

<ART-006-0>

SERVICE MANUAL

AM/FM STEREO RECEIVER

QX-949

FUW

<73H02M41D>

 **PIONEER®**

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1. SPECIFICATIONS

SEMICONDUCTORS

FETs	14
ICs	7
Transistors	118
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AMPLIFIER SECTION

Circuitry Direct Coupled Complementary OCL

Continuous Power Output

20Hz ~ 20kHz (4 channels driven) 40W x 4 (8Ω), 50W x 4 (4Ω)

1kHz (4 channels driven) 44W x 4 (8Ω), 58W x 4 (4Ω)

1kHz (Each channel driven)..... 53W/CH (8Ω), 75W/CH (4Ω)

Continuous Power Output

(2CH. POWER BOOSTING SWITCH set at "2 CH")

20Hz ~ 20kHz (2 channels driven) 60W+60W (8Ω), 75W+75W (4Ω)

1kHz (2 channels driven) 65W+65W (8Ω), 85W+85W (4Ω)

1kHz (Each channel driven)..... 75W/CH (8Ω), 100W/CH (4Ω)

Harmonic Distortion

(Continuous Power Output) Less than 0.3%

(1W x 4, Power Output) Less than 0.05%

Intermodulation Distortion

(Continuous Power Output) Less than 0.3%

(1W x 4, Power Output) Less than 0.05%

Power Bandwidth

(IHF, 4 channels driven) 7Hz ~ 40kHz

Output

Speaker FRONT: A, B, A+B
REAR: A, B, A+B (4 ~ 16Ω)

Headphones FRONT & REAR

Damping Factor (1kHz, 8Ω) More than 35

Residual Hum & Noise

(8Ω, Pre & Power Amplifier) Less than 1mV

Input Sensitivity/Impedance

PHONO 1 2.5mV/50kΩ

PHONO 2 2.5mV/50kΩ

PHONO Overload Level (rms/p-p).. 100mV/280mV

AUX 150mV/100kΩ

TAPE MONITOR (2CH, 4CH)..... 150mV/100kΩ

Output Level/Impedance

TAPE REC (2CH, 4CH) 150mV

Frequency Response

PHONO (RIAA equalization)..... 30Hz ~ 15kHz ± 1dB

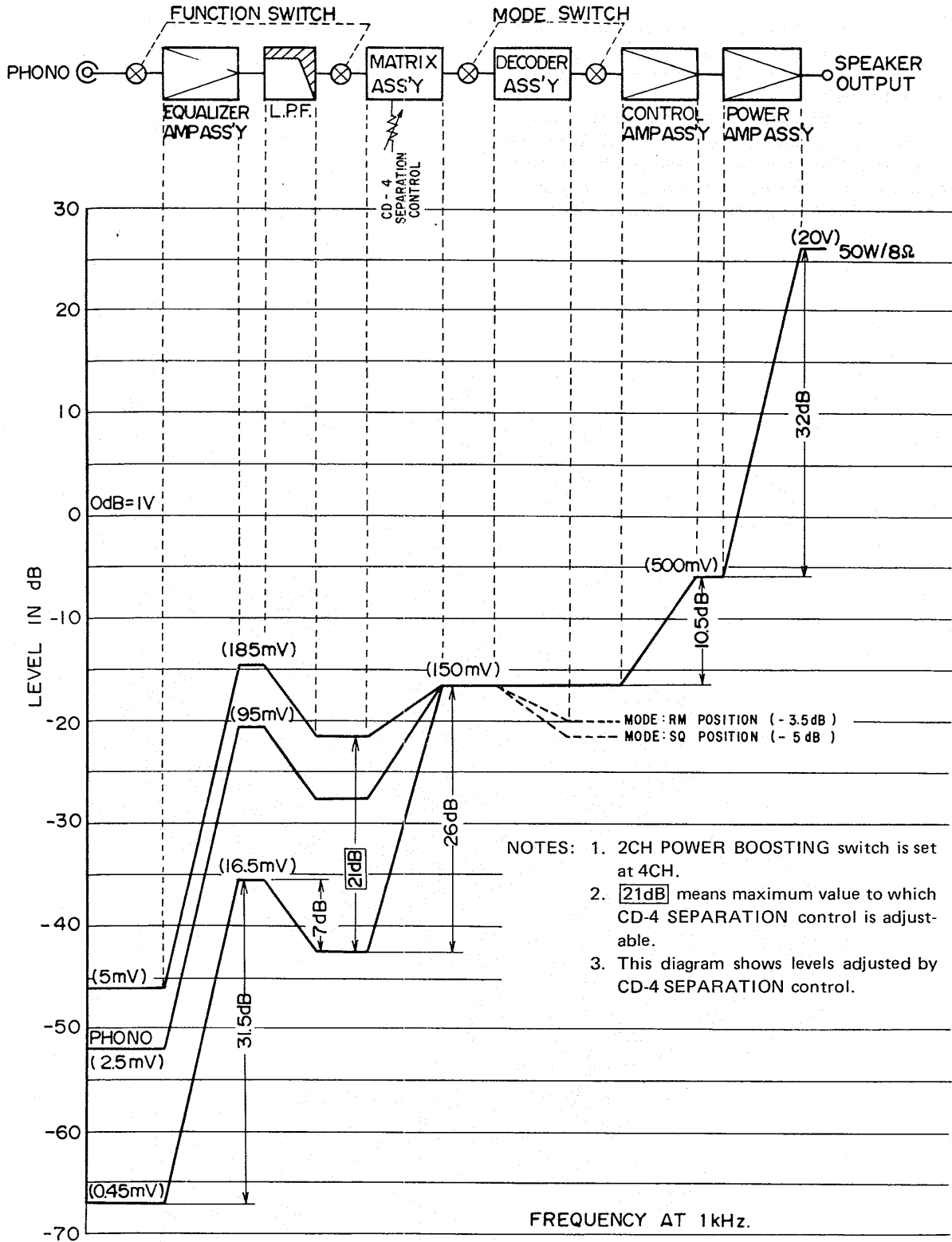
AUX, TAPE MON 7Hz ~ 25kHz^{+0.5}₋₁ dB

Tone Control

BASS ±10dB (100Hz)

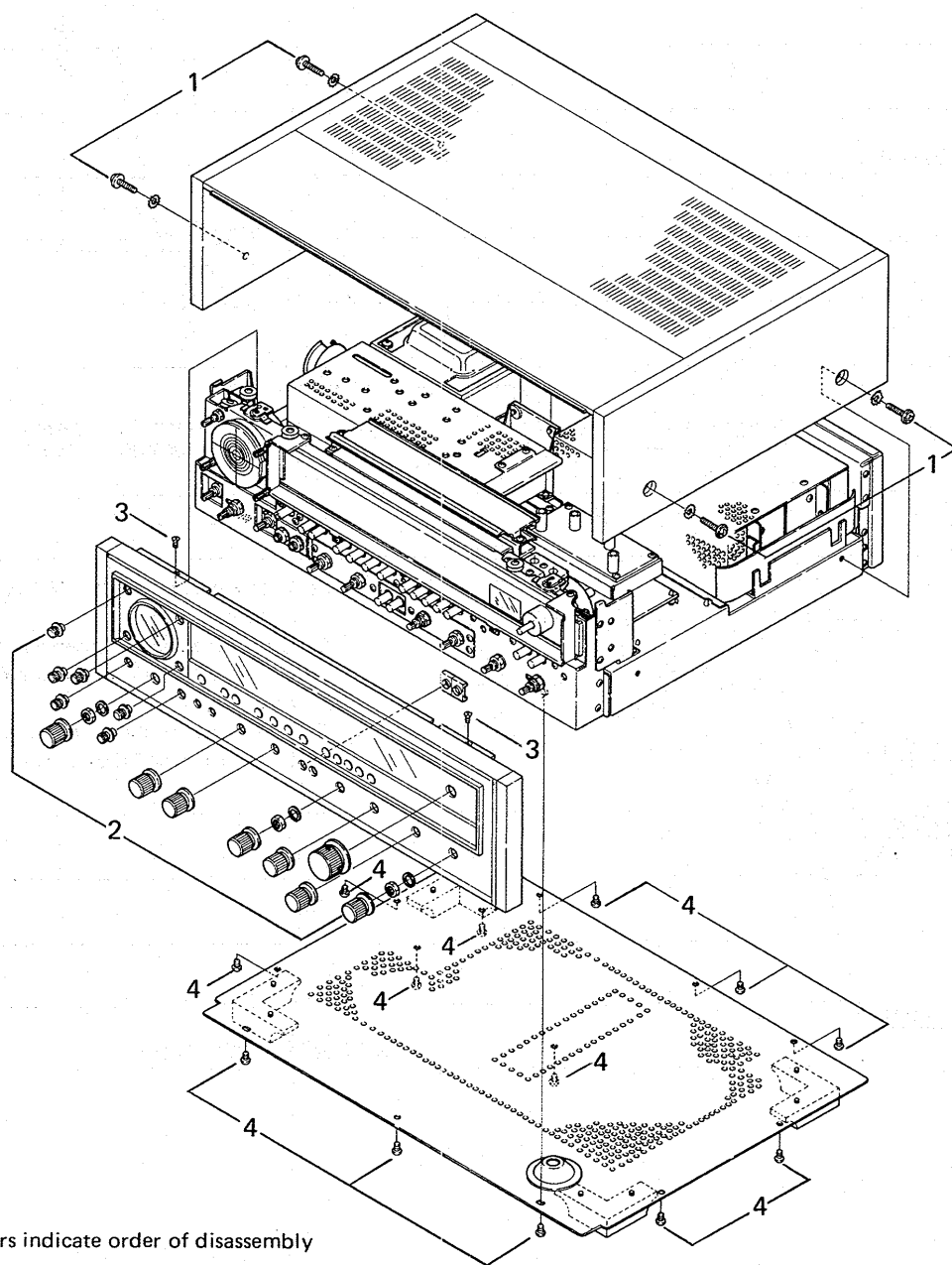
TREBLE ±10dB (10kHz)

6. LEVEL DIAGRAM



7. DISASSEMBLY

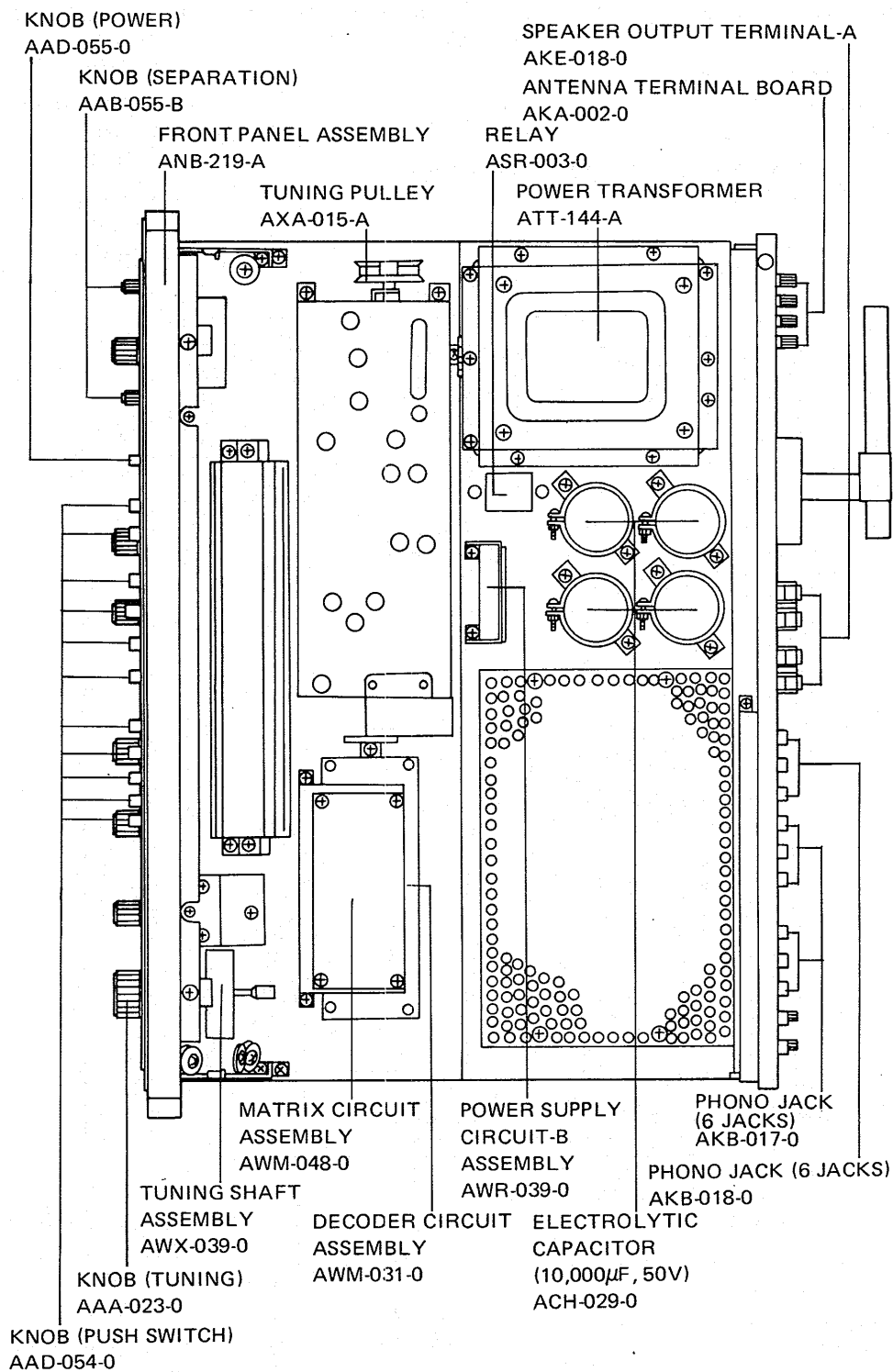
1. To remove the wooden cabinet, first remove the two screws holding each side, then lift the back of the wooden cabinet upward.
2. Pull off all knobs.
3. Remove the two screws in the upper edge of the front panel, and the three nuts from the shafts. Then pull the panel gently forward.
4. To remove the bottom plate, first remove a total of the 13 screws holding it in place.



