

<R42-324-D>

# **SERVICE MANUAL**

STEREO AMPLIFIER  
**SA-9100**  
KUW, FVW

**NOTE:**

MODEL SA-9100 COMES IN TWO VERSIONS DISTINGUISHED AS FOLLOWS:

Round label on rear panel	Voltage	Type
KUW FVW	120V only 5-position selector	UL approved (U.S.A.) General export model

<73A02Y31L>

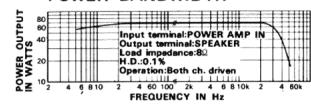
**PIONEER®**

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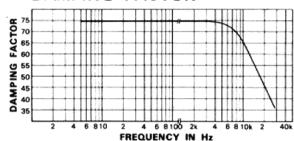
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## 1. AMPLIFIER CHARACTERISTICS

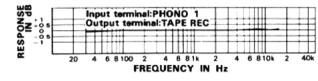
**POWER BANDWIDTH**



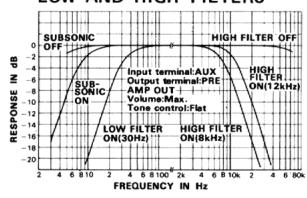
**DAMPING FACTOR**



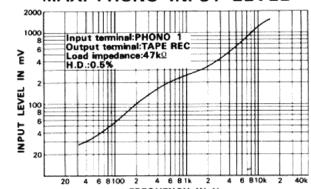
**PHONO EQUALIZATION ACCURACY**



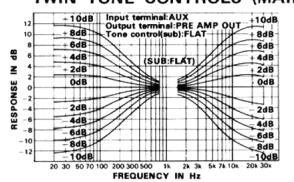
**LOW AND HIGH FILTERS**



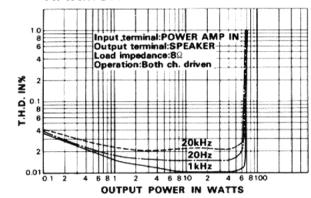
**MAX. PHONO INPUT LEVEL**



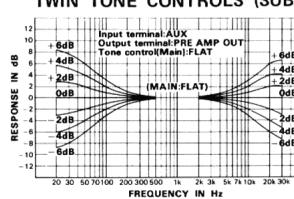
**TWIN TONE CONTROLS (MAIN)**



**OUTPUT POWER vs. HARMONIC DISTORTION**



**TWIN TONE CONTROLS (SUB)**

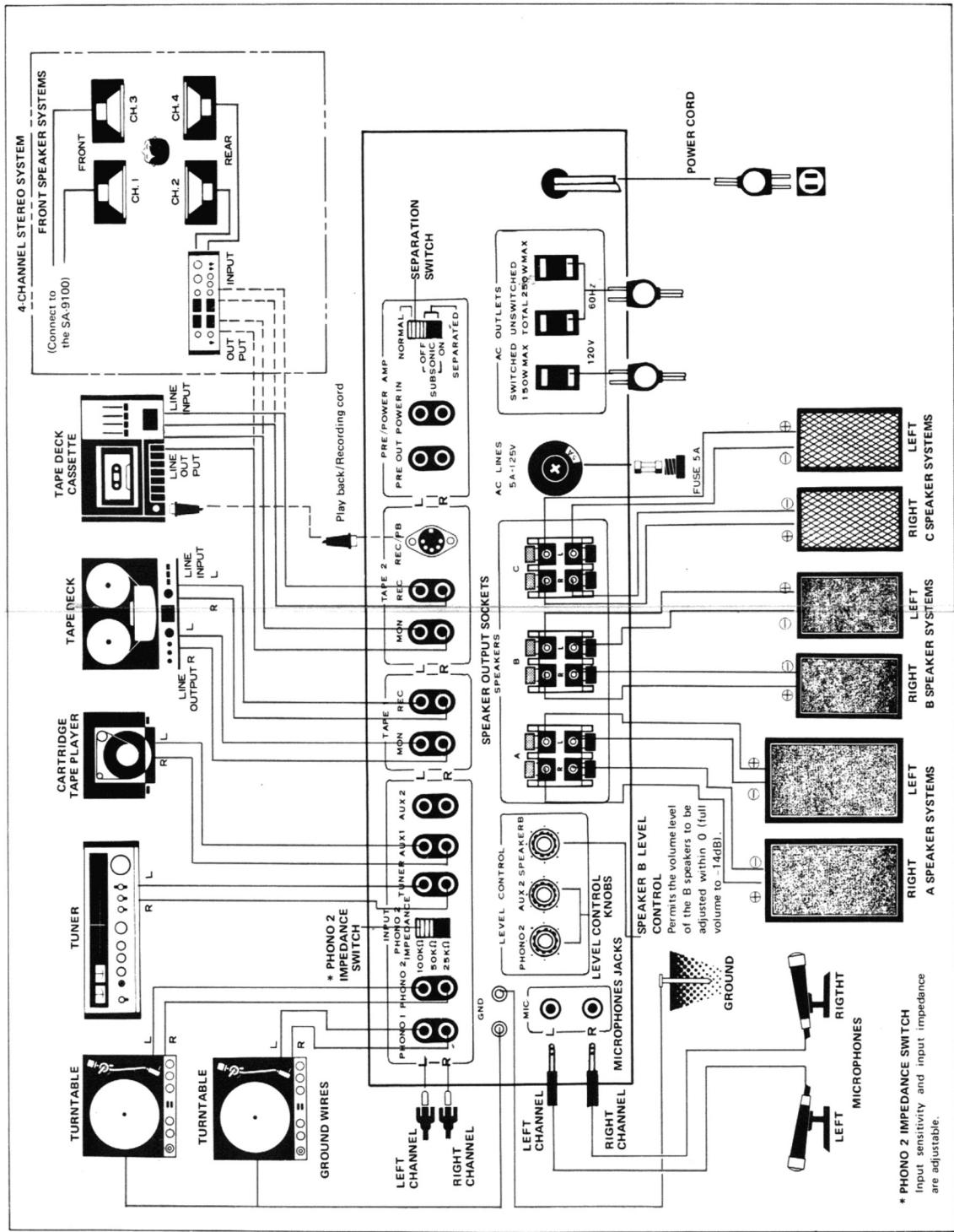


## 2. SPECIFICATIONS

<b>SEMICONDUCTORS</b>	Control-amplifier	Miscellaneous
Transistors . . . . .	1st Stage Differential Amplifier, 3-stage Direct Coupled NFB type	Power Requirements
Diodes . . . . .	2.5mV/50kΩ	AC 120V 60Hz or AC 110V, 120V, 130V, 220V and 240V 50/60Hz. (Switchable)
<b>POWER AMPLIFIER SECTION</b>	PHONO 1	Power Consumption
Circuitry	2.5mV/~10mV/25kΩ, 50kΩ	(Max.)
2-stage Differential Amplifier, Direct Coupled Pure Com- plementary OCL	100kΩ	AC Outlets
Continuous Power Output	250mV/700mV	Dimensions (overall)
20Hz~20kHz	MIC	Switched 1, Unswitched 2
(Both channels driven) 60W+60W(8Ω), 75W+75W(4Ω)	TUNER	430W 430(W) x 138(H) x 341(D)mm
1kHz	AUX 1	16.15/16(W) x 5.7/16(H) x 13- 7/16(D)in.
(Both channels driven) 65W+65W(8Ω), 85W+85W(4Ω)	AUX 2	Weight Without package 13.6kg/29 lb 15oz
1kHz	TAPE MONITOR 1, 2	With Package 15.6kg/34 lb 5oz
(Each channel driven) 75W/75W(8Ω), 100W/100W(4Ω)	TAPE MONITOR 2	Furnished Parts
	(DIN connector)	Connection Cord . . . . .
Harmonic Distortion	150mV/100kΩ	Polishing Cloth . . . . .
(Continuous Power	Output Level/Impedance	Hex. Wrench . . . . .
Output)	TAPE REC 1, 2	Factory tested Data . . . . .
(1W=1W Power	150mV	Operating Instructions . . . . .
Output)	TAPE REC 2	5-voltage Model; Fuse 2.5A
Intermodulation Distortion	(DIN connector)	Fuses 5A . . . . .
(Continuous Power	30mV/80kΩ	NOTE: <i>Specifications and the design subject to possible modification without notice due to improvements.</i>
Output)	PRE AMP OUT	
(1W=1W Power	2V/8Ω	
Output)	Harmonic Distortion	
Power Bandwidth (IHF, Both channels driven)	(20Hz~20kHz	
	Frequency Response	
	PHONO (RIAA	
Frequency Response	equalization)	
Input Sensitivity/Impedance	30Hz~15kHz ± 0.2dB	
POWER AMP IN	10Hz~10kHz ± 1dB	
Output, Speaker	TUNER, AUX, TAPE	
Headphones	MON	
Damping Factor	10Hz~70kHz ± 1dB	
(1kHz, 8Ω)	BASS	Tone Control
Hum & Noise (IHF, Short-circuited, A Network)	Main Control ± 10dB(100Hz)	± 6dB(50Hz)
Residual Hum & Noise (8Ω, Pre & Power-amplifier)	Sub Control ± 10dB(10kHz)	Filter
		SUBSONIC
Subsonic Filter	More than 95dB	8Hz (12dB/oct)
	Less than 1mV (0.13 μW)	30Hz (12dB/oct)
	8Hz (12dB/oct)	8kHz, 12kHz (12dB/oct)
	Loudness Contour (Volume control set at -40dB position)	Loudness Contour
<b>PREAMPLIFIER SECTION</b>	+10dB (100Hz)	Hum & Noise (IHF, Short-circuited, A Network)
Circuitry	PHONO	More than 80dB
Equalizer-amplifier	MIC	More than 70dB
	TUNER, AUX, TAPE	More than 90dB
1st Stage Differential Amplifier, 3-stage Direct Coupled SEPP NFB type	MON	-20dB
	Muting	0dB, -15dB, -30dB
	Level Set	

