

Service Manual

Wireless Subwoofer Unit

Model No. **SB-WA500PP**

Product Color: (K)...Black Type



SB-WA500

WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE


There are special components used in this equipment which are important for safety. These parts are marked by  in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

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1 Safety Precautions

1.1. General Guidelines

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, ensure that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, check for leakage current checks to prevent from being exposed to shock hazards.

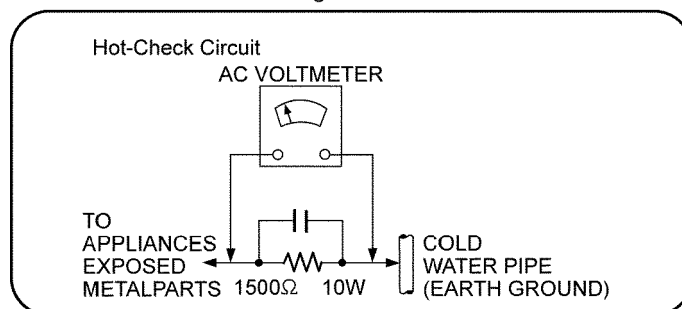
1.1.1. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Using an ohmmeter measure the resistance value, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1M\Omega$ and 5.2Ω . When the exposed metal does not have a return path to the chassis, the reading must be ∞

1.1.2. Leakage Current Hot Check

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5k\Omega$, 10 watts resistor, in parallel with a $0.15\mu F$ capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. should the measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be be repaired and re-checked before it is returned to the customer.

Figure 1



1.2. Before Repair and Adjustment

DO NOT SHORT-CIRCUIT DIRECTLY (with a screwdriver blade, for instance), as this may destroy solid state devices. After repairs are completed, restore power gradually using a variac, to avoid overcurrent.

- Current consumption at AC 120 V, at 60 Hz in NO SIGNAL mode, at volume minimum, SEL: DVD, no link, take before 10s should be ~200 mA.

1.3. Protection Circuitry

The protection circuitry may have operated if either of the following conditions are noticed:

- No sound is heard when the power is turned on.
- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of the amplifier are used.

If this occurs, follow the procedure outlines below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again after one minute.

Note:

When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again.

1.4. Safety Part Information

Safety Parts List:

There are special components used in this equipment which are important for safety.

These parts are marked by \triangle in the Schematic Diagrams & Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
\triangle	68	RGNX1154-K	SPEC LABEL	
\triangle	80	N0AB6GY00007	SMPS MODULE P.C.B.	
\triangle	PCB1	REPX0771C	RX MODULE P.C.B.	
\triangle	PCB2	REPX0770C	TX MODULE P.C.B.	
\triangle	PCB5	REPX0865DA	AC INLET P.C.B.	(RTL)
\triangle	P5701	K2ABYA000001	AC INLET	
\triangle	L1001	G0B340J00002	LINE FILTER	

2 Warning

2.1. Prevention of Electro Static Discharge (ESD) to Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor “chip” components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminium foil, to prevent electrostatic charge build up or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder remover device. Some solder removal devices not classified as “anti-static (ESD protected)” can generate electrical charge to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminium foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

Caution

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize body motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

2.2. Service caution based on Legal restrictions

2.2.1. General description about Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.

The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30 degrees C (86°F) more than that of the normal solder.

Definition of PCB Lead Free Solder being used

The letter of "PbF" is printed either foil side or components side on the PCB using the lead free solder. (See right figure)	PbF
---	-----

Service caution for repair work using Lead Free Solder (PbF)

- The lead free solder has to be used when repairing the equipment for which the lead free solder is used.
(Definition: The letter of "PbF" is printed on the PCB using the lead free solder.)
- To put lead free solder, it should be well molten and mixed with the original lead free solder.
- Remove the remaining lead free solder on the PCB cleanly for soldering of the new IC.
- Since the melting point of the lead free solder is higher than that of the normal lead solder, it takes the longer time to melt the lead free solder.
- Use the soldering iron (more than 70W) equipped with the temperature control after setting the temperature at 350±30 degrees C (662±86°F).

Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.
RFKZ03D01K----- (0.3mm 100g Reel)
RFKZ06D01K----- (0.6mm 100g Reel)
RFKZ10D01K----- (1.0mm 100g Reel)

Note

* Ingredient: Tin (Sn), 96.5%, Silver (Ag) 3.0%, Copper (Cu) 0.5%, Cobalt (Co) / Germanium (Ge) 0.1 to 0.3%

3 Service Navigation

3.1. Service Information

This service manual contains technical information which will allow service personnel's to understand and service this model. Please place orders using the parts list and not the drawing reference numbers.

If the circuit is changed or modified, this information will be followed by supplement service manual to be filed with original service manual.

3.1.1. Power supply

This model uses Switching Mode Power Supply (SMPS) Module for powering the receiver unit. It is replaceable as an assembly unit. (Part No : N0AB6GY0007) Do not attempt to repair or its component on board.

3.1.2. Digital Transmitter Unit / Digital Receiver Module (Rx) P.C.B. Replacement

1. This Model uses Digital Transmitter Unit & Digital Receiver Module (Rx) P.C.B. for the wireless transmission of signals.
2. After replacement of either Digital Transmitter Unit or Digital Receiver Module (Rx) P.C.B., ID setting is required.
Refer to section 6.1 Service Mode Table 1 for the procedures for ID setting.

4 Specifications

■ GENERAL

Power consumption:

Active subwoofer : 20 W

Power consumption in off mode:

Active subwoofer : Approx. 0.2 W

Power supply:

AC 120 V, 60 Hz

Dimensions (W x H x D):

Active subwoofer : 250 mm x 323 mm x 356 mm (9 27/32" x 12 23/32" x 14 1/32")

Mass:

Active subwoofer : Approx. 6.7 kg (14.8 lbs)

Operating temperature range:

0°C to +40°C (+32°F to +104°F)

Operating humidity range:

20% to 80% RH (no condensation)

■ AMPLIFIER SECTION

RMS Output Power

Subwoofer ch:

120 W per channel (8 Ω), 100 Hz, 10% THD

Total RMS Dolby Digital mode power:

240 W

FTC Output Power

Subwoofer ch:

37 W per channel (8 Ω), 40 Hz to 120 Hz, 1% THD

Total FTC Dolby Digital mode power:

87 W

■ SPEAKER SECTION

ACTIVE SUBWOOFER

Type:

1 way 1 speaker system (Kelton type)

Woofer:

16 cm (6 1/2") Cone type

Passive radiator:

25 cm (10")

Output sound pressure:

78 dB/W(1m)

Frequency range:

35 Hz to 180 Hz (-16dB)

40 Hz to 160 Hz (-10dB)

Note:

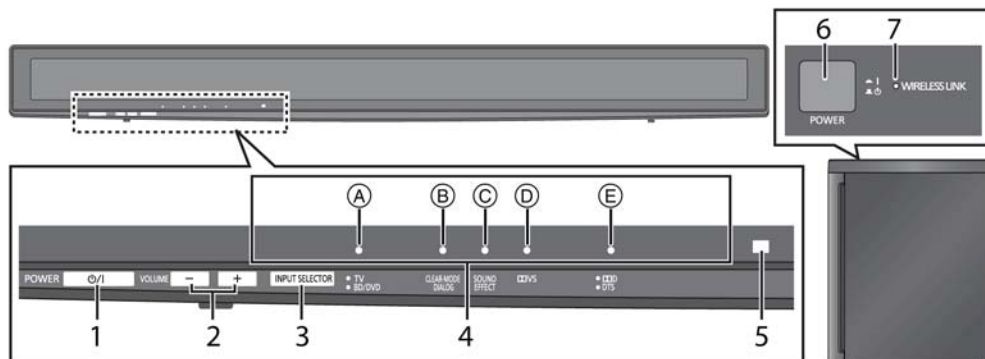
1. Specifications are subject to change without notice.

