

2048

SA-7500

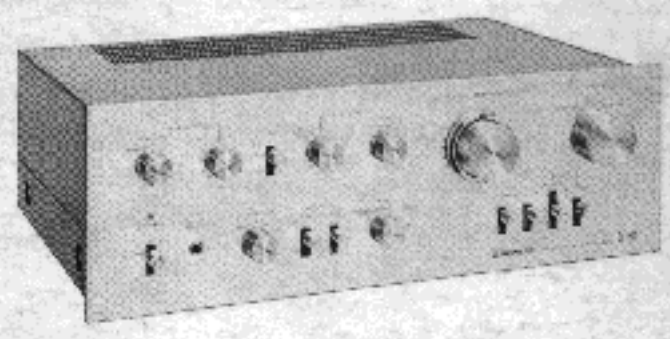
STEREO AMPLIFIER

SA-7500

KCU, FV, GN

< ART-121-B >

Service Manual



 **PIONEER**[®]

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NOTE:

THE MODEL SA-7500 COMES IN THREE VERSIONS DISTINGUISHED AS FOLLOWS:

Round label on rear panel	Voltage	Type
KCU	120V only	UL (U.S.A.), CSA (Canada) approved.
FV	110V, 120V, 130V, 220V, and 240V (switchable)	General export model. SEV (Switzerland) approved.
GN	220V only	SEMKO (Sweden), DEMKO (Denmark), NEMKO (Norway) and EI (Finland) approved.

1. SPECIFICATIONS

Semiconductors

FET(s)	2
Transistors	35
Diodes	21

Power Amplifier Section

Circuitry	1-stage differential amplifiers. Direct coupled OCL.
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Continuous Power Output

20 Hertz to 20,000 Hertz (Both channels driven)	40 watts per channel (8 ohms) 45 watts per channel (4 ohms)
1,000 Hertz (Both channels driven)	45 watts per channel (8 ohms) 50 watts per channel (4 ohms)

Total Harmonic Distortion at 20 Hertz to 20,000 Hertz

(Continuous Rated Power Output)	No more than 0.3%
(20 watts per channel Power Output, 8 ohms)	No more than 0.05%
(1 watt per channel Power Output, 8 ohms)	No more than 0.05%

Intermodulation Distortion at 20 Hertz to 20,000 Hertz

(Continuous Rated Power Output)	No more than 0.3%
(20 watts per channel Power Output, 8 ohms)	No more than 0.05%
(1 watt per channel Power Output, 8 ohms)	No more than 0.05%

Frequency Response 10 Hertz to 80,000 Hertz ± 1 dB

Input: Sensitivity/Impedance

(POWER AMP IN) 1V/50k ohms

Output: Speaker A, B, A+B

Headphone Low Impedance

Damping Factor

(20 Hertz to 20,000 Hertz,
8 ohms) 25

Hum and Noise

(IHF, Short-circuited,
A Network) 100dB

Preamplifier Section

Circuitry	3-stage direct-coupled amplifier. Control amplifier 2-stage direct-coupled with 1 FET, NFB type.
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Input: Sensitivity/Impedance

PHONO 1	2.5mV/50k ohms
PHONO 2	2.5mV/50k ohms
MIC	7.5mV/85k ohms
TUNER	150mV/50k ohms
AUX	150mV/50k ohms
TAPE PB 1	150mV/50k ohms
TAPE PB 2 (DIN connector)	150mV/50k ohms

PHONO Overload Level (T.H.D. 0.1%)

PHONO 1 200mV (1,000 Hertz)

PHONO 2 200mV (1,000 Hertz)

Output: Level/Impedance

TAPE REC 1 150mV

TAPE REC 2 (DIN connector)

. 30mV/80k ohms

PRE OUT 1V/1k ohms

Total Harmonic Distortion at

20 Hertz to 20,000 Hertz No more than 0.05%

Frequency Response

PHONO (RIAA equalization). 30 Hertz to 15,000 Hertz ± 0.3 dB

TUNER, AUX, TAPE PB 10 Hertz to 50,000 Hertz ± 1 dB

Tone Control

BASS ± 7 dB (100 Hertz) / ± 11 dB (100
Hertz)

Turnover Frequency 200 Hertz /
400 Hertz

TREBLE ± 7 dB (10,000 Hertz) / ± 11 dB
(10,000 Hertz)

Turnover Frequency 5,000 Hertz/
2,500 Hertz

Filter

LOW 30 Hertz (6dB/oct)

HIGH 8,000 Hertz (6dB/oct)

Loudness Contour

(Volume control set at

-40dB position) +8.5dB (100Hz)

+4dB (10,000Hz)

Hum and Noise (IHF, Short-circuited, A Network)

PHONO 1 and 2 70dB

MIC 65dB

TUNER, AUX, TAPE PB 90dB

Muting 0, -20dB

Miscellaneous

Power Requirements AC 120V 60 Hertz or 220V
50/60 Hertz or 110, 120, 130,
220 and 240V (Switchable)
50/60 Hertz

Power Consumption 190 watts

Dimensions 420 (W) x 150 (H) x 345 (D) mm
16-9/16 x 5-7/8 x 13-9/16 in.

Weight: Without Package 12kg (26 lb 7 oz)

With Package 13.5kg (29 lb 11 oz)

Furnished Parts

Connection Cord with Pin Plugs	1
Operating Instructions	1
Fuse 2A	1
Fuse 4A	1 (5-line voltage model only)

NOTE:

Specifications and the design subject to possible modification with-
out notice due to improvements.

2. FRONT PANEL FACILITIES

TONE SWITCH

When set to OFF, the tone control circuit is disengaged and a flat frequency response obtained. The tone controls (BASS & TREBLE) do not function in this case. This switch is convenient for various kinds of checking, including cartridge and speaker tone, tone control effectiveness, and listening room acoustics.

BASS TURN OVER SWITCH

This switch selects the frequency at which the BASS control becomes effective (see response graph). Set to either 200Hz or 400Hz according to room and speaker characteristics, or personal preference.

BASS CONTROL

Click-stop control knob for adjusting low frequency tone. Clockwise rotation enhances frequencies below the value selected by the BASS TURN OVER switch, while counter-clockwise rotation attenuates these frequencies.

PILOT LAMP

Lights to indicate power ON.

POWER SWITCH

Switch for turning on power. When switched ON, sound is not immediately obtained from the speakers. This is due to the operation of the internal muting circuit and does not signify malfunction.

PHONES JACK

Plug stereo headphones into this jack for private listening.

NOTE:

Set the **SPEAKERS** switch to OFF when listening through the headphones only.

SPEAKERS SWITCH

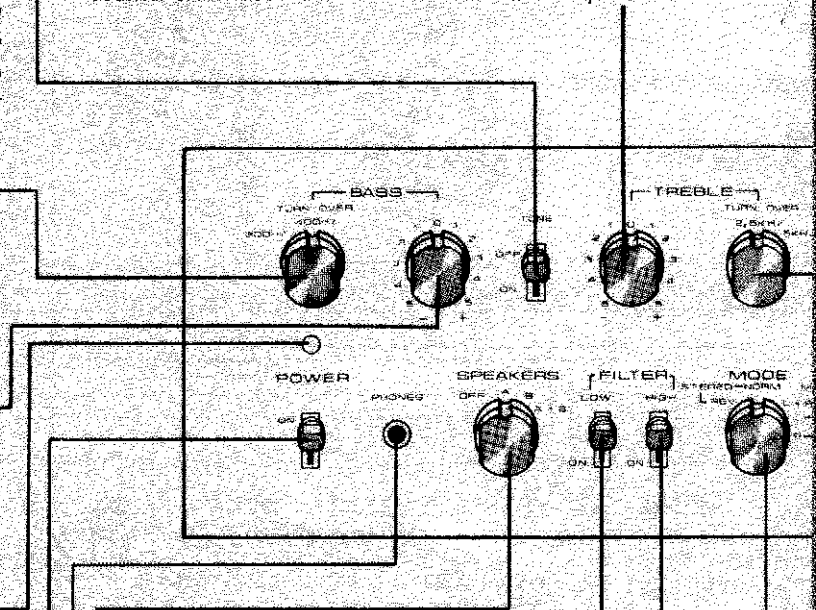
- OFF: Speaker sound cut off
- A: Activates speakers connected to the 'A' SPEAKERS terminals
- B: Activates speakers connected to the 'B' SPEAKERS terminals
- A + B: Sound obtained from both A and B speaker systems

NOTE:

Set switch to OFF when listening only through headphones, or to temporarily interrupt the sound.

TREBLE CONTROL

Click-stop control knob for adjusting high frequency tone. Clockwise rotation enhances frequencies above the value selected by the TREBLE TURN OVER switch, while counter-clockwise rotation attenuates these frequencies.



LOW FILTER SWITCH

Set to ON if low frequency noise, such as motor rumble or hum etc., becomes objectionable.

HIGH FILTER SWITCH

Set to ON if high frequency noise, such as record scratch noise etc., becomes objectionable.

MODE SWITCH

STEREO REV: Reverses left and right channels of a stereo signal and presents them stereo-phonically.

STEREO NORM: Set to this position for normal stereo listening.

MONO L + R: Left and right channels of the input signal are mixed and presented monophonically.

MONO L: Left channel input signal is presented monophonically from both left and right speakers.

MONO R: Right channel input signal is presented monophonically from both left and right speakers.

TREBLE TURN OVER SWITCH

This switch selects the frequency at which the TREBLE control becomes effective (see response graph). Set to either 2.5kHz or 5kHz according to room and speaker characteristics, or personal preference.

VOLUME CONTROL

Adjusts volume from speakers or headphones. Clockwise rotation increases volume.

BALANCE CONTROL

Adjusts relative volume between left and right speaker systems or headphones. Clockwise rotation from center increases right channel volume, while counter-clockwise rotation increases left channel volume.

FUNCTION SWITCH

Selects desired program source for listening.

PHONO 1: For playing records on a turntable connected to the PHONO 1 jacks.

MIC/PHONO 2: Same as above, for PHONO 2, or for reproduction through a microphone connected to the MIC jack on the rear panel. Note, when the microphone is connected to the jack, the turntable connected to the PHONO 2 jacks cannot be used.

TUNER: For listening to broadcasts through the tuner.

AUX: For playing signals fed to the AUX jacks.

TAPE DUPLICATE SWITCH

Set to ON when employing 2 tape decks to duplicate or edit recorded tapes.

LOUDNESS SWITCH

When listening at low volume, set this switch to ON to enhance low and high frequencies. The human ear possesses different characteristics when listening to low and high volume sounds. The LOUDNESS switch compensates for these characteristics.

MUTING SWITCH

Reduces volume by 20dB. Employ for temporarily reducing the volume, as when changing records or tapes. This eliminates the need for repeatedly adjusting the VOLUME control.

TAPE MONITOR SWITCH

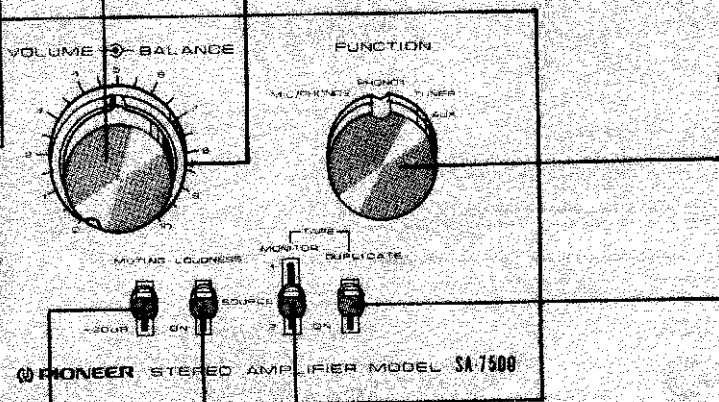
1: To perform tape playback or monitoring of tape deck connected to the TAPE 1 (REC & PB) jacks.

SOURCE: Set to this position when not playing tape.

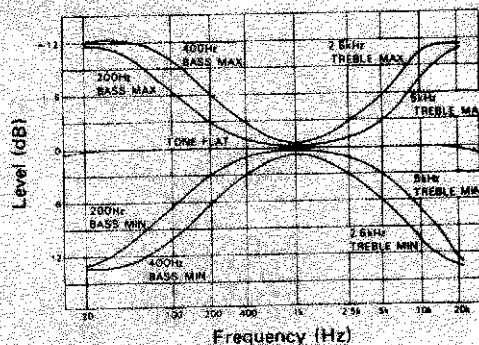
2: To perform tape playback or monitoring of tape deck connected to the TAPE 2 (REC & PB) jacks.

NOTE:

Be sure to set this switch to **SOURCE** when employing turntable or tuner. Sound will not be obtained from the speakers at positions 1 and 2 in these cases.



RESPONSE GRAPH



Graph depicts relationships between BASS and TREBLE controls and their respective TURN OVER switches.

4. CIRCUIT DESCRIPTION

The SA-7500 is a 2-channel integrated stereo amplifier.

The descriptions given here refer mainly to the left channel. Please refer to the block diagram on pages 11 to 12.

Equalizer Amplifier (Q1 ~ Q3)

This amplifier amplifies the low level signals from the cartridge and microphone inputs. Equalization is performed in accordance with the RIAA curve. This is a three-stage, direct-coupled, collector-to-emitter feedback type, consisting of Q1 ~ Q3 transistors.

By using the balanced power supply, both the input and output voltages can be lowered, and the charge voltage of coupling capacitor becomes decreased. In result, the shock noises which occur in changing the switch are reduced. The gain is 35.5dB at 1kHz, the deviation from the RIAA standard is ± 0.3 dB (from 30Hz to 15kHz) and the overload level is 200mV rms at 1kHz.

Control Amplifier (Q4 ~ Q6)

This circuit amplifies the signals from the equalizer and the input signals from TUNER terminals and TAPE PB terminals, and then feeds these amplified signals to the power amplifier. And also, the tone controls are performed here. This is of the NFB type, employing balanced power supply, and includes the turnover frequency changing circuit.

The circuit consisting of Q4 and Q5 is 2-stage direct-coupled circuit, using an FET (field effect transistor) in the first stage. Here, the signals are raised to sufficient level for driving the power amplifier.

The FET is a controllable voltage element, it holds the input impedance constant, even if the level of the NFB changes, furthermore it has an advantages as a coupled circuit.

1. LOW FREQUENCY CONTROL

The low frequency control circuit is shown in Fig. 1-a, and the equivalent circuit, when boosting low frequency, is shown in Fig. 1-b.

As the parallel impedance of VR1 and C10, in Fig. 1-b, is large in the low frequency, the volume of the NFB decreases and the gain in the low frequency range increases. The equivalent circuit, when cutting out low frequencies, is shown in Fig. 1-c. In this case, the input signal is applied to Q6, through the parallel impedance of VR1 and C9.

This parallel impedance of VR1 and C9 becomes large in the low frequency range and suppresses the lower frequency signals.

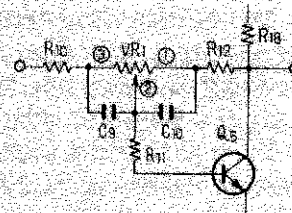


Fig. 1-a

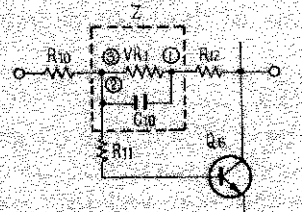


Fig. 1-b

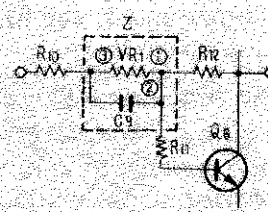


Fig. 1-c

2. HIGH FREQUENCY CONTROL

The high frequency control circuit is shown in Fig. 2-a. The equivalent circuit when boosting high frequencies, is shown in Fig. 2-b.

In this circuit, the input signal is applied to Q6 through the parallel impedance circuit. This impedance is small in the high frequency range and produces a signal with an enhanced high range. Fig. 2-c shows the equivalent circuit when cutting out high frequency. As the impedance of R10, R11 and C11 of the circuit becomes small, the level of the NFB increases and the gain of the circuit decreases.

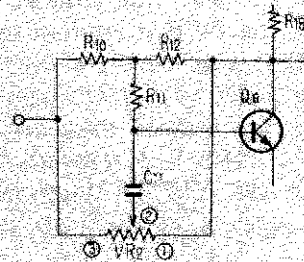


Fig. 2-a

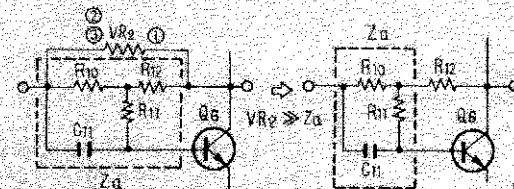


Fig. 2-b

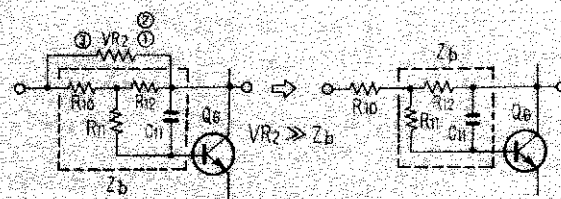


Fig. 2-c

3. ADJUSTMENT OF TURNOVER FREQUENCY

Turnover frequency is adjusted by selecting C9 and C10 as shown in Fig. 1-a, using the TURNOVER switch. By changing the values of C9 and C10, the time constants of the input circuit and the NFB are altered and the upper and lower limits of the low frequency are adjusted. In the case of the high frequency, by changing C11, as shown in Fig. 2-a, the upper and lower limits of the high frequency are also controlled.

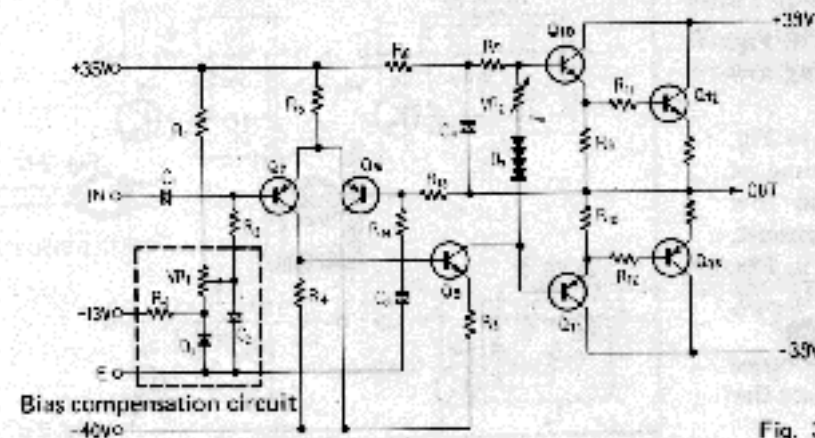
Power Amplifier (Q7 ~ Q13)

The power amplifier of the SA-7500 is an all-stage direct-coupled pure complementary OCL circuit; employing a differential amplifier and bias compensation circuit for stabilizing the operating point. The differential amplifier consisting of Q7 and Q8 in the first stage amplifies the input signal and stabilizes the voltage of the junction point of the power stage (Fig. 3).

Since the base voltage of Q7 becomes a basis of the voltage of the junction point of the power stage, the bias compensation circuit provided in the base circuit of Q7. D1, silicon diode, is used to compensate temperature.

VR1 is provided for adjusting the base voltage of Q7 to 0 volt, resulting in, the voltage of the junction point of the power stage to 0 volt.

Q9 is a voltage amplifier, drives next complementary stage. Since the boot-strap circuit is inserted into the load to Q9, the voltage gain of Q9 becomes large. The NFB is applied to the base of Q8 by R13, R14 and C3. The entire DC is also applied to the base of Q8 through R13. Thus, stabilization of the output midpoint potential is secured. The AC NFB is determined by the split circuit of R13 and R14 to improve the characteristics.



Protection Circuit (Q14 ~ Q20)

This protection circuit functions to protect the speakers from damage due to short-circuit of the load, etc., and performs a muting operation to cut noise and distortion which occur when switching the power on and off.

The circuit is shown in Fig. 4, and consists of a bridge type over-current and overload detector, a differential amplifier DC voltage detector, and a power switch on/off detector section.

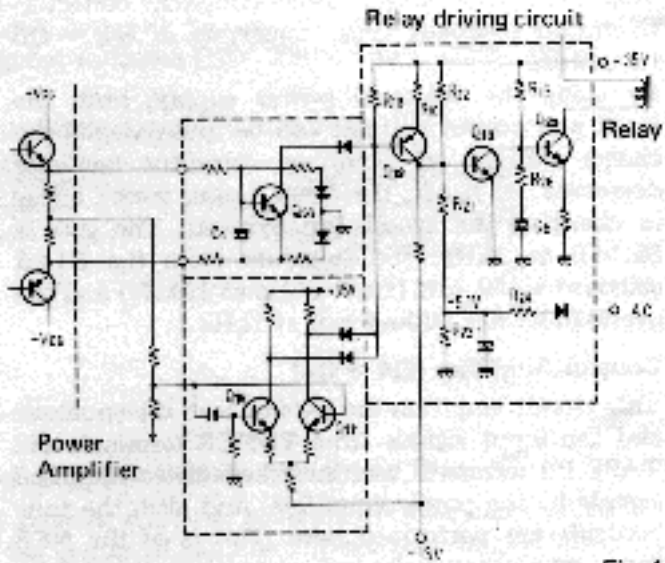


Fig. 4

1. OVER-CURRENT AND OVERLOAD DETECTION

The equivalent circuit of this detector section is shown in Fig. 5-a, and Fig. 5-b shows the equivalent circuit at the time of a positive half cycle. When this equivalent circuit is overloaded, the balance of the bridge, formed by R.E1, R1, R5 and RL, is disturbed, and a potential is produced between b and d in such a direction that Q14 is turned on.

When Q14 is turned on, the collector current increases, the relay driving circuit functions and the relay switch of the output circuit is turned off. After the cause of the overload is removed, the bias of Q14 is reduced and the relay switch turns on to automatically restore normal operation. Fig. 5-c shows the equivalent circuit at the time of a negative half cycle. In this circuit a potential is produced between b and e as above, and Q14 is turned on.

2. DETECTION OF DC VOLTAGE

This is a differential amplifier consisting of Q16 and Q17, as shown in Fig. 6. The bases of Q16 and Q17 are connected to the junction points of the right and left power amplifiers. When the DC balance of the power stage is lost for some reason, a potential difference is produced in the input signal to the differential amplifier, and the collector currents of Q16 and Q17 are put out of balance. Thus, the relay driving circuit functions, and the relay switch is turned off.

3. RELAY DRIVING CIRCUIT

Q18 ~ Q20, in Fig. 4, comprise the relay driving circuit.

In the normal condition reverse bias is applied to the base of Q18, and Q18 is in a cutout condition. When one of the above mentioned detection circuits goes on, current flows through R18, the base potential falls and Q18 is turned on. Consequently Q19 comes on and Q20 goes off. When Q20 goes off, the current of the relay circuit is cut, to release the switch of the output circuit.

