TA-N110

SERVICE MANUAL

US Model
AEP Model
UK Model
E Model

SPECIFICATIONS

Audio power specifications

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:
With 8 ohm loads, both channels driven, from 20 - 20,000 Hz; rated 100 watts per channel minimum RMS power, with no more than 0.08% total harmonic distortion from 250 milliwatts to rated output

Other specifications

Continuous RMS power output
(both channels driven simultaneously)
(US model)
Stereo: 50 W + 50 W
(6 ohms, 0.08%, 20 Hz – 20 kHz)
Mono: 100 W (8 ohms, 0.08%, 20 Hz – 20 kHz)
(Models for Except US)
Stereo: 50 W + 50 W
(6 ohms, 0.08%, 20 Hz – 20 kHz)
Mono: 100 W (6 ohms, 0.08%, 20 Hz – 20 kHz)

Dynamic power
(US model)
75 W + 75 W (6 ohms)
(Models for Except US)
85 W + 85 W (8 ohms)

Power bandwidth (IHF)
12 Hz – 40 kHz (6 ohms, THD 0.12%)
(US model only)

Frequency response
STEREO/FLAT: 5 Hz – 200 kHz, +0/–3 dB
3D: 5 Hz – 80 Hz, +0/–3 dB (12 dB/Oct.)

Input sensitivity
STEREO: 180 mV (50 kohms)
3D: 110 mV (100 kohms)
FLAT: 180 mV (100 kohms)

Signal-to-noise ratio
105 dB (input shorted)

Speaker output
(US model)
Stereo: 6 – 16 ohms
Mono: 8 – 16 ohms
(Models for Except US)
Stereo/mono: 6 – 16 ohms

General

System
Complementary Darlington SEPP power amplifier, with all stages direct coupled

Power requirements
US model: 120V AC, 60Hz
AEP, WG model: 220V – 50/60Hz
UK model: 240V – 50/60Hz
E model: 120, 220, 240V – 50/60Hz

Power consumption
US model: 110 watts
Models for Except US: 140W

Dimensions
US model:
Approx. 470 x 120 x 265 mm (w/h/d)
(17 x 4 3/4 x 10 1/2 inches)
Models for Except US:
Approx. 430 x 120 x 265 mm (w/h/d)
(17 x 4 3/4 x 10 1/2 inches)
including projecting parts and controls

Weight
US model:
Approx. 5.9 kg (13 lb 1 oz), net
Models for Except US:
Approx. 5.3 kg (11 lb 11 oz), net

Design and specifications subject to change without notice.

MICROFILM

STEREO POWER AMPLIFIER

SONY®

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

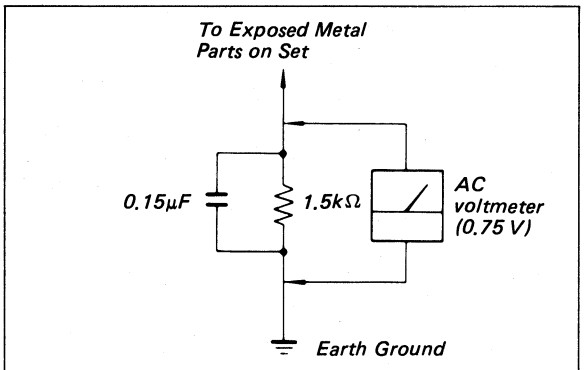
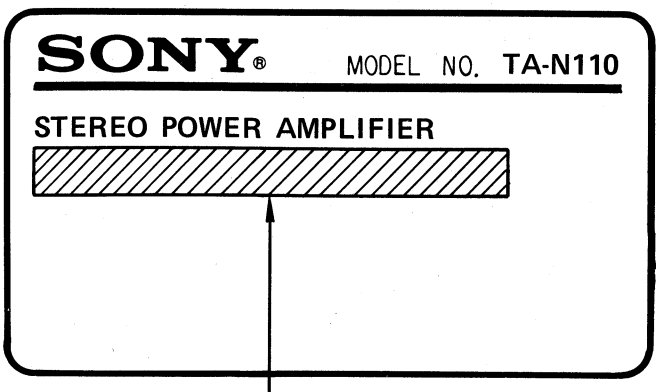


Fig. A. Using an AC voltmeter to check AC leakage.

MODEL IDENTIFICATION

– Specification Label –

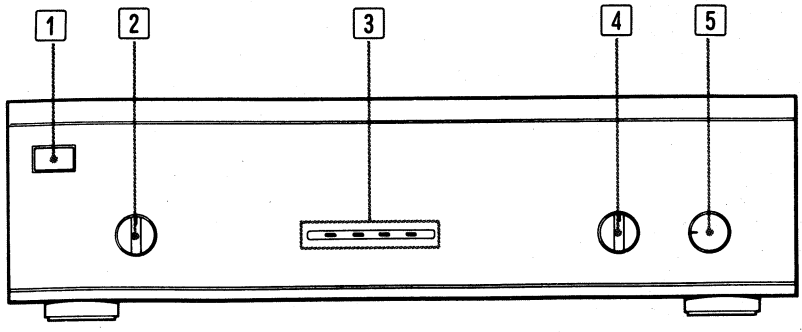


US model:	AC: 120V 60Hz	110W
AEP, WG model:	AC: 220V~50/60Hz	140W
UK model:	AC: 240V~50/60Hz	140W
E model:	AC: 120, 220, 240V~50/60Hz	140W

(WG model: West Germany)

SECTION 1
OUTLINE

1-1. LOCATION AND FUNCTION OF CONTROLS



(Side panels are attached to the US model.)

1 POWER switch

2 SPEAKERS selector
Selects speaker system to be used.
(When MONO is selected, the component connected to the MONO INPUT jack will be selected automatically as an input source.)
MONO : To select the speaker system connected to the MONO SPEAKER terminals (sub woofer or center speaker).
A : To select the speaker system connected to the SPEAKERS A terminals.
B : To select the speaker system connected to the SPEAKERS B terminals.

3 MONO/STEREO input indicators
MONO : Lights up when the SPEAKERS selector is set to MONO.
STEREO 1 to 3 : Lights up to show the input component selected by the STEREO INPUT when the SPEAKERS selector is set to either A or B.

4 STEREO INPUT selector
Selects the component to be played among the components connected to the STEREO INPUT 1 to 3 jacks on the rear panel.

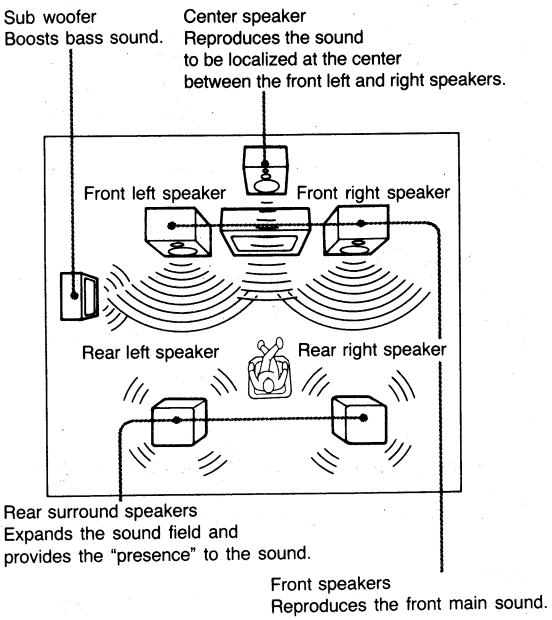
5 ATTENUATOR (volume) control
Adjusts the sound level of the speaker connected to TA-N110.