2. Total harmonic distortion is measured by the digital spectrum analyzer.

5 Location of Controls and Components

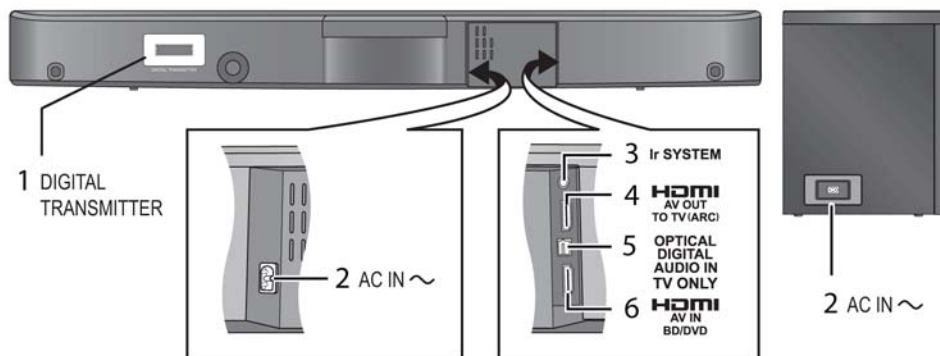
5.1. Main Unit Key Button Operations

This unit and active subwoofer (Front)



- 1 **Standby/on switch (POWER ϕ /I)**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
- 2 Adjust the Volume of this unit
- 3 Select the source
"TV" \longleftrightarrow "BD/DVD"
- 4 LED status indicators
 - (A) Audio source indicator
 - (B) Clear-mode Dialog indicator
 - (C) Sound Effect indicator
 - (D) Dolby Virtual Speaker indicator
 - (E) Audio format indicator
- 5 Remote control signal sensor
Remote control operation range
Distance:
Within approx. 7 m (23 ft.)
Angle:
Approx. 10° up and 30° down, 30° left and right
- 6 Active subwoofer on/off button
- 7 WIRELESS LINK indicator

This unit and active subwoofer (Rear)



- 1 Digital transmitter dock
- 2 AC IN terminal
- 3 Ir SYSTEM terminal
(Only for use with the optional IR Blaster.)
- 4 HDMI AV OUT terminal
- 5 OPTICAL DIGITAL AUDIO IN terminal
- 6 HDMI AV IN terminal

6 Self diagnostic and special mode setting

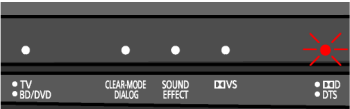
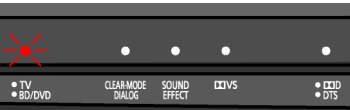

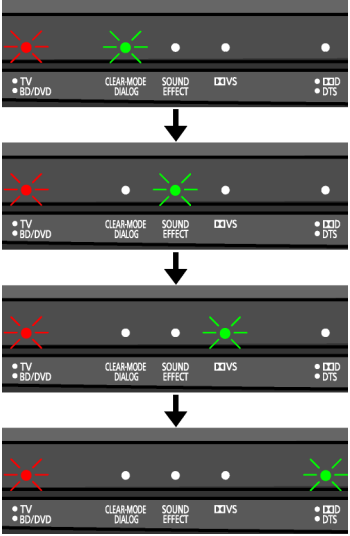
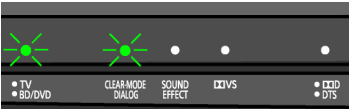
This unit is equipped with features of self-diagnostic & special mode setting for checking the functions & reliability.

Special Note : Checking of the reliability (ageing) & changer operation must be carry out to ensure good working condition in unit.

6.1. Service Mode

Service Mode Table 1

To pair Transmitter Unit & Wireless Subwoofer Unit

Item		Main Unit LED Display	Key Operation	
Mode Name	Description		Main Unit	Remote Control
Service Mode	<p>1. Power on both Main Unit & Wireless Subwoofer Unit</p> <p>2. Press & hold [VOL +],[VOL -] follow by [POWER] simultaneously on the Main Unit.</p> <p>[DTS] LED (Red) will light up.</p>		[VOL +] [VOL -] [POWER]	
Pairing Mode	<p>1. Enter into Service Mode.</p> <p>2. Press [SUBW -] for 2 secs on the Remote Control.</p> <p>Note: Unit will go into "Pairing Mode" for only 1 min. After 1 min, it will return to Service Mode.</p>	<p>No Link Condition:</p>  <p>Link Condition:</p> 		[SUBW -]
During Pairing Mode	<p>No Link Condition: [BD/DVD] LED will light up & other 4 LEDs ([CLEAR-MODE DIALOG], [SOUND EFFECT], [DVS], [DD]) will run 1 by 1 shifting for 1 min & return to Service Mode.</p> <p>Link Condition: [TV] LED will light up & other 4 LEDs ([CLEAR-MODE DIALOG], [SOUND EFFECT], [DVS], [DD]) will run 1 by 1 shifting for 1 min & return to Service Mode.</p> <p>Note: Pairing is auto configured. If auto configuration failed, press [ID] button on the Wireless Subwoofer Unit during the "Under Pairing Mode".</p>	<p>No Link Condition:</p>  <p>Link Condition:</p>  <p>4 Green LEDs running will be same as above.</p>		
Exit Mode	1. Press [POWER] on the Main Unit.			

7 Disassembly and Assembly Instructions

Caution Note:

- This section describes the disassembly and/or assembly procedures for all major printed circuit boards & main components for the unit. (You may refer to the section of “Main components and P.C.B Locations” as described in the service manual)
- **Before carrying out the disassembly process, please ensure all the safety precautions & procedures are followed.**
- **During the disassembly and/or assembly process, please handle with care as there may be chassis components with sharp edges.**
- **Avoid touching heatsinks due to its high temperature after prolong use. (See caution as described below)**

**CAUTION: HOT!!
PLEASE DO NOT
TOUCH THE HEAT SINK**

- **During disassembly and assembly, please ensure proper service tools, equipments or jigs is being used.**
- **During replacement of component parts, please refer to the section of “Replacement Parts List” as described in the service manual.**
- **Select items from the following indexes when disassembly or replacement are required.**
 - Disassembly of Side Panel Unit
 - Disassembly of Passive Radiator
 - Disassembly of Woofer Speaker (SP61)
 - Disassembly of Amp Module Assembly
 - Disassembly of AC Inlet P.C.B.
 - Disassembly of SMPS Module P.C.B.
 - Disassembly of Digital Receiver (RX) Module P.C.B.
 - Disassembly of ID Switch P.C.B. and D-Amp P.C.B.
 - Replacement of Switch Regulator IC (IC5200)

CAUTION NOTE:

Please use original screw and at correct locations.

