

Service Manual

4-CHANNEL RECEIVER

QX-4000/KLUW, FW

NOTE:

MODEL QX-4000 COMES IN TWO VERSIONS DISTINGUISHED AS FOLLOWS:

Round label on rear panel	Voltage
KLUW	120V only
FW	5-position selector

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1. SPECIFICATIONS

SEMICONDUCTORS

FET	1
ICs	2
Transistors	70
Diodes	30

AMPLIFIER SECTION

Music Power Output (IHF)	108W (4 Ω), 80W (8 Ω)
Continuous Power Output (1kHz each channel driven)	20W/20W/20W/20W (4 Ω) 15W/15W/15W/15W (8 Ω)
Continuous Power Output (1kHz 2 channels driven)	15W + 15W + 15W + 15W (4 Ω) 13W + 13W + 13W + 13W (8 Ω)
Continuous Power Output (1kHz 4 channels driven)	11W x 4 (4 Ω) 10W x 4 (8 Ω)
Power Output in the Range of 20Hz to 20kHz (2 channels driven)	10W + 10W / 10W + 10W (8 Ω , Harmonic distortion less than 1 %)
Harmonic Distortion	Less than 1% (continuous power output)
Intermodulation Distortion	Less than 1% (continuous power output)
Power Bandwidth (IHF) 2 channels driven 4 channels driven	10Hz to 30kHz 15Hz to 20kHz (8 Ω , Harmonic distortion less than 1%)
Frequency Response	10Hz to 100kHz, ± 3 dB
Speaker Outputs	1 pair for front, 2 pair for rear (4 to 16 Ω)
Headphone Jack	Front
Damping Factor	40 (8 Ω , 1kHz)
Input Sensitivity/Impedance	PHONO MAG 2.3mV/50k Ω AUX 200m/90k Ω TAPE MONITOR 200mV/90k Ω
Recording Output	TAPE REC (pin jack) 200mV TAPE REC (DIN connector) 35mV
BASS Control	-12.5dB, +13dB/100Hz
TREBLE Control	-8.5dB, +11.5dB/10kHz
Equalization Curve	PHONO: RIAA S.T.D.
Loudness Contour	+10dB/100Hz, +5dB/19kHz with volume control set at -40dB position.
Hum and Noise (IHF: short circuited, A network)	PHONO more than 70dB AUX more than 90dB

FM TUNER SECTION

Frequency Range	88MHz to 108MHz
Usable Sensitivity (IHF)	2.2 μ V
Capture Ratio (IHF)	3dB
Selectivity (IHF)	More than 40dB
Image Rejection	More than 50dB (98MHz)
IF Rejection	More than 85dB (90MHz)
Spurious Rejection	More than 80dB (98MHz)
AM Suppression	50dB
Signal to Noise Ratio	65dB
Harmonic Distortion	Mono: less than 0.6% (100% Mod.) Stereo: less than 0.8% (100% Mod.)
Tuning Indicator	Signal strength type
Muting	Switchable to ON-OFF
Stereo Separation	More than 40dB (1kHz)
Sub Carrier Suppression	More than 35dB
Antenna Input	Impedance 300 Ω balanced and 75 Ω unbalanced

AM TUNER SECTION

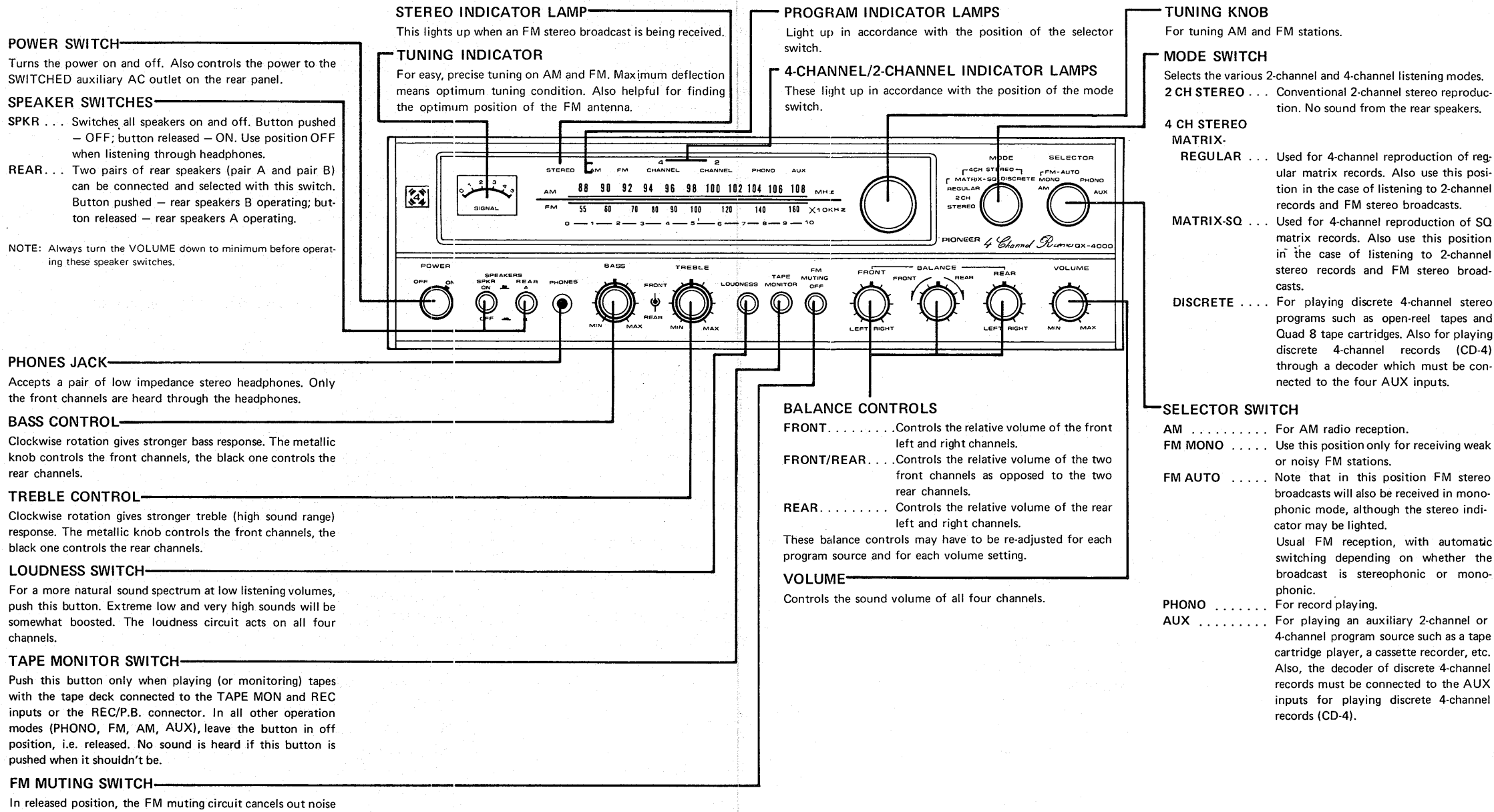
Frequency Range	525kHz to 1,605kHz
Usable Sensitivity (IHF)	15 μ V
Selectivity (IHF)	More than 25dB
Image Rejection	More than 45dB (1,000kHz)
IF Rejection	More than 30dB
Signal to Noise Ratio	More than 50dB
Antenna	Built-in ferrite loopstick antenna

MISCELLANEOUS

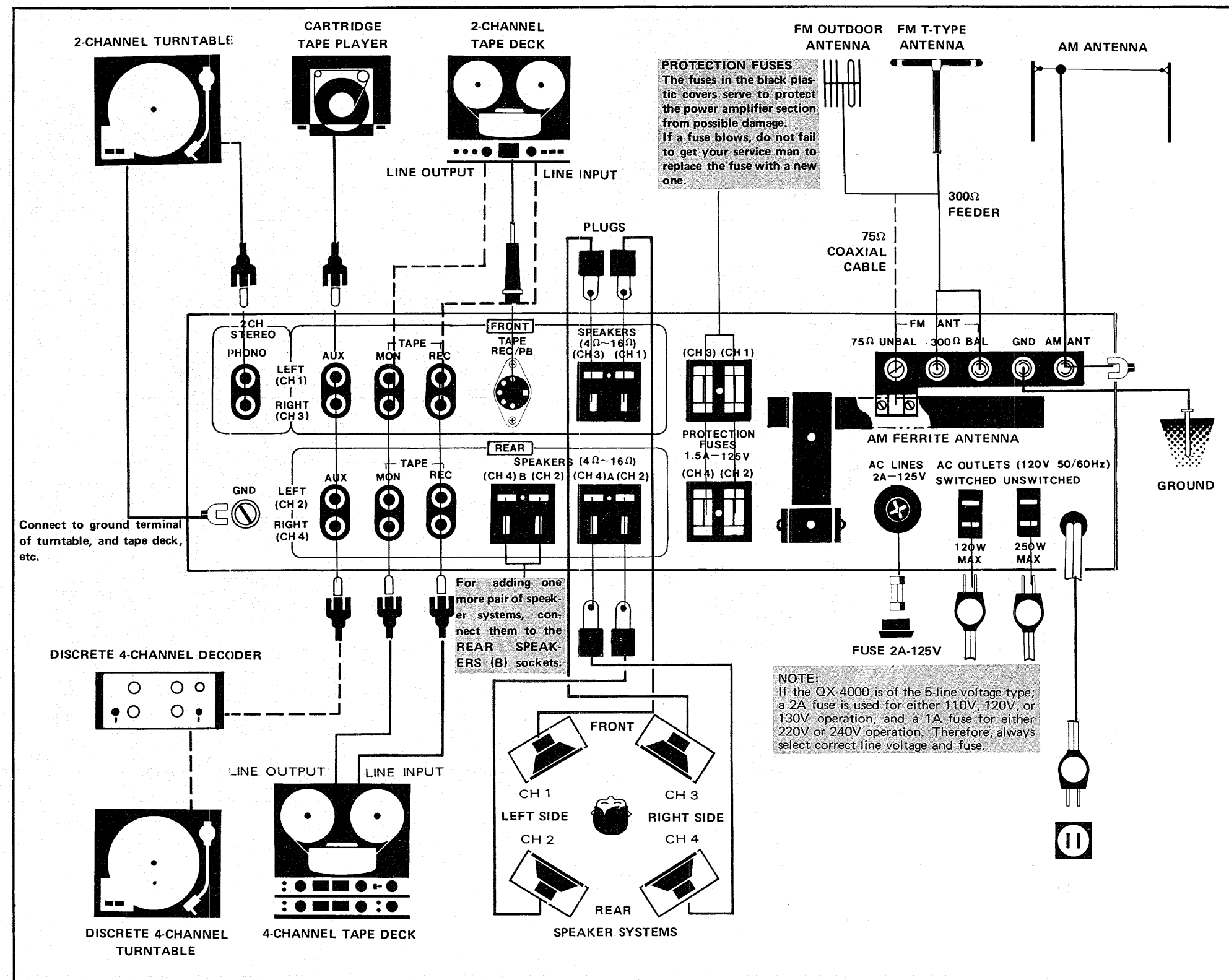
Power Requirements	120V 60Hz or 110V, 120V, 130V, 220V and 240V (Switchable), 50-60Hz
Power Consumption	150W (Max.)
AC Outlets	Switched 1, Unswitched 1
Dimensions (overall)	17-3/4in./450mm (width) 5-11/16in./144mm (height) 13-3/4in./350mm (depth)
Weight	Without package 22 lb 4oz/10.1kg With package 26 lb 14oz/12.2kg
Furnished Parts	FM T-type antenna 1 Pin-plugs 4 Speaker plugs 6 Polishing cloth 1 Operating instructions 1 5-line voltage model; Fuse 1A 1 Fuses 2A 2

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

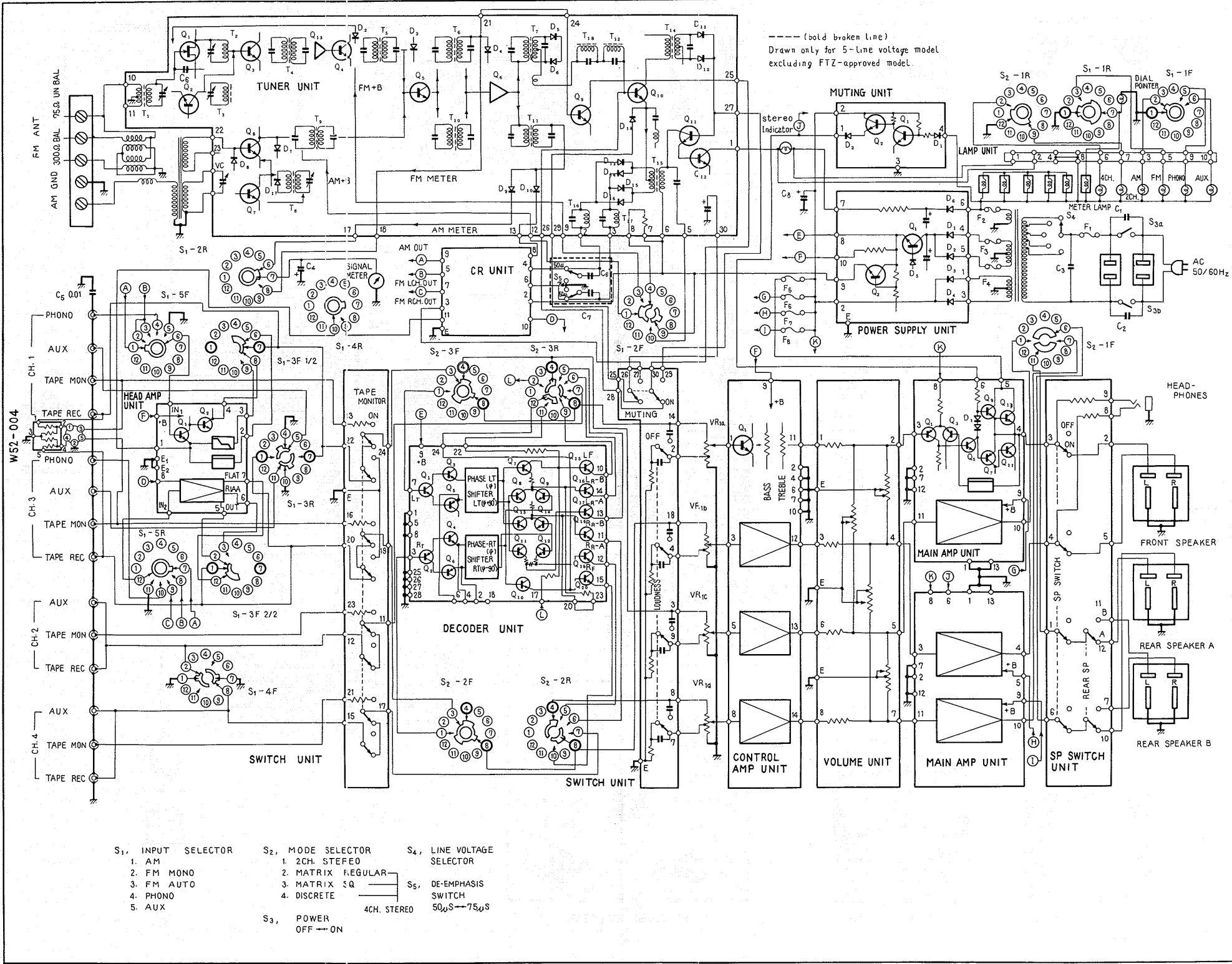
2. FRONT PANEL FACILITIES



3. CONNECTION DIAGRAM



4. BLOCK DIAGRAM



5. CIRCUIT DESCRIPTION

5.1 RF CIRCUITRY

• FM Section

The FM signal from the antenna passes to T1 of the tuner, where it is applied to the gate of Q1 (FET). This stage provides RF amplification. In order to obtain high gain from Q1, the bridge circuit consisting of feedback capacitance Crss, neutralizing capacitance C6, and T2 is balanced, preventing feedback of a part of the output to the input through Crss. Frequency conversion is effected with Q3. The local oscillator is a Colpitts type (Q2).

The converted signal passes to the IF amplifier, consisting of four stages (Q13, Q4, Q5 and Q6). Ratio detection is effected with diodes on the secondary side of T7. Resultant audio passes to the base of Q10 as a simple signal in the case of monaural broadcasts, or as a composite signal in the case of stereo broadcasts.

AGC action is effected with DC rectified from the collector circuit of Q4 and applied to the gate of Q1. D3 in the secondary side of T5 provides limiting action under strong inputs. Q5 and Q6 function as the AM intermediate frequency amplifier. The signal applied to the base of Q10 includes the 19kHz pilot. This pilot is extracted with T14 and formed into a 38kHz signal with D11, D12, Q11 and T15. The resultant signal is fed to switching diodes D13 through D16. The primary and sub-carrier signals pass from the emitter of Q10 to the center tap of T15, are switched, and are fed to the AF amplifier.

Q12 is part of an electronic switch for control of the FM stereo indicator lamp. With Q11 conducting, this switch conducts and the indicator lamp lights.

Stage Q9 handles muting and FM AUTO switching. With the muting switch set to the ON position, the collector of Q9 is connected to the base of Q10; with the muting switch set to the OFF position, the Q9 collector is connected to the base of Q11. When the potential of the base of Q9 is low (that is, when the antenna input signal is low), Q9 conducts, reducing the base potential of Q10 or Q11 and preventing the signal from passing.

• AM Section

The AM section consists of four transistors, Q7, Q8, Q5, and Q6. The AM signal received by the ferrite antenna is converted to an intermediate frequency (455kHz) with circuitry consisting of Q7 and Q8.

Amplification at the intermediate frequency is effected with Q5 and Q6 (also used for FM IF amplification). D10 on the secondary side of T11 is used for detection. AGC action is effected with a part of the detected signal applied to the base of Q8, while D7 and D8 are used to prevent excessive input.

5.2 AUDIO CIRCUITRY

• Head Amplifier Section

The signal from PHONO jacks selected with the SELECTOR switch passes through a two-stage direct coupled equalizer amplifier which provides low- and high-range compensation in compliance with RIAA specifications.

FM and AM signals from respective tuners are also applied to the head amplifier section. With the SELECTOR switch set to FM or AM, resistance of the internal negative feedback circuit drops, yielding nearly flat characteristics.

