

# SUBWOOFER SW500

## SERVICE MANUAL



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 **YAMAHA**

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### IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

**WARNING :** Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

**IMPORTANT :** This presentation or sale of this manual to any individual or firm does not constitute authorization certification, recognition of any applicable technical capabilities, or establish a principal-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

**WARNING :** Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground bus in the unit (heavy gauge black wires connect to this bus.)

**IMPORTANT :** Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

### WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (Where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

**DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER SO EVER!**

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

### IMPORTANT NOTICE FOR THE UNITED KINGDOM

#### Connecting the Plug and Cord

**IMPORTANT.** The wires in this main lead are coloured in accordance with the following code:  
BLUE: NEUTRAL  
BROWN: LIVE


As the colours of the wires in the main lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The BLUE wire must be connected to the terminal that is marked with the letter N (or coloured BLACK).

The BROWN wire must be connected to the terminal that is marked with the letter L (or coloured RED).

Be certain that neither core is connected to the earth terminal of the three pin plug.

## ■ WARNING

Components having special characteristics are marked  and must be replaced with parts having specification equal to those originally installed.

## ■ SPECIFICATIONS

### General specifications

#### Type

Bass Reflex powered subwoofer

#### Frequency Range

40–120 Hz (–10 dB)

#### Maximum Output Level

122 dB (1 m on Axis)

#### Dimensions (W x H x D)

480 x 619 x 590 mm

#### Weight

42.5 kg

#### Installation pole diameter

35 mm (1.375")

#### Accessories

Power cable 2.5 m (AC inlet type)

### Speaker unit

#### Speaker Unit

38 cm cone (8Ω)

#### Enclosure

Type: Bass Reflex

### Amp. unit

#### Maximum Output Power

500 W at 100 Hz, THD=1%, RL=8Ω

650 W at 100 Hz, 20 ms nonclip RL=8Ω

#### Input Sensitivity/Impedance

+4 dB/30 kΩ (channels A and B)

#### Controls

LEVEL Control

CUTOFF FREQ. Control: 80–100 Hz (Variable)

PHASE Switch: (REV/NORM)

POWER Switch: ON/OFF

#### Connectors

INPUT A ,B (XLR-3-31), OUTPUT THRU A, B (XLR-3-32)

OUTPUT HIGH PASS A ,B (XLR-3-32): Impedance 150Ω

#### Power Indicator

Green LED

#### Clip Indicator

Red LED

#### Power Requirement

USA and Canada: AC 120 V, 60 Hz

Europe: AC 230 V, 50 Hz

Others: AC 240 V, 50 Hz

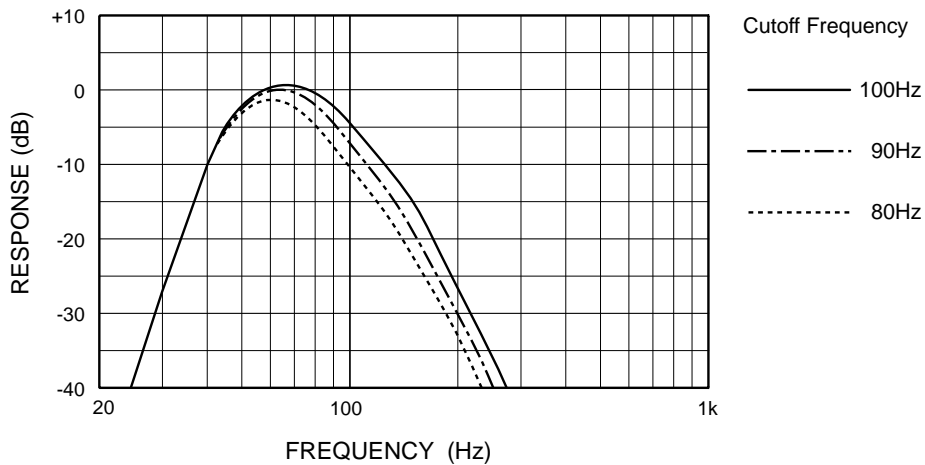
#### Power Consumption

200 W

\* 0 db=0.775 V

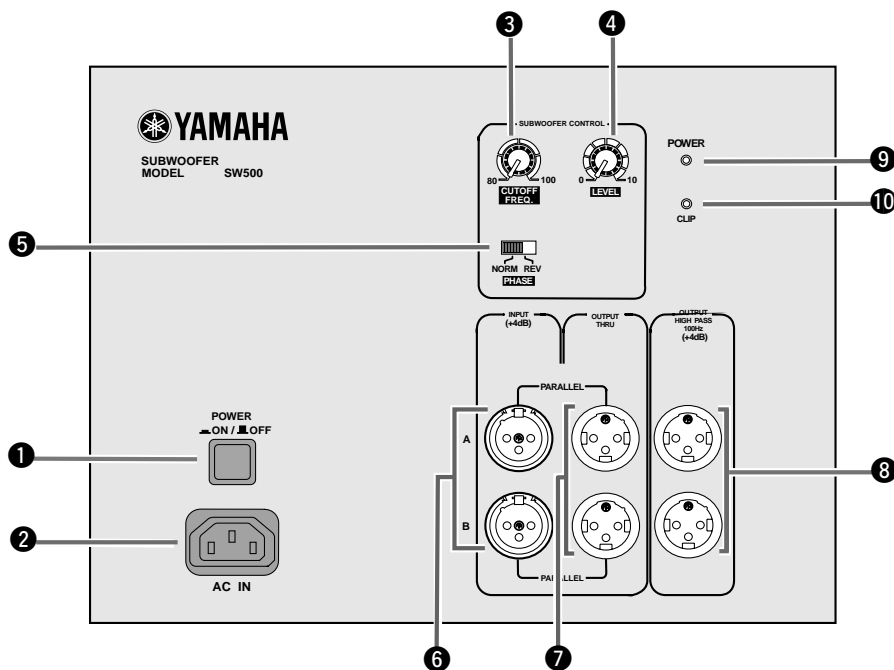
## PERFORMANCE GRAPH

### Standard frequency response



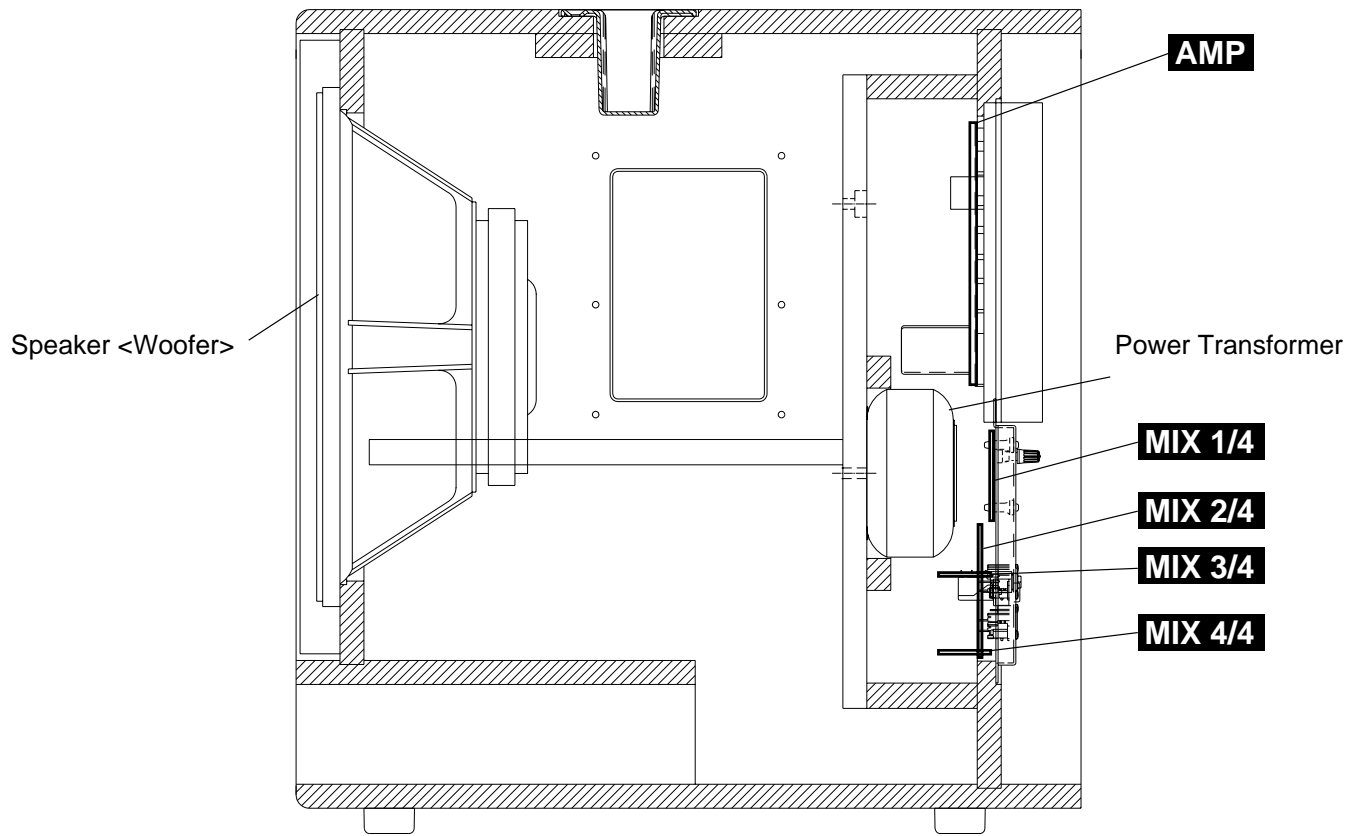
## PANEL LAYOUT

### • Rear Panel

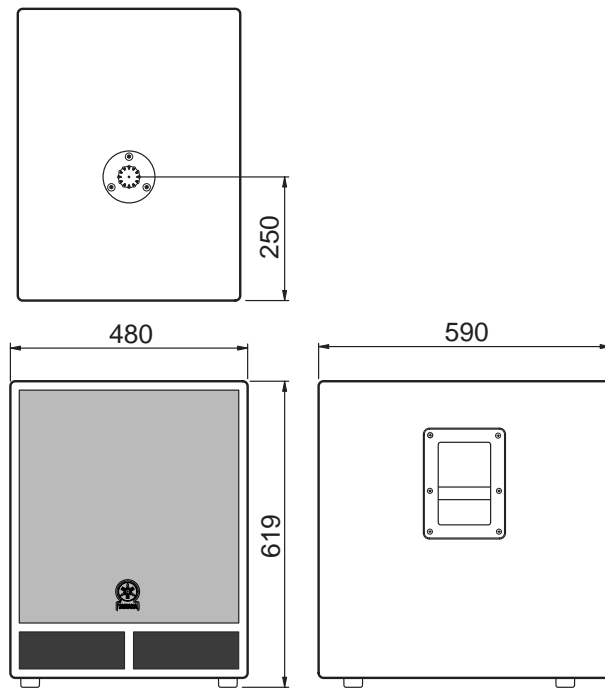


- ① [POWER] switch
- ② [AC IN] connector
- ③ [CUTOFF FREQ.] control
- ④ [LEVEL] control
- ⑤ [PHASE] switch
- ⑥ [INPUT] jacks A and B
- ⑦ [OUTPUT THRU] jacks A and B
- ⑧ [OUTPUT HIGH PASS] jacks A and B
- ⑨ [POWER] indicator
- ⑩ [CLIP] indicator