1-2. OVERVIEW

The TA-N110 is a power amplifier with selectable stereo/mono operation mode. It is suitable for use in a surround sound system. When the TA-N110 is connected to the surround processor, it can be used as follows.

- Stereo power amplifier for driving the rear surround speakers
- Stereo power amplifier for driving the front speakers
- Monaural power amplifier for driving the sub woofer.
- Monaural power amplifier for driving the center speaker.

As the TA-N110 is operable with an input voltage lower than normal power amplifier, it can be used also as an integrated amplifier or 3D system amplifier.

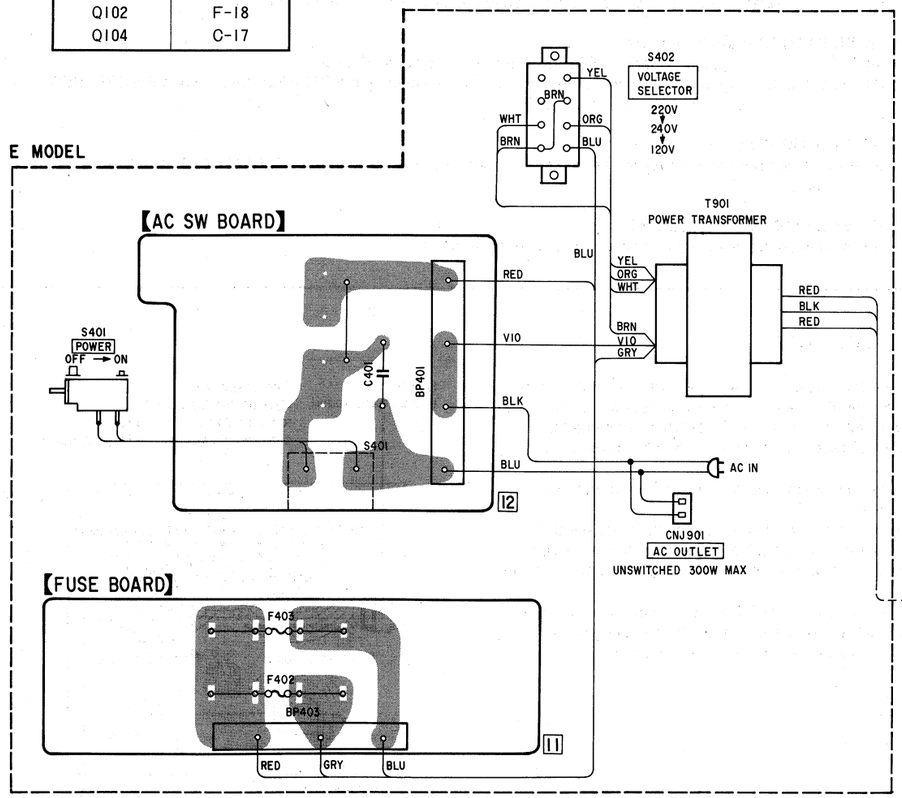


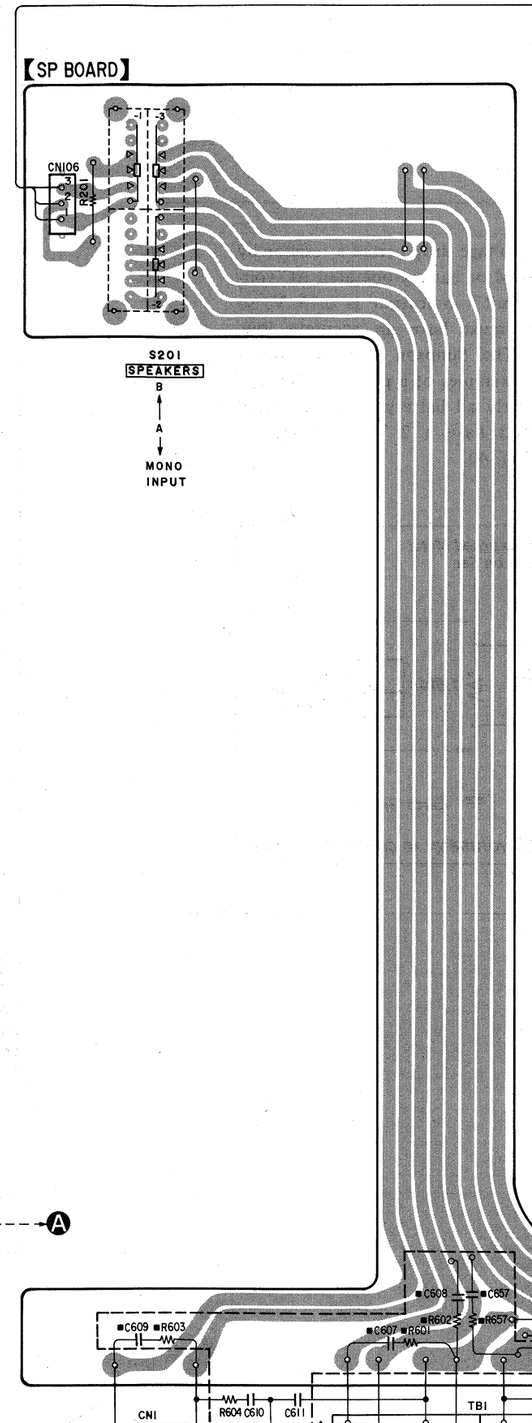
2-1. PRINTED WIRING BOARDS

● See page 10 for Semiconductor Lead Layouts.

● **Semiconductor Location**

Ref. No.	Location
D101	D-18
D102	D-17
D103	H-18
D104	B-18
D105	G-19
D106	E-18
D151	G-17
D152	G-18
D301	E-12
D302	E-14
D501	A-12
D502	A-12
D503	A-13
D504	A-13
IC101	E-16
IC102	C-18
IC103	H-21
IC104	G-22
IC105	G-21
Q101	D-17
Q102	F-18
Q104	C-17

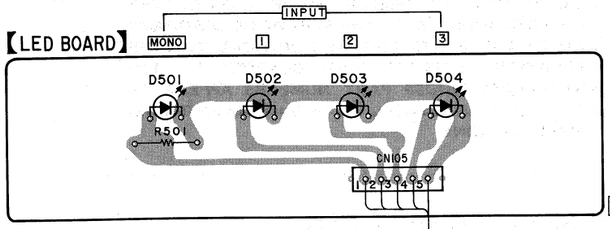




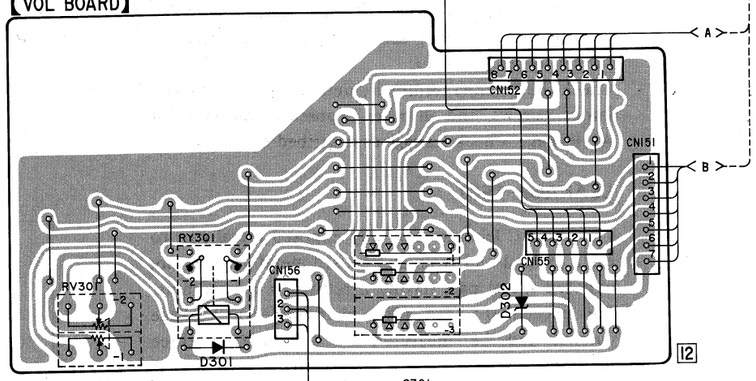
Note:

- ○—— : parts extracted from the component side.
- ▒▒▒ : Pattern on the side which is seen.

