

 **PIONEER®**

# Service Manual



**ORDER NO.  
ART-597-0**

**NON SWITCHING AMP  
STEREO AMPLIFIER**

# A-7

# Original

**MODEL A-7 COMES IN SIX VERSIONS DISTINGUISHED AS FOLLOWS:**

Type	Voltage	Remarks
HE	220V and 240V (Switchable)	Europe model
HB	220V and 240V (Switchable)	U.K. model
KU	120V only	U.S.A. model
KC	120V only	Canada model
S/G	110V, 120V, 220V and 240V (Switchable)	U.S. military model
S	110V, 120V, 220V and 240V (Switchable)	General export model

This service manual is applicable to the HE and HB types. When repairing the KU, KC, S/G and S types, please see the additional service manual.

Ce manuel d'instruction se réfère au mode de réglage, en français.

Este manual de servicio trata del método de ajuste escrito en español.

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# 1. SPECIFICATIONS

## Amplifier Section

Continuous Power Output is 70 watts\* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.007% total harmonic distortion.

Continuous Power Output at 1 kHz (both channels driven)	
T.H.D. 0.007%, 8 ohms	78 watts per channel
Total Harmonic Distortion (20 Hertz to 20,000 Hertz, 8 ohms, from TUNER)	
continuous rated power output	No more than 0.007%
35 watts per channel power output	No more than 0.005%
Intermodulation Distortion (50 Hertz:7,000 Hertz = 4:1, 8 ohms, from TUNER)	
continuous rated power output	No more than 0.005%
35 watts per channel power output	No more than 0.003%
Damping Factor (20 Hertz to 20,000 Hertz, 8 ohms)	60
Input Sensitivity/Impedance	
PHONO MM	2.5 mV/50 kilohms
PHONO MC	0.25 mV/100 ohms
TUNER, AUX, TAPE PLAY 1, 2	150 mV/50 kilohms
Phono Overload Level (T.H.D. 0.0015%, 1,000 Hz)	
PHONO MM	200 mV
PHONO MC	20 mV
Output Level	
TAPE REC 1, 2	150 mV
Speaker	A/OFF, B/OFF (6~16 Ω)
Frequency Response	
PHONO MM (RIAA Equalization)	20 Hz to 20,000 Hz±0.3 dB
TUNER, AUX, TAPE PLAY 1, 2	5 Hz to 100,000 Hz±3 dB
Tone Control	
BASS	±10 dB (100 Hz)
TREBLE	±10 dB (10 kHz)
Filter	
LOW (SUBSONIC)	20 Hz (6 dB/oct.)
Loudness Contour (Volume control set at -40 dB)	
	+9 dB (100 Hz), +3 dB (10 kHz)
Hum and Noise (IHF, short circuited A network)	
PHONO MM	88 dB
PHONO MC	70 dB
TUNER, AUX, TAPE PLAY 1, 2	110 dB
Hum and Noise (DIN, continuous rated power output/50 mW)	
PHONO MM	80 dB/66 dB
PHONO MC	70 dB/65 dB
TUNER, AUX, TAPE PLAY 1, 2	95 dB/69 dB
Muting	-20 dB

## Miscellaneous

Power Requirements	
HE, HB model	220/240 V (switchable), 50/60 Hz
Power Consumption	
HE, HB models	420 W (max.)
Dimensions	420 (W) x 132 (H) x 423 (D) mm
	16-9/16 (W) x 5-3/16 (H) x 16-11/16 (D) in
Weight (without package)	12.2 kg (26 lb 14 oz)

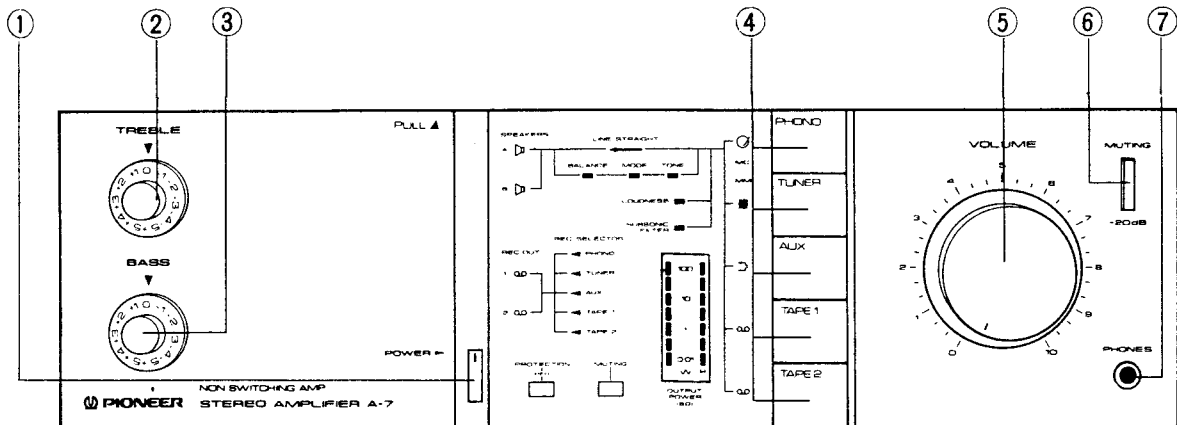
## Furnished Parts

Operating Instructions	1 (HE model only; 2)
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\*Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers.

NOTE:  
Specifications and the design subject to possible modifications without notice due to improvements.

## 2. FRONT PANEL FACILITIES



### ① POWER SWITCH

Power is supplied to the stereo amplifier as soon as this switch is depressed to the ON position.

The power is turned off when the switch is released to the OFF position. As soon as the power switch has been set to ON, the muting circuit is actuated, the PROTECTION-RED indicator lights up red/and after about 6 seconds when the muting circuit is released, the indicator goes from red to green.

### ② TREBLE CONTROL

This is used to adjust the treble (high-frequency range) sound. Rotate this control with the LINE STRAIGHT-OFF switch set to the depressed position. The treble is emphasized when the control is rotated clockwise from its center position and attenuated when it is rotated counterclockwise.

### ③ BASS CONTROL

This is used to adjust the bass (low-frequency range) sound. Rotate this control with the LINE STRAIGHT-OFF switch set to the depressed position. The bass is emphasized when the control is rotated clockwise from its center position and attenuated when it is rotated counterclockwise.

### ④ FUNCTION SWITCHES

These are used to select the sound source. At the left of each switch is a symbol function indicator which lights when the corresponding switch has been depressed. This indicates that the lighted function has been selected.

**PHONO:** Depress for playing records on a turntable connected to the PHONO jacks.

**TUNER:** Depress for listening to a program on a tuner connected to the TUNER jacks.

**AUX:** Depress for listening to the sound from a stereo component connected to the AUX jacks.

**TAPE 1:** Depress to listen to a tape in a tape deck connected to the TAPE 1 jacks or to monitor a recording.

**TAPE 2:** Depress to listen to a tape in a tape deck connected to the TAPE 2 jacks or to monitor a recording.

#### NOTE:

Depress only one FUNCTION switch at a time. The desired program source may not be selected if two or more switches are depressed at the same time.

### ⑤ VOLUME CONTROL

This is used to adjust the volume of sound heard through the speakers or headphones. No sound is heard when it is set to the "0" position. To increase the volume, rotate this control slowly clockwise (↻).

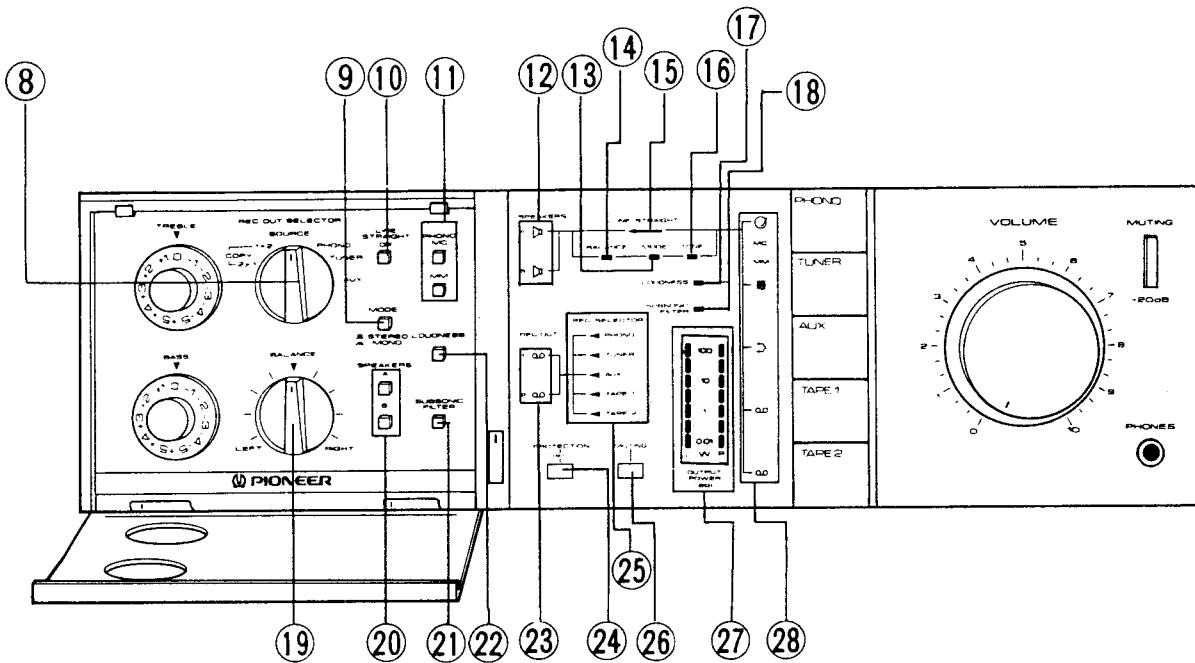
### ⑥ MUTING -20 dB SWITCH

The volume is attenuated by -20 dB when this switch is depressed to the ON position (MUTING indicator lights). The switch can be used effectively when the stylus descends onto the record during record play, when the sound is to be turned down temporarily and when you want to adjust the sound precisely as you listen to a program source under low sound level conditions.

### ⑦ PHONES JACK

Connect the plug on your headphones to this jack when listening to a program in private.

To listen to a program through the headphones, release both the SPEAKERS A and B switches.



**⑧ REC OUT SELECTOR SWITCH**

This is used to select the output signal which is fed out to the TAPE REC jacks.

**COPY 2 ▶ 1:** The output signal is fed out from the TAPE 2 PLAY jacks to the TAPE 1 REC jacks (when dubbing a tape from TAPE 2 to TAPE 1).

**COPY 1 ▶ 2:** The output signal is fed out from the TAPE 1 PLAY jacks to the TAPE 2 REC jacks (when dubbing a tape from TAPE 1 to TAPE 2).

**SOURCE:** The output signal of the program source (PHONO, TUNER, AUX, etc.) selected by the FUNCTION switch is fed out to the TAPE 1 REC and TAPE 2 REC jacks.

**PHONO:** The output signal from the PHONO jacks is fed out to the TAPE 1 REC and TAPE 2 REC jacks.

**TUNER:** The output signal from the TUNER jacks is fed out to the TAPE 1 REC and TAPE 2 REC jacks.

**AUX:** The output signal from the AUX jacks is fed out to the TAPE 1 REC and TAPE 2 REC jacks.

**⑨ MODE SELECTOR**

This is used to select the mode.

■ **STEREO:** Set here for ordinary stereo listening.

■ **MONO:** Set here to mix the left and right channel stereo input signals and hear them in mono through both the left and right speakers.

**⑩ LINE STRAIGHT-OFF SWITCH**

When this switch is released to the ON position (the LINE STRAIGHT indicator lights), the signal from the input jacks is directly sent to the power amplifier input without passing through the tone control circuit. When this switch is depressed to the OFF position, the input signal's tone quality can be adjusted with the tone controls.

**⑪ PHONO MM/MC SELECTOR SWITCH**

Set this switch to the position corresponding to the cartridge used when playing records on a turntable connected to the PHONO jacks.

MM: Set here when using an MM cartridge.

MC: Set here when using an MC cartridge.

**⑫ SPEAKERS A/B INDICATORS**

These light when one of the SPEAKERS switches has been depressed.

**⑬ MODE INDICATOR****⑭ BALANCE INDICATOR****⑮ LINE STRAIGHT INDICATOR**

This lights when the LINE STRAIGHT-OFF switch has been released to ON in place of the BALANCE, MODE and TONE indicators.

**⑯ TONE INDICATOR**

This lights when the tone control circuitry has been actuated.

**⑰ LOUDNESS INDICATOR**

This lights when the LOUDNESS switch has been set to ON.

**⑱ SUBSONIC FILTER INDICATOR**

This lights when the SUBSONIC FILTER switch has been set to ON.

**⑲ BALANCE CONTROL**

This is used to adjust the balance of the sound from the left and right channels. When rotated clockwise from its center position, the volume of the left (L) channel is reduced; when rotated counterclockwise, the volume of the right (R) channel is reduced.

To adjust the balance, first set the BALANCE control to its center position, set the MODE selector to MONO and rotate the control so that the sound seems to be coming from the midpoint between the left and right speakers.

**⑳ SPEAKERS SWITCHES**

These are used to select the speakers through which you will listen to the sound. When one of the switches is depressed, the corresponding speaker indicator will light to indicate that the selected speakers are now working.

**A:** The sound is heard from the speakers connected to the speaker A terminals.

**B:** The sound is heard from the speakers connected to the speaker B terminals.

No sound will be heard when SPEAKERS A and B switches are both released. This is the position at which the sound can be heard through the headphones.

**㉑ SUBSONIC FILTER SWITCH**

The subsonic filter with the 15 Hz cutoff frequency is actuated when this switch is depressed to the ON position (the SUBSONIC FILTER indicator lights).

This filter serves to attenuate frequencies lower than 20 Hz with a 6 dB/oct slope and, therefore, it can be used to suppress the ultra-low-range noise which is generated by record warp and other factors. This noise cannot actually be heard by the ear but it can cause cross modulation distortion and even speaker damage. Use this switch when required during record play.

**㉒ LOUDNESS SWITCH**

The bass and treble sound is emphasized when this switch is depressed to the ON position (LOUDNESS indicator lights) under low volume listening conditions.

When the volume of sound is low, the capability of the ear to pick up the bass and treble sound drops off, compared with high volume listening conditions. The LOUDNESS switch compensates for this characteristic of the ear. The bass and treble are emphasized when the switch is set to ON and the sound comes alive even when the volume is low.

**㉓ REC OUT 1, 2 INDICATORS**

These indicate the tape deck which is recording in accordance with the position selected by the REC OUT SELECTOR switch.

**㉔ PROTECTION-RED INDICATOR**

This lights in red or green, depending on the operating mode of the power protection circuit.

**㉕ REC SELECTOR INDICATOR**

This indicates the program source (PHONO, TUNER, AUX, etc.) being recorded in accordance with the position of the REC OUT SELECTOR switch.

**㉖ MUTING INDICATOR**

This lights in accordance with the position of the MUTING switch.

**㉗ OUTPUT POWER 8 Ω METER**

This indicates the output level when speakers with an 8-ohm impedance are connected to the speaker terminals. L is for the left channel and R for the right channel.

**㉘ FUNCTION INDICATORS**

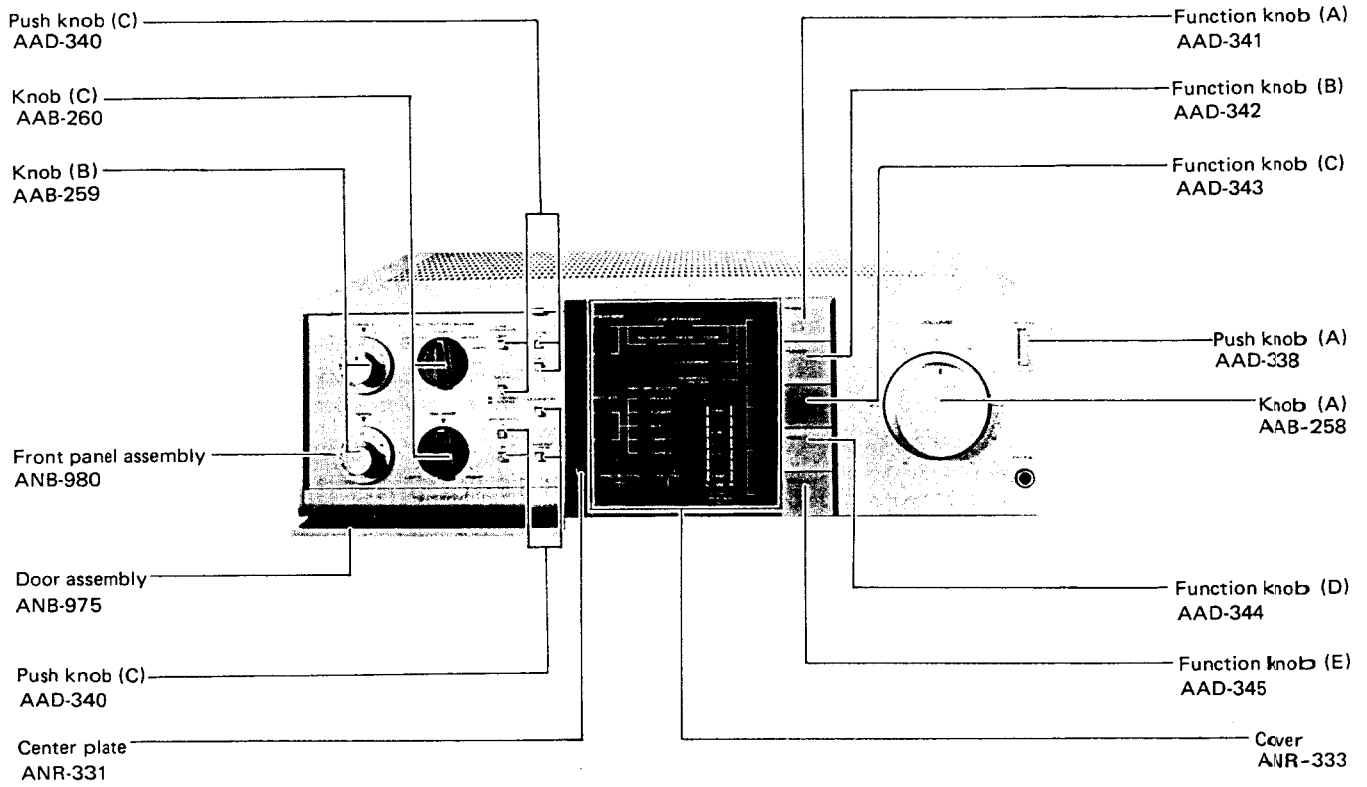
The indicator corresponding to the selected FUNCTION switch lights.

