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Service Manual

AM / FM STEREO RECEIVER

SX-626 / KCW, KUW, FVZW, NBW, FW

NOTE

MODEL SX-626 COMES IN FIVE VERSIONS DISTINGUISHED AS FOLLOWS:

Round label on rear panel	Voltage	Type
KCW KUW FVZW NBW	120V only 120V only 5-position selector 220V only	CSA approved (Canada) UL approved (U.S.A.) FTZ approved (West Germany) SEMCO (Sweden), NEMCO (Norway) and DEMCO (Denmark) approved
FW	5-position selector	General export model with de-emphasis selector switch

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1. SPECIFICATIONS

SEMICONDUCTORS

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POWER AMPLIFIER SECTION

Music Power Output (IHF)	110 Watts (4 Ω) 76 Watts (8 Ω)
Continuous Power Output (each channel driven)	40 W/40W (4 Ω) 32 W/32W (8 Ω)
Continuous Power Output (both channels driven)	30W + 30W (4 Ω) 27W + 27W (8 Ω)
Power Output in the range of 20Hz to 20kHz (both channels driven)	20W + 20W (8 Ω , Harmonic distortion less than 1%)
Harmonic Distortion	Less than 1% (Continuous power output) Less than 0.09% (16W/16W, 8 Ω output)
Intermodulation Distortion	Less than 1% (Continuous power output) Less than 0.4% (16W/16W, 8 Ω output)
Power Bandwidth (IHF)	10Hz to 70kHz (8 Ω , Harmonic distortion less than 1%)
Frequency Response	5Hz to 80kHz, $\pm$ 1 dB
Input Sensitivity/Impedance (1kHz, Continuous power output)	500mV/60k Ω (MAIN IN)
Speakers	4 to 16 Ω
Damping Factor	40 (8 Ω , 1kHz)

PREAMPLIFIER SECTION

Output Voltage	500mV (Rated output), 3V (Max.)
Harmonic Distortion	Less than 0.5%
Frequency Response	15Hz to 20kHz, $\pm$ 1 dB
Input Sensitivity/Impedance (1kHz, for rated output)	PHONO 1 2.5mV/45k Ω PHONO 2 2.5mV/45k Ω MIC 2.2mV/22k Ω AUX 200mV/100k Ω TAPE MONITOR 1, 2 200mV/70k Ω TAPE REC 1, 2 (Pin jack) 200mV TAPE REC (DIN connector) 35mV
Recording Output	—11 dB, +11 dB/100Hz —11 dB, +10.5 dB/10kHz —8dB/50Hz (6dB/oct.) —9dB/10kHz (6dB/oct.) PHONO: RIAA S.T.D. +10dB/100Hz, +6dB/10kHz with Volume Control set at —40dB position.
BASS Control	
TREBLE Control	
LOW Filter	
HIGH Filter	
Equalization Curve	
Loudness Contour	
Hum and Noise (IHF)	PHONO More than 85dB AUX More than 95dB

FM TUNER SECTION

Frequency Range	88MHz to 108MHz 87.5MHz to 108MHz (FTZ approved)
Usable Sensitivity (IHF)	2.0 μ V
Capture Ratio (IHF)	2.5dB
Selectivity (IHF)	More than 70dB
Image Rejection	More than 80dB (98MHz)
IF Rejection	More than 100dB (90MHz)
Spurious Rejection	More than 90dB (98MHz)
AM Suppression	50dB
Signal-to-Noise Ratio	70dB
Harmonic Distortion	Mono: Less than 0.4% (100% Mod.) Stereo: Less than 0.5% (100% Mod.)
Tuning Indicator	Signal strength type
Muting	Switchable to ON-OFF
Stereo Separation	More than 40dB (1kHz)
Sub Carrier Suppression	More than 50dB
De-emphasis Switch	50 μ sec., 75 μ sec. (FW model only)
Antenna Input	Impedance 300 Ω balanced and 75 Ω unbalanced.

AM TUNER SECTION

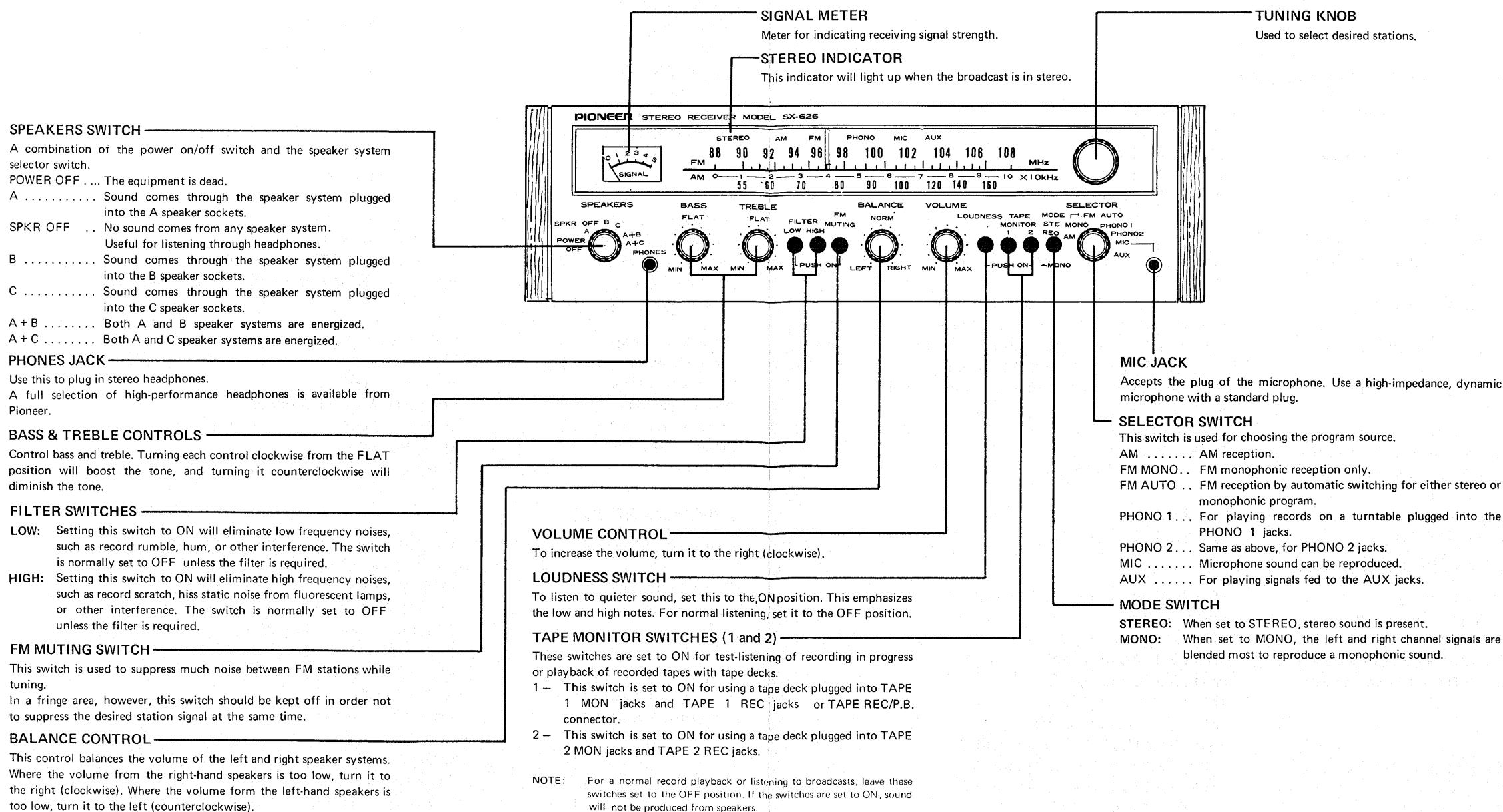
Frequency Range	525kHz to 1,605kHz
Usable Sensitivity (IHF)	10 μ V
Selectivity (IHF)	More than 30dB
Image Rejection	More than 80dB (1,000kHz)
IF Rejection	More than 70dB
Signal-to-Noise Ratio	More than 50dB
Antenna	Built-in, Ferrite Loopstick Antenna

MISCELLANEOUS

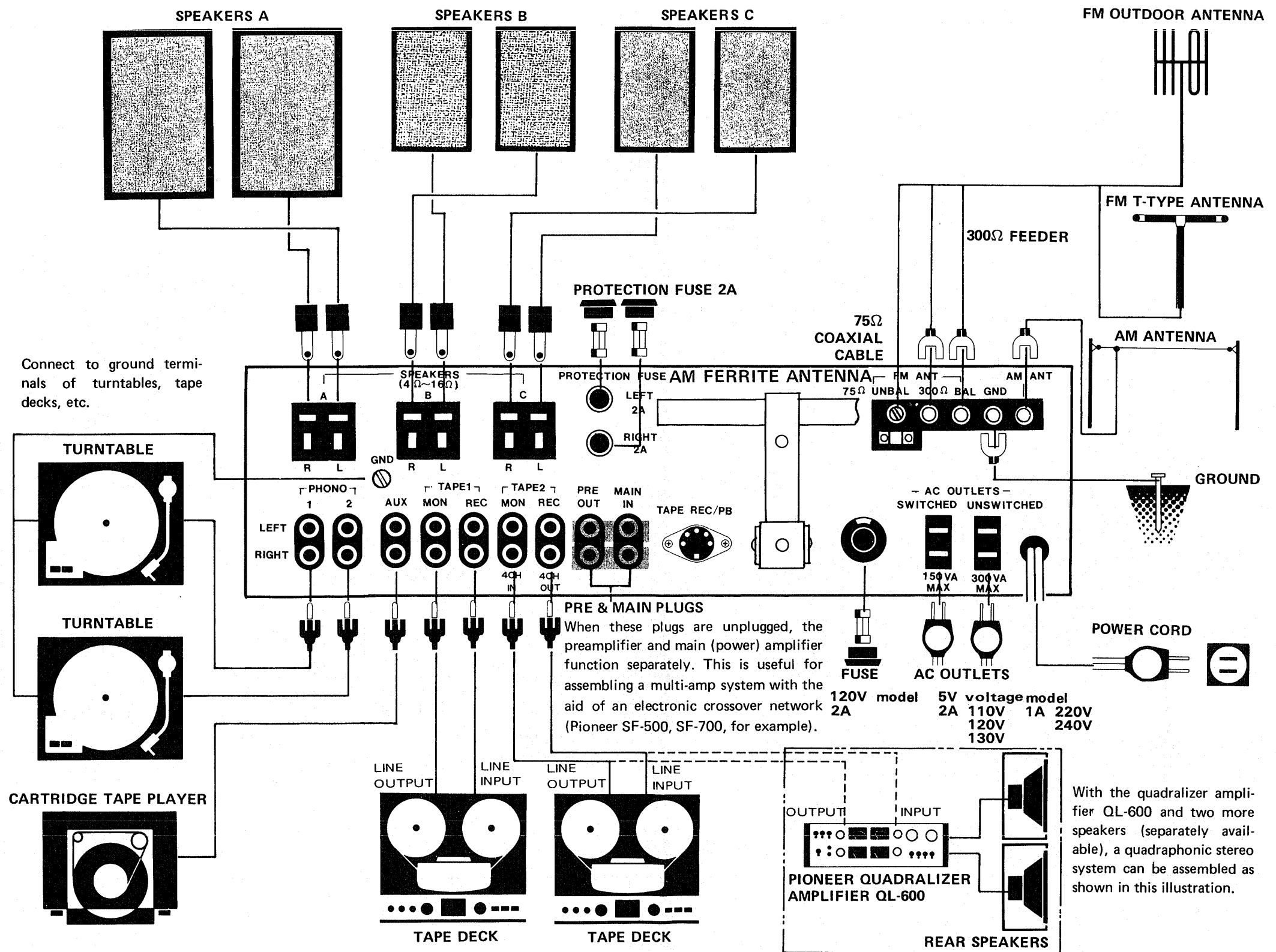
Power Requirements	120V 60Hz or 110V, 120V, 130V, 220V and 240V. (Switchable) 50 — 60Hz
Power Consumption	170W (Max.)
Dimensions (overall)	17-11/16in./450mm (width) 5-11/16in./145mm (height) 14-3/16in./360mm (depth)
Weight Without package	21lb. 13oz/9.9kg
With package	26lb. 7oz/12kg
Furnished Accessories	FM T-type Antenna 1 Pin Plug 2 Speaker Plug 6 Polishing cloth 1 Operating Instructions 1

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

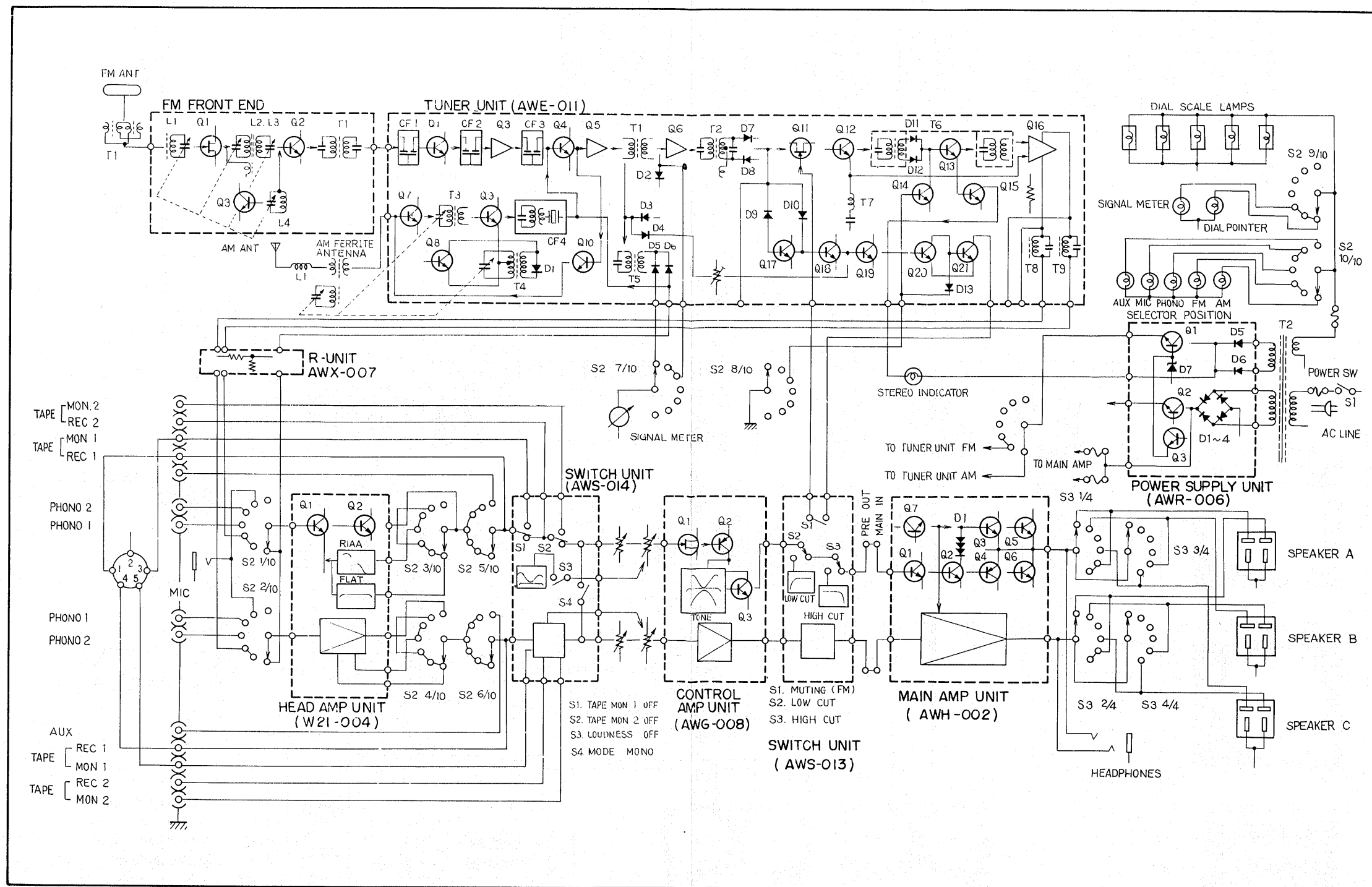
2. FRONT PANEL FACILITIES



3. CONNECTION DIAGRAM



4. BLOCK DIAGRAM



• MUTING CIRCUIT FOR ELIMINATION OF STARTING PULSE NOISE

A common drawback of conventional SEPP amplifier circuits is the occurrence of pulse noise when the power is turned on. The cause of this noise is the timing of the DC voltage distribution through the junctions in the circuit. The most important junction in this respect is the inner side of the output coupling capacitor. Fig. 1 shows a simplified, typical SEPP output stage. When the power is turned on, the original B voltage surges immediately, and this voltage simultaneously appears, through R at point (A). The time constant of this C/R network cannot be made as large as desired because it is part of the signal path. Therefore, voltage B appears almost instantly at the base of Q₃, causing a sudden high pulse to appear at the junction point, and passing through the output coupling capacitor to the loudspeaker. This causes the starting pulse noise.

