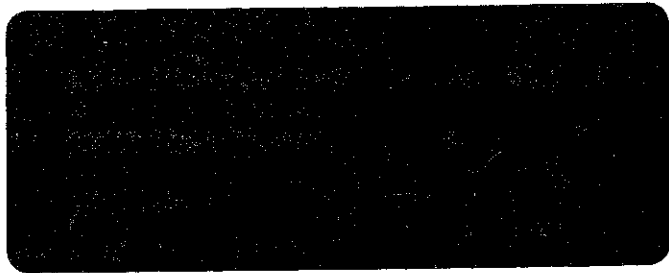
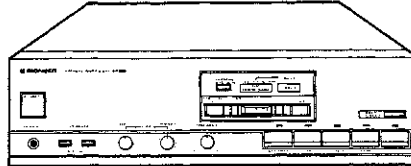


 **PIONEER®**

# Service Manual



**CIRCUIT DESCRIPTIONS  
REPAIR & ADJUSTMENTS**



**ORDER NO.  
ARP1218 - A**

**STEREO AMPLIFIER**

# A-X320(BK)

**MODEL A-X320 [BK] COMES IN THREE VERSIONS DISTINGUISHED AS FOLLOWS:**

Type	Power requirement	Export destination
HE	AC 220V, 240V (switchable)	European continent
HB	AC 220V, 240V (switchable)	United Kingdom
HEZ	AC 220V, 240V (switchable)	West Germany

- This service manual is applicable to the HE and HB types.
- As to the HB type, please refer to page 12.
- As to the HEZ type, please refer to the additional service manual (ARP1219) .

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# 1. EXPLODED VIEW AND PARTS LIST

## NOTES:

- Parts without part number cannot be supplied.
- The  $\Delta$  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 "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

## Parts List

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	AWZ1130	AF assembly		25	ADG-068	AC power cord
	2	CKDYF473Z50	C1 Ceramic capacitor	$\Delta$	26	BBZ30P080FZK	Screw (3×8)
$\Delta$	3	ATS1038	T1 Power Transformer		27	VBZ30P060FMC	Screw (3×6)
$\Delta$	4	AKP-502	3P AC outlet		28	VMZ30P060FMC	Screw (3×6)
$\Delta$	5	AEK-508	FU1 Fuse (T1A)		29	BPZ30P080FZK	Screw (3×8)
	6	AEK-403	FU2 Fuse (T2.5A)		30	BBZ30P060FZK	Screw (3×6)
	7	AEP-320	Leg assembly		31	BBZ30P100FZK	Screw (3×10)
	8	AAB1010	Rotary Knob (BASS, TREBLE, BALANCE)		32	WS30FMC	Washer
	9	AAD1056	Function Knob (FUNCTION)		33	ABA-256	Screw
	10	AAD1057	Push Knob A (SPEAKERS)		101		Power switch assembly
	11	AAD1059	Push rod		102		Headphone assembly
	12	AAD1069	Power Knob (POWER)		103		SP SW assembly
	13	AAE1034	Volume Knob (MASTER VOLUME)		104		Tone assembly
	14	AAK1129	Display plate B		105		VR assembly
	15	AAK1130	Display plate A		106		LED Assembly
	16	AMB1091	Front panel base		107		Terminal (GND)
	17	AMB1093	Front panel		108		Chassis
	18	AMR1090	Indicator lens		109		Rear panel
	19	ANE1044	Bonnet case		110		Bottom plate
	20	ABH1017	Coil spring		111		Slider
	21	ABH1018	Coil spring		112		Tracing paper
	22	AMR1066	Nylon rivet		113		Barrier
	23	ABN-065	Holder nut				
	24	ABN-072	Flange nut (M9)				