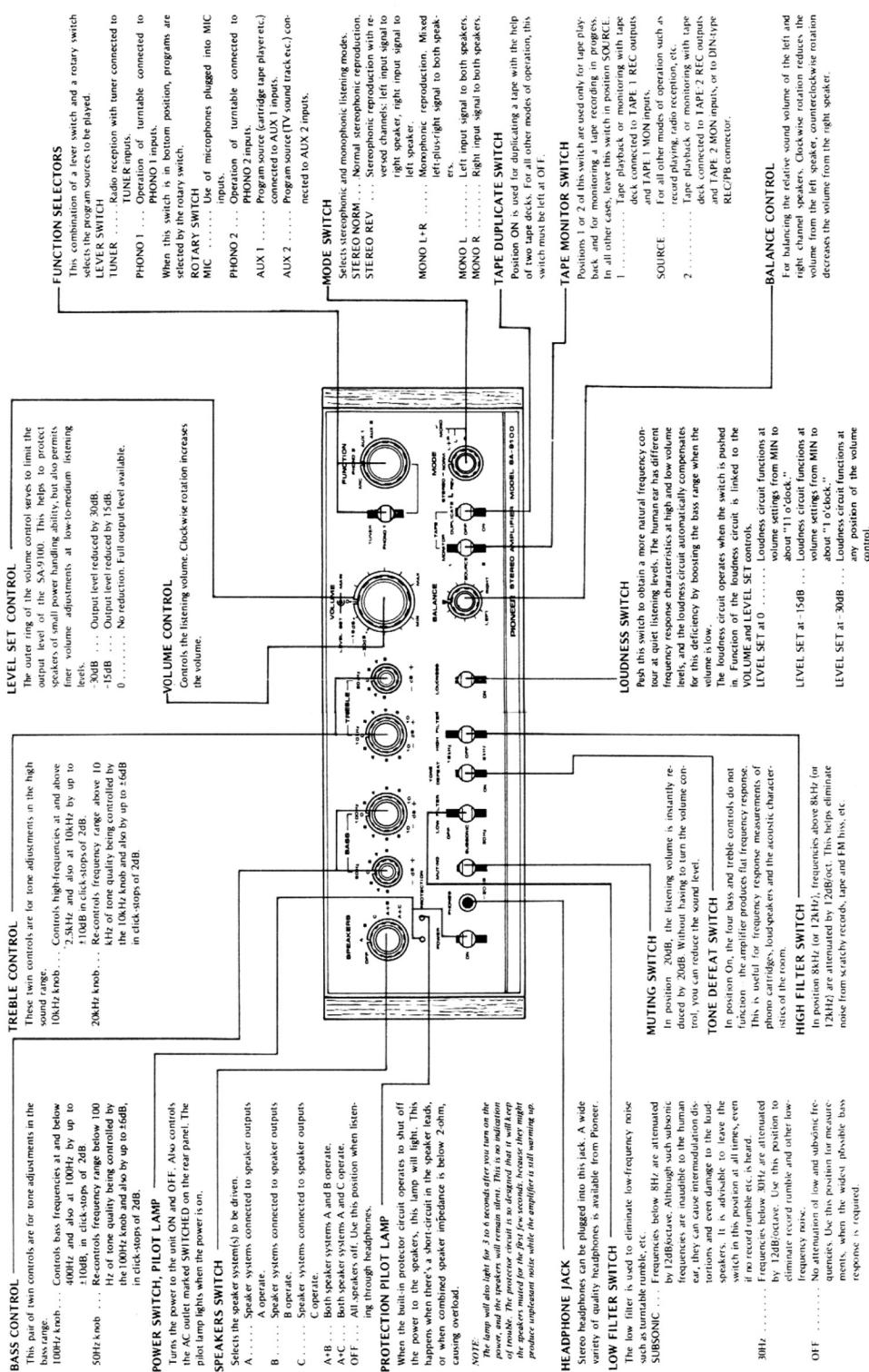


### 3. CONNECTION DIAGRAM



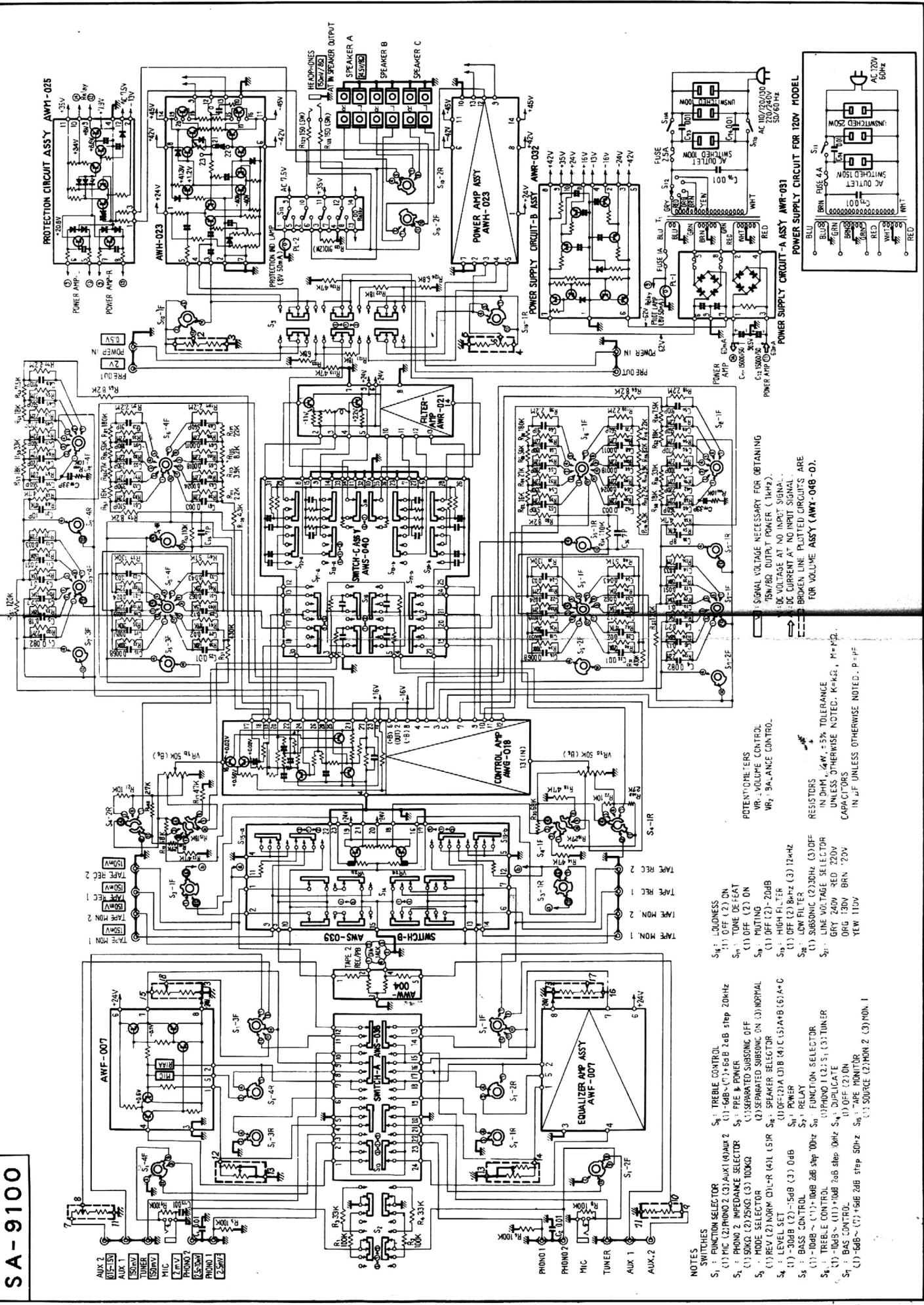
## 4. FRONT PANEL FACILITIES

**SA-9100**



5 BLOCK DIAGRAM

SA-9100



## 6. CIRCUIT DESCRIPTION

### 6.1 EQUALIZER AMPLIFIER

The equalizer amplifier is a 3-stage direct coupled single-ended push-pull circuit with a differential amplifier in its first stage. The differential amp transistors (Q1, Q2) are can-sealed type which prevents changes in noise characteristics with the passage of time. The use of a differential amplifier in the first stage permits the application of 100% of DC feedback, resulting in a substantial improvement of DC stability.

By equipping the last stage with a complementary push-pull circuit as commonly used in power amplifiers, power voltage utilization can be improved and output of very low distortion obtained. This design also raises the maximum input handling ability, resulting in a wider dynamic margin.

To assure strict adherence to the RIAA equalization curve, metallized film resistors of  $\pm 1\%$  tolerance and styrol capacitors of  $\pm 2\%$  tolerance are used. Thus, RIAA deviation remains within  $\pm 0.2\text{dB}$  from 30Hz to 15kHz. Gain fluctuations caused by the passage of time are prevented by using a metallized film resistor

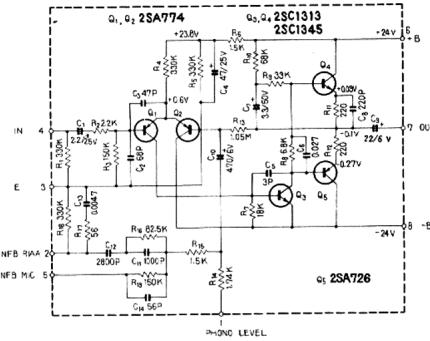
of  $\pm 1\%$  tolerance at the NFB receiving side. A variable resistor in series with the dividing resistor for feedback voltage changes the amount of NFB, thus controlling the total gain — this permits phono cartridges of relatively high output voltage to be accommodated without clipping. The phono input circuit has, in other words, more than sufficient dynamic safety margin.

Through the FUNCTION switch the input signal enters the base of Q1. Q1 and Q2 form a differential amplifier. NFB is applied to the base of Q2 to obtain the specified response curve.

R14 is normally grounded, but when the FUNCTION switch is in position PHONO 2, the potentiometer controlled by the LEVEL CONTROL on the rear panel is switched in series into the circuit.

Output from Q1 is amplified in Q3 and then taken out through the A-class complementary circuit formed by Q4 and Q5. A bootstrap circuit is provided to increase the AC load on Q3 and to obtain sufficient loop gain.

EQUALIZER AMP, CIRCUIT SCHEMATIC



### 6.2 CONTROL AMPLIFIER

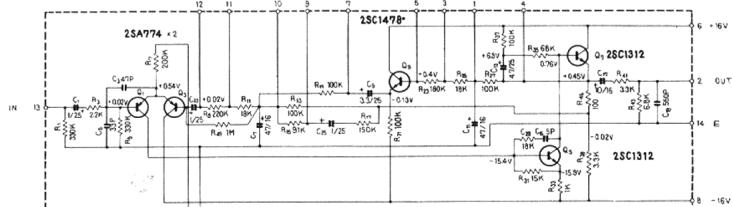
The control amplifier is a 3-stage direct coupled circuit with a differential amp in its initial stage and with so-called "twin tone controls." Adoption of the differential amplifier in the first stage improves DC stability and permits stable higher loop gain operation.

Main as well as sub tone controls operate by switching the CR elements in the feedback path, and precise switching by 2dB steps is possible at all turnover frequencies indicated on

the front panel. In position FLAT, NFB is applied through a resistance only, giving totally flat response characteristics. For accurate and easy system checks and determination of tone control effect, a TONE DEFEAT switch has been provided.

Can-sealed low-noise transistors are used in the first-stage differential amplifier to prevent fluctuations in noise characteristics due to passage of time.

CONTROL AMP, CIRCUIT SCHEMATIC



Supply of balanced positive and negative power keeps the DC potential at the inputs and outputs at practically 0V, whereby switching noise is minimized.

The signal from the equalizer amplifier or from the high level input terminals passes through the FUNCTION, TAPE MONITOR, DUPLICATE and MODE switches and through the BALANCE control, then through the emitter-follower in switch circuit-B ass'y and goes to the LEVEL SET switch and VOLUME control. The LOUDNESS contour circuit is interlocked with the LEVEL SET switch whereby its range of effectiveness is changed; with the LEVEL SET at -30dB, the loudness circuit operates over the whole range of the VOLUME control. After adjustment by the VOLUME control, the signal goes to the base of Q1 on the control amplifier assembly. Q1 and Q3 form a differential amp, and the CR elements for negative feedback, selected by switches, are connected to the base of Q3. Output from this differential amplifier goes from the collector of Q1 to the base of Q5.

The output from Q5 undergoes a change of impedance in the Q7 emitter-follower circuit, then goes to the next stage at low impedance. To assure precise, effective operation of the twin tone controls, an emitter-follower circuit (Q9) has been included between the main and sub controls, preventing mutual interference between these controls.

### 6.3 FILTER AMPLIFIER

From the control amplifier, the signal passes through low cut and high cut filters where unwanted portions are filtered out, and then enters the power amplifier. The low cut filter, with Q1, provides 12dB/oct. cut-off at either 30Hz or 8Hz (SUBSONIC). The high cut filter uses an LC network for 12dB/oct. cut-off at 8kHz or 12kHz frequency.

#### 6.4 POWER AMPLIFIER

The power amplifier is a pure complementary direct coupled OCL design with two differential amplification stages. The two-stage differential amplifier and the bias compensation circuit result in extremely good DC stability, preventing practically completely any generation of DC potential at the output junction caused by changes in the operating ambient temperature. Moreover, constant-current circuits are included at two stages to prevent changes in idle current due to AC line voltage fluctuations, which in turn precludes the generation of transient crossover distortions. Because of the 3-stage quasi-Darlington circuit provided with the constant-current drive, the predriver (Q3) operation could be help, distortion decreased and relatively high loop gain obtained. In both the driver and last stages, special PNP and NPN transistors of precisely matched characteristics are employed. Left and right channel circuits are not combined on one circuit board but are separated into two monophonic amplifiers. This not only improves heat dissipation but also prevents inequality in ultra-high frequency response caused by slight differences in the PC Boards copper film conductor pattern. Utmost operational safety is assured by using transistors of very high strength, by providing large-sized heat sinks, by including a current limiter circuit, and by installing an electronic protection circuit. The input signal enters the base of Q1. AC and DC negative feedback is applied to the base of Q2. The balanced output from the collectors of Q1 and Q2 enters the bases of Q3

and Q4 (the differential amplifier), respectively. The constant-current circuit (Q5) and the input impedance of the emitter-follower (Q6) reduce the operating load on Q3.

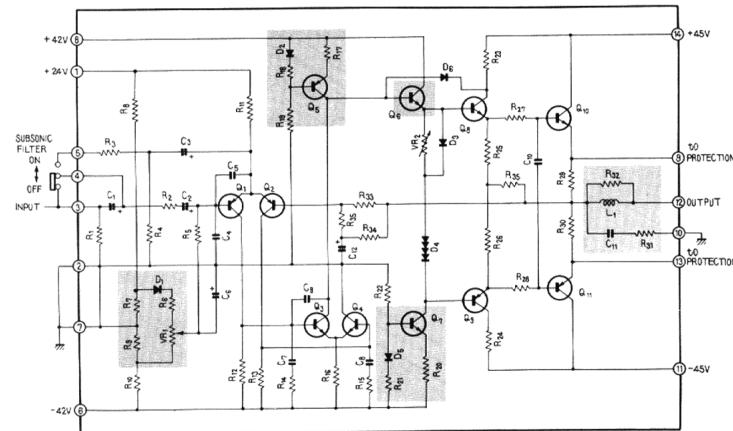
The signal from Q3 undergoes current amplification in Q6 and is then power-amplified in the output stages Q8~Q11. The emitter side load of Q6 is maintained to high impedance by the constant-current circuit formed by Q7.

DC negative feedback from the output junction is applied to the base of Q2 through R33, R34 and R35, while AC NFB goes to the base of Q2 through R33 and R35.

To maintain DC potential at the output junction at 0V, a bias circuit formed by D1, R6, R7, R8, R9, R10 and VR1 is provided. D1 is included for perfect temperature compensation. The idle current limiter circuit is formed by VR4 and D4. Varistor D4 consists of four diode unit analog to the  $V_{BE}$  of the driver and power transistors and to their temperature characteristics. Diode D3, in parallel with VR2, acts as protection if, by some trouble, VR2 should become non-conductive. D6 is a current limiting diode protecting against excessively high input.

To improve stability in the high-frequency range, high range phase compensation is performed by the following circuit: C4, C7, R14, C8, R15, C9, C11, R31, L1 and R32. C10, by providing a smooth outlet for the base storage carrier of Q10 and Q11, reduces high range notching distortion, thereby improving overall distortion characteristics.

POWER AMP. CIRCUIT SCHEMATIC



R23, R27, R24 and R28 are protective resistors which limit current flow under low-load conditions.

Output from the power amplifier passes through the relay points and the SPEAKERS switch to the speaker output terminals and the headphone jack.

## 6.5 PROTECTION CIRCUIT

The protection circuit comprises 7 transistors. Of these, Q1 and Q2 serve to detect excessive current in the power amplifier and short-circuiting of the output load (speaker leads, etc.). Each transistor serves one channel.

Q3 and Q4, constituting a differential amplifier, detect DC potential at the power amplifier output; this circuit is common for both channels. Transistors Q5 to Q7 are the relay driving circuit. When the power switch is turned off, negative voltage is applied to the base of Q6 to open the relay smoothly.

And CR time constant circuit is connected to the base of Q7. This mutes the output immediately upon switch-on and controls the reset time of the relay.

