

AM/FM STEREO RECEIVER

SX-1280

SERVICE MANUAL

XR283

2721



 PIONEER

MODEL SX-1280 COMES IN FOUR VERSIONS DISTINGUISHED AS FOLLOWS:

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

NOTICE:

- This service manual is applicable to the KU and KC types
- As to the S and S/G types, please refer to page 81.

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*NOTE: * Fuse assembly (AWX-126) is applicable to the KU type, and AWX-139 is for the KC type.*

1. SPECIFICATIONS

Semiconductors

FETs	5
ICs	6
Transistors	67
Diodes	50

Power Amplifier Section

Continuous power output of 185 watts* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.03% total harmonic distortion.

Total Harmonic Distortion (20 Hertz to 20,000 Hertz)	
Continuous Rated Power Output . . . No more than 0.03% 90 watts per channel power output, 8 ohms	No more than 0.01%
1 watt per channel power output, 8 ohms	No more than 0.01%
Intermodulation Distortion (50 Hertz: 7,000 Hertz = 4:1)	
Continuous Rated Power Output . . . No more than 0.01% 90 watts per channel power output, 8 ohms	No more than 0.006%
1 watt per channel power output, 8 ohms	No more than 0.005%
Frequency Response	5 Hertz to 10,000 Hertz $\pm 1^0$ dB
Input Sensitivity/Impedance	
POWER AMP IN	1V/50 kilohms
Output	
SPEAKERS	A, B, C, A+B, B+C, C+A
Damping Factor	
(20 Hertz to 20,000 Hertz, 8 ohms)	30
Hum and Noise (IHF, short-circuited, A Network)	105dB

Preamplifier Section

Input (Sensitivity/Impedance)	
PHONO 1	2.5mV/50 kilohms
Cartridge load (capacitance)	100, 200, 300, 400pF
PHONO 2	2.5mV/50 kilohms
MIC	7.5mV/50 kilohms
AUX	150mV/50 kilohms
TAPE PLAY 1	150mV/50 kilohms
TAPE PLAY 2	150mV/50 kilohms
PHONO Overload Level (1kHz; T.H.D: 0.03%)	
PHONO 1, 2	300mV
Output Level/Impedance	
TAPE REC 1	150mV
TAPE REC 2	150mV
PRE OUT	1V/1 kilohms
Total Harmonic Distortion	
(20Hz to 20,000Hz, 1V output)	No more than 0.01%
Frequency Response	
PHONO(RIAA equalization)	20Hz to 20,000Hz ± 0.2 dB
AUX, TAPE PLAY	5Hz to 80,000Hz $\pm 1^0$ dB

Tone Control

BASS	± 10 dB (100Hz) main control ± 5 dB (50Hz) sub control
TREBLE	± 10 dB (10kHz) main control ± 5 dB (20kHz) sub control

Filter

LOW	15Hz (12dB/oct.)
HIGH	8kHz (12dB/oct.)
Loudness Contour (Volume control set at -40dB position)	
	+6dB (100Hz), +3dB (10kHz)
Hum and Noise	
(IHF, short-circuited, A Network)	
PHONO	80dB
AUX, TAPE PLAY	95dB
Muting	-20dB

FM Tuner Section

Usable Sensitivity	
MONO	9.8dBf (1.7 μ V)
50dB Quieting Sensitivity	
MONO	14.2dBf (2.8 μ V)
STEREO	36dBf (34 μ V)
Signal-to-Noise Ratio	
(at 75dBf)	STEREO 74dB
(at 65dBf)	MONO 80dB
	STEREO 71dB
Distortion (at 65dBf)	
100Hz MONO/STEREO	0.1%/0.2%
1kHz MONO/STEREO	0.1%/0.15%
6kHz MONO/STEREO	0.1%/0.2%
Frequency Response	30Hz to 15,000Hz ± 0.2 dB
Capture Ratio	1.0dB
Alternate Channel Selectivity	80dB
Spurious Response Ratio	100dB
Image Response Ratio	90dB
IF Response Ratio	110dB
AM Suppression Ratio	55dB
Muting Threshold	19.2dBf (5 μ V)
Stereo Separation	50dB(1kHz), 35dB(30Hz - 15kHz)
Subcarrier Product Ratio	65dB
SCA Rejection Ratio	65dB
Antenna Input	300 ohms balanced 75 ohms unbalanced

AM Tuner Section

Sensitivity (IHF, Ferrite antenna) 300 μ V/m
(IHF, Ext. antenna) 15 μ V
Selectivity 30dB
Signal-to-Noise Ratio 50dB
Image Response Ratio 40dB
IF Response Ratio 40dB
Antenna Built-in Ferrite Loopstick Antenna

Miscellaneous

Power Requirements 120V 60Hz
Power Consumption 430W (UL), 1000VA (CSA)
1100W (max.)
Dimensions 556(W) x 186(H) x 461(D) mm
21-11/16(W) x 6-15/16(H) x 17-5/16(D) in
Weight Without Package 28.7kg (63lb 3oz)
With Package 32.1kg (70lb 10oz)

Furnished Parts

FM T-type Antenna 1
Operating Instructions 1
Hex. Wrench 1

**Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers.*

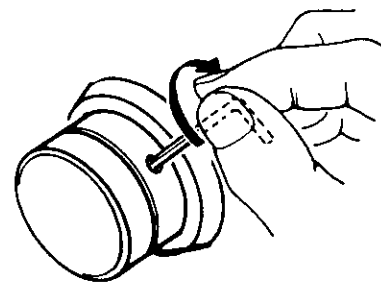
NOTE:

Specifications and the design subject to possible modification without notice due to improvements.

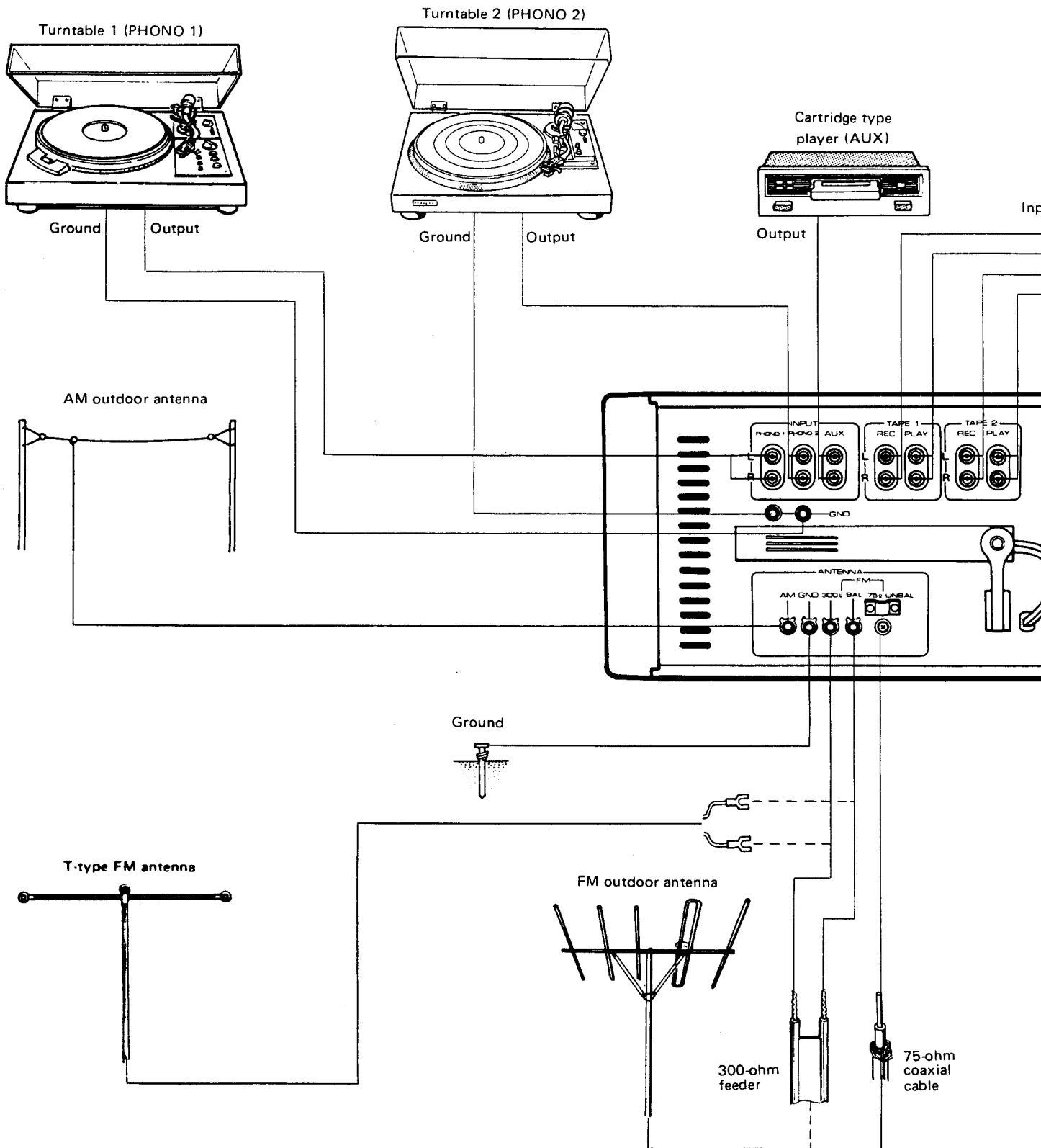
HEX. WRENCH

The accessory hexagonal wrench is provided for removing the TUNING knob and VOLUME knob or tightening their set screws should they become loose.

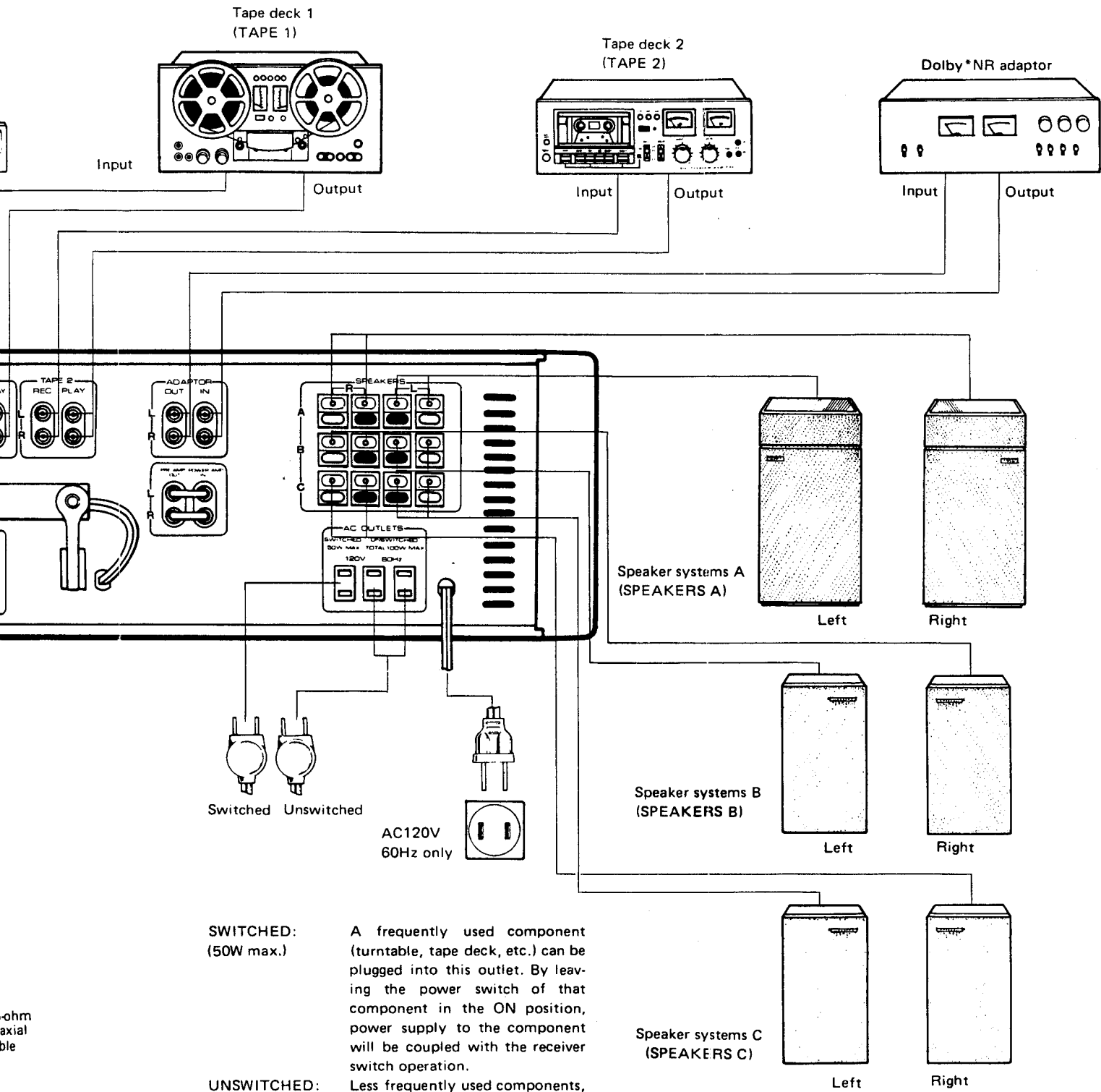
If required, loosen the set screw by inserting the wrench into the hole on the side of the knob and turning the wrench counter-clockwise. Be particularly careful not to scratch the front panel when employing the wrench.



2. CONNECTION DIAGRAM



Connect the power plug to the wall outlet because this receiver requires a lot of power.



SWITCHED:
(50W max.)

A frequently used component (turntable, tape deck, etc.) can be plugged into this outlet. By leaving the power switch of that component in the ON position, power supply to the component will be coupled with the receiver switch operation.

UNSWITCHED:
(Total 100W max.)

Less frequently used components, which do not require coupled power, can be plugged into either of these outlets.

* The word "Dolby" is a trademark of Dolby Laboratories Inc.

3. FRONT PANEL FACILITIES

POWER SWITCH

Flip this switch to the ON position to supply power to the stereo receiver. There will be a short delay when it is set to ON, because the muting circuit has been actuated to suppress the unpleasant noise that is sometimes generated when the power is switched on and off.

PHONES JACK

Plug the headphones into this jack when you want to listen through your stereo headphones. Release the all SPEAKERS buttons if you want to listen to the sound through your headphones only (This means that all three buttons will be released).

POWER METERS

These power meters allow you to read out the rated power level when speakers with a nominal impedance of 8 ohms are connected to the receiver's speaker terminals.

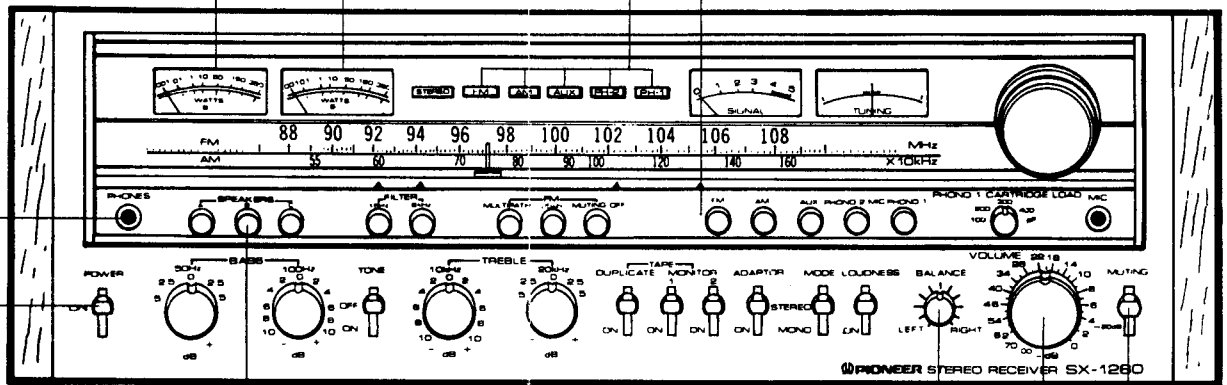
NOTE:

These values are related to the impedance of the speakers and they vary according to the frequency. In order to find out the exact output level, connect an 8-ohm dummy load instead of the speakers.

FUNCTION INDICATOR

MEMORY MARKERS

These are very convenient for frequent tuning in to the same broadcasting station.



SPEAKERS BUTTONS

Press the button corresponding to the speakers connected to the SPEAKERS terminals (A, B, C) on the rear panel. You can press two of these buttons to listen to sound from two pairs of speaker systems at the same time.

NOTE:

No sound will be heard through the speakers if all three buttons are pressed at the same time.

BALANCE CONTROL

Use this control to balance the volume of the left and right channels. First, however, set the MODE switch to MONO, and adjust so that the sound appears to come from somewhere exactly between the two speakers. If the sound appears to be louder on the right, it means that the volume of the right channel is higher. Turn the BALANCE control to the left and adjust. Conversely, if the sound appears to be louder on the left, it means that the volume of the left channel is higher. Therefore, turn the BALANCE control to the right and adjust. After adjusting, return the MODE switch to STEREO.

MUTING SWITCH

Set this switch to the -20dB position to attenuate the audio output indicated by the VOLUME control by 20dB. There is no need to adjust the VOLUME control if you use this switch when turning down the audio output temporarily and when changing over records or tapes.

VOLUME CONTROL

Use this control to adjust the output level to the speakers and headphones. Turn it clockwise to increase the output level. No sound will be heard if you set it to ∞. The scale is graduated in dB which indicate the attenuation when the maximum output level is 0dB.

TONE SWITCH

Set this switch to ON when adjusting the BASS and TREBLE controls. In the OFF position, it causes the amplifier to operate with a flat frequency response.

AM..... Press this button for AM broadcasts.

AUX..... Press this button when listening to an audio component connected to the AUX input jacks.

PHONO 2/MIC.. Press this button when playing a record on the turntable connected to the PHONO 2 jacks, or when using a microphone which you have plugged into the MIC jack.

PHONO 1..... Press this button when playing a record on the turntable connected to the PHONO 1 jacks.

FUNCTION BUTTONS

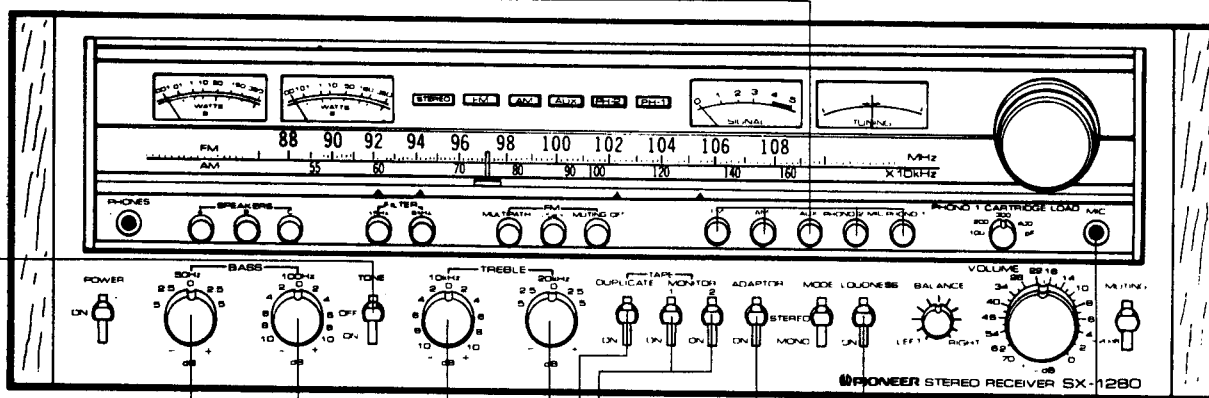
Press the function button which corresponds to the program source. Turn the VOLUME control down first before selecting a different function button while the sound from one program source is being reproduced.

FM..... Press this button for FM broadcasts.

The FM STEREO indicator lights up when the receiver is tuned in to an FM stereo broadcast. The sound is automatically received monophonically during FM monophonic broadcasts.

NOTES:

1. Unplug the microphone from the MIC jack when you do not intend to use the microphone otherwise you will not be able to use the PHONO 2 jacks.
2. Only one function button should be pressed at a time.



TWIN BASS AND TREBLE CONTROLS

Use these controls to adjust the bass and the treble.

TAPE DUPLICATE SWITCH

Set this switch to ON when you want to duplicate or edit a pre-recorded tape using two tape decks.

TAPE MONITOR SWITCHES (1, 2)

Set switch 1 to ON with a tape deck which is connected to the TAPE 1 jacks (REC and PLAY) when you want to monitor the playback or recording of a tape. The tape on a deck which is connected to the TAPE 2 jacks (REC and PLAY) can be similarly monitored by setting switch 2 to ON.

ADAPTOR SWITCH

Set this switch to ON when reproducing sound from an optional component which has been connected to the ADAPTOR jacks. Always set it to its upper position if you are not using a component with these terminals.

LOUDNESS SWITCH

Set this switch to ON when listening at a low volume. The frequency response of the human ear varies according to the listening volume, and setting this switch to the ON position compensates for hearing response by emphasizing the bass and treble.

MIC JACK

Plug your microphone into this jack.

The microphone signals are reproduced in mono through the left and right speakers.

NOTE:

Set these switches to the upper (off) position when listening to records or a broadcast.

TUNING METER

When tuning in to an FM station, the optimum reception position is indicated when the meter pointer deflects to dead center. Check that the SIGNAL meter pointer has deflected as far to the right as possible.

SIGNAL METER

When tuning in to an AM or FM station, the optimum reception position is indicated by the maximum deflection of the meter pointer to the right.

FM MULTIPATH BUTTON

Use this switch to detect multipath sound when installing the FM antenna in a position which yields the minimum multipath interference.

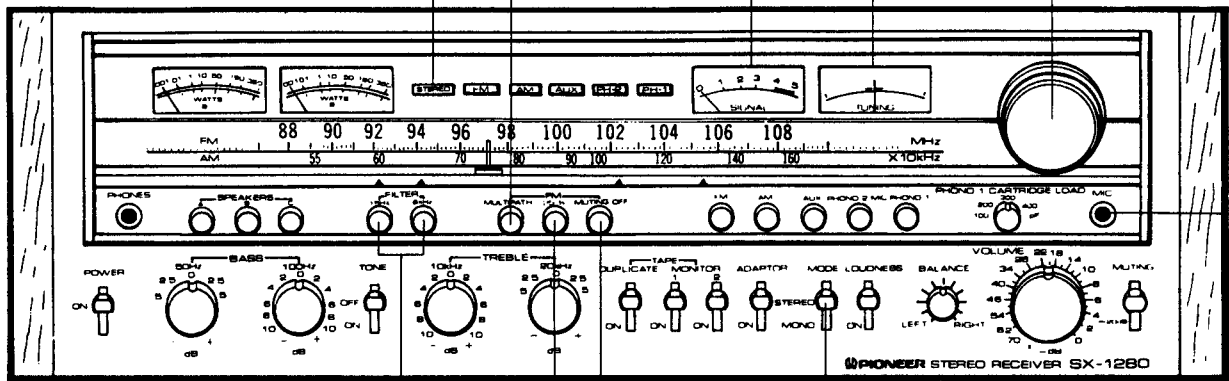
STEREO INDICATOR

PHONO 1 CARTRIDGE LOAD SWITCH

Use this knob to select the input capacitance (pF) in accordance with the specified load capacitance of the moving magnet (MM) cartridge connected to the PHONO 1 jacks.

TUNING KNOB

Use this to tune in to broadcasting stations. Select the station and tune for optimum reception by observing the SIGNAL meter for AM stations and both the SIGNAL and TUNING meters for FM stations.



FILTER BUTTONS

15Hz . . When this button is pressed, a 12dB/oct attenuation can be provided for frequencies below 15Hz. This means that you can cancel out noise in the ultra-low frequencies which is generated by low-pitched rumble from a turntable and other forms of distortion. Although this noise cannot be heard, it can generate intermodulation distortion.

8kHz . . Press this button to provide a 12dB/oct attenuation at frequencies above 8kHz. Set it to this position when you find high-frequency noise, such as that from scratched records, unpleasant.

FM 25µs BUTTON

Press this button when listening to a *Dolby FM broadcast; otherwise keep this button at the released position.

MODE SWITCH

Use this switch for selecting mono or stereo performances.

STEREO: Set to this position for normal stereo operation.

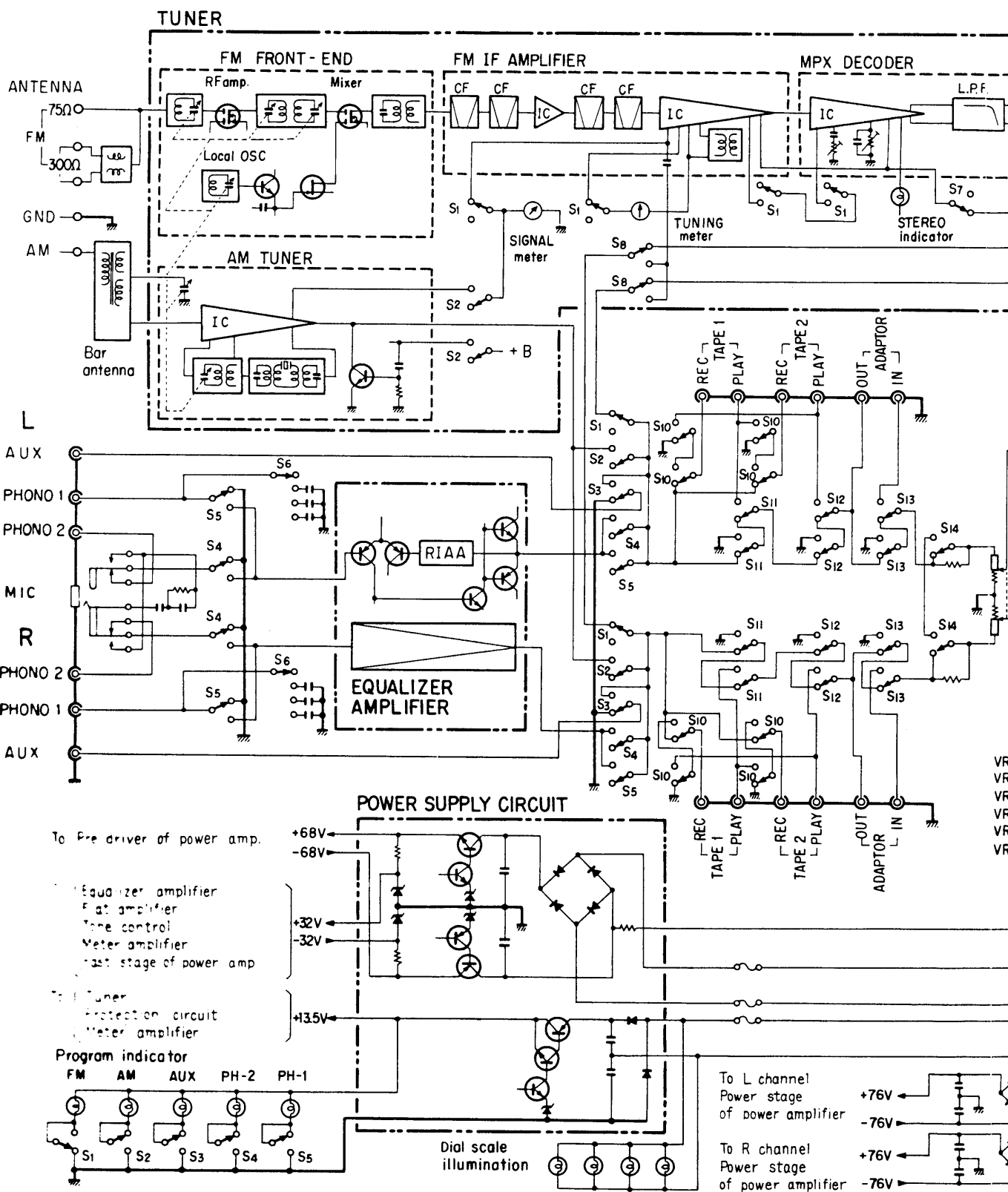
MONO: When set to this position, the left and right channel signals will be mixed and reproduced monophonically from both speaker systems.

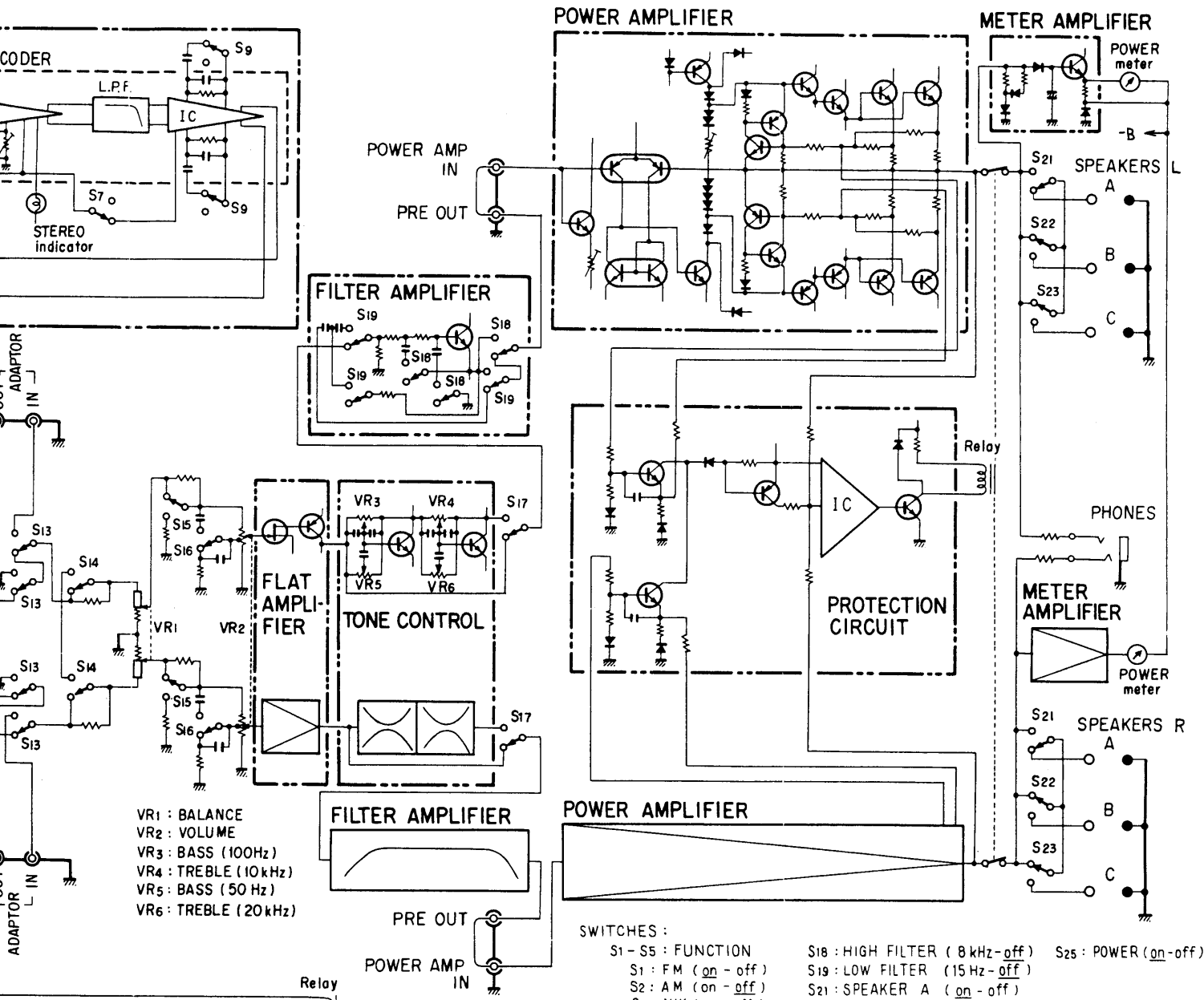
FM MUTING BUTTON

ON (released position) . . . Release this button to suppress unpleasant inter-station noise when tuning in to FM stations.

OFF (depressed position) . . . Depress this button to pick up weak stations.

5. BLOCK DIAGRAM





VR1 : BALANCE
 VR2 : VOLUME
 VR3 : BASS (100Hz)
 VR4 : TREBLE (10kHz)
 VR5 : BASS (50 Hz)
 VR6 : TREBLE (20kHz)

- SWITCHES :
- | | | |
|---|-------------------------------|----------------------|
| S1 - S5 : FUNCTION | S18 : HIGH FILTER (8 kHz-off) | S25 : POWER (on-off) |
| S1 : FM (on-off) | S19 : LOW FILTER (15 Hz-off) | |
| S2 : AM (on-off) | S21 : SPEAKER A (on-off) | |
| S3 : AUX (on-off) | S22 : SPEAKER B (on-off) | |
| S4 : PHONO 2 (on-off) | S23 : SPEAKER C (on-off) | |
| S5 : PHONO 1 (on-off) | | |
| S6 : CARTRIDGE LOAD (100, 200, 300, 400) pF | | |
| S7 : FM MUTING (on-off) | | |
| S8 : MULT. PATH (on-off) | | |
| S9 : DE-EMPHASIS (25 μs - 75 μs) | | |
| S10 : DUPLICATE (on-off) | | |
| S11 : MONITOR 1 (on-off) | | |
| S12 : MONITOR 2 (on-off) | | |
| S13 : ADAPTOR (on-off) | | |
| S14 : MODE (Stereo - Mono) | | |
| S15 : MUTING (-20 dB-off) | | |
| S16 : LOUDNESS (on-off) | | |
| S17 : TONE (on-off) | | |

6. CIRCUIT DESCRIPTIONS

Refer to the block diagram on page 11 and the schematic on page 43 for the circuit composition of this unit.

6.1 TUNER SECTION

AM Tuner

The AM tuner employs a 2-gang variable capacitor, one IC (HA1197) and one AM ceramic filter. Its block diagram is given in Fig. 1.

HA1197 is an IC containing an RF amplifier, converter, 2-stage IF amplifier, detector, and AGC circuit, and features excellent AF frequency response and distortion. Q_1 of the output circuit is a special AM muting circuit. This circuit is operated until the AM tuner stabilizes immediately after the FUNCTION AM switch has been set to ON. The instant the AM switch is set to ON, +B is supplied to R_8 , thru C_9 , and the base of Q_1 is forward biased.

Consequently, Q_1 is turned ON, and the AM output signal is shorted to ground during the time constant of C_9 , R_8 .

FM Front End

The FM front end employs a 4-gang variable capacitor in the tuning circuit, dual gate MOS FETs at the RF amplifier and mixer, and a local oscillator with J-FET buffer.

The FM front-end input is 75 Ω unbalanced single-tuned circuit. The RF amplifier is a dual gate MOS FET. An M-coupled double-tuned circuit is inserted between stages. The dual gate FET is an amplifying element suitable for RF circuits, and features extremely stable amplification because of its low NF (Noise Figure), high PG (Power Gain) and low feedback capacitance.

The mixer is also a dual gate MOS FET. The reception signal is applied to gate 1 and the local oscillator signal is applied to gate 2. This circuit

has low local oscillator signal injection power and the strong reception signal has little effect on the local oscillator.

The local oscillator is a modified Clapp circuit. Its output signal is injected into the mixer thru a J-FET buffer.

IF Amplifier

Four dual element ceramic filters are used as the selection elements, and one IC (TA7302P) containing two differential amplifiers and one FM IF IC (PA3001-A) are used as the amplification elements.

The TA7302P compensates for the filter insertion loss, and also limits the amplitude of the FM signal.

The PA3001-A performs IF amplification, amplitude limiting and FM detection. It also drives the TUNING and SIGNAL meters and controls muting.

The block diagram of the PA3001-A is given in Fig. 2.

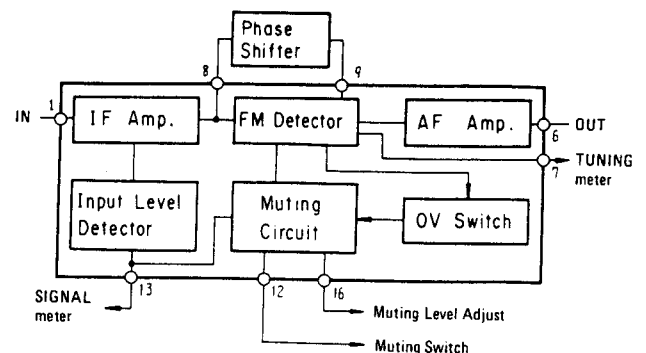


Fig. 2 Block diagram of PA3001-A

FM Multiplex Decoder

The FM multiplex decoder is a PLL (Phase-Locked-Loop) MPX IC (PA1001-A). Its block diagram is given in Fig. 3.

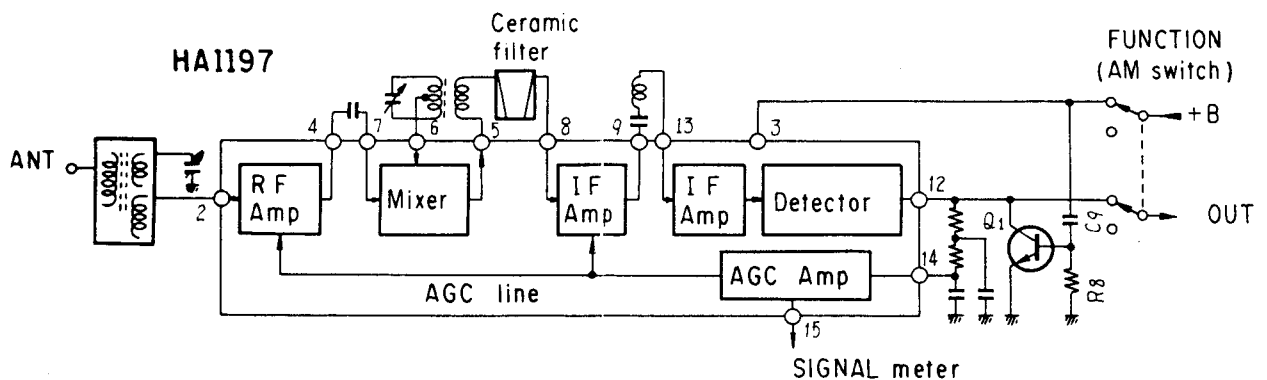


Fig. 1 Block diagram of AM tuner

PA1001-A contains a PLL VCO circuit, double-balance type differential demodulator with NFB amplifier, and pilot auto-cancel circuit to improve the distortion characteristics, frequency response, and S/N.

The nonlinear distortion produced at the demodulator has been improved by adding the NFB amplifier to the double-balance type differential demodulator.

The pilot auto-cancel circuit eliminates carrier leakage (19kHz), without a loss of demodulated signal frequency response.

Moreover, since the cancel signal level tracks the input pilot signal level, the rejection ratio does not drop even if the input pilot signal level changes.

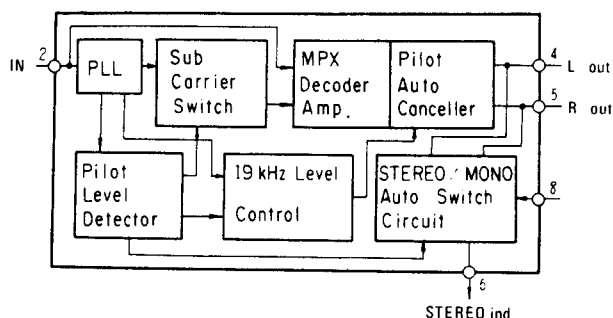


Fig. 3 Block diagram of PA1001-A

FM Output Amplifier

The FM output amp is an IC (PA1002-A). PA1002-A contains an AF amp. muting gate circuit and power ON/OFF muting control circuit. Its block diagram is given in Fig. 4.

The AF amp. is a differentially coupled NFB amp. featuring excellent dynamic range, S/N and distortion characteristics. A de-emphasis characteristic is obtained by providing a frequency selection characteristic at the NFB loop of this amp.

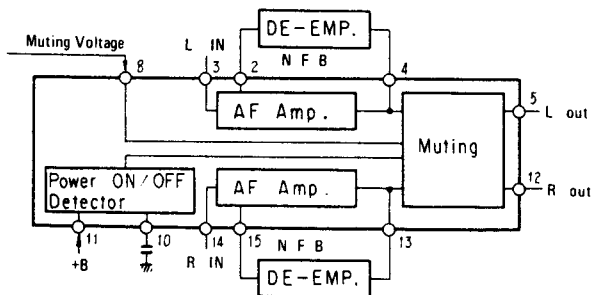


Fig. 4 Block diagram of PA1002-A

The muting circuit electronically grounds the signal circuit when a control voltage of 1.4V or greater has been applied to pin 8 of the PA1002-A. This control voltage is applied from pin 12 of the PA3001-A thru the MUTING switch. A 1.4V DC voltage is generated at pin 12 of the PA3001-A when de-tuned more than ± 70 kHz and at weak inputs (antenna input conversion $5\mu\text{V}$ or less).

6.2 AF SECTION

MIC Input Circuit

PHONO 2 is switched over to MIC when the microphone plug is inserted in to the MIC jack. This input circuit is equipped with an inverse RIAA curve designed to counteract the phono equalizer amplifier circuit.

PHONO 1 Input Capacitance Switching Circuit (Fig. 5)

The PHONO 1 input circuit includes an input capacitance switching stage which permits the user to select the optimum load capacitance for the phono cartridge being employed.

When C is excluded, the input capacitance of the circuit shown in Fig. 5 is 100pF. The capacitance of C may be set to either 0, 100, 200, or 300pF, thereby making the input load capacitance 100, 200, 300, or 400pF.

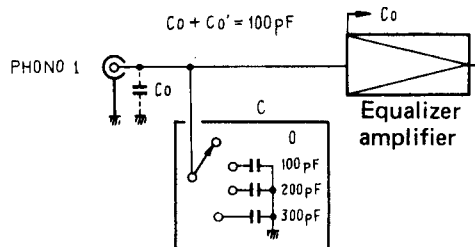


Fig. 5 PHONO 1 input capacitance switching circuit

Equalizer Amplifier

This is a 3-stage direct-coupled equalizer amplifier with a first-stage differential amplifier and final-stage pure complementary SEPP.

The role of the differential amplifier is to amplify the signal, and to stabilize the DC balance of the output neutral point. The bootstrap circuit in the second stage ensures sufficient gain to drive the final stage composed of a pure complementary SEPP circuit for a wide dynamic range and low output impedance. The RIAA equalization curve is produced by an NFB circuit employing 1%-error metal film resistors and 2%-error polypropylene capacitors, resulting in a equalization deviation of $\pm 0.2\text{dB}$ (20Hz ~ 20kHz).

Flat Amplifier

The first stage of this 2-stage direct-coupled flat amplifier is equipped with a FET for higher input impedance. Ample NFB also permits a lower output impedance. As a result, there is little change in noise level when the VOLUME control resistance is altered, and there is also sufficient power to drive the NFB-type tone control circuits connected to the following stage:

NOTE:

Since the input impedance of the NFB tone control circuits is relatively low, there will be a certain amount of change when the variable resistor is rotated.

Tone Controls

The SX-1280 features two pairs of tone control circuits (twin tone controls), each with a different turnover frequency. The main tone controls are similar to other regular tone controls, while the sub tone controls permit variation of the frequency response at the very high and very low ends. Both main and sub tone controls apply C-B feedback to a single transistor amplifier, with frequency selection provided within the feedback loop, and the frequency response altered when these frequencies are changed.

All of these circuits may be by-passed by simply putting the TONE switch into the OFF position.

Filter Circuits

The filters employed in this receiver are -12dB/octave NFB-type active filters. By coupling the emitter-follower to RC passive filters, peaks have been obtained in the region of the cut-off frequencies, thereby sharpening the "knee characteristics" of the RC passive filters.

Power Amplifier (Fig. 6)

The first stage consists of a PNP dual transistor differential amplifier (Q₂) which loads the current mirror circuit (Q₃) to obtain high stable gain even in the high frequency range. The pre-driver stage (Q₄) operates with the constant current circuit (Q₅) as the load, amplifying the voltage to the required level. With a 3-stage Darlington connection in the power stage, and a parallel push-pull circuit in the final stage, a power output level of 185W + 185W/8Ω (20Hz ~ 20kHz, T.H.D. less than 0.03%) has been obtained.

The purpose of Q₁ is to equalize temperature changes in Q₂. By keeping the input base potential of Q₂ at a constant 0V, the Q₂ output neutral point potential will remain steady despite changes in temperature. Since this power amplifier is a DC amplifier, any DC voltages appearing at the Q₂ input base will be amplified and passed to the output. In order to avoid this, the drop in potential across R₁ due to the Q₂ input base current, is designed to be absorbed by the Q₁ base current, thereby maintaining the Q₂ input base potential constant at 0V.

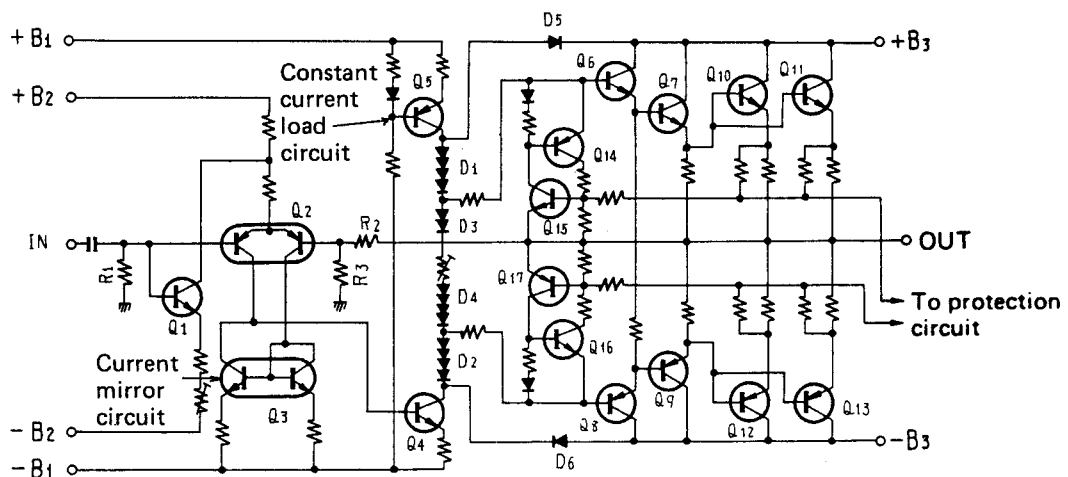


Fig. 6 Power amplifier circuit

Q_{14} to Q_{17} constitutes the power limiter stage. This stage measures the current flowing through the power transistors by means of the voltage produced by the power transistor emitter resistance. If the load impedance drops below 4 ohms, or the output level exceeds 180 watts, $Q_{14} \sim Q_{17}$ are activated, thereby limiting the drive voltage. Q_{14} and Q_{15} operate for positive half-cycles, and Q_{16} and Q_{17} for negative half-cycles.