### 3. PARTS LOCATION

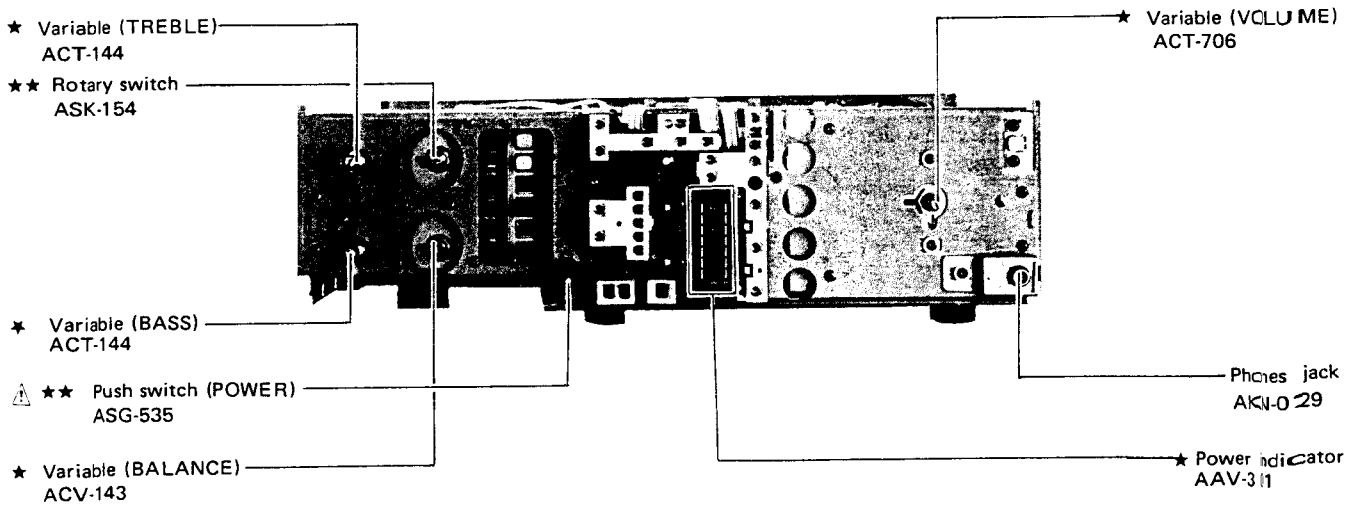
**NOTES:**

- 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.

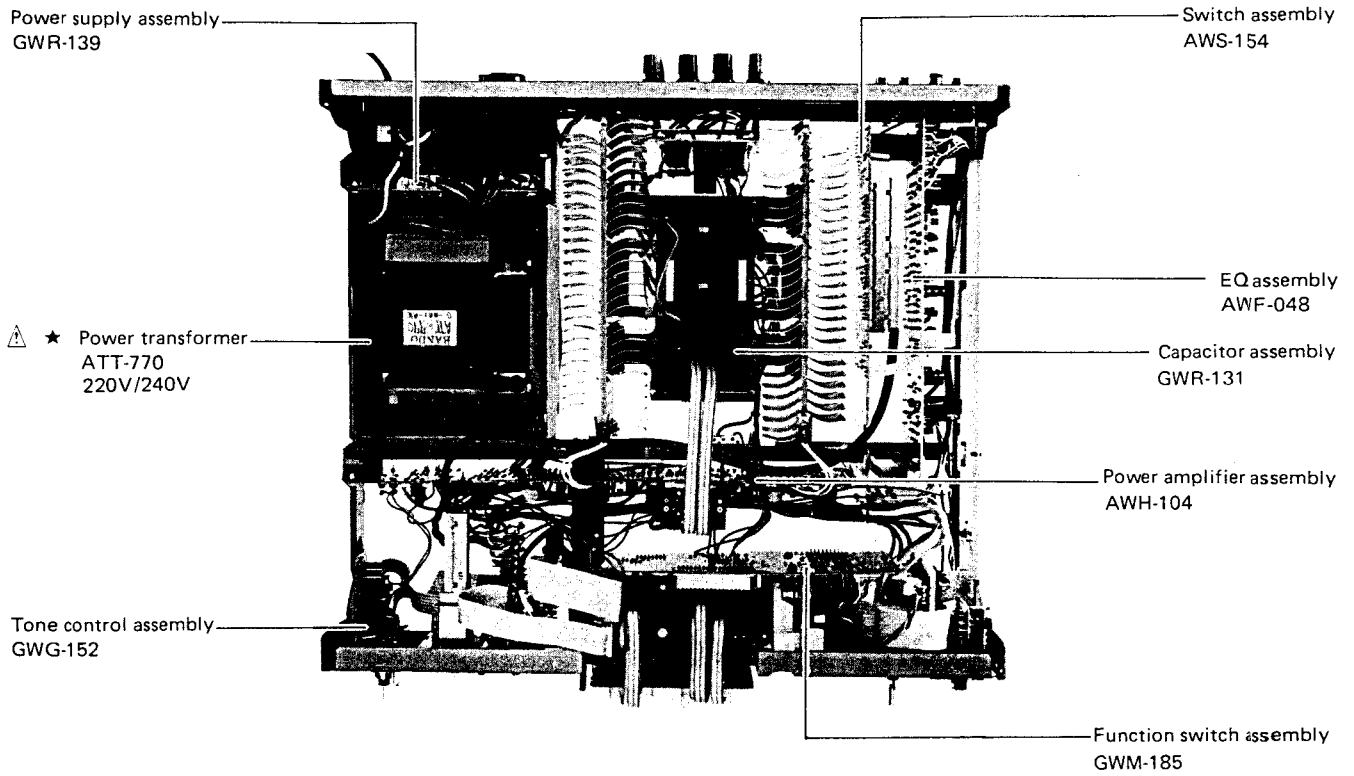
**Front Panel View**



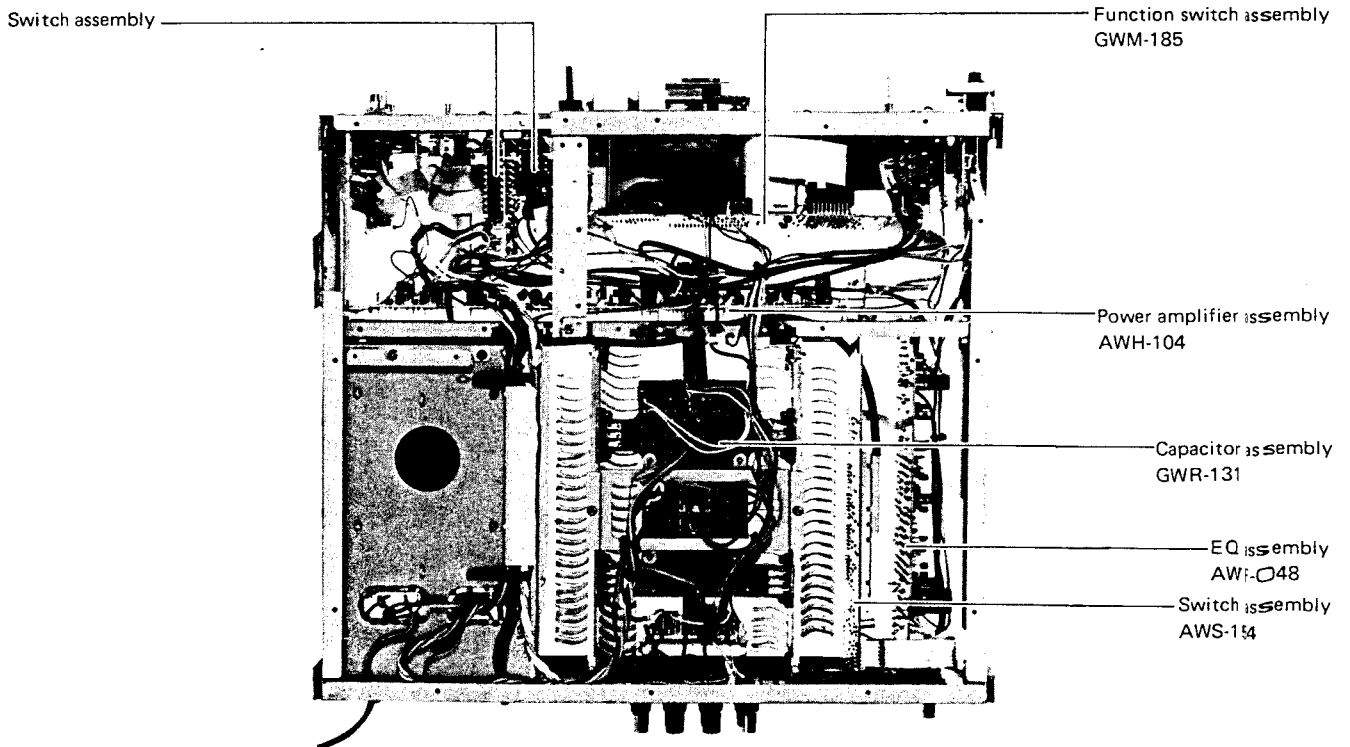
**Front View with Front Panel Removed**



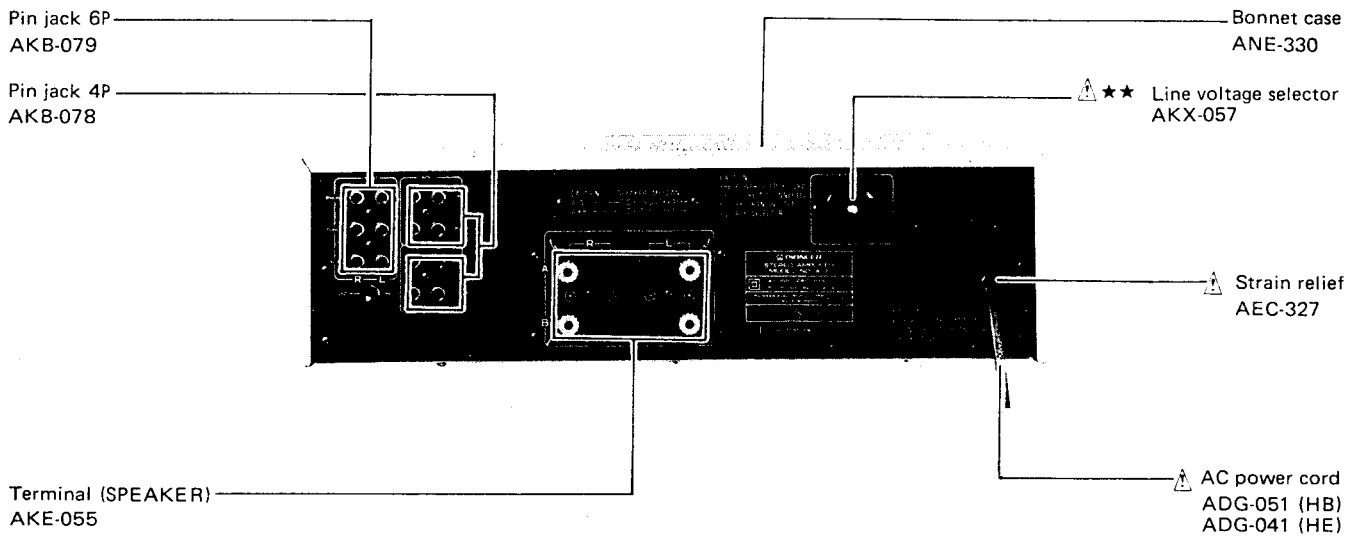
Top View



Bottom View



## Rear Panel View



## 4. CIRCUIT DESCRIPTIONS

The circuitry of the A-7 is basically the same as that of model A-8 with the exception of following sections. For details of circuit description, please see the circuit description of the model A-8.

1. The A-7 equalizer amp can not be switched between MM R LOAD and MC C LOAD.
2. The power amplifier ass'y differs from the drive circuit A-8 at the final stage.



Mark	Part No.	Symbol & Description
	CCDSL 680J 50	C41, C42
	CKDYB 472K 50	C57, C58
	CKDYB 471K 500	C53, C54
	CKDYF 103Z 50	C35, C36, C45, C46
	CQMA 102K 250	C37, C38

### RESISTORS

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

Mark	Part No.	Symbol & Description
★	ACP-019	VR1, VR2 Semi-fixed 100Ω (B)
⚠	RD¼PMF000 J	R31, R32, R39, R40, R61, R62, R91, R92, R121, R122, R41, R42
⚠	RD¼PMF000 J	R35-R40, R43, R44, R63, R64, R69-R72, R91-R96, R113, R114
⚠	RD¼PM000 JNL	R3, R4, R9-R12
⚠	RD¼PSF 221J	R111, R112
	RD¼PS000 J	R73-R76
	RD¼PM000 J	R1, R2, R5, R6, R15-R26, R29, R30, R33, R34, R45-R60, R65-R68, R77-R84, R89, R90, R95-R98, R107-R110, R115-R120

### SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SK129A	Q1, Q2
★★	2SC2291	Q3, Q4
★★	2SA979	Q5, Q6
★★	2SC2259	Q9, Q10
★★	2SA733A	Q11, Q12
	(2SA1015)	
	(2SA1115)	
	(2SA992)	
★★	2SA905A	Q13, Q14
★★	2SC1915A	Q15, Q16
	(2SC1915)	
★★	2SC2603	Q17, Q18, Q23, Q24
	(2SC1400)	
★★	2SA1115	Q19-Q22
	(2SA750)	
★★	2SA893A	Q25, Q26
★★	2SC1890A	Q27, Q28
★★	2SC2275	Q29, Q30
★★	2SA985	Q31, Q32
★★	2SB507P	Q101
	(2SB834)	
	(2SB682)	
★★	2SD313P	Q102
	(2SD880)	
	(2SD712)	
★★	NJM4558DX	Q33
	(μPC4558C)	
★	1S1555	D1-D4, D7, D8, D13-D20, D25-D28, D39-D42
	(US1035)	
	(1S2076)	
	(1S2473)	
★	MZ-047	D21-D24
★	MZ-150	D33, D34
	(WZ-150)	

Mark	Part No.	Symbol & Description
★	MZL240	D101, D102
★	STV2H-O	D11, D12

### OTHERS

Mark	Part No.	Symbol & Description
	TH102-2	TH1, TH2
	TH103-2	TH3, TH4

### SWITCH ASSEMBLY (AWS-159)

#### RESISTORS

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

Mark	Part No.	Symbol & Description
	RD¼PM 000 J	R1-R11

#### SWITCH-CAPACITOR-OTHER

Mark	Part No.	Symbol & Description
★★	ASX-156	S1 Side switch
	ACE-075	C1
	CKDYB 391K 50	C2-C5
	AKB-078	Pin jack 4P

### PROTECTION ASSEMBLY (GWM-236)

#### CAPACITORS

Mark	Part No.	Symbol & Description
	CQMA 473K 50	C201, C202
	CEA R47M 50L	C203, C204
	CEA 471M 6L	C205
	CEA 101M 16L	C206
	CEA 2R2M 100L	C207

#### RESISTORS

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

Mark	Part No.	Symbol & Description
	RS1P100J	R201, R202
	RS2PL100J	R203, R204
	RS1P391J	R215
	RD¼PM 000 J	R205-R214