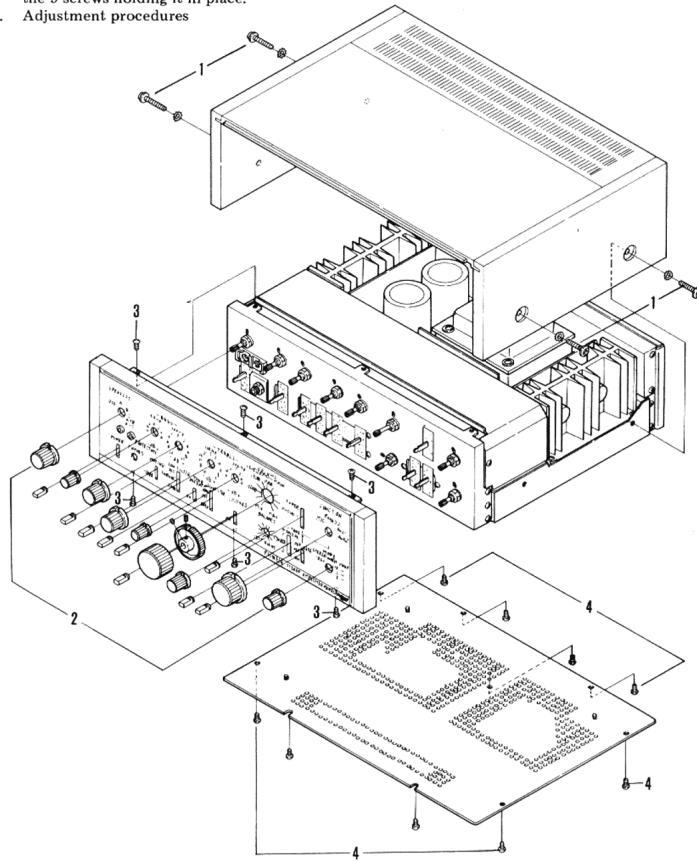
## 6.6 POWER SUPPLY CIRCUIT

All circuits — with the exception of the protection circuit — are supplied with balanced positive and negative power, which substantially improves operating stability. There are two sets of bridged rectifier circuits for this purpose. One set exclusively supplies the power amplifier. After rectification, ripple voltage takes off by through a  $15,000\mu\text{F}$  capacitor. The other rectifier set supplies all other circuits with power. After rectification, voltage stabilization and passage through a ripple filter, power is supplied with low impedance.

**SA-9100**

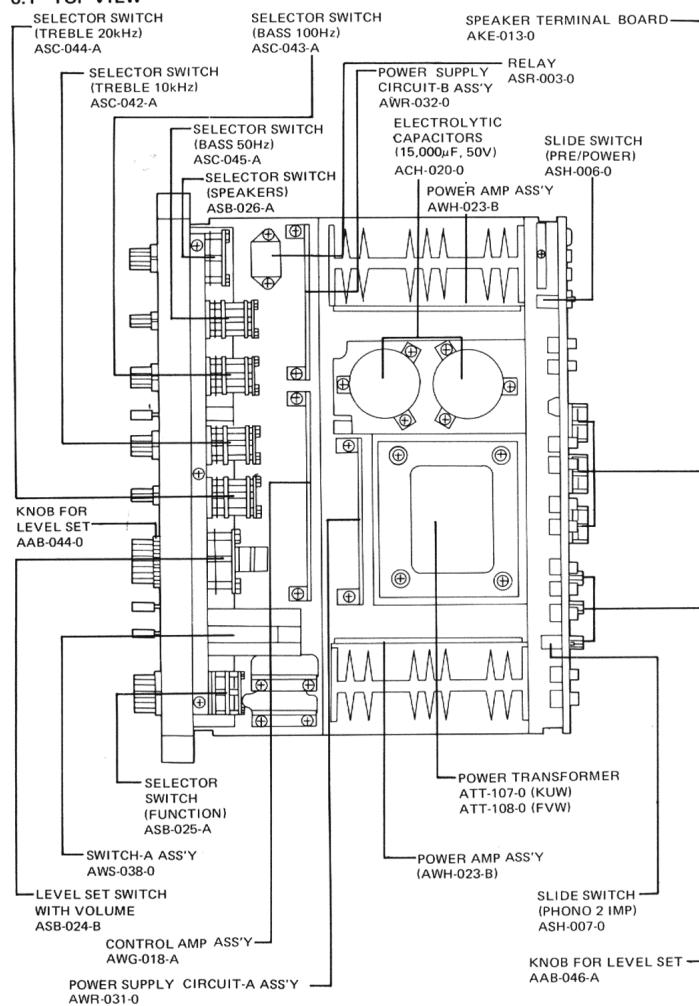
## **7. DISASSEMBLY**

1. To remove the wooden case, remove the two screws on either side, then lift the back end of the case upward.
2. Pull off all control knobs. The LEVEL SET knob must be first loosened with a hex wrench.
3. Remove the three screws each from the top and bottom edges of the front panel, then gently pull the panel forward.
4. To remove the bottom panel, first remove the 9 screws holding it in place.
5. Adjustment procedures



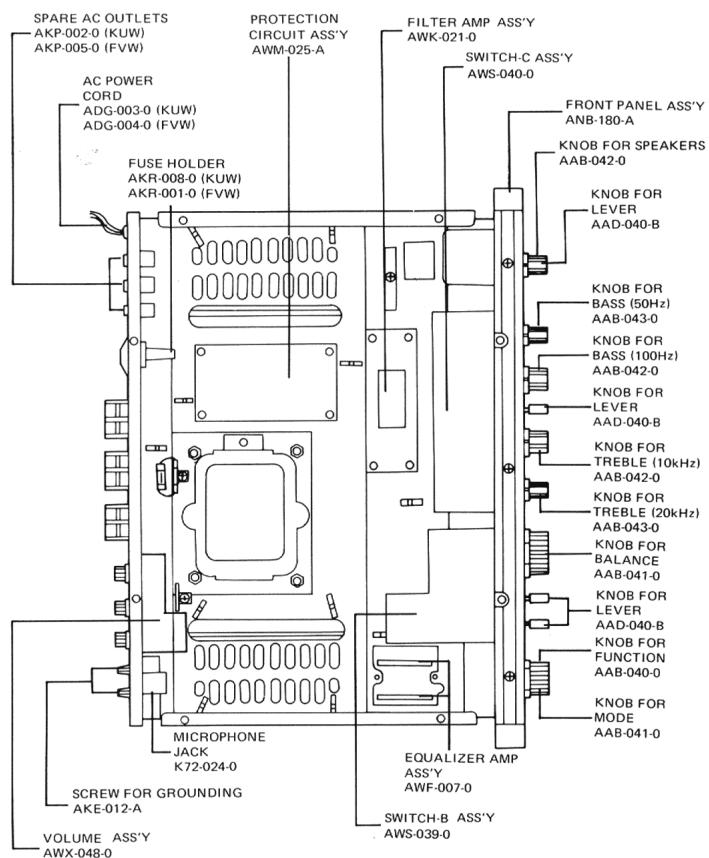
## 8. PARTS AND P.C. BOARD LOCATION

### 8.1 TOP VIEW



**SA-9100**

**8.2 BOTTOM VIEW**



## 9. ALIGNMENT PROCEDURE

The SA-9100 has two separate power amp boards. As viewed from the front, the left circuit board is the left channel power amp, the right circuit board, is the right channel power amp.

Adjustment procedures are identical for both channels, so the explanations below are given for one channel only. All adjustments are required to be made on both channels, however.

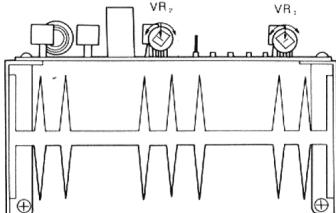
### 9.1 IDLE CURRENT ADJUSTMENT

1. Remove output load. Without applying input, terminate input terminals (terminals no.3) with  $4.7\text{ k}\Omega$  resistance.
2. Set VR1 at approximately center position, turn VR3 all the way counterclockwise. Then turn on power

3. Allow approximately 20 minutes warm-up time. Then adjust VR3 to obtain a voltage reading of  $25\text{mV}$  between terminals no. 9 and 13.

### 9.2 ADJUSTMENT OF NEUTRAL POTENTIAL

1. Remove output load. Terminate input terminals of circuit board with  $4.7\text{ k}\Omega$  resistance, then turn on power.
2. Allow approximately 20 minutes warm-up time. Then adjust VR1 to obtain a voltage reading of  $0\text{V} \pm 10\text{mV}$  between terminal no. 23 and ground.



## 10. EXPLODED VIEW AND PARTS LIST

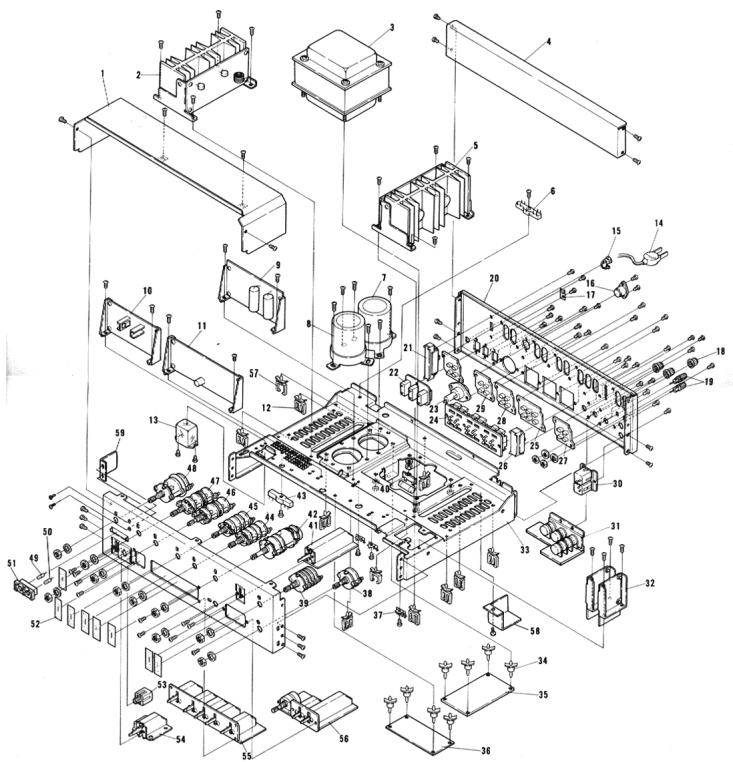
### Parts List of Exploded View

#### NOTICE:

Any parts asterisked \* are subject to being not supplied.

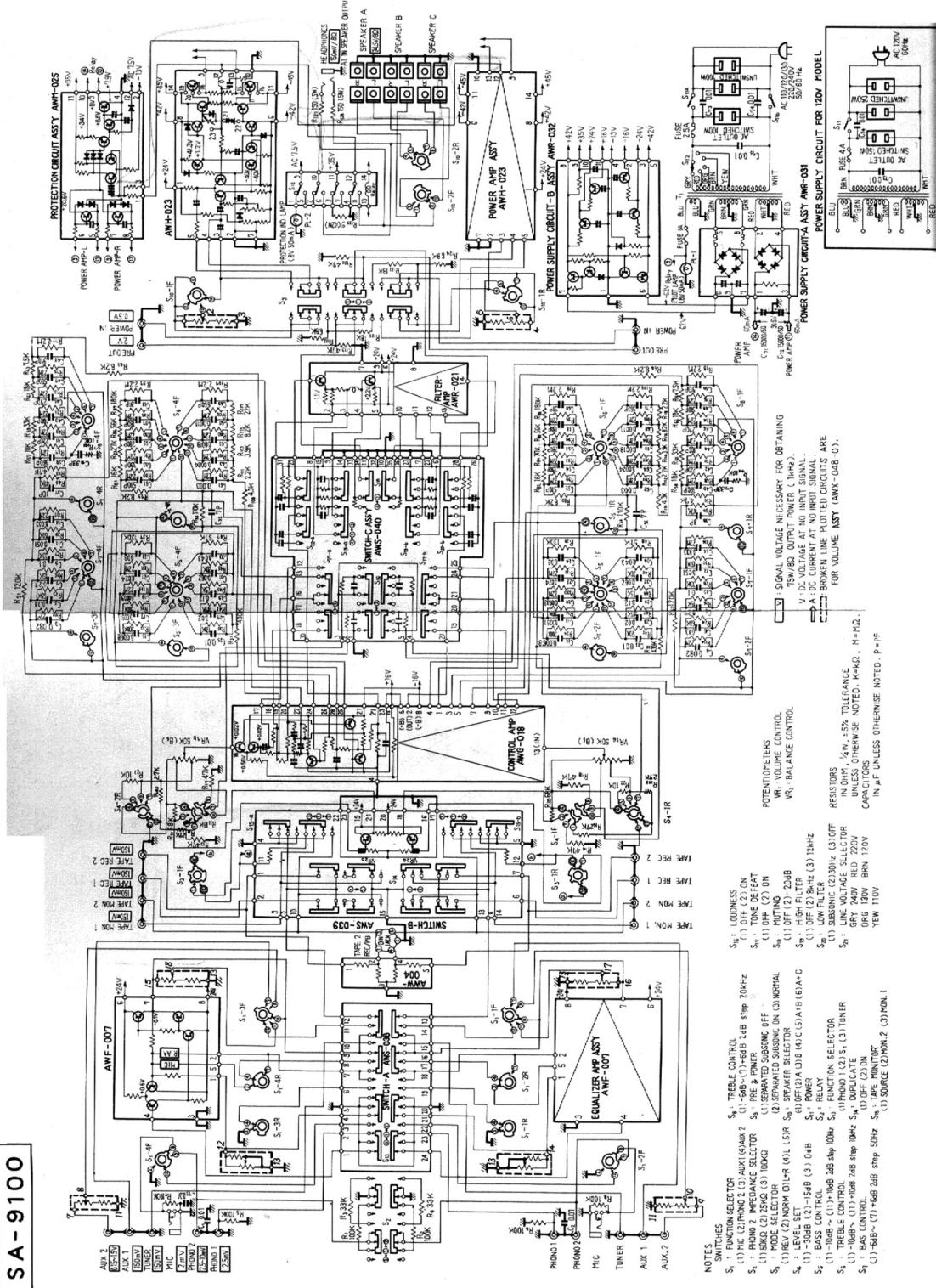
Key No.	Description	Part No.
1*	Front shield cover	ANH-133-0
2	Power amp ass'y	AWH-023-B
3	Power transformer for KUW model	ATT-107-0
	Power transformer for FVW model	ATT-108-0
4*	Rear shield cover	ANH-119-0
5	Power amp ass'y	AWH-023-B
6*	4P terminal strip	AKC-021-0
7	Electrolytic capacitor 15,000 $\mu$ F 50V	ACH-020-0
8	Electrolytic capacitor 15,000 $\mu$ F 50V	ACH-020-0
9	Power supply circuit-A ass'y	AWR-031-0
10	Power supply circuit-B ass'y	AWR-032-0
11	Control amp ass'y	AWG-018-A
12*	Wire clip-A	AEC-004-0
13	Relay	ASR-003-0
14	AC power cord for KUW model	ADG-003-0
	AC power cord for FVW model	ADG-004-0
15*	AC cord stopper	AEC-079-0
16	5P connector (DIN type)	K93-003-B
17*	Switch stopper	AEC-086-0
18	Knob for level control	AAB-046-A
19	Screw for grounding	AKE-012-A
20*	Rear panel	ANC-074-0
21	Slide switch (PRE/POWER)	ASH-006-0
22	Spare AC outlet for KUW model	AKP-002-0
	Spare AC outlet for FVW model	AKP-005-0
23	Fuse holder for KUW model	AKR-008-0
	Fuse holder for FVW model	AKR-001-0
24	Speaker terminal board (triple type)	AKE-013-0
25	Six fold phono jack-B	AKB-017-0
26	Slide switch (PHONO 2 IMP)	ASH-007-0
27	Four-fold phono Jack-B	AKB-015-0
28	Four-fold phono jack-A	AKB-014-0
29	Four-fold phono jack-A	AKB-014-0
30	Microphone jack	K72-024-0
31	Volume ass'y	AWX-048-0
32	Equalizer amp ass'y	AWF-007-0
33*	Chassis	ANA-036-B
34*	Boss	AEB-019-0
35	Protection circuit ass'y	AWM-025-A
36	Filter amp ass'y	AWK-021-0
37*	4P ground terminal	K13-047-0
38	Selector switch (MODE)	ASB-022-A
39	Selector switch (FUNCTION)	ASB-025-A
40*	2P terminal strip	AKC-015-0