Fig. 2 shows the muting circuit used to eliminate this starting noise in PIONEER receiver model SX-626. This circuit, consisting of Q_x, R_x and C_x, functions almost like a ripple filter and a time delay circuit. As C_x and R_x are not part of the signal path, their time constant can be designed as large as desired. B voltage builds up at the base of Q_x only gradually because of the comparatively long charge time of R_x/C_x. Therefore, Q_x becomes conductive rather slowly, energizing the output stage gradually and with balanced DC surge. Consequently, no abrupt pulse flows through the coupling capacitor to the speaker.

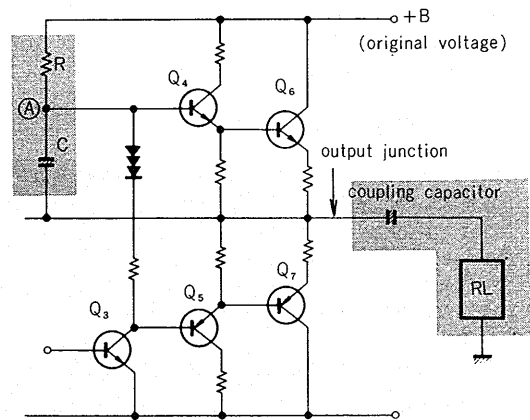


Fig. 1

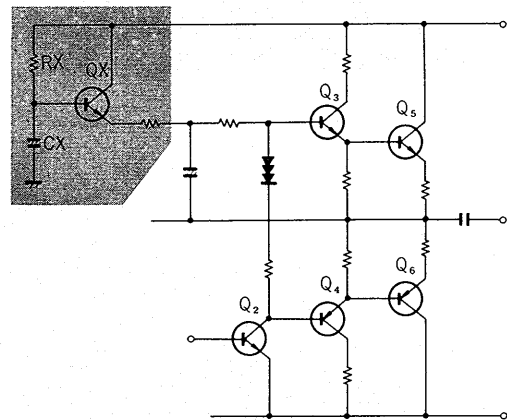


Fig. 2

5. DISASSEMBLY

5-1 WOODEN CASE

Remove 4 screws from the sides of the wooden case. Pull the case backward off from the receiver housing. See photo 1.

5-2 FRONT PANEL

Pull off all knobs, then remove nuts and washers from shafts and remove 2 screws from top of front panel. The front panel can now be removed. See photos 2 and 3.

5-3 BOTTOM PLATE

The bottom plate can be removed after loosening the 8 screws. See photo 4.

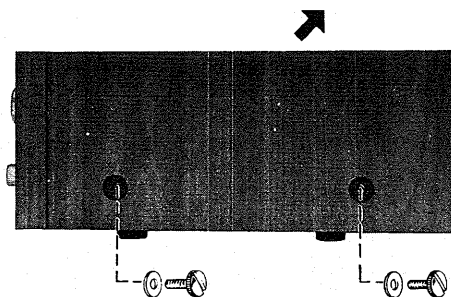


Photo 1

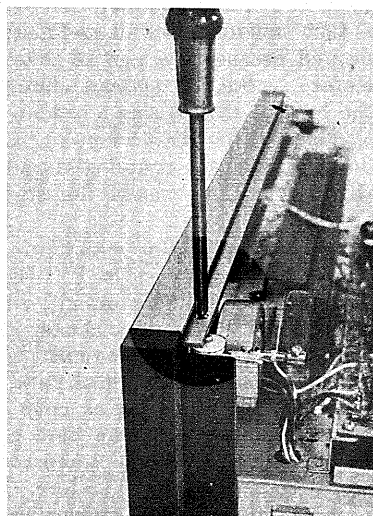


Photo 3

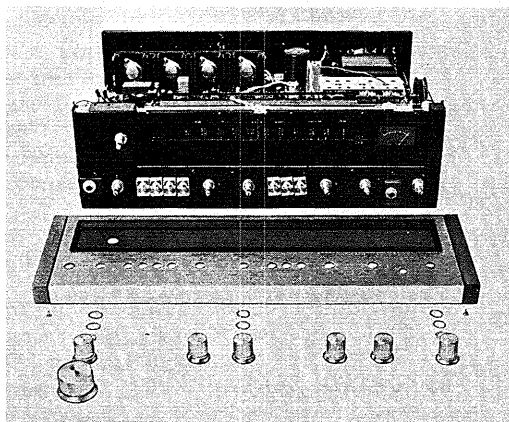


Photo 2

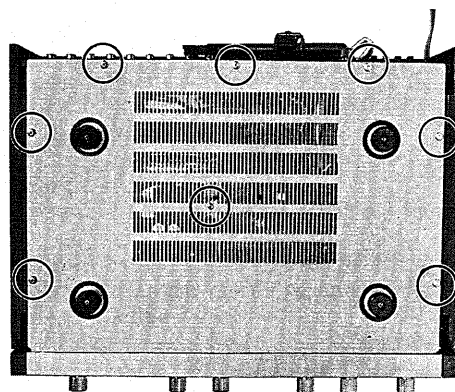
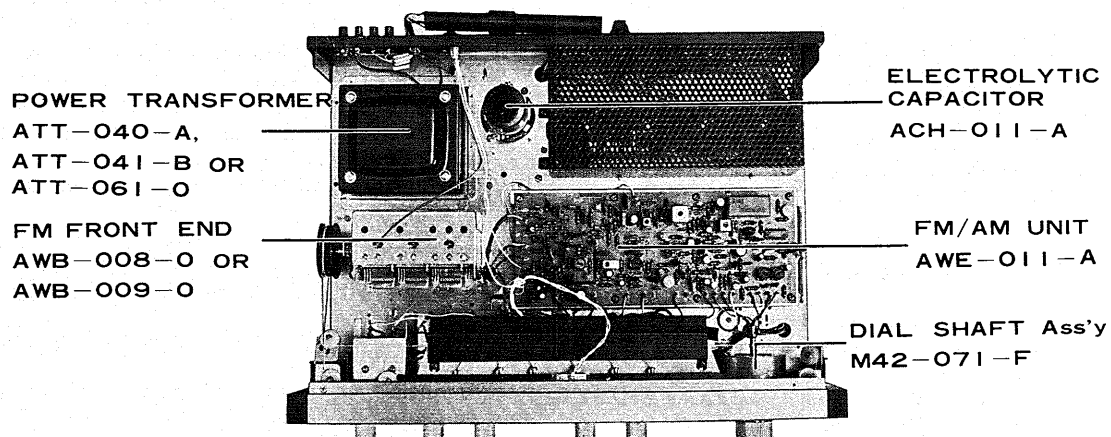


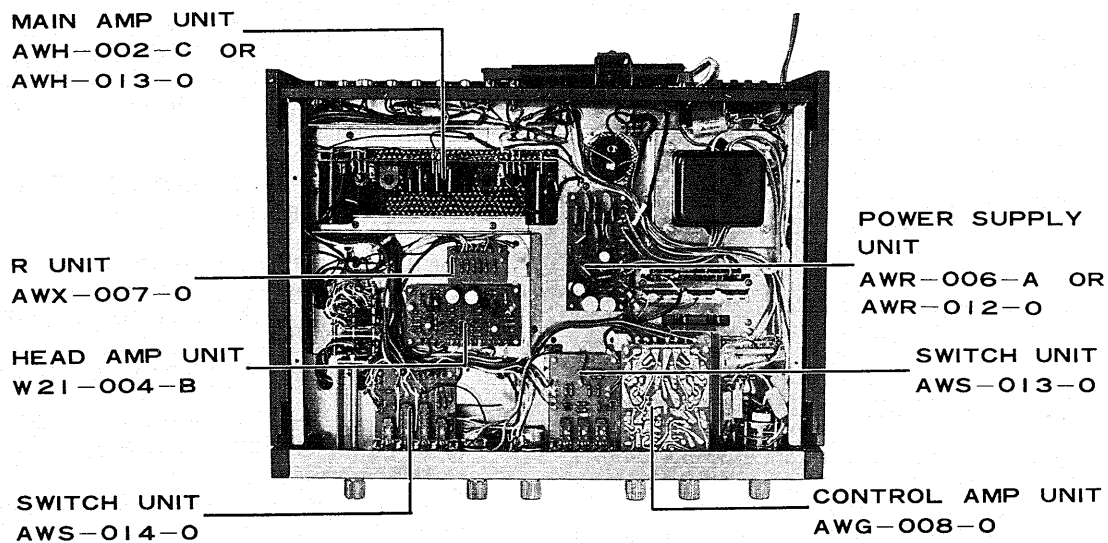
Photo 4

6. PARTS AND PCB LOCATION

6-1 TOP VIEW



6-2 BOTTOM VIEW



7. ALIGNMENT PROCEDURE

The following alignments are required only in very rare cases and should never be attempted without the proper test equipment. Also, only non-metallic tools must be used.

7-1 REQUIRED INSTRUMENT

- Sweep generator: Center marker frequencies 10.7MHz and 455kHz
- Oscilloscope: Flat to 250kHz minimum
- AC VTVM
- AM/FM signal generator
- FM MPX signal generator, preferably with RF output

7-2 FM IF ALIGNMENT

- Confirm +B voltage and current for $12V \pm 1V$ which should be 46mA to 50mA at pin 4.
- Disconnect leads from pins 22 (input) and 24 (MET), then connect resistor $2.2k\Omega$ as shunted to pin 24 of FM/AM unit.
- Connect 10.7MHz sweep generator to pins 22 (hot) and 23 (ground) of FM/AM unit. Set controls as follows:
Center frequency: 10.7MHz
Output: 55dB (500 μ V)
- Connect vertical scope input to pin 24.
- Align core of T1 for maximum gain and symmetry to obtain scope pattern.
- Raise generator output gradually to 80dB (10mV), repeat setp (e) realignment for each output level, if necessary.
- Disconnect one side of C23. Disconnect oscilloscope and resistor $2.2k\Omega$ from pin 24. Then reconnect lead to pin 24.
- Connect scope input to pin 9.
- Set generator output back to 55dB.
- Adjust bottom core of T2 for maximum gain and linearity. Adjust to core so that center frequency mark is located in zero axis.
- Reconnect C23.
- Reconnect input lead to pin 22.

7-3 FM TRACKING ALIGNMENT

- Confirm +B current (drain 11mA $\pm$ 4mA).
- Connect FM signal generator output to 300 Ω antenna inputs.
- Connect AC VTVM to TAPE REC jack on rear panel.
- Adjust generator for 400Hz, 100% modulation.
- Set SELECTOR switch on front panel to FM MONO.

- Adjust generator frequency and tuning dial to 90MHz. During the following adjustments, keep the generator output as low as possible.
- Adjust L4 core first, then adjust cores of L1, L2, L3 for maximum reading on VTVM.
- Set generator frequency and turning dial to 106MHz.
- Adjust trimmer capacitor CT4 first, then adjust CT1, CT2, CT3 for maximum reading on VTVM.
- Repeat these alignments several times until satisfactory readings obtained.
- Finally, adjust T1 core for maximum reading on VTVM.

7-4 FM MPX DECODER ALIGNMENT

- Set SELECTOR switch on front panel to FM AUTO.
- Connect RF output of FM MPX signal generator to 300 Ω antenna inputs.
- Adjust FM MPX generator as follows:

Signal mode	Deviation
L + R (main)	40.5kHz
19kHz (pilot)	7.5kHz
- Connect AC VTVM to TAPE REC jack on rear panel.
- Set generator signal mode to L — R (sub), adjust core of T6 (located on FM/AM unit) to obtain maximum reading on VTVM.
- Set generator signal mode to L. Adjust VR2 (located on FM/AM unit) for minimum crosstalk on R channel TAPE REC output.
- Set generator signal mode to R. Repeat above adjustment for minimum cross-talk on L channel.

7-5 MUTING THRESHOLD LEVEL ALIGNMENT

- Set SELECTOR switch to FM MONO.
- Turn muting switch to ON.
- Connect FM signal generator to 300 Ω antenna inputs.
- Connect AC VTVM to TAPE REC output jack.
- Set output level of generator to 25dB (20 μ V), with ± 22.5 kHz deviation, and 400Hz or 1kHz modulation.
- Tune receiver accurately to generator frequency.
- Adjust VR1 on muting circuit exactly on the borderline between muting and non-muting.

7-6 AM IF ALIGNMENT

- Set SELECTOR switch on front panel to AM.
- Connect 455kHz sweep generator to pin 15. Adjust generator output level to 60dB (1mV).
- Connect vertical oscilloscope input to either L or R of TAPE REC jack.
- Set tuning dial to high end position.
- Adjust cores of CF4 and T5 for maximum gain and symmetrical pattern on oscilloscope.

- Set signal generator to AM function, 30% modulation with 400Hz. Connect loop antenna to generator RF output and place near receiver's ferrite loopstick antenna.
- Connect VTVM to TAPE REC jack.
- Keep generator as low as possible for minimum VTVM reading.
- Tune generator and receiver to 600kHz. Adjust core of T4 on FM/AM unit for maximum VTVM reading, then adjust core of T3 and ferrite antenna.
- Re-tune generator and receiver to 1,400kHz.
- Adjust trimmers of variable capacitor indicated in Fig. 4 to obtain maximum VTVM reading.

7-7 AM TRACKING ALIGNMENT

- Set SELECTOR switch to AM position.
- For this alignment, bottom plate must be installed.