【LED BOARD】



【VOL BOARD】

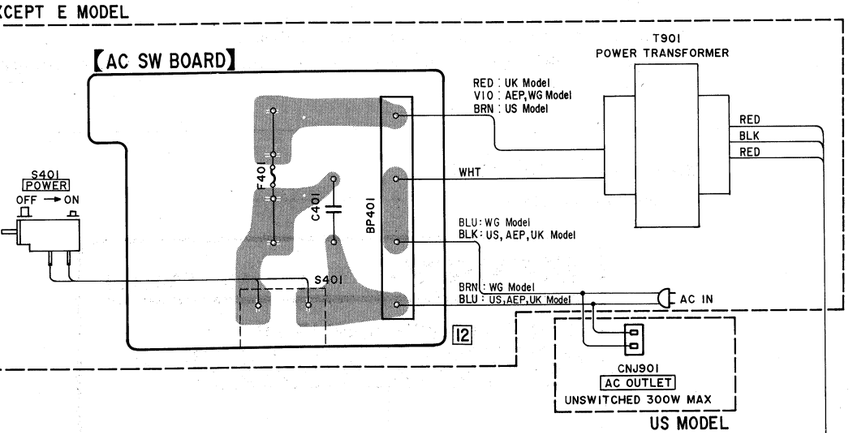


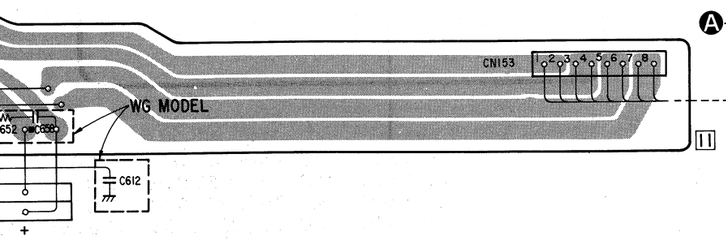
RV301
ATTENUATOR

S301
STEREO INPUT
1 → 2 → 3

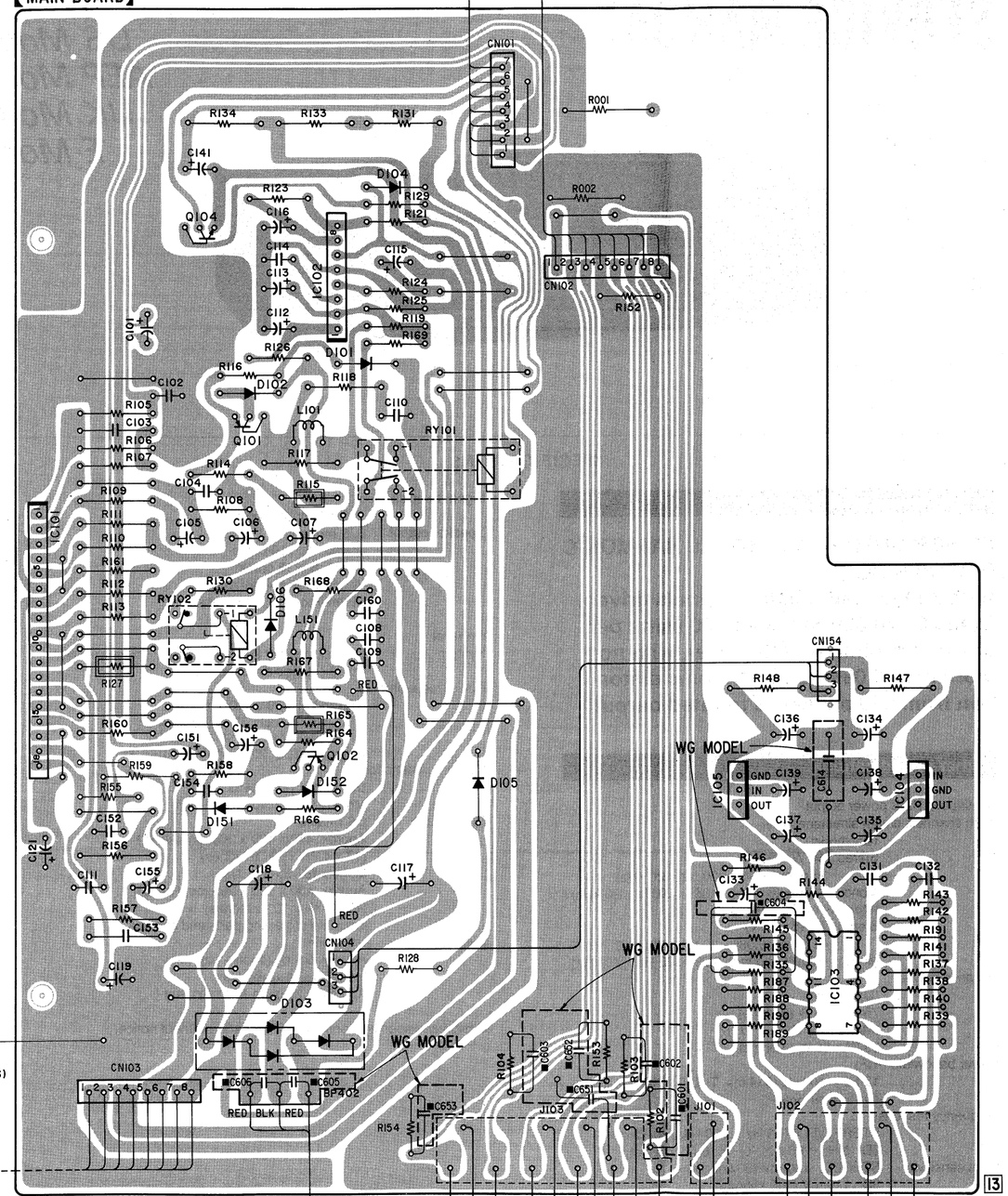