Symbol	Description	Part No.
41	Switch-A ass'y	AWS-038-0
42	LEVEL SET switch with VOLUME 4P terminal strip	ASB-024-B AKC-021-0
43*	Selector switch (TREBLE 20kHz)	ASC-044-A
44	Selector switch (TREBLE 10kHz)	ASC-042-A
45	Selector switch (BASS 100Hz)	ASC-043-A
46	Selector switch (BASS 50Hz)	ASC-045-A
47	Selector switch (SPEAKERS)	ASB-026-A
48	Pilot lamp for indicator	AEL-007-0
49	Pilot lamp for protection	AEL-014-0
50	Cushion	AEB-030-0
51*	Light shade	AED-018-0
52*	Headphone jack	K72-026-0
53	Lever switch (POWER) for KUW model	ASK-039-0
54	Lever switch (POWER) for FOW model	ASK-040-0
55	Switch-C ass'y	AWS-040-0
56	Switch-B ass'y	AMS-039-0
57*	Wire clip-D	AEC-024-0
58*	Shield cover	ANH-148-0
59*	Shield board	ANH-138-0



## 1.1 CIRCUIT CONNECTION DIAGRAM AND MISCELLANEOUS PARTS

SA-9100



**SA-9100**

- CAPACITORS: IN  $\mu\text{F}$  UNLESS OTHERWISE NOTED p:  $\text{pF}$
- RESISTORS: IN  $\Omega$ ,  $\frac{1}{2}\text{W}$  UNLESS OTHERWISE NOTED k:  $\text{k}\Omega$ , M:  $\text{M}\Omega$

**Miscellaneous Parts List****CAPACITORS**

Symbol	Description			Part No.
C1	Ceramic	0.01	50V	CKDYF 103Z 50
C2	Ceramic	0.01	50V	CKDYF 103Z 50
C3	Mylar	0.082	50V	CQMA 823J 50
C4	Mylar	0.082	50V	CQMA 823J 50
C5	Mylar	0.13	50V	CQMA 134J 50
C6	Mylar	0.13	50V	CQMA 134J 50
C7	Mylar	0.27	50V	CQMA 274J 50
C8	Mylar	0.27	50V	CQMA 274J 50
C9	Mylar	0.1	50V	CQMA 104J 50
C10	Mylar	0.1	50V	CQMA 104J 50
C11	Mylar	0.051	50V	CQMA 513J 50
C12	Mylar	0.051	50V	CQMA 513J 50
C13	Mylar	0.033	50V	CQMA 333J 50
C14	Mylar	0.033	50V	CQMA 333J 50
C15	Mylar	0.0068	50V	CQMA 682J 50
C16	Mylar	0.0068	50V	CQMA 682J 50
C17	Mylar	0.0051	50V	CQMA 512J 50
C18	Mylar	0.0051	50V	CQMA 512J 50
C19	Mylar	0.0039	50V	CQMA 392J 50
C20	Mylar	0.0039	50V	CQMA 392J 50
C21	Mylar	0.024	50V	CQMA 243J 50
C22	Mylar	0.024	50V	CQMA 243J 50
C23	Mylar	0.03	50V	CQMA 303J 50
C24	Mylar	0.03	50V	CQMA 303J 50
C25	Mylar	0.01	50V	CQMA 103J 50
C26	Mylar	0.01	50V	CQMA 103J 50
C27	Mylar	0.02	50V	CQMA 203J 50
C28	Mylar	0.02	50V	CQMA 203J 50
C29	Mylar	0.12	50V	CQMA 124J 50
C30	Mylar	0.12	50V	CQMA 124J 50
C31	Mylar	0.062	50V	CQMA 623J 50
C32	Mylar	0.062	50V	CQMA 623J 50
C33	Mylar	0.043	50V	CQMA 433J 50
C34	Mylar	0.043	50V	CQMA 433J 50
C35	Ceramic	7p	50V	CCDSL 070F 50
C36	Ceramic	7p	50V	CCDSL 070F 50
C37	Ceramic	10p	50V	CCDSL 100F 50
C38	Ceramic	8p	50V	CCDSL 080F 50
C39	Styrol	360p	50V	CQSB 361J 50
C40	Styrol	360p	50V	CQSB 361J 50
C41	Styrol	220p	50V	CQSB 221J 50
C42	Styrol	220p	50V	CQSB 221J 50
C43	Styrol	100p	50V	CQSB 101J 50
C44	Styrol	100p	50V	CQSB 101J 50
C45	Styrol	270p	50V	CQSB 271J 50

Symbol	Description			Part No.
C46	Styrol	270p	50V	CQSB 271J 50
C47	Styrol	560p	50V	CQSB 561J 50
C48	Styrol	560p	50V	CQSB 561J 50
C49	Styrol	910p	50V	CQSB 911J 50
C50	Styrol	910p	50V	CQSB 911J 50
C51	Styrol	510p	50V	CQSB 511J 50
C52	Styrol	510p	50V	CQSB 511J 50
C53	Styrol	390p	50V	CQSB 391J 50
C54	Styrol	390p	50V	CQSB 391J 50
C55	Styrol	280p	50V	CQSB 281J 50
C56	Styrol	280p	50V	CQSB 281J 50
C57	Styrol	180p	50V	CQSB 181J 50
C58	Styrol	180p	50V	CQSB 181J 50
C59	Styrol	91p	50V	CQSB 910J 50
C60	Styrol	91p	50V	CQSB 910J 50
C61	Mylar	0.003	50V	CQMA 302J 50
C62	Mylar	0.003	50V	CQMA 302J 50
C63	Mylar	0.0024	50V	CQMA 242J 50
C64	Mylar	0.0024	50V	CQMA 242J 50
C65	Mylar	0.0018	50V	CQMA 182J 50
C66	Mylar	0.0018	50V	CQMA 182J 50
C67	Mylar	0.0011	50V	CQMA 112J 50
C68	Mylar	0.0011	50V	CQMA 112J 50
C69	Styrol	560p	50V	CQSB 561J 50
C70	Styrol	560p	50V	CQSB 561J 50
C71	Electrolytic	15,000	50V	ACH-020-0
C72	Electrolytic	15,000	50V	ACH-020-0
C73	Metallized mylar	0.01	800V	ACE-002-0
	Ceramic	0.01	1.4kV	C43-003-0
C74	Ceramic	0.01	150V	ACG-002-0
	Ceramic	0.01	1.4kV	C43-003-0
C75	Ceramic	0.01	50V	CKDYF 103Z 50
C76	Ceramic	0.01	1.4kV	C43-003-0
C77	Ceramic	33p	50V	CCDSL 330K 50
C78	Ceramic	33p	50V	CCDSL 330K 50

#### RESISTORS

Symbol	Description			Part No.
R1	Carbon film	100k		RD%PM 104J
R2	Carbon film	100k		RD%PM 104J
R3	Carbon film	33k		RD%PM 333J
R4	Carbon film	33k		RD%PM 333J
R5	Carbon film	100k		RD%PM 104J
R6	Carbon film	100k		RD%PM 104J
R7	Carbon film	100k		RD%PM 104J
R8	Carbon film	100k		RD%PM 104J
R13	Carbon film	47k		RD%PM 473J
R14	Carbon film	47k		RD%PM 473J
R15	Carbon film	18k		RD%PM 183J

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Symbol	Description	Part No.
R16	Carbon film 18k	RD14PM 183J
R17	Carbon film 47k	RD14PM 473J
R18	Carbon film 47k	RD14PM 473J
R19	Carbon film 68k	RD14PM 683J
R20	Carbon film 68k	RD14PM 683J
R21	Carbon film 10k	RD14PM 103J
R22	Carbon film 10k	RD14PM 103J
R23	Carbon film 68k	RD14PM 683J
R24	Carbon film 68k	RD14PM 683J
R25	Carbon film 15k	RD14PM 153J
R26	Carbon film 15k	RD14PM 153J
R27	Carbon film 33k	RD14PM 333J
R28	Carbon film 33k	RD14PM 333J
R29	Carbon film 150k	RD14PM 154J
R30	Carbon film 150k	RD14PM 154J
R31	Carbon film 430k	RD14PM 434J
R32	Carbon film 430k	RD14PM 434J
R33	Carbon film 300k	RD14PM 304J
R34	Carbon film 300k	RD14PM 304J
R35	Carbon film 910k	RD14PM 914J
R36	Carbon film 910k	RD14PM 914J
R37	Carbon film 130k	RD14PM 134J
R38	Carbon film 130k	RD14PM 134J
R39	Carbon film 120k	RD14PM 124J
R40	Carbon film 120k	RD14PM 124J
R41	Carbon film 47k	RD14PM 473J
R42	Carbon film 47k	RD14PM 473J
R43	Carbon film 7.5k	RD14PM 752J
R44	Carbon film 7.5k	RD14PM 752J
R45	Carbon film 20k	RD14PM 203J
R46	Carbon film 20k	RD14PM 203J
R47	Carbon film 51k	RD14PM 513J
R48	Carbon film 51k	RD14PM 513J
R49	Carbon film 47k	RD14PM 473J
R50	Carbon film 47k	RD14PM 473J
R51	Carbon film 120k	RD14PM 124J
R52	Carbon film 120k	RD14PM 124J
R53	Carbon film 110k	RD14PM 114J
R54	Carbon film 110k	RD14PM 114J
R55	Carbon film 4.7k	RD14PM 472J
R56	Carbon film 4.7k	RD14PM 472J
R57	Carbon film 18k	RD14PM 183J
R58	Carbon film 18k	RD14PM 183J
R59	Carbon film 33k	RD14PM 333J
R60	Carbon film 33k	RD14PM 333J
R61	Carbon film 18k	RD14PM 183J
R62	Carbon film 18k	RD14PM 183J
R63	Carbon film 7.5k	RD14PM 752J
R64	Carbon film 7.5k	RD14PM 752J
R65	Carbon film 8.2k	RD14PM 822J

Symbol	Description	Part No.
R66	Carbon film 8.2k	RD%PM 822J
R67	Carbon film 2.2M	RD%PM 225J
R68	Carbon film 2.2M	RD%PM 225J
R69	Carbon film 2.2M	RD%PM 225J
R70	Carbon film 2.2M	RD%PM 225J
R71	Carbon film 2.2M	RD%PM 225J
R72	Carbon film 2.2M	RD%PM 225J
R73	Carbon film 2.2M	RD%PM 225J
R74	Carbon film 2.2M	RD%PM 225J
R75	Carbon film 2.2M	RD%PM 225J
R76	Carbon film 2.2M	RD%PM 225J
R77	Carbon film 2.2M	RD%PM 225J
R78	Carbon film 2.2M	RD%PM 225J
R79	Carbon film 8.2k	RD%PM 822J
R80	Carbon film 8.2k	RD%PM 822J
R81	Carbon film 16k	RD%PM 163J
R82	Carbon film 16k	RD%PM 163J
R83	Carbon film 27k	RD%PM 273J
R84	Carbon film 27k	RD%PM 273J
R85	Carbon film 56k	RD%PM 563J
R86	Carbon film 56k	RD%PM 563J
R87	Carbon film 180k	RD%PM 184J
R88	Carbon film 180k	RD%PM 184J
R89	Carbon film 2.2M	RD%PM 225J
R90	Carbon film 2.2M	RD%PM 225J
R91	Carbon film 2.2M	RD%PM 225J
R92	Carbon film 2.2M	RD%PM 225J
R93	Carbon film 2.2M	RD%PM 225J
R94	Carbon film 2.2M	RD%PM 225J
R95	Carbon film 2.2M	RD%PM 225J
R96	Carbon film 2.2M	RD%PM 225J
R97	Carbon film 2.2M	RD%PM 225J
R98	Carbon film 2.2M	RD%PM 225J
R99	Carbon film 2.2M	RD%PM 225J
R100	Carbon film 2.2M	RD%PM 225J
R101	Carbon film 2.2M	RD%PM 225J
R102	Carbon film 2.2M	RD%PM 225J
R103	Carbon film 2.2M	RD%PM 225J
R104	Carbon film 2.2M	RD%PM 225J
R105	Carbon film 2.2M	RD%PM 225J
R106	Carbon film 2.2M	RD%PM 225J
R107	Carbon film 2.2M	RD%PM 225J
R108	Carbon film 2.2M	RD%PM 225J
R109	Carbon film 4.3k	RD%PM 432J
R110	Carbon film 4.3k	RD%PM 432J
R111	Carbon film 2.2k	RD%PM 222J
R112	Carbon film 2.2k	RD%PM 222J
R113	Carbon film 3.9k	RD%PM 392J
R114	Carbon film 3.9k	RD%PM 392J
R115	Carbon film 8.2k	RD%PM 822J