## CIRCUIT BOARD LAYOUT

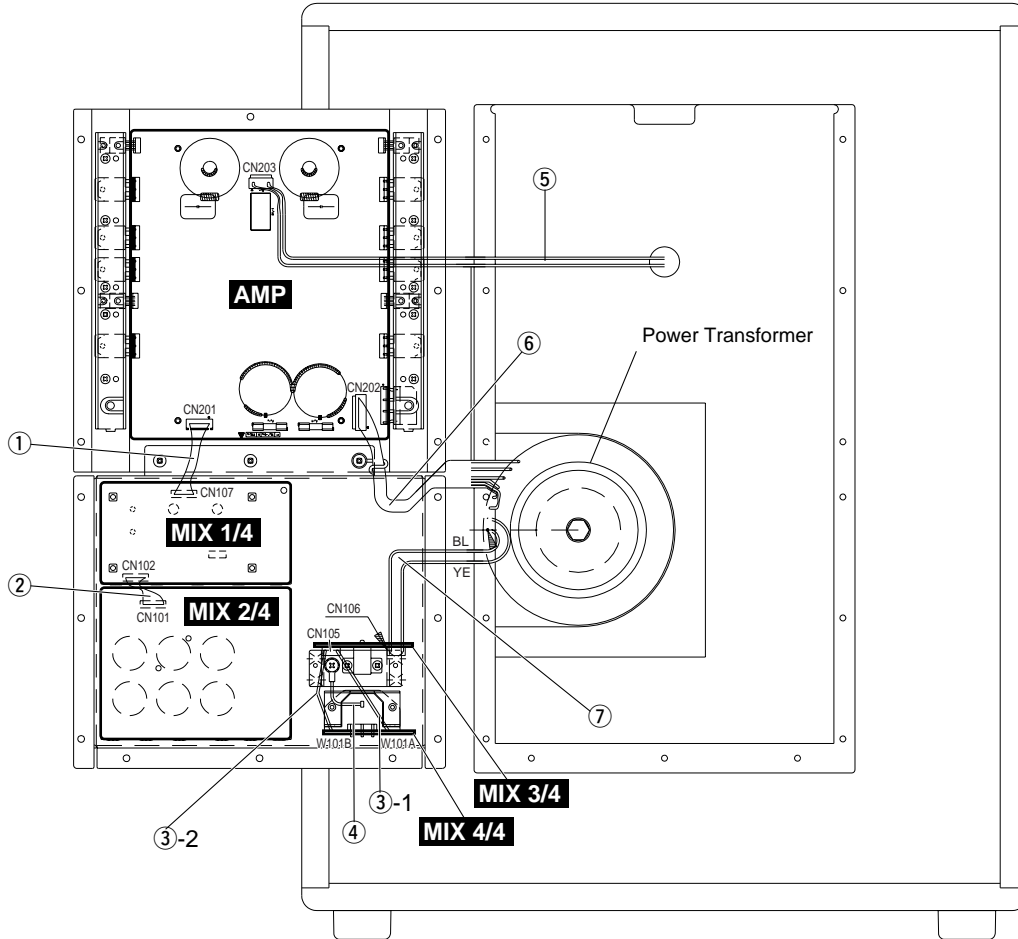


## DIMENSIONS

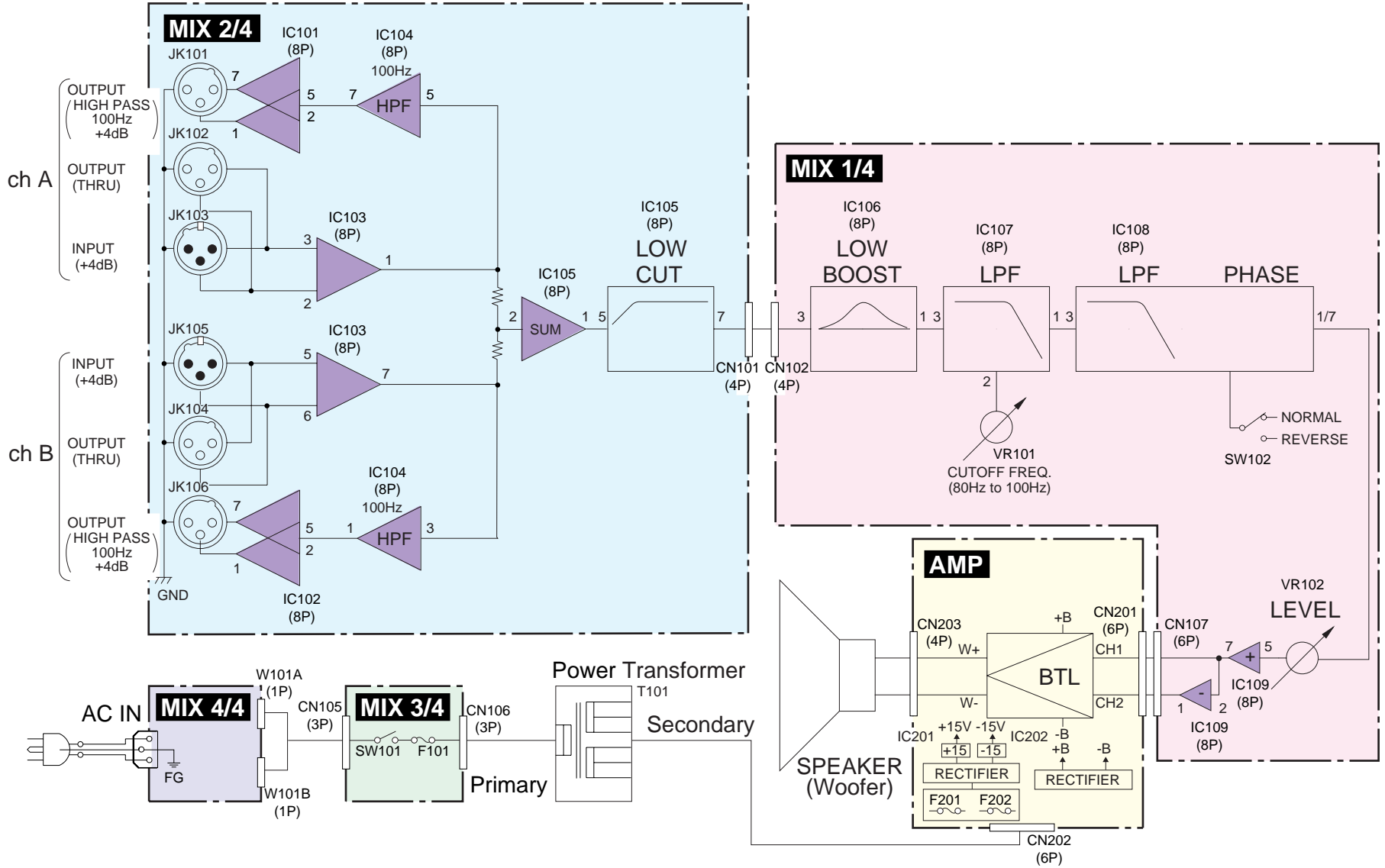


Units: mm

# WIRING



Location	Unit Name	Parts List Ref No.	Part No.	Connector Assembly	Destination		Remarks	Availability
①	MIX 1/4 Circuit Board	CN107	V8247600	—	MIX 1/4-CN107	AMP-CN201	6P-100L	○
②	MIX 2/4 Circuit Board	CN101	(V791650)	—	MIX 2/4-CN101	MIX 1/4-CN102	4P-60L	
③-1	MIX 4/4 Circuit Board	W101	(V606230)	AC	MIX 4/4-W101A	MIX 3/4-CN105	2P	
③-2					MIX 4/4-W101B			
④	MIX 4/4 Circuit Board	—	(V676790)	SGND	MIX 4/4-JK107	Rear Panel (GND)	1P	
⑤	Cabinet Assembly	C10	(MZY0144)	SP	Speaker	AMP-CN203	2P	
⑥	Power Transformer	—	—	—	Power Transformer	AMP-CN202	6P	
⑦	Power Transformer	—	—	—	Power Transformer	MIX 3/4-CN106	2P	



## DISASSEMBLY PROCEDURE

### 1. Speaker (Woofer) (Time required: About 10 minutes)

- 1-1 Remove the eight (8) screws marked [60]. The front grille assembly can then be removed. (Fig.1)
- 1-2 Remove the eight (8) cap screws marked [C90]. The speaker (woofer) can then be removed. (Fig.1)
- 1-3 Remove the SP connector assembly (red/black) installed to the speaker (woofer). (Photo.1)