• Control Amplifier Section

Signals from the head amplifier, TAPE MON jack, AUX jack, or decoder section pass through the VOLUME controls to the control amplifier. The control amplifier consists of a single transistor in an RC tone control stage.

• Main Amplifier Section

The main amplifier section is a standard quasi-complementary circuit with a differential amplifier as the initial input stage, thereby improving overall stability.

It amplifies the signal from the control amplifier and supplies output to the speaker connector.

The fuse in the +B circuit provides protection for the power transistors.

5.3 POWER SUPPLY CIRCUIT

DC power for the head amplifier unit, decoder unit, and control amplifier unit, is obtained from full-wave (diode) rectification of AC power. A stabilizing circuit consisting of a zener diode and transistor is included.

Power for the tuner unit is derived from the same source but passes through a transistor ripple filter circuit as well and hence has a low ripple content.

Another full-wave rectifier circuit is used for power supply to the main amplifier section, through a fuse which protects the power transistors. To block noise from power switch operation, main amplifier driver stages are equipped with a muting unit which functions on a time constant delay principle.

5.4 DECODER CIRCUIT

The signal passing through the MODE switch is applied to the decoder unit. When the MODE switch is set to MATRIX REGULAR or SQ, the decoder functions.

• At REGULAR (Fig. 1)

Signals applied to the decoder (L and R) are formed into L and -L signals (phase difference of 180°) with Q1, Q3, and Q5 and R and -R signals (phase difference of 180°) with Q2, Q4, and Q6. Outputs are applied to a pair of phase shifters. Each phase shifter provides a pair of outputs. Thus, the four outputs are separated in terms of phase by from each other. Outputs are taken from emitter followers Q15, Q17, Q18, and Q20. The bases of Q15 and Q20 are connected through resistance, providing for blending between the front left and right channels.

Front left and right channels are connected to each other through a $120\text{ k}\Omega$ resistor at terminals (17) and (24), rear left and right channels through a $51\text{ k}\Omega$ resistor. Thus, regular matrix levels are maintained at proper values.

• At SQ (Fig. 2)

With the MODE switch set to MATRIX SQ, the decoder unit is connected as shown in Fig. 2.

Left and right input signals are converted to L and -L and R and -R signals and applied to phase shifters. Phase shifter outputs are separated by 90° (as in the case of REGULAR) and are applied to Q7, Q8, Q9, Q10,

Q13, and Q14. Level adjustment and addition are effected. Outputs are then extracted from emitter followers Q15, Q16, Q19, and Q20, providing decoded signals. From left and right channels are connected to each other through a $43\text{ k}\Omega$ resistor, as are rear left and right components are cancelled, improving separation.

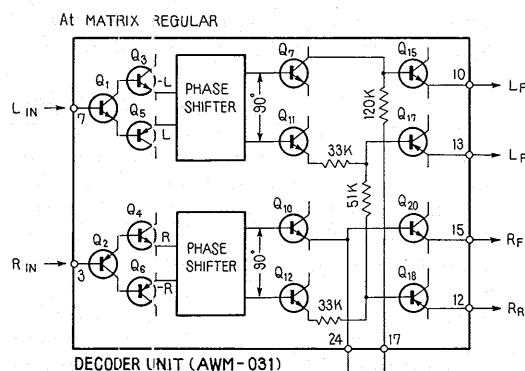


Fig. 1

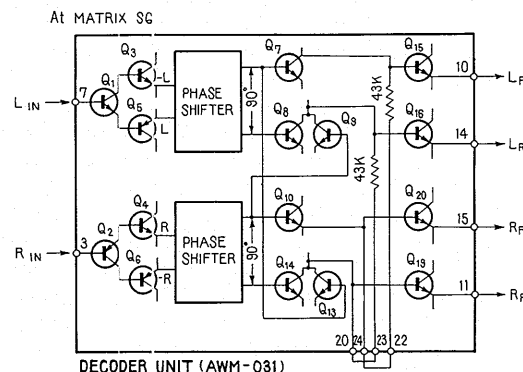
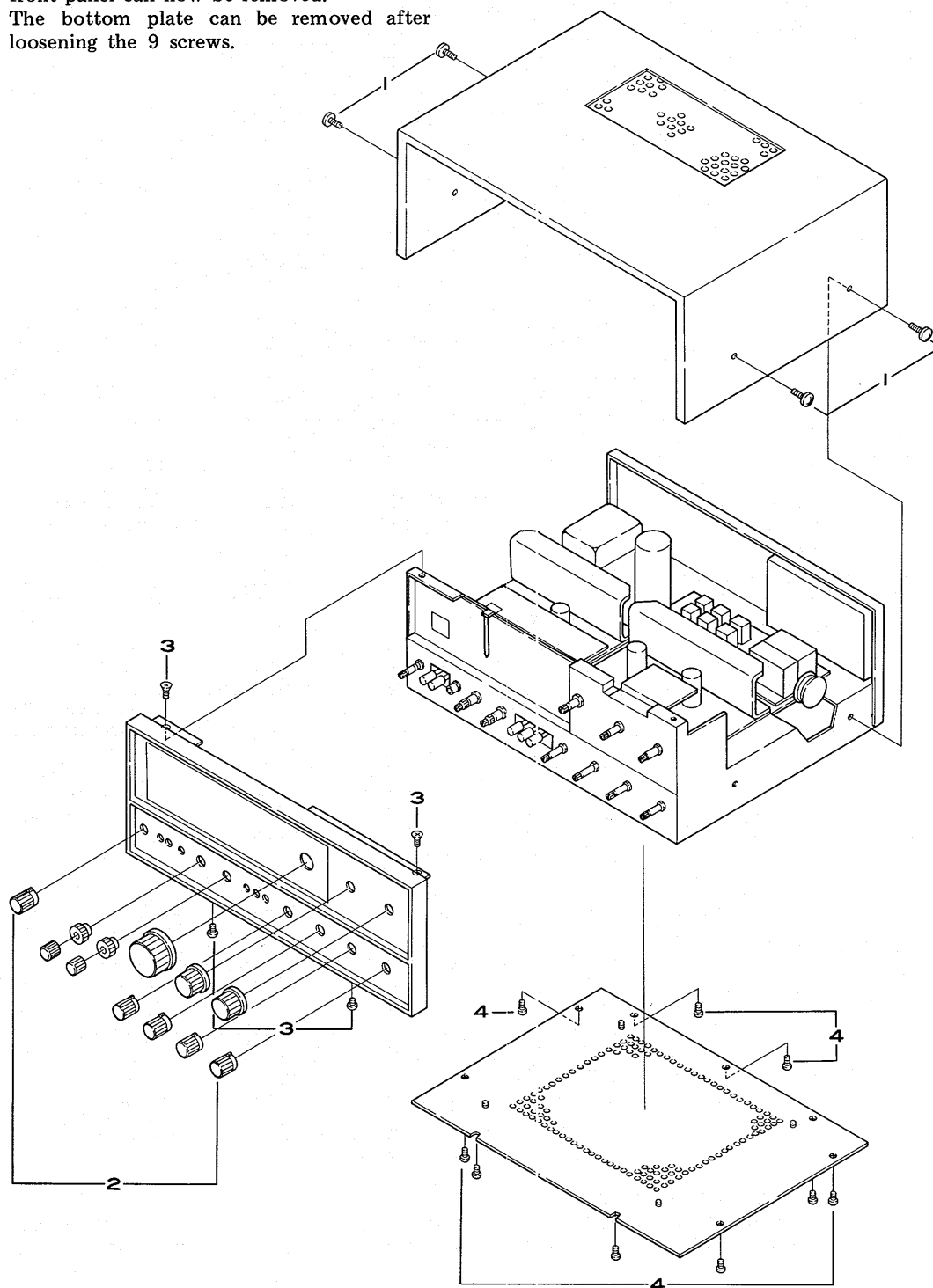


Fig. 2

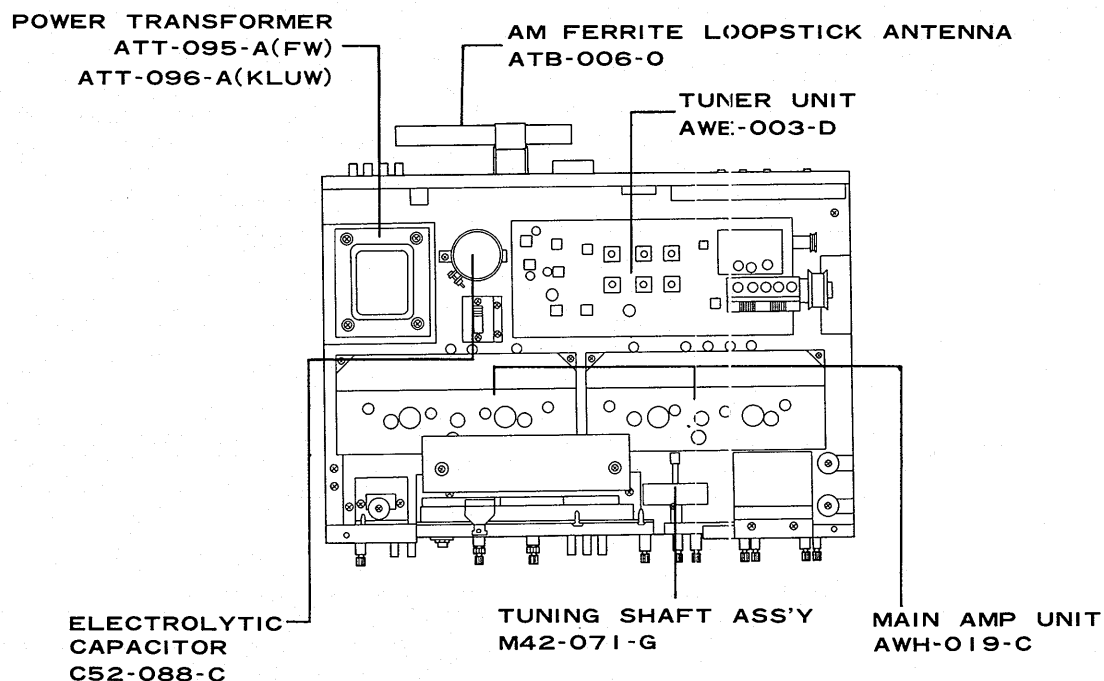
6. DISASSEMBLY

1. Remove the 4 screws from the both sides of the wooden case.
2. Pull off all knobs.
3. Remove 4 screws from top and bottom of front panel as illustrated in figure. The front panel can now be removed.
4. The bottom plate can be removed after loosening the 9 screws.

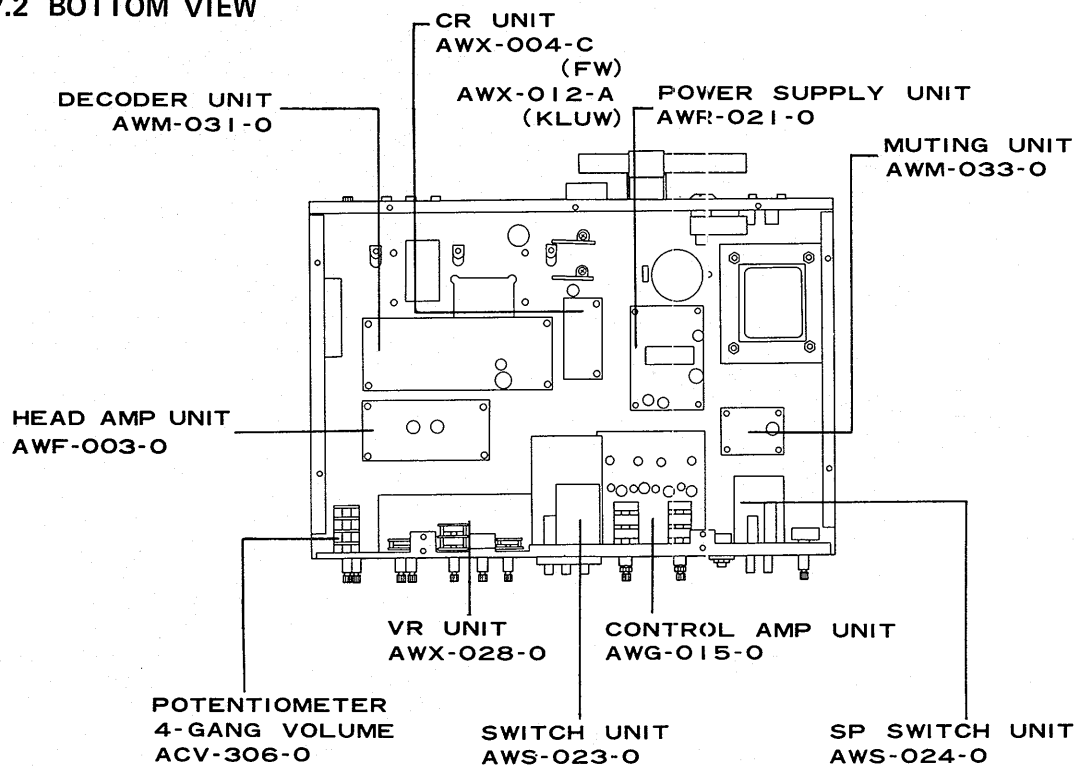


7. PARTS AND PCB LOCATION

7.1 TOP VIEW

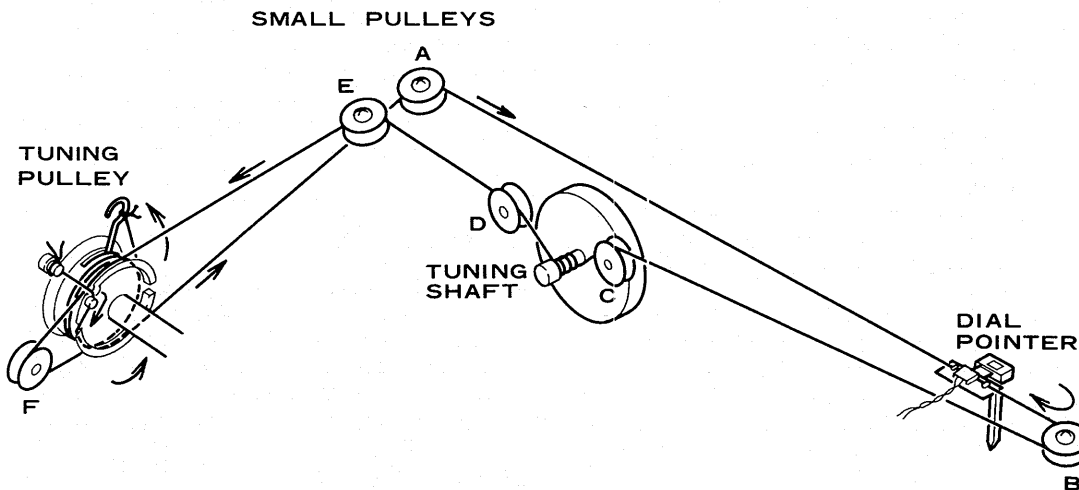


7.2 BOTTOM VIEW



8. DIAL CORD STRINGING

1. Set the tuning capacitor to maximum capacitance.
2. Tie one end of the string to the hook on the side of the tuning pulley, then lead it to the arrow-indicated direction shown in the figure.
3. Wind the string $3/4$ turn around the tuning pulley, then lead it to the small pulleys A, B, and C in order.
4. Wind the string 3 turns around the tuning shaft, then lead it to the small pulleys D and E.
5. Lead the string to the small pulley F, then wind it 2 turns around the tuning pulley.
6. Finally, tie the end of the string to the spring on the tuning pulley.
7. Tune receiver to low end. Fasten dial pointer to string so that it indicates low end on dial scale.



9. ALIGNMENT PROCEDURE

REQUIRED INSTRUMENTS

- FM/AM Signal generator.
- FM/AM Sweep generator: Center frequency 10.7 MHz, 455 kHz
- Oscilloscope
- AC VTVM
- FM multiplex signal generator preferably with RF output.

9.1 FM/AM IF ALIGNMENT

• FM SECTION

- a) Connect a $0.01\mu\text{F}$ capacitor between TP1 and ground before the alignment.
- b) Connect a $220\text{k}\Omega$ resistor in series with the vertical input terminal of the oscilloscope.
- c) Remove the meter lead from terminal 18, then terminate a $4.7\text{k}\Omega$ resistor between terminal 18 and ground.
- d) Connect the vertical input to terminal 18.
- e) Set the selector switch to FM MONO.
- f) Connect the output lead of the sweep generator to the FM antenna terminals.
- g) Set the output level of the sweep generator to 85dB.
- h) Adjust the primary and secondary cores of T6 to obtain a symmetrical pattern.
- i) Set the output level of the sweep generator to 65dB.
- j) Adjust the cores of T4 and T5 for maximum gain and symmetry of the pattern.
- k) Vary the output level of the sweep generator from 60dB to 90dB, then keep the top of the pattern flat and make sure that the center frequency does not drift. If it drifts, repeat steps (g) to (j).
- l) Remove the capacitor ($4.7\mu\text{F}$) from terminal 28.
- m) Disconnect the vertical input from terminal 18, then reconnect it to TP1.
- n) Set the output level of the sweep generator to 70dB.
- o) Observe the S-curve pattern when adjusting the cores of T7. (Linearity is improved by the primary core; symmetry by the secondary core).
- p) Disconnect the $0.01\mu\text{F}$ capacitor from TP1 after the alignment has been completed.
- q) Connect the capacitor ($4.7\mu\text{F}$) to terminal 28 after the alignment has been completed.

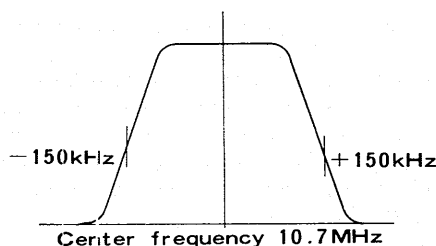


Fig. 3

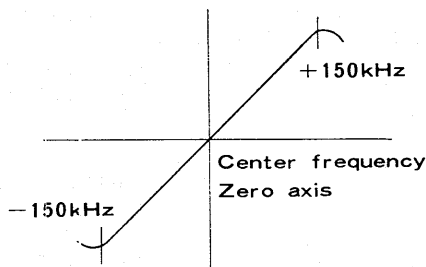


Fig. 4

• AM SECTION

- a) Turn the selector switch to AM.
- b) Connect the output lead of the sweep generator to the AM antenna terminal.
- c) Connect the vertical input of the oscilloscope to the TAPE REC jack.
- d) Set the output level of the sweep generator to 40dB.
- e) Adjust the IFT cores (T9, T10, T11) as shown in Fig. 3, for maximum gain and symmetrical pattern.