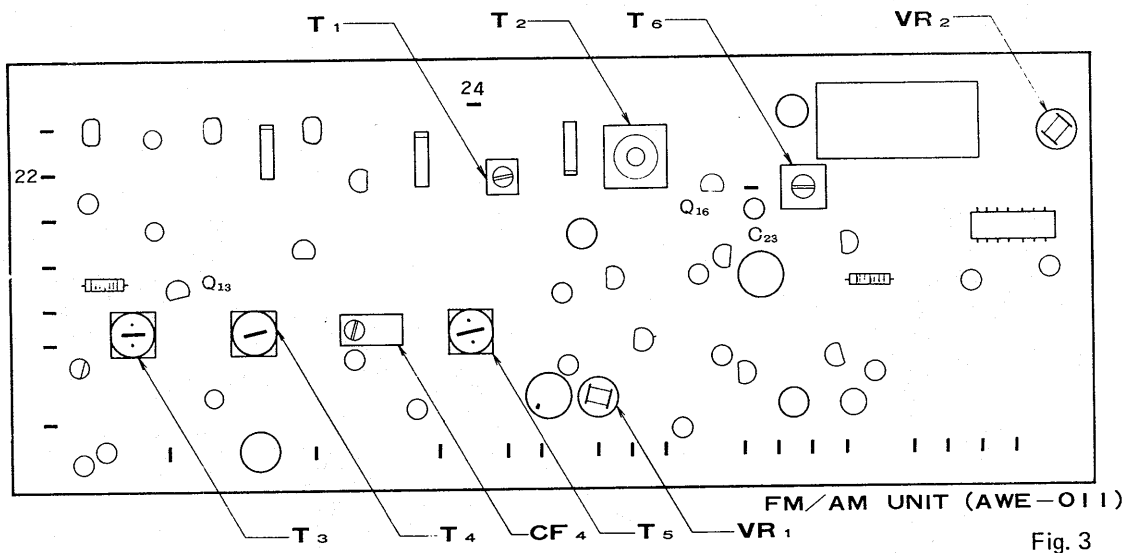


Fig. 3

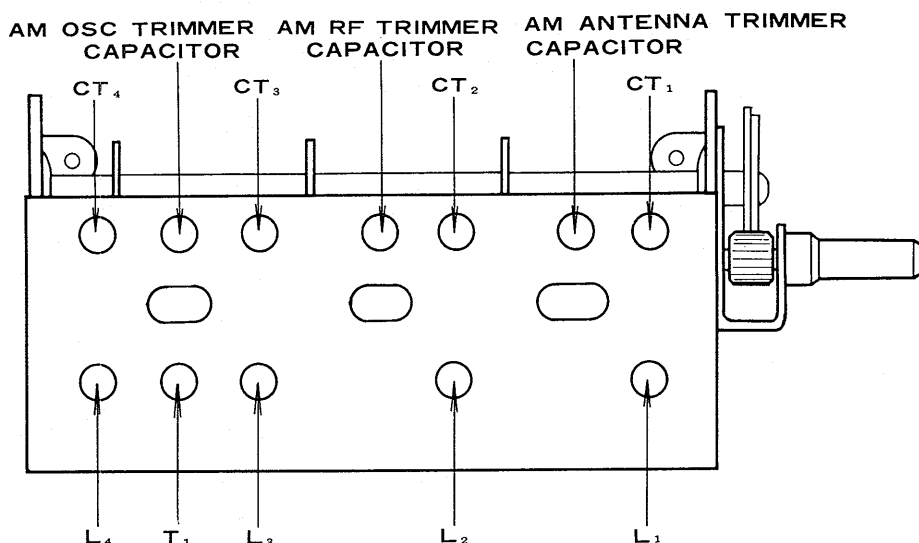
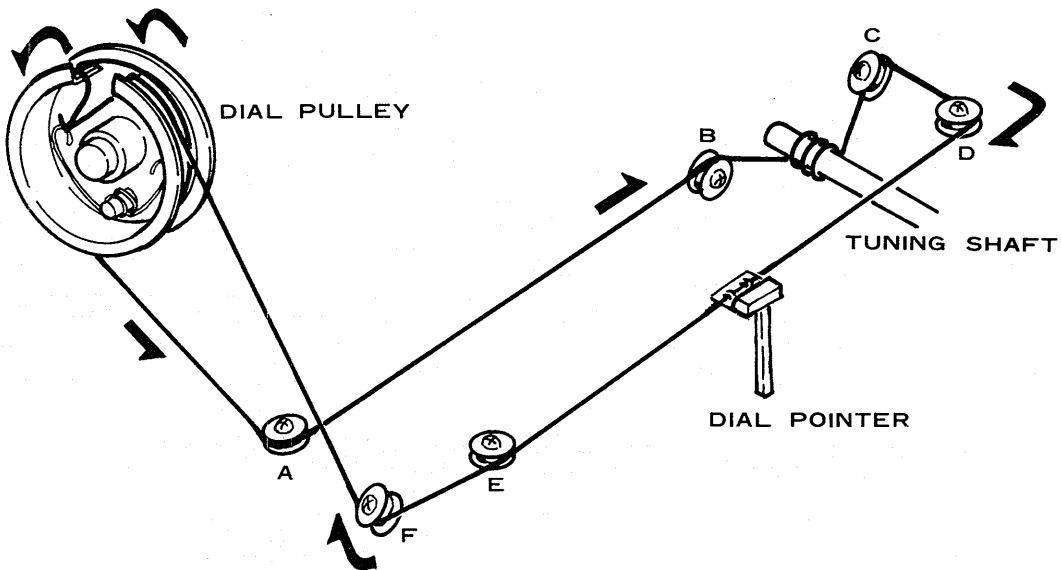


Fig. 4

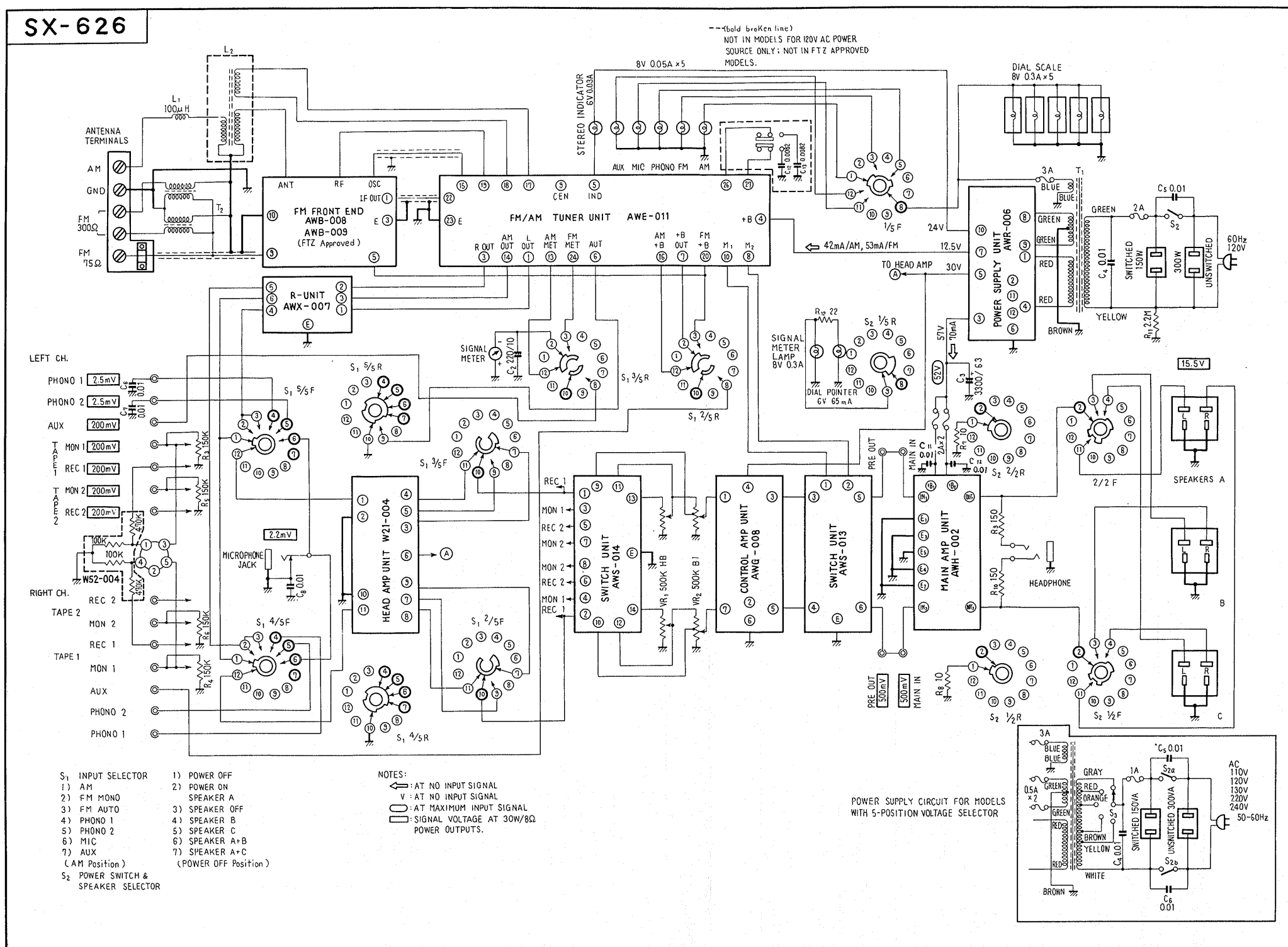
8. DIAL CORD STRINGING

- a) Set the tuning capacitor to minimum capacitance.
- b) Tie one end of the string to dial pulley.
- c) Wind the string $1\frac{1}{2}$ turns around the tuning pulley.
- d) Pull the string around the small pulleys A and B, then wind 3 turns around the tuning shaft.
- e) Lead the string around the small pulleys C and D.
- f) Lead the string around the small pulleys E and F.
- g) Finally, tie the end of the string to remaining side of spring on the dial pulley.
- h) Tune receiver to high end. Fasten dial pointer to string so that it indicates high end on dial scale.



9. SCHEMATIC DIAGRAMS, PCB PATTERNS AND PARTS LIST

9-1 UNIT CONNECTION DIAGRAM AND MISCELLANEOUS PARTS



1 MISCELLANEOUS PARTS

NOTE:

This parts list is for the KUW model, the KCW, FVZW, NBW or FW model uses some different parts as following pages:

for KCW model page 21.

for FVZW model page 23.

for NBW model page 27.

for FW model page 29.

CAPACITORS

IN μF UNLESS OTHERWISE NOTED. p: μpF .

Symbol	Description	Part No.	
C2	Electrolytic 220 10V	CEB 221P 10	
C3	Electrolytic 3300 63V	ACH-011-A	
C4	Oil paper 0.01 800V	ACE-001-A	
C5	Ceramic 0.01 DC 1.4kV	C43-003-0	
C6	Ceramic 0.01 50V	CKDYF 103Z 50	
C7	Ceramic 0.01 50V	CKDYF 103Z 50	
C8	Ceramic 0.01 50V	CKDYF 103Z 50	
C9	Mylar 0.0082 50V	CQMA 822K 50	
C10	Mylar 0.0082 50V	CQMA 822K 50	
C11	Ceramic 0.01 DC 1.4kV	C43-003-0	
C12	Ceramic 0.01 DC 1.4kV	C43-003-0	

POTENTIOMETERS

Symbol	Description	Part No.	
VR1	500k-HB, dual	ACV-104-0	
VR2	500k-B1, dual	ACV-103-0	

RESISTORS

IN Ω , $\frac{1}{4}\text{W}$ UNLESS OTHERWISE NOTED. k: $\text{k}\Omega$, M: $\text{M}\Omega$.

Symbol	Description	Part No.	
R3	Carbon film 150k	RD $\frac{1}{4}$ PS 154J	
R4	Carbon film 150k	RD $\frac{1}{4}$ PS 154J	
R5	Carbon film 150k	RD $\frac{1}{4}$ PS 154J	
R6	Carbon film 150k	RD $\frac{1}{4}$ PS 154J	
R7	Wire wound 10 5W	RT5B 100K	
R8	Wire wound 10 5W	RT5B 100K	
R9	Wire wound 150 3W	RT3B 151K	
R10	Wire wound 150 3W	RT3B 151K	
R11	Carbon film 2.2M $\frac{1}{2}\text{W}$	RD $\frac{1}{2}$ PW 225J	
R12	Carbon film 22 $\frac{1}{2}\text{W}$	RD $\frac{1}{2}$ PS 220J	

SWITCHES

Symbol	Description	Part No.	
S1	Selector switch	ASB-007-A	
S2	Output selector	ASA-026-0	

COILS AND TRANSFORMERS

Symbol	Description	Part No.	
T1	Power transformer	ATT-040-A	
T2	Balun transformer	T22-025-A	
L1	Choke coil	T24-030-0	
L2	Ferrite loopstick antenna	T42-025-0	

20 OTHERS

Symbol	Description	Part No.	
	FM front end	AWB-008-0	
	FM/AM Unit	AWE-011-A	
	Head amp unit	W21-004-B	
	Control amp unit	AWG-008-0	
	Main amp unit	AWH-002-C	
	Switch unit	AWS-013-0	
	Switch unit	AWS-014-0	
	R unit	AWX-007-0	
	Power supply unit	AWR-006-A	
	Lamp unit	AWX-010-A	
	Front panel ass'y	ANB-108-D	
	Wooden case	AMM-006-A	
	Dial pulley	M42-080-A	
	Dial shaft ass'y	M42-071-F	
	Foot	AEC-012-0	
	Ferrite loopstick antenna holder ass'y	AXB-001-0	
	Dial scale	AAG-023-B	
	Dial pointer ass'y	AAF-007-C	
	Signal meter	A91-017-B	
	Knob for filter, FM muting, loudness, tape monitor and mode switch	AAD-023-0	
	Knob for speakers, bass, treble, balance, volume and selector	AAB-007-B	
	Knob for tuning	AAA-004-B	
	18P input terminal board	AKB-001-0	
	Antenna terminal board	K11-043-C	
	4P ground terminal	K13-047-0	

Symbol	Description	Part No.	
	Pilot lamp for program indicator	AEL-007-0	
	Pilot lamp for dial scale and signal meter	E22-017-0	
	Fuse 2A	E21-027-0	
	Fuse 3A for protection	AEK-008-0	
	Fuse 2A for protection	E21-035-A	
	Compound part for REC jack	W52-004-0	
	Spare AC outlet	K82-012-A	
	Speaker socket	K72-028-0	
	Headphones jack	K72-026-0	
	Microphone jack	K72-024-0	
	Pilot lamp (for signal meter) socket	K91-005-A	
	5P connector (DIN)	K93-003-B	
	Fuse holder	K96-007-C	
	FM T-type antenna	D52-013-0	
	Speaker plug	K72-007-B	
	Packing case	AHD-057-0	
	Styrotector	AHA-007-0	
	AC power cord	D11-003-E	
	Operating instructions	ARB-044-0	
	Screw for grounding	B11-012-A	
	Screw to fix wooden case	B11-016-B	

For KCW model

CAPACITORS

IN μF UNLESS OTHERWISE NOTED. p: μpF .

Symbol	Description				Part No.	
C2	Electrolytic	220	10V		CEB	221P 10
C3	Electrolytic	3300	63V		ACH-011-A	
C4	Oil paper	0.01	800V		ACE-001-0	
C5	Ceramic	0.01	DC 1.4kV		C43-003-0	
C6	Ceramic	0.01	50V		CKDYF	103Z 50
C7	Ceramic	0.01	50V		CKDYF	103Z 50
C8	Ceramic	0.01	50V		CKDYF	103Z 50
C9	Mylar	0.0082	50V		CQMA	822K 50
C10	Mylar	0.0082	50V		CQMA	822K 50

RESISTORS

IN Ω , $\frac{1}{4}\text{W}$ UNLESS OTHERWISE NOTED. k: $\text{k}\Omega$, M: $\text{M}\Omega$.

Symbol	Description				Part No.	
R3	Carbon film	150k			RD $\frac{1}{4}$ PS	154J
R4	Carbon film	150k			RD $\frac{1}{4}$ PS	154J
R5	Carbon film	150k			RD $\frac{1}{4}$ PS	154J
R6	Carbon film	150k			RD $\frac{1}{4}$ PS	154J
R7	Wire wound	10	5W		RT5B	100K

Symbol	Description				Part No.	
R8	Wire wound	10	5W		RT5B	100K
R9	Wire wound	150	3W		RT3B	151K
R10	Wire wound	150	3W		RT3B	151K
R11	Carbon film	2.2M	$\frac{1}{2}\text{W}$		RD $\frac{1}{2}$ PS	225J
R12	Carbon film	22	$\frac{1}{2}\text{W}$		RD $\frac{1}{2}$ PS	220J

POTENTIOMETERS

Symbol	Description	Part No.	
VR1	500k-HB, dual	ACV-104-0	
VR2	500k-B1, dual	ACV-103-0	

SWITCHES

Symbol	Description	Part No.	
S1	Selector switch	ASB-007-A	
S2	Output selector	ASA-014-0	

COILS AND TRANSFORMERS

Symbol	Description	Part No.	
T1	Power transformer	ATT-040-A	
T2	Balun transformer	T22-025-A	
L1	Choke coil	T24-030-0	
L2	Ferrite loopstick antenna	ATB-005-0	

22 OTHERS

Symbol	Description	Part No.	
	FM front end	AWB-009-0	
	FM/AM unit	AWE-011-A	
	Head amp unit	W21-004-B	
	Control amp unit	AWG-008-0	
	Main amp unit	AWH-002-C	
	Switch unit	AWS-013-0	
	Switch unit	AWS-014-0	
	R unit	AWX-007-0	
	Power supply unit	AWR-006-A	
	Lamp unit	AWX-010-A	
	Front panel ass'y	ANB-108-D	
	Wooden case	AMM-006-A	
	Dial pulley	M42-080-A	
	Dial shaft ass'y	M42-071-F	
	Foot	AEC-012-0	
	Ferrite loopstick antenna holder ass'y	AXB-001-0	
	Dial scale	AAG-023-B	
	Dial pointer ass'y	AAF-007-C	
	Signal meter	A91-017-B	
	Knob for filter, FM muting, loudness, tape monitor and mode switch	AAD-023-0	
	Knob for speakers, bass, treble, balance, volume and selector	AAB-007-B	
	Knob for tuning	AAA-004-B	
	18P input terminal board	AKB-001-0	
	Antenna terminal board	K11-043-C	
	4P ground terminal	K13-047-0	

Symbol	Description	Part No.	
	Pilot lamp for program indicator	AEL-007-0	
	Pilot lamp for dial scale and signal meter	E22-017-0	
	Fuse 2A	E21-005-0	
	Fuse 3A for protection	E21-022-0	
	Fuse 2A for protection	E21-035-A	
	Fuse 0.5A for protection	E21-019-A	
	Compound part for REC jack	W52-004-0	
	Spare AC outlet	K82-012-A	
	Speaker socket	K72-028-0	
	Headphones jack	K72-026-0	
	Microphone jack	K72-024-0	
	Pilot lamp (for signal meter) socket	K91-005-A	
	5P connector (DIN)	K93-003-B	
	Line voltage selector	AKR-001-0	
	Fuse (for protection) holder	K96-007-C	
	FM T-type antenna	D52-013-0	
	Speaker plug	K72-007-B	
	Fuse 1A	E21-004-0	
	Packing case	AHD-058-0	
	Styrotector	AHA-007-0	
	AC power cord	D11-002-B	
	Operating instructions	ARB-044-0	
	Screw for grounding	B11-012-A	
	Screw to fix wooden case	B11-016-B	

For FVZW model

CAPACITORS

IN μF UNLESS OTHERWISE NOTED. p: μpF .