<Front View>

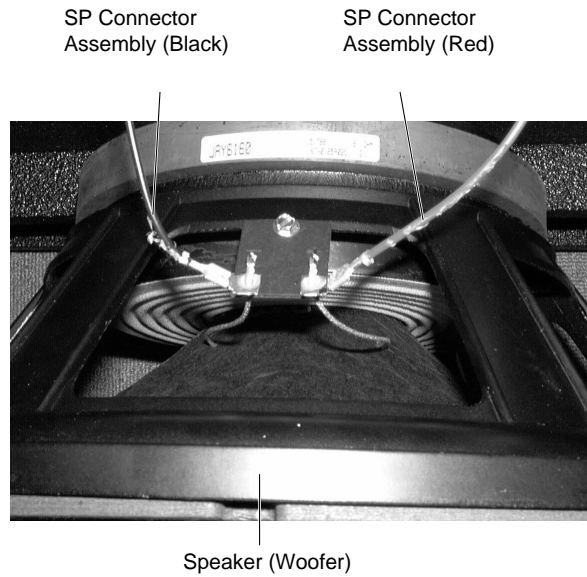
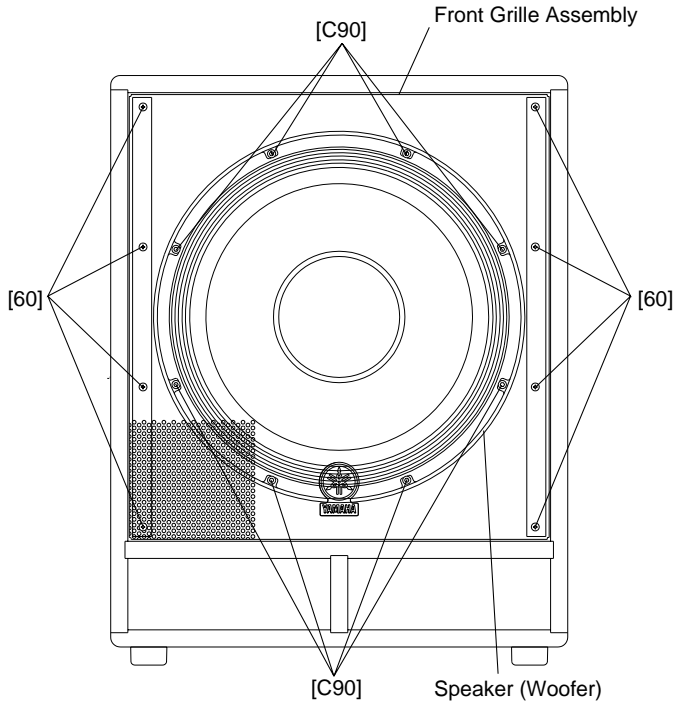


Photo.1

[60]: Cup Head Tapping Screw-1  
4.0X16 MFZN2BL (V8889600)

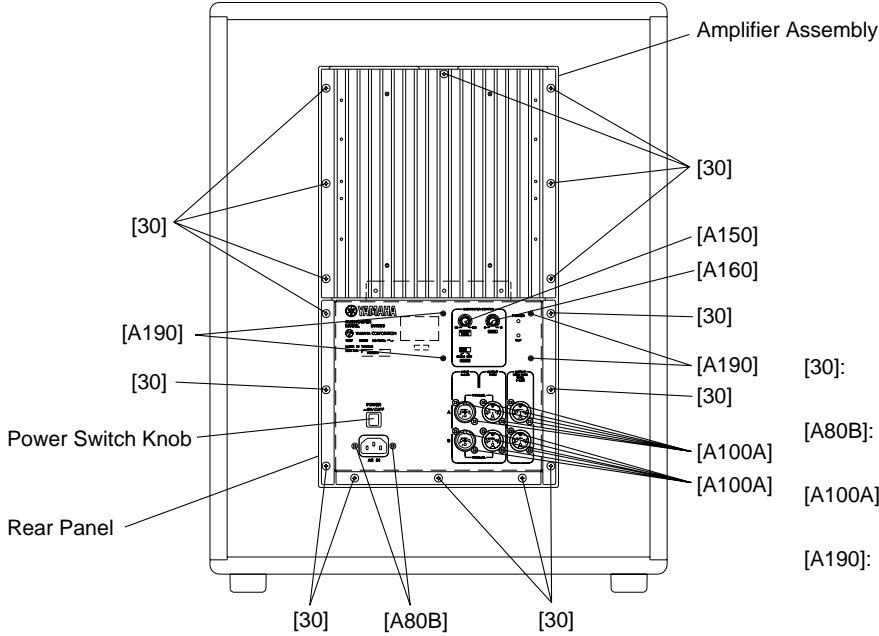
[C90]: Cap Screw  
#10X1-1/2 BL Z (EKY01010)

Fig.1



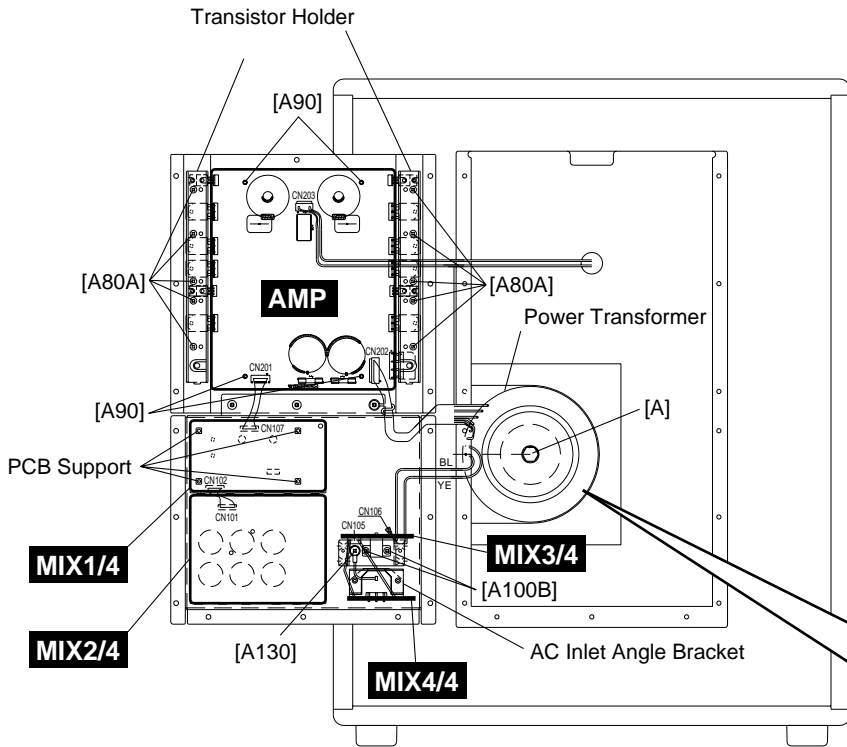
- 2. Amplifier Assembly (Time required: About 5 minutes)**
  - 2-1 Remove the sixteen (16) screws marked [30]. The amplifier assembly can then be removed. (Fig.2)
  
- 3. Power Transformer (Time required: About 10 minutes)**
  - 3-1 Remove the amplifier assembly. (See procedure 2.)
  - 3-2 Remove the hexagonal bolt marked [A]. The power transformer can then be removed. (Fig.3, 4)
  
- 4. AMP Circuit Board (Time required: About 15 minutes)**
  - 4-1 Remove the amplifier assembly. (See procedure 2.)
  - 4-2 Remove the five (5) screws marked [A80A] in right and left each. The right and left transistor holders can then be removed. (Fig.3)
  - 4-3 Remove the four (4) screws marked [A90]. The AMP circuit board can then be removed. (Fig.3)
  
- 5. MIX 1/4 Circuit Board (Time required: About 10 minutes)**
  - 5-1 Remove the knobs marked [A150] and [A160] from the rear panel side. (Fig.2)
  - 5-2 Remove the amplifier assembly. (See procedure 2.)
  - 5-3 Remove the four (4) screws marked [A190]. The MIX 1/4 circuit board can then be removed with the four (4) PCB supports. (Fig.2, 3)
  - 5-4 Remove the four (4) PCB supports from the MIX 1/4 circuit board. (Fig.3)
  
- 6. MIX 2/4 Circuit Board (Time required: About 15 minutes)**
  - 6-1 Remove the amplifier assembly. (See procedure 2.)
  - 6-2 Remove the twelve (12) screws marked [A100A]. The MIX 2/4 circuit board can then be removed. (Fig.2, 3)
  - 6-3 Remove the MIX 1/4 circuit board. (See procedure 5.)  
And then disconnect the connector (CN102) from the MIX 1/4 circuit board.
  
- 7. MIX 3/4 Circuit Board (Time required: About 10 minutes)**
  - 7-1 Remove the amplifier assembly. (See procedure 2.)
  - 7-2 Remove the two (2) screws marked [A100B]. The MIX 3/4 circuit board and the power switch knob can then be removed. (Fig.2, 3)
  
- 8. MIX 4/4 Circuit Board (Time required: About 10 minutes)**
  - 8-1 Remove the amplifier assembly. (See procedure 2.)
  - 8-2 Remove the two (2) screws marked [A80B] and the screw marked [A130]. The MIX 4/4 circuit board and the AC inlet angle bracket can then be removed. (Fig.2, 3)

<Rear View>



- [30]: Bind Head Screw  
4.0X25 MFZN2BL (VB923200)
- [A80B]: Bind Head Tapping Screw-B  
3.0X12 MFZN2BL (VQ074600)
- [A100A]: Bonding Tapping Screw-B  
3.0X8 MFZN2BL (VN413300)
- [A190]: Screw  
3.0X25 MFZNBL (V3289800)

Fig.2



- [A80A]: Bind Head Tapping Screw-B  
3.0X12 MFZN2BL (VQ074600)
- [A90]: Bind Head Screw  
SP 3.0X8 MFZN2Y (EG330290)
- [A100B]: Bonding Tapping Screw-B  
3.0X8 MFZN2BL (VN413300)
- [A130]: Bind Head Screw  
A4.0X8 MFZN2BL (VP156800)

Fig.3

**Power Transformer Installation**

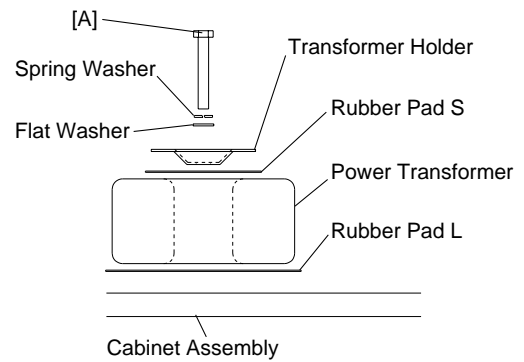
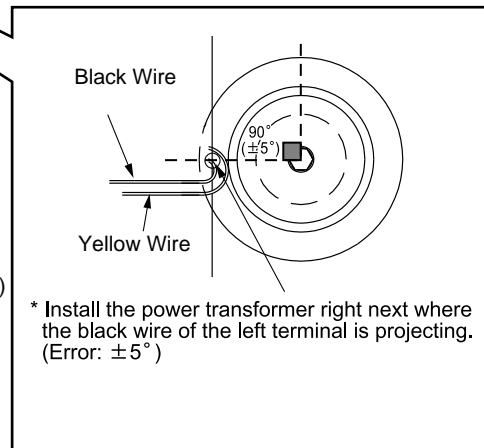
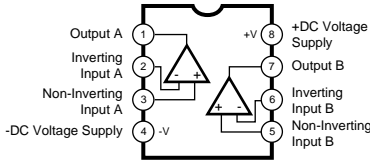