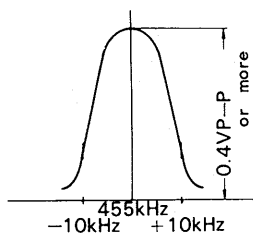


Fig. 5

9.2 FM/AM TRACKING ALIGNMENT

• FM SECTION

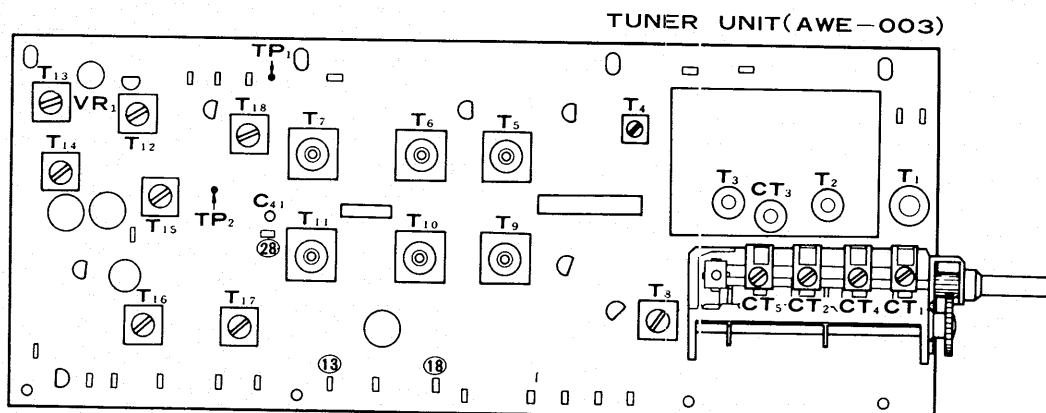
- a) Turn the selector switch to FM MONO.
- b) Connect the output leads of the FM signal generator to the FM antenna terminals.
- c) Set the FM signal generator to modulation 400Hz, 100% and output level 12dB, frequency 90MHz; also the receiver dial at set 90MHz.
- d) Connect the VTVM and oscilloscope (in parallel) to the TAPE REC jack.
- e) Observing the output level on the VTVM, adjust the following cores for maximum reading on the meter.
 T3 Oscillator circuit
 T1 Antenna circuit
 T2 RF circuit
- f) Set the frequency of the FM signal generator and the receiver dial to 106MHz.
- g) Adjust as follows:
 Trimmer capacitor CT3 .. Oscillator circuit
 Trimmer capacitor CT1 ... Antenna circuit
 Trimmer capacitor CT2 RF circuit
- h) Repeat steps (e) to (g) a few times.
- i) Set the output level of the FM signal generator to maximum signal meter deflection.
- j) Adjust the primary core of T7 for minimum sound distortion.

• AM SECTION

- a) Turn the selector switch to AM.
- b) Connect the AM signal generator to the AM antenna terminal.
- c) Set the AM signal generator to modulation 400Hz, 30%, output level 30dB, frequency 600kHz. Set the receiver dial at 600kHz.
- d) Connect the VTVM and oscilloscope (in parallel) to the TAPE REC jack.
- e) Observing the output level on the VTVM, adjust the following cores for maximum reading.
 T8 Oscillator circuit
 Ferrite loopstick antenna ... Antenna circuit
- f) Set the AM signal generator and the receiver dial to 1,400kHz.
- g) Observing the output level on the VTVM, adjust the following cores for maximum reading.
 CT5 Oscillator circuit
 CT4 Antenna circuit
- h) Repeat alignments (e) to (g) a few times.
- i) After these alignments, lock the trimmer capacitor with paint.

9.3 MPX DECODER ALIGNMENT

- a) Modulate the FM signal generator output by FM MPX modulator.
- b) Turn the selector switch to FM AUTO.
- c) Connect the FM signal generator to the FM antenna terminals.
- d) Set the FM MPX modulator to modulation; main 1kHz (L + R) 100%, pilot 10%.
- e) Set the output level of the FM signal generator to 60dB.
- f) Turn the tuning knob to maximum reading on the signal meter.
- g) Set the modulation of the FM MPX modulator to pilot only.
- h) Connect the oscilloscope to TP2.
- i) Adjust the transformers (T13, T14, T15) until the output level of the 19kHz becomes maximum on the scope.
- j) Set the FM MPX modulator to pilot with L or R signal.
- k) Connect the oscilloscope and VTVM to the TAPE REC jacks.
- l) Adjust the semi-fixed potentiometer on the CR unit (AWX-004, 012) until the output level of the L or R signal becomes maximum on the scope.



9.4 OTHER ALIGNMENTS

• CHECKING THE SCA FILTER

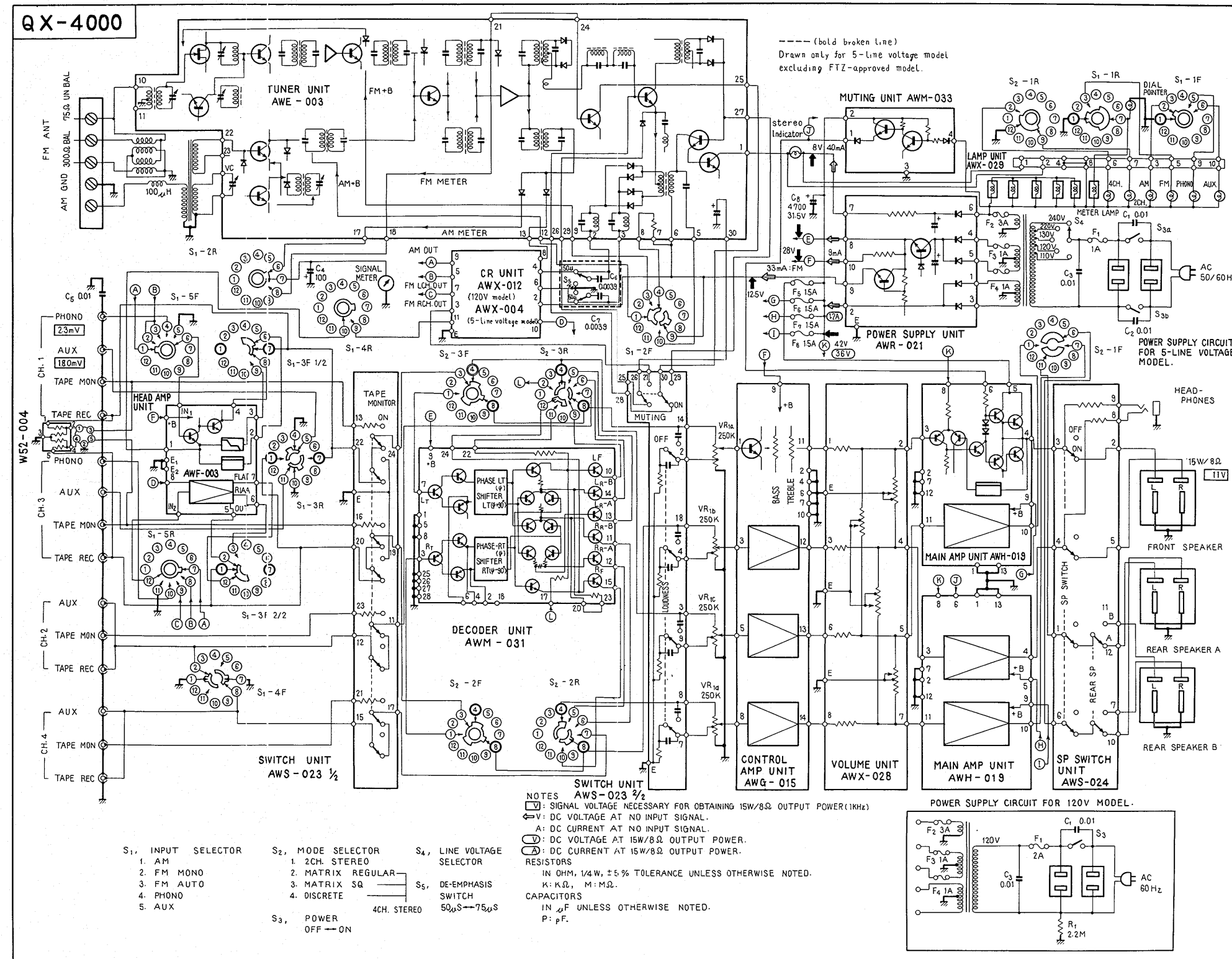
- a) Connect the FM signal generator to the FM antenna terminals.
- b) Modulate the FM signal generator connected to the audio generator, check that the frequency response shows troughs at around 67kHz and 72kHz.
- c) Should the item (b) give the unsatisfactory result, adjust T18 and T12.

• CHECKING THE STEREO INDICATOR

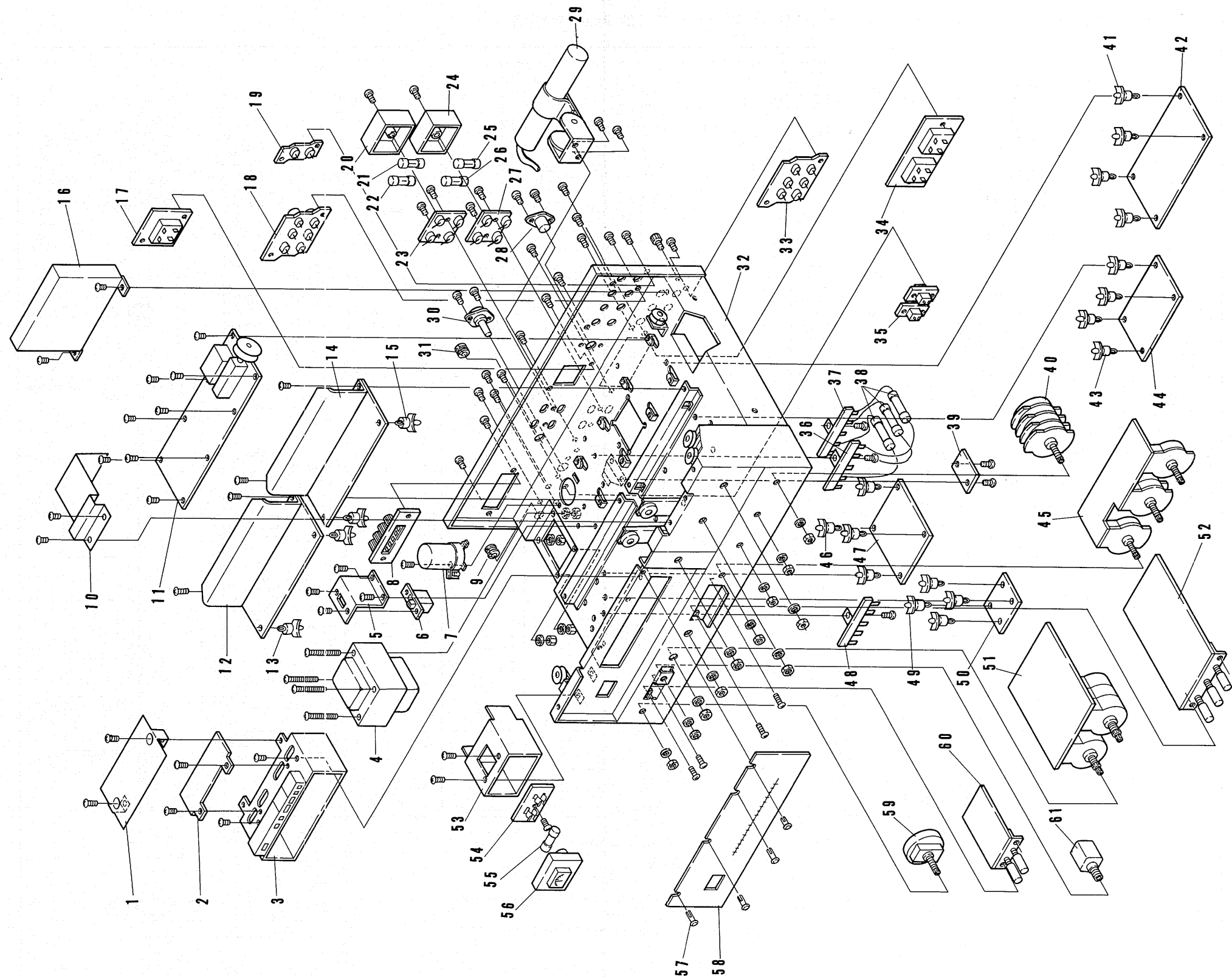
- a) Connect the FM signal generator to the FM antenna terminals.
- b) Turn the selector switch to FM AUTO.
- c) Modulate the FM signal generator connected to the FM MPX modulator, and set the FM MPX modulator pilot on. Check that the stereo indicator lamp goes in, then set the FM MPX modulator to pilot off, and check that the stereo indicator lamp goes out.

10. SCHEMATIC DIAGRAMS, PCB PATTERNS AND PARTS LISTS

10.1 UNIT CONNECTION DIAGRAM, EXPLODED VIEW, AND MISCELLANEOUS PARTS LIST



EXPLODED VIEW



PARTS LIST OF EXPLODED VIEW

Key No.	Description	Part No.	
1	Wire cover metal	ANK-026-0	FW model KLUW model
2	Shield cover	ANF-082-0	
3	Lamp box	ANG-095-0	
4	Power transformer	ATT-095-A	
5	Switch holder	ATT-096-A	
		ANF-070-0	FW model
6	De-emphasis switch	S41-022-A	FW model
7	Electrolytic capacitor 4700 μ F 50V	C52-088-C	
8	Antenna input terminal board	K11-043-D	
9	AC cord stopper	E32-056-0	
10	Switch cover	ANH-096-0	
11	Tuner unit	AWE-003-D	
12	Main amp unit	AWH-019-C	
13	Boss	B21-008-A	
14	Main amp unit	AWH-019-C	
15	Boss	B21-008-A	
16	Shield cover	ANH-037-0	
17	Speaker socket	K72-028-0	
18	6P input terminal board	AKB-006-0	
19	2P input terminal board	AKB-009-0	
20	Fuse cover	AEC-058-0	
21	Fuse 1.5A for protection	AEK-009-0	
22	Fuse 1.5A for protection	AEK-009-0	
23	Fuse holder	AKR-011-0	
24	Fuse cover	AEC-058-0	
25	Fuse 1.5A for protection	AEK-009-0	
26	Fuse 1.5A for protection	AEK-009-0	
27	Fuse holder	AKR-011-0	
28	5P connector socket (DIN)	K93-003-B	
29	AM ferrite loopstick antenna	ATB-006-0	
30	Fuse holder Line voltage selector	AKR-006-0 AKR-001-0	KLUW model FW model

Key No.	Description	Part No.	
31	AC cord stopper	AEC-032-0	KLUW model FW model
32	Chassis	ANA-027-0	
33	6P input terminal board	AKB-008-B	
34	Speaker socket	K72-031-0	
35	Spare AC outlet	AKP-002-0 AKP-004-0	
36	4P lug terminal	AKC-016-0	FW model KLUW model
37	4P lug terminal	AKC-016-0	
38	Fuse 1A for protection	AEK-004-0	
39	CR unit	AWX-004-C AWX-012-A	
40	Potentiometer 4-gang, volume	ACV-306-0	
41	Boss	B21-008-0	
42	Decoder unit	AWM-031-0	
43	Boss	B21-008-0	
44	Head amp unit	AWF-003-0	
45	Volume unit	AWX-028-0	
46	Boss	B21-008-0	
47	Power supply unit	AWR-021-0	
48	4P lug terminal	AKC-016-0	
49	Boss	B21-008-0	
50	Muting unit	AWM-033-0	
51	Control amp unit	AWG-015-0	
52	Switch unit	AWS-023-0	
53	Meter-held metal	ANG-006-0	
54	1P fuse holder	K91-005-A	
55	Pilot lamp	B22-032-0	
56	Tuning meter	AAW-003-0	FW model KLUW model
57	Canoe clip	AEC-036-A	
58	Dial scale	AAG-036-A	
59	Power switch	S11-016-A ASA-032-0	

QX-4000

Key No.	Description	Part No.
60	SP switch unit	AWS-024-0
61	Headphones jack	K72-026-0

MISCELLANEOUS PARTS LIST

NOTE:

This part s list for the FWmodel, the KLUW model uses some different parts as following page;

For KLUW model. 25.

- CAPACITORS: IN μ F UNLESS OTHERWISE NOTED. p: μ F.
- RESISTORS: IN Ω , $\frac{1}{4}$ W UNLESS OTHERWISE NOTED. k: k Ω , M: M Ω .

