<ART-005-0>

SERVICE MANUAL

4-CHANNEL
STEREO RECEIVER

QX-747

FUW

<73G02Y41D>

PIONEER®

CONTENTS

1. SPECIFICATIONS

SEMICONDUCTORS

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AMPLIFIER SECTION

Circuitry . . . . . Direct Coupled Complementary OCL
Continuous Power Output
20Hz~20kHz (4 channels driven) . . . . . 20W x 4 (8Ω), 25W x 4 (4Ω)
1kHz (4 channels driven) . 25W x 4 (8Ω), 30W x 4 (4Ω)
1kHz (Each channel driven) 33W/CH (8Ω), 45W/CH (4Ω)
Continuous Power Output
(2CH POWER BOOSTING SWITCH set at "2 CH")
20Hz~20kHz (2 channels driven) . . . . . 40W + 40W (8Ω), 50W + 50W (4Ω)
1kHz (2 channels driven) . 45W + 45W (8Ω), 55W + 55W (4Ω)
1kHz (Each channel driven) 50W/CH (8Ω), 65W/CH (4Ω)
Harmonic Distortion
(Continuous Power Output) . . . . . Less than 0.5%
(1W x 4 Power Output) . . Less than 0.05%
Intermodulation Distortion
(Continuous Power Output) . . . . . Less than 0.5%
(1W x 4 Power Output) . . Less than 0.05%
Power Bandwidth
(IHF, 4 channels driven) . 7Hz~40kHz
Output
Speaker . . . . . FRONT: A
REAR: A, B (4~16Ω)
Headphones . . . . . FRONT & REAR
Damping Factor (1kHz, 8Ω) . . . . . More than 35
Residual Hum & Noise . . Less than 1mV
(8Ω, Pre & Power Amplifier)
Input Sensitivity/Impedance
PHONO 2.2mV/50kΩ
PHONO Overload Level (rms/p-p) 100mV/280mV
TAPE MONITOR (2CH, 4CH) 140mV/100kΩ
Output Level/Impedance
TAPE REC (2CH, 4CH) . . 140mV
Frequency Response
PHONO (RIAA equalization) . . . . . 30Hz~15kHz ± 1dB
AUX, TAPE MON . . . . . 10Hz~24kHz $^{+0}_{-1}{}^{.5}$ dB

Tone Control
BASS . . . . . ±10dB (100Hz)
TREBLE . . . . . ±10dB (10kHz)
Loudness Contour
(Volume control set at −40dB position) . . . . . +6dB (100Hz), +3dB (10kHz)
Hum & Noise (IHF, Short-circuited, A Network)
PHONO . . . . . More than 70dB
AUX, TAPE MON . . . . More than 90dB

CD-4 DEMODULATOR SECTION

Input Sensitivity . . . . . 2.5mV (1~5mV adjustable)
Input Impedance 100kΩ
Distortion 0.07%
Signal-to-Noise Ratio (IHF, A Network) . . . . . More than 70dB
Separation (STD Test signal at 1kHz)
Left~Right 50dB
Front~Rear 30dB
Frequency Response. . . . 20Hz~15kHz

FM TUNER SECTION

Circuitry . . . . . 1 MOS FET, 1 stage RF Amplifier, 4-ganged Variable Capacitor, 5-stage Limiter
Usable Sensitivity (IHF) . 1.9μV
Capture Ratio (IHF) 1dB
Selectivity (IHF) 60dB
Signal-to-Noise Ratio . . 70dB
Image Rejection (98MHz) . . . . . More than 80dB
IF Rejection (98MHz) . . More than 100dB
Spurious Rejection . . . . More than 100dB
AM Suppression 55dB
Harmonic Distortion
Mono . . . . . Less than 0.2%
Stereo . . . . . Less than 0.4%
Frequency Response . . 20Hz~15kHz $^{+0.2}_{-0.5}$ dB
50Hz~10kHz $^{+0.2}_{-2.0}$ dB
Stereo Separation
1kHz . . . . . More than 40dB
50Hz~10kHz . . . . More than 30dB
Sub-carrier Suppression . . 65dB
Antenna Input. . . . . 300Ω Balanced, 75Ω Unbalanced
Muting . . . . . ON—OFF
MPX Noise Filter . . . . . ON—OFF

AM SECTION

Circuitry . . . . . 1 Stage RF Amplifier, 2-ganged Variable Capacitor
Sensitivity
(IHF, Ferrite Antenna) . . 300μV/m
(IHF, Ext. Antenna) 15μV
Selectivity 35dB
Signal-to-Noise Ratio . . 50dB
Image Rejection . . . . . More than 45dB
IF Rejection . . . . . More than 55dB
Antenna . . . . . Built-in Ferrite Loopstick Antenna

MISCELLANEOUS

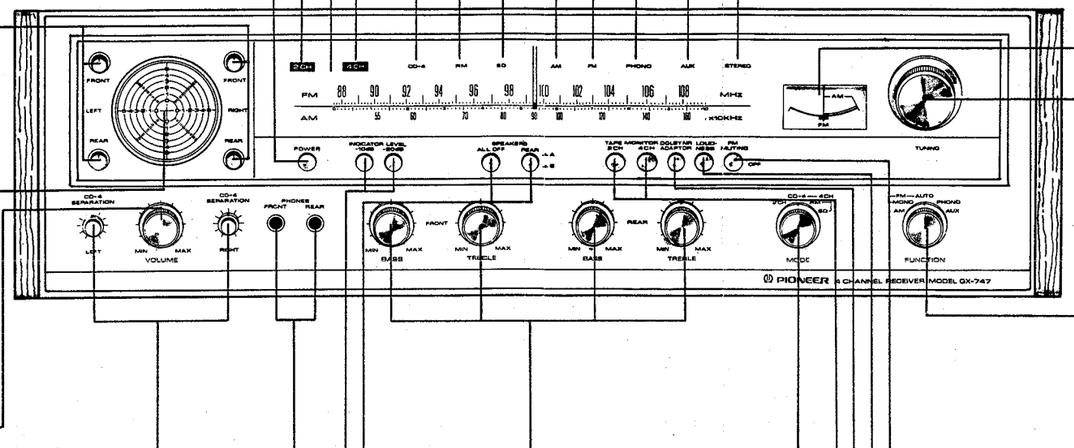
Built-in CD-4 Demodulator, Regular Matrix Decoder, SQ Matrix Decoder
Power Requirements . . . AC 120V 60Hz or 110V, 120V, 130V, 220V and 240V (Switchable) 50/60Hz
Power Consumption . . . . 140W (UL approved model only)
340W (5-line Voltage model only)
AC Outlets . . . . . Unswitched 2, Switched 1
Dimensions . . . . . 550(W) x 160(H) x 420(D) mm
21-8/16 x 6-5/16 x 16-9/16 in.
Weight:
without package . . . . . 19.1kg (42 lb 3oz)
with package . . . . . 23.6kg (51 lb 15oz)

FURNISHED PARTS

FM T-type Antenna 1
CD-4 Test Record (PQX-1011) 1
Polishing Cloth 1
Operating Instructions 1

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

2. FRONT PANEL FACILITIES



POWER SWITCH

Push button switch for turning on AC power. Also activate switched AC outlets on rear panel. Depress once for power ON; depress again for power OFF.

BALANCE CONTROLS

Individual balance controls for each of the four channels.

4-CHANNEL LEVEL INDICATOR

All channels simultaneously displayed; relative intensity easily compared and adjusted.

VOLUME CONTROL

Control for adjusting sound volume. When rotated clockwise, 4-channel speaker sound increases.

CD-4 SEPARATION (LEFT & RIGHT) CONTROLS

Controls for adjusting front and rear separation when playing CD-4 records using a CD-4 cartridge.
After adjustment, 2-channel records and matrix 4-channel records can also be played at the same setting.
When playing records employing a conventional 2-channel cartridge, set these controls (left & right) to center position.

LEFT Control: FRONT-LEFT (CH 1) and REAR-LEFT (CH 2) separation adjustment.
RIGHT Control: FRONT-RIGHT (CH 3) and REAR-RIGHT (CH 4) separation adjustment.

Be sure to readjust when replacing cartridge or stylus.

PHONES JACKS (FRONT & REAR)

Stereo headphone jacks
Front left and right (CH 1 & CH 3) can be heard when using FRONT jack.
Rear left and right (CH 2 & CH 4) can be heard when using REAR jack.

INDICATOR LEVEL BUTTONS

Step attenuator switches for convenient reading of the 4 Channel Level Indicator. If both buttons are depressed, their values are added.
According to button position, each attenuation of 0dB, -10dB, -20dB and -30dB can be selected:
0dB at released position, both -10dB and -20dB pushed, and -30dB can be obtained by pushing -10dB and -20dB buttons.

SPEAKERS BUTTONS

ALL OFF: Depress to turn off all speakers. Convenient when using headphones.
REAR A,B: Two sets of rear speakers are installed, this button selects desired set.

BASS & TREBLE CONTROLS

Separate controls are provided for front and rear bass and treble.

MODE SWITCH

Selector switch for 2-channel and each type of 4-channel reproduction method.

2CH: During 2-channel stereo reproduction. (Sound does not emerge from rear speakers.)
4CH
CD-4: For reproduction of discrete 4-channel tape, cartridge tape, or CD-4 records. 2-channel source can also be played in this position. At this time the same sounds are obtained from the rear left and right speakers as from the front left and right speakers (CH2 – CH1; CH4 – CH3).
RM: During 4-channel reproduction of Regular Matrix (RM) records and FM broadcasts. The matrix effect can also be obtained with a 2-channel program source.
SQ: For 4-channel reproduction of SQ system records and FM broadcasts. The matrix effect can also be obtained with a 2-channel program source.

NOTE:
Sound will not be obtained from the rear speakers (CH 2 & CH 4) at any setting of the Mode switch when the 2CH Power Boosting switch on the rear panel of the QX-747 has been set to 2CH.

CD-4 INDICATOR LAMP

This lights to indicate that CD-4 record is being played (only when the MODE switch is set at 4CH CD-4).

MODE & FUNCTION INDICATORS

Separately lighted indicators provide one-glance recognition of the QX-747 operating mode and function. Left to right: 2 CH, 4 CH, CD-4, RM, SQ, AM, FM, PHONO, AUX, STEREO (FM stereo indicator)

AM/FM METER

When tuning FM stations, meter should indicate in the dark "FM" area. When tuning AM stations, tune for maximum meter deflection toward the right of the scale.

TUNING KNOB

Rotate to tune in AM or FM broadcasts.

FUNCTION SWITCH

Switch for selecting program source for playing.
AM: When listening to AM broadcasts.
FM MONO: When listening to FM monophonic broadcasts.
FM AUTO: Select when listening to FM stereo broadcasts. During FM monophonic broadcasts, automatically receives monophonic signals. Stereo indicator lights during FM stereo broadcasts.
PHONO: When playing records.
AUX: When playing component connected to the AUX terminals.

FM MUTING BUTTON

Circuit for eliminating inter-station noise and weak interfering stations when tuning FM broadcast. Up position is ON; depress button (OFF) when weak station reception is desired.

LOUDNESS BUTTON

Depress when listening at low volume levels for proper sound balance relative to human ear sensitivity.

DOLBY NR ADAPTOR BUTTON

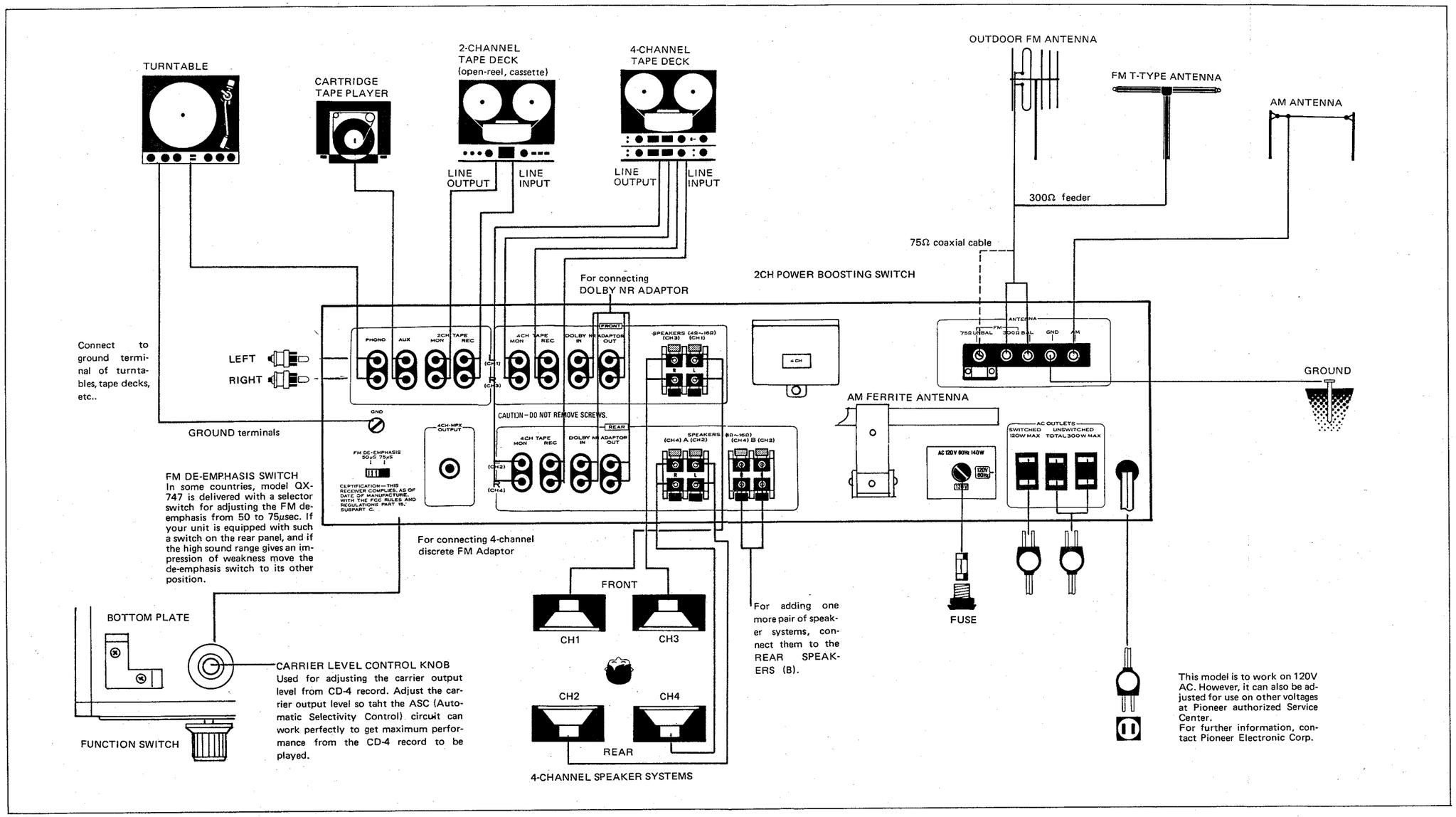
Depress when employing Dolby Noise Reduction Adaptor for recording or playback.

TAPE MONITOR BUTTONS

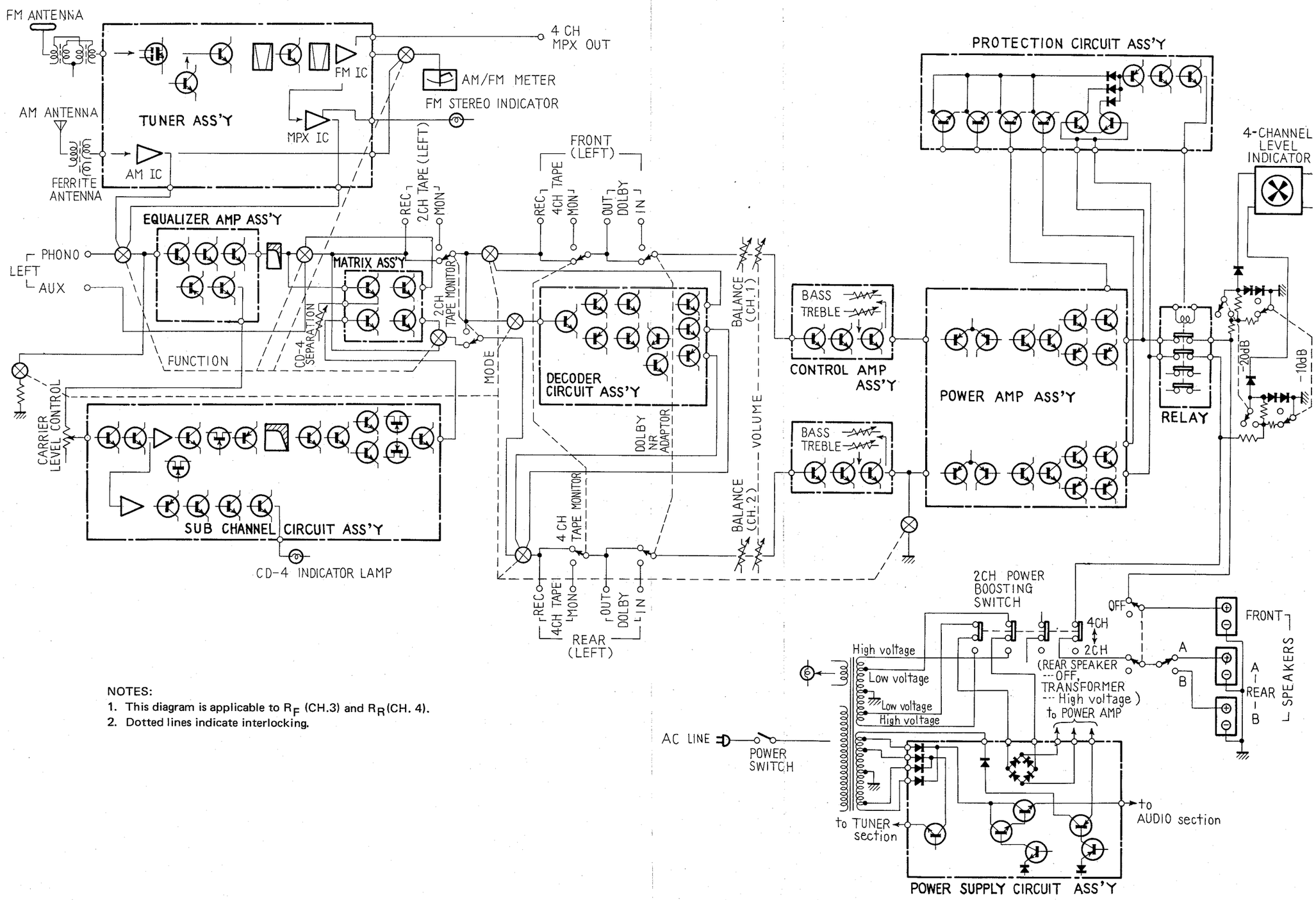
2 CH: Depress for record or playback of 2-channel tape deck. Also depress to monitor recording.
4 CH: Depress for record or playback of 4-channel tape deck. Also depress to monitor recording.

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

3. CONNECTION DIAGRAM



4. BLOCK DIAGRAM



NOTES:

1. This diagram is applicable to R_F (CH.3) and R_R(CH. 4).
2. Dotted lines indicate interlocking.

5. CIRCUIT DESCRIPTION

FM Front End

The FM front end comprises a four-ganged tuning capacitor and single-stage RF amplification with an MOS FET.
The input signal from the antenna is amplified by Q1 (FET). The output signals from Q1 and from Q3 (local oscillator) are both applied to the base of Q2 (frequency converter). From Q2, the signal enters transformer T5 tuned to the10.7MHz intermediate frequency. From the transformer's secondary side, the signal goes to the IF amplifier stage.

FM IF Amplifier Stage

The FM IF stage comprises two ceramic filters, one transistor and one IC. After selective amplification through F1 (ceramic filter), Q4 (transistor) and F2 (ceramic filter), the signal enters the integrated circuit Q5. Fig. 1 shows the internal construction of Q5.
In the IC, the signal goes through three differential type limiters, a diode limiter stage and a quad limiter stage, whereupon detection takes place in the quadrature detector.
The output from the detector, after passing through the muting circuit also included in the IC, enters the MPX decoder.
In the muting circuit, the muting analog switch is turned on and off by means of the DC voltages obtained from the IF stage and the detector section. The muting control signal also serves for switching the automatic mono/stereo mode switch.
The detected signal from the IC is also available at the 4CH MPX OUT terminal on the rear panel. To this, a 4-ch discrete decoder can be connected if and when discrete FM 4-channel broadcasts begin.

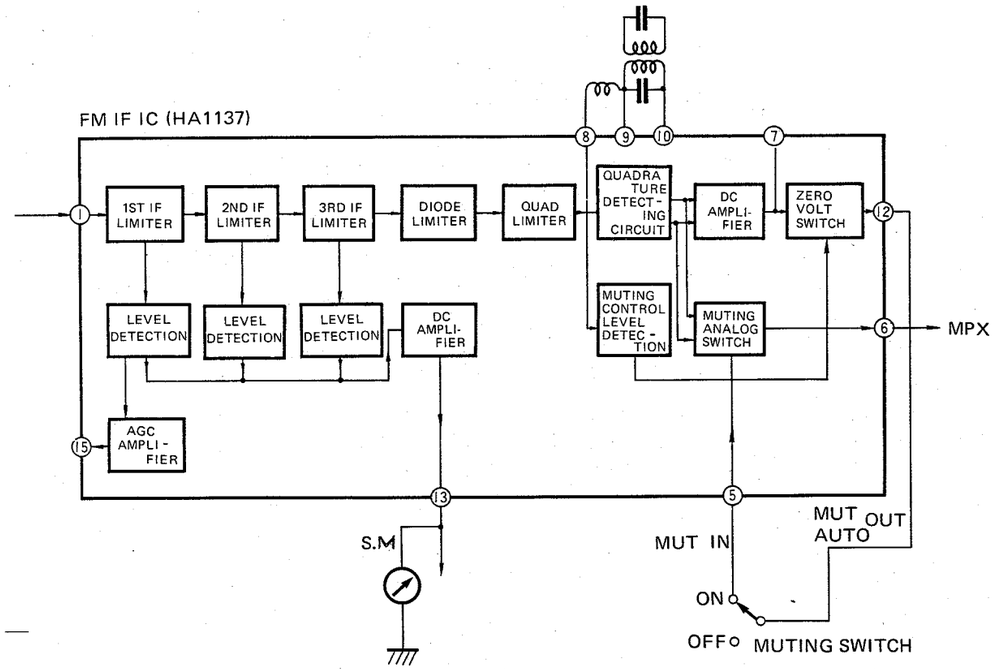


Fig. 1

MPX Decoder Section

The MPX decoder consists of a single IC (Q6). Its internal structure is shown in Fig. 2.
The signal is demodulated by two differential amplifiers in what is called a "double balanced differential amplifier circuit."
After detection, the audio signal undergoes single-stage amplification and is then divided into pilot signal, main signal (L+R) and sub signal (L−R) portions. The pilot signal is converted into a 38kHz switching signal. Time-switching of the main and sub signals converts them into the desired left and right channel stereo signals.
Automatic switching to stereo mode is effected by turning the AND gate on and off by means of the FM muting control voltage and the 38kHz signal. At the same time, the stereo indicator lamp is controlled by a voltage originating from within the IC.

AM Section

The circuit, which consists of a single IC as shown in Fig. 3, includes a single stage, untuned RF amplifier. Frequency conversion to IF is effected by a balanced type mixer. The signal from the antenna is first amplified and then converted to IF by combining it with the local oscillator output in the mixer stage.
The IF signal is selectively amplified by a combination of a single concentration filter and two amplifier stages. The signal is then demodulated to obtain the audio signal. Portions of the audio signal are used for AGC feedback and to drive the tuning meter.

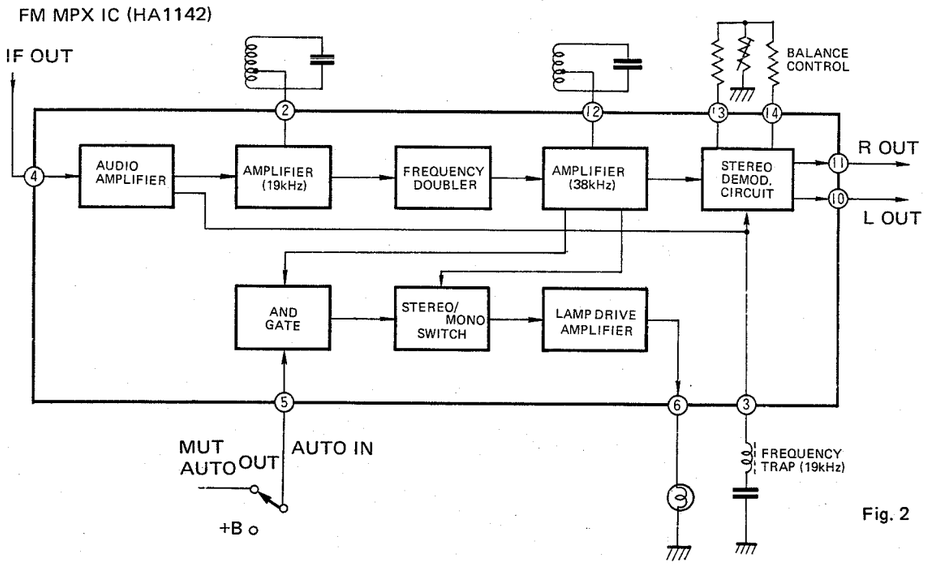


Fig. 2

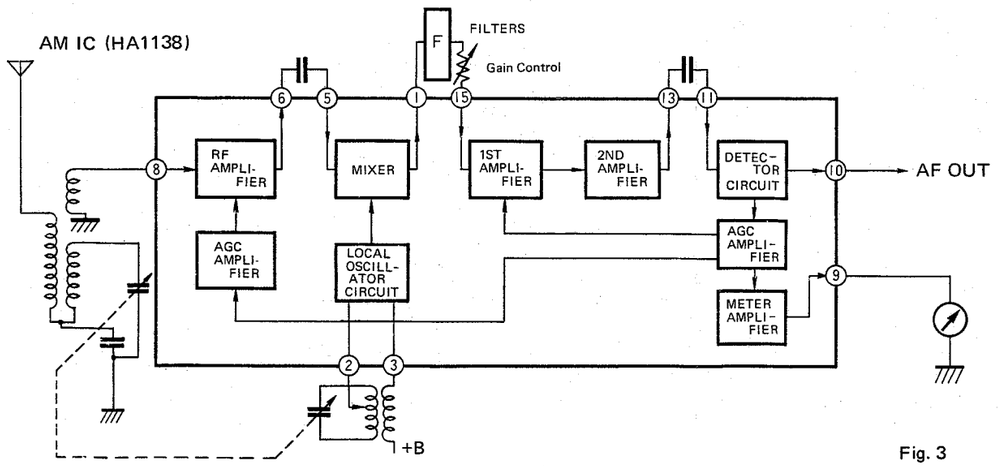


Fig. 3

AF AMPLIFIER

Equalizer Stage

The equalizer amplifier comprises 5 transistors in each channel. Three of these operate as a negative feedback type equalizer amplifier to obtain standard RIAA equalization characteristics. The other two form a buffer amplifier which supplies the CD-4 subcarrier signal to the sub-channel assembly.
After phono equalization, the signal passes through a low pass filter and thence to the matrix assembly. The purpose of this low pass filter is to prevent leakage of the supersonic subcarrier signal of CD-4 discs into the main signal path.

Sub-Channel (DC-4) Demodulator

The subcarrier signal from a CD-4 record first passes through the carrier level control and enters the sub-channel assemly.
This subcarrier is a 30kHz signal frequency-modulated with front-minus-rear difference information. Demodulation takes place in a PLL (Phase Locked Loop) circuit.
The resulting audio signal then passes through the ASC (Automatic Sensitivity Control), sub-equalizer and muting circuits, and thence through the ANRS (Automoatic Noise Reduction System) circuit to the matrix circuit.

Matrix Circuit (in CD-4 signal path)

The main CD-4 signal (from the equalizer) and the sub-signal (from the sub-channel assembly) are added and subtracted in a series of algebraic operations to obtain four independent channel signals. This is done in the matrix circuit.
Different phono cartridges produce different output voltages and, therefore, main signals of different levels. The sub-signal, however, being FM modulated, does not vary in level (after demodulation, of course). To obtain optimum channel separation in the matrix operation, the main and sub-signals must therefore be first matched in level.
This is done by the separation control on the front panel which regulates the main signal level. It controls the amount of negative feedback current at the transistor's emitter.

RM, SQ Decoder Circuits

RM (Regular Matrix)

The signal from the equalizer enters the decoder assembly if the MODE switch is at RM or SQ position. The decoder comprises two phase shifters and a matrix circuit. By changing the position of the MODE switch, the decoder can be made to operate according to the RM or SQ system.

Control Amplifier

The control amplifier is a negative feedback circuit comprising three transistors. To obtain stable operation, this two-stage direct coupled circuit constitutes a buffer amplifier of high input impedance but low output impedance.

Power Amplifier and Protection Circuit

The power amplifier is basically an all-stage direct coupled pure complementary design. Power supply is of course of the balanced positive and negative type.
With the mode switch in 2CH position, the rear channel inputs are grounded, only the front channel inputs remain operative.
The protection circuit incorporates 4 transistors (one for each channel) for four channels, which are used to detect overload. DC potential at the junction points of the output stage transistors is done by a differential amplifier consisting of two transistors. Additionally, three transistors are used to drive the cut-off relay. At the first sign of trouble, the relay contacts are opened to safeguard the output transistors and speakers.
The protector circuit also serves as a muting circuit, keeping the unit silent during the first few seconds after switch-on.

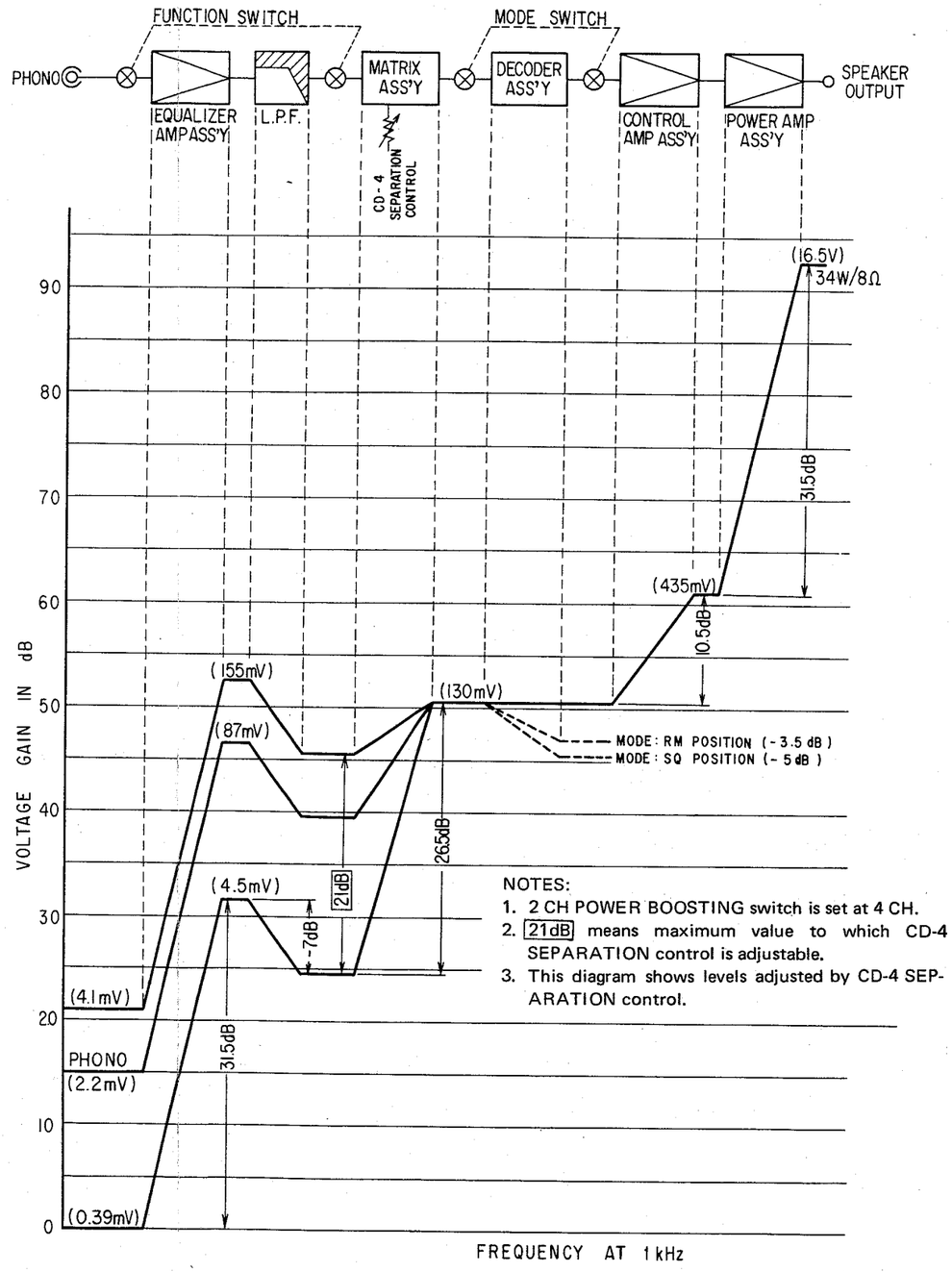
2-Channel Power Boosting Circuit

When the power boosting switch on the rear panel is set at "2CH," the output stages will operate in 2-channel mode, regardless of the position of the MODE switch. At the same time, power supply is switched to other taps on the power transformer, supplying a higher voltage to the power amps. As a result, available output power (per channel) in 2-channel operation is approximately twice that of 4-channel operation.