Fig.4

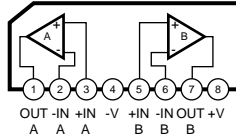


## IC BLOCK DIAGRAM

- **M5238AP** (XM085A00)  
Dual Operational Amplifier  
MIX 2/4: IC103



- **NJM2068L-D** (XM356A00)  
**NJM4580L** (XF195A00)  
Dual Operational Amplifier  
MIX 1/4: IC106-109  
MIX 2/4: IC101,102,104,105

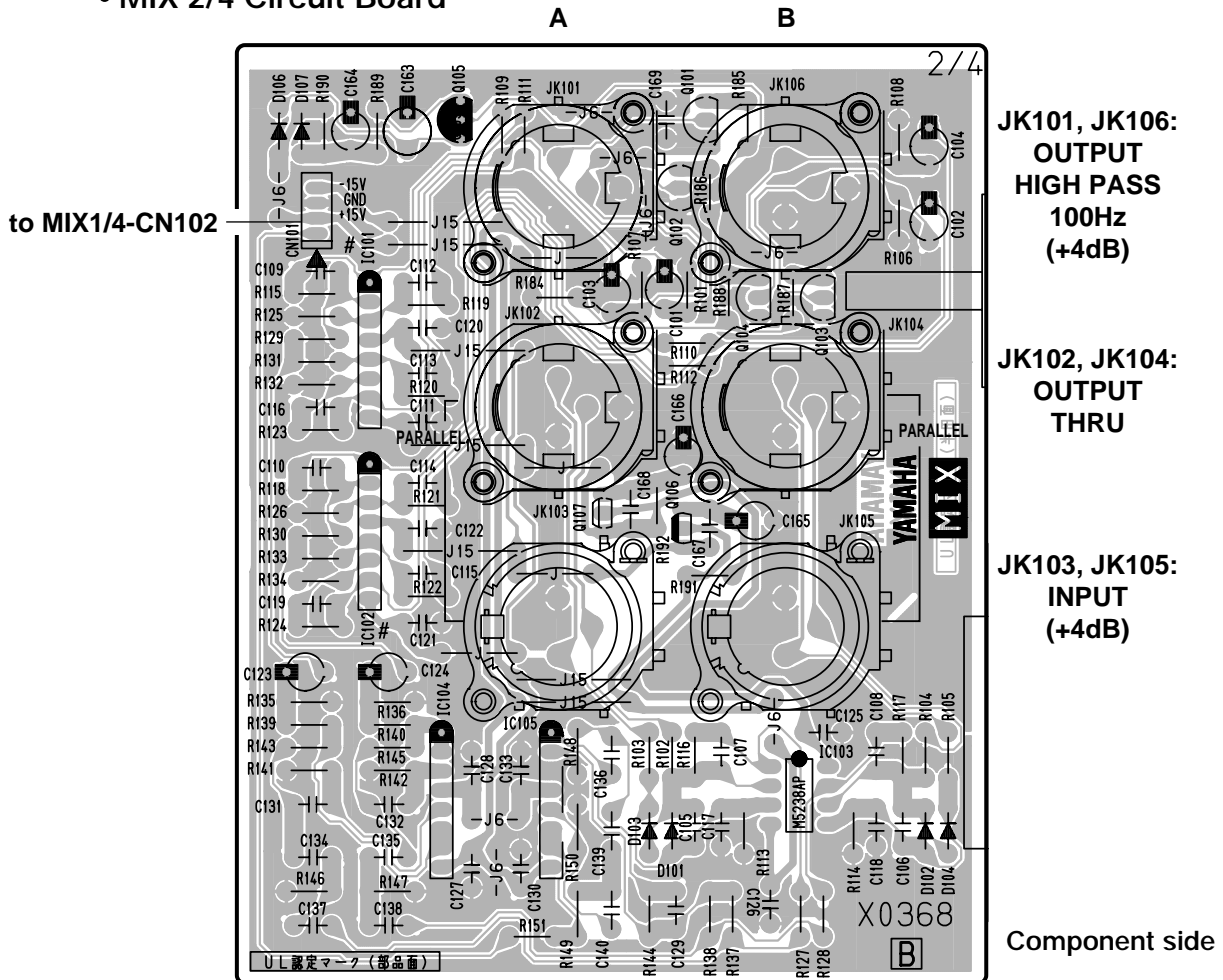


## CIRCUIT BOARDS

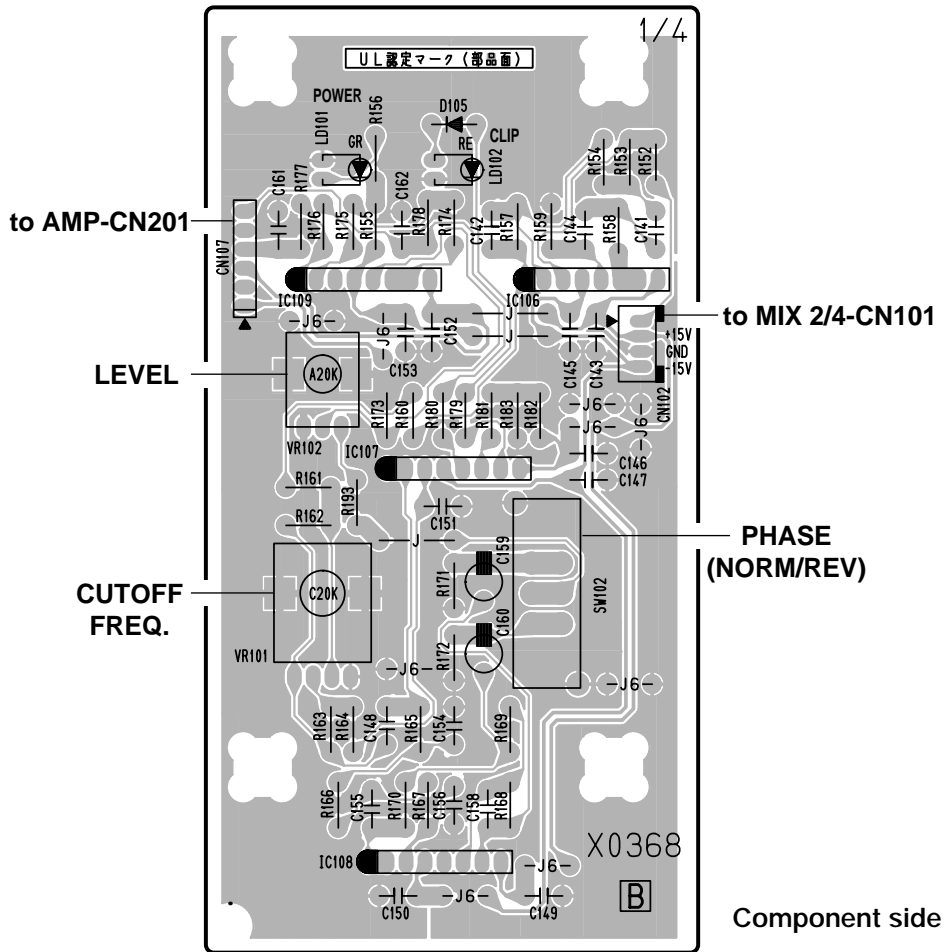
AMP Circuit Board (X0155B0) .....	13
MIX 1/4 Circuit Board (X0368B0) .....	12
MIX 2/4 Circuit Board (X0368B0) .....	11
MIX 3/4 Circuit Board (X0368B0) .....	12
MIX 4/4 Circuit Board (X0368B0) .....	12

Note: See parts list for details of circuit board component parts.

### • MIX 2/4 Circuit Board

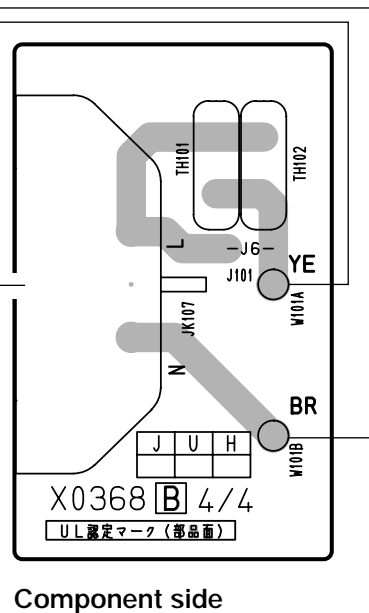
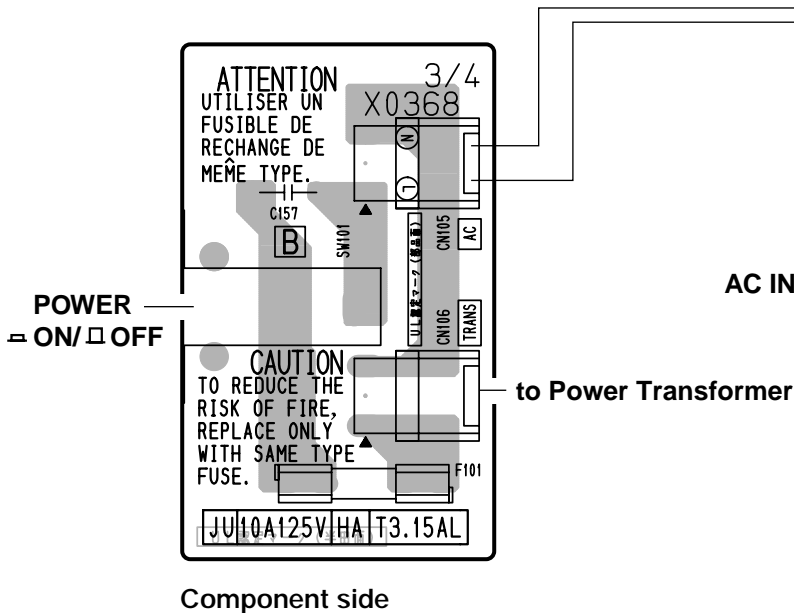


• MIX 1/4 Circuit Board



• MIX 3/4 Circuit Board

• MIX 4/4 Circuit Board





## INSPECTIONS

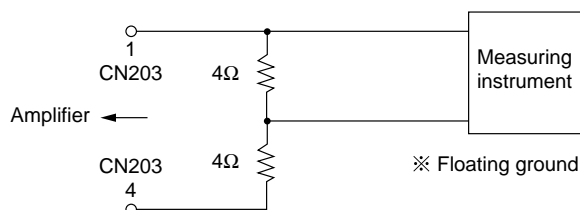
### 1. Measuring instruments

Oscilloscope, Level meter, Noise meter (with a DIN audio filter), Distortion rate meter, Wattmeter, Noninductive load resistance  $4\ \Omega \times 2$  (power capacity: beyond 500W)

### 2. Preparation

1) LEVEL: MAX  
CUTOFF FREQ.: MIN (80Hz)  
PHASE SW: NORM

2) Connecting the measuring instrument: Float the ground and then connect the measuring instrument to the midpoint of the noninductive load resistance ( $4\ \Omega \times 2$ ).