CAPACITORS

Symbol	Description	Part No.
C1	Ceramic 0.01 250V	ACG-001-0
C2	Ceramic 0.01 250V	ACG-001-0
C3	Ceramic 0.01 250V	ACG-001-0
C4	Electrolytic 100 16V	CEA 101P 16
C5	Ceramic 0.01 50V	CKDYF 103Z 50
C6	MyIar 0.0039 50V	CQMA 392K 50
C7	MyIar 0.0039 50V	CQMA 392K 50
C8	Electrolytic 4700 50V	C52-088-C

SWITCHES

Symbol	Description	Part No.
	Selector switch	ASC-030-0
	Mode selector switch	ASC-031-0
	Power switch	S11-016-A
	De-emphasis switch	S41-022-A

COILS AND TRANSFORMERS

Symbol	Description	Part No.
	Power transformer	ATT-096-A
	AM ferrite loopstick antenna	ATB-006-0
	Choke coil	T24-030-0
	Balune	T22-025-A

OTHERS

Symbol	Description	Part No.
	Lamp unit	AWX-029-0
	Front panel ass'y	ANB-150-0
	Wooden case	AMM-020-B
	Tuning shaft ass'y	M42-071-G
	Tuning pulley ass'y	AXA-003-B
	AM ferrite loopstick antenna holder ass'y	AXB-001-0
	Foot	AEC-061-0
	Dial pointer ass'y	AAF-020-0
	Knob, power, balances, and volume	AAB-027-A
	Knob, bass and treble (L)	AAB-032-0
	Knob, bass and treble (R)	AAB-033-0
	Knob, tuning	AAA-011-A
	Knob, selector and mode	AAB-026-A
	Knob, push switch	AAD-011-A
	Quadrasonic badge	AAM-003-0
	Fuse 1A	E21-004-0
	Fuse 1.5A for protection	AEK-009-0
	Fuse 3A for protection	E21-022-0
	Fuse 1A for protection	E21-020-0
	Pilot lamp for program and channel indicators	AEL-007-0

For KLUW model

CAPACITORS

Symbol	Description	Part No.
C1	Ceramic	ACG-002-0
C2		
C3	Metalized mylar	ACE-002-0
C4	Electrolytic	CEA 101P 16
C5	Ceramic	CKDYF 103Z 50
C6		
C7		
C8	Electrolytic	C52-088-C

RESISTOR

Symbol	Description	Part No.
R1	Carbon film	RD½PS 225J

SWITCHES

Symbol	Description	Part No.
	Selector switch	ASC-030-0
	Mode selector switch	ASC-031-0
	Power switch	ASA-032-0

Symbol	Description	Part No.
	Compound part for REC jack	W52-004-0
	FM T-type antenna	D52-013-0
	Speaker plug	K72-007-B
	Pin plug	K72-015-A
	Fuse 2A	E21-005-0
	Polishing cloth	E33-009-B
	Packing case	AHD-118-0
	Styrotector	AHA-007-A
	AC power cord	D11-002-B
	Operating instructions	ARB-063-0
	Screw for grounding	B11-012-A
	Screw to fix wooden case	ABA-010-0
	Insulating spacer	AEB-018-0
	Metal sleeve	AKE-007-0

MISCELLANEOUS PARTS LIST

(continued)

COILS AND TRANSFORMERS

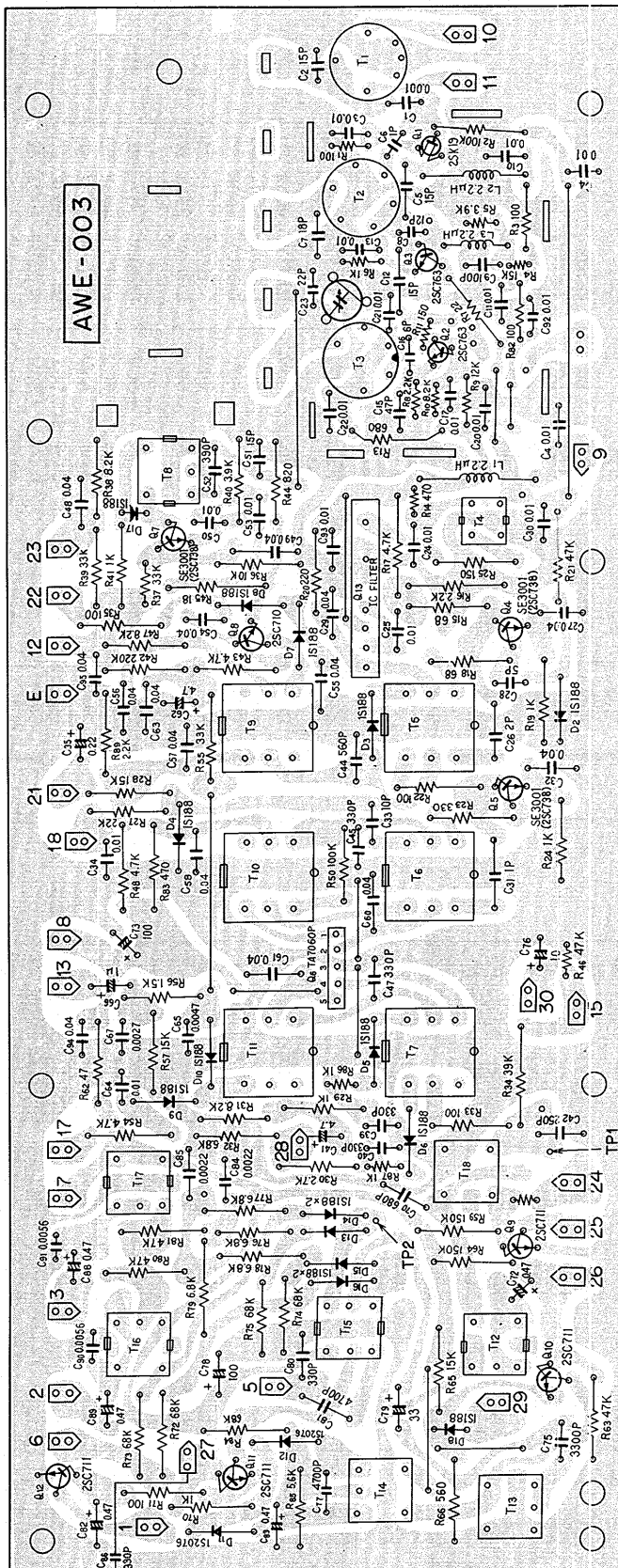
Symbol	Description	Part No.
	Power transformer	ATT-095-A
	AM ferrite loopstick antenna	ATB-006-0
	Choke coil	T24-030-0
	Balune	T22-025-A

OTHERS

Symbol	Description	Part No.
	Lamp unit	AWX-029-0
	Front panel ass'y	ANB-150-0
	Wooden case	AMM-020-B
	Tuning shaft ass'y	M42-071-G
	Tuning pulley ass'y	AXA-003-B
	AM ferrite loopstick antenna holder ass'y	AXB-001-0
	Foot	AEC-061-0
	Dial pointer ass'y	AAF-020-0
	Knob, power, balances, and volume	AAB-027-A
	Knob, bass and treble (L)	AAB-032-0
	Knob, bass and treble (R)	AAB-033-0
	Knob, tuning	AAA-011-A
	Knob, selector and mode	AAB-026-A
	Knob, push switch	AAD-011-A
	Quadrasonic badge	AAM-003-0
	Fuse 2A	E21-027-0
	Fuse 1.5A for protection	AEK-009-0
	Fuse 3A for protection	AEK-003-0
	Fuse 1A for protection	AEK-004-0
	Pilot lamp for program and channel indicators	AEL-007-0

Symbol	Description	Part No.
	Compound part for REC jack	W52-004-0
	FM T-type antenna	D52-013-0
	Speaker plug	K72-007-B
	Pin plug	K72-015-A
	Polishing cloth	E33-009-B
	Packing case	AHD-116-0
	Styrotector	AHA-007-A
	AC power cord	ADG-003-0
	Operating instructions	ARB-063-0
	Screw for grounding	B11-012-A
	Screw to fix wooden case	ABA-010-0
	Insulating spacer	AEB-018-0
	Metal sleeve	AKE-007-0

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29 PARTS LIST OF TUNER UNIT (AWE-003-D)

CAPACITORS

Symbol	Description	Part No.	
VC	Tuning capacitor	C64-046-0	
CT3	Ceramic trimmer	C43-007-A	
C1	Ceramic	CKDYF 102Z 50	
C2	Ceramic	CCDSL 150K 50	
C3	Ceramic	CKDYF 103Z 50	
C4	Ceramic	CKDYF 103Z 50	
C5	Ceramic	CCDSL 150K 50	
C6	Ceramic	CGB 010K 500	
C7	Ceramic	CCDSL 180K 50	
C8	Ceramic	CCDSL 120K 50	
C9	Ceramic	CCDSL 101K 50	
C10	Ceramic	CKDYF 103Z 50	
C11	Ceramic	CKDYF 103Z 50	
C12	Ceramic	CGB 1R5K 500	
C13	Ceramic	CKDYF 103Z 50	
C14	Ceramic	CKDYF 103Z 50	
C15	Ceramic	CCDSL 470K 50	
C16	Ceramic	CCDTJ 060D 50	
C17	Ceramic	CKDYF 103Z 50	
C20	Ceramic	CKDYF 103Z 50	
C21	Ceramic	CKDYB 103K 50	
C22	Ceramic	CKDYB 103K 50	
C23	Ceramic	CCDRH 220K 50	
C24	Ceramic	CKDYF 103Z 50	
C25	Ceramic	CKDYF 103Z 50	
C26	Ceramic	CCDSL 020C 50	
C27	Ceramic	CKDYF 403Z 50	

Symbol	Description	Part No.	
C28	Ceramic	CCDSL 050D 50	
C29	Ceramic	CKDYF 403Z 50	
C30	Ceramic	CKDYF 103Z 50	
C31	Ceramic	CGB 010K 500	
C32	Ceramic	CKDBC 473Z 25	
C33	Ceramic	CCDSL 100F 50	
C34	Ceramic	CKDYF 103Z 50	
C35	Electrolytic	CSSA R22M 25	
C39	Ceramic	CKDYB 331K 50	
C40	Ceramic	CKDYB 331K 50	
C41	Electrolytic	CEA 4R7P 25	
C42	Ceramic	CCDSL 251K 50	
C44	Ceramic	CKDYB 561K 50	
C45	Ceramic	CKDYB 331K 50	
C47	Ceramic	CKDYB 331K 50	
C48	Ceramic	CKDYF 403Z 50	
C49	Ceramic	CKDYF 403Z 50	
C50	Mylar	QOMA 103K 50	
C51	Ceramic	CCDUJ 150K 50	
C52	Styrol	QOSA 391K 50	
C53	Mylar	QOMA 103K 50	
C54	Ceramic	CKDYF 403Z 50	
C55	Ceramic	CKDYF 403Z 50	
C56	Ceramic	CKDYF 403Z 50	
C57	Ceramic	CKDYF 403Z 50	
C58	Ceramic	CKDYF 403Z 50	
C60	Ceramic	CKDYF 403Z 50	
C61	Ceramic	CKDYF 403Z 50	
C62	Electrolytic	CEA 4R7P 25	
C63	Ceramic	CKDYF 403Z 50	

RESISTORS

Symbol	Description	Part No.
C64	Ceramic	CKDYF 103Z 50
C65	Mylar	CQMA 472K 50
C66	Electrolytic	CEA 010P 50
C67	Mylar	CQMA 272K 50
C69		
C70	Styrol	CQSA 681J 50
C71		
C72	Electrolytic	CEA R47P 50
C73	Electrolytic	CEA 101P 16
C75	Styrol	C15-011-A
C76	Electrolytic	CEA 100P 16
C77	Styrol	C15-013-A
C78	Electrolytic	CEA 101P 16
C79	Electrolytic	CEA 330P 16
C80		
C81	Styrol	C15-013-A
C82	Electrolytic	CEA R47P 50
C83	Electrolytic	CEA R47P 50
C84	Mylar	CQMA 222J 50
C85	Mylar	CQMA 222J 50
C86	Ceramic	CKDYB 331K 50
C88	Electrolytic	CEA R47P 50
C89	Electrolytic	CEA R47P 50
C90	Mylar	CQMA 562K 50
C91	Mylar	CQMA 562K 50
C92	Ceramic	CKDYF 103Z 50
C93	Ceramic	CKDYF 103Z 50
C94	Ceramic	CKDYF 403Z 50
C95	Ceramic	CKDYF 403Z 50

Symbol	Description	Part No.
R1	Carbon film	RD $\frac{1}{4}$ VS 101J
R2	Carbon film	RD $\frac{1}{4}$ PS 104J
R3	Carbon film	RD $\frac{1}{4}$ VS 101J
R4	Carbon film	RD $\frac{1}{4}$ VS 153J
R5	Carbon film	RD $\frac{1}{4}$ VS 392J
R6	Carbon film	RD $\frac{1}{4}$ VS 102J
R7	Carbon film	RD $\frac{1}{4}$ VS 220J
R8	Carbon film	RD $\frac{1}{4}$ VS 222J
R9	Carbon film	RD $\frac{1}{4}$ VS 123J
R10	Carbon film	RD $\frac{1}{4}$ VS 822J
R11	Carbon film	RD $\frac{1}{4}$ VS 151J
R13	Carbon film	RD $\frac{1}{4}$ PS 681J
R14	Carbon film	RD $\frac{1}{4}$ VS 471J
R15	Carbon film	RD $\frac{1}{4}$ PS 680J
R16	Carbon film	RD $\frac{1}{4}$ VS 222J
R17	Carbon film	RD $\frac{1}{4}$ VS 472J
R18	Carbon film	RD $\frac{1}{4}$ VS 680J
R19	Carbon film	RD $\frac{1}{4}$ PS 102J
R20	Carbon film	RD $\frac{1}{4}$ PS 221J
R21	Carbon film	RD $\frac{1}{4}$ PS 473J
R22	Carbon film	RD $\frac{1}{4}$ PS 101J
R23	Carbon film	RD $\frac{1}{4}$ PS 331J
R24	Carbon film	RD $\frac{1}{4}$ PS 102J
R25	Carbon film	RD $\frac{1}{4}$ PS 151J
R27	Carbon film	RD $\frac{1}{4}$ PS 223J
R28	Carbon film	RD $\frac{1}{4}$ PS 153J
R29	Carbon film	RD $\frac{1}{4}$ PS 102J
R30	Carbon film	RD $\frac{1}{4}$ PS 272J
R31	Carbon film	RD $\frac{1}{4}$ PS 822J
R32	Carbon film	RD $\frac{1}{4}$ PS 682J

Symbol	Description	Part No.
R70	Carbon film	RD¼PS 102J
R71	Carbon film	RD¼PS 101J
R72	Carbon film	RD¼PS 683J
R73	Carbon film	RD¼PS 683J
R74	Carbon film	RD¼PS 683J
R75	Carbon film	RD¼PS 683J
R76	Carbon film	RD¼PS 682J
R77	Carbon film	RD¼PS 682J
R78	Carbon film	RD¼PS 682J
R79	Carbon film	RD¼PS 682J
R80	Carbon film	RD¼PS 472J
R81	Carbon film	RD¼PS 472J
R82	Carbon film	RD¼PS 101J
R83	Carbon film	RD¼PS 471J
R84	Carbon film	RD¼PS 683J
R85	Carbon film	RD¼VS 562J
R86	Carbon film	RD¼VS 102J
R87	Carbon film	RD¼VS 102J

TRANSFORMERS AND COILS

Symbol	Description	Part No.
T1	FM Antenna Coil	ATC-002-0
T2	FM RF Coil	ATC-004-0
T3	FM OSC Coil	ATC-003-0
T4	Matching Transformer	ATE-001-A
T5	FM IF Transformer	T73-035-A
T6	FM IF Transformer	T73-036-0
T7	FM IF Transformer	T74-003-A
T8	AM OSC Coil	ATB-001-A
T9	AM IF Transformer	T71-028-0
T10	AM IF Transformer	T71-026-0

Symbol	Description	Part No.
R33	Carbon film	RD¼PS 101J
R34	Carbon film	RD¼PS 393J
R35	Carbon film	RD¼PS 301J
R36	Carbon film	RD¼PS 103J
R37	Carbon film	RD¼VS 333J
R38	Carbon film	RD¼PS 822J
R39	Carbon film	RD¼PS 332J
R40	Carbon film	RD¼PS 392J
R41	Carbon film	RD¼PS 102J
R42	Carbon film	RD¼PS 224J
R43	Carbon film	RD¼PS 472J
R44	Carbon film	RD¼PS 821J
R45	Carbon film	RD¼PS 180J
R46	Carbon film	RD¼VS 472J
R47	Carbon film	RD¼PS 822J
R48	Carbon film	RD¼PS 472J
R49	Carbon film	RD¼PS 222J
R50	Carbon film	RD¼PS 104J
R54	Carbon film	RD¼PS 472J
R55	Carbon film	RD¼PS 333J
R56	Carbon film	RD¼PS 152J
R57	Carbon film	RD¼PS 153J
R58	Carbon film	RD¼VS 272J
R59	Carbon film	RD¼PS 154J
R62	Carbon film	RD¼PS 470J
R63	Carbon film	RD¼PS 473J
R64	Carbon film	RD¼PS 154J
R65	Carbon film	RD¼PS 153J
R66	Carbon film	RD¼PS 561J
R67	Carbon film	

TUNER UNIT (continued)

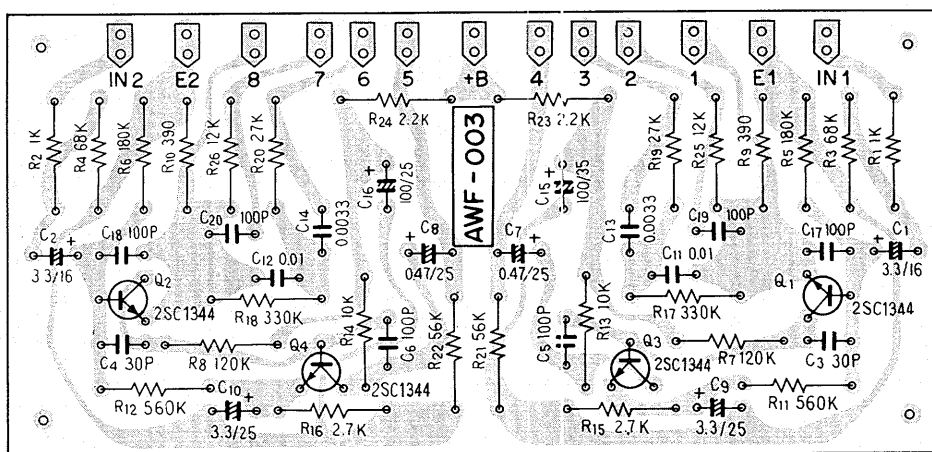
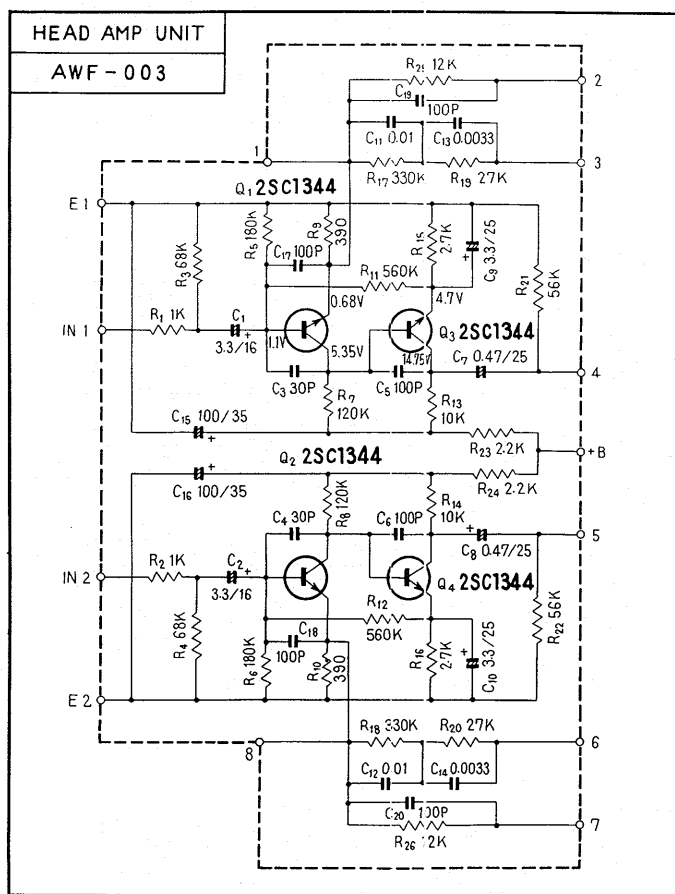
Symbol	Description	Part No.
T11	AM IF Transformer	T72-022-0
T12	SCA Filter	ATM-006-0
T13	19kHz Transformer	T75-023-B
T14	19kHz Transformer	T75-024-B
T15	38kHz Transformer	T75-025-B
T16	38kHz Leak Filter	ATM-004-0
T17	38kHz Leak Filter	ATM-004-0
T18	SCA Filter	ATM-007-0
L1	RF Choke Coil	T24-028-0
L2	RF Choke Coil	T24-028-0
L3	RF Choke Coil	T24-028-0