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Symbol	Description		Part No.
R116	Carbon film	8.2k	RD%PM 822J
R117	Carbon film	22k	RD%PM 223J
R118	Carbon film	22k	RD%PM 223J
R119	Carbon film	47k	RD%PM 473J
R120	Carbon film	47k	RD%PM 473J
R121	Carbon film	18k	RD%PM 183J
R122	Carbon film	18k	RD%PM 183J
R123	Carbon film	6.8k	RD%PM 682J
R124	Carbon film	6.8k	RD%PM 682J
R127	Wire wound	150 5W	RT5B 151K
R128	Wire wound	150 5W	RT5B 151K
R129	Carbon film	2.2M	RD%PM 225J
R130	Carbon film	2.2M	RD%PM 225J
R131	Carbon film	2.2M	RD%PM 225J
R132	Carbon film	2.2M	RD%PM 225J
R133	Carbon film	2.2M	RD%PM 225J
R134	Carbon film	2.2M	RD%PM 225J
R135	Carbon film	2.2M	RD%PM 225J
R136	Carbon film	2.2M	RD%PM 225J
R139	Metal oxide	910 2W	RS2P 911J
R140	Carbon film	10k	RD%PM 103J
R141	Carbon film	10k	RD%PM 103J

**SWITCHES**

Symbol	Description	Part No.
S1	Selector switch (FUNCTION)	ASB-025-A
S2	Slide switch (PHONO 2 IMP)	ASH-007-0
S3	Selector switch (MODE)	ASB-022-A
S4	LEVEL SET switch with VOLUME	ASB-024-B
S5	Selector switch (BASS-100Hz)	ASC-043-A
S6	Selector switch (TREBLE-10kHz)	ASC-042-A
S7	Selector switch (BASS-50Hz)	ASC-045-A
S8	Selector switch (TREBLE-20kHz)	ASC-044-A
S9	Slide switch (PRE/POWER)	ASH-006-0
S10	Selector switch (SPEAKERS)	ASB-026-A
S11	Lever switch (POWER) for KUW model	ASK-039-0
S12	Lever switch (POWER) for FVW model	ASK-040-0
	Relay	ASR-003-0

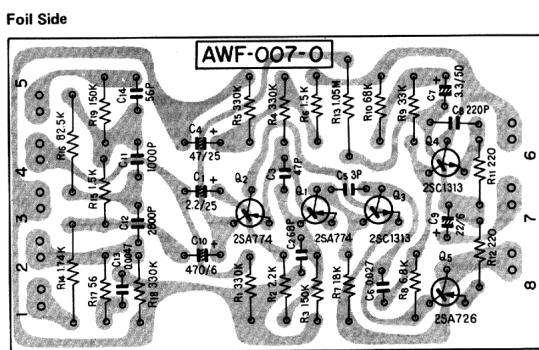
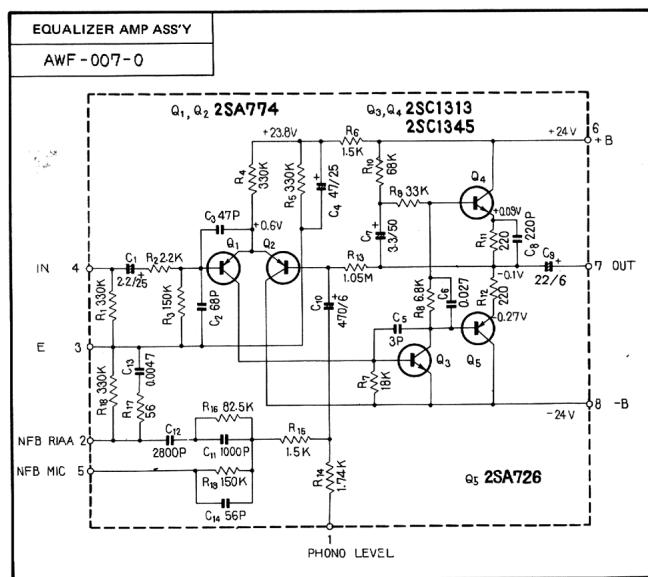
**OTHERS**

Symbol	Description	Part No.
	Equalizer amp ass'y	AWF-007-0
	Control amp ass'y	AWG-018-A
	Power amp ass'y	AWH-023-B
	Switch-A ass'y	AWS-038-0
	Switch-B ass'y	AWS-039-0
	Switch-C ass'y	AWS-040-0
	Filter amp ass'y	AWK-021-0

Symbol	Description	Part No.
	Power supply circuit-A ass'y Power supply circuit-B ass'y Protection circuit ass'y	AWR-031-0 AWR-032-0 AWM-025-A
	Volume ass'y Front panel ass'y Wooden case Foot Knob for VOLUME	AWX-048-0 ANB-180-A AMM-022-A AEC-083-A AAB-045-0
	Knob for LEVEL SET Knob for FUNCTION Knob for BALANCE, MODE Knob for SPEAKERS, BASS (100Hz) and TREBLE (10kHz) Knob for BASS(50Hz), TREBLE (20kHz)	AAB-044-0 AAB-040-0 AAB-041-0 AAB-042-0 AAB-043-0
	Knob for LEVEL CONTROL Knob for lever switch Four-fold phono jack-A Four-fold phono jack-B Six-fold phono jack-B	AAB-046-A AAD-040-B AKB-014-0 AKB-015-0 AKB-017-0
	Screw for grounding Power transformer for KUW model Power transformer for FWV model Pilot lamp for indicator Pilot lamp for protection	AKE-012-A ATT-107-0 ATT-108-0 AEL-007-0 AEL-014-0
	Fuse 1A (protection) for KUW model Fuse 1A (protection) for FWV model Fuse 1A (protection) for KUW model Fuse 1A (protection) for FWV model Fuse 4A (AC power) for KUW model	E21-033-0 E21-034-A AEK-004-0 AEK-022-0 AEK-025-0
	Fuse 2.5A (AC power) for FWV model Speaker terminal board (triple type) Spare AC outlet for KUW model Spare AC outlet for FWV model Fuse holder for KUW model	AEK-020-0 AKE-013-0 AKP-005-0 AKP-002-0 AKR-008-0
	Fuse holder for FWV model Microphone jack Headphone jack 5P connector (DIN type) AC power cord for KUW model	AKR-001-0 K72-024-0 K72-026-0 K93-003-B ADG-003-0
	AC power cord for FWV model Screw to fix wooden case Operating instructions Connection cord with pin-plug Packing case for KUW model	ADG-004-0 ABA-010-A ARB-070-0 ADE-005-0 AHD-139-A
	Packing case for FWV model Styrotector	AHD-138-0 HII-070-0

**SA-9100**

**11.2 EQUALIZER AMP ASS'Y(AWF-007-0)**



**Parts List of Equalizer Amp Ass'y (AWF-007-0)**

**CAPACITORS**

Symbol	Description	Part No.
C1	Electrolytic 2.2	25V
C2	Ceramic 68p	50V
C3	Ceramic 47p	50V
C4	Electrolytic 47	25V
C5	Ceramic 3p	50V
C6	Mylar 0.027	50V
C7	Electrolytic 3.3	50V
C8	Ceramic 220p	50V
C9	Electrolytic 22	6V
C10	Electrolytic 470	6V
C11	Styrol 0.001	50V
C12	Styrol 0.0028	50V
C13	Mylar 0.0047	50V
C14	Ceramic 56p	50V

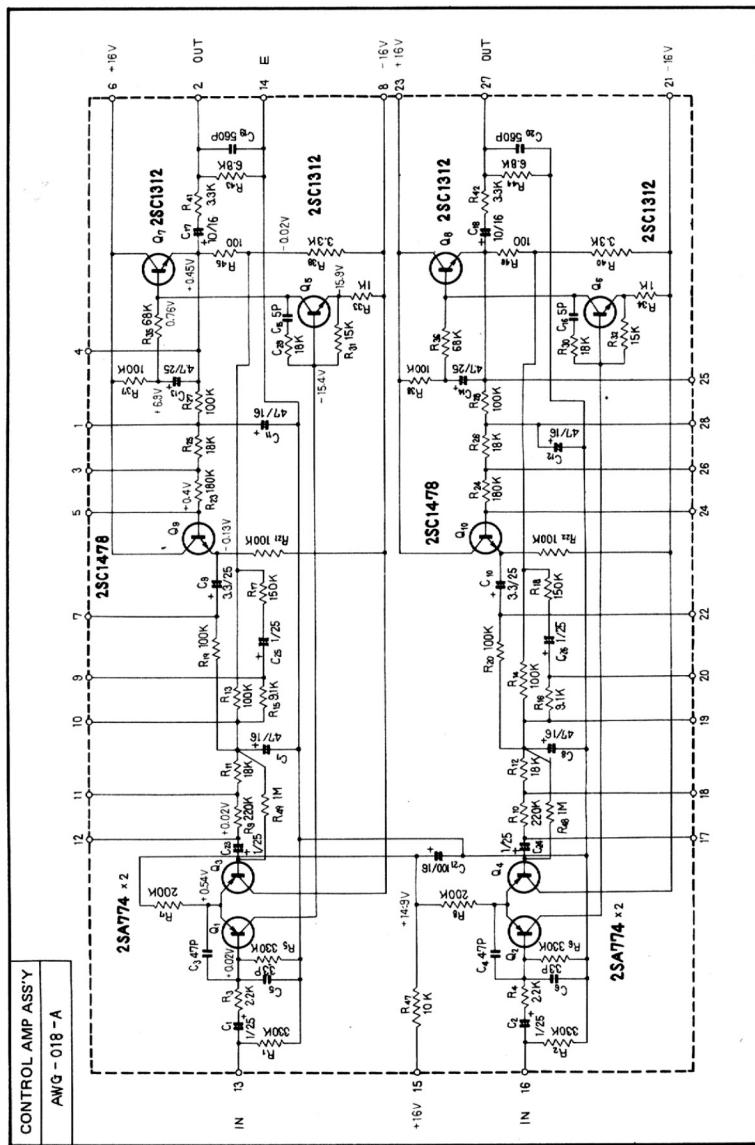
**RESISTORS**

Symbol	Description	Part No.
R1	Carbon film 330k	RD%PM 334J
R2	Carbon film 2.2k	RD%PM 222J
R3	Carbon film 150k	RD%PM 154J
R4	Carbon film 330k	RD%PM 334J
R5	Carbon film 330k	RD%PM 334J
R6	Carbon film 1.5k	RD%PM 152J
R7	Carbon film 18k	RD%PM 183J
R8	Carbon film 6.8k	RD%PM 682J
R9	Carbon film 33k	RD%PM 333J
R10	Carbon film 68k	RD%PM 683J
R11	Carbon film 220	RD%PM 221J
R12	Carbon film 220	RD%PM 221J
R13	Metal film 1.05M	%W RN%SS 1054F
R14	Metal film 1.74k	%W RN%SR 1741F
R15	Carbon film 1.5k	RD%PM 152J
R16	Metal film 82.5k	%W RN%SR 8252F
R17	Carbon film 56	RD%PM 560J
R18	Carbon film 330k	RD%PM 334J
R19	Carbon film 150k	RD%PM 154J

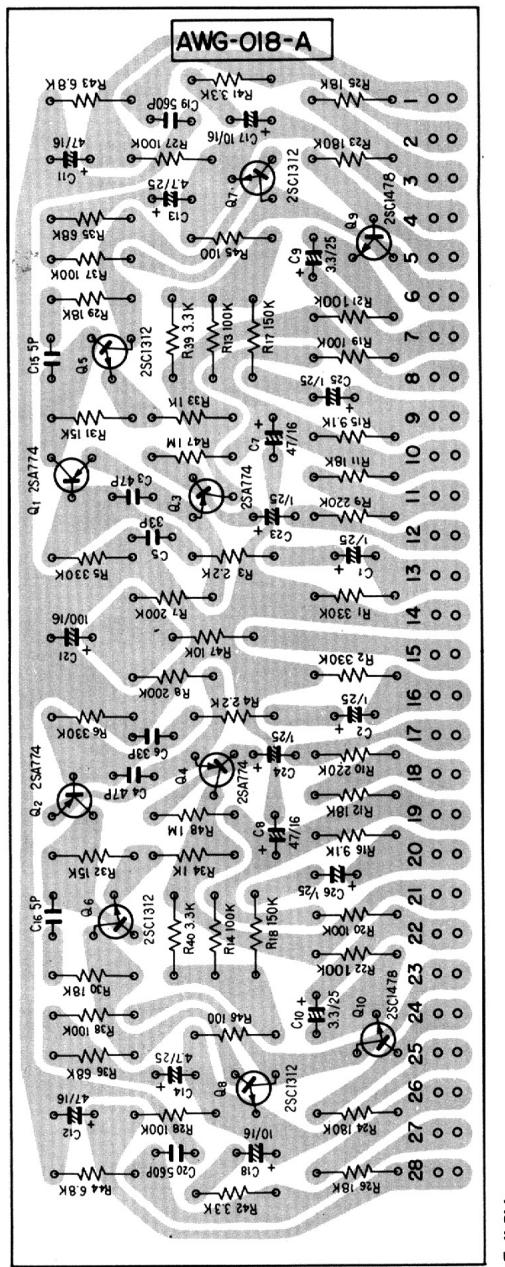
**SEMICONDUCTORS**

Symbol	Description	Part No.
Q1	Transistor 2SA774-T, S or U	
Q2	Transistor 2SA774-T, S or U	
Q3	Transistor 2SC1313-G or F (2SC1345-D or E)	
Q4	Transistor 2SC1313-G or F (2SC1345-D or E)	
Q5	Transistor 2SA726-G or F	