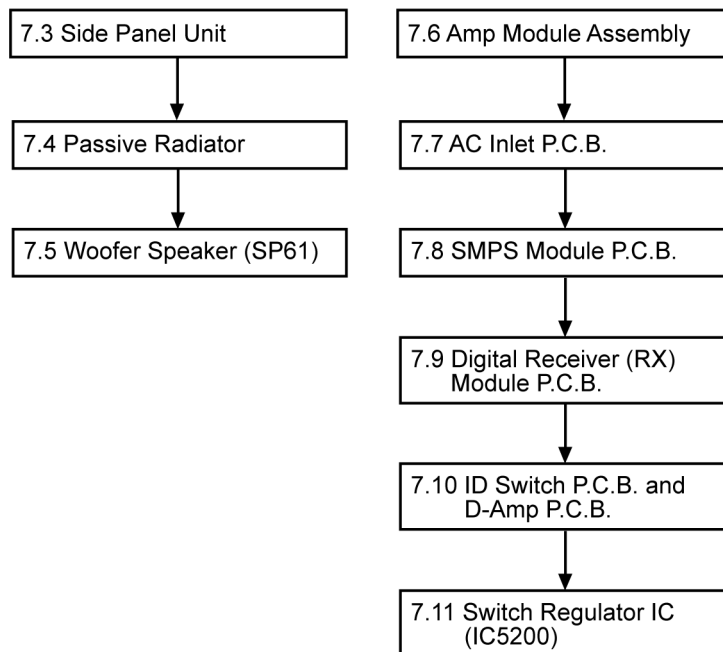
Below shown is part no. of different screw types used:

- a** : XTB4+16AFJK
- b** : XTB3+10JFJK
- c** : RHDx301002

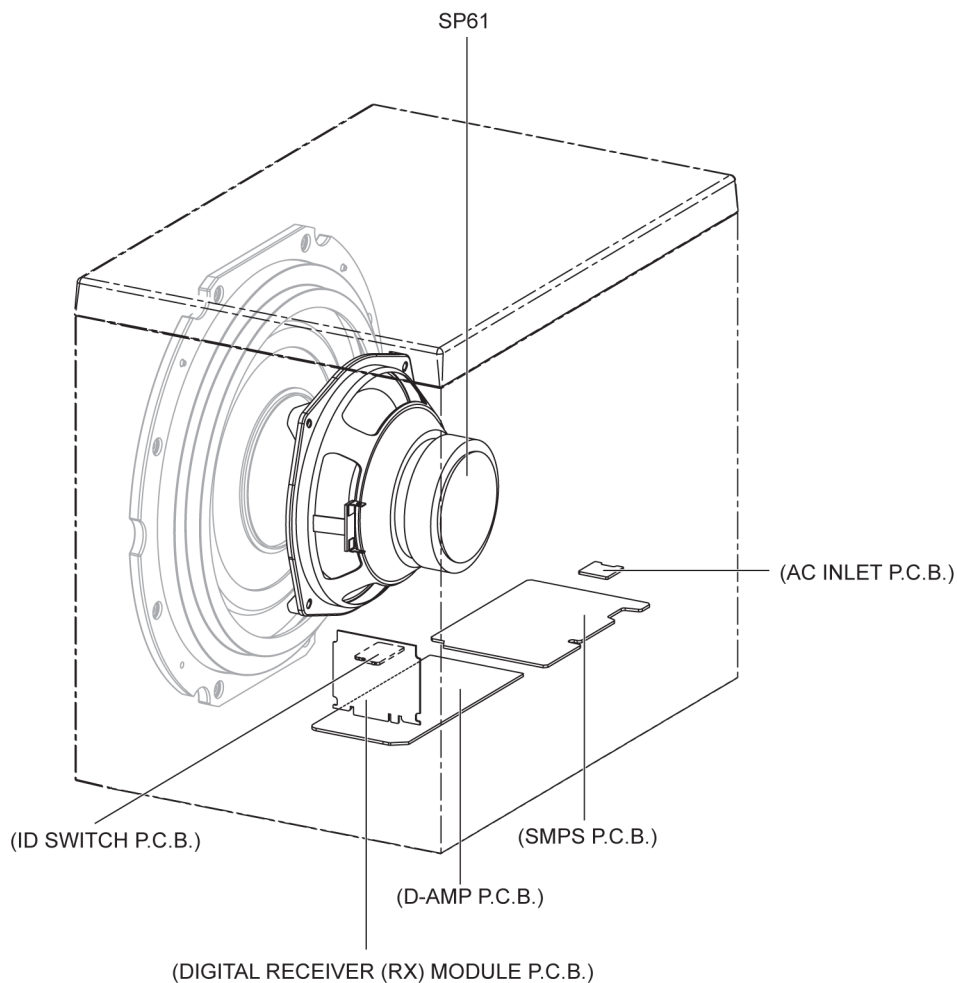
7.1. Disassembly flow chart

The following chart is the procedure for disassembling the casing and inside parts for internal inspection when carrying out the servicing.

To assemble the unit, reverse the steps shown in the chart below.



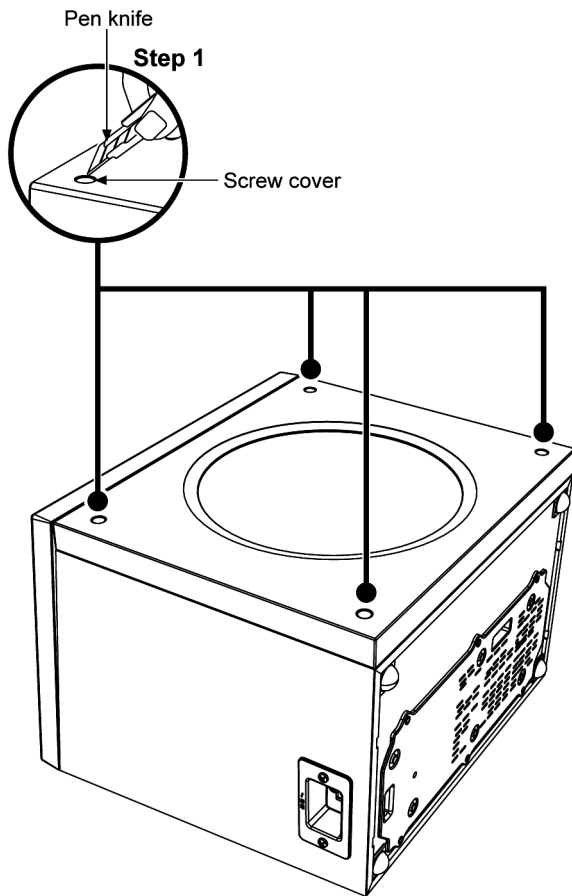
7.2. Main Parts Location Diagram



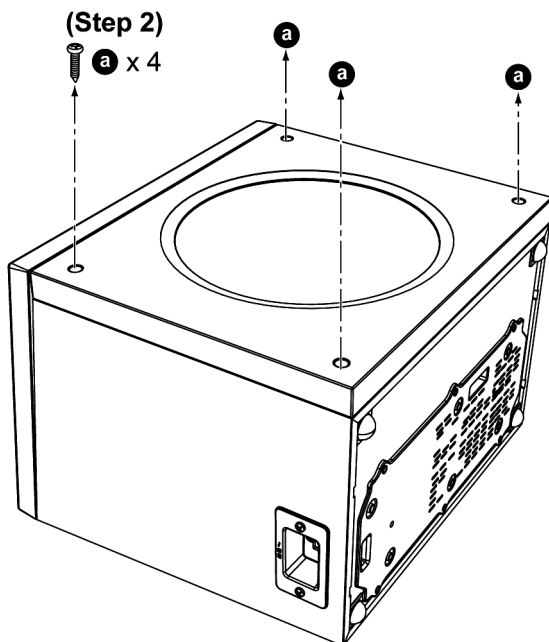
7.3. Disassembly of Side Panel Unit

Step 1 : Peel off the screw covers by using the pen knife.

Caution : Place it in original location during assembling.