Symbol	Description			Part No.	
C2	Electrolytic	220	10V	CEB 221P 10	
C3	Electrolytic	3300	63V	ACH-011-A	
C4	Ceramic	0.01	DC 1.4kV	C43-003-0	
C5	Ceramic	0.01	DC 1.4kV	C43-003-0	
C6	Ceramic	0.01	DC 1.4kV	C43-003-0	
C7	Ceramic	0.01	50V	CKDYF 103Z 50	
C8	Ceramic	0.01	50V	CKDYF 103Z 50	
C9	Ceramic	0.01	50V	CKDYF 103Z 50	

RESISTORS

IN Ω , $\frac{1}{2}\text{W}$ UNLESS OTHERWISE NOTED. k: $\text{k}\Omega$, M: $\text{M}\Omega$.

Symbol	Description			Part No.	
R3	Carbon film	150k		RD $\frac{1}{2}$ PS 154J	
R4	Carbon film	150k		RD $\frac{1}{2}$ PS 154J	
R5	Carbon film	150k		RD $\frac{1}{2}$ PS 154J	
R6	Carbon film	150k		RD $\frac{1}{2}$ PS 154J	
R7	Wire wound	10	5W	RT5B 100K	
R8	Wire wound	10	5W	RT5B 100K	
R9	Wire wound	150	3W	RT3B 151K	
R10	Wire wound	150	3W	RT3B 151K	
R11	Carbon film	22	$\frac{1}{2}\text{W}$	RD $\frac{1}{2}$ PS 220J	

POTENTIOMETERS

Symbol	Description	Part No.	
VR1	500k-HB, dual	ACV-104-0	
VR2	500k-B1, dual	ACV-103-0	

SWITCHES

Symbol	Description	Part No.	
S1	Selector switch	ASB-007-A	
S2	Output selector	ASA-015-0	

COILS AND TRANSFORMERS

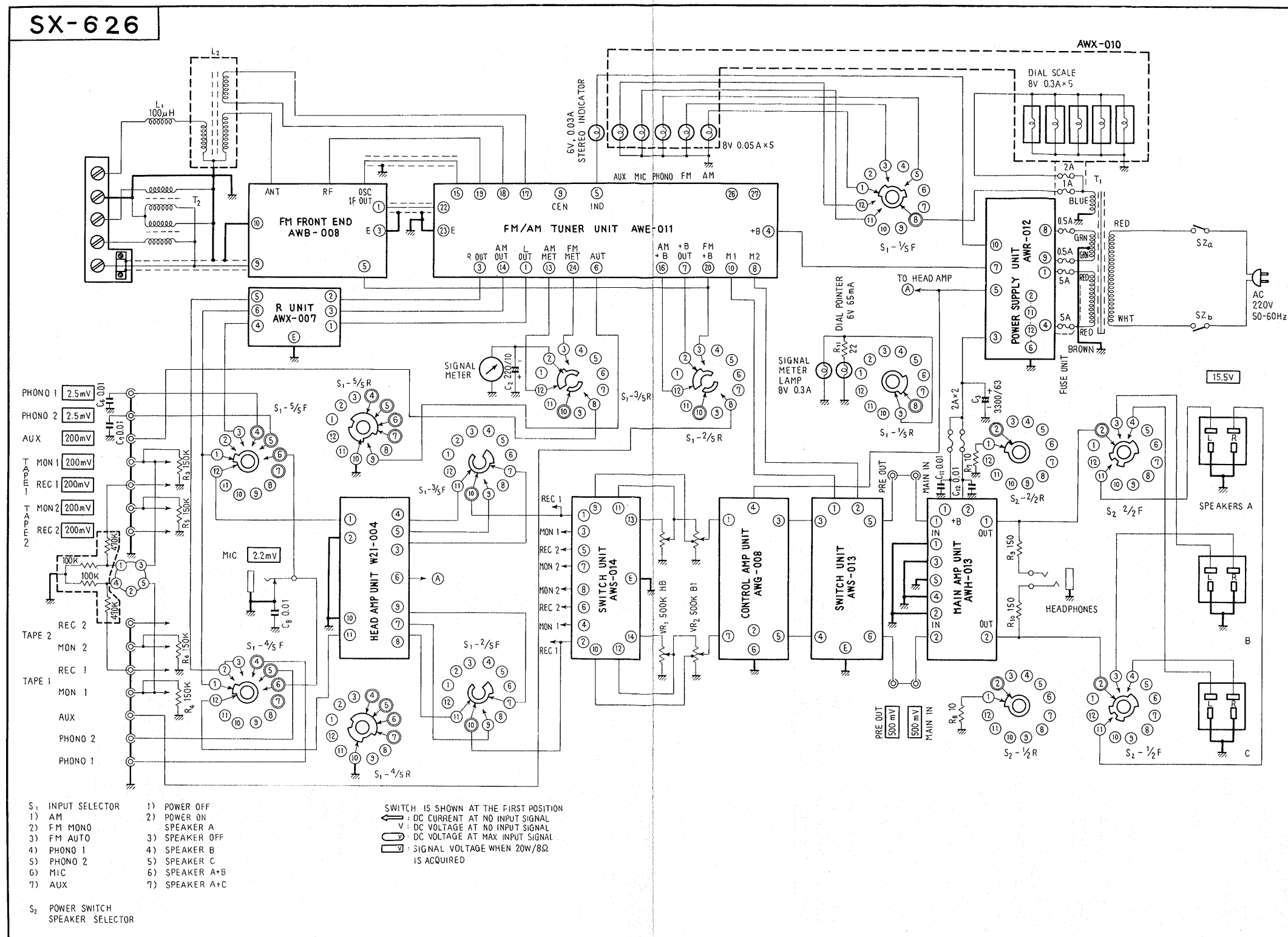
Symbol	Description	Part No.	
T1	Power transformer	ATT-041-B	
T2	Balun transformer	T22-025-A	
L1	Choke coil	T24-030-0	
L2	Ferrite loopstick antenna	T42-025-0	

OTHERS

Symbol	Description	Part No.	
	FM front end	AWB-008-0	
	FM/AM unit	AWE-011-A	
	Head amp unit	W21-004-B	
	Control amp unit	AWG-008-0	
	Main amp unit	AWH-002-C	
	Switch unit	AWS-013-0	
	Switch unit	AWS-014-0	
	R unit	AWX-007-0	
	Power supply unit	AWR-006-A	
	Lamp unit	AWX-010-A	
	Front panel ass'y	ANB-108-D	
	Wooden case	AMM-006-A	
	Dial pulley	M42-080-A	
	Dial shaft ass'y	M42-071-F	
	Foot	AEC-012-0	
	Ferrite loopstick antenna holder ass'y	AXB-001-0	
	Dial scale	AAG-023-B	
	Dial pointer ass'y	AAF-007-C	
	Signal meter	AAW-005-0	
	Knob for filter, FM muting, loudness, tape monitor and mode switch	AAD-023-0	
	Knob for speakers, bass, treble, balance, volume and selector	AAB-007-B	
	Knob for tuning	AAA-004-B	
	18P input terminal board	AKB-001-0	
	Antenna terminal board	K11-043-C	
	4P ground terminal	K13-047-0	

Symbol	Description	Part No.	
	Pilot lamp for program indicator	AEL-007-0	
	Pilot lamp for dial scale and signal meter	E22-017-0	
	Fuse 2A	E21-027-0	
	Fuse 3A for protection	AEK-008-0	
	Fuse 2A for protection	E21-035-A	
	Pilot lamp for FM stereo indicator	AEL-006-0	
	Compound part for REC jack	W52-004-0	
	Spare AC outlet	AKP-002-0	
	Speaker socket	K72-028-0	
	Headphones jack	K72-026-0	
	Microphone jack	K72-024-0	
	Pilot lamp (for signal meter) socket	K91-005-A	
	5P connector (DIN)	K93-003-B	
	Fuse holder	AKR-006-0	
	Fuse (for protection) holder	K96-007-C	
	FM T-type antenna	D52-013-0	
	Speaker plug	K71-032-0	
	Packing case	AHD-082-0	
	Styrorector	AHA-007-0	
	AC power cord	D11-003-E	
	Operating instructions	ARB-044-0	
	Screw for grounding	B11-012-A	
	Screw for fix wooden case	B11-016-B	

UNIT CONNECTION DIAGRAM FOR NBW MODEL ONLY



For NBW model

CAPACITORS

IN μF UNLESS OTHERWISE NOTED. p: μpF

Symbol	Description	Part No.	
C2	Electrolytic 220 10V	CEB 221P 10	
C3	Electrolytic 3300 63V	ACH-011-A	
C6	Ceramic 0.01 50V	CKDYF 103Z 50	
C7	Ceramic 0.01 50V	CKDYF 103Z 50	
C8	Ceramic 0.01 50V	CKDYF 103Z 50	
C11	Ceramic 0.01 DC 1.4kV	C43-003-0	
C12	Ceramic 0.01 DC 1.4kV	C43-003-0	

RESISTORS

IN Ω , $\frac{1}{4}\text{W}$ UNLESS OTHERWISE NOTED. k: $\text{k}\Omega$, M: $\text{M}\Omega$.

Symbol	Description	Part No.	
R3	Carbon film 150k	RD $\frac{1}{4}$ PS 154J	
R4	Carbon film 150k	RD $\frac{1}{4}$ PS 154J	
R5	Carbon film 150k	RD $\frac{1}{4}$ PS 154J	
R6	Carbon film 150k	RD $\frac{1}{4}$ PS 154J	
R7	Wire wound 10 5W	RT5B 100K	
R8	Wire wound 10 5W	RT5B 100K	
R9	Wire wound 150 3W	RT3B 151K	
R10	Wire wound 150 3W	RT3B 151K	
R11	Carbon film 22 $\frac{1}{4}\text{W}$	RD $\frac{1}{4}$ PS 220J	

POTENTIOMETERS

Symbol	Description	Part No.	
VR1	500k-HB, dual	ACV-104-0	
VR2	500k-B1, dual	ACV-103-0	

SWITCHES

Symbol	Description	Part No.	
S1	Selector switch	ASB-007-A	
S2	Output selector	ASA-015-0	

COILS AND TRANSFORMERS

Symbol	Description	Part No.	
T1	Power transformer	ATT-061-0	
T2	Balun transformer	T22-025-A	
L1	Choke coil	T24-030-0	
L2	Ferrite loopstick antenna	T42-025-0	

OTHERS

Symbol	Description	Part No.	
	FM front end	AWB-008-0	
	FM/AM unit	AWE-011-A	
	Head amp unit	W21-004-B	
	Control amp unit	AWG-008-0	
	Main amp unit	AWH-013-0	
	Switch unit	AWS-013-0	
	Switch unit	AWS-014-0	
	R unit	AWX-007-0	
	Power supply unit	AWR-012-0	
	Lamp unit	AWX-010-A	
	Fuse unit	AWX-018-0	
	Front panel ass'y	ANB-108-D	
	Wooden case	AMM-006-A	
	Dial pulley	M42-080-A	
	Dial shaft ass'y	M42-071-F	
	Foot	AEC-012-0	
	Ferrite loopstick antenna holder ass'y	AXB-001-0	
	Dial scale	AAG-023-B	
	Dial pointer ass'y	AAF-007-C	
	Signal meter	AAW-005-0	
	Knob for filter, FM muting, loudness, tape monitor and mode switch	AAD-023-0	
	Knob for speakers, bass, treble, balance, volume and selector	AAB-007-B	
	Knob for tuning	AAA-004-B	
	18P input terminal board	AKB-001-0	
	Antenna terminal board	K11-043-C	

Symbol	Description	Part No.	
	4P ground terminal	K13-047-0	
	Pilot lamp for FM stereo indicator	AEL-006-0	
	Pilot lamp for program indicator	AEL-007-0	
	Pilot lamp for dial scale and signal meter	E22-017-0	
	Fuse 2A for protection	E21-029-A	
	Fuse 5A for protection	AEK-015-0	
	Fuse 1A for protection	E21-031-0	
	Jumper plug	K71-026-0	
	Fuse 0.5A for protection	AEK-014-0	
	Compound part for REC jack	W52-004-0	
	Speaker socket	K72-028-0	
	Headphones jack	K72-026-0	
	Microphone jack	K72-024-0	
	Pilot lamp (for signal meter) socket	K91-005-A	
	5P connector (DIN)	K93-003-B	
	Fuse (for protection) holder	K91-008-0	
	FM T-type antenna	D52-013-0	
	Speaker plug	K72-007-B	
	Fuse 1A	E21-004-0	
	Packing case	AHD-086-0	
	Styrotector	AHA-007-0	
	AC power cord	D54-013-0	
	Operating instructions	ARB-053-0	
	Screw for grounding	B11-012-0	
	Screw to fix wooden case	B11-016-B	
	Pin plug	K72-007-B	

For FW model

CAPACITORS

IN μF UNLESS OTHERWISE NOTED. p: μpF .

Symbol	Description			Part No.	
C2	Electrolytic	220	10V	CEB 221P	10
C3	Electrolytic	3300	63V	ACH-011-A	
C4	Ceramic	0.01	DC 1.4kV	C43-003-0	
C5	Ceramic	0.01	DC 1.4kV	C43-003-0	
C6	Ceramic	0.01	DC 1.4kV	C43-003-0	
C7	Ceramic	0.01	50V	CKDYF 103Z	50
C8	Ceramic	0.01	50V	CKDYF 103Z	50
C9	Ceramic	0.01	50V	CKDYF 103Z	50
C10	Ceramic	0.01	DC 1.4kV	C43-003-0	
C11	Ceramic	0.01	DC 1.4kV	C43-003-0	
C12	Mylar	0.0082	50V	CQMA 822K	50
C13	Mylar	0.0082	50V	CQMA 822K	50

RESISTORS

IN Ω , $\frac{1}{4}\text{W}$ UNLESS OTHERWISE NOTED. k: $\text{k}\Omega$, M: $\text{M}\Omega$.