D_1 , D_2 , D_5 , and D_6 limit the drive voltage to prevent drive voltages in excess of a fixed level from being applied to the power stage, thereby avoiding clipping in the power stage, and the generation of oscillations.

NOTE:

If an excessively high drive voltage is applied to the power stage, the D_5 and D_6 anode peak voltage will exceed the power stage power supply voltage, thereby activating D_5 and D_6 , and limiting the drive voltage.

Meter Amplifier (Figs 7, 8)

In order to indicate the 0.01W–400W range with one meter without range switching, a logarithmic indication type meter must be employed and the input signal must be logarithmically compressed. The meter amplifier circuit is shown in Fig. 7. This circuit consists of a logarithmic compression circuit and a meter drive circuit. The output signal of the power amplifier is applied to the logarithmic compression circuit, and its dynamic range is compressed. The principles of the logarithmic compression circuit are given in Fig. 8. The output voltage of this circuit is the value divided by R_{13} and Z . The attenuation at low signal input is reduced and the attenuation at large signal input is increased, by using the rise of the diode current-voltage characteristic at Z .

The compressed signal is shaped by D_5 and applied to Q_1 of the meter drive circuit. Q_1 current amplifies the DC voltage from D_5 to drive the power meter.

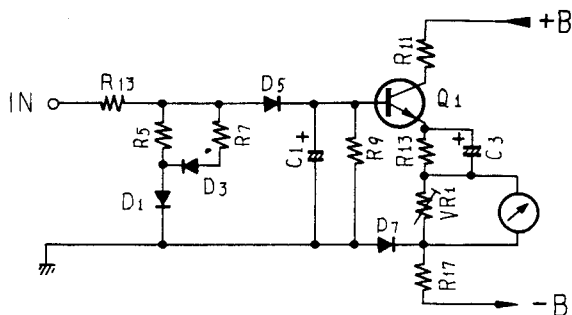


Fig. 7 Schematic diagram of meter amplifier

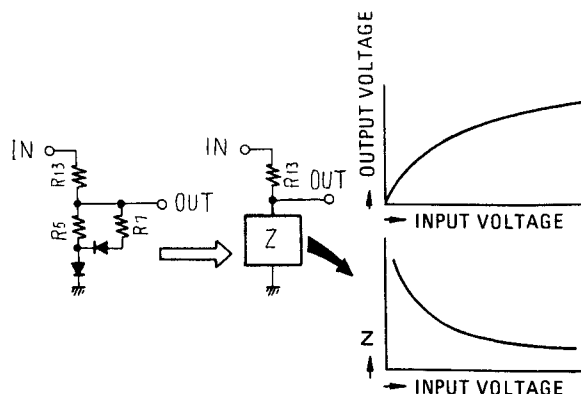


Fig. 8 Schematic diagram of logarithmic compressor

6.3 POWER SUPPLY CIRCUIT

The L and R channels in the power stage are both equipped with independent coils, bridge rectifiers, and a pair of 15000 μ F capacitors for independent supply of ± 76 V.

The class A amplifier circuits (equalizer amp, flat amp, tone control circuit, filter amp, first stage of the power amp, and the pre-driver stage) are supplied with ± 68 V and ± 32 V via a coil, bridge rectifier, and voltage regulator stage independent of the power stage.

The tuner section is supplied with +13.5V via lamp coils, voltage multiplier rectifier, and voltage regulator stage.

Surge Current Suppressor Circuit (Fig. 9)

The power supply stage in this equipment employs toroidal transformers of low internal resistance, and 4 high capacitance (15000 μ F) electrolytic capacitors for smoothing purposes. Therefore without any effective countermeasures, a sudden large surge of current would flow once the POWER switch was turned on, resulting in possible damage to fuses, the POWER switch itself, and other components. In order to prevent this, a surge current suppressor circuit has been incorporated.

When the POWER switch is turned ON, the AC current is applied to T (power transformer) via R_1 and the micro temp (thermal fuse). The secondary coil output is then rectified by diode D, resulting in capacitor C_1 being charged up, and relay R_L being activated. So until R_L is turned on, the voltage applied to the primary coil of T will be the voltage divided by R_1 and the T primary coil impedance, which means that the current flowing in when the POWER switch is first turned ON will be very small. The time required for R_L to be turned on will depend on the D and C_1 time constant. Micro temp is a protection fuse designed to blow

upon detection of heat generated in R_1 if R_L should fail to turn on, or the T secondary coil fail to operate normally.

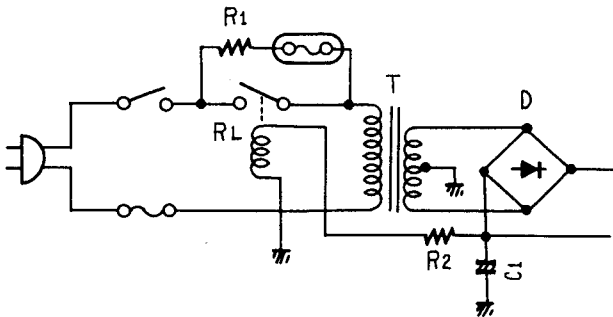


Fig. 9 Surge current suppressor circuit

6.4 PROTECTION CIRCUIT (Fig. 10)

The protection circuit featured in this equipment employs an IC (PA3004) recently developed by Pioneer. This IC includes DC voltage detection (a), +B voltage level detection (b), -B voltage level detection (c), AC voltage detection (d), C_T discharge switching (e), relay drive trigger switching (f), and constant current circuitry (g & h). This protection circuit is responsible for muting when the POWER switch is turned ON and OFF, speaker protection in case of an abnormal power amplifier neutral point potential, power amplifier protection in case of overloading, and speaker disconnection in case of protection circuit failure due to abnormal voltage in the power supply to the protection circuit IC.

POWER Switch Muting

The delaying action employed when the POWER switch is turned ON is determined by the time constants of the timing capacitor (C_T) and the constant current circuit (g). When the POWER switch is turned ON, +B is passed via (g) to charge up C_T . When fully charged, switch (f) will turn on, and a base current will flow from circuit (h) to Q_3 , thereby turning the relay on.

When the POWER switch is turned OFF again, the AC voltage disappears immediately, resulting in switch (e) being turned on by the AC voltage detector (d), thereby discharging C_T . Consequently switch (f), Q_3 , and the relay will all be turned off.

Abnormal Power Amplifier Neutral Point Potential

The occurrence of any abnormality in the power amplifier neutral point potential will be detected at (a), resulting in switch (e) being turned on. C_T will thus be charged up, and switch (f), Q_3 , and the relay all turned off.

Protection Against Overload

If the bridge type detector circuit (Q_1) detects the presence of an overload condition, Q_2 will be charged on, resulting in a DC voltage being applied to detector (a). Switch (e) will thus turn on, and switch (f), Q_3 , and the relay will all turn off.

Abnormal Protector Circuit Power Voltage

The power supply voltage level is detected by detectors (b) and (d). If the prescribed level is not attained, switch (e) will turn on, and switch (f), Q_3 , and the relay all turn off.

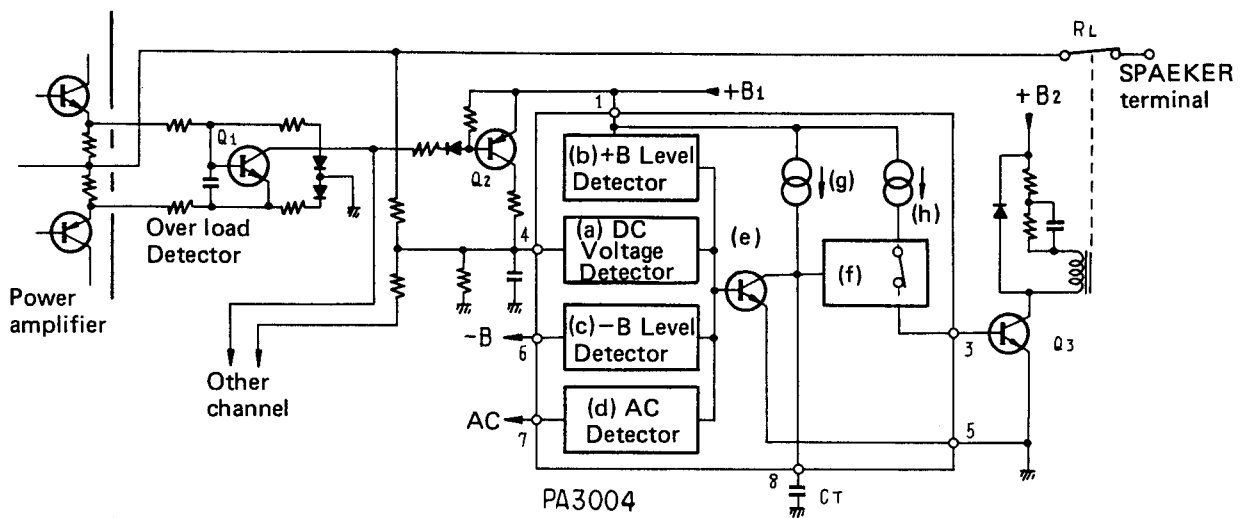


Fig. 10 Protection circuit

7. DISASSEMBLY

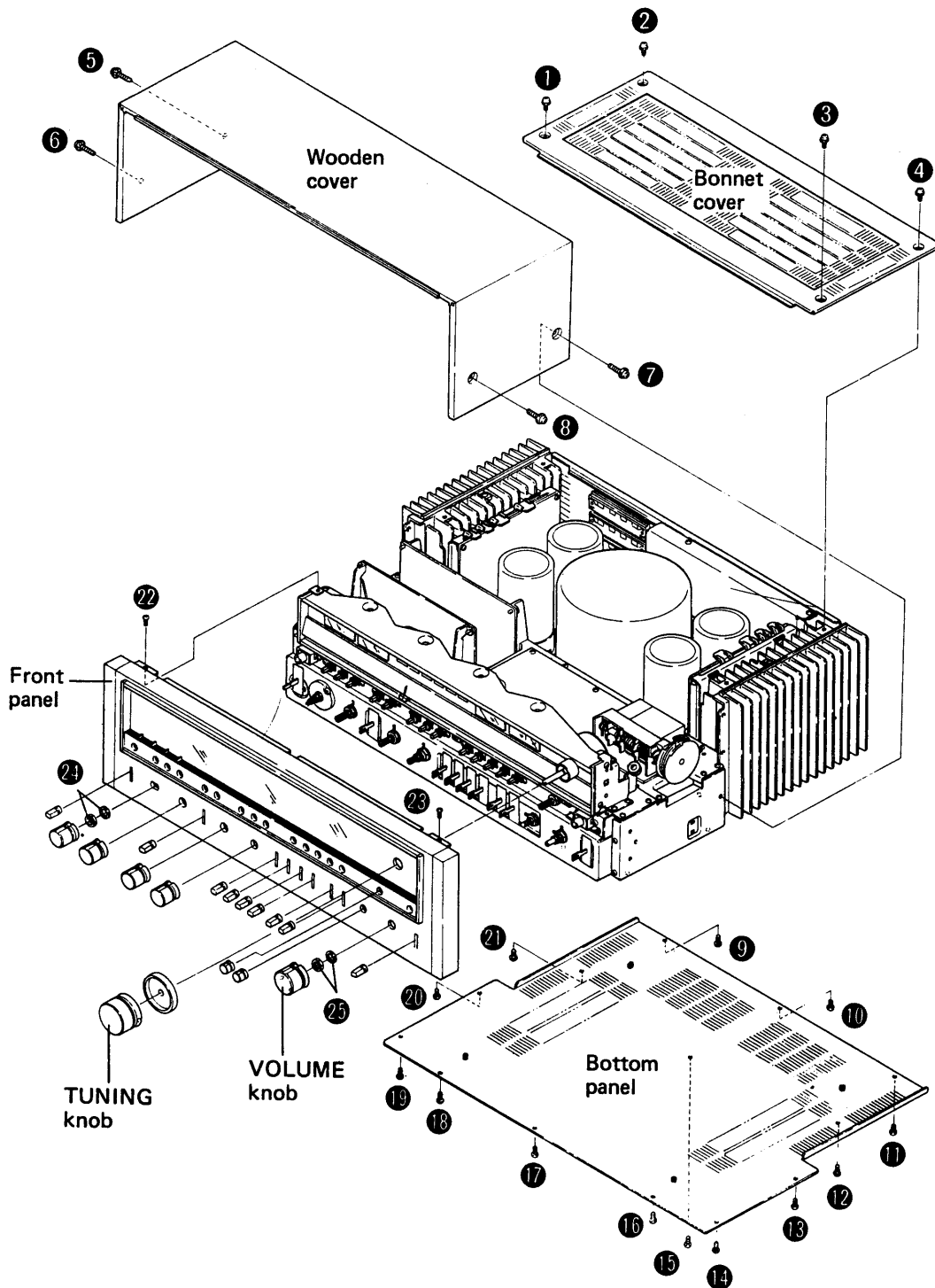


Fig. 11

Bonnet Cover

Remove the bonnet cover by undoing the 4 screws ① ~ ④.

Wooden Cover

The wooden cover can only be removed after the bonnet cover has been removed. Undo the second set of 4 screws ⑤ ~ ⑧.

Bottom Plate

Undo 13 screws ⑨ ~ ⑳ to remove the bottom plate.

Front Panel

To remove the front panel, first loosen the hexagonal screws in the VOLUME control and TUNING knobs, and then gently pull them off. All other front panel knobs are pulled off directly. Then undo the screws ㉒ and ㉓, and the pair of nuts and washers ㉔ and ㉕.

Power Amplifier and Heat Sinks (Fig. 12)

Undo the 4 screws ㉖ ~ ㉙ to remove the power amplifier and heat sinks.

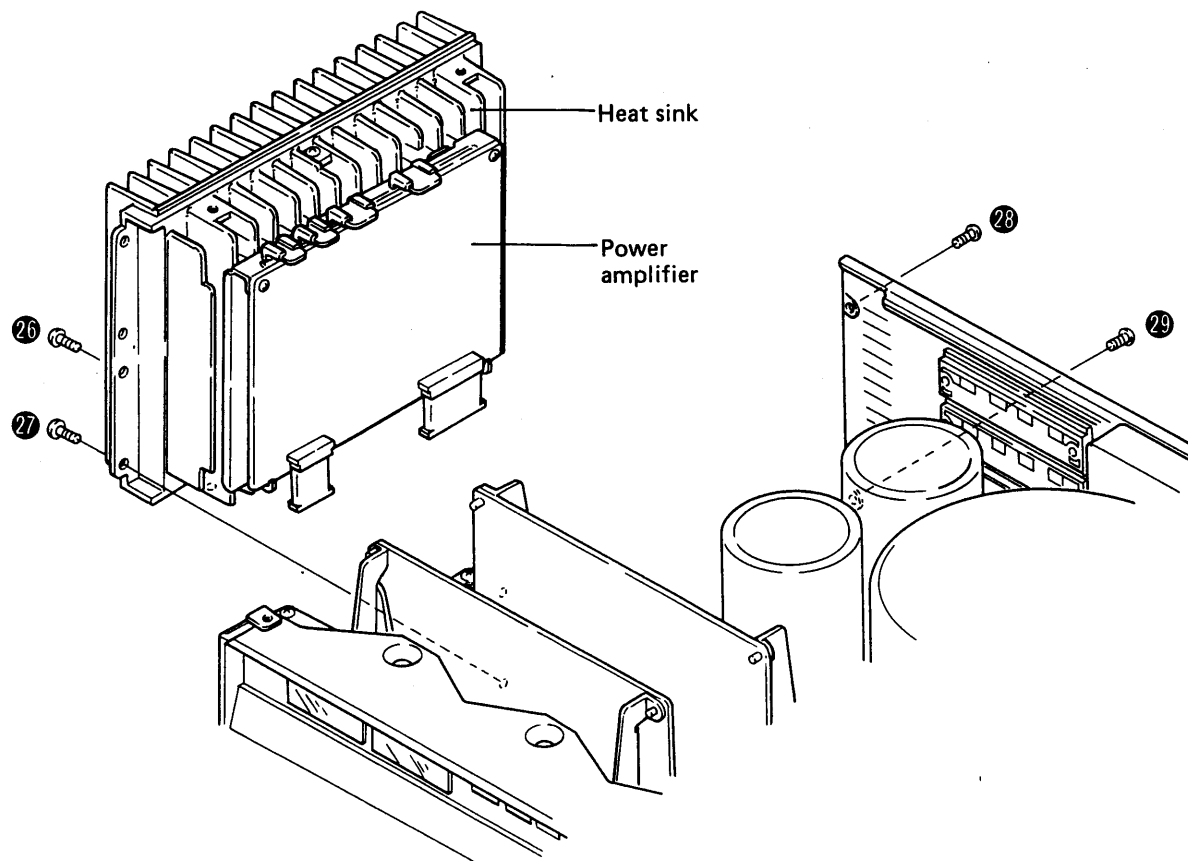
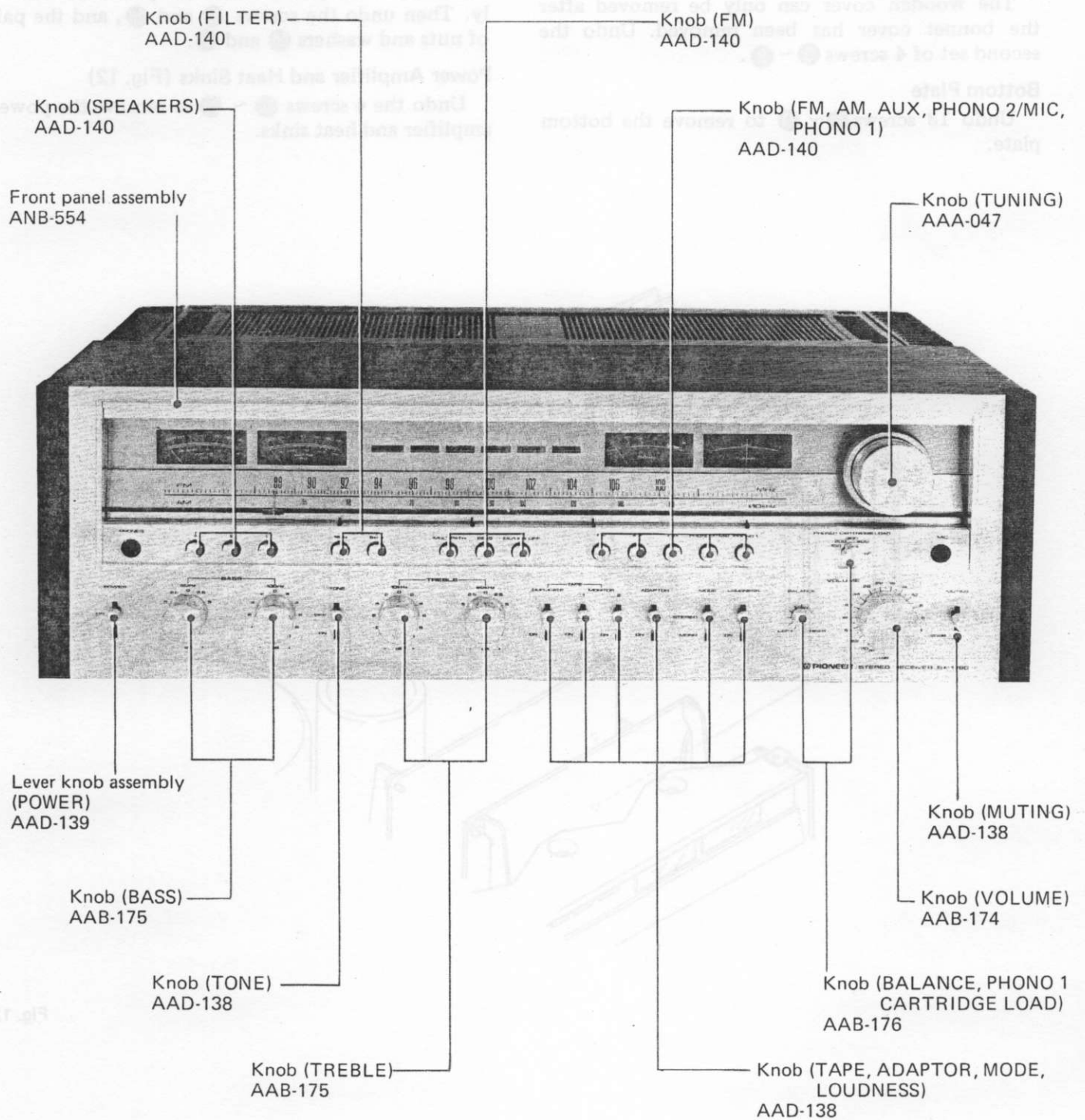


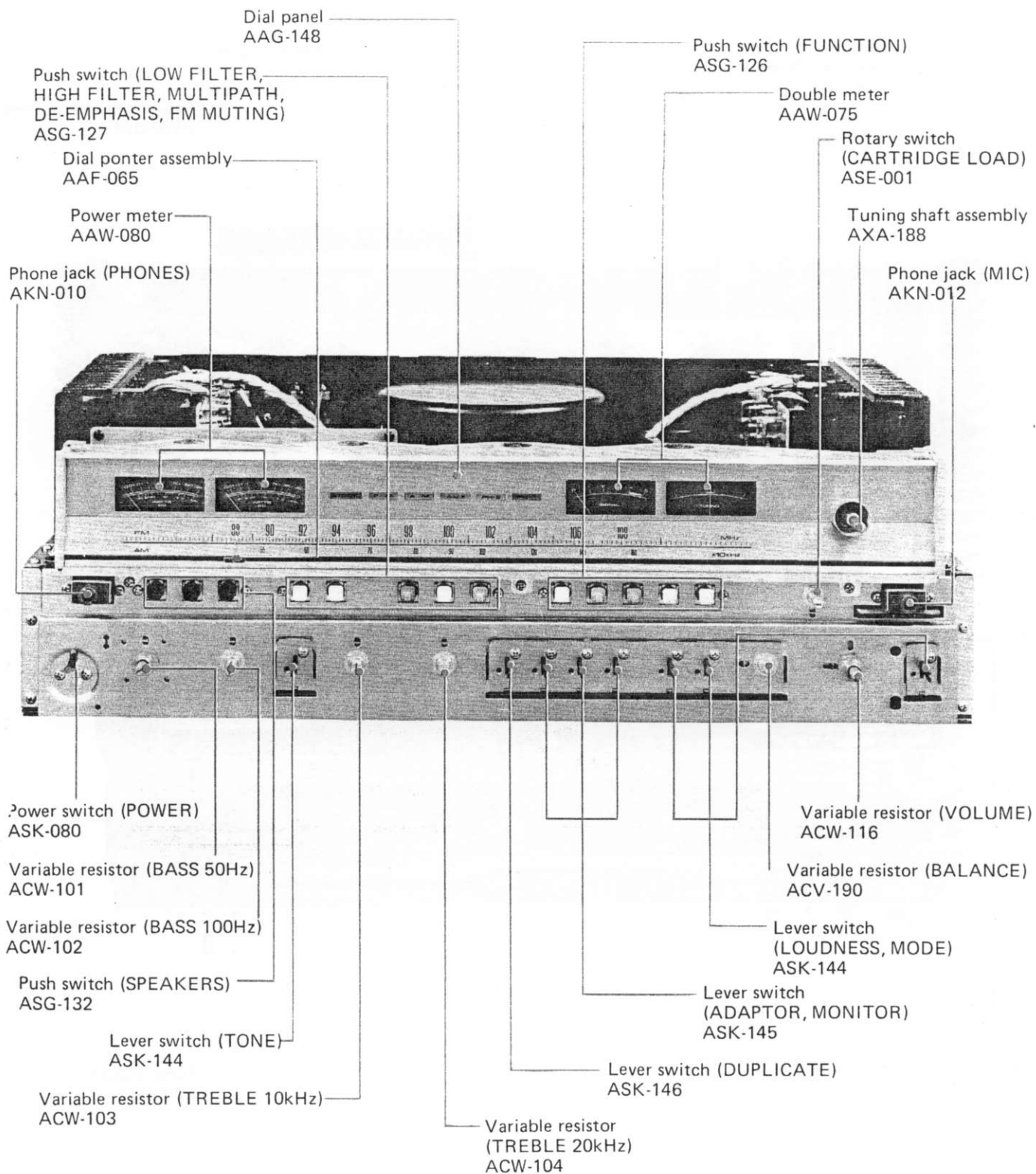
Fig. 12

8. PARTS LOCATION

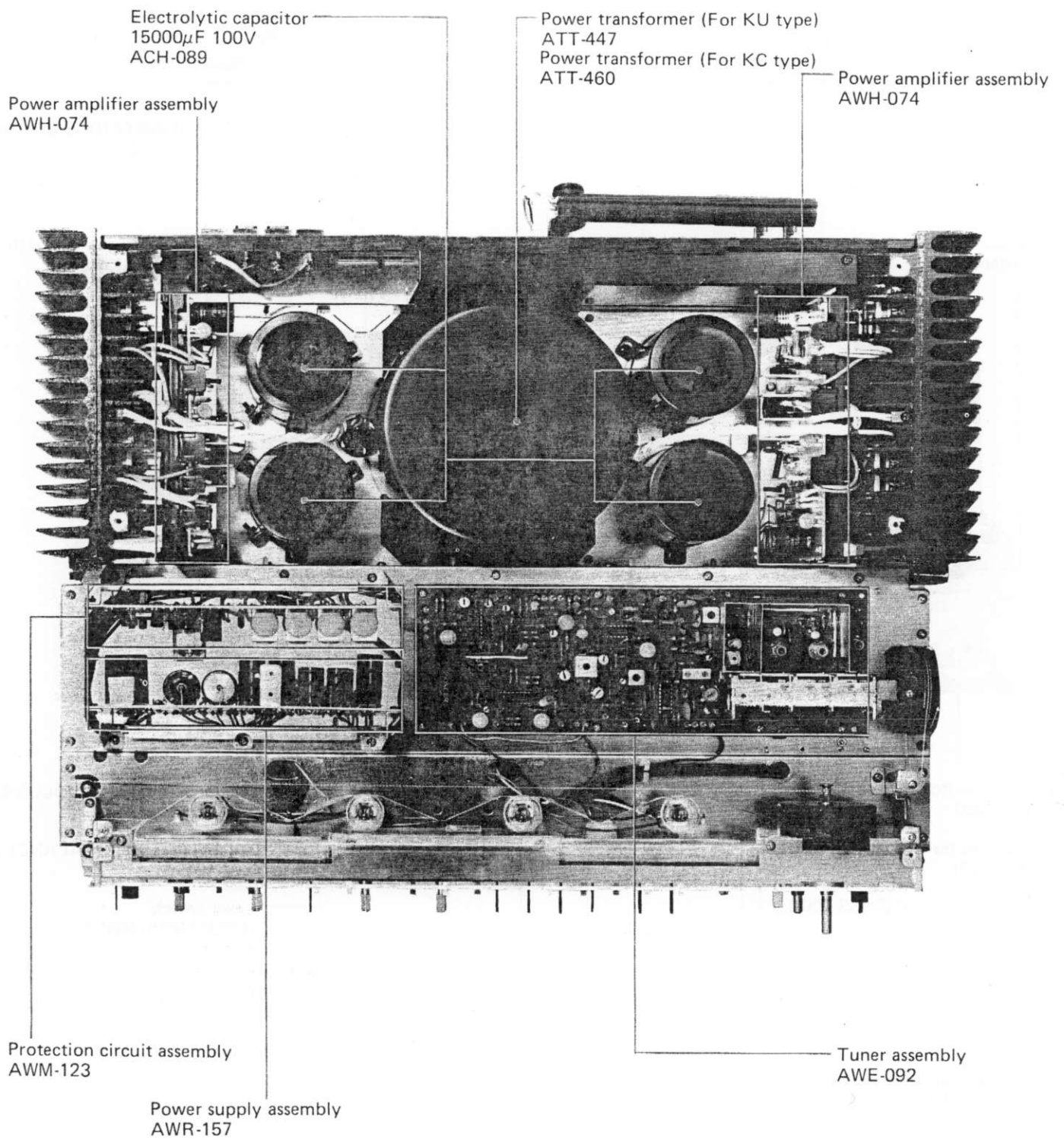
8.1 FRONT PANEL VIEW



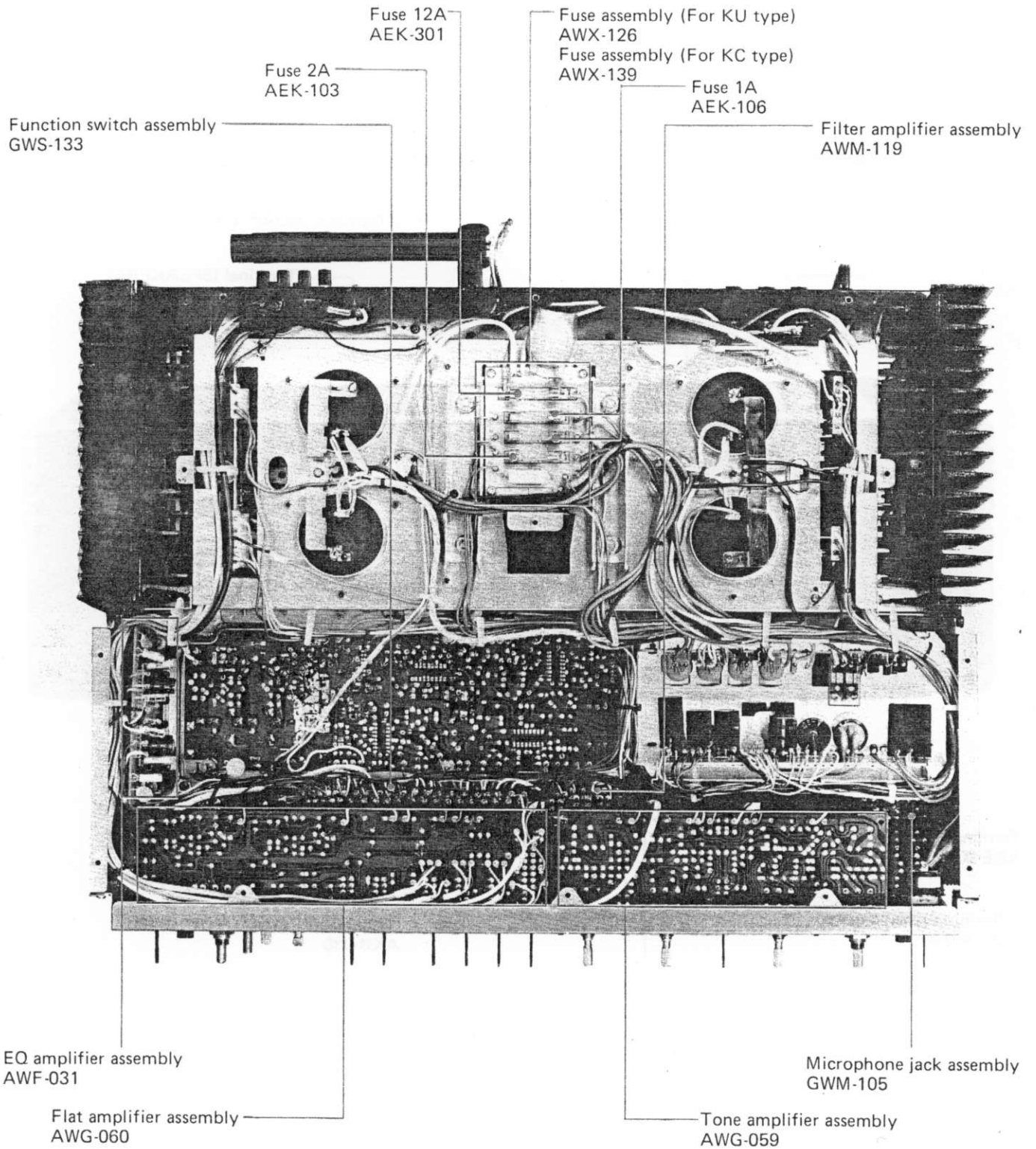
8.2 FRONT VIEW WITH PANEL REMOVED



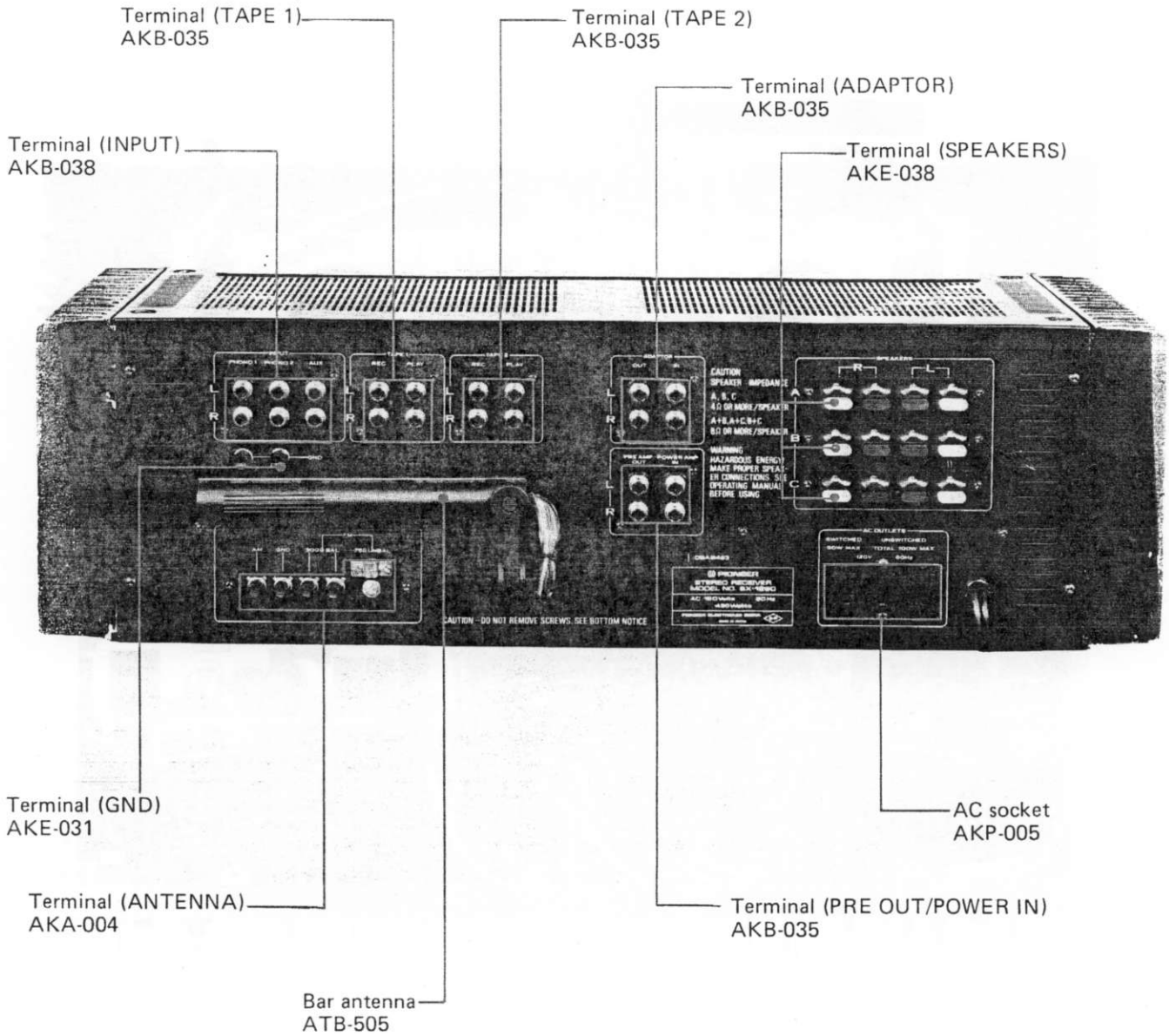
8.3 TOP VIEW



8.4 BOTTOM VIEW



8.5 REAR PANEL VIEW



9. DIAL CORD STRINGING

1. Remove the bonnet cover, wooden cover and front panel as described in the "Disassembly" section on page 18.
2. Undo the 3 screws ③① ~ ③② to remove the blind sash (Fig. 13).
3. Loosen screw ③③, and then remove the tuning drum from the tuning capacitor shaft (Fig. 14).
4. Tie one end of the cord to the peg on the inside of the tuning drum (Fig. 14).
5. With the tuning capacitor blades turned full in, rotate the tuning drum around the variable capacitor shaft so that screw ③③ is positioned at the apex (i.e. facing straight up).
6. Lead the cord out through the gap in the tuning drum, make half a turn, and then pass the cord over the pulleys A, B, and C in that order. Wind the cord 3 times around the tuning shaft and pass it over pulley D; then make 2 windings around the tuning drum, and finally tie it to the spring, making sure there is sufficient tension in the cord (Figs. 15, 16).
7. Turn the tuning shaft to check that the drum and cord move smoothly and easily, and then cut off the remaining cord.
8. Turn the tuning shaft right back in the counter-clockwise direction (so that the variable capacitor blades are fully intermeshed).
9. Align the dial pointer with the starter point on the dial scale, and secure it firmly to the cord (Fig. 17).
10. Finally apply the locking paint to the cord securing positions (tuning drum projection and spring) and the dial pointer connection.

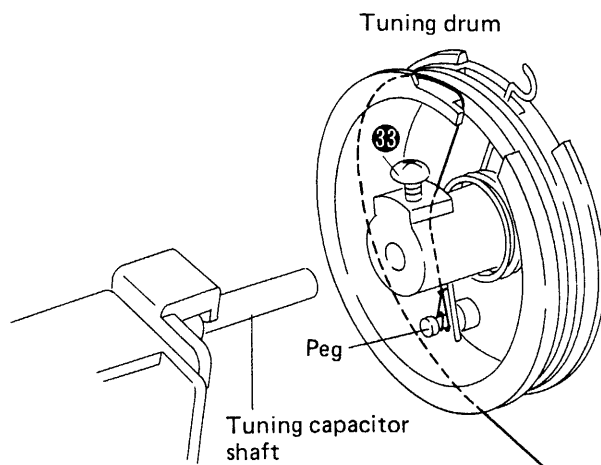


Fig. 14

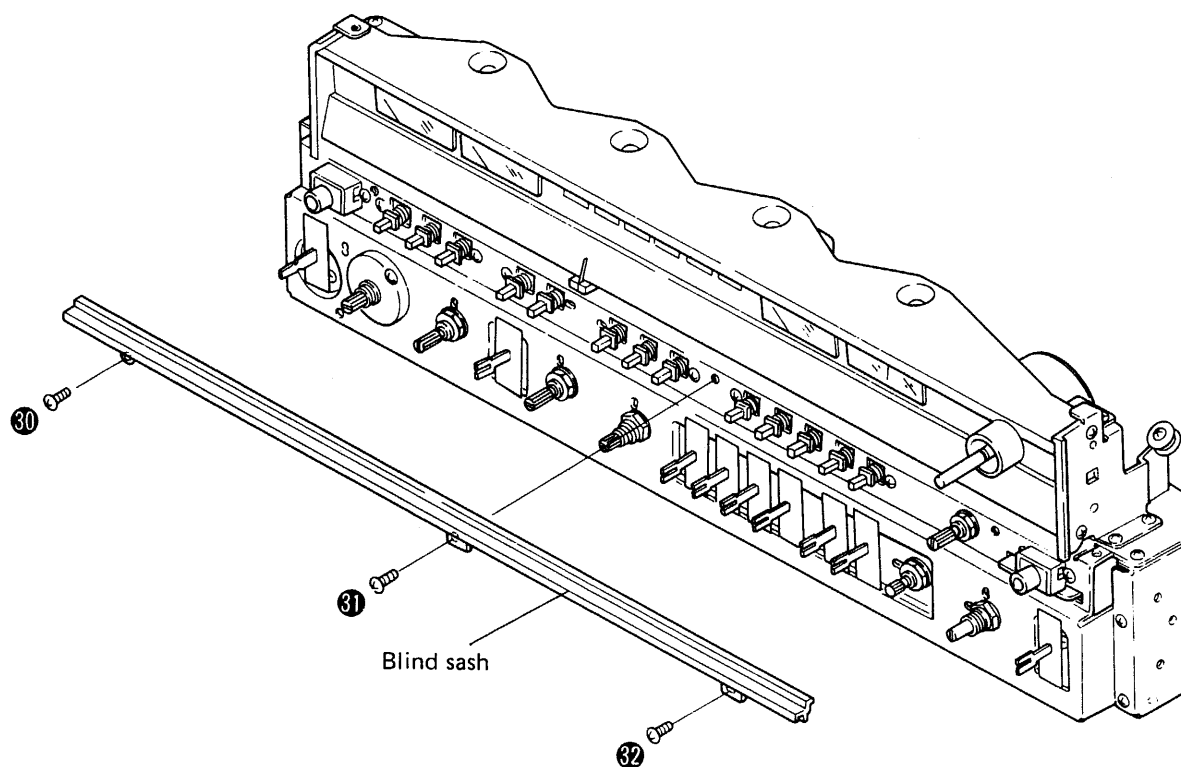


Fig. 13

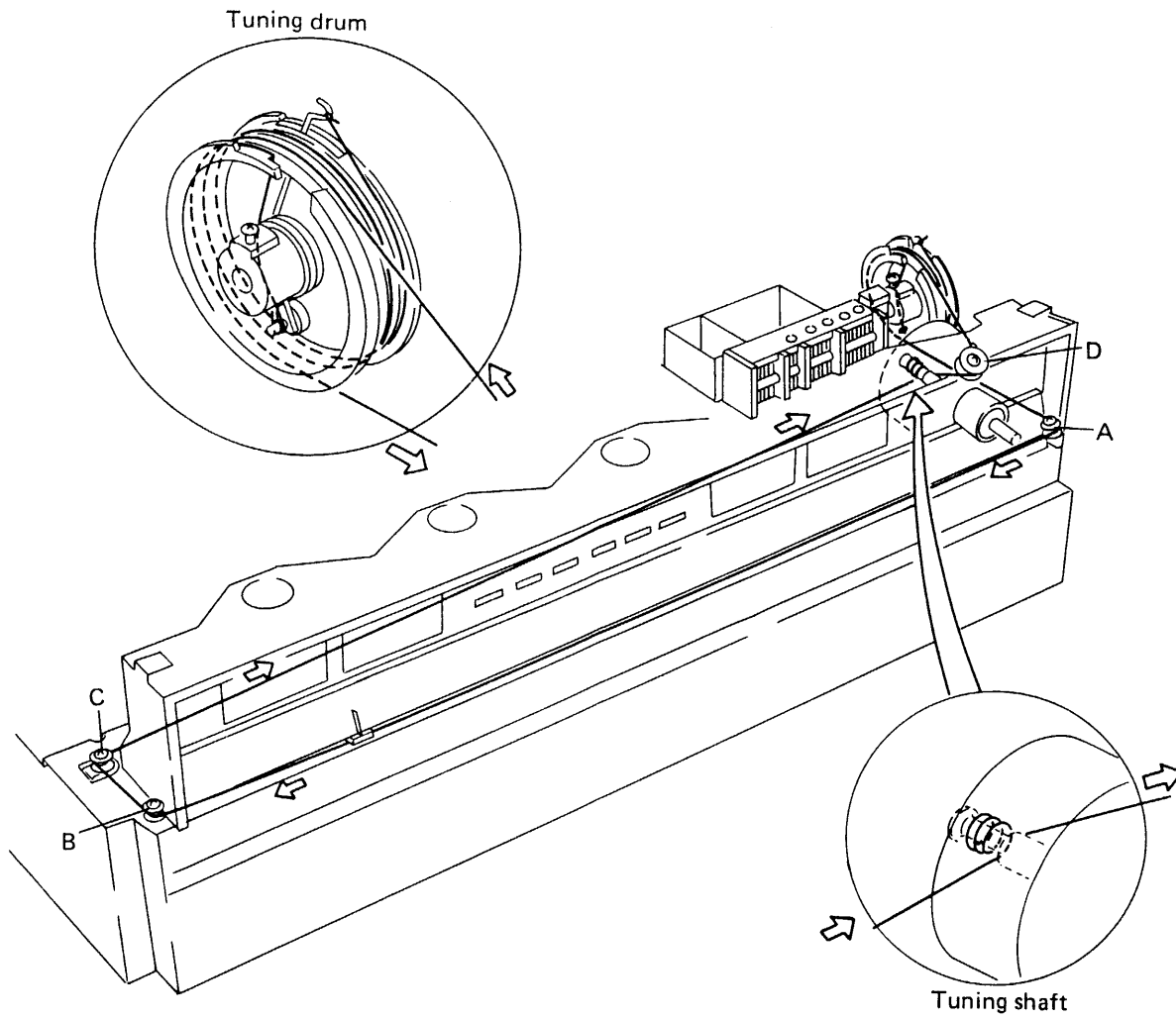


Fig. 15

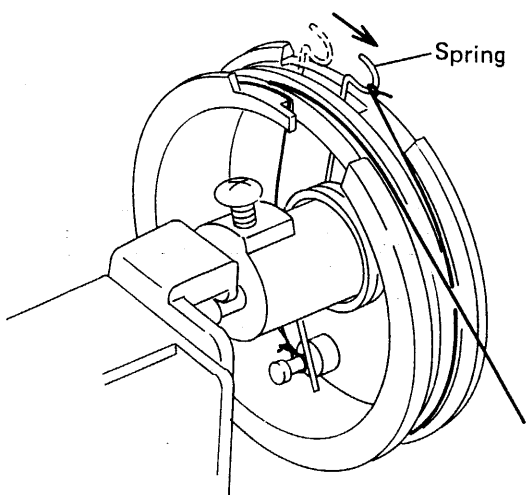


Fig. 16

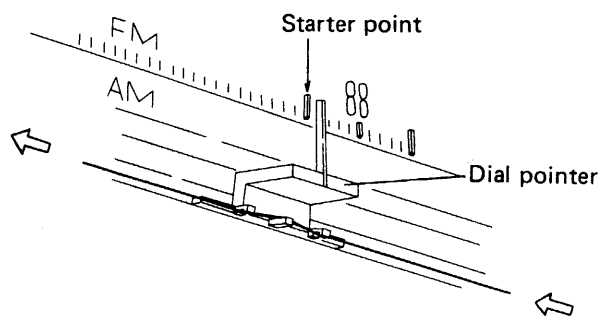


Fig. 17

10. ADJUSTMENTS

10.1 FM TUNER

FM Tracking

- Confirm that the dial is set to the start point.
 - Connect as shown in Fig. 20, and set the FUNCTION switch to "FM" and the MUTING switch to "OFF".
1. Set an FM signal generator to 400Hz, 100% modulation, 100dB output.
 2. Set TC_4 to near center capacitance, set the FM signal generator and the SX-1280 dial pointer to 90MHz, and adjust T_4 for maximum deflection at the signal meter.
 3. Under the state of "2" above, adjust the primary (bottom) core of T_6 so that the pointer of the tuning meter deflects to the center of the scale.
 4. Set the FM signal generator output to 9dB, and adjust T_1, T_2, T_3 for maximum output.
 5. Set the FM signal generator and the SX-1280 dial pointer to 106MHz, and adjust TC_4 for maximum deflection at the signal meter.
 6. Set the FM signal generator output to 9dB, and adjust TC_1, TC_2, TC_3 for maximum output.
 7. Repeat steps 2–6 until reception at 90MHz and 106MHz is perfect. At this time, adjust T_5 for maximum output.
 8. Adjust the primary core (bottom) of T_6 so that the pointer of the tuning meter deflects to the center of the scale in the untuned state (noise only).
 9. Set the FM signal generator output to 60dB, set the SX-1280 dial pointer to 98MHz, and tune the FM signal generator at the tuning meter. (Pointer of tuning meter deflects to the center of the scale).
 10. Adjust the secondary side (top) of T_6 for minimum distortion.
 11. Repeat steps 8–10 until the minimum distortion point does not change.
 12. Set the FM signal generator output to 100dB, and adjust VR_2 for maximum deflection at the signal meter (Fig. 18).
 13. Set the FM signal generator output to 20dB. Set the MUTING switch to "ON" and adjust VR_1 so that the output waveform disappears.