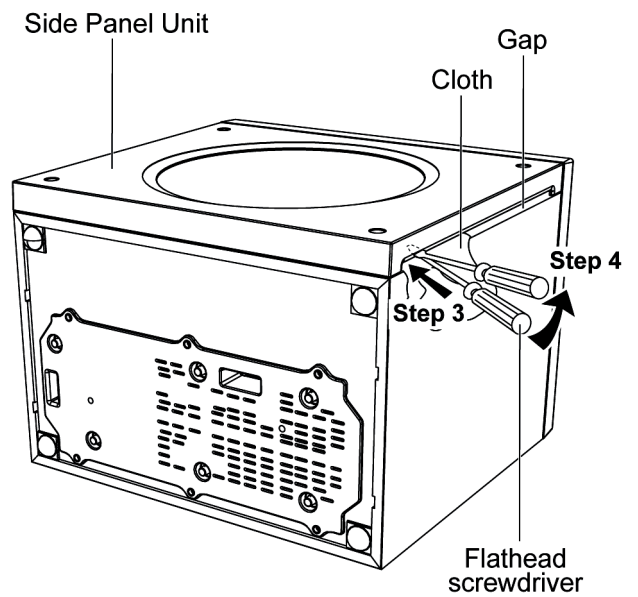


Step 2 : Remove 4 screws.



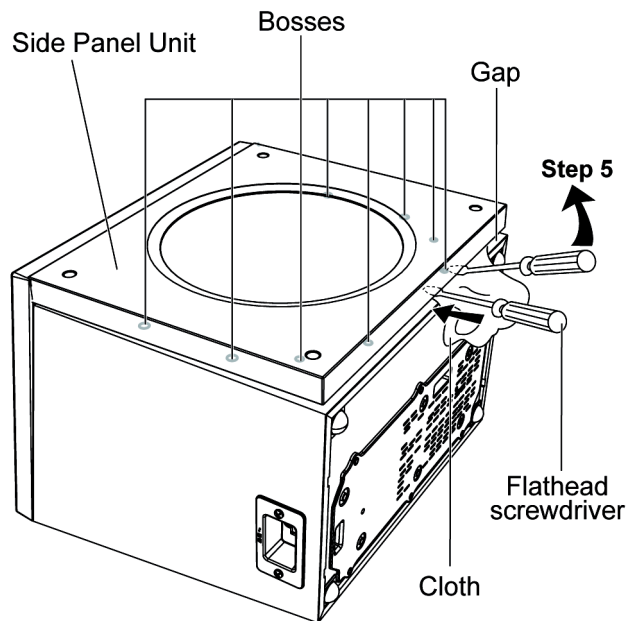
Step 3 : Insert the flathead screwdriver into the gap of the Side Panel Unit.

Step 4 : Lift up the Side Panel Unit slightly.

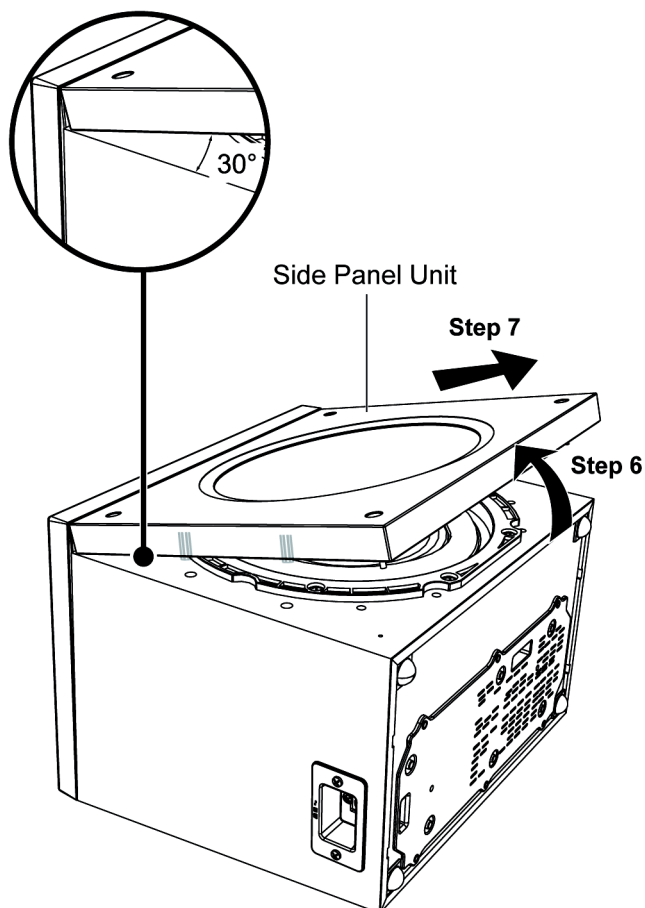


Step 5 : Insert two flathead screwdriver at the gap and apply force to gently push out the Side Panel Unit as shown.

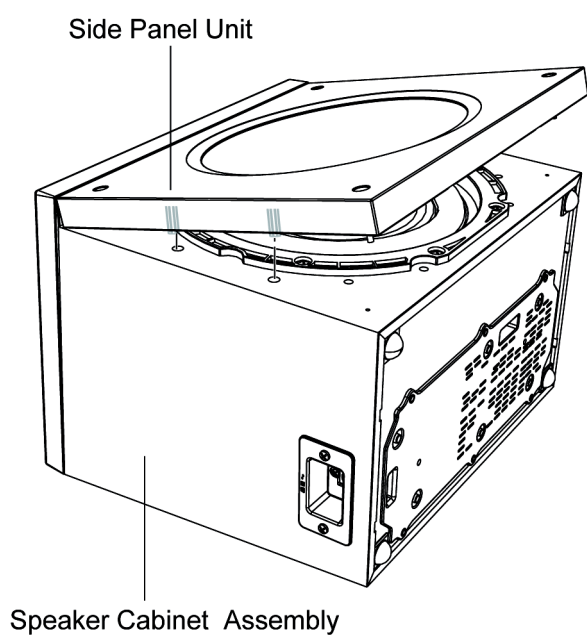
Caution : Do not exert too much force as it may damage the Side Panel Unit.



Step 6 : Lift up the Side Panel Unit by 30° as shown.
Step 7 : Slide out the Side Panel Unit as arrow shown.



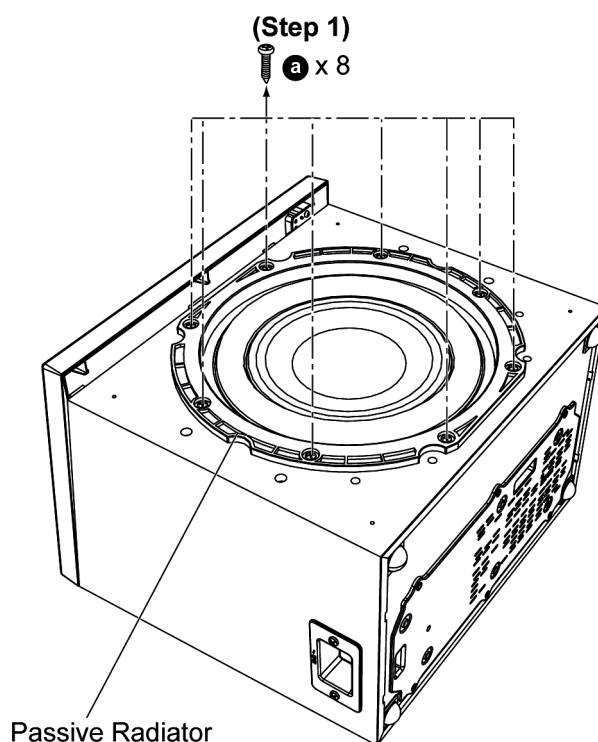
Caution : During assembly of the Side Panel Unit, align the bosses to their respective holes on the Speaker Cabinet Assembly and attach it.