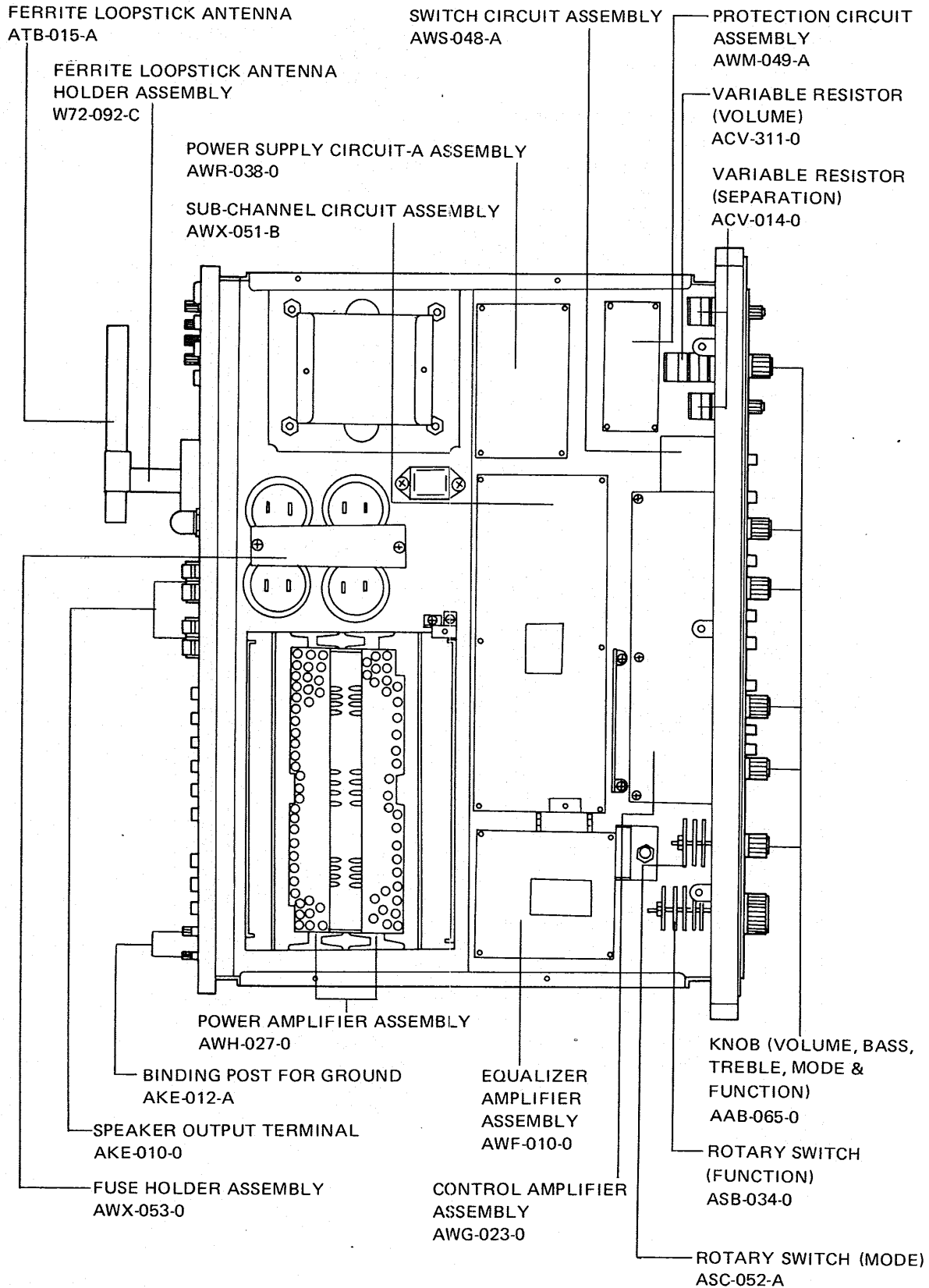
● Numbers indicate order of disassembly

8. PARTS AND P.C. BOARD LOCATION

8.1 TOP VIEW

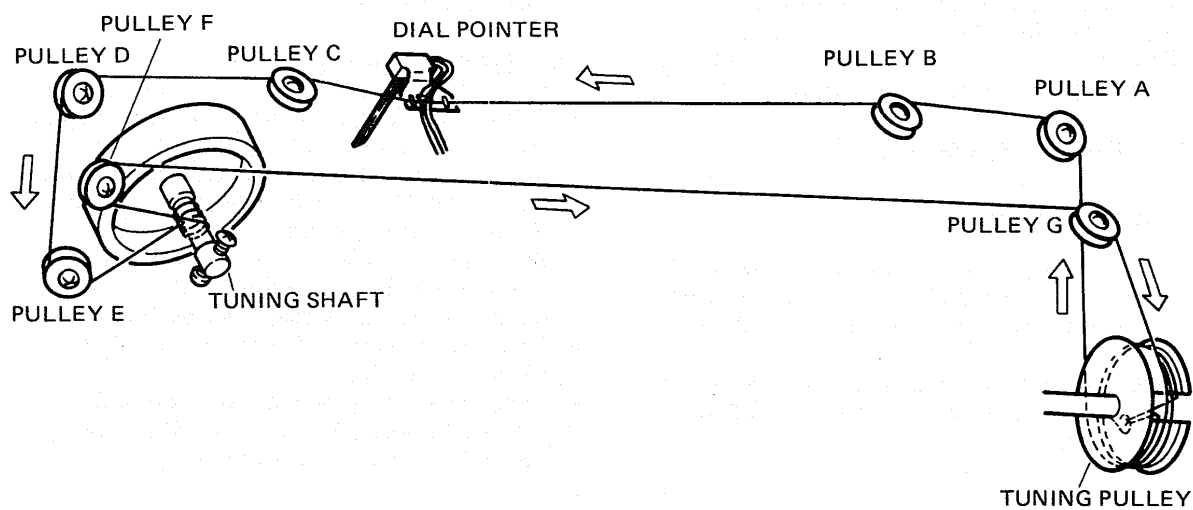


8.2 BOTTOM VIEW



9. DIAL CORD STRINGING

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



10. ALIGNMENT PROCEDURE

10.1 REQUIRED MEASURING INSTRUMENTS

- FM Signal generator
- MPX signal generator
- AM signal generator
- Millivolt meter
- Distortion meter

10.2 AM ALIGNMENT

1. Set AM signal generator at 400Hz 30% modulation. Connect to AM antenna terminal via 1k-ohm dummy resistor.
2. Connect oscilloscope and millivolt meter in parallel to unit's TAPE REC terminals.
3. Tune signal generator and unit to 600kHz. Set signal generator output level at approx. 30dB.
4. Adjust T9 and T10 on tuner assembly and core of ferrite bar antenna for maximum output level reading.
5. Now tune unit and signal generator to 1,400kHz.
6. Adjust TC5, TC6 and TC7 on tuner assembly for maximum output level reading.
7. Repeat steps 3 thru 6 several times to obtain maximum readings at both frequencies.

10.3 FM ALIGNMENT

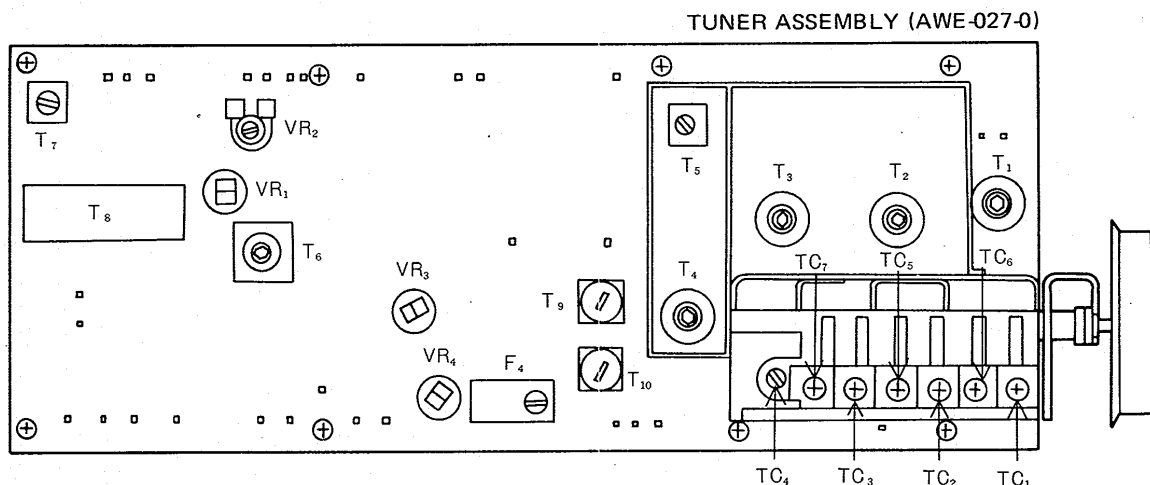
Tracking Adjustment

1. Set FM signal generator at 400Hz 100% modulation. Connect to unit's FM antenna terminals via 300-ohm balanced dummy antenna.
2. Connect oscilloscope, millivolt meter and distortion meter in parallel to TAPE REC terminal.

3. Set the signal generator output level to 8 ~ 10dB.
Set the signal generator and set dials to 90MHz.
4. Adjust T1, T2, T3 and T4 cores for maximum output level reading.
5. Now, tune unit and signal generator to 106MHz.
6. Adjust TC4, TC1, TC2 and TC3 to obtain maximum output level reading.
7. Repeat steps 3 thru 6 several times for maximum level readings at both frequencies.
8. Then adjust core of T5 for maximum output level reading.
9. Detune so that only interstation noise is received.
Adjust primary (bottom) core of T6 so that tuning meter is centered.
10. Tune unit and signal generator to 98MHz. Set signal generator level at 60dB. Tune precisely, observing tuning meter.
11. Adjust secondary (upper) core of T6 on tuner assembly to obtain minimum reading on distortion meter.

FM MPX Alignment

1. Adjust MPX signal generator to obtain main signal modulation of 1kHz, 67.5kHz frequency deviation, and pilot signal modulation of 19kHz, 7.5kHz frequency, deviation. Set output level at 60dB.
2. Set signal generator for modulation of L (left) channel only. Adjust core of T7 to obtain maximum output level reading.
3. Now, adjust core of T5 to obtain minimum distortion reading.
4. Then set signal generator for modulation of L (later R) and pilot. Adjust VR1 to obtain maximum channel separation.



10.4 CD-4 DECODER CIRCUIT ALIGNMENT

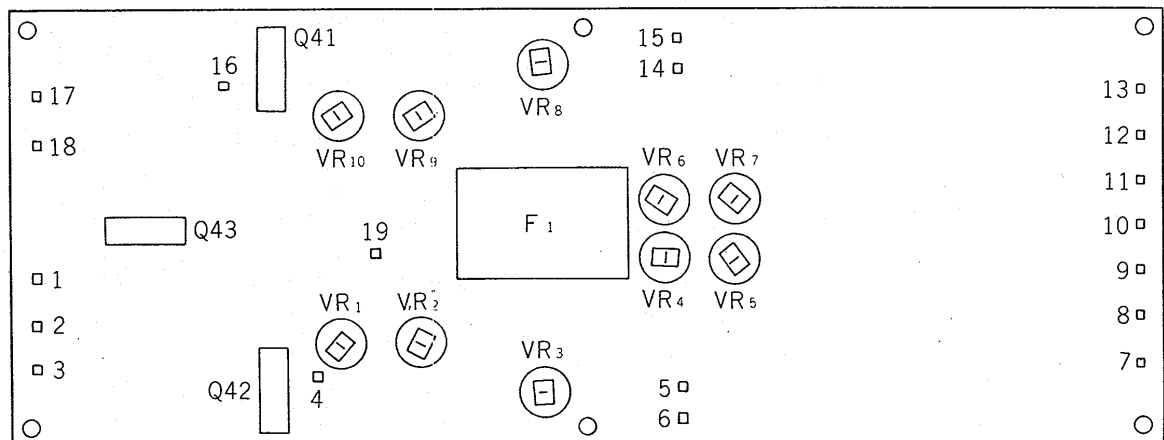
- When the PLL demodulator integrated circuit has been replaced (Q41, Q42: SL60505), adjustments should be made in the following order.
 - This method is both convenient and simple, but, if carried out carefully, is capable of adjustment over the practical range. Note, however, that unless the test record (PQX-1011) and the phono cartridge used for the audition are both new, adjustment is impossible.
- Terminal 19 of the sub-channel assembly must be to ground. (This ensures that muting is inactivated.)
 - Connect an oscilloscope to terminal 14 (L channel). (For the R channel use terminal 5.)
 - Turn the carrier level control up to its maximum (fully clockwise).
 - Play band 1 of the test record (Band 2 for the R channel). The warble-tone waveform will be displayed on the oscilloscope.
 - Turn the carrier level control to the left until the point where the warble-tone waveform distorts is reached. This adjustment is extremely critical, and should be performed with great care.
 - Adjust VR10 until the warble-tone distortion disappears. (For the R channel use VR1.)

It is preferable for the adjustment to be made with the lowest possible carrier level, so the oscilloscope used should have as high a vertical sensitivity as possible (approximately 10mV/cm).

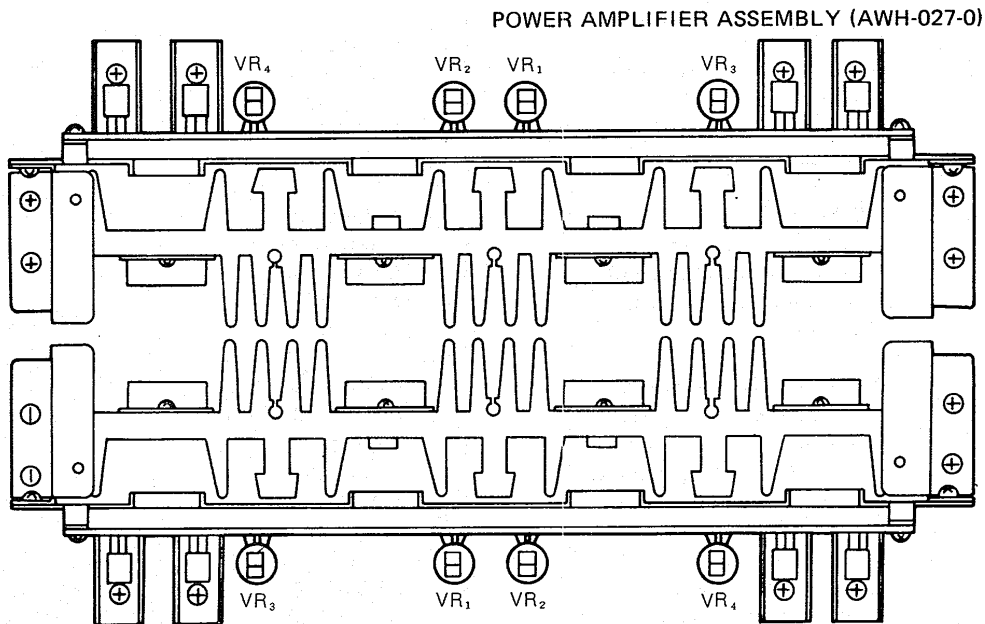
10.5 POWER AMPLIFIER ADJUSTMENTS

- Do not connect load to speaker terminals. Terminate input terminals of power amplifier assembly with a 5.1k-ohm resistor.
- Set power boosting switch to 4CH position. Then energize unit.
- For first approximately six seconds, the relay remains open, keeping the unit muted. Confirm that all voltages are as indicated in the circuit diagram on page 31.
- If voltages are greatly different from rated values, shut off power immediately. Check suspicious areas, especially power supply unit.
- If the relay opens immediately after the power amplifier has been come into operation, a defect in the output transistors can be suspected. Check the output stage.
- After approx. 10 ~ 20 minutes of warming-up time, adjust VR3 so that the voltage across terminals 1 and 2 of the power amplifier assembly becomes 20mV.
- In the same way, adjust VR4 to obtain 20mV voltage readings across the terminals 25 and 26.
- Next, connect voltmeter between terminal 5 and ground. Adjust VR1 to obtain 0V reading.

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



9. In the same way, adjust VR2 to obtain zero readings between terminal 23 and ground.
10. After completing all adjustments, return all connections to normal, then replace the case and bottom plate.



11. EXPLODED VIEW AND PARTS LIST

11.1 EXPLODED VIEW-1

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

Key No.	Description	Part No.
1	Power transformer	ATT-144-A
2		
3*	Power transformer-held metal	ANF-156-0
4*	Wire supporter	ANK-056-0
5*	Shield cover	
6	Tuning pulley	AXA-015-A
7	Tuner assembly	AWE-027-0
8*	Tuner assembly-held metal (A)	ANF-157-A
9*	Tuner assembly-held metal (B)	ANF-158-A
10	Screw M4 x 15	ABA-010-A
11	Washer	B21-011-0
12	Wooden cabinet	AMM-028-A
13	Electrolytic capacitor 10,000 μ F, 50V	ACH-029-0
14	Relay	ASR-003-0
15*	Wire clip (C)	AEC-007-0
16	Ground terminal strip (2P)	K13-048-0
17	Power supply circuit-A assembly	AWR-038-0
18	Terminal strip (1L2P)	AKC-018-0
19*	Shield plate	ANH-168-A
20	Protection circuit assembly	AWM-049-A
21	Ground terminal strip (4P)	K13-047-0
22*	Bottom plate	ANE-033-A
23	Foot	AEC-027-B
24*	Shield plate	ANH-155-A
25*	Reinforced metal	ANK-055-0
26	Variable resistor	ACV-122-0
27*	Variable resistor-held metal	ANF-141-0
28	Fuse holder assembly	AWX-053-0
29	Power supply circuit-B assembly	AWR-039-0
30*	Wire clip (D)	AEC-024-0
31*	P.C. board holder	AEB-019-0
32	Matrix circuit assembly	AWM-048-0
33	Sub-channel circuit assembly	AWX-051-B
34*	Power amplifier-held metal (A)	ANF-148-0
35*	Heat sink	ANH-159-0
36*	Power amplifier-held metal	ANF-149-0
37*	Power amplifier-held metal	ANF-150-0
38	Power amplifier assembly	AWH-027-0
39*	Power amplifier-held metal (B)	ANF-149-0
40*	Wire guide	ANG-089-0
41		
42	Clip (P.C. Board holder)	AEC-036-A
43*	Cover (power amplifier)	ANH-163-0
44*	Chassis	ANA-051-A
45	Power amplifier assembly	AWH-027-0

Note:

Parts number subject to change for the purpose of improvement with notice of service bulletin.

Service bulletin will be furnished whenever necessary and you are kindly requested to amend parts number in this manual according to the instructions.