MPX Decoder

- Connect as shown in Fig. 20, and set the FUNCTION switch to "FM" and the MUTING switch to "OFF".
1. Set the FM signal generator to 98MHz unmodulated, 60dB output.
 2. Connect the output of the MPX SG PILOT OUT terminal to the horizontal axis input terminal of an oscilloscope and tuner ass'y terminal 13 to the vertical axis input.
 3. Set the SX-1280 dial pointer to 98MHz and adjust the FM signal generator so that the tuning meter deflects to the center of the scale.
 4. Adjust VR_3 so that a Lissajous pattern is traced on the oscilloscope (Fig. 19).
 5. Modulate the MPX SG at L+R (1kHz) to deviate the 67.5kHz pilot signal (19kHz) 7.5kHz.
 6. Adjust T_5 for minimum L channel or R channel distortion. (However, within $\pm 90^\circ$ of the core adjustment range).
 7. Make the MPX SG main signal L or R and adjust VR_4 for best separation.
 8. Next, set the MPX SG to 7.5kHz by pilot signal (19kHz).
 9. Adjust VR_5 for minimum output.

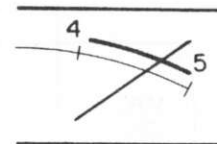


Fig. 18 Meter deflection

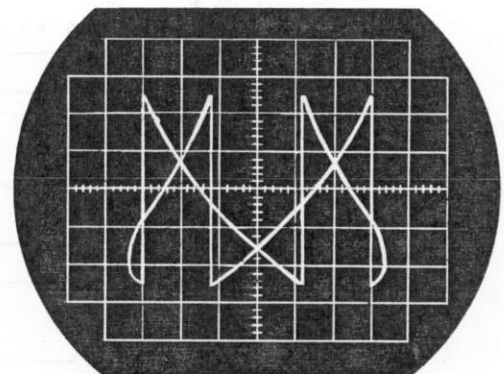


Fig. 19 Lissajous waveform

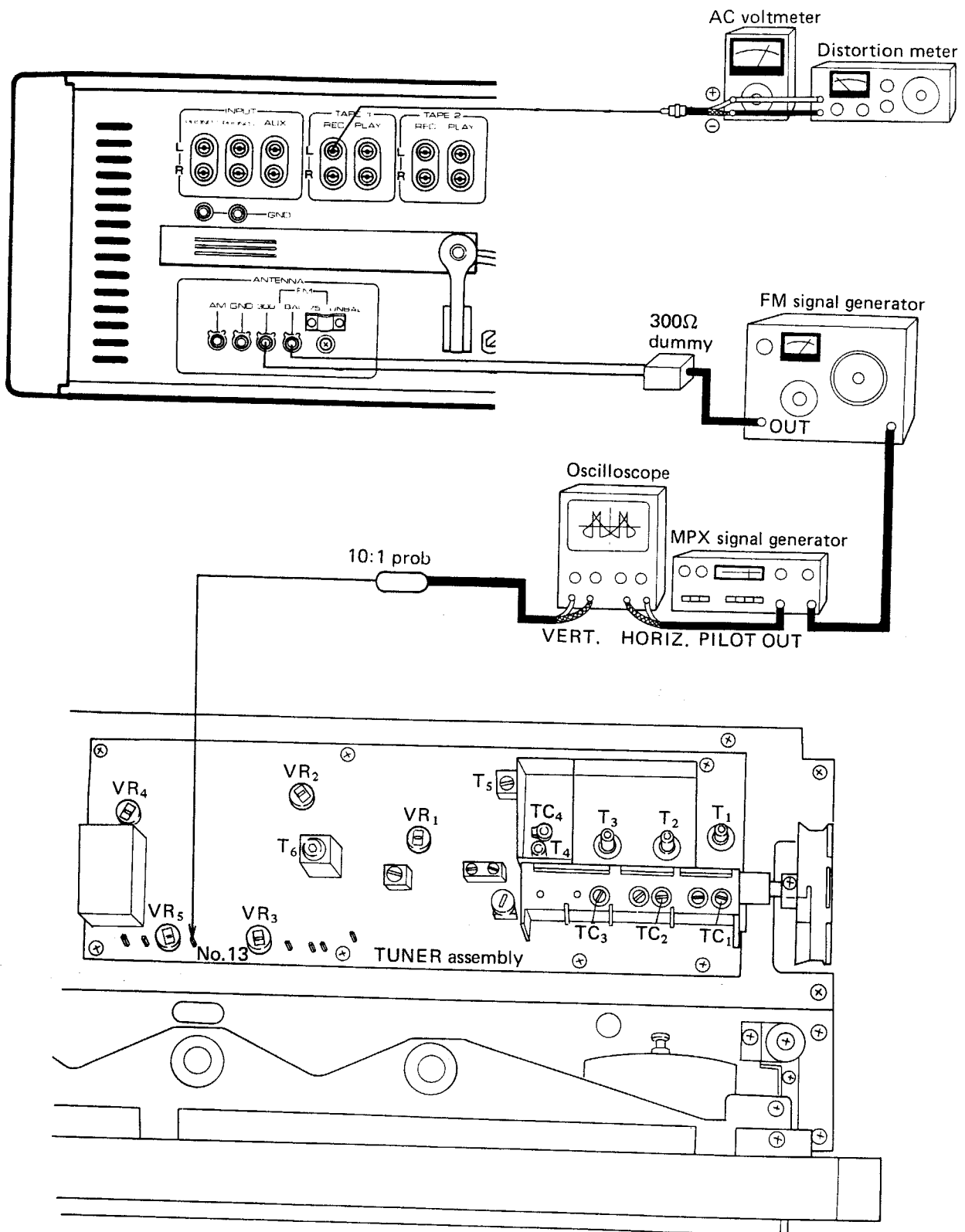


Fig. 20

10.2 AM TUNER

1. Connect the AM signal generator (AMSG) to the AM ANTENNA terminal via a 1kΩ resistor (Fig. 21).
2. Turn the AM function switch ON.
3. Turn the DUPLICATE switch OFF, and connect an AC voltmeter to either the L or R TAPE 1 REC jack.
4. Apply a 400Hz, 30% modulated signal to AMSG, and set the output to 100dB.
5. Adjust the tuning dial indicator and AMSG frequency to 600kHz.
6. Adjust the T₇ core to provide maximum reading in the AC voltmeter.
7. Next readjust the tuning dial indicator and AMSG frequency to 1400kHz.
8. Adjust TC₆ (trimmer) to again provide maximum reading in the AC voltmeter.
9. Set AMSG to 30dB output level.
10. Return the tuning dial indicator and AMSG frequency to 600kHz.
11. This time adjust bar antenna core to provide maximum reading in the AC voltmeter.
12. Return the tuning dial indicator and AMSG frequency back to 1400kHz.
13. Adjust TC₅ (trimmers) to again provide maximum reading in the AC voltmeter.
14. Repeat steps 10 to 13 above until no further changes occur in the AC voltage reading at the 600kHz and 1400kHz positions.

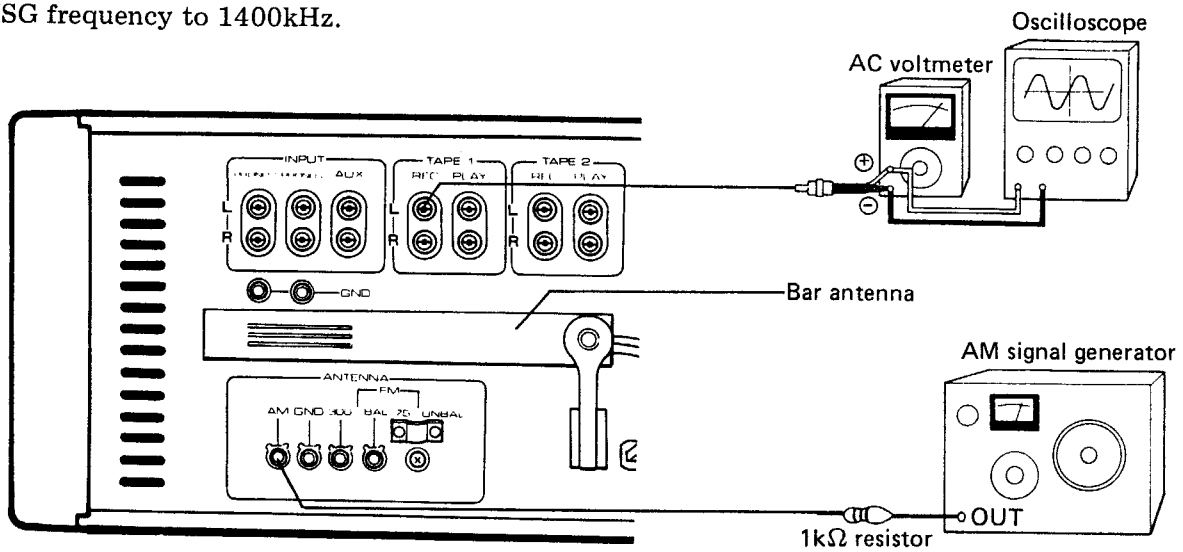


Fig. 21

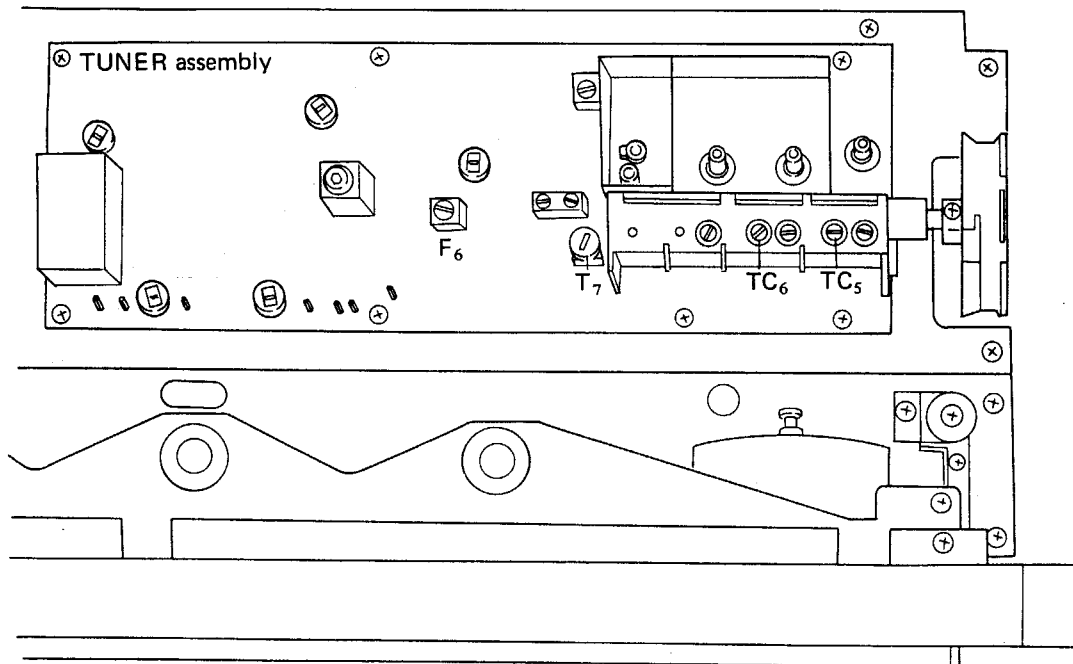


Fig. 22

10.3 POWER AMPLIFIER

Turn VR₂ (L and R) fully around in the counter-clockwise direction, but set VR₁ (L and R) to the center positions. Without any load or input signal, turn the POWER switch ON.

Since the same configuration is used for both left and right channels of the SX-1280 power amplifier assembly, the following adjustments apply to both channels.

DC Balance (Fig. 23)

Adjust VR₁ so that the potential difference between terminals No. 14 and ground reads zero volts (to within $\pm 20\text{mV}$). If this level cannot be attained, disconnect the jumper leads A (or reconnect if already disconnected), and then readjust.

Idle Current (Fig. 23)

Adjust VR₂ so that the potential difference between the plus (+) terminal No. 17, and the minus (-) terminal No. 11 reads 15mV (or at least in the 10 to 25mV range). The potential difference between + terminal No.18, and - terminal No. 12 should also register about 15mV at this time. After passing a current for about 10 minutes, check these voltage readings again.

10.4 METER AMPLIFIER

Apply a 1kHz signal to the POWER AMP IN terminals (or any other power amplifier input terminals). Adjust the level of this input signal so that the voltage on the output terminals (SPEAKERS) reads 37.95V rms (AC). Then adjust VR₂(L) and VR₁(R) of the meter amplifier assembly so that the output power meters read 180 watts.

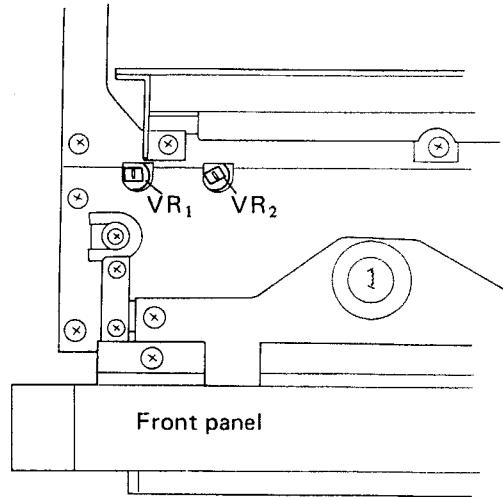
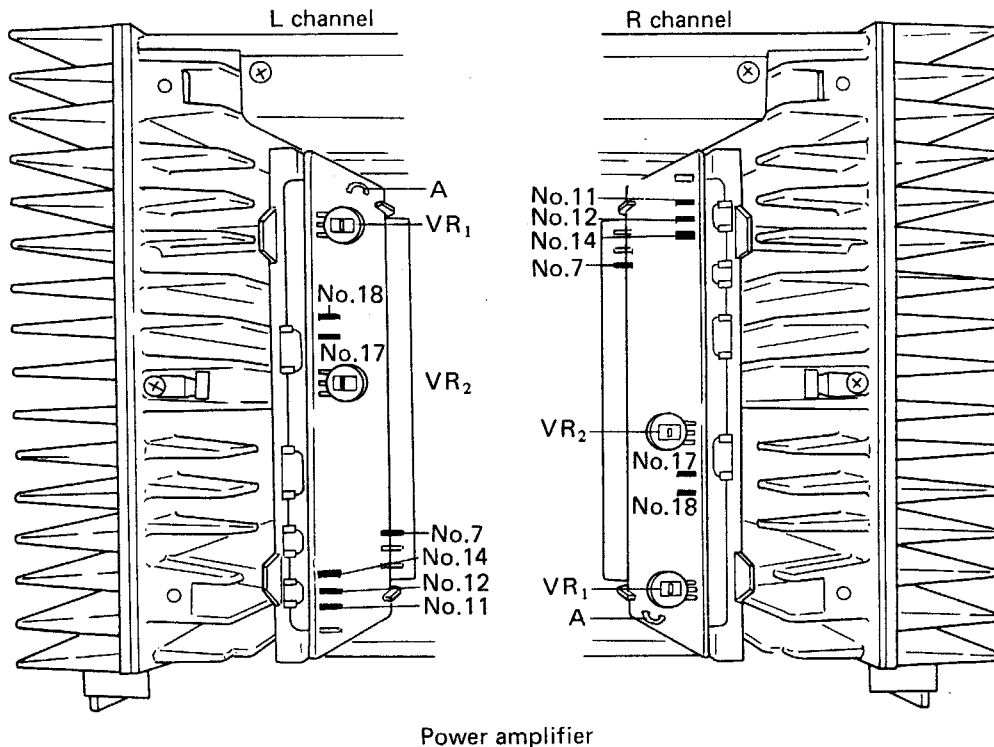


Fig. 24

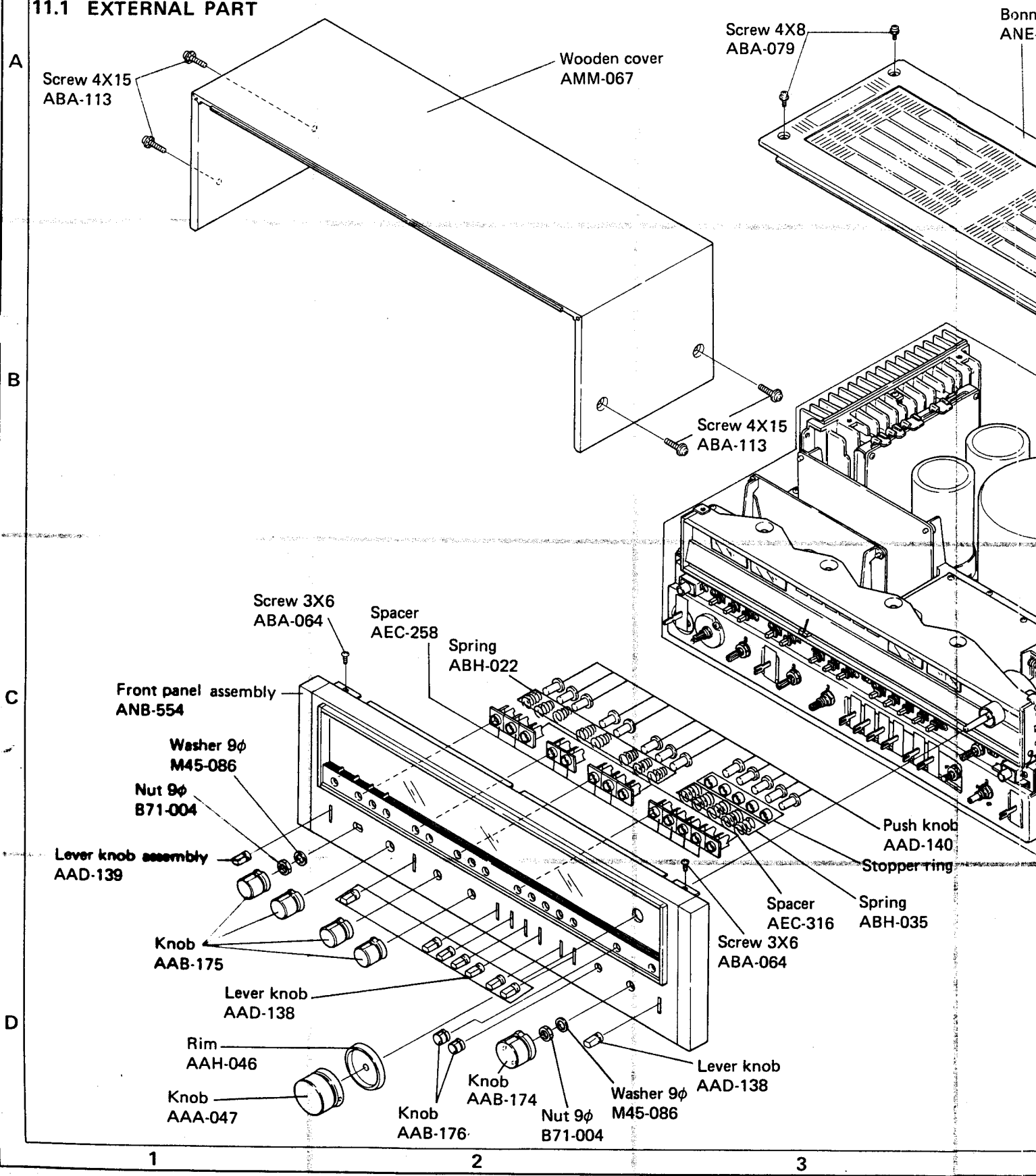


Power amplifier

Fig. 23

11. EXPLODED VIEWS

11.1 EXTERNAL PART



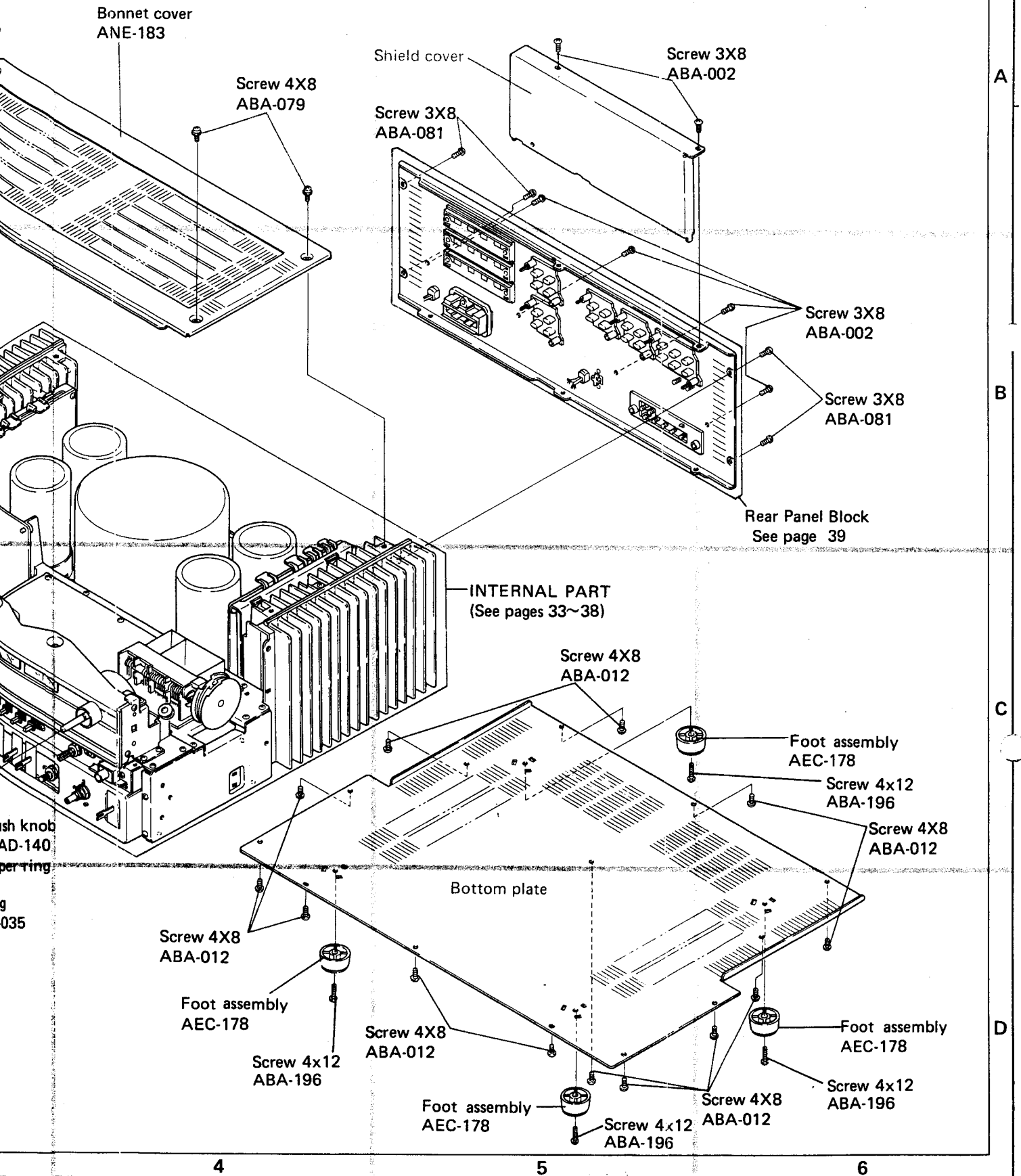
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NOTE:

Parts indicated in green type cannot be supplied.

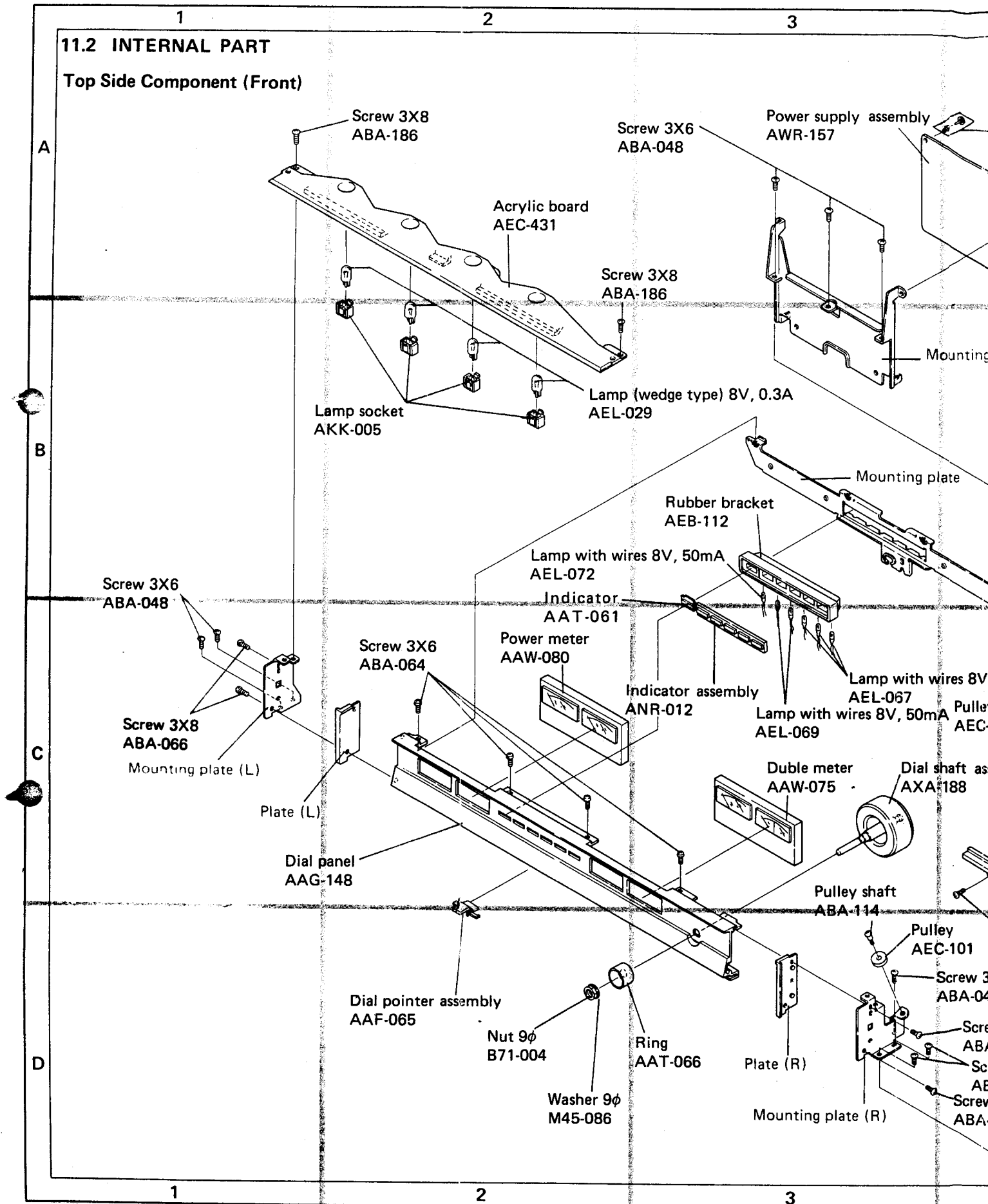


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11.2 INTERNAL PART
Top Side Component (Front)



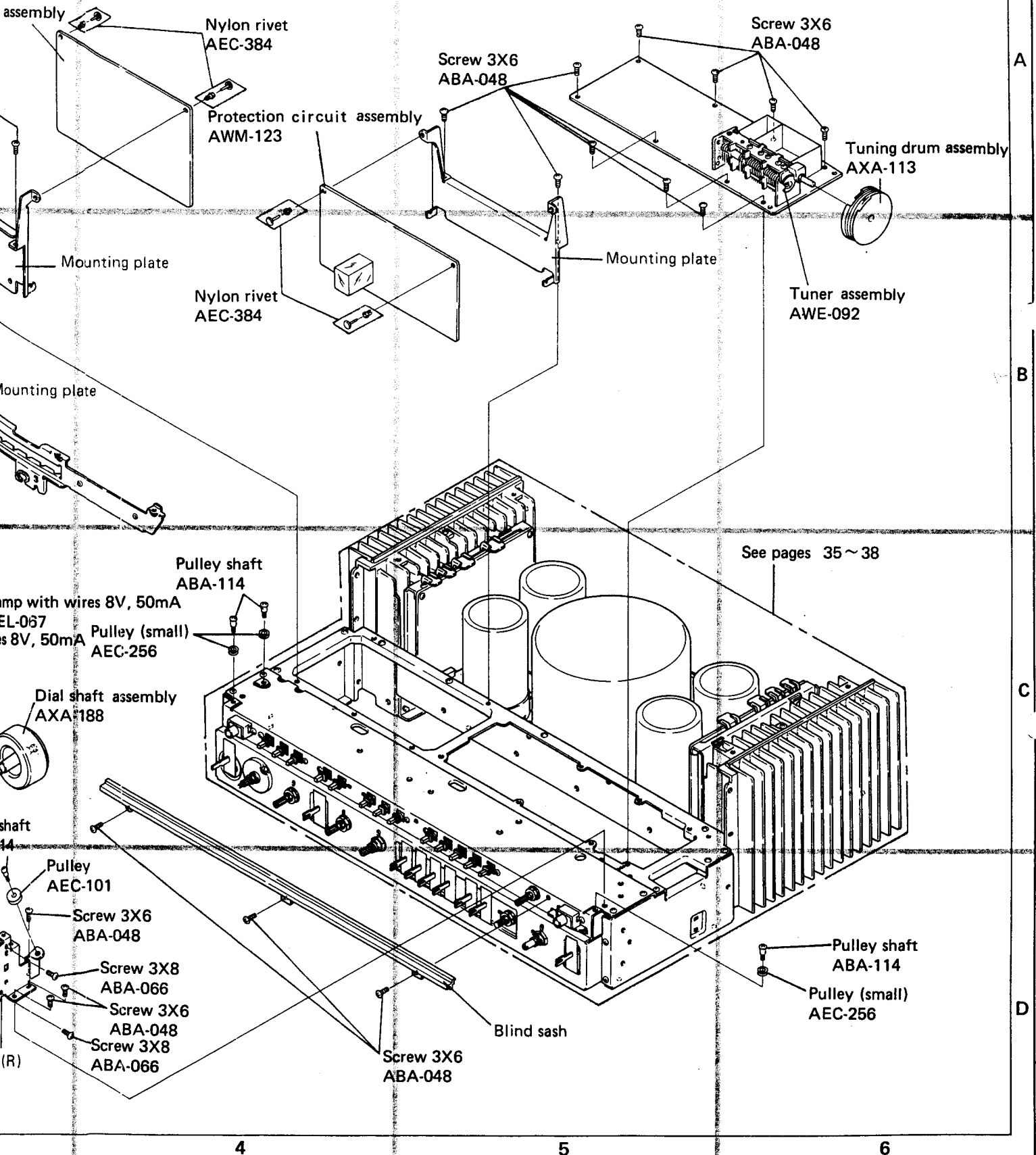
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NOTE:

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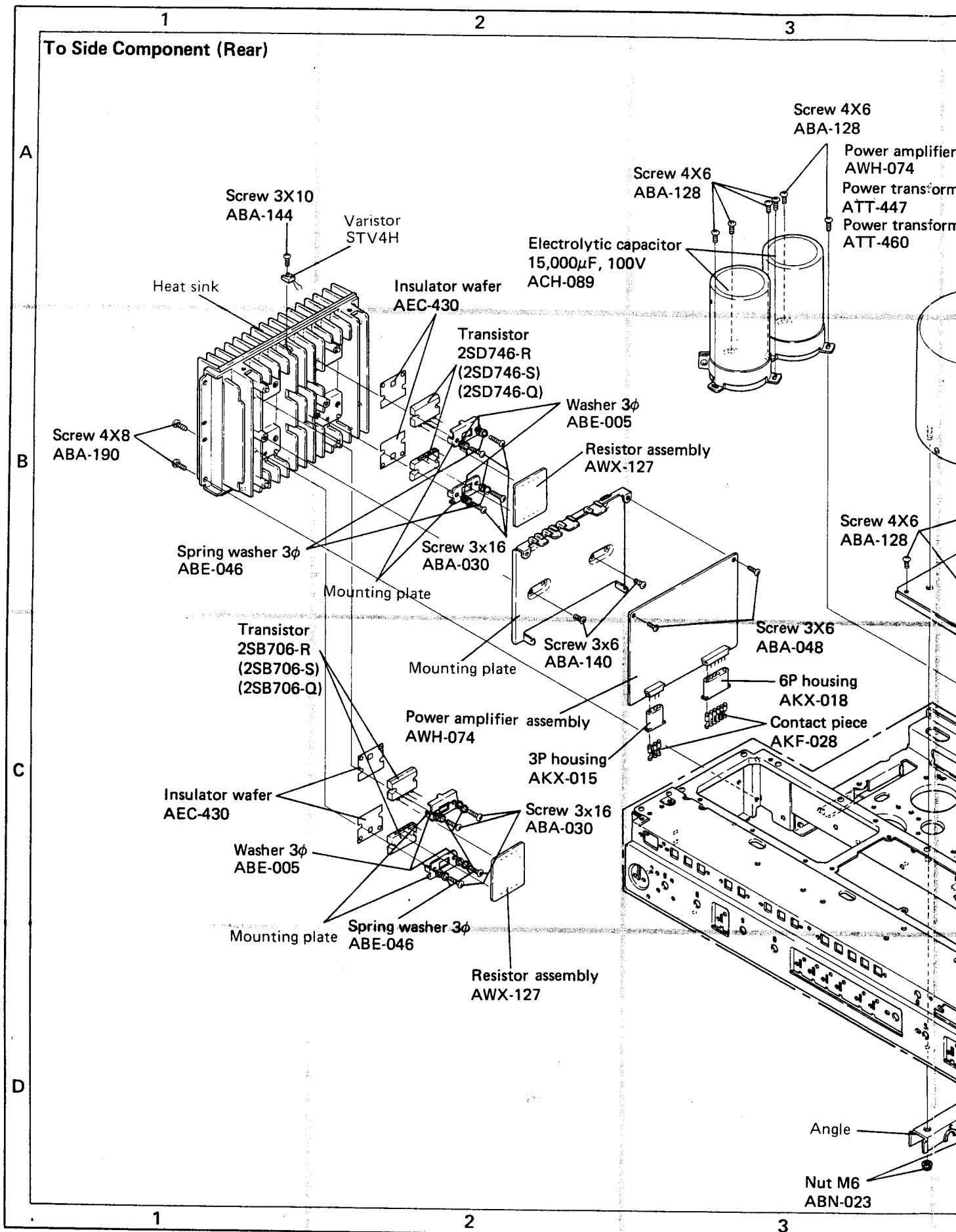
A

B

C

D

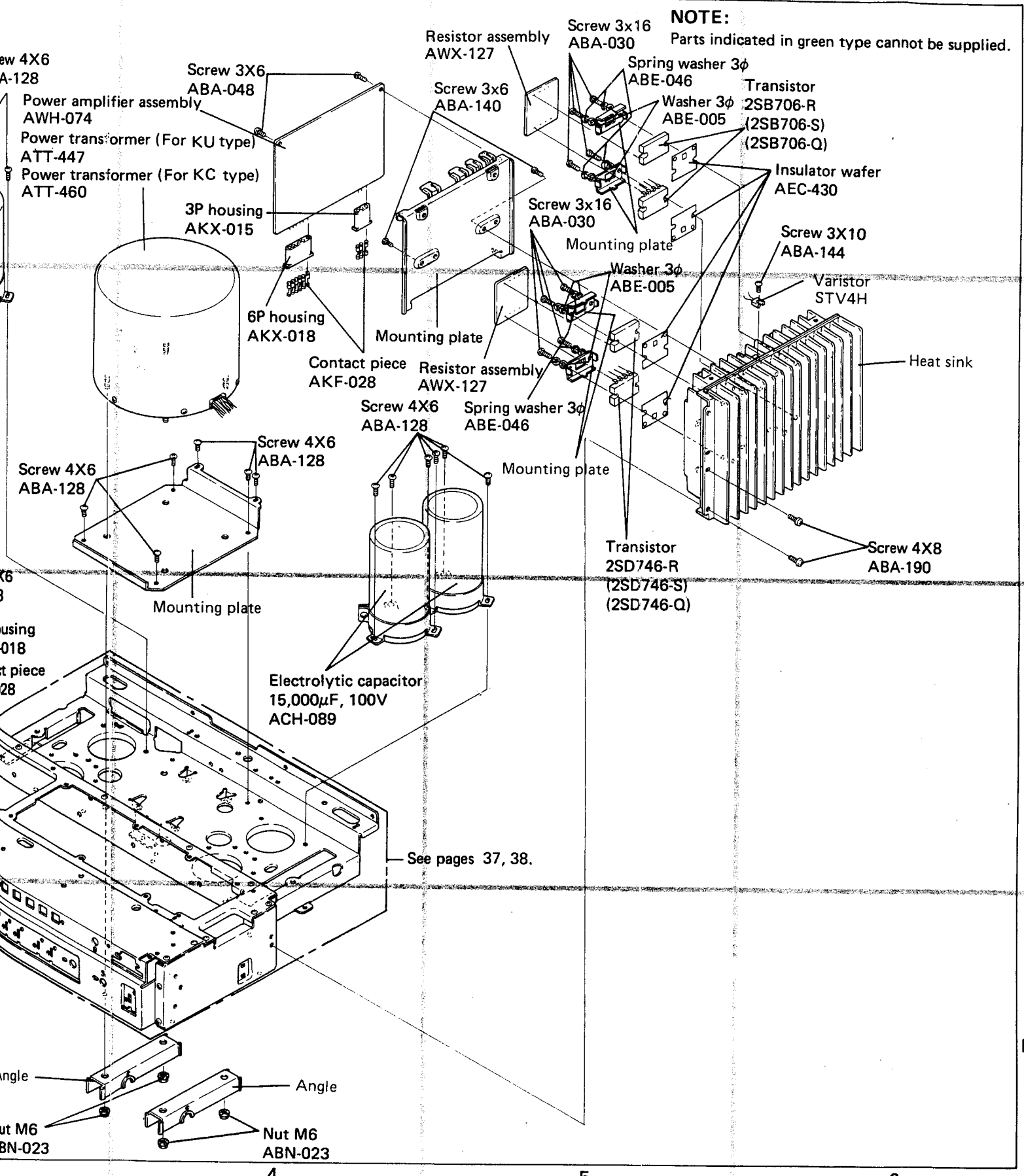
To Side Component (Rear)



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6



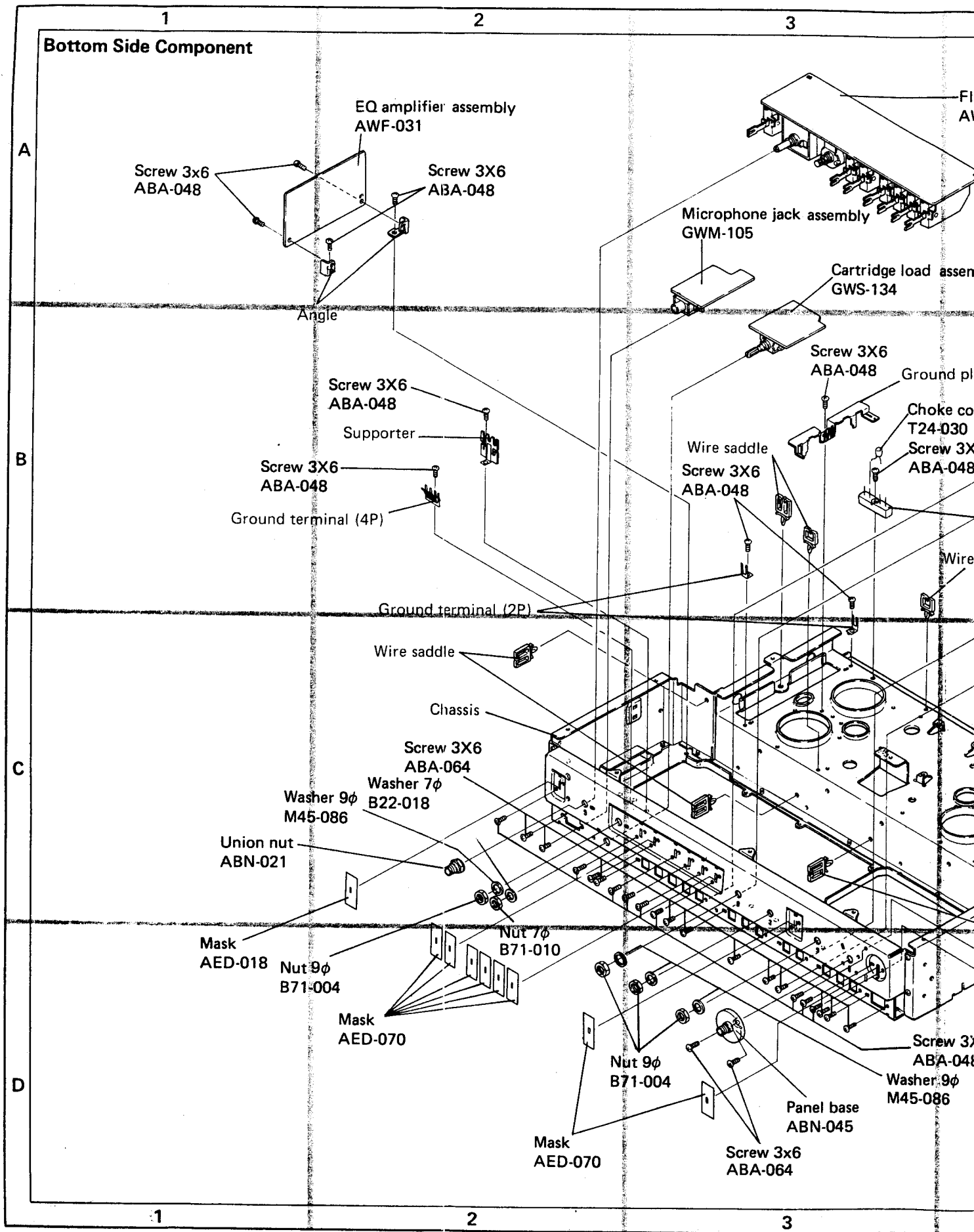
NOTE:
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See pages 37, 38.

4

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6



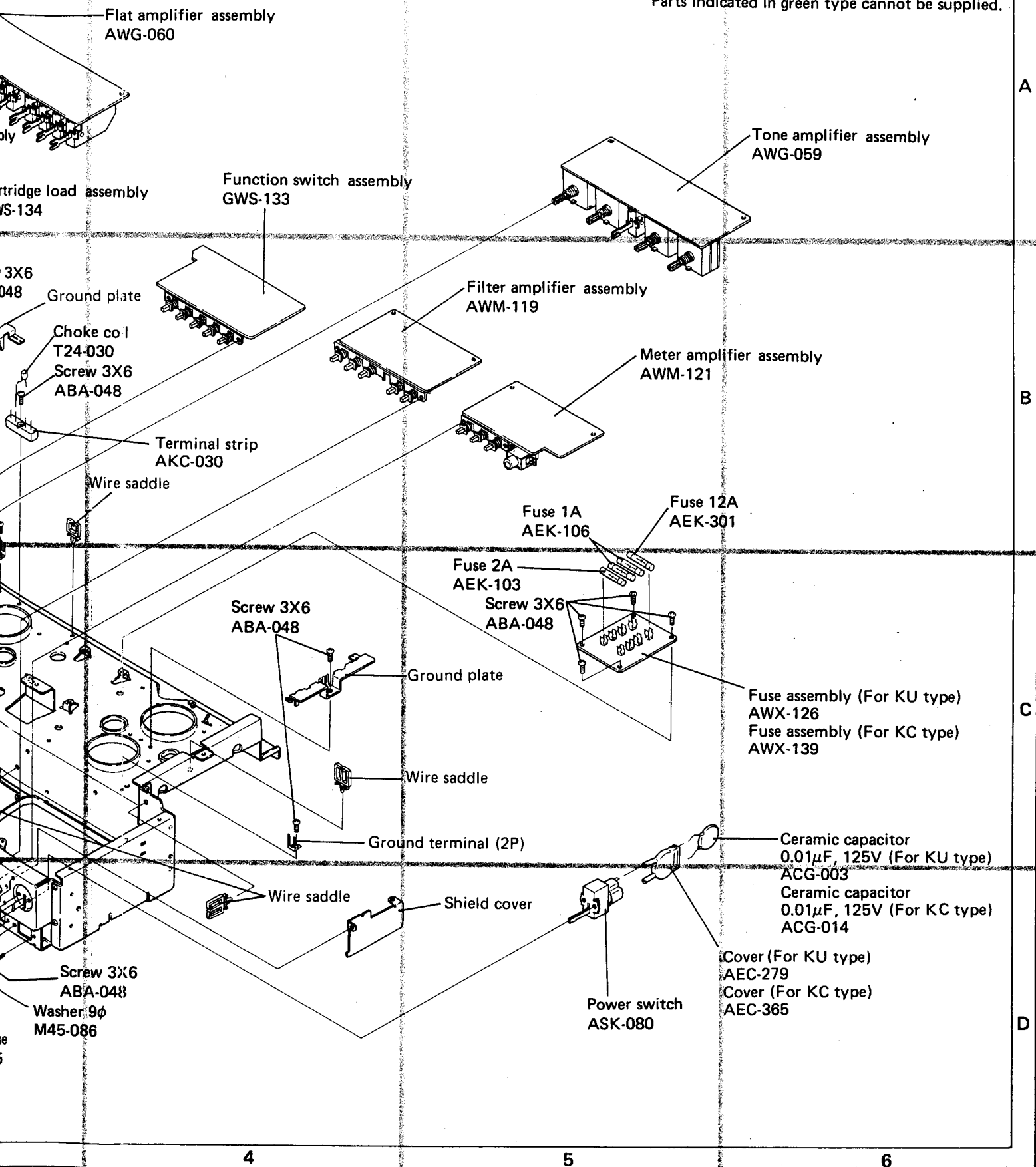
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NOTE:

Parts indicated in green type cannot be supplied.



