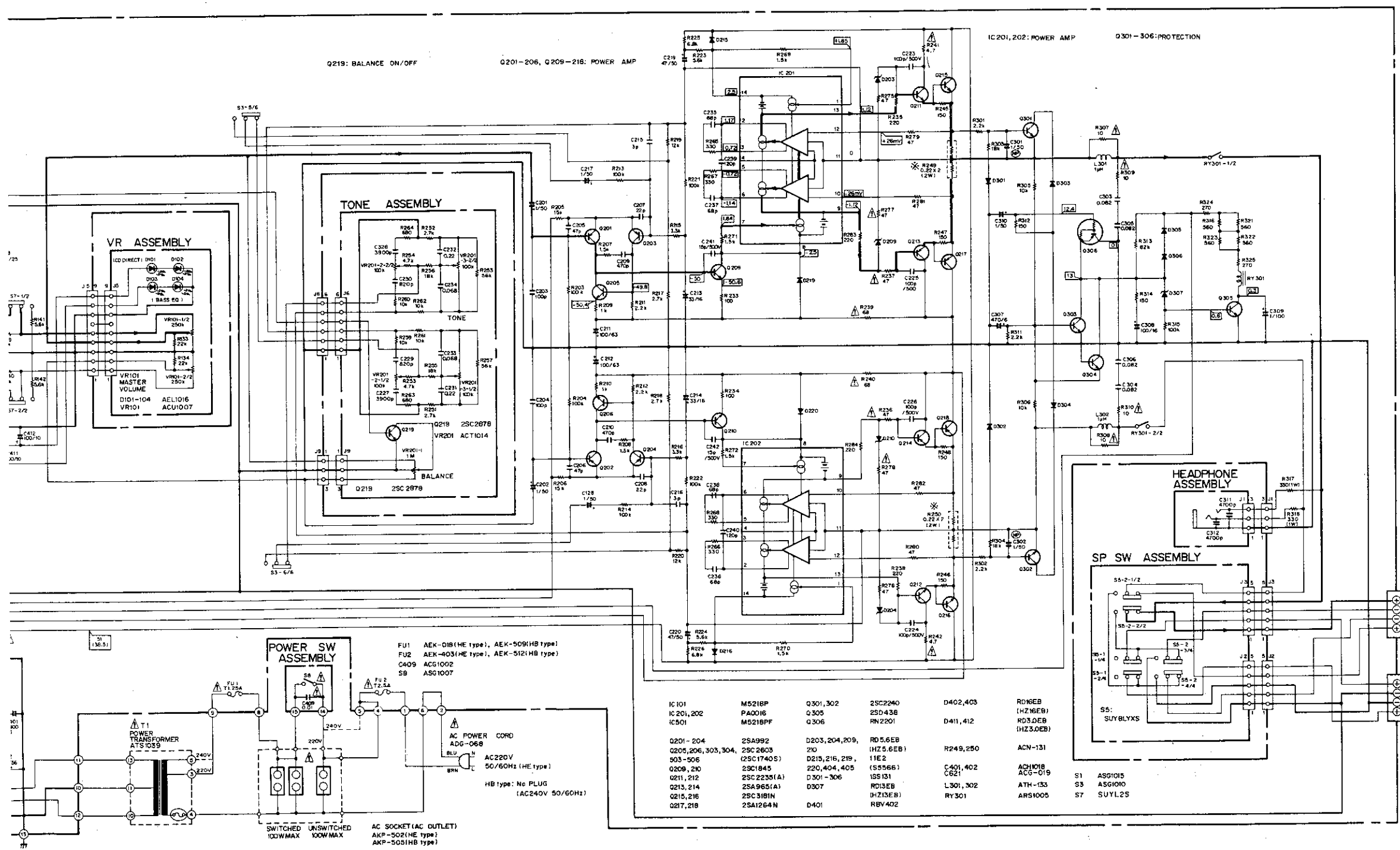
4. SCHEMATIC DIAGRAM

A
B
C
D



- LINE VOLTAGE SELECTION
1. Extract the power supply cord.
 2. Remove the bonnet case.
 3. Connect the lead (Yellow) from No.9 terminal of 1 220V: No.3 terminal of the transformer
240V: No.5 terminal of the transformer

NOTE:
 The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



- RESISTORS:**
 Indicated in Ω, 1/4W, 1/8W and 1/8W, ±5% tolerance unless otherwise noted. K: M, M/L (F): ±1%, (G): ±2%, (J): ±10%, (M): ±20% tolerance
 - CAPACITORS:**
 Indicated in capacity (pF)/voltage (V) unless otherwise noted. p: pF. Indication without voltage is 50V except electrolytic capacitor.
 - VOLTAGE, CURRENT:**
 □: Signal voltage at 62 W + 62 W, 80 output (1 kHz)
 □: DC voltage (V) at no input signal (Value in □) is DC voltage at rated power.
 □ mA: DC current at no input signal
 - 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:**
- AF assembly (AWZ 1131)
- | | |
|----------------------|----------|
| S1-1: CD | ON - OFF |
| S1-2: TUNER | ON - OFF |
| S1-3: TAP E1 | ON - OFF |
| S1-4: TAP E2 / ADAPT | ON - OFF |
| S1-5: PHONO | ON - OFF |
| S3: DIRECT CD INPUT | ON - OFF |
| S7: MUTE (-20dB) | ON - OFF |
- SP SW assembly
- | | |
|------------------|----------|
| S5-1: SPEAKERS A | ON - OFF |
| S5-2: SPEAKERS B | ON - OFF |
- BASS EQ assembly
- | | |
|-----------------------|----------|
| S6-1: BASS EQUALIZER | ON - OFF |
| S6-2: TYPE 1 / TYPE 2 | 1 - 2 |
- POWER SW assembly
- | | |
|-----------|----------|
| S8: POWER | ON - OFF |
|-----------|----------|
- THE UNDERLINED INDICATES THE SWITCH POSITION