\* Disconnect the connector assembly connected with the speaker from CN203.

### 3. Checks and adjustments

#### 1) Muting operation

When turning the power switch on, check that the muting operation is cancelled within  $3 \pm 1$  seconds and that the relay turns on. In addition, check that the power indicator turns on.

#### 2) Adjusting the idling current

Adjust the VR201 and VR202 so that the voltage obtained between pins 1 and 2 of AMP PCB CN206 and CN207 is  $1 \pm 0.2$  mV respectively.

#### 3) Mid-point potential

When no signal is applied, check that the DC voltage of AMP PCB CN203 (VH4P) is  $\pm 100$  mV or less.

#### 4) Gain/Efficiency

When a 50 Hz, 0 dBu signal is input into [INPUT A and B] terminals with an output voltage of  $+28.3 \pm 1$  dBu, check that the primary power consumption is  $410 \pm 50$  W. (Be sure to check both [INPUT A] and [INPUT B] terminals.) In addition, check that the output voltage of the [OUTPUT THRU A and B] terminals is  $0 \pm 1$  dBu.

When a 1 kHz, 0 dBu signal is input into the [INPUT A and B] terminals, check that the output voltage of the [OUTPUT HIGH PASS A and B] terminals is  $0.2 \pm 0.5$  dBu. (Be sure to apply a  $600\ \Omega$  load with balance when performing this measurement.)

#### 5) Total harmonic distortion rate

When a 100 Hz signal is input into the [INPUT A] terminal and the output voltage is 32.2 dBu, check that the total harmonic distortion rate is  $\text{THD} + \text{N} = 1\%$  or less.

### 6) Output noise level

Ground the [INPUT A and B] terminals with  $600\ \Omega$  of resistance, measure the noise level of the output terminal, and then check that the maximum noise level is  $-65$  dBu or less.

In addition, measure the noise level from [OUTPUT HIGH PASS A and B] with balance and check that it is  $-90$  dBu or less. Use a DIN audio filter with the noise meter.

### 7) Frequency response

When a 20 Hz, 30 Hz, 50 Hz, or 100 Hz ( $-20$  dBu) signal is input into the [INPUT A] terminal and the 30 Hz and  $-20$  dBu input time of the output voltage is the standard (0 dB), check that the frequency response is as shown in the following table.

Measure the frequency response with the [CUTOFF FREQ.] at 100 Hz (MAX) and 80 Hz (MIN).

Frequency (Hz)	CUTOFF FREQ.: 100Hz	CUTOFF FREQ.: 80Hz
20	$-8.0 \pm 2.0\text{dB}$	$-8.0 \pm 2.0\text{dB}$
30	0dB	0dB
50	$+6.5 \pm 2.0\text{dB}$	$+5.5 \pm 2.0\text{dB}$
100	$-0.2 \pm 2.0\text{dB}$	$-5.8 \pm 2.0\text{dB}$

### 8) PHASE switch

When the [PHASE] switch is set to REV, check that the phase changes by 180 degrees to accommodate the input signal.

### 9) Protection circuit

When DC +5 V (power output resistance =  $10\ \text{k}\Omega$ ) is applied between pins 1 and 2 of AMP PCB CN209, check that the relay turns off within 1 second.

In addition, when the input signal is cut, check that the signal automatically returns within 10 seconds.

### 10) Clip indicator

When a 50 Hz,  $+4.3$  dBu signal is input into the [INPUT A] terminal, check that the red LED is on.

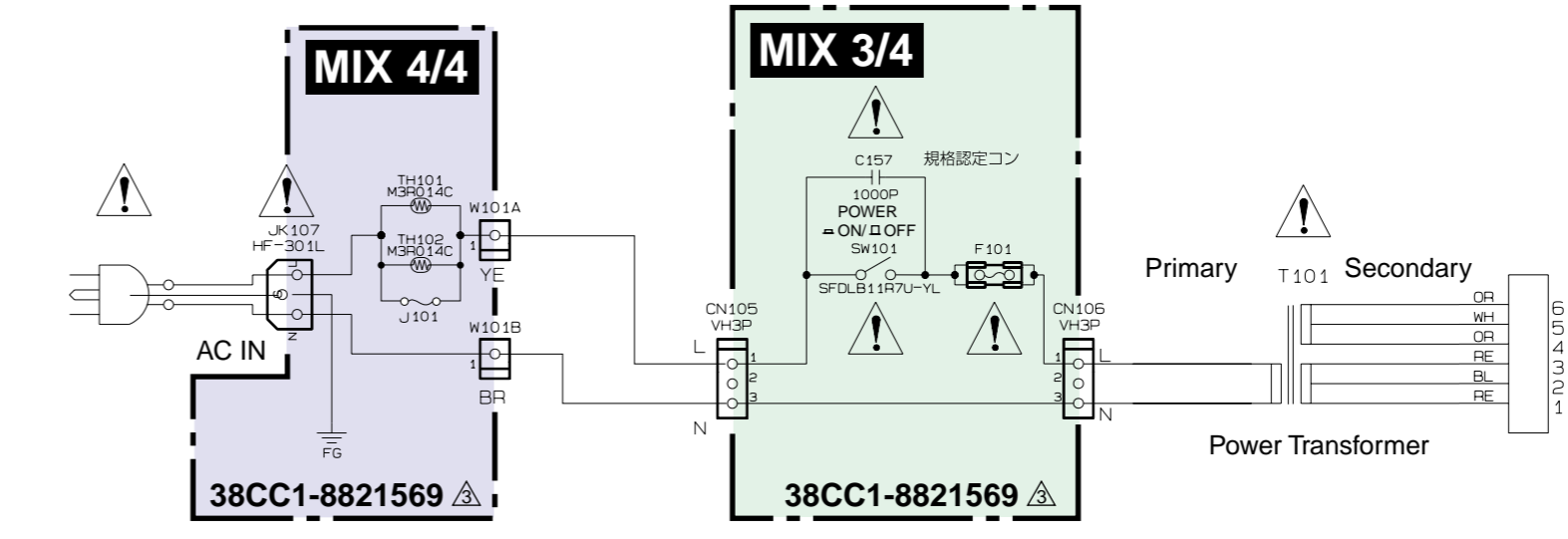
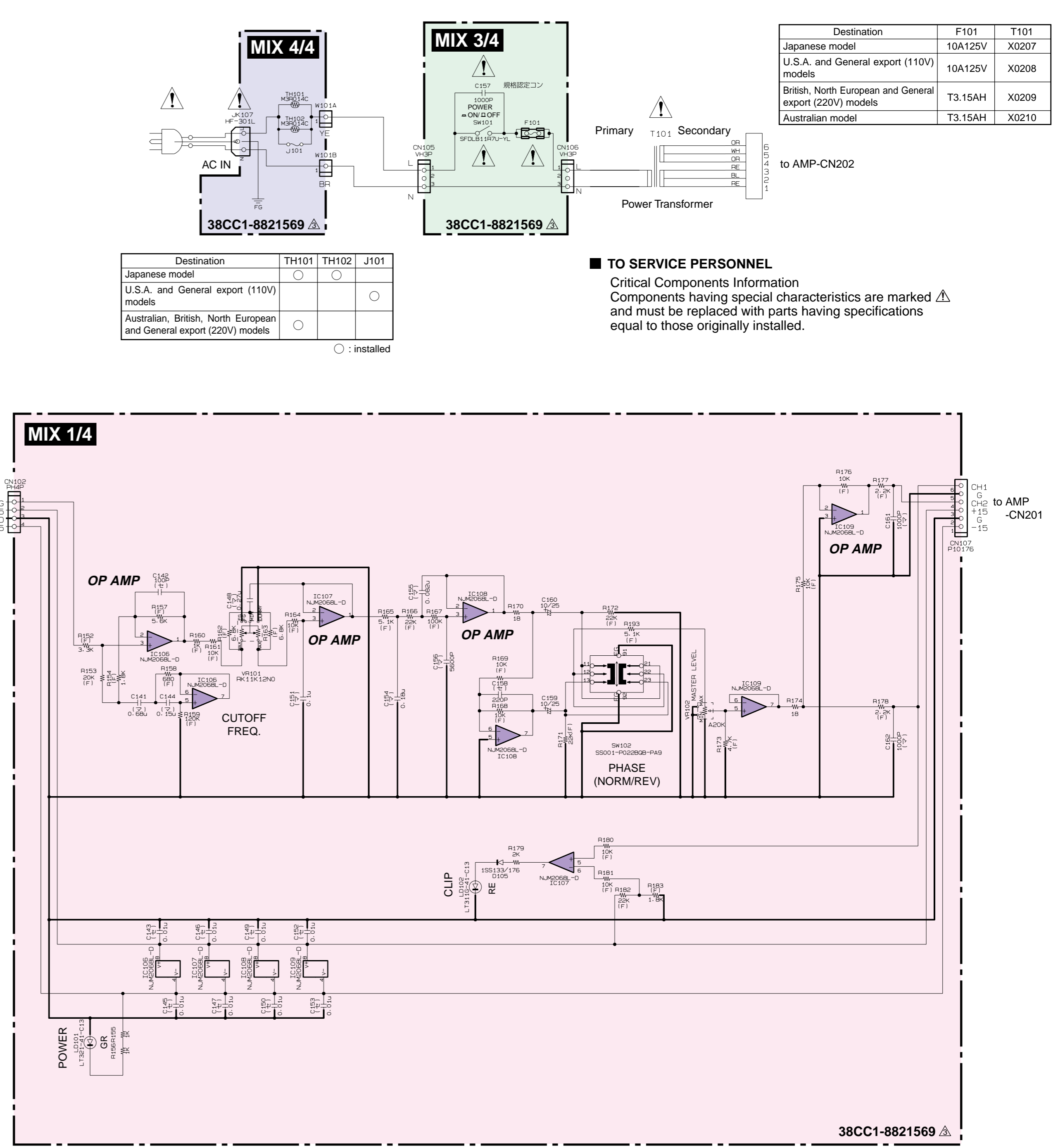
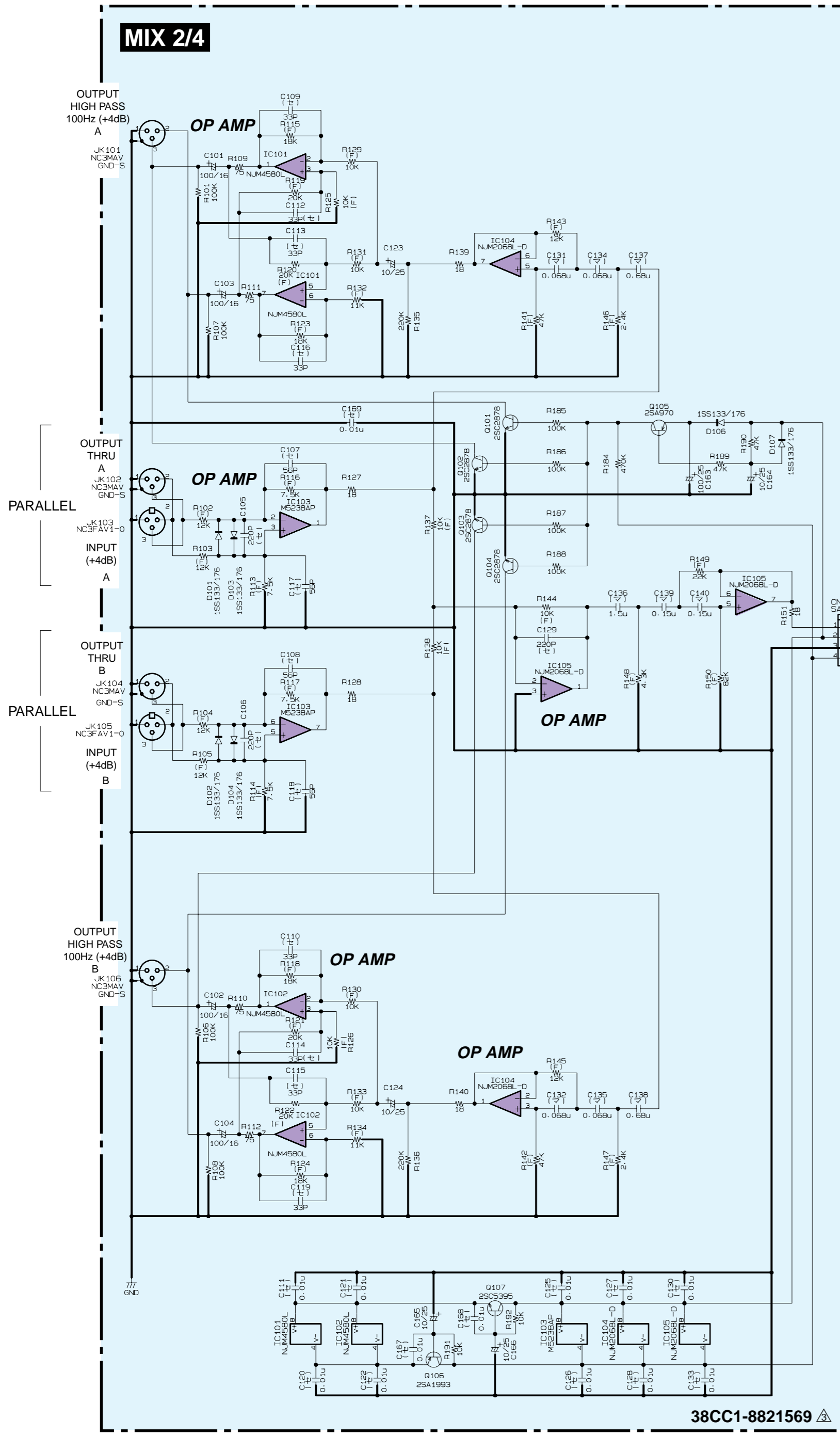
### 4. Checking after assembly