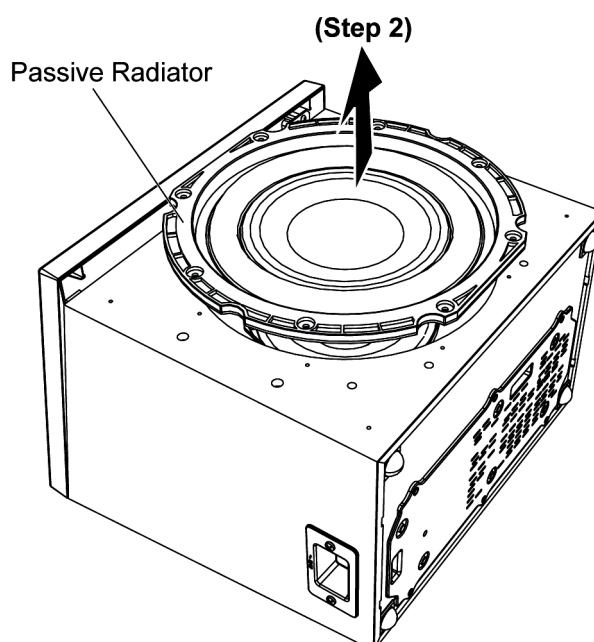
7.4. Disassembly of Passive Radiator

• Refer to “Disassembly of Side Panel Unit”.

Step 1 : Remove 8 screws.



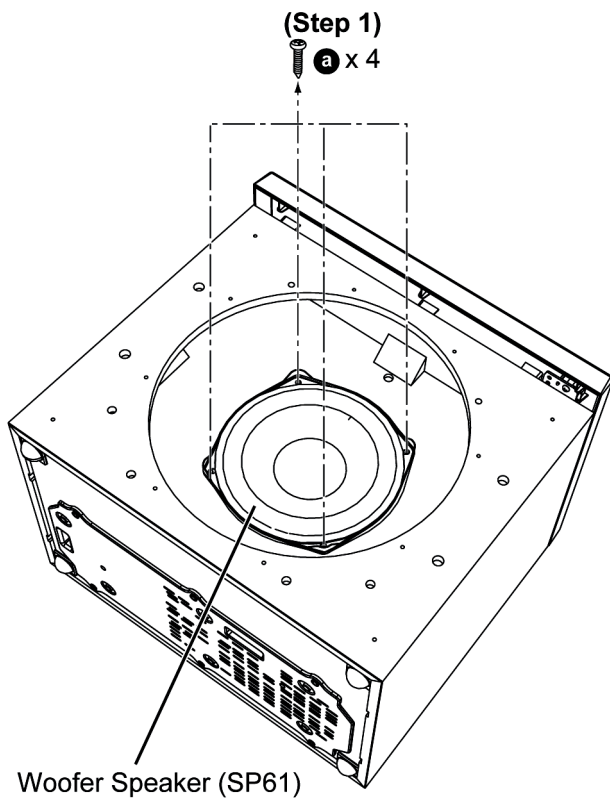
Step 2 : Lift up and remove Passive Radiator as arrow shown.



7.5. Disassembly of Woofer Speaker (SP61)

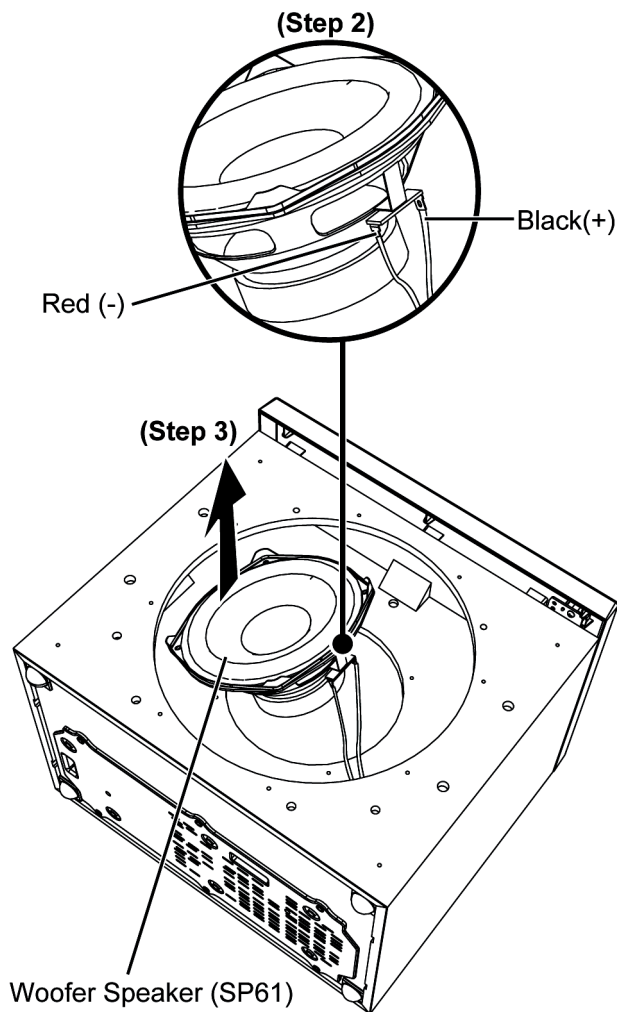
- Refer to "Disassembly of Side Panel Unit".
- Refer to "Disassembly of Passive Radiator".

Step 1 : Remove 4 screws.



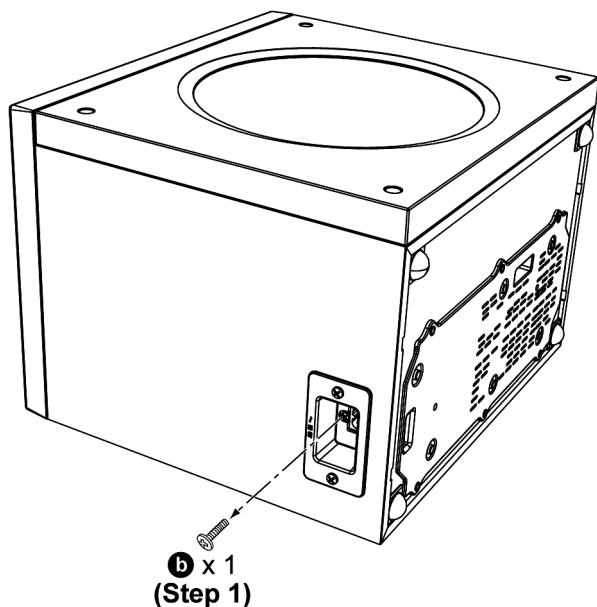
Step 2 : Detach the black (+) and red (-) speaker wire.

Step 3 : Remove Woofer Speaker (SP61) as arrow shown.

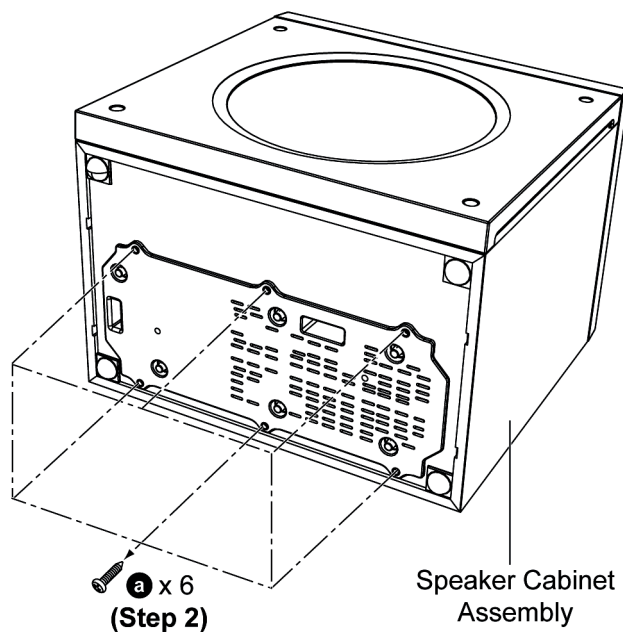


7.6. Disassembly of Amp Module Assembly

Step 1 : Remove 1 screw.