### 11.3 CONTROL AMP ASS'Y (AWG-018-A)



**SA-9100**



Foil Side

**Parts List of Control Amp Ass'y (AWG-018-A)**

**CAPACITORS**

Symbol	Description	Part No.
C1	Electrolytic 1 25V	CSSA 010M 25
C2	Electrolytic 1 25V	CSSA 010M 25
C3	Ceramic 47p 50V	CCDSL 470K 50
C4	Ceramic 47p 50V	CCDSL 470K 50
C5	Ceramic 33p 50V	CCDSL 330K 50
C6	Ceramic 33p 50V	CCDSL 330K 50
C7	Electrolytic 47 16V	CEA 470P 16
C8	Electrolytic 47 16V	CEA 470P 16
C9	Electrolytic 3.3 25V	CSSA 3R3M 25
C10	Electrolytic 3.3 25V	CSSA 3R3M 25
C11	Electrolytic 47 16V	CEA 470P 16
C12	Electrolytic 47 16V	CEA 470P 16
C13	Electrolytic 4.7 25V	CEA 4R7P 25
C14	Electrolytic 4.7 25V	CEA 4R7P 25
C15	Ceramic 5p 50V	CCDSL 050D 50
C16	Ceramic 5p 50V	CCDSL 050D 50
C17	Electrolytic 10 25V	CSZA 100M 25
C18	Electrolytic 10 25V	CSZA 100M 25
C19	Styrol 560p 50V	CQSA 561K 50
C20	Styrol 560p 50V	COSA 561K 50
C21	Electrolytic 100 16V	CEA 101P 16
C22	Electrolytic 1 25V	CSSA 010M 25
C23	Electrolytic 1 25V	CSSA 010M 25
C24	Electrolytic 1 25V	CSSA 010M 25
C25	Electrolytic 1 25V	CSSA 010M 25
C26	Electrolytic 1 25V	CSSA 010M 25

**RESISTORS**

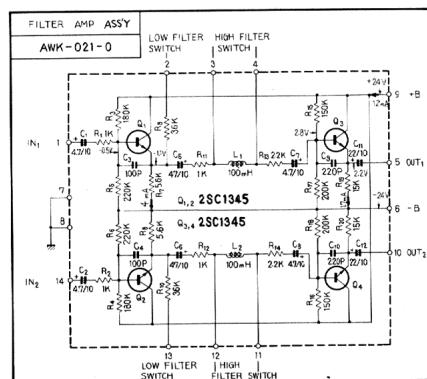
Symbol	Description	Part No.
R1	Carbon film 330k	RD%PM 334J
R2	Carbon film 330k	RD%PM 334J
R3	Carbon film 2.2k	RD%PM 222J
R4	Carbon film 2.2k	RD%PM 222J
R5	Carbon film 330k	RD%PM 334J
R6	Carbon film 330k	RD%PM 334J
R7	Carbon film 200k	RD%PM 204J
R8	Carbon film 200k	RD%PM 204J
R9	Carbon film 220k	RD%PM 224J
R10	Carbon film 220k	RD%PM 224J
R11	Carbon film 18k	RD%PM 183J
R12	Carbon film 18k	RD%PM 183J
R13	Carbon film 100k	RD%PM 104J
R14	Carbon film 100k	RD%PM 104J
R15	Carbon film 9.1k	RD%PM 912J

Symbol	Description	Part No.
R16	Carbon film 9.1k	RD%PM 912J
R17	Carbon film 150k	RD%PM 154J
R18	Carbon film 150k	RD%PM 154J
R19	Carbon film 100k	RD%PM 104J
R20	Carbon film 100k	RD%PM 104J
R21	Carbon film 100k	RD%PM 104J
R22	Carbon film 100k	RD%PM 104J
R23	Carbon film 180k	RD%PM 184J
R24	Carbon film 180k	RD%PM 184J
R25	Carbon film 18k	RD%PM 183J
R26	Carbon film 18k	RD%PM 183J
R27	Carbon film 100k	RD%PM 104J
R28	Carbon film 100k	RD%PM 104J
R29	Carbon film 18k	RD%PM 183J
R30	Carbon film 18k	RD%PM 183J
R31	Carbon film 15k	RD%PM 153J
R32	Carbon film 15k	RD%PM 153J
R33	Carbon film 1k	RD%PM 102J
R34	Carbon film 1k	RD%PM 102J
R35	Carbon film 68k	RD%PM 683J
R36	Carbon film 68k	RD%PM 683J
R37	Carbon film 100k	RD%PM 104J
R38	Carbon film 100k	RD%PM 104J
R39	Carbon film 3.3k	RD%PM 332J
R40	Carbon film 3.3k	RD%PM 332J
R41	Carbon film 3.3k	RD%PM 332J
R42	Carbon film 3.3k	RD%PM 332J
R43	Carbon film 6.8k	RD%PM 682J
R44	Carbon film 6.8k	RD%PM 682J
R45	Carbon film 100	RD%PM 101J
R46	Carbon film 100	RD%PM 101J
R47	Carbon film 10k	RD%PM 103J
R48	Carbon film 1M	RD%PM 105J
R49	Carbon film 1M	RD%PM 105J

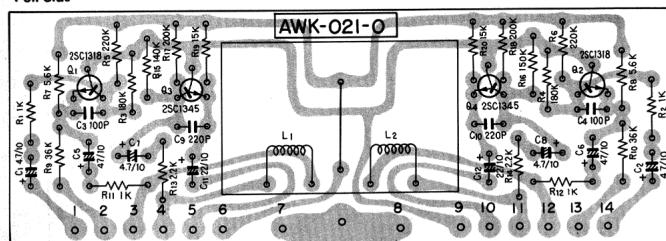
#### SEMICONDUCTORS

Symbol	Description	Part No.
Q1	Transistor 2SA774-T or U	
Q2	Transistor 2SA774-T or U	
Q3	Transistor 2SA774-T or U	
Q4	Transistor 2SA774-T or U	
Q5	Transistor 2SC1312-F or G (2SC1344-D or E)	
Q6	Transistor 2SC1312-F or G (2SC1344-D or E)	
Q7	Transistor 2SC1312-F or G (2SC1344-D or E)	
Q8	Transistor 2SC1312-F or G (2SC1344-D or E)	
Q9	Transistor 2SC1478-T or U	
Q10	Transistor 2SC1478-T or U	

#### 11.4 FILTER AMP ASS'Y (AWK-021-0)



Foil Side



Parts List of Filter Amp Ass'y (AWK-021-0)

CAPACITORS

Symbol	Description			Part No.
C1	Electrolytic	4.7	10V	CSSA 4R7X 10
C2	Electrolytic	4.7	10V	CSSA 4R7X 10
C3	Ceramic	100p	50V	CCDSL 101K 50
C4	Ceramic	100p	50V	CCDSL 101K 50
C5	Electrolytic	47	10V	CEA 470P 10
C6	Electrolytic	47	10V	CEA 470P 10
C7	Electrolytic	4.7	10V	CSSA 4R7X 10
C8	Electrolytic	4.7	10V	CSSA 4R7X 10
C9	Ceramic	220p	50V	CCDSL 221K 50
C10	Ceramic	220p	50V	CCDSL 221K 50
C11	Electrolytic	22	10V	CEA 220P 10
C12	Electrolytic	22	10V	CEA 220P 10

**SA-9100****RESISTORS**

Symbol	Description	Part No.	
R1	Carbon film 1k	RD%PM 102J	
R2	Carbon film 1k	RD%PM 102J	
R3	Carbon film 180k	RD%PM 184J	
R4	Carbon film 180k	RD%PM 184J	
R5	Carbon film 220k	RD%PM 224J	
R6	Carbon film 220k	RD%PM 224J	
R7	Carbon film 5.6k	RD%PM 562J	
R8	Carbon film 5.6k	RD%PM 562J	
R9	Carbon film 36k	RD%PM 363J	
R10	Carbon film 36k	RD%PM 363J	
R11	Carbon film 1k	RD%PM 102J	
R12	Carbon film 1k	RD%PM 102J	
R13	Carbon film 2.2k	RD%PM 222J	
R14	Carbon film 2.2k	RD%PM 222J	
R15	Carbon film 150k	RD%PM 154J	
R16	Carbon film 150k	RD%PM 154J	
R17	Carbon film 200k	RD%PM 204J	
R18	Carbon film 200k	RD%PM 204J	
R19	Carbon film 15k	RD%PM 153J	
R20	Carbon film 15k	RD%PM 153J	

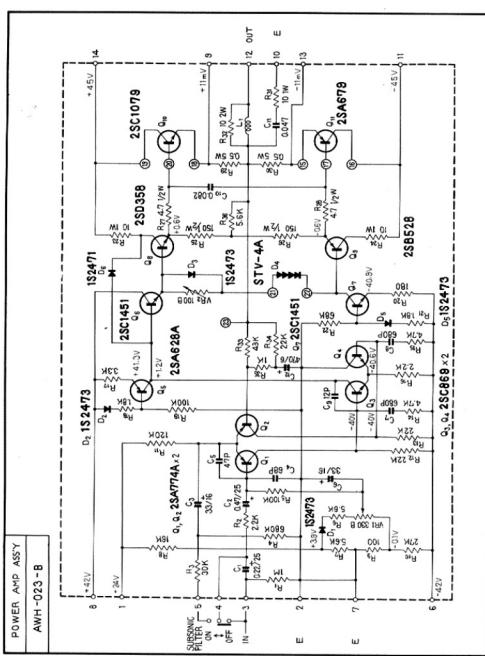
**SEMICONDUCTORS**

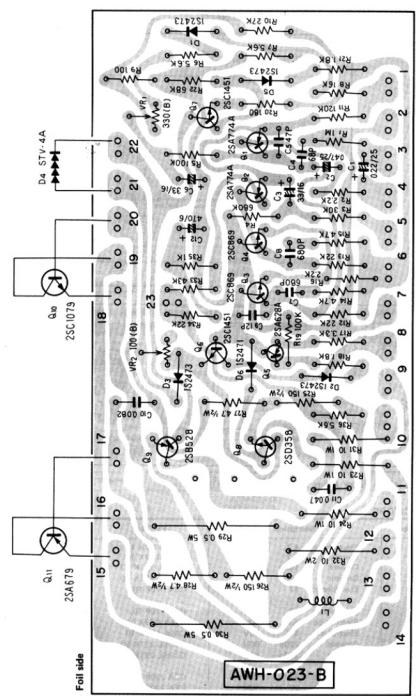
Symbol	Description	Part No.	
Q1	Transistor 2SC1345-D or E (2SC1313-G or F)		
Q2	Transistor 2SC1345-D or E (2SC1313-G or F)		
Q3	Transistor 2SC1345-D or E (2SC1313-G or F)		
Q4	Transistor 2SC1345-D or E (2SC1313-G or F)		

**COILS**

Symbol	Description	Part No.	
L1	Choke coil 104k	ATM-012-0	
L2	Choke coil 104k	ATM-012-0	

**11.5 POWER AMP ASS'Y (AWH-023-B)**





**SA-9100**

**Parts List of Power Amp Ass'y(AWH-023-B)**

**CAPACITORS**

Symbol	Description	Part No.	
C1	Electrolytic 0.22 25V	CSSA R22M 25-85C	
C2	Electrolytic 0.47 25V	CSSA R47M 25-85C	
C3	Electrolytic 33 16V	CEA 330P 16-85C	
C4	Ceramic 68p 50V	CCDSL 680K 50	
C5	Ceramic 47p 50V	CCDSL 470K 50	
C6	Electrolytic 33 16V	CEA 330P 16-85C	
C7	Ceramic 680p 50V	CKDYB 681K 50	
C8	Ceramic 680p 50V	CKDYB 681K 50	
C9	Ceramic 12p 50V	CCDSL 120K 50	
C10	Mylar 0.082 50V	COMA 823K 50	
C11	Mylar 0.047 50V	CQMA 473K 50	
C12	Electrolytic 470 6V	CEA 471P 6-85C	

**RESISTORS**

Symbol	Description	Part No.	
R1	Carbon film 1M	RD%PM 105J	
R2	Carbon film 2.2k	RD%PM 222J	
R3	Carbon film 30k	RD%PM 303J	
R4	Carbon film 680k	RD%PM 684J	
R5	Carbon film 100k	RD%PM 104J	
R6	Carbon film 5.6k	RD%PM 562J	
R7	Carbon film 5.6k	RD%PM 562J	
R8	Carbon film 16k	RD%PM 163J	
R9	Carbon film 100	RD%PM 101J	
R10	Carbon film 27k	RD%PM 273J	
R11	Carbon film 120k	RD%PM 124J	
R12	Carbon film 22k	RD%PM 223J	
R13	Carbon film 22k	RD%PM 223J	
R14	Carbon film 4.7k	RD%PM 472J	
R15	Carbon film 4.7k	RD%PM 472J	
R16	Carbon film 2.2k	RD%PM 222J	
R17	Carbon film 3.3k	RD%PM 332J	
R18	Carbon film 1.8k	RD%PM 182J	
R19	Carbon film 100k	RD%PM 104J	
R20	Carbon film 180	RD%PM 181J	
R21	Carbon film 1.8k	RD%PM 182J	
R22	Carbon film 68k	RD%PM 683J	
R23	Metal oxide 10 1W	RS1P 100J	
R24	Metal oxide 10 1W	RS1P 100J	
R25	Carbon film 150 ½W	RD%PS 151J	
R26	Carbon film 150 ½W	RD%PS 151J	
R27	Carbon film 4.7 ½W	RD%PS 4R7J	
R28	Carbon film 4.7 ½W	RD%PS 4R7J	
R29	Wire wound 0.5 5W	RT5B 0R5K	
R30	Wire wound 0.5 5W	RT5B 0R5K	

Symbol	Description			Part No.	
R31	Metal oxide	10	1W	RS1P 100J	
R32	Metal oxide	10	2W	RS2P 100J	
R33	Carbon film	43k		RD%PM 433J	
R34	Carbon film	22k		RD%PM 223J	
R35	Carbon film	1k		RD%PM 102J	
R36	Carbon film	5.6k		RD%PM 562J	

#### SEMICONDUCTORS

Symbol	Description			Part No.	
Q1	Transistor	2SA774A-T	U or S		
Q2	Transistor	2SA774A-T	U or S		
Q3	Transistor	2SC869-D	or C		
Q4	Transistor	2SC869-D	or C		
Q5	Transistor	2SA628A-D	or C		
Q6	Transistor	2SC1451-V	or B		
Q7	Transistor	2SC1451-V	or B		
Q8	Transistor	2SD358-D	or C		
Q9	Transistor	2SB528-D	or C		
Q10	Transistor	2SC1079-R	or Y		
Q11	Transistor	2SA679-R	or Y		
D1	Diode	1S2473			
D2	Diode	1S2473			
D3	Diode	1S2473			
D4	Varistor	STV-4A			
D5	Diode	1S2473			
D6	Diode	1S2471			