When the power switch is turned on, a delay operation occurs in this circuit. R25, R26 and C6, in the base circuit of Q20, are the time-constant elements which determine the delay time. When the power switch is switched on, C6 charges to a potential of +35 volts through R25 and R26, and Q20 is kept in the OFF condition during this time. When the power source is switched off the muting operation of Q19 prevents shock noise. In the normal condition, the potentials of +35 volts and -5.1 volts are applied to Q19 through R21 and R22. The resultant potential at the base of Q19 is

-1 volt in the cutout condition. When the power supply is turned off, the potential of -5.1 volts disappears immediately, due to the small time constant of the power circuit. Thus a positive base potential remains, switching Q19 on, which in turn switches off Q20 and hence the relay.

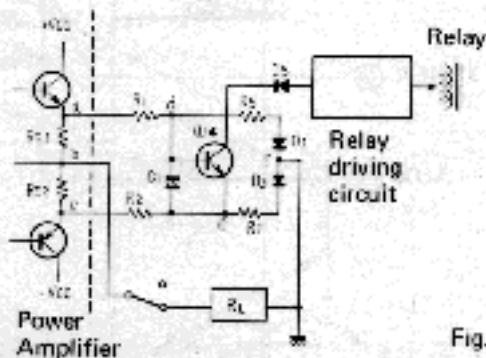


Fig. 5-a

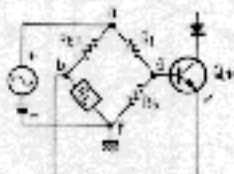


Fig. 5-b

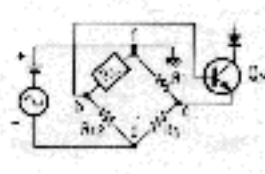


Fig. 5-c

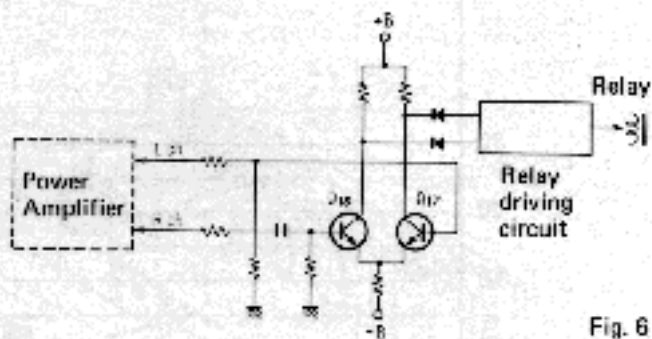


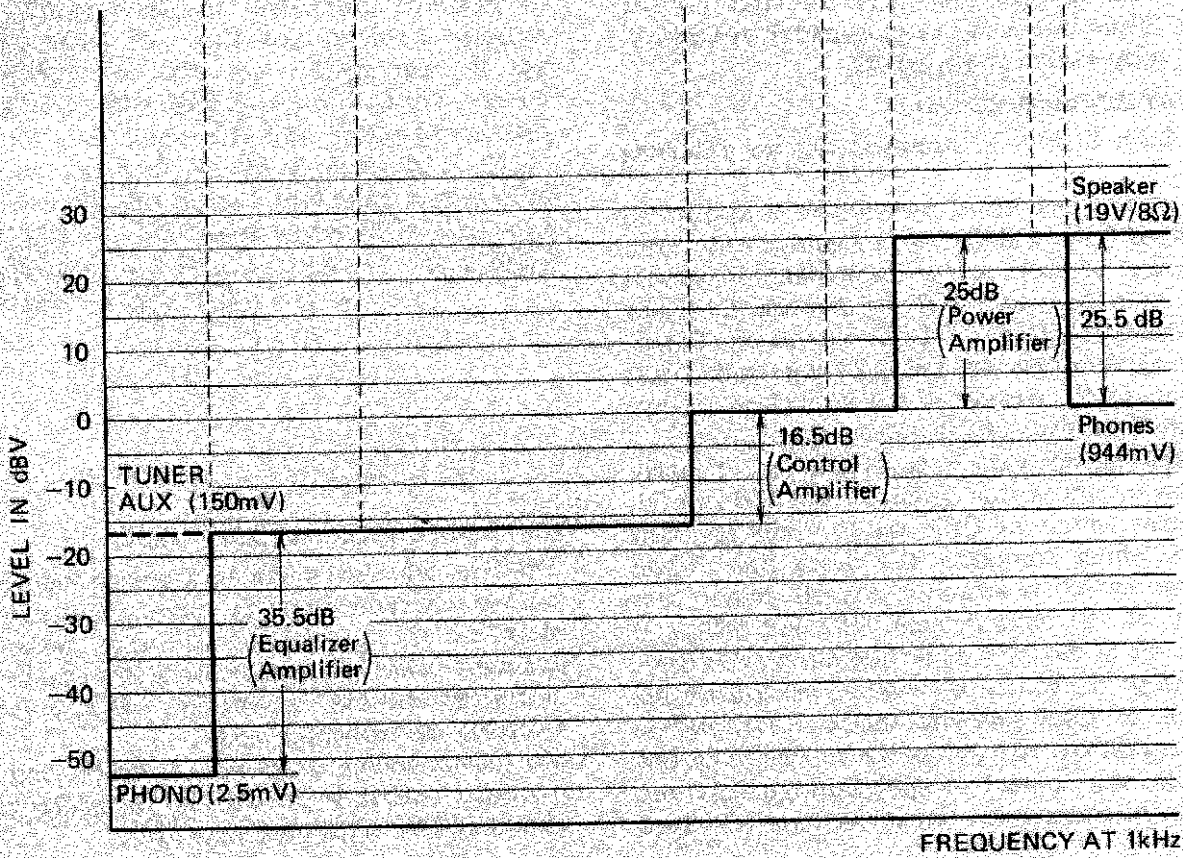
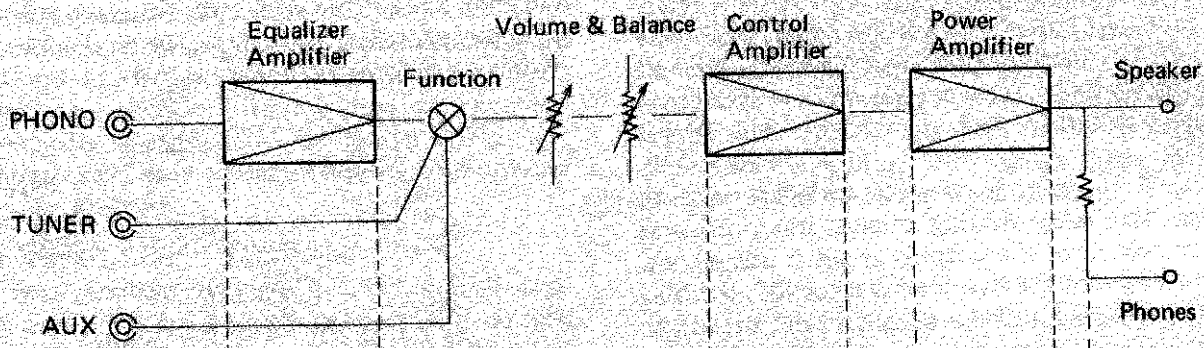
Fig. 6

Power Supply Circuit (Q21 ~ Q24)

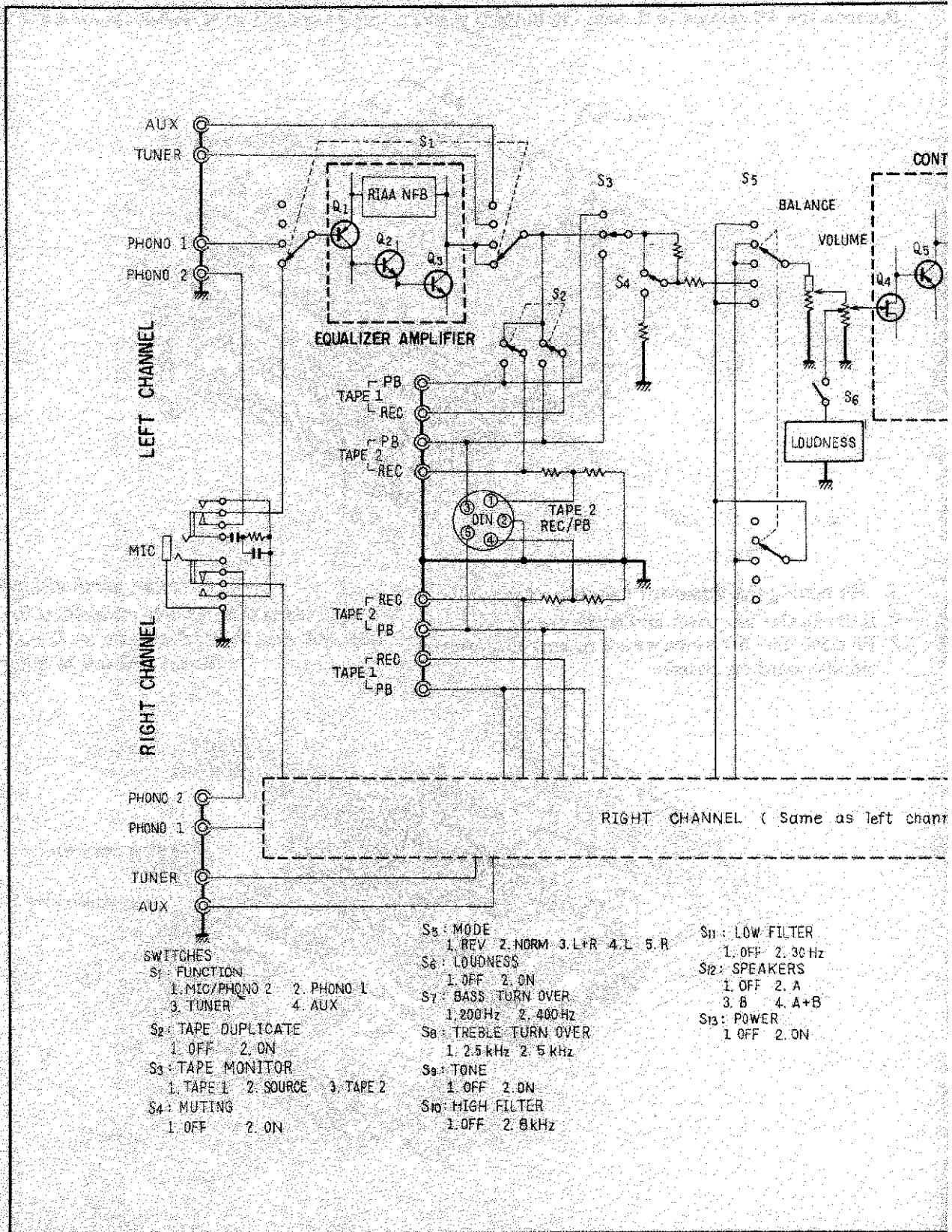
The SA-7500 uses a balanced power supply with a built-in constant potential circuit. Apart from the stage of the pre-driver, all other parts are in constant potential condition. Therefore, not only operating stability is superior, but it is useful in reducing the remaining noise.

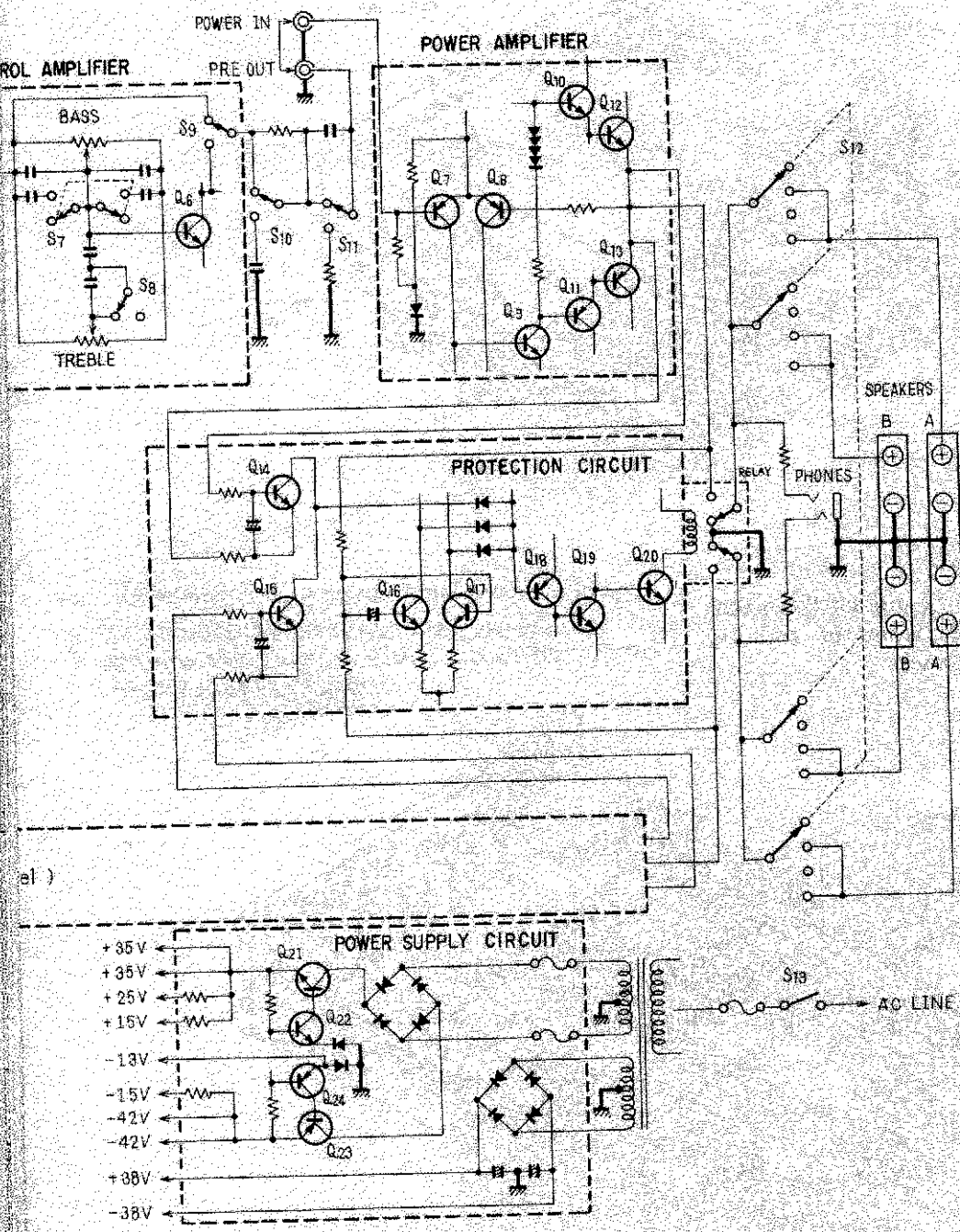
The power source, after the pre-driver stage of the amplifier circuit, is provided by the bridge rectifier circuit and the 10,000 μ F capacitor.

5. LEVEL DIAGRAM



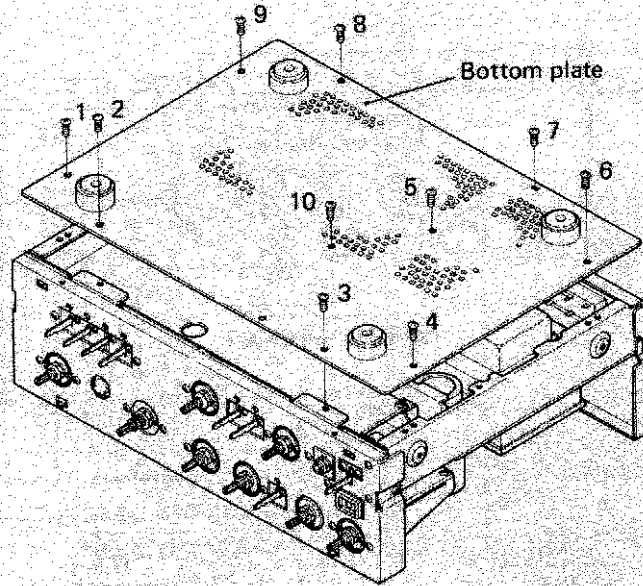
6. BLOCK DIAGRAM





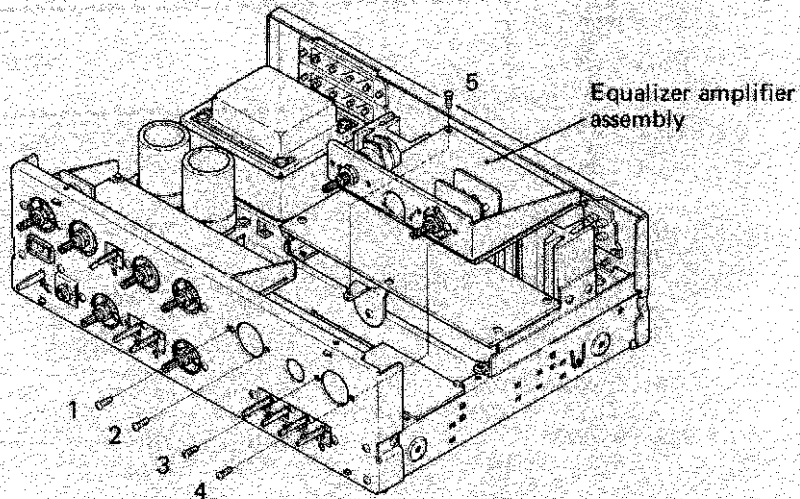
3. Removing the Bottom Plate

Remove the 10 screws to detach the bottom plate.



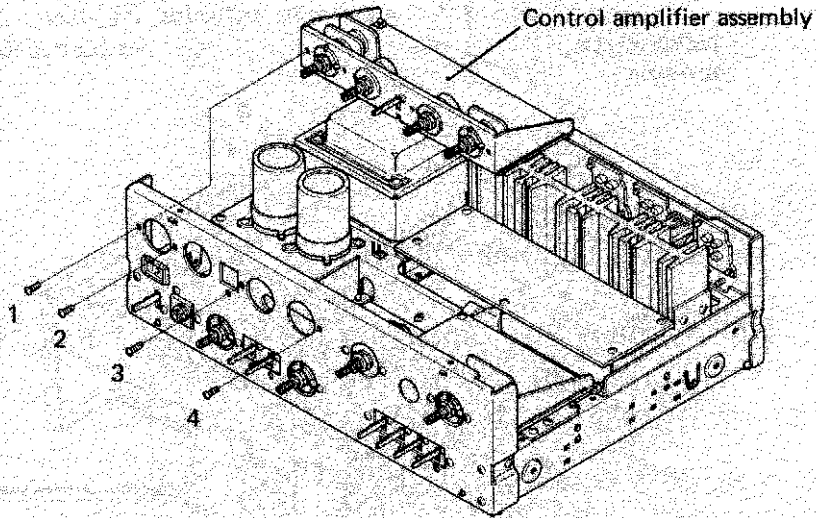
4. Removing the Equalizer Amplifier Assembly

1. Remove the top cover and front panel.
2. Remove the 5 screws which mount the printed circuit board on chassis.



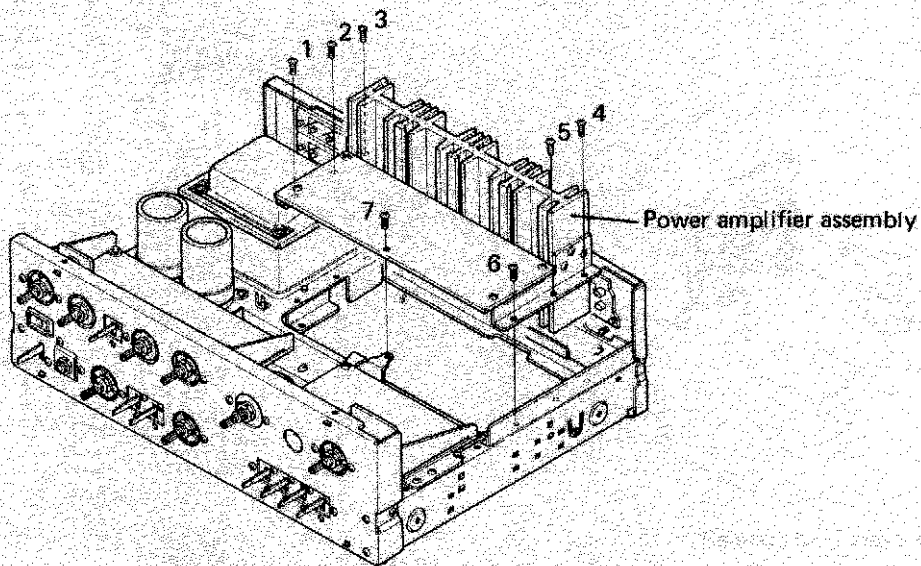
5. Removing the Control Amplifier Assembly

1. Remove the top cover and front panel.
2. Remove the 4 screws which mount the printed circuit board on chassis.



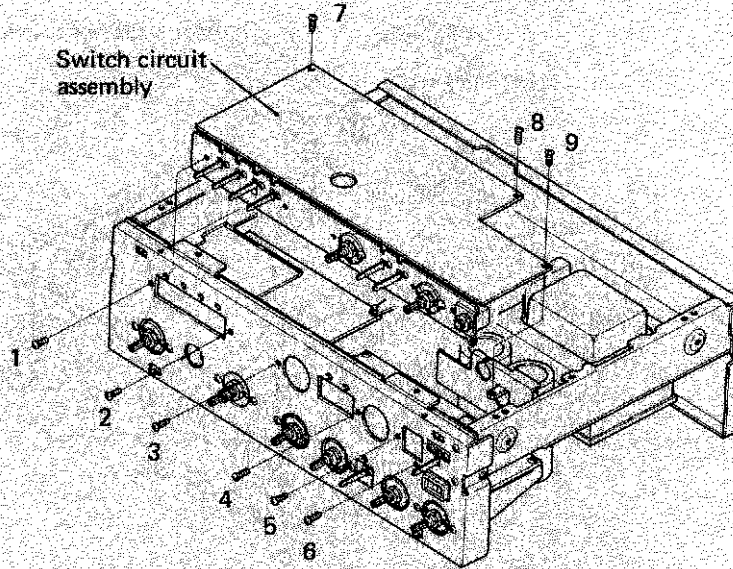
6. Removing the Power Amplifier Assembly

1. Remove the top cover and bottom plate.
2. Remove the 7 screws which mount the printed circuit board on chassis.



7. Removing the Switch Circuit Assembly

1. Remove the front panel and bottom plate.
2. Remove the 9 screws which mount the printed circuit board on the chassis.



CORRECTION OF SERVICE MANUAL

MODEL: SA-7500

PAGE: 17, 18

Please correct your Service Manual as follows.