Key No.	Description	Part No.	
46*	P.C. board-hold metal	ANF-150-0	
47	Equalizer amplifier assembly	AWF-010-0	
48*	P.C. board holder	ANF-159-0	
49	Decoder circuit assembly	AWM-031-0	

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

Key No.	Description	Part No.
1	Lamp board assembly	AWX-052-0
2	Pilot lamp 8V, 0,3A	E22-017-0
3*	Rubber bracket holder	ANF-164-0
4*	Lamp box	ANH-162-0
5	Pilot lamp 6V, 30mA	AEL-006-0
6*	Rubber bracket	AEB-043-0
7*	Rubber bracket	AEB-042-0
8	Dial pointer assembly	AAF-020-0
9*	Dial scale holder	ANF-162-0
10	Dial scale	AAG-063-A
11*	Dial scale holder	ANF-163-A
12	Knob (Level)	AAB-064-A
13	Knob (Separation)	AAB-055-B
14	Knob (Volume, Bass, Treble, Mode, Function)	AAB-065-0
15	Knob (Tuning)	AAA-023-0
16	Boss	ALA-006-0
17	4-Channel level indicator	AAW-021-0
18*	Shading plate	AEC-120-0
19	Front panel assembly	ANB-219-A
20	Spacer	AEC-116-0
21*	Wire cover	ANK-054-0
22*	P.C. board cover	ANK-053-0
23	Antenna terminal board	AKA-002-0
24	AC socket	AKP-005-0
25		
26	Variable resistor	ACT-009-0
27*	Rubber bracket	AEB-044-0
28	Pilot lamp 6V, 50mA	AEL-007-0
29	Coupler (knob-to-switch)	AAE-008-0
30*	Shield plate	ANH-169-0
31*	Reinforced metal (R)	ANK-057-A
32*	Shield plate	ANH-170-A
33	Switch circuit assembly	AWS-048-A
34	Coupler (Knob-to switch)	AAE-007-0
35	Knob (Push switch)	AAD-054-0
36	Push switch (Power)	ASG-043-0
37*	Switch-held metal	ANF-153-0
38	Knob (Power)	AAD-055-0
39	Variable resistor	ACV-311-0
40	Variable resistor	ACV-014-0
41	Variable resistor	ACV-014-0
42	Headphone jack assembly	AWX-054-0
43*	Sub-panel	AND-064-A
44*	P.C. board-held metal	ANF-154-0
45	Control amplifier assembly	AWG-023-0

Key No.	Description	Part No.
46	Fuse holder	AKR-015-0
47*	Fuse holder-held metal	ANF-161-0
48	Multi-socket	AKP-006-0
49	Speaker output terminal-A	AKE-018-0
50	Microswitch	ASF-001-0
51*	Insulator	AEC-111-A
52*	Switch-held metal	ANF-142-0
53*	Shield plate	ANH-165-A
54*	P.C. board-held metal	ANF-166-0
55*	Shield plate	ANF-167-0
56	Rotary switch (Mode)	ASC-052-A
57	Rotary switch (Function)	ASB-034-0
58*	Pulley's shaft	M49-025-E
59*	Pulley	AEC-101-0
60*	Pulley-held metal	ANG-088-A
61*	Reinforced metal (L)	ANK-056-A
62	Push switch (MPX-noise filter, FM muting)	ASG-050-A
63*	Switch-held metal	ANF-160-0
64	AC power cord	ADG-003-0
65	AC cord grommet	AEC-079-0
66*	Rear panel	ANC-089-A
67*	Model name plate	AAL-168-0
68	Switch cover assembly	AEC-110-A
69*	Indicator plate	AAH-008-A
70	Multi-plug	AKM-006-0
71	Ferrite loopstick antenna	ATB-015-A
72	Binding post for ground	AKE 012-A
73	Slide switch (De-emphasis)	ASH-008-0
74	Phono Jack (4 jacks)	AKB-014-0
75	Phono jack (1 jack)	AKB-019-0
76	Phono jack (6 jacks)	AKB-017-0
77*	Lamp-held metal	ANF-014-A
78*	Lamp box	ANH-156-A
79	Twin meter	AAW-020-0
80	Fuse holder (1P)	AKK-002-0
81	Tuning shaft assembly	AXA-039-0
82	Pilot lamp 8V, 0,3A	AEL-015-0
83	Ferrite loopstick antenna holder assembly	W72-092-C
84	Speaker output terminal	AKE-010-0
85	Phono jack (6 jacks)	AKB-018-0

- CAPACITORS: IN μ F UNLESS OTHERWISE NOTED p:pF
- RESISTORS: IN Ω , $\frac{1}{2}$ W UNLESS OTHERWISE NOTED k:k Ω , M:M Ω .

Miscellaneous Parts

CAPACITORS

Symbol	Description	Part No.
C1	Electrolytic 2.2 16V	CSSA 2R2M 16
C2	Mylar 0.0033 50V	CQMA 332J 50
C3	Mylar 0.0033 50V	CQMA 332J 50
C4	Ceramic 0.0056 50V	CKDYB 562K 50
C5	Electrolytic 10,000 50V	ACH-029-0
C6	Electrolytic 10,000 50V	ACH-029-0
C7	Electrolytic 10,000 50V	ACH-029-0
C8	Electrolytic 10,000 50V	ACH-029-0
C9	Metallized mylar 0.01 250V	ACE-002-0
C10	Ceramic 0.01 250V	ACG-001-0
C11	Ceramic 0.01 250V	ACG-001-0
C12	Ceramic 0.01 250V	ACG-001-0
C13	Electrolytic 100 16V	CEA 101P 16
C14	Ceramic 0.01 50V	CKDYF 103Z 50
C15	Electrolytic 10 50V	CEA 100P 50
C16	Mylar 0.0039 50V	CQMA 392K 50
C17	Mylar 0.0039 50V	CQMA 392K 50
C18	Ceramic 0.01 50V	CKDYF 103Z 50

RESISTORS AND POTENTIOMETERS

Symbol	Description	Part No.
R1	Carbon film 270k	RD $\frac{1}{4}$ PS 274J
R2	Carbon film 100k	RD $\frac{1}{4}$ PS 104J
R3	Metal oxide 3.3k 3W	RS3P 332K
R4	Metal oxide 3.3k 3W	RS3P 332K
R5	Metal oxide 3.3k 3W	RS3P 332K
R6	Metal oxide 3.3k 3W	RS3P 332K
R7	Carbon film 2.2M $\frac{1}{2}$ W	RD $\frac{1}{2}$ PS 225J
R8	Carbon film 100k	RD $\frac{1}{4}$ PS 104J
R9	Carbon film 100k	RD $\frac{1}{4}$ PS 104J
R10	Carbon film 4.7k	RD $\frac{1}{4}$ PS 472J
R11	Carbon film 4.7k	RD $\frac{1}{4}$ PS 472J
VR1a	Variable resistor 10k-C (CD-4 separation)	ACV-014-0
VR1b	Variable resistor 10k-C (CD-4 separation)	ACV-014-0
VR2	Variable resistor 10k-B ₂ dual (Carrier level)	ACV-122-0
VR3a	Variable resistor 250k-B ₂ (Level control)	ACT-009-0
VR3b	Variable resistor 250k-B ₂ (Level control)	ACT-009-0

Continued on the next page

Symbol	Description	Part No.	
VR3c	Variable resistor 250k-B ₂ (Level control)	ACT-009-0	
VR3d	Variable resistor 250k-B ₂ (Level control)		
VR4	Variable resistor 250k-B ₁₄ -gang (Volume)	ACV-311-0	

SEMICONDUCTOR

Symbol	Description	Part No.	
	1S188 FM-1 Diode		

SWITCHES

Symbol	Description	Part No.	
S1	Rotary switch (Function)	ASB-034-0	
S2	Rotary switch (Mode)	ASC-052-A	
	Fuse holder (AC power)	AKR-015-0	
	Push switch	ASG-050-A	
	Relay	ASR-003-0	
S3	Slide switch (De-emphasis)	ASH-008-0	
S6	Push switch (Power)	ASG-043-0	
S7	Micro switch	ASF-001-0	
S8	Multi-plug (Power boosting)	AKM-006-0	
	Multi-socket (Power boosting)	AKP-006-0	

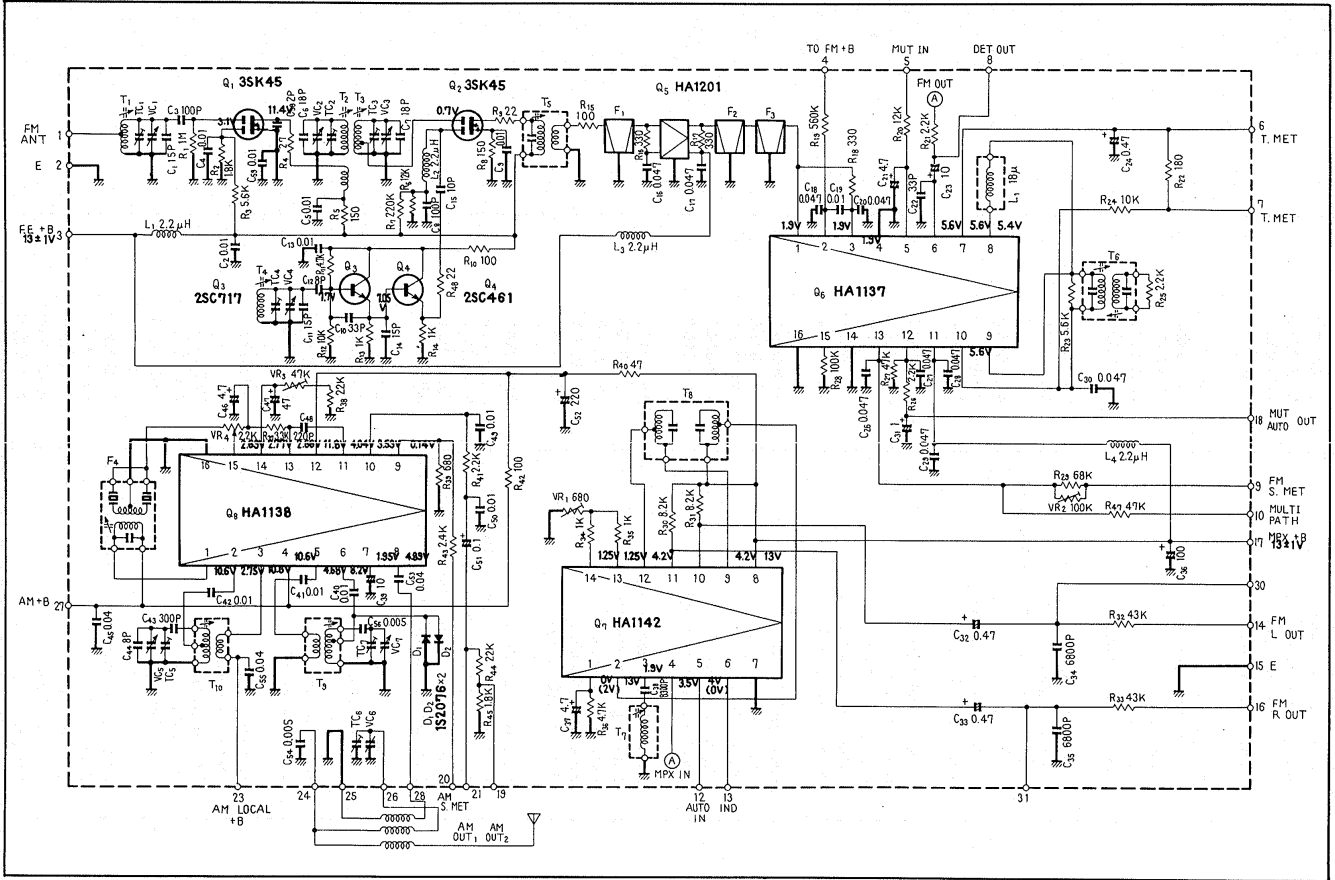
COIL AND TRANSFORMERS

Symbol	Description	Part No.	
	RF choke coil	T24-028-A	
	Power transformer	ATT-144-A	
	Ferrite loopstick antenna	ATB-015-A	
	Balune	T22-025-A	

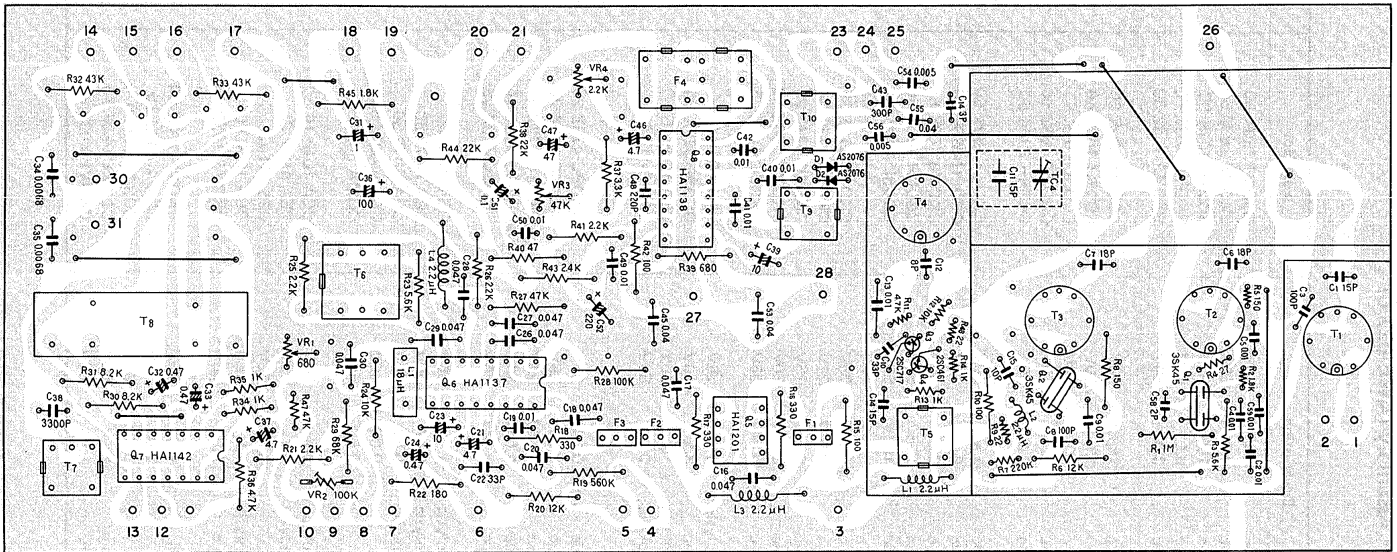
OTHERS

Symbol	Description	Part No.	
	Tuner assembly	AWE-027-0	
	Equalizer amplifier assembly	AWF-010-0	
	Control amplifier assembly	AWG-023-0	
	Decoder circuit assembly	AWM-031-0	
	Sub-channel circuit assembly	AWX-051-B	
	Matrix circuit assembly	AWM-048-0	
	Protection circuit assembly	AWM-049-A	
	Power amplifier assembly	AWH-027-0	
	Headphone jack assembly	AWX-054-0	
	Switch circuit assembly	AWS-048-A	

Symbol	Description	Part No.	
	Lamp holder assembly	AWX-052-0	
	Power supply circuit-A assembly	AWR-038-0	
	Power supply circuit-B assembly	AWR-039-0	
	Fuse holder assembly	AWX-053-0	
	Front panel assembly	ANB-219-A	
	Wooden case	AMM-028-A	
	Tuning shaft assembly	AXA-039-0	
	Tuning pulley	AXA-015-A	
	Dial scale	AAG-063-A	
	Dial pointer assembly	AAF-020-0	
	Twin meter (Signal and Tuning)	AAW-020-0	
	Knob (Tuning)	AAA-023-0	
	Knob (Volume, Bass, Treble, Function and Mode)	AAB-065-0	
	Knob (CD-4 separation)	AAB-055-B	
	Knob (Level control)	AAB-064-A	
	Knob (Push button)	AAD-054-0	
	Knob (Power)	AAD-055-0	
	Lens (for CD-4 indicator)	AEC-121-0	
	4 channel level indicator	AAW-021-0	
	Antenna terminal board	AKA-002-0	
	Phono jack (4 jacks)	AKB-014-0	
	Phono jack (6 jacks)	AKB-017-0	
	Phono jack (6 jacks)	AKB-018-0	
	Phono jack (1 jack)	AKB-019-0	
	Speaker output terminal	AKE-010-0	
	Speaker output terminal-A	AKE-018-0	
	Binding post for ground	AKE-012-A	
	Fuse 1A (protection)	E21-034-A	
	Fuse 3A (protection)	E21-036-A	
	Fuse 6A (AC power)	AEK-033-0	
	Fuse 6A (protection)	AEK-034-0	
	Pilot lamp 8V 0.3A (twin meter)	AEL-015-0	
	Pilot lamp 8V 0.3A (dial scale)	E22-017-0	
	Pilot lamp 6V 30mA (Stereo indicator)	AEL-006-0	
	Pilot lamp 6V 50mA (Program indicator)	AEL-007-0	
	AC socket	AKP-005-0	
	Fuse holder (protection)	AKK-002-0	
	Foot	AEC-027-B	
	AC power cord	ADG-003-0	
	Connection cord	ADX-004-B	
	Operating instructions	ARB-087-0	
	Test record PQX-1011		
	FM T-type antenna	D52-013-0	
	Screw M4 x 15	ABA-010-A	
	Packing case	AHD-187-0	
	Packing case (with cord number printed)	AHD-186-0	
	Side pad (L)	AHA-038-0	
	Side pad (R)	AHA-039-0	
	Inside packing	AHC-006-0	
	Cardboard protector	AHB-012-0	