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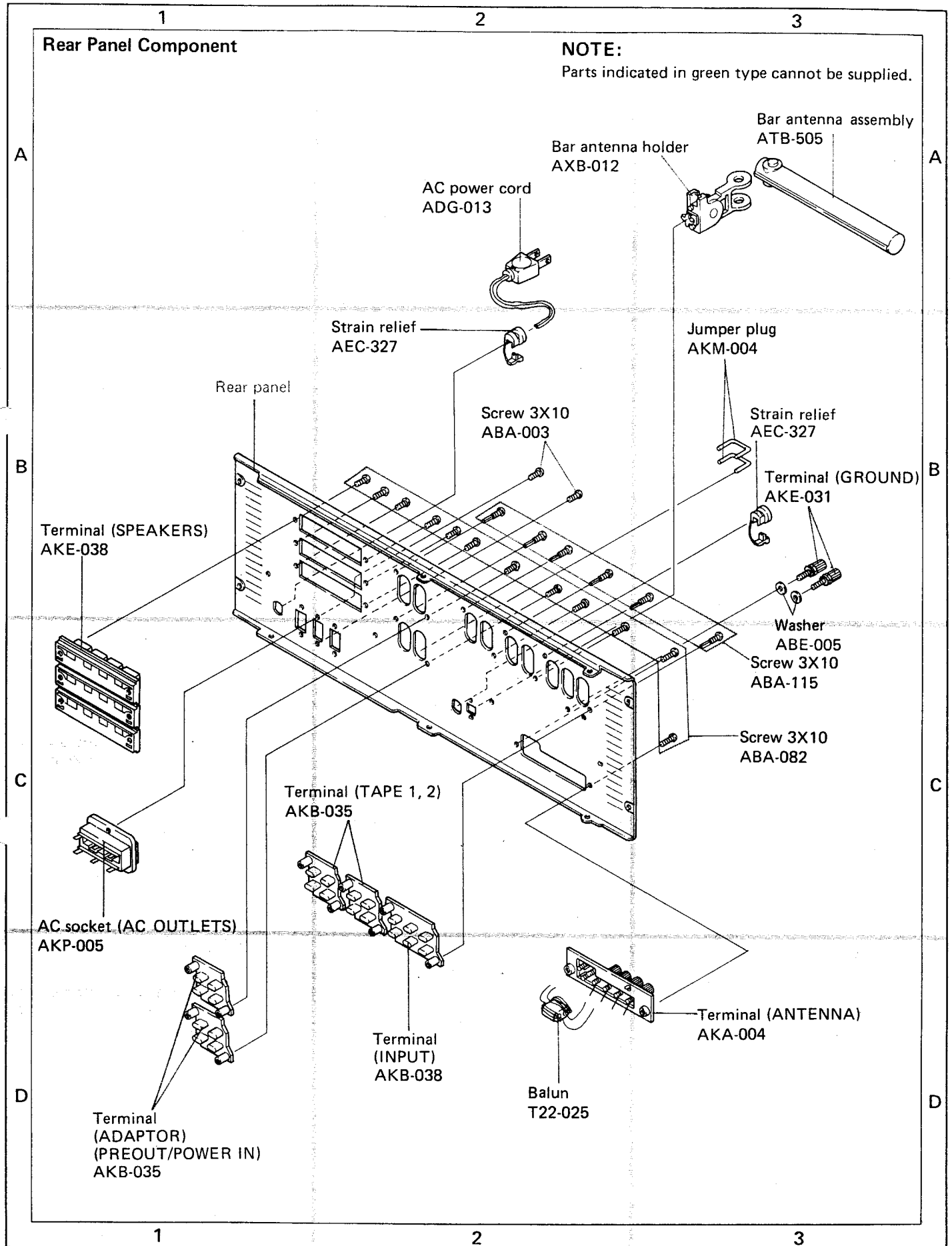
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A

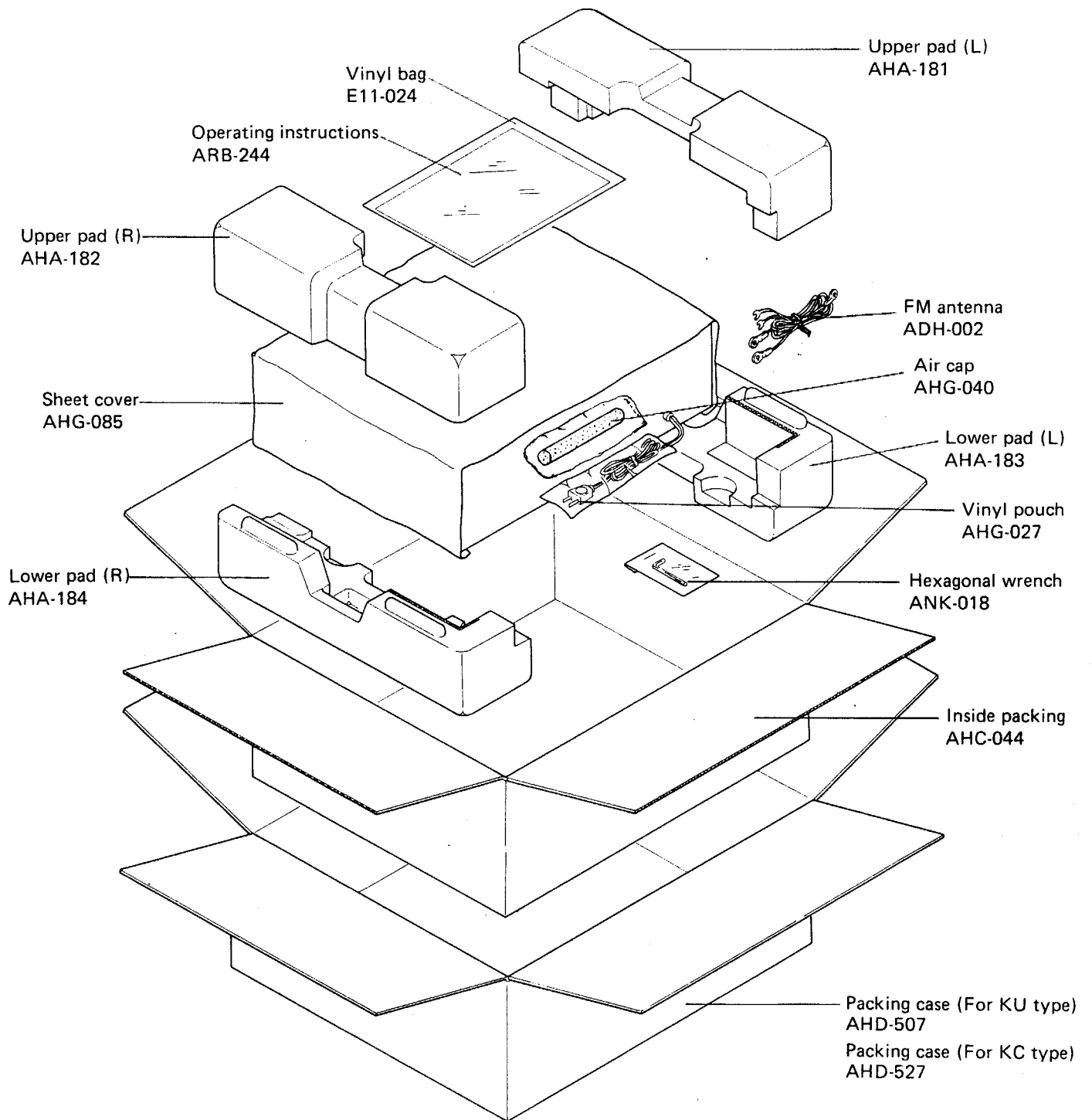
B

C

D



12. PACKING



13. SCHEMATIC DIAGRAMS, P.C. BOARD PATTERNS AND PARTS LIST

13.1 SCHEMATIC DIAGRAM AND MISCELLANEOUS PARTS

Miscellaneous Parts

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

TRANSFORMERS AND COILS

Symbol	Part No.	Description
T1	ATT-447	Power transformer (For KU type)
	ATT-460	Power transformer (For KC type)
T2	ATB-505	Bar antenna assembly
T3	T22-025	Balun
L1	T24-030	Choke coil

CAPACITORS

Symbol	Part No.	Description
C1	ACH-089	Electrolytic 15000 100V
C2	ACH-089	Electrolytic 15000 100V
C3	ACH-089	Electrolytic 15000 100V
C4	ACH-089	Electrolytic 15000 100V
C5	ACG-003	Ceramic 0.01 125V (For KU type)
	ACG-014	Ceramic 0.01 125V (For KC type)
C6	CKDYF 403Z 50	Ceramic 0.04 50V
C7	CKDYF 403Z 50	Ceramic 0.04 50V
C8	CKDYF 403Z 50	Ceramic 0.04 50V
C9	CKDYF 403Z 50	Ceramic 0.04 50V
C10	CKDYF 403Z 50	Ceramic 0.04 50V
C11	CKDYF 403Z 50	Ceramic 0.04 50V
C12	CKDYF 403Z 50	Ceramic 0.04 50V
C13	CKDYF 403Z 50	Ceramic 0.04 50V

OTHERS

Symbol	Part No.	Description
S25	ASK-080	Power switch
	AKK-005	Lamp socket
R1	RD $\frac{1}{2}$ PS 225J	Carbon film resistor 2.2M $\frac{1}{4}W$

SEMICONDUCTORS

Symbol	Part No.	Description
Q1	2SD746-R, S or Q	Transistor
Q2	2SD746-R, S or Q	Transistor

Symbol	Part No.	Description
Q3	2SD746-R, S or Q	Transistor
Q4	2SD746-R, S or Q	Transistor
Q5	2SB706-R, S or Q	Transistor
Q6	2SB706-R, S or Q	Transistor
Q7	2SB706-R, S or Q	Transistor
Q8	2SB706-R, S or Q	Transistor

* hfe of these transistors (Q1 ~ Q8) should have the same value.

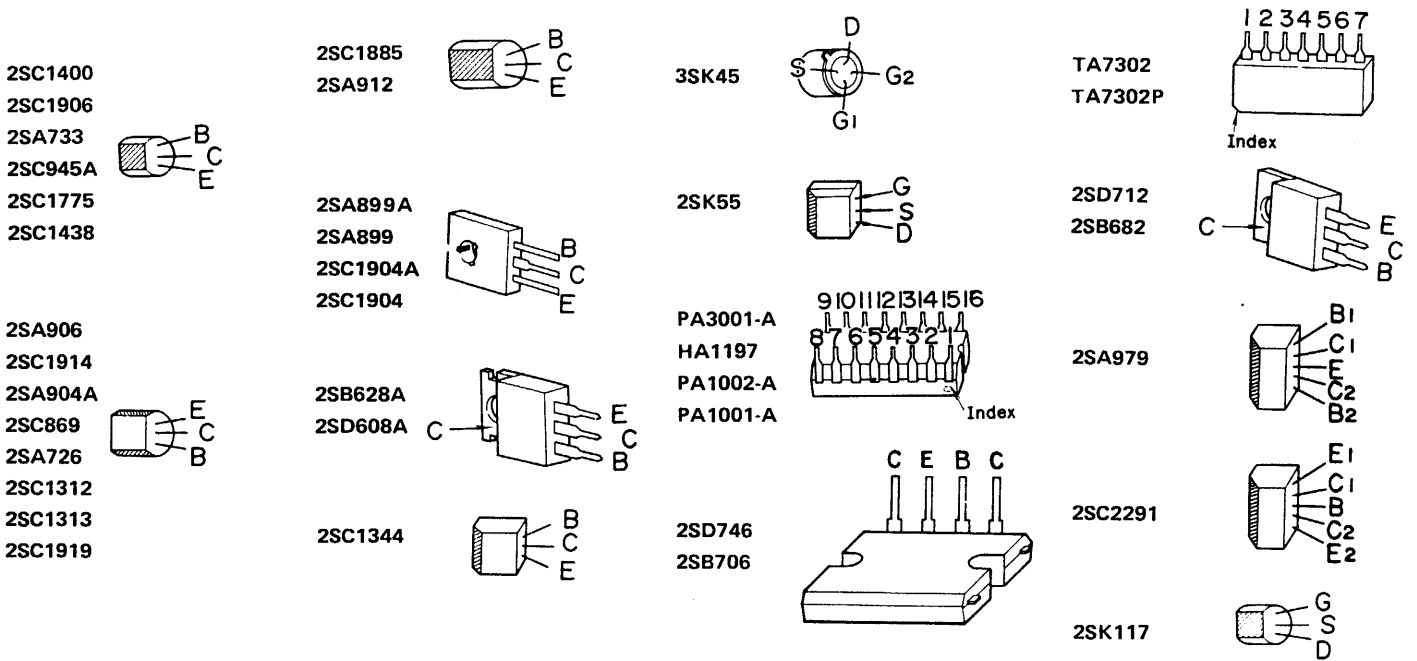
P.C. BOARD ASSEMBLIES

Symbol	Part No.	Description
	AWE-092	Tuner assembly
	AWF-031	EQ amplifier assembly
	GWS-133	Function switch assembly
	GWS-134	Cartridge load assembly
	GWM-105	Microphone jack assembly
	AWG-060	Flat amplifier assembly
	AWG-059	Tone amplifier assembly
	AWM-119	Filter amplifier assembly
	AWH-074	Power amplifier assembly
	AWM-121	Meter amplifier assembly
	AWM-123	Protection assembly
	AWR-157	Power supply assembly
	AWX-126	Fuse assembly (For KU type)
	AWX-139	Fuse assembly (For KC type)
	AWX-127	Resistor assembly

LAMPS AND FUSES

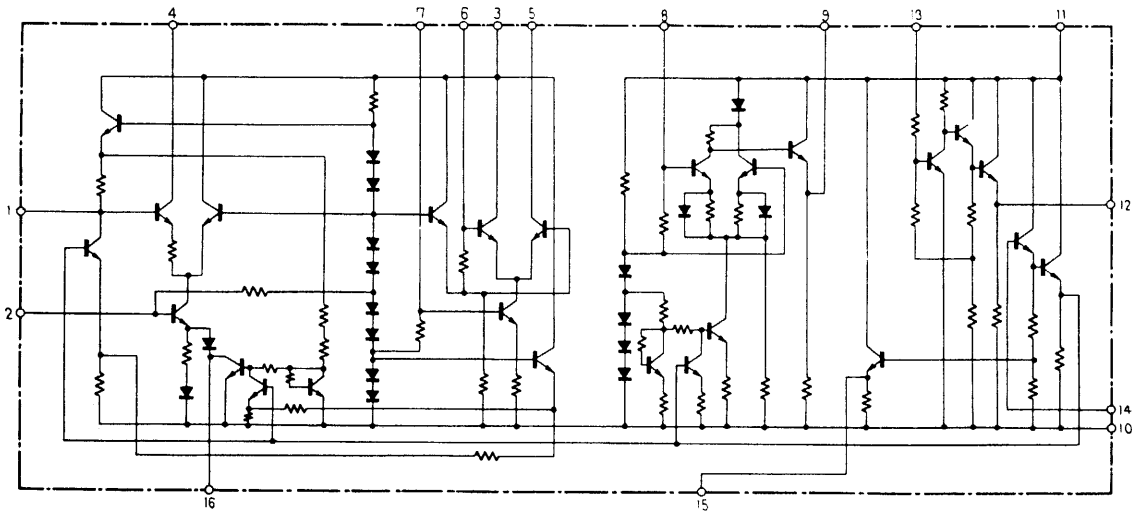
Symbol	Part No.	Description
PL1	AEL-029	Lamp (wedge type) 8V 0.3A
PL2	AEL-029	Lamp (wedge type) 8V 0.3A
PL3	AEL-029	Lamp (wedge type) 8V 0.3A
PL4	AEL-029	Lamp (wedge type) 8V 0.3A
PL5	AEL-069	Lamp with wires 8V 50mA
PL6	AEL-069	Lamp with wires 8V 50mA
PL7	AEL-067	Lamp with wires 8V 50mA
PL8	AEL-067	Lamp with wires 8V 50mA
PL9	AEL-067	Lamp with wires 8V 50mA
PL10	AEL-072	Lamp with wires 8V 50mA
FU1	AEK-301	Fuse 12A
FU2	AEK-103	Fuse 2A
FU3	AEK-106	Fuse 1A
FU4	AEK-106	Fuse 1A

External Appearance of Transistors and ICs

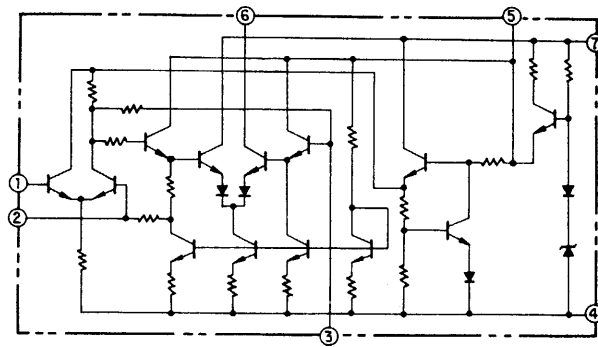


Circuit Diagrams of ICs

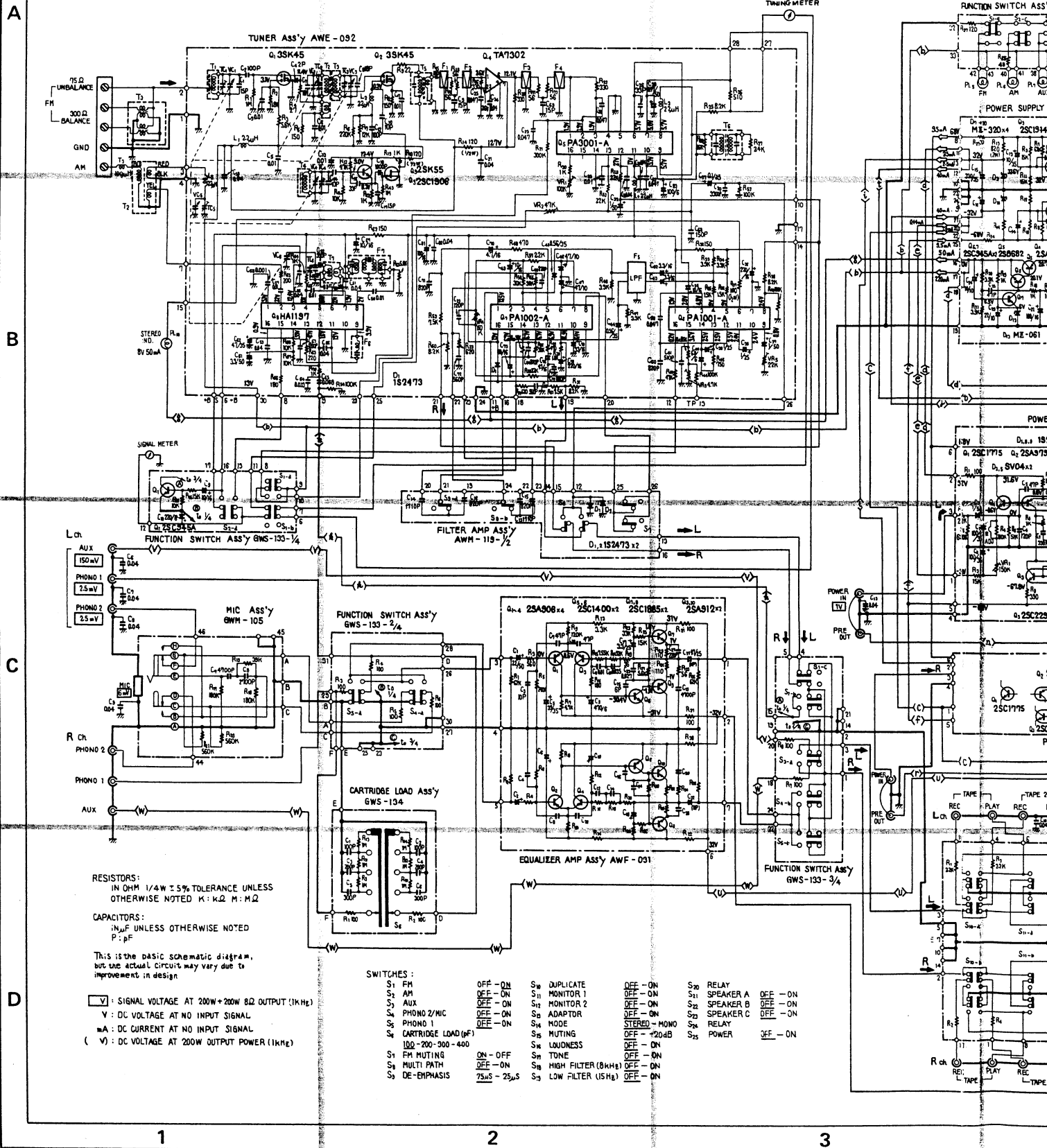
HA1197



TA7302P



Schematic Diagram



RESISTORS:
IN OHM 1/4W ± 5% TOLERANCE UNLESS
OTHERWISE NOTED K: K.2 M: M.2

CAPACITORS:
IN μF UNLESS OTHERWISE NOTED
P: pF

THIS IS THE BASIC SCHEMATIC DIAGRAM,
BUT THE ACTUAL CIRCUIT MAY VARY DUE TO
IMPROVEMENT IN DESIGN

- ∇: SIGNAL VOLTAGE AT 200W+200W OUTPUT (1KHz)
- V: DC VOLTAGE AT NO INPUT SIGNAL
- mA: DC CURRENT AT NO INPUT SIGNAL
- (V): DC VOLTAGE AT 200W OUTPUT POWER (1KHz)

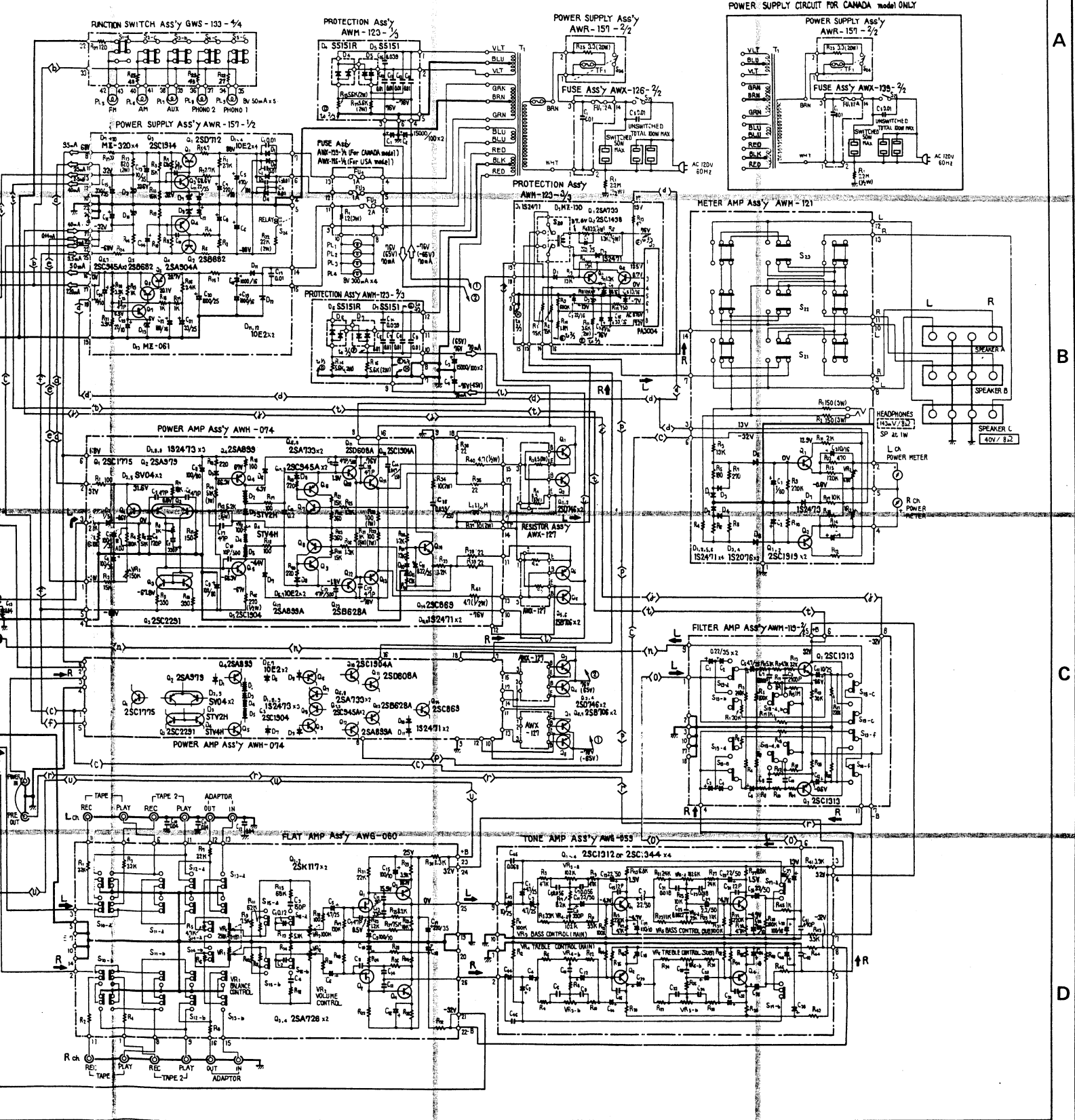
- SWITCHES:
- | | | | | | |
|------------------------------------|-----------------------|------------------------------------|---------------|---------------------------|----------|
| S ₁ FM | OFF - ON | S ₁₀ DUPLICATE | OFF - ON | S ₂₀ RELAY | OFF - ON |
| S ₂ AM | OFF - ON | S ₁₁ MONITOR 1 | OFF - ON | S ₂₁ SPEAKER A | OFF - ON |
| S ₃ AUX | OFF - ON | S ₁₂ MONITOR 2 | OFF - ON | S ₂₂ SPEAKER B | OFF - ON |
| S ₄ PHONO 2/MIC | OFF - ON | S ₁₃ ADAPTOR | OFF - ON | S ₂₃ SPEAKER C | OFF - ON |
| S ₅ PHONO 1 | OFF - ON | S ₁₄ MODE | STEREO - MONO | S ₂₄ RELAY | OFF - ON |
| S ₆ CARTRIDGE LOAD (μF) | 100 - 200 - 500 - 400 | S ₁₅ MUTING | OFF - +20dB | S ₂₅ POWER | OFF - ON |
| S ₇ FM MUTING | ON - OFF | S ₁₆ LOUDNESS | OFF - ON | | |
| S ₈ MULTI PATH | OFF - ON | S ₁₇ TONE | OFF - ON | | |
| S ₉ DE-EMPHASIS | 75AS - 25AS | S ₁₈ HIGH FILTER (8KHz) | OFF - ON | | |
| | | S ₁₉ LOW FILTER (15KHz) | OFF - ON | | |

4

5

6

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



4

5

6

A

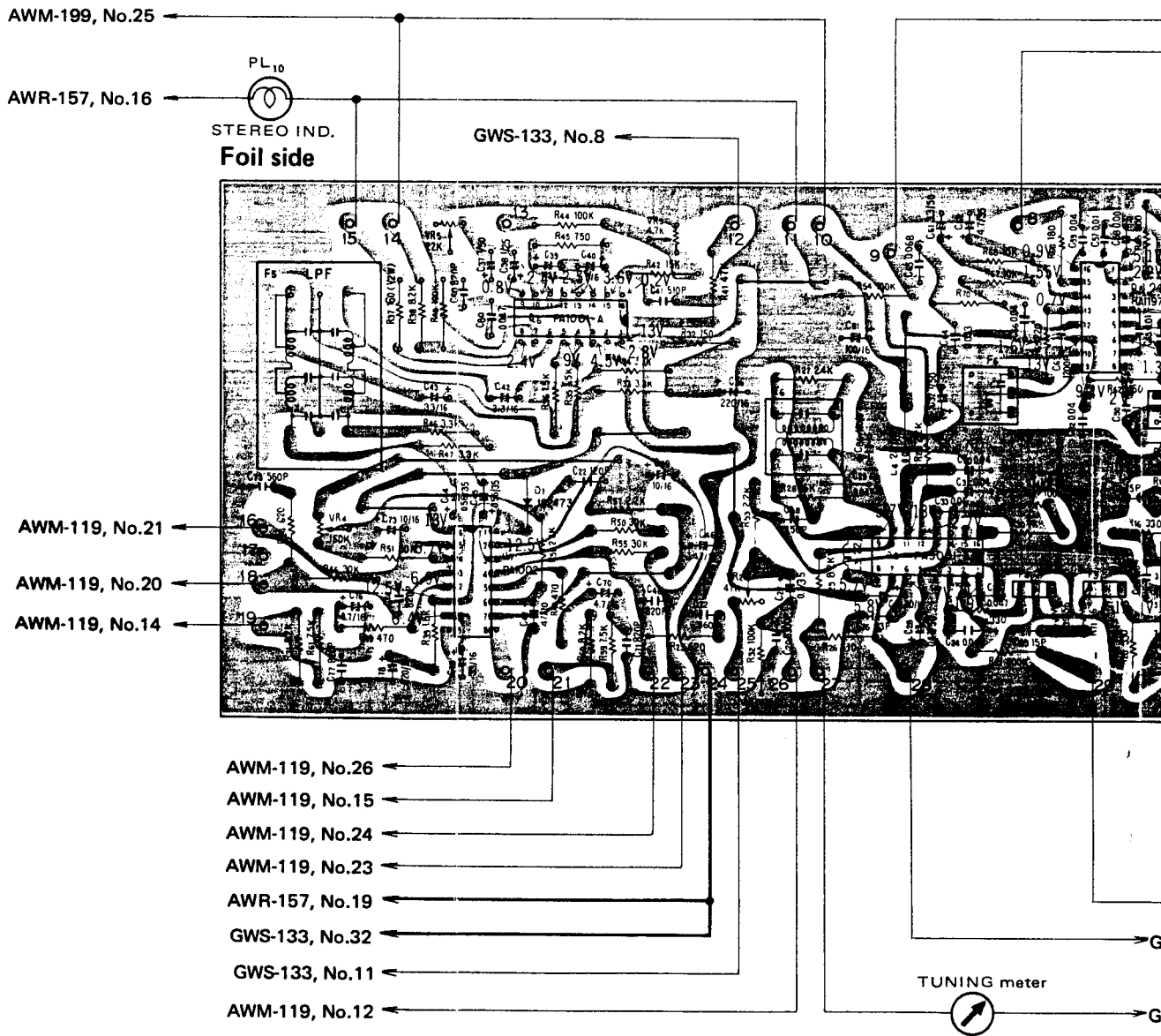
B

C

D

13.2 TUNER ASSEMBLY (AWE-092)

A
B
C
D



4

5

6

A

B

C

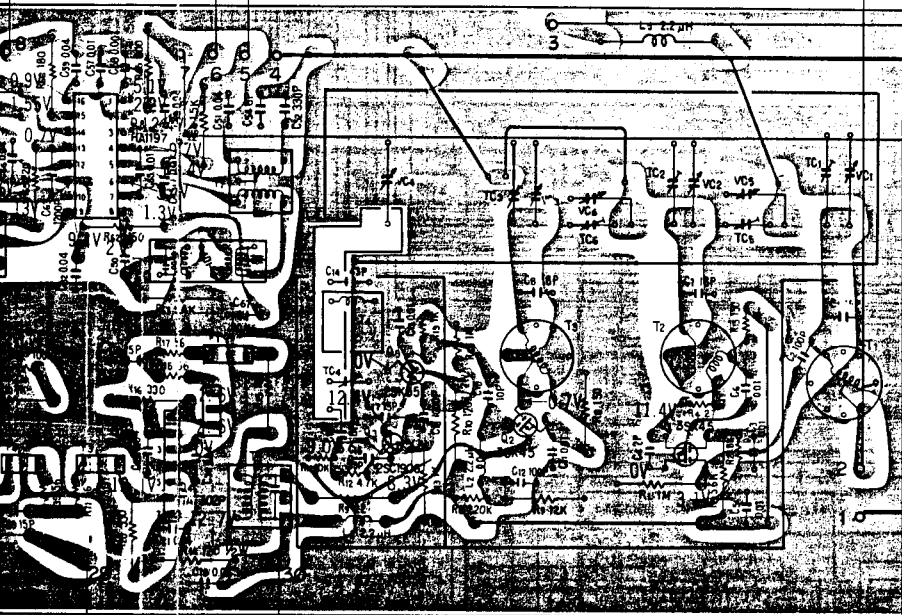
D

→ GWS-133, No.15

→ GWS-133, No.13

→ GWS-133, No.16

→ GWS-133, No.17



→ GWS-133, No.9

→ AWR-157, No.17

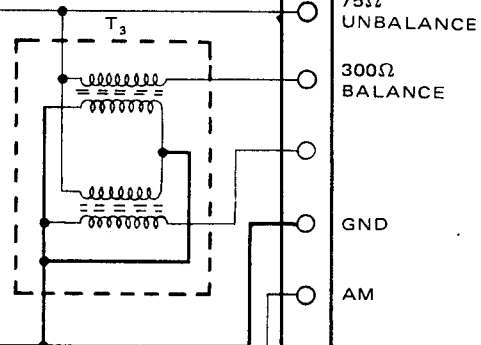
→ GWS-133, No.33

→ GWS-133, No.10

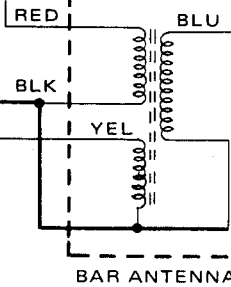
→ GWS-133, No.7

meter

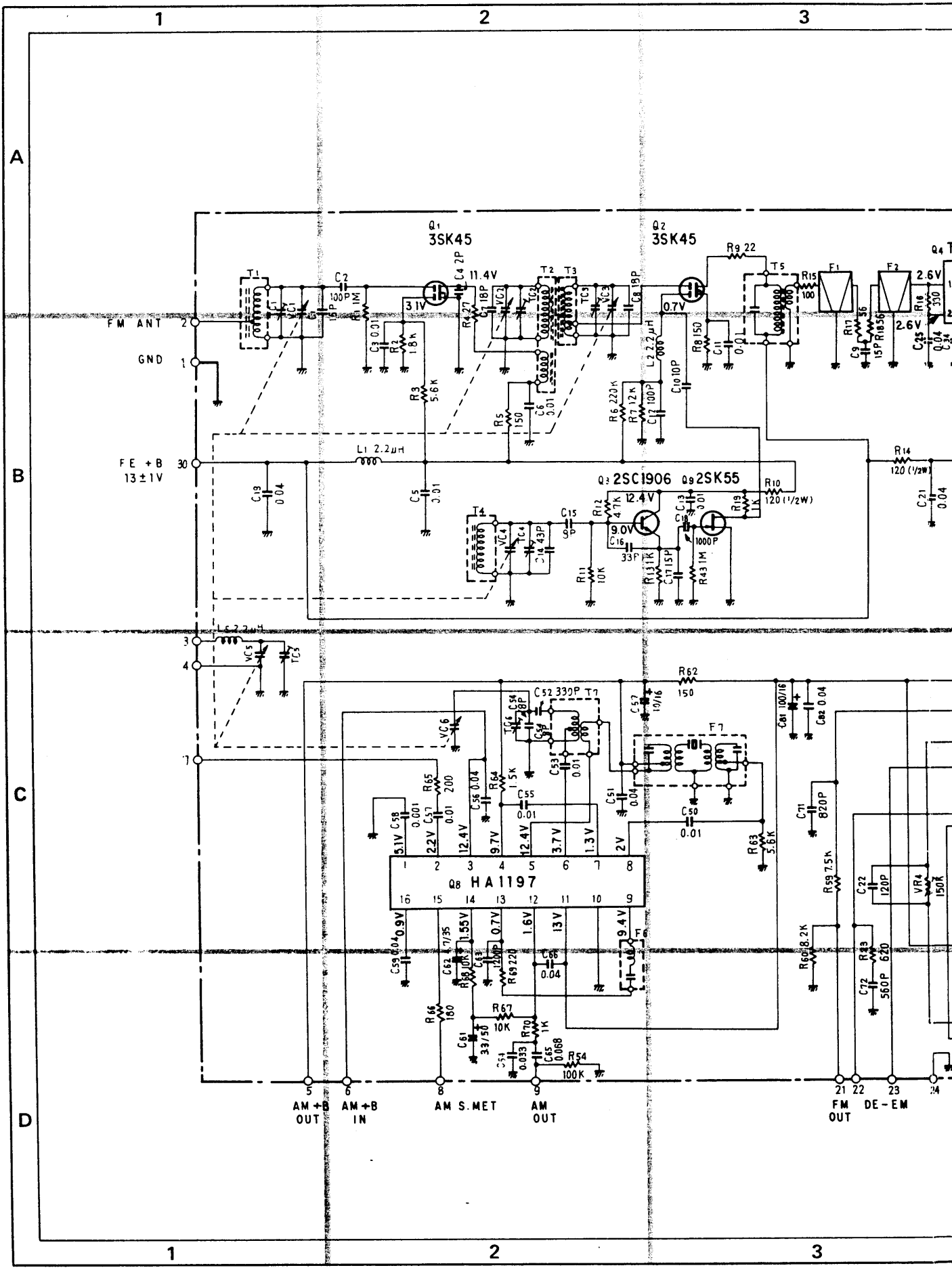
→ GWS-133, No.6

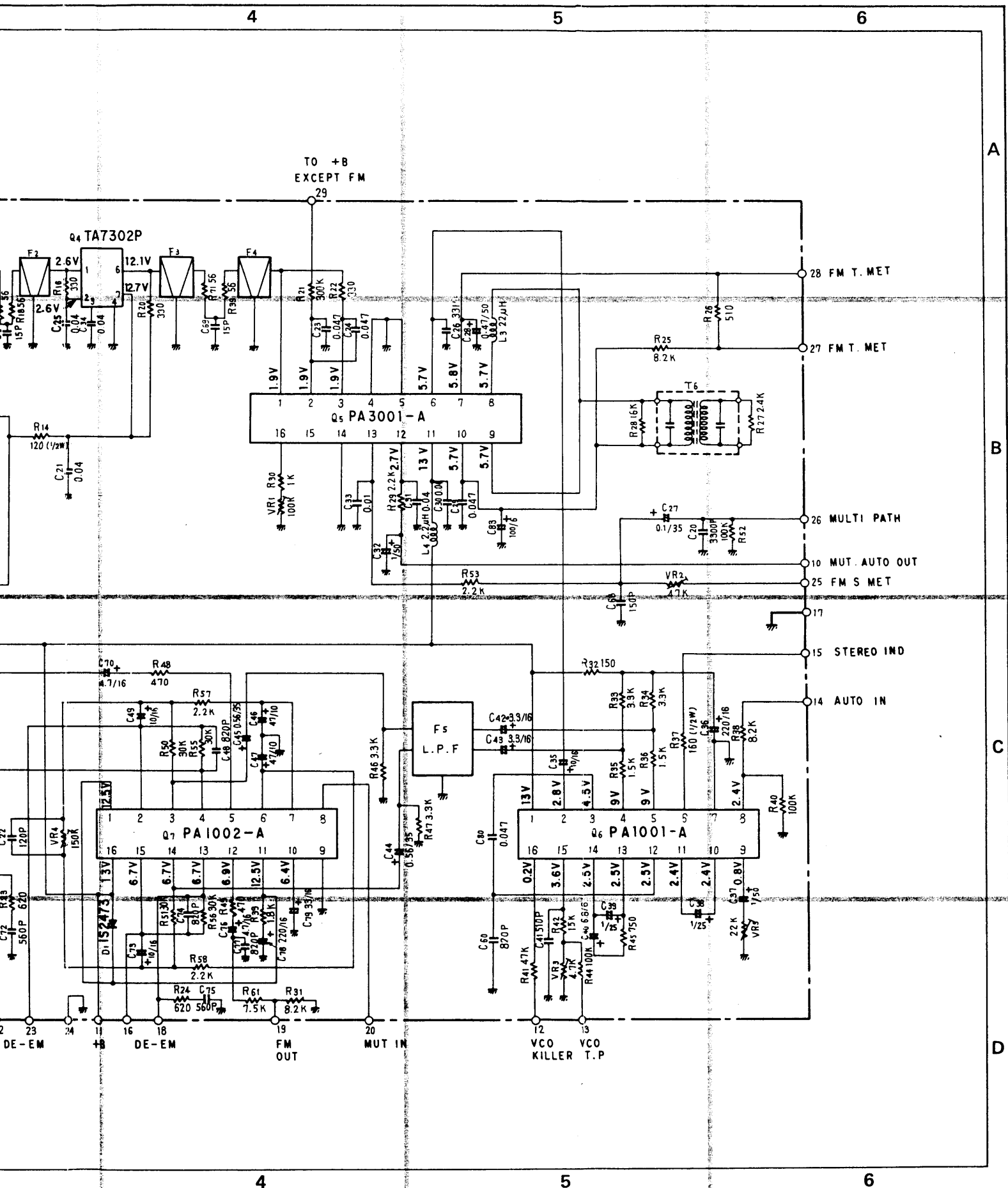


T₃ 100μH



BAR ANTENNA





A

B

C

D

Parts List of Tuner Assembly (AWE-092)

TRANSFORMER, COILS AND FILTERS

Symbol	Part No.	Description	Symbol	Part No.	Description		
T1	ATC-021	FM antenna coil	C21	CKDYF 403Z 50	Ceramic	0.04	50V
T2	ATC-015	FM RF coil	C22	CCDSL 121K 50	Ceramic	120p	50V
T3	ATC-016	FM RF coil	C23	CKDBC 473Z 25	Ceramic	0.047	25V
T4	ATC-057	FM RF coil	C24	CKDBC 473Z 25	Ceramic	0.047	25V
T5	ATE-039	FM matching coil	C25	CKDYF 403Z 50	Ceramic	0.04	50V
T6	ATE-030	FM detector transformer	C26	CCDSL 330K 50	Ceramic	33p	50V
T7	ATB-013	AM OSC coil	C27	CZA 0R1M 35	Electrolytic	0.1	35V
F1	ATF-018	FM ceramic filter	C28	CEA R47P 50	Electrolytic	0.47	50V
F2	ATF-018	FM ceramic filter	C29	CKDBC 473Z 25	Ceramic	0.047	25V
F3	ATF-018	FM ceramic filter	C30	CKDYF 403Z 50	Ceramic	0.04	50V
F4	ATF-018	FM ceramic filter	C31	CKDYF 403Z 50	Ceramic	0.04	50V
F5	ATF-047	Low pass filter	C32	CEA 010P 50	Electrolytic	1	50V
F6	ATF-038	455kHz filter	C33	CKDYF 103Z 50	Ceramic	0.01	50V
F7	ATF-034	AM ceramic filter	C34	CKDYF 403Z 50	Ceramic	0.04	50V
L1	T24-028	RF choke coil	C35	CSZA 100M 16	Electrolytic	10	16V
L2	T24-028	RF choke coil	C36	CEA 221P 16	Electrolytic	220	16V
L3	ATH-014	Micro inductor	C37	CEA 010P 50	Electrolytic	1	50V
L4	T24-028	RF choke coil	C38	CSZA 010M 25	Electrolytic	1	25V
L5	T24-028	RF choke coil	C39	CSZA 010M 25	Electrolytic	1	25V
			C40	CSZA 6R8M 6	Electrolytic	6.8	6V

CAPACITORS

Symbol	Part No.	Description		
VC	ACK-022	Variable capacitor		
TC4	ACM-006	Ceramic trimmer		
C1	CCDTH 150K 50	Ceramic	15p	50V
C2	CCDSL 101K 50	Ceramic	100p	50V
C3	CKDYF 103Z 50	Ceramic	0.01	50V
C4	CCDSL 020C 50	Ceramic	2p	50V
C5	CKDYF 103Z 50	Ceramic	0.01	50V
C6	CKDYF 103Z 50	Ceramic	0.01	50V
C7	CCDTH 180K 50	Ceramic	18p	50V
C8	CCDTH 180K 50	Ceramic	18p	50V
C9	CCDSL 150K 50	Ceramic	15p	50V
C10	CCDSL 100F 50	Ceramic	10p	50V
C11	CKDYB 103K 50	Ceramic	0.01	50V
C12	CCDSL 101K 50	Ceramic	100p	50V
C13	CKDYB 103K 50	Ceramic	0.01	50V
C14	CCDLH 430K 50	Ceramic	43p	50V
C15	CCDCH 080F 50	Ceramic	8p	50V
C16	CCDCH 330K 50	Ceramic	33p	50V
C17	CCDCH 150K 50	Ceramic	15p	50V
C18	CKDYB 102K 50	Ceramic	1000p	50V
C19	CKDYF 403Z 50	Ceramic	0.04	50V
C20	CKDYA 332J 50	Ceramic	3300p	50V
C41	CQSH 511J 50	Polystyrene	510p	50V
C42	CSZA 3R3M 16	Electrolytic	3.3	16V
C43	CSZA 3R3M 16	Electrolytic	3.3	16V
C44	CSZA R56K 35	Electrolytic	0.56	35V
C45	CSZA R56K 35	Electrolytic	0.56	35V
C46	CEA 470P 10	Electrolytic	47	10V
C47	CEA 470P 10	Electrolytic	47	10V
C48	CQSA 821G 50	Polystyrene	820p	50V
C49	CSZA 100M 16	Electrolytic	10	16V
C50	CKDYF 103Z 50	Ceramic	0.01	50V
C51	CKDYF 403Z 50	Ceramic	0.04	50V
C52	CQSA 331J 50	Polystyrene	330p	50V
C53	CKDYF 103Z 50	Ceramic	0.01	50V
C54	CCDSL 080F 50	Ceramic	8p	50V
C55	CKDYF 103Z 50	Ceramic	0.01	50V
C56	CKDYF 403Z 50	Ceramic	0.04	50V
C57	CKDYF 103Z 50	Ceramic	0.01	50V
C58	CKDYB 102K 50	Ceramic	1000p	50V
C59	CKDYF 403Z 50	Ceramic	0.04	50V
C60	CKDYB 821K 50	Ceramic	820p	50V
C61	CEA 3R3P 50	Electrolytic	3.3	50V
C62	CEA 4R7P 35	Electrolytic	4.7	35V
C63	CKDYB 122K 50	Ceramic	1200p	50V
C64	CQMA 333J 50	Mylar	0.033	50V
C65	CQMA 683J 50	Mylar	0.068	50V

Symbol	Part No.	Description			Symbol	Part No.	Description		
C66	CKDYF 403Z 50	Ceramic	0.04	50V	R16	RD%PS 331J	Carbon film	330	
C67	CEA 100P 16	Electrolytic	10	16V	R17	RD%VS 560J	Carbon film	56	
C68	CCDSL 151K 50	Ceramic	150p	50V	R18	RD%VS 560J	Carbon film	56	
C69	CCDSL 151K 50	Ceramic	150p	50V	R19	RD%VS 102J	Carbon film	1k	
C70	CSZA 4R7M 16	Electrolytic	4.7	16V	R20	RD%PS 331J	Carbon film	330	
C71	CKDYB 821K 50	Ceramic	820p	50V	R21	RD%PS 304J	Carbon film	300k	
C72	CKDYB 561K 50	Ceramic	560p	50V	R22	RD%PS 331J	Carbon film	330	
C73	CSZA 100M 16	Electrolytic	10	16V	R23	RD%PS 621J	Carbon film	620	
C74	CQSA 821J 50	Polystyrene	820p	50V	R24	RD%PS 621J	Carbon film	620	
C75	CKDYB 561K 50	Ceramic	560p	50V	R25	RD%PS 822J	Carbon film	8.2k	
C76	CSZA 4R7M 16	Electrolytic	4.7	16V	R26	RD%PS 511J	Carbon film	510	
C77	CKDYB 821K 50	Ceramic	820p	50V	R27	RD%PS 242J	Carbon film	2.4k	
C78	CEA 221P 16	Electrolytic	220	16V	R28	RD%PS 163J	Carbon film	16k	
C79	CEA 330P 16	Electrolytic	33	16V	R29	RD%PS 222J	Carbon film	2.2k	
C80	CQMA 473K 50	Mylar	0.047	50V	R30	RD%PS 102J	Carbon film	1k	
C81	CEA 101P 16	Electrolytic	100	16V	R31	RD%PS 822J	Carbon film	8.2k	
C82	CKDYF 403Z 50	Ceramic	0.04	50V	R32	RD%PS 151J	Carbon film	150	
C83	CEA 101P 6	Electrolytic	100	6V	R33	RD%PS 332J	Carbon film	3.3k	
					R34	RD%PS 332J	Carbon film	3.3k	
					R35	RD%PS 152J	Carbon film	1.5k	

RESISTORS

Symbol	Part No.	Description							
VR1	C92-047	Semi fixed	100k		R36	RD%PS 152J	Carbon film	1.5k	
VR2	C92-048	Semi fixed	47k		R37	RD%PS 161J	Carbon film	160	1/2W
VR3	C92-051	Semi fixed	4.7k		R38	RD%PS 822J	Carbon film	8.2k	
VR4	ACP-057	Semi fixed	150k		R39	RD%PS 182J	Carbon film	1.8k	
VR5	ACP-056	Semi fixed	22k		R40	RD%PS 104J	Carbon film	100k	
R1	RD%PS 105J	Carbon film	1M		R41	RD%PS 473J	Carbon film	47k	
R2	RD%VS 182J	Carbon film	1.8k		R42	RN1/5SQ 1502F	Metal film	15k	1/5W
R3	RD%PS 562J	Carbon film	5.6k		R43	RD%VS 105J	Carbon film	1M	
R4	RD%VS 270J	Carbon film	27		R44	RD%PS 104J	Carbon film	100k	
R5	RD%VS 151J	Carbon film	150		R45	RD%PS 751J	Carbon film	750	
R6	RD%VS 224J	Carbon film	220k		R46	RD%PS 332J	Carbon film	3.3k	
R7	RD%PS 123J	Carbon film	12k		R47	RD%PS 332J	Carbon film	3.3k	
R8	RD%PS 151J	Carbon film	150		R48	RD%PS 471J	Carbon film	470	
R9	RD%PS 220J	Carbon film	22		R49	RD%PS 471J	Carbon film	470	
R10	RD%PS 121J	Carbon film	120	1/2W	R50	RD%PS 303J	Carbon film	30k	
R11	RD%VS 103J	Carbon film	10k		R51	RD%PS 303J	Carbon film	30k	
R12	RD%VS 472J	Carbon film	4.7k		R52	RD%PS 104J	Carbon film	100k	
R13	RD%PS 102J	Carbon film	1k		R53	RD%PS 222J	Carbon film	2.2k	
R14	RD%PS 121J	Carbon film	120	1/2W	R54	RD%PS 104J	Carbon film	100k	
R15	RD%PS 101J	Carbon film	100		R55	RD%PS 303J	Carbon film	30k	
					R56	RD%PS 303J	Carbon film	30k	
					R57	RD%PS 222J	Carbon film	2.2k	
					R58	RD%PS 222J	Carbon film	2.2k	
					R59	RD%PS 752J	Carbon film	7.5k	
					R60	RD%PS 822J	Carbon film	8.2k	

List of changed parts information will be furnished whenever necessary and you are requested to amend parts number in this parts list.