Symbol	Description			Part No.	
R3	Carbon film	150k		RD $\frac{1}{4}$ PS	154J
R4	Carbon film	150k		RD $\frac{1}{4}$ PS	154J
R5	Carbon film	150k		RD $\frac{1}{4}$ PS	154J
R6	Carbon film	150k		RD $\frac{1}{4}$ PS	154J
R7	Wire wound	10	5W	RT5B	100K
R8	Wire wound	10	5W	RT5B	100K
R9	Wire wound	150	3W	RT3B	151K
R10	Wire wound	150	3W	RT3B	151K
R11	Carbon film	22	$\frac{1}{4}\text{W}$	RD $\frac{1}{4}$ PS	220J

POTENTIOMETERS

Symbol	Description	Part No.	
VR1	500k-HB, dual	ACV-104-0	
VR2	500k-B1, dual	ACV-103-0	

SWITCHES

Symbol	Description	Part No.	
S1	Selector switch	ASB-007-A	
S2	Output selector	ASA-015-0	
S4	De-emphasis switch	S41-022-A	

COILS AND TRANSFORMERS

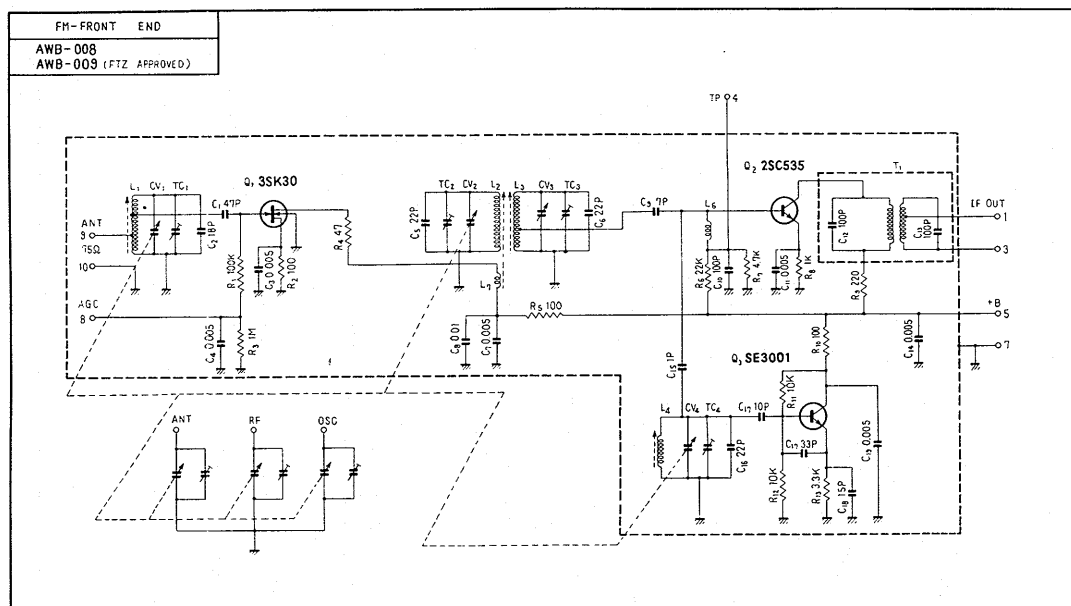
Symbol	Description	Part No.	
T1	Power transformer	ATT-041-B	
T2	Balun transformer	T22-025-A	
L1	Choke coil	T24-030-0	
L2	Ferrite loopstick antenna	T42-025-0	

30 OTHERS

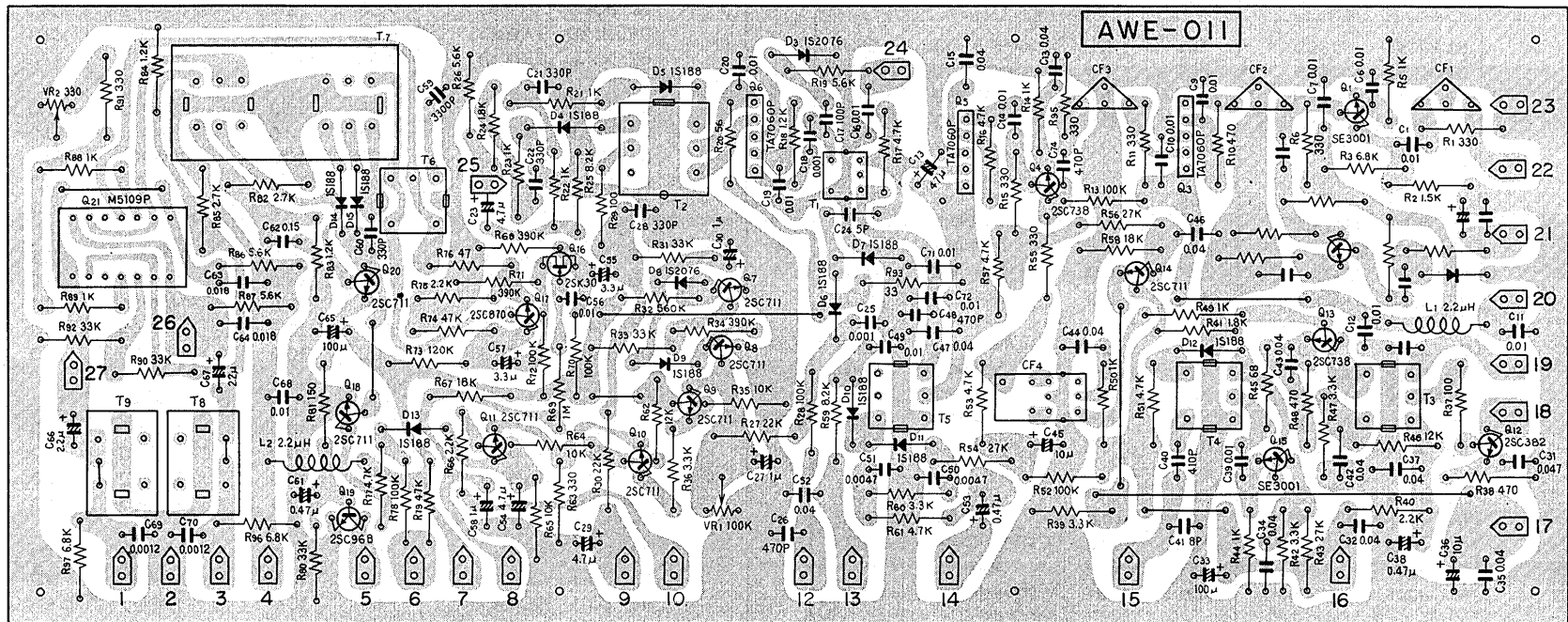
Symbol	Descriptiton	Part No.	
	FM front end	AWB-008-0	
	FM/AM unit	AWE-011-A	
	Head amp unit	W21-004-B	
	Control amp unit	AWG-008-0	
	Main amp unit	AWH-002-C	
	Switch unit	AWS-013-0	
	Switch unit	AWS-014-0	
	R unit	AWX-007-0	
	Power supply unit	AWR-006-A	
	Lamp unit	AWX-010-A	
	Front panel ass'y	ANB-108-D	
	Wooden case	AMM-006-A	
	Dial pulley	M42-080-A	
	Dial shaft ass'y	M42-071-F	
	Foot	AEC-012-0	
	Ferrite loopstick antenna holder ass'y	AXB-001-0	
	Dial scale	AAG-023-B	
	Dial pointer ass'y	AAF-007-C	
	Signal meter	AAW-005-0	
	Knob for filter, FM muting, loudness, tape monitor and mode switch	AAD-023-0	
	Knob for speakers, bass, treble, balance, volume and selector	AAB-007-B	
	Knob for tuning	AAA-004-B	
	18P input terminal board	AKB-001-0	
	Antenna terminal board	K11-043-C	
	4P ground terminal	K13-047-0	

Symbol	Description	Part No.	
	Pilot lamp for program indicator	AEL-007-0	
	Pilot lamp for dial scale and signal meter	E22-017-0	
	Fuse 2A	E21-005-0	
	Fuse 3A for protection	E21-022-0	
	Fuse 2A for protection	E21-035-A	
	Fuse 0.5A for protection	E21-019-A	
	Compound part for REC terminal	W52-004-0	
	Spare AC outlet	AKP-002-0	
	Speaker socket	K72-028-0	
	Headphones jack	K72-026-0	
	Microphone jack	K72-024-0	
	Pilot lamp (for signal meter) socket	K91-005-A	
	5P connector (DIN)	K93-003-B	
	Line voltage selector	AKR-001-0	
	Fuse (for protection) holder	K96-007-C	
	FM T-type antenna	D52-013-0	
	Speaker plug	K72-007-B	
	Fuse 1A	E21-004-0	
	Packing case	AHD-081-0	
	Styrotector	AHA-007-0	
	AC power cord	D11-002-B	
	Operating instructions	ARB-044-A	
	Screw for grounding	B11-012-A	
	Screw to fix wooden case	B11-041-A	
	Pilot lamp for FM stereo indicator	AEL-006-0	
	Pin plug	K72-015-A	
	Fuse 2A	E21-005-0	

9-2 FM FRONT END (AWB-008) (AWB-009)







PARTS LIST OF FM/AM UNIT

CAPACITORS

Symbol	Description			Part No.	
C1	Ceramic	0.01	50V	CKDYF	103Z 50
C2	Ceramic	0.01	50V	CKDYF	103Z 50
C3	Ceramic	0.01	50V	CKDYF	103Z 50
C4	Ceramic	0.01	50V	CKDYF	103Z 50
C5	Ceramic	0.01	50V	CKDYF	103Z 50
C6	Ceramic	0.01	50V	CKDYF	103Z 50
C7	Ceramic	0.01	50V	CKDYB	103K 50
C8	Ceramic	0.01	50V	CKDYB	103K 50
C9	Ceramic	0.01	50V	CKDYF	103Z 50
C10	Ceramic	0.01	50V	CKDYB	103K 50
C11	Ceramic	0.01	50V	CKDYF	103Z 50
C12	Ceramic	0.01	50V	CKDYB	103K 50
C13	Ceramic	0.04	50V	CKDYF	403Z 50
C14	Ceramic	0.01	50V	CKDYF	103Z 50
C15	Ceramic	0.04	50V	CKDYF	403Z 50
C16	Ceramic	0.01	50V	CKDYF	103Z 50
C17	Ceramic	100p	50V	CCDSL	101K 50
C18	Ceramic	0.001	50V	CKDYB	102K 50
C19	Ceramic	0.01	50V	CKDYF	103Z 50
C20	Ceramic	0.01	50V	CKDYF	103Z 50
C21	Ceramic	330p	50V	CKDYB	331K 50
C22	Ceramic	330p	50V	CKDYB	331K 50
C23	Electrolytic	4.7	25V✓	CEA	4R7P 25
C24	Ceramic	5p	50V	CCDSL	050D 50
C25	Ceramic	0.001	50V	CKDYB	102K 50
C26	Ceramic	470p	50V	CKDYB	471K 50
C27	Electrolytic	1	50V✓	CEA	010P 50
C28	Ceramic	330p	50V	CKDYB	331K 50
C29	Electrolytic	4.7	25V	CEA	4R7P 25
C30	Electrolytic	1	50V	CEA	010P 50

Symbol	Description			Part No.	
C31	Ceramic	0.047	25V	CKDBC	473Z 25
C32	Ceramic	0.04	50V	CKDYF	403Z 50
C33	Electrolytic	100	16V	CEA	101P 16
C34	Ceramic	0.04	50V	CKDYF	403Z 50
C35	Ceramic	0.04	50V	CKDYF	403Z 50
C36	Electrolytic	10	16V	CEA	100P 16
C37	Ceramic	0.04	50V	CKDYF	403Z 50
C38	Electrolytic	0.47	50V✓	CEA	R47P 50
C39	Mylar	0.01	50V	QOMA	103K 50
C40	Styrol	410p	50V	QOSA	411K 50
C41	Ceramic	8p	50V	CCDSL	080D 50
C42	Ceramic	0.04	50V	CKDYF	403Z 50
C43	Ceramic	0.04	50V	CKDYF	403Z 50
C44	Ceramic	0.04	50V	CKDYF	403Z 50
C45	Electrolytic	10	16V	CEA	100P 16
C46	Ceramic	0.04	50V	CKDYF	403Z 50
C47	Ceramic	0.04	50V	CKDYF	403Z 50
C48	Ceramic	470p	50V	CKDYB	471K 50
C49	Ceramic	0.01	50V	CKDYF	103Z 50
C50	Mylar	0.0047	50V	QOMA	472K 50
C51	Mylar	0.0047	50V	QOMA	472K 50
C52	Ceramic	0.04	50V	CKDYF	403Z 50
C53	Electrolytic	0.47	25V	CSSA	R47X 25
C54	Electrolytic	4.7	25V	CEA	4R7P 25
C55	Electrolytic	3.3	16V	CSSA	3R3M 16
C56	Mylar	0.01	50V	QOMA	103K 50
C57	Electrolytic	3.3	16V	CSSA	3R3M 16
C58	Electrolytic	1	50V	CEA	010P 50
C59	Styrol	330p	50V	C15-011-A	
C60	Ceramic	330p	50V	CKDYB	331K 50

Symbol	Description			Part No.	
C61	Electroytic	0.47	50V	CEA	R47P 50
C62	Mylar	0.15	50V	CQMA	154K 50
C63	Mylar	0.018	50V	CQMA	183K 50
C64	Mylar	0.018	50V	CQMA	183K 50
C65	Electrolytic	100	16V	CEA	101P 16
C66	Electrolytic	2.2	16V	CSSA	2R2M 16
C67	Electrolytic	2.2	16V	CSSA	2R2M 16
C68	Ceramic	0.01	50V	CKDYF	103Z 50
C69	Mylar	0.0012	50V	CQMA	122K 50
C70	Mylar	0.0012	50V	CQMA	122K 50
C71	Ceramic	0.01	50V	CKDYB	103K 50
C72	Ceramic	0.01	50V	CKDYB	103K 50
C73	Electrolytic	47	16V	CEA	470P 16
C74	Ceramic	470p	50V	CKDYB	471K 50

RESISTORS

Symbol	Description			Part No.	
R1	Carbon film	330		RD4PS	331J
R2	Carbon film	1.5k		RD4PS	152J
R3	Carbon film	6.8k		RD4PS	682J
R5	Carbon film	1k		RD4PS	102J
R6	Carbon film	330		RD4PS	331J
R10	Carbon film	470		RD4PS	471J
R11	Carbon film	330		RD4PS	331J
R13	Carbon film	100k		RD4PS	104J
R14	Carbon film	1k		RD4PS	102J
R15	Carbon film	330		RD4PS	331J
R16	Carbon film	4.7k		RD4PS	472J
R17	Carbon film	4.7k		RD4PS	472J
R18	Carbon film	1.2k		RD4PS	122J
R19	Carbon film	5.6k		RD4PS	562J
R20	Carbon film	56		RD4PS	560J

Symbol	Description			Part No.	
R21	Carbon film	1k		RD4PS	102J
R22	Carbon film	1k		RD4PS	102J
R23	Carbon film	1k		RD4PS	102J
R24	Carbon film	1.8k		RD4PS	182J
R25	Carbon film	8.2k		RD4PS	822J
R26	Carbon film	5.6k		RD4PS	562J
R27	Carbon film	22k		RD4PS	223J
R28	Carbon film	100k		RD4PS	104J
R29	Carbon film	100		RD4PS	101J
R30	Carbon film	22k		RD4PS	223J
R31	Carbon film	33k		RD4PS	333J
R32	Carbon film	560k		RD4PS	564J
R33	Carbon film	33k		RD4PS	333J
R34	Carbon film	390k		RD4PS	394J
R35	Carbon film	10k		RD4PS	103J
R36	Carbon film	3.3k		RD4PS	332J
R37	Carbon film	100		RD4PS	101J
R38	Carbon film	470		RD4PS	471J
R39	Carbon film	3.3k		RD4PS	332J
R40	Carbon film	2.2k		RD4PS	222J
R41	Carbon film	1.8k		RD4PS	182J
R42	Carbon film	3.3k		RD4PS	332J
R43	Carbon film	27k		RD4PS	273J
R44	Carbon film	1k		RD4PS	102J
R45	Carbon film	68		RD4PS	680J
R46	Carbon film	12k		RD4PS	123J
R47	Carbon film	3.3k		RD4PS	332J
R48	Carbon film	470		RD4PS	471J
R49	Carbon film	1k		RD4PS	102J
R50	Carbon film	1k		RD4PS	102J

Symbol	Description		Part No.	
R51	Carbon film	4.7k	RD¼PS 472J	
R52	Carbon film	100k	RD¼PS 104J	
R53	Carbon film	4.7k	RD¼PS 472J	
R54	Carbon film	27k	RD¼PS 273J	
R55	Carbon film	330	RD¼PS 331J	
R56	Carbon film	27k	RD¼PS 273J	
R57	Carbon film	4.7k	RD¼PS 472J	
R58	Carbon film	18k	RD¼PS 183J	
R59	Carbon film	8.2k	RD¼PS 822J	
R60	Carbon film	3.3k	RD¼PS 332J	
R61	Carbon film	4.7k	RD¼PS 472J	
R62	Carbon film	12k	RD¼PS 123J	
R63	Carbon film	330	RD¼PS 331J	
R64	Carbon film	10k	RD¼PS 103J	
R65	Carbon film	10k	RD¼PS 103J	
R66	Carbon film	2.2k	RD¼PS 222J	
R67	Carbon film	18k	RD¼PS 183J	
R68	Carbon film	390k	RD¼PS 394J	
R69	Carbon film	1M	RD¼PS 105J	
R70	Carbon film	100k	RD¼PS 104J	
R71	Carbon film	390k	RD¼PS 394J	
R72	Carbon film	100k	RD¼PS 104J	
R73	Carbon film	120k	RD¼PS 124J	
R74	Carbon film	47k	RD¼PS 473J	
R75	Carbon film	2.2k	RD¼PS 222J	
R76	Carbon film	47	RD¼PS 470J	
R77	Carbon film	4.7k	RD¼PS 472J	
R78	Carbon film	100k	RD¼PS 104J	
R79	Carbon film	47k	RD¼PS 473J	
R80	Carbon film	33k	RD¼PS 333J	