Foil Side



Parts List of Tuner Assembly (AWE-027-0)

CAPACITORS

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

Symbol	Description	Part No.
C46	Electrolytic 4.7 25V	CEA 4R7P 25
C47	Electrolytic 47 6V	CEA 470P 6
C48	Ceramic 220p 50V	CCDSL 221K 50
C49	Mylar 0.01 50V	CQMA 103K 50
C50	Mylar 0.01 50V	CQMA 103K 50
C51	Electrolytic 0.1 25V	CSSA 0R1M 25
C52	Electrolytic 220 16V	CEA 221P 16
C53	Ceramic 0.04 50V	CKDYF 403Z 50
C54	Ceramic 0.005 50V	CKDYF 502Z 50
C55	Ceramic 0.04 50V	CKDYF 403Z 50
C56	Ceramic 0.005 50V	CKDYF 502Z 50
C57		
C58	Ceramic 2p 50V	CCDSL 020C 50
C59	Ceramic 0.01 50V	CKDYF 103Z 50
VC1	Tuning capacitor	ACK-006-0
TC4	Ceramic trimmer	C43-007-A

RESISTORS AND POTENTIOMETERS

Symbol	Description	Part No.
R1	Carbon film 1M	RD¼PS 105J
R2	Carbon film 1.8k	RD¼VS 182J
R3	Carbon film 5.6k	RD¼PS 562J
R4	Carbon film 27	RD¼VS 270J
R5	Carbon film 150	RD¼VS 151J
R6	Carbon film 12k	RD¼PS 123J
R7	Carbon film 220k	RD¼VS 224J
R8	Carbon film 150	RD¼PS 151J
R9	Carbon film 22	RD¼VS 220J
R10	Carbon film 100	RD¼PS 101J
R11	Carbon film 4.7k	RD¼VS 472J
R12	Carbon film 10k	RD¼VS 103J
R13	Carbon film 1k	RD¼VS 102J
R14	Carbon film 1k	RD¼VS 102J
R15	Carbon film 100	RD¼PS 101J
R16	Carbon film 330	RD¼PS 331J
R17	Carbon film 330	RD¼PS 331J
R18	Carbon film 330	RD¼PS 331J
R19	Carbon film 180k	RD¼PS 184J
R20	Carbon film 12k	RD¼PS 123J
R21	Carbon film 2.2k	RD¼PS 222J
R22	Carbon film 180	RD¼PS 181J
R23	Carbon film 5.6k	RD¼PS 562J
R24	Carbon film 10k	RD¼PS 103J
R25	Carbon film 2.2k	RD¼PS 222J
R26	Carbon film 2.2k	RD¼PS 222J
R27	Carbon film 47k	RD¼PS 473J
R28	Carbon film 100k	RD¼PS 104J
R29	Carbon film 68k	RD¼PS 683J
R30	Carbon film 8.2k	RD¼PS 822J

Symbol	Description	Part No.
R31	Carbon film 8.2k	RD¼PS 822J
R32	Carbon film 43k	RD¼PS 433J
R33	Carbon film 43k	RD¼PS 433J
R34	Carbon film 1k	RD¼VS 102J
R35	Carbon film 1k	RD¼VS 102J
R36	Carbon film 4.7k	RD¼PS 472J
R37	Carbon film 3.3k	RD¼PS 332J
R38	Carbon film 22k	RD¼PS 223J
R39	Carbon film 680	RD¼PS 681J
R40	Carbon film 47	RD¼PS 470J
R41	Carbon film 2.2k	RD¼PS 222J
R42	Carbon film 100	RD¼PS 101J
R43	Carbon film 2.4k	RD¼PS 242J
R44	Carbon film 22k	RD¼PS 223J
R45	Carbon film 1.8k	RD¼PS 182J
R46		
R47	Carbon film 47k	RD¼PS 473J
R48	Carbon film 22	RD¼VS 220J
VR1	Variable resistor, semi-fixed	ACP-013-0
VR2	Variable resistor, semi-fixed	ACP-021-0
VR3	Variable resistor, semi-fixed	C92-048-0
VR4	Variable resistor, semi-fixed	ACP-001-0

SEMICONDUCTORS

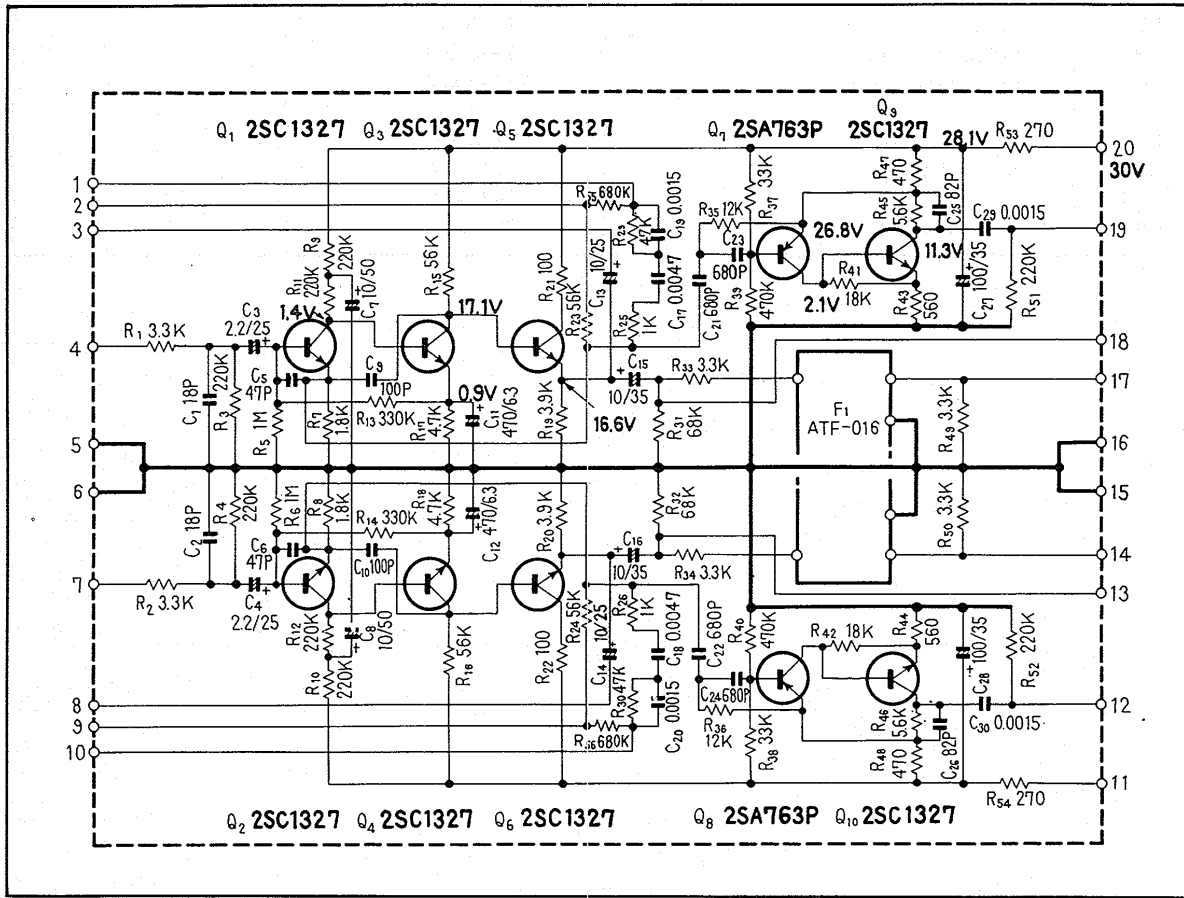
Symbol	Description	Part No.
Q1	3SK45-B FET	
Q2	3SK45-B FET	
Q3	2SC717 Transistor	
Q4	2SC461-B Transistor	
Q5	HA1201 IC	
Q6	HA1137 IC	
Q7	HA1142 IC	
Q8	HA1138 IC	
D1	1S2076 Diode	

COILS, TRANSFORMERS AND FILTERS

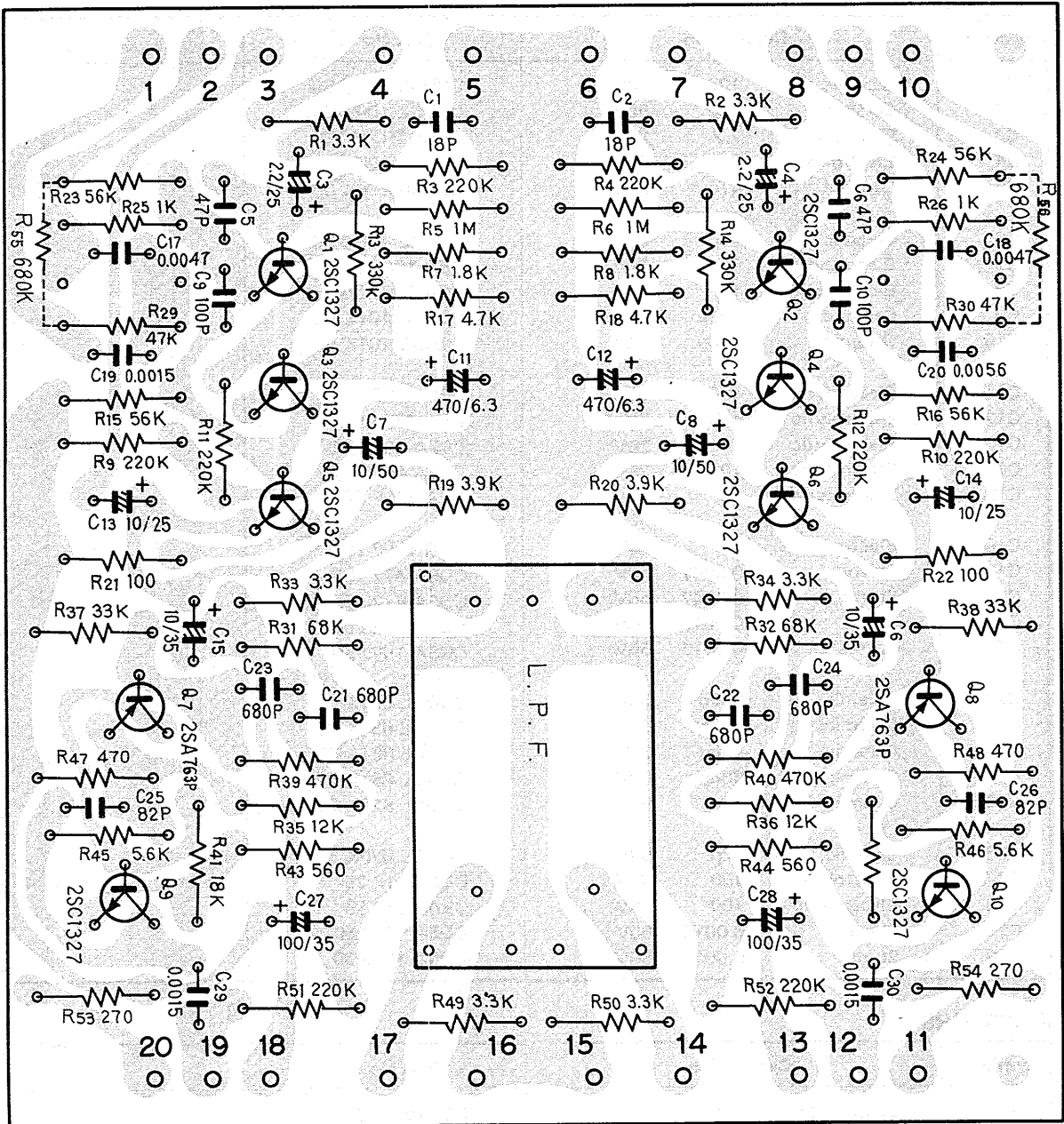
Symbol	Description	Part No.
T1	FM antenna coil	ATC-021-0
T2	FM RF coil	ATC-015-0
T3	FM RF coil	ATC-016-0
T4	FM OSC coil	ATC-022-0
T5	FM matching transformer	ATE-008-0
T6	FM IF transformer	T73-035-A
T7	19kHz transformer	T75-023-B
T8	MPX transformer	ATM-011-0
T9	AM RF coil	ATB-014-0
T10	AM OSC coil	ATB-013-0

Symbol	Description	Part No.	
F1	FM ceramic filter	ATF-013-B	
F2	FM ceramic filter	ATF-013-B	
F3	FM ceramic filter	ATF-013-B	
F4	AM ceramic filter	ATF-009-0	
L1	RF choke coil	T24-028-A	
L2	RF choke coil	T24-028-A	
L3	RF choke coil	T24-028-A	
L4	RF choke coil	T24-028-A	

12.3 EQUALIZER AMPLIFIER ASSEMBLY (AWF-010-0)



Foil Side



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

CAPACITORS

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

RESISTORS

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

Symbol	Description	Part No.
R16	Carbon film 56k	RD¼PS 563J
R17	Carbon film 4.7k	RD¼PS 472J
R18	Carbon film 4.7k	RD¼PS 472J
R19	Carbon film 3.9k	RD¼PS 392J
R20	Carbon film 3.9k	RD¼PS 392J
R21	Carbon film 100	RD¼PM 101J
R22	Carbon film 100	RD¼PM 101J
R23	Carbon film 56k	RD¼PM 563J
R24	Carbon film 56k	RD¼PM 563J
R25	Carbon film 1k	RD¼PM 102J
R26	Carbon film 1k	RD¼PM 102J
R29	Carbon film 47k	RD¼PM 473J
R30	Carbon film 47k	RD¼PM 473J
R31	Carbon film 68k	RD¼PM 683J
R32	Carbon film 68k	RD¼PM 683J
R33	Carbon film 3.3k	RD¼PM 332J
R34	Carbon film 3.3k	RD¼PM 332J
R35	Carbon film 12k	RD¼PM 123J
R36	Carbon film 12k	RD¼PM 123J
R37	Carbon film 33k	RD¼PM 333J
R38	Carbon film 33k	RD¼PM 333J
R39	Carbon film 470k	RD¼PM 474J
R40	Carbon film 470k	RD¼PM 474J
R41	Carbon film 18k	RD¼PM 183J
R42	Carbon film 18k	RD¼PM 183J
R43	Carbon film 560	RD¼PM 561J
R44	Carbon film 560	RD¼PM 561J
R45	Carbon film 5.6k	RD¼PM 562J
R46	Carbon film 5.6k	RD¼PM 562J
R47	Carbon film 470	RD¼PM 471J
R48	Carbon film 470	RD¼PM 471J
R49	Carbon film 3.3k	RD¼PM 332J
R50	Carbon film 3.3k	RD¼PM 332J
R51	Carbon film 220k	RD¼PM 224J
R52	Carbon film 220k	RD¼PM 224J
R53	Carbon film 270	RD¼PM 271J
R54	Carbon film 270	RD¼PM 271J
R55	Carbon film 680k	RD¼PM 684J
R56	Carbon film 680k	RD¼PM 684J

SEMICONDUCTORS

Symbol	Description	Part No.
Q1	2SC1327-T or U (2SC1312-G or H, 2SC1344-E or F)	Transistor
Q2	2SC1327-T or U (2SC1312-G or H, 2SC1344-E or F)	Transistor
Q3	2SC1327-T or U (2SC1312-G or H, 2SC1344-E or F)	Transistor

Symbol	Description	Part No.
Q4	2SC1327-T or U (2SC1312-G or H, 2SC1344-E or F)	Transistor
Q5	2SC1327-T or U (2SC1312-G or H, 2SC1344-E or F)	Transistor
Q6	2SC1327-T or U (2SC1312-G or H, 2SC1344-E or F)	Transistor
Q7	2SA763P-5 or 6 (2SA725-G or F)	Transistor
Q8	2SA763P-5 or 6 (2SA725-G or F)	Transistor
Q9	2SC1327-T or U (2SC1312-G or H, 2SC1344-E or F)	Transistor
Q10	2SC1327-T or U (2SC1312-G or H, 2SC1344-E or F)	Transistor