1 | 2 | 3 | 4 | 5 | 6

A

A

B

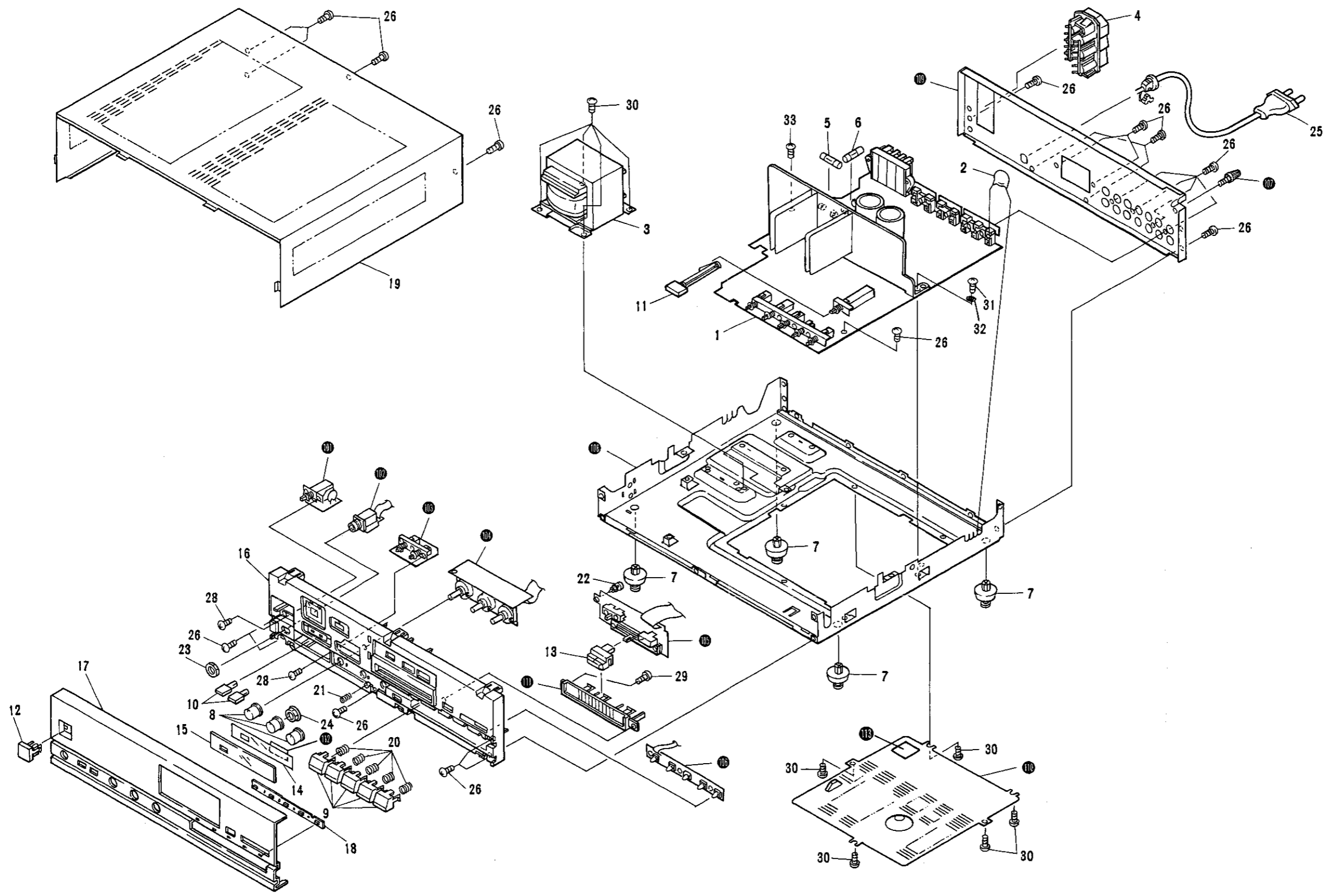
B

C

C

D

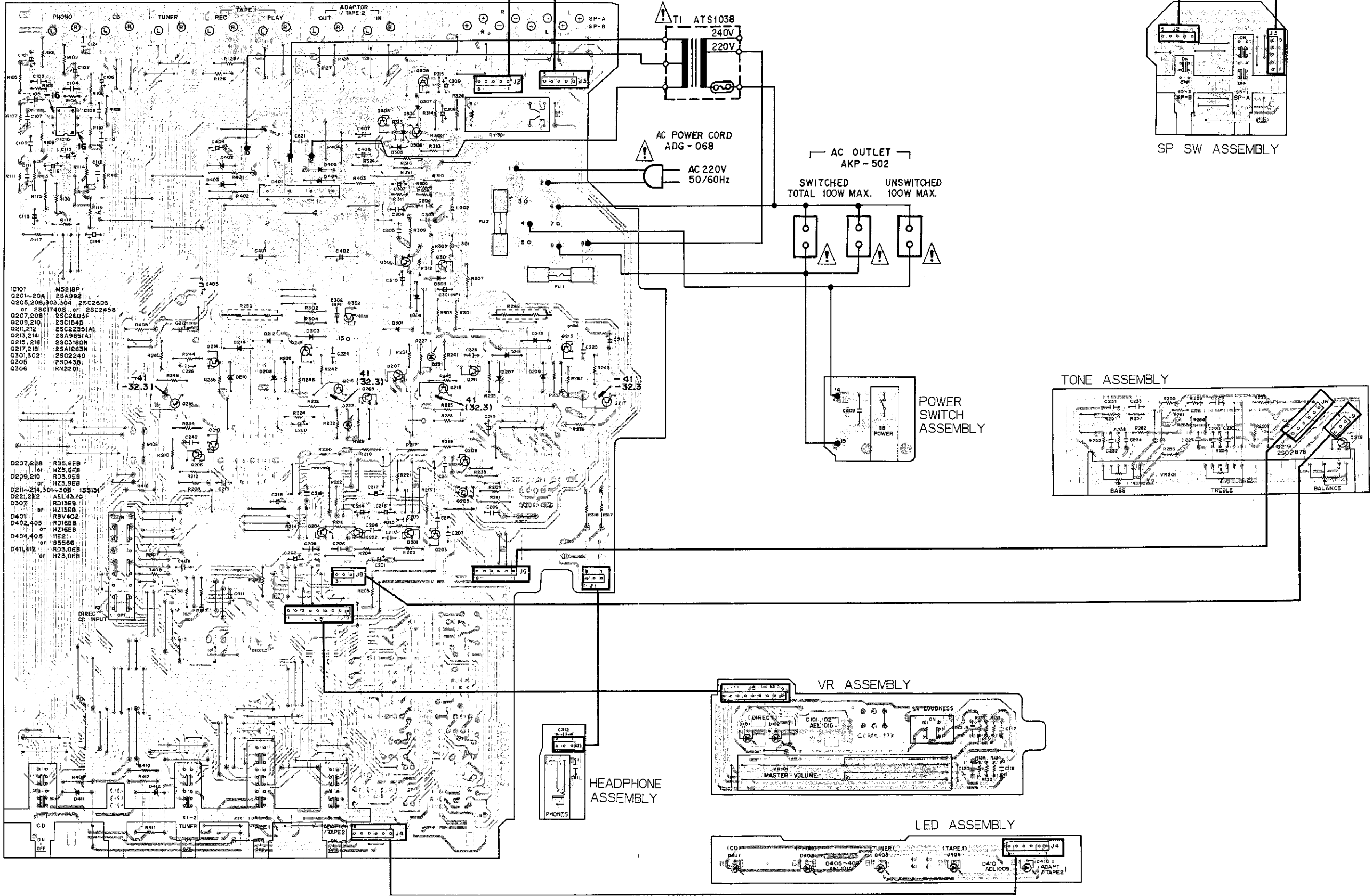
D



1 | 2 | 3 | 4 | 5 | 6

# 2. P.C. BOARDS CONNECTION DIAGRAM

AF ASSEMBLY (AWZ1130)