SEMICONDUCTORS

Symbol	Description	Part No.
Q1	2SK19-Y FET	
Q2	2SC763-D or C Transistor	
Q3	2SC763-D or C Transistor	
Q4	SE3001 or 2SC738 Transistor	
Q5	SE3001 or 2SC738 Transistor	
Q6	TA7060P-BL IC	
Q7	SE3001 or 2SC738 Transistor	
Q8	2SC710-D or DR Transistor	
Q9	2SC711-F Transistor	
Q10	2SC711-E or F Transistor	
Q11	2SC945-R Transistor	
Q12	2SC373 Transistor	
Q13	FM IC Filter	{ W53-046-A ATF-007-0

Symbol	Description	Part No.
D2	1S188 FM-1 Diode	
D3	1S188 FM-1 Diode	
D4	1S188 FM-1 Diode	
D5	1S188 FM-1 Diode	
D6	1S188 FM-1 Diode	
D7	1S188 FM-1 Diode	
D8	1S188 FM-1 Diode	
D9	1S188 FM-1 Diode	
D10	1S188 FM-1 Diode	
D11	1S2076 Diode	
D12	1S2076 Diode	
D13	1S188 FM-1 Diode	
D14	1S188 FM-1 Diode	
D15	1S188 FM-1 Diode	
D16	1S188 FM-1 Diode	
D17	1S188 FM-1 Diode	
D18	1S188 FM-1 Diode	

10.3 HEAD AMP UNIT (AWF-003-0)



PARTS LIST OF HEAD AMP UNIT (AWF-003-0)

CAPACITORS

Symbol	Description	Part No.
C1	Electrolytic 3.3 16V	CSSA 3R3M 16
C2	Electrolytic 3.3 16V	CSSA 3R3M 16
C3	Ceramic 30p 50V	CCDSL 300K 50
C4	Ceramic 30p 50V	CCDSL 300K 50
C5	Ceramic 100p 50V	CCDSL 101K 50
C6	Ceramic 100p 50V	CCDSL 101K 50
C7	Electrolytic 0.47 25V	CSSA R47M 25
C8	Electrolytic 0.47 25V	CSSA R47M 25
C9	Electrolytic 3.3 25V	CEA 3R3P 25
C10	Electrolytic 3.3 25V	CEA 3R3P 25
C11	MyIar 0.01 50V	CQMA 103K 50
C12	MyIar 0.01 50V	CQMA 103K 50
C13	MyIar 0.0033 50V	CQMA 332K 50
C14	MyIar 0.0033 50V	CQMA 332K 50
C15	Electrolytic 100 35V	CEA 101P 35
C16	Electrolytic 100 35V	CEA 101P 35
C17	Ceramic 100p 50V	CCDSL 101K 50
C18	Ceramic 100p 50V	CCDSL 101K 50
C19	Ceramic 100p 50V	CCDSL 101K 50
C20	Ceramic 100p 50V	CCDSL 101K 50

SEMICONDUCTORS

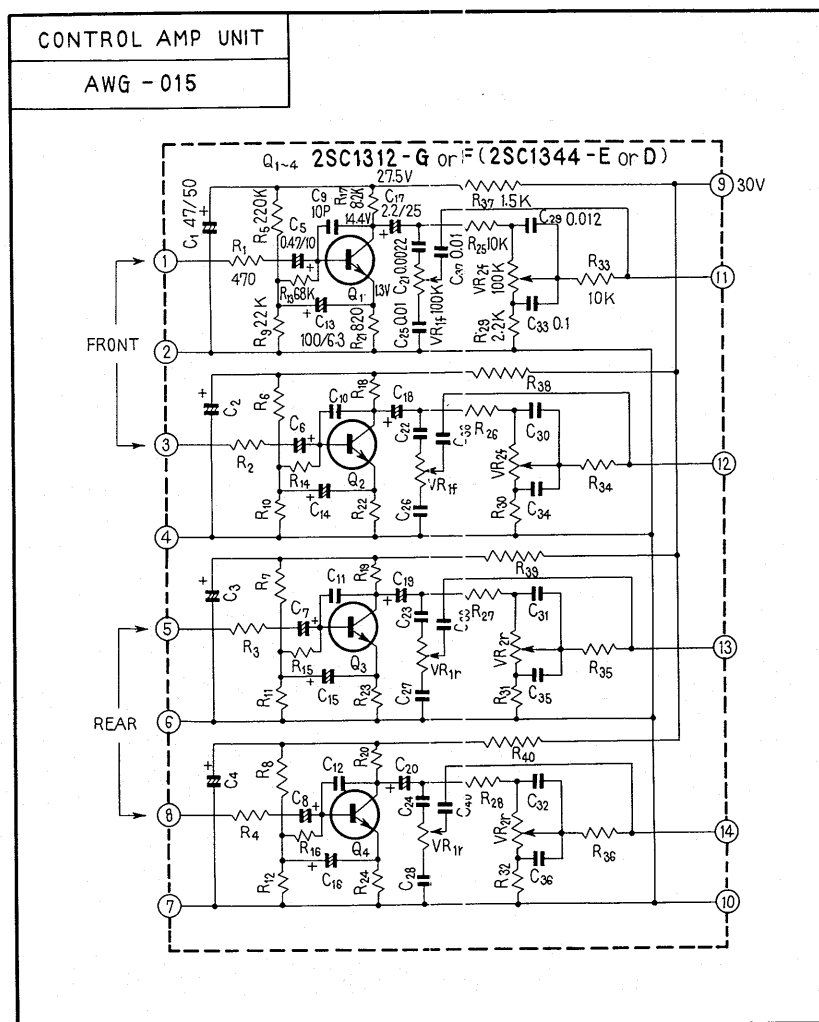
Symbol	Description	Part No.
Q1	2SC1344-E or 2SC1312-G, F Transistor	
Q2	2SC1344-E or 2SC1312-G, F Transistor	

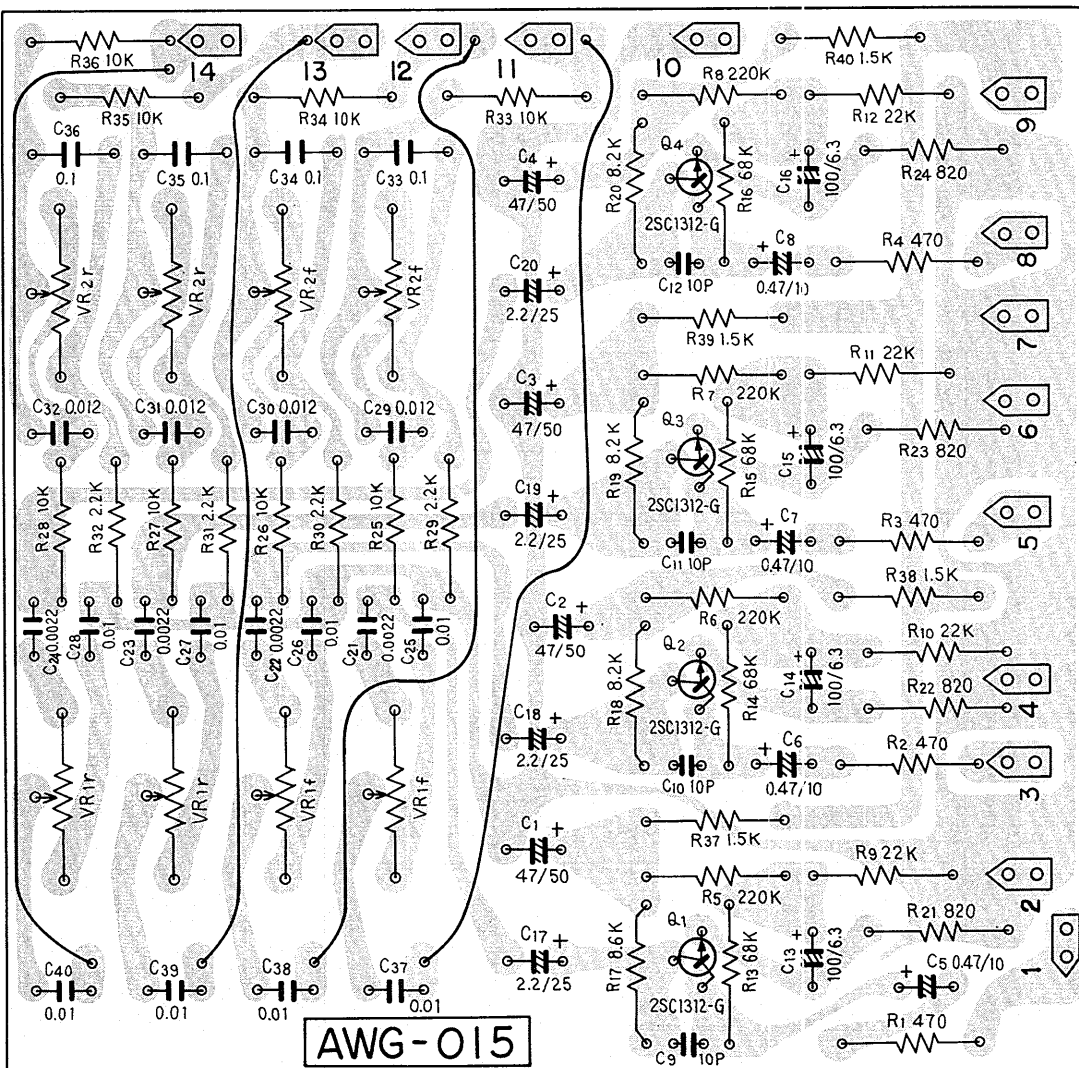
Symbol	Description	Part No.
Q3	2SC1344-E or 2SC1312-G, F Transistor	
Q4	2SC1344-E or 2SC1312-G, F Transistor	

RESISTORS

Symbol	Description	Part No.
R1	Carbon film 1k	RD¼PS 102J
R2	Carbon film 1k	RD¼PS 102J
R3	Carbon film 68k	RD¼PS 683J
R4	Carbon film 68k	RD¼PS 683J
R5	Carbon film 180k	RD¼PS 184J
R6	Carbon film 180k	RD¼PS 184J
R7	Carbon film 120k	RD¼PS 124J
R8	Carbon film 120k	RD¼PS 124J
R9	Carbon film 390	RD¼PS 391J
R10	Carbon film 390	RD¼PS 391J
R11	Carbon film 560k	RD¼PS 564J
R12	Carbon film 560k	RD¼PS 564J
R13	Carbon film 10k	RD¼PS 103J
R14	Carbon film 10k	RD¼PS 103J
R15	Carbon film 2.7k	RD¼PS 272J
R16	Carbon film 2.7k	RD¼PS 272J
R17	Carbon film 330k	RD¼PS 334J
R18	Carbon film 330k	RD¼PS 334J
R19	Carbon film 27k	RD¼PS 273J
R20	Carbon film 27k	RD¼PS 273J
R21	Carbon film 56k	RD¼PS 563J
R22	Carbon film 56k	RD¼PS 563J
R23	Carbon film 2.2k	RD¼PS 222J
R24	Carbon film 2.2k	RD¼PS 222J
R25	Carbon film 12k	RD¼PS 123J
R26	Carbon film 12k	RD¼PS 123J

10.4 CONTROL AMP UNIT (AWG-015-0)





37 PARTS LIST OF CONTROL AMP UNIT (AWG-015-0)

CAPACITORS

Symbol	Description	Part No.	
C1	Electrolytic	CEA 470P 50	
C2	Electrolytic	CEA 470P 50	
C3	Electrolytic	CEA 470P 50	
C4	Electrolytic	CEA 470P 50	
C5	Electrolytic	CSSA R47X 10	
C6	Electrolytic	CSSA R47X 10	
C7	Electrolytic	CSSA R47X 10	
C8	Electrolytic	CSSA R47X 10	
C9	Ceramic	CCDSL 100F 50	
C10	Ceramic	CCDSL 100F 50	
C11	Ceramic	CCDSL 100F 50	
C12	Ceramic	CCDSL 100F 50	
C13	Electrolytic	CEA 101P 6	
C14	Electrolytic	CEA 101P 6	
C15	Electrolytic	CEA 101P 6	
C16	Electrolytic	CEA 101P 6	
C17	Electrolytic	CSSA 2R2X 25	
C18	Electrolytic	CSSA 2R2X 25	
C19	Electrolytic	CSSA 2R2X 25	
C20	Electrolytic	CSSA 2R2X 25	
C21	Mylar	QOMA 222K 50	
C22	Mylar	QOMA 222K 50	
C23	Mylar	QOMA 222K 50	
C24	Mylar	QOMA 222K 50	
C25	Mylar	QOMA 103K 50	

Symbol	Description	Part No.	
C26	Mylar	QOMA 103K 50	
C27	Mylar	QOMA 103K 50	
C28	Mylar	QOMA 103K 50	
C29	Mylar	QOMA 123K 50	
C30	Mylar	QOMA 123K 50	
C31	Mylar	QOMA 123K 50	
C32	Mylar	QOMA 123K 50	
C33	Mylar	QOMA 104K 50	
C34	Mylar	QOMA 104K 50	
C35	Mylar	QOMA 104K 50	
C36	Mylar	QOMA 104K 50	
C37	Mylar	QOMA 103K 50	
C38	Mylar	QOMA 103K 50	
C39	Mylar	QOMA 103K 50	
C40	Mylar	QOMA 103K 50	

RESISTORS

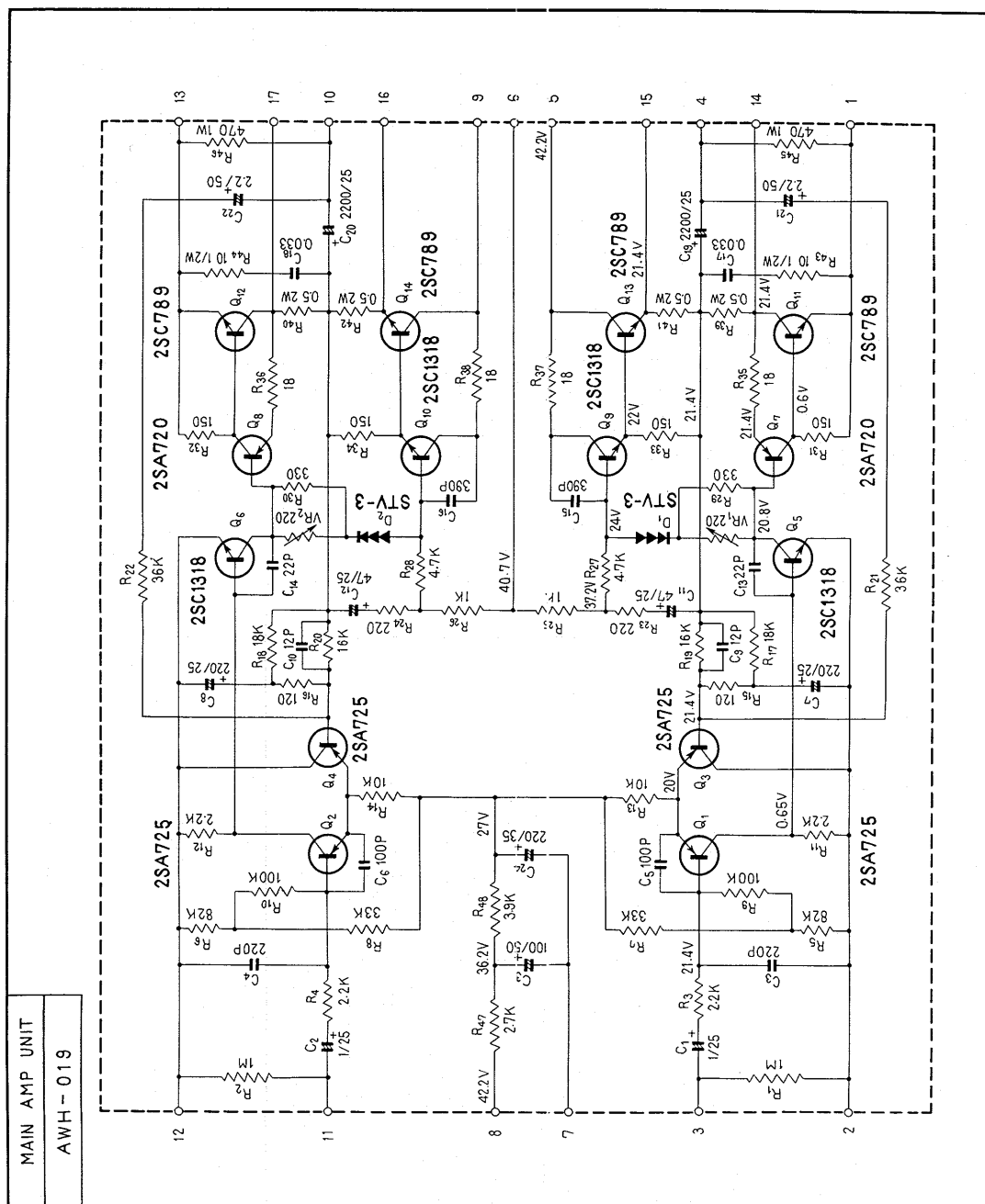
Symbol	Description	Part No.	
R1	Carbon film	RD½PS 471J	
R2	Carbon film	RD½PS 471J	
R3	Carbon film	RD½PS 471J	
R4	Carbon film	RD½PS 471J	
R5	Carbon film	RD½PS 224J	
R6	Carbon film	RD½PS 224J	
R7	Carbon film	RD½PS 224J	
R8	Carbon film	RD½PS 224J	
R9	Carbon film	RD½PS 223J	
R10	Carbon film	RD½PS 223J	