EXCEPT E MODEL

【AC SW BOARD】



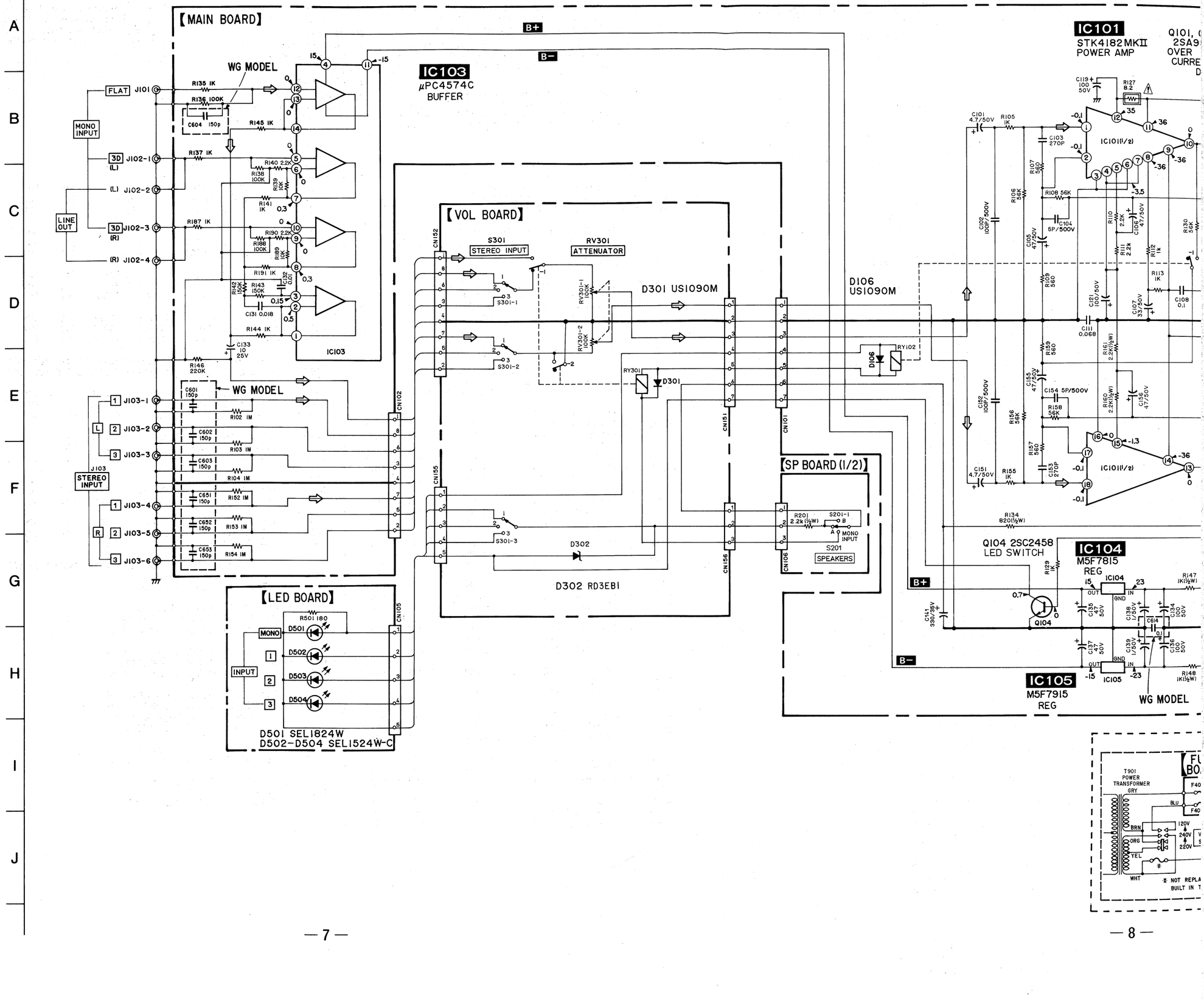


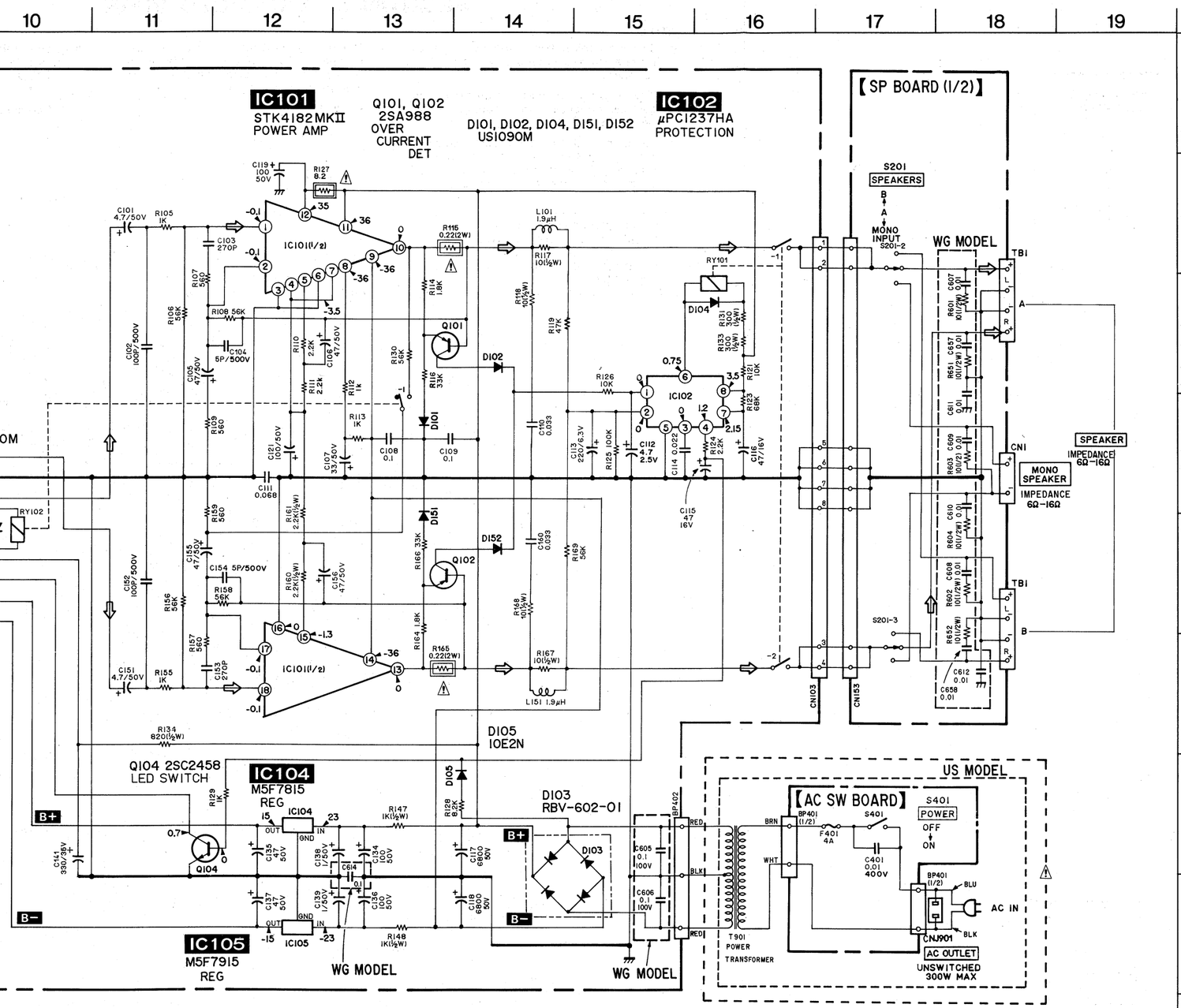
【MAIN BOARD】



2-2. SCHEMATIC DIAGRAM

● See page 10 for IC block diagram.