4-Channel Level Indicators

An indicator is provided for each channel. The length of the bright line varies according to the output level of each channel, giving a kind of display effect. Its operating principle is as follows: A shutter is moved in accordance with the current flowing through a moving coil. This current is obtained from the amplifiers.
Output from the power amplifier is divided, and one portion is rectified. The resulting DC current flows through the indicator coil, moving the shutter. The above-mentioned voltage division is effected by the indicator level switch.
To protect the indicator coil against possible overload, a diode is shunted in the circuit, operating as a limiter.

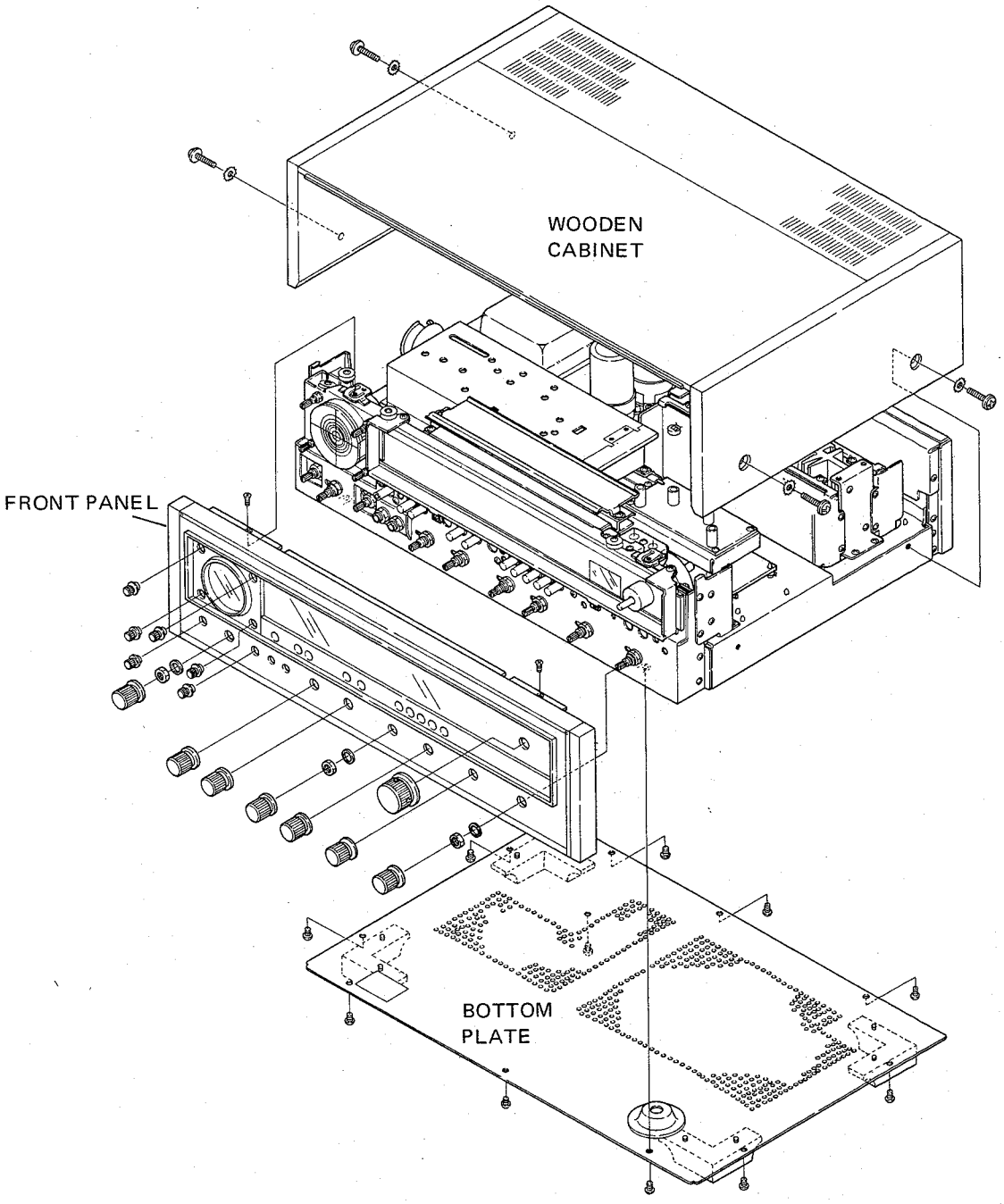
6. LEVEL DIAGRAM



NOTES:
1. 2 CH POWER BOOSTING switch is set at 4 CH.
2. 21dB means maximum value to which CD-4 SEPARATION control is adjustable.
3. This diagram shows levels adjusted by CD-4 SEPARATION control.

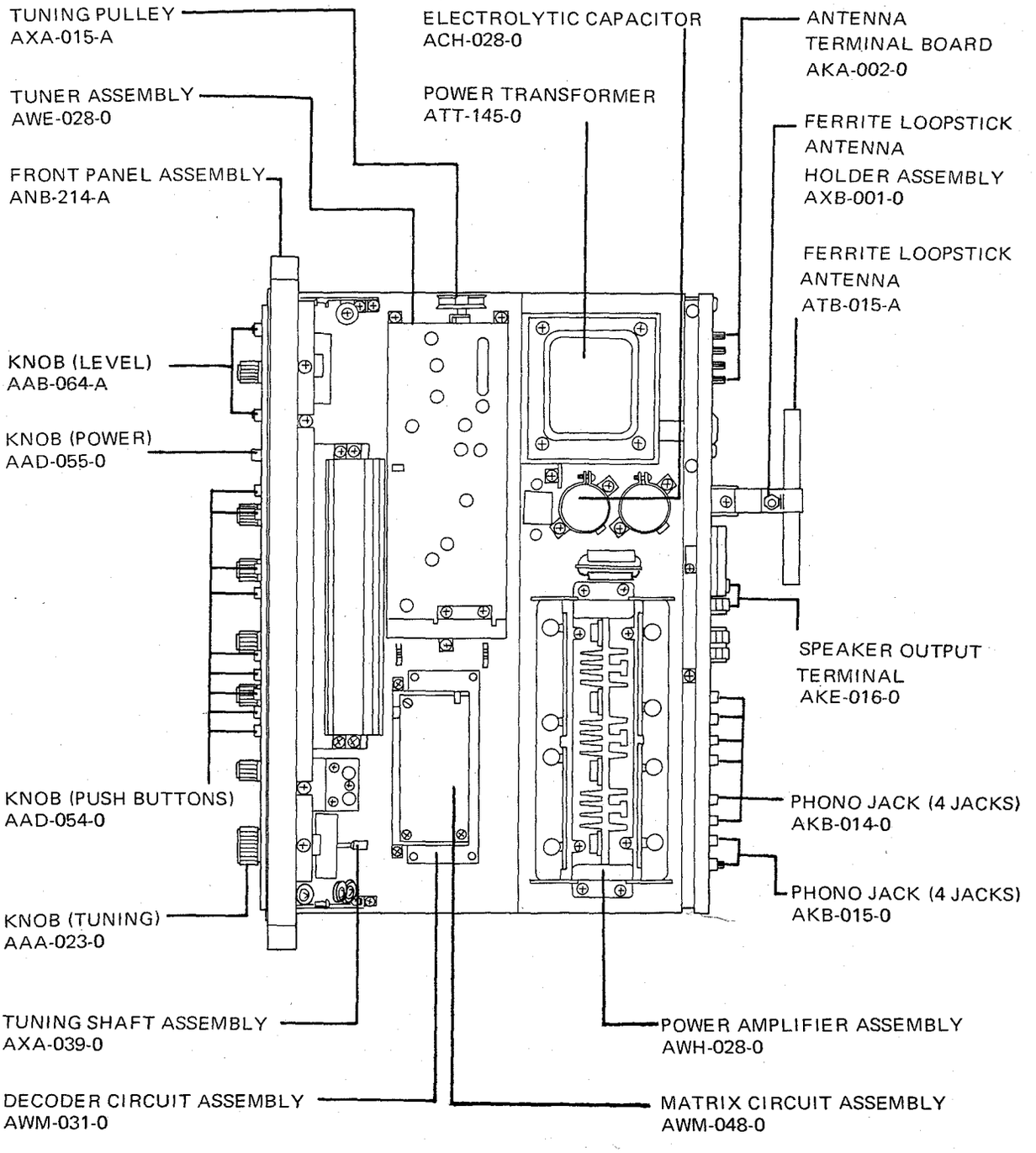
7. DISASSEMBLY

1. To remove the wooden cabinet, first remove the two screws holding each side, then lift the back of the wooden cabinet upward.
2. Pull off all knobs.
3. Remove the two screws in the upper edge of the front panel, and the three nuts from the shafts. Then pull the panel gently forward.
4. To remove the bottom plate, first remove the 11 screws holding it in place.

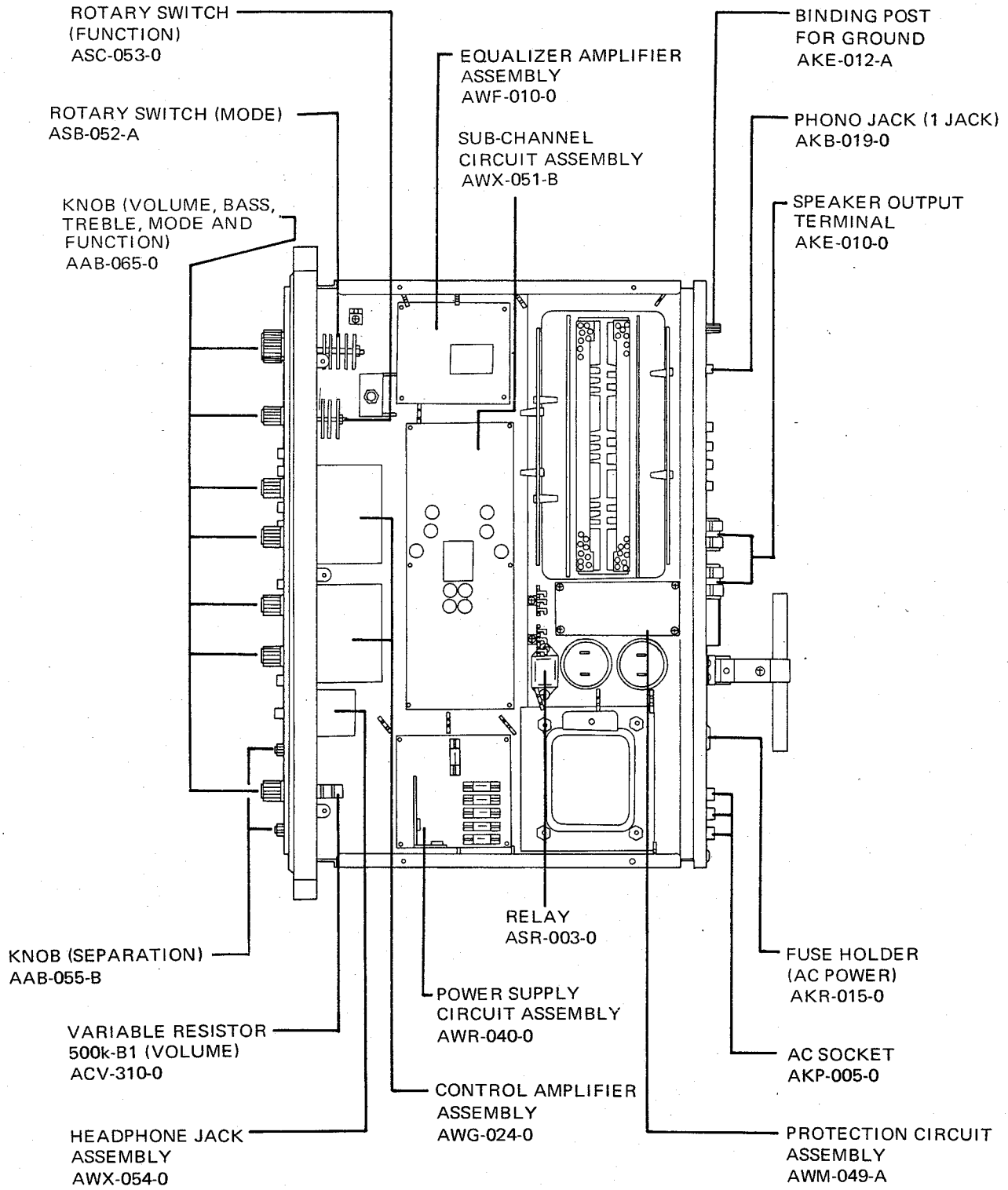


8. PARTS AND P.C. BOARD LOCATION

8.1 TOP VIEW



8.2 BOTTOM VIEW



9. ALIGNMENT PROCEDURE

9.1 REQUIRED MEASURING INSTRUMENTS

- FM signal generator
- MPX signal generator
- AM signal generator
- Voltmeter (VTVM)
- Oscilloscope
- Distortion meter

9.2 AM ADJUSTMENT

• Tracking

1. Set the AM signal generator for 400Hz modulation at 30%. Connect the generator output to the AM antenna terminal through a 1kΩ dummy.
2. Connect the oscilloscope and voltmeter in parallel to TAPE REC jack.
3. Set the signal generator output to approximately 30dB. Set signal generator and set dials to 600kHz.
4. Adjust cores of T9 (tuner assembly) and the bar antenna for peak output.
5. Set signal generator and set dials to 1,400kHz.
6. Adjust TC5 and TC6 (tuner assembly) for peak output.
7. Repeat steps (3) through (6) several times, to obtain optimum tracking.

9.3 FM ADJUSTMENT

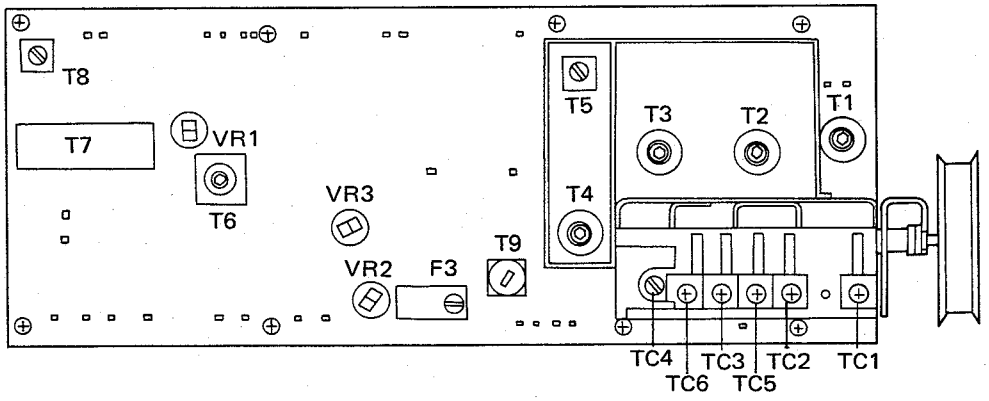
• Tracking

1. Set the FM signal generator for 400Hz modulation at 100%.
   Connect generator output to the FM antenna terminals through a 300Ω balanced dummy antenna.
2. Connect the oscilloscope, voltmeter, and distortion meter in parallel across TAPE REC jack.
3. Set the signal generator output level to 8~10dB.
   Set the signal generator and set dials to 90MHz.
4. Adjust cores of T4 (tuner assembly) and T1, T2, and T3 to obtain peak output.
5. Set signal generator and set dials to 106MHz.
6. Adjust TC4 (tuner assembly) and TC1, TC2, and TC3 to obtain peak output.
7. Repeat steps (3) through (6) several times, to obtain optimum tracking.
8. Set the frequency to 90MHz and adjust the T5 core of the tuner assembly to obtain peak output.
9. Detune the set so that noise only is received. Adjust the primary (bottom) core of T6 so that the tuning meter pointer indicates the center position.
10. Set signal generator and set dials to 82MHz. Set signal generator output level to 60dB. Carefully tune the set to this frequency as indicated by the tuning meter.
11. Adjust the secondary (top) core of T6 (tuner assembly) for minimum distortion.

• FM MPX adjustment

1. Set MPX signal generator modulation for the main signal (L+R) to 1kHz at 67.5kHz deviation and for the pilot (19kHz) at 7.5kHz deviation. Set the output level to 60dB.
2. Apply signal generator modulation to the left channel only.
   Adjust T8 (tuner assembly) for peak output.
3. Under this condition, adjust the core of T5 (tuner assembly) for minimum distortion.
4. Set signal generator modulation to the pilot and L(R).
   Adjust VR1 (tuner assembly) to obtain maximum channel separation.

TUNER ASSEMBLY (AWE-028)

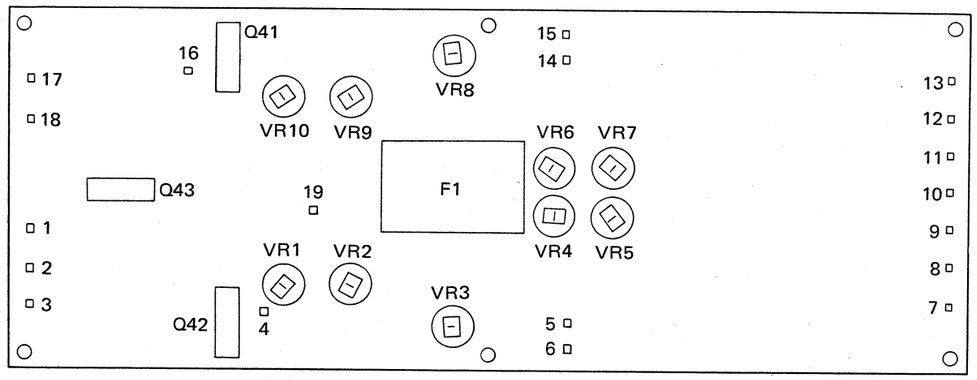


9.4 CD-4 DEMODULATOR ALIGNMENT

- When the P.L.L. demodulator integrated circuit has been replaced (Q41, Q42: SL60505), adjustments should be made in the following order.
- This method is both convenient and simple, but, if carried out carefully, is capable of adjustment over the practical range.
  Note, however, that unless the test record (PQX-1011) and the phono cartridge used for the audition are both new, adjustment is impossible.

1. Terminal 19 of the sub-channel assembly must be to ground. (This ensures that muting is inactivated.)
2. Connect an oscilloscope to terminal 14 (L channel). (For the R channel use terminal 5.)
3. Turn the carrier level control up to its maximum (fully clockwise).
4. Play band 1 of the test record (Band 2 for the R channel). The warble-tone waveform will be displayed on the oscilloscope.
5. Turn the carrier level control to the left until the point where the warble-tone waveform distorts is reached. This adjustment is extremely critical, and should be performed with great care.
6. Adjust VR10 until the warble-tone distortion disappears. (For the R channel use VR1.)
   It is preferable for the adjustment to be made with the lowest possible carrier level, so the oscilloscope used should have as high a vertical sensitivity as possible (approximately 10 mV/cm).

SUB-CHANNEL CIRCUIT ASSEMBLY (AWX-051)



9.5 POWER AMPLIFIER ADJUSTMENT

1. Do not connect load to speaker terminals. Terminate input terminals of power amplifier assembly with a 5.1k-ohm resistor.
2. Set power boosting switch to 4CH position. Then energize unit.
3. For the first approximately six seconds, the relay remains open, keeping the unit muted.
   Confirm that all voltages are as indicated in the circuit diagram on page 71.
4. If voltages are greatly different from rated values, shut off power immediately. Check suspicious areas, especially power supply circuit assembly.
5. If the relay opens immediately after the power amplifier has been come into operation, a defect in the output transistors can be suspected. Check the output stage.
6. After approx. 10~20 minutes of warming-up time, adjust VR101 so that the voltage across terminals 96 and 97 of the power amplifier assembly becomes 20mV.
7. In the same way, adjust the following variable resistors to obtain 20mV voltage readings across the following terminals:

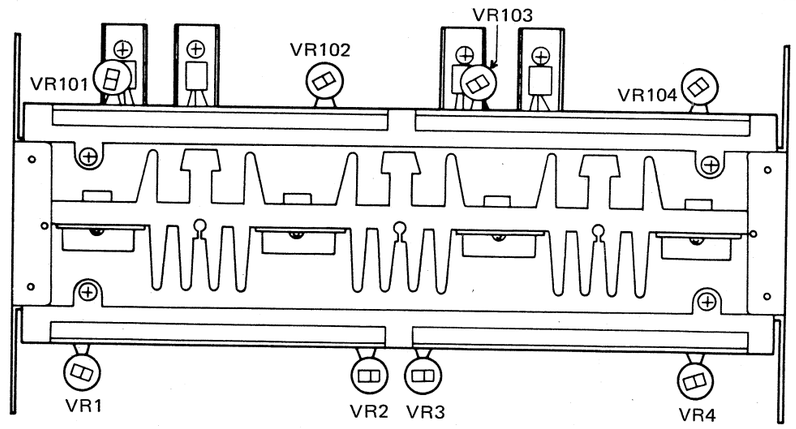
Terminals	94 — 95	VR102
Terminals	92 — 93	VR103
Terminals	90 — 91	VR104

8. Next, connect voltmeter between terminal 60 and ground. Adjust VR1 to obtain 0V reading.
9. In the same way, adjust the following VRs to obtain zero readings at the following points:

Terminal	52 and ground	VR2
Terminal	43 and ground	VR3
Terminal	35 and ground	VR4

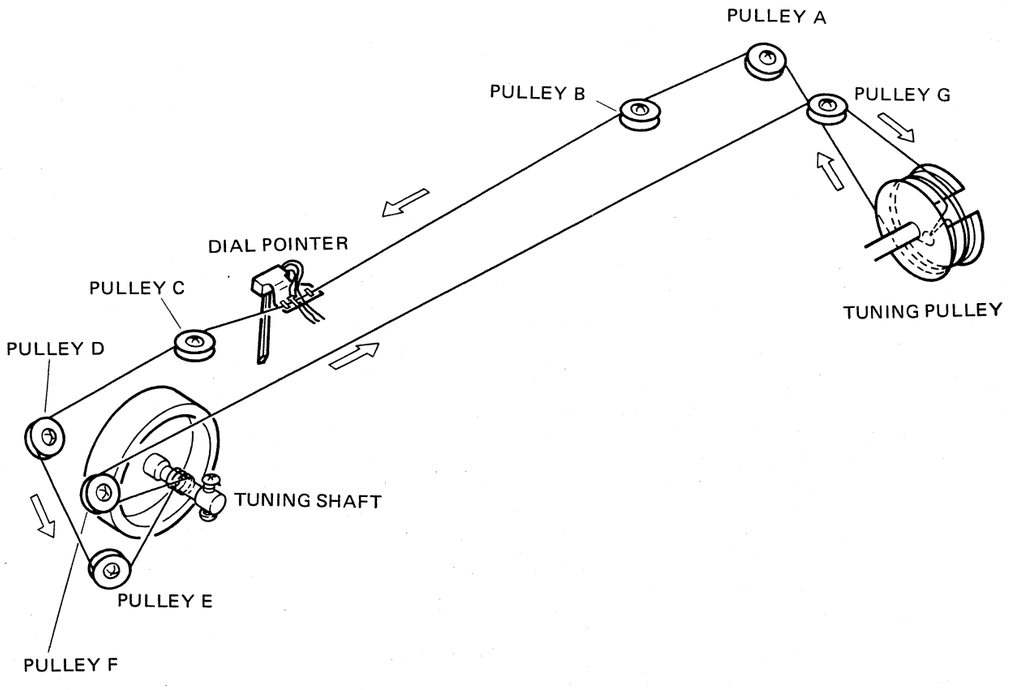
10. After completing all adjustments, return all connections to normal, then replace the case and bottom plates.

POWER AMPLIFIER ASSEMBLY (AWH-028)



10. DIAL CORD STRINGING

1. Turn the tuning capacitor so that its plates protrude as much as possible.
2. Tie one end of the string to the spring on the TUNING pulley (attached to the tuning capacitor).
3. Lead the string around pulleys A, B, C, D and E, then wind it 3 turns around the TUNING shaft.
4. Lead the string around pulleys F and G, then wind it 2 turns around the TUNING pulley.
5. Now tie the other end of the string to the spring on the TUNING pulley. Turn the tuning shaft and check for proper function. Then trim the ends of the string.
6. Turn the tuning shaft until the plates of the variable are all the way in. Move the pointer to the right-end starting point on the dial and fasten it to the string in that position.



11. EXPLODED VIEW AND PARTS LIST

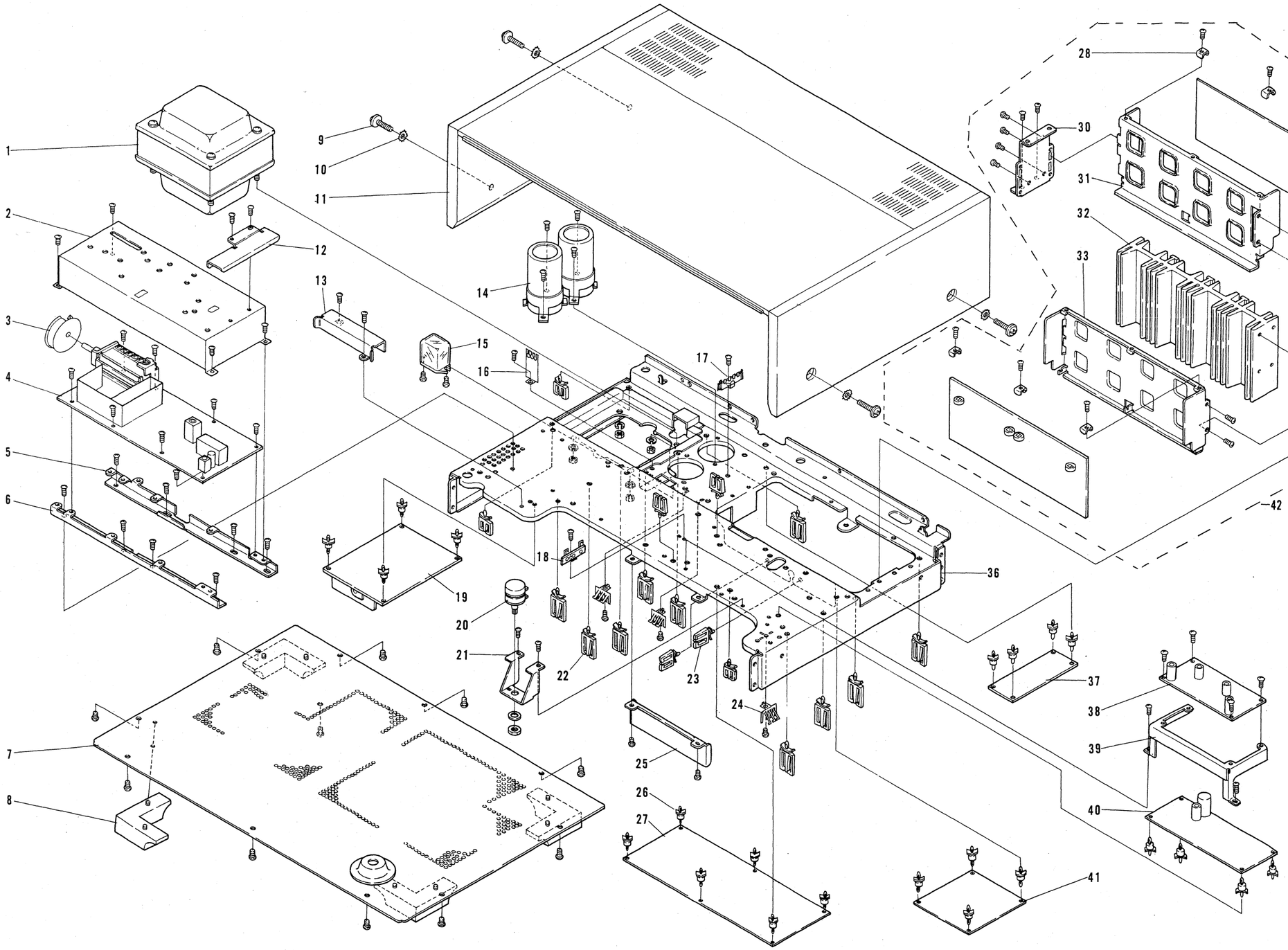
NOTE:
Parts number is subject to change for the purpose of improvement with notice of a service bulletin.
Service bulletin will be furnished whenever necessary and you are requested to amend parts number in this manual according to the instructions.

Parts List of Exploded View-1

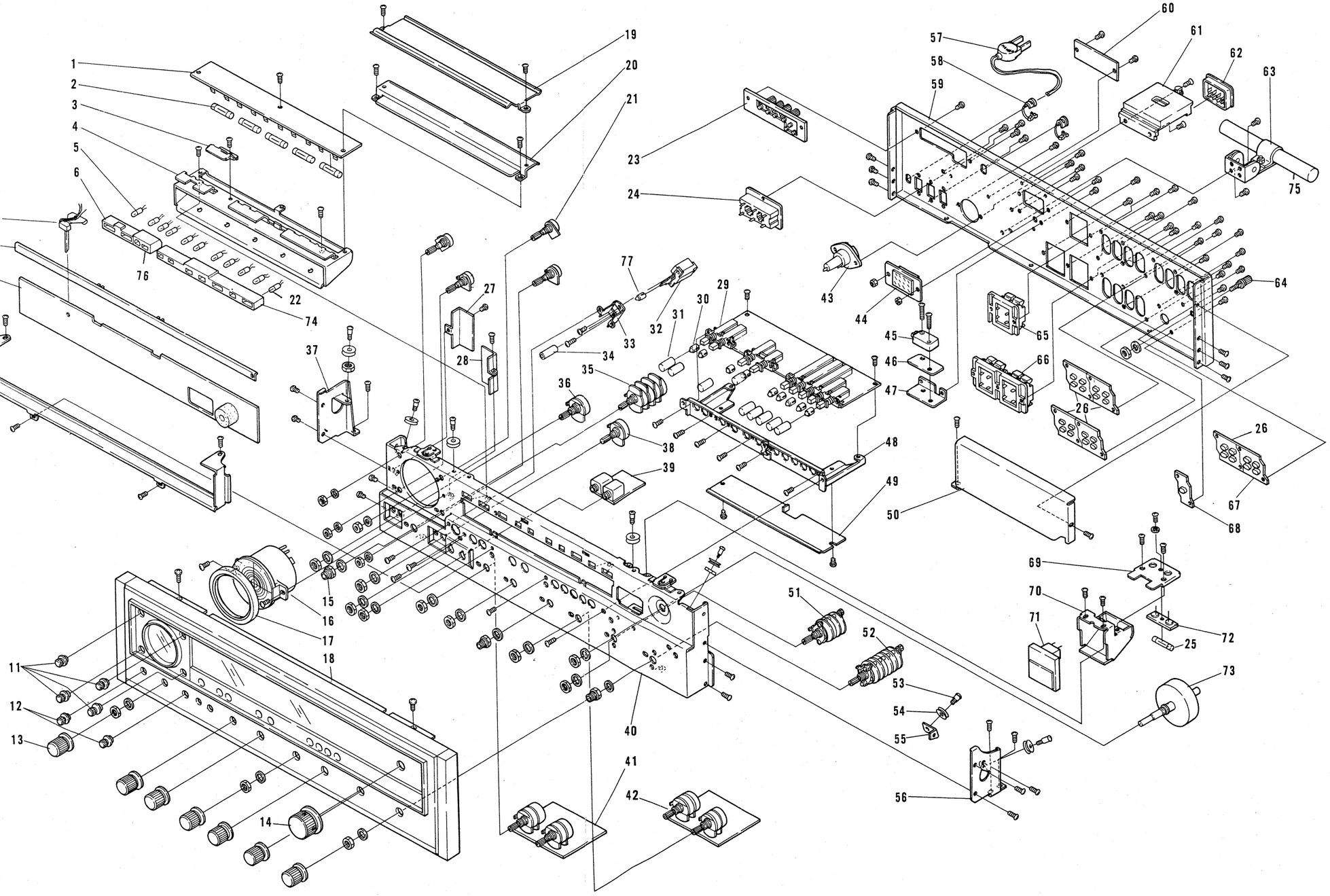
NOTICE: Any parts asterisked (*) are subject to being not supplied.