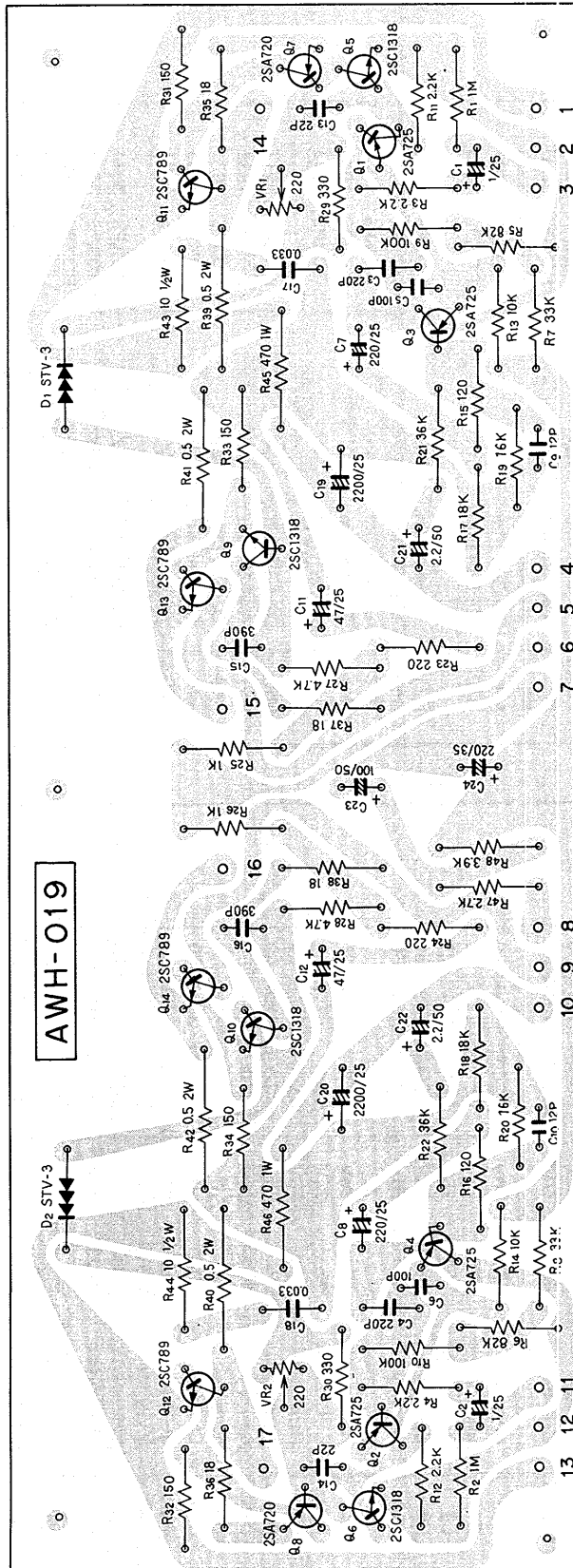
SEMICONDUCTORS

Symbol	Description	Part No.	
Q1	2SC1312-G or F Transistor		2SC1344E or D
Q2	2SC1312-G or F Transistor		2SC1344E or D
Q3	2SC1312-G or F Transistor		2SC1344E or D
Q4	2SC1312-G or F Transistor		2SC1344E or D

Symbol	Description	Part No.
R11	Carbon film 22k	RD¼PS 223J
R12	Carbon film 22k	RD¼PS 223J
R13	Carbon film 68k	RD¼PS 683J
R14	Carbon film 68k	RD¼PS 683J
R15	Carbon film 68k	RD¼PS 683J
R16	Carbon film 68k	RD¼PS 683J
R17	Carbon film 8.2k	RD¼PS 822J
R18	Carbon film 8.2k	RD¼PS 822J
R19	Carbon film 8.2k	RD¼PS 822J
R20	Carbon film 8.2k	RD¼PS 822J
R21	Carbon film 820	RD¼PS 821J
R22	Carbon film 820	RD¼PS 821J
R23	Carbon film 820	RD¼PS 821J
R24	Carbon film 820	RD¼PS 821J
R25	Carbon film 10k	RD¼PS 103J
R26	Carbon film 10k	RD¼PS 103J
R27	Carbon film 10k	RD¼PS 103J
R28	Carbon film 10k	RD¼PS 103J
R29	Carbon film 2.2k	RD¼PS 222J
R30	Carbon film 2.2k	RD¼PS 222J
R31	Carbon film 2.2k	RD¼PS 222J
R32	Carbon film 2.2k	RD¼PS 222J
E33	Carbon film 10k	RD¼PS 103J
R34	Carbon film 10k	RD¼PS 103J
R35	Carbon film 10k	RD¼PS 103J
R36	Carbon film 10k	RD¼PS 103J
R37	Carbon film 1.5k	RD¼PS 152J
R38	Carbon film 1.5k	RD¼PS 152J
R39	Carbon film 1.5k	RD¼PS 152J
R40	Carbon film 1.5k	RD¼PS 152J
VR1	4-gang volume	ACV-401-0
VR2	4-gang volume	ACV-401-0

10.5 MAIN AMP UNIT (AWH-019-C)





PARTS LIST OF MAIN AMP UNIT (AWH-019-C)

CAPACITORS

Symbol	Description	Part No.
C1	Electrolytic 1 25V	CSSA 010X 25
C2	Electrolytic 1 25V	CSSA 010X 25
C3	Ceramic 220p 50V	CCDSL 221K 50
C4	Ceramic 220p 50V	CCDSL 221K 50
C5	Ceramic 100p 50V	CCDSL 101K 50
C6	Ceramic 100p 50V	CCDSL 101K 50
C7	Electrolytic 220 25V	CEA 221P 25
C8	Electrolytic 220 25V	CEA 221P 25
C9	Ceramic 12p 50V	CCDSL 120K 50
C10	Ceramic 12p 50V	CCDSL 120K 50
C11	Electrolytic 47 25V	CEA 470P 25
C12	Electrolytic 47 25V	CEA 470P 25
C13	Ceramic 22p 50V	CCDSL 220K 50
C14	Ceramic 22p 50V	CCDSL 220K 50
C15	Ceramic 390p 50V	CKDYB 391K 50
C16	Ceramic 390p 50V	CKDYB 391K 50
C17	Mylar 0.033 50V	CQMA 333K 50
C18	Mylar 0.033 50V	CQMA 333K 50
C19	Electrolytic 2200 25V	CEA 222P 25
C20	Electrolytic 2200 25V	CEA 222P 25
C21	Electrolytic 2.2 50V	CEA 2R2P 50
C22	Electrolytic 2.2 50V	CEA 2R2P 50
C23	Electrolytic 100 50V	CEA 101P 50
C24	Electrolytic 220 35V	CEA 221P 35

RESISTORS

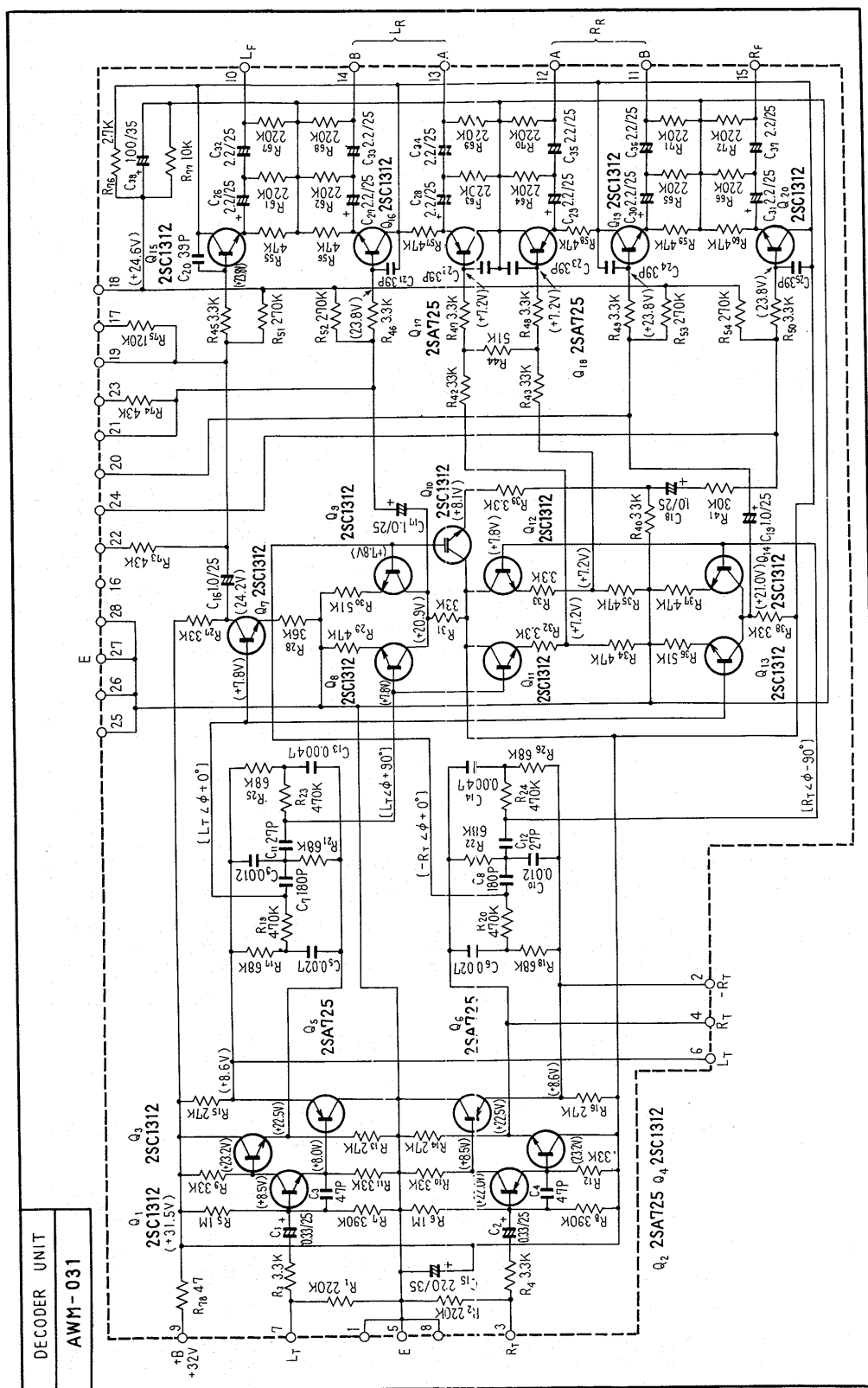
Symbol	Description	Part No.
R1	Carbon film 1M	RD¼PS 105J
R2	Carbon film 1M	RD¼PS 105J
R3	Carbon film 2.2k	RD¼PS 222J
R4	Carbon film 2.2k	RD¼PS 222J
R5	Carbon film 82k	RD¼PS 823J
R6	Carbon film 82k	RD¼PS 823J
R7	Carbon film 33k	RD¼PS 333J
R8	Carbon film 33k	RD¼PS 333J
R9	Carbon film 100k	RD¼PS 104J
R10	Carbon film 100k	RD¼PS 104J
R11	Carbon film 2.2k	RD¼PS 222J
R12	Carbon film 2.2k	RD¼PS 222J
R13	Carbon film 10k	RD¼PS 103J
R14	Carbon film 10k	RD¼PS 103J
R15	Carbon film 120	RD¼PS 121J
R16	Carbon film 120	RD¼PS 121J
R17	Carbon film 18k	RD¼PS 183J
R18	Carbon film 18k	RD¼PS 183J
R19	Carbon film 16k	RD¼PS 163J
R20	Carbon film 16k	RD¼PS 163J
R21	Carbon film 36k	RD¼PS 363J
R22	Carbon film 36k	RD¼PS 363J
R23	Carbon film 220	RD¼PS 221J
R24	Carbon film 220	RD¼PS 221J
R25	Carbon film 1k	RD¼PS 102J
R26	Carbon film 1k	RD¼PS 102J
R27	Carbon film 4.7k	RD¼PS 472J
R28	Carbon film 4.7k	RD¼PS 472J
R29	Carbon film 330	RD¼PS 331J
R30	Carbon film 330	RD¼PS 331J

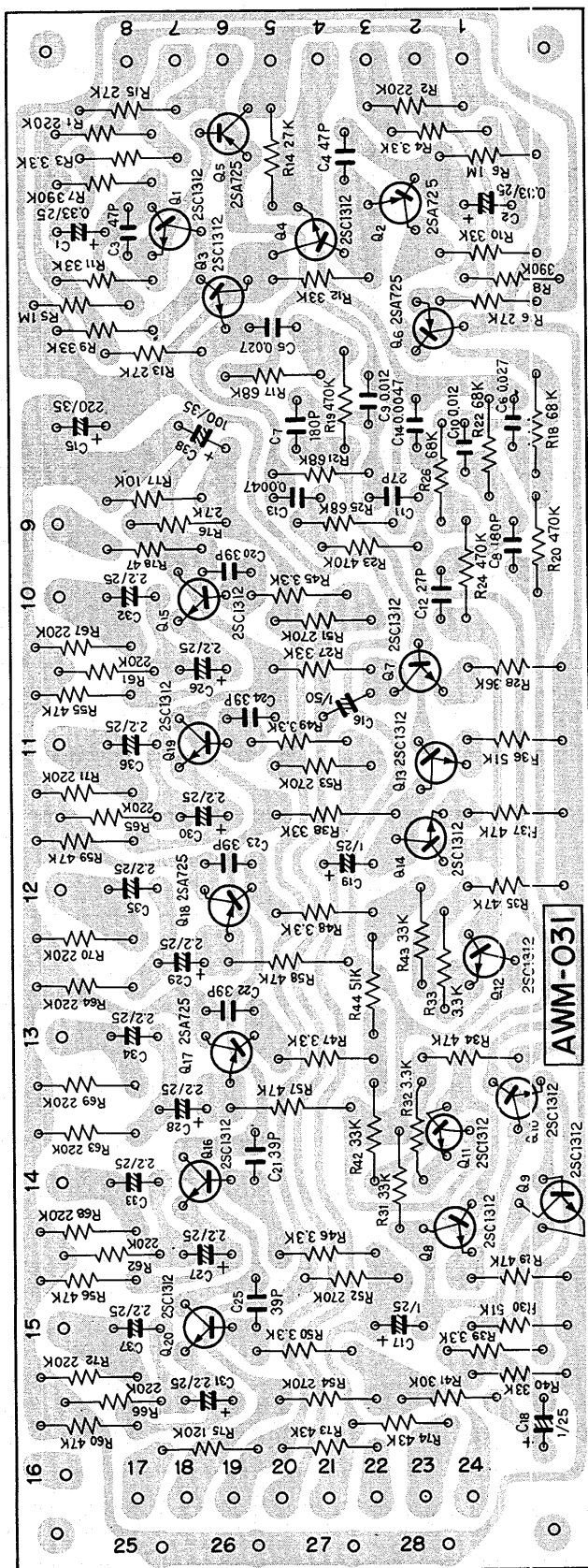
SEMICONDUCTORS

Symbol	Description	Part No.
R31	Carbon film 150	RD¼PS 151J
R32	Carbon film 150	RD¼PS 151J
R33	Carbon film 150	RD¼PS 151J
R34	Carbon film 150	RD¼PS 151J
R35	Carbon film 18	RD¼PS 180J
R36	Carbon film 18	RD¼PS 180J
R37	Carbon film 18	RD¼PS 180J
R38	Carbon film 18	RD¼PS 180J
R39	Metal film 0.5	RN2H 0R5K
R40	Metal film 0.5	RN2H 0R5K
R41	Metal film 0.5	RN2H 0R5K
R42	Metal film 0.5	RN2H 0R5K
R43	Carbon film 10	RD½PS 100J
R44	Carbon film 10	RD½PS 100J
R45	Metal oxide 470	RS1P 471K
R46	Metal oxide 470	RS1P 471K
R47	Carbon film 2.7k	RD¼PS 272J
R48	Carbon film 3.9k	RD¼PS 392J
VR1	Semi-fixed	C92-060-0
VR2	Semi-fixed	C92-060-0

Symbol	Description	Part No.
Q1	2SA725-F or G	Transistor
Q2	2SA725-F or G	Transistor
Q3	2SA725-F or G	Transistor
Q4	2SC725-F or G	Transistor
Q5	2SC1318-R or Q	Transistor
Q6	2SC1318-R or Q	Transistor
Q7	2SA720-R or Q	Transistor
Q8	2SA720-R or Q	Transistor
Q9	2SC1318-R or Q	Transistor
Q10	2SC1318-R or Q	Transistor
Q11	2SC789-R or O	Transistor
Q12	2SC789-R or O	Transistor
Q13	2SC789-R or O	Transistor
D1	STV-3-G	Varistor
D2	STV-3-G	Varistor

10.6 DECODER UNIT (AWM-031-0)





PARTS LIST OF DECODER UNIT (AWM-031-0)

CAPACITORS

Symbol	Description	Part No.
C1	Electrolytic	CSSA R33M 25
C2	Electrolytic	CSSA R33M 25
C3	Ceramic	CCDSL 470K 50
C4	Ceramic	CCDSL 470K 50
C5	Mylar	CQMA 273J 50
C6	Mylar	CQMA 273J 50
C7	Ceramic	CCDSL 181J 50
C8	Ceramic	CCDSL 181J 50
C9	Mylar	CQMA 123J 50
C10	Mylar	CQMA 123J 50
C11	Ceramic	CCDSL 270J 50
C12	Ceramic	CCDSL 270J 50
C13	Mylar	CQMA 472J 50
C14	Mylar	CQMA 472J 50
C15	Electrolytic	CEA 221P 35
C16	Electrolytic	CEA 010M 25NP
C17	Electrolytic	CSSA 010M 25
C18	Electrolytic	CSSA 010M 25
C19	Electrolytic	CSSA 010M 25
C20	Ceramic	CCDSL 390K 50
C21	Ceramic	CCDSL 390K 50
C22	Ceramic	CCDSL 390K 50
C23	Ceramic	CCDSL 390K 50
C24	Ceramic	CCDSL 390K 50
C25	Ceramic	CCDSL 390K 50