A

B

C

D

IC 101	M521BP	Q301, 302	2SC2940	D402, 403	RD3EB
IC 201, 202	PA001B	Q305	2SD43B	D411, 412	RD3.0EB
IC 301	M521BPF	Q306	RN2201		RD3.0EB
Q201 - 204	2SA992	D203, 204, 209,	RD 5.6EB	R249, 250	ACN-131
Q205, 206, 303, 304,	2SC2603	210	(HZ 5.6EB)		
503 - 506	(2SC1740S)	D215, 216, 219,	11E2		
Q208, 210	2SC1845	220, 404, 405	(S5566)	C401, 402	ACH101B
Q211, 212	2SC2235(A)	D301 - 306	ISS131	C621	ACG-019
Q213, 214	2SA965(A)	D307	RD13EB	L301, 302	ATH - C35
Q215, 216	2SC3181N	D401	(HZ13EB)	RY301	ARS1005
Q217, 218	2SA1264N		RBV402		S7
					SUYL25

LINE VOLTAGE SELECTION

1. Extract the power supply cord.
2. Remove the bonnet case.
3. Connect the lead (Yellow) from No.9 terminal of the AF assembly as follows:
 220V: No.3 terminal of the transformer
 240V: No.5 terminal of the transformer

4. Connect the lead (Yellow) from No.14 terminal of the Power switch assembly as follows:
 220V: L side of the AC socket (Unswitched)
 240V: No.5 terminal of the AF assembly
5. Be sure to replace the power supply voltage label on the rear panel.

Description.	Part No.
220V label	AAX-193
240V label	AAX-192

5. P.C. BOARDS CONNECTION DIAGRAM

AF ASSEMBLY (AWZ1131)

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
		Transistor
		Radiator type transistor
		Diode
		Resistor
		Capacitor (Polarity)
		Capacitor (Non-polarity)

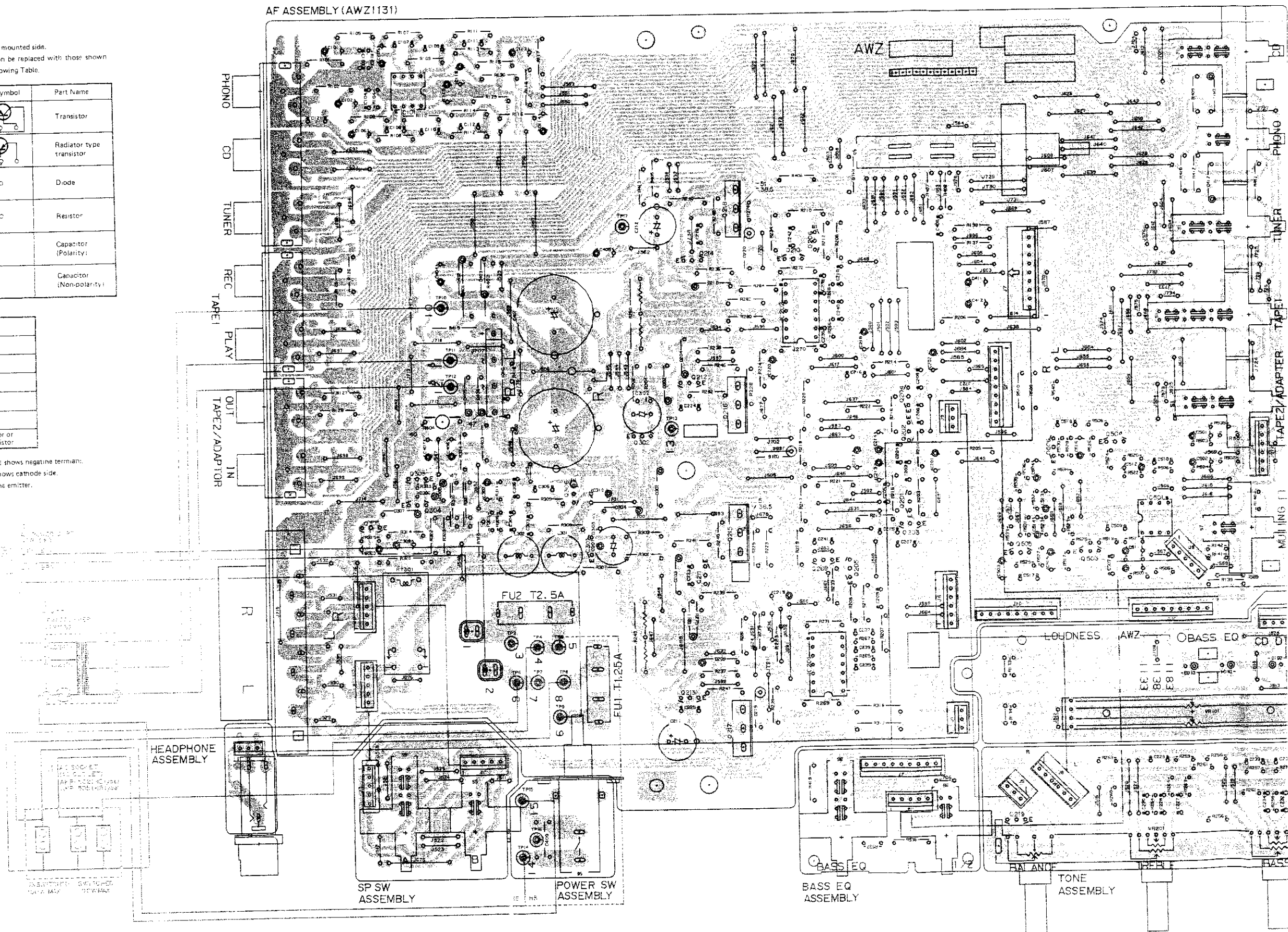
Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Fetler
V.R.	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.