#### COIL

Symbol	Description			Part No.	
L1	AF choke coil			T63-009-0	

#### POTENTIOMETERS

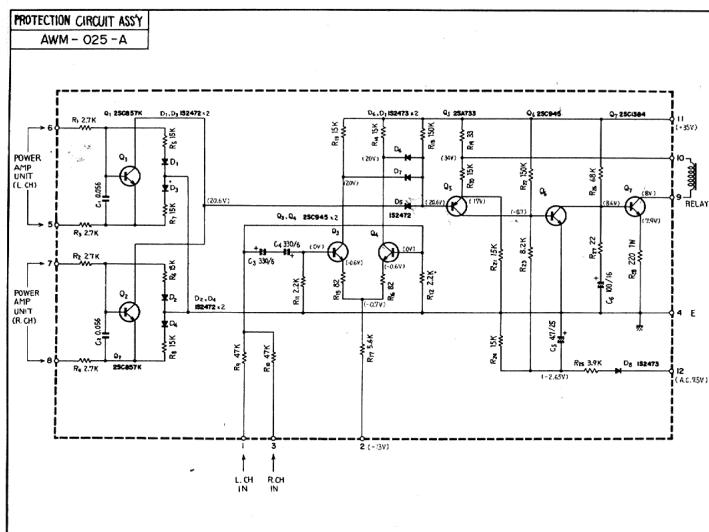
Symbol	Description			Part No.	
VR1	Semi-fixed(330-B)			ACP-020-0	
VR2	Semi-fixed(100-B)			ACP-019-0	

#### OTHERS

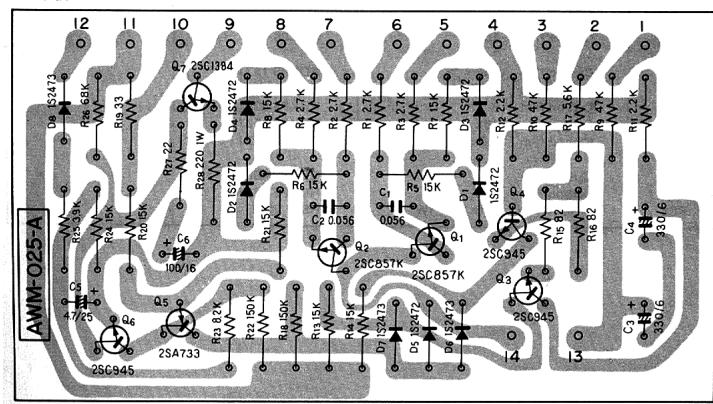
Symbol	Description			Part No.	
	Socket for power transistor Spacer (Mica) Heat Sink (2SD358) (2SB528) Holder for Varistor			AKH-001-0 AEC-076-0 ANH-135-A ANG-073-0	

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## 11.6 PROTECTION CIRCUIT ASS'Y (AWM-025-A)



Foil Side



**Parts List of Protection Circuit Ass'y (AWM-025-A)**

**CAPACITORS**

Symbol	Description			Part No.
C1	Mylar	0.056	50V	COMA 563K 50
C2	Mylar	0.056	50V	COMA 563K 50
C3	Electrolytic	330	6V	CEA 331P 6
C4	Electrolytic	330	6V	CEA 331P 6
C5	Electrolytic	4.7	25V	CEA 4R7P 25
C6	Electrolytic	100	16V	CEA 101P 16

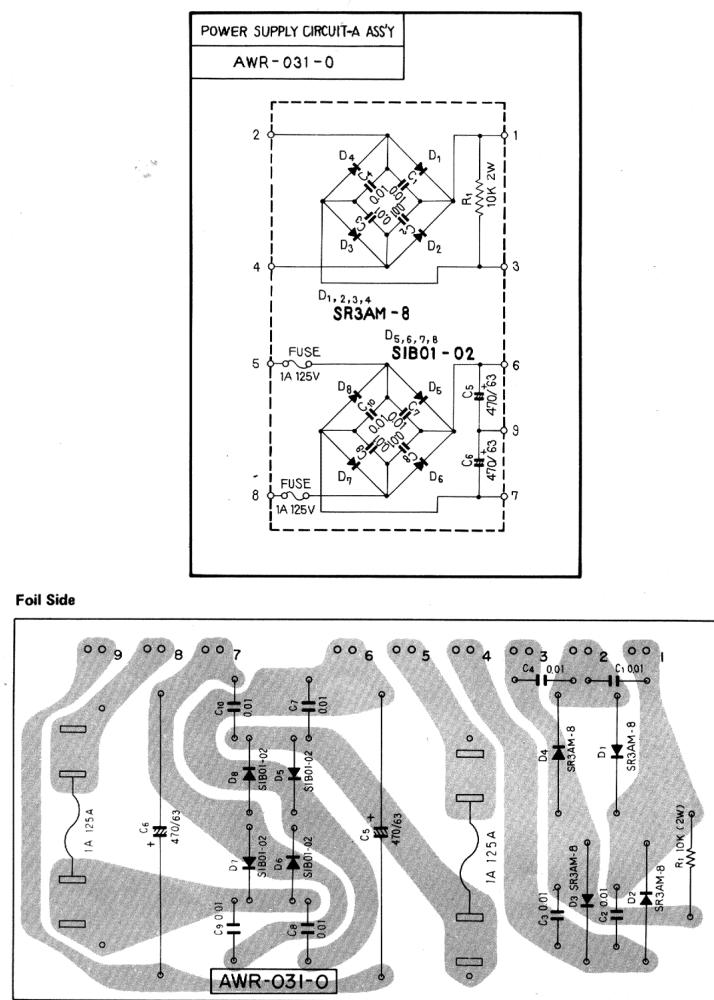
**RESISTORS**

Symbol	Description			Part No.
R1	Carbon film	2.7k		RD%PS 272J
R2	Carbon film	2.7k		RD%PS 272J
R3	Carbon film	2.7k		RD%PS 272J
R4	Carbon film	2.7k		RD%PS 272J
R5	Carbon film	15k		RD%PS 153J
R6	Carbon film	15k		RD%PS 153J
R7	Carbon film	15k		RD%PS 153J
R8	Carbon film	15k		RD%PS 153J
R9	Carbon film	47k		RD%PS 473J
R10	Carbon film	47k		RD%PS 473J
R11	Carbon film	2.2k		RD%PS 222J
R12	Carbon film	2.2k		RD%PS 222J
R13	Carbon film	15k		RD%PS 153J
R14	Carbon film	15k		RD%PS 153J
R15	Carbon film	82		RD%PS 820J
R16	Carbon film	82		RD%PS 820J
R17	Carbon film	5.6k		RD%PS 562J
R18	Carbon film	150k		RD%PS 154J
R19	Carbon film	33		RD%PS 330J
R20	Carbon film	15k		RD%PS 153J
R21	Carbon film	15k		RD%PS 153J
R22	Carbon film	150k		RD%PS 154J
R23	Carbon film	8.2k		RD%PS 822J
R24	Carbon film	15k		RD%PS 153J
R25	Carbon film	3.9k		RD%PS 392J
R26	Carbon film	68k		RD%PS 683J
R27	Carbon film	22		RD%PS 220J
R28	Metal oxide	220	1W	RS1P 221J

**SA-9100**

SEMICONDUCTORS			
Symbol	Description	Part No.	
Q1	Transistor 2SC857K-A		
Q2	Transistor 2SC857K-A		
Q3	Transistor 2SC945-Q or R		
Q4	Transistor 2SC945-Q or R		
Q5	Transistor 2SA733-Q or R		
Q6	Transistor 2SC945-Q or R		
Q7	Transistor 2SC1384-R or Q		
D1	Diode 1S2472		
D2	Diode 1S2472		
D3	Diode 1S2472		
D4	Diode 1S2472		
D5	Diode 1S2472		
D6	Diode 1S2473		
D7	Diode 1S2473		
D8	Diode 1S2473		

**11.7 POWER SUPPLY CIRCUIT-A ASS'Y (AWR-031-0)**



**SA-9100****Parts List of Power Supply Circuit-A Ass'y(AWR-031-0)****CAPACITORS**

Symbol	Description			Part No.
C1	Ceramic	0.01	150V	ACG-004-0
C2	Ceramic	0.01	150V	ACG-004-0
C3	Ceramic	0.01	150V	ACG-004-0
C4	Ceramic	0.01	150V	ACG-004-0
C5	Electrolytic	470	63V	CEB 471P 63-85C
C6	Electrolytic	470	63V	CEB 471P 63-85C
C7	Ceramic	0.01	150V	ACG-004-0
C8	Ceramic	0.01	150V	ACG-004-0
C9	Ceramic	0.01	150V	ACG-004-0
C10	Ceramic	0.01	150V	ACG-004-0

**RESISTOR**

Symbol	Description			Part No.
R1	Metal oxide	10k	2W	RS2P 103K

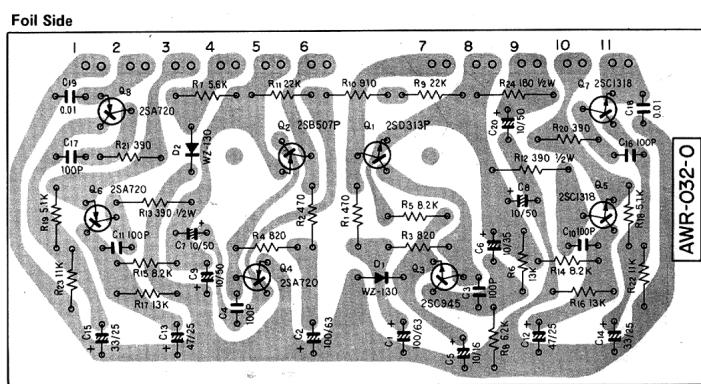
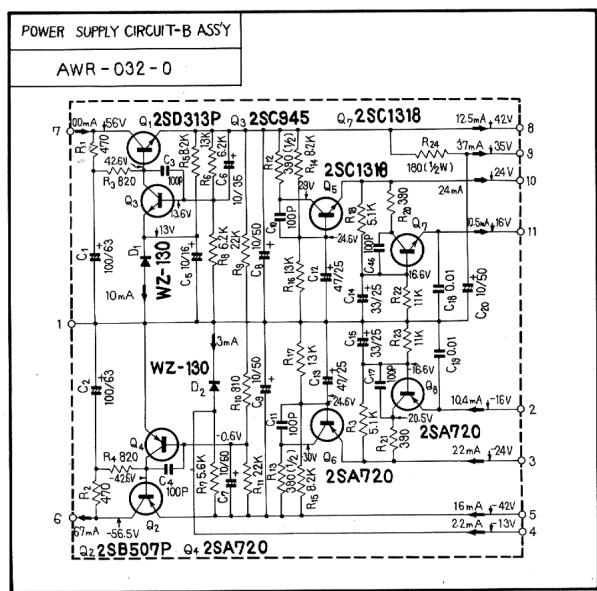
**SEMICONDUCTORS**

Symbol	Description			Part No.
D1	Diode	SR3AM-8		
D2	Diode	SR3AM-8		
D3	Diode	SR3AM-8		
D4	Diode	SR3AM-8		
D5	Diode	SIB01-02		
D6	Diode	SIB01-02		
D7	Diode	SIB01-02		
D8	Diode	SIB01-02		

**OTHER**

Symbol	Description			Part No.
	Fuse holder			K91-006-0

**11.8 POWER SUPPLY CIRCUIT-B ASS'Y (AWR-032-0)**



**AWR-032-0**

**SA-9100**

**Parts List of Power Supply Circuit-B Ass'y (AWR-032-0)**

**CAPACITORS**

Symbol	Description			Part No.
C1	Electrolytic	100	63V	CEA 101P 63-85C
C2	Electrolytic	100	63V	CEA 101P 63-85C
C3	Ceramic	100p	50V	CCDSL 101K 50
C4	Ceramic	100p	50V	CCDSL 101K 50
C5	Electrolytic	10	16V	CEA 100P 16-85C
C6	Electrolytic	10	35V	CEA 100P 35-85C
C7	Electrolytic	10	50V	CEA 100P 50-85C
C8	Electrolytic	10	50V	CEA 100P 50-85C
C9	Electrolytic	10	50V	CEA 100P 50-85C
C10	Ceramic	100p	50V	CCDSL 101K 50
C11	Ceramic	100p	50V	CCDSL 101K 50
C12	Electrolytic	47	25V	CEA 470P 25-85C
C13	Electrolytic	47	25V	CEA 470P 25-85C
C14	Electrolytic	33	25V	CEA 330P 25-85C
C15	Electrolytic	33	25V	CEA 330P 25-85C
C16	Ceramic	100p	50V	CCDSL 101K 50
C17	Ceramic	100p	50V	CCDSL 101K 50
C18	Ceramic	0.01	50V	CKDYF 103Z 50
C19	Ceramic	0.01	50V	CKDYF 103Z 50
C20	Electrolytic	10	50V	CEA 100P 50-85C

**RESISTORS**

Symbol	Description			Part No.
R1	Carbon film	470		RD%PM 471J
R2	Carbon film	470		RD%PM 471J
R3	Carbon film	820		RD%PM 821J
R4	Carbon film	820		RD%PM 821J
R5	Carbon film	8.2k		RD%PM 822J
R6	Carbon film	13k		RD%PM 133J
R7	Carbon film	5.6k		RD%PM 562J
R8	Carbon film	6.2k		RD%PM 622J
R9	Carbon film	22k		RD%PM 223J
R10	Carbon film	910		RD%PM 911J
R11	Carbon film	22k		RD%PM 223J
R12	Carbon film	390	½W	RD%PM 391J
R13	Carbon film	390	½W	RD%PM 391J
R14	Carbon film	8.2k		RD%PM 822J
R15	Carbon film	8.2k		RD%PM 822J
R16	Carbon film	13k		RD%PM 133J
R17	Carbon film	13k		RD%PM 133J
R18	Carbon film	5.1k		RD%PM 512J
R19	Carbon film	5.1k		RD%PM 512J
R20	Carbon film	390		RD%PM 391J
R21	Carbon film	390		RD%PM 391J
R22	Carbon film	11k		RD%PM 113J
R23	Carbon film	11k		RD%PM 113J
R24	Carbon film	180	½W	RD%PM 181J