Step 2 : Remove 6 screws.



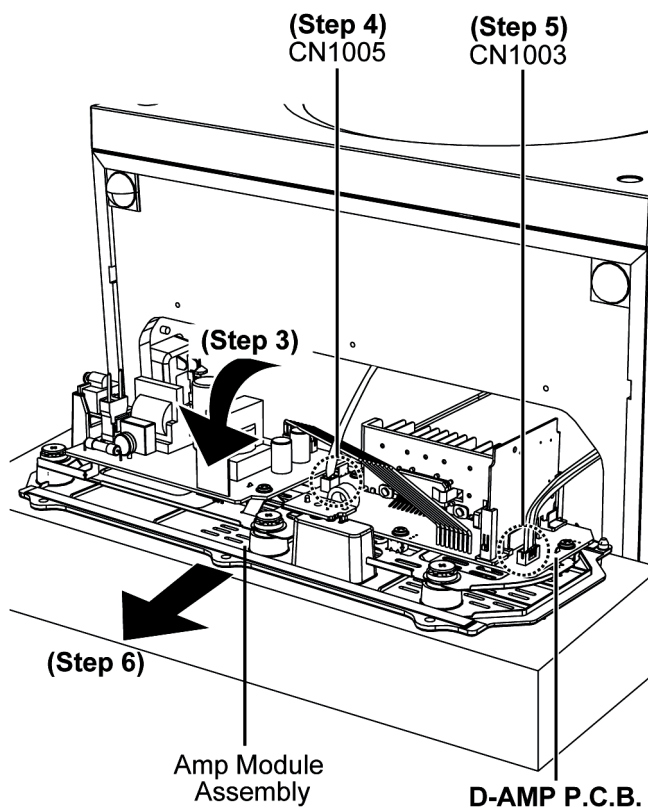
Step 3 : Lift down slightly the Amp Module Assembly as arrow shown.

Caution : Do not exert too much force as it may damage the wiring within.

Step 4 : Detach the 2P Wire of the connector (CN1005) on D-Amp P.C.B..

Step 5 : Detach the 5P Cable Wire of the connector (CN1003) on D-Amp P.C.B..

Step 6 : Remove the Amp Module Assembly as arrow shown.

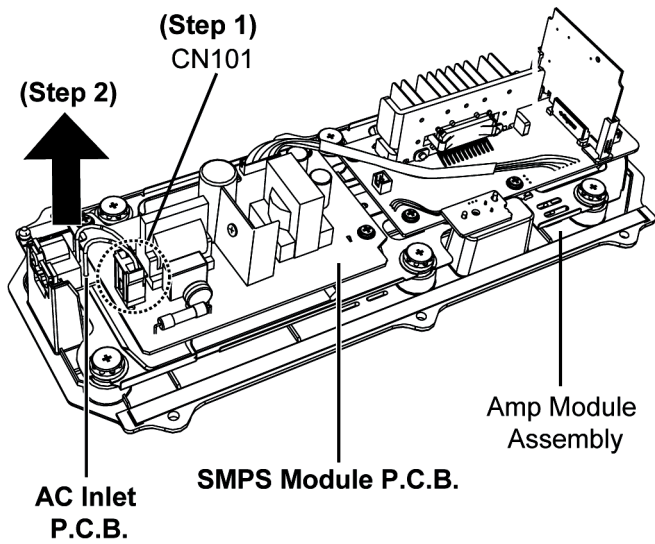


7.7. Disassembly of AC Inlet P.C.B.

- Refer to "Disassembly of Amp Module Assembly".

Step 1 : Detach the 2P Wire of the connector (CN101) on SMPS Module P.C.B..

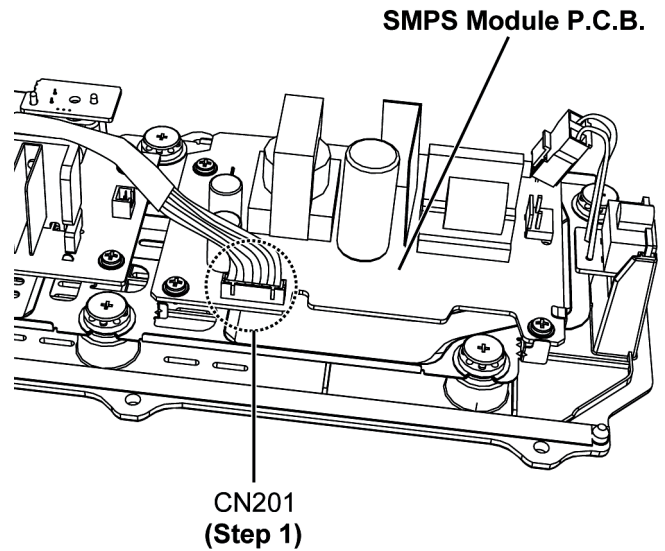
Step 2 : Remove the AC Inlet P.C.B. as arrow shown.



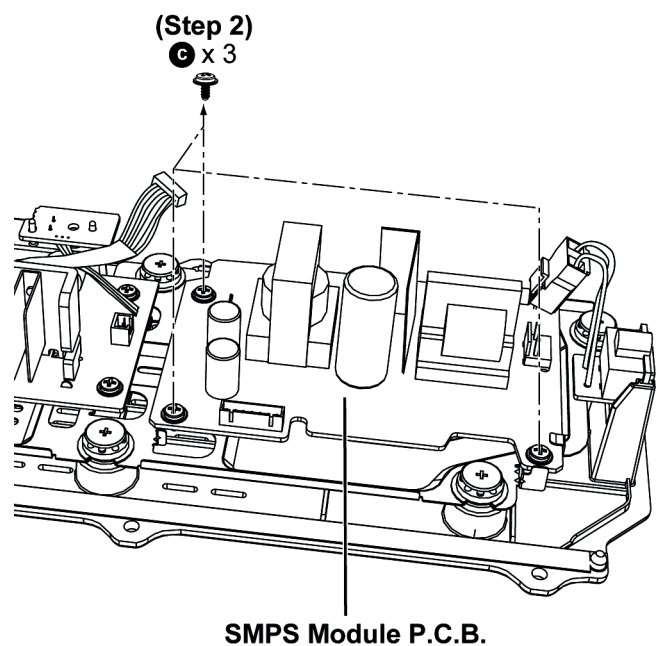
7.8. Disassembly of SMPS Module P.C.B.

- Refer to "Disassembly of Amp Module Assembly".
- Refer to (Step 1) of "Disassembly of AC Inlet P.C.B.".