### SEMICONDUCTORS

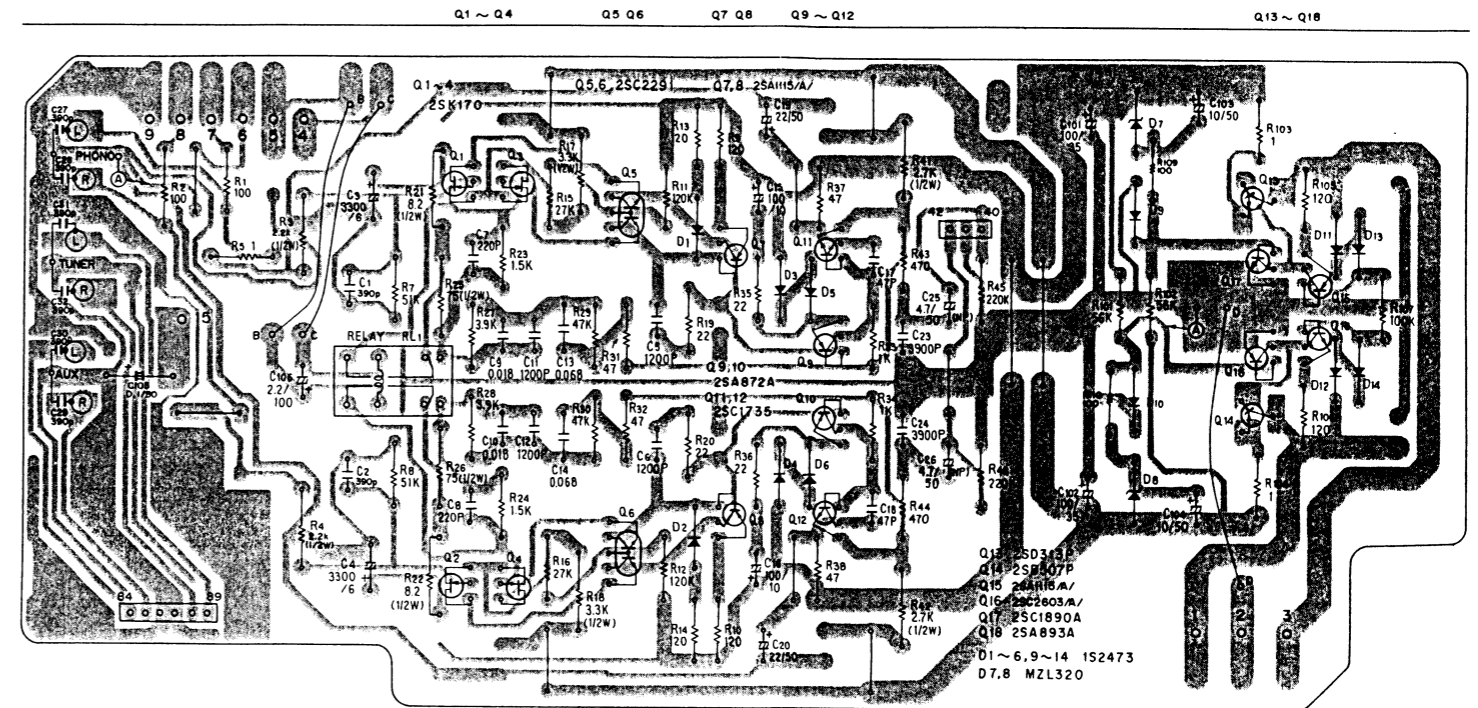
Mark	Part No.	Symbol & Description
★★	2SC1890A	Q201, Q202
★★	2SC945A	Q203, Q204
★★	2SA733A	Q205
★★	2SC1384	Q206
★	1S2471	D201-D204
★	1S2473	D205
	(1S1555)	
	(1S2076)	
★	MZ-150	D206
	(WZ-150)	

### OTHER

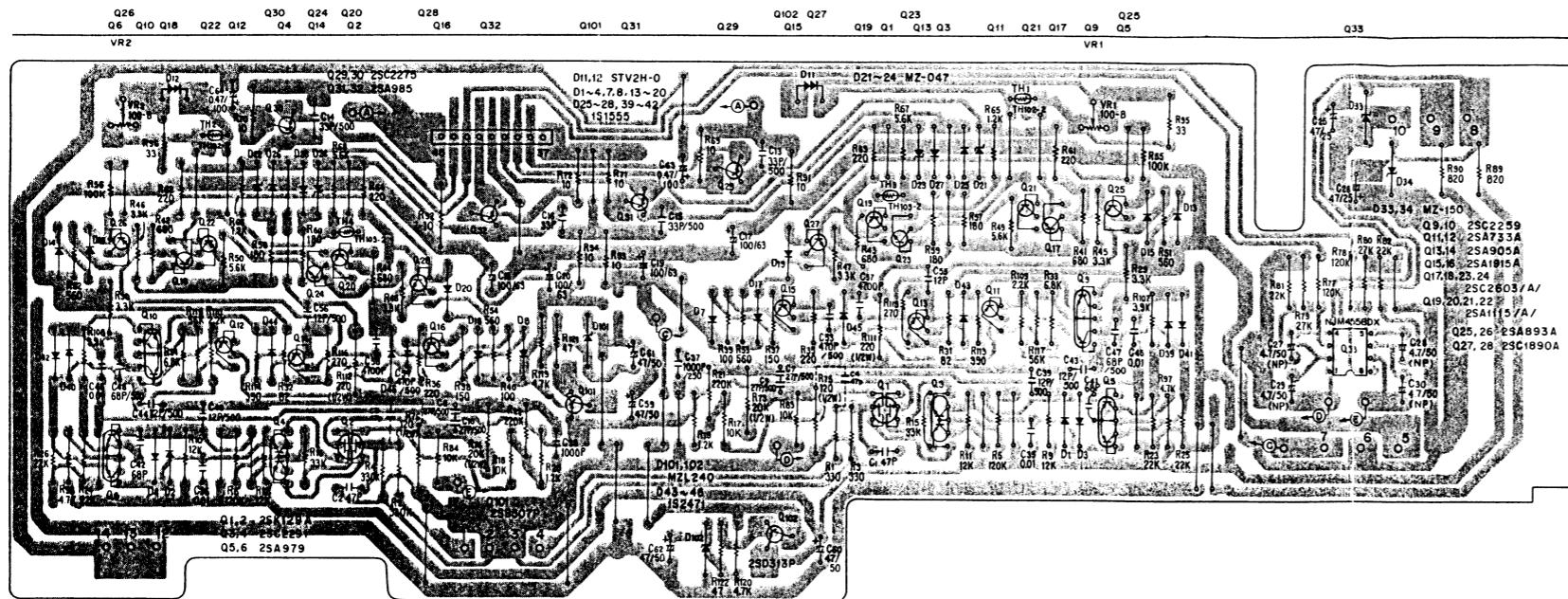
Mark	Part No.	Symbol & Description
★★	ASR-068	Relay RL4

## 4. P.C. BOARD PATTERN

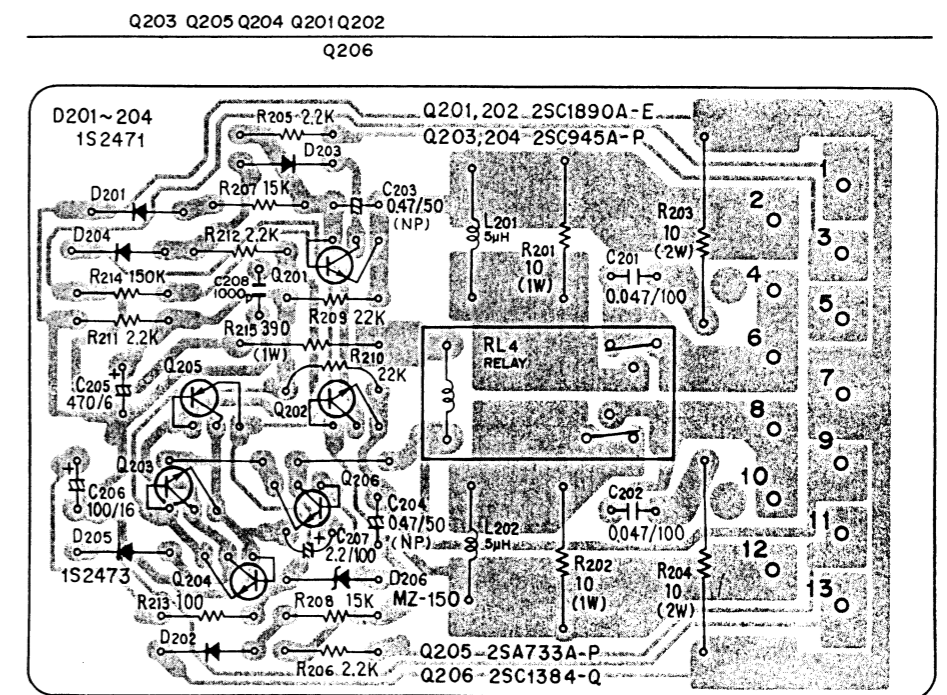
### 4.1 EQ ASSEMBLY (AWF-054)



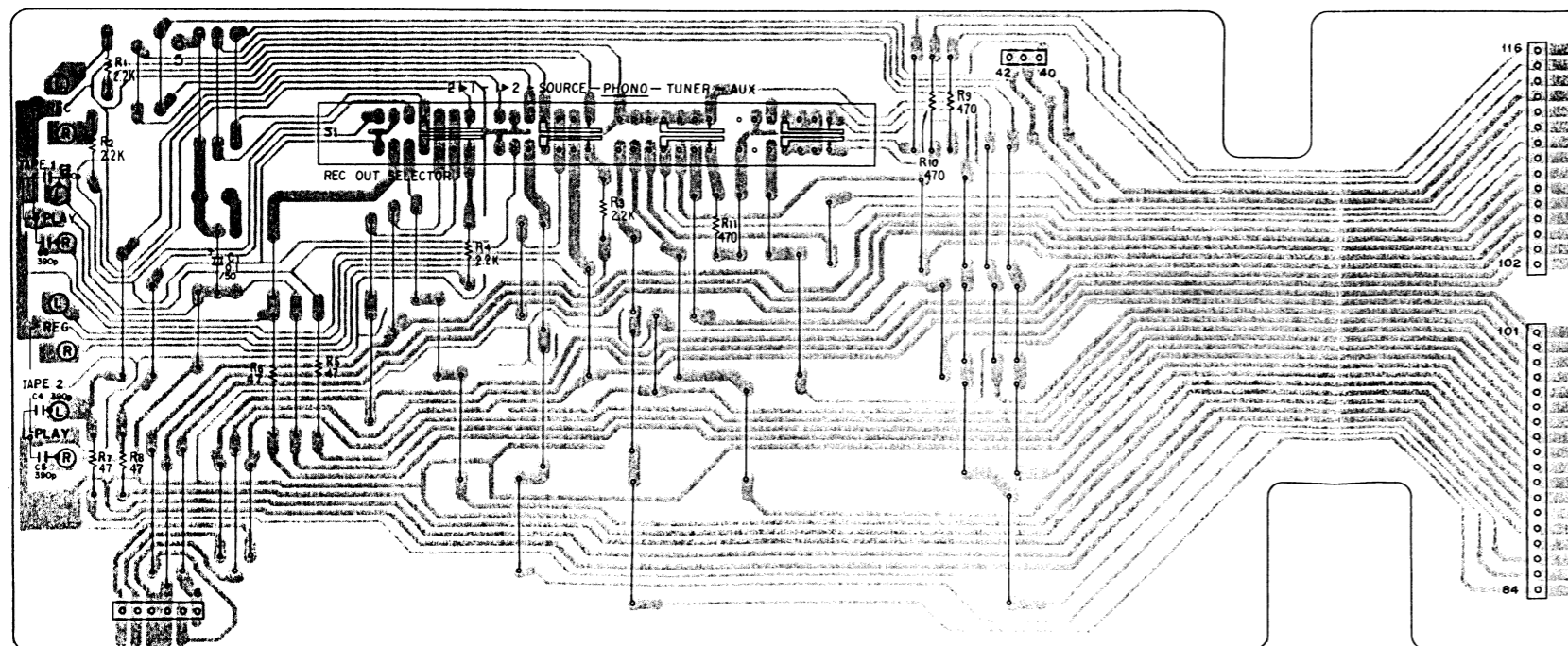
4.2 POWER AMPLIFIER ASSEMBLY (AWH-117)