Key No.	Description	Part No.	
1	Power transformer	ATT-145-0	
2*	Shield cover	ANH-154-0	
3	Tuning pulley	AXA-015-A	
4	Tuner assembly	AWE-028-0	
5*	P.C. board holder (A)	ANF-157-A	
6*	P.C. board holder (B)	ANF-158-A	
7*	Bottom plate	ANE-030-0	
8	Foot	AEC-027-B	
9	Screw M4x15	ABA-010-0	
10	Washer	B21-011-0	
11	Wooden cabinet assembly	AMM-026-A	
12*	Wire supporter	ANK-052-0	
13*	Shield plate	ANH-168-A	
14	Electrolytic capacitor 15,000μF, 50V	ACH-028-0	
15	Relay	ASR-003-0	
16*	Wire holder	M45-105-C	
17	Terminal strip (6P)	AKC-017-0	
18	Terminal strip (1L2P)	AKC-018-0	
19	Power supply circuit assembly	AWR-040-0	
20	Variable resistor 10kΩ-B2(carrier level)	ACV-122-0	
21*	Variable resistor-held metal	ANF-141-0	
22*	Wire clip	AEC-064-0	
23*	Wire clip	ACE-004-0	
24	Ground terminal strip (4P)	K13-047-0	
25*	Shield plate	ANH-155-0	
26*	P.C. board holder	B21-008-A	
27	Sub-channel circuit assembly	AWX-051-B	
28*	P.C. board holder	ANF-146-0	
29			
30*	Heat sink-held metal	ANF-145-0	
31*	P.C. board holder	ANF-159-0	
32*	Heat sink	ANH-157-0	
33*	P.C. board holder	ANF-159-0	
34*	Heat sink-held metal	ANF-145-0	
35			
36*	Chassis	ANA-049-B	
37	Protection circuit assembly	AWM-049-A	
38	Matrix circuit assembly	AWM-048-0	
39*	P.C. board holder	ANF-159-0	
40	Decoder circuit assembly	AWM-031-0	
41	Equalizer amplifier assembly	AWF-010-0	
42	Power amplifier assembly	AWH-028-0	

Exploded View - 1



Exploded View-2



Parts List of Exploded View-2

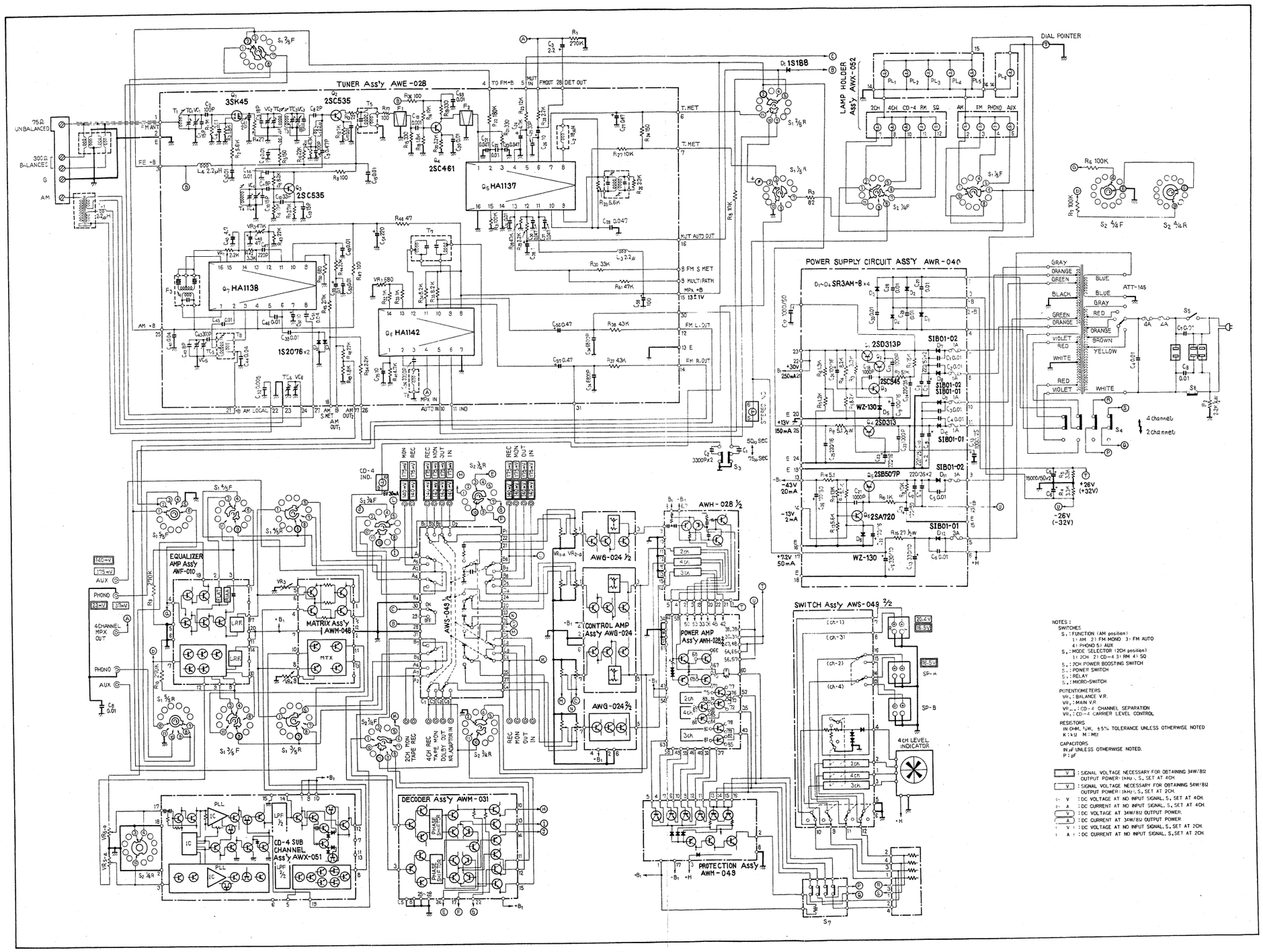
NOTICE: Any parts asterisked (*) are subject to being not supplied.

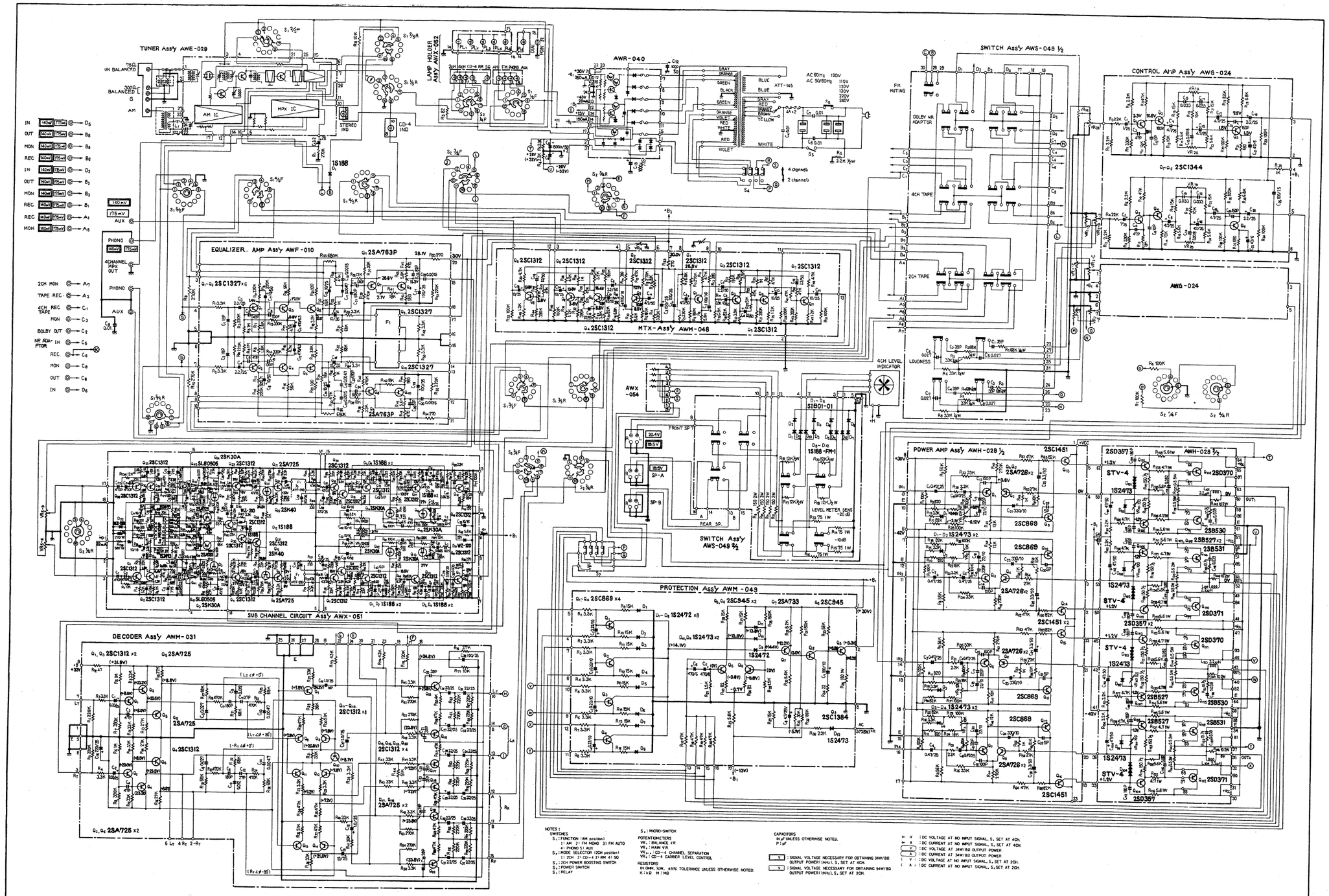
Key No.	Description	Part No.	
1	Lamp assembly	AWX-052-0	
2	Pilot lamp 8V 0,3A (dial scale)	E22-032-0	
3*	Rubber bracket holder	ANF-164-0	
4*	Lamp box	ANH-162-0	
5	Pilot lamp 6V, 30mA (stereo indicator)	AEL-006-0	
6*	Rubber bracket	AEB-043-0	
7	Dial pointer assembly	AAF-020-0	
8*	Dial scale holder	ANF-162-0	
9	Dial scale	AAG-055-B	
10*	Dial scale holder	ANF-163-0	
11	Knob (level)	AAB-064-A	
12	Knob (separation)	AAB-055-B	
13	Knob (volume, bass, treble, mode, function)	AAB-065-0	
14	Knob (tuning)	AAA-023-0	
15	Boss	B21-008-A	
16	4-channel level indicator	AAW-021-0	
17*	Shading plate	AEC-120-0	
18	Front panel assembly	ANB-214-A	
19*	Wire cover	ANK-054-0	
20*	P.C. board cover	ANK-053-0	
21	Variable resistor 10kΩ-B2 (level)	ACT-008-0	
22	Pilot lamp 8V 50mA (program indicator)	AEL-007-0	
23	Antenna terminal board	AKA-002-0	
24	AC socket	AKP-005-0	
25	Pilot lamp 8V 0.3A (meter)	AEL-015-0	
26	Phono jack (4 jacks)-A	AKB-014-0	
27*	Shield plate	ANH-169-0	
28*	Shield plate	ANH-170-A	
29	Switch circuit assembly	AWS-049-A	
30	Coupler (knob-to-switch)	AAE-007-0	
31	Knob (push switch)	AAD-054-0	
32	Push switch (power)	ASG-043-0	
33*	Switch-held metal	ANF-153-0	
34	Knob (power)	AAD-055-0	
35	Variable resistor 500kΩ-B1 (volume)	ACV-310-0	
36	Variable resistor 10kΩ-C (separation-L)	ACV-014-0	
37*	Reinforced metal (L)	ANK-056-A	
38	Variable resistor 10kΩ-C (separation-R)	ACV-014-0	
39	Headphone jack assembly	AWX-054-0	
40*	Sub-panel	AND-063-A	
41	Control amplifier assembly	AWG-024-0	
42	Control amplifier assembly	AWG-024-0	
43	Fuse holder (AC power)	AKR-015-0	
44	Multi-socket	AKP-006-0	
45	Microswitch	ASF-001-0	

Key No.	Description	Part No.	
46	Insulator	AEC-111-0	
47*	Switch-held metal	ANF-142-0	
48*	P.C. board holder	ANF-159-0	
49*	Shield plate	ANF-167-0	
50*	Shield cover	ANH-152-A	
51	Rotary switch (function)	ASC-053-0	
52	Rotary switch (mode)	ASC-052-A	
53*	Pulley shaft	M49-025-E	
54*	Pulley	AEC-101-0	
55*	Pulley-held metal	ANG-088-A	
56*	Reinforced metal (R)	ANK-057-A	
57	AC power cord	ADG-003-0	
58	AC cord grommet	AEC-079-0	
59*	Rear panel	ANC-087-B	
60*	Model name plate	AAL-169-0	
61	Switch cover assembly	AEC-110-A	
62	Multi-plug	AKM-006-0	
63	Ferrite loopstick antenna holder assembly	AXB-001-0	
64	Binding post for ground	AKE-012-A	
65	Speaker output terminal	AKE-016-0	
66	Speaker output terminal	AKE-010-0	
67	Phono jack (4 jacks)-B	AKB-015-0	
68	Phono jack (1 jack)	AKB-019-0	
69*	Lamp-held metal	ANF-140-A	
70*	Lamp-box	ANH-156-A	
71	AM-FM meter	AAW-018-A	
72	Fuse holder (1P)	AKK-002-0	
73	Tuning shaft assembly	AXA-039-0	
74*	Rubber bracket	AEB-042-0	
75	AM ferrite loopstick antenna	ATB-015-A	
76*	Rubber bracket	AEB-044-0	
77	Coupler (knob-to-switch)	AAE-008-0	

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

12.1 CIRCUIT CONNECTION DIAGRAM AND MISCELLANEOUS PARTS




TUNER Assy AWE-029
LAMP HOLDER Assy AWH-052
AWR-040
SWITCH Assy AWS-048 ½
CONTROL AMP Assy AWG-024
EQUALIZER AMP Assy AWF-010
MTX-Assy AWM-048
AWX-054
SUB CHANNEL CIRCUIT Assy AWX-051
DECODER Assy AWM-031
SWITCH Assy AWS-049 ½
PROTECTION Assy AWM-049
POWER AMP Assy AWH-028 ½
AWH-028 ½
AWG-024
DOLBY NR ADAPTOR
4CH TAPE
2CH TAPE
4CH LEVEL INDICATOR
FM MUTING
FRONT SP
REAR SP.
SP-A
SP-B
4 channel
2 channel
NOTES :
SWITCHES
S₁ : FUNCTION (AM position)
1: AM 2: FM MONO 3: FM AUTO
4: PHONO 5: AUX
S₂ : MODE SELECTOR (2CH position)
1: 2CH 2: CD-4 3: RM 4: SQ
S₃ : 2CH POWER BOOSTING SWITCH
S₄ : POWER SWITCH
S₅ : RELAY
S₆ : MICRO-SWITCH
POTENTIOMETERS
VR₁ : BALANCE F/R
VR₂ : MAIN V.R.
VR₃, 4 : CD-4 CHANNEL SEPARATION
VR₅ : CD-4 CARRIER LEVEL CONTROL
RESISTORS
IN OHMS, 5CW, ±5% TOLERANCE UNLESS OTHERWISE NOTED.
K : kΩ M : MΩ
CAPACITORS
IN μF UNLESS OTHERWISE NOTED.
P : pF
V : SIGNAL VOLTAGE NECESSARY FOR OBTAINING 34W/8Ω OUTPUT POWER (1kHz), S, SET AT 4CH.
V : SIGNAL VOLTAGE NECESSARY FOR OBTAINING 34W/8Ω OUTPUT POWER (1kHz), S, SET AT 2CH.
V : DC VOLTAGE AT NO INPUT SIGNAL, S, SET AT 4CH.
A : DC CURRENT AT NO INPUT SIGNAL, S, SET AT 4CH.
V : DC VOLTAGE AT 34W/8Ω OUTPUT POWER
A : DC CURRENT AT 34W/8Ω OUTPUT POWER
V : DC VOLTAGE AT NO INPUT SIGNAL, S, SET AT 2CH.
A : DC CURRENT AT NO INPUT SIGNAL, S, SET AT 2CH.

- CAPACITORS: IN μF UNLESS OTHERWISE NOTED p: pF
- RESISTORS: IN Ω,¼W UNLESS OTHERWISE NOTED k: kΩ, M: MΩ

MISCELLANEOUS PARTS

CAPACITORS

Symbol	Description			Part No.	
C1	Mylar	0.0033	50V	CQMA 332K 50	
C2	Mylar	0.0033	50V	CQMA 332K 50	
C3	Electrolytic	2.2	16V	CSSA 2R2M 16	
C4	Metalized mylar	0.01	250V	ACE-002-0	
C5	Electrolytic	15,000	50V	ACH-028-0	
C6	Electrolytic	15,000	50V	ACH-028-0	
C7	Ceramic	0.01	250V	ACG-001-0	
C8	Ceramic	0.01	250V	ACG-001-0	
C9	Ceramic	0.01	50V	CKDYF 103Z 50	
C12	Electrolytic	1,000	50V	CEB 102P 50	
C13	Mylar	0.0039	50V	CQMA 392K 50	
C14	Mylar	0.0039	50V	CQMA 392K 50	
C15	Electrolytic	1,000	25V	CEB 102P 25	

RESISTORS AND POTENTIOMETERS

Symbol	Description			Part No.	
VR1	Variable resistor	500k-B2		ACT-008-0	
VR2	Variable resistor	500k-B1		ACV-310-0	
VR3	Variable resistor	10k-C		ACV-014-0	
VR4	Variable resistor	10k-C		ACV-014-0	
VR5	Variable resistor	10k-B2		ACV-122-0	
R1	Carbon film	270k		RD¼PS 274J	
R2	Carbon film	2.2M	½W	RD½PS 225J	
R3	Carbon film	82		RD¼PS 820J	
R4	Metal oxide	3.3k	2W	RS2P 332J	
R5	Metal oxide	3.3k	2W	RS2P 332J	
R6	Carbon film	100k		RD¼PS 104J	
R7	Carbon film	100k		RD¼PS 104J	
R8	Carbon film	10k		RD¼PS 103J	

SEMICONDUCTOR

Symbol	Description		Part No.	
D1	Diode	1S188FM-1		

TRANSFORMERS AND COIL

Symbol	Description	Part No.	
	Power transformer	ATT-145-0	
	Ferrite loopstick antenna	ATB-015-A	
	Balun	T22-025-A	
L1	RF choke coil	T24-028-A	

SWITCHES

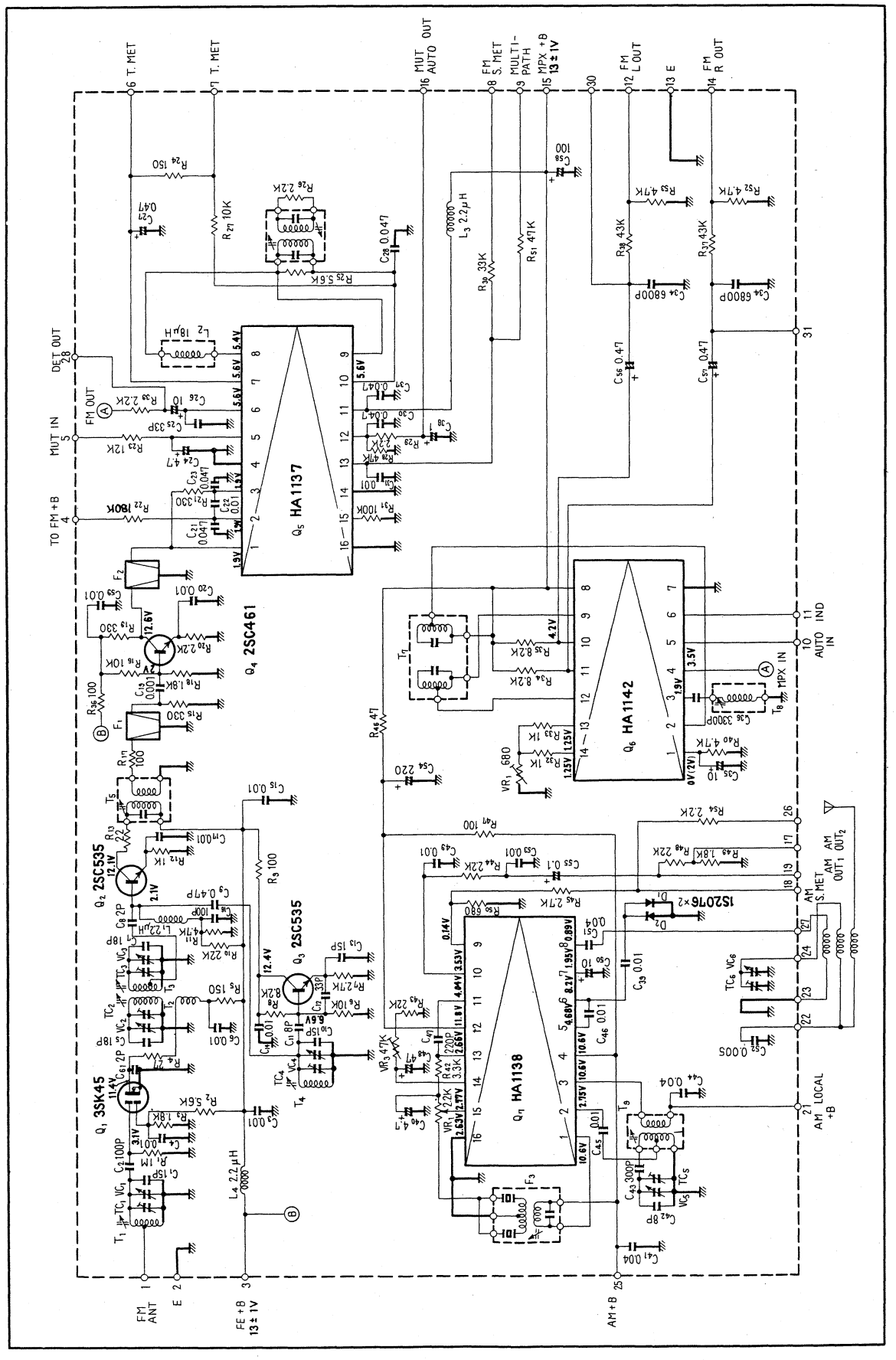
Symbol	Description	Part No.	
S1	Selector switch (Function)	ASC-053-0	
S2	Selector switch (Mode)	ASC-052-A	
S3	Slide switch (FM de-emphasis)	ASH-008-0	
S4	Multi-plug	AKM-006-0	
	Multi-socket	AKP-006-0	
S5	Push switch (Power)	ASG-043-0	
S6	Fuse holder (AC power)	AKR-015-0	
S7	Relay	ASR-003-0	
S8	Microswitch	ASF-001-0	

OTHERS

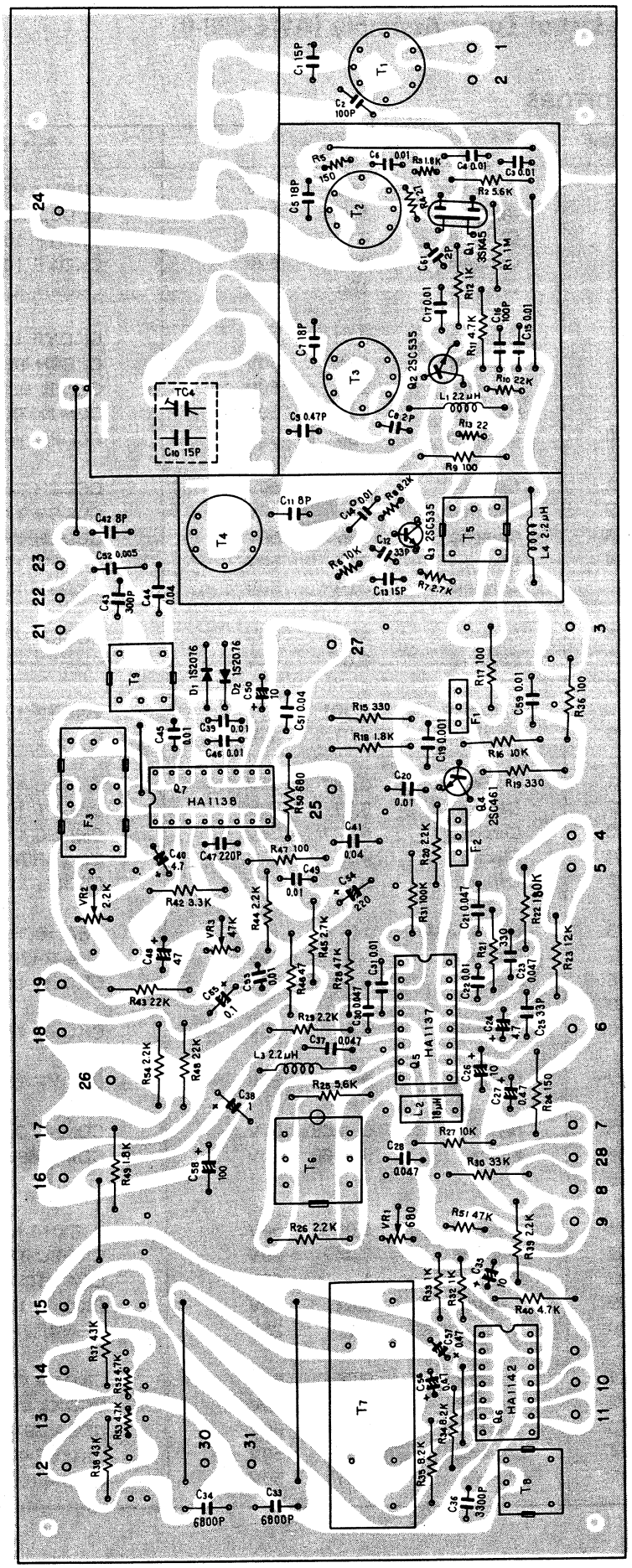
Symbol	Description	Part No.	
	Tuner assembly	AWE-028-0	
	Equalizer amplifier assembly	AWF-010-0	
	Matrix circuit assembly	AWM-048-0	
	Control amplifier assembly	AWG-024-0	
	Decoder circuit assembly	AWM-031-0	
	Sub-channel circuit assembly	AWX-051-B	
	Power amplifier assembly	AWH-028-0	
	Switch circuit assembly	AWS-049-A	
	Protection circiut assembly	AWM-049-A	
	Power supply circuit assembly	AWR-040-0	
	Lamp assembly	AWX-052-0	
	Headphone jack assembly	AWX-054-0	
	Front panel assembly	ANB-214-A	
	Wooden cabinet assembly	AMM-026-A	
	Bottom plate	ANE-030-0	
	Foot	AEC-027-B	
	Tuning shaft assembly	AXA-039-0	
	Tuning pulley	AXA-015-A	
	Ferrite loopstick antenna holder assembly	AXB-001-0	
	Dial pointer assembly	AAF-020-0	
	Dial scale	AAG-055-B	
	AM-FM meter	AAW-018-A	
	4-channel level indicator	AAW-021-0	
	Knob (Tuning)	AAA-023-0	
	Knob (Function , mode , Bass, Treble, Volume)	AAB-065-0	
	Knob (Separation)	AAB-055-B	
	Konb (Level control)	AAB-064-A	
	Knob (push button)	AAD-054-0	
	Knob (Power)	AAD-055-0	
	Bracket (CD-4 indicator)	AEC-121-0	
	Coupler (knob-to-switch)	AAE-007-0	
	Coupler (knob-to-switch)	AAE-008-0	
	Antenna terminal board	AKA-002-0	
	Phono jack-B (4 jacks)	AKB-015-0	
	Phono jack-A (4 jacks)	AKB-014-0	

Symbol	Description	Part No.	
	Phono jack (1 jack)	AKB-019-0	
	Speaker output terminal	AKE-016-0	
	Speaker output terminal	AKE-010-0	
	Ground terminal strip (4P)	K13-047-0	
	Binding post for ground	AKE-012-A	
PL1	Pilot lamp 8V, 0.3A	E22-032-0	
PL2	Pilot lamp 8V, 0.3A	E22-032-0	
PL3	Pilot lamp 8V, 0.3A	E22-032-0	
PL4	Pilot lamp 8V, 0.3A	E22-032-0	
PL5	Pilot lamp 8V, 0.3A	E22-032-0	
PL6	Pilot lamp 8V, 0.3A	AEL-015-0	
	Pilot lamp 6V, 30mA	AEL-006-0	
	Pilot lamp 8V, 50mA	AEL-007-0	
	Fuse 4A (AC power)	AEK-028-0	
	AC socket	AKP-005-0	
	1P fuse holder	AKK-002-0	
	AC cord grommet	AEC-079-0	
	Sockets with cords	ADX-005-A	
	AC cord	ADG-003-0	
	Screw M4x15	ABA-010-0	
	FM T-type antenna	D52-013-0	
	Operating instructions	ARB-088-0	
	Test record PQX-101		
	Packing case	AHD-189-0	
	Reinforced cardboard	AHB-012-0	
	Fuse 4A (protection)	AEK-035-0	
	Packing case with cord number printed	AHD-188-0	
	Inside packing	AHC-007-0	
	Side pad (L)	AHA-040-A	
	Side pad (R)	AHA-041-A	

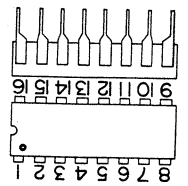
12.2 TUNER ASSEMBLY (AWE-028-0)



Foil side (AWE-028-0)



HA1137
HA1138



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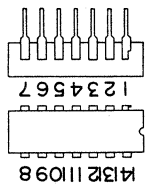

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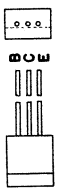
2SC461



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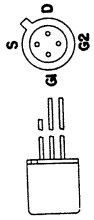


Parts List of Tuner Assembly (AWE-028-0)

CAPACITORS

Symbol	Description			Part No.	
C1	Ceramic	15p	50V	CCDSH 150K 50	
C2	Ceramic	100p	50V	CCDSL 101K 50	
C3	Ceramic	0.01	50V	CKDYF 103Z 50	
C4	Ceramic	0.01	50V	CKDYF 103Z 50	
C5	Ceramic	18p	50V	CCDSH 180K 50	
C6	Ceramic	0.01	50V	CKDYF 103Z 50	
C7	Ceramic	18p	50V	CCDSH 180K 50	
C8	Ceramic	2p	50V	CCDSL 020C 50	
C9	Ceramic	0.47p	500V	CGB R47K 500	
C10	Ceramic	15p	50V	CCDPH 150K 50	
C11	Ceramic	8p	50V	CCDCH 080F 50	
C12	Ceramic	33p	50V	CCDCH 330K 50	
C13	Ceramic	15p	50V	CCDCH 150K 50	
C14	Ceramic	0.01	50V	CKDYB 103K 50	
C15	Ceramic	0.01	50V	CKDYF 103Z 50	
C16	Ceramic	100p	50V	CCDSL 101K 50	
C17	Ceramic	0.01	50V	CKDYF 103Z 50	
C18					
C19	Ceramic	0.001	50V	CKDYF 102Z 50	
C20	Ceramic	0.01	50V	CKDYF 103Z 50	
C21	Ceramic	0.047	25V	CKDBC 473Z 25	
C22	Ceramic	0.01	50V	CKDYF 103Z 50	
C23	Ceramic	0.047	25V	CKDBC 473Z 25	
C24	Electrolytic	4.7	25V	CEA 4R7P 25	
C25	Ceramic	33p	50V	CCDSL 330K 50	
C26	Electrolytic	10	16V	CEA 100P 16	
C27	Electrolytic	0.47	50V	CEA R47P 50	
C28	Ceramic	0.047	25V	CKDBC 473Z 25	
C29					
C30	Ceramic	0.047	25V	CKDBC 473Z 25	
C31	Ceramic	0.01	50V	CKDYF 103Z 50	
C32					
C33	Mylar	0.0068	50V	CQMA 682J 50	
C34	Mylar	0.0068	50V	CQMA 682J 50	
C35					
C36	Styrol	0.0033	50V	C15-011-A	
C37	Ceramic	0.047	25V	CKDBC 473Z 25	
C38	Electrolytic	1	50V	CEA 010P 50	
C39	Ceramic	0.01	50V	CKDYF 103Z 50	
C40	Electrolytic	4.7	25V	CEA 4R7P 25	
C41	Ceramic	0.04	50V	CKDYF 403Z 50	
C42	Ceramic	8p	50V	CCDXL 080F 50	
C43	Styrol	300p	50V	CQSA 301J 50	
C44	Ceramic	0.04	50V	CKDYF 403Z 50	
C45	Mylar	0.01	50V	CQMA 103K 50	