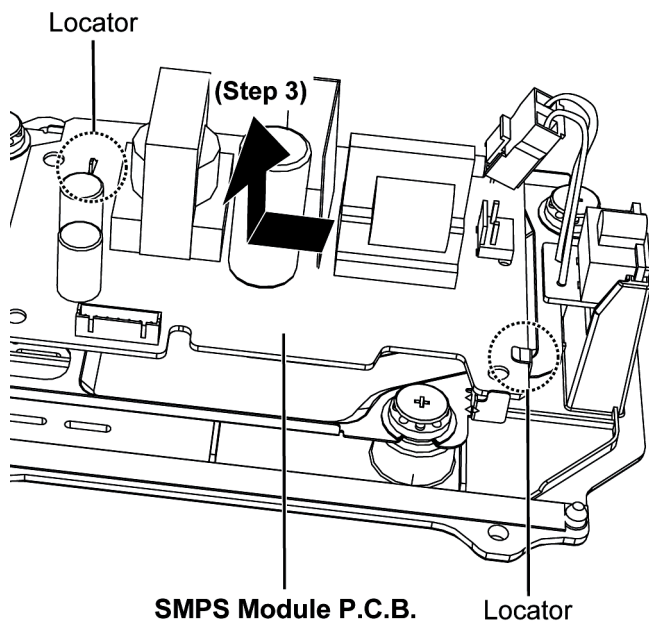
Step 1 : Detach the 7P Cable Wire of the connector (CN201) on SMPS Module P.C.B..



Step 2 : Remove 3 screws.



Step 3 : Remove SMPS Module P.C.B.as arrow shown.
Caution : During assembling, ensure the SMPS Module P.C.B. is seated properly onto the locators.



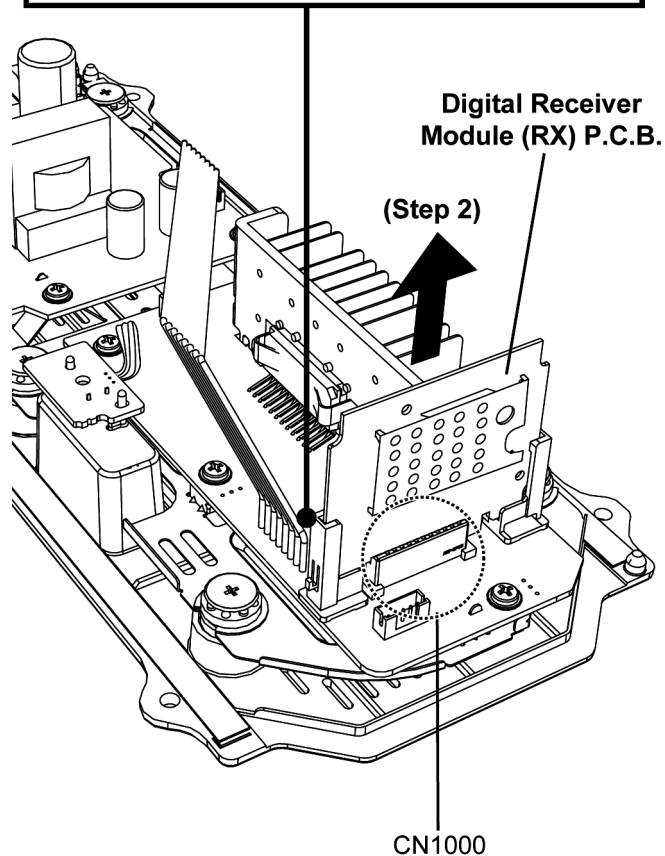
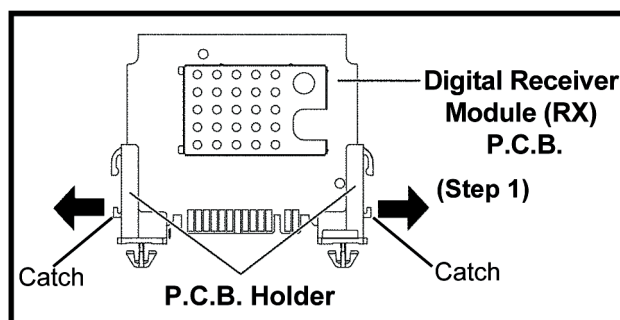
7.9. Disassembly of Digital Receiver (RX) Module P.C.B.

• Refer to “Disassembly of Amp Module Assembly”.

Step 1 : Release the P.C.B. Holders slightly outwards as arrows shown.

Step 2 : Detach the Digital Receiver (RX) Module P.C.B. at the D-Amp P.C.B. connector (CN1000).

Caution : During assembling, ensure the Digital Receiver (RX) Module P.C.B. is properly and fully inserted onto the D-Amp P.C.B. connector (CN1000).



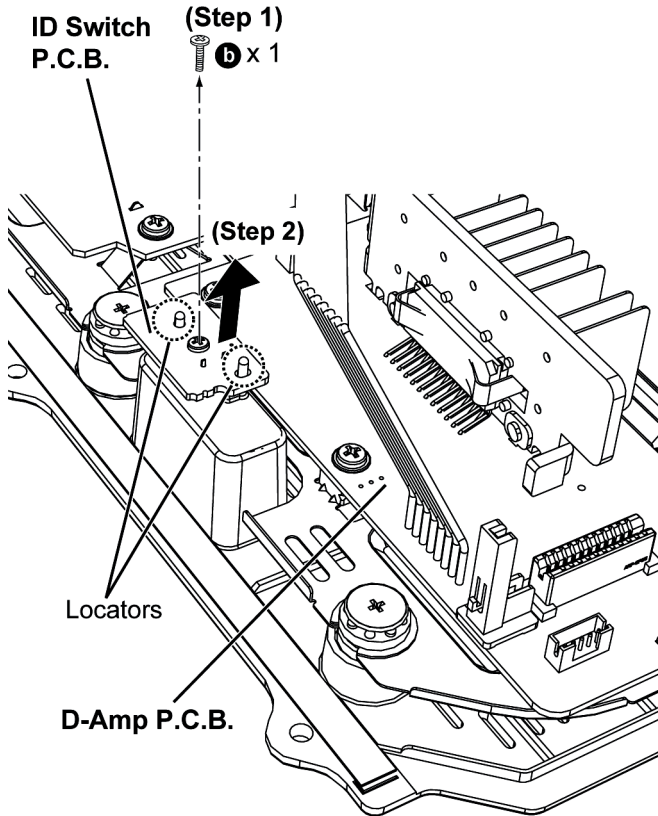
7.10. Disassembly of ID Switch P.C.B. and D-Amp P.C.B.

- Refer to "Disassembly of Amp Module Assembly".
- Refer to (Step 1) of "Disassembly of SMPS Module P.C.B.".

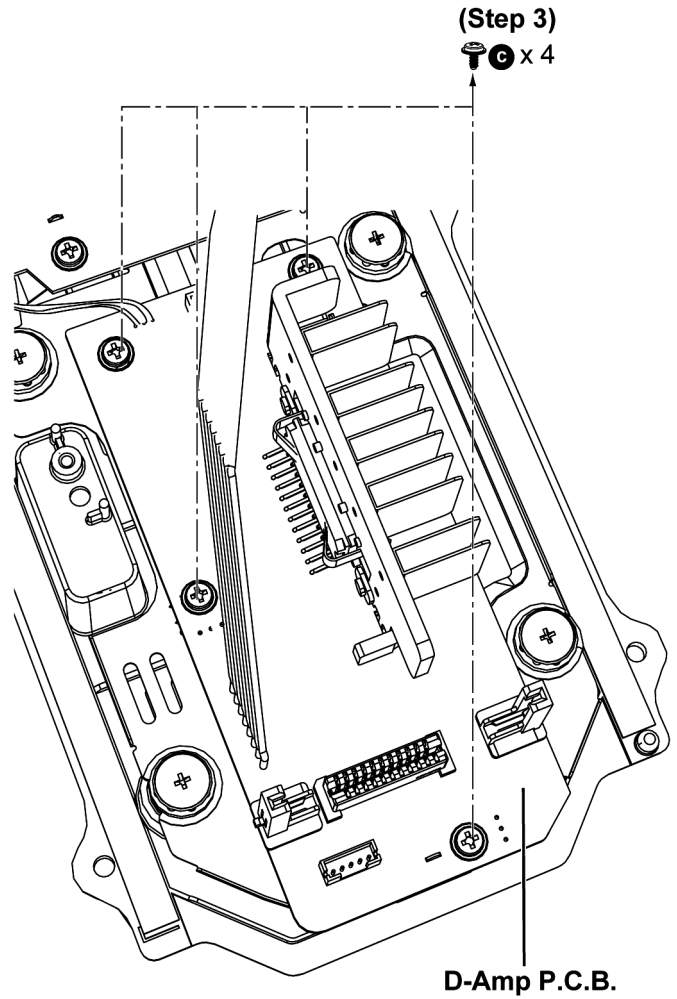
Step 1 : Remove 1 screw.