4.4 PROTECTION ASSEMBLY (GWM-236)



4.3 SWITCH ASSEMBLY (AWS-159)



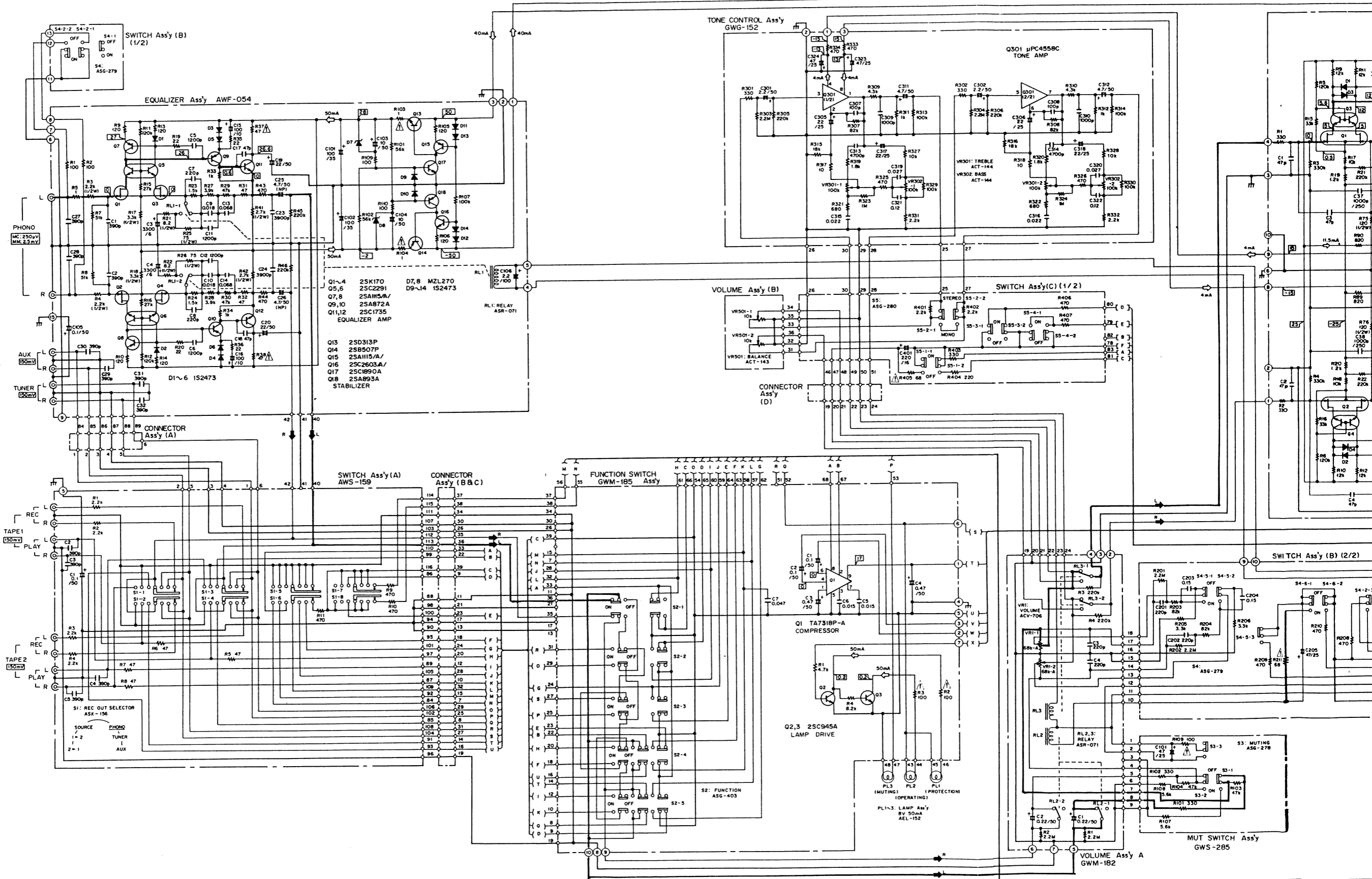
# 5. SCHEMATIC DIAGRAM

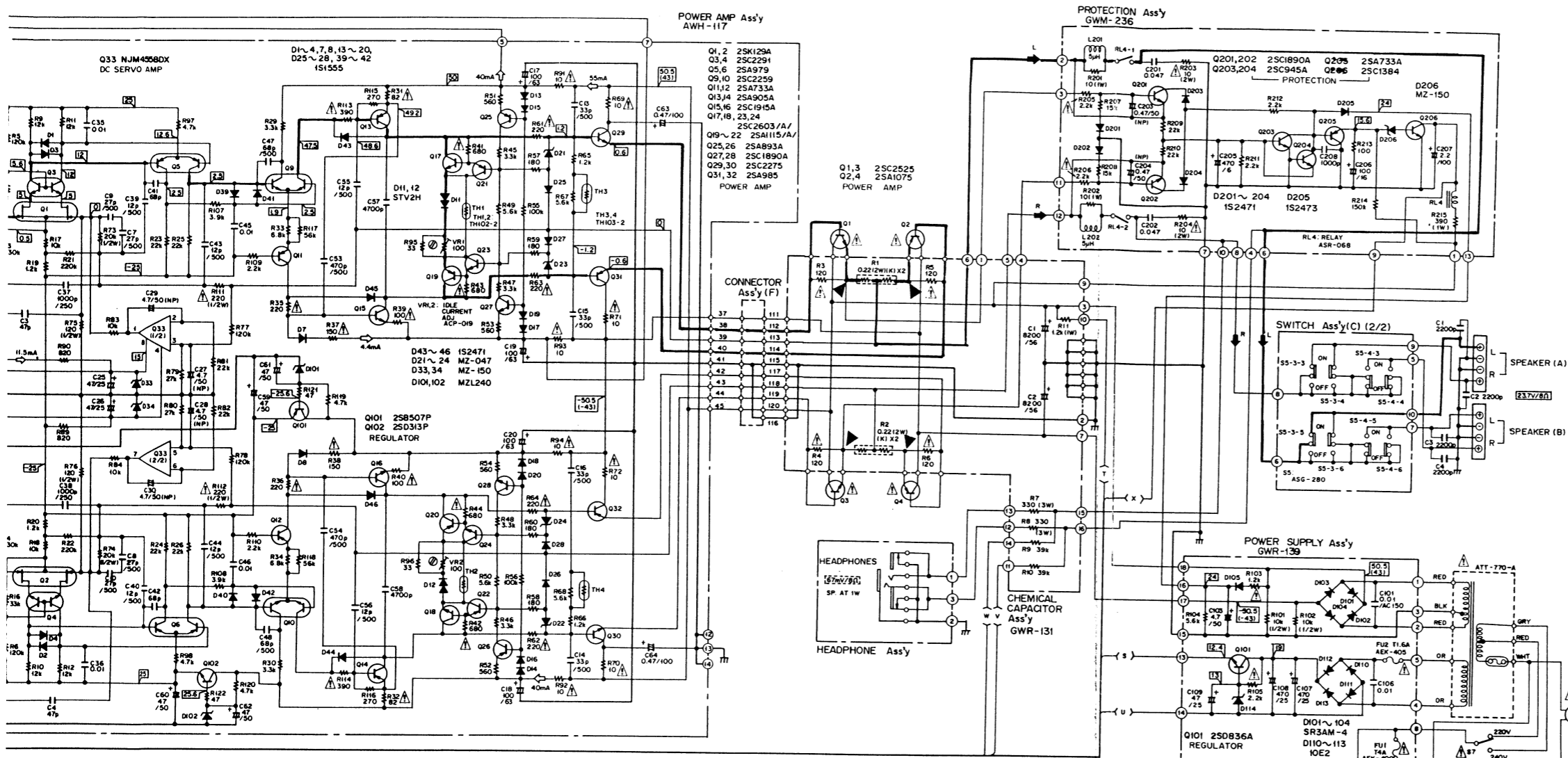
A

B

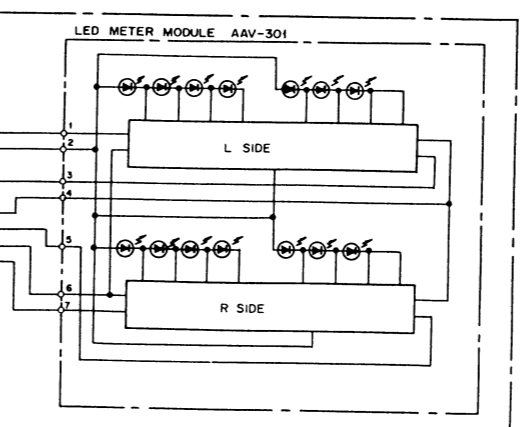
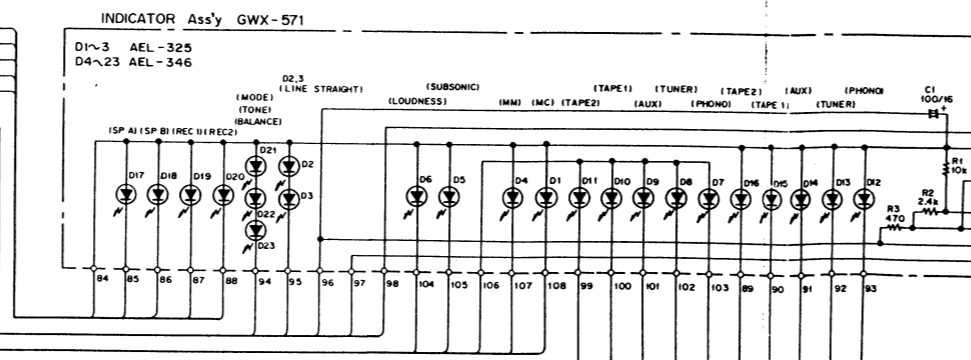
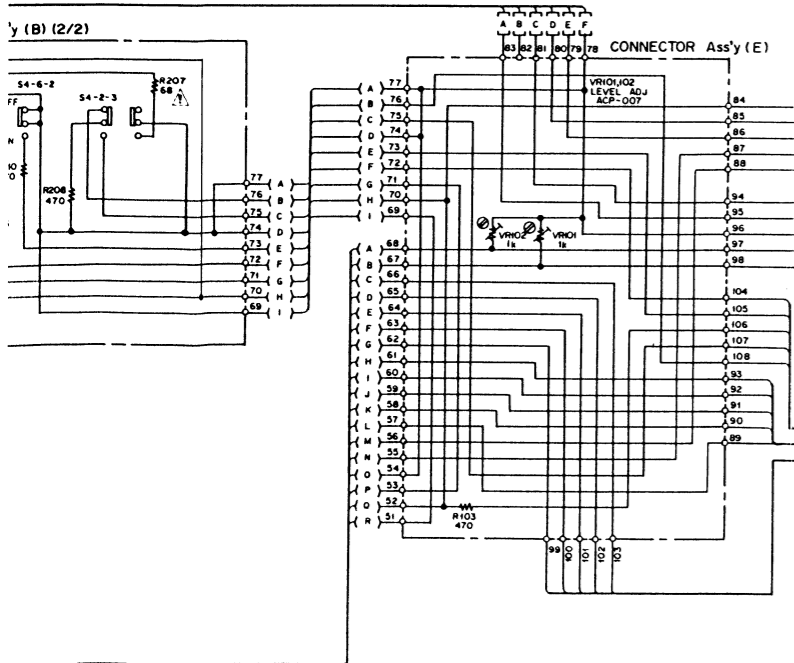
C

D





- RESISTORS:**  
 Indicated in  $\Omega$ ,  $\frac{1}{2}W$ ,  $\pm 5\%$  tolerance unless otherwise noted k : k $\Omega$ , M : M $\Omega$ , (F) :  $\pm 1\%$ , (G) :  $\pm 2\%$ , (K) :  $\pm 10\%$  tolerance
  - CAPACITORS:**  
 Indicated in capacity ( $\mu F$ )/voltage (V) unless otherwise noted p : pF  
 Indication without voltage is 50V except electrolytic capacitor.
  - VOLTAGE CURRENT:**  
 Signal voltage at 70W + 70W R1: output (1kHz)  
 DC voltage (V) at no input signal  
 Value in I is DC voltage at rated power  
 mA: DC current at no input signal
  - OTHERS:**  
 Signal route  
 Adjusting point  
 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.
  - SWITCHES:**  
 S1: REC OUT SELECTOR  
 2 = 1 - 1 = 2 - SOURCE - PHONO - TUNER - AUX  
 S2-1 FUNCTION (PHONO) ON - OFF  
 S2-2 FUNCTION (TUNER) ON - OFF  
 S2-3 FUNCTION (AUX1) ON - OFF  
 S2-4 FUNCTION (TAPE 1) ON - OFF  
 S2-5 FUNCTION (TAPE 2) ON - OFF  
 S3: MUTING (-20dB) ON - OFF  
 S4-1: PHONO (MC) ON - OFF  
 S4-2: PHONO (MM) ON - OFF  
 S4-3: LOUDNESS ON - OFF  
 S4-4: SUBSONIC ON - OFF  
 S5-1: LINE STRAIGHT ON - OFF  
 S5-2: MODE STEREO - MONO  
 S5-3: SPEAKER (A) ON - OFF  
 S5-4: SPEAKER (B) ON - OFF  
 S6: POWER ON - OFF  
 S7: LINE VOLTAGE SELECTOR 220V-240V  
 The underlined indicates the switch position
- This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.



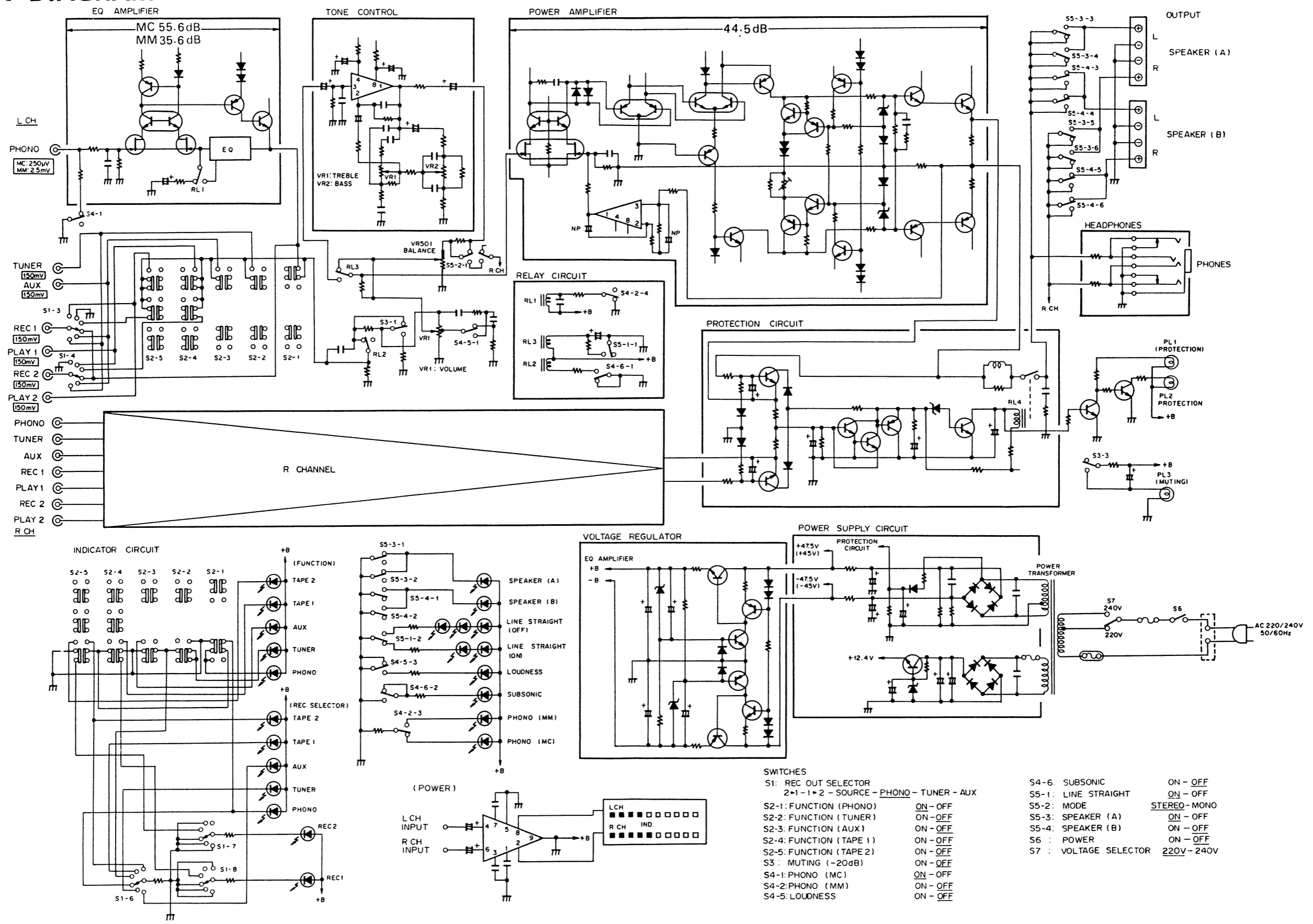
A

B

C

D

# 5. BLOCK DIAGRAM

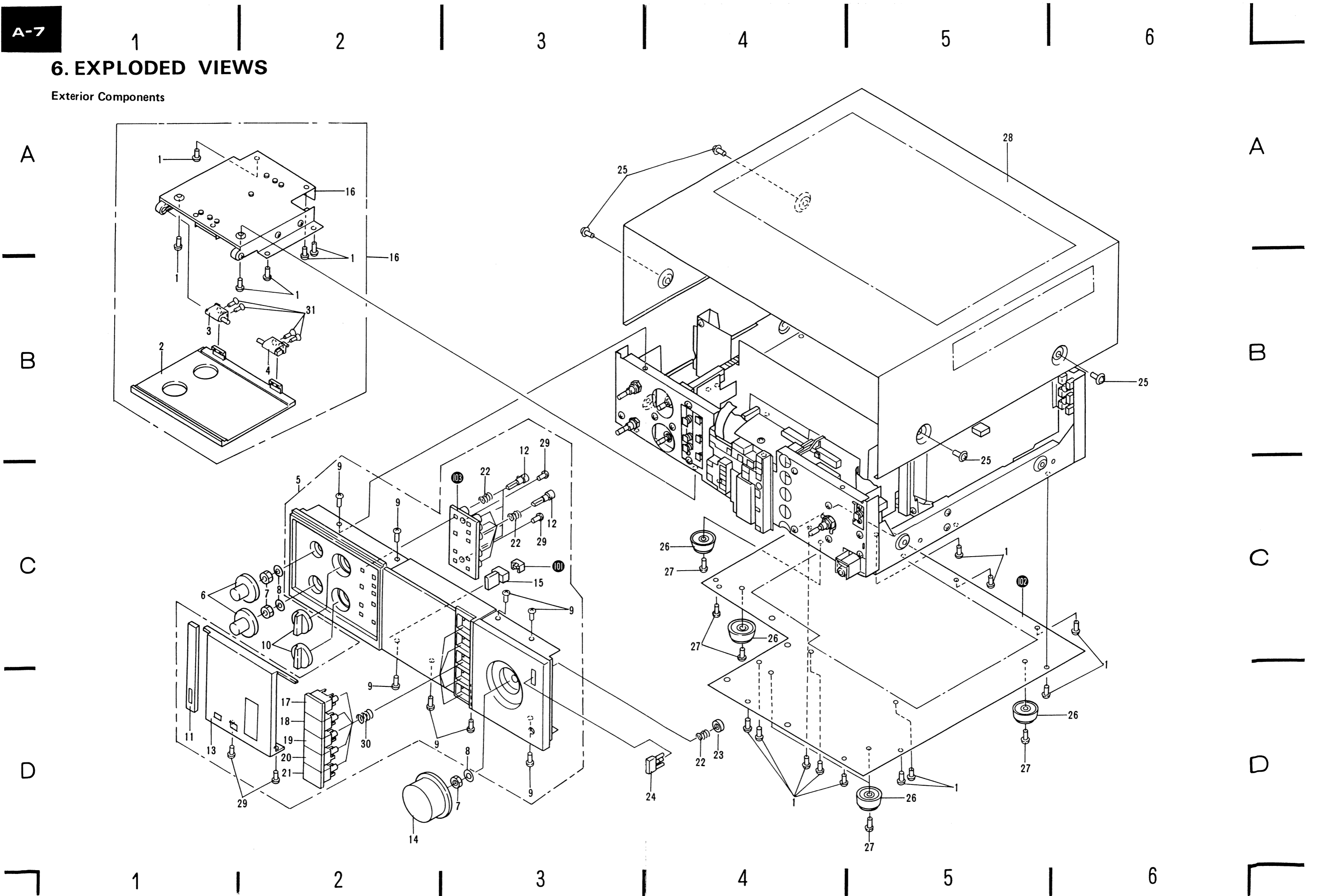


- SWITCHES**
- S1: REC OUT SELECTOR  
2-1-1-2 - SOURCE - PHONO - TUNER - AUX
  - S2-1: FUNCTION (PHONO) ON - OFF
  - S2-2: FUNCTION (TUNER) ON - OFF
  - S2-3: FUNCTION (AUX) ON - OFF
  - S2-4: FUNCTION (TAPE 1) ON - OFF
  - S2-5: FUNCTION (TAPE 2) ON - OFF
  - S3: MUTING (-20dB) ON - OFF
  - S4-1: PHONO (MC) ON - OFF
  - S4-2: PHONO (MM) ON - OFF
  - S4-5: LOUDNESS ON - OFF

- S4-6: SUBSONIC ON - OFF
- S5-1: LINE STRAIGHT ON - OFF
- S5-2: MODE STEREO - MONO
- S5-3: SPEAKER (A) ON - OFF
- S5-4: SPEAKER (B) ON - OFF
- S6: POWER ON - OFF
- S7: VOLTAGE SELECTOR 220V - 240V

# 6. EXPLODED VIEWS

Exterior Components



**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 List**

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1.	VBZ30P060FMC	Screw		101.		Ring
	2.	ANB-975	Door assembly		102.		Bottom plate
	3.	ANR-340	Hinge (L)		103.		Push knob spacer
	4.	ANR-341	Hinge (R)				
	5.	ANB-980	Front panel assembly				
	6.	AAB-259	Knob (B)				
	7.	NK90FUC	Nut				
	8.	WA92F140U100	Washer				
	9.	VBZ30P080FMC	Screw				
	10.	AAB-260	Knob (C)				
	11.	ANR-331	Center plate				
	12.	AAD-340	Push knob (C)				
	13.	ANR-333	Cover				
	14.	AAB-258	Knob (A)				
	15.	AAD-338	Push knob (A)				
	16.	AXC-001	Door mechanical assembly				
	17.	AAD-341	Function knob (A)				
	18.	AAD-342	Function knob (B)				
	19.	AAD-343	Function knob (C)				
	20.	AAD-344	Function knob (D)				
	21.	AAD-345	Function knob (E)				
	22.	ABH-045	Spring				
	23.	AEC-564	Knob holder (A)				
	24.	AAD-339	Push knob (B)				
	25.	ABA-193	Screw				
	26.	AEC-083	Foot assembly				
	27.	VTZ40P120FMC	Screw				
	28.	ANE-330	Bonnet case				
	29.	VBZ30P080FZK	Screw				
	30.	ABH-069	Spring				
	31.		Screw 3x6 (Black)				

**Interior Components**

**Parts List**

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
		1.	VBZ30P060FMC		104.		Lamp holder (C)
		2.	AEC-352		105.		P.C.B. holder (D)
		3.	AWH-104				
	*	4.	AAV-301		106.		Volume holder
		5.	GWX-571		107.		Sub-frame
					108.		Panel stay
		6.	ABN-046		109.		Plate
		7.	AEL-152		110.		Jack holder
$\Delta$	*	8.	ATT-770				
		9.	VTZ40P080FMC		111.		P.C.B. holder (G)
		10.	ABN-048		112.		P.C.B. holder (H)
					113.		Transformer frame
		11.	GWG-152		114.		Transformer sub-frame
		12.	ABA-214		115.		P.C.B. holder (B)
		13.	ABA-261				
		14.	ASX-154		116.		Wire
$\Delta$	**	15.	AEK-400		117.		Power switch holder
					118.		Lead wire guide
$\Delta$	**	16.	AEK-405		119.		P.C.B. holder (E)
	**	17.	ASG-535		120.		Arm assembly
		18.	VBZ30P080FMC				
	*	19.	STV2H-O		121.		Arm guide
		20.	GWM-185		122.		.....
					123.		Holder
		21.	GWM-182		124.		Heat sink
		22.	AEC-782		125.		Heat sink holder (A)
$\Delta$	**	23.	2SA1075-B				
			(2SA1075-G)		126.		Terminal 2P (GND)
			(2SA1075-X)		127.		Plate
$\Delta$	**	24.	2SC2525-B		128.		Heat sink holder (B)
			(2SC2525-G)		129.		Heat sink holder (A)
			(2SC2525-X)		130.		Center frame
		25.	ABA-258				
		26.	ACH-230		131.		Terminal 7P (GND)
		27.	GWR-131		132.		Side frame (R)
$\Delta$	**	28.	AKX-057		133.		Heat sink holder (C)
$\Delta$	**	29.	2SC2525-B		134.		Heat sink
			(2SC2525-G)		135.		P.C.B. holder (A)
			(2SC2525-X)				
$\Delta$	**	30.	2SA1075-B		136.		Terminal 2P (GND)
			(2SA1075-G)		137.		Rear panel
			(2SA1075-X)		138.		Terminal (GND)
		31.	AWS-154		139.		P.C.B. holder (F)
		32.	AWF-048		140.		Volume assembly
		33.	GWM-181				
$\Delta$		34.	AEC-327		141.		Connector assembly
$\Delta$		35.	ADG-051		142.		Switch assembly
			ADG-041		143.		Phone assembly
					144.		Muting switch assembly
		36.	BBT30P080FZK		145.		Switch assembly
		37.	WA35F100N080				
		38.	ABA-176		146.		Connector assembly A
		39.	AKE-055		147.		Connector assembly B
		40.	.....		148.		Connector assembly
					149.		P.C.B. holder
		41.	GWR-139		150.		LED holder A
		101.			151.		LED holder B
		102.			152.		LED holder D
		103.					Lamp holder (A)

\*hfe of Q1-Q4 should have the same value.