Symbol	Description			Part No.	
C46	Ceramic	0.01	50V	CKDYF 103Z 50	
C47	Ceramic	220p	50V	CCDSL 221K 50	
C48	Electrolytic	47	6V	CEA 470P 6	
C49	Mylar	0.01	50V	CQMA 103K 50	
C50	Electrolytic	10	16V	CEA 100P 16	
C51	Ceramic	0.04	50V	CKDYF 403Z 50	
C52	Ceramic	0.005	50V	CKDYF 502Z 50	
C53	Mylar	0.01	50V	CQMA 103K 50	
C54	Electrolytic	220	16V	CEA 221P 16	
C55	Electrolytic	0.1	25V	CSSA 0R1M 25	
C56	Electrolytic	0.47	50V	CEA R47P 50	
C57	Electrolytic	0.47	50V	CEA R47P 50	
C58	Electrolytic	100	16V	CEA 101P 16	
C59	Ceramic	0.01	50V	CKDYF 103Z 50	
C60	Ceramic	2p	50V	CCDSL 020C 50	
VC	Tuning capacitor			ACK-005-0	
TC4	Ceramic trimmer			C43-007-A	

RESISTORS AND POTENTIOMETERS

Symbol	Description		Part No.	
R1	Carbon film	1M	RD¼PS 105J	
R2	Carbon film	5.6k	RD¼PS 562J	
R3	Carbon film	1.8k	RD¼VS 182J	
R4	Carbon film	27	RD¼VS 270J	
R5	Carbon film	150	RD¼VS 151J	
R6	Carbon film	10k	RD¼VS 103J	
R7	Carbon film	2.7k	RD¼VS 272J	
R8	Carbon film	8.2k	RD¼VS 822J	
R9	Carbon film	100	RD¼PS 101J	
R10	Carbon film	22k	RD¼VS 223J	
R11	Carbon film	4.7k	RD¼PS 472J	
R12	Carbon film	1k	RD¼PS 102J	
R13	Carbon film	22	RD¼VS 220J	
R14				
R15	Carbon film	330	RD¼PS 331J	
R16	Carbon film	10k	RD¼PS 103J	
R17	Carbon film	100	RD¼PS 101J	
R18	Carbon film	1.8k	RD¼PS 182J	
R19	Carbon film	330	RD¼PS 331J	
R20	Carbon film	2.2k	RD¼PS 222J	
R21	Carbon film	330	RD¼PS 331J	
R22	Carbon film	180k	RD¼PS 184J	
R23	Carbon film	12k	RD¼PS 123J	
R24	Carbon film	150	RD¼PS 151J	
R25	Carbon film	5.6k	RD¼PS 562J	
R26	Carbon film	2.2k	RD¼PS 222J	
R27	Carbon film	10k	RD¼PS 103J	
R28	Carbon film	47k	RD¼PS 473J	
R29	Carbon film	2.2k	RD¼PS 222J	
R30	Carbon film	33k	RD¼PS 333J	

Symbol	Description		Part No.	
R31	Carbon film	100k	RD¼PS 104J	
R32	Carbon film	1k	RD¼VS 102J	
R33	Carbon film	1k	RD¼VS 102J	
R34	Carbon film	8.2k	RD¼PS 822J	
R35	Carbon film	8.2k	RD¼PS 822J	
R36	Carbon film	100	RD¼PS 101J	
R37	Carbon film	43k	RD¼PS 433J	
R38	Carbon film	43k	RD¼PS 433J	
R39	Carbon film	2.2k	RD¼PS 222J	
R40	Carbon film	4.7k	RD¼PS 472J	
R41				
R42	Carbon film	3.3k	RD¼PS 332J	
R43	Carbon film	22k	RD¼PS 223J	
R44	Carbon film	2.2k	RD¼PS 222J	
R45	Carbon film	2.7k	RD¼PS 272J	
R46	Carbon film	47	RD¼PS 470J	
R47	Carbon film	100	RD¼PS 101J	
R48	Carbon film	22k	RD¼PS 223J	
R49	Carbon film	1.8k	RD¼PS 182J	
R50	Carbon film	680	RD¼PS 681J	
R51	Carbon film	47k	RD¼VS 473J	
R52	Carbon film	4.7k	RD¼VS 472J	
R53	Carbon film	4.7k	RD¼VS 472J	
R54	Carbon film	2.2k	RD¼PS 222J	
VR1	Variable resistor	680-B	ACP-013-0	
VR2	Variable resistor	2.2k-B	ACP-001-0	
VR3	Variable resistor	47k-B	C92-048-0	

SEMICONDUCTORS

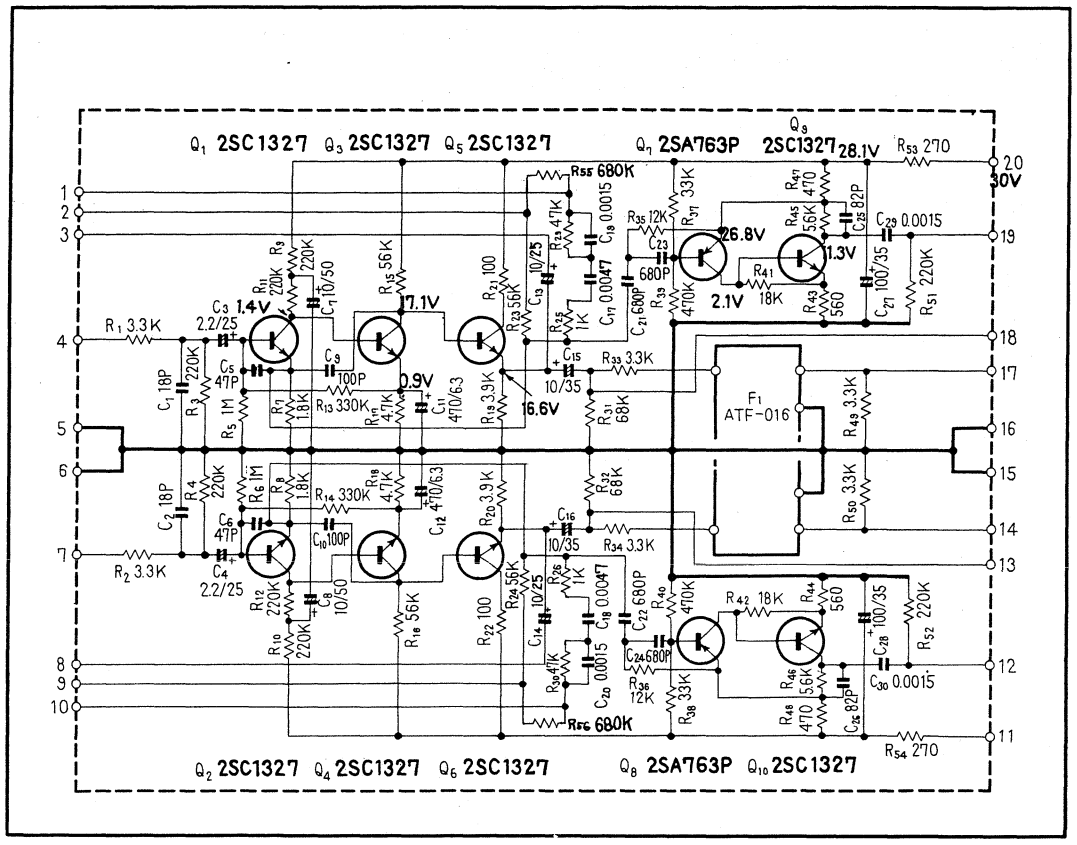
Symbol	Description		Part No.	
Q1	FET	3SK45-B		
Q2	Transistor	2SC535-B or A		
Q3	Transistor	2SC535-B		
Q4	Transistor	2SC461-B		
Q5	IC	HA1137		
Q6	IC	HA1142		
Q7	IC	HA1138		
D1	Diode	1S2076		
D2	Diode	1S2076		

COILS, TRANSFORMERS AND FILTERS

Symbol	Description	Part No.	
T1	FM antenna coil	ATC-021-0	
T2	FM RF coil	ATC-015-0	
T3	FM RF coil	ATC-016-0	
T4	FM oscillator coil	ATC-022-0	
T5	FM matching transformer	ATE-008-0	

Symbol	Description	Part No.	
T6	FM IF transformer	T73-035-A	
T7	MPX transformer	ATM-011-0	
T8	19kHz transformer	T75-023-B	
T9	AM oscillator coil	ATB-013-0	
F1	FM ceramic filter	ATF-013-B	
F2	FM ceramic filter	ATF-013-B	
F3	AM ceramic filter	ATF-009-0	
L1	RF choke coil	T24-028-A	
L2	Choke coil	ATH-007-0	
L3	RF choke coil	T24-028-A	
L4	RF choke coil	T24-028-A	

12.3 EQUALIZER AMPLIFIER ASSEMBLY (AWF-010-0)



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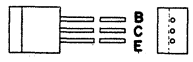

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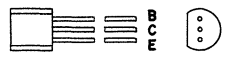

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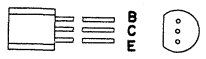
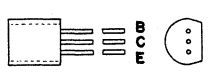
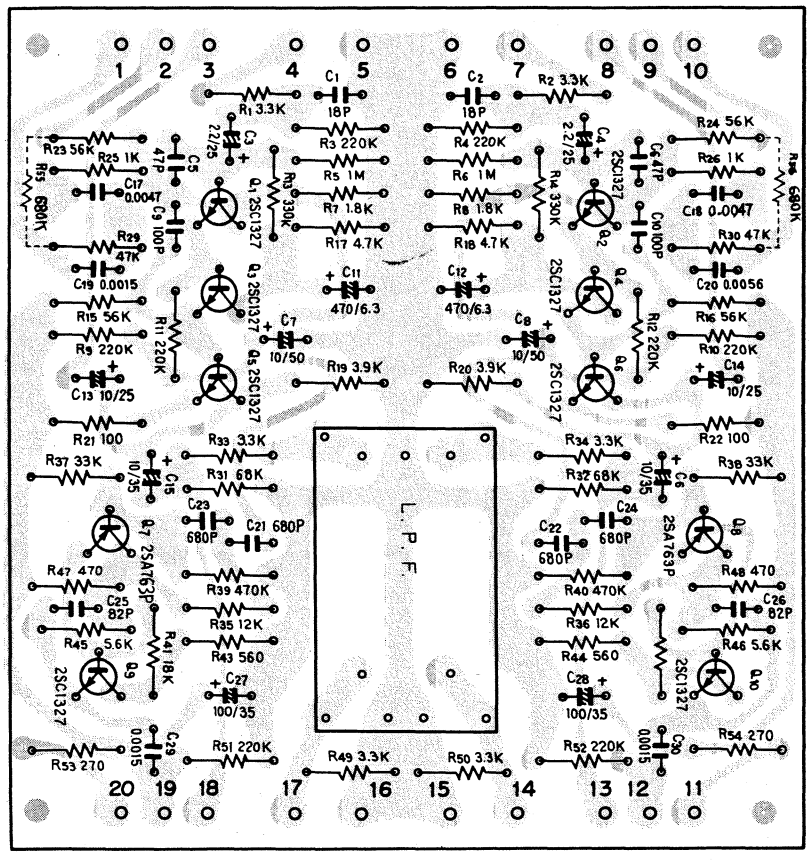


2SC1312
2SA725



Foil side (AWF-010-0)



Parts List of Equalizer Amplifier Assembly (AWF-010-0)

CAPACITORS

Symbol	Description			Part No.	
C1	Ceramic	18p	50V	CCDSL 180K 50	
C2	Ceramic	18p	50V	CCDSL 180K 50	
C3	Electrolytic	2.2	25V	CSSA 2R2M 25	
C4	Electrolytic	2.2	25V	CSSA 2R2M 25	
C5	Ceramic	47p	50V	CCDSL 470K 50	
C6	Ceramic	47p	50V	CCDSL 470K 50	
C7	Electrolytic	10	50V	CEA 100P 50	
C8	Electrolytic	10	50V	CEA 100P 50	
C9	Ceramic	100p	50V	CCDSL 101K 50	
C10	Ceramic	100p	50V	CCDSL 101K 50	
C11	Electrolytic	470	6V	CEA 471P 6	
C12	Electrolytic	470	6V	CEA 471P 6	
C13	Electrolytic	10	25V	CSZA 100M 25	
C14	Electrolytic	10	25V	CSZA 100M 25	
C15	Electrolytic	10	35V	CEA 100P 35	
C16	Electrolytic	10	35V	CEA 100P 35	
C17	Styrol	0.0047	50V	CQSA 472J 50	
C18	Styrol	0.0047	50V	CQSA 472J 50	
C19	Styrol	0.0015	50V	CQSA 152J 50	
C20	Styrol	0.0015	50V	CQSA 152J 50	
C21	Ceramic	680p	50V	CCDSL 681K 50	
C22	Ceramic	680p	50V	CCDSL 681K 50	
C23	Ceramic	680p	50V	CCDSL 681K 50	
C24	Ceramic	680p	50V	CCDSL 681K 50	
C25	Ceramic	82p	50V	CCDSL 820K 50	
C26	Ceramic	82p	50V	CCDSL 820K 50	
C27	Electrolytic	100	35V	CEA 101P 35	
C28	Electrolytic	100	35V	CEA 101P 35	
C29	Styrol	0.0015	50V	CQSA 152J 50	
C30	Styrol	0.0015	50V	CQSA 152J 50	

RESISTORS

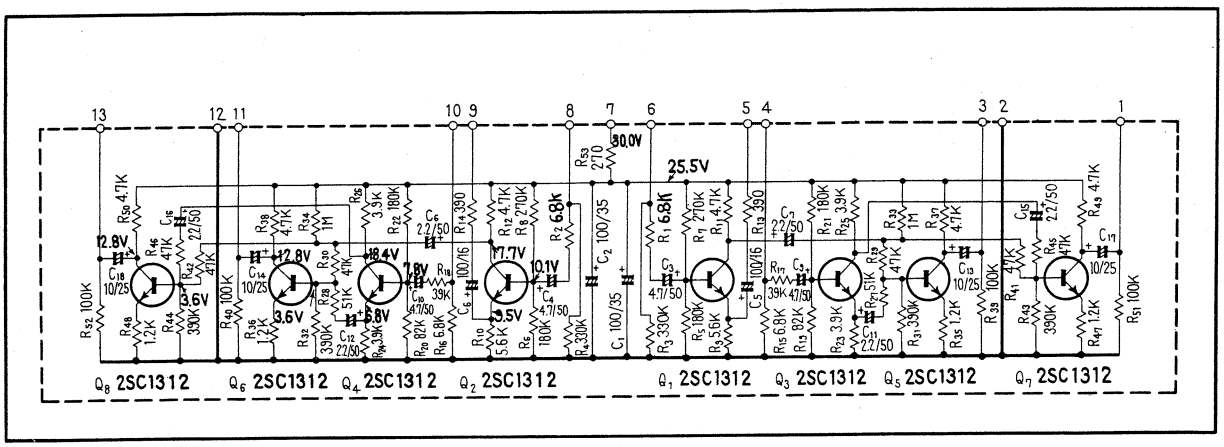
Symbol	Description		Part No.	
R1	Carbon film	3.3k	RD¼PM 332J	
R2	Carbon film	3.3k	RD¼PM 332J	
R3	Carbon film	220k	RD¼PM 224J	
R4	Carbon film	220k	RD¼PM 224J	
R5	Carbon film	1M	RD¼PM 105J	
R6	Carbon film	1M	RD¼PM 105J	
R7	Carbon film	1.8k	RD¼PM 182J	
R8	Carbon film	1.8k	RD¼PM 182J	
R9	Carbon film	220k	RD¼PM 224J	
R10	Carbon film	220k	RD¼PM 224J	
R11	Carbon film	220k	RD¼PM 224J	
R12	Carbon film	220k	RD¼PM 224J	
R13	Carbon film	330k	RD¼PM 334J	
R14	Carbon film	330k	RD¼PM 334J	
R15	Carbon film	56k	RD¼PM 563J	

Symbol	Description		Part No.	
R16	Carbon film	56k	RD¼PM 563J	
R17	Carbon film	4.7k	RD¼PM 472J	
R18	Carbon film	4.7k	RD¼PM 472J	
R19	Carbon film	3.9k	RD¼PM 392J	
R20	Carbon film	3.9k	RD¼PM 392J	
R21	Carbon film	100	RD¼PM 101J	
R22	Carbon film	100	RD¼PM 101J	
R23	Carbon film	56k	RD¼PM 563J	
R24	Carbon film	56k	RD¼PM 563J	
R25	Carbon film	1k	RD¼PM 102J	
R26	Carbon film	1k	RD¼PM 102J	
R27				
R28				
R29	Carbon film	47k	RD¼PM 473J	
R30	Carbon film	47k	RD¼PM 473J	
R31	Carbon film	68k	RD¼PM 683J	
R32	Carbon film	68k	RD¼PM 683J	
R33	Carbon film	3.3k	RD¼PM 332J	
R34	Carbon film	3.3k	RD¼PM 332J	
R35	Carbon film	12k	RD¼PM 123J	
R36	Carbon film	12k	RD¼PM 123J	
R37	Carbon film	33k	RD¼PM 333J	
R38	Carbon film	33k	RD¼PM 333J	
R39	Carbon film	470k	RD¼PM 474J	
R40	Carbon film	470k	RD¼PM 474J	
R41	Carbon film	18k	RD¼PM 183J	
R42	Carbon film	18k	RD¼PM 183J	
R43	Carbon film	560	RD¼PM 561J	
R44	Carbon film	560	RD¼PM 561J	
R45	Carbon film	5.6k	RD¼PM 562J	
R46	Carbon film	5.6k	RD¼PM 562J	
R47	Carbon film	470	RD¼PM 471J	
R48	Carbon film	470	RD¼PM 471J	
R49	Carbon film	3.3k	RD¼PM 332J	
R50	Carbon film	3.3k	RD¼PM 332J	
R51	Carbon film	220k	RD¼PM 224J	
R52	Carbon film	220k	RD¼PM 224J	
R53	Carbon film	270	RD¼PM 271J	
R54	Carbon film	270	RD¼PM 271J	
R55	Carbon film	680k	RD¼PM 684J	
R56	Carbon film	680k	RD¼PM 684J	

SEMICONDUCTORS AND FILTER

Symbol	Description	Part No.	
Q1	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q2	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q3	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q4	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q5	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q6	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q7	Transistor 2SA763-5 or 6 (2SA725-G or F)		
Q8	Transistor 2SA763-5 or 6 (2SA725-G or F)		
Q9	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q10	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
F1	Low pass filter	ATF-016-0	

12.4 MATRIX CIRCUIT ASSEMBLY (AWM-048-0)



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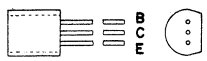

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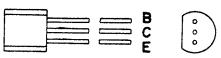

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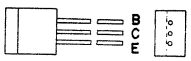
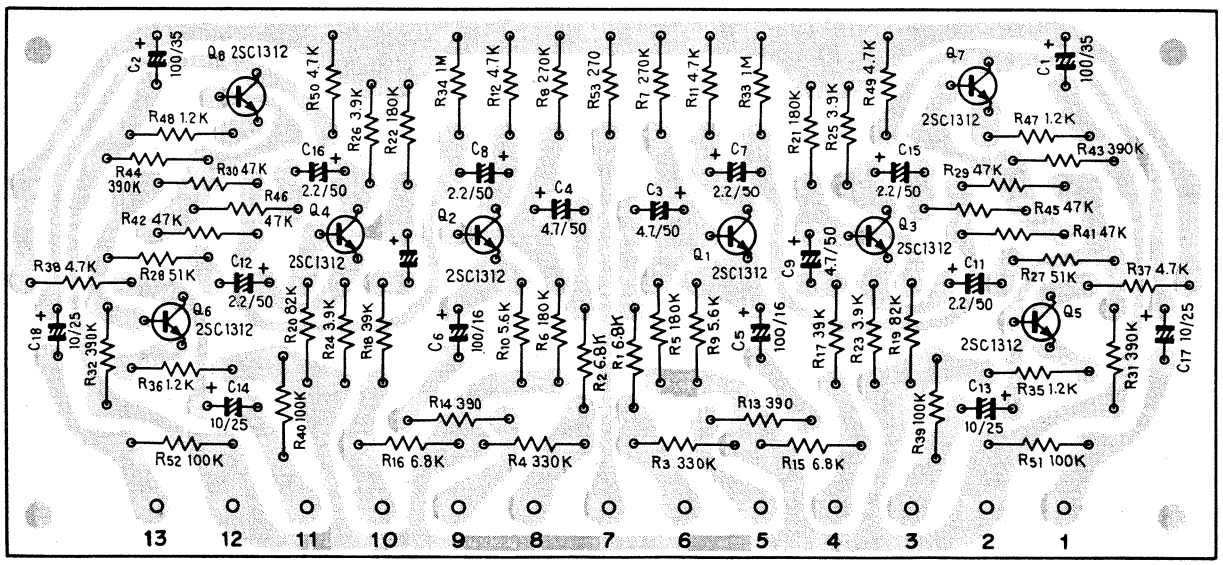


Foil side (AWM-048-0)



Parts List of Matrix Circuit Assembly (AWM-048-0)

CAPACITORS

Symbol	Description	Part No.	
C1	Electrolytic 100 35V	CEA 101P 35	
C2	Electrolytic 100 35V	CEA 101P 35	
C3	Electrolytic 4.7 50V	CEA 4R7P 50	
C4	Electrolytic 4.7 50V	CEA 4R7P 50	
C5	Electrolytic 100 16V	CEA 101P 16	
C6	Electrolytic 100 16V	CEA 101P 16	
C7	Electrolytic 2.2 50V	CEA 2R2P 50	
C8	Electrolytic 2.2 50V	CEA 2R2P 50	
C9	Electrolytic 4.7 50V	CEA 4R7P 50	
C10	Electrolytic 4.7 50V	CEA 4R7P 50	
C11	Electrolytic 2.2 50V	CEA 2R2P 50	
C12	Electrolytic 2.2 50V	CEA 2R2P 50	
C13	Electrolytic 10 25V	CEA 100P 25	
C14	Electrolytic 10 25V	CEA 100P 25	
C15	Electrolytic 2.2 50V	CEA 2R2P 50	
C16	Electrolytic 2.2 50V	CEA 2R2P 50	
C17	Electrolytic 10 25V	CEA 100P 25	
C18	Electrolytic 10 25V	CEA 100P 25	

RESISTORS

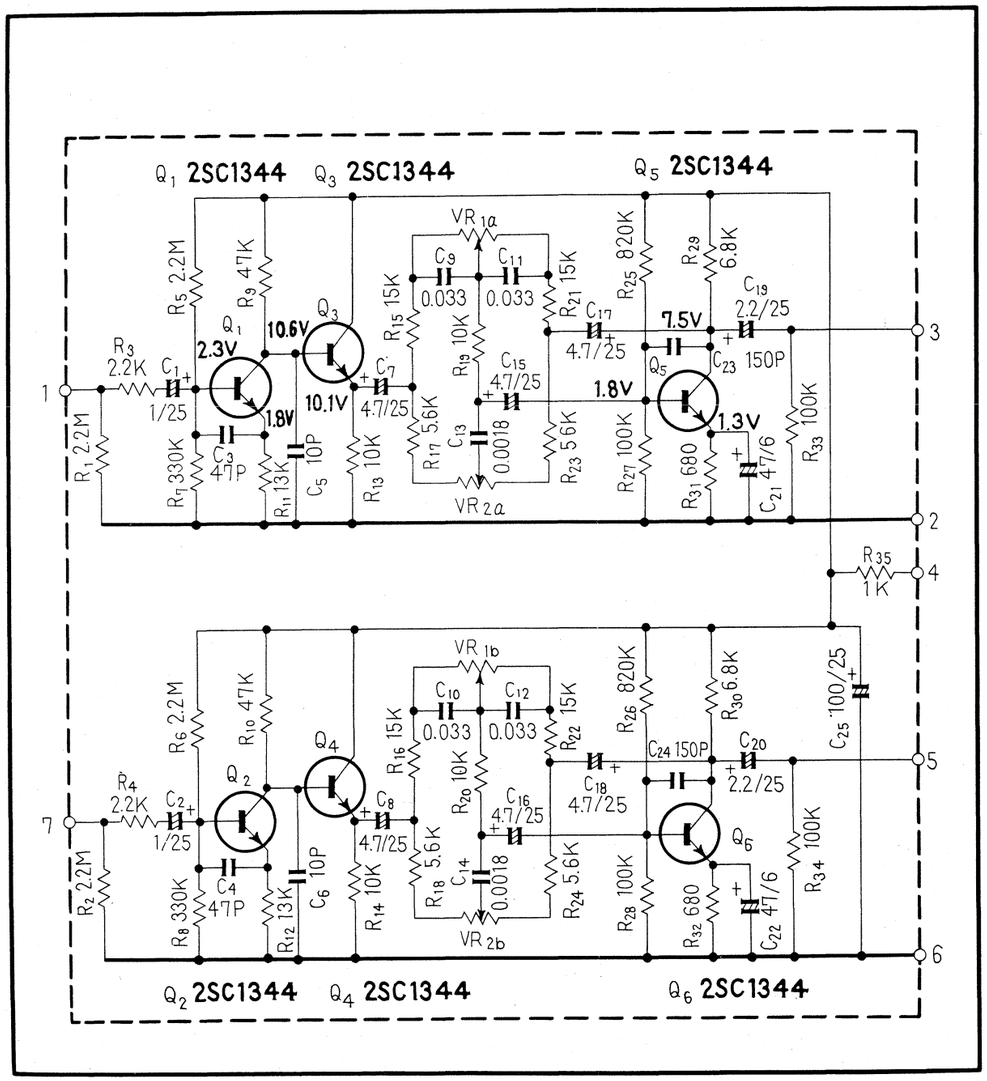
Symbol	Description	Part No.	
R1	Carbon film 6.8k	RD¼PM 682J	
R2	Carbon film 6.8k	RD¼PM 682J	
R3	Carbon film 330k	RD¼PM 334J	
R4	Carbon film 330k	RD¼PM 334J	
R5	Carbon film 180k	RD¼PM 184J	
R6	Carbon film 180k	RD¼PM 184J	
R7	Carbon film 270k	RD¼PM 274J	
R8	Carbon film 270k	RD¼PM 274J	
R9	Carbon film 5.6k	RD¼PM 562J	
R10	Carbon film 5.6k	RD¼PM 562J	
R11	Carbon film 4.7k	RD¼PM 472J	
R12	Carbon film 4.7k	RD¼PM 472J	
R13	Carbon film 390	RD¼PM 391J	
R14	Carbon film 390	RD¼PM 391J	
R15	Carbon film 6.8k	RD¼PM 682J	
R16	Carbon film 6.8k	RD¼PM 682J	
R17	Carbon film 39k	RD¼PM 393J	
R18	Carbon film 39k	RD¼PM 393J	
R19	Carbon film 82k	RD¼PM 823J	
R20	Carbon film 82k	RD¼PM 823J	
R21	Carbon film 180k	RD¼PM 184J	
R22	Carbon film 180k	RD¼PM 184J	
R23	Carbon film 3.9k	RD¼PM 392J	
R24	Carbon film 3.9k	RD¼PM 392J	
R25	Carbon film 3.9k	RD¼PM 392J	
R26	Carbon film 3.9k	RD¼PM 392J	
R27	Carbon film 51k	RD¼PM 513J	

Symbol	Description	Part No.	
R28	Carbon film 51k	RD¼PM 513J	
R29	Carbon film 47k	RD¼PM 473J	
R30	Carbon film 47k	RD¼PM 473J	
R31	Carbon film 390k	RD¼PM 394J	
R32	Carbon film 390k	RD¼PM 394J	
R33	Carbon film 1M	RD¼PM 105J	
R34	Carbon film 1M	RD¼PM 105J	
R35	Carbon film 1.2k	RD¼PM 122J	
R36	Carbon film 1.2k	RD¼PM 122J	
R37	Carbon film 4.7k	RD¼PM 472J	
R38	Carbon film 4.7k	RD¼PM 472J	
R39	Carbon film 100k	RD¼PM 104J	
R40	Carbon film 100k	RD¼PM 104J	
R41	Carbon film 47k	RD¼PM 473J	
R42	Carbon film 47k	RD¼PM 473J	
R43	Carbon film 390k	RD¼PM 394J	
R44	Carbon film 390k	RD¼PM 394J	
R45	Carbon film 47k	RD¼PM 473J	
R46	Carbon film 47k	RD¼PM 473J	
R47	Carbon film 1.2k	RD¼PM 122J	
R48	Carbon film 1.2k	RD¼PM 122J	
R49	Carbon film 4.7k	RD¼PM 472J	
R50	Carbon film 4.7k	RD¼PM 472J	
R51	Carbon film 100k	RD¼PM 104J	
R52	Carbon film 100k	RD¼PM 104J	
R53	Carbon film 270	RD¼PM 271J	

SEMICONDUCTORS

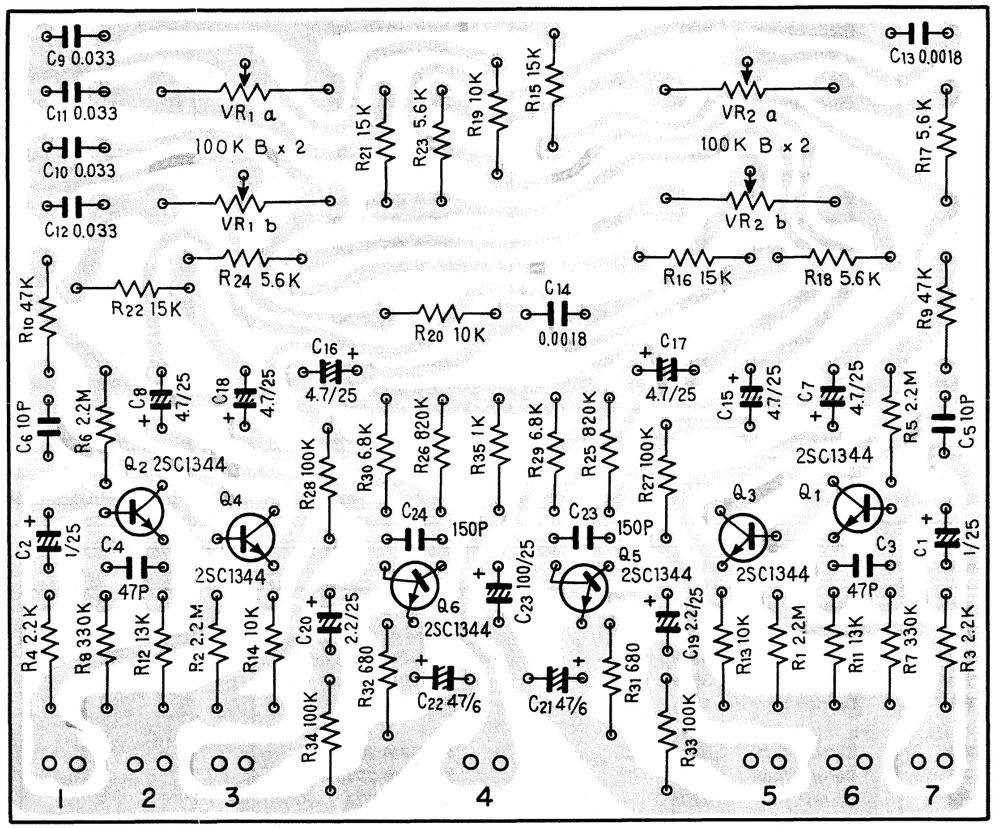
Symbol	Description	Part No.	
Q1	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q2	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q3	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q4	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q5	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q6	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q7	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		
Q8	Transistor 2SC1327-T or U (2SC1312-G or H) (2SC1344-E or F)		

12.5 CONTROL AMPLIFIER ASSEMBLY (AWG-024-0)



2SC1344

Foil side (AWM-024-0)



Parts List of Control Amplifier Assembly (AWG-024-0)