A

B

C

D

A

B

C

D

5

1

2

3

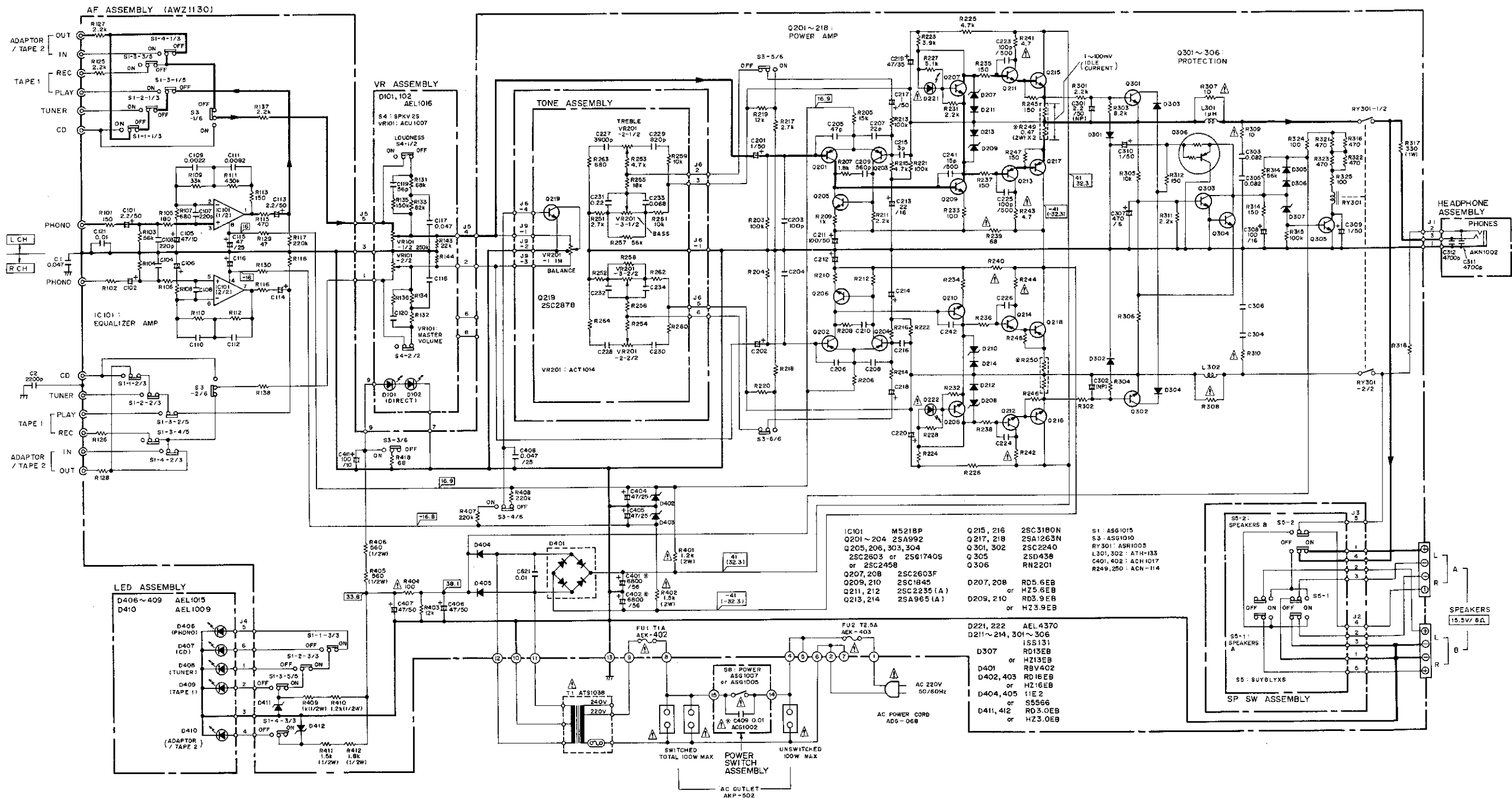
6

4

5

6

### 3. SCHEMATIC DIAGRAM

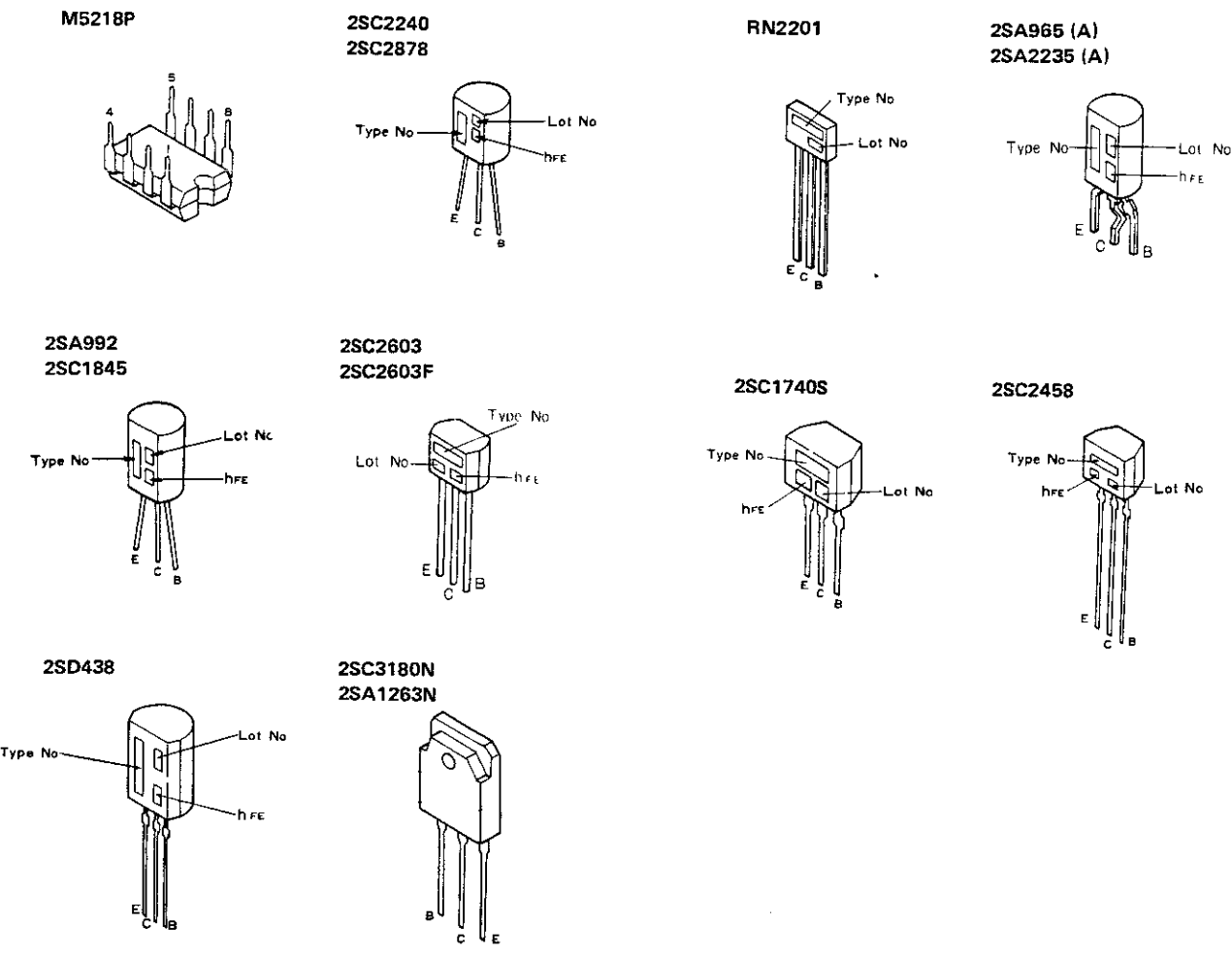


- RESISTORS.**  
Indicated in Ω, ¼W, ½W, 1W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G), ±2%, (K); ±10%, (M); ±20% tolerance
- CAPACITORS:**  
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
- VOLTAGE CURRENT.**  