1 2 3 4 5 6

A

A

B

B

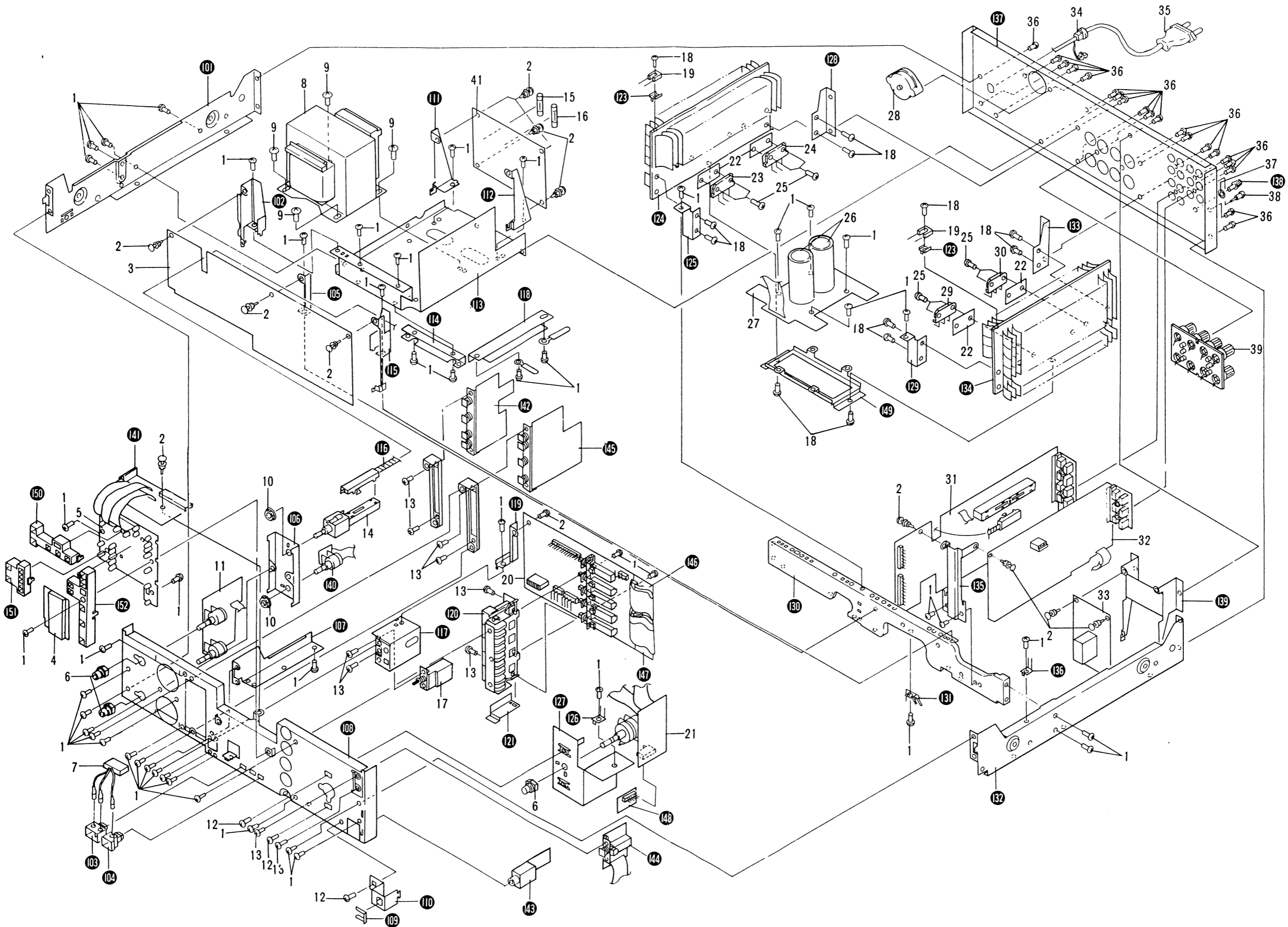
C

C

D

D

1 2 3 4 5 6





# 7. P.C. BOARDS CONNECTION DIAGRAM

1

2

3

4

5

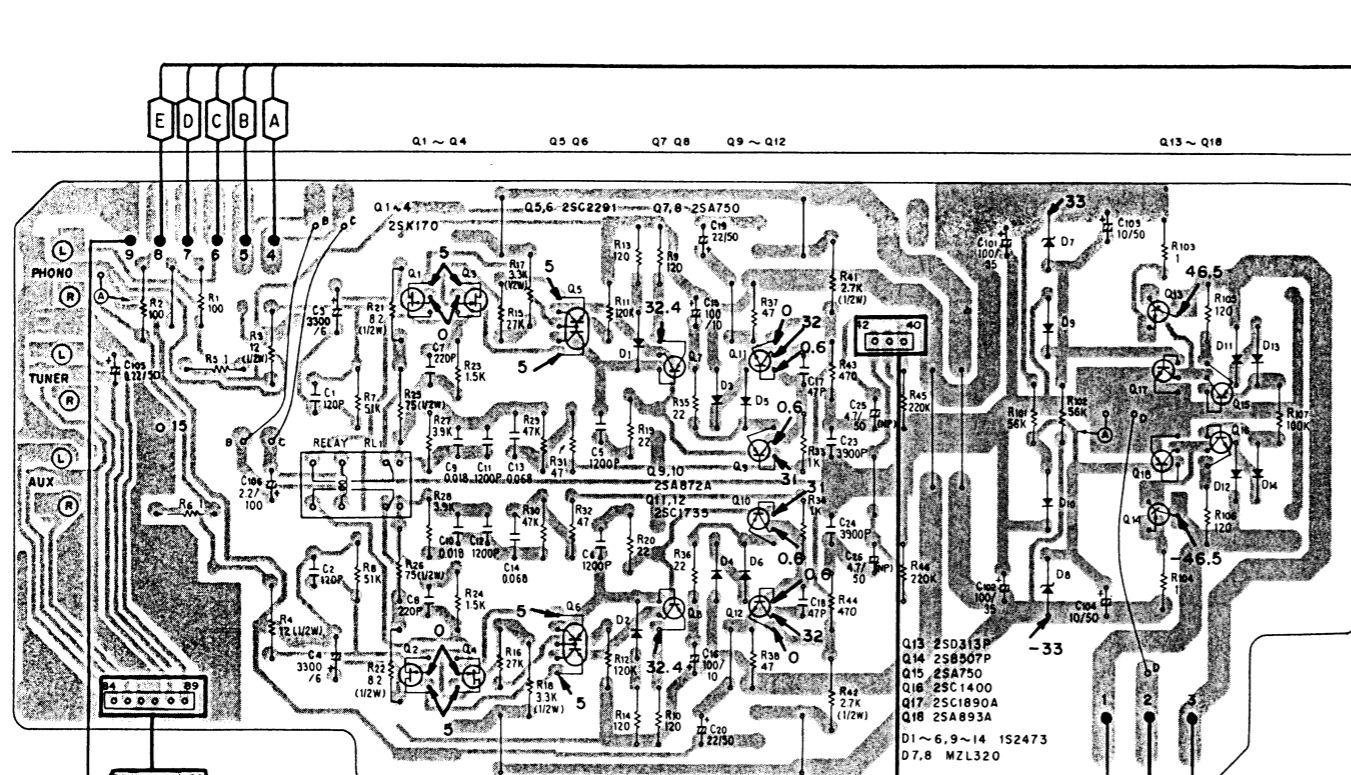
6

A

B

C

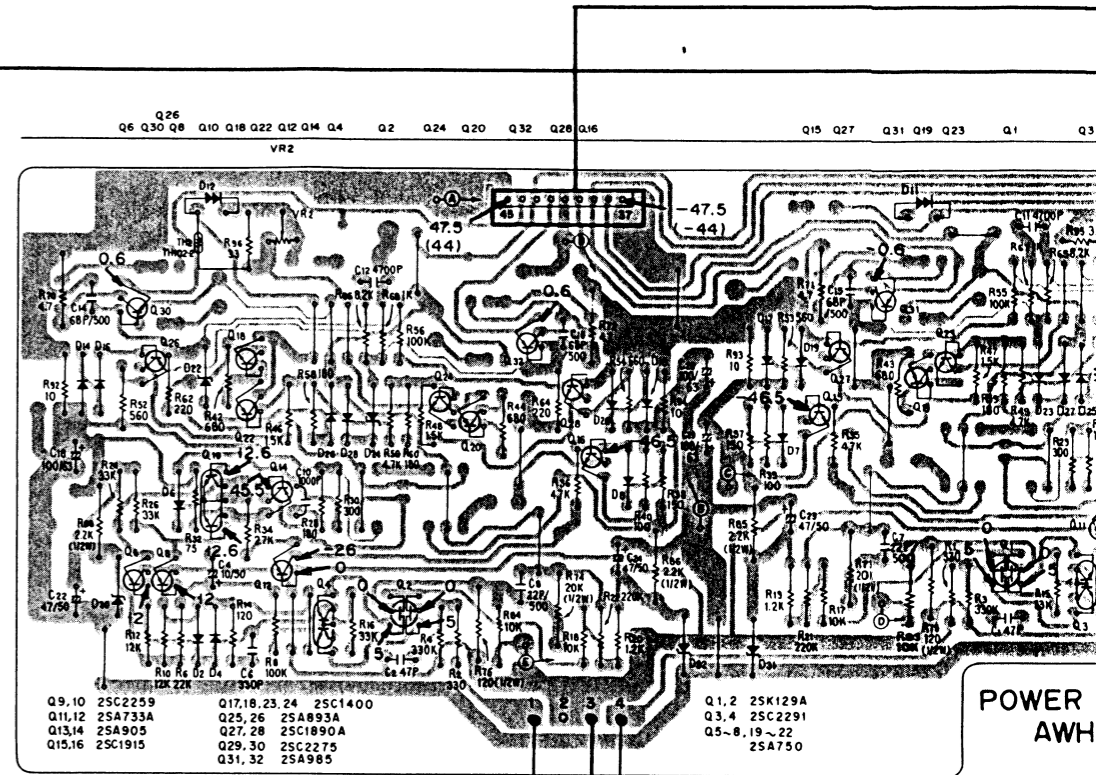
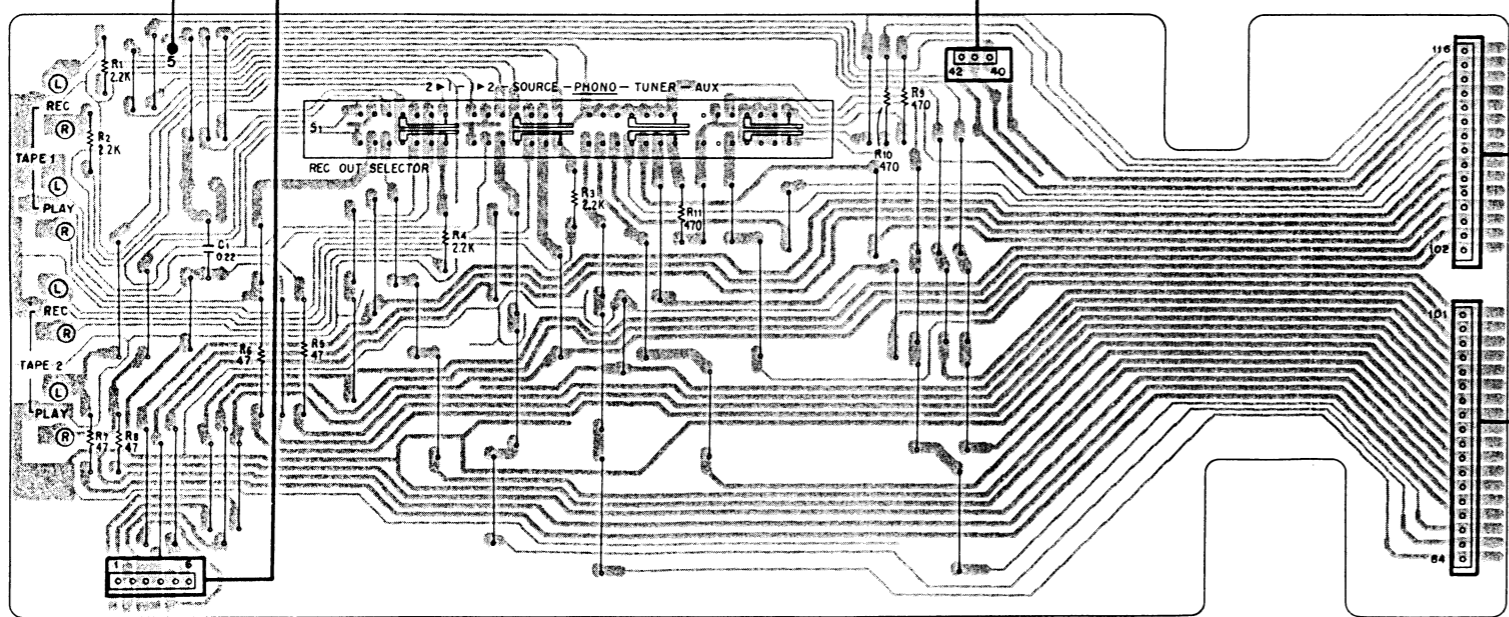
D