1) When a 20–500 Hz, 0.1 Vrms ( $-17.8$  dBu) sine wave are input into the [INPUT A] terminal, check that no abnormality occurs, such as voice coil contact, air leakage, and vibration. In addition, when each knob is moved, check that the sound volume and quality vary smoothly and that no noise is produced.

#### 2) Speaker output phase

Check that the output is in positive phase with respect to the input.





Destination	TH101	TH102	J101
Japanese model	○	○	
U.S.A. and General export (110V) models			○
Australian, British, North European and General export (220V) models	○		

○ : installed

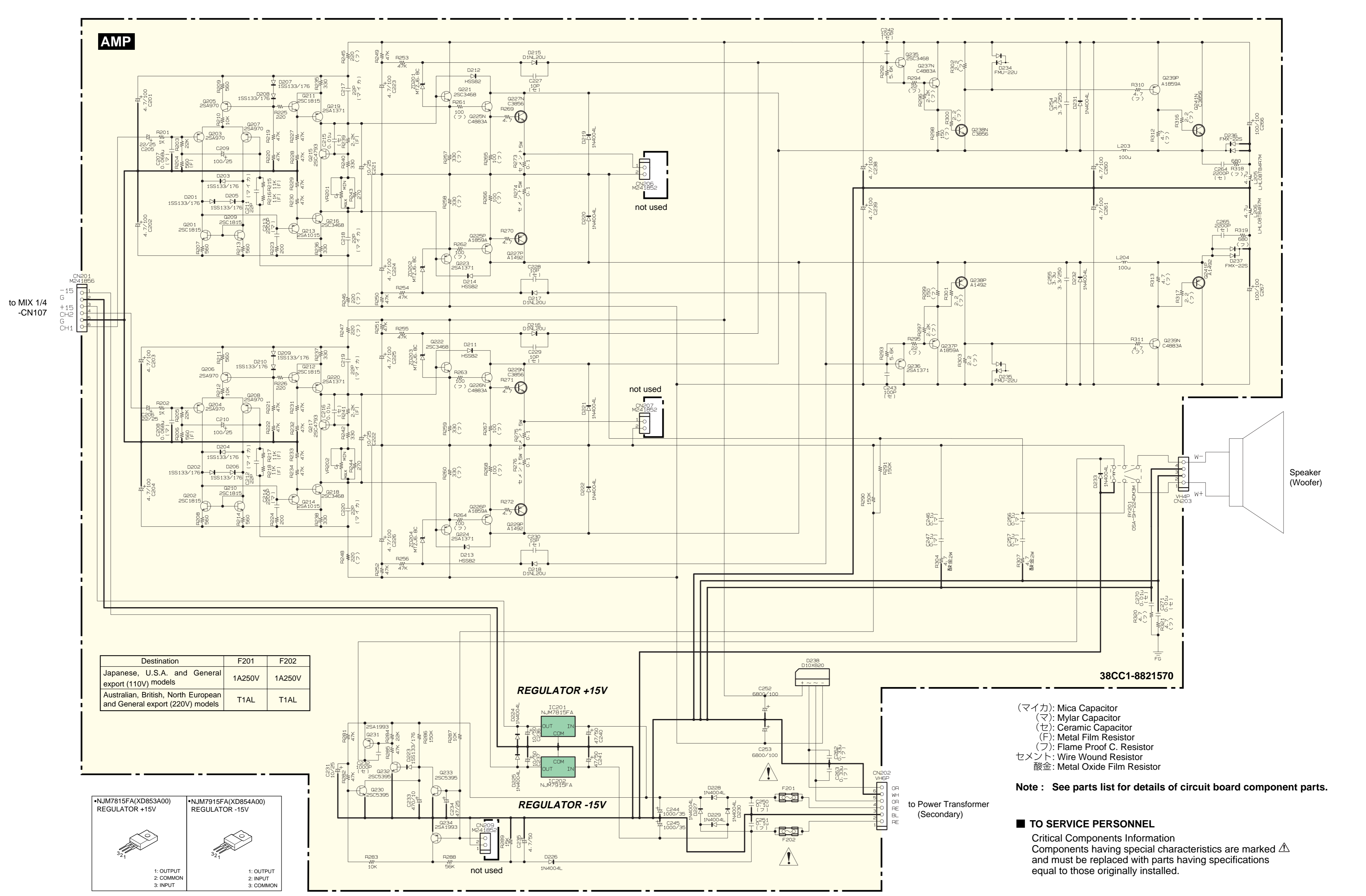
Destination	F101	T101
Japanese model	10A125V	X0207
U.S.A. and General export (110V) models	10A125V	X0208
British, North European and General export (220V) models	T3.15AH	X0209
Australian model	T3.15AH	X0210

**TO SERVICE PERSONNEL**  
Critical Components Information  
Components having special characteristics are marked  $\Delta$  and must be replaced with parts having specifications equal to those originally installed.

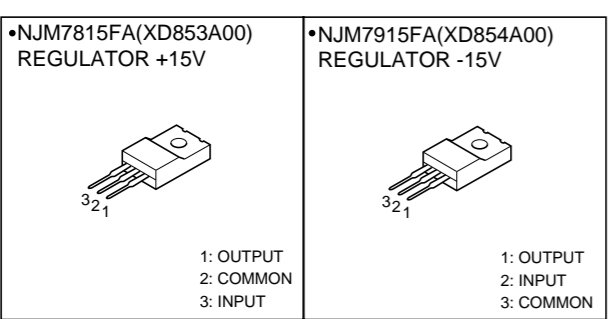
規格認定コン: Capacitor  
(マ): Mylar Capacitor  
(セ): Ceramic Capacitor  
(F): Metal Film Resistor

Note : See parts list for details of circuit board component parts.





Destination	F201	F202
Japanese, U.S.A. and General export (110V) models	1A250V	1A250V
Australian, British, North European and General export (220V) models	T1AL	T1AL



- (マイカ): Mica Capacitor
- (マ): Mylar Capacitor
- (セ): Ceramic Capacitor
- (F): Metal Film Resistor
- (フ): Flame Proof C. Resistor
- セメント: Wire Wound Resistor
- 酸化: Metal Oxide Film Resistor

Note: See parts list for details of circuit board component parts.