FILTER

Symbol	Description	Part No.
F1	Low pass filter	ATF-016-0

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

CAPACITORS

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

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

RESISTORS

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

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

Symbol	Description	Part No.
R101	Carbon film 1k	RD¼PM 102J
R102	Carbon film 4.7k	RD¼PM 472J
R103	Carbon film 3.3k	RD¼PM 332J
R104	Carbon film 330	RD¼PM 331J
R105	Carbon film 3.3k	RD¼PM 332J
R106	Carbon film 680	RD¼PM 681J
R107	Carbon film 270k	RD¼PM 274J
R108	Carbon film 33k	RD¼PM 333J
R109	Carbon film 1M	RD¼PM 105J
R110	Carbon film 270k	RD¼PM 274J
R111	Carbon film 33k	RD¼PM 333J
R112	Carbon film 1.5k	RD¼PM 152J
R113	Carbon film 1k	RD¼PM 102J
R114	Carbon film 8.2k	RD¼PM 822J
R115	Carbon film 27k	RD¼PM 273J
R116	Carbon film 56k	RD¼PM 563J
R117	Carbon film 330k	RD¼PM 334J
R118	Carbon film 1k	RD¼PM 102J
R119	Carbon film 100k	RD¼PM 104J
R120	Carbon film 4.7k	RD¼PM 472J
R121	Carbon film 10k	RD¼PM 103J
R122	Carbon film 1.5k	RD¼PM 152J
R123	Carbon film 100	RD¼PM 101J
R124	Carbon film 1.8k	RD¼PM 182J
R125	Carbon film 2.2k	RD¼PM 222J
R126	Carbon film 2.2k	RD¼PM 222J
R127	Carbon film 68k	RD¼PM 683J
R128	Carbon film 47k	RD¼PM 473J
R129	Carbon film 1k	RD¼PM 102J
R130	Carbon film 5.6k	RD¼PM 562J
R131	Carbon film 1.2k	RD¼PM 122J
R132	Carbon film 22k	RD¼PM 223J
R133	Carbon film 27k	RD¼PM 273J
R134	Carbon film 12k	RD¼PM 123J
R135	Carbon film 330	RD¼PM 331J
R136	Carbon film 330	RD¼PM 331J
R137	Carbon film 330	RD¼PM 331J
R138		
R139	Metal oxide 560 1W	RS1P 561J
R140	Carbon film 3.3k	RD¼PM 332J
R141	Carbon film 1k	RD¼PM 102J
R142	Carbon film 1k	RD¼PM 102J
R143	Carbon film 3.3k	RD¼PM 332J
R144	Carbon film 10k	RD¼PM 103J
R145	Carbon film 10k	RD¼PM 103J
R146	Carbon film 1k	RD¼PM 102J
R147	Carbon film 10k	RD¼PM 103J
R148	Carbon film 47	RD¼PM 470J
R149	Carbon film 47	RD¼PM 470J
R150	Carbon film 10k	RD¼PM 103J

Continued on the Next Page

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

POTENTIOMETERS

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

SEMICONDUCTORS

Symbol	Description	Part No.
Q1	2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F) Transistor	
Q2	2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F) Transistor	
Q3	2SK30A-Y or GR (2SK30AD) FET	
Q4	2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F) Transistor	
Q5	2SK40-D or C (2SK30A-Y or GR) FET	

Symbol	Description	Part No.	
Q6	2SA763P-5 or 6 (2SA725-F or G)	Transistor	
Q7	2SC1327-S or T (2SC1327-F or G) (2SC1344-D or E)	Transistor	
Q8	2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)	Transistor	
Q9	2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)	Transistor	
Q10	2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)	Transistor	
Q11	2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)	Transistor	
Q12	2SK30A-Y or GR (2SK30AD)	FET	
Q13	2SK30A-GR	FET	
Q14	2SK30A-Y or GR (2SK30AD)	FET	
Q15	2SK30A-Y or GR (2SK30AD)	FET	
Q16	2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)	Transistor	
Q17	2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)	Transistor	
Q18	2SC1327-S or T (2SC1312-F or G) (2SC1344-D or E)	Transistor	
Q19	2SC1327-T (2SC1312-F or G) (2SC1344-D or E)	Transistor	
Q20	2SC1327-T (2SC1312-F or G) (2SC1344-D or E)	Transistor	
Q21	2SA763P-5 or 6 (2SA725-F or G)	Transistor	
Q22	2SK40-D or C (2SK30A-Y or GR)	FET	
Q23	2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)	Transistor	
Q24	2SK30A-GR	FET	
Q25	2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)	Transistor	

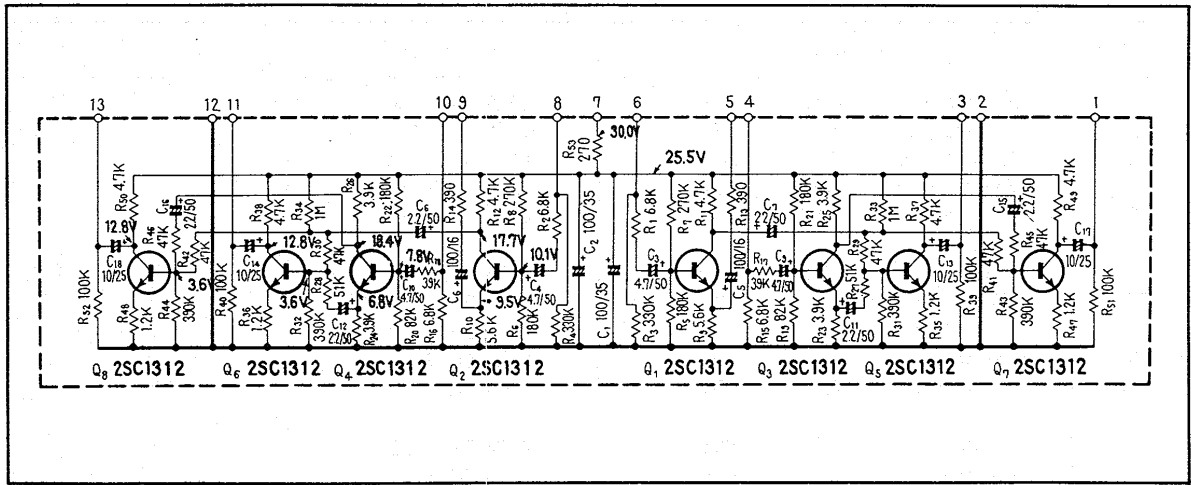
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Symbol	Description	Part No.	
Q26	2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)	Transistor	
Q27	2SA763P-5 or 6 (2SA725-F or G)	Transistor	
Q28	2SA763P-5 or 6 (2SA725-F or G)	Transistor	
Q29	2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)		
Q30	2SC1327-U (2SC1312-H) (2SC1344-F)	Transistor	
Q31	2SC1327-T, S or U (2SC1312-F, G or H) (2SC1344-D, E or F)	Transistor	
Q41	SL60505 (M51361P)	IC	
Q42	SL60505 (M51361P)	IC	
Q43	M5109P	IC	
D1	1S188 FM-1	Diode	
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	1S2473	Diode	
D10	1S2473	Diode	
D11	1S188 FM-1	Diode	
D12	1S188 FM-1	Diode	
D21	WZ-120	Zener diode	
D22	WZ-120	Zener diode	
D23	WZ-210	Zener diode	

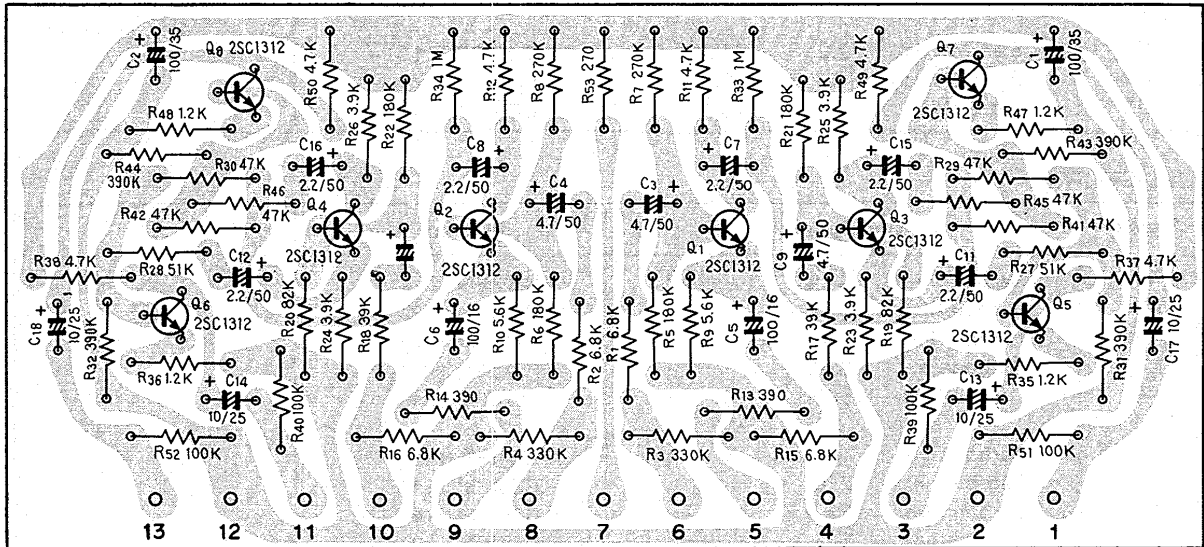
COILS AND FILTER

Symbol	Description	Part No.	
F1	Low pass filter	ATF-016-0	ATF-019-0
L1	Choke coil 104k	ATM-008-0	
L2	Choke coil 104k	ATM-008-0	

12.5 MATRIX CIRCUIT ASSEMBLY (AWM-048-0)



Foil Side



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

CAPACITORS

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

RESISTORS

Symbol	Description			Part No.
R1	Carbon film	6.8k		RD½PM 682J
R2	Carbon film	6.8k		RD½PM 682J
R3	Carbon film	330k		RD½PM 334J
R4	Carbon film	330k		RD½PM 334J
R5	Carbon film	180k		RD½PM 184J
R6	Carbon film	180k		RD½PM 184J
R7	Carbon film	270k		RD½PM 274J
R8	Carbon film	270k		RD½PM 274J
R9	Carbon film	5.6k		RD½PM 562J
R10	Carbon film	5.6k		RD½PM 562J
R11	Carbon film	4.7k		RD½PM 472J
R12	Carbon film	4.7k		RD½PM 472J
R13	Carbon film	390		RD½PM 391J
R14	Carbon film	390		RD½PM 391J
R15	Carbon film	6.8k		RD½PM 682J
R16	Carbon film	6.8k		RD½PM 682J
R17	Carbon film	39k		RD½PM 393J
R18	Carbon film	39k		RD½PM 393J
R19	Carbon film	82k		RD½PM 823J
R20	Carbon film	82k		RD½PM 823J
R21	Carbon film	180k		RD½PM 184J
R22	Carbon film	180k		RD½PM 184J
R23	Carbon film	3.9k		RD½PM 392J
R24	Carbon film	3.9k		RD½PM 392J
R25	Carbon film	3.9k		RD½PM 392J

Symbol	Description	Part No.
R26	Carbon film 3.9k	RD¼PM 392J
R27	Carbon film 51k	RD¼PM 513J
R28	Carbon film 51k	RD¼PM 513J
R29	Carbon film 47k	RD¼PM 473J
R30	Carbon film 47k	RD¼PM 473J
R31	Carbon film 390k	RD¼PM 394J
R32	Carbon film 390k	RD¼PM 394J
R33	Carbon film 1M	RD¼PM 105J
R34	Carbon film 1M	RD¼PM 105J
R35	Carbon film 1.2k	RD¼PM 122J
R36	Carbon film 1.2k	RD¼PM 122J
R37	Carbon film 4.7k	RD¼PM 472J
R38	Carbon film 4.7k	RD¼PM 472J
R39	Carbon film 100k	RD¼PM 104J
R40	Carbon film 100k	RD¼PM 104J
R41	Carbon film 47k	RD¼PM 473J
R42	Carbon film 47k	RD¼PM 473J
R43	Carbon film 390k	RD¼PM 394J
R44	Carbon film 390k	RD¼PM 394J
R45	Carbon film 47k	RD¼PM 473J
R46	Carbon film 47k	RD¼PM 473J
R47	Carbon film 1.2k	RD¼PM 122J
R48	Carbon film 1.2k	RD¼PM 122J
R49	Carbon film 4.7k	RD¼PM 472J
R50	Carbon film 4.7k	RD¼PM 472J
R51	Carbon film 100k	RD¼PM 104J
R52	Carbon film 100k	RD¼PM 104J
R53	Carbon film 270	RD¼PM 271J

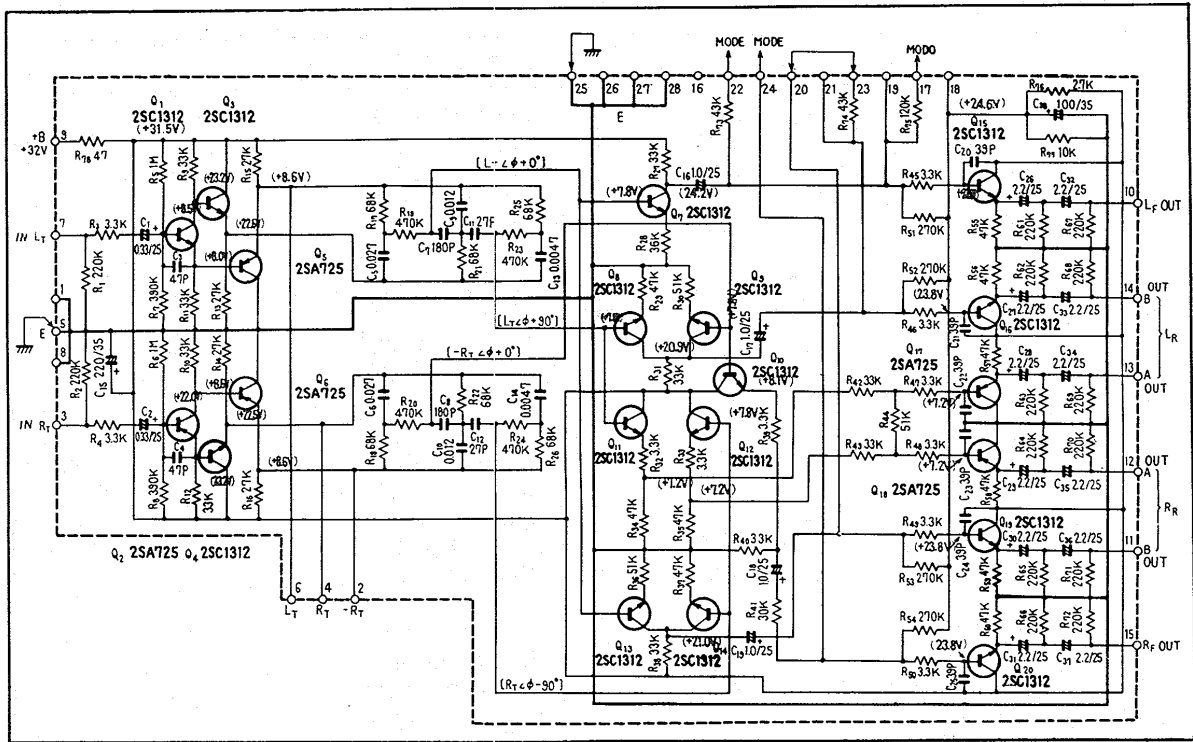
SEMICONDUCTORS

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

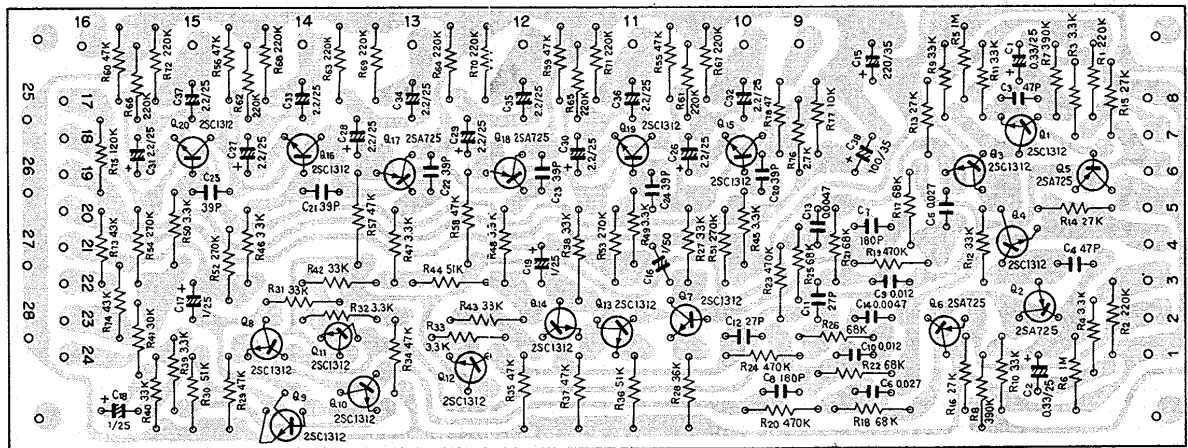
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Symb.	Description	Part No.	
Q6	2SC1327-T or U (2SC1312-G or H, 2SC1344-E or F)	Transistor	
Q7	2SC1327-T or U (2SC1312-G or H, 2SC1344-E or F)	Transistor	
Q8	2SC1327-T or U (2SC1312-G or H, 2SC1344-E or F)	Transistor	