**EQUALIZER Ass'y  
AWF-048**

**CONNECTOR  
Ass'y (A)**

**SWITCH Ass'y (A)  
AWS-154**



**PL1  
(PROTECTION)**

**PL2  
(OPERATING)**

**FUNCTION  
SWITCH  
Ass'y  
GWM-185**

1

2

3

4

5

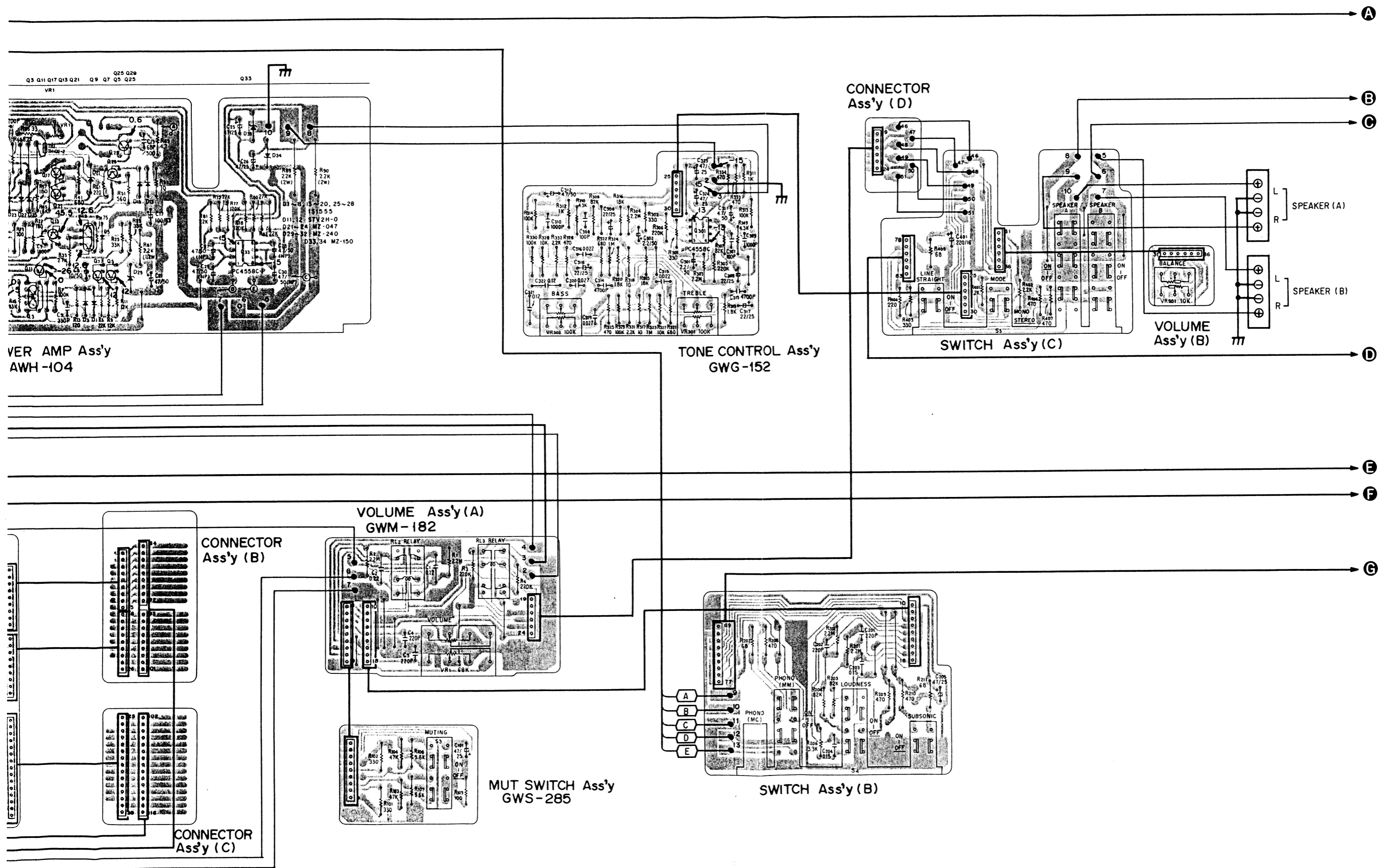
6

A

B

C

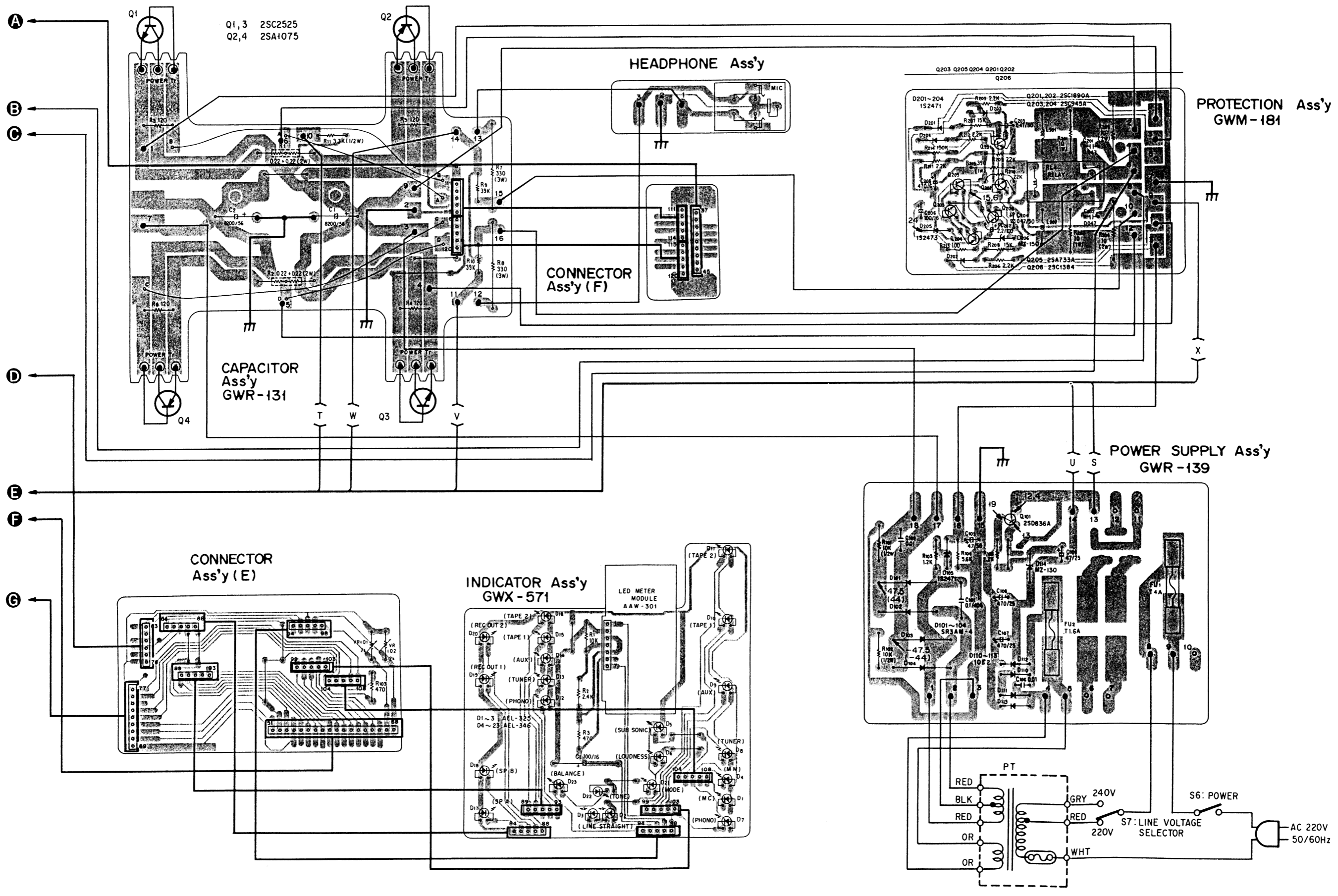
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1 2 3 4 5 6

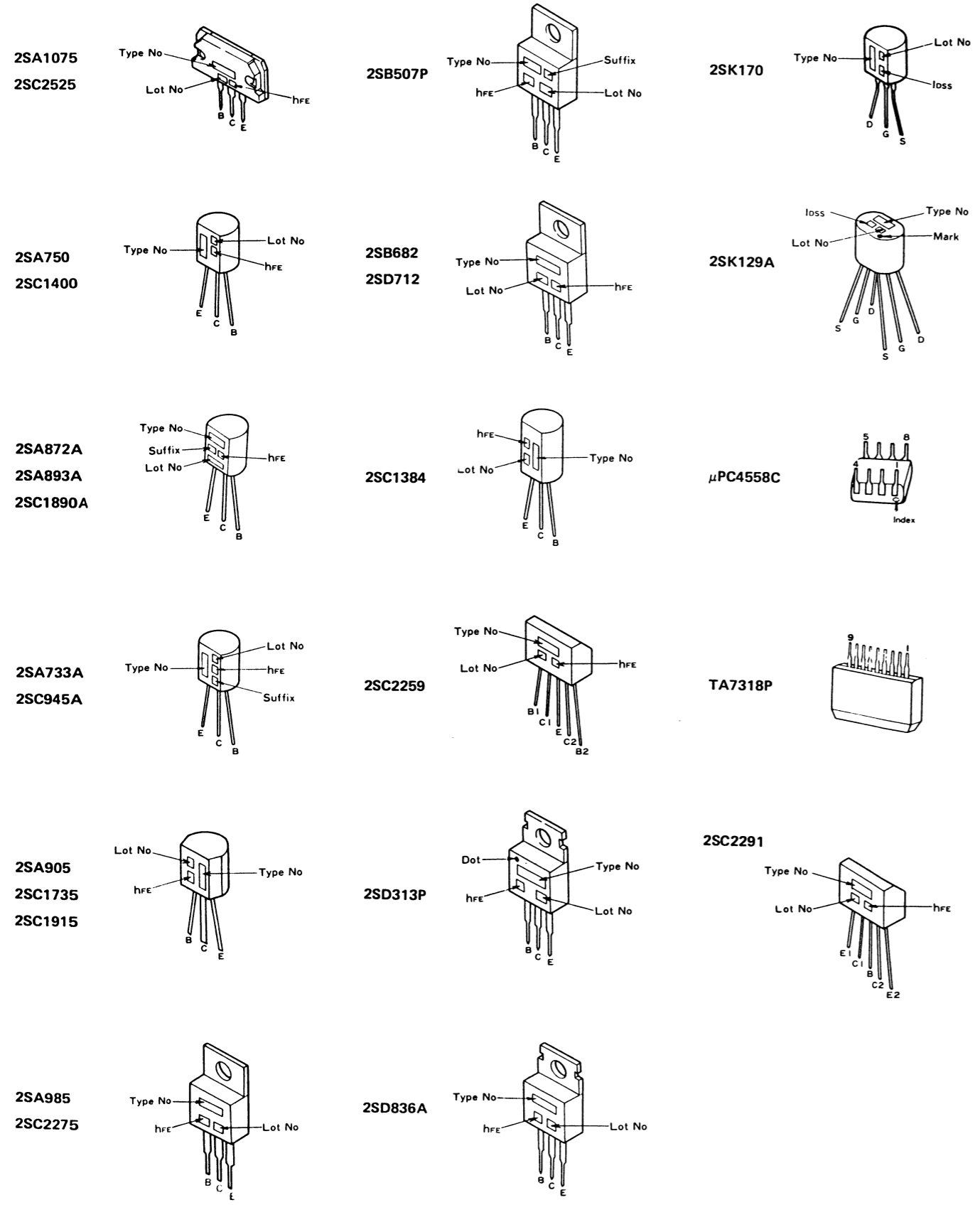
A  
B  
C  
D  
E  
F  
G

A  
B  
C  
D



1 2 3 4 5 6

External Appearance of Transistors and ICs



8. 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	RD4PS	561J
47kΩ	47 × 10 <sup>3</sup>	473	RD4PS	473J
0.5Ω	0R5		RN2H	0R5K
1Ω	010		RS1P	010K

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

5.62kΩ	562 × 100	5621	RN4SR	5621F
--------	-----------	------	-------	-------

- 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.

Miscellaneous Parts

ASSEMBLIES

Mark	Part No.	Symbol & Description
	AWF-048	EQ assembly
	GWR-139	Power supply assembly
	GWG-152	Tone control assembly
	GWM-181	Protection assembly
	GWM-182	Volume assembly
	GWM-185	Function switch assembly
	AWH-104	Power amplifier assembly
	AWR-220	Switch assembly
	GWR-131	Capacitor assembly
	GWX-571	Indicator assembly

SWITCHES

Mark	Part No.	Symbol & Description
★★	ASX-154	S1 Rotary switch (SPEAKER)
$\Delta$ ★★	ASG-535	S6 Push switch (POWER)
$\Delta$ ★★	AKX-057	S7 Line voltage selector

FUSES

Mark	Part No.	Symbol & Description
$\Delta$ ★★	AEK-400	FU1 Fuse T4A
$\Delta$ ★★	AEK-405	FU2 Fuse T1.6A

OTHERS

Mark	Part No.	Symbol & Description
$\Delta$ ★	ATT-770	Power transformer 220V/240V
$\Delta$	ADG-041	Power cord (HE)
$\Delta$	ADG-051	Power cord (HB)
	AKE-005	Terminal (SPEAKERS)
	AEL-152	Lamp assembly

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
$\Delta$ ★★	2SC2525-B (2SC2525-G) (2SC2525-X)	Q1, Q3
$\Delta$ ★★	2SA1075-B (2SA1075-G) (2SA1075-X)	Q2, Q4

\*hfe of Q1-Q4 should have the same value.

Continued on page 29.

# 9. SCHEMATIC DIAGRAM

1

2

3

4

5

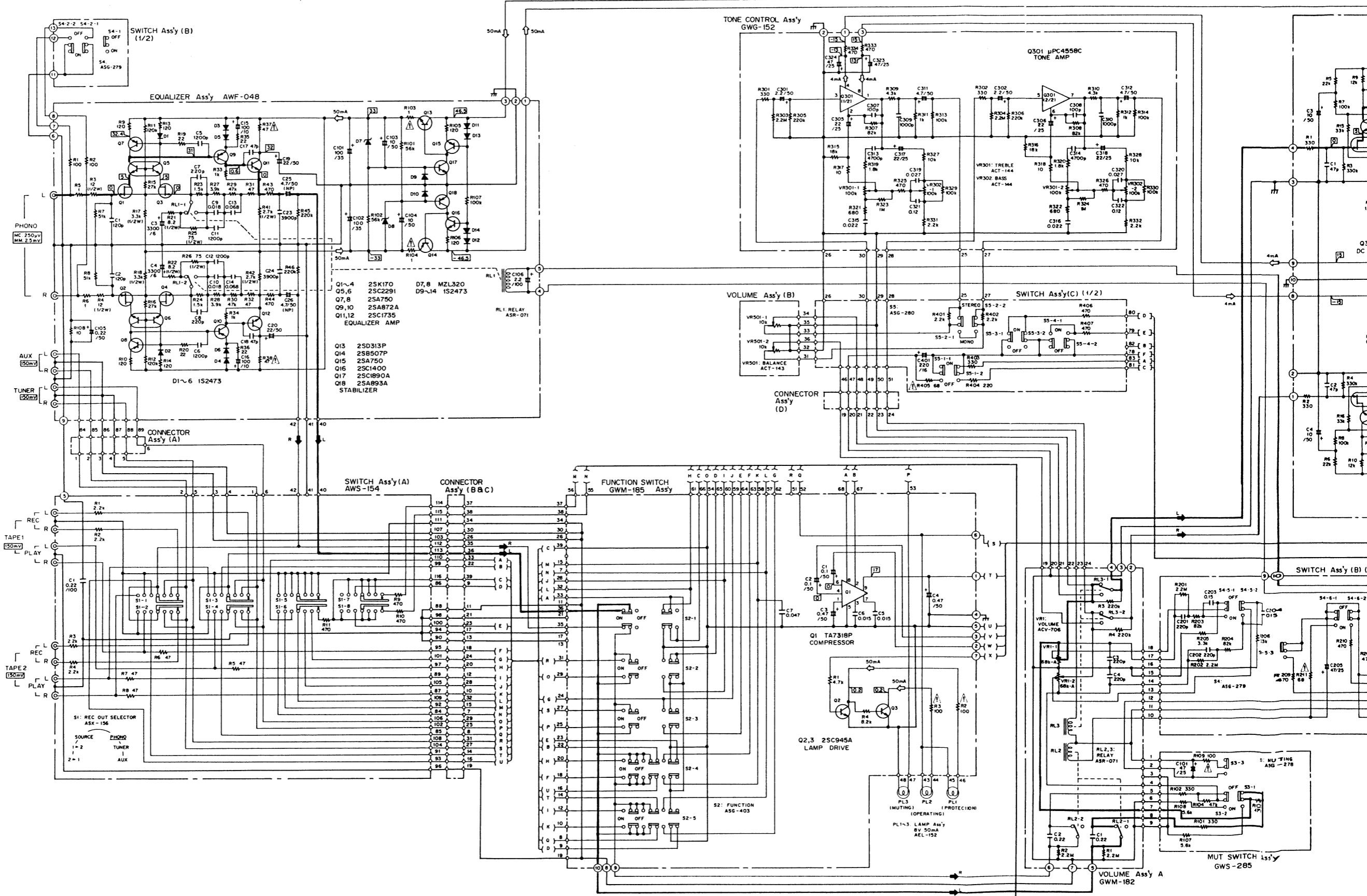
6

A

B

C

D



1

2

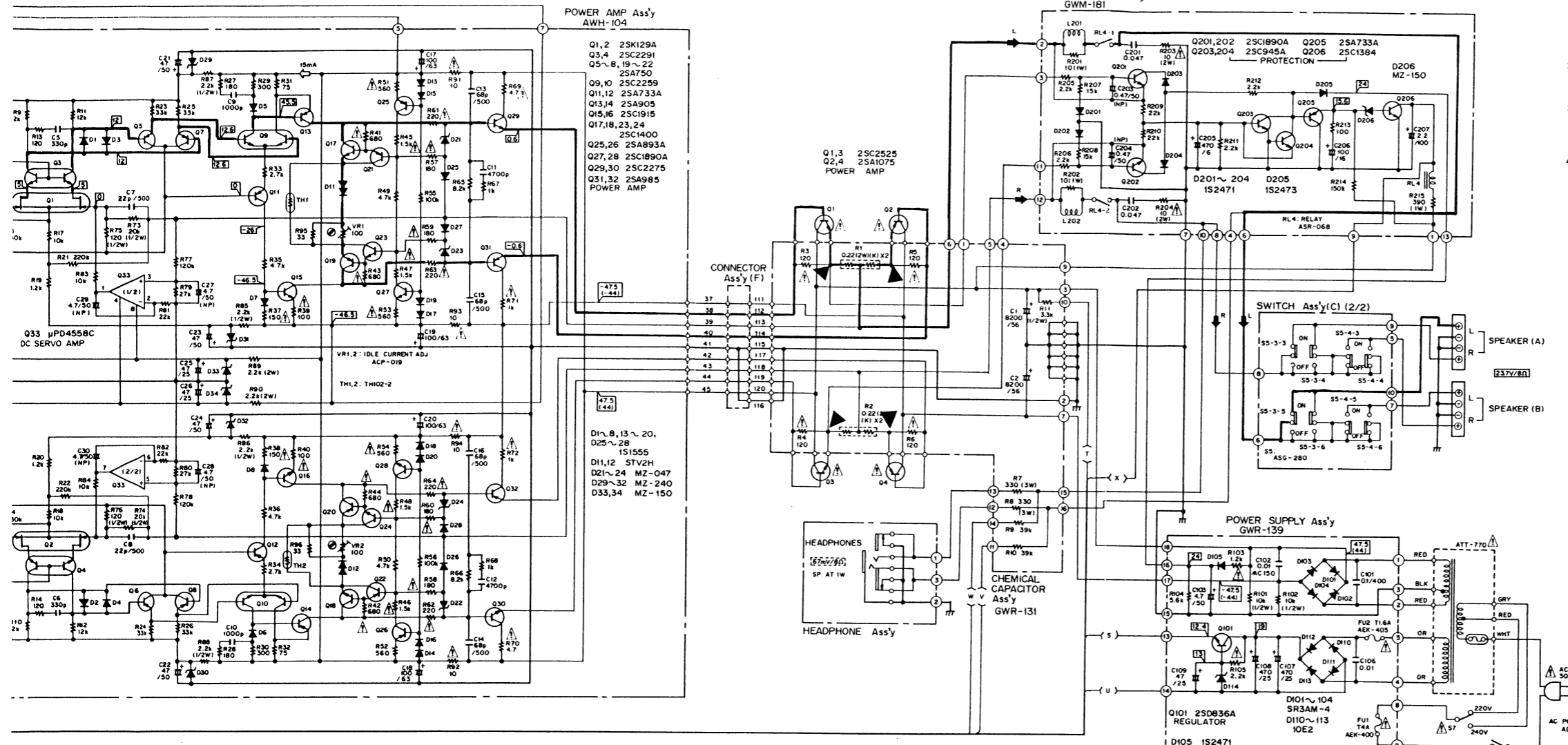
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4