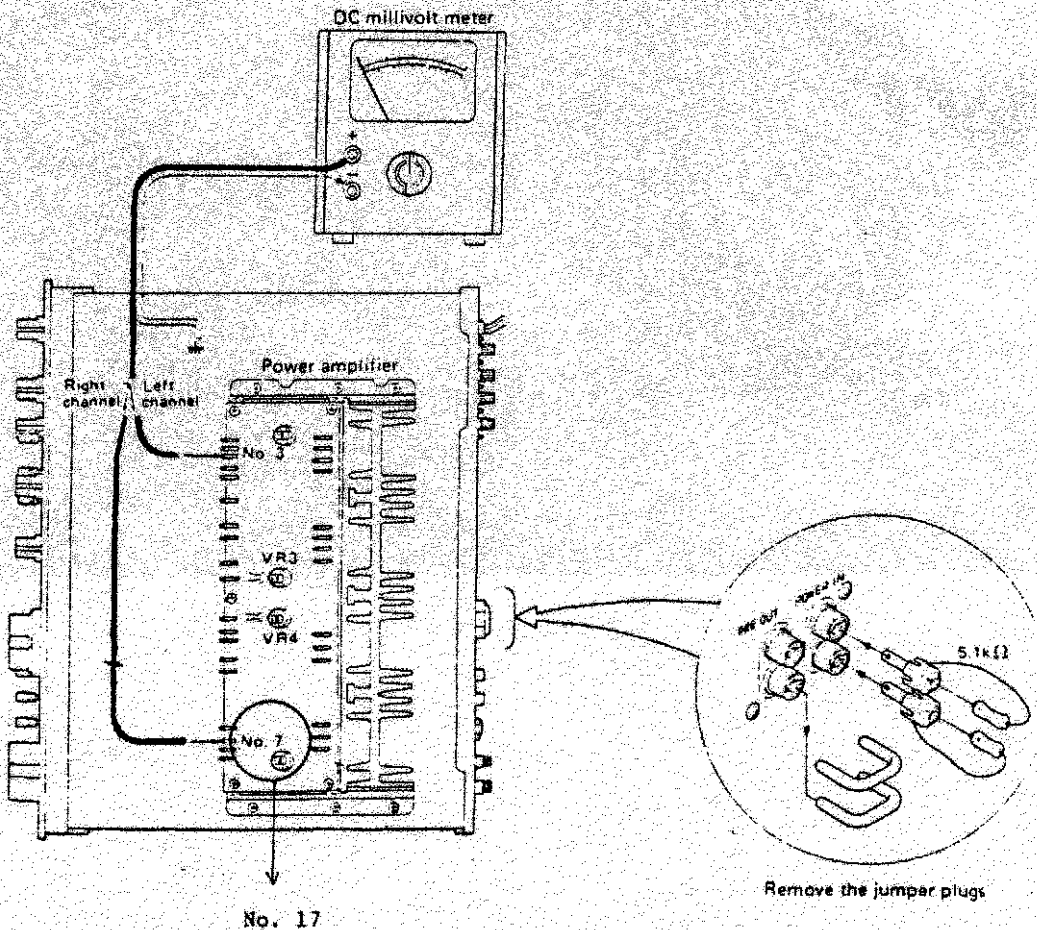
8. ADJUSTMENT

Set-up

- (a) Remove the top cover.
- (b) Before turning on the POWER switch, turn VR1 and VR2 all the way to the left (counter-clockwise).
- (c) For adjustment, wait 10 minutes after the POWER switch is turned on.

8.1 ADJUSTMENT FOR JUNCTION POINT

- 1. Connect as shown in Fig. 7.
- 2. Adjust VR3 (left channel, VR4: for right channel) until the DC voltmeter indicates 0V.



No. 17

Fig. 7

CH	
LA	
TX	
SC	
DATE SET	
5-31-77	

8.2 ADJUSTMENT FOR IDLE CURRENT

1. Connect as shown in Fig. 8.
2. Adjust VR1 (left channel, VR2: for right channel) until the DC voltmeter indicates 30mV.

Connect the DC Voltmeter between Pins No.1 (-) and No.2 (+) for Left channel, No.18 (+) and No.19 (-) for Right channel as shown in Fig.8.

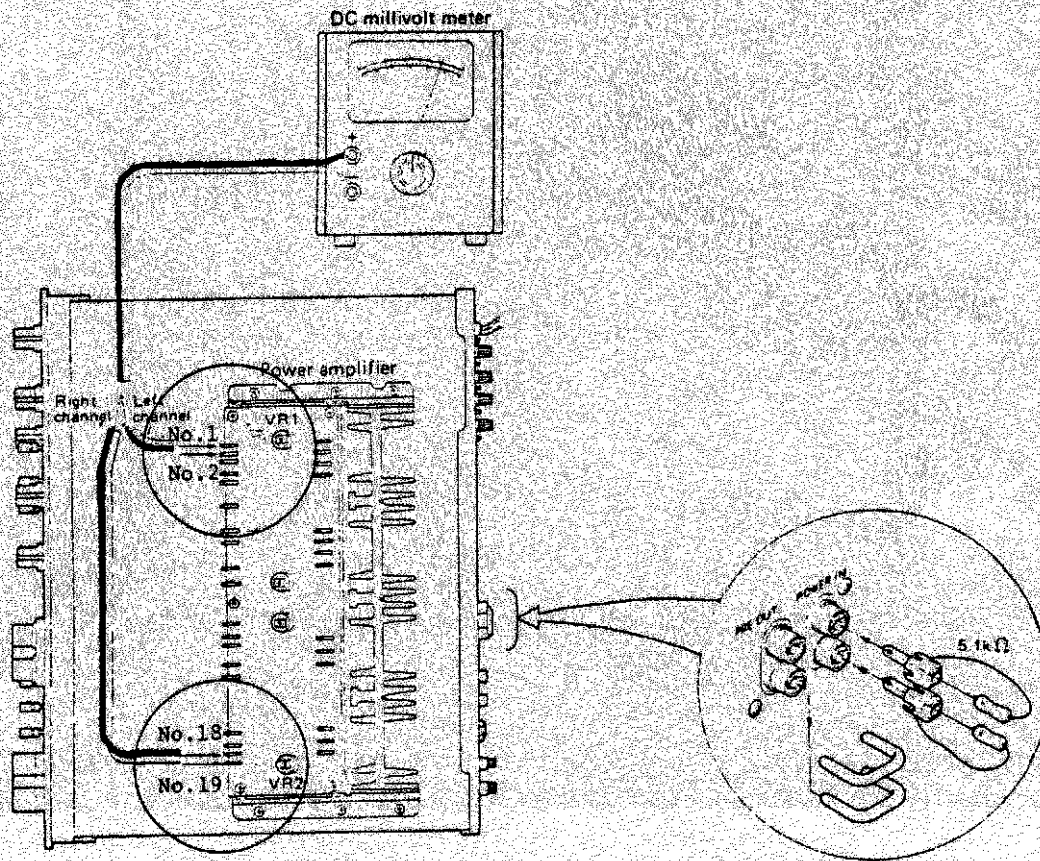
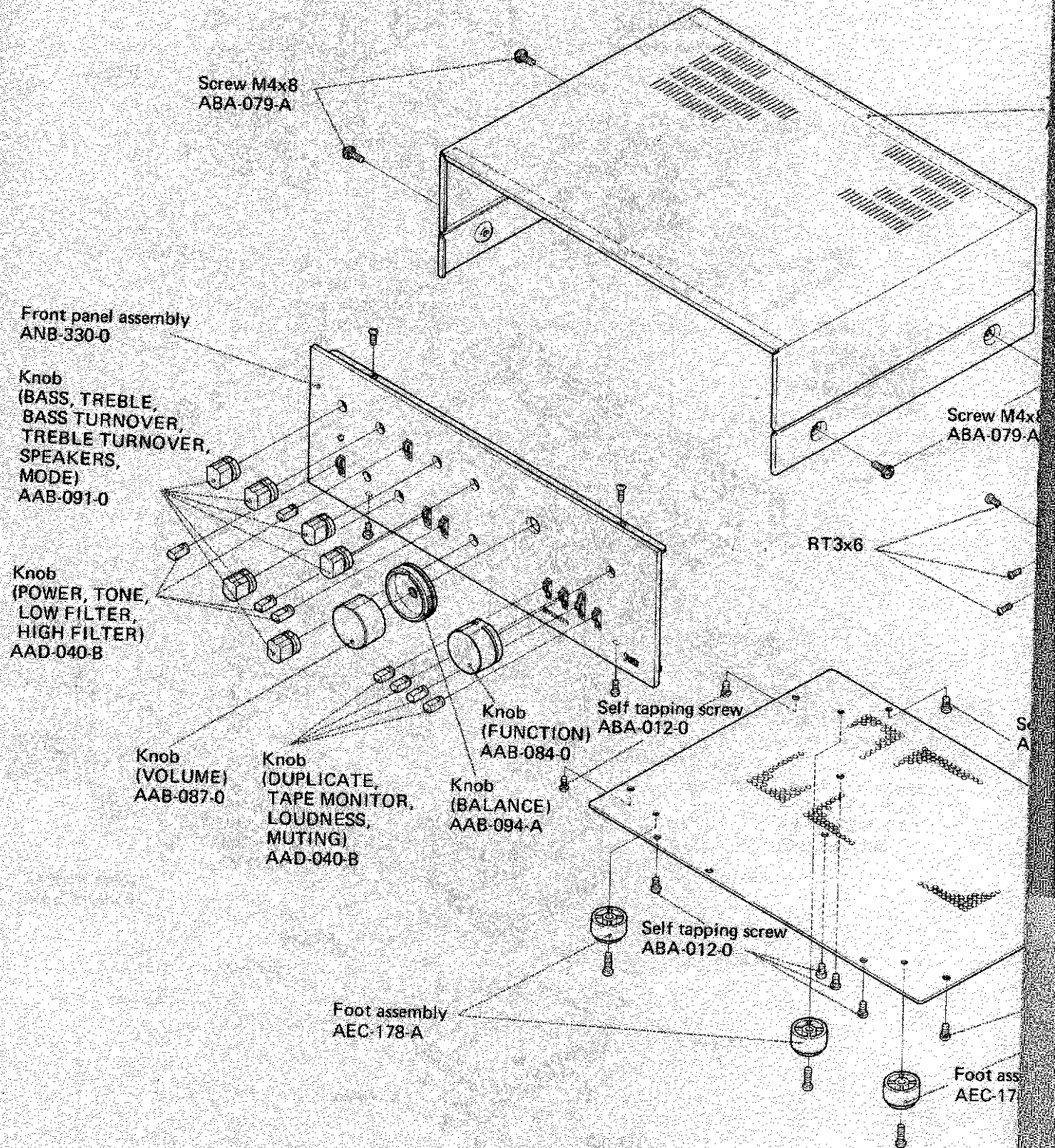


Fig. 8

9. EXPLODED VIEW

NOTE:

Parts indicated in green type cannot be supplied.



Top cover
ANE-076-0

Part 3
See page 23 (KCU type)
See page 24 (FV type)
See page 25 (GN type)

Self tapping screw
ABA-002-0

Part 1
See page 21

Self tapping screw
ABA-002-0

Part 2
See page 22

Self tapping screw
3A-012-0

Bottom plate

RT3x6

Self tapping screw
ABA-012-0

Assembly
3-A

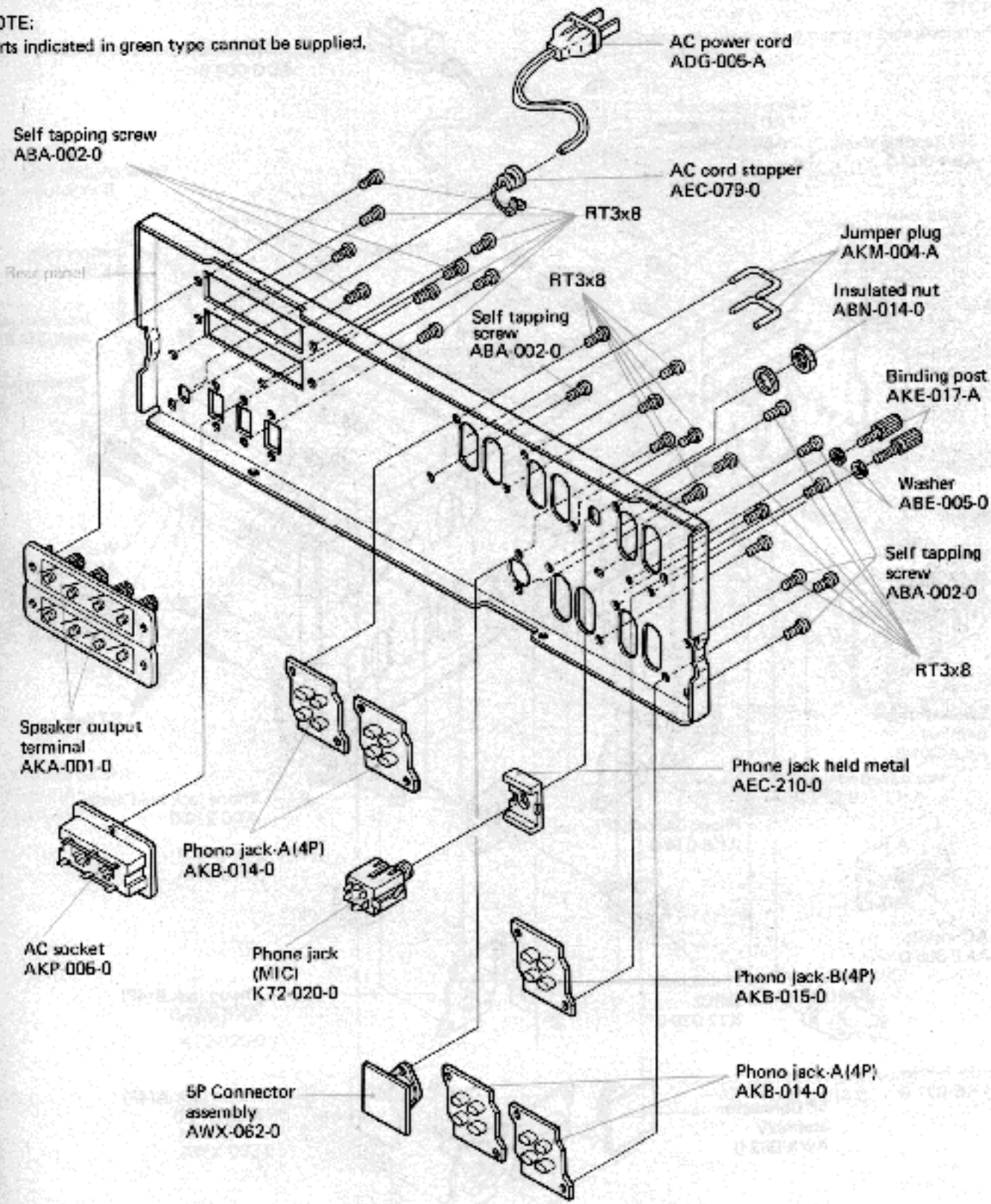
The following symbols stand for screws as shown
in Exploded View on pp. 19-27.

RT Round head tapping screw  

PART 3

For "KCU" type (120V model)

NOTE:
Parts indicated in green type cannot be supplied.

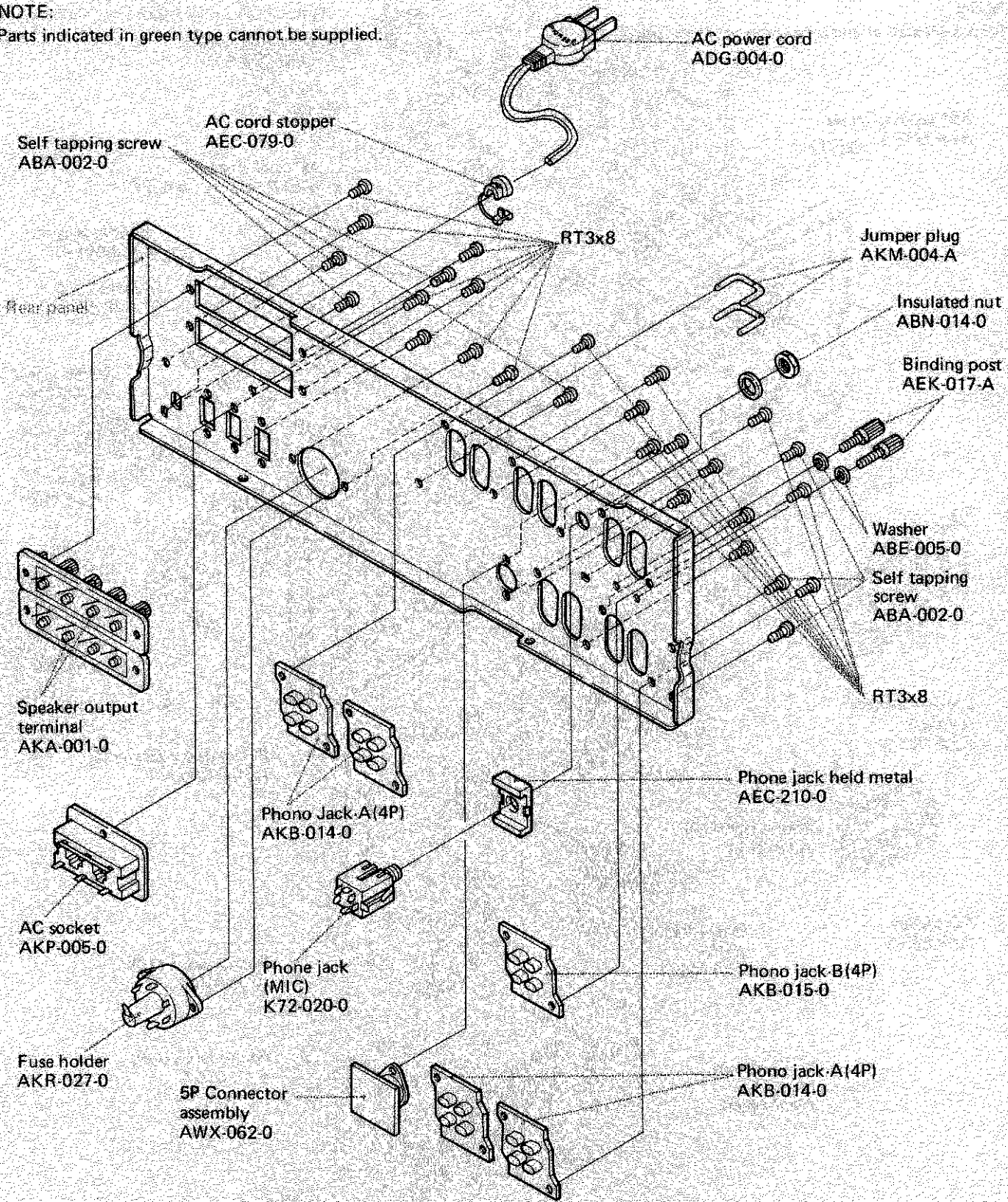


PART 3

For "FV" type (5-Voltage model)

NOTE:

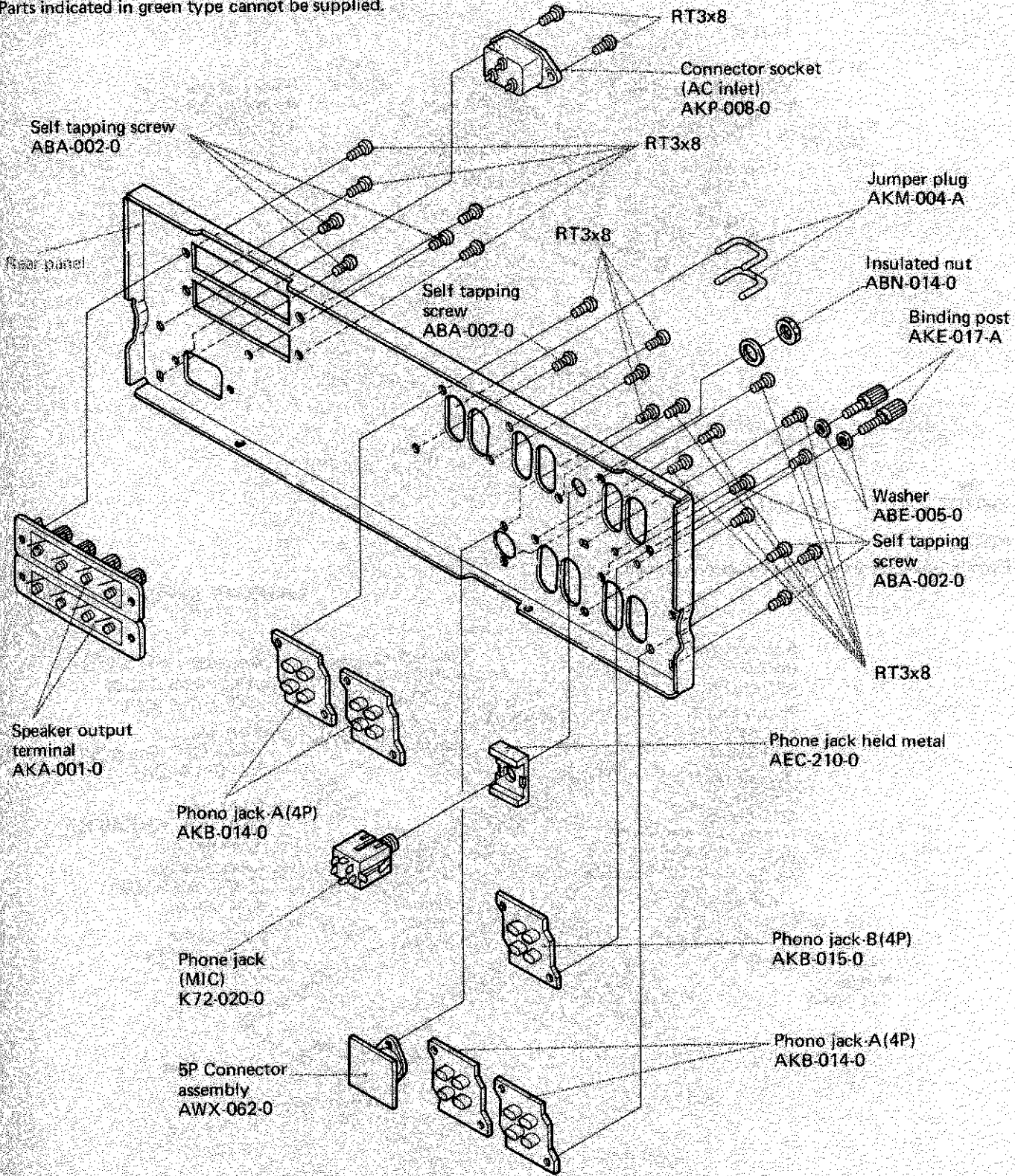
Parts indicated in green type cannot be supplied.