Symbol	Description	Part No.
C26	Electrolytic	CSSA 2R2M 25
C27	Electrolytic	CSSA 2R2M 25
C28	Electrolytic	CSSA 2R2M 25
C29	Electrolytic	CSSA 2R2M 25
C30	Electrolytic	CSSA 2R2M 25
C31	Electrolytic	CSSA 2R2M 25
C32	Electrolytic	CEA 2R2M 25NP
C33	Electrolytic	CEA 2R2M 25NP
C34	Electrolytic	CEA 2R2M 25NP
C35	Electrolytic	CEA 2R2M 25NP
C36	Electrolytic	CEA 2R2M 25NP
C37	Electrolytic	CEA 2R2M 25NP
C38	Electrolytic	CEA 101P 35

RESISTORS

Symbol	Description	Part No.
R1	Carbon film	RD¼PM 224J
R2	Carbon film	RD¼PM 224J
R3	Carbon film	RD¼PM 332J
R4	Carbon film	RD¼PM 332J
R5	Carbon film	RD¼PM 105J
R6	Carbon film	RD¼PM 105J
R7	Carbon film	RD¼PM 394J
R8	Carbon film	RD¼PM 394J
R9	Carbon film	RD¼PM 333J
R10	Carbon film	RD¼PM 333J
R11	Carbon film	RD¼PM 333J
R12	Carbon film	RD¼PM 333J
R13	Carbon film	RD¼PM 273J
R14	Carbon film	RD¼PM 273J
R15	Carbon film	RD¼PM 273J

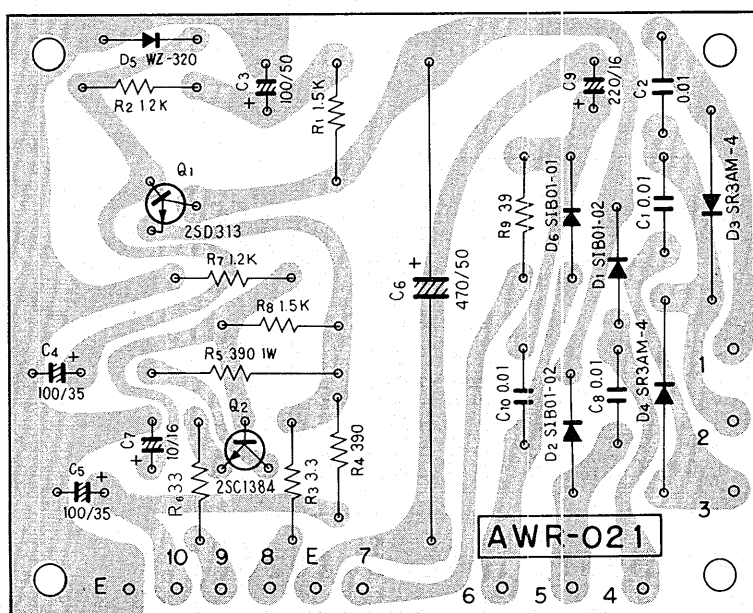
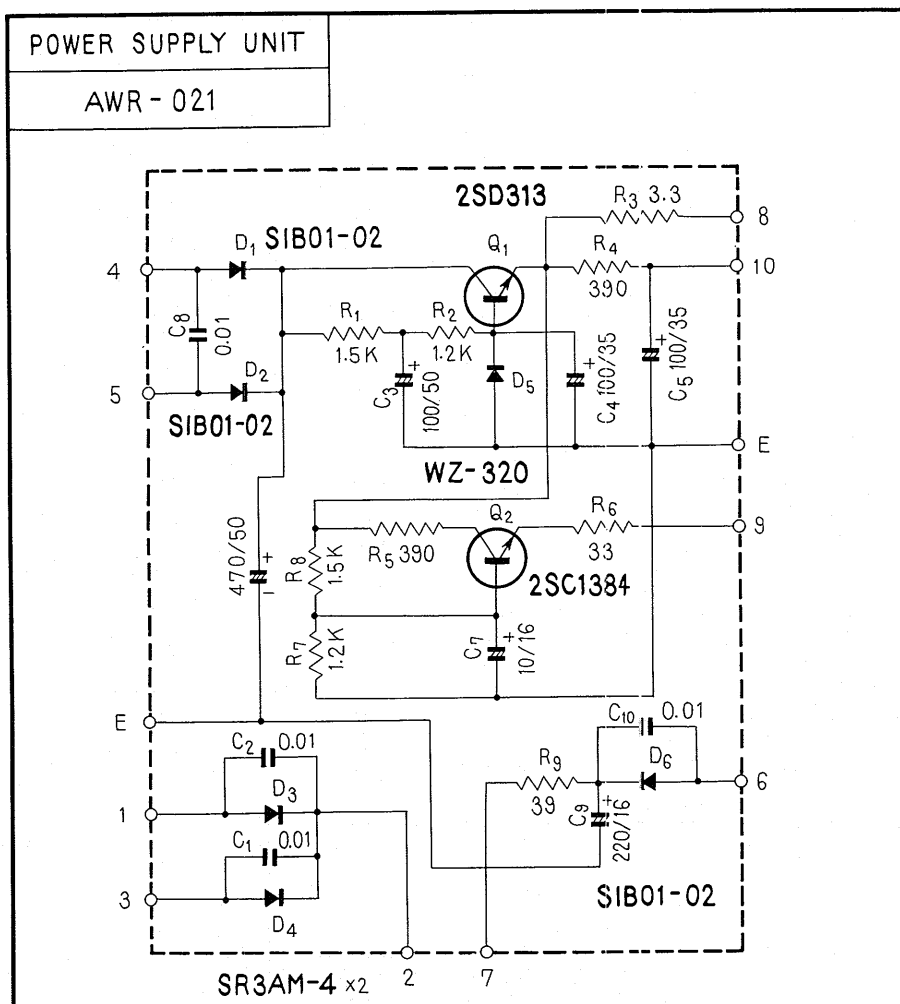
Symbol	Description	Part No.	
R46	Carbon film	RD¼PM 332J	
R47	Carbon film	RD¼PM 332J	
R48	Carbon film	RD¼PM 332J	
R49	Carbon film	RD¼PM 332J	
R50	Carbon film	RD¼PM 332J	
R51	Carbon film	RD¼PM 274J	
R52	Carbon film	RD¼PM 274J	
R53	Carbon film	RD¼PM 274J	
R54	Carbon film	RD¼PM 274J	
R55	Carbon film	RD¼PM 473J	
R56	Carbon film	RD¼PM 473J	
R57	Carbon film	RD¼PM 473J	
R58	Carbon film	RD¼PM 473J	
R59	Carbon film	RD¼PM 473J	
R60	Carbon film	RD¼PM 473J	
R61	Carbon film	RD¼PM 224J	
R62	Carbon film	RD¼PM 224J	
R63	Carbon film	RD¼PM 224J	
R64	Carbon film	RD¼PM 224J	
R65	Carbon film	RD¼PM 224J	
R66	Carbon film	RD¼PM 224J	
R67	Carbon film	RD¼PM 224J	
R68	Carbon film	RD¼PM 224J	
R69	Carbon film	RD¼PM 224J	
R70	Carbon film	RD¼PM 224J	
R71	Carbon film	RD¼PM 224J	
R72	Carbon film	RD¼PM 224J	
R73	Carbon film	RD¼PM 433J	
R74	Carbon film	RD¼PM 433J	
R75	Carbon film	RD¼PM 124J	
R76	Carbon film	RD¼PM 272J	
R77	Carbon film	RD¼PM 103J	
R78	Carbon film	RD¼PM 470J	

Symbol	Description	Part No.	
R16	Carbon film	RD¼PM 273J	
R17	Carbon film	RD¼PM 683J	
R18	Carbon film	RD¼PM 683J	
R19	Carbon film	RD¼PM 474J	
R20	Carbon film	RD¼PM 474J	
R21	Carbon film	RD¼PM 683J	
R22	Carbon film	RD¼PM 683J	
R23	Carbon film	RD¼PM 474J	
R24	Carbon film	RD¼PM 474J	
R25	Carbon film	RD¼PM 683J	
R26	Carbon film	RD¼PM 683J	
R27	Carbon film	RD¼PM 333J	
R28	Carbon film	RD¼PM 363J	
R29	Carbon film	RD¼PM 473J	
R30	Carbon film	RD¼PM 513J	
R31	Carbon film	RD¼PM 333J	
R32	Carbon film	RD¼PM 332J	
R33	Carbon film	RD¼PM 332J	
R34	Carbon film	RD¼PM 473J	
R35	Carbon film	RD¼PM 473J	
R36	Carbon film	RD¼PM 513J	
R37	Carbon film	RD¼PM 473J	
R38	Carbon film	RD¼PM 333J	
R39	Carbon film	RD¼PM 332J	
R40	Carbon film	RD¼PM 333J	
R41	Carbon film	RD¼PM 303J	
R42	Carbon film	RD¼PM 333J	
R43	Carbon film	RD¼PM 333J	
R44	Carbon film	RD¼PM 513J	
R45	Carbon film	RD¼PM 332J	

SEMICONDUCTORS

Symbol	Description	Part No.
Q1	2SC1312-F or G	Transistor
Q2	2SA725-F or G	
Q3	2SC1312-F or G	
Q4	2SC1312-F or G	
Q5	2SA725-F or G	
Q6	2SA725-F or G	Transistor
Q7	2SC1312-G	
Q8	2SC1312-G	
Q9	2SC1312-G	
Q10	2SC1312-G	
Q11	2SC1312-G	Transistor
Q12	2SC1312-G	
Q13	2SC1312-G	
Q14	2SC1312-G	
Q15	2SC1312-F or G	
Q16	2SC1312-F or G	Transistor
Q17	2SA725-F or G	
Q18	2SA725-F or G	
Q19	2SC1312-F or G	
Q20	2SC1312-F or G	

10.8 POWER SUPPLY UNIT (AWR-021-0)



PARTS LIST OF POWER SUPPLY UNIT
CAPACITORS

Symbol	Description			Part No.	
C1	Ceramic	0.01	150V	ACG-002-0	
C2	Ceramic	0.01	150V	ACG-002-0	
C3	Electrolytic	100	50V	CEA 101P 50	
C4	Electrolytic	100	35V	CEA 101P 35	
C5	Electrolytic	100	35V	CEA 101P 35	
C6	Electrolytic	470	50V	CEB 471P 50	
C7	Electrolytic	10	16V	CEA 100P 16	
C8	Ceramic	0.01	150V	ACG-002-0	
C9	Electrolytic	220	16V	CEA 221P 16	
C10	Ceramic	0.01	150V	ACG-002-0	

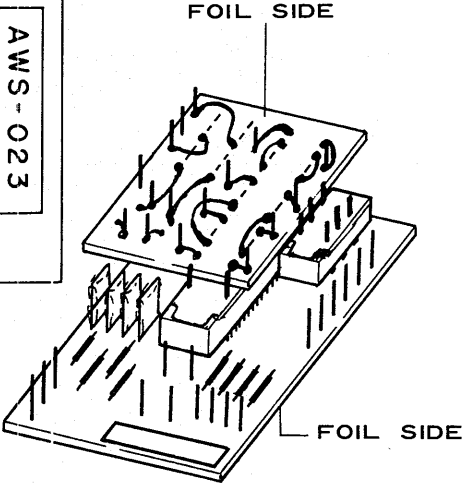
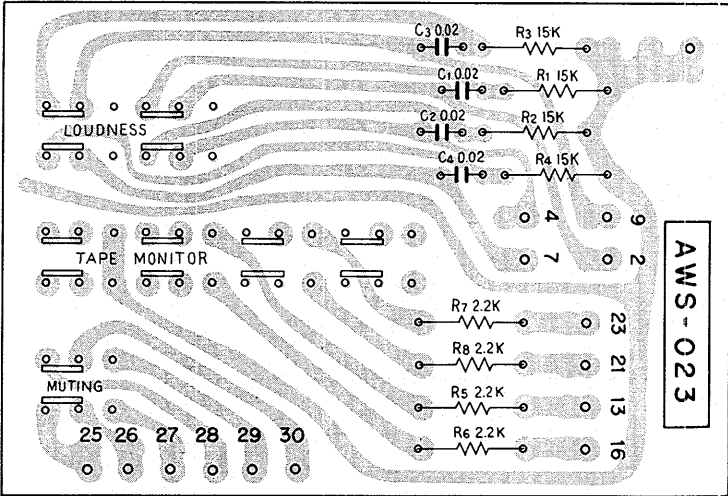
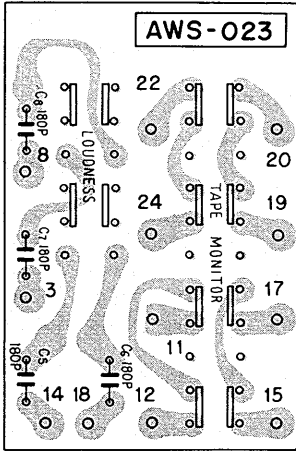
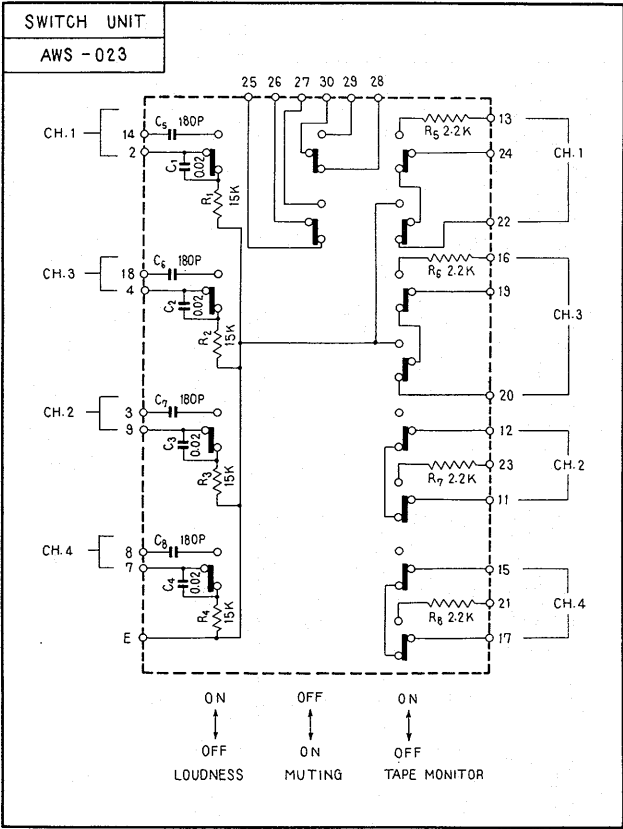
RESISTORS

Symbol	Description			Part No.	
R1	Carbon film	1.5k		RD¼PS 152J	
R2	Carbon film	1.2k		RD¼PS 122J	
R3	Carbon film	3.3		RD¼PS 3R3J	
R4	Carbon film	390		RD¼PS 391J	
R5	Metal oxide	390	1W	RS1P 391K	
R6	Carbon film	33		RD¼PS 330J	
R7	Carbon film	1.2k		RD¼PS 122J	
R8	Carbon film	1.5k		RD¼PS 152J	
R9	Carbon film	39		RD¼PS 390J	

SEMICONDUCTORS

Symbol	Description			Part No.	
Q1	2SD313D or E Transistor				
Q2	2SC1384Q or R Transistor				
D1	SIB01-02	Diode			
D2	SIB01-02	Diode			
D3	SR3AM-4	Diode			
D4	SR3AM-4	Diode			
D5	WZ-320	Zener diode			
D6	SIB01-01	Diode			

10.8 SWITCH UNIT (AWS-023-0)



PARTS LIST OF SWITCH UNIT
CAPACITORS

Symbol	Description			Part No.		
C1	Mylar	0.02	50V	CQMA	203K 50	
C2	Mylar	0.02	50V	CQMA	203K 50	
C3	Mylar	0.02	50V	CQMA	203K 50	
C4	Mylar	0.02	50V	CQMA	203K 50	
C5	Ceramic	180p	50V	CCDSL	181K 50	
C6	Ceramic	180p	50V	CCDSL	181K 50	
C7	Ceramic	180p	50V	CCDSL	181K 50	
C8	Ceramic	180p	50V	CCDSL	181K 50	

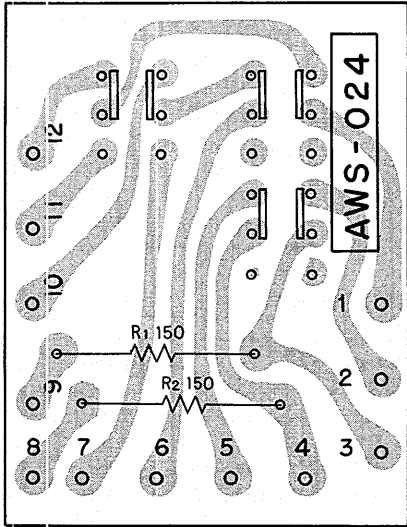
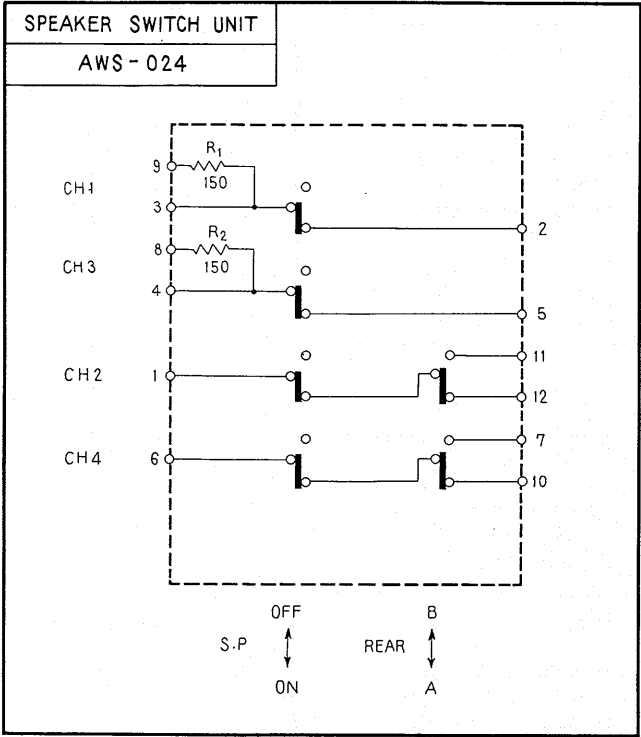
RESISTORS