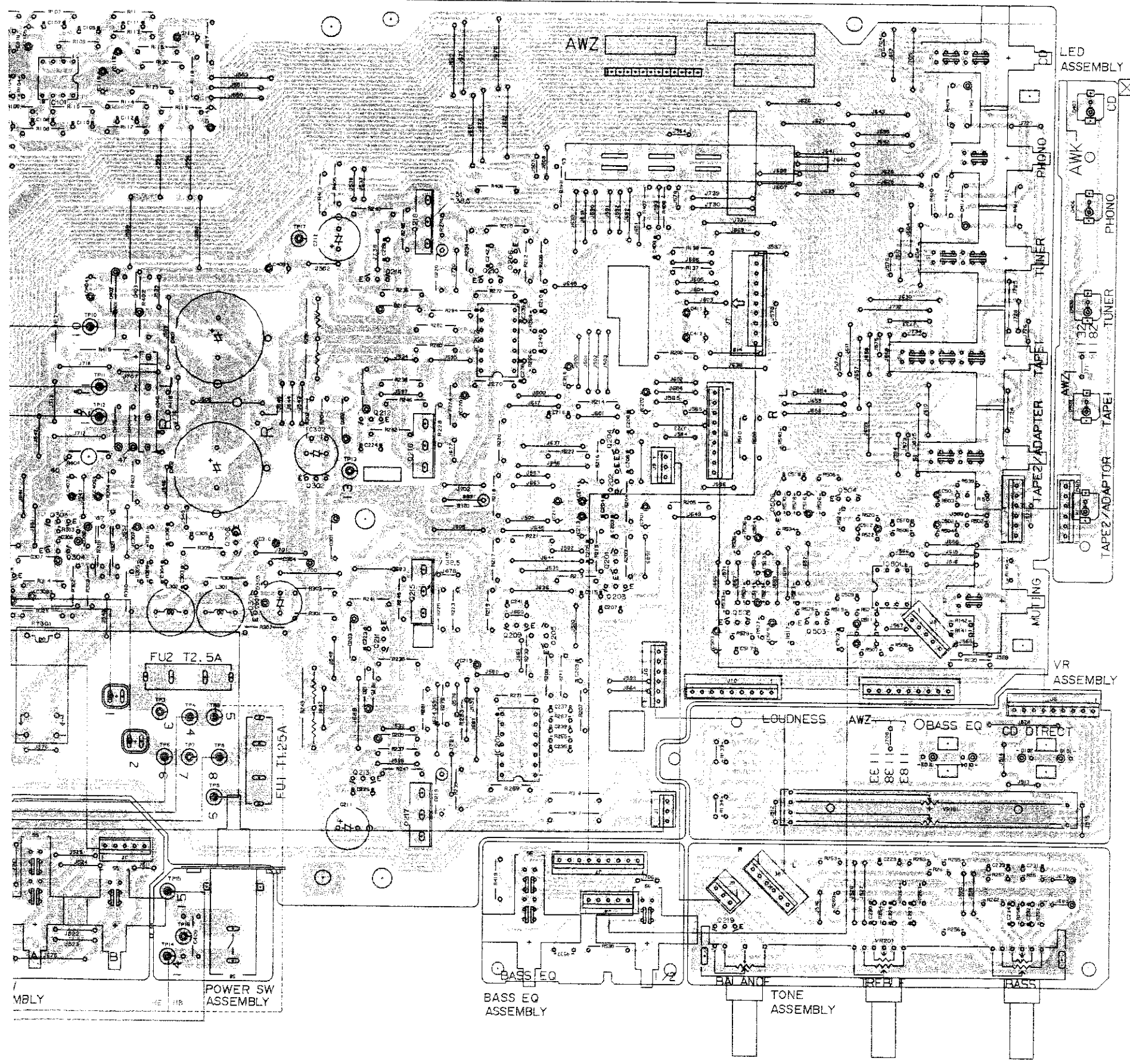
AF ASSEMBLY

IC 01	M521BP
IC 201, IC 202	94001E
CS 01	M521BPF
Q201-204	2SA992
Q205, 206, 303, 304	2SC2603
Q207-208	(2SC1740S)
Q209, 210	2SC1845
Q211, 212	2SC2235(A)
Q213, 214	2SA965(A)
Q215, 216	2SC3181N
Q217, 218	2SA1264N
Q301, 302	2SC2240
Q305	2SD438
Q306	RN2201
D203, 204, 209, 210	RD5.6EB
D215, 216, 219	(HZ5.6EB)
D220, 404, 405	1E2
D301-306	(S5566)
D307	1S5131
F401	RD13EB
L402, 403	(HZ13EB)
Q411, 412	RBV402
	RD16EB
	(HZ16EB)
	RD3.0EB
	(HZ3.0EB)