CAPACITORS

Symbol	Description			Part No.	
C1	Electrolytic	1	25V	CSSA 010M 25	
C2	Electrolytic	1	25V	CSSA 010M 25	
C3	Ceramic	47p	50V	CCDSL 470K 50	
C4	Ceramic	47p	50V	CCDSL 470K 50	
C5	Ceramic	10p	50V	CCDSL 100K 50	
C6	Ceramic	10p	50V	CCDSL 100K 50	
C7	Electrolytic	4.7	25V	CEA 4R7P 25	
C8	Electrolytic	4.7	25V	CEA 4R7P 25	
C9	Mylar	0.033	50V	CQMA 333K 50	
C10	Mylar	0.033	50V	CQMA 333K 50	
C11	Mylar	0.033	50V	CQMA 333K 50	
C12	Mylar	0.033	50V	CQMA 333K 50	
C13	Mylar	0.0018	50V	CQMA 182K 50	
C14	Mylar	0.0018	50V	CQMA 182K 50	
C15	Electrolytic	4.7	25V	CEA 4R7P 25	
C16	Electrolytic	4.7	25V	CEA 4R7P 25	
C17	Electrolytic	4.7	25V	CEA 4R7P 25	
C18	Electrolytic	4.7	25V	CSSA 4R7M 25	
C19	Electrolytic	2.2	25V	CSSA 2R2M 25	
C20	Electrolytic	2.2	25V	CSSA 2R2M 25	
C21	Electrolytic	47	6V	CEA 470P 6	
C22	Electrolytic	47	6V	CEA 470P 6	
C23	Ceramic	150p	50V	CCDSL 151K 50	
C24	Ceramic	150p	50V	CCDSL 151K 50	
C25	Electrolytic	100	25V	CEA 101P 25	

RESISTORS AND POTENTIOMETERS

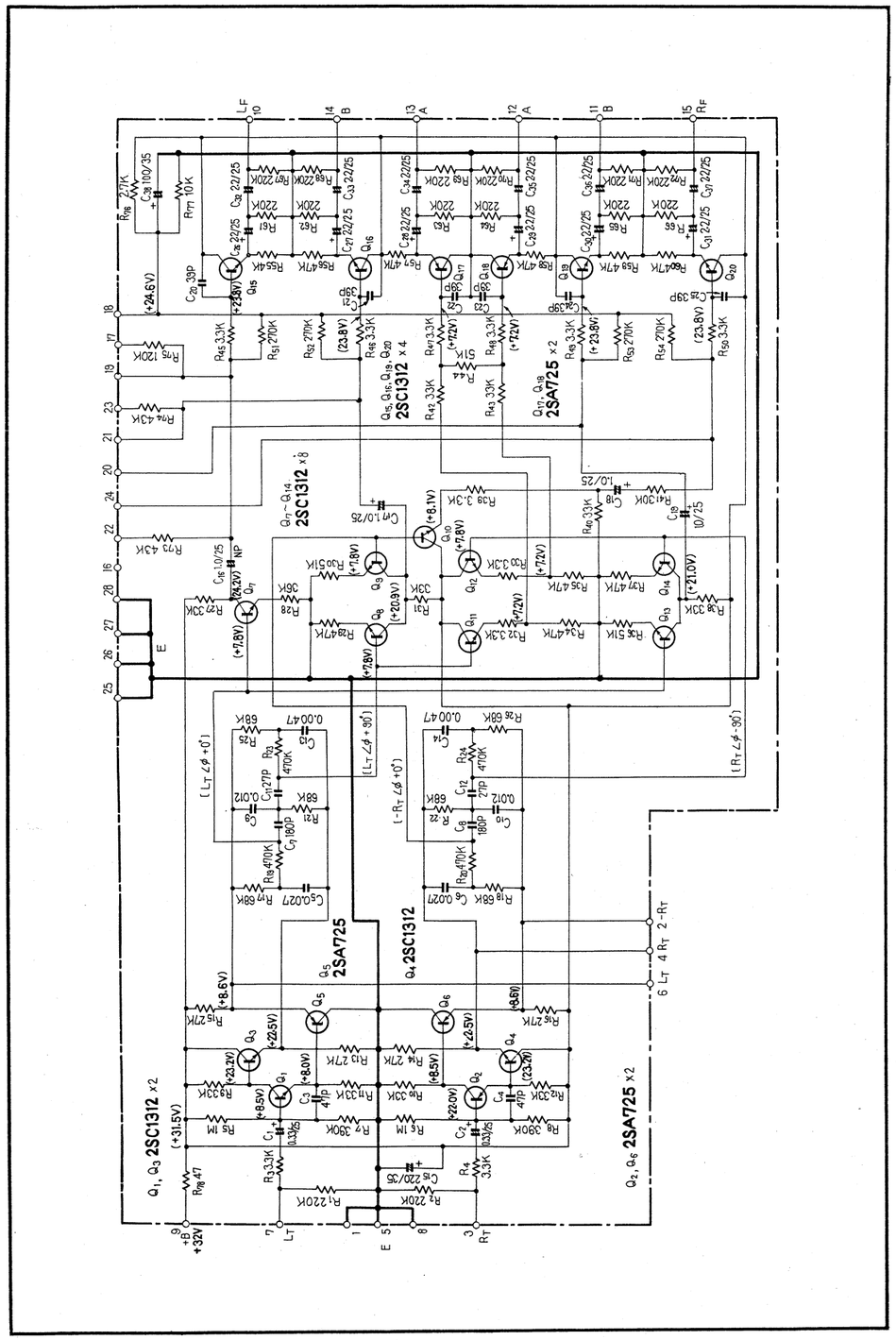
Symbol	Description		Part No.	
VR1	Variable resistor	100k-B	ACV-110-0	
VR2	Variable resistor	100k-B	ACV-110-0	
R1	Carbon film	2.2M	RD¼PM 225J	
R2	Carbon film	2.2M	RD¼PM 225J	
R3	Carbon film	2.2k	RD¼PM 222J	
R4	Carbon film	2.2k	RD¼PM 222J	
R5	Carbon film	2.2M	RD¼PM 225J	
R6	Carbon film	2.2M	RD¼PM 225J	
R7	Carbon film	330k	RD¼PM 334J	
R8	Carbon film	330k	RD¼PM 334J	
R9	Carbon film	47k	RD¼PM 473J	
R10	Carbon film	47k	RD¼PM 473J	
R11	Carbon film	13k	RD¼PM 133J	
R12	Carbon film	13k	RD¼PM 133J	
R13	Carbon film	10k	RD¼PM 103J	
R14	Carbon film	10k	RD¼PM 103J	
R15	Carbon film	15k	RD¼PM 153J	

Symbol	Description	Part No.	
R16	Carbon film 15k	RD¼PM 153J	
R17	Carbon film 5.6k	RD¼PM 562J	
R18	Carbon film 5.6k	RD¼PM 562J	
R19	Carbon film 10k	RD¼PM 103J	
R20	Carbon film 10k	RD¼PM 103J	
R21	Carbon film 15k	RD¼PM 153J	
R22	Carbon film 15k	RD¼PM 153J	
R23	Carbon film 5.6k	RD¼PM 562J	
R24	Carbon film 5.6k	RD¼PM 562J	
R25	Carbon film 820k	RD¼PM 824J	
R26	Carbon film 820k	RD¼PM 824J	
R27	Carbon film 100k	RD¼PM 104J	
R28	Carbon film 100k	RD¼PM 104J	
R29	Carbon film 6.8k	RD¼PM 682J	
R30	Carbon film 6.8k	RD¼PM 682J	
R31	Carbon film 680	RD¼PM 681J	
R32	Carbon film 680	RD¼PM 681J	
R33	Carbon film 100k	RD¼PM 104J	
R34	Carbon film 100k	RD¼PM 104J	
R35	Carbon film 1k	RD¼PM 102J	

SEMICONDUCTORS

Symbol	Description	Part No.	
Q1	Transistor 2SC1344-E or D		
Q2	Transistor 2SC1344-E or D		
Q3	Transistor 2SC1344-E or D		
Q4	Transistor 2SC1344-E or D		
Q5	Transistor 2SC1344-E or D		
Q6	Transistor 2SC1344-E or D		

12.6 DECODER CIRCUIT ASSEMBLY (AWM-031-0)

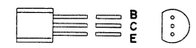


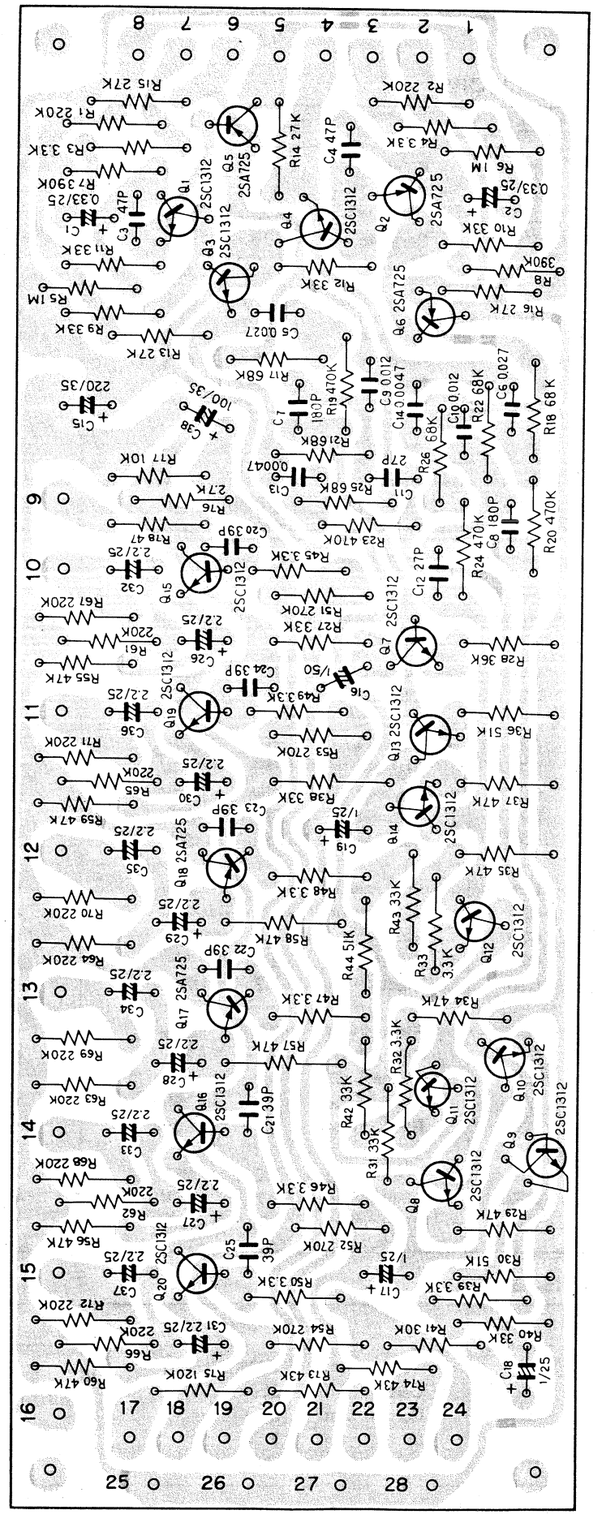
Foil side (AWM-031-0)

2SA725
2SC1312

2SA763P

2SC1327





Parts List of Decoder Circuit Assembly (AWM-031-0)

CAPACITORS

Symbol	Description			Part No.	
C1	Electrolytic	0.33	25V	CSSA R33M 25	
C2	Electrolytic	0.33	25V	CSSA R33M 25	
C3	Ceramic	47p	50V	CCDSL 470K 50	
C4	Ceramic	47p	50V	CCDSL 470K 50	
C5	Mylar	0.027	50V	CQMA 273J 50	
C6	Mylar	0.027	50V	CQMA 273J 50	
C7	Ceramic	180p	50V	CCDSL 181J 50	
C8	Ceramic	180p	50V	CCDSL 181J 50	
C9	Mylar	0.012	50V	CQMA 123J 50	
C10	Mylar	0.012	50V	CQMA 123J 50	
C11	Ceramic	27p	50V	CCDSL 270J 50	
C12	Ceramic	27p	50V	CCDSL 270J 50	
C13	Mylar	0.0047	50V	CQMA 472J 50	
C14	Mylar	0.0047	50V	CQMA 472J 50	
C15	Electrolytic	220	35V	CEA 221P 35	
C16	Electrolytic	1	25V	CEA 010M 25NP	
C17	Electrolytic	1	25V	CSSA 010M 25	
C18	Electrolytic	1	25V	CSSA 010M 25	
C19	Electrolytic	1	25V	CSSA 010M 25	
C20	Ceramic	39p	50V	CCDSL 390K 50	
C21	Ceramic	39p	50V	CCDSL 390K 50	
C22	Ceramic	39p	50V	CCDSL 390K 50	
C23	Ceramic	39p	50V	CCDSL 390K 50	
C24	Ceramic	39p	50V	CCDSL 390K 50	
C25	Ceramic	39p	50V	CCDSL 390K 50	
C26	Electrolytic	2.2	25V	CSSA 2R2M 25	
C27	Electrolytic	2.2	25V	CSSA 2R2M 25	
C28	Electrolytic	2.2	25V	CSSA 2R2M 25	
C29	Electrolytic	2.2	25V	CSSA 2R2M 25	
C30	Electrolytic	2.2	25V	CSSA 2R2M 25	
C31	Electrolytic	2.2	25V	CSSA 2R2M 25	
C32	Electrolytic	2.2	25V	CEA 2R2M 25NP	
C33	Electrolytic	2.2	25V	CEA 2R2M 25NP	
C34	Electrolytic	2.2	25V	CEA 2R2M 25NP	
C35	Electrolytic	2.2	25V	CEA 2R2M 25NP	
C36	Electrolytic	2.2	25V	CEA 2R2M 25NP	
C37	Electrolytic	2.2	25V	CEA 2R2M 25NP	
C38	Electrolytic	100	35V	CEA 101P 35	

RESISTORS

Symbol	Description		Part No.	
R1	Carbon film	220k	RD¼PM 224J	
R2	Carbon film	220k	RD¼PM 224J	
R3	Carbon film	3.3k	RD¼PM 332J	
R4	Carbon film	3.3k	RD¼PM 332J	
R5	Carbon film	1M	RD¼PM 105J	
R6	Carbon film	1M	RD¼PM 105J	
R7	Carbon film	390k	RD¼PM 394J	
R8	Carbon film	390k	RD¼PM 394J	
R9	Carbon film	33k	RD¼PM 333J	
R10	Carbon film	33k	RD¼PM 333J	
R11	Carbon film	33k	RD¼PM 333J	
R12	Carbon film	33k	RD¼PM 333J	
R13	Carbon film	27k	RD¼PM 273J	
R14	Carbon film	27k	RD¼PM 273J	
R15	Carbon film	27k	RD¼PM 273J	
R16	Carbon film	27k	RD¼PM 273J	
R17	Carbon film	68k	RD¼PM 683J	
R18	Carbon film	68k	RD¼PM 683J	
R19	Carbon film	470k	RD¼PM 474J	
R20	Carbon film	470k	RD¼PM 474J	
R21	Carbon film	68k	RD¼PM 683J	
R22	Carbon film	68k	RD¼PM 683J	
R23	Carbon film	470k	RD¼PM 474J	
R24	Carbon film	470k	RD¼PM 474J	
R25	Carbon film	68k	RD¼PM 683J	
R26	Carbon film	68k	RD¼PM 683J	
R27	Carbon film	33k	RD¼PM 333J	
R28	Carbon film	36k	RD¼PM 363J	
R29	Carbon film	47k	RD¼PM 473J	
R30	Carbon film	51k	RD¼PM 513J	
R31	Carbon film	33k	RD¼PM 333J	
R32	Carbon film	3.3k	RD¼PM 332J	
R33	Carbon film	3.3k	RD¼PM 332J	
R34	Carbon film	47k	RD¼PM 473J	
R35	Carbon film	47k	RD¼PM 473J	
R36	Carbon film	51k	RD¼PM 513J	
R37	Carbon film	47k	RD¼PM 473J	
R38	Carbon film	33k	RD¼PM 333J	
R39	Carbon film	3.3k	RD¼PM 332J	
R40	Carbon film	33k	RD¼PM 333J	
R41	Carbon film	30k	RD¼PM 303J	
R42	Carbon film	33k	RD¼PM 333J	
R43	Carbon film	33k	RD¼PM 333J	
R44	Carbon film	51k	RD¼PM 513J	
R45	Carbon film	3.3k	RD¼PM 332J	
R46	Carbon film	3.3k	RD¼PM 332J	
R47	Carbon film	3.3k	RD¼PM 332J	
R48	Carbon film	3.3k	RD¼PM 332J	
R49	Carbon film	3.3k	RD¼PM 332J	
R50	Carbon film	3.3k	RD¼PM 332J	
R51	Carbon film	270k	RD¼PM 274J	
R52	Carbon film	270k	RD¼PM 274J	
R53	Carbon film	270k	RD¼PM 274J	
R54	Carbon film	270k	RD¼PM 274J	
R55	Carbon film	47k	RD¼PM 473J	

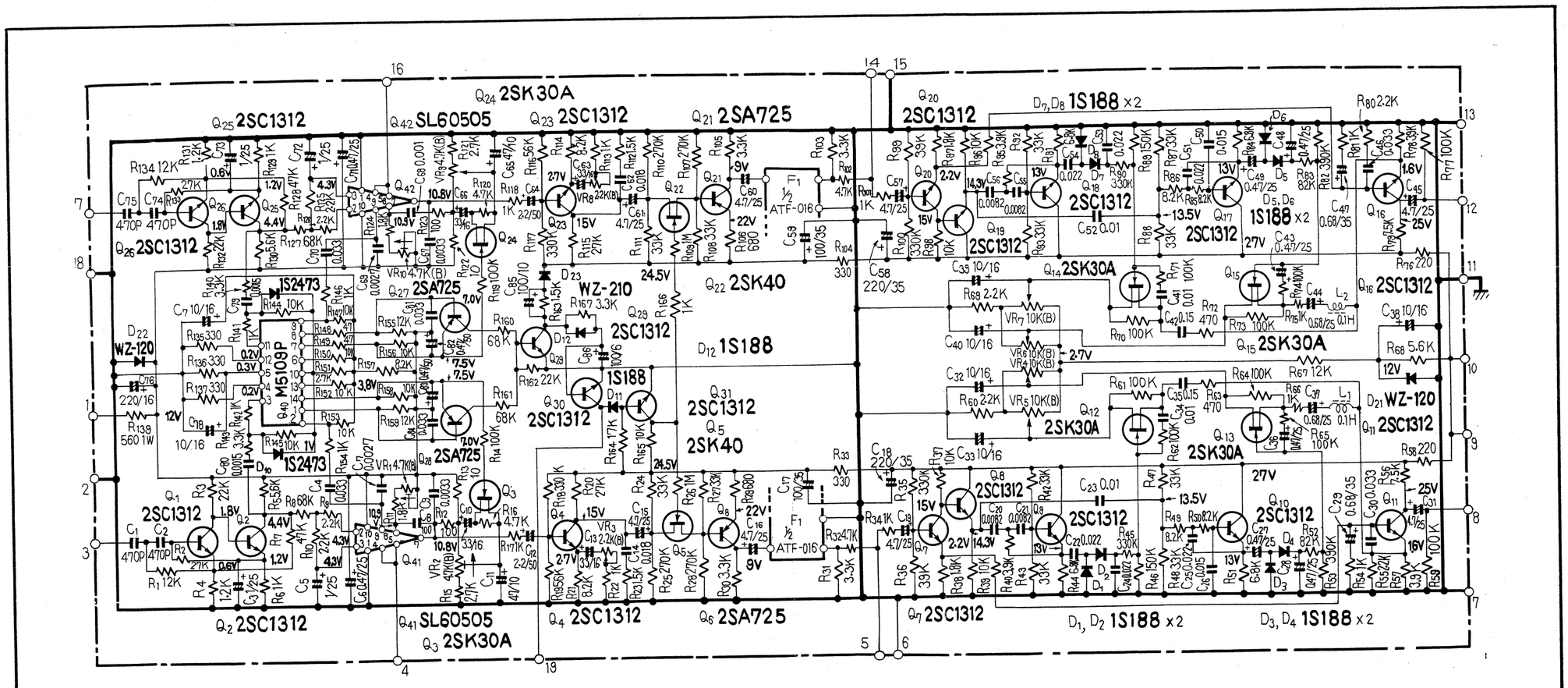
Symbol	Description	Part No.	
R56	Carbon film 47k	RD¼PM 473J	
R57	Carbon film 47k	RD¼PM 473J	
R58	Carbon film 47k	RD¼PM 473J	
R59	Carbon film 47k	RD¼PM 473J	
R60	Carbon film 47k	RD¼PM 473J	
R61	Carbon film 220k	RD¼PM 224J	
R62	Carbon film 220k	RD¼PM 224J	
R63	Carbon film 220k	RD¼PM 224J	
R64	Carbon film 220k	RD¼PM 224J	
R65	Carbon film 220k	RD¼PM 224J	
R66	Carbon film 220k	RD¼PM 224J	
R67	Carbon film 220k	RD¼PM 224J	
R68	Carbon film 220k	RD¼PM 224J	
R69	Carbon film 220k	RD¼PM 224J	
R70	Carbon film 220k	RD¼PM 224J	
R71	Carbon film 220k	RD¼PM 224J	
R72	Carbon film 220k	RD¼PM 224J	
R73	Carbon film 43k	RD¼PM 433J	
R74	Carbon film 43k	RD¼PM 433J	
R75	Carbon film 120k	RD¼PM 124J	
R76	Carbon film 2.7k	RD¼PM 272J	
R77	Carbon film 10k	RD¼PM 103J	
R78	Carbon film 47	RD¼PM 470J	

SEMICONDUCTORS

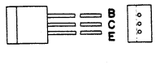
Symbol	Description	Part No.	
Q1	Transistor 2SC1327-S or T (2SC1312-F or G)		
Q2	Transistor 2SA763P-5 or 6 (2SA725-F or G)		
Q3	Transistor 2SC1327-S or T (2SC1312-F or G)		
Q4	Transistor 2SC1327-S or T (2SC1312-F or G)		
Q5	Transistor 2SA763P-5 or 6 (2SA725-F or G)		
Q6	Transistor 2SA763P-5 or 6 (2SA725-F or G)		
Q7	Transistor 2SC1327-T or U (2SC1312-G or H)		
Q8	Transistor 2SC1327-T or U (2SC1312-G or H)		
Q9	Transistor 2SC1327-T or U (2SC1312-G or H)		
Q10	Transistor 2SC1327-T or U (2SC1312-G or H)		

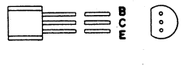
Symbol	Description	Part No.	
Q11	Transistor 2SC1327-T or U (2SC1312-G or H)		
Q12	Transistor 2SC1327-T or U (2SC1312-G or H)		
Q13	Transistor 2SC1327-T or U (2SC1312-G or H)		
Q14	Transistor 2SC1327-T or U (2SC1312-G or H)		
Q15	Transistor 2SC1327-S or T (2SC1312-F or G)		
Q16	Transistor 2SC1327-S or T (2SC1312-F or G)		
Q17	Transistor 2SA763P-5 or 6 (2SA725-F or G)		
Q18	Transistor 2SA763P-5 or 6 (2SA725-F or G)		
Q19	Transistor 2SC1327-S or T (2SC1312-F or G)		
Q20	Transistor 2SC1327-S or T (2SC1312-F or G)		

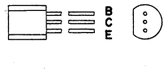
SUB-CHANNEL CIRCUIT ASSEMBLY (AWX-051-B)

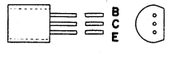


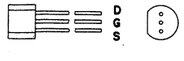
2SC1344 2SC1327 2SA763P 2SC1312 2SA725 2SK30A 2SK30AD 2SK40

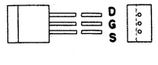


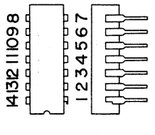




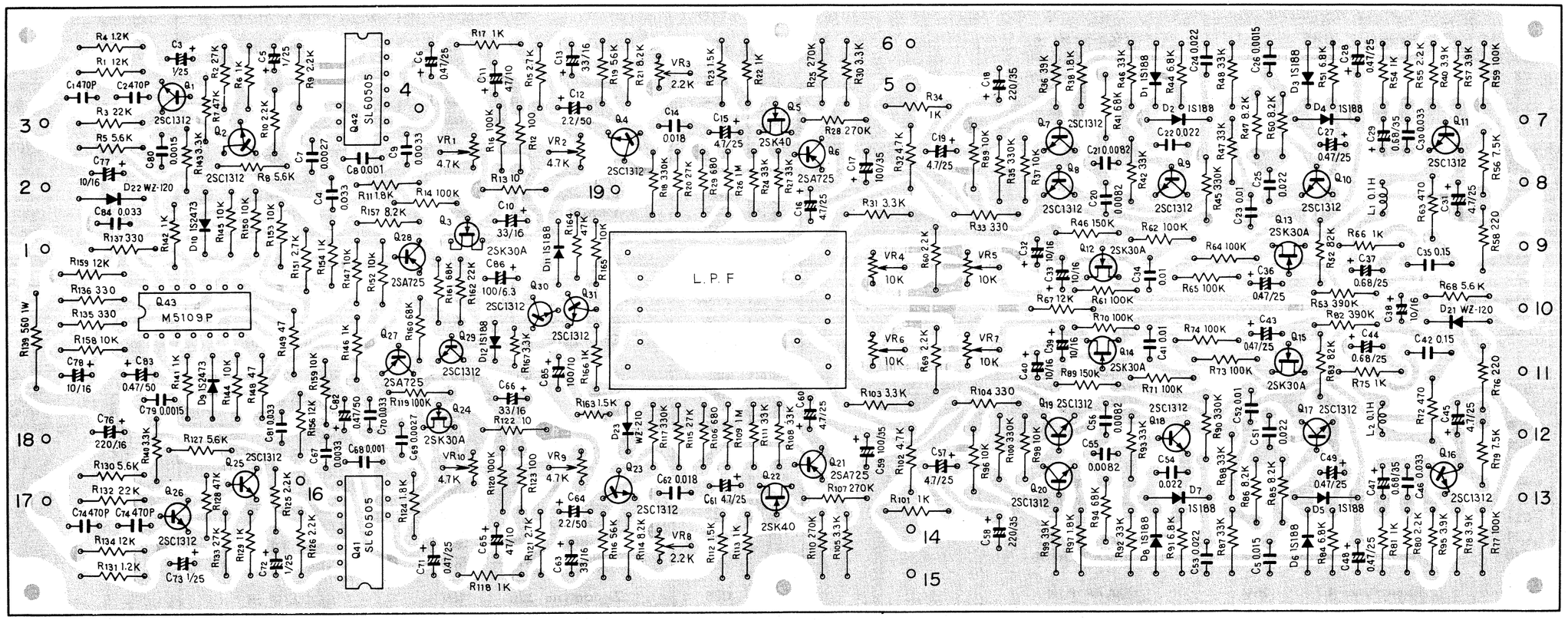








Foil side (AWX-051-B)



Parts List of Sub-Channel Circuit Assembly (AWX-051-B)

CAPACITORS

Symbol	Description			Part No.	
C1	Ceramic	470p	50V	CKDYB 471K 50	
C2	Ceramic	470p	50V	CKDYB 471K 50	
C3	Electrolytic	1	25V	CEA 010P 25	
C4	Mylar	0.033	50V	CQMA 333K 50	
C5	Electrolytic	1	25V	CEA 010P 25	
C6	Electrolytic	0.47	25V	CSSA R47M 25	
C7	Mylar	0.0027	50V	CQMA 272K 50	
C8	Mylar	0.001	50V	CQMA 102K 50	
C9	Mylar	0.0033	50V	CQMA 332K 50	
C10	Electrolytic	33	16V	CEA 330P 16	
C11	Electrolytic	47	10V	CEA 470P 10	
C12	Electrolytic	2.2	50V	CEA 2R2P 50	
C13	Electrolytic	33	16V	CEA 330P 16	
C14	Mylar	0.018	50V	CQMA 183K 50	
C15	Electrolytic	4.7	25V	CEA 4R7P 25	
C16	Electrolytic	4.7	25V	CEA 4R7P 25	
C17	Electrolytic	100	35V	CEA 101P 35	
C18	Electrolytic	220	35V	CEA 221P 35	
C19	Electrolytic	4.7	25V	CEA 4R7P 25	
C20	Mylar	0.0082	50V	CQMA 822K 50	
C21	Mylar	0.0082	50V	CQMA 822K 50	
C22	Mylar	0.022	50V	CQMA 223K 50	
C23	Mylar	0.01	50V	CQMA 103K 50	
C24	Mylar	0.022	50V	CQMA 223K 50	
C25	Mylar	0.022	50V	CQMA 223K 50	
C26	Mylar	0.015	50V	CQMA 153K 50	
C27	Electrolytic	0.47	25V	CSSA R47M 25	
C28	Electrolytic	0.47	25V	CSSA R47M 25	
C29	Electrolytic	0.68	35V	CSZA R68K 35	
C30	Mylar	0.033	50V	CQMA 333K 50	
C31	Electrolytic	4.7	25V	CEA 4R7P 25	
C32	Electrolytic	10	16V	CEA 100P 16	
C33	Electrolytic	10	16V	CEA 100P 16	
C34	Mylar	0.01	50V	CQMA 103K 50	
C35	Mylar	0.15	50V	CQMA 154K 50	
C36	Electrolytic	0.47	25V	CSSA R47M 25	
C37	Electrolytic	0.68	25V	CSSA R68M 25	
C38	Electrolytic	10	16V	CEA 100P 16	
C39	Electrolytic	10	16V	CEA 100P 16	
C40	Electrolytic	10	16V	CEA 100P 16	
C41	Mylar	0.01	50V	CQMA 103K 50	
C42	Mylar	0.15	50V	CQMA 154K 50	
C43	Electrolytic	0.47	25V	CSSA R47M 25	
C44	Electrolytic	0.68	25V	CSSA R68M 25	
C45	Electrolytic	4.7	25V	CEA 4R7P 25	

Symbol	Description			Part No.	
C46	Mylar	0.033	50V	CQMA 333K 50	
C47	Electrolytic	0.68	35V	CSZA R68K 35	
C48	Electrolytic	0.47	25V	CSSA R47M 25	
C49	Electrolytic	0.47	25V	CSSA R47M 25	
C50	Mylar	0.015	50V	CQMA 153K 50	
C51	Mylar	0.022	50V	CQMA 223K 50	
C52	Mylar	0.01	50V	CQMA 103K 50	
C53	Mylar	0.022	50V	CQMA 223K 50	
C54	Mylar	0.022	50V	CQMA 223K 50	
C55	Mylar	0.0082	50V	CQMA 822K 50	
C56	Mylar	0.0082	50V	CQMA 822K 50	
C57	Electrolytic	4.7	25V	CEA 4R7P 25	
C58	Electrolytic	220	35V	CEA 221P 35	
C59	Electrolytic	100	35V	CEA 101P 35	
C60	Electrolytic	4.7	25V	CEA 4R7P 25	
C61	Electrolytic	4.7	25V	CEA 4R7P 25	
C62	Mylar	0.018	50V	CQMA 183K 50	
C63	Electrolytic	33	16V	CEA 330P 16	
C64	Electrolytic	2.2	50V	CEA 2R2P 50	
C65	Electrolytic	47	10V	CEA 470P 10	
C66	Electrolytic	33	16V	CEA 330P 16	
C67	Mylar	0.0033	50V	CQMA 332K 50	
C68	Mylar	0.001	50V	CQMA 102K 50	
C69	Mylar	0.0027	50V	CQMA 272K 50	
C70	Mylar	0.033	50V	CQMA 333K 50	
C71	Electrolytic	0.47	25V	CSSA R47M 25	
C72	Electrolytic	1	25V	CEA 010P 25	
C73	Electrolytic	1	25V	CEA 010P 25	
C74	Ceramic	470p	50V	CKDYB 471K 50	
C75	Ceramic	470p	50V	CKDYB 471K 50	
C76	Electrolytic	220	16V	CEA 221P 16	
C77	Electrolytic	10	16V	CEA 100P 16	
C78	Electrolytic	10	16V	CEA 100P 16	
C79	Mylar	0.0015	50V	CQMA 152K 50	
C80	Mylar	0.0015	50V	CQMA 152K 50	
C81	Mylar	0.033	50V	CQMA 333K 50	
C82	Electrolytic	0.47	50V	CEA R47P 50	
C83	Electrolytic	0.47	50V	CEA R47P 50	
C84	Mylar	0.033	50V	CQMA 333K 50	
C85	Electrolytic	100	10V	CEA 101P 10	
C86	Electrolytic	100	6V	CEA 101P 6	