[V]: Signal voltage at ( W, Br) output (1kHz)  
[V]: DC voltage (V) at no input signal  
[ ] is DC voltage at rated power.

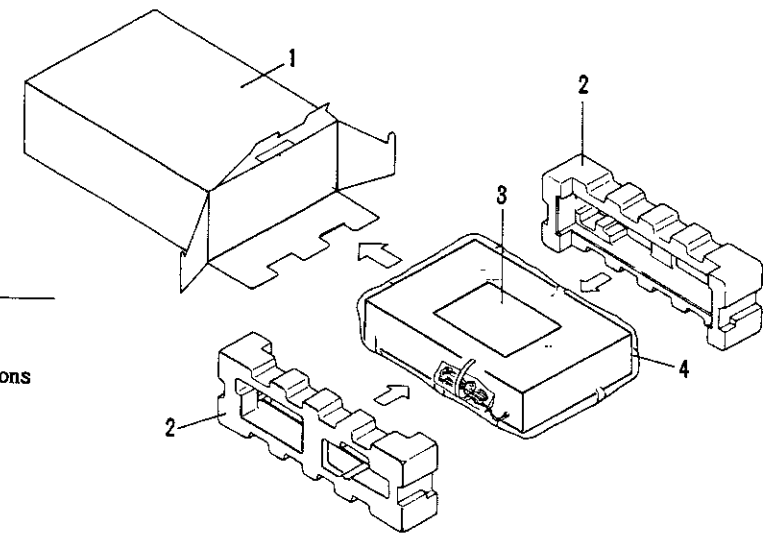
- OTHERS:**  
⊙: Signal route.  
⊙: Adjusting point.  
The **▲** mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.  
\* marked capacitors and resistors have parts numbers.  
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