Note:

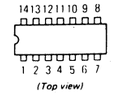
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- ⊣▭⊢ : nonflammable resistor.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (50 kΩ/V). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : SOUND
- Switches

Ref. No.	Switch	Position
S201	SPEAKERS	A
S301	STEREO INPUT	1
S401	POWER	OFF

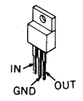
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

• Semiconductor Lead Layouts

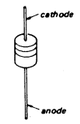
μPC4574C



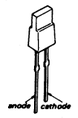
M5F7815



US1090M



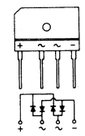
SEL1524W-C
SEL1824W



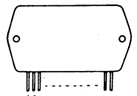
μPC1237HA

2SA988F

RBV-602-01

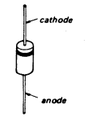


STK4182MK2

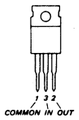


2SC634SP

10E2N
RD3.0EB2

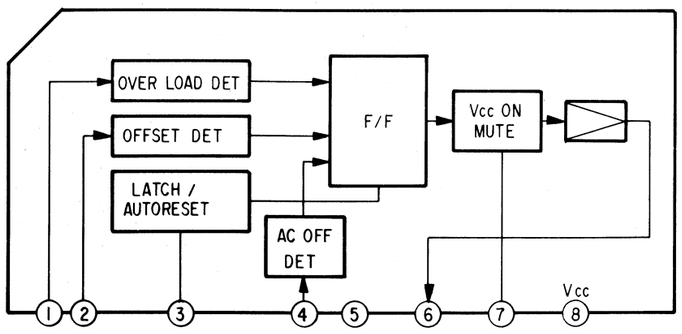


M5F7915



• IC BLOCK DIAGRAMS

IC103 μPC1237HA

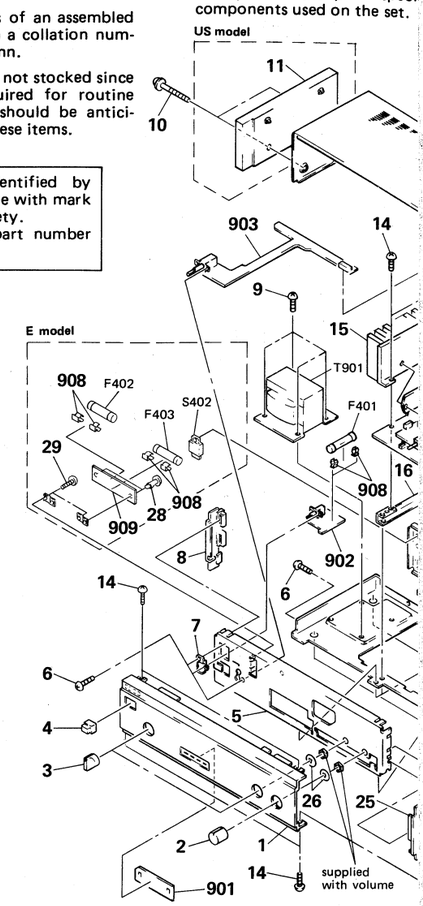


NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- Due to standardization, part number suffix -XX and -X r ferent from the parts speci components used on the set.



No.	Part No.	Description	Remarks
1	A-4323-003-A	PANEL ASSY	
2	4-916-746-01	KNOB (DIA.21)	
3	4-916-745-01	KNOB (DIA.21)	
4	4-917-460-01	KNOB, POWER	
5	*4-921-370-03	CHASSIS, SUB	
6	7-682-548-04	SCREW +BVTT 3X8 (S)	
7	*4-921-360-01	BRACKET (SW)	
8	*4-921-365-01	PANEL (LEFT), SIDE	
9	7-682-560-04	SCREW +BVTT 4X6 (S)	
10	3-704-366-01	(EXCEPT US)...SCREW (CASE)(M3X8)	
	3-721-342-11	(US).....SCREW, SIDE WOOD	
11	X-4904-486-1	PLATE (LEFT) ASSY, SIDE	
12	*3-327-853-41	CASE	
13	X-4904-485-1	PLATE (RIGHT) ASSY, SIDE	
14	3-703-685-21	SCREW (+BV 3X8)	
15	*4-921-322-01	HEAT SINK (A)	
16	*4-921-314-01	BRACKET (P)	
17	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	
18	*3-703-244-00	(EXCEPT E)...BUSHING (2104), CORD	
	*3-703-571-11	(E).....BUSHING (S)(4516), CORD	
19	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
20	*4-921-359-11	(US)....PANEL, BACK	
	*4-921-359-21	(E).....PANEL, BACK	
	*4-921-359-31	(AEP)...PANEL, BACK	
	*4-921-359-41	(WG)....PANEL, BACK	
	*4-921-359-51	(UK)....PANEL, BACK	
22	9-911-843-XX	CUSHION	
24	X-4911-201-1	(US,E).....FOOT ASSY	
	X-4885-935-1	(AEP,WG,UK)...FOOT ASSY	
25	*4-921-364-01	PANEL (RIGHT), SIDE	
26	3-533-938-00	CLOTH	
28	4-812-134-00	(E)...RIVET NYLON, 3.5	

No.	Part No
29	7-685-1
30	7-685-8
31	7-621-8
32	4-887-7
901	*1-626-6
902	*1-626-6
903	*1-626-6
904	*A-4388-
	*A-4388-
905	*1-626-6
906	⚠1-559-8
	⚠1-556-0
	⚠1-556-0
	⚠1-555-7
908	1-533-1
909	*1-628-3
⚠CNJ901	1-526-7
⚠CNJ901	1-526-8
F401	⚠1-532-2
F401	⚠1-532-5
F402	⚠1-532-2
F403	⚠1-532-2
S402	⚠1-570-3
T901	⚠1-449-4
T901	⚠1-449-4
T901	⚠1-449-4
T901	⚠1-449-4

SECTION 3 EXPLODED VIEW

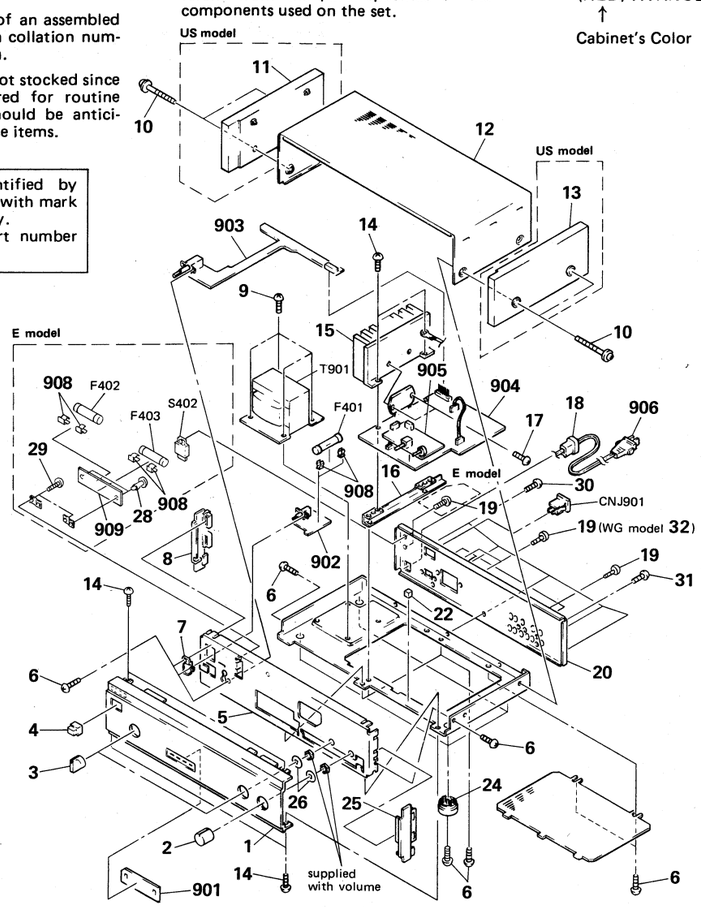
l parts with no reference exploded views are not

on parts of an assembled ted with a collation num- rk column.