RESISTORS

Symbol	Description	Part No.	
R1	Carbon film 12k	RD¼PM 123J	
R2	Carbon film 27k	RD¼PM 273J	
R3	Carbon film 22k	RD¼PM 223J	
R4	Carbon film 1.2k	RD¼PM 122J	
R5	Carbon film 5.6k	RD¼PM 562J	
R6	Carbon film 1k	RD¼PM 102J	
R7	Carbon film 47k	RD¼PM 473J	
R8	Carbon film 5.6k	RD¼PM 562J	
R9	Carbon film 2.2k	RD¼PM 222J	
R10	Carbon film 2.2k	RD¼PM 222J	
R11	Carbon film 1.8k	RD¼PM 182J	
R12	Carbon film 100	RD¼PM 101J	
R13	Carbon film 1.5k	RD¼PM 152J	
R14	Carbon film 100k	RD¼PM 104J	
R15	Carbon film 3.3k	RD¼PM 332J	
R16	Carbon film 100k	RD¼PM 104J	
R17	Carbon film 1k	RD¼PM 102J	
R18	Carbon film 330k	RD¼PM 334J	
R19	Carbon film 56k	RD¼PM 563J	
R20	Carbon film 27k	RD¼PM 273J	
R21	Carbon film 8.2k	RD¼PM 822J	
R22	Carbon film 1k	RD¼PM 102J	
R23	Carbon film 1.5k	RD¼PM 152J	
R24	Carbon film 33k	RD¼PM 333J	
R25	Carbon film 270k	RD¼PM 274J	
R26	Carbon film 1M	RD¼PM 105J	
R27	Carbon film 33k	RD¼PM 333J	
R28	Carbon film 270k	RD¼PM 274J	
R29	Carbon film 680	RD¼PM 681J	
R30	Carbon film 3.3k	RD¼PM 332J	
R31	Carbon film 3.3k	RD¼PM 332J	
R32	Carbon film 4.7k	RD¼PM 472J	
R33	Carbon film 330	RD¼PM 331J	
R34	Carbon film 1k	RD¼PM 102J	
R35	Carbon film 330k	RD¼PM 334J	
R36	Carbon film 39k	RD¼PM 393J	
R37	Carbon film 10k	RD¼PM 103J	
R38	Carbon film 1.8k	RD¼PM 182J	
R39	Carbon film 10k	RD¼PM 103J	
R40	Carbon film 3.9k	RD¼PM 392J	
R41	Carbon film 68k	RD¼PM 683J	
R42	Carbon film 33k	RD¼PM 333J	
R43	Carbon film 33k	RD¼PM 333J	
R44	Carbon film 6.8k	RD¼PM 682J	
R45	Carbon film 330k	RD¼PM 334J	
R46	Carbon film 150k	RD¼PM 154J	
R47	Carbon film 33k	RD¼PM 333J	
R48	Carbon film 33k	RD¼PM 333J	
R49	Carbon film 8.2k	RD¼PM 822J	
R50	Carbon film 8.2k	RD¼PM 822J	

Symbol	Description	Part No.	
R51	Carbon film 6.8k	RD¼PM 682J	
R52	Carbon film 82k	RD¼PM 823J	
R53	Carbon film 390k	RD¼PM 394J	
R54	Carbon film 1k	RD¼PM 102J	
R55	Carbon film 2.2k	RD¼PM 222J	
R56	Carbon film 7.5k	RD¼PM 752J	
R57	Carbon film 3.9k	RD¼PM 392J	
R58	Carbon film 220	RD¼PM 221J	
R59	Carbon film 100k	RD¼PM 104J	
R60	Carbon film 2.2k	RD¼PM 222J	
R61	Carbon film 100k	RD¼PM 104J	
R62	Carbon film 100k	RD¼PM 104J	
R63	Carbon film 470	RD¼PM 471J	
R64	Carbon film 100k	RD¼PM 104J	
R65	Carbon film 100k	RD¼PM 104J	
R66	Carbon film 1k	RD¼PM 102J	
R67	Carbon film 12k	RD¼PM 123J	
R68	Carbon film 5.6k	RD¼PM 562J	
R69	Carbon film 2.2k	RD¼PM 222J	
R70	Carbon film 100k	RD¼PM 104J	
R71	Carbon film 100k	RD¼PM 104J	
R72	Carbon film 470	RD¼PM 471J	
R73	Carbon film 100k	RD¼PM 104J	
R74	Carbon film 100k	RD¼PM 104J	
R75	Carbon film 1k	RD¼PM 102J	
R76	Carbon film 220	RD¼PM 221J	
R77	Carbon film 100k	RD¼PM 104J	
R78	Carbon film 3.9k	RD¼PM 392J	
R79	Carbon film 7.5k	RD¼PM 752J	
R80	Carbon film 2.2k	RD¼PM 222J	
R81	Carbon film 1k	RD¼PM 102J	
R82	Carbon film 390k	RD¼PM 394J	
R83	Carbon film 82k	RD¼PM 823J	
R84	Carbon film 6.8k	RD¼PM 682J	
R85	Carbon film 8.2k	RD¼PM 822J	
R86	Carbon film 8.2k	RD¼PM 822J	
R87	Carbon film 33k	RD¼PM 333J	
R88	Carbon film 33k	RD¼PM 333J	
R89	Carbon film 150k	RD¼PM 154J	
R90	Carbon film 330k	RD¼PM 334J	
R91	Carbon film 6.8k	RD¼PM 682J	
R92	Carbon film 33k	RD¼PM 333J	
R93	Carbon film 33k	RD¼PM 333J	
R94	Carbon film 68k	RD¼PM 683J	
R95	Carbon film 3.9k	RD¼PM 392J	
R96	Carbon film 10k	RD¼PM 103J	
R97	Carbon film 1.8k	RD¼PM 182J	
R98	Carbon film 10k	RD¼PM 103J	
R99	Carbon film 39k	RD¼PM 393J	
R100	Carbon film 330k	RD¼PM 334J	

Symbol	Description	Part No.	
R101	Carbon film 1k	RD¼PM 102J	
R102	Carbon film 4.7k	RD¼PM 472J	
R103	Carbon film 3.3k	RD¼PM 332J	
R104	Carbon film 330	RD¼PM 331J	
R105	Carbon film 3.3k	RD¼PM 332J	
R106	Carbon film 680	RD¼PM 681J	
R107	Carbon film 270k	RD¼PM 274J	
R108	Carbon film 33k	RD¼PM 333J	
R109	Carbon film 1M	RD¼PM 105J	
R110	Carbon film 270k	RD¼PM 274J	
R111	Carbon film 33k	RD¼PM 333J	
R112	Carbon film 1.5k	RD¼PM 152J	
R113	Carbon film 1k	RD¼PM 102J	
R114	Carbon film 8.2k	RD¼PM 822J	
R115	Carbon film 27k	RD¼PM 273J	
R116	Carbon film 56k	RD¼PM 563J	
R117	Carbon film 330k	RD¼PM 334J	
R118	Carbon film 1k	RD¼PM 102J	
R119	Carbon film 100k	RD¼PM 104J	
R120	Carbon film 100k	RD¼PM 104J	
R121	Carbon film 10k	RD¼PM 103J	
R122	Carbon film 1.5k	RD¼PM 152J	
R123	Carbon film 100	RD¼PM 101J	
R124	Carbon film 1.8k	RD¼PM 182J	
R125	Carbon film 2.2k	RD¼PM 222J	
R126	Carbon film 2.2k	RD¼PM 222J	
R127	Carbon film 5.6k	RD¼PM 562J	
R128	Carbon film 47k	RD¼PM 473J	
R129	Carbon film 1k	RD¼PM 102J	
R130	Carbon film 5.6k	RD¼PM 562J	
R131	Carbon film 1.2k	RD¼PM 122J	
R132	Carbon film 22k	RD¼PM 223J	
R133	Carbon film 27k	RD¼PM 273J	
R134	Carbon film 12k	RD¼PM 123J	
R135	Carbon film 330	RD¼PM 331J	
R136	Carbon film 330	RD¼PM 331J	
R137	Carbon film 330	RD¼PM 331J	
R138			
R139	Metal oxide 560 1W	RS1P 561J	
R140	Carbon film 3.3k	RD¼PM 332J	
R141	Carbon film 1k	RD¼PM 102J	
R142	Carbon film 1k	RD¼PM 102J	
R143	Carbon film 3.3k	RD¼PM 332J	
R144	Carbon film 10k	RD¼PM 103J	
R145	Carbon film 10k	RD¼PM 103J	
R146	Carbon film 1k	RD¼PM 102J	
R147	Carbon film 10k	RD¼PM 103J	
R148	Carbon film 47	RD¼PM 470J	
R149	Carbon film 47	RD¼PM 470J	
R150	Carbon film 10k	RD¼PM 103J	

Symbol	Description	Part No.	
R151	Carbon film 2.7k	RD¼PM 272J	
R152	Carbon film 10k	RD¼PM 103J	
R153	Carbon film 10k	RD¼PM 103J	
R154	Carbon film 1k	RD¼PM 102J	
R155	Carbon film 12k	RD¼PM 123J	
R156	Carbon film 10k	RD¼PM 103J	
R157	Carbon film 8.2k	RD¼PM 822J	
R158	Carbon film 10k	RD¼PM 103J	
R159	Carbon film 12k	RD¼PM 123J	
R160	Carbon film 68k	RD¼PM 683J	
R161	Carbon film 68k	RD¼PM 683J	
R162	Carbon film 22k	RD¼PM 223J	
R163	Carbon film 1.5k	RD¼PM 152J	
R164	Carbon film 47k	RD¼PM 473J	
R165	Carbon film 10k	RD¼PM 103J	
R166	Carbon film 1k	RD¼PM 102J	
R167	Carbon film 3.3k	RD¼PM 332J	

POTENTIOMETERS

Symbol	Description	Part No.	
VR1	Semi-fixed 4.7k-B	C92-051-0	
VR2	Semi-fixed 4.7k-B	C92-051-0	
VR3	Semi-fixed 2.2k-B	ACP-001-0	
VR4	Semi-fixed 10k-B	C92-049-0	
VR5	Semi-fixed 10k-B	C92-049-0	
VR6	Semi-fixed 10k-B	C92-049-0	
VR7	Semi-fixed 10k-B	C92-049-0	
VR8	Semi-fixed 2.2k-B	ACP-001-0	
VR9	Semi-fixed 4.7k-B	C92-051-0	
VR10	Semi-fixed 4.7k-B	C92-051-0	

SEMICONDUCTORS

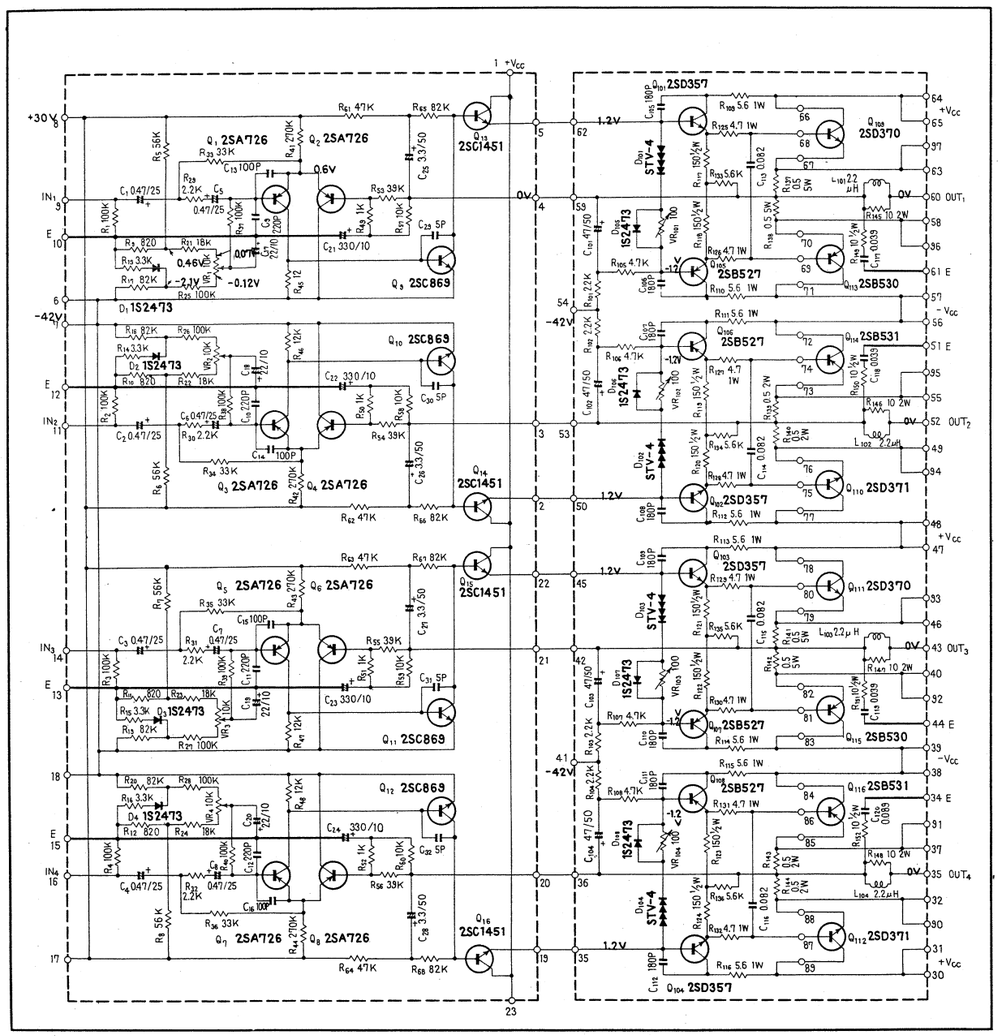
Symbol	Description	Part No.	
Q1	Transistor 2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)		
Q2	Transistor 2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)		
Q3	FET 2SK30A-Y or GR (2SK30AD)		
Q4	Transistor 2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)		
Q5	FET 2SK40-D or C (2SK30A-Y or GR)		
Q6	Transistor 2SA763P-5 or 6 (2SA725-F or G)		
Q7	Transistor 2SC1327-S or T (2SC1327-F or G) (2SC1344-D or E)		
Q8	Transistor 2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)		
Q9	Transistor 2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)		
Q10	Transistor 2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)		
Q11	Transistor 2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)		
Q12	FET 2SK30A-Y or GR (2SK30AD)		
Q13	FET 2SK30A-GR		
Q14	FET 2SK30A-Y or GR (2SK30AD)		
Q15	FET 2SK30A-Y or GR (2SK30AD)		
Q16	Transistor 2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)		
Q17	Transistor 2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)		
Q18	Transistor 2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)		
Q19	Transistor 2SC1327-T (2SC1312-F or G) (2SC1344-D or E)		
Q20	Transistor 2SC1327-T (2SC1312-F or G) (2SC1344-D or E)		
Q21	Transistor 2SA763P-5 or 6 (2SA725-F or G)		

Symbol	Description	Part No.	
Q22	FET 2SK40-D or C (2SK30A-Y or GR)		
Q23	Transistor 2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)		
Q24	FET 2SK30A-GR		
Q25	Transistor 2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)		
Q26	Transistor 2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)		
Q27	Transistor 2SA763P-5 or 6 (2SA725-F or G)		
Q28	Transistor 2SA763P-5 or 6 (2SA725-F or G)		
Q29	Transistor 2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)		
Q30	Transistor 2SC1327-U (2SC1312-H) (2SC1344-F)		
Q31	Transistor 2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)		
Q41	IC SL60505 (M51361P)		
Q42	IC SL60505 (M51361P)		
Q43	IC M5109P		
D1	Diode 1S188 FM-1		
D2	Diode 1S188 FM-1		
D3	Diode 1S188 FM-1		
D4	Diode 1S188 FM-1		
D5	Diode 1S188 FM-1		
D6	Diode 1S188 FM-1		
D7	Diode 1S188 FM-1		
D8	Diode 1S188 FM-1		
D9	Diode 1S2473		
D10	Diode 1S2473		
D11	Diode 1S188 FM-1		
D12	Diode 1S188 FM-1		
D21	Zener Diode WZ-120		
D22	Zener Diode WZ-120		
D23	Zener Diode WZ-210		

FILTER AND COILS

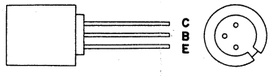
Symbol	Description	Part No.	
F1	Low-pass filter	ATF-016-0	
L1	Choke coil 104K	ATM-008-0	
L2	Choke coil 104K	ATM-008-0	

12.8 POWER AMPLIFIER ASSEMBLY (AWH-028-0)



Foil side (AWH-028-0) No. 1

2SC1451



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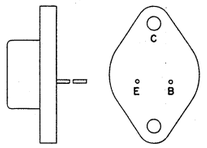

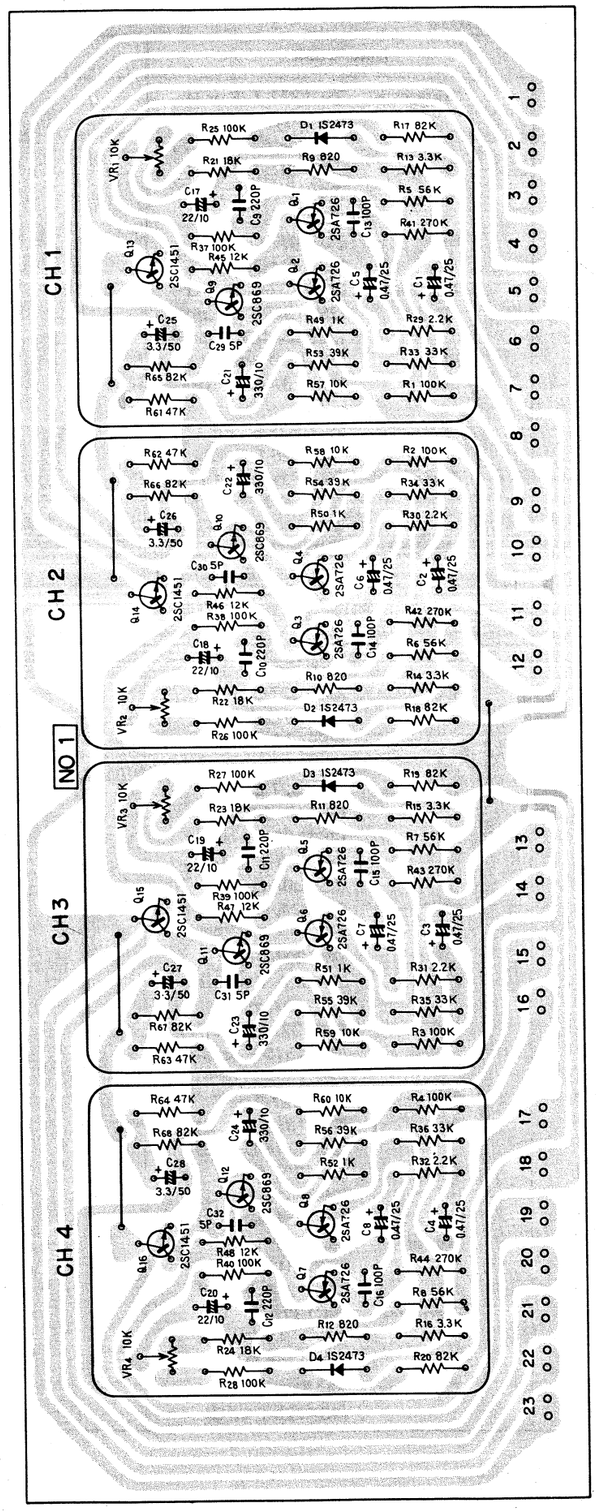

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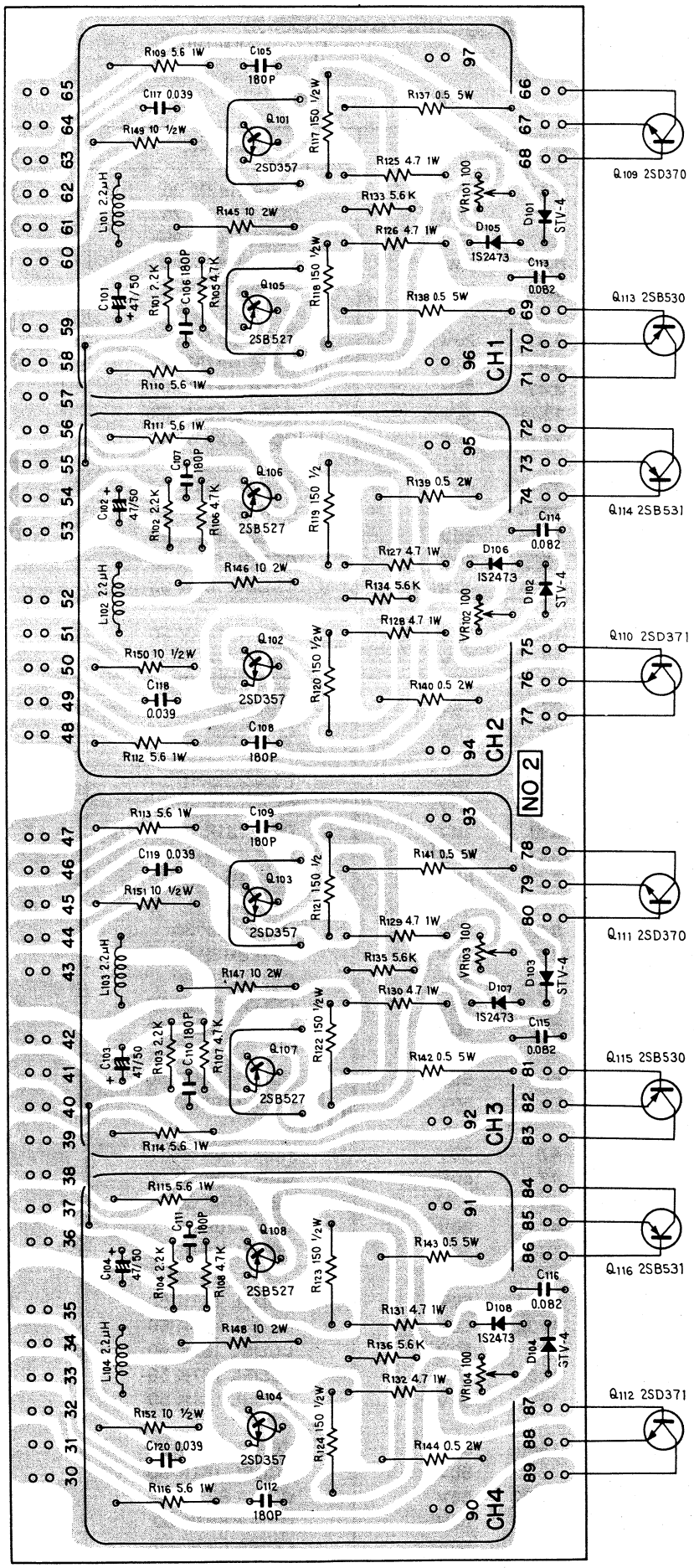


Parts List of Power Amplifier Assembly (AWH-028-0)

CAPACITORS

Symbol	Description			Part No.	
C1	Electrolytic	0.47	25V	CSSA R47M 25	
C2	Electrolytic	0.47	25V	CSSA R47M 25	
C3	Electrolytic	0.47	25V	CSSA R47M 25	
C4	Electrolytic	0.47	25V	CSSA R47M 25	
C5	Electrolytic	0.47	25V	CSSA R47M 25	
C6	Electrolytic	0.47	25V	CSSA R47M 25	
C7	Electrolytic	0.47	25V	CSSA R47M 25	
C8	Electrolytic	0.47	25V	CSSA R47M 25	
C9	Ceramic	220p	50V	CCDSL 221K 50	
C10	Ceramic	220p	50V	CCDSL 221K 50	
C11	Ceramic	220p	50V	CCDSL 221K 50	
C12	Ceramic	220p	50V	CCDSL 221K 50	
C13	Ceramic	100p	50V	CCDSL 101K 50	
C14	Ceramic	100p	50V	CCDSL 101K 50	
C15	Ceramic	100p	50V	CCDSL 101K 50	
C16	Ceramic	100p	50V	CCDSL 101K 50	
C17	Electrolytic	22	10V	CEA 220P 10	
C18	Electrolytic	22	10V	CEA 220P 10	
C19	Electrolytic	22	10V	CEA 220P 10	
C20	Electrolytic	22	10V	CEA 220P 10	
C21	Electrolytic	330	10V	CEA 331P 10	
C22	Electrolytic	330	10V	CEA 331P 10	
C23	Electrolytic	330	10V	CEA 331P 10	
C24	Electrolytic	330	10V	CEA 331P 10	
C25	Electrolytic	3.3	50V	CEA 3R3P 50	
C26	Electrolytic	3.3	50V	CEA 3R3P 50	
C27	Electrolytic	3.3	50V	CEA 3R3P 50	
C28	Electrolytic	3.3	50V	CEA 3R3P 50	
C29	Ceramic	5p	50V	CCDSL 050D 50	
C30	Ceramic	5p	50V	CCDSL 050D 50	
C31	Ceramic	5p	50V	CCDSL 050D 50	
C32	Ceramic	5p	50V	CCDSL 050D 50	
C101	Electrolytic	47	50V	CEA 470P 50	
C102	Electrolytic	47	50V	CEA 470P 50	
C103	Electrolytic	47	50V	CEA 470P 50	
C104	Electrolytic	47	50V	CEA 470P 50	
C105	Ceramic	180p	50V	CCDSL 181K 50	
C106	Ceramic	180p	50V	CCDSL 181K 50	
C107	Ceramic	180p	50V	CCDSL 181K 50	
C108	Ceramic	180p	50V	CCDSL 181K 50	
C109	Ceramic	180p	50V	CCDSL 181K 50	
C110	Ceramic	180p	50V	CCDSL 181K 50	
C111	Ceramic	180p	50V	CCDSL 181K 50	
C112	Ceramic	180p	50V	CCDSL 181K 50	
C113	Mylar	0.082	50V	CQMA 823K 50	
C114	Mylar	0.082	50V	CQMA 823K 50	
C115	Mylar	0.082	50V	CQMA 823K 50	

Symbol	Description			Part No.	
C116	Mylar	0.082	50V	CQMA 823K 50	
C117	Mylar	0.039	50V	CQMA 393K 50	
C118	Mylar	0.039	50V	CQMA 393K 50	
C119	Mylar	0.039	50V	CQMA 393K 50	
C120	Mylar	0.039	50V	CQMA 393K 50	

RESISTORS AND POTENTIOMETERS

Symbol	Description		Part No.	
VR1	Variable resistor	10k-B	ACP-029-0	
VR2	Variable resistor	10k-B	ACP-029-0	
VR3	Variable resistor	10k-B	ACP-029-0	
VR4	Variable resistor	10k-B	ACP-029-0	
VR101	Variable resistor	100-B	ACP-019-0	
VR102	Variable resistor	100-B	ACP-019-0	
VR103	Variable resistor	100-B	ACP-019-0	
VR104	Variable resistor	100-B	ACP-019-0	
R1	Carbon film	100k	RD¼PM 104J	
R2	Carbon film	100k	RD¼PM 104J	
R3	Carbon film	100k	RD¼PM 104J	
R4	Carbon film	100k	RD¼PM 104J	
R5	Carbon film	56k	RD¼PM 563J	
R6	Carbon film	56k	RD¼PM 563J	
R7	Carbon film	56k	RD¼PM 563J	
R8	Carbon film	56k	RD¼PM 563J	
R9	Carbon film	820	RD¼PM 821J	
R10	Carbon film	820	RD¼PM 821J	
R11	Carbon film	820	RD¼PM 821J	
R12	Carbon film	820	RD¼PM 821J	
R13	Carbon film	3.3k	RD¼PM 332J	
R14	Carbon film	3.3k	RD¼PM 332J	
R15	Carbon film	3.3k	RD¼PM 332J	
R16	Carbon film	3.3k	RD¼PM 332J	
R17	Carbon film	82k	RD¼PM 823J	
R18	Carbon film	82k	RD¼PM 823J	
R19	Carbon film	82k	RD¼PM 823J	
R20	Carbon film	82k	RD¼PM 823J	
R21	Carbon film	18k	RD¼PM 183J	
R22	Carbon film	18k	RD¼PM 183J	
R23	Carbon film	18k	RD¼PM 183J	
R24	Carbon film	18k	RD¼PM 183J	
R25	Carbon film	100k	RD¼PM 104J	
R26	Carbon film	100k	RD¼PM 104J	
R27	Carbon film	100k	RD¼PM 104J	
R28	Carbon film	100k	RD¼PM 104J	
R29	Carbon film	2.2k	RD¼PM 222J	
R30	Carbon film	2.2k	RD¼PM 222J	
R31	Carbon film	2.2k	RD¼PM 222J	
R32	Carbon film	2.2k	RD¼PM 222J	
R33	Carbon film	33k	RD¼PM 333J	
R34	Carbon film	33k	RD¼PM 333J	
R35	Carbon film	33k	RD¼PM 333J	

Symbol	Description			Part No.	
R36	Carbon film	33k		RD¼PM 333J	
R37	Carbon film	100k		RD¼PM 104J	
R38	Carbon film	100k		RD¼PM 104J	
R39	Carbon film	100k		RD¼PM 104J	
R40	Carbon film	100k		RD¼PM 104J	
R41	Carbon film	270k		RD¼PM 274J	
R42	Carbon film	270k		RD¼PM 274J	
R43	Carbon film	270k		RD¼PM 274J	
R44	Carbon film	270k		RD¼PM 274J	
R45	Carbon film	12k		RD¼PM 123J	
R46	Carbon film	12k		RD¼PM 123J	
R47	Carbon film	12k		RD¼PM 123J	
R48	Carbon film	12k		RD¼PM 123J	
R49	Carbon film	1k		RD¼PM 102J	
R50	Carbon film	1k		RD¼PM 102J	
R51	Carbon film	1k		RD¼PM 102J	
R52	Carbon film	1k		RD¼PM 102J	
R53	Carbon film	27k		RD¼PM 273J	
R54	Carbon film	27k		RD¼PM 273J	
R55	Carbon film	27k		RD¼PM 273J	
R56	Carbon film	27k		RD¼PM 273J	
R57	Carbon film	10k		RD¼PM 103J	
R58	Carbon film	10k		RD¼PM 103J	
R59	Carbon film	10k		RD¼PM 103J	
R60	Carbon film	10k		RD¼PM 103J	
R61	Carbon film	47k		RD¼PM 473J	
R62	Carbon film	47k		RD¼PM 473J	
R63	Carbon film	47k		RD¼PM 473J	
R64	Carbon film	47k		RD¼PM 473J	
R65	Carbon film	82k		RD¼PM 823J	
R66	Carbon film	82k		RD¼PM 823J	
R67	Carbon film	82k		RD¼PM 823J	
R68	Carbon film	82k		RD¼PM 823J	
R101	Carbon film	2.2k		RD¼PM 222J	
R102	Carbon film	2.2k		RD¼PM 222J	
R103	Carbon film	2.2k		RD¼PM 222J	
R104	Carbon film	2.2k		RD¼PM 222J	
R105	Carbon film	4.7k		RD¼PM 472J	
R106	Carbon film	4.7k		RD¼PM 472J	
R107	Carbon film	4.7k		RD¼PM 472J	
R108	Carbon film	4.7k		RD¼PM 472J	
R109	Metal film	5.6	1W	RN1H 5R6K	
R110	Metal film	5.6	1W	RN1H 5R6K	
R111	Metal film	5.6	1W	RN1H 5R6K	
R112	Metal film	5.6	1W	RN1H 5R6K	
R113	Metal film	5.6	1W	RN1H 5R6K	
R114	Metal film	5.6	1W	RN1H 5R6K	
R115	Metal film	5.6	1W	RN1H 5R6K	

Symbol	Description			Part No.	
R116	Metal film	5.6	1W	RN1H 5R6K	
R117	Carbon film	150	½W	RD½PS 151J	
R118	Carbon film	150	½W	RD½PS 151J	
R119	Carbon film	150	½W	RD½PS 151J	
R120	Carbon film	150	½W	RD½PS 151J	
R121	Carbon film	150	½W	RD½PS 151J	
R122	Carbon film	150	½W	RD½PS 151J	
R123	Carbon film	150	½W	RD½PS 151J	
R124	Carbon film	150	½W	RD½PS 151J	
R125	Metal film	4.7	1W	RN1H 4R7K	
R126	Metal film	4.7	1W	RN1H 4R7K	
R127	Metal film	4.7	1W	RN1H 4R7K	
R128	Metal film	4.7	1W	RN1H 4R7K	
R129	Metal film	4.7	1W	RN1H 4R7K	
R130	Metal film	4.7	1W	RN1H 4R7K	
R131	Metal film	4.7	1W	RN1H 4R7K	
R132	Metal film	4.7	1W	RN1H 4R7K	
R133	Carbon film	5.6k		RD¼PM 562J	
R134	Carbon film	5.6k		RD¼PM 562J	
R135	Carbon film	5.6k		RD¼PM 562J	
R136	Carbon film	5.6k		RD¼PM 562J	
R137	Wire wound	0.5	5W	RT5B 0R5K	
R138	Wire wound	0.5	5W	RT5B 0R5K	
R139	Metal film	0.5	2W	RN2H 0R5K	
R140	Metal film	0.5	2W	RN2H 0R5K	
R141	Wire wound	0.5	5W	RT5B 0R5K	
R142	Wire wound	0.5	5W	RT5B 0R5K	
R143	Metal film	0.5	2W	RN2H 0R5K	
R144	Metal film	0.5	2W	RN2H 0R5K	
R145	Metal oxide	10	2W	RS2P 100J	
R146	Metal oxide	10	2W	RS2P 100J	
R147	Metal oxide	10	2W	RS2P 100J	
R148	Metal oxide	10	2W	RS2P 100J	
R149	Carbon film	10	½W	RD½PS 100J	
R150	Carbon film	10	½W	RD½PS 100J	
R151	Carbon film	10	½W	RD½PS 100J	
R152	Carbon film	10	½W	RD½PS 100J	