- SWITCHES:**
- AF ASSEMBLY**  
 S1-1: FUNCTION (CD) ON - OFF  
 S1-2: FUNCTION (TUNER) ON - OFF  
 S1-3: FUNCTION (TAPE 1) ON - OFF  
 S1-4: FUNCTION (ADAPTOR/TAPE 2) ON - OFF  
 S3: DIRECT CD INPUT ON - OFF
- VR ASSEMBLY**  
 S4: LOUDNESS ON - OFF
- SP ASSEMBLY**  
 S5-1: SPEAKERS A ON - OFF  
 S5-2: SPEAKERS B ON - OFF
- POWER SWITCH ASSEMBLY**  
 S8: POWER ON - OFF
- The underlined indicates the switch position.

External Appearances of Transistor and ICs



4. PACKING



Parts List

Mark	No.	Part No.	Description
	1	AHD1112	Packing case
	2	AHA1024	Front rear pad
	3	ARE1033	Operating instructions
	4	AHG-188	Polyethylene sheet

5. 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 <sup>1</sup>	561.....	RD1/4PS	□ □ □ J
47kΩ	47 × 10 <sup>3</sup>	473.....	RD1/4PS	□ □ □ J
0.5Ω	0R5.....		RN2H	□ □ □ K
1Ω	010.....		RSIP	□ □ □ K
  - Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).
 

5.62kΩ	562 × 10 <sup>1</sup>	5621.....	RN1/4SR	□ □ □ □ F
--------	-----------------------	-----------	---------	-----------
- The  $\Delta$  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 "●" 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.
	TONE assembly	Non supply
	LED assembly	Non supply
	VR assembly	Non supply
	HEADPHONE assembly	Non supply
	SP SW assembly	Non supply
	AF assembly	AWZ1130
	POWER SW assembly	Non supply

OTHERS

Mark	Symbol & Description	Part No.
$\Delta$ $\star$	T1 Power transformer	ATS1038
	C1	CKDYF473Z50
$\Delta$	3P AC outlet	AKP-502
$\Delta$ $\star\star$	FU1 Fuse (T1A)	AER-402
$\Delta$ $\star\star$	FU2 Fuse (T2.5A)	AER-403
$\Delta$	AC Power cord	ADG-068

TONE Assembly  
SEMICONDUCTOR

Mark	Symbol & Description	Part No.
$\star\star$	Q219	2SC2878

CAPACITORS

Mark	Symbol & Description	Part No.
	C229, C230	CQMA821K50
	C231, C232	CQMA224K50
	C233, C234	CQMA683K50
	C227, C228	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.
$\star$	VR201 Variable (BASS, TREBLE, BALANCE)	ACT1014
	R251—R264	RD1/8PM □ □ □ J

LED Assembly  
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
$\star$	D410	AEL1009
$\star$	D406—D409	AEL1015

VR Assembly  
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
$\star$	D101, D102	AEL1016

SWITCH

Mark	Symbol & Description	Part No.
$\star$	S4 Push switch (LOUDNESS)	SPKV2S

CAPACITORS

Mark	Symbol & Description	Part No.
	C119, C120	CCCSL560J50 (CCDSL560J50)
	C117, C118	CKCYX473M25 (CKDYX473M25)

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.
$\star$	VR101 Slide variable (250k) (MASTER VOLUME)	ACU1007
	R131—R136	RD1/8PM □ □ □ J

HEADPHONE Assembly  
CAPACITORS

Mark	Symbol & Description	Part No.
	C311, C312	CKCYB472K50

OTHERS

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

SP SW Assembly  
SWITCH

Mark	Symbol & Description	Part No.
$\star$	S5 Push switch (SPEAKERS)	SUY8LYXS

**AF Assembly (AWZ1130)**

**SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
★★	IC101	M5218P
★★	Q306	RN2201
★★	Q217, Q218	2SA1263N
★★	Q213, Q214	2SA965 (A)
★★	Q201—Q204	2SA992
★★	Q209, Q210	2SC1845
★★	Q211, Q212	2SC2235 (A)
★★	Q301, Q302	2SC2240
★★	Q205, Q206, Q303, Q304	2SC2603 (2SC1740S) (2SC2458)
★★	Q207, Q208	2SC2603F
★★	Q215, Q216	2SC3180N
★★	Q305	2SD438
△ ★	D221, D222	AEL-437
★	D401	RBV402
★	D307	RD13EB (HZ13EB)
★	D402, D403	RD16EB (HZ16EB)
★	D411, D412	RD3.0EB (HZ3.0EB)
★	D209, D210	RD3.9EB (HZ3.9EB)
★	D207, D208	RD5.6EB (HZ5.6EB)
★	D211—D214, D301—D306	1SS131
★	D404, D405	11E2 (S5566)

**SWITCHES AND RELAY**

Mark	Symbol & Description	Part No.
★	S3 Push switch (DIRECT CD INPUT)	ASG1010
★	S1 Push switch (FUNCTION)	ASG1015
★	RY301 Relay	ASR1005