12.6 DECODER CIRCUIT ASSEMBLY (AWM-031-0)



Foil Side



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

CAPACITORS

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

RESISTORS

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

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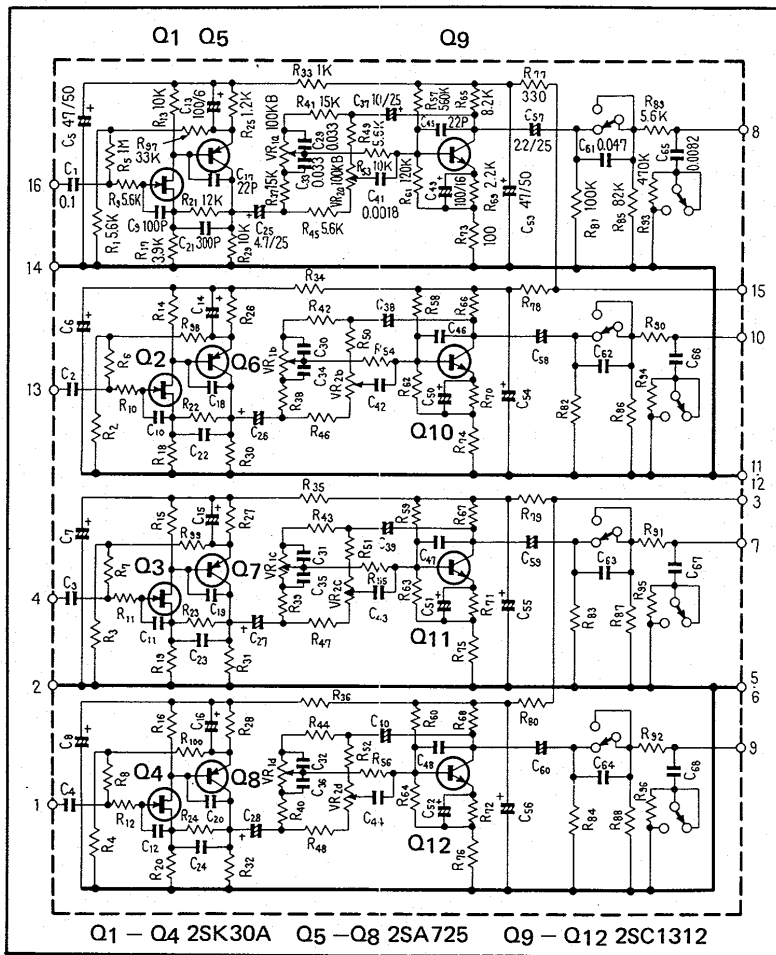
Symbol	Description	Part No.
R51	Carbon film 270k	RD¼PM 274J
R52	Carbon film 270k	RD¼PM 274J
R53	Carbon film 270k	RD¼PM 274J
R54	Carbon film 270k	RD¼PM 274J
R55	Carbon film 47k	RD¼PM 473J
R56	Carbon film 47k	RD¼PM 473J
R57	Carbon film 47k	RD¼PM 473J
R58	Carbon film 47k	RD¼PM 473J
R59	Carbon film 47k	RD¼PM 473J
R60	Carbon film 47k	RD¼PM 473J
R61	Carbon film 220k	RD¼PM 224J
R62	Carbon film 220k	RD¼PM 224J
R63	Carbon film 220k	RD¼PM 224J
R64	Carbon film 220k	RD¼PM 224J
R65	Carbon film 220k	RD¼PM 224J
R66	Carbon film 220k	RD¼PM 224J
R67	Carbon film 220k	RD¼PM 224J
R68	Carbon film 220k	RD¼PM 224J
R69	Carbon film 220k	RD¼PM 224J
R70	Carbon film 220k	RD¼PM 224J
R71	Carbon film 220k	RD¼PM 224J
R72	Carbon film 220k	RD¼PM 224J
R73	Carbon film 43k	RD¼PM 433J
R74	Carbon film 43k	RD¼PM 433J
R75	Carbon film 120k	RD¼PM 124J
R76	Carbon film 2.7k	RD¼PM 272J
R77	Carbon film 10k	RD¼PM 103J
R78	Carbon film 47	RD¼PM 470J

SEMICONDUCTORS

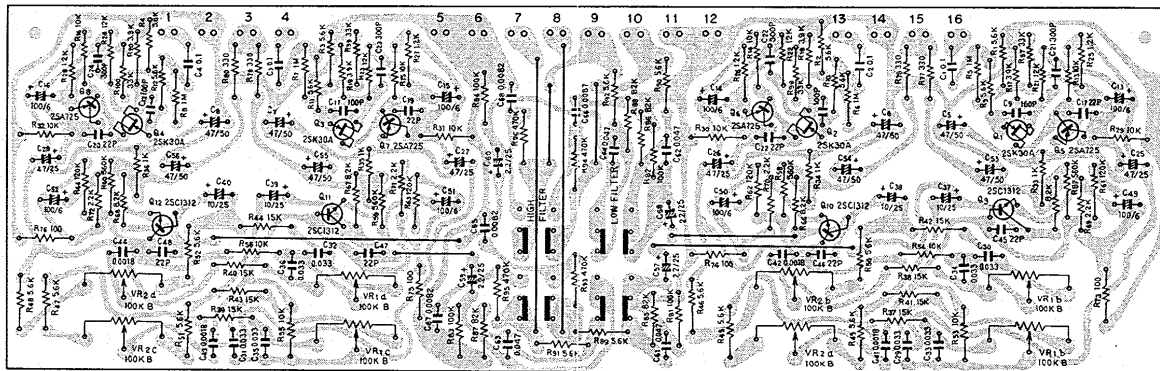
Symbol	Description	Part No.
Q1	2SC1327-S or T (2SC1312-F or G) Transistor	
Q2	2SA763P-5 or 6 (2SA725-F or G) Transistor	
Q3	2SC1327-S or T (2SC1312-F or G) Transistor	
Q4	2SC1327-S or T (2SC1312-F or G) Transistor	
Q5	2SA763P-5 or 6 (2SA725-F or G) Transistor	
Q6	2SA763P-5 or 6 (2SA725-F or G) Transistor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

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

12.7 CONTROL AMPLIFIER ASSEMBLY (AWG-023-0)



Foil Side



Parts List of Control Amplifier Assembly (AWG-023-0)

CAPACITORS

Symbol	Description			Part No.
C1	Mylar	0.1	50V	CQMA 104K 50
C2	Mylar	0.1	50V	CQMA 104K 50
C3	Mylar	0.1	50V	CQMA 104K 50
C4	Mylar	0.1	50V	CQMA 104K 50
C5	Electrolytic	47	50V	CEA 470P 50
C6	Electrolytic	47	50V	CEA 470P 50
C7	Electrolytic	47	50V	CEA 470P 50
C8	Electrolytic	47	50V	CEA 470P 50
C9	Ceramic	100p	50V	CCDSL 101K 50
C10	Ceramic	100p	50V	CCDSL 101K 50
C11	Ceramic	100p	50V	CCDSL 101K 50
C12	Ceramic	100p	50V	CCDSL 101K 50
C13	Electrolytic	100	6V	CEA 101P 6
C14	Electrolytic	100	6V	CEA 101P 6
C15	Electrolytic	100	6V	CEA 101P 6
C16	Electrolytic	100	6V	CEA 101P 6
C17	Ceramic	22p	50V	CCDSL 220K 50
C18	Ceramic	22p	50V	CCDSL 220K 50
C19	Ceramic	22p	50V	CCDSL 220K 50
C20	Ceramic	22p	50V	CCDSL 220K 50
C21	Ceramic	300p	50V	CKDYB 301K 50
C22	Ceramic	300p	50V	CKDYB 301K 50
C23	Ceramic	300p	50V	CKDYB 301K 50
C24	Ceramic	300p	50V	CKDYB 301K 50
C25	Electrolytic	4.7	25V	CSSA 4R7P 25
C26	Electrolytic	4.7	25V	CSSA 4R7P 25
C27	Electrolytic	4.7	25V	CSSA 4R7P 25
C28	Electrolytic	4.7	25V	CSSA 4R7P 25
C29	Mylar	0.033	50V	CQMA 333K 50
C30	Mylar	0.033	50V	CQMA 333K 50
C31	Mylar	0.033	50V	CQMA 333K 50
C32	Mylar	0.033	50V	CQMA 333K 50
C33	Mylar	0.033	50V	CQMA 333K 50
C34	Mylar	0.033	50V	CQMA 333K 50
C35	Mylar	0.033	50V	CQMA 333K 50
C36	Mylar	0.033	50V	CQMA 333K 50
C37	Electrolytic	10	25V	CEA 100P 25
C38	Electrolytic	10	25V	CEA 100P 25
C39	Electrolytic	10	25V	CEA 100P 25
C40	Electrolytic	10	25V	CEA 100P 25
C41	Mylar	0.0018	50V	CQMA 182K 50
C42	Mylar	0.0018	50V	CQMA 182K 50
C43	Mylar	0.0018	50V	CQMA 182K 50
C44	Mylar	0.0018	50V	CQMA 182K 50
C45	Ceramic	22p	50V	CCDSL 220K 50

Continued on the Next Page

Symbol	Description			Part No.
C46	Ceramic	22p	50V	CCDSL 220K 50
C47	Ceramic	22p	50V	CCDSL 220K 50
C48	Ceramic	22p	50V	CCDSL 220K 50
C49	Electrolytic	100	6V	CEA 101P 6
C50	Electrolytic	100	6V	CEA 101P 6
C51	Electrolytic	100	6V	CEA 101P 6
C52	Electrolytic	100	6V	CEA 101P 6
C53	Electrolytic	47	50V	CEA 470P 50
C54	Electrolytic	47	50V	CEA 470P 50
C55	Electrolytic	47	50V	CEA 470P 50
C56	Electrolytic	47	50V	CEA 470P 50
C57	Electrolytic	2.2	25V	CSSA 2R2P 25
C58	Electrolytic	2.2	25V	CSSA 2R2P 25
C59	Electrolytic	2.2	25V	CSSA 2R2P 25
C60	Electrolytic	2.2	25V	CSSA 2R2P 25
C61	Mylar	0.047	50V	CQMA 473K 50
C62	Mylar	0.047	50V	CQMA 473K 50
C63	Mylar	0.047	50V	CQMA 473K 50
C64	Mylar	0.047	50V	CQMA 473K 50
C65	Mylar	0.0082	50V	CQMA 822K 50
C66	Mylar	0.0082	50V	CQMA 822K 50
C67	Mylar	0.0082	50V	CQMA 822K 50
C68	Mylar	0.0082	50V	CQMA 822K 50

SWITCHES

Symbol	Description	Part No.
S1	Push switch	ASG-019-0
S2	Push switch	ASG-019-G

RESISTORS

Symbol	Description	Part No.
R1	Carbon film 5.6k	RD¼PM 562J
R2	Carbon film 5.6k	RD¼PM 562J
R3	Carbon film 5.6k	RD¼PM 562J
R4	Carbon film 5.6k	RD¼PM 562J
R5	Carbon film 1M	RD¼PM 105J
R6	Carbon film 1M	RD¼PM 105J
R7	Carbon film 1M	RD¼PM 105J
R8	Carbon film 1M	RD¼PM 105J
R9	Carbon film 5.6k	RD¼PM 562J
R10	Carbon film 5.6k	RD¼PM 562J
R11	Carbon film 5.6k	RD¼PM 562J
R12	Carbon film 5.6k	RD¼PM 562J
R13	Carbon film 10k	RD¼PM 103J
R14	Carbon film 10k	RD¼PM 103J
R15	Carbon film 10k	RD¼PM 103J
R16	Carbon film 10k	RD¼PM 103J
R17	Carbon film 3.9k	RD¼PM 392J
R18	Carbon film 3.9k	RD¼PM 392J
R19	Carbon film 3.9k	RD¼PM 392J
R20	Carbon film 3.9k	RD¼PM 392J

Symbol	Description	Part No.
R21	Carbon film 12k	RD¼PM 123J
R22	Carbon film 12k	RD¼PM 123J
R23	Carbon film 12k	RD¼PM 123J
R24	Carbon film 12k	RD¼PM 123J
R25	Carbon film 1.2k	RD¼PM 122J
R26	Carbon film 1.2k	RD¼PM 122J
R27	Carbon film 1.2k	RD¼PM 122J
R28	Carbon film 1.2k	RD¼PM 122J
R29	Carbon film 10k	RD¼PM 103J
R30	Carbon film 10k	RD¼PM 103J
R31	Carbon film 10k	RD¼PM 103J
R32	Carbon film 10k	RD¼PM 103J
R33	Carbon film 1k	RD¼PM 102J
R34	Carbon film 1k	RD¼PM 102J
R35	Carbon film 1k	RD¼PM 102J
R36	Carbon film 1k	RD¼PM 102J
R37	Carbon film 15k	RD¼PM 153J
R38	Carbon film 15k	RD¼PM 153J
R39	Carbon film 15k	RD¼PM 153J
R40	Carbon film 15k	RD¼PM 153J
R41	Carbon film 15k	RD¼PM 153J
R42	Carbon film 15k	RD¼PM 153J
R43	Carbon film 15k	RD¼PM 153J
R44	Carbon film 15k	RD¼PM 153J
R45	Carbon film 5.6k	RD¼PM 562J
R46	Carbon film 5.6k	RD¼PM 562J
R47	Carbon film 5.6k	RD¼PM 562J
R48	Carbon film 5.6k	RD¼PM 562J
R49	Carbon film 5.6k	RD¼PM 562J
R50	Carbon film 5.6k	RD¼PM 562J
R51	Carbon film 5.6k	RD¼PM 562J
R52	Carbon film 5.6k	RD¼PM 562J
R53	Carbon film 10k	RD¼PM 103J
R54	Carbon film 10k	RD¼PM 103J
R55	Carbon film 10k	RD¼PM 103J
R56	Carbon film 10k	RD¼PM 103J
R57	Carbon film 560k	RD¼PM 564J
R58	Carbon film 560k	RD¼PM 564J
R59	Carbon film 560k	RD¼PM 564J
R60	Carbon film 560k	RD¼PM 564J
R61	Carbon film 120k	RD¼PM 124J
R62	Carbon film 120k	RD¼PM 124J
R63	Carbon film 120k	RD¼PM 124J
R64	Carbon film 120k	RD¼PM 124J
R65	Carbon film 8.2k	RD¼PM 822J
R66	Carbon film 8.2k	RD¼PM 822J
R67	Carbon film 8.2k	RD¼PM 822J
R68	Carbon film 8.2k	RD¼PM 822J
R69	Carbon film 2.2k	RD¼PM 222J
R70	Carbon film 2.2k	RD¼PM 222J

Symbol	Description	Part No.
R71	Carbon film 2.2k	RD¼PM 222J
R72	Carbon film 2.2k	RD¼PM 222J
R73	Carbon film 100	RD¼PM 101J
R74	Carbon film 100	RD¼PM 101J
R75	Carbon film 100	RD¼PM 101J
R76	Carbon film 100	RD¼PM 101J
R77	Carbon film 330	RD¼PM 331J
R78	Carbon film 330	RD¼PM 331J
R79	Carbon film 330	RD¼PM 331J
R80	Carbon film 330	RD¼PM 331J
R81	Carbon film 100k	RD¼PM 104J
R82	Carbon film 100k	RD¼PM 104J
R83	Carbon film 100k	RD¼PM 104J
R84	Carbon film 100k	RD¼PM 104J
R85	Carbon film 82k	RD¼PM 823J
R86	Carbon film 82k	RD¼PM 823J
R87	Carbon film 82k	RD¼PM 823J
R88	Carbon film 82k	RD¼PM 823J
R89	Carbon film 5.6k	RD¼PM 562J
R90	Carbon film 5.6k	RD¼PM 562J
R91	Carbon film 5.6k	RD¼PM 562J
R92	Carbon film 5.6k	RD¼PM 562J
R93	Carbon film 470k	RD¼PM 474J
R94	Carbon film 470k	RD¼PM 474J
R95	Carbon film 470k	RD¼PM 474J
R96	Carbon film 470k	RD¼PM 474J
R97	Carbon film 33k	RD¼PM 333J
R98	Carbon film 33k	RD¼PM 333J
R99	Carbon film 33k	RD¼PM 333J
R100	Carbon film 33k	RD¼PM 333J
VR1	Variable resistor dual	ACV-110-0
VR2	Variable resistor dual	ACV-110-0
VR3	Variable resistor dual	ACV-110-0
VR4	Variable resistor dual	ACV-110-0