SEMICONDUCTORS

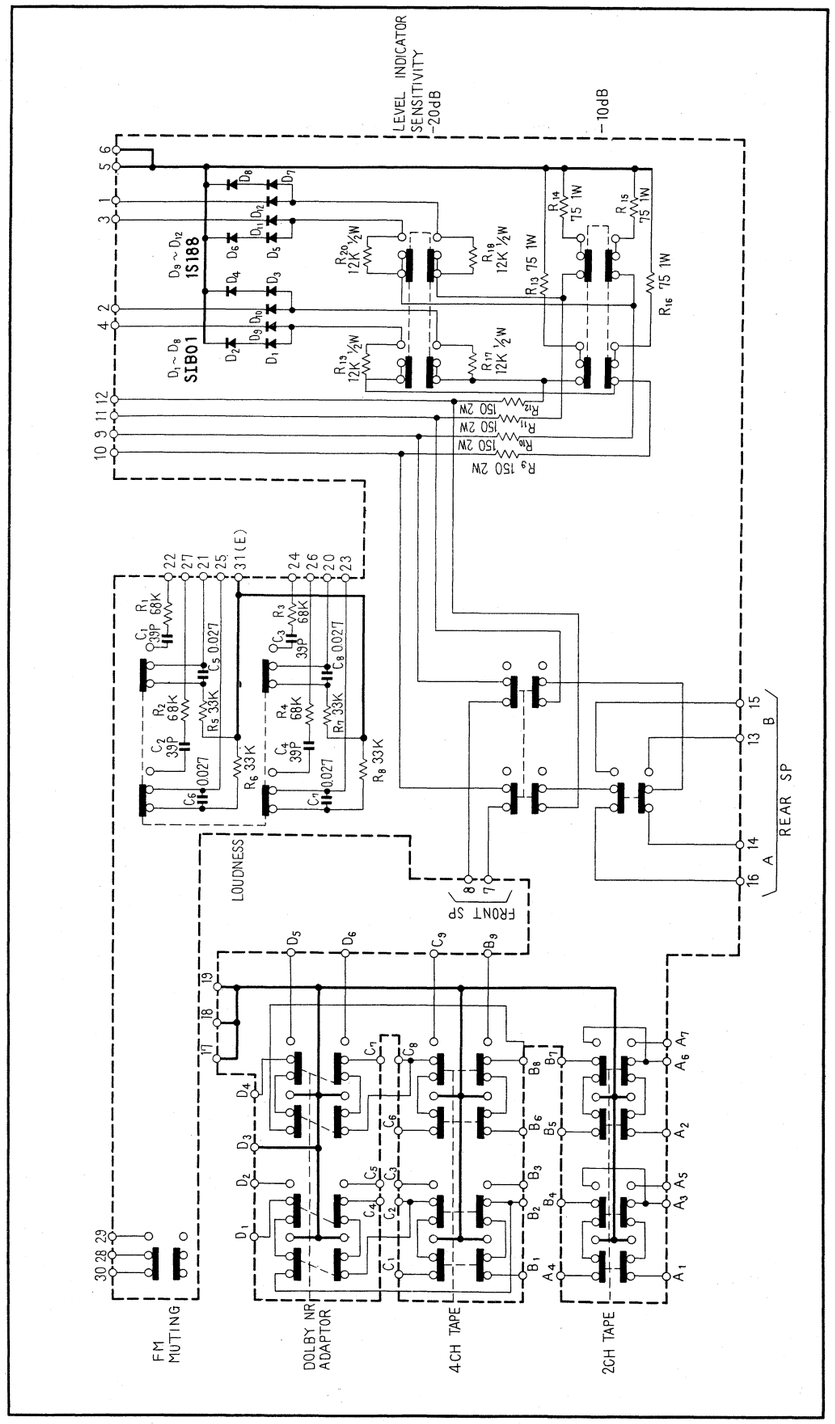
Symbol	Description		Part No.	
Q1	Transistor	2SA726-G or F		
Q2	Transistor	2SA726-G or F		
Q3	Transistor	2SA726-G or F		
Q4	Transistor	2SA726-G or F		
Q5	Transistor	2SA726-G or F		
Q6	Transistor	2SA726-G or F		
Q7	Transistor	2SA726-G or F		
Q8	Transistor	2SA726-G or F		
Q9	Transistor	2SC869-C or D		
Q10	Transistor	2SC869-C or D		

Symbol	Description		Part No.	
Q11	Transistor	2SC869-C or D		
Q12	Transistor	2SC869-C or D		
Q13	Transistor	2SC1451-V, B or S		
Q14	Transistor	2SC1451-V, B or S		
Q15	Transistor	2SC1451-V, B or S		
Q16	Transistor	2SC1451-V, B or S		
Q101	Transistor	2SD357-C or D		
Q102	Transistor	2SD357-C or D		
Q103	Transistor	2SD357-C or D		
Q104	Transistor	2SD357-C or D		
Q105	Transistor	2SB527-C or D		
Q106	Transistor	2SB527-C or D		
Q107	Transistor	2SB527-C or D		
Q108	Transistor	2SB527-C or D		
Q109	Transistor	2SD370-R or O (2SC1403-R or O)		
Q110	Transistor	2SD371-R or O (2SC1030S-B or C)		
Q111	Transistor	2SD370-R or O (2SC1403-R or O)		
Q112	Transistor	2SD371S-R or O (2SC1030S-B or C)		
Q113	Transistor	2SB530-R or O (2SA745-R or O)		
Q114	Transistor	2SB531S-R or O (2SA756S-B or C)		
Q115	Transistor	2SB530-R or O (2SA745-R or O)		
Q116	Transistor	2SB531S-R or O (2SA756S-B or C)		
D1	Diode	1S2473		
D2	Diode	1S2473		
D3	Diode	1S2473		
D4	Diode	1S2473		
D101	Varistor	STV-4		
D102	Varistor	STV-4		
D103	Varistor	STV-4		
D104	Varistor	STV-4		
D105	Diode	1S2473		
D106	Diode	1S2473		
D107	Diode	1S2473		
D108	Diode	1S2473		

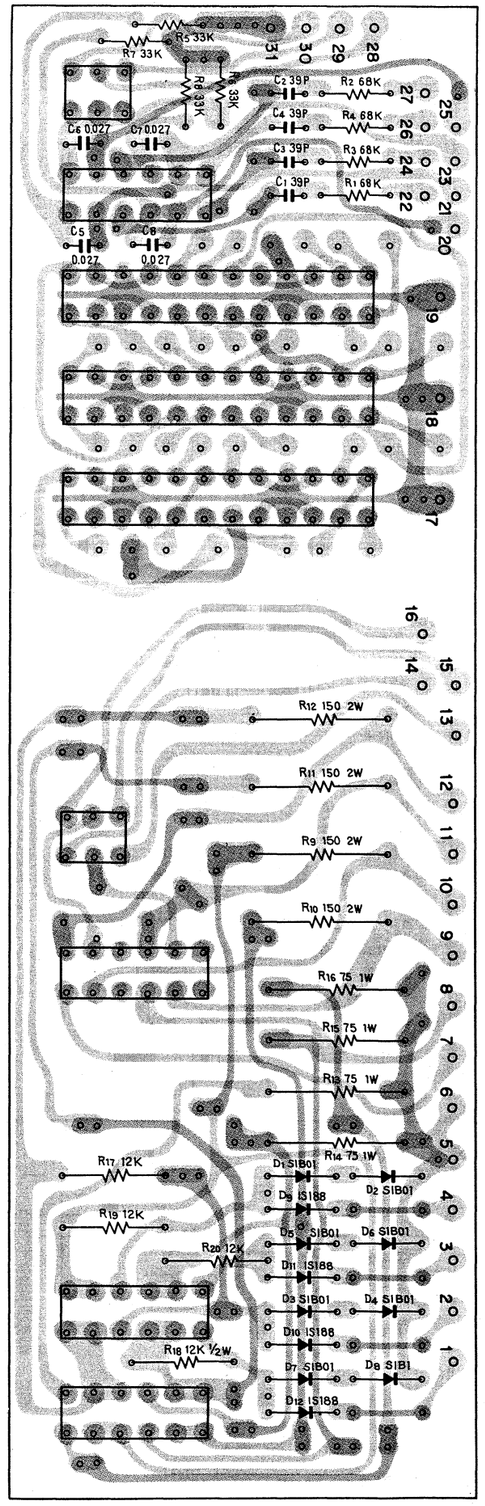
OTHERS

Symbol	Description	Part No.	
L101	AF choke coil	T63-009-0	
L102	AF choke coil	T63-009-0	
L103	AF choke coil	T63-009-0	
L104	AF choke coil	T63-009-0	

12.9 SWITCH CIRCUIT ASSEMBLY (AWS-049-A)



Foil side (AWS-049-A)



Parts List of Switch Circuit Assembly (AWS-049-A)

CAPACITORS

Symbol	Description			Part No.	
C1	Ceramic	39p	50V	CCDSL 390K 50	
C2	Ceramic	39p	50V	CCDSL 390K 50	
C3	Ceramic	39p	50V	CCDSL 390K 50	
C4	Ceramic	39p	50V	CCDSL 390K 50	
C5	Mylar	0.027	50V	CQMA 273K 50	
C6	Mylar	0.027	50V	CQMA 273K 50	
C7	Mylar	0.027	50V	CQMA 273K 50	
C8	Mylar	0.027	50V	CQMA 273K 50	

RESISTORS

Symbol	Description			Part No.	
R1	Carbon film	68k		RD¼PM 683J	
R2	Carbon film	68k		RD¼PM 683J	
R3	Carbon film	68k		RD¼PM 683J	
R4	Carbon film	68k		RD¼PM 683J	
R5	Carbon film	33k		RD¼PM 333J	
R6	Carbon film	33k		RD¼PM 333J	
R7	Carbon film	33k		RD¼PM 333J	
R8	Carbon film	33k		RD¼PM 333J	
R9	Metal oxide	150	2W	RS2P 151K	
R10	Metal oxide	150	2W	RS2P 151K	
R11	Metal oxide	150	2W	RS2P 151K	
R12	Metal oxide	150	2W	RS2P 151K	
R13	Metal oxide	75	1W	RS1P 750K	
R14	Metal oxide	75	1W	RS1P 750K	
R15	Metal oxide	75	1W	RS1P 750K	
R16	Metal oxide	75	1W	RS1P 750K	
R17	Carbon film	12k	½W	RD½PS 123J	
R18	Carbon film	12k	½W	RD½PS 123J	
R19	Carbon film	12k	½W	RD½PS 123J	
R20	Carbon film	12k	½W	RD½PS 123J	

SEMICONDUCTORS

Symbol	Description		Part No.	
D1	Diode	SIB01-01		
D2	Diode	SIB01-01		
D3	Diode	SIB01-01		
D4	Diode	SIB01-01		
D5	Diode	SIB01-01		
D6	Diode	SIB01-01		
D7	Diode	SIB01-01		
D8	Diode	SIB01-01		
D9	Diode	1S188 FM-1		
D10	Diode	1S188 FM-1		
D11	Diode	1S188 FM-1		
D12	Diode	1S188 FM-1		

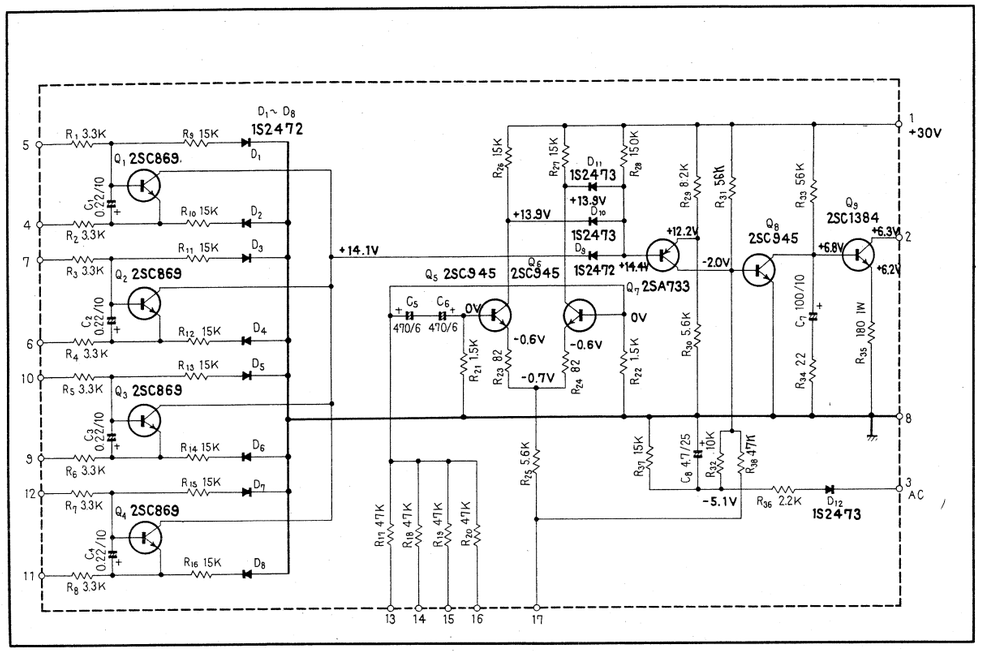
SWITCHES

Symbol	Description	Part No.	
	Push switch (speakers)	ASG-044-0	
	Push switch (FM muting, dolby, tape mon., loudness)	ASG-045-0	
	Push switch (level indicator sensitivity)	S31-028-0	

OTHERS

Symbol	Description	Part No.	
	3P plug	AKM-007-0	
	3P plug	AKM-008-0	
	3P plug	AKM-010-0	

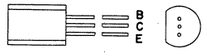
12.10 PROTECTION CIRCUIT ASSEMBLY (AWM-049-A)



2SC869

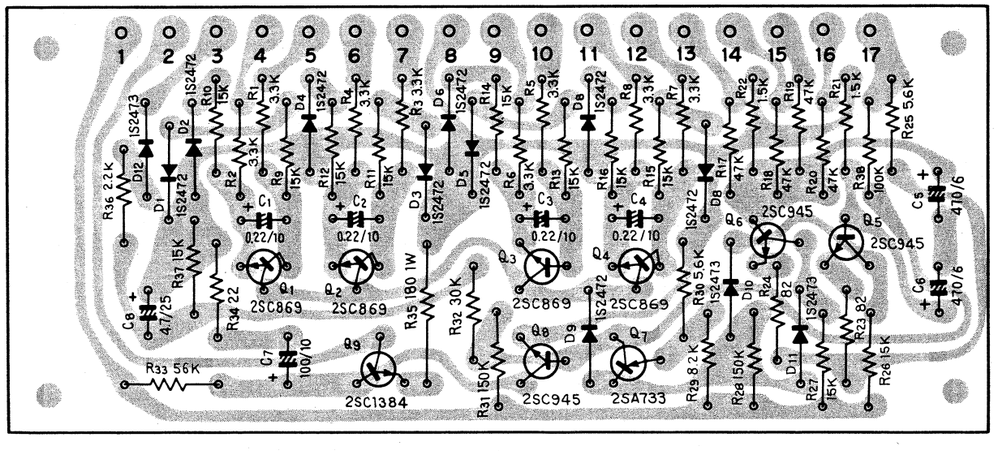
2SC857KA

2SC1384



2SC945
2SA733

Foil side (AWM-049-A)



Parts List of Protection Circuit Assembly (AWM-049-A)

CAPACITORS

Symbol	Description			Part No.	
C1	Electrolytic	0.22	10V	CSSA R22M 10	
C2	Electrolytic	0.22	10V	CSSA R22M 10	
C3	Electrolytic	0.22	10V	CSSA R22M 10	
C4	Electrolytic	0.22	10V	CSSA R22M 10	
C5	Electrolytic	470	6V	CEA 471P 6	
C6	Electrolytic	470	6V	CEA 471P 6	
C7	Electrolytic	100	10V	CEA 101P 10	
C8	Electrolytic	4.7	25V	CEA 4R7P 25	

RESISTORS

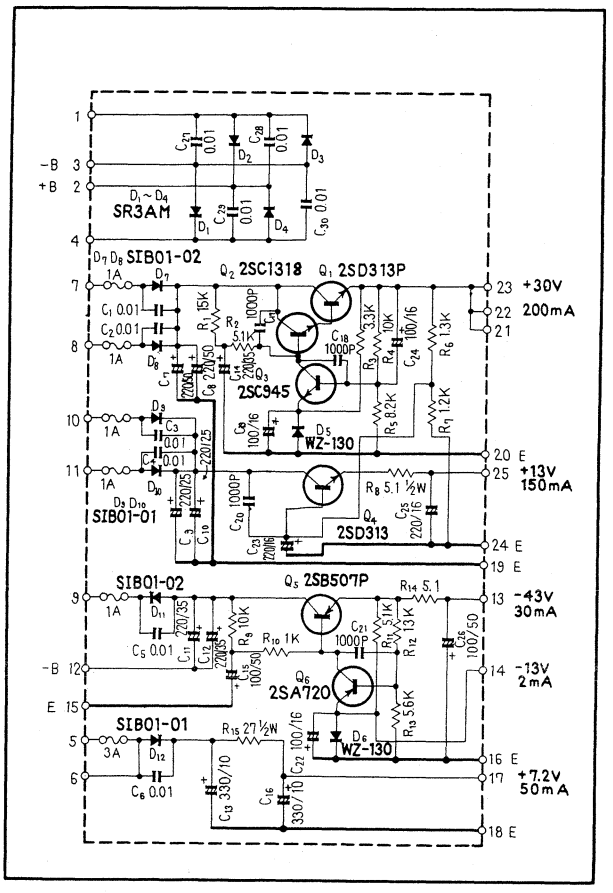
Symbol	Description			Part No.	
R1	Carbon film	3.3k		RD¼PM 332J	
R2	Carbon film	3.3k		RD¼PM 332J	
R3	Carbon film	3.3k		RD¼PM 332J	
R4	Carbon film	3.3k		RD¼PM 332J	
R5	Carbon film	3.3k		RD¼PM 332J	
R6	Carbon film	3.3k		RD¼PM 332J	
R7	Carbon film	3.3k		RD¼PM 332J	
R8	Carbon film	3.3k		RD¼PM 332J	
R9	Carbon film	15k		RD¼PM 153J	
R10	Carbon film	15k		RD¼PM 153J	
R11	Carbon film	15k		RD¼PM 153J	
R12	Carbon film	15k		RD¼PM 153J	
R13	Carbon film	15k		RD¼PM 153J	
R14	Carbon film	15k		RD¼PM 153J	
R15	Carbon film	15k		RD¼PM 153J	
R16	Carbon film	15k		RD¼PM 153J	
R17	Carbon film	47k		RD¼PM 473J	
R18	Carbon film	47k		RD¼PM 473J	
R19	Carbon film	47k		RD¼PM 473J	
R20	Carbon film	47k		RD¼PM 473J	
R21	Carbon film	1.5k		RD¼PM 152J	
R22	Carbon film	1.5k		RD¼PM 152J	
R23	Carbon film	82		RD¼PM 820J	
R24	Carbon film	82		RD¼PM 820J	
R25	Carbon film	5.6k		RD¼PM 562J	
R26	Carbon film	15k		RD¼PM 153J	
R27	Carbon film	15k		RD¼PM 153J	
R28	Carbon film	150k		RD¼PM 154J	
R29	Carbon film	8.2k		RD¼PM 822J	
R30	Carbon film	5.6k		RD¼PM 562J	
R31	Carbon film	56k		RD¼PM 563J	
R32	Carbon film	10k		RD¼PM 103J	
R33	Carbon film	56k		RD¼PM 503J	
R34	Carbon film	22		RD¼PM 220J	
R35	Metal oxide	180	1W	RS1P 181J	

Symbol	Description	Part No.	
R36	Carbon film 2.2k	RD¼PM 222J	
R37	Carbon film 15k	RD¼PM 153J	
R38	Carbon film 47k	RD¼PM 473J	

SEMICONDUCTORS

Symbol	Description	Part No.	
Q1	Transistor 2SC869-C, B or D (2SC857KA)		
Q2	Transistor 2SC869-C, B or D (2SC857KA)		
Q3	Transistor 2SC869-C, B or D (2SC857KA)		
Q4	Transistor 2SC869-C, B or D (2SC857KA)		
Q5	Transistor 2SC945-R or Q		
Q6	Transistor 2SC945-R or Q		
Q7	Transistor 2SA733-R or Q		
Q8	Transistor 2SC945-R or Q		
Q9	Transistor 2SC1384-Q or R		
D1	Diode 1S2472		
D2	Diode 1S2472		
D3	Diode 1S2472		
D4	Diode 1S2472		
D5	Diode 1S2472		
D6	Diode 1S2472		
D7	Diode 1S2472		
D8	Diode 1S2472		
D9	Diode 1S2472		
D10	Diode 1S2473		
D11	Diode 1S2473		
D12	Diode 1S2473		

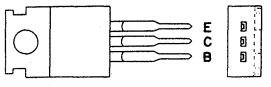
12.11 POWER SUPPLY CIRCUIT ASSEMBLY (AWR-040-0)



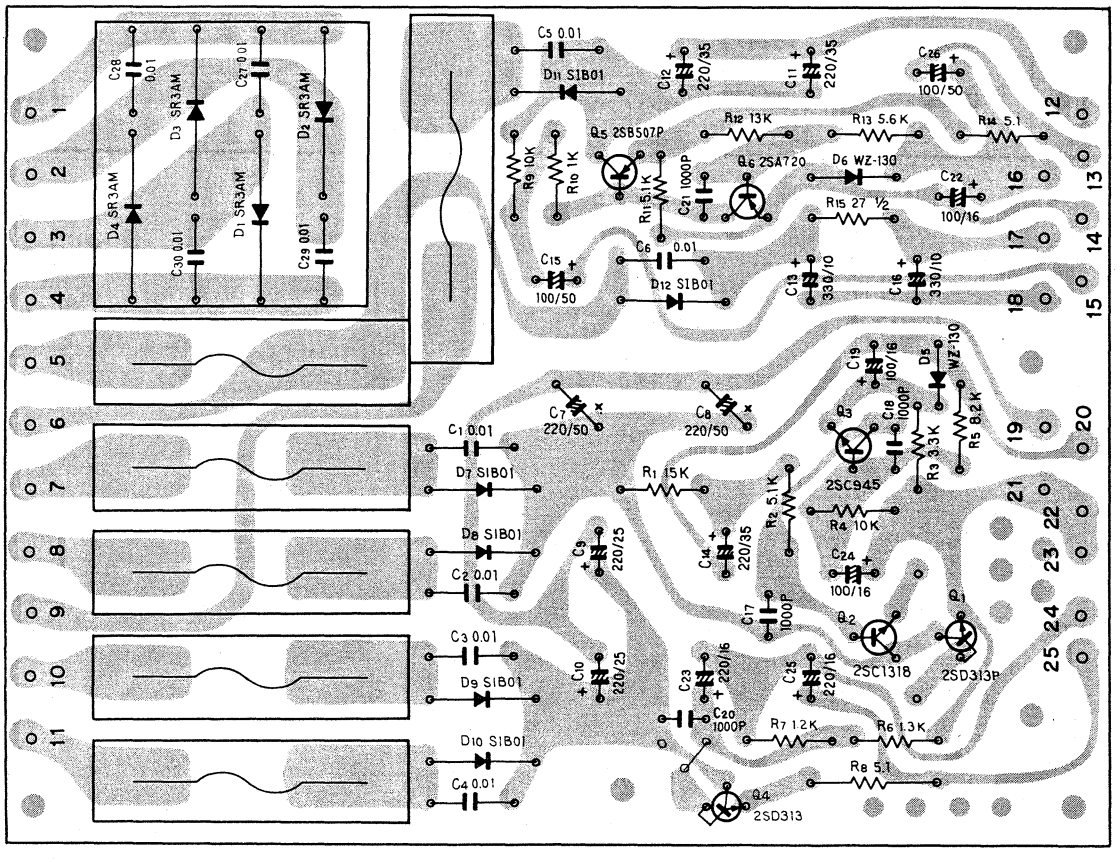
2SC945

2SA720
2SC1318

2SB507P
2SD313P
2SD313



Foil side (AWR-040-0)



Parts List of Power Supply Circuit Assembly (AWR-040-0)

CAPACITORS

Symbol	Description			Part No.	
C1	Ceramic	0.01	150V	ACG-002-0	
C2	Ceramic	0.01	150V	ACG-002-0	
C3	Ceramic	0.01	150V	ACG-002-0	
C4	Ceramic	0.01	150V	ACG-002-0	
C5	Ceramic	0.01	150V	ACG-002-0	
C6	Ceramic	0.01	150V	ACG-002-0	
C7	Electrolytic	220	50V	CEA 221P 50	
C8	Electrolytic	220	50V	CEA 221P 50	
C9	Electrolytic	220	25V	CEA 221P 25	
C10	Electrolytic	220	25V	CEA 221P 25	
C11	Electrolytic	220	35V	CEA 221P 35	
C12	Electrolytic	220	35V	CEA 221P 35	
C13	Electrolytic	330	10V	CEA 331P 10	
C14	Electrolytic	220	35V	CEA 221P 35	
C15	Electrolytic	100	50V	CEA 101P 50	
C16	Electrolytic	330	10V	CEA 331P 10	
C17	Ceramic	0.001	50V	CKDYF 102Z 50	
C18	Ceramic	0.001	50V	CKDYF 102Z 50	
C19	Electrolytic	100	16V	CEA 101P 16	
C20	Ceramic	0.001	50V	CKDYF 102Z 50	
C21	Ceramic	0.001	50V	CKDYF 102Z 50	
C22	Electrolytic	100	16V	CEA 101P 16	
C23	Electrolytic	220	16V	CEA 221P 16	
C24	Electrolytic	100	16V	CEA 101P 16	
C25	Electrolytic	220	16V	CEA 221P 16	
C26	Electrolytic	100	50V	CEA 101P 50	
C27	Ceramic	0.01	150V	ACG-002-0	
C28	Ceramic	0.01	150V	ACG-002-0	
C29	Ceramic	0.01	150V	ACG-002-0	
C30	Ceramic	0.01	150V	ACG-002-0	

RESISTORS

Symbol	Description			Part No.	
R1	Carbon film	15k		RD¼PM 153J	
R2	Carbon film	5.1k		RD¼PM 512J	
R3	Carbon film	3.3k		RD¼PM 332J	
R4	Carbon film	10k		RD¼PM 103J	
R5	Carbon film	8.2k		RD¼PM 822J	
R6	Carbon film	1.3k		RD¼PM 132J	
R7	Carbon film	1.2k		RD¼PM 122J	
R8	Carbon film	5.1	½W	RD½PM 5R1J	
R9	Carbon film	10k		RD¼PM 103J	
R10	Carbon film	1k		RD¼PM 102J	
R11	Carbon film	5.1k		RD¼PM 512J	
R12	Carbon film	13k		RD¼PM 133J	
R13	Carbon film	5.6k		RD¼PM 562J	
R14	Carbon film	5.1	½W	RD½PM 5R1J	
R15	Carbon film	27	½W	RD½PM 270J	

SEMICONDUCTORS

Symbol	Description	Part No.	
Q1	Transistor 2SD313P-E or D		
Q2	Transistor 2SC1318-R or Q		
Q3	Transistor 2SC945-R or Q		
Q4	Transistor 2SD313-E or D		
Q5	Transistor 2SB507P-E or D		
Q6	Transistor 2SA720-R or Q		
D1	Diode SR3AM-8		
D2	Diode SR3AM-8		
D3	Diode SR3AM-8		
D4	Diode SR3AM-8		
D5	Zener diode WZ-130		
D6	Zener diode WZ-130		
D7	Diode S1B01-02 or 1S1886		
D8	Diode S1B0a-02 or 1S1886		
D9	Diode S1B01-01 or 1S1885		
D10	Diode S1B01-01 or 1S1885		
D11	Diode S1B01-02 or 1S1886		
D12	Diode S1B01-01 or 1S1885		

OTHERS

Symbol	Description	Part No.	
	Fuse holder	AKR-013-0	
	Fuse 1A	E21-034-A	
	Fuse 3A	E21-036-A	

12.12 PARTS LIST OF HEADPHONE JACK ASSEMBLY (AWX-054-0)

RESISTORS

Symbol	Description			Part No.	
R1	Metal oxide	150	2W	RS2P 151K	
R2	Metal oxide	150	2W	RS2P 151K	
R3	Metal oxide	150	2W	RS2P 151K	
R4	Metal oxide	150	2W	RS2P 151K	

OTHERS

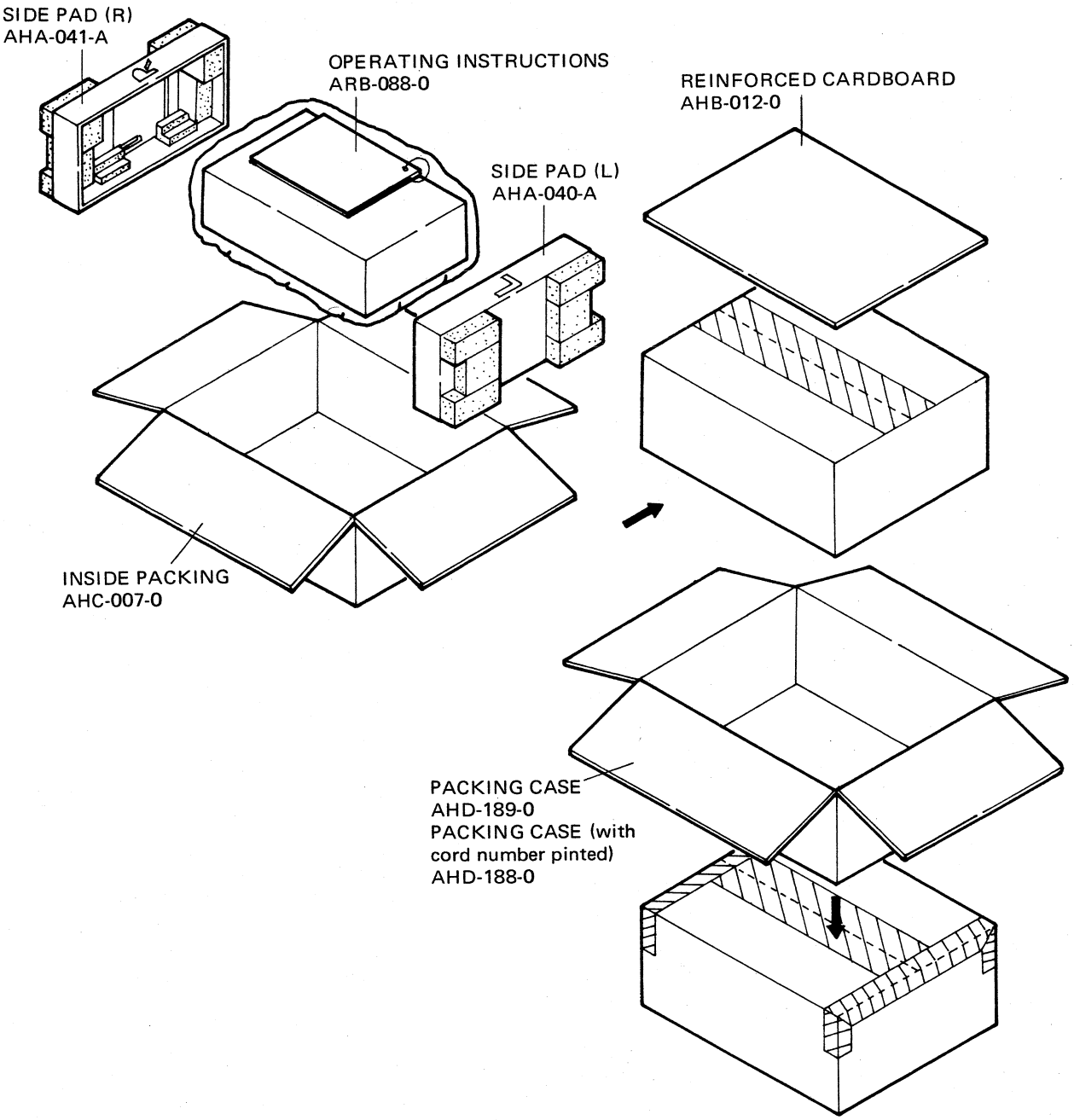
Symbol	Description	Part No.	
	Headphones jack	AKN-002-0	