**COILS**

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

**CAPACITORS**

Mark	Symbol & Description	Part No.
	C401, C402 Electrolytic (6800 μF/56V)	ACH1018
	C215, C216	CCCSL030C50 (CCDSL030C50)
	C203, C204	CCCSL101J50 (CCDSL101J50)
	C223—C226	CCCSL101K500 (CCDSL101K500)
	C241, C242	CCCSL150K500 (CCDSL150K500)
	C207, 208	CCCSL220J50 (CCDSL220J50)

Mark	Symbol & Description	Part No.
	C103, C104, C107, C108	CCCSL221J50 (CCDSL221J50)
	C205, C206	CCCSL470J50 (CCDSL470J50)
	C301, C302	CEANP2R2M50
	C309, C310	CEAS010M50
	C411	CEAS101M10
	C308	CEAS101M16
	C211, C212	CEAS101M50
	C101, C102, C113, C114	CEAS2R2M50
	C105, C106	CEAS470M10
	C115, C116, C404, C405	CEAS470M25
	C219, C220	CEAS470M35
	C406, C407	CEAS470M50
	C307	CEAS471M6
	C201, C202, C217, C218	CEYA010M50
	C213, C214	CEYA220M16
	C121	CKCYB103K50 (CKDYB103K50)
	C209, C210	CKCYB561K50 (CKDYB561K50)
	C408	CKCYX473M25 (CKDYX473M25)
	C109, C110	CQMA222J50
	C111, C112	CQMA822J50
	C303—C306	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 (0.47 Ω/2W)	ACN-114
	R405, R406, R409—R412	RD1/2PM □ □ □ J
△	R239, R240, R307—R310, R404	RD1/4PMFL □ □ □ J
	R245—R248	RD1/4PMF151J
	R103, R104, R305, R306, R311, R313, R315	RD1/8PM □ □ □ J
△	R241—R244	RFA1/4PS4R7J
	R227, R228, R231, R232	RN1/4PQ □ □ □ □ F
	R317, R318	RS1LMF331J
△	R401	RS2LMF122J
△	R402	RS2LMF152J
	Other resistors	RD1/4PM □ □ □ J

**OTHERS**

Mark	Symbol & Description	Part No.
	4P Terminal (TAPE1, ADAPTOR/TAPE2)	AKB-115
	6P Terminal (INPUT)	AKB-117
	8P Terminal (SPEAKERS)	AKE-111

**POWER SW Assembly SWITCH**

Mark	Symbol & Description	Part No.
△ ★	S8 Push switch (POWER)	ASG1007 (ASG1005)

**CAPACITOR**

Mark	Symbol & Description	Part No.
△	C409 Ceramic (0.01 μF)	ACG1002

## 6. FOR HB TYPE

The A-X320 [BK]/HB type is the same as the A-X320 [BK]/HE type with the exception of the following sections.

### Contrast of miscellaneous parts

Mark	Symbol & Description	Part No.		Remarks
		HE type	HB type	
▲★★	FU1 Fuse (T1A)	AEK-402	AEK-508	
▲★★	FU2 Fuse (T2.5A)	AEK-403	AEK-512	
▲	3P AC outlet	AKP-502	AKP-505	
	Operating instructions	ARE1033	ARB1040	

### Line Voltage Selection for HB Type

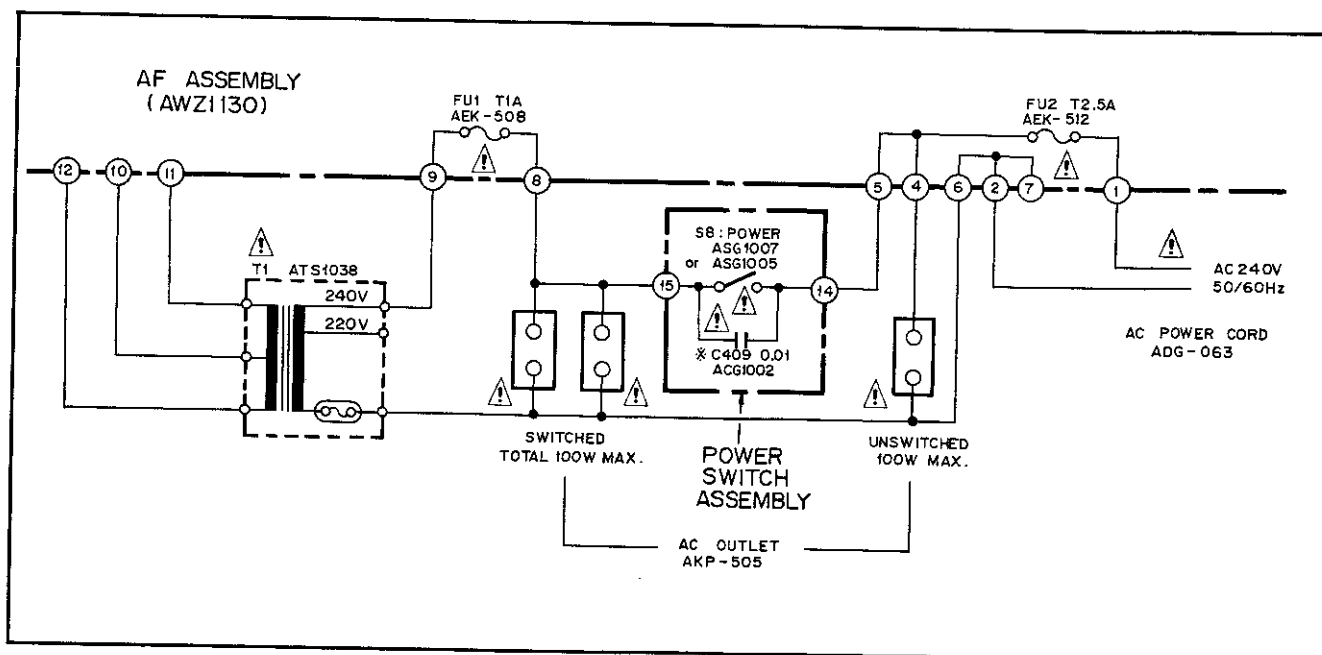
Line voltage can be changed with following steps.