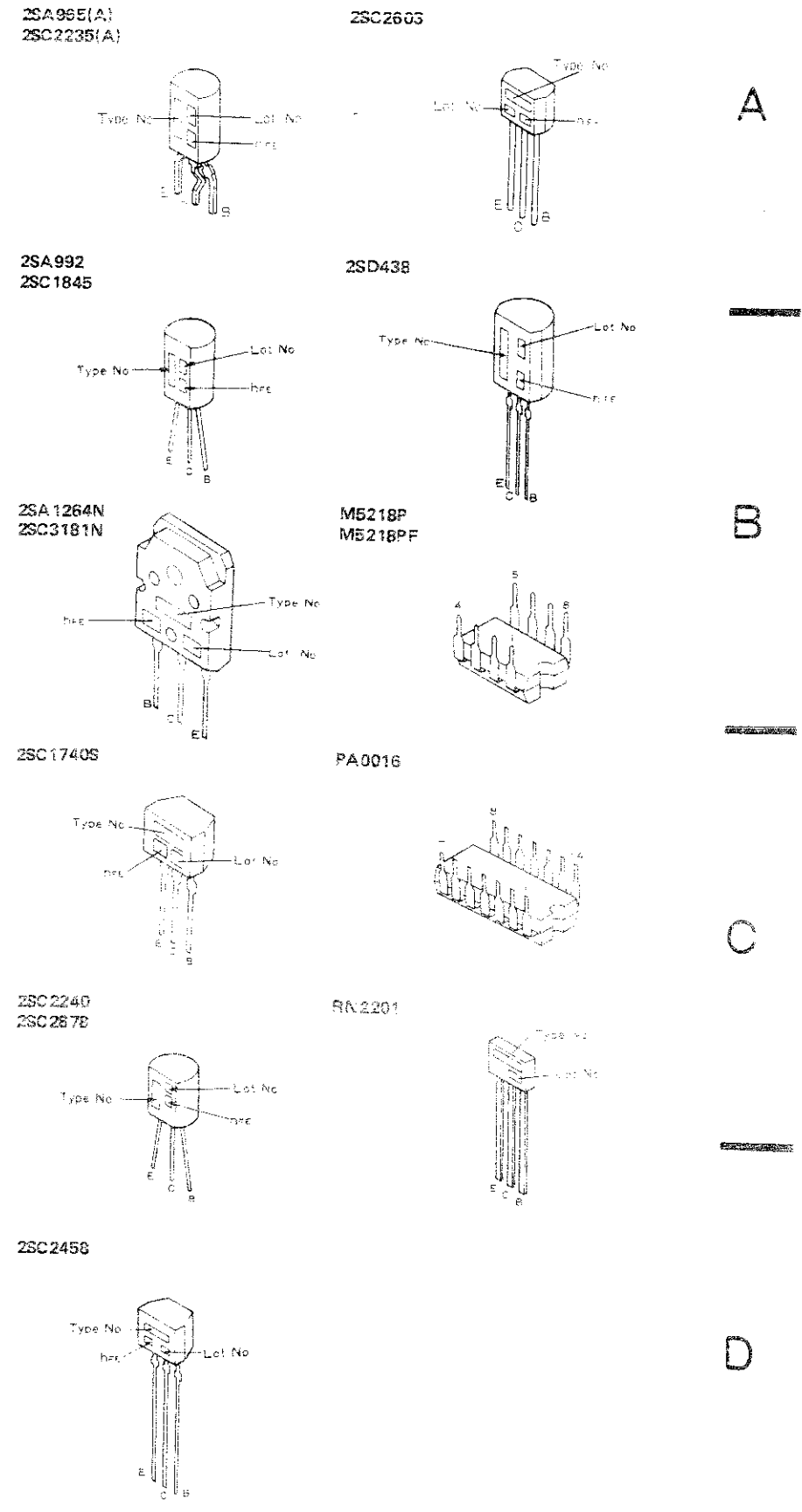


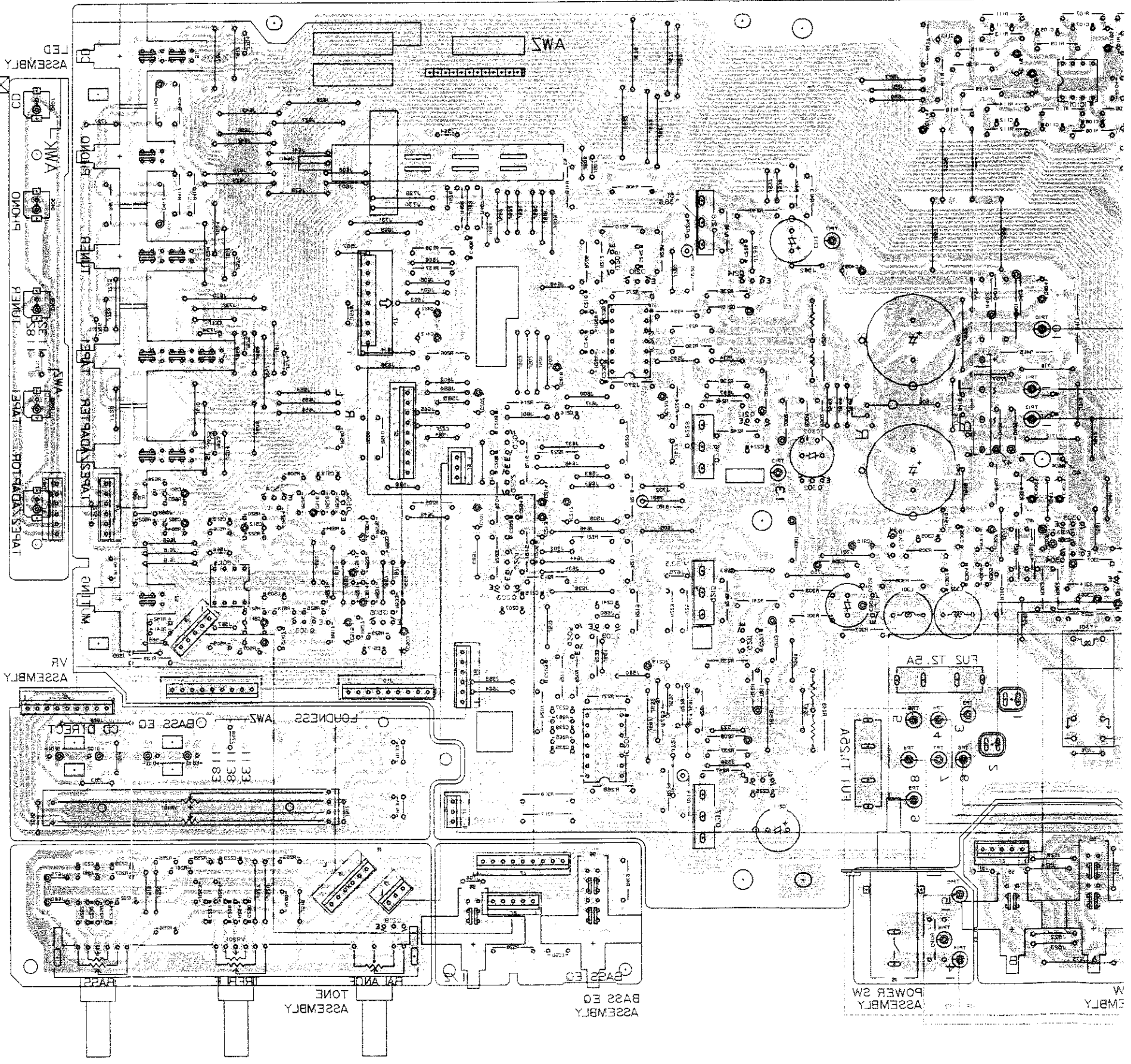
1 2 3 4 5 6

Z1131)



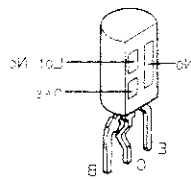
External Appearance of Transistors and ICs



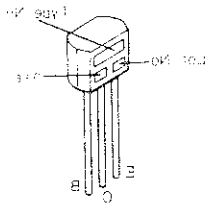


External Appearance of Transistors and ICs

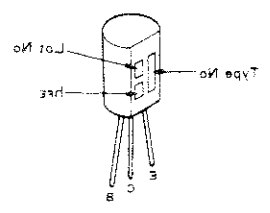
2SC238(A)



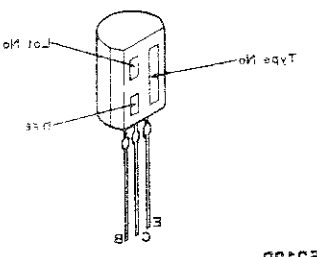
2SC2803



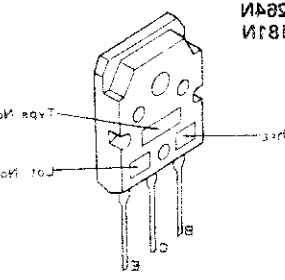
2SC1845



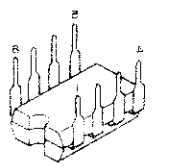
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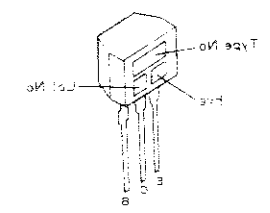
2SC181N