12.13 PARTS LIST OF LAMP ASSEMBLY (AWX-052-0)

OTHERS

Symbol	Description	Part No.	
	Fuse holder	AKR-013-0	

13. PACKING METHOD AND PART NUMBERS



TUNER Ass'y AWE-029

LAMP HOLDER Ass'y AWX-052

AWR-040

AWX-054

EQUALIZER AMP Ass'y AWF-010

MTX-Ass'y AWM-048

IN 140mV 175mV → D_5

OUT 140mV 175mV → B_8

MON 140mV 175mV → B_9

REC 140mV 175mV → B_6

IN 140mV 175mV → D_2

OUT 140mV 175mV → B_2

MON 140mV 175mV → B_3

REC 140mV 175mV → B_1

REC 140mV 175mV → A_1

MON 140mV 175mV → A_5

140mV

175mV

AUX

PHONO 140mV 175mV

4CHANNEL MPX OUT

PHONO

AUX

C_9 0.01

2CH MON → A_7

TAPE REC → A_2

4CH REC TAPE → C_1

MON → C_3

BOLBY OUT → C_2

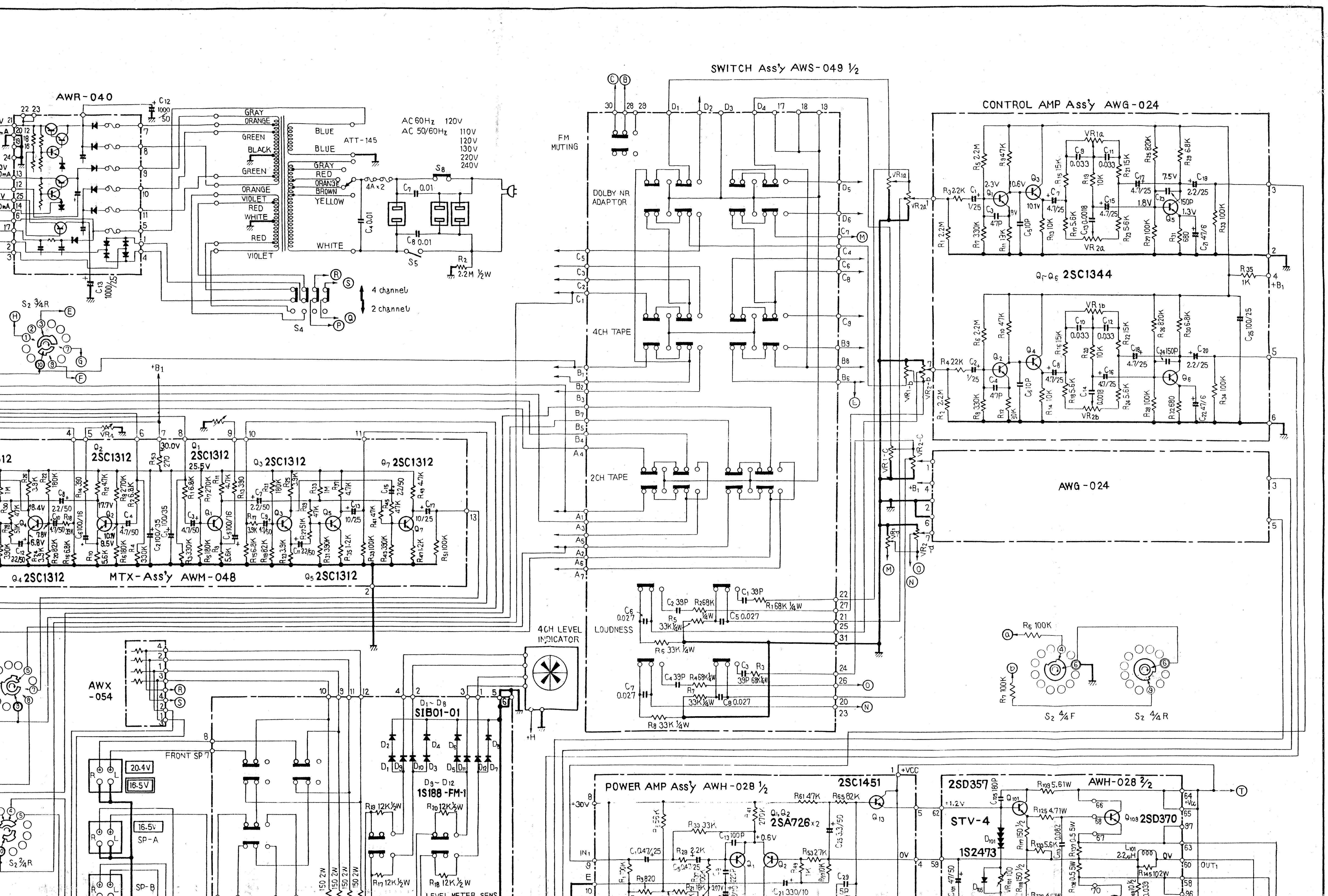
NR ADAPTOR IN → C_5

REC → C_6

MON → C_9

OUT → C_8

IN → D_6


AWR-040
SWITCH Ass'y AWS-049 1/2
CONTROL AMP Ass'y AWG-024
AC 60Hz 120V
AC 50/60Hz 110V 120V 130V 220V 240V
ATT-145
FM MUTING
DOLBY NR ADAPTOR
4CH TAPE
2CH TAPE
LOUDNESS
4CH LEVEL INDICATOR
4 channel
2 channel
Q1~Q6 2SC1344
AWG-024
MTX-Ass'y AWM-048
Q1 2SC1312
Q2 2SC1312
Q3 2SC1312
Q4 2SC1312
Q5 2SC1312
Q7 2SC1312
AWX -054
D1~D8 SIB01-01
D9~D12 1S188-FM-1
FRONT SP
SP-A
SP-B
20.4V
16.5V
LEVEL METER SENS
POWER AMP Ass'y AWH-028 1/2
AWH-028 2/2
2SC1451
2SD357
STV-4
1S2473
Q1, Q2 2SA726 x2
Q109 2SD370
S2 3/4R
S2 2/4R
S2 4/4F
S2 4/4R
OUT1

SUB CHANNEL CIRCUIT Ass'y AWX-051

DECODER Ass'y AWM-031

PROTECTION Ass'y AWM-049

SWITCH Ass'y AWS-049 2/2

NOTES :
SWITCHES
S_1 : FUNCTION (AM position)
1) AM 2) FM MONO 3) FM AUTO
4) PHONO 5) AUX
S_2 : MODE SELECTOR (2CH position)
1) 2CH 2) CD-4.3 RM 4) SQ
S_3 : 2CH POWER BOOSTING SWITCH
S_4 : POWER SWITCH
S_5 : RELAY
S_6 : MICRO-SWITCH

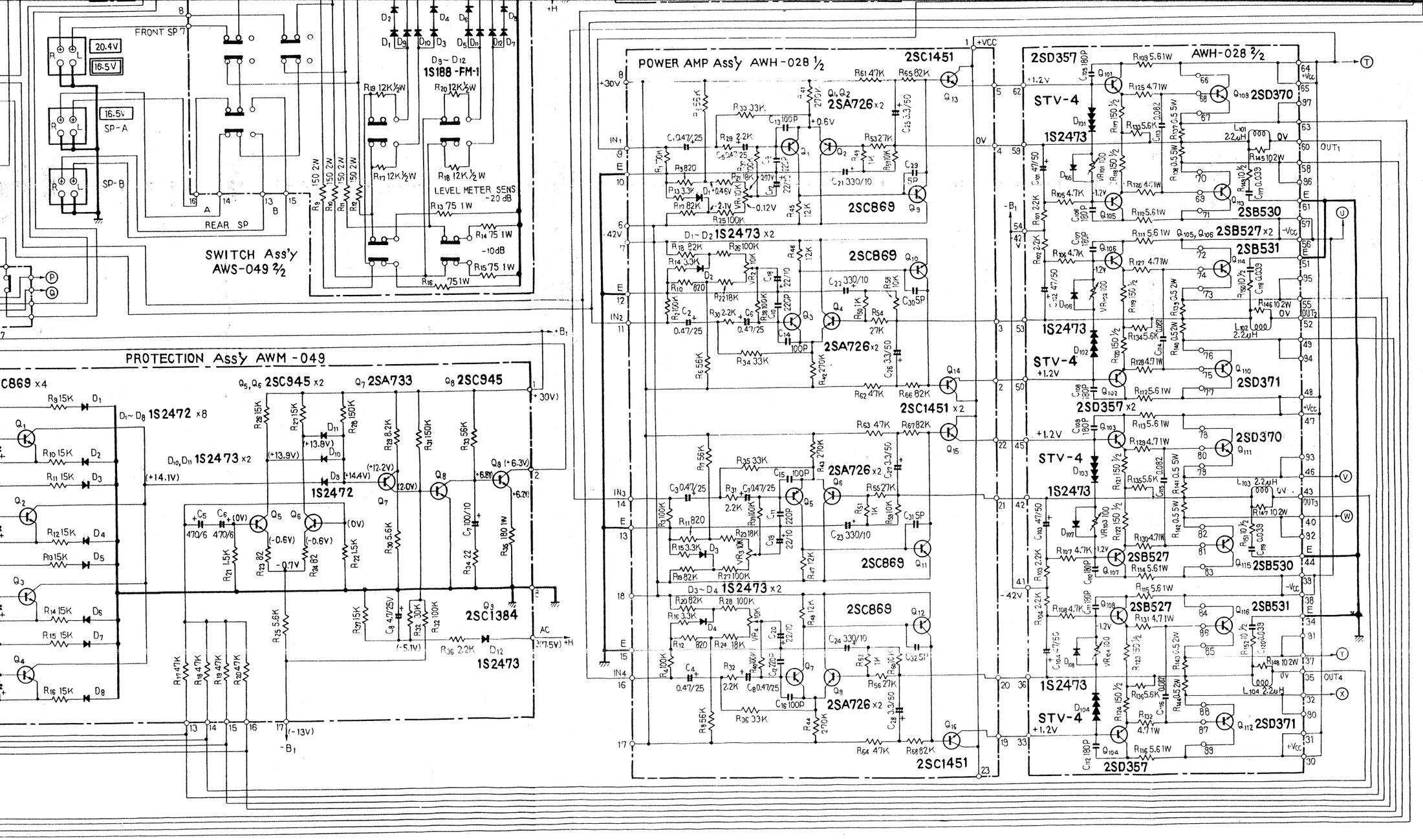
POTENTIOMETERS
VR_1 : BALANCE V.R
VR_2 : MAIN V.R
$VR_{3,4}$: CD-4 CHANNEL SEPARATION
VR_5 : CD-4 CARRIER LEVEL CONTROL

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

CAPACITORS
IN μF UNLESS OTH
P : pF

V : SIGNAL VO
OUTPUT P

V : SIGNAL VO
OUTPUT P



S$_n$: MICRO-SWITCH

POTENTIOMETERS
VR$_1$: BALANCE V.R
VR$_2$: MAIN V.R.
VR$_{3,4}$: CD-4 CHANNEL SEPARATION
VR$_5$: CD-4 CARRIER LEVEL CONTROL

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

CAPACITORS
IN μF UNLESS OTHERWISE NOTED.
P : pF

[V] : SIGNAL VOLTAGE NECESSARY FOR OBTAINING 34W 8Ω OUTPUT POWER(1kHz), S$_n$ SET AT 4CH

[V] : SIGNAL VOLTAGE NECESSARY FOR OBTAINING 54W 8Ω OUTPUT POWER(1kHz), S$_n$ SET AT 2CH

V : DC VOLTAGE AT NO INPUT SIGNAL, S$_n$ SET AT 4CH

A : DC CURRENT AT NO INPUT SIGNAL, S$_n$ SET AT 4CH

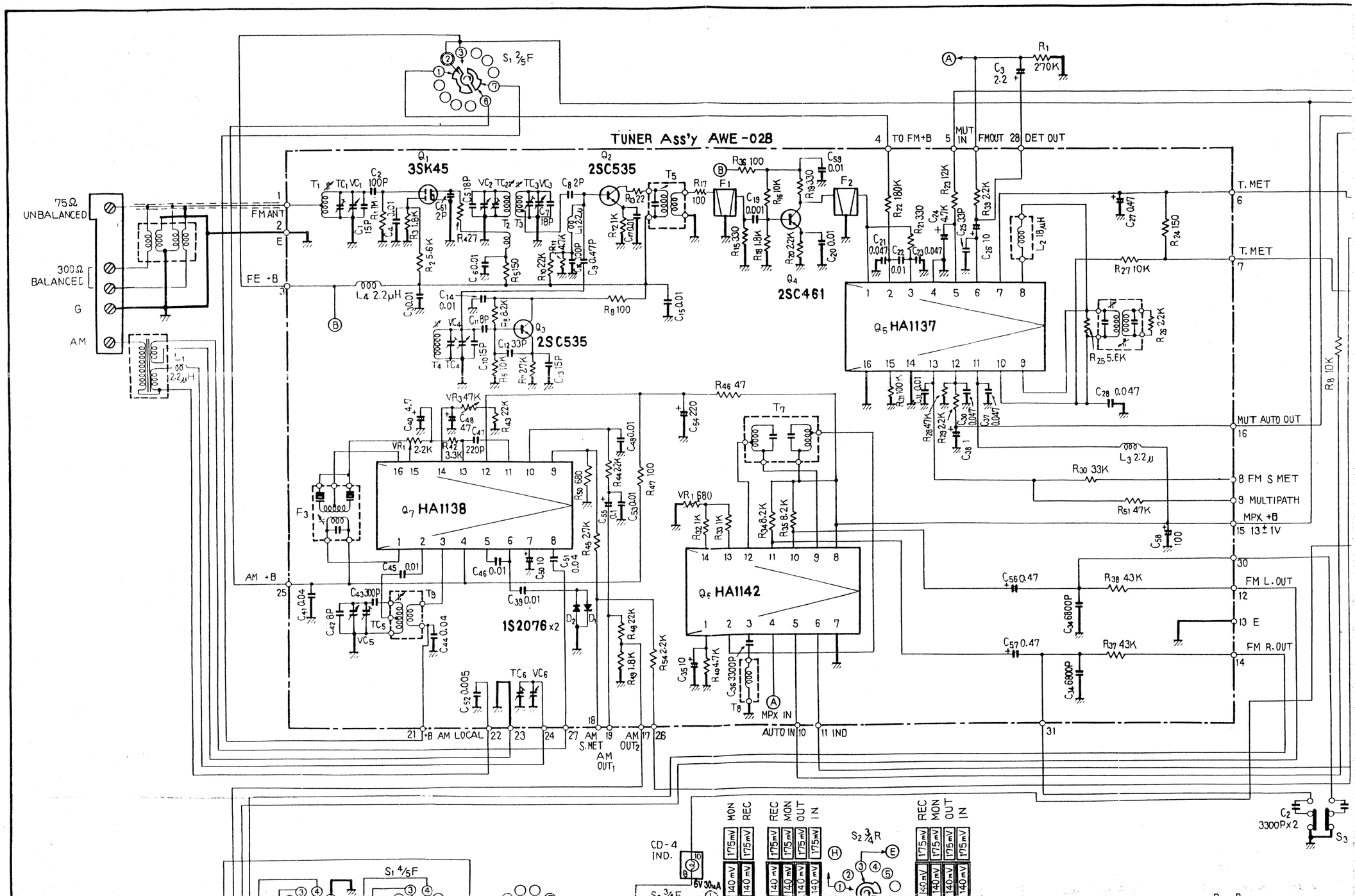
(V) : DC VOLTAGE AT 34W 8Ω OUTPUT POWER

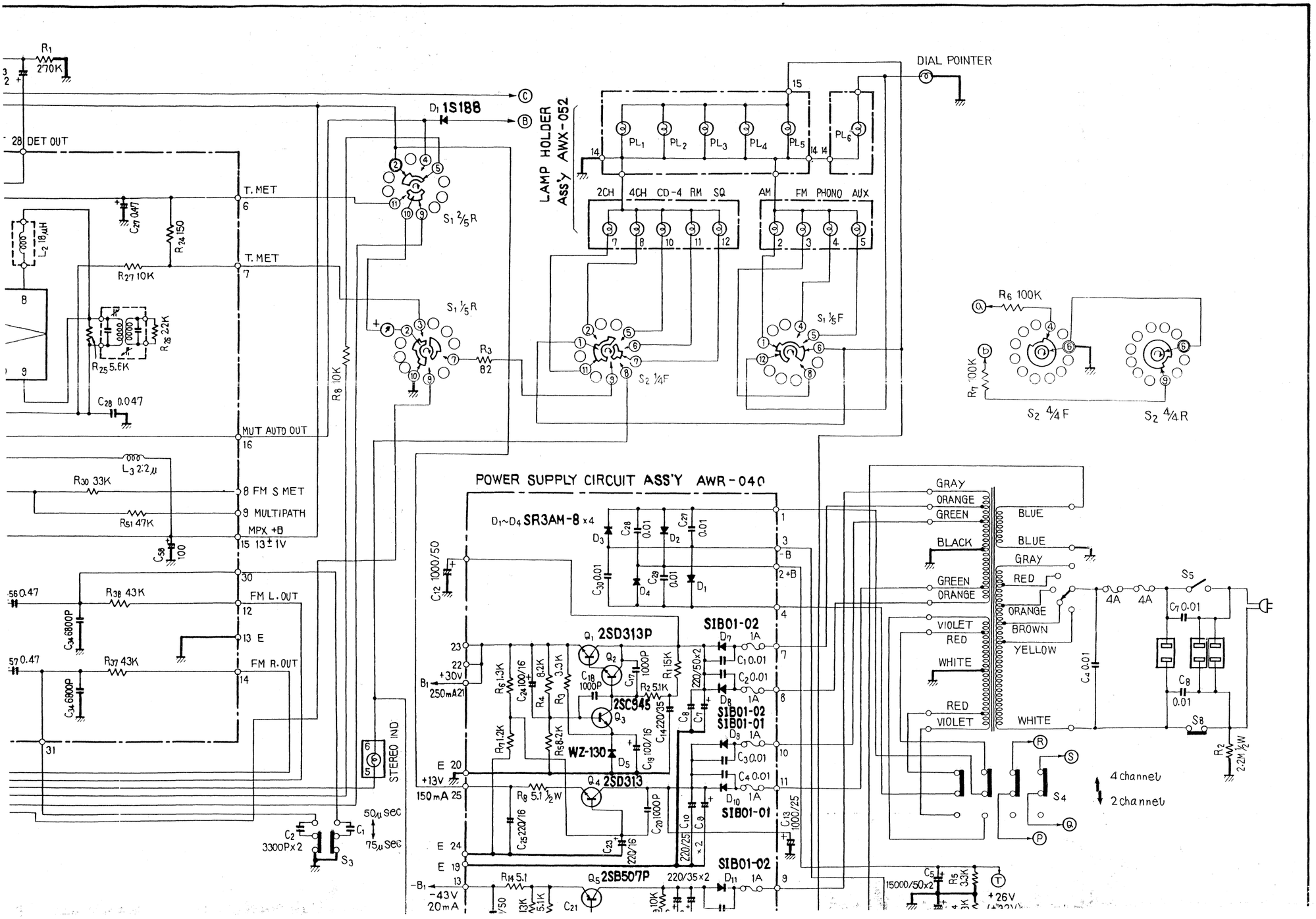
(A) : DC CURRENT AT 34W 8Ω OUTPUT POWER

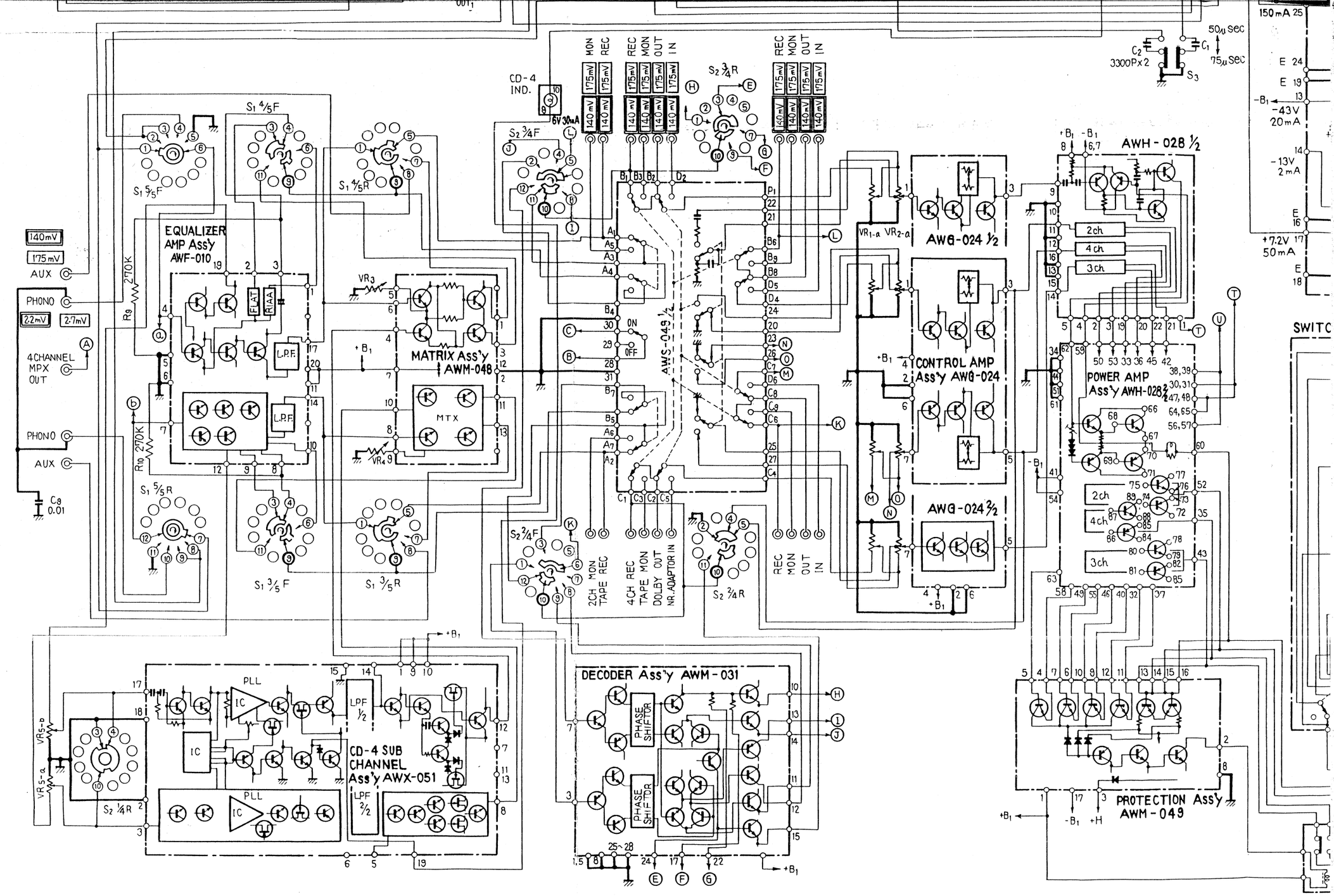
V : DC VOLTAGE AT NO INPUT SIGNAL, S$_n$ SET AT 2CH

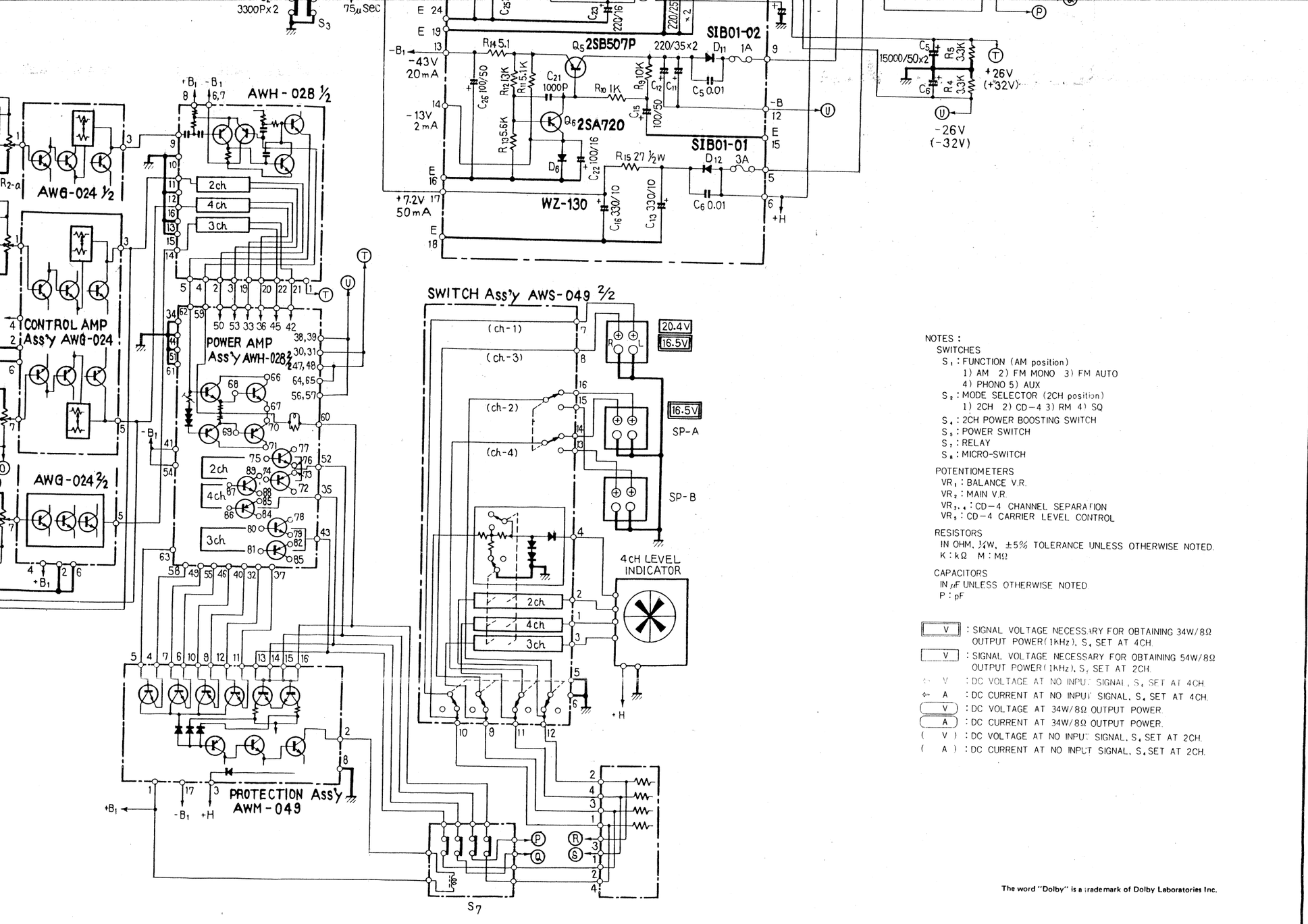
A : DC CURRENT AT NO INPUT SIGNAL, S$_n$ SET AT 2CH

PIONEER QX-747 FUW




R1 270K
28 DET OUT
T. MET 6
T. MET 7
C27 0.047
R24 150
L2 18μH
R27 10K
R25 5.6K
R26 2.2K
C28 0.047
MUT AUTO OUT 16
L3 2.2μ
R30 33K
8 FM S MET
R51 47K
9 MULTIPATH
MPX +B 15 13±1V
C58 100
30
FM L. OUT 12
R38 43K
C36 6800P
13 E
FM R. OUT 14
R37 43K
C34 6800P
31
R8 10K
D1 1S188
S1 2/5R
S1 1/5R
R3 82
S2 1/4F
S1 1/5F
LAMP HOLDER Ass'y AWX-052
15
PL1 PL2 PL3 PL4 PL5 PL6
14 14
2CH 4CH CD-4 RM SQ
AM FM PHONO AUX
7 8 10 11 12
2 3 4 5
DIAL POINTER
R6 100K
R7 100K
S2 4/4F
S2 4/4R
STEREO IND
C2 3300P×2
C1
50μ sec
75μ sec
S3
POWER SUPPLY CIRCUIT ASS'Y AWR-040
D1~D4 SR3AM-8 ×4
C28 0.01
C27 0.01
C29 0.01
C30 0.001
C12 1000/50
1 3 -B 2 +B 4
Q1 2SD313P
Q2 2SC945
Q3
WZ-130 D5
Q4 2SD313
Q5 2SB507P
SIB01-02
SIB01-01
D7 1A
C1 0.01
C2 0.01
D8 1A
D9 1A
C3 0.01
C4 0.01
D10 1A
D11 1A
C18 1000P
C17 1000P
R1 15K
R2 5.1K
220/50×2
C24 100/16
R6 1.3K
R4 8.2K
R3 3.3K
C14 220/35
C8
C7
R11 1.2K
R5 8.2K
C19 100/16
C20 1000P
C10 220/25 ×2
C9
C13 1000/25
C25 220/16
C23 220/16
R14 5.1
C21
C5 15000/50×2
R5 3.3K
+30V 250mA
+13V 150mA
-43V 20mA
+26V
R8 5.1 1/2W
23 22 B1 E 20 E 24 E 19 -B1 13 9 7 10 11
GRAY ORANGE GREEN BLUE BLACK BLUE GRAY RED GREEN ORANGE ORANGE VIOLET BROWN RED YELLOW WHITE RED VIOLET WHITE
4A 4A
S5
C7 0.01
C8 0.01
S8
R2 2.2M 1/2W
C4 0.01
S4
R P S Q
4 channel
2 channel


CD-4 IND.
6V 30mA
MON REC
REC MON OUT IN
175mV
140mV
S2 3/4R
S2 3/4F
S1 4/5F
S1 3/5F
S1 5/5F
S1 4/5R
S1 3/5R
S1 5/5R
140mV
175mV
AUX
PHONO
2.2mV
2.7mV
4CHANNEL MPX OUT
PHONO
AUX
C9 0.01
R9 270K
R10 270K
EQUALIZER AMP Ass'y AWF-010
FLAT
RIAA
L.P.F.
L.P.F.
VR3
VR4
+B1
MATRIX Ass'y AWM-048
MTX
ON
OFF
AWS-049 1/2
2CH MON TAPE REC
4CH REC TAPE MON DOLBY OUT NR ADAPTOR IN
S2 2/4F
S2 2/4R
REC MON OUT IN
VR1-a VR2-a
AWG-024 1/2
AWG-024 2/2
CONTROL AMP Ass'y AWG-024
AWH-028 1/2
2ch
4ch
3ch
POWER AMP Ass'y AWH-028 1/2
SWITC
C2 3300P x2
C1
S3
50μ sec
75μ sec
150mA 25
E 24
E 19
-B1
-43V 20mA
14
-13V 2mA
E 16
+7.2V 17
50mA
E 18
VR5-b
VR5-a
S2 1/4R
PLL
IC
LPF 1/2
LPF 2/2
CD-4 SUB CHANNEL Ass'y AWX-051
DECODER Ass'y AWM-031
PHASE SHIFTOR
PROTECTION Ass'y AWM-049
+H



NOTES :

SWITCHES
- S_1 : FUNCTION (AM position) 1) AM 2) FM MONO 3) FM AUTO 4) PHONO 5) AUX
- S_2 : MODE SELECTOR (2CH position) 1) 2CH 2) CD-4 3) RM 4) SQ
- S_4 : 2CH POWER BOOSTING SWITCH
- S_5 : POWER SWITCH
- S_7 : RELAY
- S_8 : MICRO-SWITCH

POTENTIOMETERS
- VR_1 : BALANCE V.R.
- VR_2 : MAIN V.R.
- $VR_{3,4}$: CD-4 CHANNEL SEPARATION
- VR_5 : CD-4 CARRIER LEVEL CONTROL

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

CAPACITORS
IN μF UNLESS OTHERWISE NOTED.
P : pF

[V] : SIGNAL VOLTAGE NECESSARY FOR OBTAINING 34W/8Ω OUTPUT POWER(1kHz), S_4 SET AT 4CH.

[V] : SIGNAL VOLTAGE NECESSARY FOR OBTAINING 54W/8Ω OUTPUT POWER(1kHz), S_4 SET AT 2CH.

V : DC VOLTAGE AT NO INPUT SIGNAL, S_4 SET AT 4CH.

A : DC CURRENT AT NO INPUT SIGNAL, S_4 SET AT 4CH.

[V] : DC VOLTAGE AT 34W/8Ω OUTPUT POWER.

[A] : DC CURRENT AT 34W/8Ω OUTPUT POWER.

(V) : DC VOLTAGE AT NO INPUT SIGNAL, S_4 SET AT 2CH.

(A) : DC CURRENT AT NO INPUT SIGNAL, S_4 SET AT 2CH.