Symbol	Description		Part No.	
R81	Carbon film	150	RD¼PS 151J	
R82	Carbon film	2.7k	RD¼PS 272J	
R83	Carbon film	1.2k	RD¼PS 122J	
R84	Carbon film	1.2k	RD¼PS 122J	
R85	Carbon film	2.7k	RD¼PS 272J	
R86	Carbon film	5.6k	RD¼PS 562J	
R87	Carbon film	5.6k	RD¼PS 562J	
R88	Carbon film	1k	RD¼PS 102J	
R89	Carbon film	1k	RD¼PS 102J	
R90	Carbon film	33k	RD¼PS 333J	
R91	Carbon film	330	RD¼PS 331J	
R92	Carbon film	33k	RD¼PS 333J	
R93	Carbon film	33	RD¼PS 330J	
R95	Carbon film	330	RD¼PS 331J	
R96	Carbon film	6.8k	RD¼PS 682J	
R97	Carbon film	6.8k	RD¼PS 682J	

POTENTIOMETERS

Symbol	Description	Part No.	
VR1	Semi-fixed, 100k-B	C92-047-0	
VR2	Semi-fixed, 330-B	C92-065-A	

SEMICONDUCTORS

Symbol	Description	Part No.	
Q1	SE3001 Transistor		
Q3	TA7060P-R IC		
Q4	2SC738-D Transistor		
Q5	TA7060P-W IC		
Q6	TA7060P-W IC		
Q7	2SC711-F or E Transistor		
Q8	2SC711-F or E Transistor		
Q9	2SC711-F or E Transistor		
Q10	2SC711-F or E Transistor		
Q11	2SC711-F or E Transistor		
Q12	2SC382 Transistor		
Q13	2SC738-D Transistor		
Q14	2SC711-F or E Transistor		
Q15	SE3001 Transistor		
Q16	2SK30-Y or GR FET		
Q17	2SC870-F or E Transistor		
Q18	2SC711-F or E Transistor		
Q19	2SC968-Y Transistor		
Q20	2SC711-F or E Transistor		
Q21	M5109P or CA3054 IC		
D3	1S2076 Diode		
D4	1S188FM-1 Diode		
D5	1S188FM-1 Diode		
D6	1S188FM-1 Diode		
D7	1S188FM-1 Diode		

Symbol	Description	Part No.	
D8	1S2076 Diode		
D9	1S188FM-1 Diode		
D10	1S188FM-1 Diode		
D11	1S188FM-1 Diode		
D12	1S188FM-1 Diode		
D13	1S188FM-1 Diode		
D14	1S188FM-1 Diode		
D15	1S188FM-1 Diode		

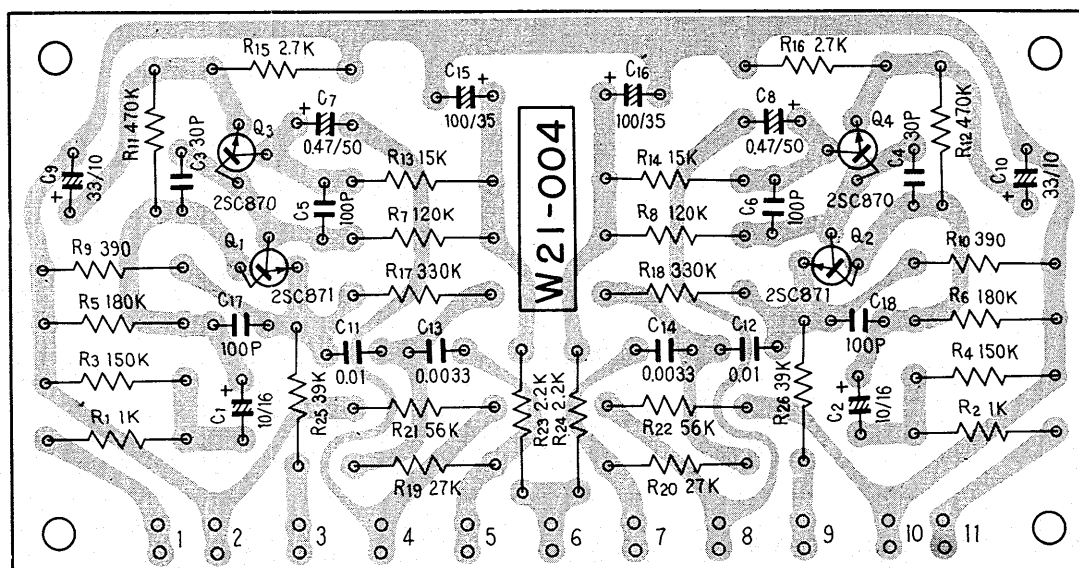
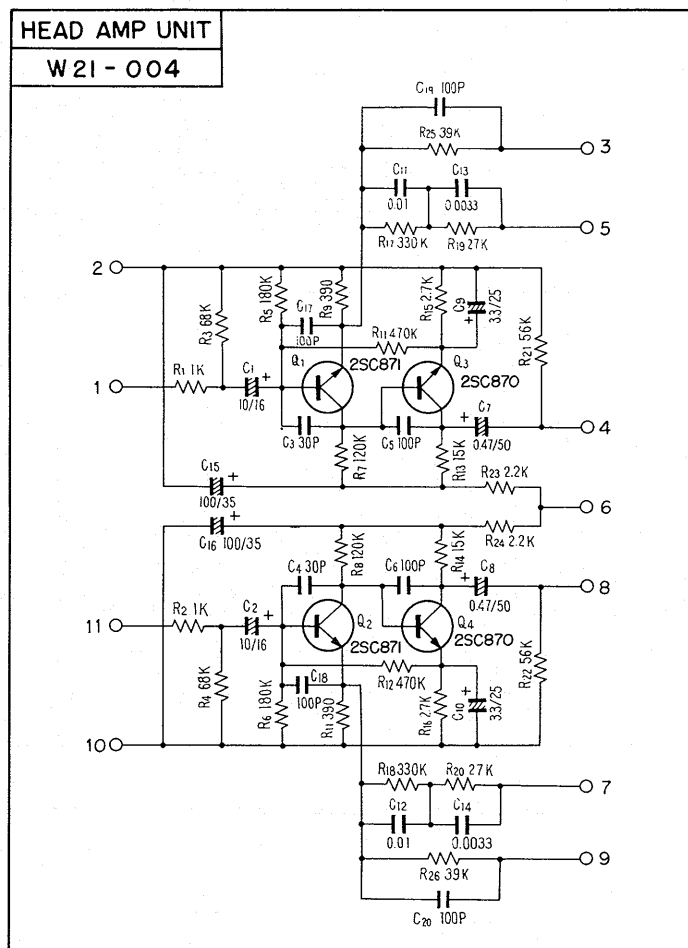
COILS AND TRANSFORMERS

Symbol	Description	Part No.	
T1	Matching transformer	ATE-002-0	
T2	FM IF transformer	T74-003-A	
T3	AM RF transformer	ATB-003-A	
T4	AM OSC transformer	ATB-004-B	
T5	AM IF transformer	ATE-003-B	
T6	19kHz coil	T75-023-B	
T7	MPX transformer	T75-026-0	
T8	38kHz filter	ATM-004-0	
T9	38kHz filter	ATM-004-0	
L1	RF choke coil	T24-028-A	
L2	RF choke coil	T24-028-A	

FILTERS

Symbol	Description	Part No.	
CF1	FM ceramic filter	ATF-003-0	
CF2	FM ceramic filter	ATF-001-0	
CF3	FM ceramic filter	ATF-001-0	
CF4	AM ceramic filter	ATF-002-A	

9-4 HEAD AMP UNIT (W21-004)



PARTS LIST OF HEAD AMP UNIT

CAPACITORS ✓

Symbol	Description			Part No.		
C1	Electrolytic	10	16V	CEA	100P	16
C2	Electrolytic	10	16V	CEA	100P	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	50V	CEA	R47P	50
C8	Electrolytic	0.47	50V	CEA	R47P	50
C9	Electrolytic	3.3	25V	CEA	3R3P	25
C10	Electrolytic	3.3	25V	CEA	3R3P	25
C11	Mylar	0.01	50V	CQMA	103M	50
C12	Mylar	0.01	50V	CQMA	103M	50
C13	Mylar	0.0033	50V	CQMA	332M	50
C14	Mylar	0.0033	50V	CQMA	332M	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

RESISTORS

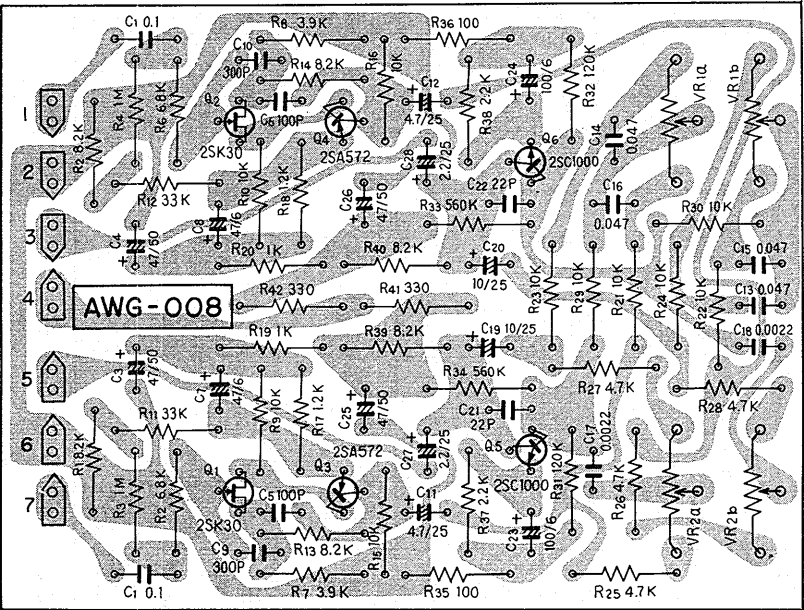
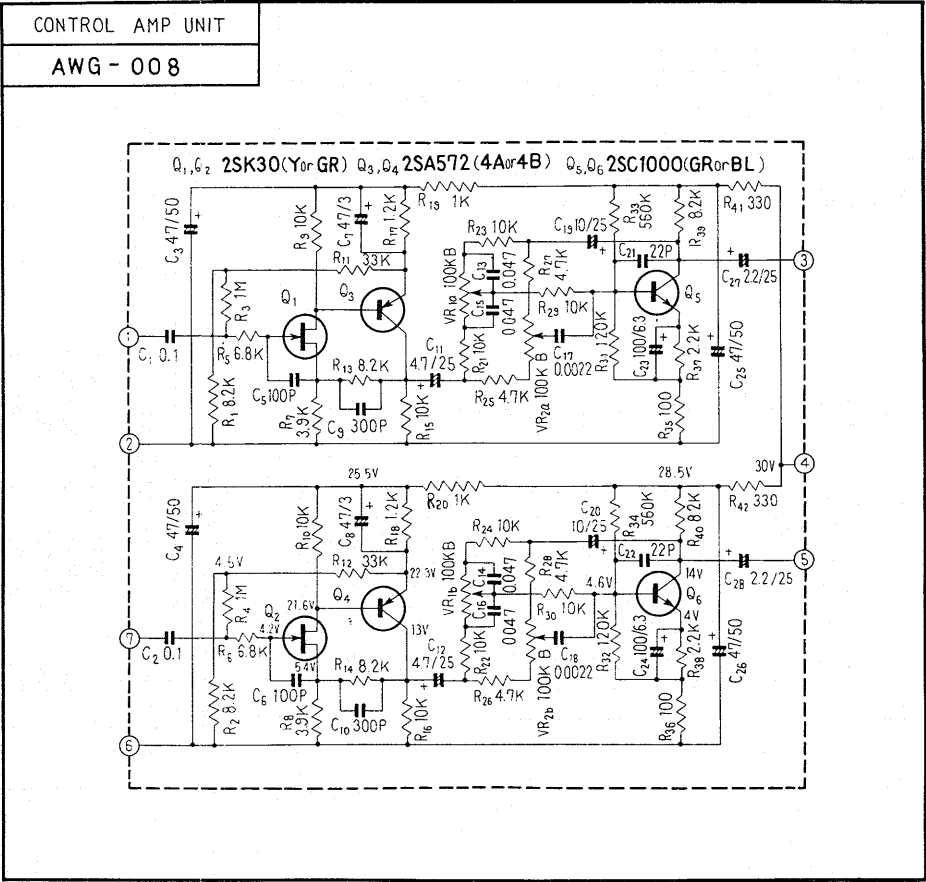
Symbol	Description			Part No.		
R1	Carbon film	1k		RD¼PS	102J	
R2	Carbon film	1k		RD¼PS	102J	
R3	Carbon film	68k		RD¼PS	683J	
R4	Carbon film	68k		RD¼PS	683J	
R5	Carbon film	180k		RD¼PS	184J	

Symbol	Description			Part No.		
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	470k		RD¼PS	474J	
R12	Carbon film	470k		RD¼PS	474J	
R13	Carbon film	15k		RD¼PS	153J	
R14	Carbon film	15k		RD¼PS	153J	
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	39k		RD¼PS	393J	
R26	Carbon film	39k		RD¼PS	393J	

SEMICONDUCTORS

Symbol	Description			Part No.		
Q1	2SC871-E or F	Transistor				
Q2	2SC871-E or F	Transistor				
Q3	2SC870	Transistor				
Q4	2SC870	Transistor				

9-5 CONTROL AMP UNIT (AWG-008)



PARTS LIST OF CONTROL AMP UNIT

CAPACITORS ✓

Symbol	Description			Part No.	
C1	Mylar	0.1	50V	CQMA	104K 50
C2	Mylar	0.1	50V	CQMA	104K 50
C3	Electrolytic	47	50V	CEA	470P 50
C4	Electrolytic	47	50V	CEA	470P 50
C5	Ceramic	100p	50V	CCDSL	101K 50
C6	Ceramic	100p	50V	CCDSL	101K 50
C7	Electrolytic	47	6V	CEA	470P 6
C8	Electrolytic	47	6V	CEA	470P 6
C9	Ceramic	300p	50V	CCDSL	301K 50
C10	Ceramic	300p	50V	CCDSL	301K 50
C11	Electrolytic	4.7	25V	CEA	4R7P 25
C12	Electrolytic	4.7	25V	CEA	4R7P 25
C13	Mylar	0.047	50V	CQMA	473J 50
C14	Mylar	0.047	50V	CQMA	473J 50
C15	Mylar	0.047	50V	CQMA	473J 50
C16	Mylar	0.047	50V	CQMA	473J 50
C17	Mylar	0.0022	50V	CQMA	222K 50
C18	Mylar	0.0022	50V	CQMA	222K 50
C19	Electrolytic	10	25V	CEA	100P 25
C20	Electrolytic	10	25V	CEA	100P 25
C21	Ceramic	22p	50V	CCDSL	220K 50
C22	Ceramic	22p	50V	CCDSL	220K 50
C23	Electrolytic	100	6V	CEA	101P 6
C24	Electrolytic	100	6V	CEA	101P 6
C25	Electrolytic	47	50V	CEA	470P 50
C26	Electrolytic	47	50V	CEA	470P 50
C27	Electrolytic	2.2	25V	CSSA	2R2X 25
C28	Electrolytic	2.2	25V	CSSA	2R2X 25