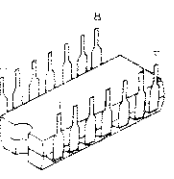
MS218P



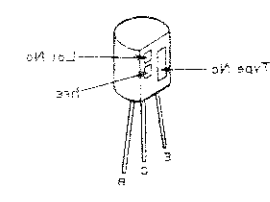
2SC1402



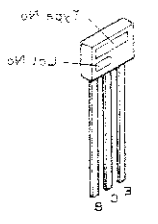
PA0016



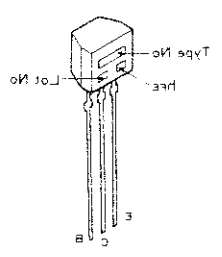
2SC3878



RM2301



2SC3498



A

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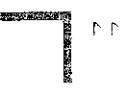
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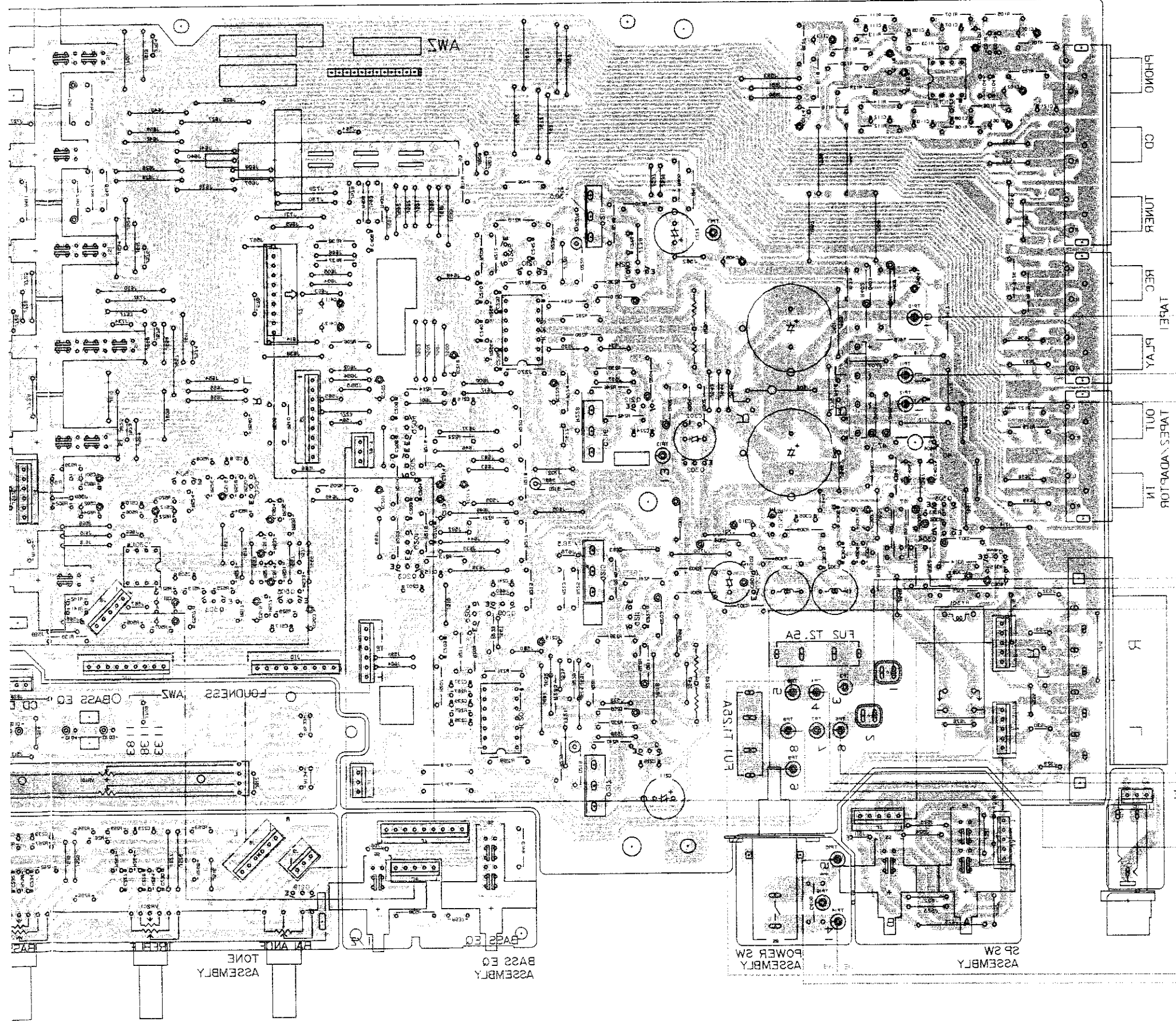
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4



B. P.C. BOARDS CONNECTION DIAGRAM

AF ASSEMBLY (AW21131)



P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
		Transistor
		Resistor type
		Diode
		Resistor
		Capacitor (Polar)
		Capacitor (Non-polar)

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

- NOTE
1. The 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 impedance in the following Table.
 3. The diode symbol marked with (double circles) shows cathode side.
 4. The diode symbol marked with (double circles) shows anode side.
 5. The resistor symbol to which E is affixed shows the emitter.