PART 3

For "GN" type (220V model)

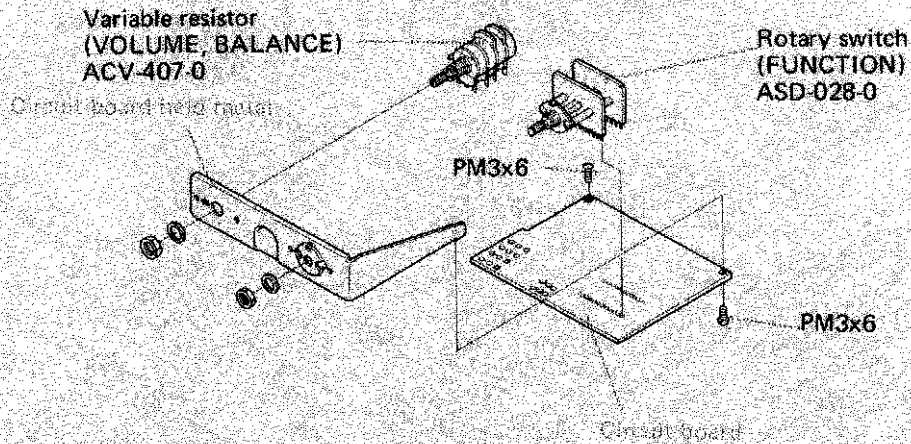
NOTE:
Parts indicated in green type cannot be supplied.



EQUALIZER AMPLIFIER ASSEMBLY

NOTE:

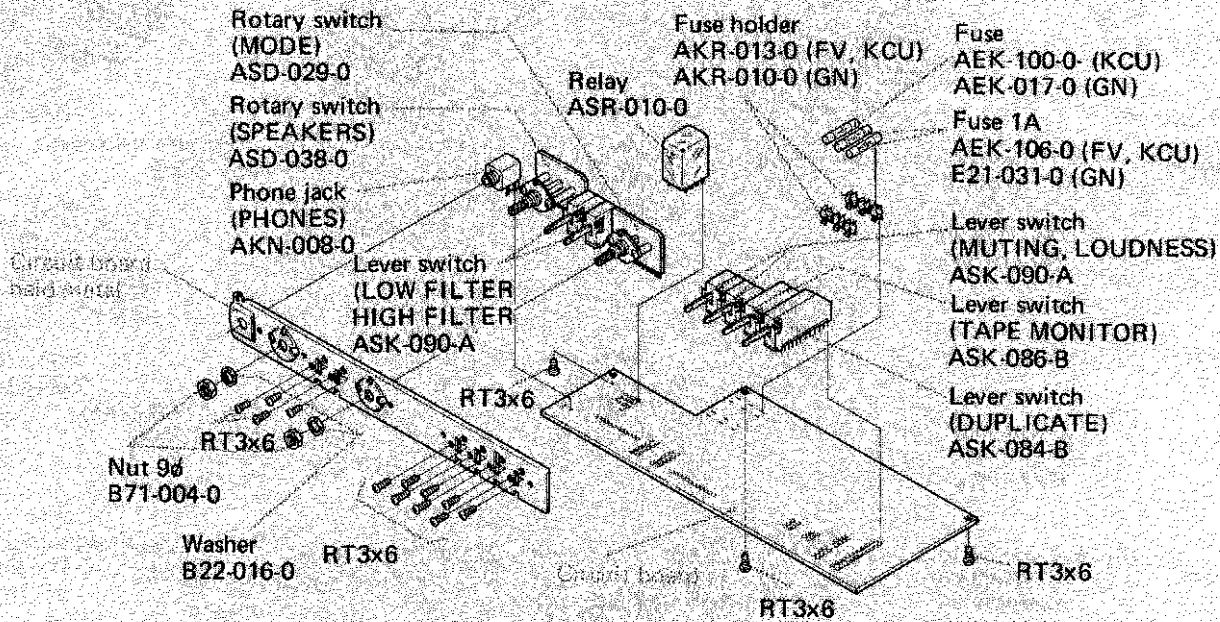
Parts indicated in green type cannot be supplied.



SWITCH CIRCUIT ASSEMBLY

NOTE:

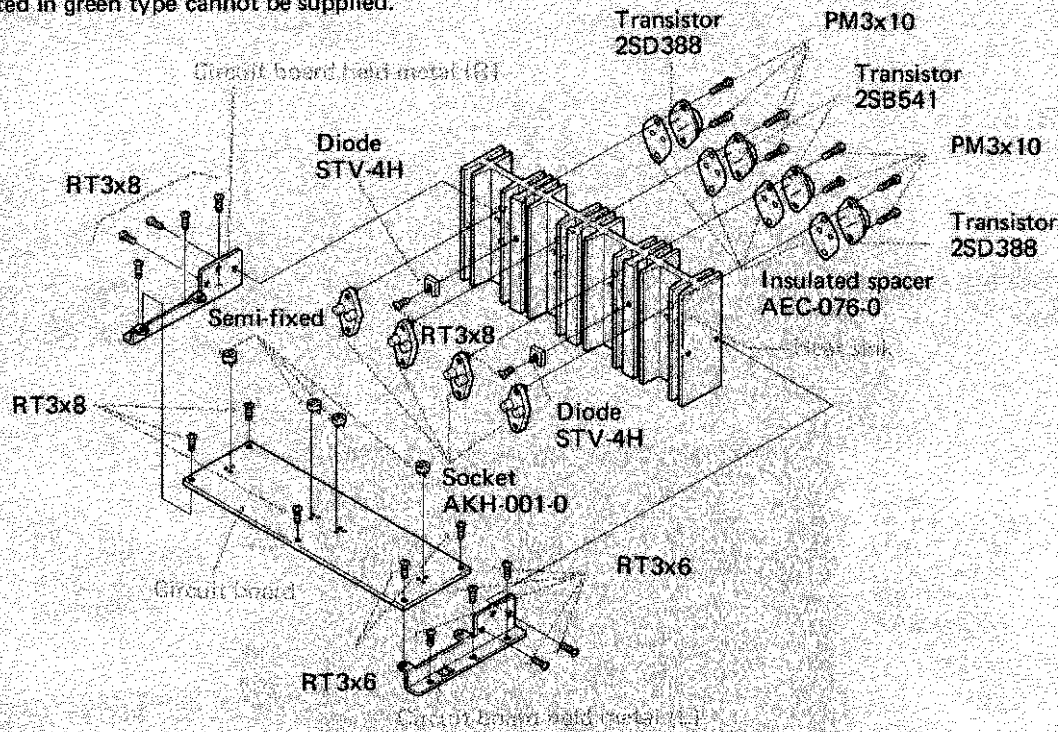
Parts indicated in green type cannot be supplied.



POWER AMPLIFIER ASSEMBLY

NOTE:

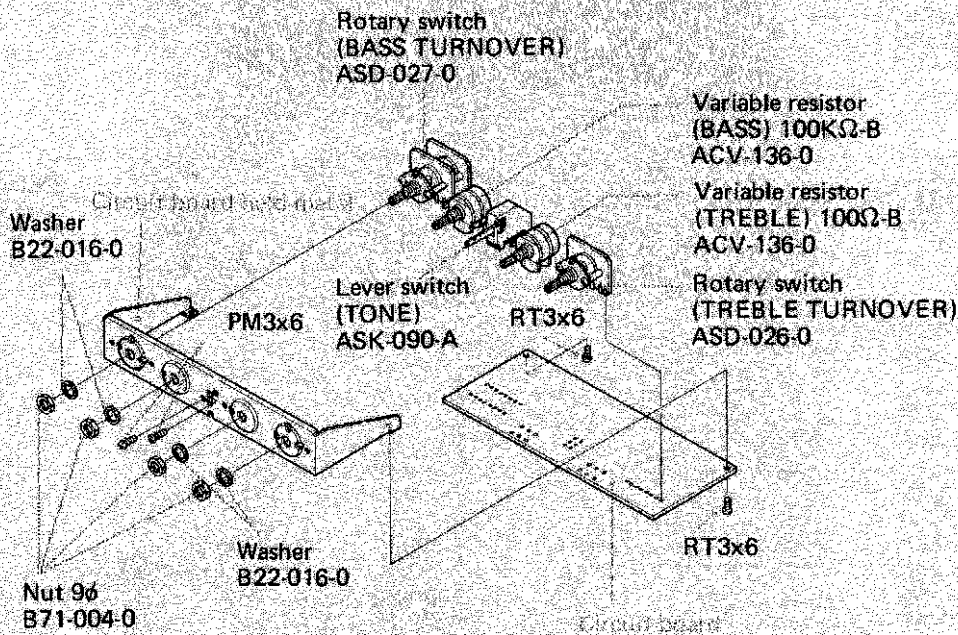
Parts indicated in green type cannot be supplied.



CONTROL AMPLIFIER ASSEMBLY

NOTE:

Parts indicated in green type cannot be supplied.



10. PARTS LOCATIONS

1. Top View

Power amplifier
assembly
AWH-040-0

Equalizer amplifier
assembly
AWF-015-B

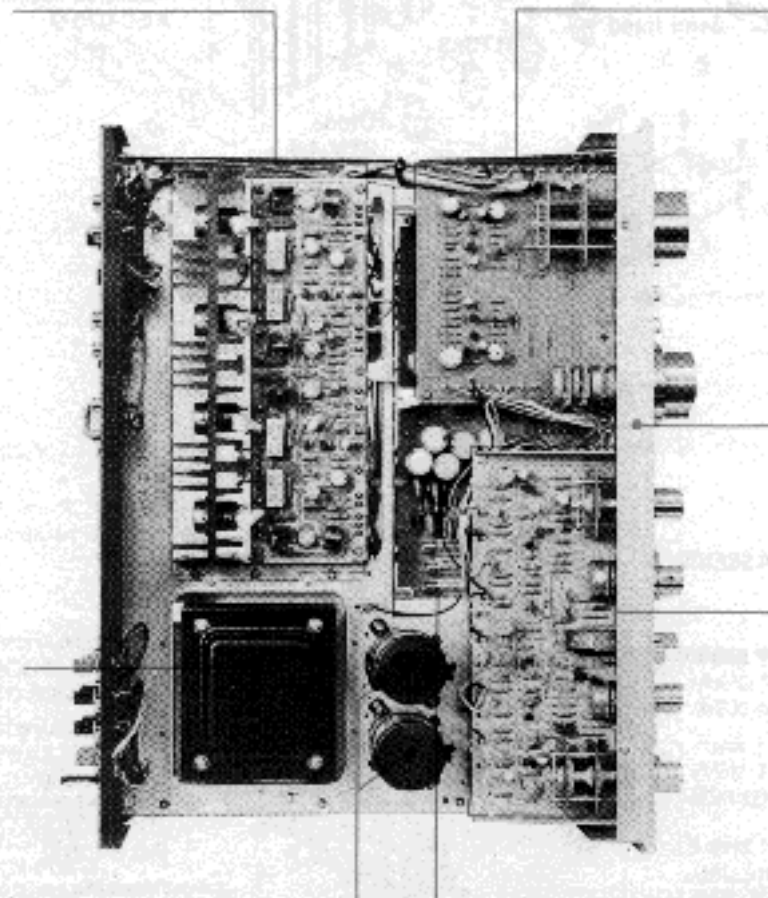
Power
transformer
ATT-228-B (KCU)
ATT-226-B (FV)
ATT-227-B (GN)

Front panel assembly
ANB-330-0

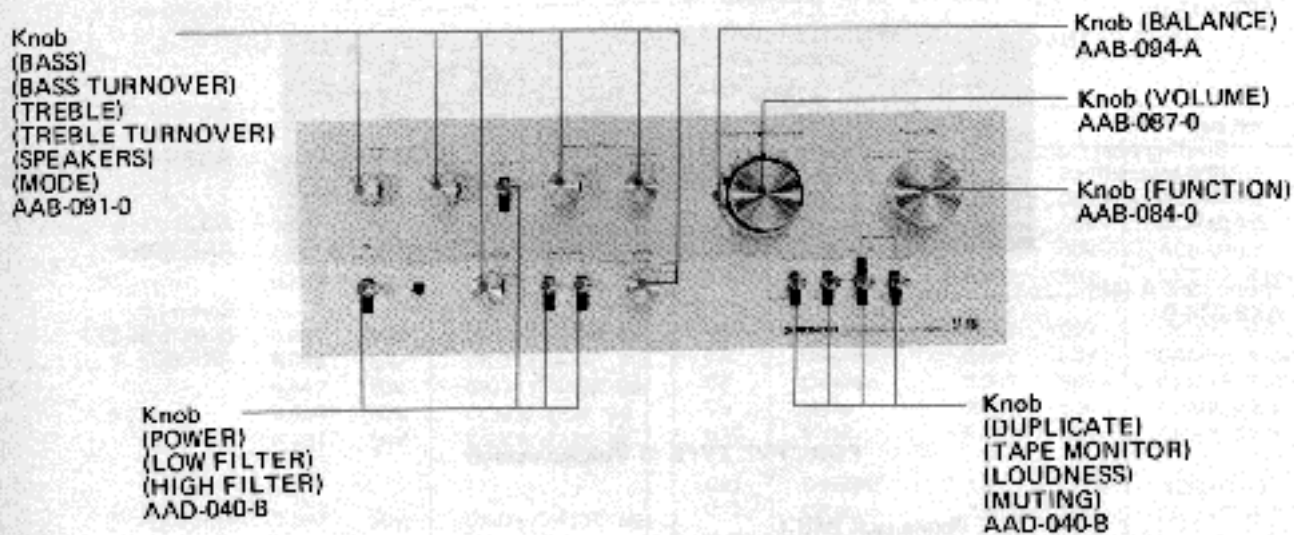
Control amplifier
assembly
AWG-033-0

Electrolytic
capacitor (C3, C4)
10,000 μ F, 50V
ACH-019-0

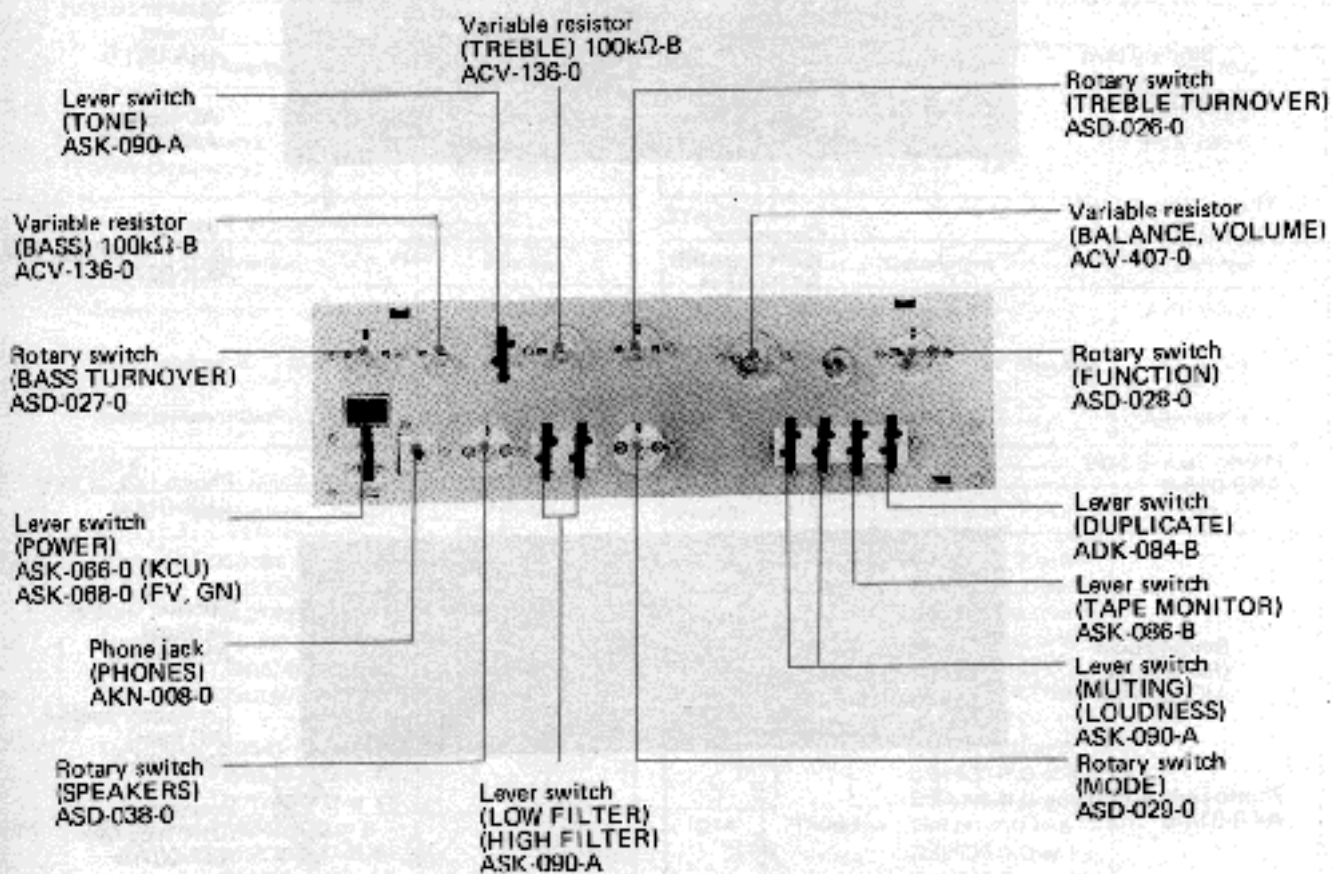
Switch circuit
assembly
AWM-072-C (KCU, FV)
AWM-078-B (GN)



2. Front View

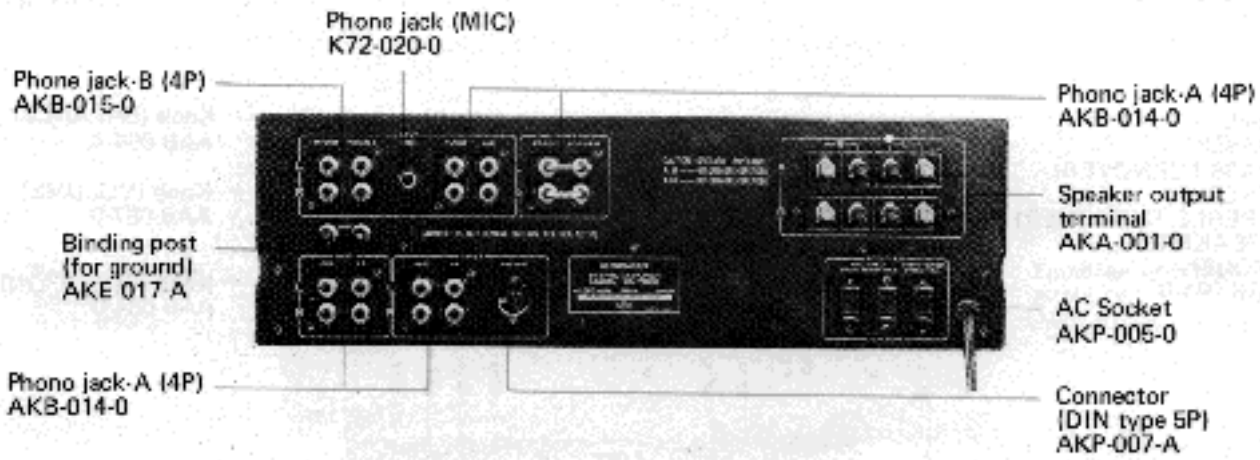


3. Front View with Panel Removed

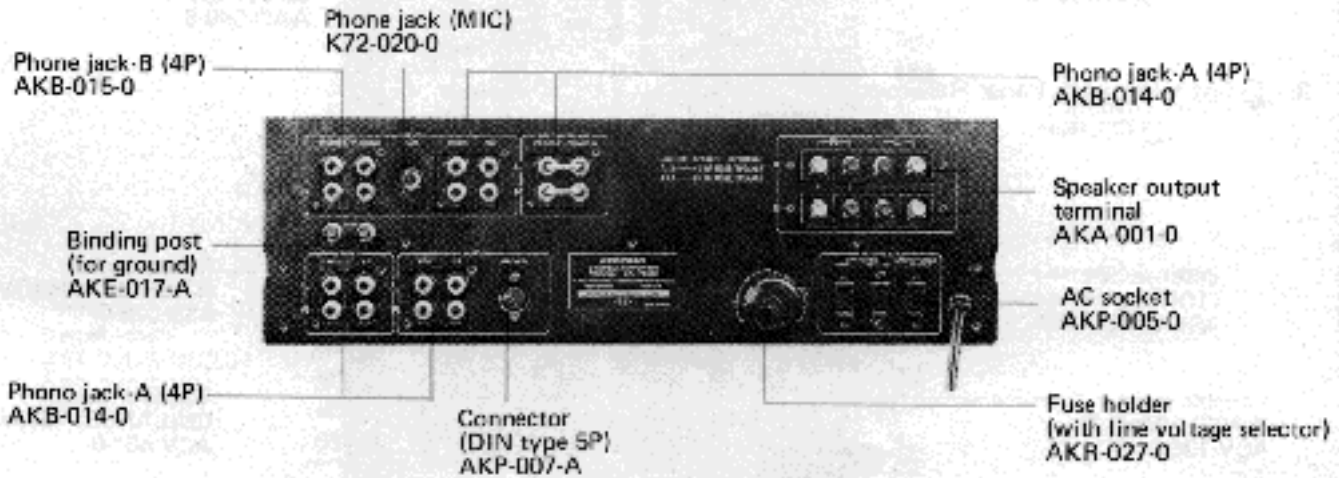


4. Rear View

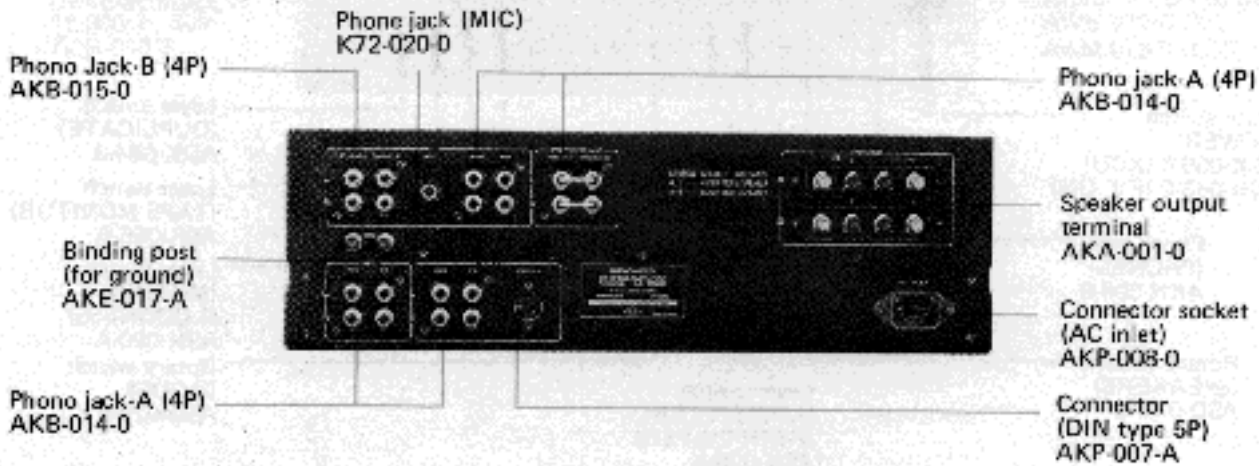
FOR "KCU" TYPE (120V model)