Symbol	Part No.	Description	
R61	RD¼PS 752J	Carbon film	7.5k
R62	RD¼PS 151J	Carbon film	150
R63	RD¼PS 562J	Carbon film	5.6k
R64	RD¼PS 152J	Carbon film	1.5k
R65	RD¼PS 201J	Carbon film	200
R66	RD¼PS 181J	Carbon film	180
R67	RD¼PS 103J	Carbon film	10k
R68	RD¼PS 103J	Carbon film	10k
R69	RD¼PS 221J	Carbon film	220
R70	RD¼PS 102J	Carbon film	1k
R71	RD¼VS 560J	Carbon film	56
R72	RD¼VS 560J	Carbon film	56

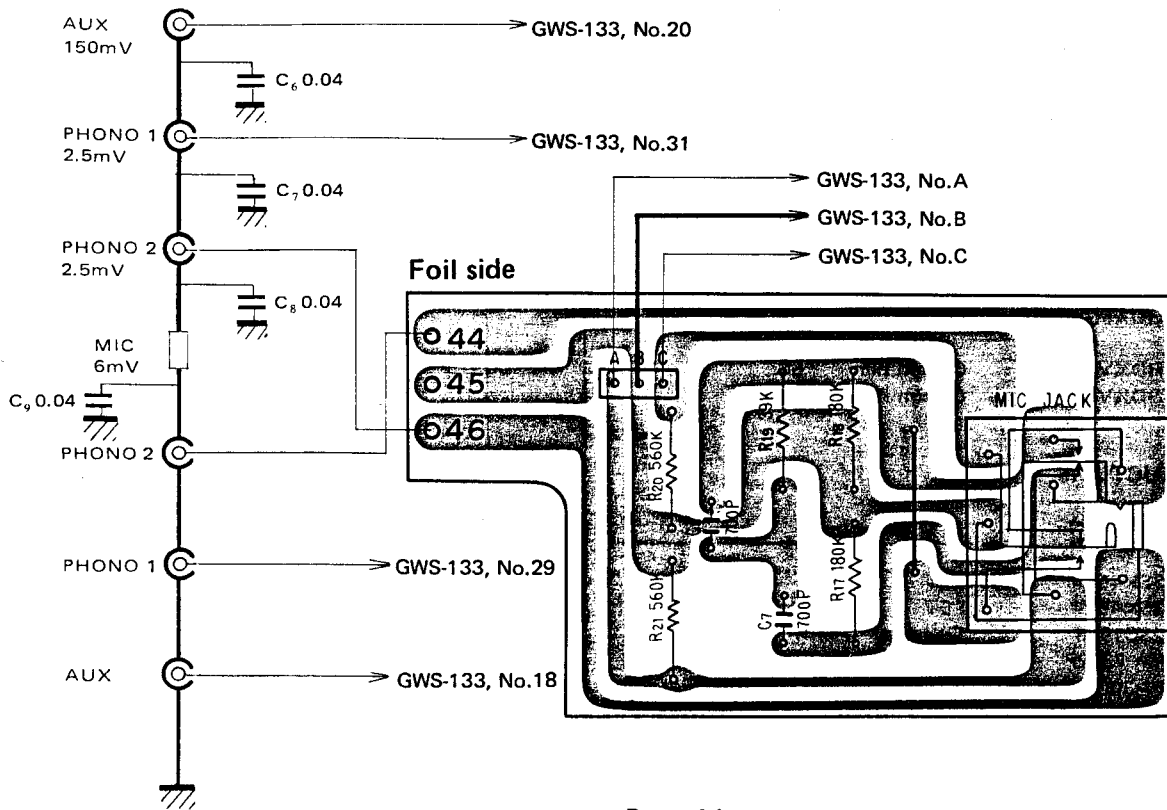
SEMICONDUCTORS

Symbol	Part No.	Description	
Q1	3SK45-B	FET	
Q2	3SK45-B	FET	
Q3	2SC1906	Transistor	
Q4	TA 7302P	IC	
Q5	PA3001-A	IC	
Q6	PA1001-A	IC	
Q7	PA1002-A	IC	
Q8	HA1197	IC	
Q9	2SK55-D	FET	
D1	1S2473	Diode	

List of Changed Parts for Factory Modification

Symbol	Part No.	Description

13.3 MICROPHONE JACK ASSEMBLY (GWM-105)



Parts List

CAPACITORS

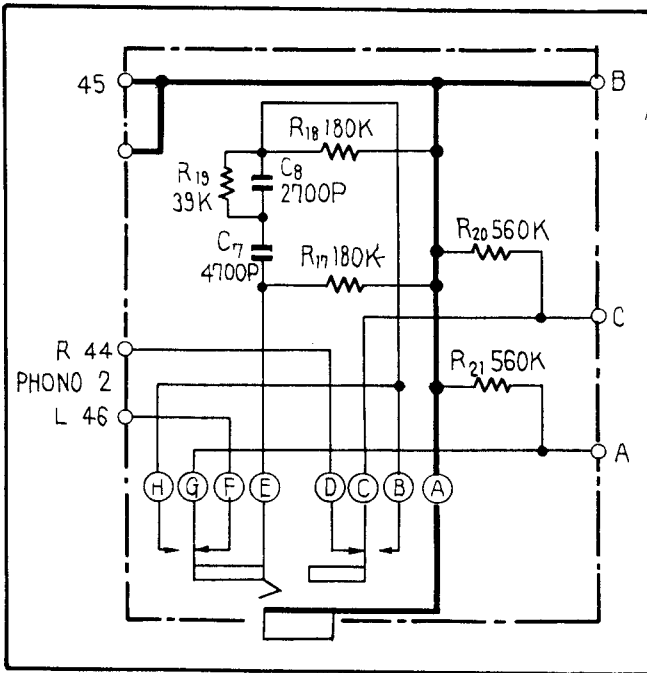
Symbol	Part No.	Description
C7	CKDYA 472J 50 (CQMA 472J 50)	Ceramic (Mylar) 4700p 50V
C8	CKDYA 272J 50 (CQMA 272J 50)	Ceramic (Mylar) 2700p 50V

RESISTORS

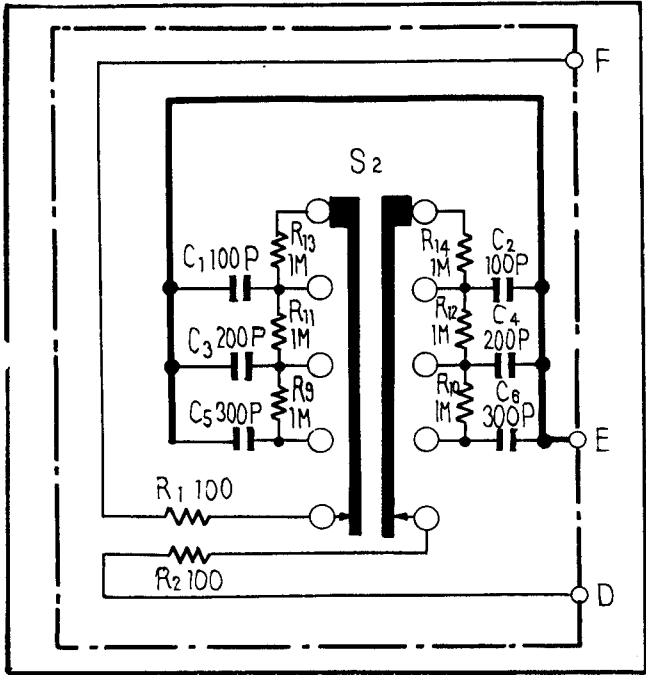
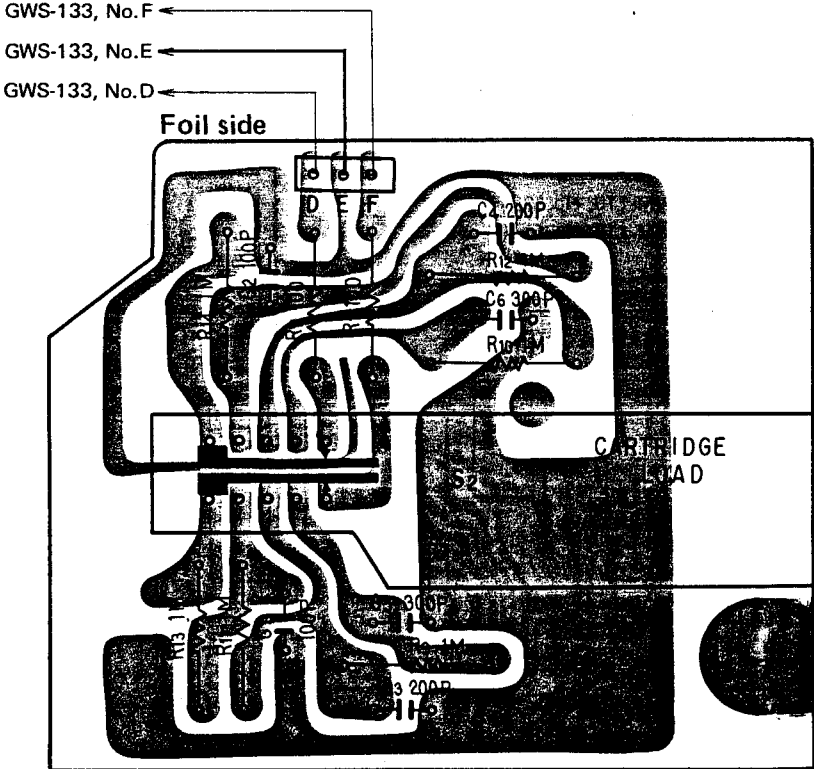
Symbol	Part No.	Description
R17	RD¼PS 184J	Carbon film 180k
R18	RD¼PS 184J	Carbon film 180k
R19	RD¼PS 393J	Carbon film 39k
R20	RD¼PS 564J	Carbon film 560k
R21	RD¼PS 564J	Carbon film 560k

OTHER

Symbol	Part No.	Description
	AKN-012	Phone Jack (MIC)



13.4 CARTRIDGE LOAD ASSEMBLY (GWS-134)



Parts List

SWITCH

Symbol	Part No.	Description
S2	ASE-001	Rotary switch (CARTRIDGE LOAD)

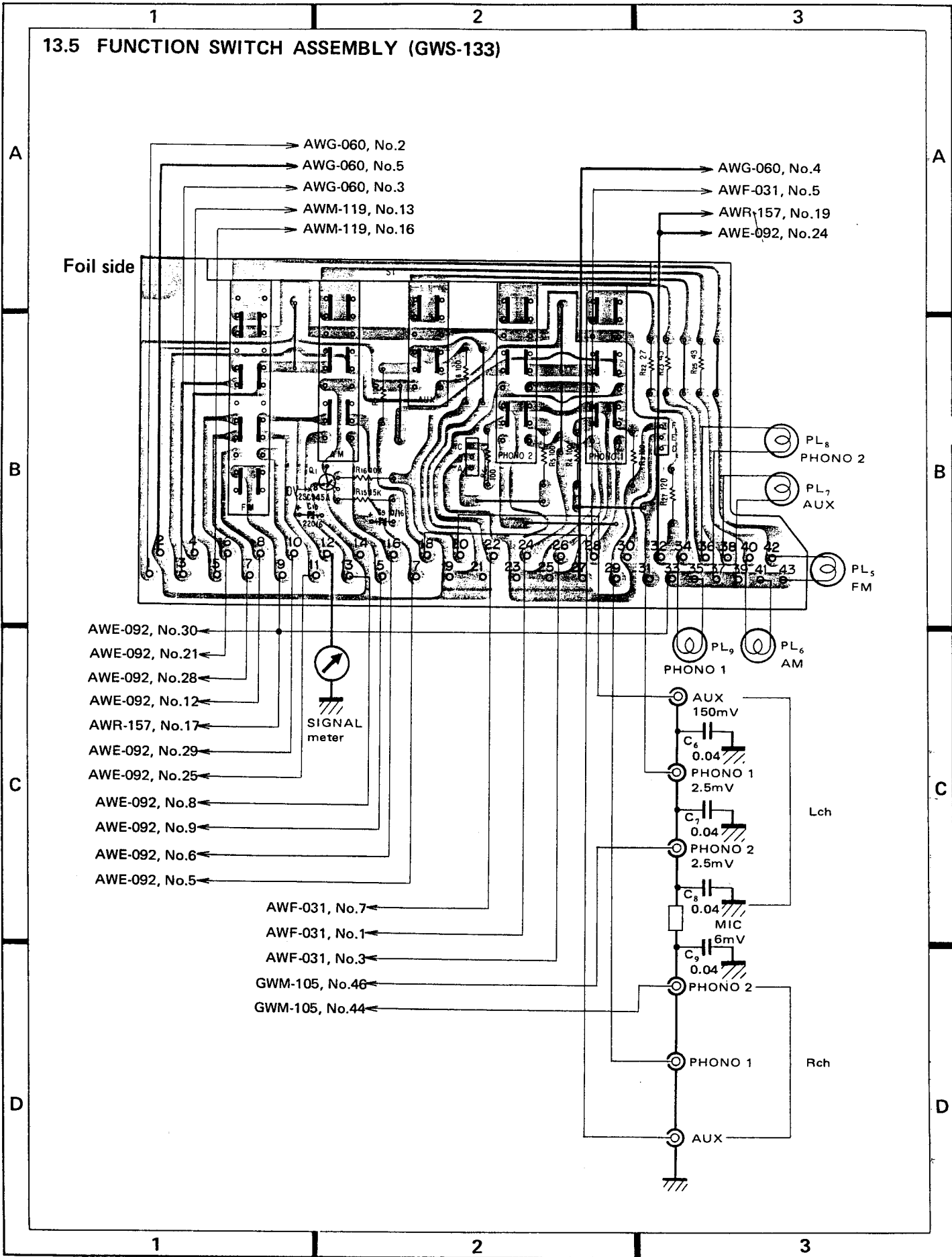
CAPACITORS

Symbol	Part No.	Description
C1	CQSH 101J 50	Polystyrene 100p 50V
C2	CQSH 101J 50	Polystyrene 100p 50V
C3	CQSH 201J 50	Polystyrene 200p 50V
C4	CQSH 201J 50	Polystyrene 200p 50V
C5	CQSH 301J 50	Polystyrene 300p 50V
C6	CQSH 301J 50	Polystyrene 300p 50V

RESISTORS

Symbol	Part No.	Description
R1	RD¼PS 101J	Carbon film 100
R2	RD¼PS 101J	Carbon film 100
R9	RD¼PS 105J	Carbon film 1M
R10	RD¼PS 105J	Carbon film 1M
R11	RD¼PS 105J	Carbon film 1M
R12	RD¼PS 105J	Carbon film 1M
R13	RD¼PS 105J	Carbon film 1M
R14	RD¼PS 105J	Carbon film 1M

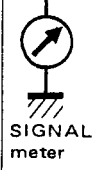
13.5 FUNCTION SWITCH ASSEMBLY (GWS-133)



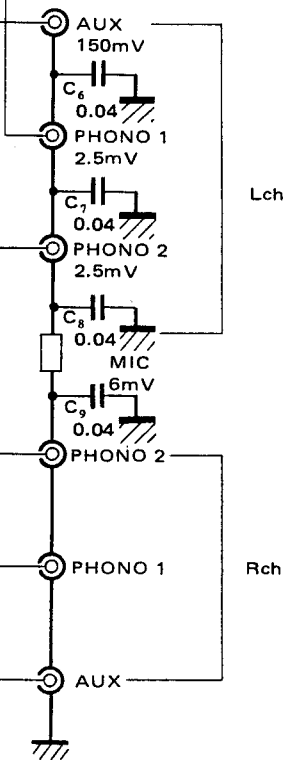
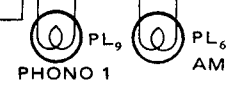
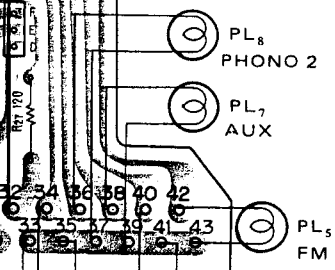
- AWG-060, No.2
- AWG-060, No.5
- AWG-060, No.3
- AWM-119, No.13
- AWM-119, No.16
- AWG-060, No.4
- AWF-031, No.5
- AWR-157, No.19
- AWE-092, No.24

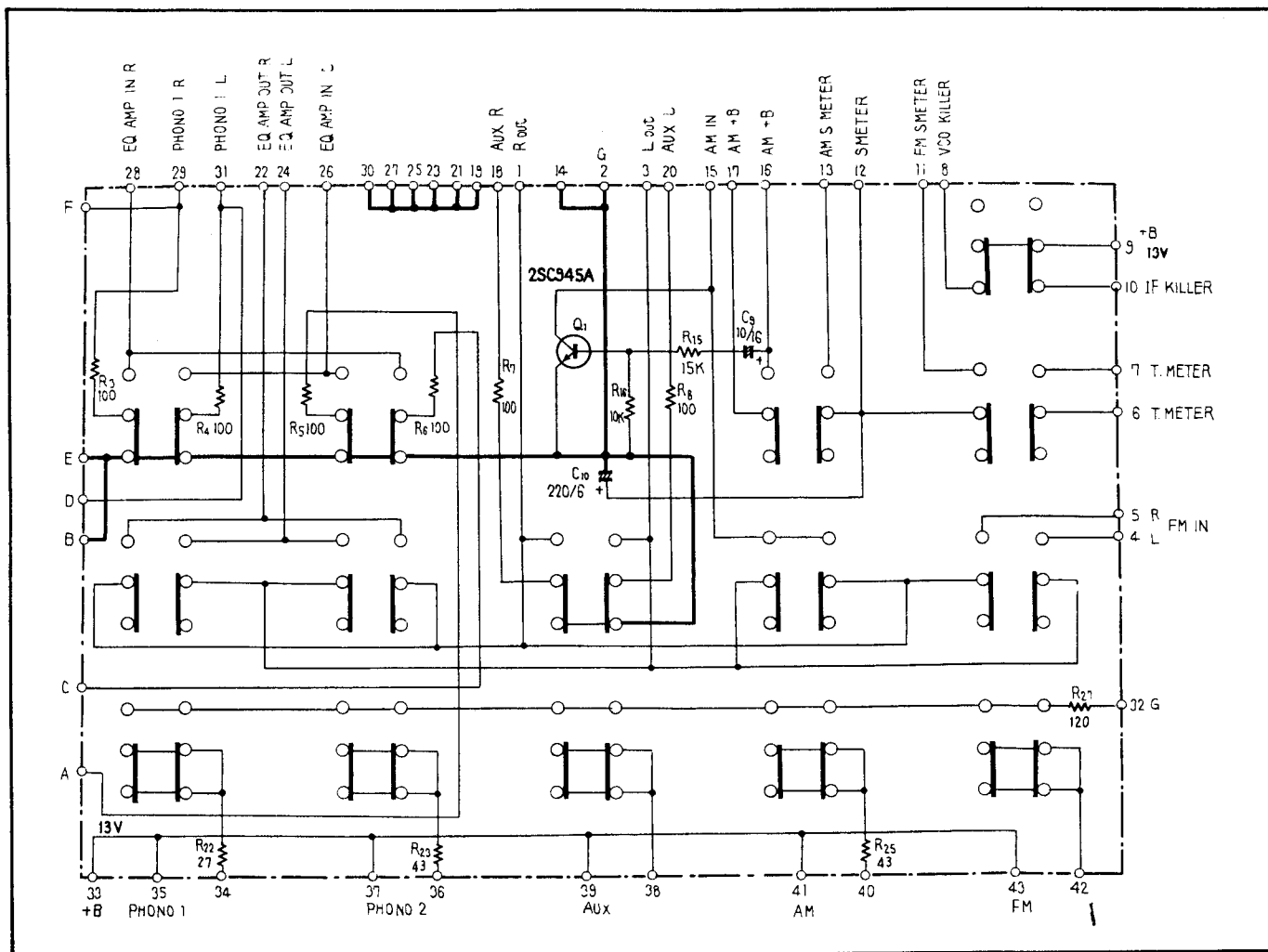
Foil side

- ← AWE-092, No.30
- ← AWE-092, No.21
- ← AWE-092, No.28
- ← AWR-157, No.17
- ← AWE-092, No.29
- ← AWE-092, No.25
- ← AWE-092, No.8
- ← AWE-092, No.9
- ← AWE-092, No.6
- ← AWE-092, No.5



- ← AWF-031, No.7
- ← AWF-031, No.1
- ← AWF-031, No.3
- ← GWM-105, No.46
- ← GWM-105, No.44





Parts List of Function Switch Assembly (GWS-173)

SWITCH

Symbol	Part No.	Description	Symbol	Part No.	Description
S1	ASG-126	Push switch (FUNCTION)	R6	RD¼PS 101J	Carbon film 100
			R7	RD¼PS 101J	Carbon film 100
			R8	RD¼PS 101J	Carbon film 100

CAPACITORS

Symbol	Part No.	Description	Symbol	Part No.	Description
C9	CEA 100P 16	Electrolytic 10 16V	R15	RD¼PS 153J	Carbon film 15k
C10	CEA 221P 6	Electrolytic 220 6V	R16	RD¼PS 103J	Carbon film 10k
			R22	RD¼PS 270J	Carbon film 27
			R23	RD¼PS 430J	Carbon film 43
			R25	RD¼PS 430J	Carbon film 43
			R27	RD¼PS 121J	Carbon film 120 ¼W

RESISTORS

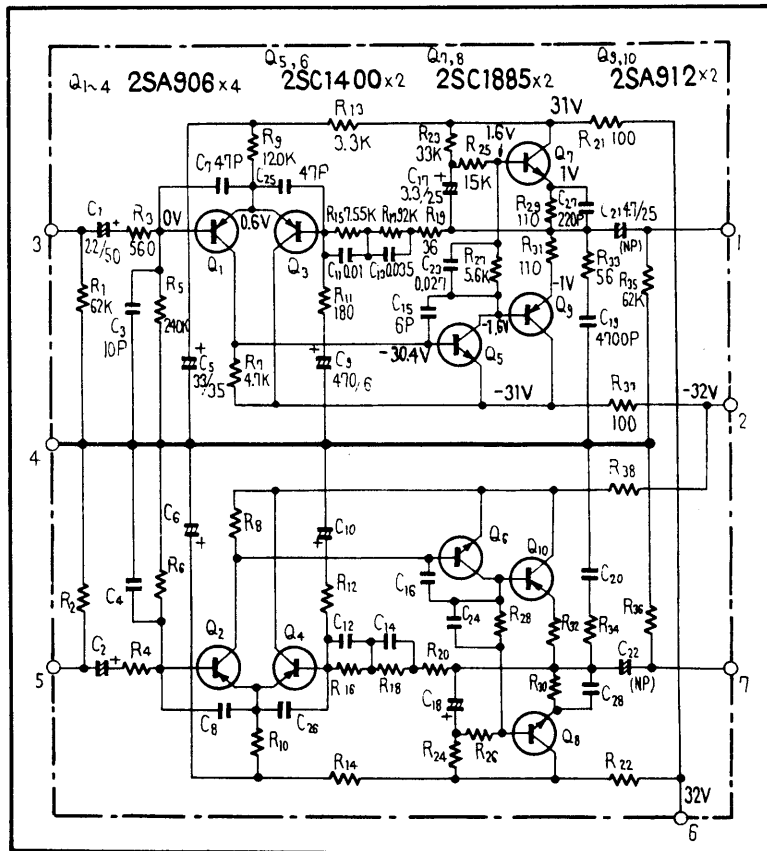
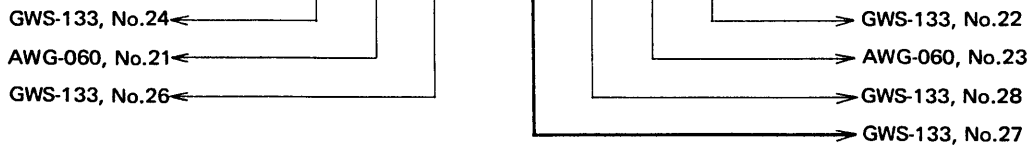
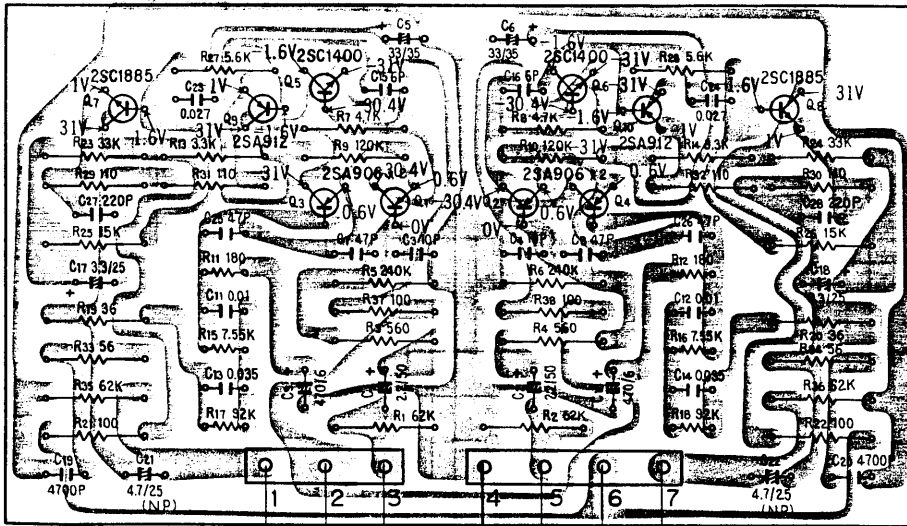
Symbol	Part No.	Description
R3	RD¼PS 101J	Carbon film 100
R4	RD¼PS 101J	Carbon film 100
R5	RD¼PS 101J	Carbon film 100

SEMICONDUCTOR

Symbol	Part No.	Description
Q1	2SC945A-Q or R	Transistor

13.6 EQ AMPLIFIER ASSEMBLY (AWF-031)

Foil side



Parts List of EQ Amplifier Assembly (AWF-031)

CAPACITORS

Symbol	Part No.	Description	Symbol	Part No.	Description
C1	CEANL 2R2P 50	Electrolytic 2.2 50V	R14	RD¼PS 332J	Carbon film 3.3k
C2	CEANL 2R2P 50	Electrolytic 2.2 50V	R15	ACN-011	Metal film 7.55k
C3	CCDSL 100F 50	Ceramic 10p 50V	R16	ACN-011	Metal film 7.55k
C4	CCDSL 100F 50	Ceramic 10p 50V	R17	ACN-012	Metal film 92k
C5	CEA 330P 35	Electrolytic 33 35V	R18	ACN-012	Metal film 92k
C6	CEA 330P 35	Electrolytic 33 35V	R19	RD¼PS 360J	Carbon film 36
C7	CCDSL 470K 50	Ceramic 47p 50V	R20	RD¼PS 360J	Carbon film 36
C8	CCDSL 470K 50	Ceramic 47p 50V	R21	RD¼PS 101J	Carbon film 100
C9	CEA 471P 6	Electrolytic 470 6V	R22	RD¼PS 101J	Carbon film 100
C10	CEA 471P 6	Electrolytic 470 6V	R23	RD¼PS 333J	Carbon film 33k
C11	CQPA 103G 50	Polypropylene 0.01 50V	R24	RD¼PS 333J	Carbon film 33k
C12	CQPA 103G 50	Polypropylene 0.01 50V	R25	RD¼PS 153J	Carbon film 15k
C13	CQPA 353G 50	Polypropylene 0.035 50V	R26	RD¼PS 153J	Carbon film 15k
C14	CQPA 353G 50	Polypropylene 0.035 50V	R27	RD¼PS 562J	Carbon film 5.6k
C15	CCDSL 060D 50	Ceramic 6p 50V	R28	RD¼PS 562J	Carbon film 5.6k
C16	CCDSL 060D 50	Ceramic 6p 50V	R29	RD¼PS 111J	Carbon film 110
C17	CEANL 3R3P 25	Electrolytic 3.3 25V	R30	RD¼PS 111J	Carbon film 110
C18	CEANL 3R3P 25	Electrolytic 3.3 25V	R31	RD¼PS 111J	Carbon film 110
C19	CQMA 472J 50 (CKDYA 472J 50)	Mylar (Ceramic) 4700p (4700p 50V)	R32	RD¼PS 111J	Carbon film 110
C20	CQMA 472J 50 (CKDYA 472J 50)	Mylar (Ceramic) 4700p (4700p 50V)	R33	RD¼PS 560J	Carbon film 56
C21	ACH-318	Electrolytic 4.7 25V	R34	RD¼PS 560J	Carbon film 56
C22	ACH-318	Electrolytic 4.7 25V	R35	RD¼PS 623J	Carbon film 62k
C23	CQMA 273J 50 (CKDYA 273J 50)	Mylar (Ceramic) 0.027 (0.027 50V)	R36	RD¼PS 623J	Carbon film 62k
C24	CQMA 273J 50 (CKDYA 273J 50)	Mylar (Ceramic) 0.027 (0.027 50V)	R37	RD¼PS 101J	Carbon film 100
C25	CCDSL 470K 50	Ceramic 47p 50V	R38	RD¼PS 101J	Carbon film 100
C26	CCDSL 470K 50	Ceramic 47p 50V			
C27	CCDSL 221K 50	Ceramic 220p 50V			
C28	CCDSL 221K 50	Ceramic 220p 50V			

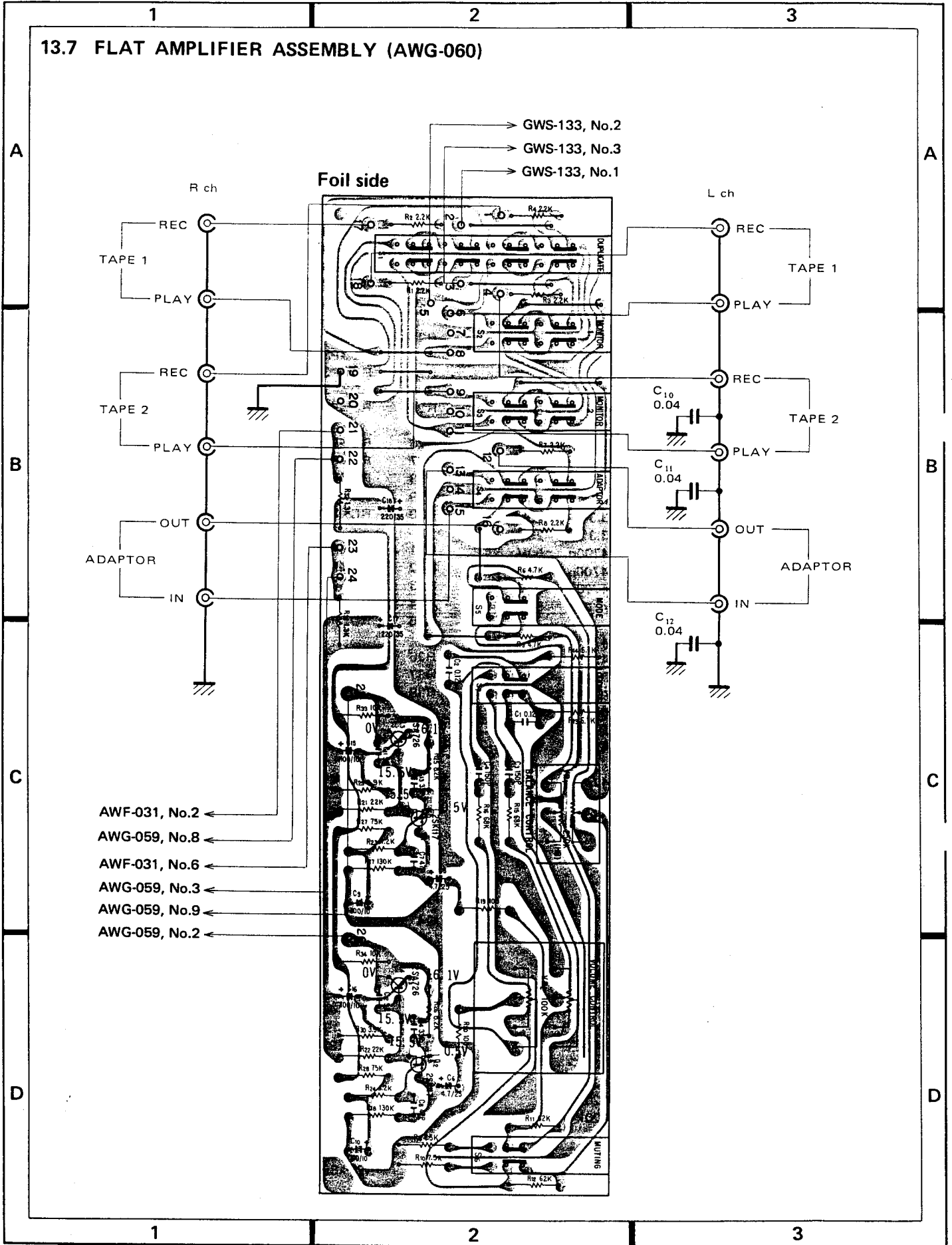
SEMICONDUCTORS

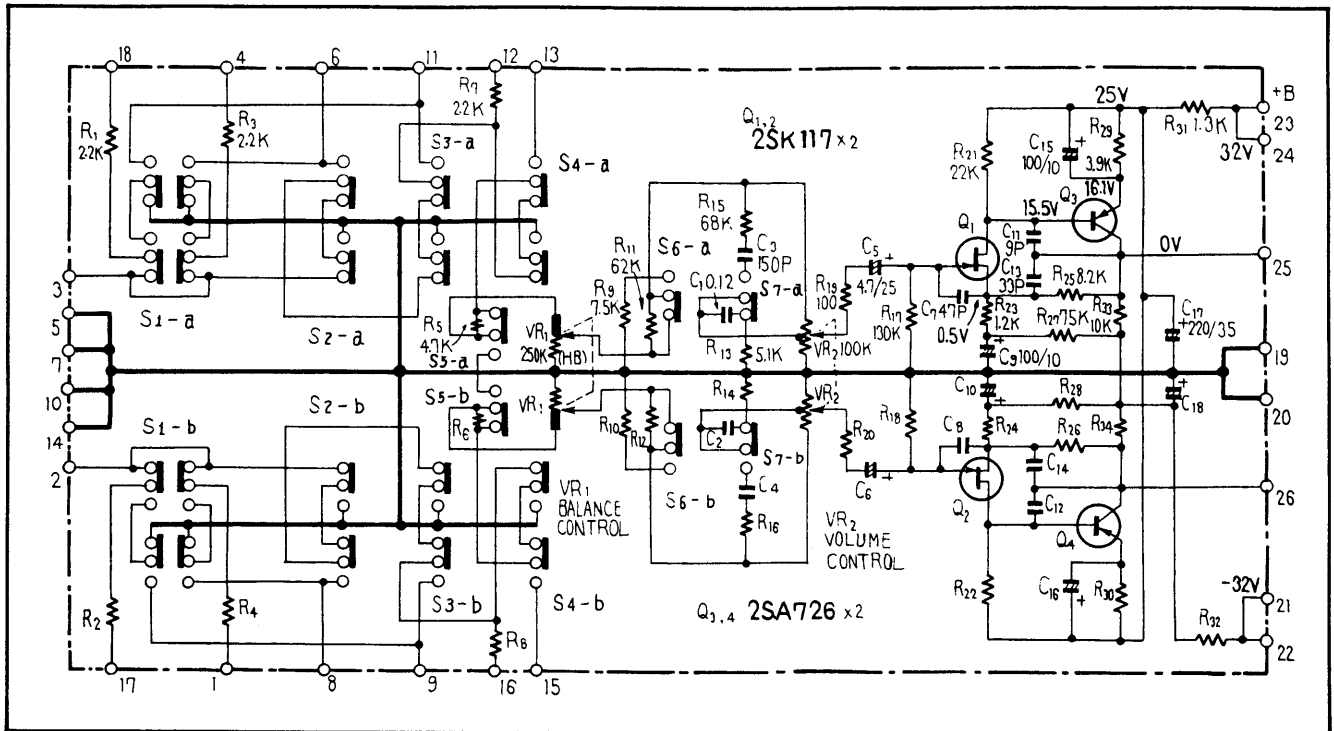
Symbol	Part No.	Description
Q1	2SA906-G or F (2SA978-F or G)	Transistor
Q2	2SA906-G or F (2SA978-F or G)	Transistor
Q3	2SA906-G or F (2SA978-F or G)	Transistor
Q4	2SA906-G or F (2SA978-F or G)	Transistor
Q5	2SC1400-F or E (2SC1919-F or G)	Transistor
Q6	2SC1400-F or E (2SC1919-F or G)	Transistor
Q7	2SC1885-R or Q (2SC1735-C or D)	Transistor
Q8	2SC1885-R or Q (2SC1735-C or D)	Transistor
Q9	2SA912-R or Q (2SA850-C or D)	Transistor
Q10	2SA912-R or Q (2SA850-C or D)	Transistor

RESISTORS

Symbol	Part No.	Description
R1	RD¼PS 623J NL	Carbon film 62k
R2	RD¼PS 623J NL	Carbon film 62k
R3	RD¼PS 561J	Carbon film 560
R4	RD¼PS 561J	Carbon film 560
R5	RD¼PS 244J NL	Carbon film 240k
R6	RD¼PS 244J NL	Carbon film 240k
R7	RD¼PS 472J	Carbon film 4.7k
R8	RD¼PS 472J	Carbon film 4.7k
R9	RD¼PS 124J NL	Carbon film 120k
R10	RD¼PS 124J NL	Carbon film 120k
R11	RN1/5SQ 1800F	Metal film 180 1/5W
R12	RN1/5SQ 1800F	Metal film 180 1/5W
R13	RD¼PS 332J	Carbon film 3.3k

13.7 FLAT AMPLIFIER ASSEMBLY (AWG-060)





Parts List of Flat Amplifier Assembly (AWG-060)

SWITCHES

Symbol	Part No.	Description
S1	ASK-146	Lever switch (DUPLICATE)
S2	ASK-145	Lever switch (MONITOR 1)
S3	ASK-145	Lever switch (MONITOR 2)
S4	ASK-145	Lever switch (ADAPTOR)
S5	ASK-144	Lever switch (MODE)
S6	ASK-144	Lever switch (MUTING)
S7	ASK-144	Lever switch (LOUDNESS)

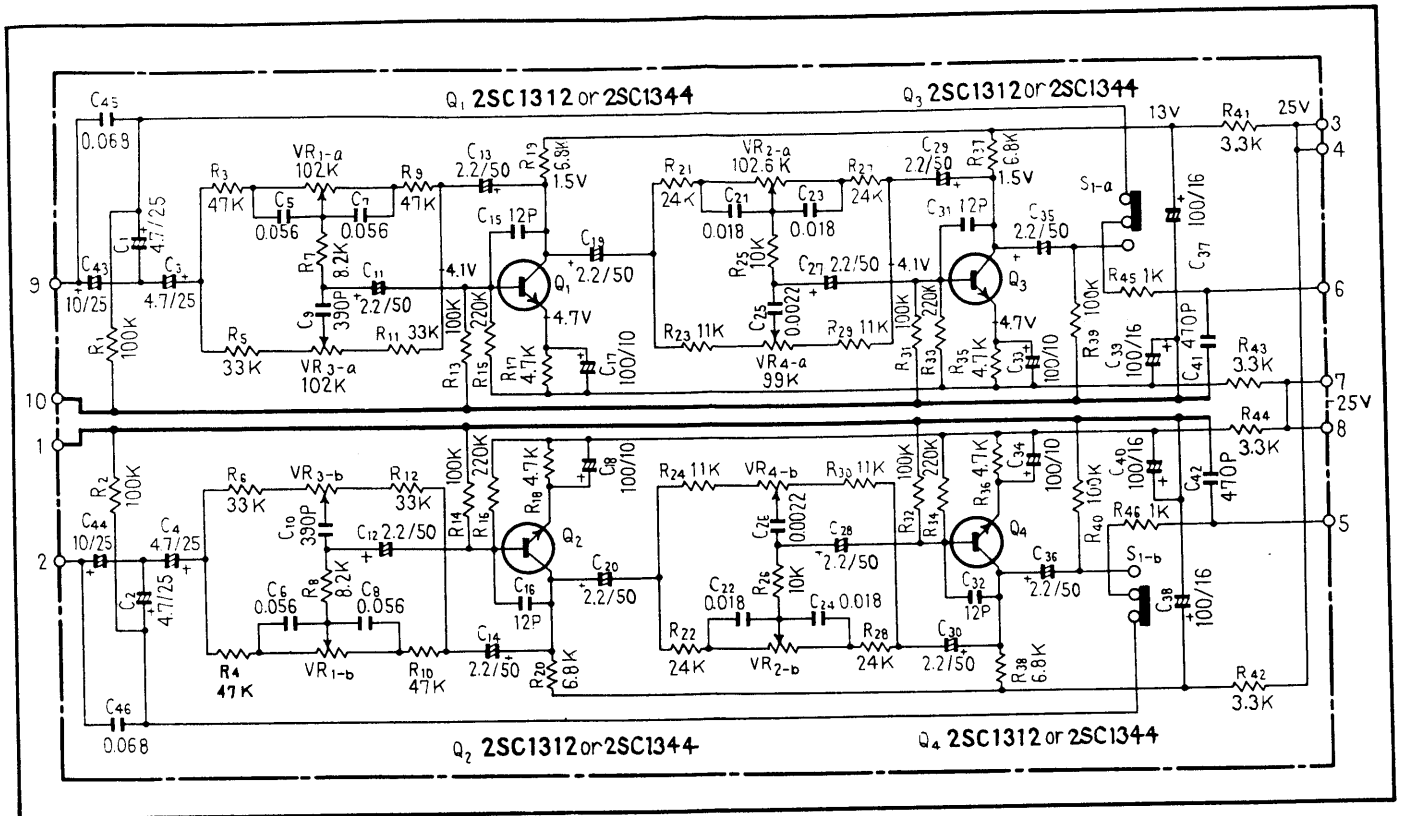
Symbol	Part No.	Description
C7	CCDSL 470K 50	Ceramic 47p 50V
C8	CCDSL 470K 50	Ceramic 47p 50V
C9	CEA 101P 10	Electrolytic 100 10V
C10	CEA 101P 10	Electrolytic 100 10V
C11	CCDSL 090F 50	Ceramic 9p 50V
C12	CCDSL 090F 50	Ceramic 9p 50V
C13	CCDSL 330K 50	Ceramic 33p 50V
C14	CCDSL 330K 50	Ceramic 33p 50V
C15	CEA 101P 10	Electrolytic 100 10V
C16	CEA 101P 10	Electrolytic 100 10V
C17	CEA 221P 35	Electrolytic 220 35V
C18	CEA 221P 35	Electrolytic 220 35V