SEMICONDUCTORS

Symbol	Description	Part No.
Q1	2SK30A-Y or GR FET	
Q2	2SK30A-Y or GR FET	
Q3	2SK30A-Y or GR FET	
Q4	2SK30A-Y or GR FET	
Q5	2SA725-F or G Transistor	
Q6	2SA725-F or G Transistor	
Q7	2SA725-F or G Transistor	
Q8	2SA725-F or G Transistor	
Q9	2SC1312-F or G Transistor	
Q10	2SC1312-F or G Transistor	
Q11	2SC1312-F or G Transistor	
Q12	2SC1312-F or G Transistor	

Parts List of Power Amplifier Assembly (AWH-027-0)

CAPACITORS

Symbol	Description			Part No.
C1	Electrolytic	0.22	35V	CSZA R22M 35
C2	Electrolytic	0.22	35V	CSZA R22M 35
C3	Electrolytic	33	16V	CEA 330P 16
C4	Electrolytic	33	16V	CEA 330P 16
C5	Electrolytic	0.47	35V	CSZA R47M 35
C6	Electrolytic	0.47	35V	CSZA R47M 35
C7	Ceramic	100p	50V	CCDSL 101K 50
C8	Ceramic	100p	50V	CCDSL 101K 50
C9	Ceramic	100p	50V	CCDSL 101K 50
C10	Ceramic	100p	50V	CCDSL 101K 50
C11	Electrolytic	330	10V	CEA 331P 10
C12	Electrolytic	330	10V	CEA 331P 10
C13	Electrolytic	3.3	50V	CEA 3R3P 50
C14	Electrolytic	3.3	50V	CEA 3R3P 50
C15	Ceramic	12p	50V	CCDSL 120K 50
C16	Ceramic	12p	50V	CCDSL 120K 50
C17	Electrolytic	100	50V	CEA 101P 50
C18	Electrolytic	100	50V	CEA 101P 50
C19	Ceramic	82p	50V	CCDSL 820K 50
C20	Ceramic	82p	50V	CCDSL 820K 50
C21	Ceramic	82p	50V	CCDSL 820K 50
C22	Ceramic	82p	50V	CCDSL 820K 50
C23	Mylar	0.082	50V	CQMA 823M 50
C24	Mylar	0.082	50V	CQMA 823M 50
C25	Mylar	0.056	50V	CQMA 563M 50
C26	Mylar	0.056	50V	CQMA 563M 50

RESISTORS AND POTENTIOMETERS

Symbol	Description		Part No.
R1	Carbon film	100k	RD¼PS 104J
R2	Carbon film	100k	RD¼PS 104J
R3	Carbon film	3.3k	RD¼PS 332J
R4	Carbon film	3.3k	RD¼PS 332J
R5	Carbon film	820	RD¼PS 821J
R6	Carbon film	820	RD¼PS 821J
R7	Carbon film	56k	RD¼PS 563J
R8	Carbon film	56k	RD¼PS 563J
R9	Carbon film	33k	RD¼PS 333J
R10	Carbon film	33k	RD¼PS 333J
R11	Carbon film	18k	RD¼PS 183J
R12	Carbon film	18k	RD¼PS 183J
R13	Carbon film	100k	RD¼PS 104J
R14	Carbon film	100k	RD¼PS 104J
R15	Carbon film	82k	RD¼PS 823J

Continued on the Next Page

Symbol	Description	Part No.
R16	Carbon film 82k	RD¼PS 823J
R17	Carbon film 2.2k	RD¼PS 222J
R18	Carbon film 2.2k	RD¼PS 222J
R19	Carbon film 100k	RD¼PS 104J
R20	Carbon film 100k	RD¼PS 104J
R21	Carbon film 110k	RD¼PS 114J
R22	Carbon film 110k	RD¼PS 114J
R23	Carbon film 4.7k	RD¼PS 472J
R24	Carbon film 4.7k	RD¼PS 472J
R25	Carbon film 1k	RD¼PS 102J
R26	Carbon film 1k	RD¼PS 102J
R27	Carbon film 39k	RD¼PS 393J
R28	Carbon film 39k	RD¼PS 393J
R29	Carbon film 22k	RD¼PS 223J
R30	Carbon film 22k	RD¼PS 223J
R31	Carbon film 47k	RD¼PS 473J
R32	Carbon film 47k	RD¼PS 473J
R33	Carbon film 82k	RD¼PS 823J
R34	Carbon film 82k	RD¼PS 823J
R35	Carbon film 2.7k	RD¼PS 272J
R36	Carbon film 2.7k	RD¼PS 272J
R37	Carbon film 4.7k	RD¼PS 472J
R38	Carbon film 4.7k	RD¼PS 472J
R39	Carbon film 150 ½W	RD½PS 151J
R40	Carbon film 150 ½W	RD½PS 151J
R41	Carbon film 150 ½W	RD½PS 151J
R42	Carbon film 150 ½W	RD½PS 151J
R43	Metal film 4.7 1W	RN1H 4R7K
R44	Metal film 4.7 1W	RN1H 4R7K
R45	Carbon film 5.6k	RD¼PS 562J
R46	Carbon film 5.6k	RD¼PS 562J
R47	Metal film 4.7 1W	RN1H 4R7K
R48	Metal film 4.7 1W	RN1H 4R7K
R49	Wire wound 0.5 5W	RT5B 0R5K
R50	Wire wound 0.5 5W	RT5B 0R5K
R51	Wire wound 0.5 5W	RT5B 0R5K
R52	Wire wound 0.5 5W	RT5B 0R5K
R53	Metal oxide 10 2W	RS2P 100J
R54	Metal oxide 10 2W	RS2P 100J
R55	Metal oxide 10 1W	RS1P 100J
R56	Metal oxide 10 1W	RS1P 100J
VR1	Variable resistor (Semi-fixed) 10k-B	ACP-029-0
VR2	Variable resistor (Semi-fixed) 10k-B	ACP-029-0
VR3	Variable resistor (Semi-fixed) 100-B	ACP-019-A
VR4	Variable resistor (Sem-fixed) 100-B	ACP-019-A

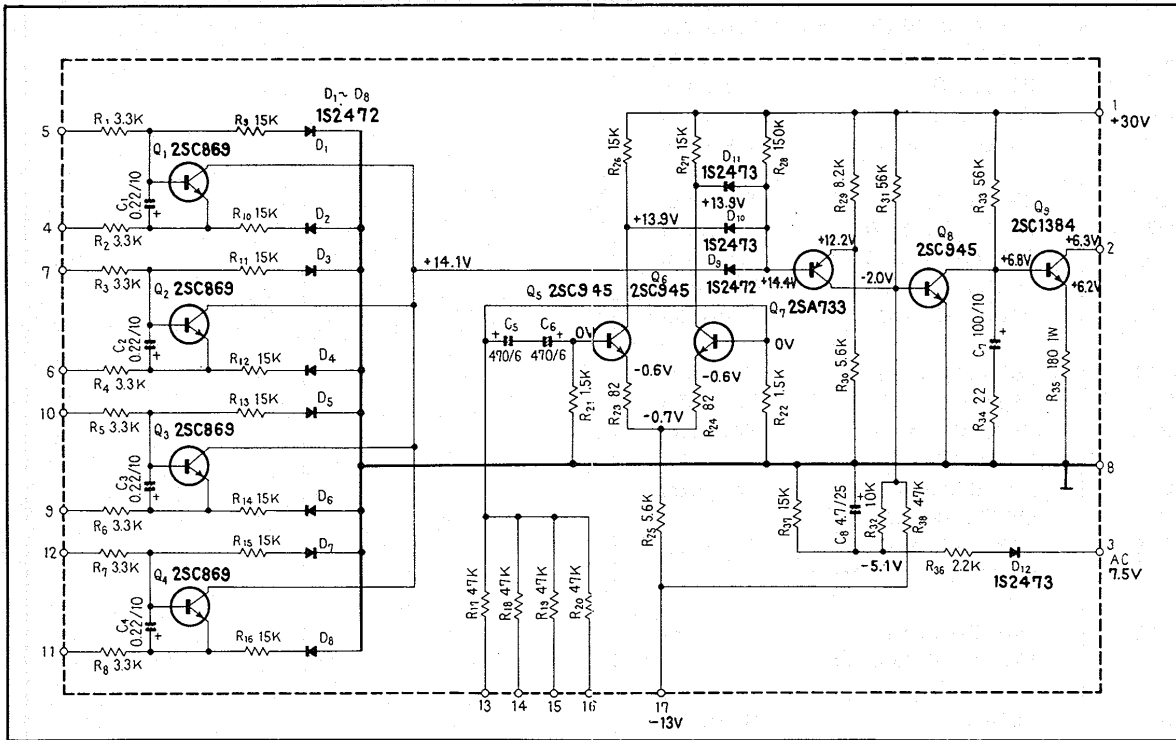
SEMICONDUCTORS

Symbol	Description	Part No.
Q1	2SA726-G or F	Transistor
Q2	2SA726-G or F	Transistor
Q3	2SA726-G or F	Transistor
Q4	2SA726-G or F	Transistor
Q5	2SC869-C or D	Transistor
Q6	2SC869-C or D	Transistor
Q7	2SC1451-V or B	Transistor
Q8	2SC1451-V or B	Transistor
Q9	2SD357-C or D	Transistor
Q10	2SD358-C or D	Transistor
Q11	2SB527-C or D	Transistor
Q12	2SB528-C or D	Transistor
Q13	2SD370-R or O	Transistor
Q14	(2SC1403-R, O or Y) 2SC1079-R or Y	Transistor
Q15	(2SC1116-R, O or Y) 2SB530-R or O	Transistor
Q16	(2SA745-R, O or Y) 2SA679-R or T	Transistor
	(2SA747-R, O or Y)	
D1	1S2473	Diode
D2	1S2473	Diode
D3	1S2473	Diode
D4	1S2473	Diode
D5	STV-4	Varistor
D6	STV-4	Varistor

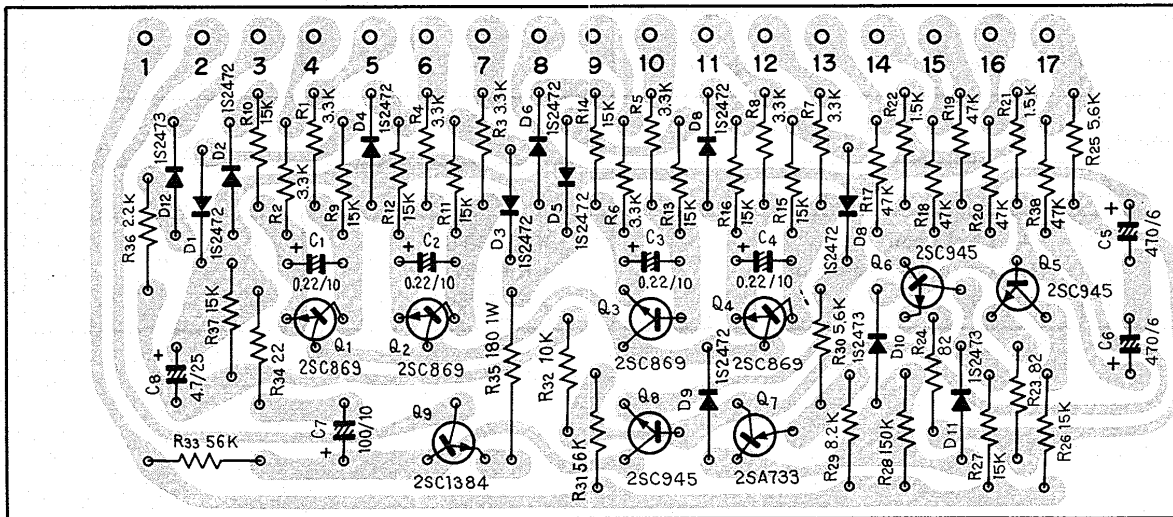
OTHERS

Symbol	Description	Part No.
	AF Choke coil	T63-009-0
	Socket (power transistor)	AKH-001-0
	Spacer	AEC-076-0

12.9 PROTECTION CIRCUIT ASSEMBLY (AWM-049-A)



Foil Side



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

CAPACITORS

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

RESISTORS

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

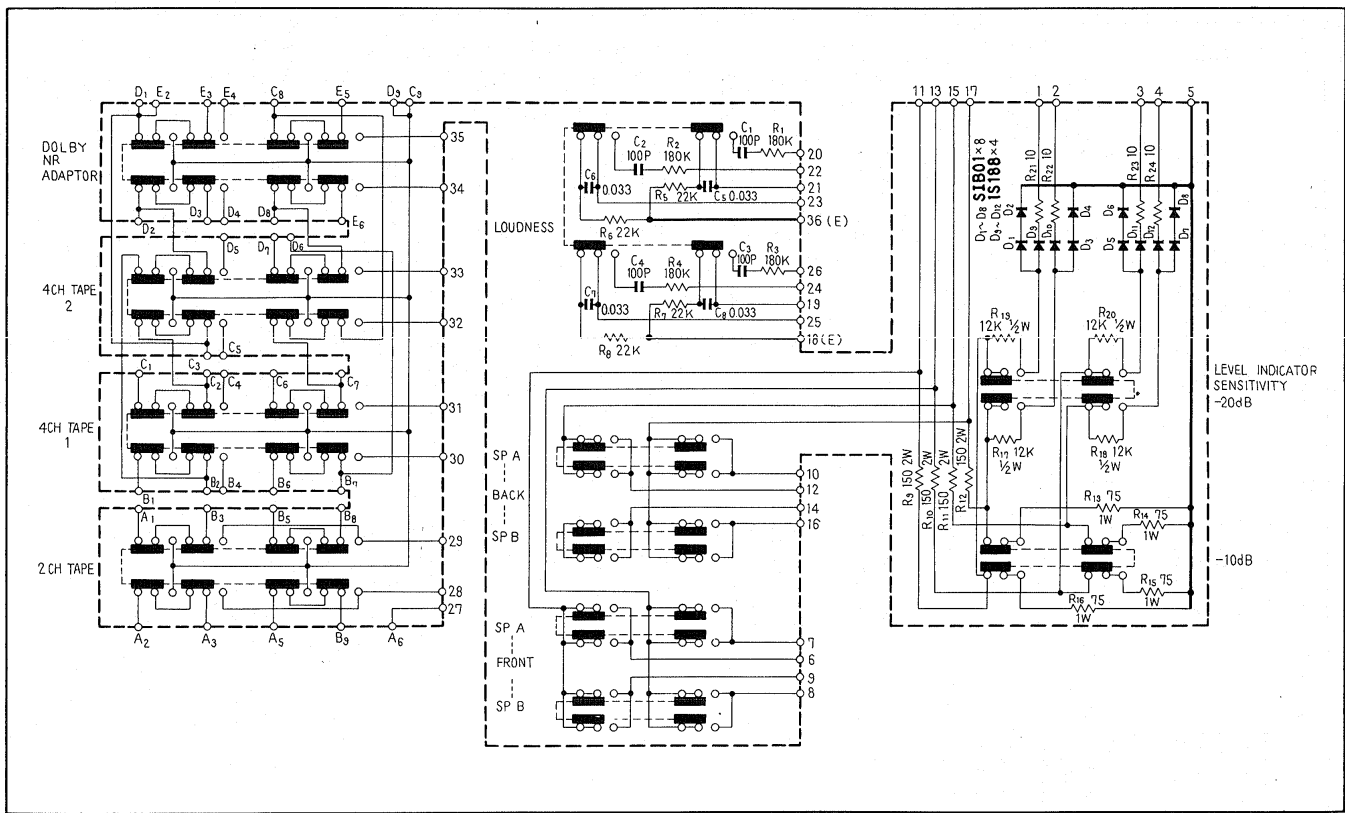
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Symbol	Description	Part No.
R36	Carbon film 2.2k	RD¼PM 222J
R37	Carbon film 15k	RD¼PM 153J
R38	Carbon film 47k	RD¼PM 473J