1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the connection wire as shown in the schematic diagram for HB type.
4. Stick the line voltage label on the rear panel.

### Parts list

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

### SCHEMATIC DIAGRAM FOR HB TYPE



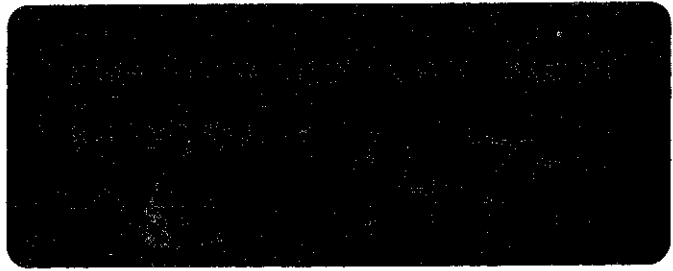


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ADDITIONAL

 PIONEER®

# Service Manual



ORDER NO.  
ARP1219 - A

STEREO AMPLIFIER

## A-X320(BK) HEZ

- For servicing these types, please refer to the A-X320 (BK) service manual (ARP1218) with the exception of this additional service manual.
- This additional service manual is applicable to the A-X320 [BK]/HEZ type.

### 1. CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- Parts without part number cannot be supplied.
- The  $\Delta$  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-X320 [BK]/HEZ type is the same as the A-X320 [BK]/HE type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		HE type	HEZ type	
	Display filter	• • • •	AAK1163	Packing
	Screw with tapping	• • • •	ABA-115	
	C3 Ceramic capacitor (4700p/150V)	• • • •	ACG-009	
	Polyethylene sheet	AHG-131	AHG-188	
	Operating instruction (English, German, French, Italian)	ARE1033	• • • •	
	Operating instruction (German)	• • • •	ARC1026	
	AF assembly	AWZ1130	AWZ1206	
	R1	• • • •	RD1/4PM100J	

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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 <sup>1</sup>	561.....	RD1/4PS	5	5	1	J
47kΩ	47 × 10 <sup>3</sup>	473.....	RD1/4PS	4	7	3	J
0.5Ω	0R5.....		RN2H	0	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 × 10 <sup>1</sup>	5621.....	RN1/4SR	5	6	2	1	F
--------	-----------------------	-----------	---------	---	---	---	---	---
- The  $\Delta$  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.

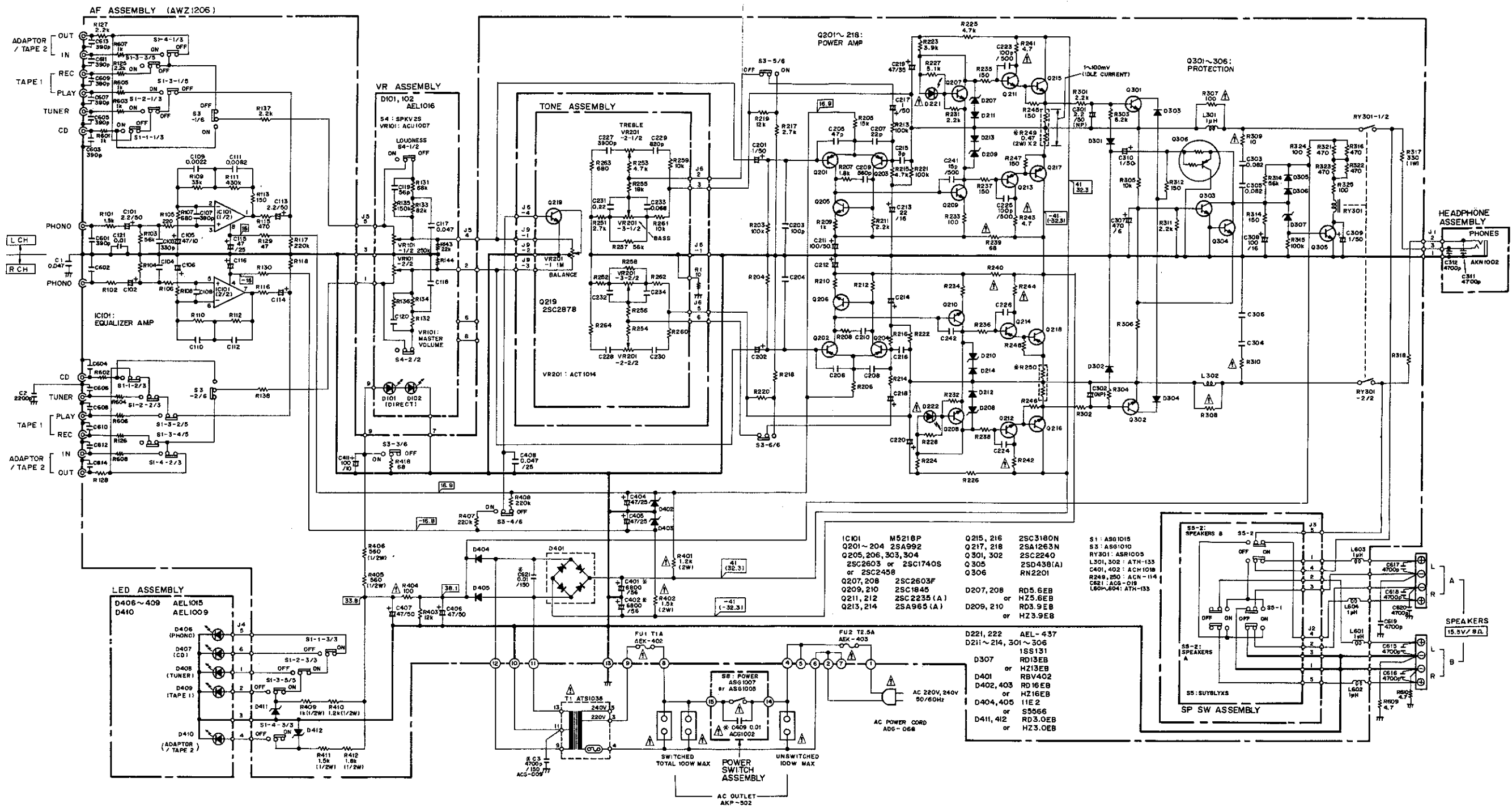
### AF Assembly (AWZ1206)