CAPACITORS

Symbol	Part No.	Description
C1	CQMA 124K 50	Mylar 0.12 50V
C2	CQMA 124K 50	Mylar 0.12 50V
C3	CQSH 151J 50	Polystyrene 150p 50V
C4	CQSH 151J 50	Polystyrene 150p 50V
C5	CEANL 4R7P 25	Electrolytic 4.7 25V
C6	CEANL 4R7P 25	Electrolytic 4.7 25V

RESISTORS

Symbol	Part No.	Description
VR1	ACV-190	Variable resistor (BALANCE)



Parts List of Tone Control Assembly (AWG-059)

SWITCH

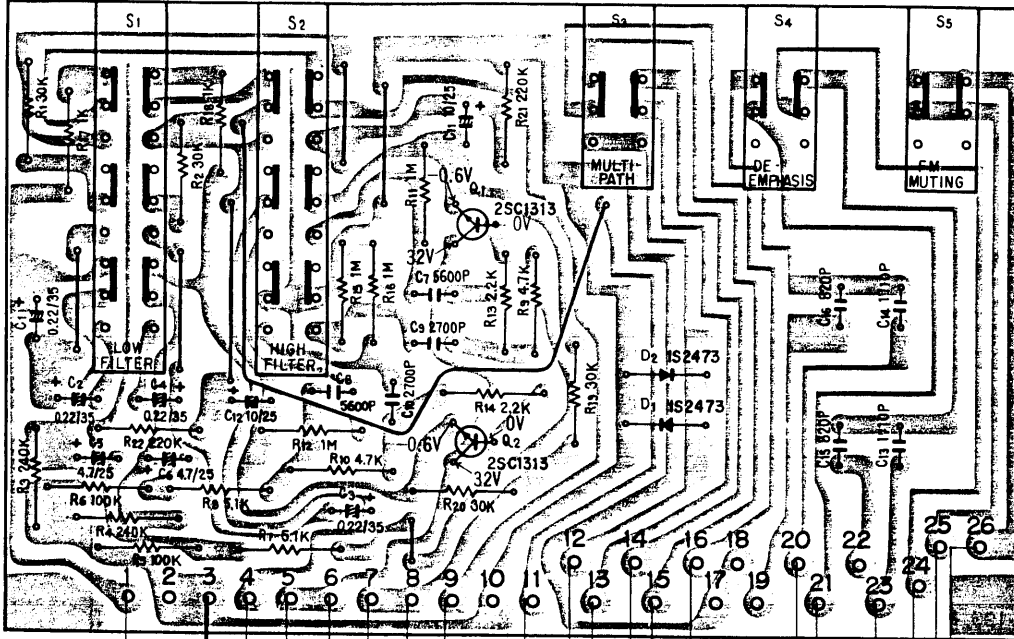
Symbol	Part No.	Description	Symbol	Part No.	Description
S1	ASK-144	Lever switch (TONE)	C17	ACH-312	Electrolytic 100 10V

CAPACITORS

Symbol	Part No.	Description	Symbol	Part No.	Description
C1	CSZA 4R7M 25	Electrolytic 4.7 25V	C21	CQMA 183J 50	Mylar 0.018 50V
C2	CSZA 4R7M 25	Electrolytic 4.7 25V	C22	CQMA 183J 50	Mylar 0.018 50V
C3	CSZA 4R7M 25	Electrolytic 4.7 25V	C23	CQMA 183J 50	Mylar 0.018 50V
C4	CSZA 4R7M 25	Electrolytic 4.7 25V	C24	CQMA 183J 50	Mylar 0.018 50V
C5	CQMA 563J 50	Mylar 0.056 50V	C25	CKDYA 222J 50	Ceramic 2200p 50V
C6	CQMA 563J 50	Mylar 0.056 50V	C26	CKDYA 222J 50	Ceramic 2200p 50V
C7	CQMA 563J 50	Mylar 0.056 50V	C27	CEANL 2R2P 50	Electrolytic 2.2 50V
C8	CQMA 563J 50	Mylar 0.056 50V	C28	CEANL 2R2P 50	Electrolytic 2.2 50V
C9	CQSA 391J 50	Polystyrene 390p 50V	C29	CEANL 2R2P 50	Electrolytic 2.2 50V
C10	CQSA 391J 50	Polystyrene 390p 50V	C30	CEANL 2R2P 50	Electrolytic 2.2 50V
C11	CEANL 2R2P 50	Electrolytic 2.2 50V	C31	CCDSL 120K 50	Ceramic 12p 50V
C12	CEANL 2R2P 50	Electrolytic 2.2 50V	C32	CCDSL 120K 50	Ceramic 12p 50V
C13	CEANL 2R2P 50	Electrolytic 2.2 50V	C33	ACH-312	Electrolytic 100 10V
C14	CEANL 2R2P 50	Electrolytic 2.2 50V	C34	ACH-312	Electrolytic 100 10V
C15	CCDSL 120K 50	Ceramic 12p 50V	C35	CEANL 2R2P 50	Electrolytic 2.2 50V
C16	CCDSL 120K 50	Ceramic 12p 50V	C36	CEANL 2R2P 50	Electrolytic 2.2 50V
			C37	ACH-311	Electrolytic 100 16V
			C38	ACH-311	Electrolytic 100 16V

13.9 FILTER AMPLIFIER ASSEMBLY (AWM-119)

Foil side

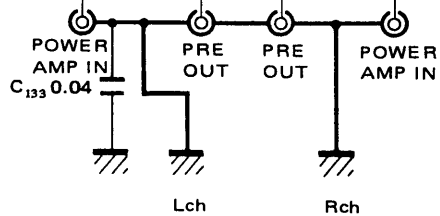


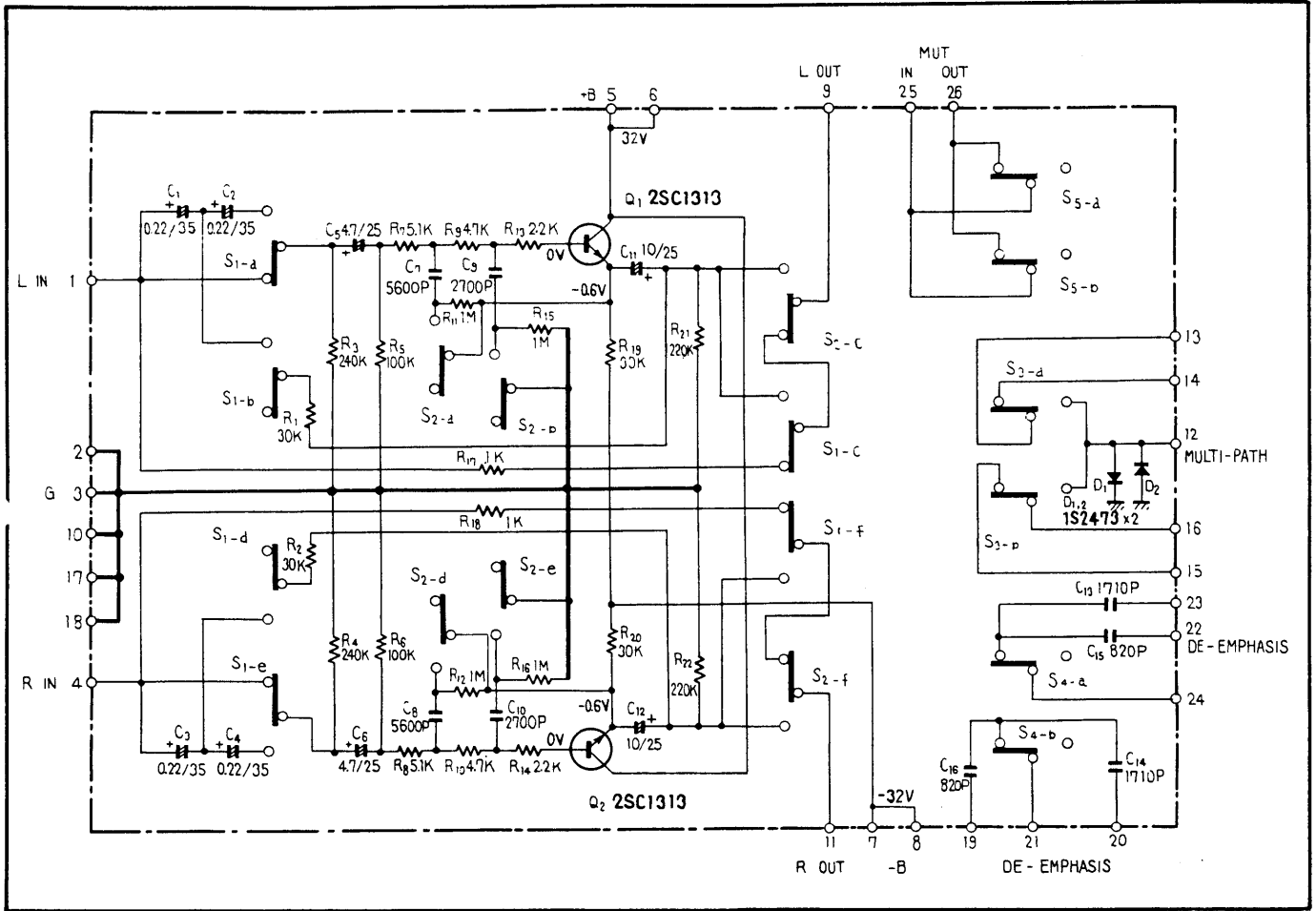
AWG-059, No.6

- AWE-092, No.20
- AWE-092, No.10
- AWE-092, No.14
- AWE-092, No.22
- AWE-092, No.23

- ← AWE-059, No.5
- ← AWE-059, No.4
- ← AWR-157, No.12
- ← AWE-059, No.7
- ← AWR-157, No.21
- ← AWH-074, No.3

- AWE-092, No.16
- AWE-092, No.18
- GWS-133, No.5
- AWE-092, No.21
- AWE-092, No.19
- GWS-133, No.4
- AWE-092, No.26
- AWH-074, No.3 (R)





Parts List of Filter Assembly (AWM-119)

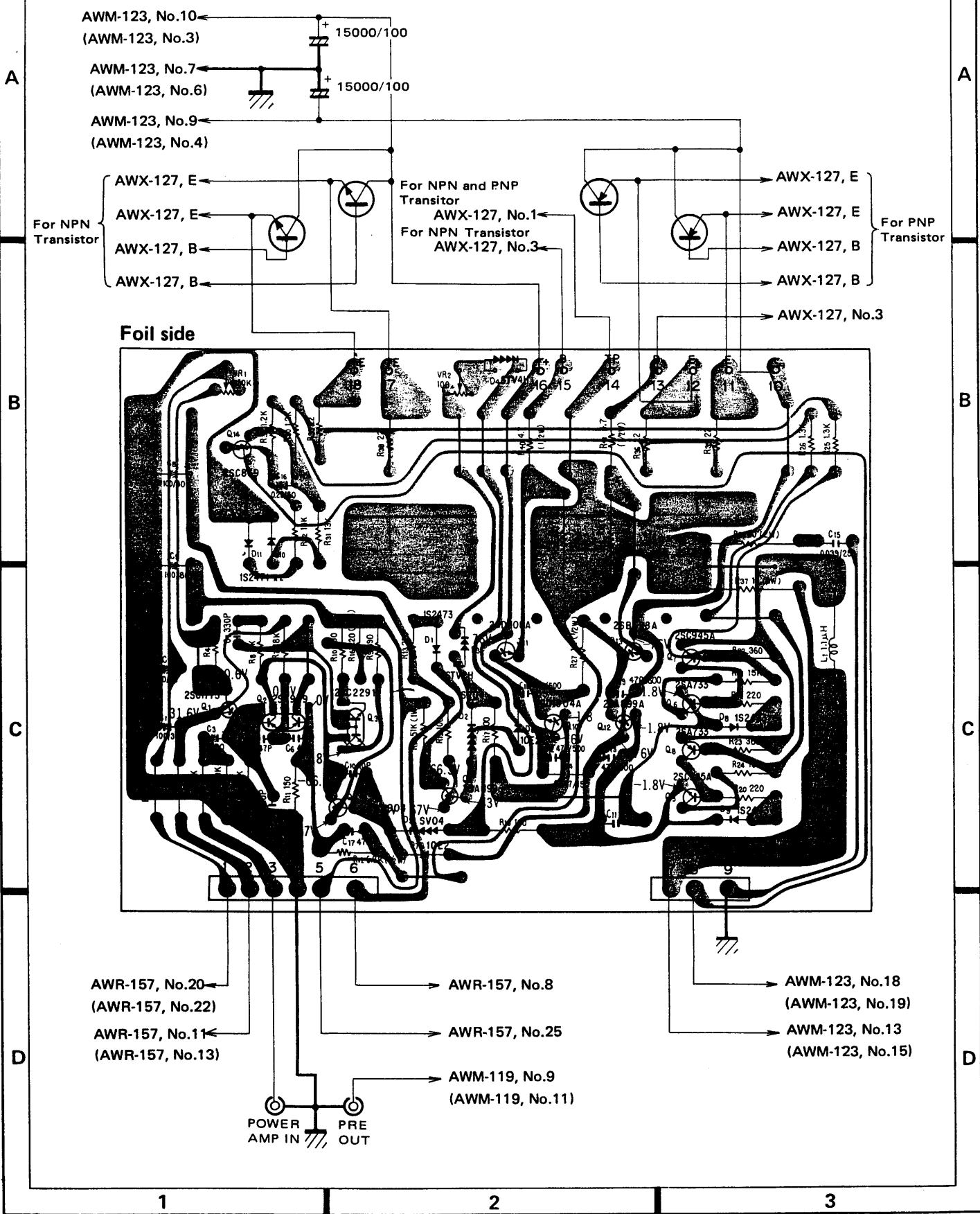
SWITCH

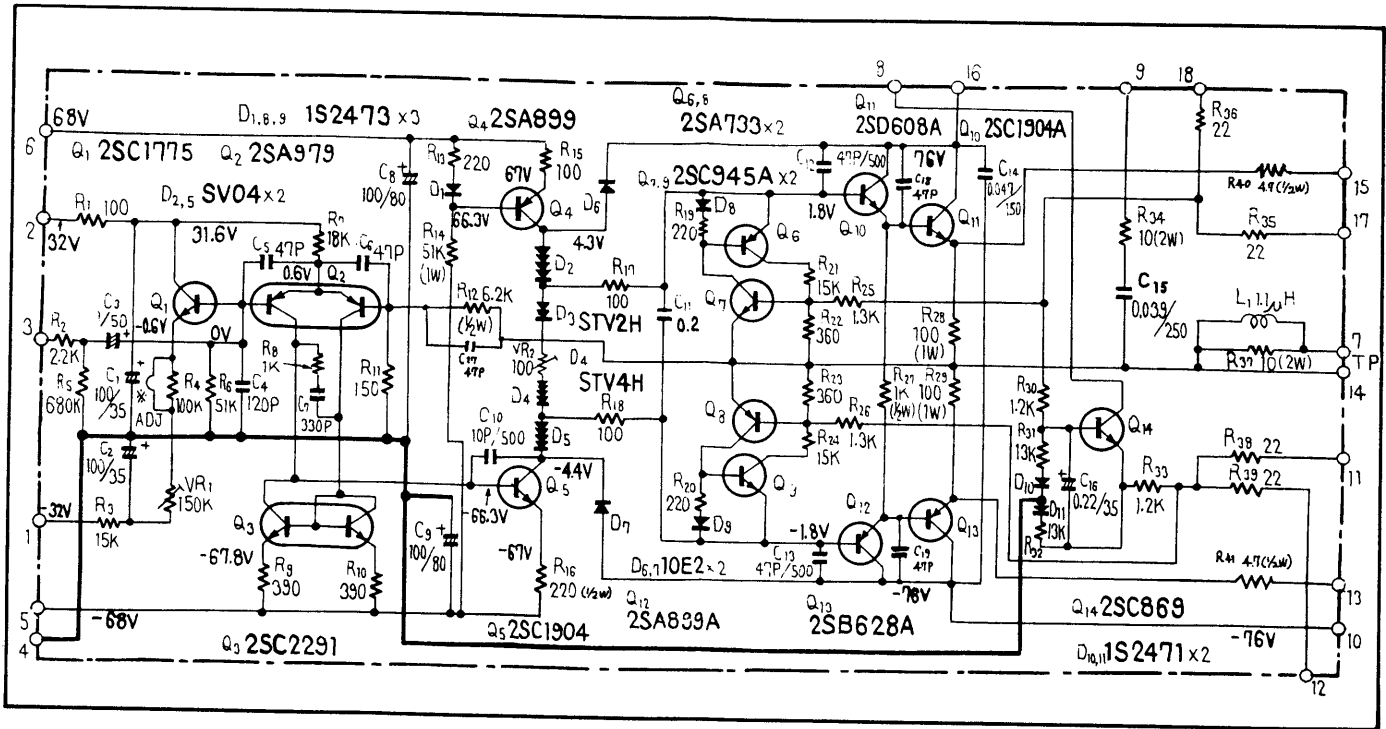
Symbol	Part No.	Description	Symbol	Part No.	Description
S1~S5	ASG-127	Push switch (LOW FILTER, HIGH FILTER, MULTIPATH, DE-EMPHASIS, FM MUTING)	C7	CKDYA 562J 50 (CQMA 562J 50)	Ceramic (Mylar) 0.0056 50V
			C8	CKDYA 562J 50 (CQMA 562J 50)	Ceramic (Mylar) 0.0056 50V
			C9	CKDYA 272J 50 (CQMA 272J 50)	Ceramic (Mylar) 0.0027 50V
			C10	CKDYA 272J 50 (CQMA 272J 50)	Ceramic (Mylar) 0.0027 50V

CAPACITORS

Symbol	Part No.	Description	Symbol	Part No.	Description
C1	CSZA R22M 35	Electrolytic 0.22 35V	C11	CSZA 100M 25	Electrolytic 10 25V
C2	CSZA R22M 35	Electrolytic 0.22 35V	C12	CSZA 100M 25	Electrolytic 10 25V
C3	CSZA R22M 35	Electrolytic 0.22 35V	C13	ACE-043	Polystyrene 1710p 50V
C4	CSZA R22M 35	Electrolytic 0.22 35V	C14	ACE-043	Polystyrene 1710p 50V
C5	CSZA 4R7M 25	Electrolytic 4.7 25V	C15	CQSA 821G 50	Polystyrene 820p 50V
C6	CSZA 4R7M 25	Electrolytic 4.7 25V	C16	CQSA 821G 50	Polystyrene 820p 50V

13.10 POWER AMPLIFIER ASSEMBLY (AWH-074)





Parts List of Power Amplifier Assembly (AWH-074)

CAPACITORS

Symbol	Part No.	Description	Symbol	Part No.	Description
C1	CEA 101P 35	Electrolytic 100 35V	R1	RD½PSF 101J	Carbon film 100
C2	CEA 101P 35	Electrolytic 100 35V	R2	RD½PS 222J	Carbon film 2.2k
C3	CEANL 010P 50	Electrolytic 1 50 V	R3	RD½PS 153J	Carbon film 15k
C4	CCDSL 121K 50	Ceramic 120p 50V	R4	RD½PS 104J	Carbon film 100k
C5	CCDSL 470K 50	Ceramic 47p 50V	R5	RD½PS 684J NL	Carbon film 680k
C6	CCDSL 470K 50	Ceramic 47p 50V	R6	RD½PS 513J NL	Carbon film 51k
C7	CCDSL 331K 50	Ceramic 330p 50V	R7	RD½PS 183J	Carbon film 18k
C8	CEA 101P 80	Electrolytic 100 80V	R8	RD½PS 102J	Carbon film 1k
C9	CEA 101P 80	Electrolytic 100 80V	R9	RD½PS 391J	Carbon film 390
C10	CCDSL 100K 500	Ceramic 10p 500V	R10	RD½PS 391J	Carbon film 390
C11	CQMA 204J 50	Mylar 0.2 50V	R11	RD½PSF 151J	Carbon film 150
C12	CCDSL 470K 500	Ceramic 47p 500V	R12	RD½PS 622J	Carbon film 6.2k ½W
C13	CCDSL 470K 500	Ceramic 47p 500V	R13	RD½PSF 221J	Carbon film 220
C14	ACG-009	Ceramic 0.047 150V	R14	PS1P 513J	Metal oxide 51k 1W
C15	CQMA 393J 250	Mylar 0.039 250V	R15	RD½PSF 101J	Carbon film 100
C16	CSZA R22M 35	Electrolytic 0.22 35V	R16	RD½PSF 221J	Carbon film 220 ½W
C17	CCDSL 470K 50	Ceramic 47p 50V	R17	RD½PSF 101J	Carbon film 100
C18	CCDSL 470K 500	Ceramic 47p 500V	R18	RD½PSF 101J	Carbon film 100
C19	CCDSL 470K 500	Ceramic 47p 500V	R19	RD½PSF 221J	Carbon film 220
			R20	RD½PSF 221J	Carbon film 220
			R21	RD½PS 153J	Carbon film 15k
			R22	RD½PSF 361J	Carbon film 360
			R23	RD½PSF 361J	Carbon film 360
			R24	RD½PS 153J	Carbon film 15k

RESISTORS

Symbol	Part No.	Description
VR1	ACP-063	Semi fixed (150k)
VR2	ACP-032	Semi fixed (100)

Symbol	Part No.	Description		
R25	RD¼PS 132J	Carbon film	1.3k	
R26	RD¼PS 132J	Carbon film	1.3k	
R27	RD¼PSF 102J	Carbon film	1k	¼W
R28	RS1PF 101J	Metal oxide	100	1W
R29	RS1PF 101J	Metal oxide	100	1W
R30	RD¼PSF 122J	Carbon film	1.2k	
R31	RD¼PS 133J	Carbon film	13k	
R32	RD¼PS 133J	Carbon film	13k	
R33	RD¼PSF 122J	Carbon film	1.2k	
R34	RS2P 100J	Metal oxide	10	2W
R35	RD¼PSF 220J	Carbon film	22	
R36	RD¼PSF 220J	Carbon film	22	
R37	RS2P 100J	Metal oxide	10	2W
R38	RD¼PSF 220J	Carbon film	22	
R39	RD¼PSF 220J	Carbon film	22	
R40	RD¼PSF 4R7J	Carbon film	4.7	¼W
R41	RD¼PSF 4R7J	Carbon film	4.7	¼W

Symbol	Part No.	Description
D6	10E2 (SIB01-02)	Diode
D7	10E (SIB01-02)	Diode
D8	1S2473 (1S1555)	Diode
D9	1S2473 (1S1555)	Diode
D10	1S2471	Diode
D11	1S2471	Diode

List of Changed Parts for Factory Modification

Symbol	Part No.	Description

OTHERS

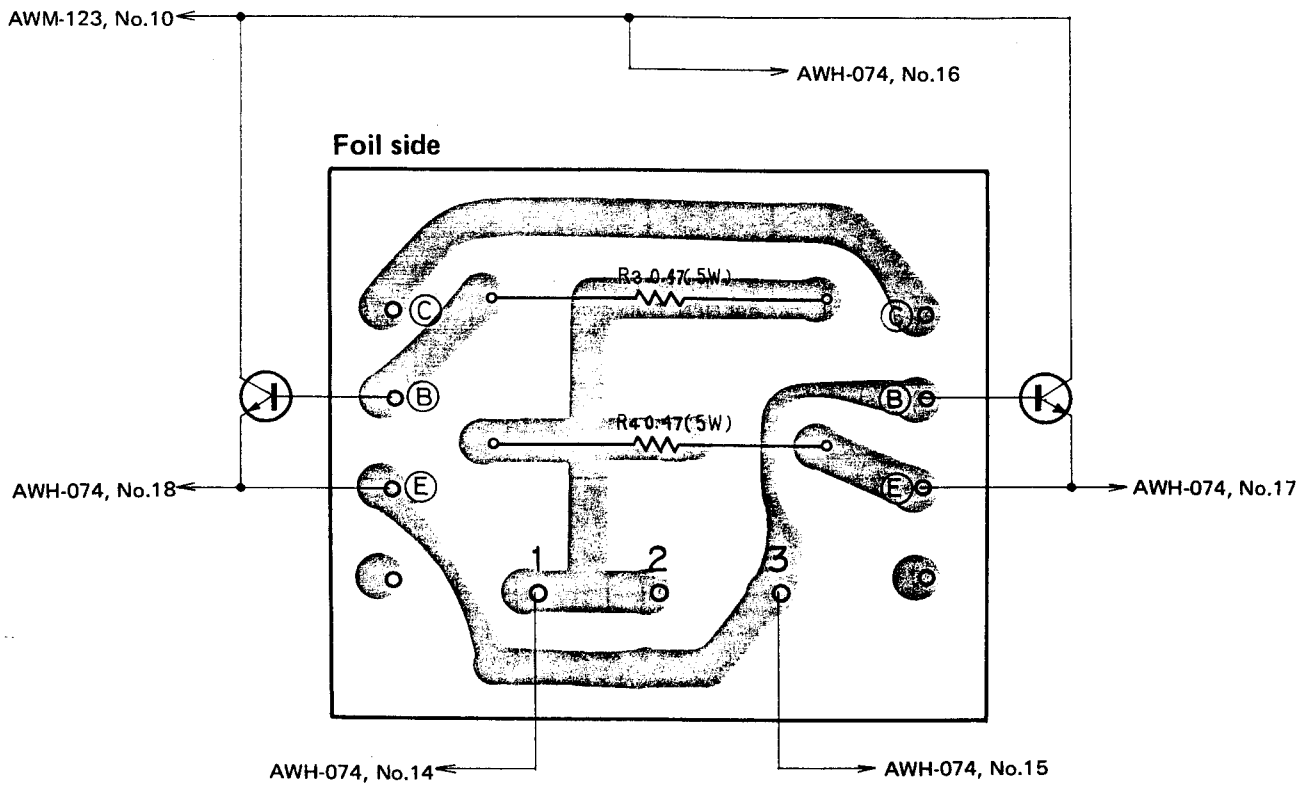
Symbol	Part No.	Description
L1	ANH-203 ATH-012	Heat sink AF choke coil 1.1μH

SEMICONDUCTORS

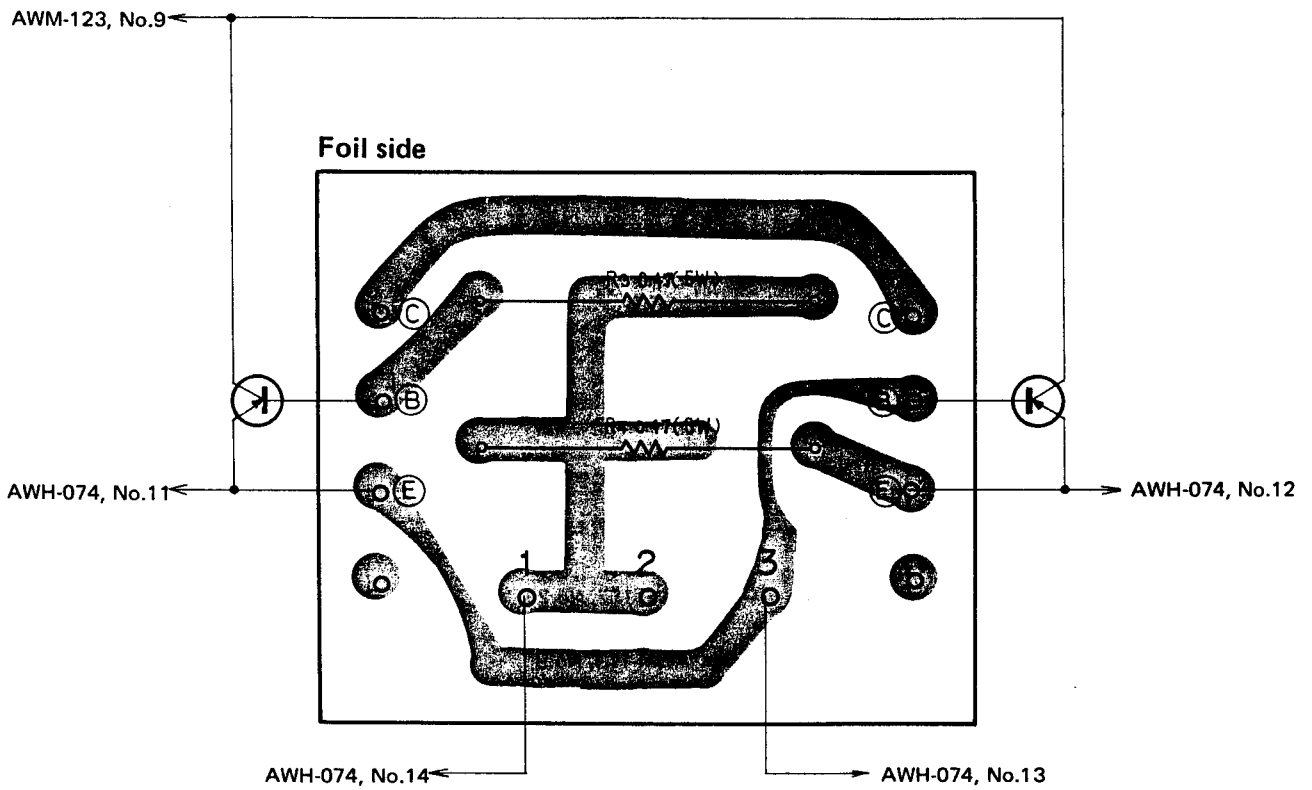
Symbol	Part No.	Description
Q1	2SC1775A-E	Transistor
Q2	2SA979-F	Transistor
Q3	2SC2291-G or F	Transistor
Q4	2SA899-V or B	Transistor
Q5	2SC1904-V or B	Transistor
Q6	2SA733-Q or R	Transistor
Q7	2SC945A-Q or R	Transistor
Q8	2SA733-Q or R	Transistor
Q9	2SC945A-Q or R	Transistor
Q10	2SC1904A-V or B	Transistor
Q11	2SD608A-R or Q	Transistor
Q12	2SA899A-V or B	Transistor
Q13	2SB628A-R or Q	Transistor
Q14	2SC869-D or C	Transistor
D1	1S2473 (1S1555)	Diode
D2	SV-04	Varistor
D3	STV2H	Varistor
D4	STV4H	Varistor
D5	SV-04	Varistor

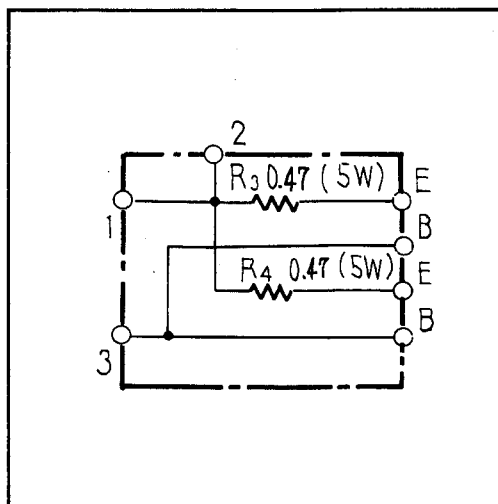
13.11 RESISTOR ASSEMBLY (AWX-127)

For NPN Transistor



For PNP Transistor





Parts List of Resistor Assembly (AWX-127)

RESISTORS

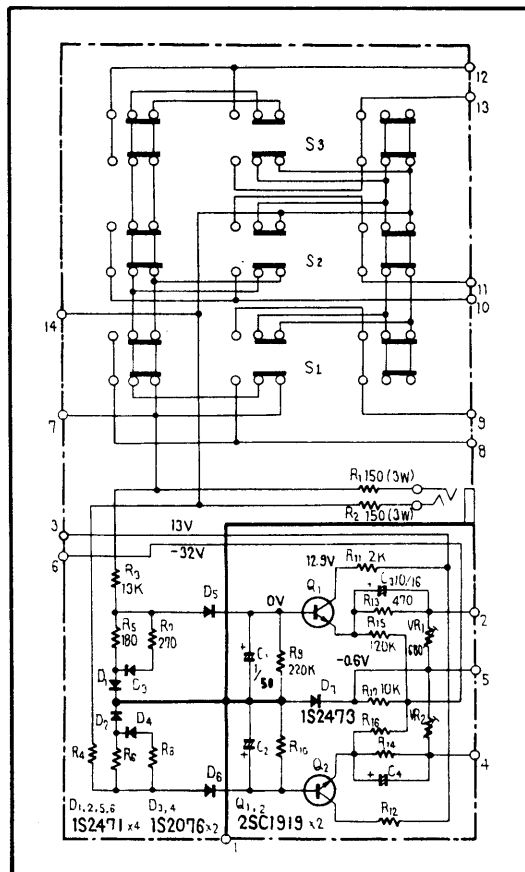
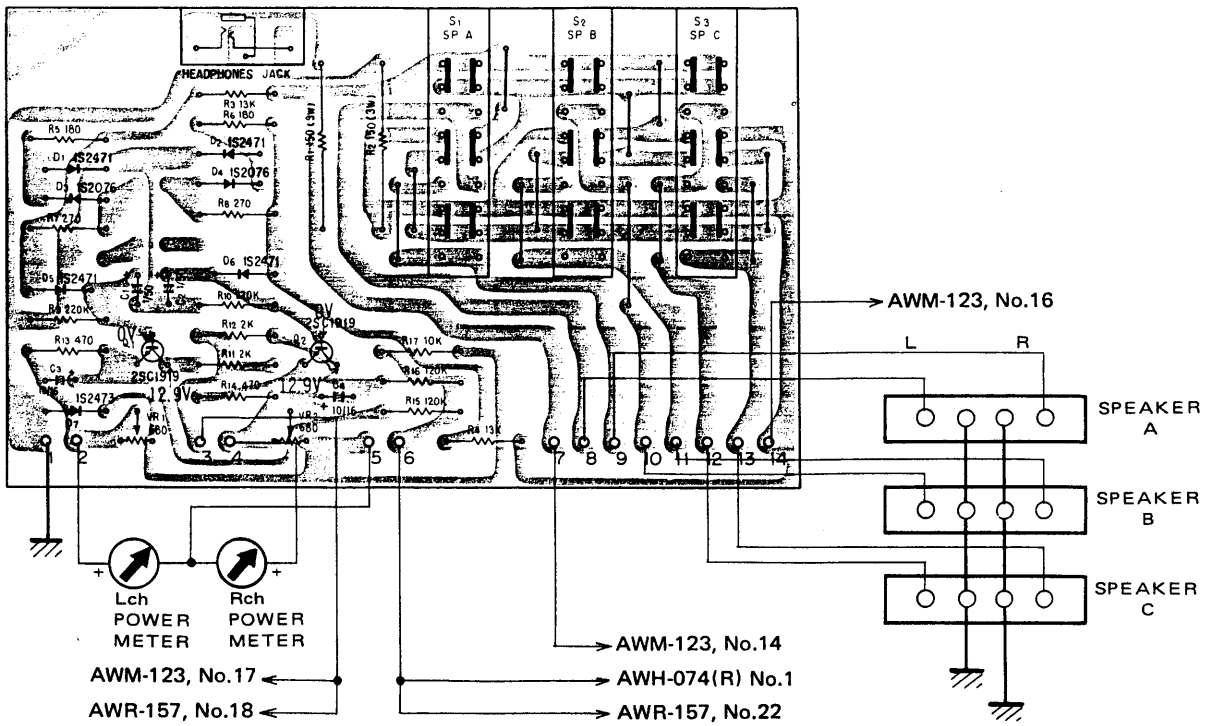
Symbol	Part No.	Description
R3	ACN-028	Wire wound 0.47 5W
R4	ACN-028	Wire wound 0.47 5W

List of Changed Parts for Factory Modification

Symbol	Part No.	Description

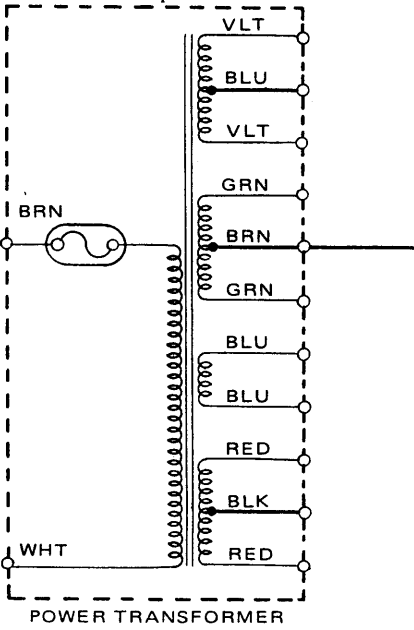
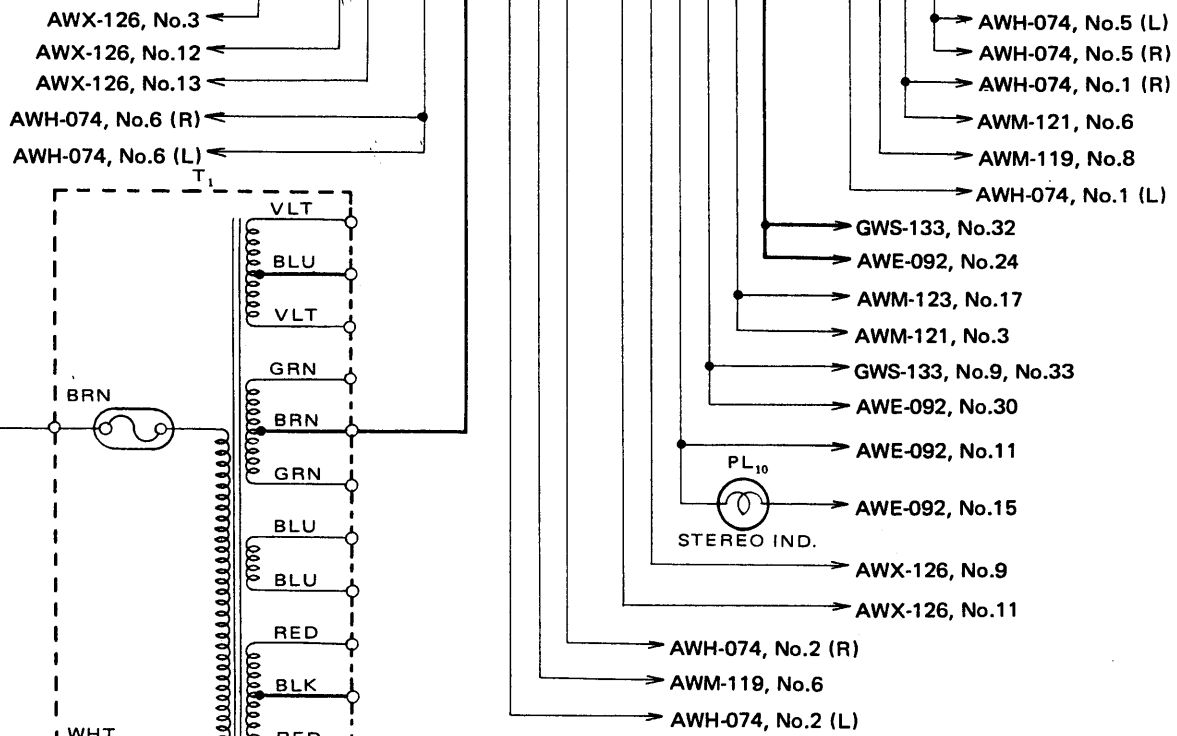
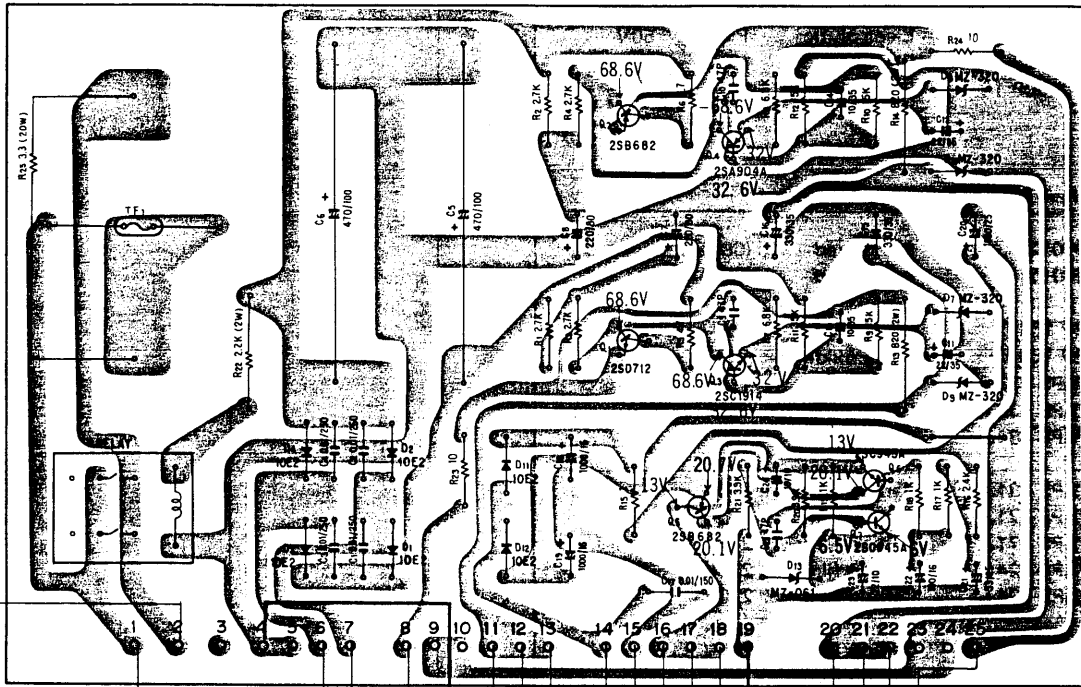
13.12 METER AMPLIFIER ASSEMBLY (AWM-121)

Foil side

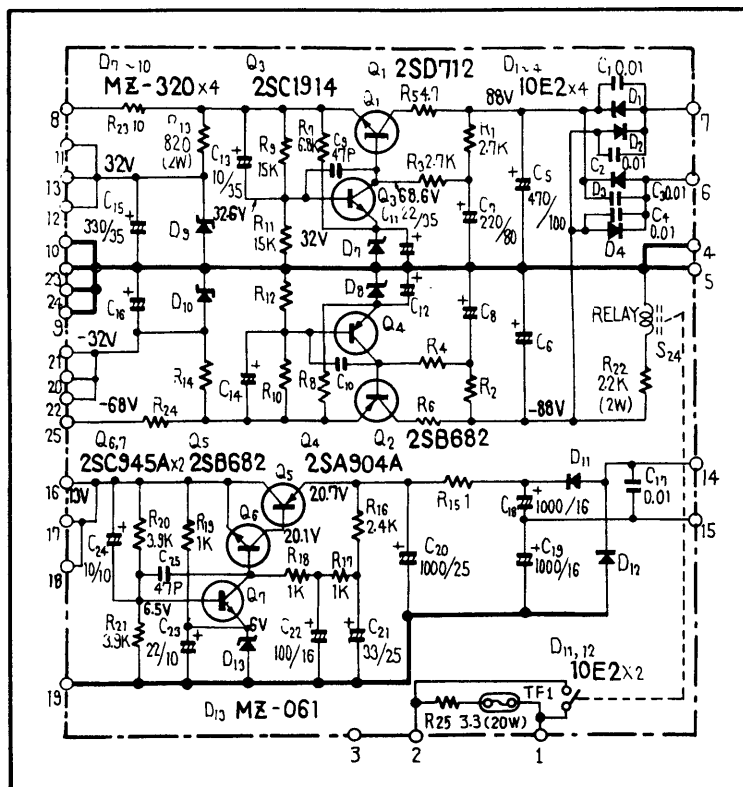


13.13 POWER SUPPLY ASSEMBLY (AWR-157)

Foil side



POWER TRANSFORMER



Parts List of Power Supply Assembly (AWR-157)

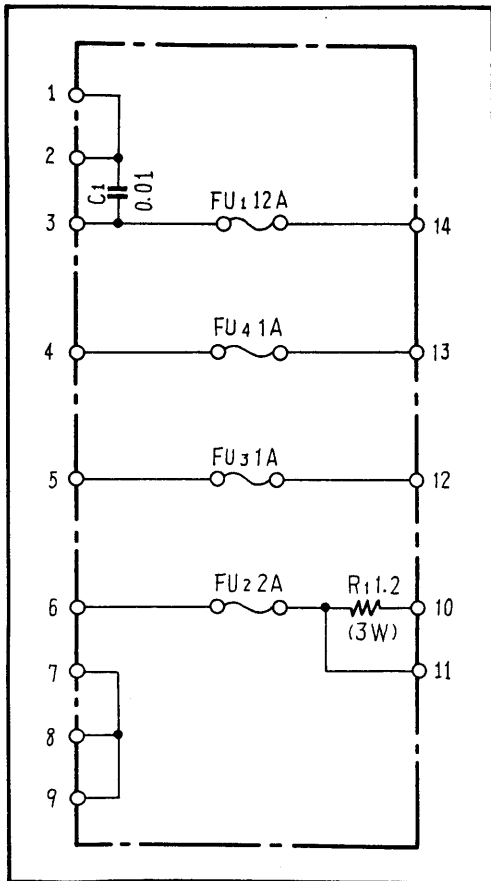
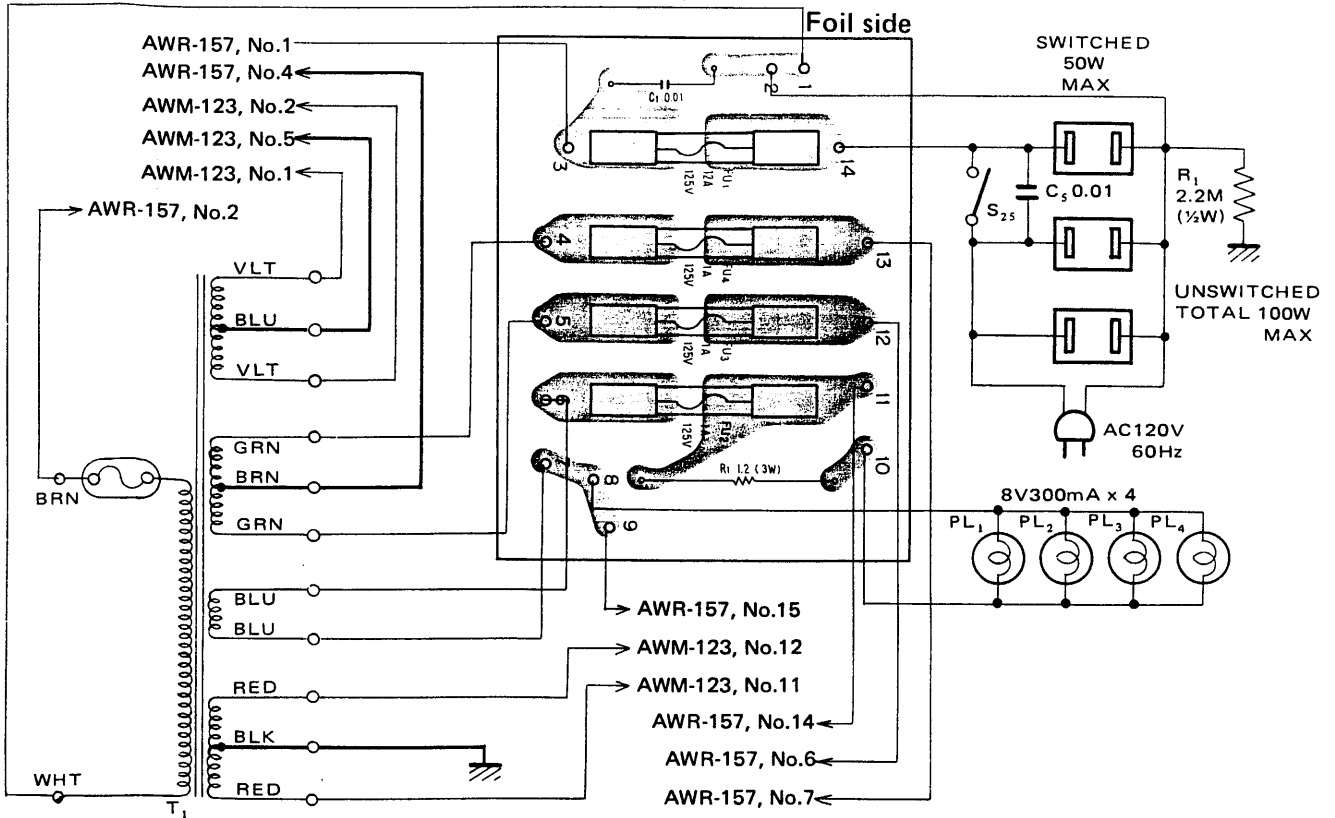
CAPACITORS

Symbol	Part No.	Description
C1	ACG-001	Ceramic 0.01 250V
C2	ACG-001	Ceramic 0.01 250V
C3	ACG-001	Ceramic 0.01 250V
C4	ACG-001	Ceramic 0.01 250V
C5	CEB 471P 100	Electrolytic 470 100V
C6	CEB 471P 100	Electrolytic 470 100V
C7	CEA 221P 80	Electrolytic 220 80V
C8	CEA 221P 80	Electrolytic 220 80V
C9	CCDSL 470K 50	Ceramic 47p 50V
C10	CCDSL 470K 50	Ceramic 47p 50V
C11	CEA 220P 35	Electrolytic 22 35V
C12	CEA 220P 35	Electrolytic 22 35V
C13	CEA 100P 35	Electrolytic 10 35V
C14	CEA 100P 35	Electrolytic 10 35V
C15	CEA 331P 35	Electrolytic 330 35V
C16	CEA 331P 35	Electrolytic 330 35V
C17	ACG-004	Ceramic 0.01 150V
C18	CEA 102P 16	Electrolytic 1000 16V
C19	CEA 102P 16	Electrolytic 1000 16V
C20	CEA 102P 25	Electrolytic 1000 25V

RESISTORS

Symbol	Part No.	Description
R1	RD¼PSF 272J	Carbon film 2.7k
R2	RD¼PSF 272J	Carbon film 2.7k
R3	RD¼PSF 272J	Carbon film 2.7k
R4	RD¼PSF 272J	Carbon film 2.7k
R5	RD¼PSF 4R7J	Carbon film 4.7
R6	RD¼PSF 4R7J	Carbon film 4.7
R7	RD¼PS 682J	Carbon film 6.8k
R8	RD¼PS 682J	Carbon film 6.8k
R9	RD¼PS 153J	Carbon film 15k
R10	RD¼PS 153J	Carbon film 15k

13.14 FUSE ASSEMBLY (AWX-126) or (AWX-139)



NOTE:
AWS-126 is applicable to the KU type, and AWX-139 is for the KC type.