Symbol	Description			Part No.		
R1	Carbon film	15k		RD $\frac{1}{4}$ PS	153J	
R2	Carbon film	15k		RD $\frac{1}{4}$ PS	153J	
R3	Carbon film	15k		RD $\frac{1}{4}$ PS	153J	
R4	Carbon film	15k		RD $\frac{1}{4}$ PS	153J	
R5	Carbon film	2.2k		RD $\frac{1}{4}$ PS	222J	
R6	Carbon film	2.2k		RD $\frac{1}{4}$ PS	222J	
R7	Carbon film	2.2k		RD $\frac{1}{4}$ PS	222J	
R8	Carbon film	2.2k		RD $\frac{1}{4}$ PS	222J	

SWITCH

Symbol	Description	Part No.		
	Mini-switch (3-gang)	ASG-027-0		

10.9 SPEAKER SWITCH UNIT (AWS-024-0)



PARTS LIST OF SP SWITCH UNIT

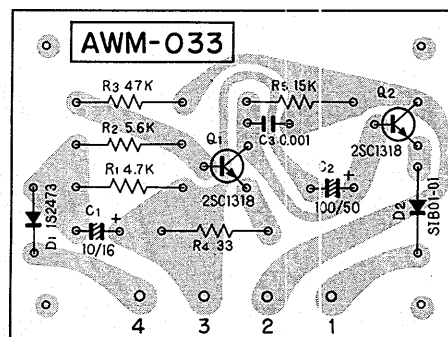
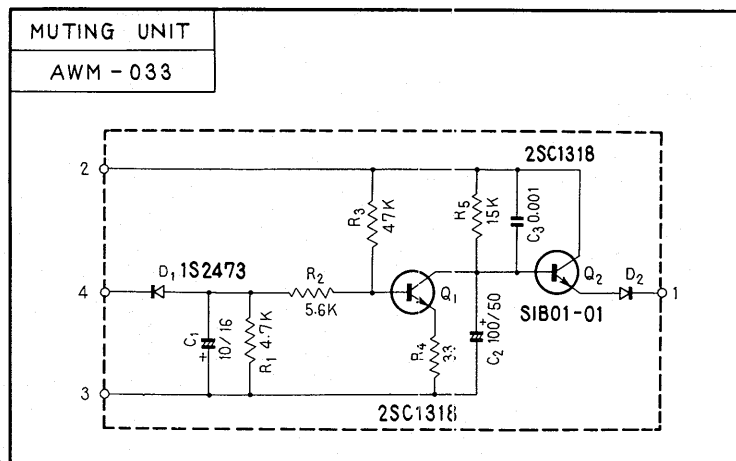
RESISTORS

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

SWITCH

Symbol	Description	Part No.	
	Mini-switch	ASG-026-0	

10.10 MUTING UNIT (AWM-033-0)



CAPACITORS

Symbol	Description	Part No.	
C1	Electrolytic 10 16V	CEA 100P 16	
C2	Electrolytic 100 50V	CEA 101P 50	
C3	Mylar 0.001 50V	CQMA 102K 50	

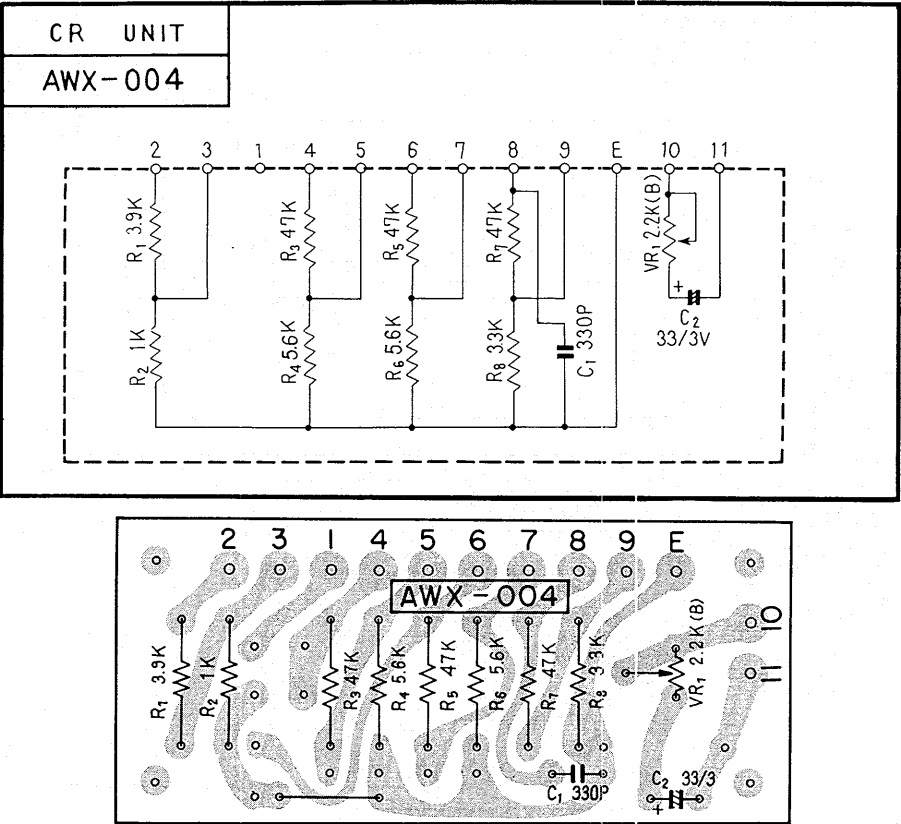
RESISTORS

Symbol	Description	Part No.	
R1	Carbon film 4.7k	RD¼PS 472J	
R2	Carbon film 5.6k	RD¼PS 562J	
R3	Carbon film 47k	RD¼PS 473J	
R4	Carbon film 33	RD¼PS 330J	
R5	Carbon film 15k	RD¼PS 153J	

SEMICONDUCTORS

Symbol	Description	Part No.	
Q1	2SC1318-R or Q Transistor		
Q2	2SC1318-R or Q Transistor		
D1	1S2473 Diode		
D2	SIB01-01 Diode		

10.11 CR UNIT (AWX-004-C) For FW model



CAPACITORS

Symbol	Description			Part No.	
C1	Ceramic	330p	50V	CKDYB 331K 50	
C2	Electrolytic	33	10V	CEA 330P 10	

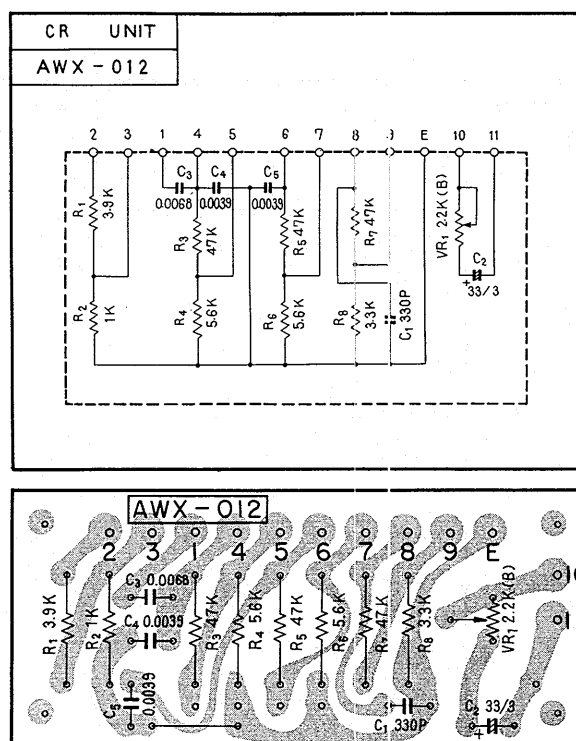
RESISTORS

Symbol	Description			Part No.	
R1	Carbon film	3.9k		RD¼PS 392J	
R2	Carbon film	1k		RD¼PS 102J	
R3	Carbon film	47k		RD¼PS 473J	
R4	Carbon film	4.7k		RD¼PS 472J	
R5	Carbon film	47k		RD¼PS 473J	
R6	Carbon film	4.7k		RD¼PS 472J	
R7	Carbon film	47k		RD¼PS 473J	
R8	Carbon film	3.3k		RD¼PS 332J	

POTENTIOMETER

Symbol	Description	Part No.	
VR1	2.2kB Semi-fixed	ACP-001-0	

CR UNIT (AWX-012-A) For KLUW model



CAPACITORS

Symbol	Description			Part No.	
C1	Ceramic	330p	50V	CKDYB 331K 50	
C2	Electrolytic	33	10V	CEA 330P 10	
C3	Mylar	0.0068	50V	CQMA 682K 50	
C4	Mylar	0.0039	50V	CQMA 392K 50	
C5	Mylar	0.0039	50V	CQMA 392K 50	

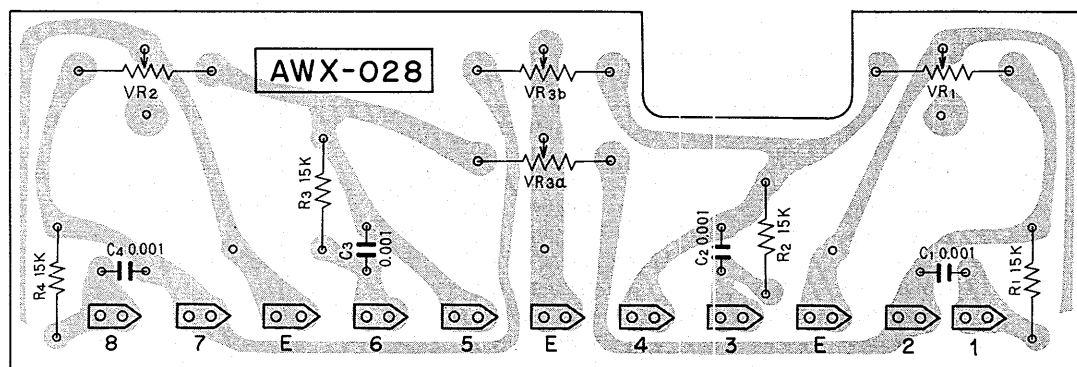
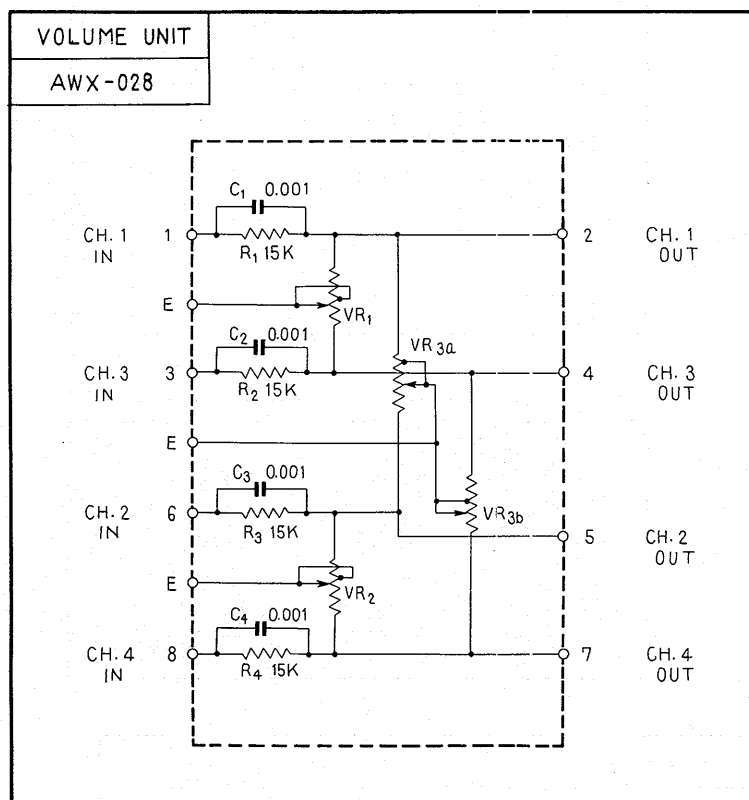
RESISTORS

Symbol	Description			Part No.	
R1	Carbon film	3.9k		RD¼PS 392J	
R2	Carbon film	1k		RD¼PS 102J	
R3	Carbon film	47k		RD¼PS 473J	
R4	Carbon film	5.6k		RD¼PS 562J	
R5	Carbon film	47k		RD¼PS 473J	
R6	Carbon film	5.6k		RD¼PS 562J	
R7	Carbon film	47k		RD¼PS 473J	
R8	Carbon film	3.3k		RD¼PS 332J	

POTENTIOMETERS

Symbol	Description			Part No.	
VR1	2.2k-B	Semi-fixed		ACP-001-0	

10.12 VOLUME UNIT (AWX-028-0)



PARTS LIST OF VOLUME UNIT

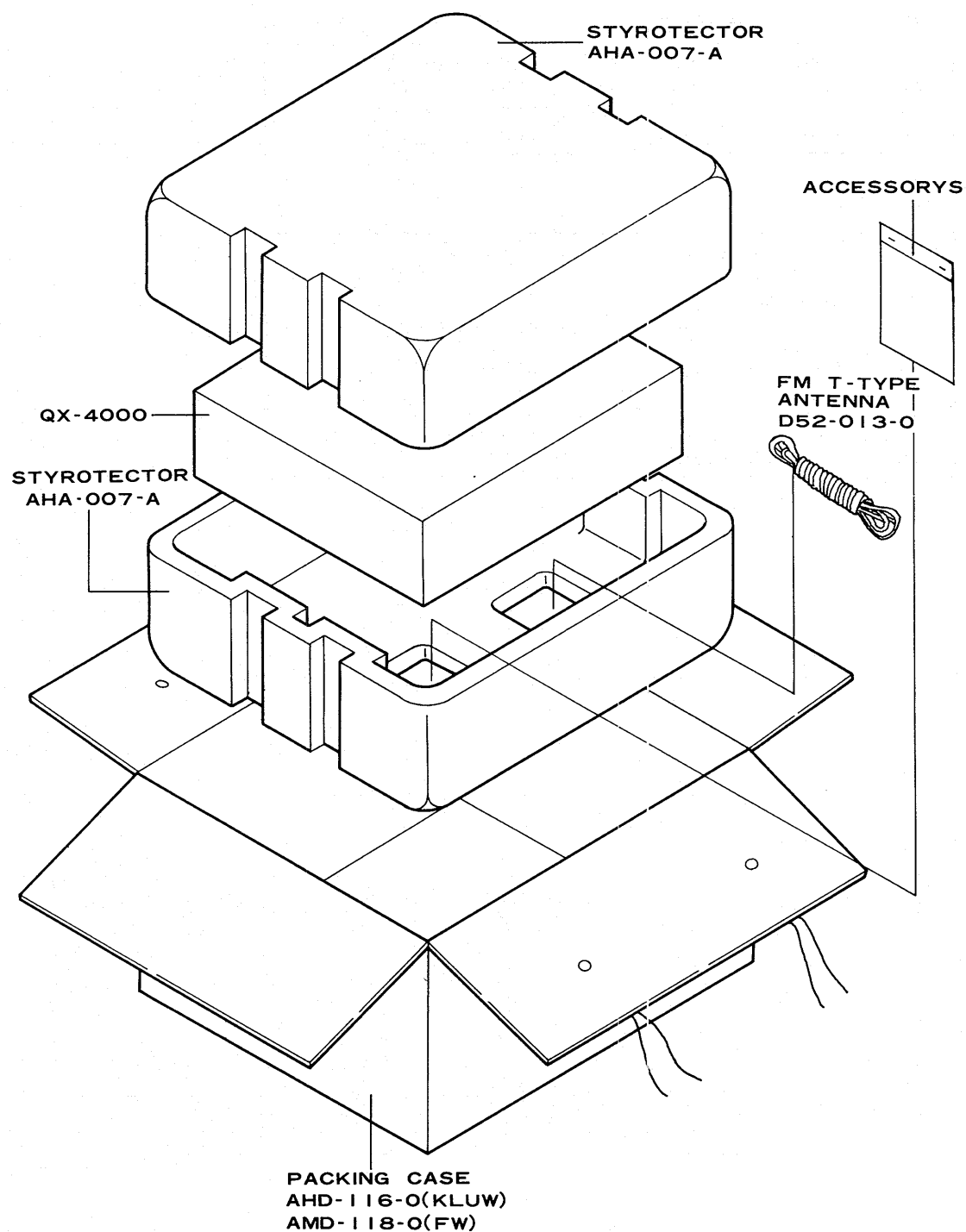
CAPACITORS

Symbol	Description				Part No.			
C1	Mylar	0.001	50V		CQMA	102K	50	
C2	Mylar	0.001	50V		CQMA	102K	50	
C3	Mylar	0.001	50V		CQMA	102K	50	
C4	Mylar	0.001	50V		CQMA	102K	50	

RESISTORS

Symbol	Description				Part No.			
R1	Carbon film	15k			RD $\frac{1}{4}$ PS	153J		
R2	Carbon film	15k			RD $\frac{1}{4}$ PS	153J		
R3	Carbon film	15k			RD $\frac{1}{4}$ PS	153J		
R4	Carbon film	15k			RD $\frac{1}{4}$ PS	153J		
VR1	500k-B, balance				ACV-008-0			
VR2	500k-B, balance				ACV-008-0			
VR3	500k-B, dual, balance				ACV-109-0			

11. PACKING METHOD AND PART NUMBERS



PIONEER ELECTRONIC CORPORATION

15-5, 4-Chome, Ohmori-nishi, Ohta-ku, Tokyo, Japan

U.S. PIONEER ELECTRONICS CORPORATION

178 Commerce Road, Carlstadt, New Jersey 07072 U.S.A.

PIONEER ELECTRONIC (EUROPE) N.V.

Noorderlaan 83, 2030 Antwerp, Belgium