The AF Assembly AWZ1206 (HEZ type) is the same as the AWZ1130 (HE type) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		AWZ1130	AWZ1206	
	C103, C104	CCCSL221J50	CKCYB331K50	
	C107, C108	CCCSL221J50	CKCYB391K50	
	C601 — C614	. . . .	CKCYB391K50	
	C615 — C620	. . . .	CQMA472K50	
	C621 (0.01/150V)	. . . .	ACG-019	
	L601 — L604 (1μH)	. . . .	ATH-133	
	R101, R102	RD1/4PM151J	RD1/4PM152J	
	R105, R106	RD1/4PM181J	RD1/4PM221J	
	R601 — R608	. . . .	RD1/4PM102J	
	R609, R610	. . . .	RD1/4PM4R7J	



# 4. SCHEMATIC DIAGRAM



1. RESISTORS:  
Indicated in Ω, kΩ, M, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance

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

3. VOLTAGE, CURRENT:  
V: Signal voltage at (30 W ± 30 W, 8Ω) output (1kHz)  
DC: DC voltage (V) at no input signal  
Value in ( ) is DC voltage at rated power.

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.

SWITCHES:  
AF ASSEMBLY  
S1-1: FUNCTION (CD) ON - OFF  
S1-2: FUNCTION (TUNER) ON - OFF  
S1-3: FUNCTION (TAPE 1) ON - OFF  
S1-4: FUNCTION (ADAPTOR/TAPE 2) ON - OFF  
S3: DIRECT CD INPUT ON - OFF

VR ASSEMBLY  
S4: LOUDNESS ON - OFF

SP ASSEMBLY  
S5-1: SPEAKERS A ON - OFF  
S5-2: SPEAKERS B ON - OFF

POWER SWITCH ASSEMBLY  
S8: POWER ON - OFF

The underlined indicates the switch position.

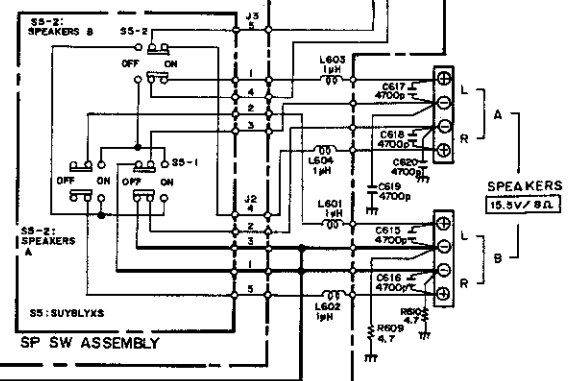
IC101 M5218P  
Q201~204 2SA992  
Q205, 206, 303, 304 2SC2603 or 2SC1740S or 2SC2458  
Q207, 208 2SC2603F  
Q209, 210 2SC1845  
Q211, 212 2SC2235 (A)  
Q213, 214 2SA965 (A)

Q215, 216 2SC3180N  
Q217, 218 2SA1263N  
Q301, 302 2SC2240  
Q305 2SD438(A)  
Q306 RN2201

S1: ASG1015  
S3: ASG1010  
RY301: ASR1005  
L301, 302: ATH-133  
C401, 402: ACH-1018  
R248, 250: ACH-114  
C821: ACP-019  
L601~604: ATH-133

D221, 222 AEL-437  
D211~214, 301~306 1SS131

D307 RD13EB  
D401 HZ13EB  
D402, 403 RBV402  
D404, 405 HZ16EB  
D411, 412 11E2  
or S5566  
or RD3.0EB  
or HZ3.0EB



SPEAKERS  
15.3V/8Ω