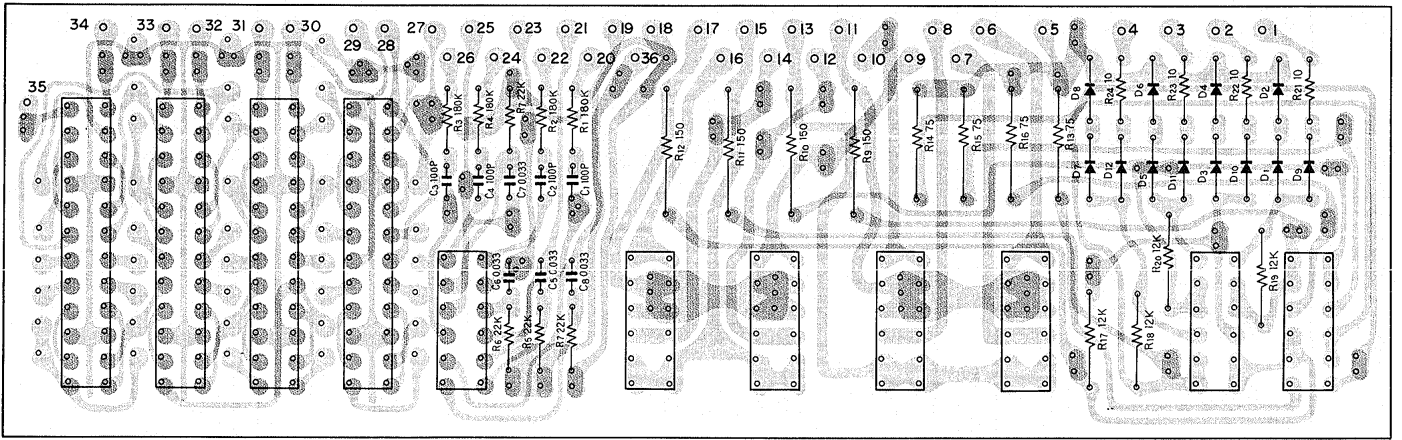
SEMICONDUCTORS

Symbol	Description	Part No.
Q1	2SC869-C, D or B Transistor (2SC857K-A or 2SC1515K)	
Q2	2SC869-C, D or B Transistor (2SC857K-A or 2SC1515K)	
Q3	2SC869-C, D or B Transistor (2SC857K-A or 2SC1515K)	
Q4	2SC869-C, D or B Transistor (2SC857K-A or 2SC1515K)	
Q5	2SC945-R or Q Transistor	
Q6	2SC945-R or Q Transistor	
Q7	2SA733-R or Q Transistor	
Q8	2SC945-R or Q Transistor	
Q9	2SC1384-Q or R Transistor	
D1	1S2472 Diode	
D2	1S2472 Diode	
D3	1S2472 Diode	
D4	1S2472 Diode	
D5	1S2472 Diode	
D6	1S2472 Diode	
D7	1S2472 Diode	
D8	1S2472 Diode	
D9	1S2472 Diode	
D10	1S2473 Diode	
D11	1S2473 Diode	
D12	1S2473 Diode	

12.10 SWITCH CIRCUIT ASSEMBLY (AWS-048-A)



Foil Side



Parts List of Switch Circuit Assembly (AWS-048-A)

CAPACITORS

Symbol	Description	Part No.
C1	Ceramic 100p 50V	CKDSL 101K 50
C2	Ceramic 100p 50V	CKDSL 101K 50
C3	Ceramic 100p 50V	CKDSL 101K 50
C4	Ceramic 100p 50V	CKDSL 101K 50
C5	Mylar 0.033 50V	CQMA 333K 50
C6	Mylar 0.033 50V	CQMA 333K 50
C7	Mylar 0.033 50V	CQMA 333K 50
C8	Mylar 0.033 50V	CQMA 333K 50

RESISTORS

Symbol	Description	Part No.
R1	Carbon film 180k	RD $\frac{1}{4}$ PM 184J
R2	Carbon film 180k	RD $\frac{1}{4}$ PM 184J
R3	Carbon film 180k	RD $\frac{1}{4}$ PM 184J
R4	Carbon film 180k	RD $\frac{1}{4}$ PM 184J
R5	Carbon film 22k	RD $\frac{1}{4}$ PM 223J
R6	Carbon film 22k	RD $\frac{1}{4}$ PM 223J
R7	Carbon film 22k	RD $\frac{1}{4}$ PM 223J
R8	Carbon film 22k	RD $\frac{1}{4}$ PM 223J
R9	Metal oxide 150 2W	RS2P 151K
R10	Metal oxide 150 2W	RS2P 151K
R11	Metal oxide 150 2W	RS2P 151K
R12	Metal oxide 150 2W	RS2P 151K
R13	Metal oxide 75 1W	RS1P 750K
R14	Metal oxide 75 1W	RS1P 750K
R15	Metal oxide 75 1W	RS1P 750K
R16	Metal oxide 75 1W	RS1P 750K
R17	Carbon film 12k $\frac{1}{2}$ W	RD $\frac{1}{2}$ PS 123J
R18	Carbon film 12k $\frac{1}{2}$ W	RD $\frac{1}{2}$ PS 123J
R19	Carbon film 12k $\frac{1}{2}$ W	RD $\frac{1}{2}$ PS 123J
R20	Carbon film 12k $\frac{1}{2}$ W	RD $\frac{1}{2}$ PS 123J
R21	Carbon film 10	RD $\frac{1}{4}$ PM 100J
R22	Carbon film 10	RD $\frac{1}{4}$ PM 100J
R23	Carbon film 10	RD $\frac{1}{4}$ PM 100J
R24	Carbon film 10	RD $\frac{1}{4}$ PM 100J

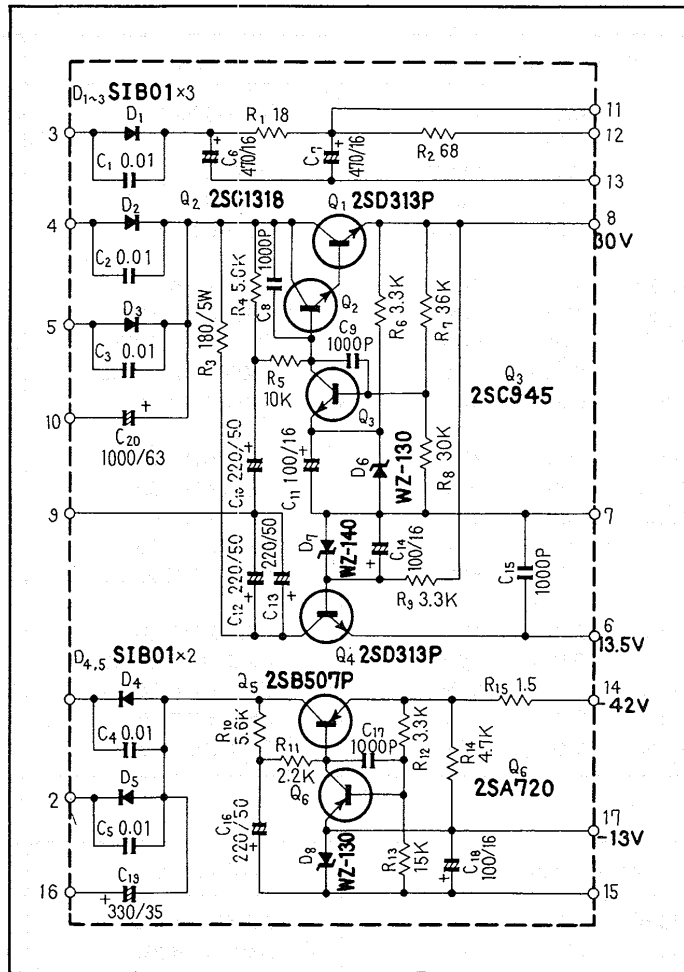
SWITCHES

Symbol	Description	Part No.
	Push switch	ASG-049-0
	Push switch	ASG-047-0
	Push switch	ASG-046-0

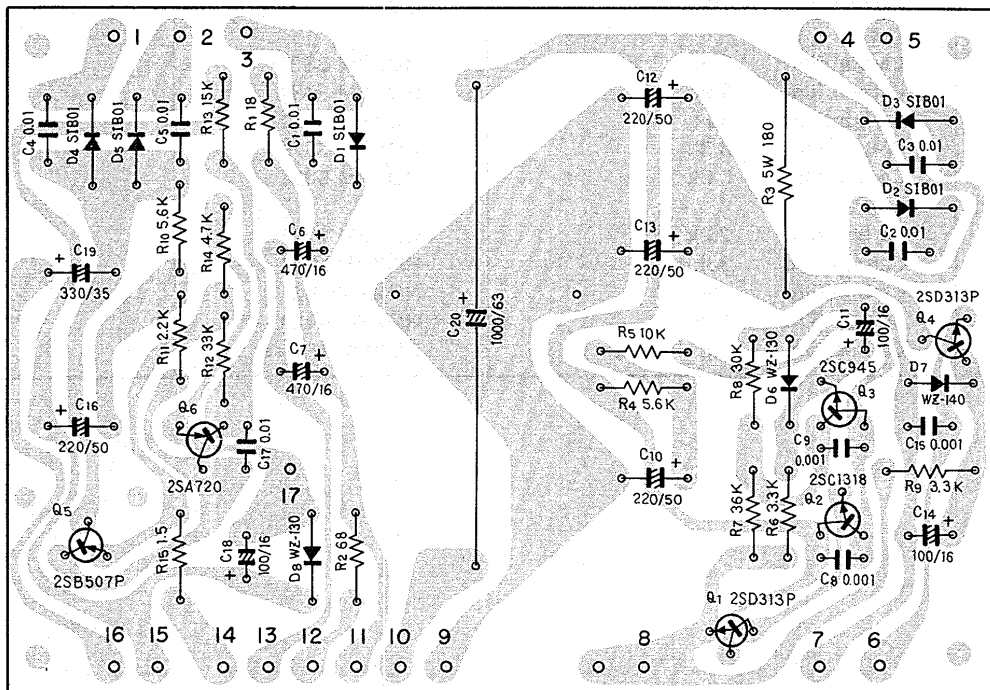
SEMICONDUCTORS

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

12.11 POWER SUPPLY CIRCUIT ASSEMBLY (AWR-038-0)



Foil Side



Parts List of Power Supply Circuit Assembly (AWR-038-0)

CAPACITORS

Symbol	Description			Part No.
C1	Ceramic	0.01	150V	ACG-004-0
C2	Ceramic	0.01	150V	ACG-004-0
C3	Ceramic	0.01	150V	ACG-004-0
C4	Ceramic	0.01	150V	ACG-004-0
C5	Ceramic	0.01	150V	ACG-004-0
C6	Electrolytic	470	16V	CEA 471P 16
C7	Electrolytic	470	16V	CEA 471P 16
C8	Ceramic	0.001	50V	CKDYF 102Z 50
C9	Ceramic	0.001	50V	CKDYF 102Z 50
C10	Electrolytic	220	50V	CEA 221P 50
C11	Electrolytic	100	16V	CEA 101P 16
C12	Electrolytic	220	50V	CEA 221P 50
C13	Electrolytic	220	50V	CEA 221P 50
C14	Electrolytic	100	16V	CEA 101P 16
C15	Ceramic	0.001	50V	CKDYF 102Z 50
C16	Electrolytic	220	50V	CEA 221P 50
C17	Ceramic	0.001	50V	CKDYF 102Z 50
C18	Electrolytic	100	16V	CEA 101P 16
C19	Electrolytic	330	35V	CEA 331P 35
C20	Electrolytic	1,000	63V	CEB 102P 63

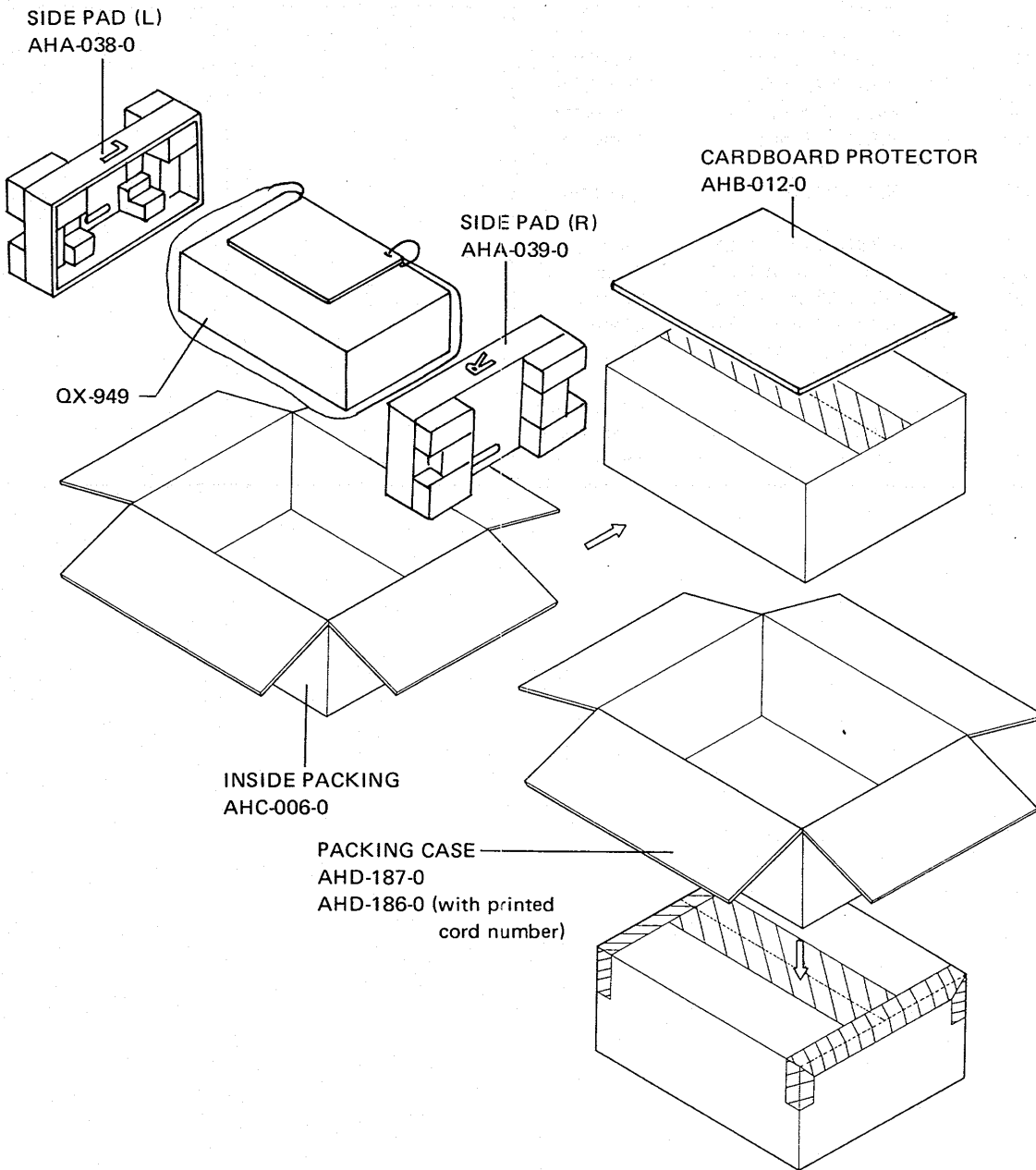
RESISTORS

Symbol	Description			Part No.
R1	Carbon film	18		RD¼PM 180J
R2	Carbon film	68		RD¼PM 680J
R3	Wire wound	180	5W	RT5B 181K
R4	Carbon film	5.6k		RD¼PM 562J
R5	Carbon film	10k		RD¼PM 103J
R6	Carbon film	3.3k		RD¼PM 332J
R7	Carbon film	36k		RD¼PM 363J
R8	Carbon film	30k		RD¼PM 303J
R9	Carbon film	3.3k		RD¼PM 332J
R10	Carbon film	5.6k		RD¼PM 562J
R11	Carbon film	2.2k		RD¼PM 222J
R12	Carbon film	33k		RD¼PM 333J
R13	Carbon film	15k		RD¼PM 153J
R14	Carbon film	4.7k		RD¼PM 472J
R15	Carbon film	1.5		RD¼PM 1R5J

SEMICONDUCTORS

Symbol	Description		Part No.
Q1	2SD313P-E or D	Transistor	
Q2	2SC1318-Q or R	Transistor	
Q3	2SC945-R or Q	Transistor	
Q4	2SD313P-E or D	Transistor	
Q5	2SB507P-E or D	Transistor	
Q6	2SA720-Q or R	Transistor	
D1	S1B01-01 or 1S1885	Diode	
D2	S1B01-02 or 1S1886	Diode	
D3	S1B01-02 or 1S1886	Diode	
D4	S1B01-02 or 1S1886	Diode	
D5	S1B01-02 or 1S1886	Diode	
D6	WZ-130	Zener diode	
D7	WZ-140	Zener diode	
D8	WZ-130	Zener diode	

13. PACKING METHOD AND PART NUMBERS



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