**TO SERVICE PERSONNEL**  
 Critical Components Information  
 Components having special characteristics are marked  $\Delta$  and must be replaced with parts having specifications equal to those originally installed.

# SUBWOOFER SW500 PARTS LIST


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## Notes : DESTINATION ABBREVIATIONS

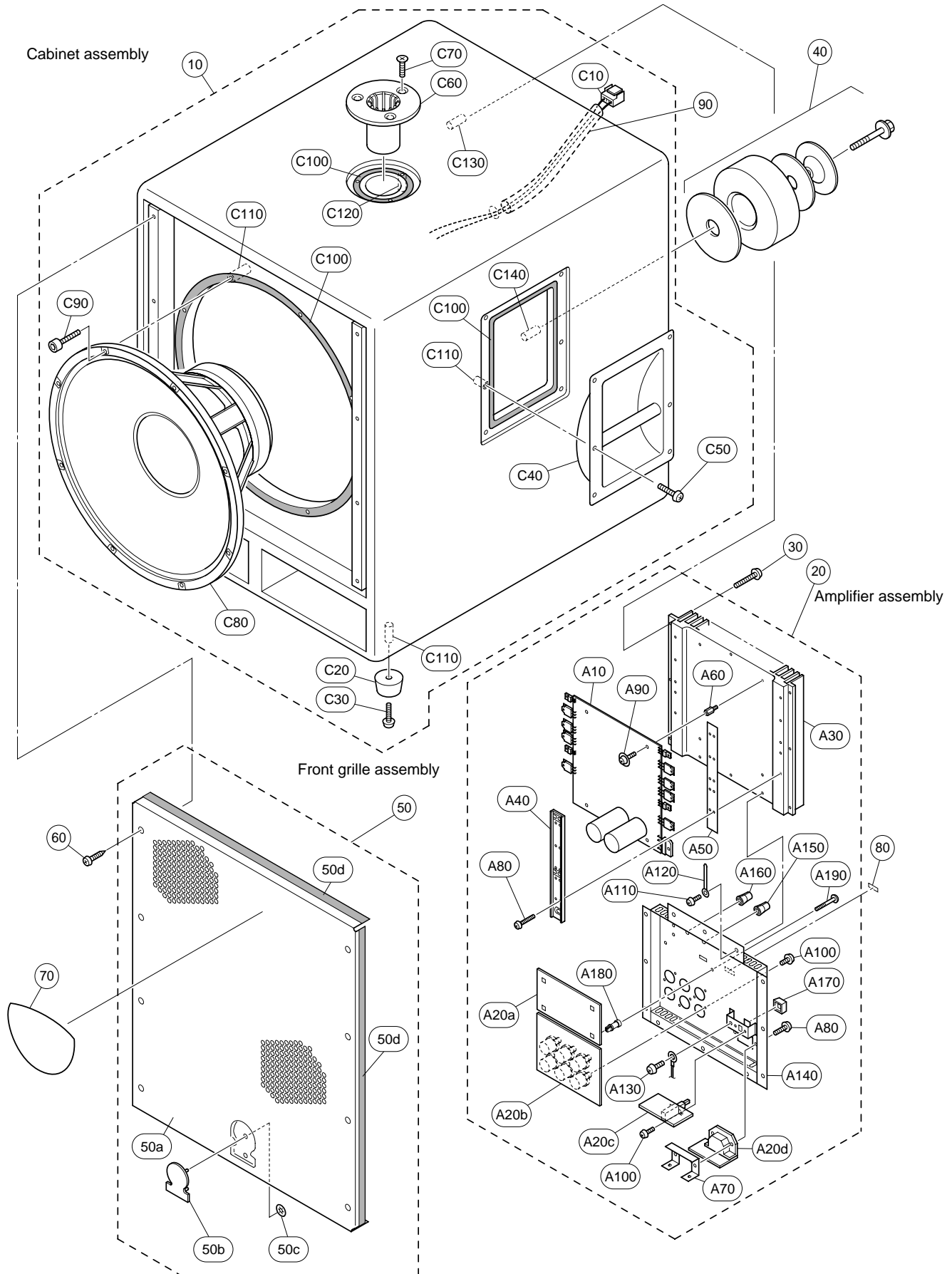
A : Australian model	M: South African model
B : British model	O : Chinese model
C : Canadian model	Q : South-east Asia model
D : German model	T : Taiwan model
E : European model	U : U.S.A. model
F : French model	V : General export model (110V)
H : North European model	W: General export model (220V)
I : Indonesian model	N,X: General export model
J : Japanese model	Y : Export model

## ■ WARNING

Components having special characteristics are marked  and must be replaced with parts having specification equal to those originally installed.

- The numbers "QTY" show quantities for each unit.
- The parts with "--" in "PART NO." are not available as spare parts.
- This mark "}" in the REMARKS column means these parts are interchangeable.
- The second letter of the shaded (■) part number is O, not zero.
- The second letter of the shaded (■) part number is I, not one.

# OVERALL ASSEMBLY















REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
R297	VZ008700	Flame Proof C. Resistor	2.2K 1/4 J			01
R298	VZ008600	Flame Proof C. Resistor	150.0 1/4 J			01
R299	VZ008600	Flame Proof C. Resistor	150.0 1/4 J			01
R300	VV313600	Flame Proof C. Resistor	2.2 1/4 J			01
-303	VV313600	Flame Proof C. Resistor	2.2 1/4 J			01
R304	V2961000	Metal Oxide Film Resistor	4.7 2W J			01
R307	V2961000	Metal Oxide Film Resistor	4.7 2W J			01
R310	VV276700	Flame Proof C. Resistor	4.7 1/4 J			01
-313	VV276700	Flame Proof C. Resistor	4.7 1/4 J			01
R316	VV313600	Flame Proof C. Resistor	2.2 1/4 J			01
R317	VV313600	Flame Proof C. Resistor	2.2 1/4 J			01
R318	VV313900	Flame Proof C. Resistor	680.0 1/4 J			01
R319	VV313900	Flame Proof C. Resistor	680.0 1/4 J			01
R320	VV276700	Flame Proof C. Resistor	4.7 1/4 J			01
R321	VV276700	Flame Proof C. Resistor	4.7 1/4 J			01
RY201	VV315400	Relay	DC24V OSASH224DM3M			06
VR201	VA787500	Trimmer Potentiometer	B 470 3P RHEOA			01
VR202	VA787500	Trimmer Potentiometer	B 470 3P RHEOA			01
ZD201	VG438400	Zener Diode	MTZ J 6.8C 6.8V			01
-204	VG438400	Zener Diode	MTZ J 6.8C 6.8V			01
*	AAX31260	Circuit Board	MIX 1/4	(V791620,V880400,V791640) (X0368B0)		
	VV307300	LED Spacer	MX12/4		2	01
C141	VV064300	Monolithic Mylar Capacitor	0.68 50V J			01
C142	V3280500	Ceramic Capacitor-B	100P 500 K			01
C143	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
C144	V7079900	Monolithic Mylar Capacitor	0.15 50V J			01
C145	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
-147	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
* C148	VV063800	Monolithic Mylar Capacitor	0.27 50V J			01
C149	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
C150	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
C151	VV062800	Mylar Capacitor	0.1 50V J			01
C152	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
C153	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
C154	V7080000	Monolithic Mylar Capacitor	0.18 50V J			01
C155	VV062700	Mylar Capacitor	0.082 50V J			01
C156	VV061000	Mylar Capacitor	5600P 50V J			01
C158	VZ353600	Ceramic Cap.-B	220P 50V K			01
C159	UR847100	Electrolytic Cap.	10.00 25.0V			01
C160	UR847100	Electrolytic Cap.	10.00 25.0V			01
C161	VV059800	Mylar Capacitor	1000P 50V J			08
C162	VV059800	Mylar Capacitor	1000P 50V J			08
CN102	VV066400	Connector Base Post	M2426XX 4P TE			01
* CN107	V8247600	Connector Assembly	1017&24185 6P 100L			01
D105	VD631600	Diode	1SS133,176,HSS104			01
IC106	XM356A00	IC	NJM2068L-D	OP AMP		02
-109	XM356A00	IC	NJM2068L-D	OP AMP		02
LD101	VV621000	LED Green	LT321-41-C13	POWER		01
LD102	VV620800	LED Red	LT311G-41-C13	CLIP		01
R152	V4404000	Metal Film Resistor	3.3K 1/4 F			01
R153	VV065800	Metal Film Resistor	20K 1/4 F			05
R154	V2336300	Metal Film Resistor	1.8K 1/4 F			01
R155	HF456100	Carbon Resistor	1.0K 1/4 J			01
R156	HF456100	Carbon Resistor	1.0K 1/4 J			01
R157	V2440300	Metal Film Resistor	5.6K 1/4 F			01
R158	VV312800	Metal Film Resistor	680.0 1/4 F			01
R159	V6570200	Metal Film Resistor	120K 1/4 F			01
R160	V3029000	Metal Film Resistor	1K 1/4 F			01
R161	VV065500	Metal Film Resistor	10K 1/4 F			01
R162	VV065300	Metal Film Resistor	6.8K 1/4 F			01
R163	VV065300	Metal Film Resistor	6.8K 1/4 F			01
R164	VV065500	Metal Film Resistor	10K 1/4 F			01
R165	VZ010300	Metal Film Resistor	5.1K 1/4 F			01
R166	VV312900	Metal Film Resistor	22K 1/4 F			01
R167	V2348800	Metal Film Resistor	100K 1/4 F			01
R168	VV065500	Metal Film Resistor	10K 1/4 F			01
R169	VV065500	Metal Film Resistor	10K 1/4 F			01
R170	HF454180	Carbon Resistor	18.0 1/4 J			01