**SEMICONDUCTORS**

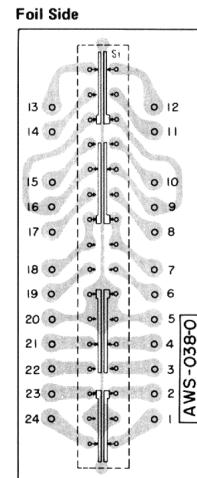
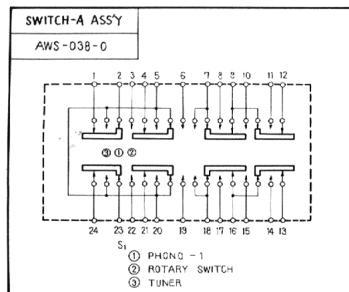
Symbol	Description	Part No.
Q1	Transistor 2SB507P-D or E	
Q2	Transistor 2SB507P-D or E	
Q3	Transistor 2SC945-R or S	
Q4	Transistor 2SA720-R or Q	
Q5	Transistor 2SC1318-R or Q	
Q6	Transistor 2SA720-R or Q	
Q7	Transistor 2SC1318-R or Q	
Q8	Transistor 2SA720-R or Q	
D1	Zener diode WZ130	
D2	Zener diode WZ130	

**OTHER**

Symbol	Description	Part No.
	Heat sink (2SD313P) (2SB507P)	ANH-117-0

**SA-9100**

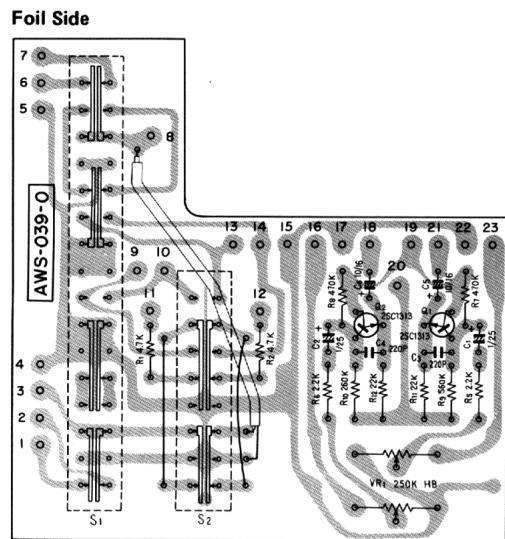
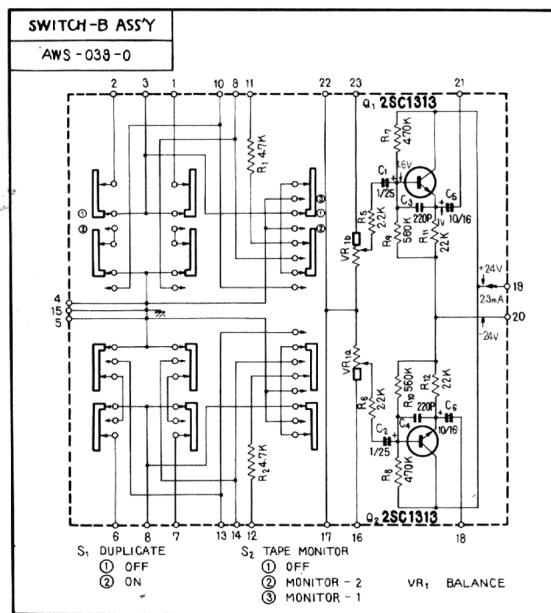
**11.9 SWITCH-A ASS'Y (AWS-038-0)**



**SWITCH**

Symbol	Description	Part No.	
S1	Lever switch (FUNCTION)	ASK-037-A	

### 11.10 SWITCH-B ASS'Y (AWS-039-0)



**SA-9100****Parts List of Switch-B Ass'y (AWS-039-0)****CAPACITORS**

Symbol	Description	Part No.
C1	Electrolytic 1 25V	CSSA 010M 25
C2	Electrolytic 1 25V	CSSA 010M 25
C3	Ceramic 220p 50V	CCDSL 221K 50
C4	Ceramic 220p 50V	CCDSL 221K 50
C5	Electrolytic 10 16V	CEA 100P 16
C6	Electrolytic 10 16V	CEA 100P 16

**RESISTORS**

Symbol	Description	Part No.
R1	Carbon film 4.7k	RD1PM 472J
R2	Carbon film 4.7k	RD1PM 472J
R5	Carbon film 2.2k	RD1PM 222J
R6	Carbon film 2.2k	RD1PM 222J
R7	Carbon film 470k	RD1PM 474J
R8	Carbon film 470k	RD1PM 474J
R9	Carbon film 560k	RD1PM 564J
R10	Carbon film 560k	RD1PM 564J
R11	Carbon film 22k	RD1PM 223J
R12	Carbon film 22k	RD1PM 223J

**SEMICONDUCTORS**

Symbol	Description	Part No.
Q1	Transistor 2SC1313-G or F (2SC1345-D or E)	
Q2	Transistor 2SC1313-G or F (2SC1345-D or E)	

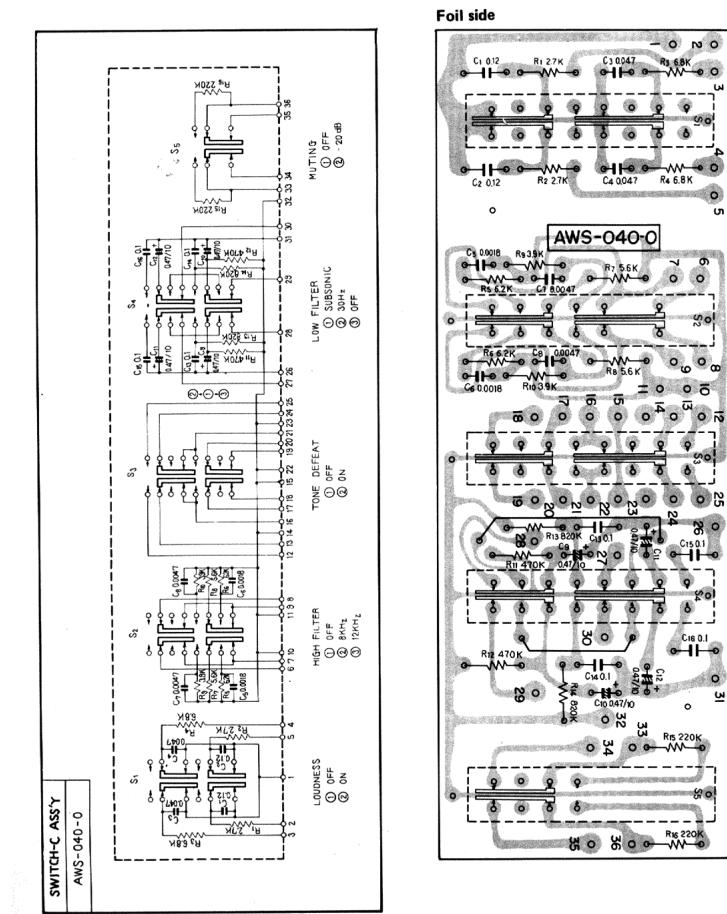
**SWITCHES**

Symbol	Description	Part No.
S1	Lever switch (DUPLICATE)	ASK-036-0
S2	Lever switch (TAPE MONITOR)	ASK-034-0

**POTENTIOMETER**

Symbol	Description	Part No.
VR1	Balance control 250k-HB	ACV-111-A

## 11.11 SWITCH-C Ass'y (AWS-040-0)



**SA-9100****Parts List of Switch -C ASS'Y (AWS-040-0)****CAPACITORS**

Symbol	Description			Part No.
C1	Mylar	0.12	50V	CQMA 124J 50
C2	Mylar	0.12	50V	CQMA 124J 50
C3	Mylar	0.047	50V	CQMA 473J 50
C4	Mylar	0.047	50V	CQMA 473J 50
C5	Mylar	0.0018	50V	CQMA 182J 50
C6	Mylar	0.0018	50V	CQMA 182J 50
C7	Mylar	0.0047	50V	CQMA 472J 50
C8	Mylar	0.0047	50V	CQMA 472J 50
C9	Electrolytic	0.47	10V	CSSA R47M 10
C10	Electrolytic	0.47	10V	CSSA R47M 10
C11	Electrolytic	0.47	10V	CSSA R47M 10
C12	Electrolytic	0.47	10V	CSSA R47M 10
C13	Mylar	0.1	50V	CQMA 104J 50
C14	Mylar	0.1	50V	CQMA 104J 50
C15	Mylar	0.1	50V	CQMA 104J 50
C16	Mylar	0.1	50V	CQMA 104J 50

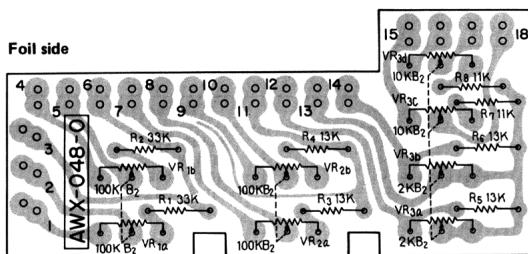
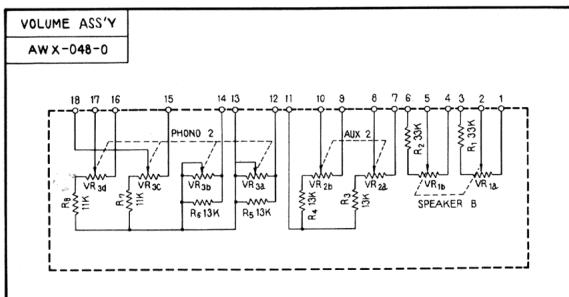
**RESISTORS**

Symbol	Description			Part No.
R1	Carbon film	2.7k		RD%PM 272J
R2	Carbon film	2.7k		RD%PM 272J
R3	Carbon film	6.8k		RD%PM 682J
R4	Carbon film	6.8k		RD%PM 682J
R5	Carbon film	6.2k		RD%PM 622J
R6	Carbon film	6.2k		RD%PM 622J
R7	Carbon film	5.6k		RD%PM 562J
R8	Carbon film	5.6k		RD%PM 562J
R9	Carbon film	3.9k		RD%PM 392J
R10	Carbon film	3.9k		RD%PM 392J
R11	Carbon film	470k		RD%PM 474J
R12	Carbon film	470k		RD%PM 474J
R13	Carbon film	820k		RD%PM 824J
R14	Carbon film	820k		RD%PM 824J
R15	Carbon film	220k		RD%PM 224J
R16	Carbon film	220k		RD%PM 224J

**SWITCHES**

Symbol	Description			Part No.
S1	Lever switch (LOUDNESS)			ASK-033-0
S2	Lever switch (HIGH FILTER)			ASK-035-0
S3	Lever switch (TONE DEFEAT)			ASK-033-0
S4	Lever switch (LOW FILTER)			ASK-035-0
S5	Lever switch (MUTING)			ASK-030-0

### 11.12 VOLUME ASS'Y (AWX-048-0)



#### RESISTORS

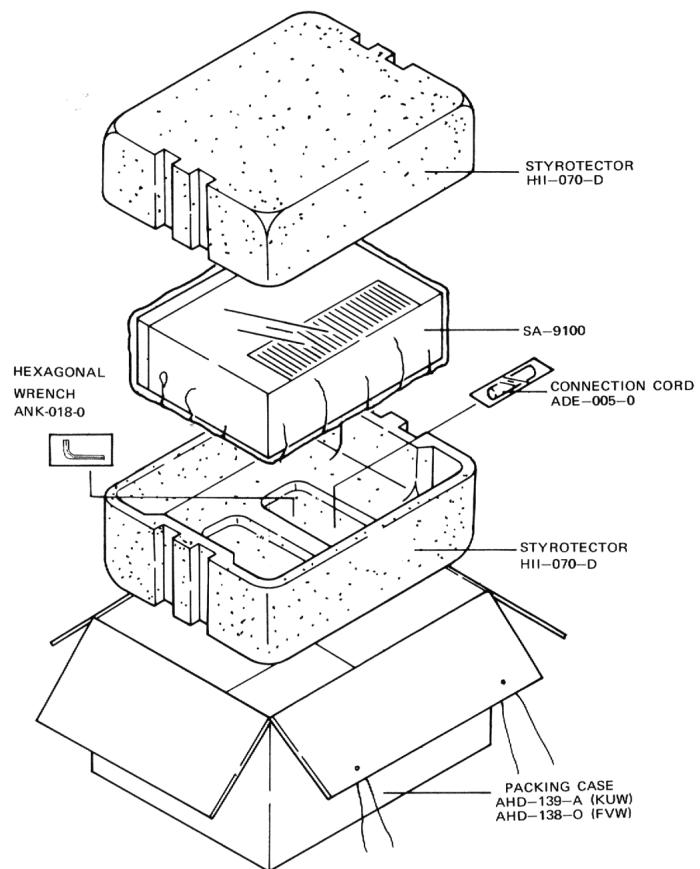
Symbol	Description	Part No.
R1	Carbon film 33k	RD1PM 333J
R2	Carbon film 33k	RD1PM 333J
R3	Carbon film 13k	RD1PM 133J
R4	Carbon film 13k	RD1PM 133J
R5	Carbon film 13k	RD1PM 133J
R6	Carbon film 13k	RD1PM 133J
R7	Carbon film 11k	RD1PM 113J
R8	Carbon film 11k	RD1PM 113J

#### POTENTIOMETERS

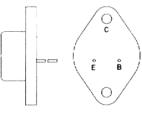
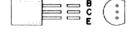
Symbol	Description	Part No.	
VR1	Level control (100K-B <sub>2</sub> x 2)	ACT-104-0	
VR2	Level control (100K-B <sub>2</sub> x 2)	ACT-104-0	AUX 2
VR3	Level control (10K-B <sub>2</sub> x 2, 2.2k-B <sub>2</sub> x 2)	ACT-302-A	SPEAKER B
			PHONO 2

**SA-9100**

## **12. PACKING METHOD AND PARTS NUMBERS**



### 13. SKELETON APPEARANCES OF TRANSISTORS

2SA628A 2SA720R 2SC1318		2SA679 2SC1079	
2SA733		2SA774 2SA774A 2SC1478	
2SA726 2SC869 2SC1313 2SC1312		2SB507P 2SD313P	
2SB528 2SD358		2SC857K	
2SC945		2SC1345	
2SC1384		2SC1451	