FOR "FV" TYPE (5-Voltage model)



FOR "GN" TYPE (220V model)



11. SCHEMATIC DIAGRAMS, P. C. BOARD PATTERNS AND PARTS LISTS

11.1 MISCELLANEOUS PARTS AND CIRCUIT CONNECTION DIAGRAMS

NOTE: ● Capacitors: in μF unless otherwise noted p.pF
● Resistors: in Ω , $\frac{1}{4}W$ unless otherwise noted k: k Ω , M: M Ω

Miscellaneous Parts List

For "KCU" type (120V model)

CAPACITORS

Symbol	Description	Part No.
C1	Ceramic 0.01 250V	ACG-001-0
C2	Ceramic 0.01 150V	ACG-003-0
C3	Electrolytic 10,000 50V	ACH-019-0
C4	Electrolytic 10,000 50V	ACH-019-0
C5	Ceramic 0.047 50V	CKDYF 473Z 50
C6	Ceramic 0.047 50V	CKDYF 473Z 50
C7	Ceramic 0.047 50V	CKDYF 473Z 50
C8	Ceramic 0.047 50V	CKDYF 473Z 50
C9	Mylar 0.0047 50V	CQMA 472K 50
C10	Mylar 0.0027 50V	CQMA 272K 50
C11
C12	Ceramic 0.047 50V	CKDYF 473Z 50

For "FV" type (5-voltage model)

CAPACITORS

Symbol	Description	Part No.
C1	Ceramic 0.01 250V	ACG-001-0
C2	Ceramic 0.01 250V	ACG-001-0
C3	Electrolytic 10,000 50V	ACH-019-0
C4	Electrolytic 10,000 50V	ACH-019-0
C5	Ceramic 0.047 50V	CKDYF 473Z 50
C6	Ceramic 0.047 50V	CKDYF 473Z 50
C7	Ceramic 0.047 50V	CKDYF 473Z 50
C8	Ceramic 0.047 50V	CKDYF 473Z 50
C9	Mylar 0.0047 50V	CQMA 472K 50
C10	Mylar 0.0027 50V	CQMA 272K 50
C11	Ceramic 0.01 250V	ACG-001-0
C12	Ceramic 0.047 50V	CKDYF 473Z 50

RESISTOR

Symbol	Description	Part No.
R1	Carbon film 39k	RD%PS 393J

RESISTOR

Symbol	Description	Part No.
R1	Carbon film 39k	RD%PS 393J

FUSES

Symbol	Description	Part No.
FU1	Fuse (Primary) 4A	AEK-100-0
FU2	Fuse (Secondary) 1A	AEK-106-0
FU3	Fuse (Secondary) 1A	AEK-106-0

FUSES

Symbol	Description	Part No.
FU1	Fuse (Primary) 2A	AEK-103-0
FU2	Fuse (Secondary) 1A	AEK-106-0
FU3	Fuse (Secondary) 1A	AEK-106-0

OTHERS

Symbol	Description	Part No.
T1	Power transformer	ATT-228-B
PL1	Lamp with wires 8V 50mA	AEL-023-0
S10	Lever switch (POWER)	ASK-066-0

OTHERS

Symbol	Description	Part No.
T1	Power transformer	ATT-226-B
PL1	Lamp with wires 8V 50mA	AEL-023-0
S10	Lever switch (POWER)	ASK-068-0

TRANSISTORS

Symbol	Description	Part No.
Q11	Transistor 2SD388-R,Q or S (2SD370-R,O or Y) (2SC1403-R,O or Y)	
Q12	Transistor 2SD388-R,Q or S (2SD370-R,O or Y) (2SC1403-R,O or Y)	
Q13	Transistor 2SB541-R,Q or S (2SB530-R,O or Y) (2SA745-R,O or Y)	
Q14	Transistor 2SB541-R,Q or S (2SB530-R,O or Y) (2SA745-R,O or Y)	

TRANSISTORS

Symbol	Description	Part No.
Q11	Transistor 2SD388-R,Q or S (2SD370-R,O or Y) (2SC1403-R,O or Y)	
Q12	Transistor 2SD388-R,Q or S (2SD370-R,O or Y) (2SC1403-R,O or Y)	
Q13	Transistor 2SB541-R,Q or S (2SB530-R,O or Y) (2SA745-R,O or Y)	
Q14	Transistor 2SB541-R,Q or S (2SB530-R,O or Y) (2SA745-R,O or Y)	

For "GN" type (220V model)

CAPACITORS

Symbol	Description			Part No.
C1
C2	Ceramic	0.01	250V	ACG-001-0
C3	Electrolytic	10,000	50V	ACH-019-0
C4	Electrolytic	10,000	50V	ACH-019-0
C5	Ceramic	0.047	50V	CKDYF 473Z 50
C6	Ceramic	0.047	50V	CKDYF 473Z 50
C7	Ceramic	0.047	50V	CKDYF 473Z 50
C8	Ceramic	0.047	50V	CKDYF 473Z 50
C9	Mylar	0.0047	50V	CQMA 472K 50
C10	Mylar	0.0027	50V	CQMA 272K 50
C11
C12	Ceramic	0.047	50V	CKDYF 473Z 50

RESISTOR

Symbol	Description		Part No.
R1	Carbon film	39k	RD4PS 393J

FUSES

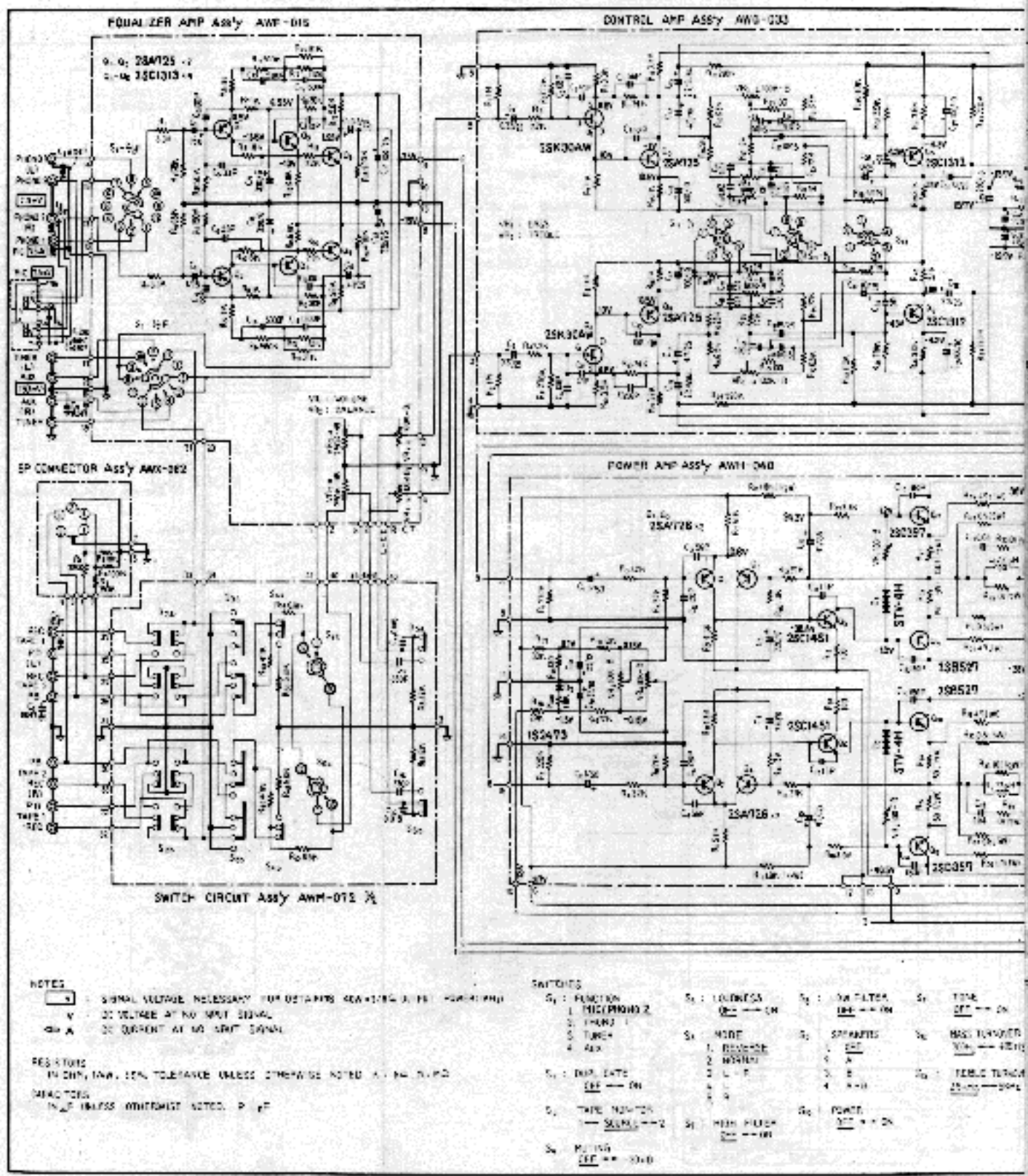
Symbol	Description		Part No.
FU1	Fuse (Primary)	2A	AEK-017-0
FU2	Fuse (Secondary)	1A	E21-031-0
FU3	Fuse (Secondary)	1A	E21-031-0

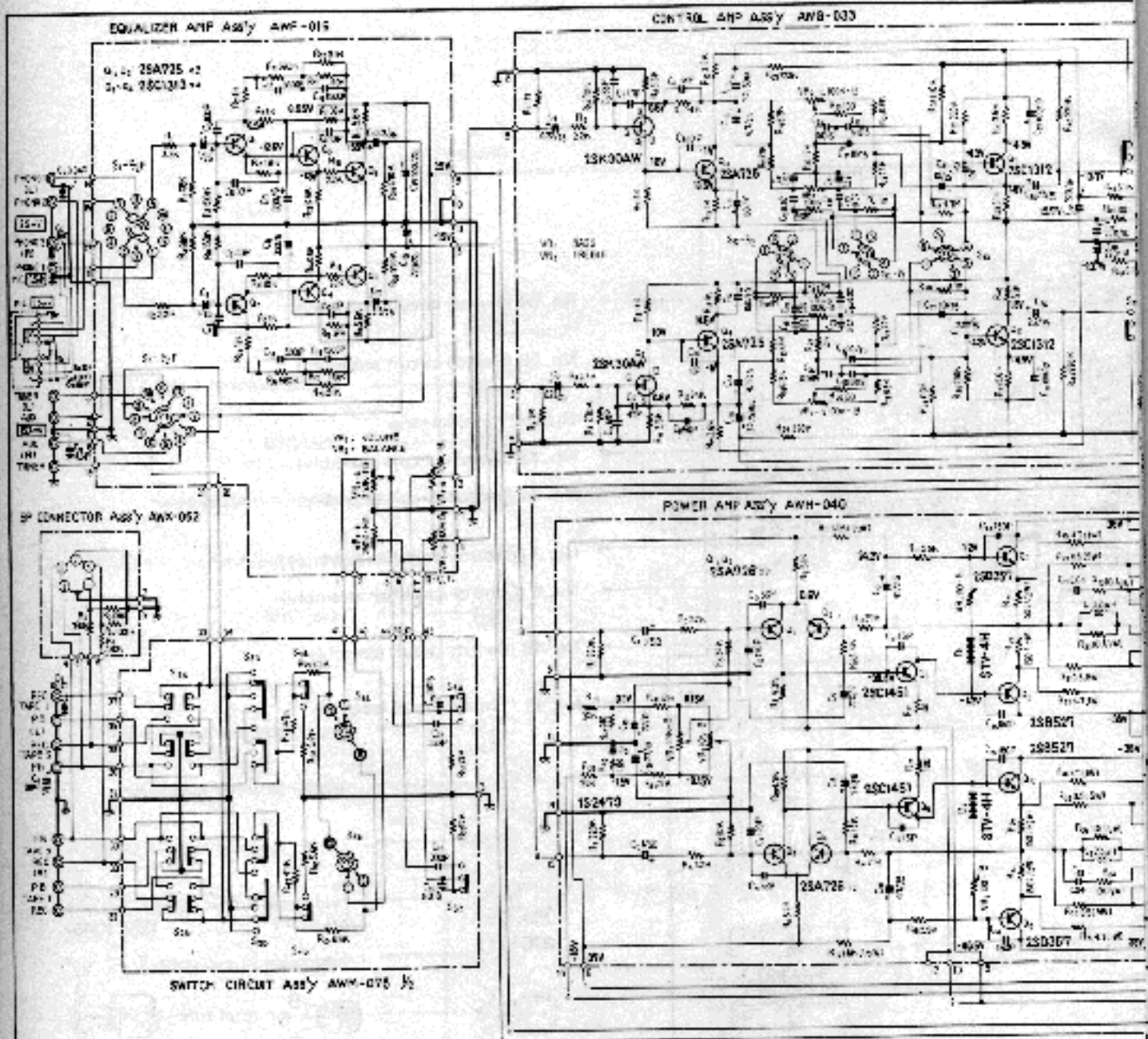
OTHERS

Symbol	Description		Part No.
T1	Power transformer		ATT-227-B
PL1	Lamp with wires	8V 50mV	AEL-023-0
S10	Lever switch (POWER)		ASK-068-0

TRANSISTORS

Symbol	Description		Part No.
Q11	Transistor	2SD388-R,Q or S (2SD370-R,Q or Y) (2SC1403-R,Q or Y)	
Q12	Transistor	2SD388-R,Q or S (2SD370-R,Q or Y) (2SC1403-R,Q or Y)	
Q13	Transistor	2SB541-R,Q or S (2SB530-R,Q or Y) (2SA745-R,Q or Y)	
Q14	Transistor	2SB541-R,Q or S (2SB530-R,Q or Y) (2SA745-R,Q or Y)	





NOTES

1. SIGNAL VOLTAGE NECESSARY FOR OBTAINING MAXIMUM OUTPUT POWERING

2. DC VOLTAGE AT NO LOAD SIGNAL

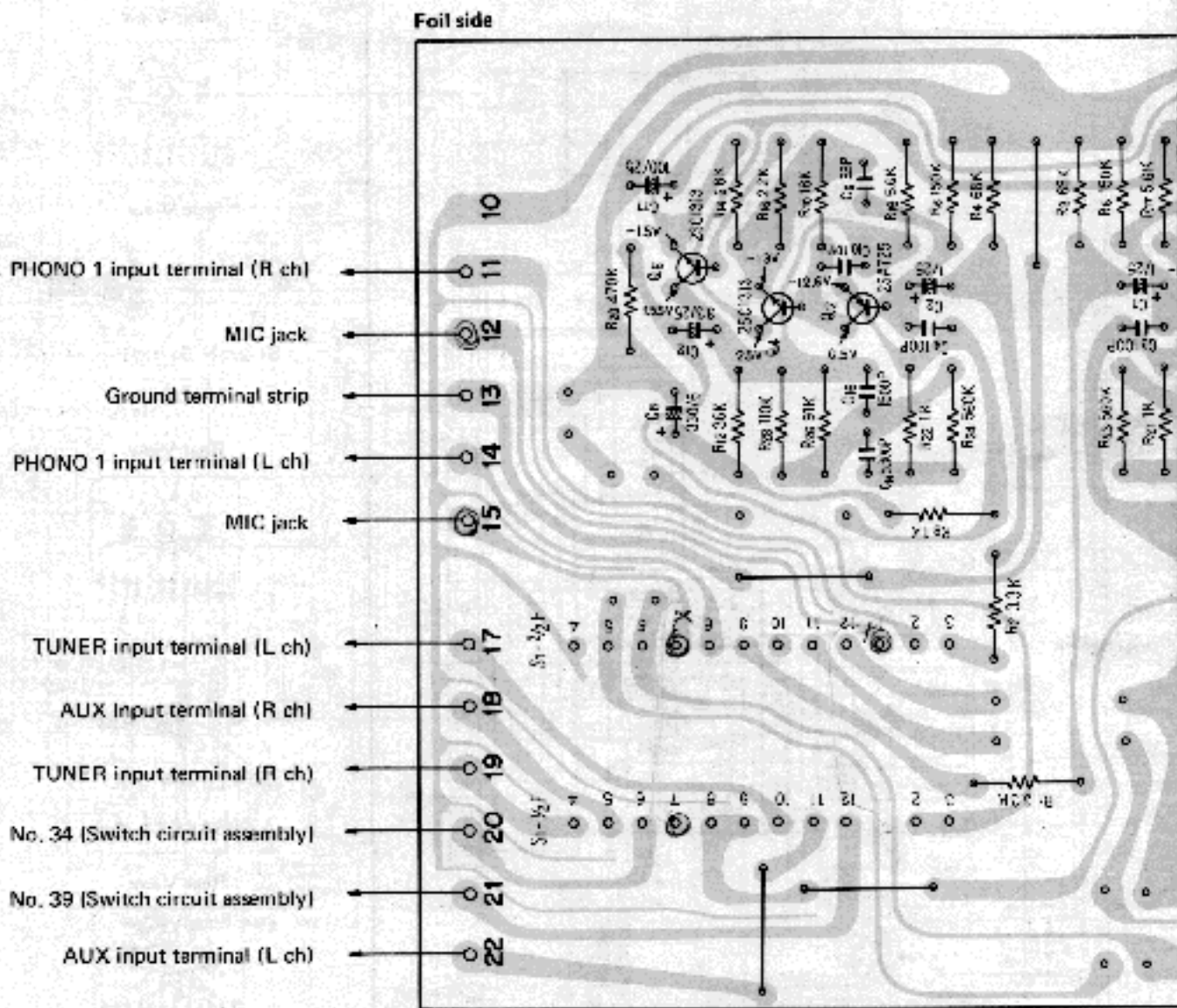
3. DC CURRENT AT NO LOAD SIGNAL

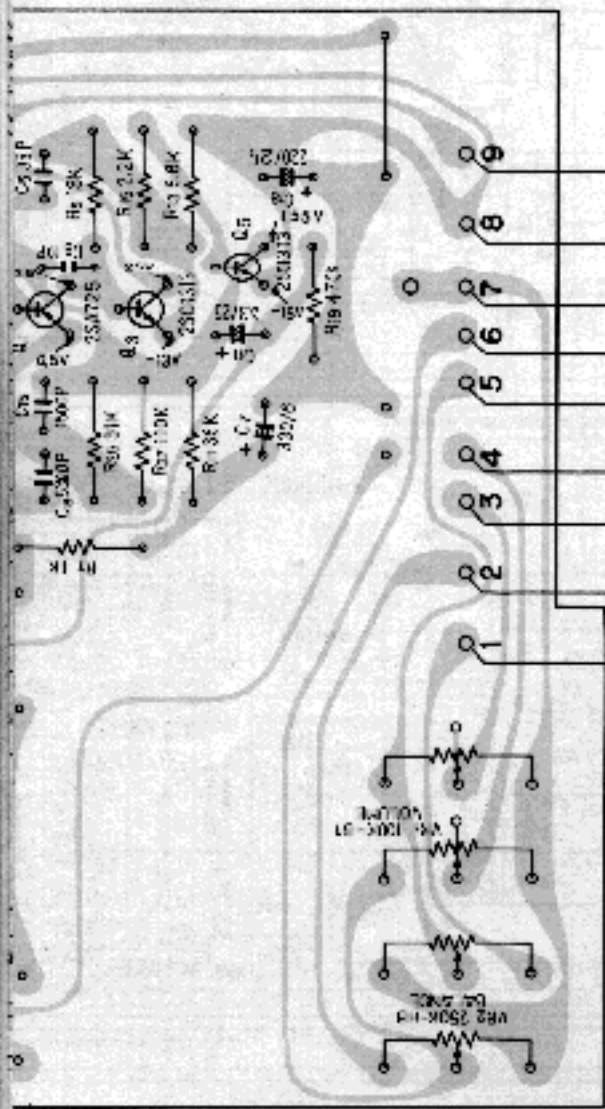
RESISTORS
 IN OHM, K Ω , M Ω , 5% TOLERANCE UNLESS OTHERWISE NOTED R, K, M, MC

CAPACITORS
 IN μ F UNLESS OTHERWISE NOTED P, μ F

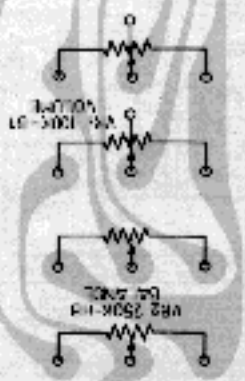
- SWITCHES**
- 1. FUNCTION
 - 2. BASS
 - 3. TREBLE
 - 4. MUTE
 - 5. DUPLICATE
 - 6. TONE CENTER
 - 7. MUTE
 - 8. LOUDNESS
 - 9. MODE
 - 10. SPEAKERS
 - 11. TONE
 - 12. SPEAKERS
 - 13. TONE
 - 14. TONE
 - 15. TONE
 - 16. TONE
 - 17. TONE
 - 18. TONE
 - 19. TONE
 - 20. TONE

11.2 EQUALIZER AMPLIFIER ASSEMBLY (AWF-015-B)

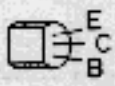




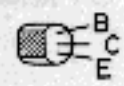
- No. 54 (Switch circuit assembly)
- No. 56 (Switch circuit assembly)
- Ground terminal strip
- No. 45 (Switch circuit assembly)
- No. 44 (Switch circuit assembly)
- No. 3 (Control amplifier assembly)
- No. 9 (Control amplifier assembly)
- No. 40 (Switch circuit assembly)
- No. 41 (Switch circuit assembly)