\*: New Parts

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REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
R171	VV312900	Metal Film Resistor	22K 1/4 F			01
R172	VV312900	Metal Film Resistor	22K 1/4 F			01
R173	VV065200	Metal Film Resistor	4.7K 1/4 F			05
R174	HF454180	Carbon Resistor	18.0 1/4 J			01
R175	VV065500	Metal Film Resistor	10K 1/4 F			01
R176	VV065500	Metal Film Resistor	10K 1/4 F			01
R177	VV065100	Metal Film Resistor	2.2K 1/4 F			01
R178	VV065100	Metal Film Resistor	2.2K 1/4 F			01
R179	HF456200	Carbon Resistor	2.0K 1/4 J			01
R180	VV065500	Metal Film Resistor	10K 1/4 F			01
R181	VV065500	Metal Film Resistor	10K 1/4 F			01
R182	VV312900	Metal Film Resistor	22K 1/4 F			01
R183	V2336300	Metal Film Resistor	1.8K 1/4 F			01
R193	VZ010300	Metal Film Resistor	5.1K 1/4 F			01
* SW102	V7909300	Slide Switch	SS001-P022BQB-PA9	PHASE (NORM/REV)		
* VR101	V7757200	Rotary Variable Resistor	C20K RK11K12NO-30L	CUTOFF FREQ.		
VR102	V5521500	Rotary Variable Resistor	A 20.0K RK09D113	LEVEL		01
*	AAX31270	Circuit Board	MIX 2/4	(V791620,V880400,V791640) (X0368B0)		
C101	UR838100	Electrolytic Cap.	100.00 16.0V			01
-104	UR838100	Electrolytic Cap.	100.00 16.0V			01
C105	VZ353600	Ceramic Cap.-B	220P 50V K			01
C106	VZ353600	Ceramic Cap.-B	220P 50V K			01
C107	VZ353300	Ceramic Capacitor-SL	56P 50V J			01
C108	VZ353300	Ceramic Capacitor-SL	56P 50V J			01
C109	VZ353000	Ceramic Capacitor-SL	33P 50V J			01
C110	VZ353000	Ceramic Capacitor-SL	33P 50V J			01
C111	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
C112	VZ353000	Ceramic Capacitor-SL	33P 50V J			01
-116	VZ353000	Ceramic Capacitor-SL	33P 50V J			01
C117	VZ353300	Ceramic Capacitor-SL	56P 50V J			01
C118	VZ353300	Ceramic Capacitor-SL	56P 50V J			01
C119	VZ353000	Ceramic Capacitor-SL	33P 50V J			01
C120	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
-122	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
C123	UR847100	Electrolytic Cap.	10.00 25.0V			01
C124	UR847100	Electrolytic Cap.	10.00 25.0V			01
C125	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
-128	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
C129	VZ353600	Ceramic Cap.-B	220P 50V K			01
C130	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
C131	VV062600	Mylar Capacitor	0.068 50V J			01
C132	VV062600	Mylar Capacitor	0.068 50V J			01
C133	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
C134	VV062600	Mylar Capacitor	0.068 50V J			01
C135	VV062600	Mylar Capacitor	0.068 50V J			01
* C136	VV064600	Monolithic Mylar Capacitor	1.5 50V J			
C137	VV064300	Monolithic Mylar Capacitor	0.68 50V J			
C138	VV064300	Monolithic Mylar Capacitor	0.68 50V J			
C139	V7079900	Monolithic Mylar Capacitor	0.15 50V J			
C140	V7079900	Monolithic Mylar Capacitor	0.15 50V J			
C163	UR848100	Electrolytic Cap.	100.00 25.0V			01
C164	UR847100	Electrolytic Cap.	10.00 25.0V			01
-166	UR847100	Electrolytic Cap.	10.00 25.0V			01
C167	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
-169	VZ354000	Ceramic Capacitor-F	0.0100 50V Z			01
CN101	--	Connector Assembly	1018&2426 4P 60L	(V791650)		
D101	VD631600	Diode	1SS133,176,HSS104			01
-104	VD631600	Diode	1SS133,176,HSS104			01
D106	VD631600	Diode	1SS133,176,HSS104			01
D107	VD631600	Diode	1SS133,176,HSS104			01
IC101	XF195A00	IC	NJM4580L	OP AMP		04
IC102	XF195A00	IC	NJM4580L	OP AMP		04
IC103	XM085A00	IC	M5238AP	OP AMP		03
IC104	XM356A00	IC	NJM2068L-D	OP AMP		02
IC105	XM356A00	IC	NJM2068L-D	OP AMP		02
JK101	VU805100	XLM Connector	XLR NC3MAV	OUTPUT HIGH PASS 100Hz A		04
JK102	VU805100	XLM Connector	XLR NC3MAV	OUTPUT THRU A		04
JK103	VU805200	XLM Connector	XLR NC3FAV1-0	INPUT A		04

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REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
JK104	VU805100	XLM Connector	XLR NC3MAV	OUTPUT THRU B		04
JK105	VU805200	XLM Connector	XLR NC3FAV1-0	INPUT B		04
JK106	VU805100	XLM Connector	XLR NC3MAV	OUTPUT HIGH PASS 100Hz B		04
Q101	IC287820	Transistor	2SC2878 A,B			01
-104	IC287820	Transistor	2SC2878 A,B			01
Q105	IA097030	Transistor	2SA970 GR,BL			01
Q106	V2797600	Transistor	2SA1993 E,F			01
Q107	V2797700	Transistor	2SC5395 E,F			01
R101	HF458100	Carbon Resistor	100.0K 1/4 J			01
R102	V2440400	Metal Film Resistor	12K 1/4 F			01
-105	V2440400	Metal Film Resistor	12K 1/4 F			01
R106	HF458100	Carbon Resistor	100.0K 1/4 J			01
-108	HF458100	Carbon Resistor	100.0K 1/4 J			01
R109	HF454750	Carbon Resistor	75.0 1/4 J			01
-112	HF454750	Carbon Resistor	75.0 1/4 J			01
R113	V4404200	Metal Film Resistor	7.5K 1/4 F			
R114	V4404200	Metal Film Resistor	7.5K 1/4 F			
R115	VV065700	Metal Film Resistor	18K 1/4 F			
R116	V4404200	Metal Film Resistor	7.5K 1/4 F			
R117	V4404200	Metal Film Resistor	7.5K 1/4 F			
R118	VV065700	Metal Film Resistor	18K 1/4 F			
R119	VV065800	Metal Film Resistor	20K 1/4 F			05
-122	VV065800	Metal Film Resistor	20K 1/4 F			05
R123	VV065700	Metal Film Resistor	18K 1/4 F			
R124	VV065700	Metal Film Resistor	18K 1/4 F			
R125	VV065500	Metal Film Resistor	10K 1/4 F			01
R126	VV065500	Metal Film Resistor	10K 1/4 F			01
R127	HF454180	Carbon Resistor	18.0 1/4 J			01
R128	HF454180	Carbon Resistor	18.0 1/4 J			01
R129	VV065500	Metal Film Resistor	10K 1/4 F			01
-131	VV065500	Metal Film Resistor	10K 1/4 F			01
R132	VV065600	Metal Film Resistor	11K 1/4 F			05
R133	VV065500	Metal Film Resistor	10K 1/4 F			01
R134	VV065600	Metal Film Resistor	11K 1/4 F			05
R135	HF458220	Carbon Resistor	220.0K 1/4 J			01
R136	HF458220	Carbon Resistor	220.0K 1/4 J			01
R137	VV065500	Metal Film Resistor	10K 1/4 F			01
R138	VV065500	Metal Film Resistor	10K 1/4 F			01
R139	HF454180	Carbon Resistor	18.0 1/4 J			01
R140	HF454180	Carbon Resistor	18.0 1/4 J			01
R141	VV066100	Metal Film Resistor	47K 1/4 F			01
R142	VV066100	Metal Film Resistor	47K 1/4 F			01
R143	V2440400	Metal Film Resistor	12K 1/4 F			01
R144	VV065500	Metal Film Resistor	10K 1/4 F			01
R145	V2440400	Metal Film Resistor	12K 1/4 F			01
R146	V2440200	Metal Film Resistor	2.4K 1/4 F			01
R147	V2440200	Metal Film Resistor	2.4K 1/4 F			01
R148	V2386900	Metal Film Resistor	4.3K 1/4 F			01
R149	VV312900	Metal Film Resistor	22K 1/4 F			01
R150	V5909400	Metal Film Resistor	82K 1/4 F			
R151	HF454180	Carbon Resistor	18.0 1/4 J			01
R184	HF458470	Carbon Resistor	470.0K 1/4 J			01
R185	HF458100	Carbon Resistor	100.0K 1/4 J			01
-188	HF458100	Carbon Resistor	100.0K 1/4 J			01
R189	HF457470	Carbon Resistor	47.0K 1/4 J			01
R190	HF457470	Carbon Resistor	47.0K 1/4 J			01
R191	HF457100	Carbon Resistor	10.0K 1/4 J			01
R192	HF457100	Carbon Resistor	10.0K 1/4 J			01
*	AAX31280	Circuit Board	MIX 3/4	J,U,V (V791620,V880400) (X0368B0)		
*	AAX31290	Circuit Board	MIX 3/4	H,B,W,A (V791640)(X0368B0)		
	VV319600	Fuse Holder	CQ-05CT		2	01
△	C157	VV314800	Capacitor	1000P 400V J.U.C.S		01
	CN105	LB933030	Base Post Connector	VH 3P SE		01
	CN106	LB933030	Base Post Connector	VH 3P SE		01
△	F101	VS823400	Fuse	10.00A JUC	J,U,V	01
△	F101	VV071700	Fuse	TSD 3.15A 250V SEM	H,B,W,A	01
△	SW101	VV089200	Push Switch	SFDLB11R7U-YL U,C,	POWER ON/OFF	03

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REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
*	AAX31300	Circuit Board	MIX 4/4	J (V791620)(X0368B0)		
*	AAX31600	Circuit Board	MIX 4/4	U,V (V880400)(X0368B0)		
*	AAX31610	Circuit Board	MIX 4/4	H,B,W,A (V791640)(X0368B0)		
J101	--	Jumper Wire	0.55	U,V (VA07890)		
⚠ JK107	V5817000	AC Inlet	HF-301L 3P	AC IN		
TH101	V8788200	Power Thermistor	M3R014C	J,H,B,W,A		
TH102	V8788200	Power Thermistor	M3R014C	J		
W101	--	Connector Assembly	AC 2P(VH 3P)	(V606230)		
	--	GND Wire	SGND	(V676790)		
*	JAY61600	Speaker	380mm	Woofers		34
⚠ *	X0207A00	Power Transformer		J		
⚠ *	X0208A00	Power Transformer		U,V		
⚠ *	X0209A00	Power Transformer		H,B,W		
⚠ *	X0210A00	Power Transformer		A		
⚠	V7240300	AC Cord	J VCTF 0.75X3	J		
⚠	V6284300	AC Cord	UC SJT#18X3	U,V		05
⚠	V6284400	AC Cord	E H05VV-FX3 0.75	H,W,A		06
⚠	V6283900	AC Cord	BS H05VV-F3X0.75	B		08

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