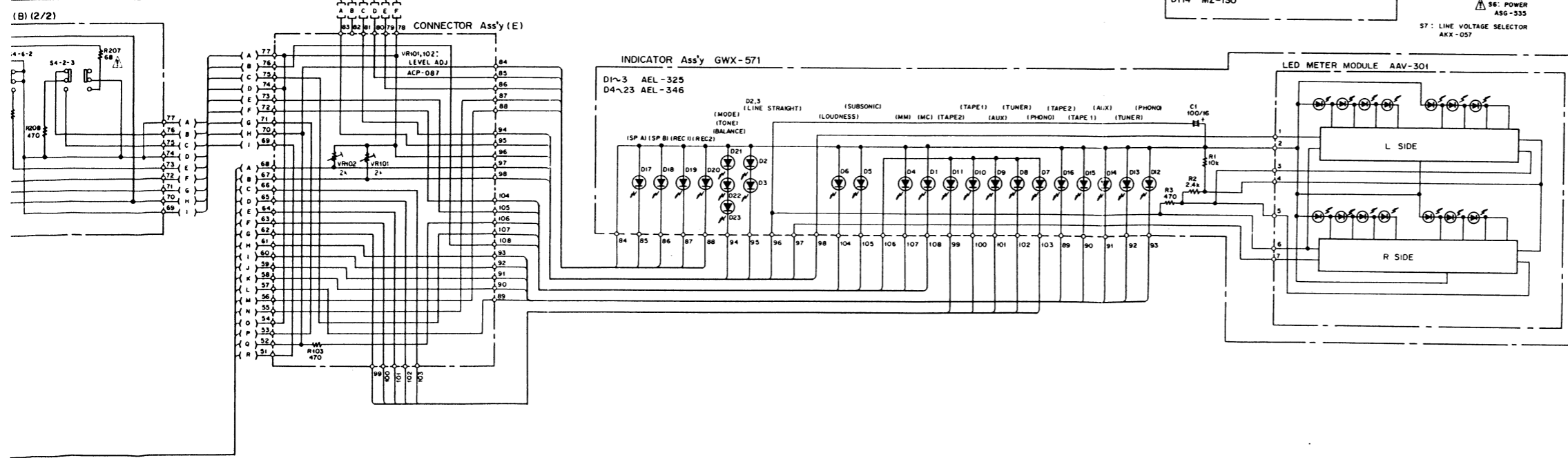
5

6

**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, ¼W, 5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : 1%, (G) : 2%, (K) : 10% tolerance
  - CAPACITORS:**  
 Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF  
 Indication without voltage is 50V except electrolytic capacitor.
  - VOLTAGE CURRENT**  
 Signal voltage at 70 W + 70 W B1: output (1kHz)  
 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.
- SWITCHES:**
- S1: REC OUT SELECTOR  
 2 = 1 - 1 = 2 - SOURCE - PHONO - TUNER - AUX
- S2-1: FUNCTION (PHONO) ON - OFF  
 S2-2: FUNCTION (TUNER) ON - OFF  
 S2-3: FUNCTION (AUX) ON - OFF  
 S2-4: FUNCTION (TAPE 1) ON - OFF  
 S2-5: FUNCTION (TAPE 2) ON - OFF  
 S3: MUTING (-20dB) ON - OFF  
 S4-1: PHONO (MC) ON - OFF  
 S4-2: PHONO (MM) ON - OFF  
 S4-5: LOUDNESS ON - OFF  
 S4-6: SUBSONIC ON - OFF  
 S5-1: LINE STRAIGHT ON - OFF  
 S5-2: MODE STEREO - MONO  
 S5-3: SPEAKER (A) ON - OFF  
 S5-4: SPEAKER (B) ON - OFF  
 S6: POWER ON - OFF  
 S7: LINE VOLTAGE SELECTOR 220V-240V
- The underlined indicates the switch position.
- This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.



A  
 B  
 C  
 D

Continued from page 24

**EQ ASSEMBLY (AWF-048)**

**CAPACITORS**

Mark	Part No.	Symbol & Description
	CCDSL 121J 50	C1, C2
	ACH-359	C25, C26
	CEA 332M 6L	C3, C4
	CEA 101M 35L	C101, C102
	CEA 100M 50L	C103, C104
	CEA 101M 10L	C15, C16
	CEA 220M 50L	C19, C20
	CEA R22M 50L	C105
	CEA 2R2M 100L	C106
	CCDSL 221J 50	C7, C8
	CCDSL 470J 50	C17, C18
	CKDYB 122K 50	C5, C6
	CQMA 683J 50	C13, C14
	CQMA 183J 50	C9, C10
	CQMA 122K 50	C11, C12
	CQMA 392J 50	C23, C24

**RESISTORS**

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

Mark	Part No.	Symbol & Description
	RD½PS □□□ J	R3, R4, R17, R18, R21, R22, R25, R26, R41, R42
	RD¼PM □□□ JNL	R7—R10, R13, R14
⚠	RD¼PMF □□□ J	R37, R38, R103, R104
	RD¼PM □□□ J	R1, R2, R5, R6, R11, R12, R15, R16, R19, R20
	RD¼PM □□□ J	R23, R24, R27—R36, R43—R46, R101, R102, R105—R108

**SEMICONDUCTORS**

Mark	Part No.	Symbol & Description
★★	2SK170	Q1—Q4
★★	2SC2291	Q5, Q6
★★	2SA750	Q7, Q8, Q15
★★	2SC1400	Q16
★★	2SC1735	Q11, Q12
★★	2SA872A	Q9, Q10
★★	2SC1890A	Q17
★★	2SA893A	Q18
★★	2SD313P (2SD712)	Q13
★★	2SB507P (2SB682)	Q14
★	1S2473 (1S2076) (1S1555)	D1—D6, D9—D14
★	MZL320	D7, D8

**OTHERS**

Mark	Part No.	Symbol & Description
★★	ASR-071	RL1 Relay
	PMZ30P060FMC	Screw
	AKB-079	Pin jack 6P

**FUNCTION SWITCH ASSEMBLY (GWM-185)**

**SWITCH**

Mark	Part No.	Symbol & Description
★★	ASG-403	S2 Push switch

**CAPACITORS**

Mark	Part No.	Symbol & Description
	CEA 0R1M 50L	C1, C2
	CEA R47M 50L	C3, C4
	CKDYX 153M 25	C5, C6
	CKDYX 473M 25	C7

**RESISTORS**

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

Mark	Part No.	Symbol & Description
⚠	RD¼PMF680J	R2, R3
	RD¼PM □□□ J	R1, R4

**SEMICONDUCTORS**

Mark	Part No.	Symbol & Description
★★	TA7318P	Q1
★★	2SC945A	Q2, Q3

**TONE CONTROL ASSEMBLY (GWG-152)**

**CAPACITORS**

Mark	Part No.	Symbol & Description
	CEA 2R2M 50L	C301, C302
	CEA 4R7M 50L	C311, C312
	CEA 220M 25L	C305, C306, C317, C318
	CEA 470M 25L	C323, C324
	CQMA 472K 50	C313, C314
	CQMA 223K 50	C315, C316
	CQMA 273K 50	C319, C320
	CQMA 124K 50	C321, C322
	CCDSL 101J 50	C307, C308
	CKDYB 102K 50	C309, C310

**RESISTORS**

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

Mark	Part No.	Symbol & Description
★	ACT-144	VR301, VR302 Variable
	RD¼PM224JNL	R305, R306
	RD¼PM □□□ J	R301—R304, R307—R334

## SEMICONDUCTOR

Mark	Part No.	Symbol & Description
★★	μPC4558C-P	Q301

## VOLUME ASSEMBLY (GWM-182)

### CAPACITORS

Mark	Part No.	Symbol & Description
	CQMA 224K 50	C1, C2
	CCDSL 221J 50	C3, C4

### RESISTORS

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

Mark	Part No.	Symbol & Description
★	ACV-706	VR1 Variable
	RD¼PM □□□ J	R1-R4

### RELAIES

Mark	Part No.	Symbol & Description
★★	ASR-071	RL2, RL3

## CAPACITOR ASSEMBLY (GWR-131)

### RESISTORS

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

Mark	Part No.	Symbol & Description
	ACN-070	R1, R2 0.22/2W
	RS3P331J	R7, R8
⚠	RD¼PMFL21J	R3-R6
	RD¼PM □□□ J	R9, R10
	RD¼PS □□□ J	R11

### CAPACITORS-OTHER

Mark	Part No.	Symbol & Description
	ACH-230	C1, C2 Electrolytic
	VBZ30P060FMC	Screw

## CONNECTOR ASSEMBLY

### RESISTORS

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

Mark	Part No.	Symbol & Description
	RD¼PM 471 J	R103
★	ACP-078	VR101, VR102 Variable-resistor

## VOLUME ASSEMBLY

Mark	Part No.	Symbol & Description
★	ACT-143	VR501 Variable

## INDICATOR ASSEMBLY (GWX-571)

### CAPACITOR-RESISTORS

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

Mark	Part No.	Symbol & Description
	CEB 101P 16	C1
	RD¼PM □□□ J	R1-R4

### SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★	AEL-325	D1-D3 LED
★	AEL-346	D4-D23 LED
★	AAV-301	Power indicator

### OTHER

Mark	Part No.	Symbol & Description
	VBZ30P080FMC	Screw

## SWITCH ASSEMBLY

### CAPACITORS

Mark	Part No.	Symbol & Description
	CCDSL 221J 50	C201, C202
	CQMA 154K 50	C203, C204
	CEA 470M 25L	C205

### RESISTORS

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

Mark	Part No.	Symbol & Description
⚠	RD¼PMF680J	R207, R211
	RD¼PM □□□ J	R201-R206, R208-R210

### SWITCH-OTHER

Mark	Part No.	Symbol & Description
★★	ASG-279	S4 Push switch
	ABA-261	Screw

## SWITCH ASSEMBLY (AWS-154)

### RESISTORS

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

Mark	Part No.	Symbol & Description
	RD¼PM □□□ J	R1-R11

### SWITCH-CAPACITOR-OTHER

Mark	Part No.	Symbol & Description
★★	ASX-156	S1 Side switch
	ACE-075	C1
	AKB-078	Pin jack 4P



## PROTECTION ASSEMBLY (GWM-181)

### CAPACITORS

Mark	Part No.	Symbol & Description
	CQMA 473K 50	C201, C202
	CEA R47M 50L	C203, C204
	CEA 471M 6L	C205
	CEA 101M 16L	C206
	CEA 2R2M 100L	C207

### RESISTORS

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

Mark	Part No.	Symbol & Description
	RS1P100J	R201, R202
	RS2PL100J	R203, R204
	RS1P391J	R215
	RD¼PM □□□ J	R205—R214

### SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SC1890A	Q201, Q202
★★	2SC945A	Q203, Q204
★★	2SA733A	Q205
★★	2SC1384	Q206
★	1S2471	D201—D204
★	1S2473 (1S1555) (1S2076)	D205
★	MZ-150 (WZ-150)	D206

### OTHER

Mark	Part No.	Symbol & Description
★★	ASR-068	Relay RL4

### PHONES ASSEMBLY

#### OTHER

Mark	Part No.	Symbol & Description
	AKN-029	Phones Jack

### MUTING ASSEMBLY

#### SWITCH·CAPACITOR

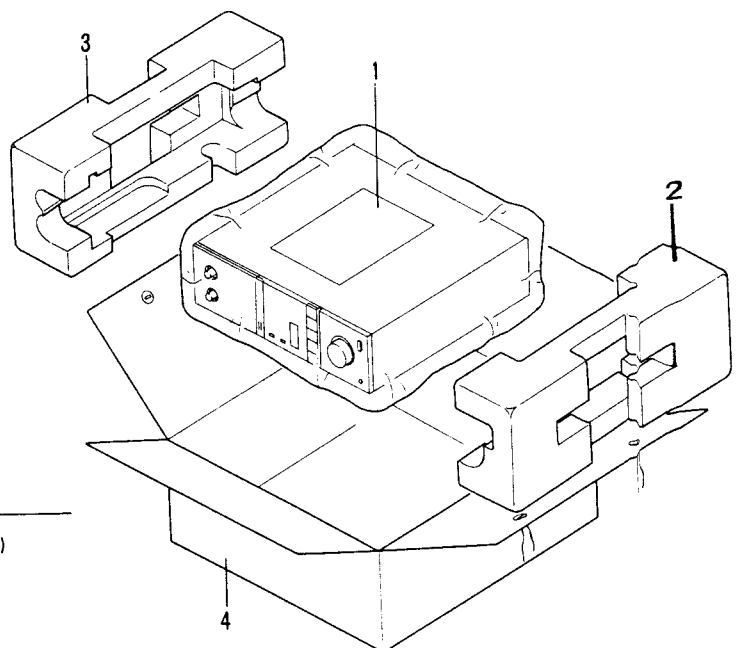
Mark	Part No.	Symbol & Description
★★	ASG-278	S3 Push switch
	CEA 470M 25L	C101

### RESISTORS

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

Mark	Part No.	Symbol & Description
⚠	RD¼PMF 101J	R109
	RD¼PM □□□ J	R101—R104, R107, R108

## 10. PACKING



### Parts List

Mark	No.	Part No.	Description
	1.	ARB-400 ARD-157	Operation instructions (E) (G/F)
	2.	AHA-277	Side pad (L)
	3.	AHA-278	Side pad (R)
	4.	AHD-871	Packing case

## SWITCH ASSEMBLY

### RESISTORS

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

Mark	Part No.	Symbol & Description
△	RD½PMF680J RD½PM □□□ J	R405 R401-R404, R406, R407

### SWITCH · CAPACITOR · OTHER

Mark	Part No.	Symbol & Description
★★	ASG-280	S5 Push switch
	CEA 221M 16L	C401
	ABA-261	Screw

### RESISTORS

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

Mark	Part No.	Symbol & Description
	RD½PMF680J RD½PM □□□ J	R405 R401-R404, R406, R407

## POWER AMPLIFIER ASSEMBLY (AWH-104)

### CAPACITORS

Mark	Part No.	Symbol & Description
	CCDSL 470J 50	C1, C2
	CEA 100M 50L	C3, C4
	CEA 470M 25L	C25, C26
	CEA 470M 50L	C21-C24
	CEA 101M 63L	C17-C20
	ACH-359	C27-C30 Electrolytic
	CCDSL 220K 500	C7, C8
	CCDSL 680K 500	C13-C16
	CKDYB 331K 50	C5, C6
	CKDYB 102K 50	C9, C10
	CKDYB 472K 50	C11, C12

### RESISTORS

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

Mark	Part No.	Symbol & Description
★	ACP-019	VR1, VR2 Variable-resistor 100Ω
	RS2P222J	R89, R90
	RD½PS □□□ J	R73-R76, R85-R88
△	RD½PMF □□□ J	R37, R38, R69-R72,
△	RD½PMFL □□□ J	R39, R40-R48, R51-R54, R57-R64, R91-R94
	RD½VM □□□ J	R95
	RD½PM □□□ J	R1-R8, R13-R36, R49, R50, R55, R56, R65-R68, R77-R84, R96
	RD½PM123JNL	R9-R12

## SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SK129A	Q1, Q2
★★	2SC2291	Q3, Q4
★★	2SC2259	Q9, Q10
★★	2SA750	Q5-Q8, Q19-Q22
★★	2SA733A	Q11, Q12
★★	2SA905	Q13, Q14
★★	2SC1915	Q15, Q16
★★	2SC1400	Q17, Q18, Q23, Q24
★★	2SA893A	Q25, Q26
★★	2SC1890A	Q27, Q28
★★	2SC2275-Q (2SC2275-R)	*Q29, *Q30
★★	2SA985-Q (2SA985-R)	*Q31, *Q32
★★	μPC4558C-P	Q33
★	1S1555	D1-D8, D13-D20, D25-D28
★	MZ-047	D21-D24
★	MZ-150	D33, D34
★	MZ-240	D29-D32
★	STV2H-0	D11, D12
★	TH102-2	TH1, TH2

\*hfe of Q29-Q32 should have the same value.