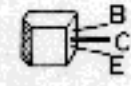
2SA725
2SC1313

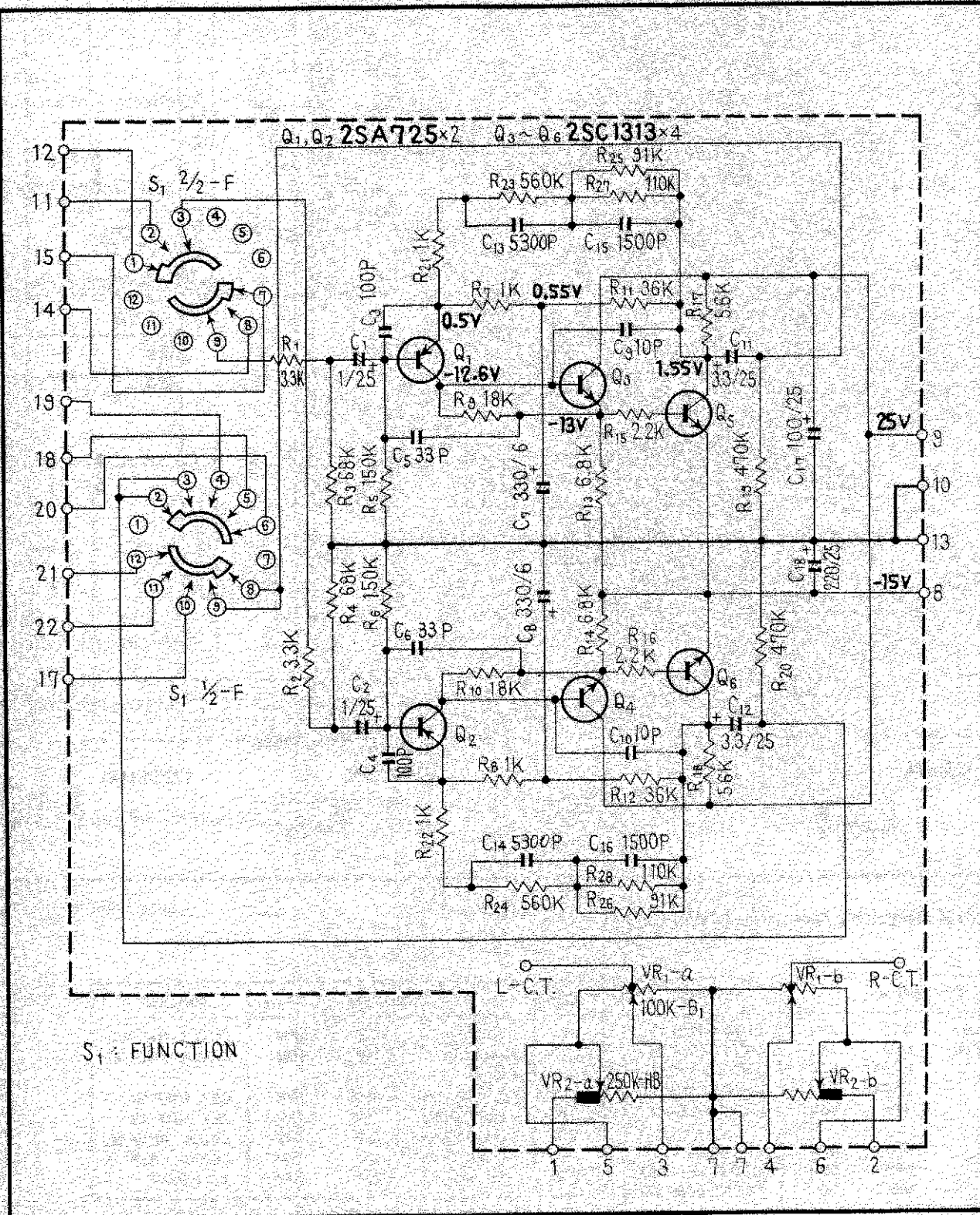


(2SA763P)



(2SC1345)





Parts List of Equalizer Amplifier Assembly (AWF-015-B)

CAPACITORS

Symbol	Description			Part No.
C1	Electrolytic	1	25V	CSSA 010M 25
C2	Electrolytic	1	25V	CSSA 010M 25
C3	Ceramic	100p	50V	CCDSL 101K 50
C4	Ceramic	100p	50V	CCDSL 101K 50
C5	Ceramic	33p	50V	CCDSL 330K 50
C6	Ceramic	33p	50V	CCDSL 330K 50
C7	Electrolytic	330	6V	CEA 331P 6
C8	Electrolytic	330	6V	CEA 331P 6
C9	Ceramic	10p	50V	CCDSL 100D 50
C10	Ceramic	10p	50V	CCDSL 100D 50
C11	Electrolytic	3.3	25V	CEANL 3R3P 25
C12	Electrolytic	3.3	25V	CEANL 3R3P 25
C13	Styrol	0.0053	50V	CQSA 532G 50
C14	Styrol	0.0053	50V	CQSA 532G 50
C15	Styrol	0.0015	50V	CQSA 152G 50
C16	Styrol	0.0015	50V	CQSA 152G 50
C17	Electrolytic	100	25V	CEA 101P 25
C18	Electrolytic	220	25V	CEA 221P 25

RESISTORS

Symbol	Description			Part No.
R1	Carbon film	3.3k		RD%PS 332J
R2	Carbon film	3.3k		RD%PS 332J
R3	Carbon film	68k		RD%PS 683J
R4	Carbon film	68k		RD%PS 683J
R5	Carbon film	150k		RD%PS 154J
R6	Carbon film	150k		RD%PS 154J
R7	Carbon film	1k		RD%PS 102J
R8	Carbon film	1k		RD%PS 102J
R9	Carbon film	18k		RD%PS 183J
R10	Carbon film	18k		RD%PS 183J
R11	Carbon film	36k		RD%PS 363J
R12	Carbon film	36k		RD%PS 363J
R13	Carbon film	6.8k		RD%PS 682J
R14	Carbon film	6.8k		RD%PS 682J
R15	Carbon film	2.2k		RD%PS 222J

Symbol	Description			Part No.
R16	Carbon film	2.2k		RD%PS 222J
R17	Carbon film	5.6k		RD%PS 562J
R18	Carbon film	5.6k		RD%PS 562J
R19	Carbon film	470k		RD%PS 474JNL
R20	Carbon film	470k		RD%PS 474JNL
R21	Carbon film	1k		RD%PS 102J
R22	Carbon film	1k		RD%PS 102J
R23	Carbon film	540k		RD%PS 564JNL
R24	Carbon film	540k		RD%PS 564JNL
R25	Carbon film	91k		RD%PS 913J
R26	Carbon film	91k		RD%PS 913J
R27	Carbon film	110k		RD%PS 114J
R28	Carbon film	110k		RD%PS 114J

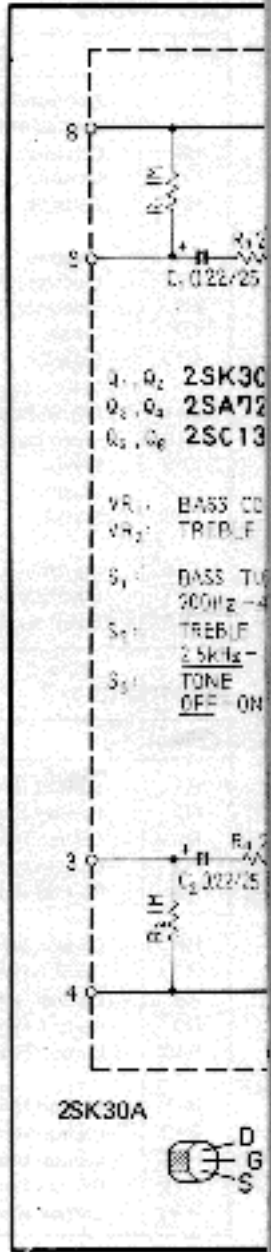
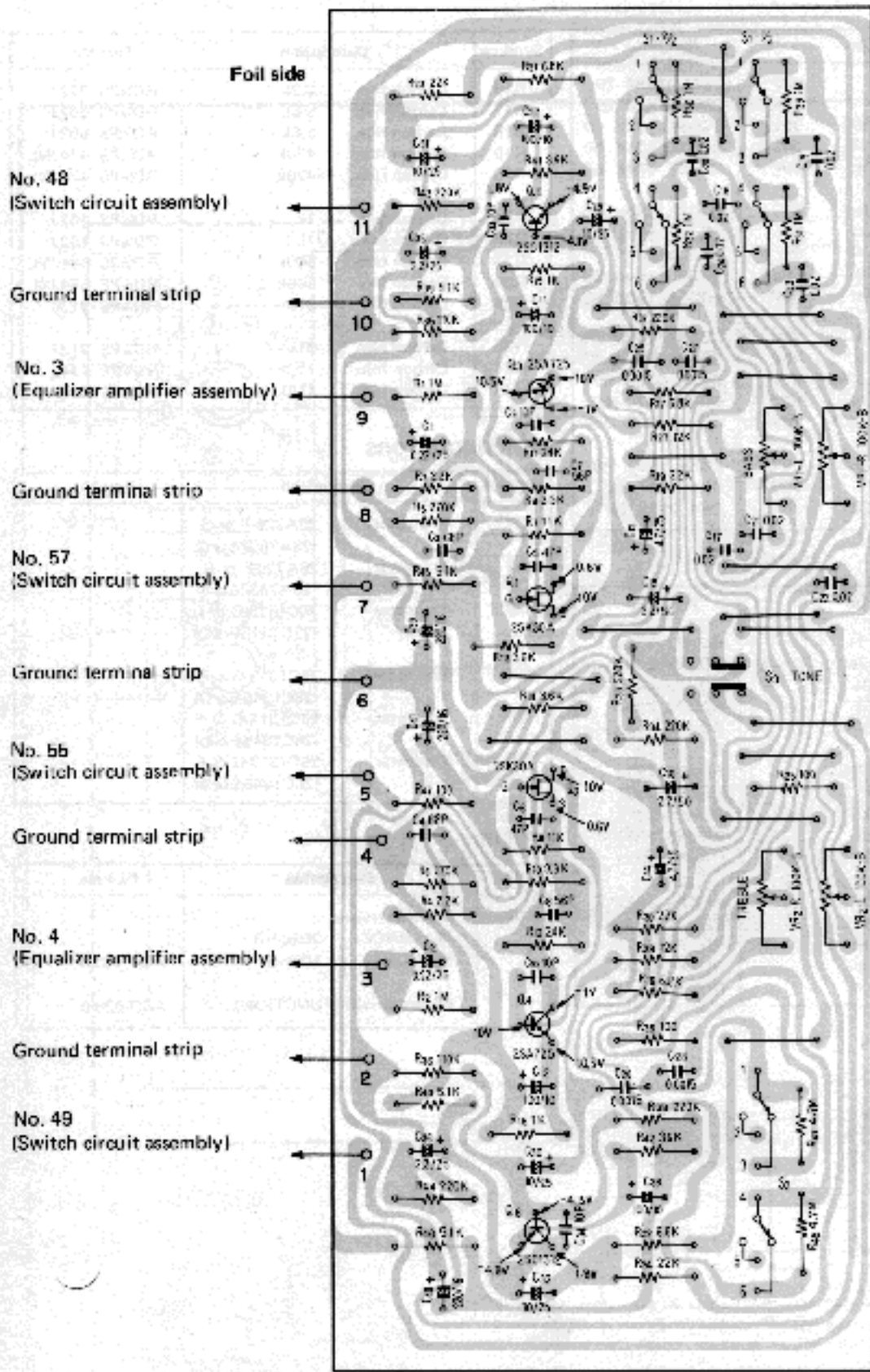
SEMICONDUCTORS

Symbol	Description			Part No.
Q1	Transistor	2SA725-F or G (2SA763P-5 or 6)		
Q2	Transistor	2SA725-F or G (2SA763P-5 or 6)		
Q3	Transistor	2SC1313-G or F (2SC1345E or D)		
Q4	Transistor	2SC1313-G or F (2SC1345E or D)		
Q5	Transistor	2SC1313-G or F (2SC1345E or D)		
Q6	Transistor	2SC1313-G or F (2SC1345E or D)		

OTHERS

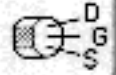
Symbol	Description			Part No.
VR1	Variable resistor (BALANCE) 250k-HB (VOLUME) 100k-B1			ACV-407-0
S1	Rotary switch (FUNCTION)			ASD-028-0

11.3 CONTROL AMPLIFIER ASSEMBLY (AWG-033-0)



- Q₁, Q₂ 2SK30
- Q₃, Q₄ 2SA72
- R₁, R₆ 2SC13
- VR₁ BASS CD
- VR₂ TREBLE
- S₁ BASS TUNE 300Hz-4
- S₂ TREBLE 2.5kHz
- S₃ TONE OFF-ON

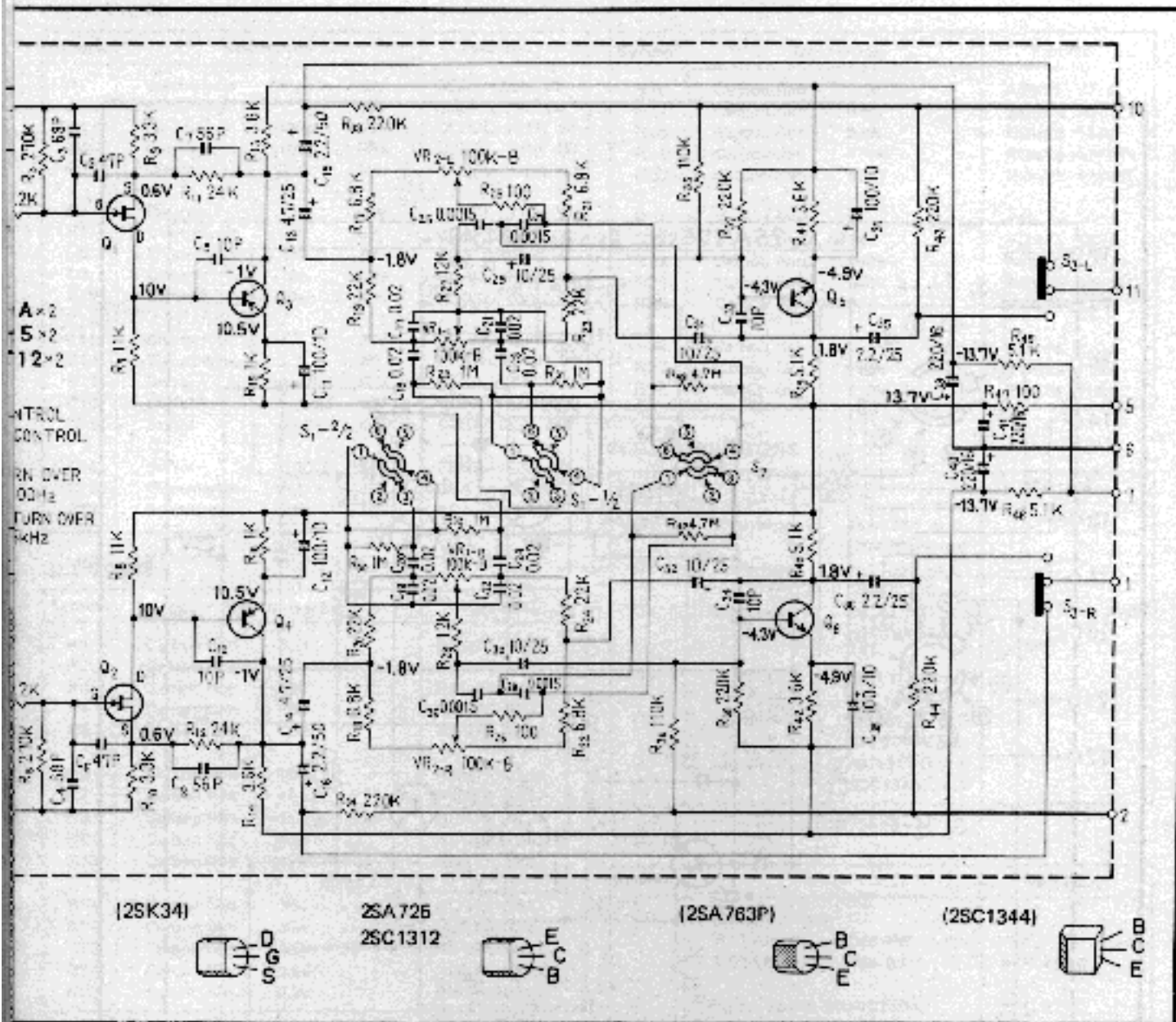
2SK30A



Parts List

CAPAC

Symbol	
C1	
C2	
C3	
C4	
C5	
C6	
C7	
C8	



List of Control Amplifier Assembly (AWG-033-0)

COMPONENTS

Description			Part No.	Symbol	Description			Part No.
Electrolytic	0.22	25V	CSSA R22M 25	C9	Ceramic	10p	50V	CCDSL 100F 50
Electrolytic	0.22	25V	CSSA R22M 25	C10	Ceramic	10p	50V	CCDSL 100F 50
Ceramic	0.0015	50V	CKDYA 152J 50	C11	Electrolytic	100	10V	CEA 101P 10
Ceramic	0.0015	50V	CKDYA 152J 50	C12	Electrolytic	100	10V	CEA 101P 10
Ceramic	47p	50V	CCDSL 470K 50	C13	Electrolytic	4.7	25V	CEANL 4R7P 25
Ceramic	47p	50V	CCDSL 470K 50	C14	Electrolytic	4.7	25V	CEANL 4R7P 25
Ceramic	56p	50V	CCDSL 560K 50	C15	Electrolytic	2.2	50V	ACH-30B-0
Ceramic	56p	50V	CCDSL 560K 50					

Symbol	Description			Part No.
C16	Electrolytic	2.2	50V	ACH-309-0
C17	Mylar	0.02	50V	CQMA 203J 50
C18	Mylar	0.02	50V	CQMA 203J 50
C19	Mylar	0.02	50V	CQMA 203J 50
C20	Mylar	0.02	50V	CQMA 203J 50
C21	Mylar	0.02	50V	CQMA 203J 50
C22	Mylar	0.02	50V	CQMA 203J 50
C23	Mylar	0.02	50V	CQMA 203J 50
C24	Mylar	0.02	50V	CQMA 203J 50
C25	Ceramic	0.0015	50V	CKDYA 152J 50
C26	Ceramic	0.0015	50V	CKDYA 152J 50
C27	Ceramic	0.0015	50V	CKDYA 152J 50
C28	Ceramic	0.0015	50V	CKDYA 152J 50
C29	Electrolytic	10	25V	CEANL 100P 25
C30	Electrolytic	10	25V	CEANL 100P 25
C31	Electrolytic	10	25V	CEANL 100P 25
C32	Electrolytic	10	25V	CEANL 100P 25
C33	Ceramic	10p	50V	CCDSL 100F 50
C34	Ceramic	10p	50V	CCDSL 100F 50
C35	Electrolytic	2.2	25V	CSZA 2R2M 25
C36	Electrolytic	2.2	25V	CSZA 2R2M 25
C37	Electrolytic	100	10V	CEA 101P 10
C38	Electrolytic	100	10V	CEA 101P 10
C39	Electrolytic	220	16V	CEA 221P 16
C40	Electrolytic	220	16V	CEA 221P 16
C41	Electrolytic	220	16V	CEA 221P 16

Symbol	Description		Part No.
R26	Carbon film	100	RD%PS 101J
R27	Carbon film	12k	RD%PS 123J
R28	Carbon film	12k	RD%PS 123J
R29	Carbon film	1M	RD%PS 105J
R30	Carbon film	1M	RD%PS 105J
R31	Carbon film	1M	RD%PS 105J
R32	Carbon film	1M	RD%PS 105J
R33	Carbon film	220k	RD%PS 224J
R34	Carbon film	220k	RD%PS 224J
R35	Carbon film	110k	RD%PS 114JNL
R36	Carbon film	110k	RD%PS 114JNL
R37	Carbon film	220k	RD%PS 224JNL
R38	Carbon film	220k	RD%PS 224JNL
R39	Carbon film	5.1k	RD%PS 512J
R40	Carbon film	5.1k	RD%PS 512J
R41	Carbon film	3.6k	RD%PS 362J
R42	Carbon film	3.6k	RD%PS 362J
R43	Carbon film	220k	RD%PS 224J
R44	Carbon film	220k	RD%PS 224J
R45	Carbon film	5.1k	RD%PS 512J
R46	Carbon film	5.1k	RD%PS 512J
R47	Carbon film	100	RD%PS 101J
R48	Carbon film	4.7M	RD%PS 475J
R49	Carbon film	4.7M	RD%PS 475J

RESISTORS

Symbol	Description			Part No.
R1	Carbon film	1M		RD%PS 105J
R2	Carbon film	1M		RD%PS 105J
R3	Carbon film	2.2k		RD%PS 222J
R4	Carbon film	2.2k		RD%PS 222J
R5	Carbon film	270k		RD%PS 274J
R6	Carbon film	270k		RD%PS 274J
R7	Carbon film	11k		RD%PS 113J
R8	Carbon film	11k		RD%PS 113J
R9	Carbon film	3.3k		RD%PS 332J
R10	Carbon film	3.3k		RD%PS 332J
R11	Carbon film	24k		RD%PS 243J
R12	Carbon film	24k		RD%PS 243J
R13	Carbon film	3.6k		RD%PS 362J
R14	Carbon film	3.6k		RD%PS 362J
R15	Carbon film	1k		RD%PS 102J
R16	Carbon film	1k		RD%PS 102J
R17	Carbon film	6.8k		RD%PS 682J
R18	Carbon film	6.8k		RD%PS 682J
R19	Carbon film	22k		RD%PS 223J
R20	Carbon film	22k		RD%PS 223J
R21	Carbon film	6.8k		RD%PS 682J
R22	Carbon film	6.8k		RD%PS 682J
R23	Carbon film	22k		RD%PS 223J
R24	Carbon film	22k		RD%PS 223J
R25	Carbon film	100		RD%PS 101J

SEMICONDUCTORS

Symbol	Description		Part No.
Q1	FET	2SK30AW-Y (2SK34-C)	
Q2	FET	2SK30AW-Y (2SK34-C)	
Q3	Transistor	2SA725-F or G (2SA763P-5 or 6)	
Q4	Transistor	2SA725-F or G (2SA763P-5 or 6)	
Q5	Transistor	2SC1312-H or F (2SC1344-E or F)	
Q6	Transistor	2SC1312-H or F (2SC1344-E or F)	

OTHERS

Symbol	Description		Part No.
VR1	Variable resistor (BASS)	100k-B	ACV-136-0
VR2	Variable resistor (TREBLE)	100k-B	ACV-136-0
S1	Rotary switch (BASS TURN OVER)		ASD-027-0
S2	Rotary switch (TREBLE TURN OVER)		ASD-026-0
S3	Lever switch (TONE)		ASK-090-A

11.4 POWER AMPLIFIER ASSEMBLY (AWH-040-0)

No. 28 (Switch circuit assembly)

No. 27 (Switch circuit assembly)

No. 23 (Switch circuit assembly)

Ground terminal strip

POWER IN terminal (R ch)

Ground terminal strip

No. 58 (Switch circuit assembly)

Ground terminal strip

No. 21 (Switch circuit assembly)

No. 58 (Switch circuit assembly)

Ground terminal strip

POWER IN terminal (L ch)