RESISTORS

Symbol	Description		Part No	
R1	Carbon film	8.2k	RD¼PS	822J
R2	Carbon film	8.2k	RD¼PS	822J
R3	Carbon film	1M	RD¼PS	105JNL
R4	Carbon film	1M	RD¼PS	105JNL
R5	Carbon film	6.8k	RD¼PS	682J
R6	Carbon film	6.8k	RD¼PS	682J
R7	Carbon film	3.9k	RD¼PS	392J
R8	Carbon film	3.9k	RD¼PS	392J
R9	Carbon film	10k	RD¼PS	103J
R10	Carbon film	10k	RD¼PS	103J
R11	Carbon film	33k	RD¼PS	333J
R12	Carbon film	33k	RD¼PS	333J
R13	Carbon film	8.2k	RD¼PS	822J
R14	Carbon film	8.2k	RD¼PS	822J
R15	Carbon film	10k	RD¼PS	103J
R16	Carbon film	10k	RD¼PS	103J
R17	Carbon film	1.2k	RD¼PS	122J
R18	Carbon film	1.2k	RD¼PS	122J
R19	Carbon film	1k	RD¼PS	102J
R20	Carbon film	1k	RD¼PS	102J
R21	Carbon film	10k	RD¼PS	103J
R22	Carbon film	10k	RD¼PS	103J
R23	Carbon film	10k	RD¼PS	103J
R24	Carbon film	10k	RD¼PS	103J
R25	Carbon film	4.7k	RD¼PS	472J
R26	Carbon film	4.7k	RD¼PS	472J
R27	Carbon film	4.7k	RD¼PS	472J
R28	Carbon film	4.7k	RD¼PS	472J
R29	Carbon film	10k	RD¼PS	103J
R30	Carbon film	10k	RD¼PS	103J

Symbol	Description	Part No.	
R31	Carbon film 120k	RD%PS 124JNL	
R32	Carbon film 120k	RD%PS 124JNL	
R33	Carbon film 560k	RD%PS 564JNL	
R34	Carbon film 560k	RD%PS 564JNL	
R35	Carbon film 100	RD%PS 101J	
R36	Carbon film 100	RD%PS 101J	
R37	Carbon film 2.2k	RD%PS 222J	
R38	Carbon film 2.2k	RD%PS 222J	
R39	Carbon film 8.2k	RD%PS 822J	
R40	Carbon film 8.2k	RD%PS 822J	
R41	Carbon film 330	RD%PS 331J	
R42	Carbon film 330	RD%PS 331J	

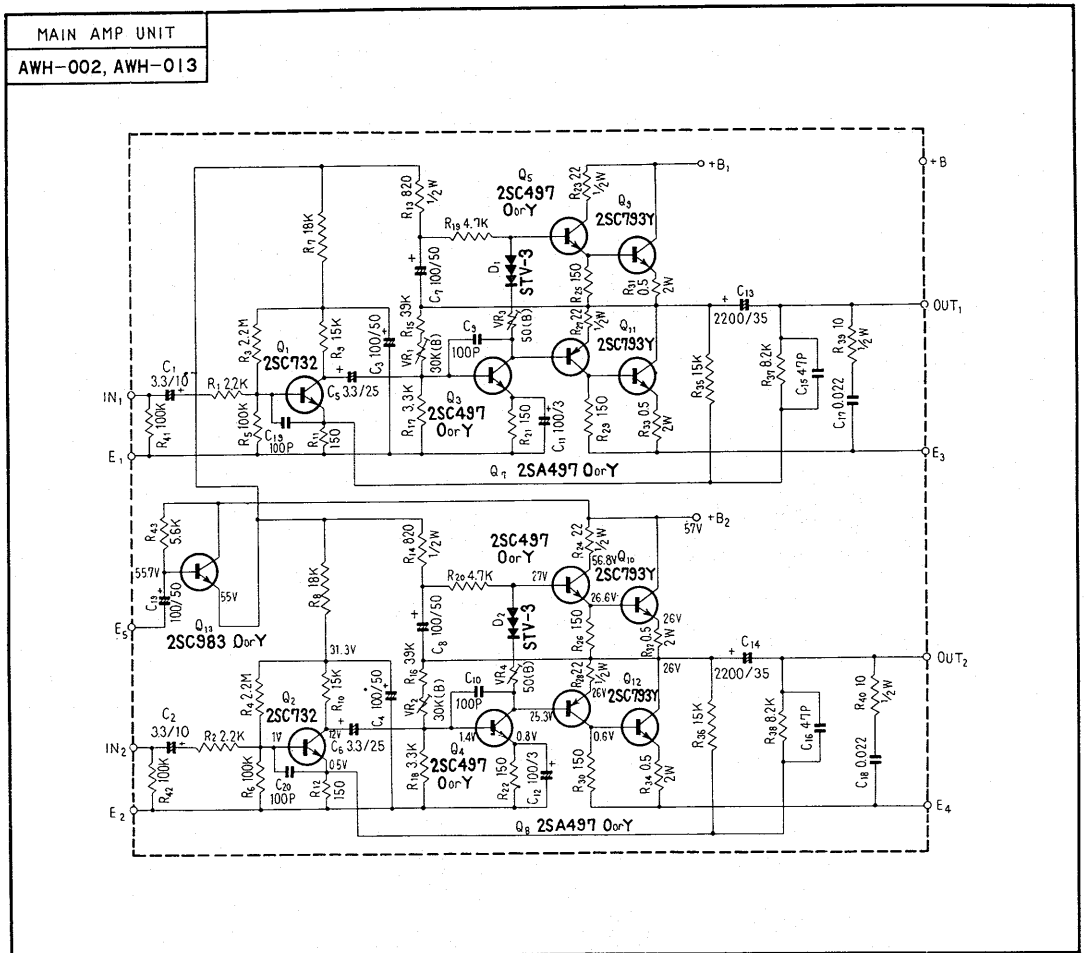
SEMICONDUCTORS

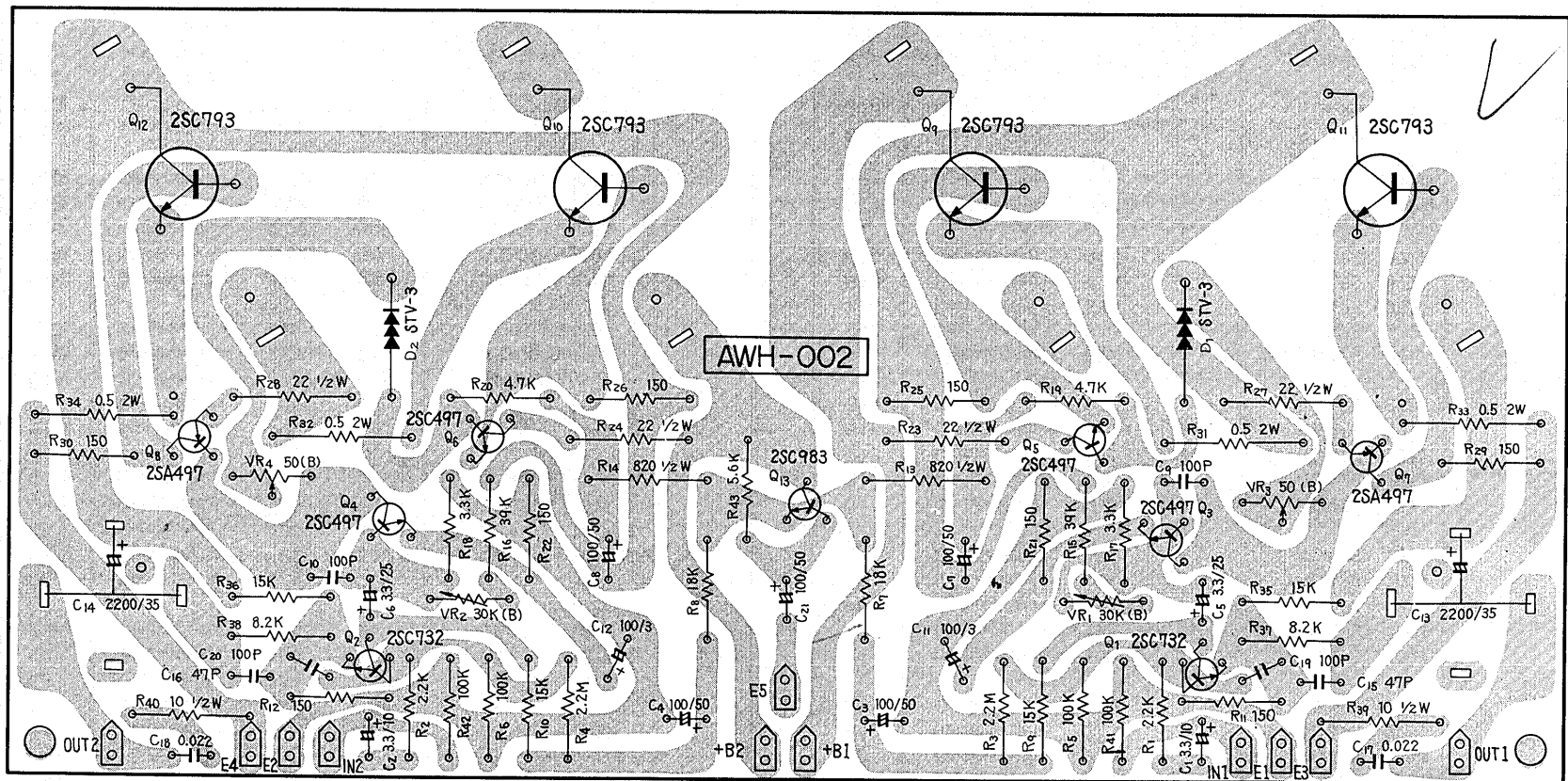
Symbol	Description	Part No.	
Q1	2SK30-Y or GR FET		
Q2	2SK30-Y or GR FET		
Q3	2SA572-4A or 4B Transistor		
Q4	2SA572-4A or 4B Transistor		
Q5	2SC1000-GR or BL Transistor		
Q6	2SC1000-GR or BL Transistor		

POTENTIOMETERS

Symbol	Description	Part No.	
VR1	100k-B, dual	C82-050-0	
VR2	100k-B, dual	C82-050-0	

9-6 MAIN AMP UNIT (AWH-002) (AWH-013, for NBW model)





SX-626

CAPACITORS

Symbol	Description				Part No.	
C1	Electrolytic	3.3	10V	CEA	3R3P	10
C2	Electrolytic	3.3	10V	CEA	3R3P	10
C3	Electrolytic	100	50V	CEA	101P	50
C4	Electrolytic	100	50V	CEA	101P	50
C5	Electrolytic	3.3	25V	CEA	3R3P	25
C6	Electrolytic	3.3	25V	CEA	3R3P	25
C7	Electrolytic	100	50V	CEA	101P	50
C8	Electrolytic	100	50V	CEA	101P	50
C9	Ceramic	100p	50V	CCDSL	101K	50
C10	Ceramic	100p	50V	CCDSL	101K	50
C11	Electrolytic	100	6V	CEA	101P	6
C12	Electrolytic	100	6V	CEA	101P	6
C13	Electrolytic	2200	35V	ACH-004-A		
C14	Electrolytic	2200	35V	ACH-004-A		
C15	Ceramic	47p	50V	CCDSL	470K	50
C16	Ceramic	47p	50V	CCDSL	470K	50
C17	Mylar	0.022	50V	CQMA	223M	50
C18	Mylar	0.022	50V	CQMA	223M	50
C19	Ceramic	100p	50V	CCDSL	101K	50
C20	Ceramic	100p	50V	CCDSL	101K	50
C21	Electrolytic	100	50V	CEA	101P	50

RESISTORS

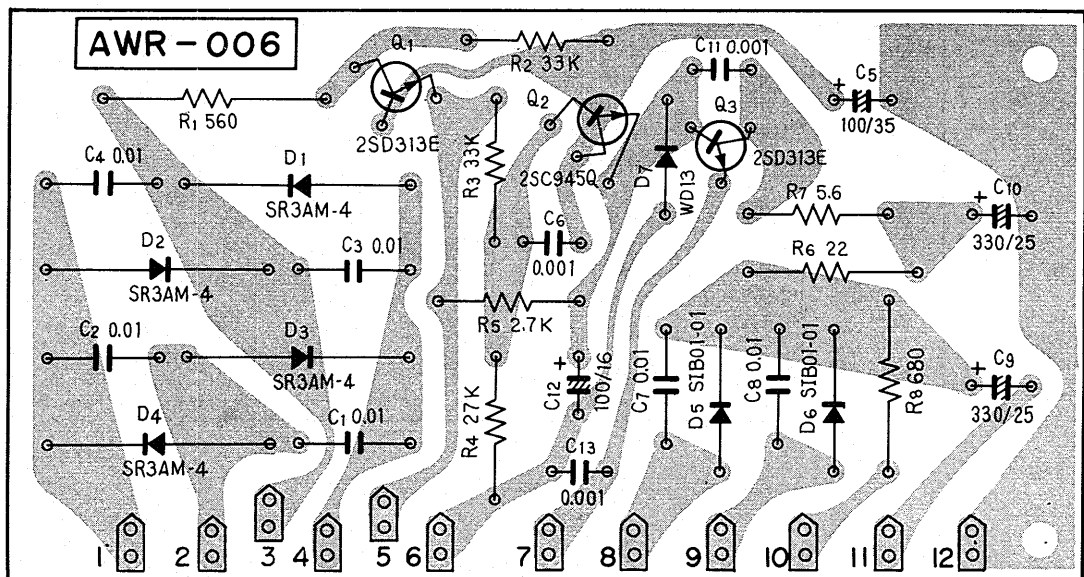
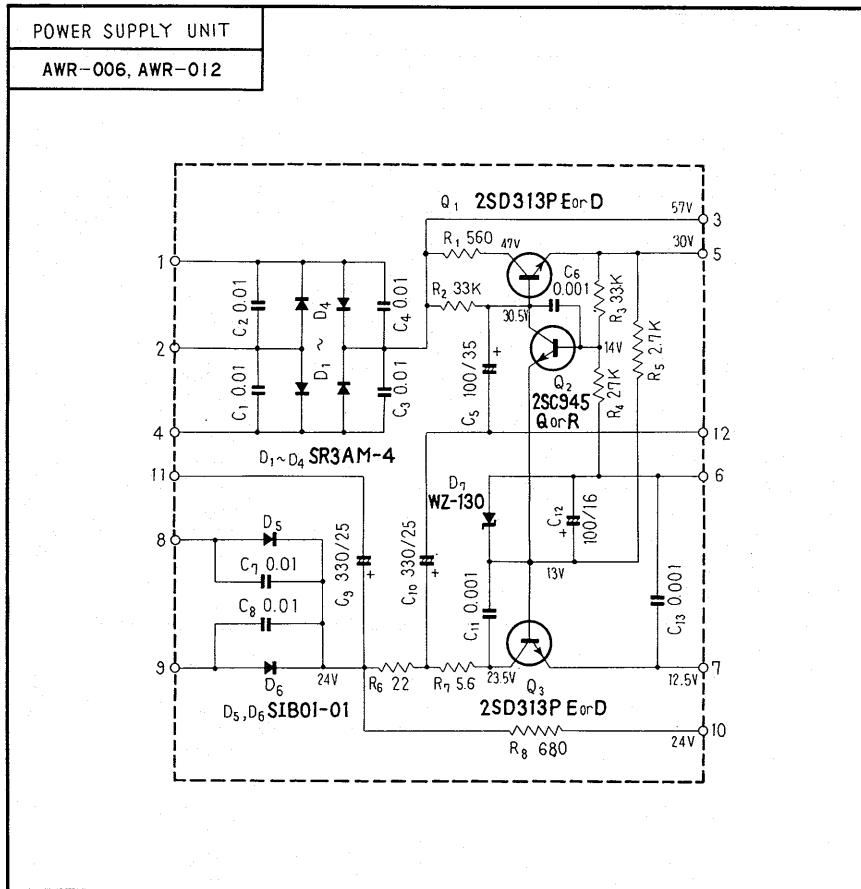
Symbol	Description			Part No.	
R1	Carbon film	2.2k		RD¼PS	222J
R2	Carbon film	2.2k		RD¼PS	222J
R3	Carbon film	2.2M		RD¼PS	225J
R4	Carbon film	2.2M		RD¼PS	225J
R5	Carbon film	100k		RD¼PS	104J
R6	Carbon film	100k		RD¼PS	104J
R7	Carbon film	18k		RD¼PS	183J
R8	Carbon film	18k		RD¼PS	183J
R9	Carbon film	15k		RD¼PS	153J
R10	Carbon film	15k		RD¼PS	153J
R11	Carbon film	150		RD¼PS	151J
R12	Carbon film	150		RD¼PS	151J
R13	Carbon film	820	½W	RD½PS	821J
R14	Carbon film	820	½W	RD½PS	821J
R15	Carbon film	39k		RD¼PS	393J
R16	Carbon film	39k		RD¼PS	393J
R17	Carbon film	3.3k		RD¼PS	332J
R18	Carbon film	3.3k		RD¼PS	332J
R19	Carbon film	4.7k		RD¼PS	472J
R20	Carbon film	4.7k		RD¼PS	472J
R21	Carbon film	150		RD¼PS	151J
R22	Carbon film	150		RD¼PS	151J
R23	Carbon film	22	½W	RD½PS	220J
R24	Carbon film	22	½W	RD½PS	220J
R25	Carbon film	150		RD¼PS	151J
R26	Carbon film	150		RD¼PS	151J
R27	Carbon film	22	½W	RD½PS	220J
R28	Carbon film	22	½W	RD½PS	220J
R29	Carbon film	150		RD¼PS	151J
R30	Carbon film	150		RD¼PS	151J