Parts List

RESISTOR

Symbol	Part No.	Description
R1	RT3B 1R2K	Wire wound 1.2 3W

CAPACITOR

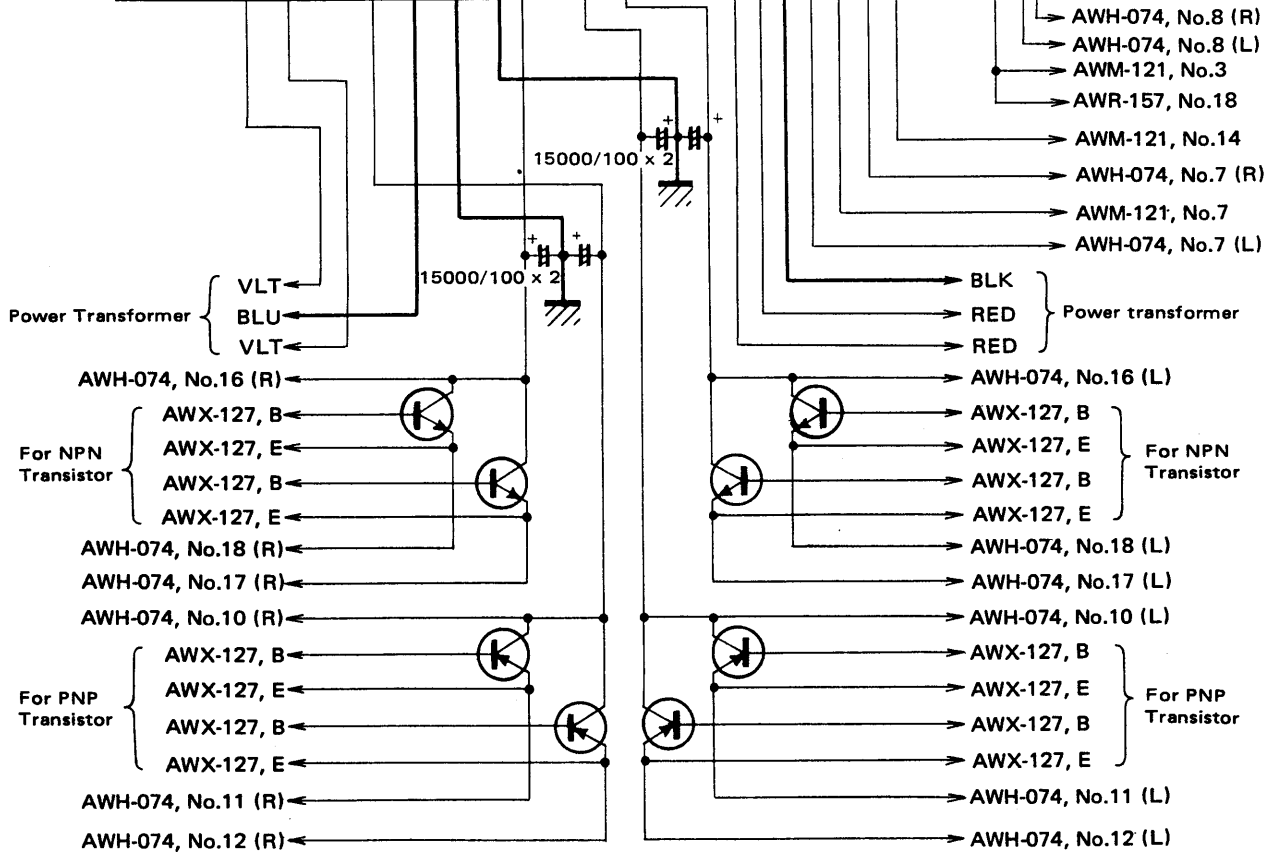
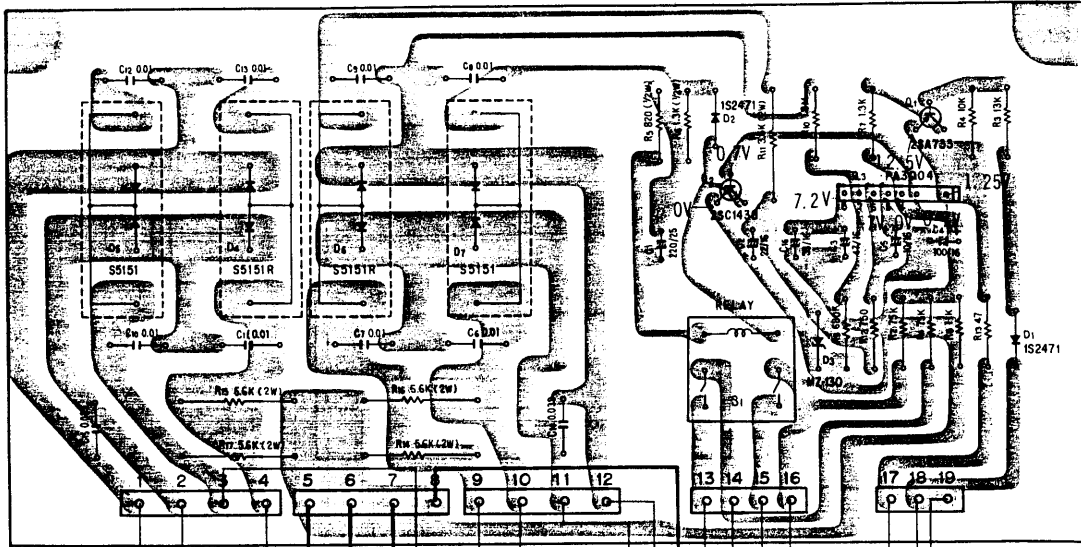
Symbol	Part No.	Description
C1	ACG-003	Ceramic 0.01 125V (For KU type)
	ACG-014	Ceramic 0.01 125V (For KC type)

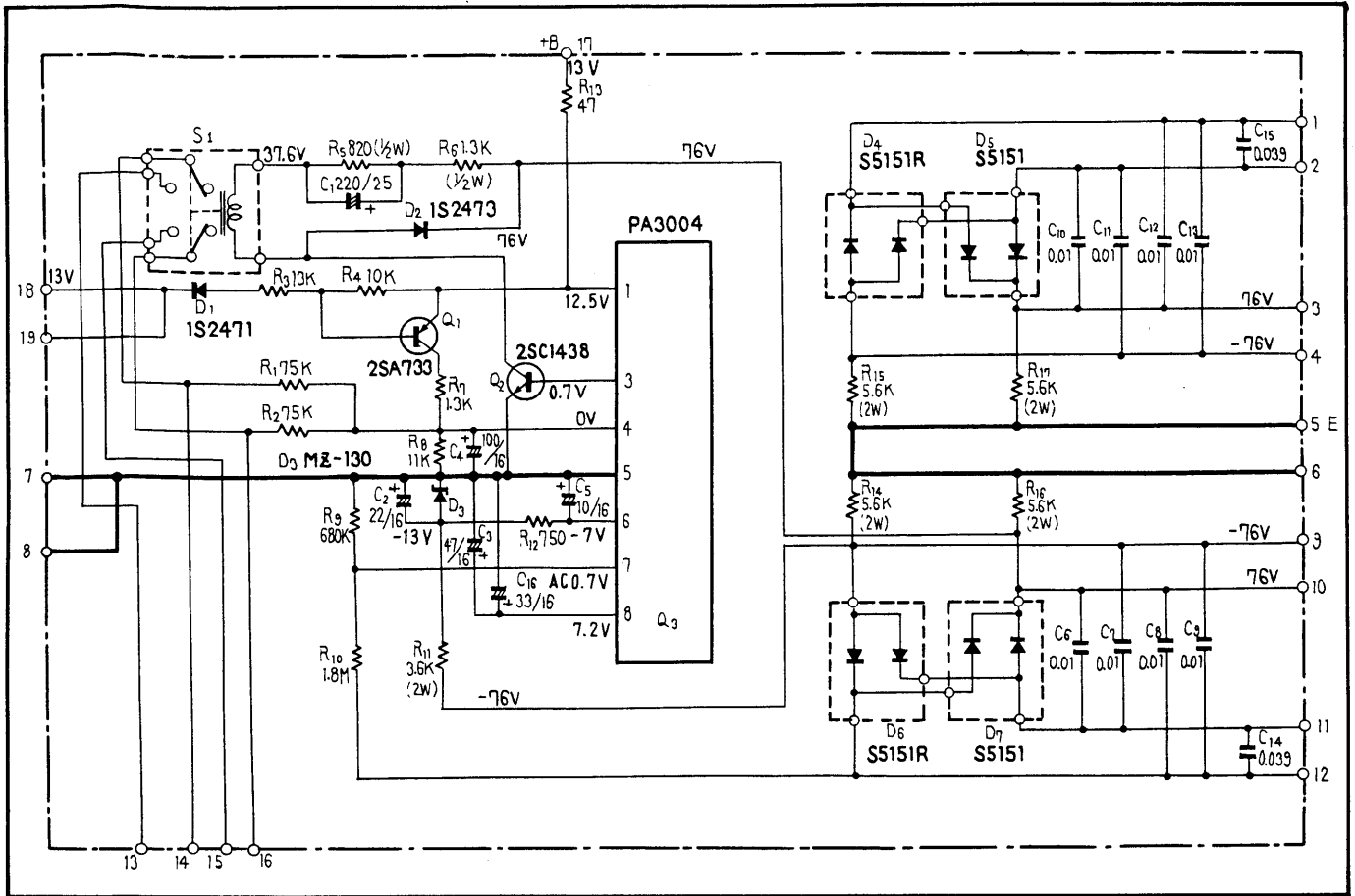
OTHERS

Symbol	Part No.	Description
	AKR-013	Fuse clip
	AKR-030	Fuse clip
	AEC-279	Cover (For KU type)
	AEC-365	Cover (For KC type)

13.15 PROTECTION CIRCUIT ASSEMBLY (AWM-123)

Foil side





Parts List of Protection Assembly (AWM-123)

CAPACITORS

Symbol	Part No.	Description
C1	CEA 221P 25	Electrolytic 220 25V
C2	CEA 220P 16	Electrolytic 22 16V
C3	CEA 470P 16	Electrolytic 47 16V
C4	CEA 101P 16	Electrolytic 100 16V
C5	CEA 100P 16	Electrolytic 10 16V
C6	ACG-001	Ceramic 0.01 250V
C7	ACG-001	Ceramic 0.01 250V
C8	ACG-001	Ceramic 0.01 250V
C9	ACG-001	Ceramic 0.01 250V
C10	ACG-001	Ceramic 0.01 250V
C11	ACG-001	Ceramic 0.01 250V
C12	ACG-001	Ceramic 0.01 250V
C13	ACG-001	Ceramic 0.01 250V
C14	CQMA 393J 250	Mylar 0.039 250V
C15	CQMA 393J 250	Mylar 0.039 250V
C16	CEA 330P 16	Electrolytic 33 16V

RESISTORS

Symbol	Part No.	Description
R1	RD¼PS 753J	Carbon film 75k
R2	RD¼PS 753J	Carbon film 75k
R3	RD¼PS 133J	Carbon film 13k
R4	RD¼PS 103J	Carbon film 10k
R5	RD¼PS 821J	Carbon film 820 ½W
R6	RD¼PS 132J	Carbon film 1.3k ½W
R7	RD¼PS 132J	Carbon film 1.3k
R8	RD¼PS 113J	Carbon film 11k
R9	RD¼PS 684J	Carbon film 680k
R10	RD¼PS 185J	Carbon film 1.8M
R11	RS2P 362J	Metal oxide 3.6k 2W
R12	RD¼PS 751J	Carbon film 750
R13	RD¼PS 470J	Carbon film 47
R14	RS2P 562J	Metal oxide 5.6k 2W
R15	RS2P 562J	Metal oxide 5.6k 2W
R16	RS2P 562J	Metal oxide 5.6k 2W
R17	RS2P 562J	Metal oxide 5.6k 2W

ADDITIONAL

 PIONEER

Service Manual

AM/FM STEREO RECEIVER

SX-1280 S S/G

- This additional service manual provides the description of the parts applied only S, and S/G types.
- For detailed instructions on adjustments, circuit descriptions, exploded views, etc., please refer to this Service Manual (page 3 ~ page 80).

1. SPECIFICATIONS

Preamplifier Section

Input (Sensitivity/Impedance)

TAPE PLAY 2 (DIN connector) 150mV/50kilohms

Output Level/Impedance

TAPE 2 (DIN connector) 30mV/80kilohms

Miscellaneous

Power requirements 110V, 120V, 220V, 240V
switchable, 50/60Hz

Power Consumption 1100W (max.)

Furnished Parts

Fuse 6A 1

Fuse 12A. 1

2. CONTRAST OF MISCELLANEOUS PARTS

NOTE:

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

P.C. BOARD ASSEMBLIES

Symbol & Description	Part No.			Remarks
	KU	S	S/G	
Fuse assembly	AWX-126	AWX-134	AWX-134	
5P connector assembly	.....	AWX-062	AWX-062	

TRANSFORMER

Symbol & Description	Part No.			Remarks
	KU	S	S/G	
T1 Power transformer	ATT-447	ATT-474	ATT-475	

SWITCHES

Symbol & Description	Part No.			Remarks
	KU	S	S/G	
S26 Plug in selector (line voltage selector)	AKR-031	AKR-031	
S27 Slide switch (DE-EMPHASIS)	ASH-016	ASH-016	

CAPACITORS

Symbol & Description				Part No.			Remarks
				KU	S	S/G	
C5	Ceramic	0.01	125V	ACG-003	.....	.....
C5	Ceramic	0.01	250V	.....	ACG-001	ACG-001	
C14	Ceramic	0.01	250V	.....	ACG-001	ACG-001	

RESISTOR

Symbol & Description				Part No.			Remarks
				KU	S	S/G	
R1	Carbon film	2.2M	½W	RD½PS 225J	.....	.....

FUSES

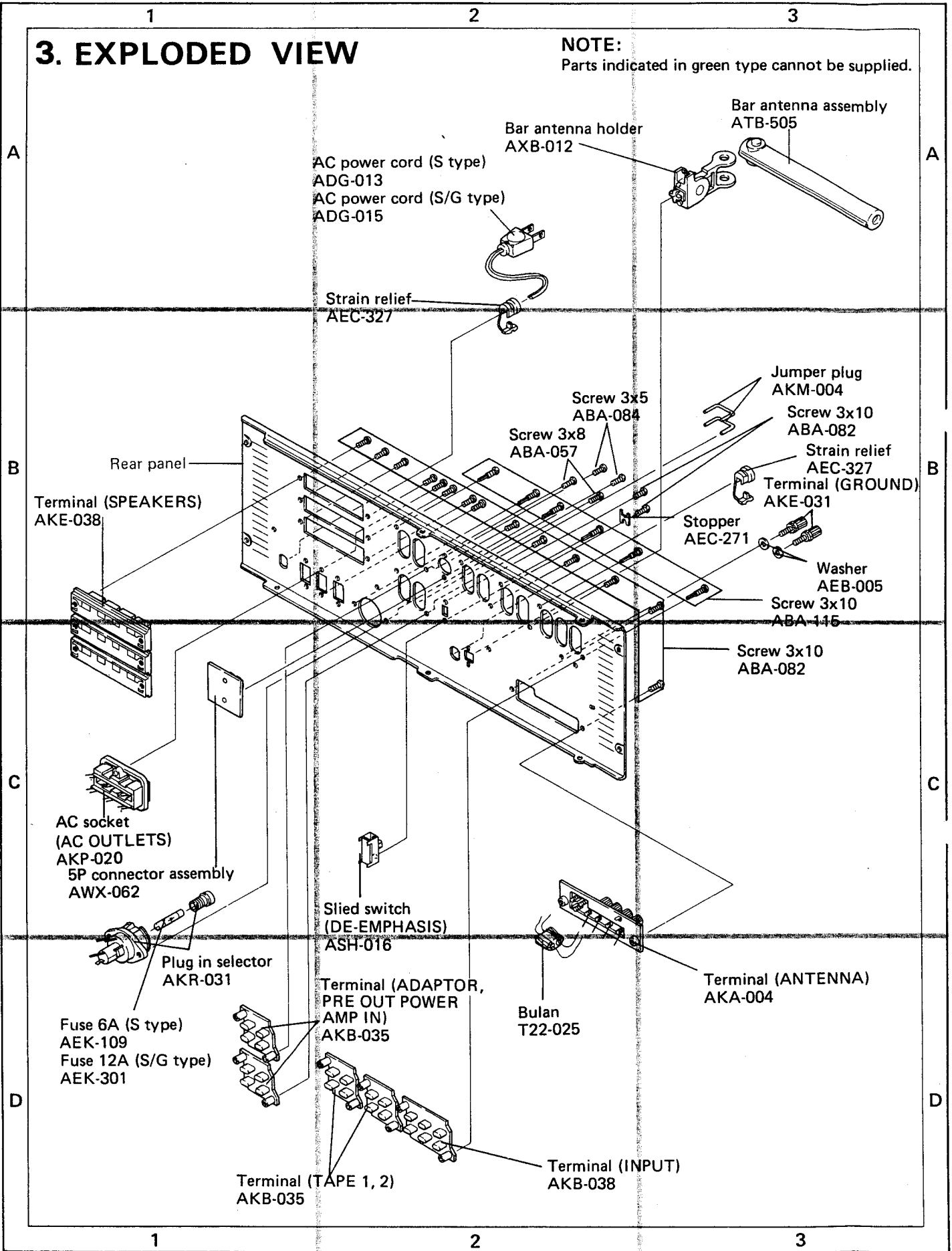
Symbol & Description				Parts No.			Remarks
				KU	S	S/G	
FU1	Fuse	12A		AEK-301	.....	AEK-301	
FU1	Fuse	6A		.....	AEK-109	.....

OTHERS

Symbol & Description				Part No.			Remarks
				KU	S	S/G	
	AC power cord			ADG-013	ADG-013	ADG-015	
	Condenser cover			AEC-297	AEC-099	AEC-099	
	Operating instructions			ARB-244	ARB-247	ARB-247	
	Vinyl pouch			.....	E11-033	E11-033	
	Spare fuse	12A		.....	AEK-301	AEK-301	
	Spare fuse	6A		.....	AEK-109	AEK-109	
	AC socket			AKP-005	AKP-020	AKP-020	

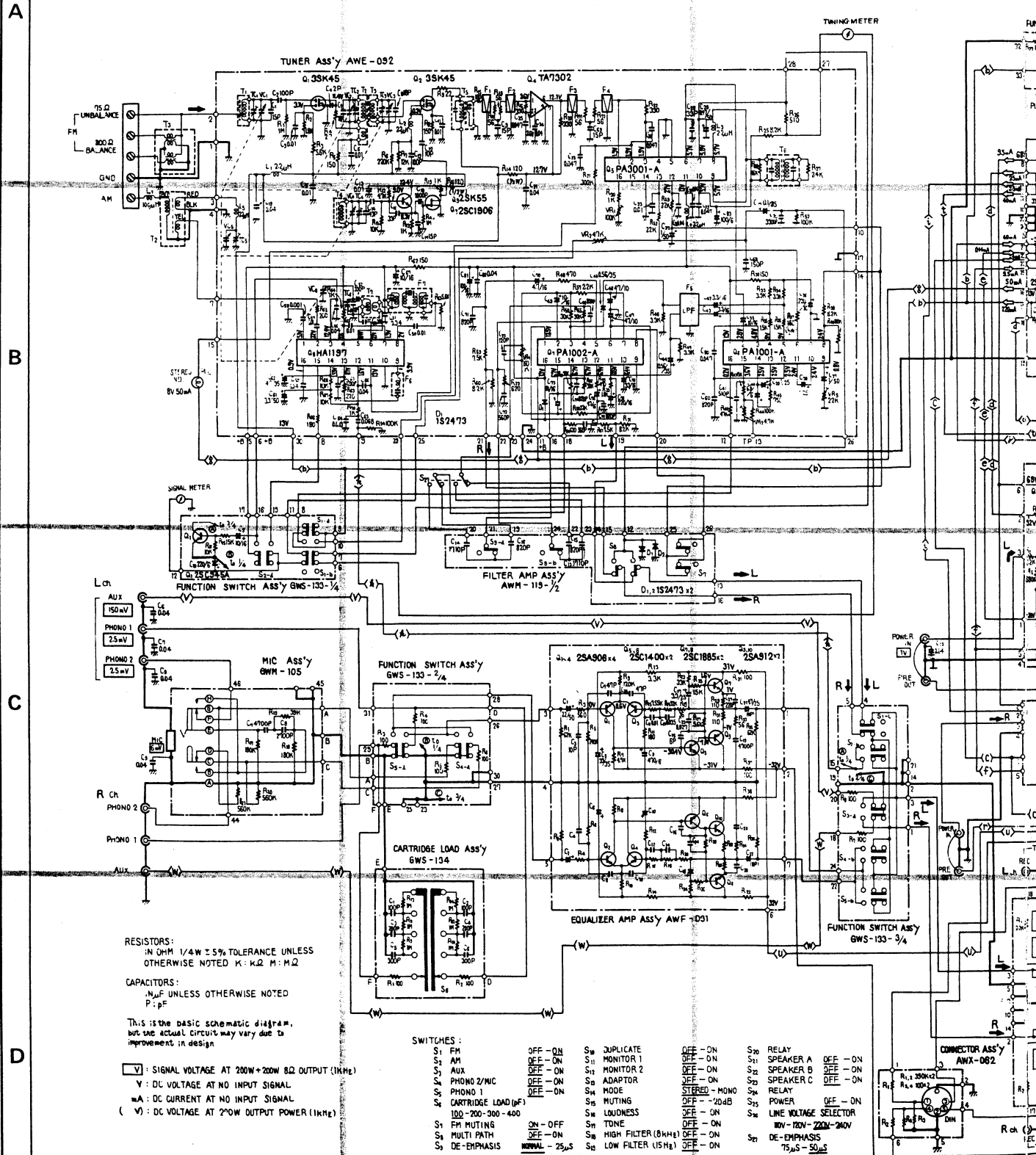
3. EXPLODED VIEW

NOTE:
Parts indicated in green type cannot be supplied.



4. SCHEMATIC DIAGRAMS, P.C. BOARD PATTERNS A

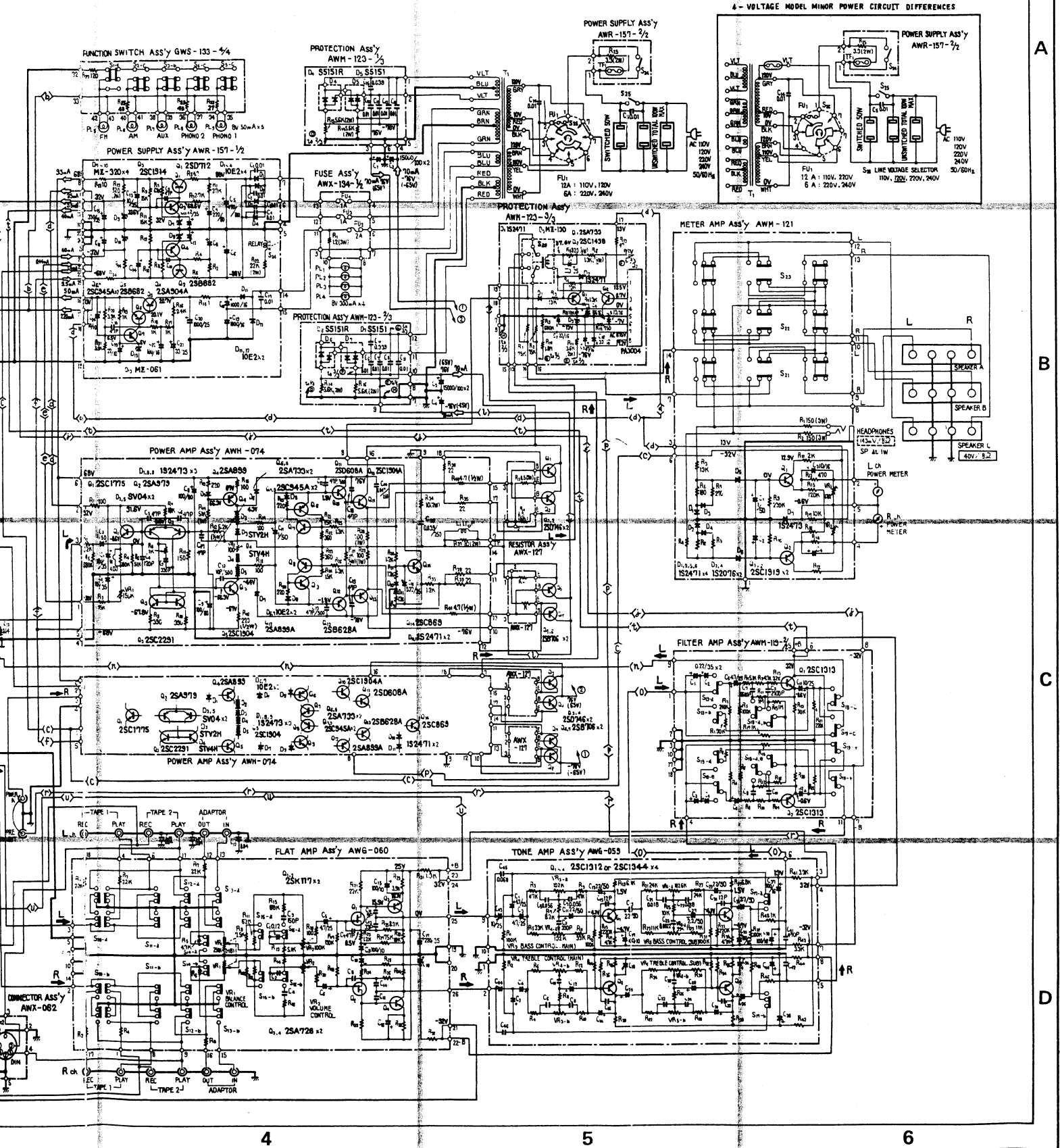
4.1 SCHEMATIC DIAGRAM



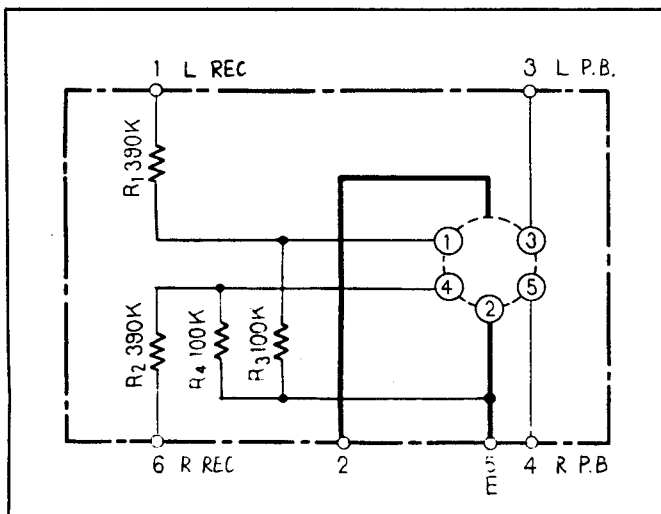
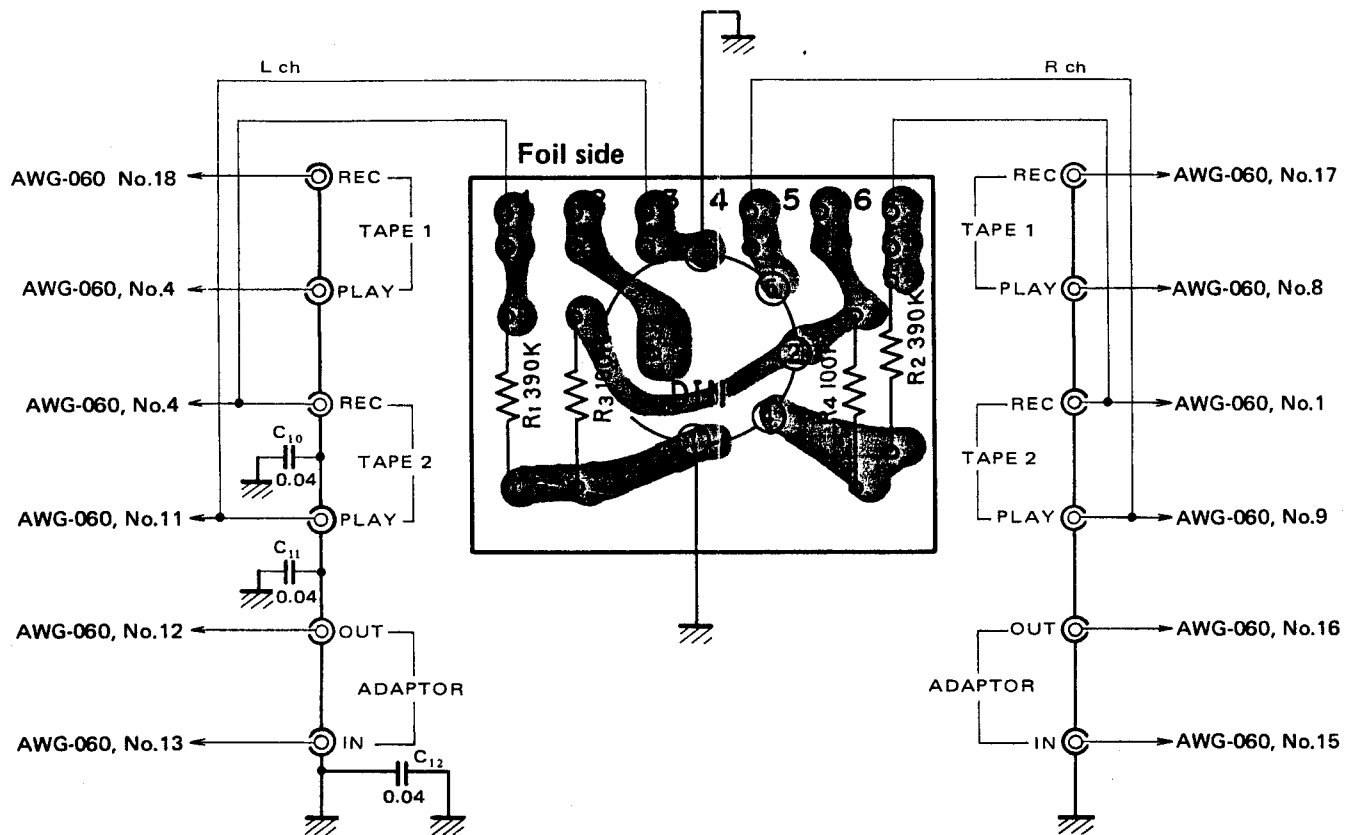
SCHEMATIC AND PARTS LIST

NOTE:

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



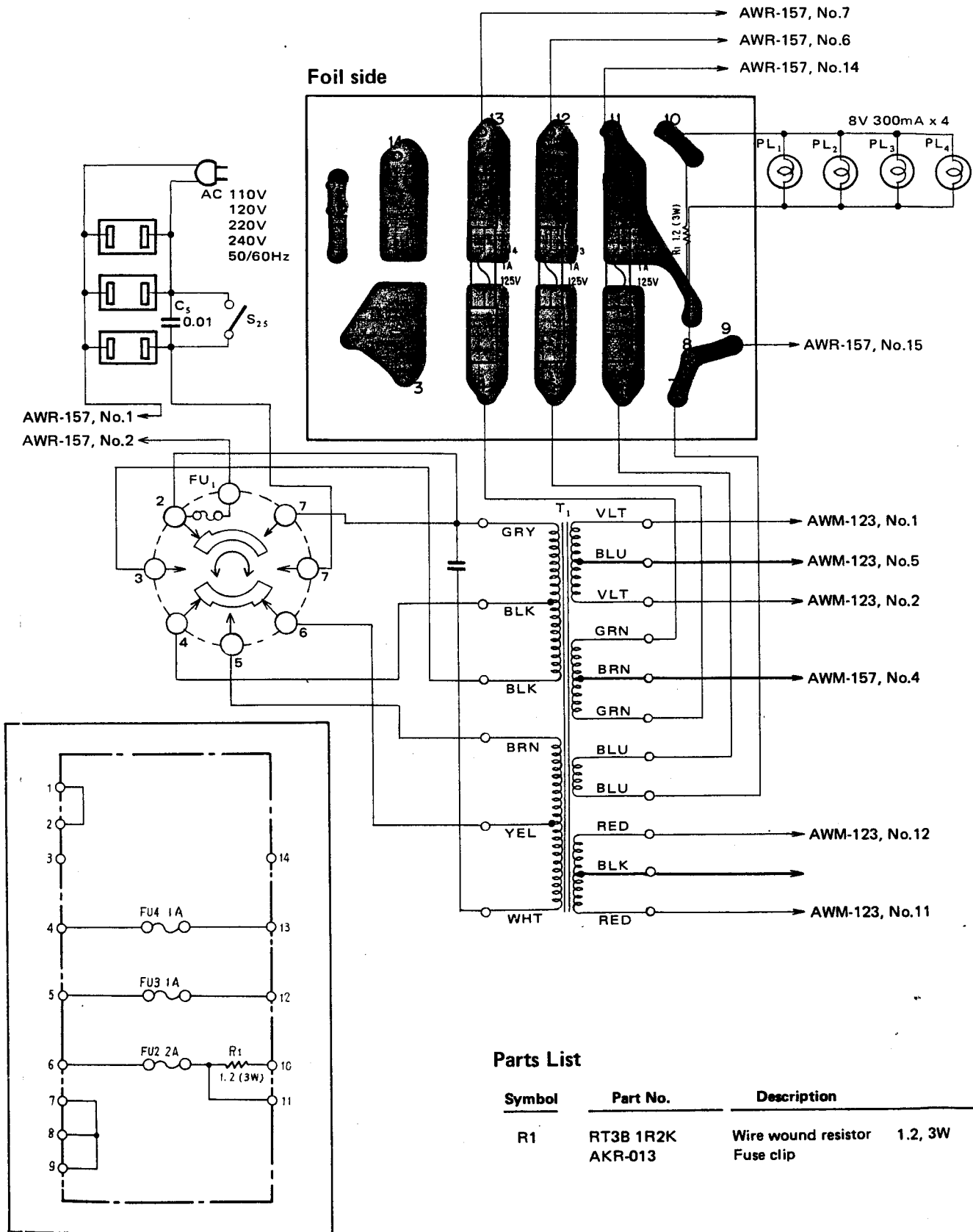
4.2 5P CONNECTOR ASSEMBLY (AWX-062)



Parts List

Symbol	Part No.	Description
R1	RD½PS 394J	Carbon film resistor 390k
R2	RD½PS 394J	Carbon film resistor 390k
R3	RD½PS 104J	Carbon film resistor 100k
R4	RD½PS 104J	Carbon film resistor 100k
	AKP-007	Connector socket 5p (REC/PLAY)

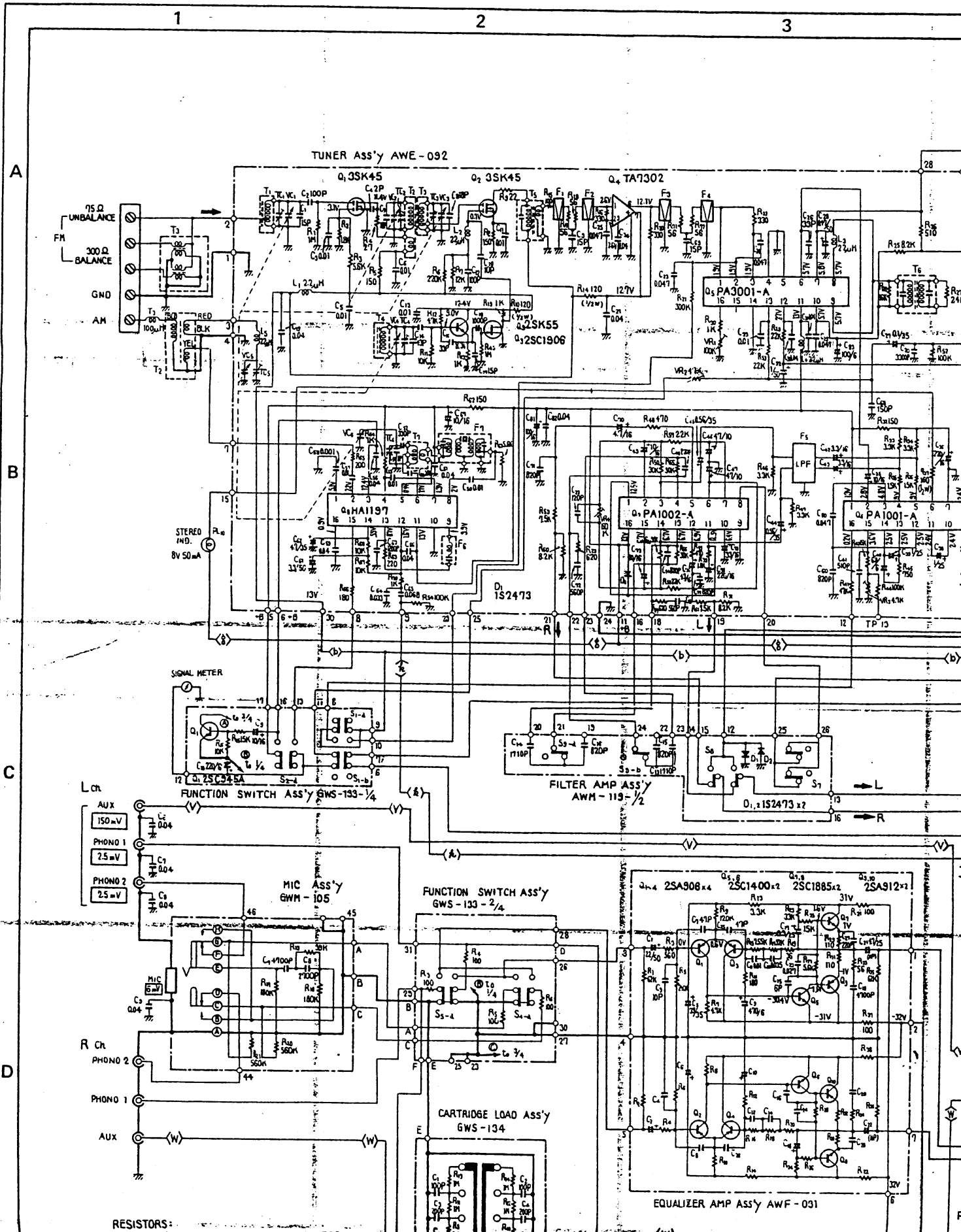
4.3 FUSE ASSEMBLY (AWX-134)