'★" are not stocked since om required for routine delay should be antici- dering these items.

ents identified by otted line with mark for safety. with part number

- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ Cabinet's Color ↑ Parts Color



Part No.	Description	Remarks
A-4323-003-A	PANEL ASSY	
4-916-746-01	KNOB (DIA.21)	
4-916-745-01	KNOB (DIA.21)	
4-917-460-01	KNOB, POWER	
4-921-370-03	CHASSIS, SUB	
7-682-548-04	SCREW +BVTT 3X8 (S)	
4-921-360-01	BRACKET (SW)	
4-921-365-01	PANEL (LEFT), SIDE	
7-682-560-04	SCREW +BVTT 4X6 (S)	
3-704-366-01	(EXCEPT US)...SCREW (CASE)(M3X8)	
3-721-342-11	(US).....SCREW, SIDE WOOD	
X-4904-486-1	PLATE (LEFT) ASSY, SIDE	
3-327-853-41	CASE	
X-4904-485-1	PLATE (RIGHT) ASSY, SIDE	
3-703-685-21	SCREW (+BV 3X8)	
4-921-322-01	HEAT SINK (A)	
4-921-314-01	BRACKET (P)	
7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	
3-703-244-00	(EXCEPT E)...BUSHING (2104), CORD	
3-703-571-11	(E).....BUSHING (S)(4516), CORD	
7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
4-921-359-11	(US)....PANEL, BACK	
4-921-359-21	(E).....PANEL, BACK	
4-921-359-31	(AEP)...PANEL, BACK	
4-921-359-41	(WG)....PANEL, BACK	
4-921-359-51	(UK)....PANEL, BACK	
9-911-843-XX	CUSHION	
X-4911-201-1	(US,E).....FOOT ASSY	
X-4885-935-1	(AEP,WG,UK)...FOOT ASSY	
4-921-364-01	PANEL (RIGHT), SIDE	
3-533-938-00	CLOTH	
4-812-134-00	(E)...RIVET NYLON, 3.5	

No.	Part No.	Description	Remarks
29	7-685-134-19	(E)...SCREW +P 2.6X8 TYPE 2 N-S	
30	7-685-872-09	SCREW +BVTT 3X8 (S)	
31	7-621-849-00	SCREW, TAPPING	
32	4-887-711-21	(WG)...SCREW, TERMINAL, CLAW, +BVTP	
901	*1-626-604-11	PC BOARD, LED	
902	*1-626-605-11	PC BOARD, AC SW	
903	*1-626-603-11	PC BOARD, SP	
904	*A-4388-797-A	(EXCEPT WG)...MOUNTED PCB, MAIN	
	*A-4388-799-A	(WG).....MOUNTED PCB, MAIN	
905	*1-626-602-11	PC BOARD, VOL	
906	⚠1-559-819-11	(US).....CORD, POWER	
	⚠1-556-091-00	(E).....CORD, POWER	
	⚠1-556-035-00	(UK).....CORD, POWER	
	⚠1-555-750-00	(AEP,WG)...CORD, POWER	
908	1-533-183-11	HOLDER, FUSE	
909	*1-628-354-00	(E)...PC BOARD, FUSE	
⚠CNJ901	1-526-774-11	(E).....OUTLET, AC	
⚠CNJ901	1-526-882-00	(US).....OUTLET, AC	
F401	⚠1-532-203-00	(AEP,UK,WG)...FUSE, TIME-LAG (2A)	
F401	⚠1-532-579-00	(US).....FUSE, GLASS TUBE (4A)	
F402	⚠1-532-203-00	(E).....FUSE, TIME-LAG (2A)	
F403	⚠1-532-203-00	(E).....FUSE, TIME-LAG (2A)	
S402	⚠1-570-307-11	(E)...SWITCH, VOLTAGE CHANGE (VOLTAGE SELECTOR)	
T901	⚠1-449-434-11	(US).....TRANSFORMER, POWER	
T901	⚠1-449-436-11	(AEP,WG)...TRANSFORMER, POWER	
T901	⚠1-449-435-11	(E).....TRANSFORMER, POWER	
T901	⚠1-449-445-11	(UK).....TRANSFORMER, POWER	

SECTION 4
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description			
901	*1-626-604-11	PC BOARD, LED			
902	*1-626-605-11	PC BOARD, AC SW			
903	*1-626-603-11	PC BOARD, SP			
904	*A-4388-797-A	(EXCEPT WG)...MOUNTED PCB, MAIN			
	*A-4388-799-A	(WG).....MOUNTED PCB, MAIN			
905	*1-626-602-11	PC BOARD, VOL			
906	⚠1-559-819-11	(US).....CORD, POWER			
	⚠1-556-091-00	(E).....CORD, POWER			
	⚠1-556-035-00	(UK).....CORD, POWER			
	⚠1-555-750-00	(AEP,WG)...CORD, POWER			
908	1-533-183-11	HOLDER, FUSE			
909	*1-628-354-00	(E)...PC BOARD, FUSE			
⚠BP401	*1-535-141-00	BASE POST 19MM (10MM PITCH) 4P			
BP402	*1-535-116-00	TERMINAL 3P			
BP403	*1-560-595-21	(E)....TERMINAL (WITH FUSE) 3P			
C101	1-123-369-00	ELECT	4.7MF	20%	50V
C102	1-107-169-00	MICA	100PF	5%	500V
C103	1-162-287-31	CERAMIC	270PF	10%	50V
C104	1-107-026-00	MICA	5PF	0.5PF	500V
C105	1-123-359-00	ELECT	47MF	20%	50V
C106	1-123-359-00	ELECT	47MF	20%	50V
C107	1-123-382-00	ELECT	33MF	20%	50V
C108	1-136-165-00	FILM	0.1MF	5%	50V
C109	1-136-165-00	FILM	0.1MF	5%	50V
C110	1-136-159-00	FILM	0.033MF	5%	50V
C111	1-136-163-00	FILM	0.068MF	5%	50V
C112	1-123-369-00	ELECT	4.7MF	20%	25V
C113	1-126-176-11	ELECT	220MF	20%	6.3V
C114	1-130-487-00	MYLAR	0.022MF	5%	50V
C115	1-124-477-11	ELECT	47MF	20%	16V
C116	1-124-477-11	ELECT	47MF	20%	16V
C117	1-126-307-11	ELECT	6800MF	20%	50V
C118	1-126-307-11	ELECT	6800MF	20%	50V
C119	1-126-052-11	ELECT	100MF	20%	50V
C121	1-126-052-11	ELECT	100MF	20%	50V
C131	1-136-156-00	FILM	0.018MF	5%	50V
C132	1-130-483-00	MYLAR	0.01MF	5%	50V
C133	1-123-356-00	ELECT	10MF	20%	25V
C134	1-126-052-11	ELECT	100MF	20%	50V
C135	1-123-359-00	ELECT	47MF	20%	50V
C136	1-126-052-11	ELECT	100MF	20%	50V
C137	1-123-359-00	ELECT	47MF	20%	50V
C138	1-123-380-00	ELECT	1MF	20%	50V
C139	1-123-380-00	ELECT	1MF	20%	50V
C141	1-124-485-11	ELECT	330MF	20%	35V