## POWER SUPPLY ASSEMBLY (GWR-139)

### CAPACITORS

Mark	Part No.	Symbol & Description
	CQMA 104K 400	C101
	ACG-019	C102
	CEA 471M 25L	C107, C108
	CEA 470M 25L	C109
	CEA 4R7M 50L	C103
	CKDYF 103Z 50	C106

### RESISTORS

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

Mark	Part No.	Symbol & Description
	RD½PS103J	R101, R102
△	RD½PMF122J	R103
	RD½PM □□□ J	R104, R105

## SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SD836A	Q101
★	SR3AM	D101-D104
★	10E2	D110-D113
★	1S2471	D105
★	MZ-130	D114

### OTHER

Mark	Part No.	Symbol & Description
	PMZ30P060FMC	Screw

## 11. ADJUSTMENTS

### • Idle Current Adjustment

1. Depress the speaker A switch to the ON position and connect an 8 ohm load to the speaker A terminals.
2. Turn the volume all the way down, turn the power ON and let stand for 10 minutes.
3. Connect a DC voltmeter to emitters Q1 and Q2 and adjust VR1 so the voltage difference between the emitters is 44mV.
4. In the same manner, connect a DC voltmeter to emitters Q3 and Q4 and adjust VR2 so the voltage difference between the emitters is 44mV.

**NOTE:**

When connecting a voltage meter to the transistor emitters, refer to diagram 11.1 to make sure no misconnections have been made. All connections are performed on the bottom plate of the amplifier.

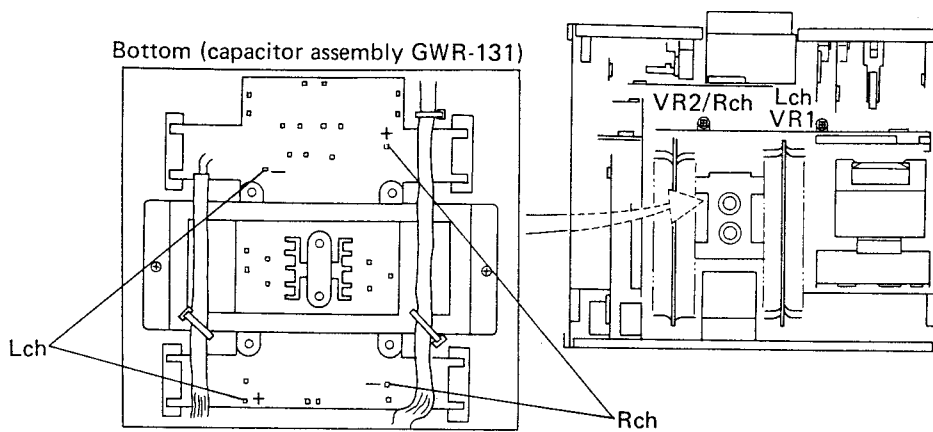


Fig. 11.1 The idle current adjustment

### • Adjustment of power indicator

1. Connect the frequency oscillator to AUX terminal and send a signal of 1 kHz, 150 mV.
2. Connect the AC voltmeter to the speaker terminal and adjust the volume so as to allow the output to be 20 V.
3. Under this condition, adjust with VR101 (Lch) so as to allow red light emitting diode (LED) of power indicator to start lighting.
4. In the same manner, adjust with VR102 (Rch).

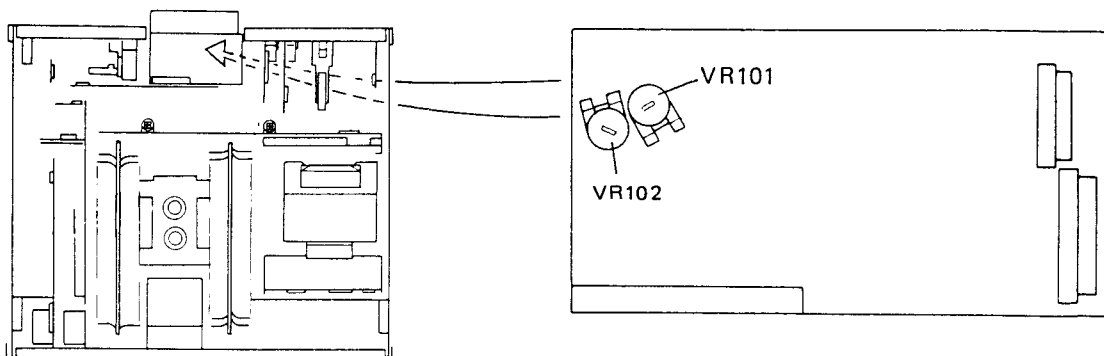


Fig. 11-2 The adjustment of power indicator

## 11. RÉGLAGE

### ■ Réglage du courant déwatté

1. Enclencher, en l'enfonçant (position ON), l'interrupteur des enceintes A, et raccorder une charge sous 8 ohms aux bornes des enceintes A.
2. Régler le volume au minimum, mettre l'appareil sous tension et attendre une dizaine de minutes.
3. Raccorder un voltmètre de courant continu aux bornes Q1 et Q2, et régler VR1 de sorte que la différence de tension entre les émetteurs soit de 44 mV.

4. Raccorder de même un voltmètre de courant continu aux émetteurs Q3 et Q4, et régler VR2 de sorte que la différence de tension entre les émetteurs soit de 44 mV.

#### NOTE:

Lors du raccordement d'un voltmètre aux émetteurs à transistors, se reporter au schéma 11-1 afin d'éviter toute erreur de connexion. Tous les raccordements s'effectuent sur la plaque dessous de l'amplificateur.

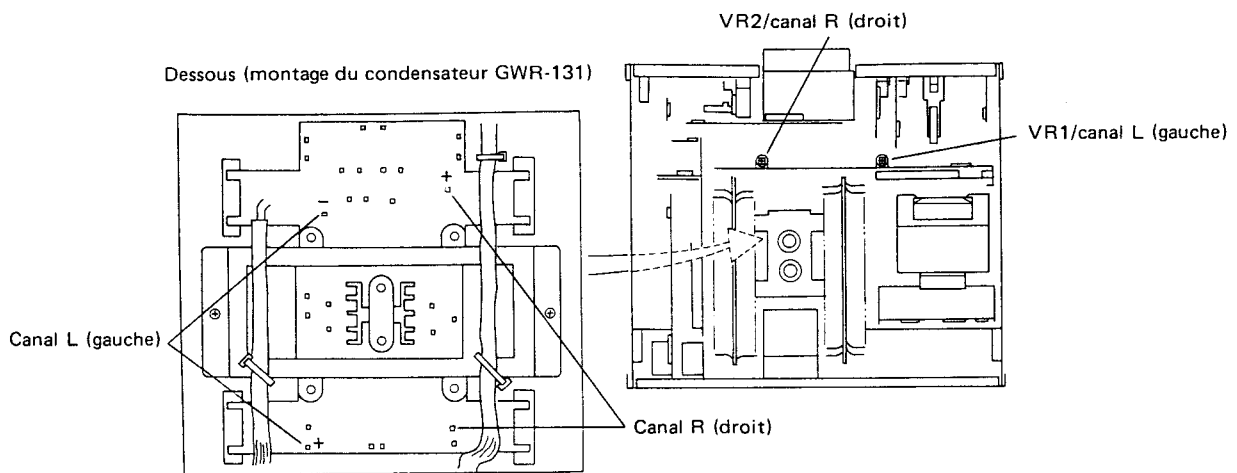


Fig. 11-1 Réglage du courant déwatté

### ■ Réglage de l'indicateur de puissance

1. Raccorder l'oscillateur de fréquence à la borne AUX et envoyer un signal de 1 KHz, 150 mV.
2. Raccorder le voltmètre de courant alternatif à la borne d'enceinte et régler le volume de sorte que le signal de sortie soit de 20 V.

3. Dans cette condition, régler avec VR101 (canal gauche) de sorte que la diode électroluminescente rouge (LED) de l'indicateur de puissance s'allume.
4. Régler de la même manière avec VR102 (canal droite).

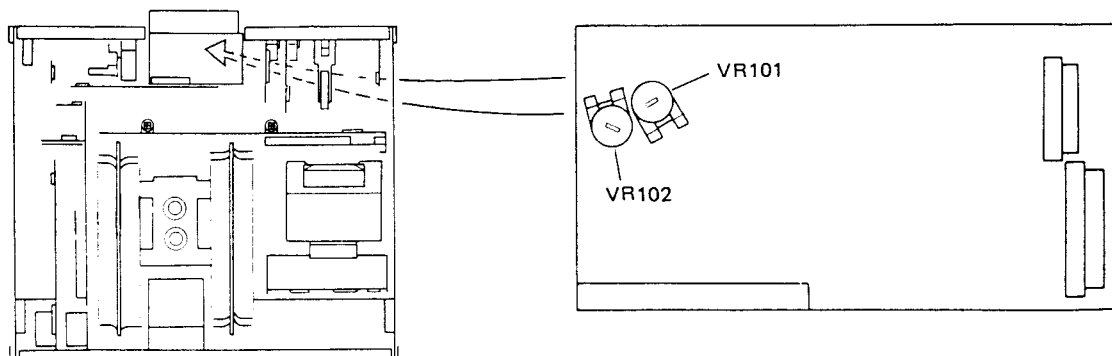


Fig. 11-2 Réglage de l'indicateur de puissance

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# ADDITIONAL Service Manual



ORDER NO.  
ARP-082-0

NON SWITCHING AMP  
STEREO AMPLIFIER

# A-7 HEZ

- This additional service manual is applicable to the A-7/HEZ type.
- The basic performance of the A-7/HEZ type are the same as the A-7/HE type. Please refer to the A-7/HE type service manual <ART-597-0> with the exception of this additional service manual.

## 1. SPECIFICATIONS

The specifications for HEZ type are the same as the HE type except for following sections.

### Miscellaneous

Power Requirements . . . . . 220, 240V (switchable)  
50/60Hz

## 2. CONTRAST OF MISCELLANEOUS PARTS

### NOTES:

- 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.

Mark	Symbol & Description	Part No.		Remarks
		HE Type	HEZ type	
$\Delta$ ★	EQ assembly	AWF-048	AWF-054	
	Power amplifier assembly	AWH-111	AWH-117	
	Switch assembly	AWS-154	AWS-159	
	Protection assembly	GWM-181	GWM-236	
	Power transformer	ATT-770	ATT-770-A	
	C1~C4 Capacitors	.....	CKDYB222K50	

### 3. PARTS LIST

#### EQ Assembly (AWF-054)

**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	.....	RD¼PS	561J
47kΩ	47 × 10 <sup>3</sup>	473	.....	RD¼PS	473J
0.5Ω	0R5	.....	.....	RN2H	0R5K
1Ω	010	.....	.....	RS1P	010K

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

5.62kΩ	562 × 100	5621	.....	RN¼SR	5621F
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- 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.

#### CAPACITORS

Mark	Part No.	Symbol & Description
	CKDYB 391K 50	C1, C2, C27-C32
	ACH-359	C25, C26 Electrolytic
	CEA 332M 6L	C3, C4
	CEA 101M 35L	C101, C102
	CEA 100M 50L	C103, C104
	CEA 101M 10L	C15, C16
	CEA 220M 50L	C19, C20
	CEA R22M 50L	C105
	CEA 2R2M 100L	C106
	CCDSL 221J 50	C7, C8
	CCDSL 470J 50	C17, C18
	CKDYB 122K 50	C5, C6
	CQMA 683J 50	C13, C14
	CQMA 183J 50	C9, C10
	CQMA 122K 50	C11, C12
	CQMA 392J 50	C23, C24

Mark	Part No.	Symbol & Description
★★	2SC1400	Q16
★★	2SC1735	Q11, Q12
★★	2SA872A	Q9, Q10
★★	2SC1890A	Q17
★★	2SA893A	Q18
★★	2SD313P	Q13
	(2SD712)	
★★	2SB507P	Q14
	(2SB682)	
★	1S2473	D1-D6, D9-D14
	(1S2076)	
	(1S1555)	
★	MZL320	D7, D8

#### OTHERS

Mark	Part No.	Symbol & Description
★★	ASR-071	RL1 Relay
	PMZ30P060FMC	Screw
	AKB-079	Pin jack 6P

#### RESISTORS

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

Mark	Part No.	Symbol & Description
	RD¼PS □□□ J	R3, R4, R17, R18, R21, R22, R25, R26, R41, R42
	RD¼PM □□□ JNL	R7-R10, R13, R14
$\Delta$	RD¼PMF □□□ J	R37, R38, R103, R104
	RD¼PM □□□ J	R1, R2, R5, R6, R11, R12, R15, R16, R19, R20
	RD¼PM □□□ J	R23, R24, R27-R36, R43-R46, R101, R102, R105-R108

#### Power amplifier assembly (AWH-117)

##### CAPACITORS

Mark	Part No.	Symbol & Description
	CCDSL 470J 50	C1, C2
	CCDSL 470J 50	C3, C4
	CEXANP 4R7M 50	C27-C30
	CEA R47M 100L	C63, C64
	CEA 470M 25L	C25, C26
	CEA 470M 50L	C59-C62
	CEA 101M 63L	C17-C20
	CCDSL 270K 50	C7-C10
	CCDSL 120K 500	C39, C40, C43, C44, C45, C5i, C56
	CCDSL 330K 500	C13-C16
	CCDSL 680K 500	C47, C48

#### SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SK170	Q1-Q4
★★	2SC2291	Q5, Q6
★★	2SA750	Q7, Q8, Q15

## 11. AJUSTE

### ■ Ajuste de la corriente reactiva

1. Presionar el interruptor del altavoz A, poniéndolo en ON y conectar una carga de 8 ohmios a los terminales A para altavoces.
2. Girar completamente hacia abajo el control de volumen, conectar la alimentación (a ON) y déjelo así durante unos 10 minutos.
3. Conectar un voltímetro de CC a los emisores Q1 y Q2 y ajustar VR1 de forma que la diferencia de tensión entre los emisores sea de 44 mV.

4. Del mismo modo, conectar un voltímetro de CC a los emisores Q3 y Q4 y ajustar VR2 de forma que la diferencia de tensión entre los emisores sea de 44 mV.

#### NOTA:

Al conectar el voltímetro a los emisores del transistor, referirse al diagrama 11-1 para cerciorarse de no realizar incorrectas conexiones. Todas las conexiones se realizan en placa de parte inferior del amplificador.

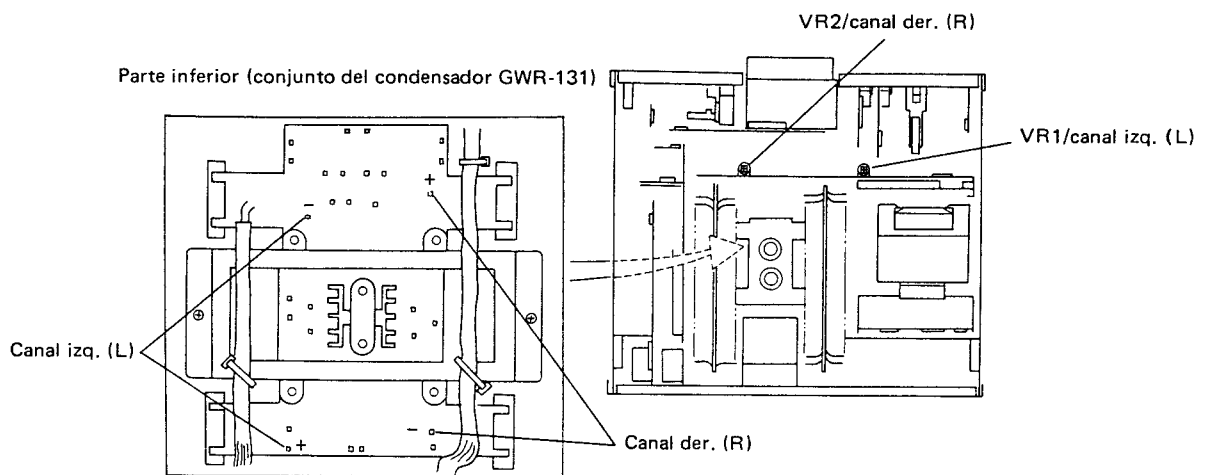


Fig. 11-1 Ajuste de la corriente reactiva

### ■ Ajuste del indicador de potencia

1. Conectar el oscilador de frecuencia al terminal AUX y enviar una señal de 1 KHz, 150 mV.
2. Conectar el voltímetro de CA al terminal del altavoz y ajustar el volumen de modo que la salida sea de 20 V.

3. En tales condiciones, ajustar con la VR101 (canal izq.) de modo que empiece a iluminarse el diodo emisor de luz (LED) del indicador de potencia.
4. Ajustar de algún modo con la VR102 (canal der.).

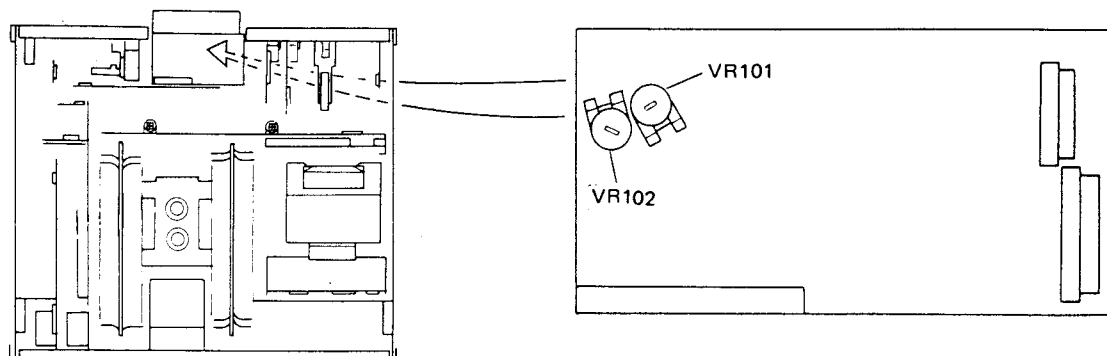


Fig. 11-2 Ajuste del indicador de potencia