THE ASSEMBLY

MS308B	MS189B
MS307B	MS188B
MS306B	MS187B
MS305B	MS186B
MS304B	MS185B
MS303B	MS184B
MS302B	MS183B
MS301B	MS182B
MS300B	MS181B
MS299B	MS180B
MS298B	MS179B
MS297B	MS178B
MS296B	MS177B
MS295B	MS176B
MS294B	MS175B
MS293B	MS174B
MS292B	MS173B
MS291B	MS172B
MS290B	MS171B
MS289B	MS170B
MS288B	MS169B
MS287B	MS168B
MS286B	MS167B
MS285B	MS166B
MS284B	MS165B
MS283B	MS164B
MS282B	MS163B
MS281B	MS162B
MS280B	MS161B
MS279B	MS160B
MS278B	MS159B
MS277B	MS158B
MS276B	MS157B
MS275B	MS156B
MS274B	MS155B
MS273B	MS154B
MS272B	MS153B
MS271B	MS152B
MS270B	MS151B
MS269B	MS150B
MS268B	MS149B
MS267B	MS148B
MS266B	MS147B
MS265B	MS146B
MS264B	MS145B
MS263B	MS144B
MS262B	MS143B
MS261B	MS142B
MS260B	MS141B
MS259B	MS140B
MS258B	MS139B
MS257B	MS138B
MS256B	MS137B
MS255B	MS136B
MS254B	MS135B
MS253B	MS134B
MS252B	MS133B
MS251B	MS132B
MS250B	MS131B
MS249B	MS130B
MS248B	MS129B
MS247B	MS128B
MS246B	MS127B
MS245B	MS126B
MS244B	MS125B
MS243B	MS124B
MS242B	MS123B
MS241B	MS122B
MS240B	MS121B
MS239B	MS120B
MS238B	MS119B
MS237B	MS118B
MS236B	MS117B
MS235B	MS116B
MS234B	MS115B
MS233B	MS114B
MS232B	MS113B
MS231B	MS112B
MS230B	MS111B
MS229B	MS110B
MS228B	MS109B
MS227B	MS108B
MS226B	MS107B
MS225B	MS106B
MS224B	MS105B
MS223B	MS104B
MS222B	MS103B
MS221B	MS102B
MS220B	MS101B
MS219B	MS100B
MS218B	MS99B
MS217B	MS98B
MS216B	MS97B
MS215B	MS96B
MS214B	MS95B
MS213B	MS94B
MS212B	MS93B
MS211B	MS92B
MS210B	MS91B
MS209B	MS90B
MS208B	MS89B
MS207B	MS88B
MS206B	MS87B
MS205B	MS86B
MS204B	MS85B
MS203B	MS84B
MS202B	MS83B
MS201B	MS82B
MS200B	MS81B
MS199B	MS80B
MS198B	MS79B
MS197B	MS78B
MS196B	MS77B
MS195B	MS76B
MS194B	MS75B
MS193B	MS74B
MS192B	MS73B
MS191B	MS72B
MS190B	MS71B
MS189B	MS70B
MS188B	MS69B
MS187B	MS68B
MS186B	MS67B
MS185B	MS66B
MS184B	MS65B
MS183B	MS64B
MS182B	MS63B
MS181B	MS62B
MS180B	MS61B
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MS178B	MS59B
MS177B	MS58B
MS176B	MS57B
MS175B	MS56B
MS174B	MS55B
MS173B	MS54B
MS172B	MS53B
MS171B	MS52B
MS170B	MS51B
MS169B	MS50B
MS168B	MS49B
MS167B	MS48B
MS166B	MS47B
MS165B	MS46B
MS164B	MS45B
MS163B	MS44B
MS162B	MS43B
MS161B	MS42B
MS160B	MS41B
MS159B	MS40B
MS158B	MS39B
MS157B	MS38B
MS156B	MS37B
MS155B	MS36B
MS154B	MS35B
MS153B	MS34B
MS152B	MS33B
MS151B	MS32B
MS150B	MS31B
MS149B	MS30B
MS148B	MS29B
MS147B	MS28B
MS146B	MS27B
MS145B	MS26B
MS144B	MS25B
MS143B	MS24B
MS142B	MS23B
MS141B	MS22B
MS140B	MS21B
MS139B	MS20B
MS138B	MS19B
MS137B	MS18B
MS136B	MS17B
MS135B	MS16B
MS134B	MS15B
MS133B	MS14B
MS132B	MS13B
MS131B	MS12B
MS130B	MS11B
MS129B	MS10B
MS128B	MS9B
MS127B	MS8B
MS126B	MS7B
MS125B	MS6B
MS124B	MS5B
MS123B	MS4B
MS122B	MS3B
MS121B	MS2B
MS120B	MS1B
MS119B	MS0B

1 2 3 4 5 6

A B C D

6. ELECTRICAL PARTS LIST

NOTES:

- 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 × 10 ¹	561	RD½PS	561 J
47kΩ	47 × 10 ³	473	RD½PS	473 J
0.5Ω	0R5	.....	RN2H	0R5 K
1Ω	010	.....	RS1P	010 K

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

5.62kΩ	562 × 10 ¹	5621	RN½SR	5621 F
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- The Δ 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.

Miscellaneous Parts

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	AF assembly	AWZ1131
	LED assembly	Non supply
	Tone assembly	Non supply
	Headphone assembly	Non supply
	SP SW assembly	Non supply
	Bass EQ assembly	Non supply
	VR assembly	Non supply
	Power SW assembly	Non supply

OTHERS

Mark	Symbol & Description	Part No.
	C1 Ceramic capacitor	CKDYF473Z50
Δ ★	T1 Power transformer (AC220V/240V)	ATS1039
Δ	3P AC socket (AC OUTLETS)	AKP-502 (HE type)
	3P AC socket (AC OUTLETS)	AKP-505 (HB type)
Δ ★★	FU1 Fuse (T1.25A)	AEK-018 (HE type)
	Fuse (T1.25A)	AEK-509 (HB type)
Δ ★★	FU2 Fuse (T2.5A)	AEK-403 (HE type)
	Fuse (T2.5A)	AEK-512 (HB type)
Δ	AC Power cord	ADG-068

AF Assembly (AWZ1131)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC101 OP-AMP IC	M5218P
★★	IC501 OP-AMP IC	M5218PF
★★	IC201, IC202	PA0016
★★	Q306	RN2201
★★	Q217, Q218	2SA1264N
★★	Q213, Q214	2SA965(A)
★★	Q201-Q204	2SA992
★★	Q209, Q210	2SC1845
★★	Q211, Q212	2SC2235(A)
★★	Q301, Q302	2SC2240
★★	Q205, Q206, Q303, Q304, Q503-Q506	2SC2603 (2SC1740S) (2SC2458)
★★	Q215, Q216	2SC3181N
★★	Q305	2SD438
★	D401	RBV402
★	D307	RD13EB (HZ13EB)
★	D402, D403	RD16EB (HZ16EB)
★	D411, D412	RD3.0EB (HD3.0EB)
★	D203, D204, D209, D210	RD5.6EB (HZ5.6EB)
★	D301-D306	1SS131
★	D215, D216, D219, D220, D404, D405	11E2 (S5566)