Ref.No.	Part No.	Description			
C151	1-123-369-00	ELECT	4.7MF	20%	50V
C152	1-107-169-00	MICA	100PF	5%	500V
C153	1-162-287-31	CERAMIC	270PF	10%	50V
C154	1-107-026-00	MICA	5PF	0.5PF	500V
C155	1-123-359-00	ELECT	47MF	20%	50V
C156	1-123-359-00	ELECT	47MF	20%	50V
C160	1-136-159-00	FILM	0.033MF	5%	50V
C401	⚠1-161-744-00	CERAMIC	0.01MF		400V
C601	1-164-075-11	(WG)...CERAMIC	150PF	10%	50V
C622	1-164-075-11	(WG)...CERAMIC	150PF	10%	50V
C603	1-164-075-11	(WG)...CERAMIC	150PF	10%	50V
C604	1-164-075-11	(WG)...CERAMIC	150PF	10%	50V
C605	1-108-389-00	(WG)...PE TEREPHTHALATE	0.1MF	10%	100V
C606	1-108-389-00	(WG)...PE TEREPHTHALATE	0.1MF	10%	100V
C607	1-136-153-00	(WG)...FILM	0.01MF	5%	50V
C608	1-136-153-00	(WG)...FILM	0.01MF	5%	50V
C609	1-136-153-00	(WG)...FILM	0.01MF	5%	50V
C610	1-136-153-00	(WG)...FILM	0.01MF	5%	50V
C611	1-136-153-00	(WG)...FILM	0.01MF	5%	50V
C612	1-136-153-00	(WG)...FILM	0.01MF	5%	50V
C614	1-136-153-00	(WG)...FILM	0.01MF	5%	50V
C651	1-164-075-11	(WG)...CERAMIC	150PF	10%	50V
C652	1-164-075-11	(WG)...CERAMIC	150PF	10%	50V
C653	1-164-075-11	(WG)...CERAMIC	150PF	10%	50V
C657	1-136-153-00	(WG)...FILM	0.01MF	5%	50V
C658	1-136-153-00	(WG)...FILM	0.01MF	5%	50V
CN1	1-536-707-21	TERMINAL BOARD, PUSH 2P (MONO SPEAKER)			
CN101	*1-560-532-00	PIN, CONNECTOR 7P			
CN102	*1-564-599-11	PIN, CONNECTOR 8P			
CN103	*1-564-599-11	PIN, CONNECTOR 8P			
CN104	*1-562-327-00	SOCKET, CONNECTOR 3P			
CN105	*1-562-250-00	SOCKET, CONNECTOR 5P			
CN106	*1-562-327-00	SOCKET, CONNECTOR 3P			
CN151	*1-561-651-00	SOCKET, CONNECTOR 7P			
CN152	*1-562-573-11	SOCKET, CONNECTOR 8P			
CN153	*1-562-573-11	SOCKET, CONNECTOR 8P			
CN154	*1-562-327-00	SOCKET, CONNECTOR 3P			
CN155	*1-564-508-11	PLUG, CONNECTOR 5P			
CN156	*1-562-327-00	SOCKET, CONNECTOR 3P			
⚠CNJ901	1-526-774-11	(E).....OUTLET, AC			
⚠CNJ901	1-526-882-00	(US).....OUTLET, AC			
D101	8-719-002-83	DIODE US1090M			
D102	8-719-002-83	DIODE US1090M			
D103	8-719-302-38	DIODE RBV-602-01			

Ref.No.	Part No.	Description
D104	8-719-002-83	DIODE US1090M
D105	8-719-200-77	DIODE 10E2N
D106	8-719-002-83	DIODE US1090M
D151	8-719-002-83	DIODE US1090M
D152	8-719-002-83	DIODE US1090M
D301	8-719-002-83	DIODE US1090M
D302	8-719-100-15	DIODE RD3.0EB2
D501	8-719-310-83	DIODE SEL1824W
D502	8-719-310-75	DIODE SEL1524W-C
D503	8-719-310-75	DIODE SEL1524W-C
D504	8-719-310-75	DIODE SEL1524W-C
F401 ⚠	1-532-203-00	(AEP,UK,WG)...FUSE, TIME-LAG (2A)
F401 ⚠	1-532-579-00	(US).....FUSE, GLASS TUBE (4A)
F402 ⚠	1-532-203-00	(E)...FUSE, TIME-LAG (2A)
F403 ⚠	1-532-203-00	(E)...FUSE, TIME-LAG (2A)
IC101	8-749-900-34	IC STK4182MK2
IC102	8-759-111-68	IC UPC1237HA
IC103	8-759-113-18	IC UPC4574C
IC104	8-759-604-34	IC M5F7815
IC105	8-759-604-52	IC M5F7915
J101	1-565-406-21	JACK, PIN 1P (MONO INPUT FLAT)
J102	1-565-258-21	JACK, PIN 4P (MONO INPUT 3D/LINE OUT)
J103	1-565-320-11	JACK, PIN 6P (STEREO INPUT)
L101	*1-420-872-00	COIL, AIR CORE 1.9UH
L151	*1-420-872-00	COIL, AIR CORE 1.9UH
Q101	8-729-108-14	TRANSISTOR 2SA988F
Q102	8-729-108-14	TRANSISTOR 2SA988F
Q104	8-729-600-27	TRANSISTOR 2SC634SP
R001	1-249-496-11	CARBON 100K 5% 1/2W
R002	1-249-496-11	CARBON 100K 5% 1/2W
R102	1-246-545-00	CARBON 1M 5% 1/4W
R103	1-246-545-00	CARBON 1M 5% 1/4W
R104	1-246-545-00	CARBON 1M 5% 1/4W
R105	1-247-713-11	CARBON 1K 5% 1/4W
R106	1-249-466-11	CARBON 56K 5% 1/4W
R107	1-247-710-11	CARBON 560 5% 1/4W
R108	1-249-466-11	CARBON 56K 5% 1/4W
R109	1-247-710-11	CARBON 560 5% 1/4W
R110	1-247-717-11	CARBON 2.2K 5% 1/4W
R111	1-247-756-11	CARBON 2.2K 5% 1/2W
R112	1-247-713-11	CARBON 1K 5% 1/4W
R113	1-247-713-11	CARBON 1K 5% 1/4W
R114	1-247-716-11	CARBON 1.8K 5% 1/4W
R115 ⚠	1-217-151-00	RES, METAL PLATE 0.22 2W
R116	1-247-726-11	CARBON 33K 5% 1/4W
R117	1-247-727-11	CARBON 10 5% 1/2W
R118	1-247-727-11	CARBON 10 5% 1/2W
R119	1-249-465-11	CARBON 47K 5% 1/4W
R121	1-247-725-11	CARBON 10K 5% 1/4W
R123	1-249-467-11	CARBON 68K 5% 1/4W
R124	1-247-717-11	CARBON 2.2K 5% 1/4W
R125	1-249-469-11	CARBON 100K 5% 1/4W
R126	1-247-725-11	CARBON 10K 5% 1/4W
R127 ⚠	1-249-458-11	CARBON 8.2 5% 1/4W F
R128	1-247-724-11	CARBON 8.2K 5% 1/4W
R129	1-247-713-11	CARBON 1K 5% 1/4W
R130	1-249-466-11	CARBON 56K 5% 1/4W
R131	1-244-860-11	CARBON 300 5% 1/2W
R133	1-244-860-11	CARBON 300 5% 1/2W
R134	1-247-751-11	CARBON 820 5% 1/2W
R135	1-247-713-11	CARBON 1K 5% 1/4W