SEMICONDUCTORS

Symbol	Description				Part No.	
R31	Wire wound	0.5	2W	RT2P	0R5K	
R32	Wire wound	0.5	2W	RT2P	0R5K	
R33	Wire wound	0.5	2W	RT2P	0R5K	
R34	Wire wound	0.5	2W	RT2P	0R5K	
R35	Wire wound	15k		RD¼PS	153J	
R36	Carbon film	15k		RD¼PS	153J	
R37	Carbon film	8.2k		RD¼PS	822J	
R38	Carbon film	8.2k		RD¼PS	822J	
R39	Carbon film	10	½W	RD½PS	100J	
R40	Carbon film	10	½W	RD½PS	100J	
R41	Carbon film	100k		RD¼PS	104J	
R42	Carbon film	100k		RD¼PS	104J	
R43	Carbon film	5.6k		RD¼PS	562J	
VR1	Semi-fixed	30k (B)		C92-024-B		
VR2	Semi-fixed	30k (B)		C92-024-B		
VR3	Semi-fixed	50 (B)		C92-043-A		
VR4	Semi-fixed	50 (B)		C92-043-A		

Symbol	Description			Part No.	
Q1	2SC732	Transistor			
Q2	2SC732	Transistor			
Q3	2SC497-O or Y	Transistor			
Q4	2SC497-O or Y	Transistor			
Q5	2SC497-O or Y	Transistor			
Q6	2SC497-O or Y	Transistor			
Q7	2SA497-O or Y	Transistor			
Q8	2SA497-O or Y	Transistor			
Q9	2SC793-Y	Transistor			
Q10	2SC793-Y	Transistor			
Q11	2SC793-Y	Transistor			
Q12	2SC793-Y	Transistor			
Q13	2SC983-O or Y	Transistor			
D1	STV-3	Varistor			
D2	STV-3	Varistor			

9-7 POWER SUPPLY UNIT (AWR-006) (AWR-012, for NBW model)



PARTS LIST OF POWER SUPPLY UNIT

CAPACITORS

Symbol	Description			Part No.	
C1	Ceramic	0.01	DC 1.4kV	C43-003-0	
C2	Ceramic	0.01	DC 1.4kV	C43-003-0	
C3	Ceramic	0.01	DC 1.4kV	C43-003-0	
C4	Ceramic	0.01	DC 1.4kV	C43-003-0	
C5	Electrolytic	100	35V	CEA 101P 35	
C6	Mylar	0.001	50V	CQMA 102K 50	
C7	Ceramic	0.01	DC 1.4kV	C43-003-0	
C8	Ceramic	0.01	DC 1.4kV	C43-003-0	
C9	Electrolytic	330	25V	CEA 331P 25	
C10	Electrolytic	330	25V	CEA 331P 25	
C11	Mylar	0.001	50V	CQMA 102K 50	
C12	Electrolytic	100	16V	CEA 101P 16	
C13	Mylar	0.001	50V	CQMA 102K 50	

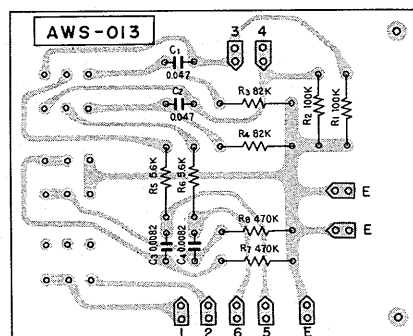
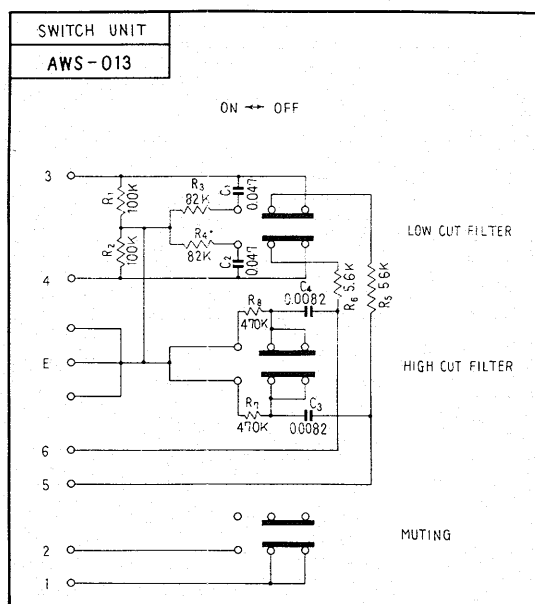
RESISTORS

Symbol	Description			Part No.	
R1	Metal oxide	560	2W	RS2P 561K	
R2	Carbon film	33k		RD¼PS 333J	
R3	Carbon film	33k		RD¼PS 333J	
R4	Carbon film	27k		RD¼PS 273J	
R5	Carbon film	2.7k		RD¼PS 272J	
R6	Carbon film	22	¼W	RD¼PS 220J	
R7	Carbon film	5.6		RD¼PS 5R6J	
R8	Metal oxide	680	1W	RS1P 681K	

SEMICONDUCTORS

Symbol	Description		Part No.	
Q1	2SD313	Transistor		
Q2	2SC945	Transistor		
Q3	2SD313	Transistor		
D1	SR3AM-4	Diode		
D2	SR3AM-4	Diode		
D3	SR3AM-4	Diode		
D4	SR3AM-4	Diode		
D5	SIB01-01	Diode		
D6	SIB01-01	Diode		
D7	WZ-130	Zener diode		

9-8 SWITCH UNIT (AWS-013)



PARTS LIST OF SWITCH UNIT

CAPACITORS

Symbol	Description			Part No.	
C1	Mylar	0.047	50V	CQMA	473K 50
C2	Mylar	0.047	50V	CQMA	473K 50
C3	Mylar	0.0082	50V	CQMA	822K 50
C4	Mylar	0.0082	50V	CQMA	822K 50

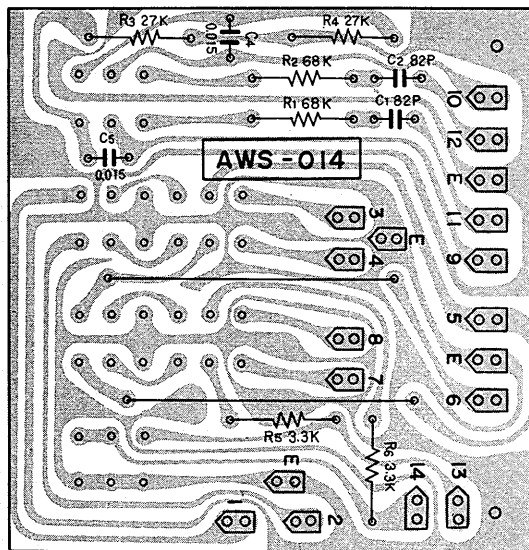
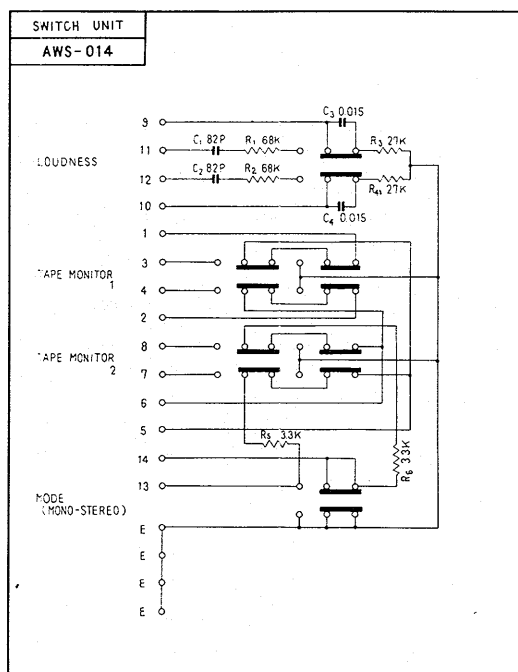
RESISTORS

Symbol	Description			Part No.	
R1	Carbon film	100k		RD¼PS	104J
R2	Carbon film	100k		RD¼PS	104J
R3	Carbon film	82k		RD¼PS	823J
R4	Carbon film	82k		RD¼PS	823J
R5	Carbon film	5.6k		RD¼PS	562J
R6	Carbon film	5.6k		RD¼PS	562J
R7	Carbon film	470k		RD¼PS	474J
R8	Carbon film	470k		RD¼PS	474J

SWITCH

Symbol	Description	Part No.	
	Mini switch	S31-035-0	

9-9 SWITCH UNIT (AWS-014)



PARTS LIST OF SWITCH UNIT

CAPACITORS

Symbol	Description			Part No.	
C1	Ceramic	82p	50V	CCDSL	820K 50
C2	Ceramic	82p	50V	CCDSL	820K 50
C3	Mylar	0.015	50V	CQMA	153K 50
C4	Mylar	0.015	50V	CQMA	153K 50

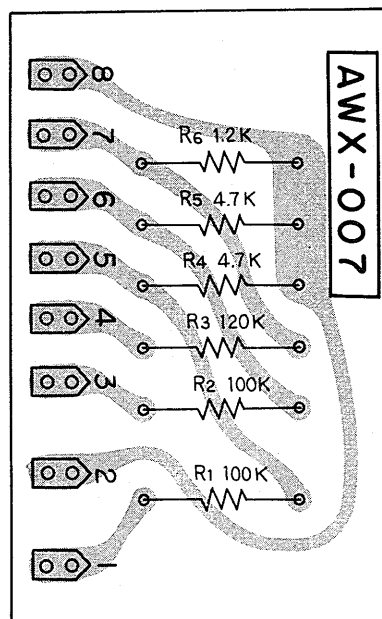
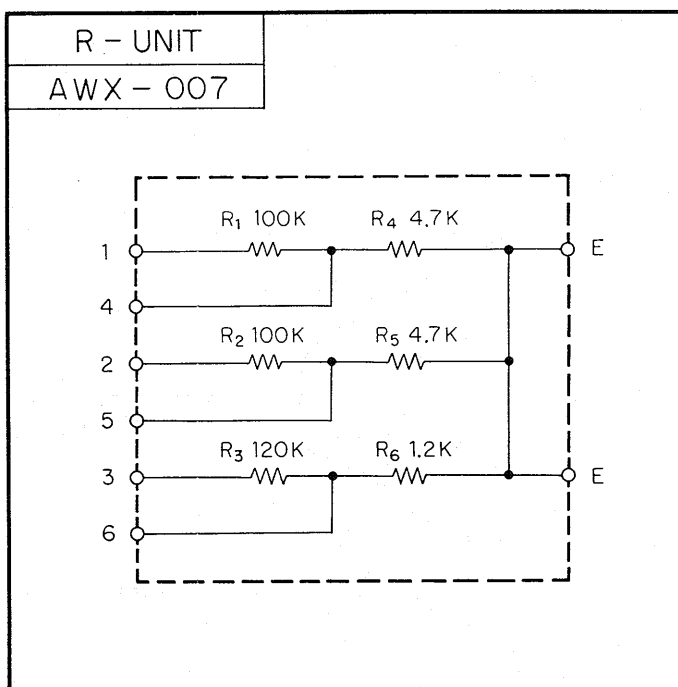
RESISTORS

Symbol	Description			Part No.	
R1	Carbon film	68k		RD4PS	683J
R2	Carbon film	68k		RD4PS	683J
R3	Carbon film	27k		RD4PS	273J
R4	Carbon film	27k		RD4PS	273J
R5	Carbon film	3.3k		RD4PS	332J
R6	Carbon film	3.3k		RD4PS	332J

SWITCH

Symbol	Description	Part No.	
	Mini switch	ASG-012-0	

9-10 R UNIT (AWX-007)

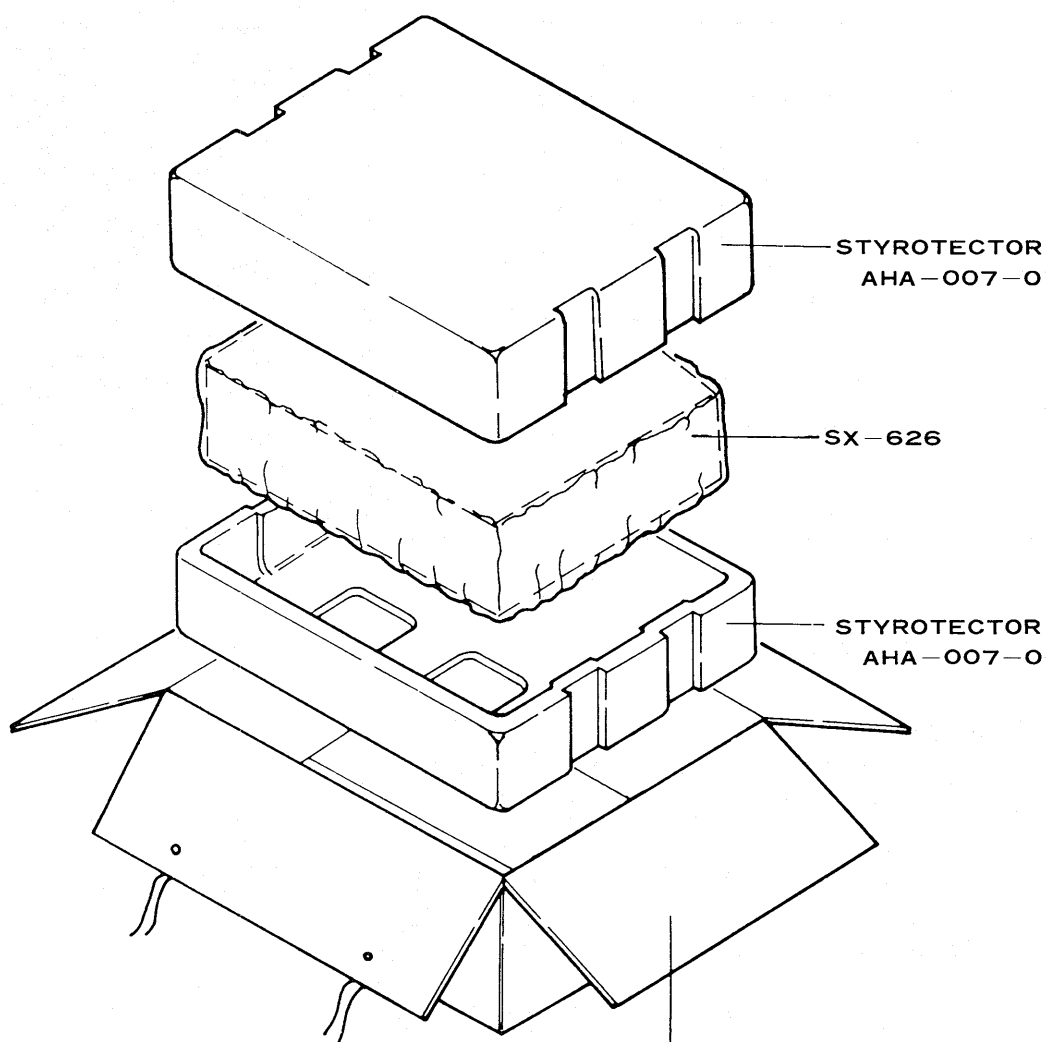


PARTS LIST OF R UNIT

RESISTORS

Symbol	Description		Part No.	
R1	Carbon film	100k	RD¼PS 104J	
R2	Carbon film	100k	RD¼PS 104J	
R3	Carbon film	120k	RD¼PS 124J	
R4	Carbon film	4.7k	RD¼PS 472J	
R5	Carbon film	4.7k	RD¼PS 472J	
R6	Carbon film	1.2k	RD¼PS 122J	

10. PACKING METHOD AND PART NUMBERS



PACKING CASE

KCW	AHD-082-0
KUW	AHD-057-0
FVZW	AHD-058-0
NBW	AHD-086-0
FW	AHD-081-0

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