SWITCHES AND RELAY

Mark	Symbol & Description	Part No.
★★	S3 Push switch (DIRECT CD INPUT)	ASG1010
★★	S1 Push switch (CD/TUNER/TAPE1/ TAPE2/ADAPTOR/PHONE)	ASG1015
★★	S7 Push switch (MUTING)	SUYL2S
★★	RY301 Relay (PROTECTION)	ASR1005

COILS

Mark	Symbol & Description	Part No.
	L301, L302 AF choke coil (1μH)	ATH-133

CAPACITORS

Mark	Symbol & Description	Part No.
	C401, C402 Electrolytic (6800μF/56V)	ACH1018
	C215, C216	CCCSL030C50 (CCDSL030C50)
	C203, C204	CCCSL101J50 (CCDSL101J50)
	C223-C226	CCCSL101K500 (CCDSL101K500)
	C239, C240	CCCSL121J50 (CCDSL121J50)
	C241, C242	CCCSL150K500 (CCDSL150K500)
	C207, C208	CCCSL220J50 (CCDSL220J50)
	C103, C104, C107, C108	CCCSL221J50 (CCDSL221J50)
	C205, C206	CCCSL470J50 (CCDSL470J50)
	C235-C238	CCCSL680J50 (CCDSL680J50)
	C301, C302 C515, C516 C511, C512	CEANP010M50 CEASR47M50 CEAS010M50
	C309 C310 C411, C412 C308, C513, C514 C211, C212	CEAS010M100 CEAS010M50 CEAS101M10 CEAS101M16 CEAS101M63
	C101, C102, C113, C114, C501-C504 C404, C405 C105, C106 C115, C116	CEAS2R2M50 CEAS221M25 CEAS470M10 CEAS470M25
	C219, C220, C407 C406 C307 C201, C202, C217, C218 C213, C214 C121	CEAS470M50 CEAS470M63 CEAS471M6 CEYA010M50 CEYA330M16 CKCYB103K50 (CKDYB103K50)
	C209, C210	CKCYB331K50 (CKDYB331K50)
	C621 (0.01μF)	ACG-019-0

Mark	Symbol & Description	Part No.
	C408	CKCYX473M25 (CKDYX473M25)
	C509, C510, C517, C518 C109, C110 C111, C112 C303-C306	CQMA154K50 CQMA222J50 CQMA822J50 CQMA823K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
△	R249, R250 (0.22Ω X2, 2W) R406, R414 R405, R409-R413	ACN-131 RD1/2PMFL561J RD1/2PM□□□J
△	R239, R240, R307-R310 R245-R248, R277, R278	RD1/4PMFL□□□J RD1/4PMF□□□J
△	R404 R101, R102, R105-R118, R125-R130, R137, R138, R203-R226, R233-R235, R238, R265-R272, R275, R276, R279-R284, R301-R304, R312, R314, R316, R321-R325, R403, R407, R408, R418, R509, R510	RD1/4PMF101J RD1/4PM□□□J
△	R236, R237, R241, R242	RFA1/4PS□□□J
△	R415, R416 R317, R318	RS1LMF561J RS1LMF331J
△	R401, R402, R417	RS2LMF□□□J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (4P) (TAPE1 REC/PLAY, TAPE2 ADAPTOR IN/OUT)	AKB-115
	Terminal (6P) (PHONO/CD/TUNER)	AKB-117
	Terminal (8P) (SPEAKERS)	AKE-111

LED Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★	D410 LED (A-ADP)	AEL1009
★	D406-D409 LED (PHONO, CD, TUNER, TAPE1)	AEL1015

Tone Assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★★	Q219	2SC2878

CAPACITORS

Mark	Symbol & Description	Part No.
	C229, C230 C231, C232 C233, C234 C227, C228	CQMA821K50 CQMA224K50 CQMA683K50 CQMA392K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR201 Slide variable resistor (100k Ω) (TONE, BALANCE)	ACT1014
	Other resistors	RD1/8PM□□□J

Headphone Assembly**CAPACITORS**

Mark	Symbol & Description	Part No.
	C311, C312	CKDYF473Z50

OTHERS

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

SP SW Assembly**SWITCH**

Mark	Symbol & Description	Part No.
★★	S5 Push switch (SPEAKER A, B)	SUY8LYXS

Bass EQ Assembly**SWITCH**

Mark	Symbol & Description	Part No.
★★	S6 Push switch (BASS EQ TYPE1/TYPE2)	SUY6L4B2S

RESISTORS

Mark	Symbol & Description	Part No.
	R419	RD1/4PM680J
	R537, R538	RD1/8PM103J

**VR Assembly
SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
★	D101—D104 LED (DIRECT CD INPUT, BASS EQ)	AEL1016

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	VR101 Slide variable resistor (250k) (MASTER VOLUM)	ACU1007
	Other resistors	RD1/8PM□□□J

POWER SW Assembly**SWITCH**

Mark	Symbol & Description	Part No.
△ ★★	S8 Push switch (POWER)	ASG1007

CAPACITOR

Mark	Symbol & Description	Part No.
	C409 (0,01 μ F/50V)	ACG1002