Ref.No.	Part No.	Description
R136	1-249-469-11	CARBON 100K 5% 1/4W
R137	1-247-713-11	CARBON 1K 5% 1/4W
R138	1-249-469-11	CARBON 100K 5% 1/4W
R139	1-247-725-11	CARBON 10K 5% 1/4W
R140	1-247-717-11	CARBON 2.2K 5% 1/4W
R141	1-247-713-11	CARBON 1K 5% 1/4W
R142	1-249-604-11	CARBON 150K 5% 1/4W
R143	1-249-604-11	CARBON 150K 5% 1/4W
R144	1-247-713-11	CARBON 1K 5% 1/4W
R145	1-247-713-11	CARBON 1K 5% 1/4W
R146	1-247-887-00	CARBON 220K 5% 1/4W
R147	1-247-752-11	CARBON 1K 5% 1/2W
R148	1-247-752-11	CARBON 1K 5% 1/2W
R152	1-246-545-00	CARBON 1M 5% 1/4W
R153	1-246-545-00	CARBON 1M 5% 1/4W
R154	1-246-545-00	CARBON 1M 5% 1/4W
R155	1-247-713-11	CARBON 1K 5% 1/4W
R156	1-249-466-11	CARBON 56K 5% 1/4W
R157	1-247-710-11	CARBON 560 5% 1/4W
R158	1-249-466-11	CARBON 56K 5% 1/4W
R159	1-247-710-11	CARBON 560 5% 1/4W
R160	1-247-756-11	CARBON 2.2K 5% 1/2W
R161	1-247-756-11	CARBON 2.2K 5% 1/2W
R164	1-247-716-11	CARBON 1.8K 5% 1/4W
R165 ⚠	1-217-151-00	RES, METAL PLATE 0.22 2W
R166	1-247-726-11	CARBON 33K 5% 1/4W
R167	1-247-727-11	CARBON 10 5% 1/2W
R168	1-247-727-11	CARBON 10 5% 1/2W
R169	1-249-466-11	CARBON 56K 5% 1/4W
R187	1-247-713-11	CARBON 1K 5% 1/4W
R188	1-249-469-11	CARBON 100K 5% 1/4W
R189	1-247-725-11	CARBON 10K 5% 1/4W
R190	1-247-717-11	CARBON 2.2K 5% 1/4W
R191	1-247-713-11	CARBON 1K 5% 1/4W
R201	1-247-756-11	CARBON 2.2K 5% 1/2W
R501	1-247-703-11	CARBON 180 5% 1/4W
R601	1-247-727-11	(WG)...CARBON 10 5% 1/2W
R602	1-247-727-11	(WG)...CARBON 10 5% 1/2W
R603	1-247-727-11	(WG)...CARBON 10 5% 1/2W
R604	1-247-727-11	(WG)...CARBON 10 5% 1/2W
R651	1-247-727-11	(WG)...CARBON 10 5% 1/2W
R652	1-247-727-11	(WG)...CARBON 10 5% 1/2W
RV301	1-238-176-11	RES, VAR, CARBON 100K/100K (ATTENUATOR)
RY101	1-515-533-11	RELAY
RY102	1-515-614-11	RELAY
RY301	1-515-614-11	RELAY
S201	1-571-545-11	SWITCH, ROTARY (SPEAKERS)
S301	1-571-546-11	SWITCH, ROTARY (STEREO INPUT)
S401 ⚠	1-554-920-11	SWITCH, PUSH (AC POWER)(1 KEY)(POWER)
S402 ⚠	1-570-307-11	(E)...SWITCH, VOLTAGE CHANGE (VOLTAGE SELECTOR)
T901 ⚠	1-449-434-11	(US).....TRANSFORMER, POWER
T901 ⚠	1-449-436-11	(AEP,WG)...TRANSFORMER, POWER
T901 ⚠	1-449-435-11	(E).....TRANSFORMER, POWER
T901 ⚠	1-449-445-11	(UK).....TRANSFORMER, POWER
TB1	1-536-706-00	TERMINAL BOARD (SPEAKER)

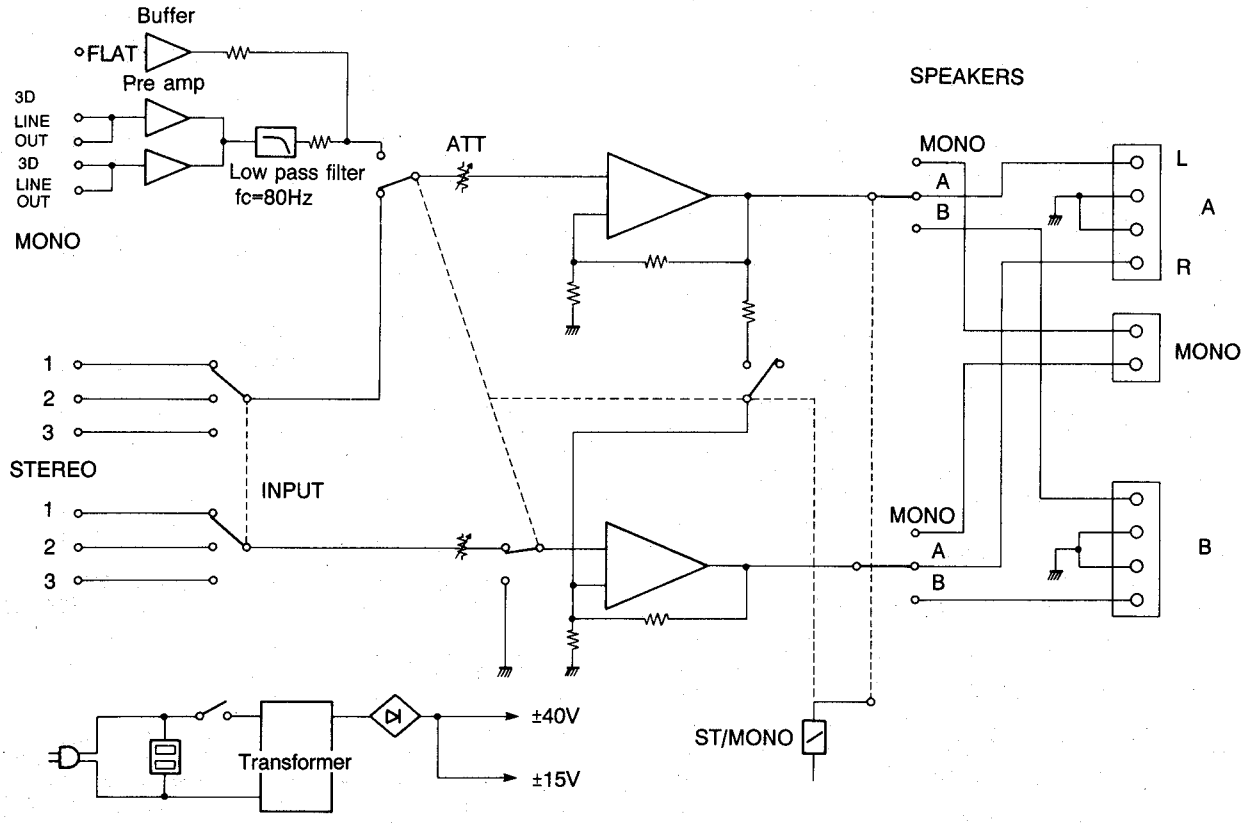
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

ACCESSORY & PACKING MATERIAL

⚠1-526-565-00	(E)....AC PLUG ADAPTOR
*3-701-948-17	(EXCEPT US)...LABEL, FUSE
*3-701-030-00	LABEL, SERIAL NUMBER
3-703-450-01	INSTRUCTION
*3-704-346-01	SHEET (STANDARD), PROTECTION
3-786-064-11	MANUAL, INSTRUCTION
*3-346-378-01	(EXCEPT US)...INDIVIDUAL CARTON
*4-921-373-11	(US).....INDIVIDUAL CARTON
*4-921-311-01	(EXCEPT US)...CUSHION
*4-921-371-01	(US).....CUSHION

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Block Diagram



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