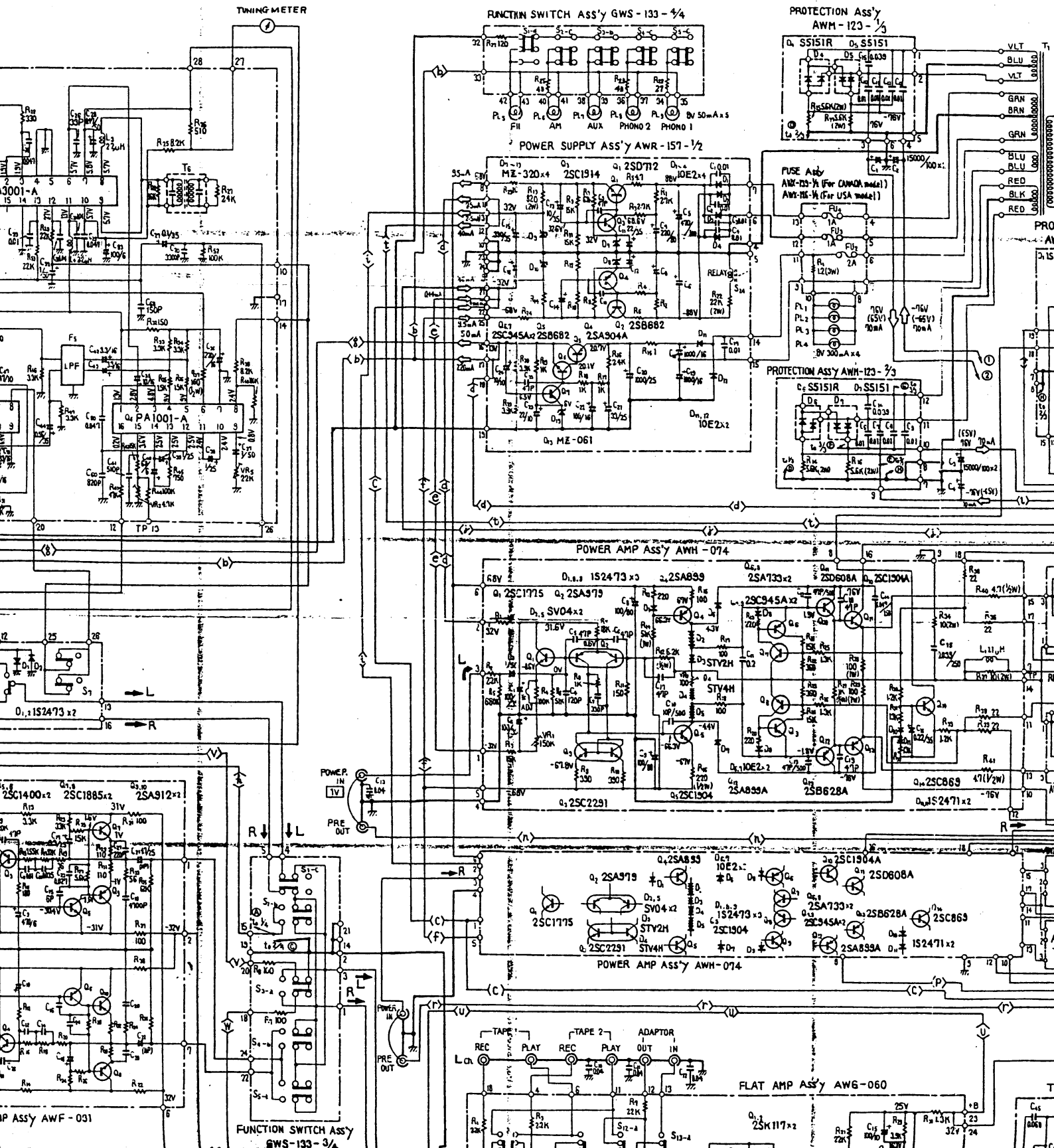


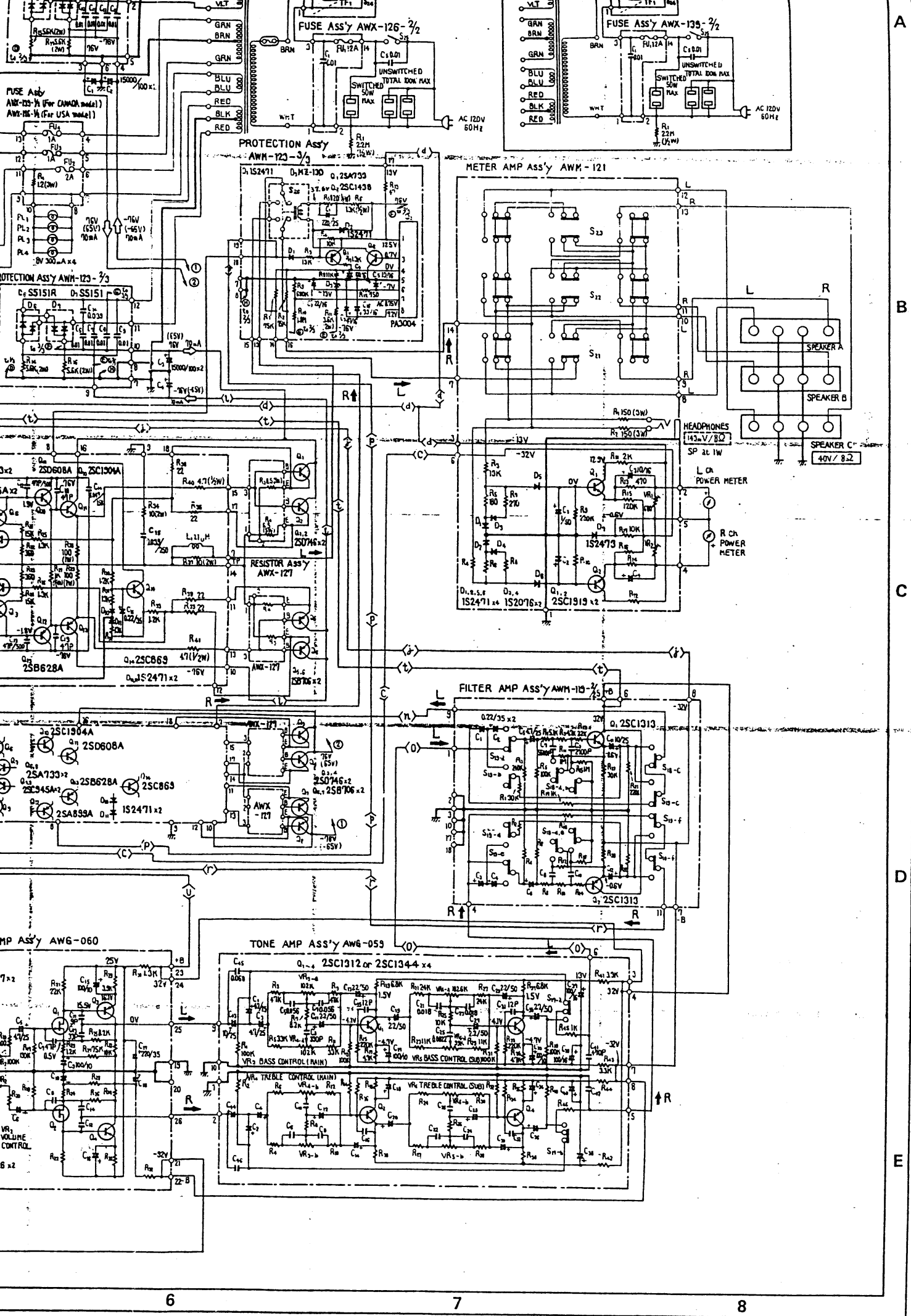
AM / FM STEREO RECEIVER

SX-1280

KU
KC







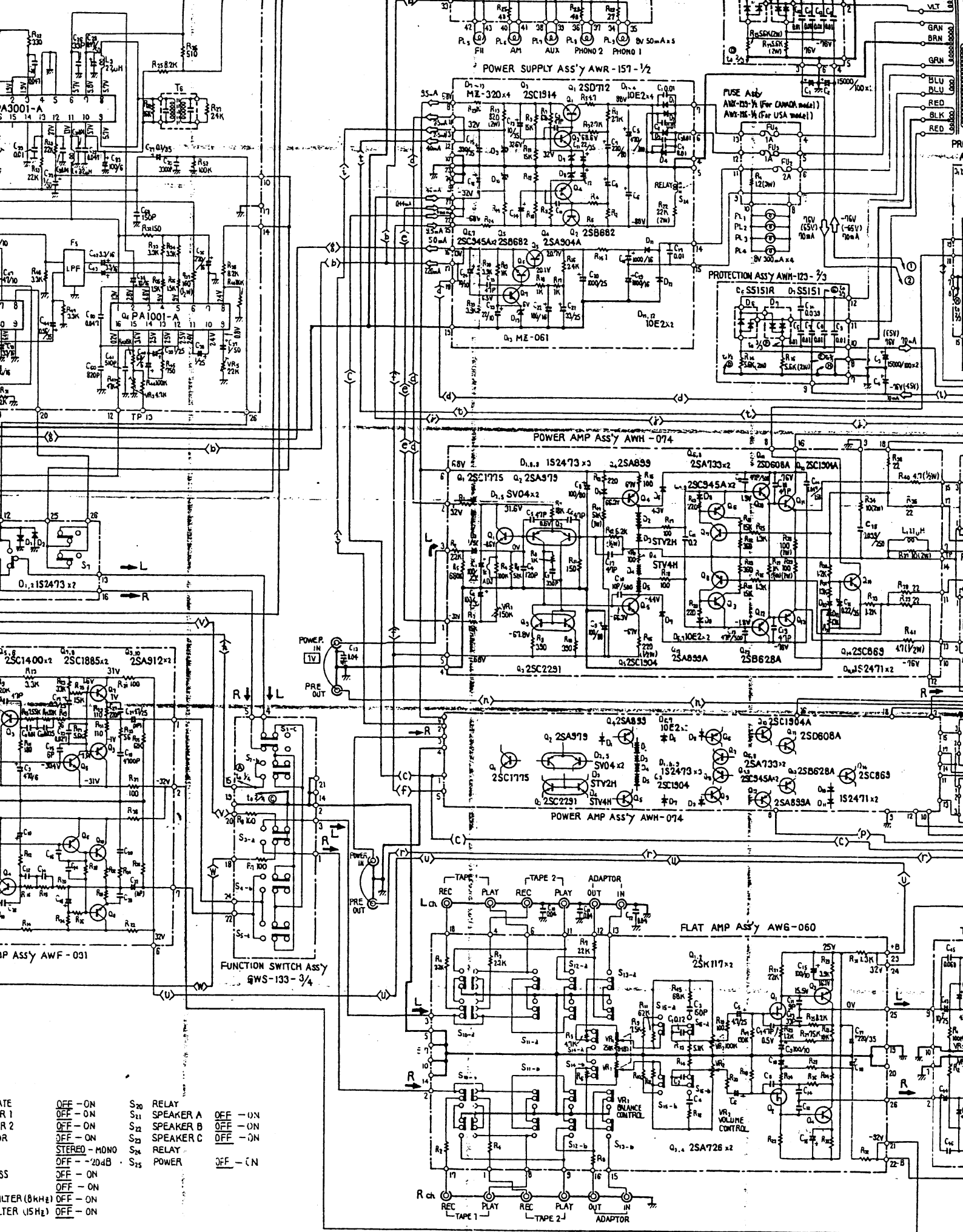
A

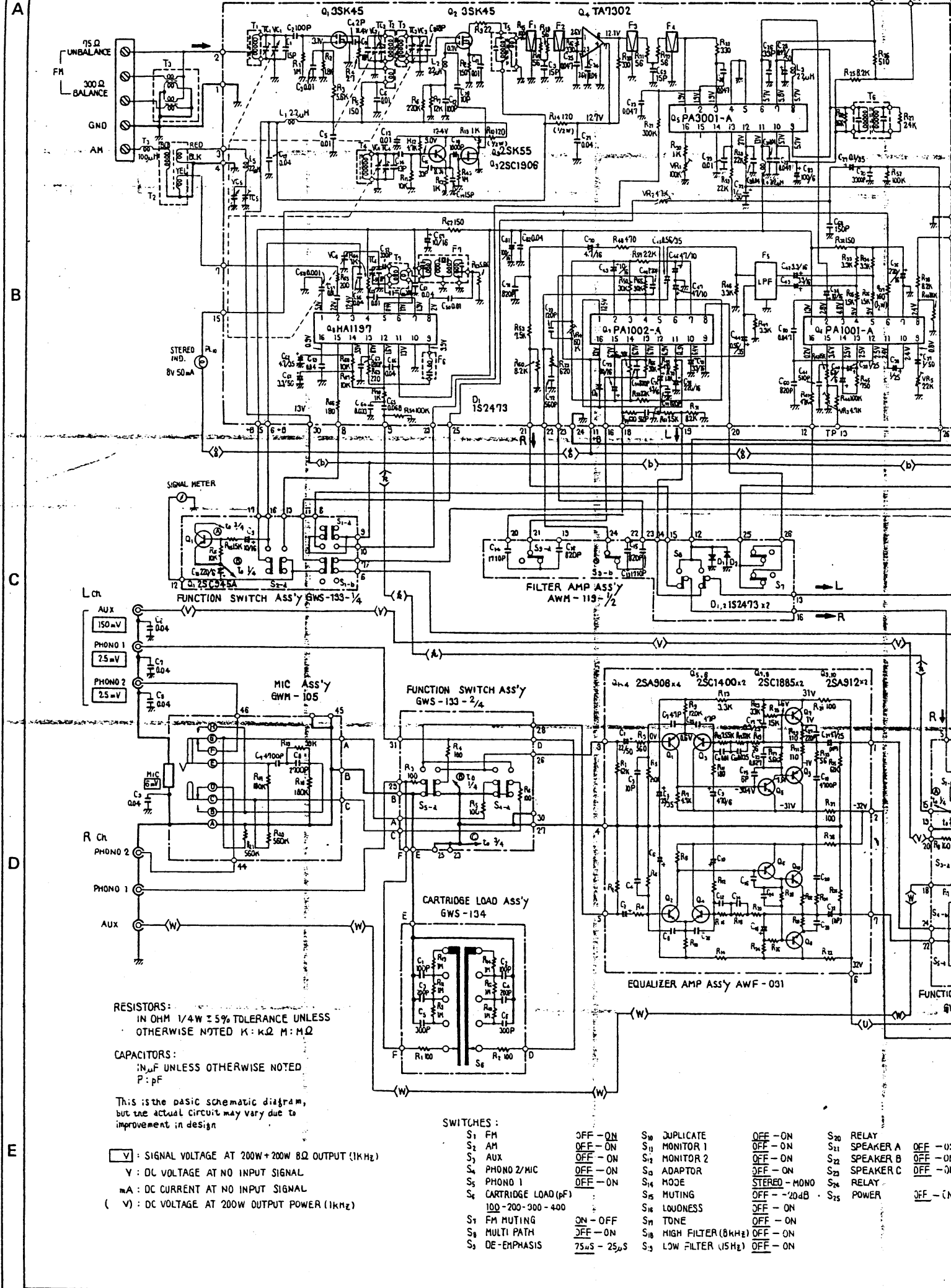
B

C

D

E





RESISTORS:
IN OHM 1/4W ±5% TOLERANCE UNLESS
OTHERWISE NOTED K: KΩ M: MΩ

CAPACITORS:
IN μF UNLESS OTHERWISE NOTED
P: pF

This is the basic schematic diagram,
but the actual circuit may vary due to
improvement in design

- (V) : SIGNAL VOLTAGE AT 200W+200W BQ OUTPUT (1KHz)
- Y : DC VOLTAGE AT NO INPUT SIGNAL
- mA : DC CURRENT AT NO INPUT SIGNAL
- (V) : DC VOLTAGE AT 200W OUTPUT POWER (1KHz)

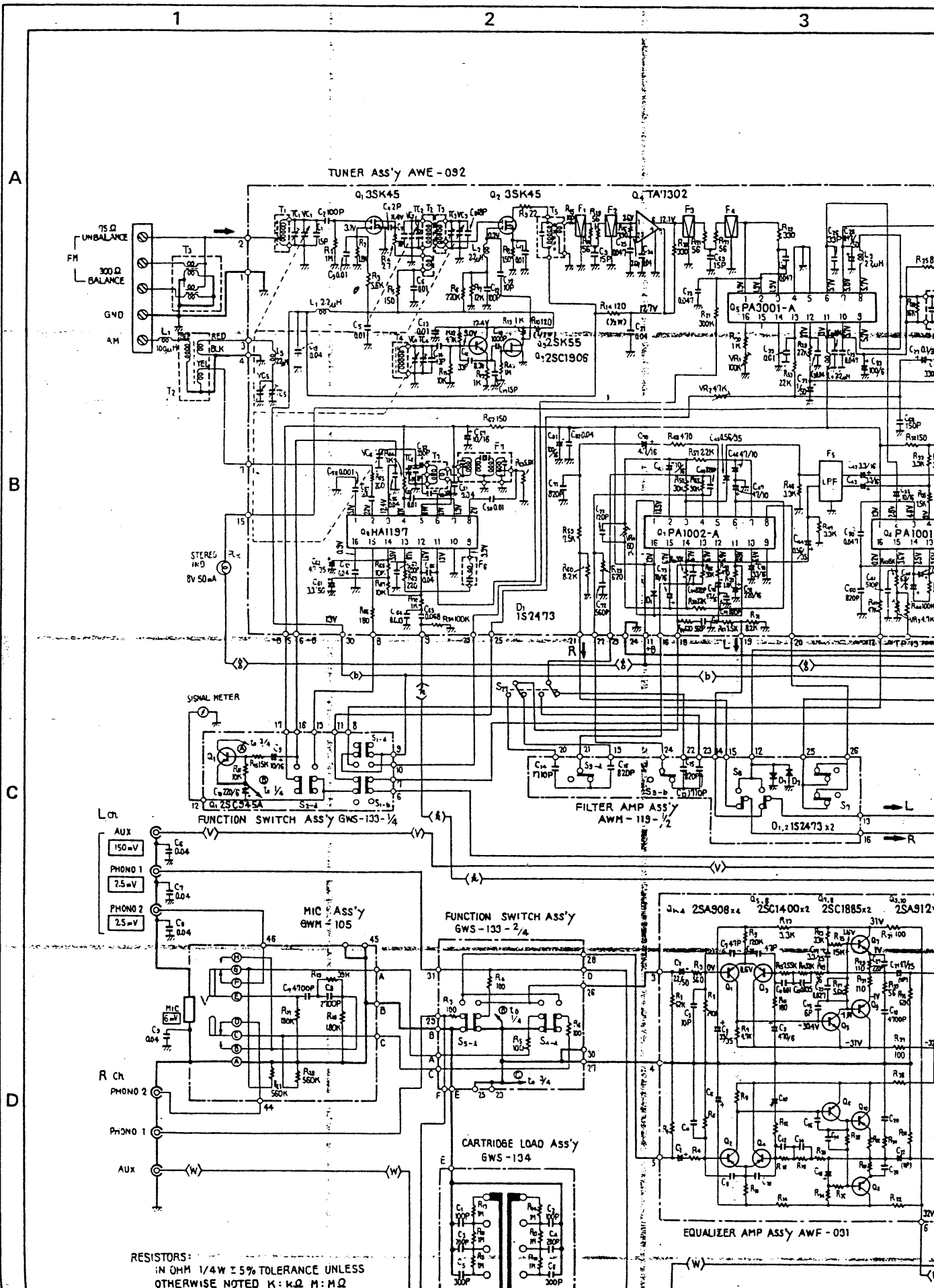
SWITCHES :

- | | | | | | |
|------------------------------------|-----------------------|------------------------------------|---------------|---------------------------|----------|
| S ₁ FM | OFF - ON | S ₁₀ DUPLICATE | OFF - ON | S ₂₀ RELAY | OFF - ON |
| S ₂ AM | OFF - ON | S ₁₁ MONITOR 1 | OFF - ON | S ₂₁ SPEAKER A | OFF - ON |
| S ₃ AUX | OFF - ON | S ₁₂ MONITOR 2 | OFF - ON | S ₂₂ SPEAKER B | OFF - ON |
| S ₄ PHONO 2/MIC | OFF - ON | S ₁₃ ADAPTOR | OFF - ON | S ₂₃ SPEAKER C | OFF - ON |
| S ₅ PHONO 1 | OFF - ON | S ₁₄ MODE | STEREO - MONO | S ₂₄ RELAY | OFF - ON |
| S ₆ CARTRIDGE LOAD (pF) | 100 - 200 - 300 - 400 | S ₁₅ MUTING | OFF - ON | S ₂₅ POWER | OFF - ON |
| S ₇ FM MUTING | ON - OFF | S ₁₆ LOUDNESS | OFF - ON | | |
| S ₈ MULTI PATH | OFF - ON | S ₁₇ TONE | OFF - ON | | |
| S ₉ DE-EMPHASIS | 75μS - 25μS | S ₁₈ HIGH FILTER (8KHz) | OFF - ON | | |
| | | S ₁₉ LOW FILTER (15Hz) | OFF - ON | | |

AM/FM STEREO RECEIVER

SX-1280

S
S/G



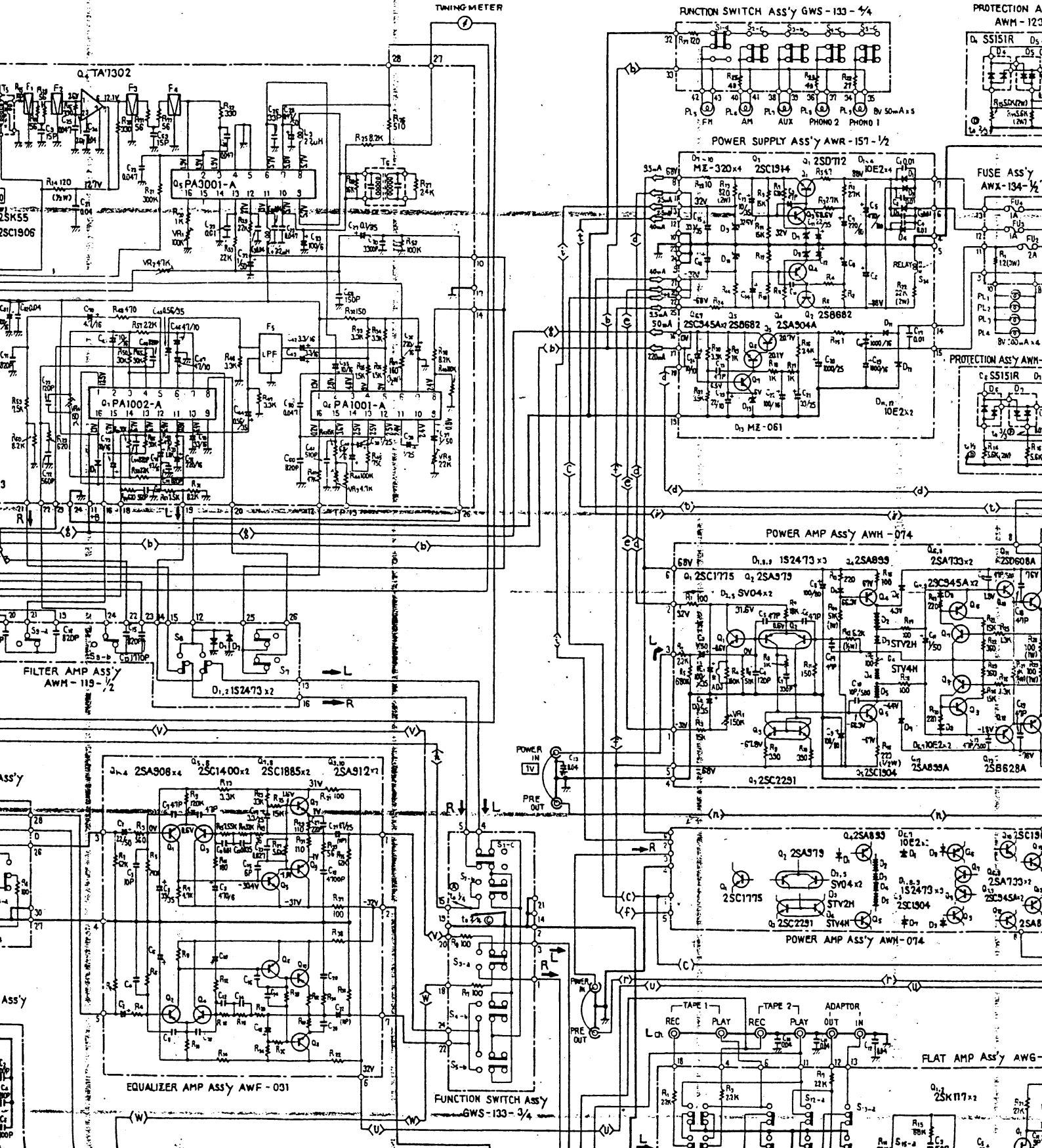
BO

S S/G

3

4

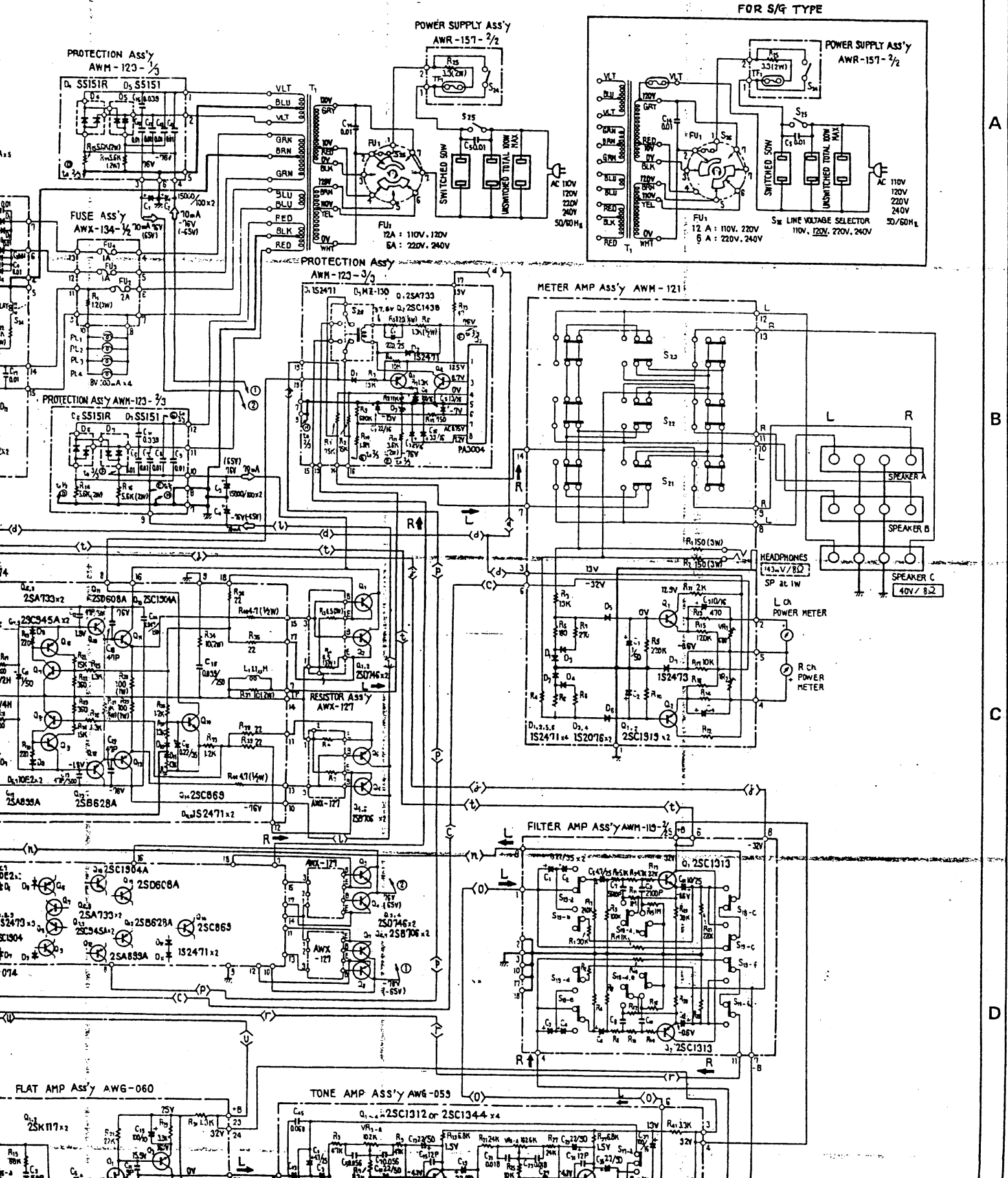
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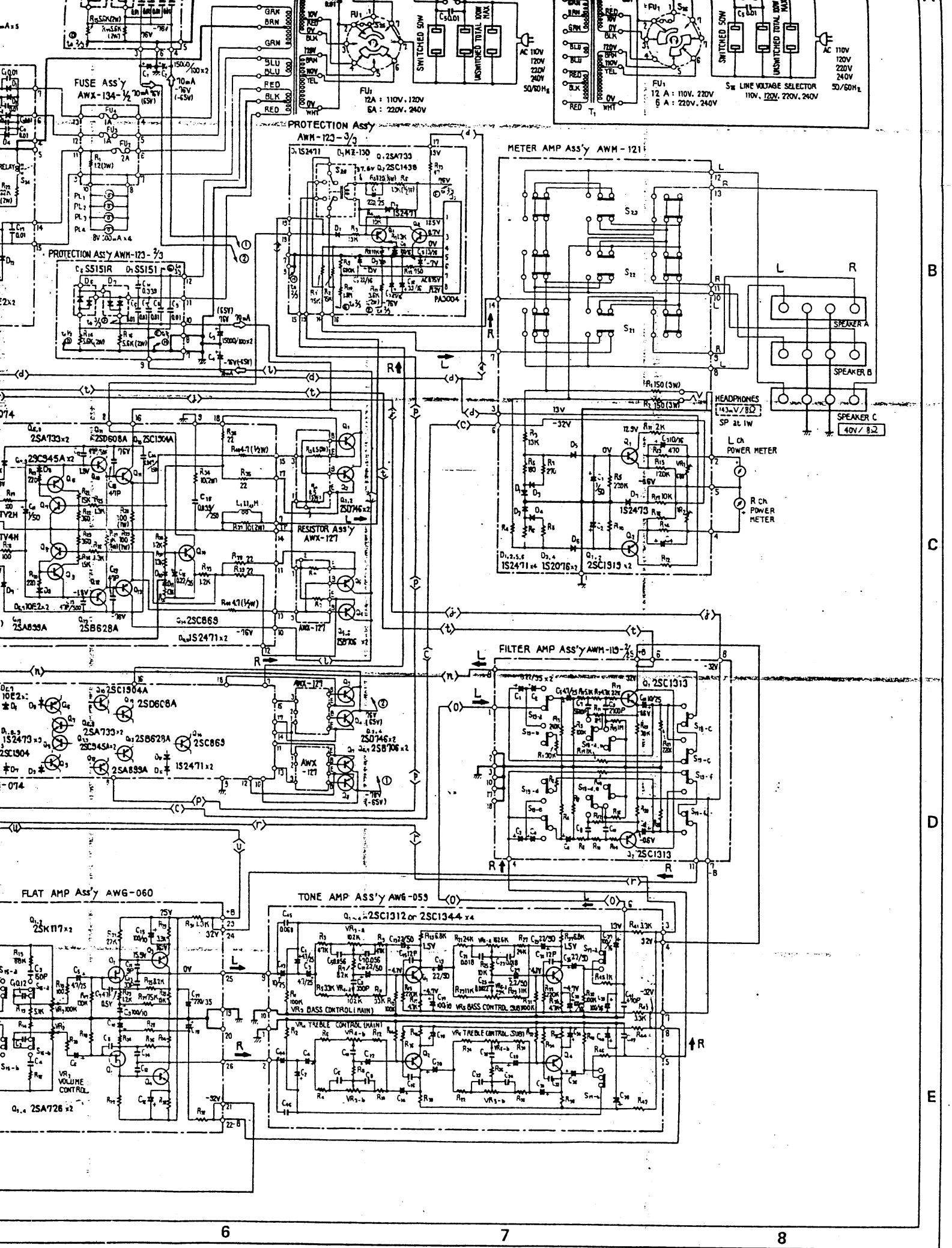


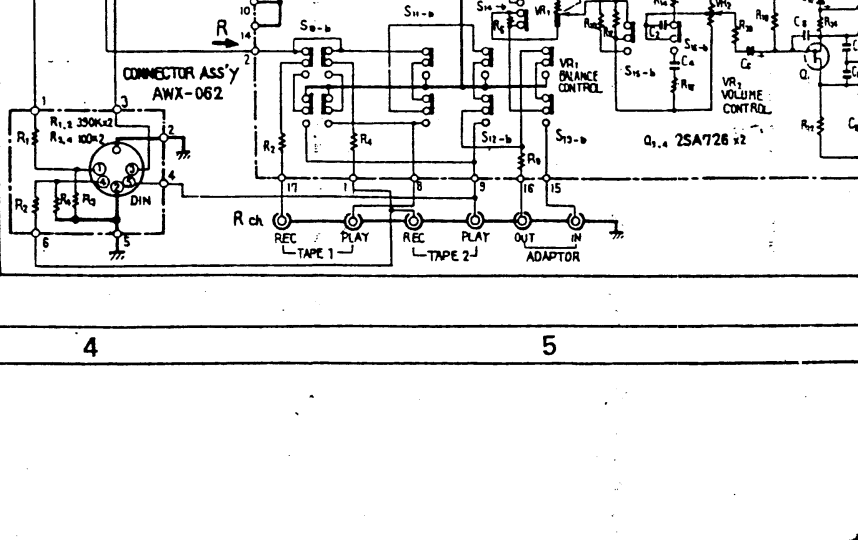
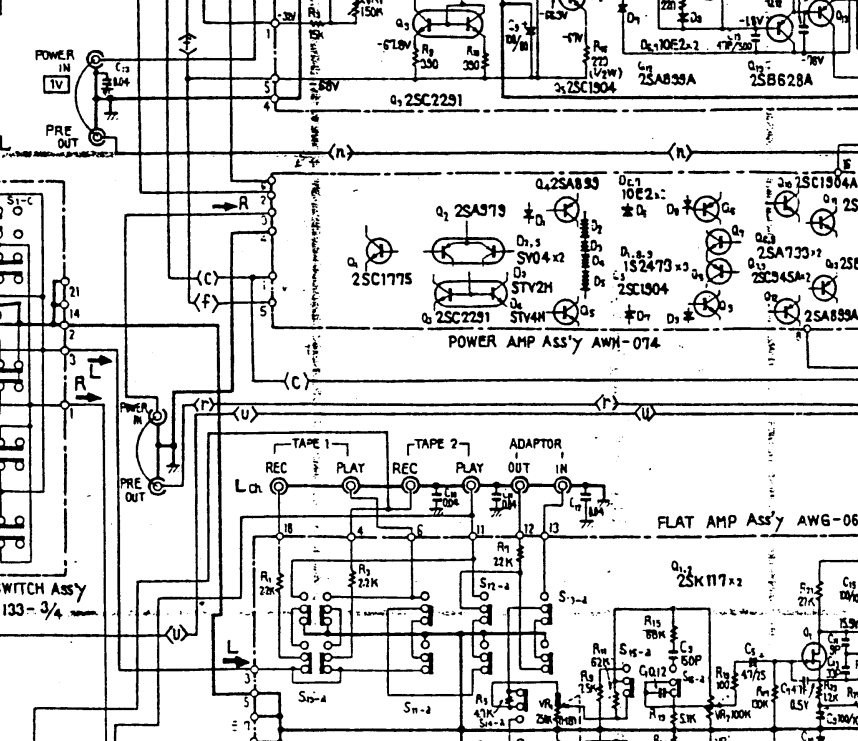
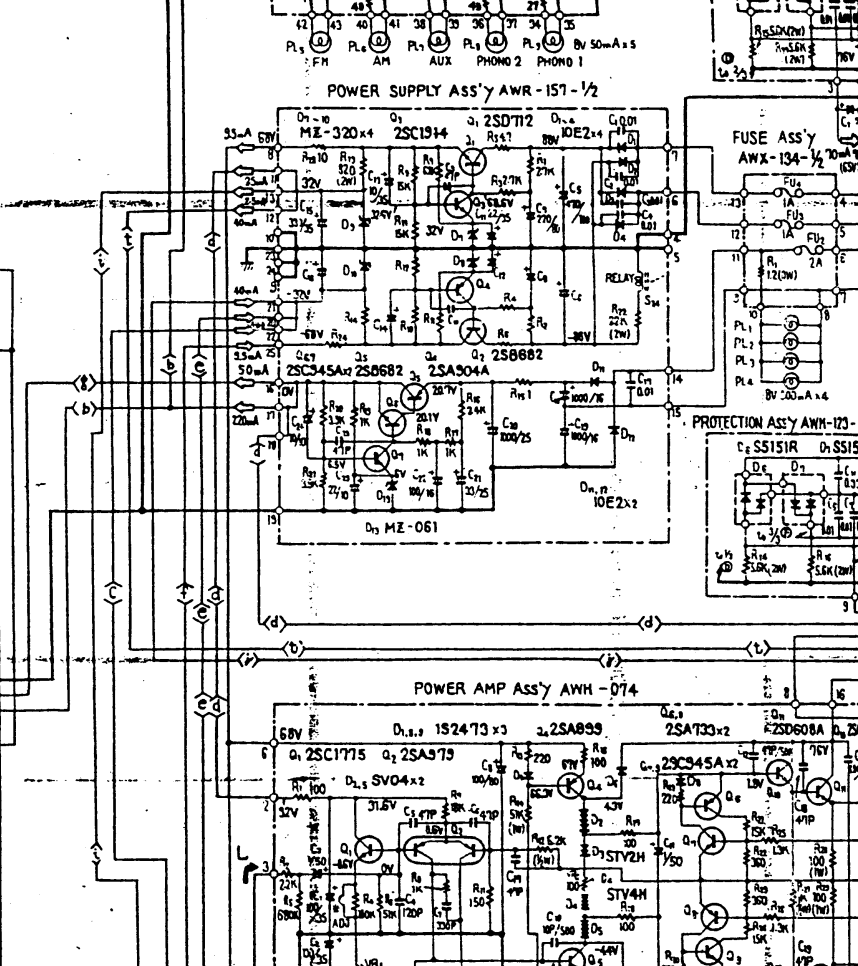
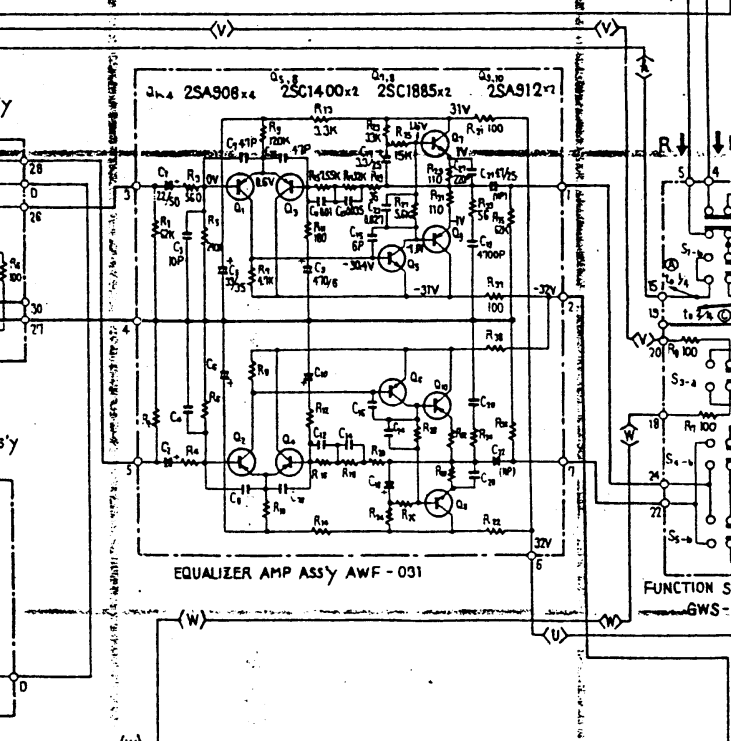
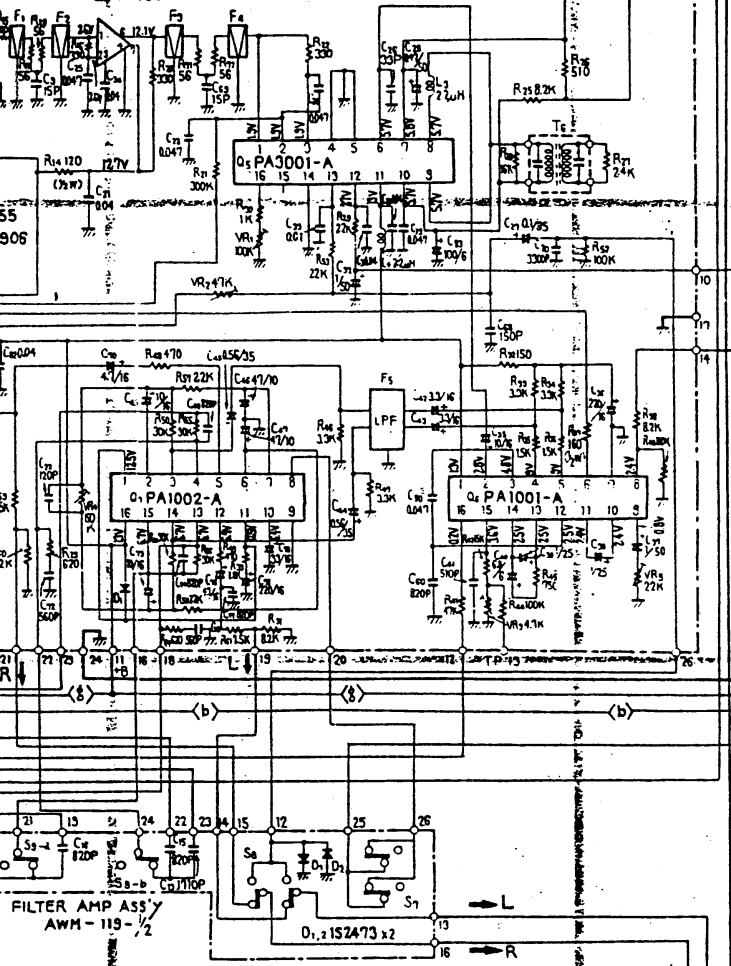
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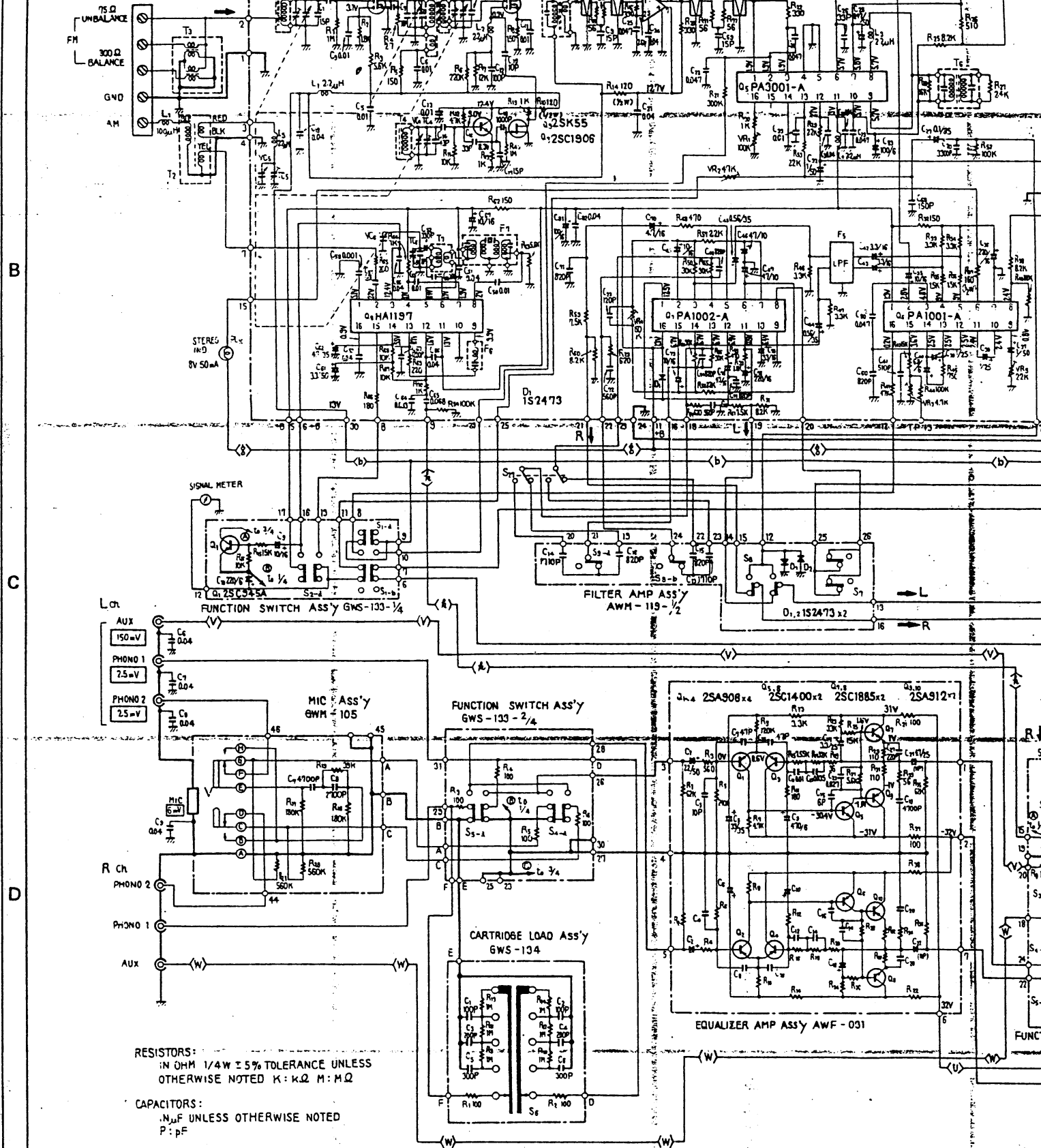
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- | | | | |
|----------|------------------------------------|----------|---|
| OFF - ON | S ₁₀ DUPLICATE | OFF - ON | S ₂₆ RELAY |
| OFF - ON | S ₁₁ MONITOR 1 | OFF - ON | S ₂₇ SPEAKER A |
| OFF - ON | S ₁₂ MONITOR 2 | OFF - ON | S ₂₈ SPEAKER B |
| OFF - ON | S ₁₃ ADAPTOR | OFF - ON | S ₂₉ SPEAKER C |
| OFF - ON | S ₁₄ MODE | OFF - ON | S ₃₀ RELAY |
| OFF - ON | S ₁₅ MUTING | OFF - ON | S ₃₁ POWER |
| OFF - ON | S ₁₆ LOUDNESS | OFF - ON | S ₃₂ LINE VOLTAGE SELECTOR |
| OFF - ON | S ₁₇ TONE | OFF - ON | S ₃₃ 100V - 120V - 220V - 240V |
| OFF - ON | S ₁₈ HIGH FILTER (8kHz) | OFF - ON | S ₃₄ DE-EMPHASIS |
| OFF - ON | S ₁₉ LOW FILTER (15Hz) | OFF - ON | S ₃₅ 75μS - 50μS |



RESISTORS:
 IN OHM 1/4W ± 5% TOLERANCE UNLESS
 OTHERWISE NOTED K: k.Ω M: M.Ω

CAPACITORS:
 .NµF UNLESS OTHERWISE NOTED
 P: pF

This is the basic schematic diagram,
 but the actual circuit may vary due to
 improvement in design

- Ⓜ: SIGNAL VOLTAGE AT 200W+200W 8Ω OUTPUT (1kHz)
- Y: DC VOLTAGE AT NO INPUT SIGNAL
- ⓂA: DC CURRENT AT NO INPUT SIGNAL
- (V): DC VOLTAGE AT 200W OUTPUT POWER (1kHz)

SWITCHES:

- | | | | | | |
|------------------------------------|-----------------------|------------------------------------|---------------|---------------------------------------|--------------------------|
| S ₁ FM | OFF - ON | S ₁₀ DUPLICATE | OFF - ON | S ₂₀ RELAT | OFF - ON |
| S ₂ AM | OFF - ON | S ₁₁ MONITOR 1 | OFF - ON | S ₂₁ SPEAKER A | OFF - ON |
| S ₃ AUX | OFF - ON | S ₁₂ MONITOR 2 | OFF - ON | S ₂₂ SPEAKER B | OFF - ON |
| S ₄ PHONO 2/MIC | OFF - ON | S ₁₃ ADAPTOR | OFF - ON | S ₂₃ SPEAKER C | OFF - ON |
| S ₅ PHONO 1 | OFF - ON | S ₁₄ MODE | STEREO - MONO | S ₂₄ RELAY | OFF - ON |
| S ₆ CARTRIDGE LOAD (pF) | 100 - 200 - 300 - 400 | S ₁₅ MUTING | OFF - 20dB | S ₂₅ POWER | OFF - ON |
| S ₇ FM MUTING | ON - OFF | S ₁₆ LOUDNESS | OFF - ON | S ₂₆ LINE VOLTAGE SELECTOR | 10V - 120V - 220V - 240V |
| S ₈ MULTI PATH | OFF - ON | S ₁₇ TONE | OFF - ON | S ₂₇ DE-EMPHASIS | 75µS - 50µS |
| S ₉ DE-EMPHASIS | NORMAL - 25µS | S ₁₈ HIGH FILTER (8kHz) | OFF - ON | | |
| | | S ₁₉ LOW FILTER (15Hz) | OFF - ON | | |