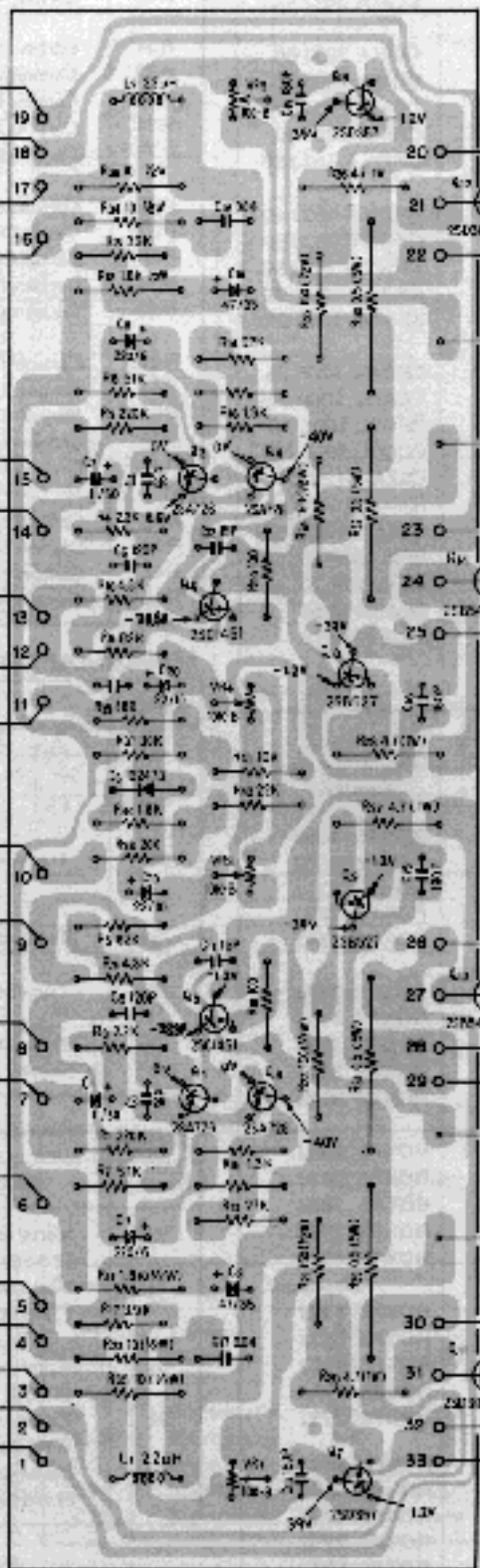
No. 53 (Switch circuit assembly)

Ground terminal strip

No. 22 (Switch circuit assembly)

No. 26 (Switch circuit assembly)

No. 25 (Switch circuit assembly)



2SD388 2SB541
 (2SD370) (2SB530)
 (2SC1403) (2SA745)



2SB527
 2SD367

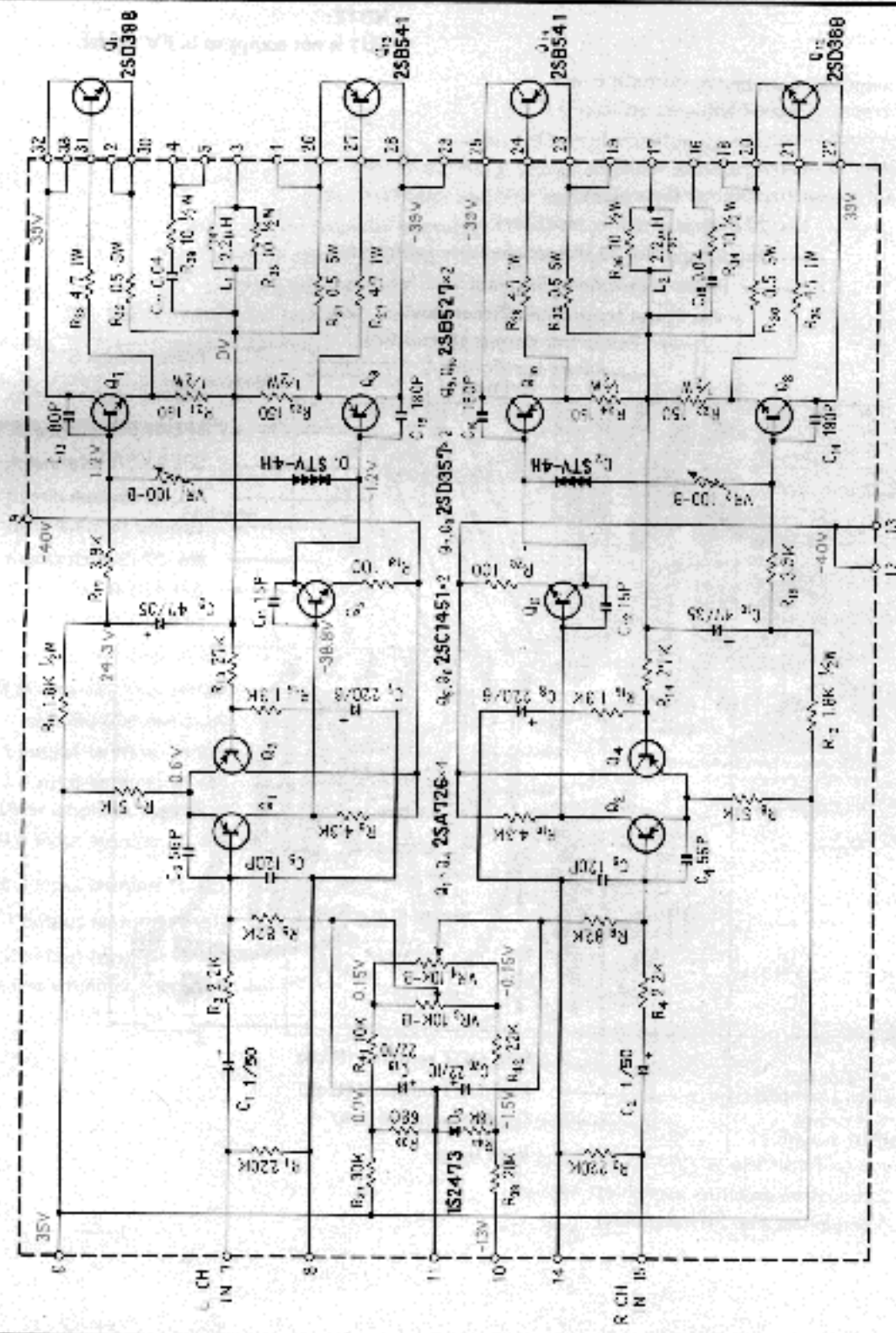
2SC1451

2SA725

(2SA763F)
 (2SA640)

No. 17 (Switch circuit assembly)

No. 16 (Switch circuit assembly)



Parts List of Power Amplifier Assembly (AWH-040-0)

CAPACITORS

Symbol	Description	Part No.
C1	Electrolytic 1 50V	CEANL 010P 50
C2	Electrolytic 1 50V	CEANL 010P 50
C3	Ceramic 56p 50V	CCDSL 560K 50
C4	Ceramic 56p 50V	CCDSL 560K 50
C5	Ceramic 120p 50V	CCDSL 121K 50
C6	Ceramic 120p 50V	CCDSL 121K 50
C7	Electrolytic 220 6V	CEA 221P 6
C8	Electrolytic 220 6V	CEA 221P 6
C9	Electrolytic 47 35V	CEA 470P 35
C10	Electrolytic 47 35V	CEA 470P 35
C11	Ceramic 15p 50V	CCDSL 150K 50
C12	Ceramic 15p 50V	CCDSL 150K 50
C13	Ceramic 180p 50V	CCDSL 181K 50
C14	Ceramic 180p 50V	CCDSL 181K 50
C15	Ceramic 180p 50V	CCDSL 181K 50
C16	Ceramic 180p 50V	CCDSL 181K 50
C17	Ceramic 0.04 50V	CKDYF 403Z 50
C18	Ceramic 0.04 50V	CKDYF 403Z 50

RESISTORS

Symbol	Description	Part No.
R1	Carbon film 220k	RD½PS 224J
R2	Carbon film 220k	RD½PS 224J
R3	Carbon film 2.2k	RD½PS 222J
R4	Carbon film 2.2k	RD½PS 222J
R5	Carbon film 82k	RD½PS 823J
R6	Carbon film 82k	RD½PS 823J
R7	Carbon film 51k	RD½PS 513J
R8	Carbon film 51k	RD½PS 513J
R9	Carbon film 4.3k	RD½PS 432J
R10	Carbon film 4.3k	RD½PS 432J
R11	Carbon film 1.8k ½W	RD½PS 182J
R12	Carbon film 1.8k ½W	RD½PS 182J
R13	Carbon film 27k	RD½PS 273J
R14	Carbon film 27k	RD½PS 273J
R15	Carbon film 1.3k	RD½PS 132J
R16	Carbon film 1.3k	RD½PS 132J
R17	Carbon film 3.9k	RD½PS 392J
R18	Carbon film 3.9k	RD½PS 392J
R19	Carbon film 100	RD½PS 101J
R20	Carbon film 100	RD½PS 101J
R21	Carbon film 150 ½W	RD½PS 151J
R22	Carbon film 150 ½W	RD½PS 151J
R23	Carbon film 150 ½W	RD½PS 151J
R24	Carbon film 150 ½W	RD½PS 151J
R25	Metal film 4.7 1W	RN1H 4R7K
R26	Metal film 4.7 1W	RN1H 4R7K
R27	Metal film 4.7 1W	RN1H 4R7K
R28	Metal film 4.7 1W	RN1H 4R7K
R29	Wire wound 0.5 5W	RT5B 0R5K
R30	Wire wound 0.5 5W	RT5B 0R5K

Symbol	Description	Part No.
R31	Wire wound 0.5 5W	RT5B 0R5K
R32	Wire wound 0.5 5W	RT5B 0R5K
R33	Carbon film 10 ½W	RD½PS 100J
R34	Carbon film 10 ½W	RD½PS 100J
R35	Carbon film 10 ½W	RD½PS 100J
R36	Carbon film 10 ½W	RD½PS 100J
R37	Carbon film 30k	RD½PS 303J
R38	Carbon film 20k	RD½PS 203J
R39	Carbon film 680	RD½PS 681J
R40	Carbon film 1.8k	RD½PS 182J
R41	Carbon film 10k	RD½PS 103J
R42	Carbon film 22k	RD½PS 223J

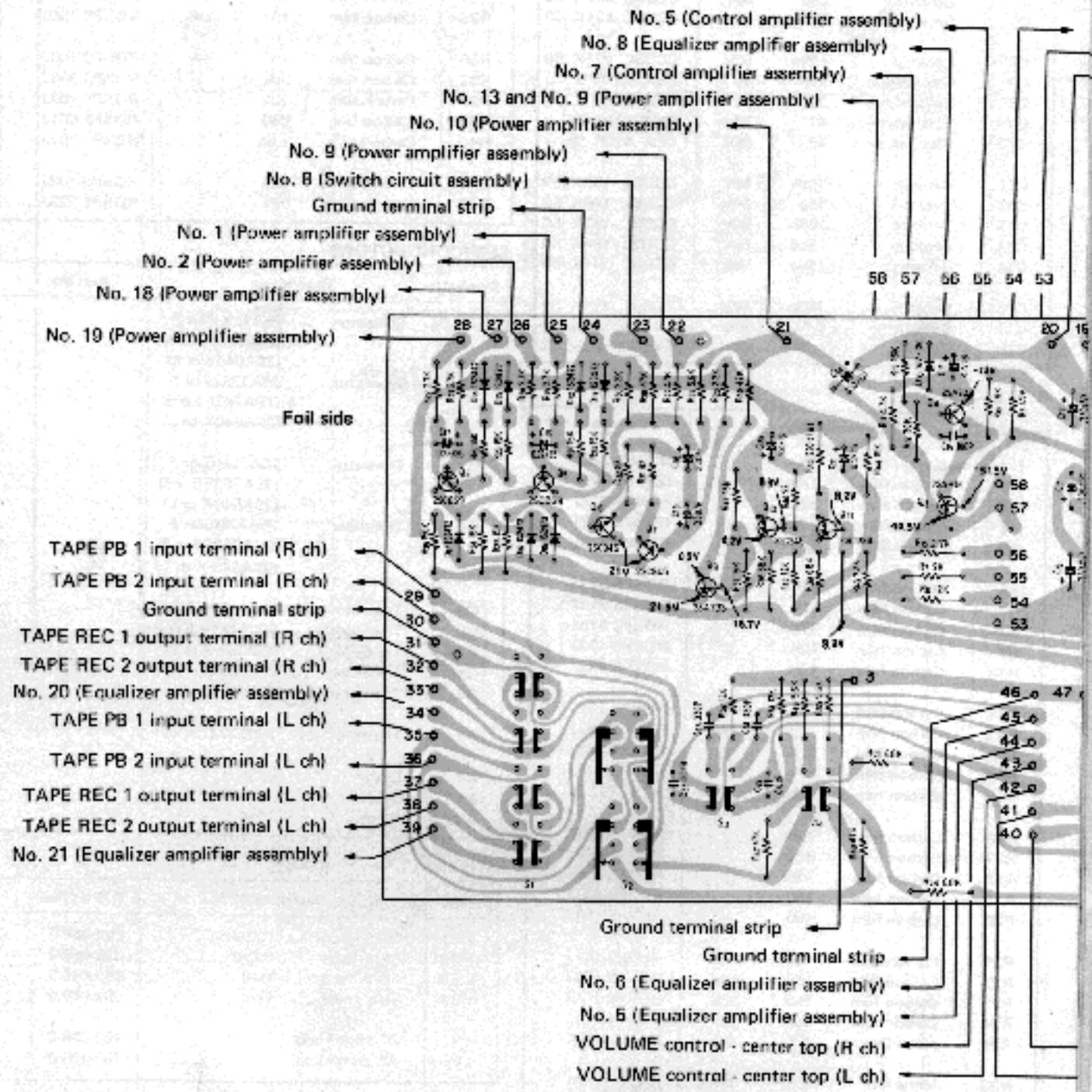
SEMICONDUCTORS

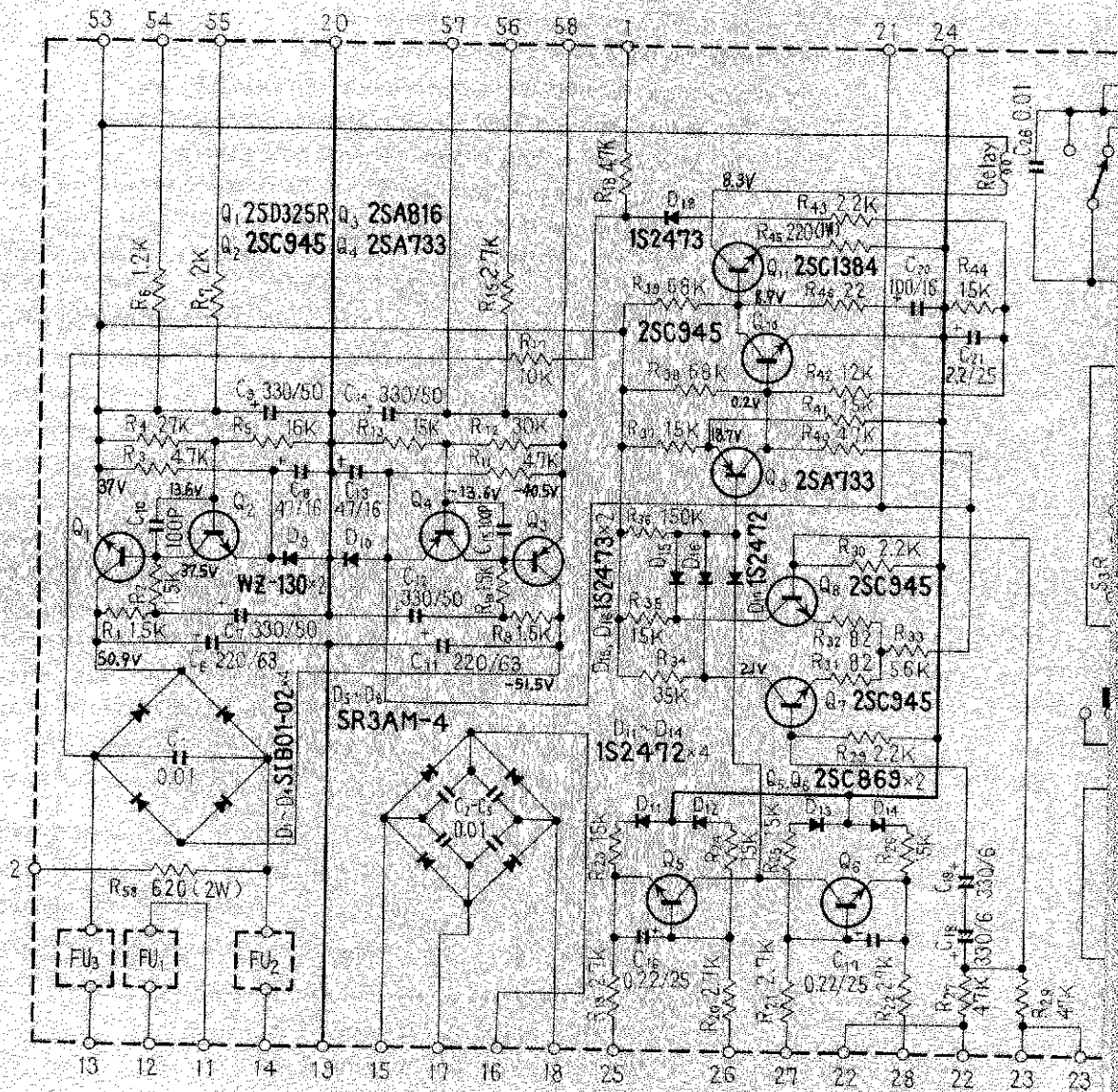
Symbol	Description	Part No.
Q1	Transistor 2SA726-G or F (2SA763F-5 or 6) (2SA640K or L)	
Q2	Transistor 2SA726-G or F (2SA763F-5 or 6) (2SA640K or L)	
Q3	Transistor 2SA726-G or F (2SA763F-5 or 6) (2SA640K or L)	
Q4	Transistor 2SA726-G or F (2SA763F-5 or 6) (2SA640K or L)	
Q5	Transistor 2SC1451-V,B or G	
Q6	Transistor 2SC1451-V,B or G	
Q7	Transistor 2SD357-C or D	
Q8	Transistor 2SD357-C or D	
Q9	Transistor 2SB527-C or D	
Q10	Transistor 2SB527-C or D	
D1	Diode STV4H	
D2	Diode STV4H	
D3	Diode 1S2473	

OTHERS

Symbol	Description	Part No.
VR1	Semi-fixed 100-B	C92-063-0
VR2	Semi-fixed 100-B	C92-063-0
VR3	Semi-fixed 1k-B	C92-049-0
VR4	Semi-fixed 1k-B	C92-049-0
L1	AF chock coil	T63-009-0
L2	AF chock coil	T63-009-0

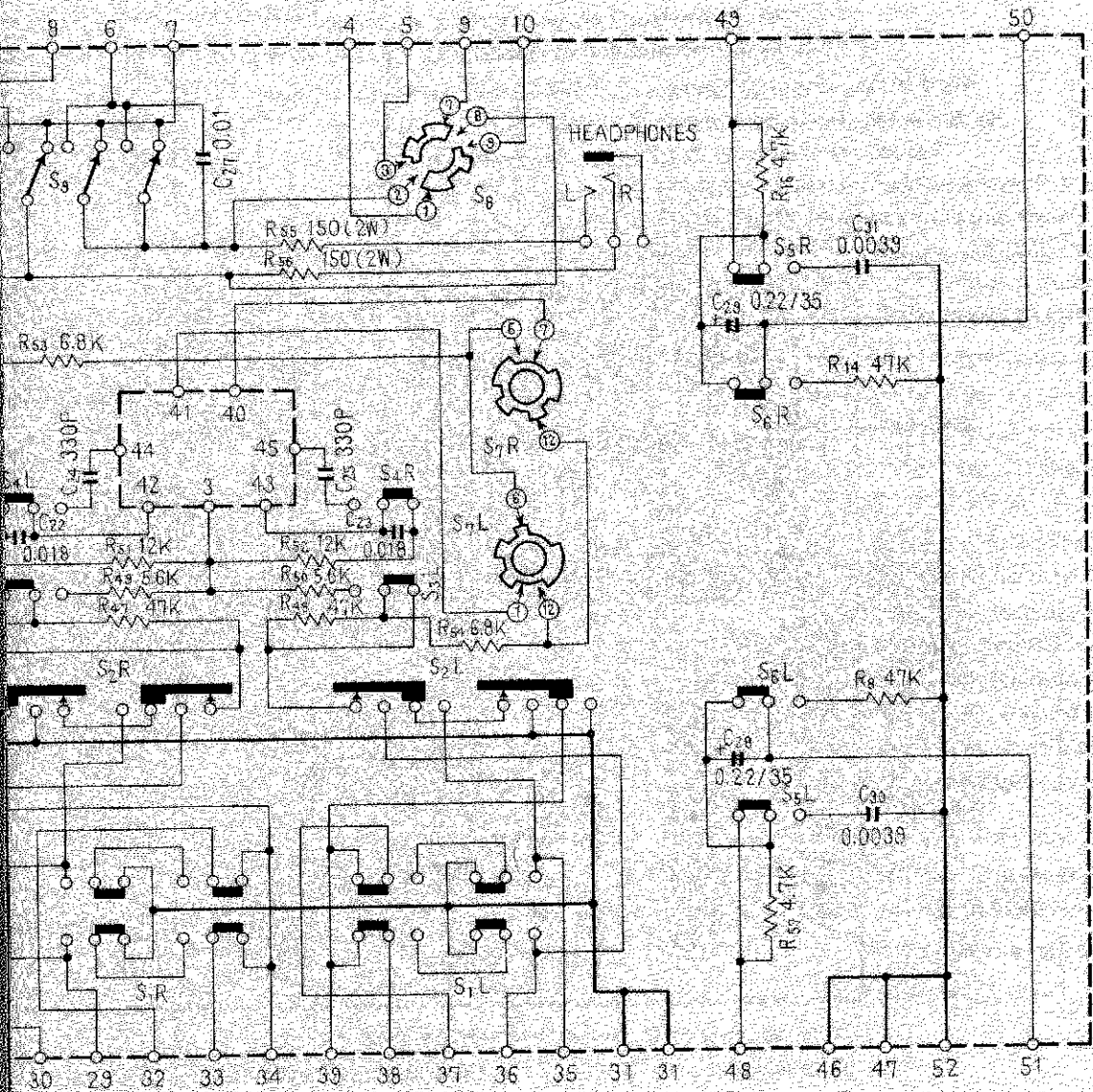
11.5.1 SWITCH CIRCUIT ASSEMBLY (AWM-072-C) FOR "KCU" AND "FV" TYPES



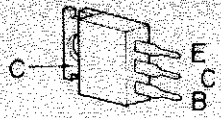


SWITCHES

- | | | | | |
|-------------------------------|----------------|------------------------------|----------|---------------------------|
| S ₁ : DUPLICATE | OFF ↔ ON | S ₆ : HIGH FILTER | OFF ↔ ON | S ₈ : SPEAKERS |
| S ₂ : TAPE MONITOR | 1 ↔ SOURCE ↔ 2 | S ₇ : MODE | | 1 OFF 2 A |
| S ₃ : MUTING | OFF ↔ ON | 1 Rev. 2 Norm. 3 L+R | | 3 B 4 A+ |
| S ₄ : LOUDNESS | OFF ↔ ON | 4 L 5 R | | S ₅ : RELAY |
| S ₅ : LOW FILTER | OFF ↔ ON | | | |



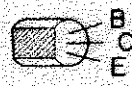
2SD325R (2SD526)
2SAB16 (2SB507)



2SC945
2SA733
2SC1649



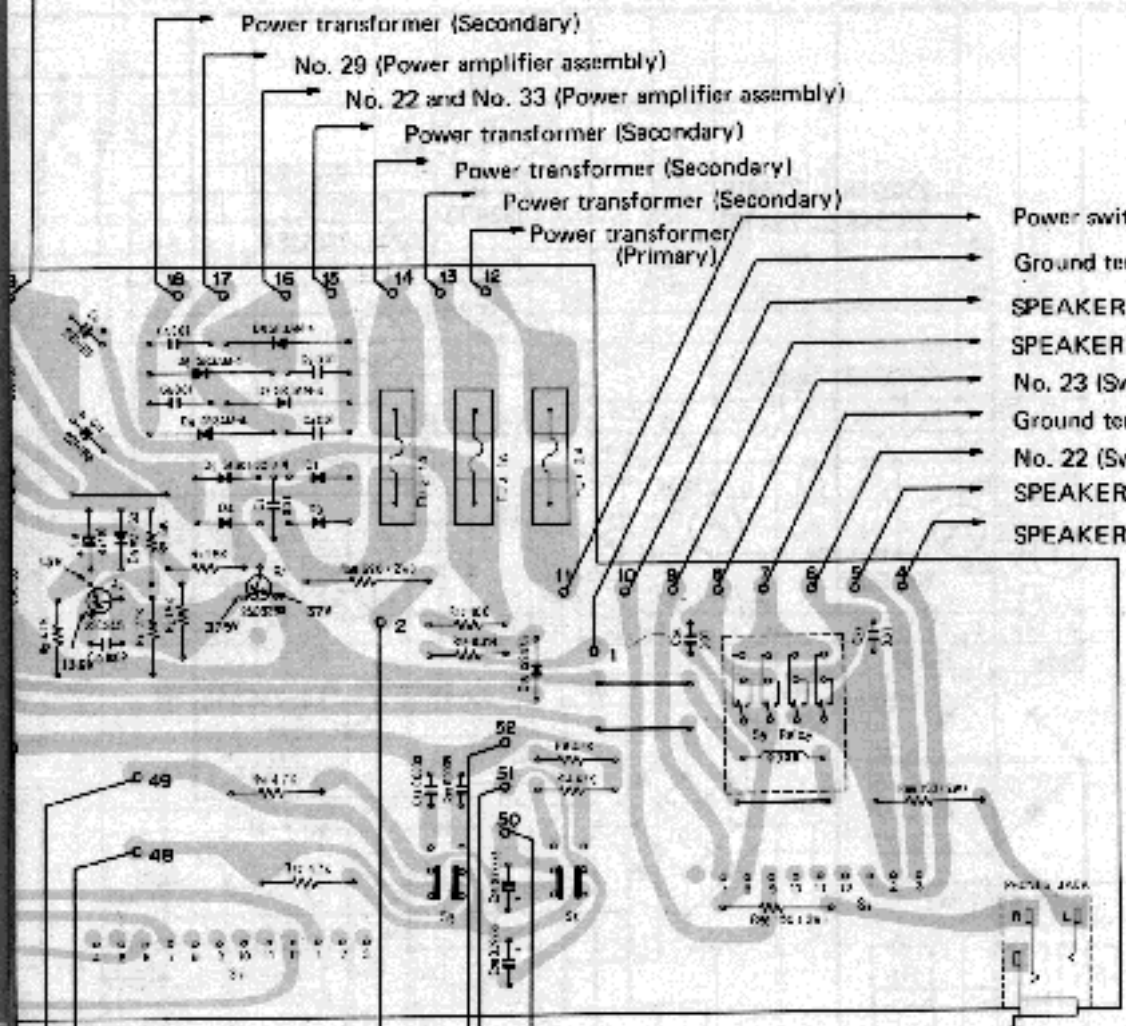
2SC1384



2SC869



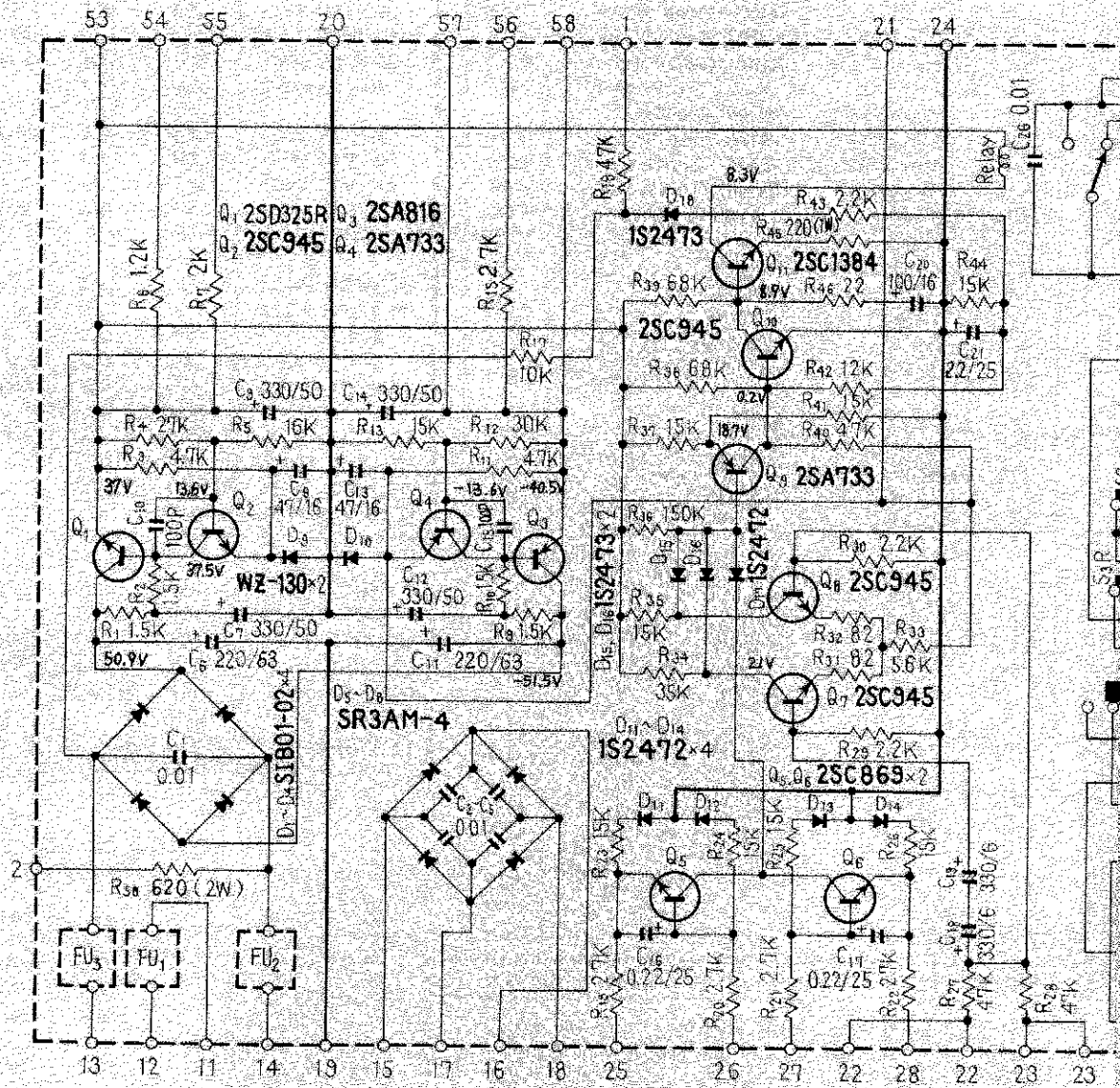
- No. 9 (Equalizer amplifier assembly)
- No. 8 (Power amplifier assembly)
- Ground terminal strip
- Ground terminal strip



- Power switch S10
- Ground terminal strip
- SPEAKER terminal B (R ch)
- SPEAKER terminal A (R ch)
- No. 23 (Switch circuit assembly)
- Ground terminal strip
- No. 22 (Switch circuit assembly)
- SPEAKER terminal B (L ch)
- SPEAKER terminal A (L ch)

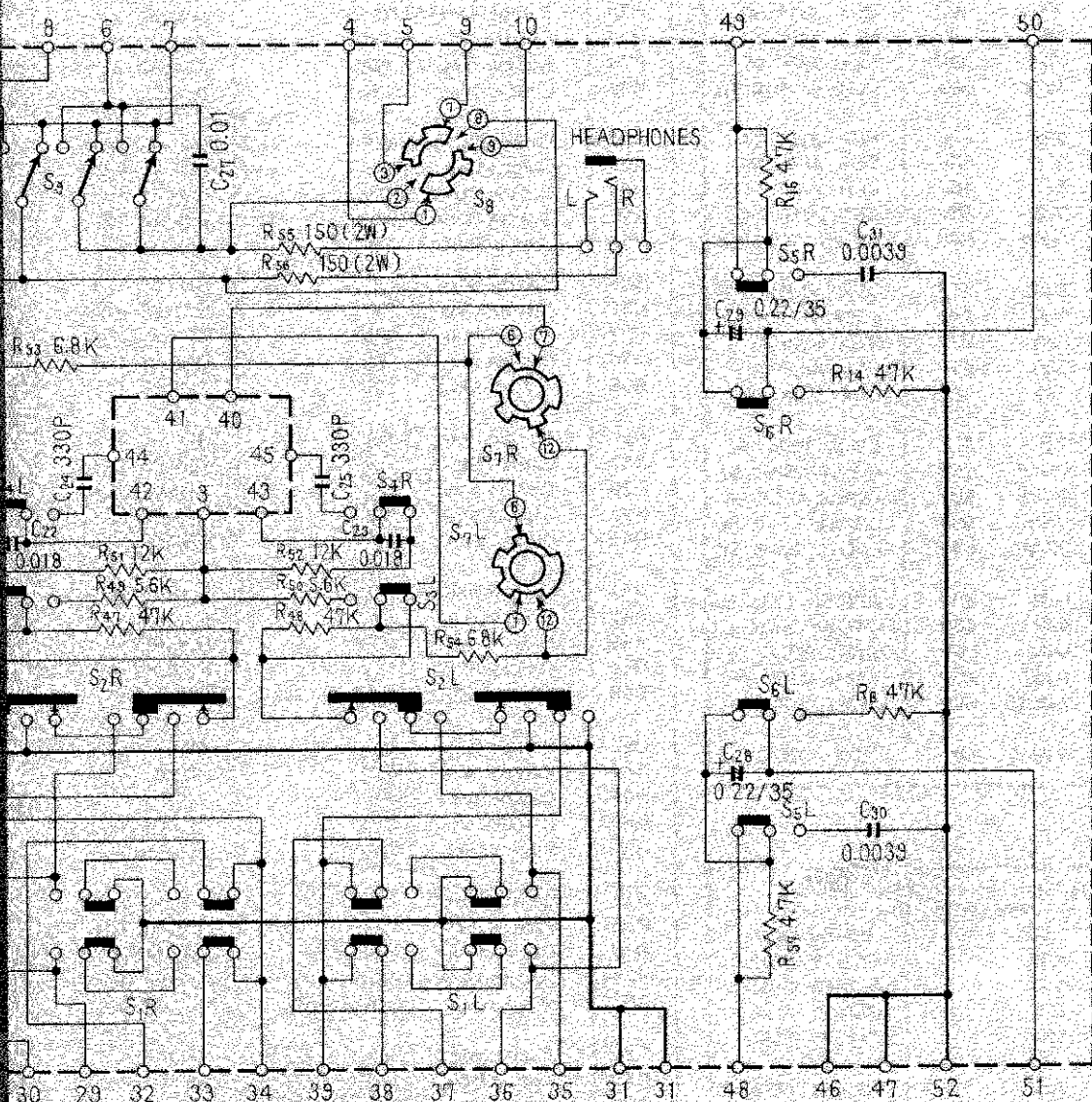
- No. 11 (Control amplifier assembly)
- No. 1 (Control amplifier assembly)
- Ground terminal strip
- No. 2 (Equalizer amplifier assembly)
- No. 1 (Equalizer amplifier assembly)

- PRE OUT terminal (R ch)
- PRE OUT terminal (L ch)
- Ground terminal strip
- Pilot lamp

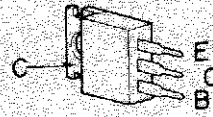


SWITCHES

- | | | | | |
|-------------------------------|----------------|------------------------------|----------|---------------------------|
| S ₁ : DUPLICATE | OFF ↔ ON | S ₆ : HIGH FILTER | OFF ↔ ON | S ₈ : SPEAKERS |
| S ₂ : TAPE MONITOR | 1 ↔ SOURCE ↔ 2 | S ₇ : MODE | | 1 OFF 2 A |
| S ₃ : MUTING | OFF ↔ ON | 1 Rev. 2 Norm. 3 L+R | | 3 B 4. A+B |
| S ₄ : LOUDNESS | OFF ↔ ON | 4 L 5 R | | S ₉ : RELAY |
| S ₅ : LOW FILTER | OFF ↔ ON | | | |



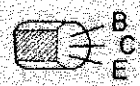
2SD325R (2SD526)
2SA816 (2SB507)



2SC945
2SA733
2SC1649



2SC1384



2SC869



Parts List of Switch Circuit Assembly (AWM-072-C) and (AWM-078-B)

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	Ceramic 0.001 150V	ACG-004-0
C6	Electrolytic 220 63V	CEA 221P 63
C7	Electrolytic 330 50V	CEA 331P 50
C8	Electrolytic 47 16V	CEA 470P 16
C9	Electrolytic 330 50V	CEA 331P 50
C10	Ceramic 100p 50V	CCDSL 101K 50
C11	Electrolytic 220 63V	CEA 221P 63
C12	Electrolytic 330 50V	CEA 331P 50
C13	Electrolytic 47 16V	CEA 470P 16
C14	Electrolytic 330 50V	CEA 331P 50
C15	Ceramic 100p 50V	CCDSL 101K 50
C16	Electrolytic 0.22 25V	CSSA R22M 25
C17	Electrolytic 0.22 25V	CSSA R22M 25
C18	Electrolytic 330 6V	CEA 331P 6
C19	Electrolytic 330 6V	CEA 331P 6
C20	Electrolytic 100 16V	CEA 101P 16
C21	Electrolytic 2.2 25V	CSSA 2R2M 25
C22	Mylar 0.018 50V	CQMA 183K 50
C23	Mylar 0.018 50V	CQMA 183K 50
C24	Ceramic 330p 50V	CCDSL 331K 50
C25	Ceramic 330p 50V	CCDSL 331K 50
C26	Ceramic 0.01 50V	CKDYF 103Z 50
C27	Ceramic 0.01 50V	CKDYF 103Z 50
C28	Electrolytic 0.22 35V	CSZA R22K 35
C29	Electrolytic 0.22 35V	CSZA R22K 35
C30	Mylar 0.0039 50V	CQMA 392K 50
C31	Mylar 0.0039 50V	CQMA 392K 50

Symbol	Description	Part No.
R16	Carbon film 4.7k	RD%PS 472J
R17	Carbon film 10k	RD%PS 103J
R18	Carbon film 4.7k	RD%PS 472J
R19	Carbon film 2.7k	RD%PS 272J
R20	Carbon film 2.7k	RD%PS 272J
R21	Carbon film 2.7k	RD%PS 272J
R22	Carbon film 2.7k	RD%PS 272J
R23	Carbon film 15k	RD%PS 153J
R24	Carbon film 15k	RD%PS 153J
R25	Carbon film 15k	RD%PS 153J
R26	Carbon film 15k	RD%PS 153J
R27	Carbon film 47k	RD%PS 473J
R28	Carbon film 47k	RD%PS 473J
R29	Carbon film 2.2k	RD%PS 222J
R30	Carbon film 2.2k	RD%PS 222J
R31	Carbon film 82	RD%PS 820J
R32	Carbon film 82	RD%PS 820J
R33	Carbon film 5.6k	RD%PS 562J
R34	Carbon film 15k	RD%PS 153J
R35	Carbon film 15k	RD%PS 153J
R36	Carbon film 150k	RD%PS 154J
R37	Carbon film 15k	RD%PS 153J
R38	Carbon film 68k	RD%PS 683J
R39	Carbon film 68k	RD%PS 683J
R40	Carbon film 47k	RD%PS 473J
R41	Carbon film 15k	RD%PS 153J
R42	Carbon film 12k	RD%PS 123J
R43	Carbon film 2.2k	RD%PS 222J
R44	Carbon film 15k	RD%PS 153J
R45	Metal oxide 220 1W	RS1P 221K
R46	Carbon film 22	RD%PS 220J
R47	Carbon film 47k	RD%PS 473J
R48	Carbon film 47k	RD%PS 473J
R49	Carbon film 5.6k	RD%PS 562J
R50	Carbon film 5.6k	RD%PS 562J
R51	Carbon film 12k	RD%PS 123J
R52	Carbon film 12k	RD%PS 123J
R53	Carbon film 6.8k	RD%PS 682J
R54	Carbon film 6.8k	RD%PS 682J
R55	Metal oxide 150 2W	RS2P 151J
R56	Metal oxide 1 150 2W	RS2P 151J
R57	Carbon film 4.7k	RD%PS 472J
R58	Metal oxide 620 2W	RS2P 621K

RESISTORS

Symbol	Description	Part No.
R1	Carbon film 1.5k	RD%PS 152J
R2	Carbon film 1.5k	RD%PS 152J
R3	Carbon film 4.7k	RD%PS 472J
R4	Carbon film 27k	RD%PS 273J
R5	Carbon film 16k	RD%PS 163J
R6	Carbon film 1.2k	RD%PS 122J
R7	Carbon film 2k	RD%PS 202J
R8	Carbon film 47k	RD%PS 473J
R9	Carbon film 1.5k	RD%PS 152J
R10	Carbon film 1.5k	RD%PS 152J
R11	Carbon film 4.7k	RD%PS 472J
R12	Carbon film 30k	RD%PS 303J
R13	Carbon film 15k	RD%PS 153J
R14	Carbon film 47k	RD%PS 473J
R15	Carbon film 2.7k	RD%PS 272J

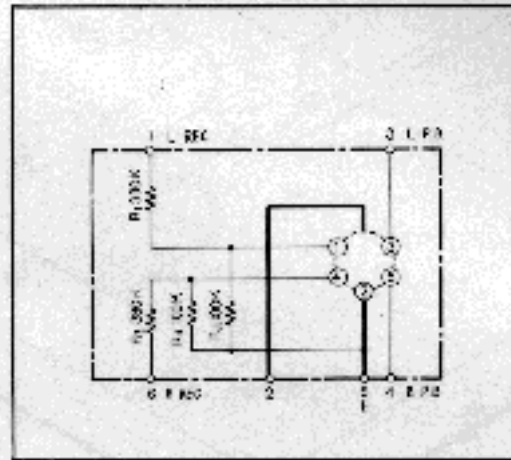
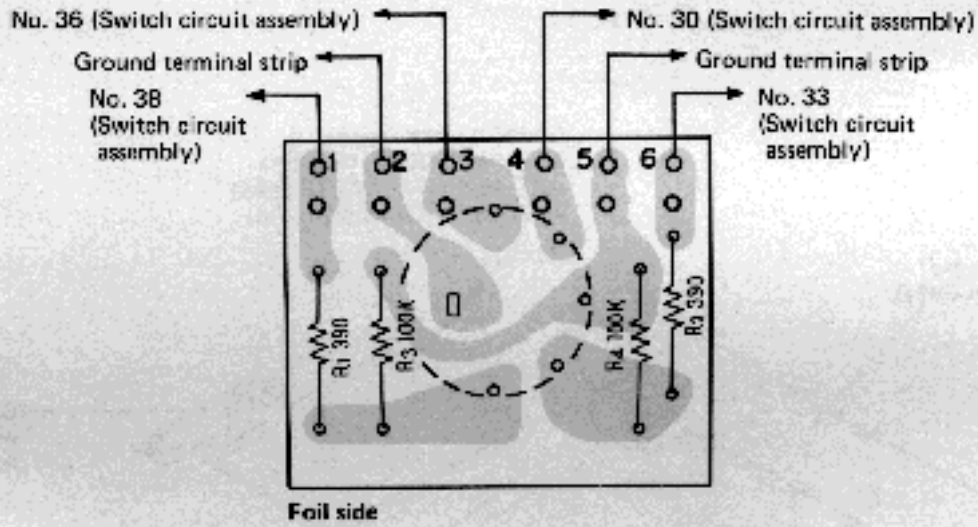
SEMICONDUCTORS

Symbol	Description	Part No.
Q1	Transistor 2SD325R-D (2SD526-Q or Y)	
Q2	Transistor 2SC945-Q or R	
Q3	Transistor 2SA816-Q or Y (2SB507R or O)	
Q4	Transistor 2SA733-Q or R	
Q5	Transistor 2SC869-C, B or D (2SC1649N or F)	
Q6	Transistor 2SC869-C, B or D (2SC1649N or F)	
Q7	Transistor 2SC945-Q or R	
Q8	Transistor 2SC945-Q or R	
Q9	Transistor 2SA733-Q or R	
Q10	Transistor 2SC945-Q or R	
Q11	Transistor 2SC1384-R or Q	
D1	Diode S1B01-02	
D2	Diode S1B01-02	
D3	Diode S1B01-02	
D4	Diode S1B01-02	
D5	Diode SR3AM-4	
D6	Diode SR3AM-4	
D7	Diode SR3AM-4	
D8	Diode SR3AM-4	
D9	Diode WZ-130	
D10	Diode WZ-130	
D11	Diode 1S2472	
D12	Diode 1S2472	
D13	Diode 1S2472	
D14	Diode 1S2472	
D15	Diode 1S2473 (1S1555)	
D16	Diode 1S2473 (1S1555)	
D17	Diode 1S2472	
D18	Diode 1S2473 (1S1555)	

SWITCHES

Symbol	Description	Part No.
S1	Lever switch (DUPLICATE)	ASK-084-B
S2	Lever switch (TAPE MONITOR)	ASK-086-B
S3	Lever switch (MUTING)	ASK-090-A
S4	Lever switch (LOUDNESS)	ASK-090-A
S5	Lever switch (LOW FILTER)	ASK-090-A
S6	Lever switch (HIGH FILTER)	ASK-090-A
S7	Rotary switch (MODE)	ASD-029-0
S8	Rotary switch (SPEAKERS)	ASD-038-0
S9	Relay	ASR-010-0

11.6 5P CONNECTOR ASSEMBLY (AWX-062-0)



Parts List of 5P Connector Assembly (AWX-062-0)

RESISTORS

Symbol	Description	Part No.
R1	Carbon film 390k	RD&PS 394J
R2	Carbon film 390k	RD&PS 394J
R3	Carbon film 100k	RD&PS 104J
R4	Carbon film 100k	RD&PS 104J

OTHER

Symbol	Description	Part No.
	5P connector socket	AKP-007-A

12. PACKING