Step 2 : Remove ID Switch P.C.B. as arrow shown.

Caution : During assembling, ensure the ID Switch P.C.B. is seated properly onto the locators.

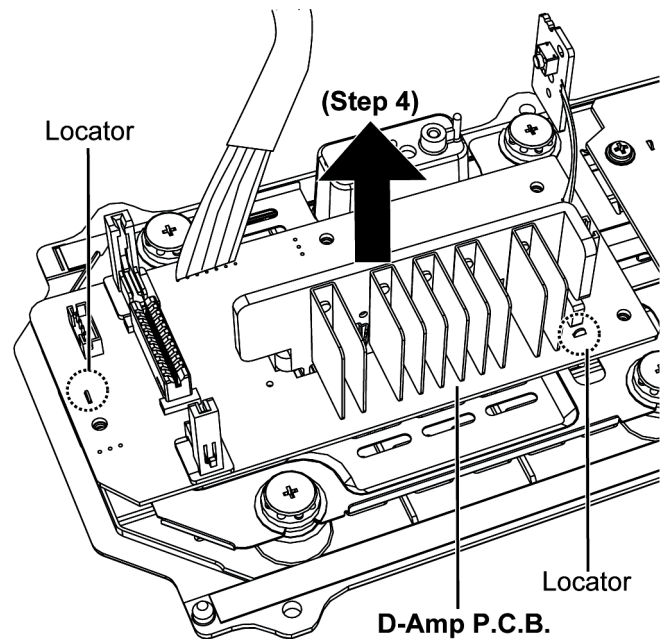


Step 3 : Remove 4 screws.



Step 4 : Remove D-Amp P.C.B. as arrow shown.

Caution : During assembling, ensure the D-Amp P.C.B. is seated properly onto the locators.

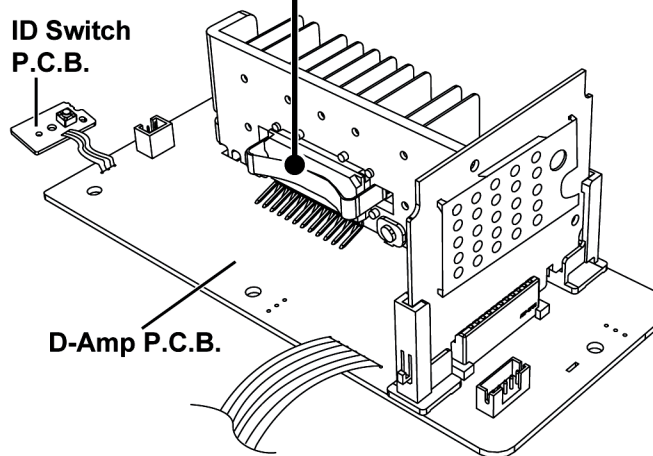
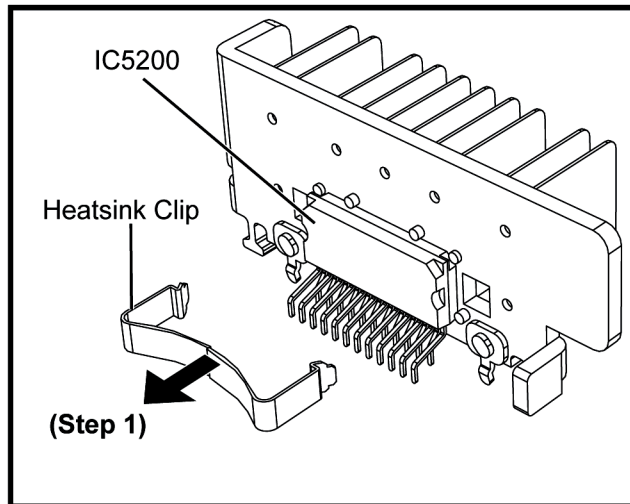


7.11. Replacement of Switch Regulator IC (IC5200)

- Refer to “Disassembly of ID Switch P.C.B. and D-Amp P.C.B.”.

7.11.1. Disassembly of Switch Regulator IC (IC5200)

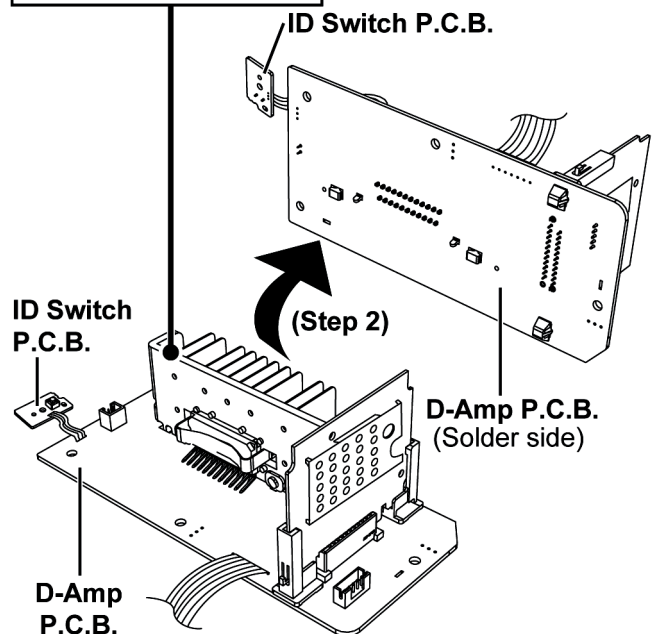
Step 1 : Remove Heatsink Clip.



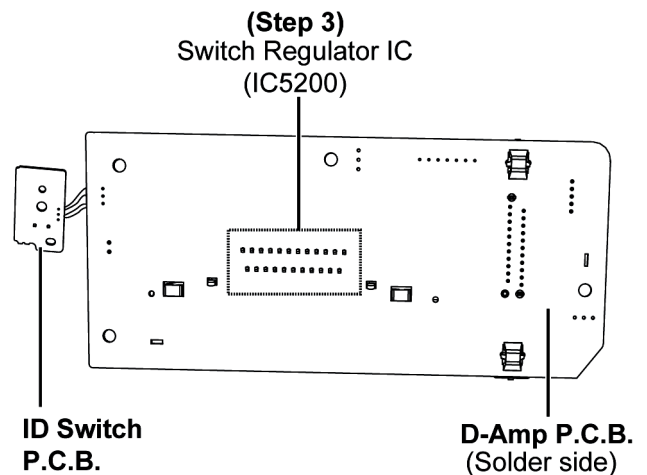
Step 2 : Flip over the D-Amp P.C.B..

Caution : Avoid touching the Heatsink Unit due to its high temperature after prolonged use. Touching it may lead to injuries.

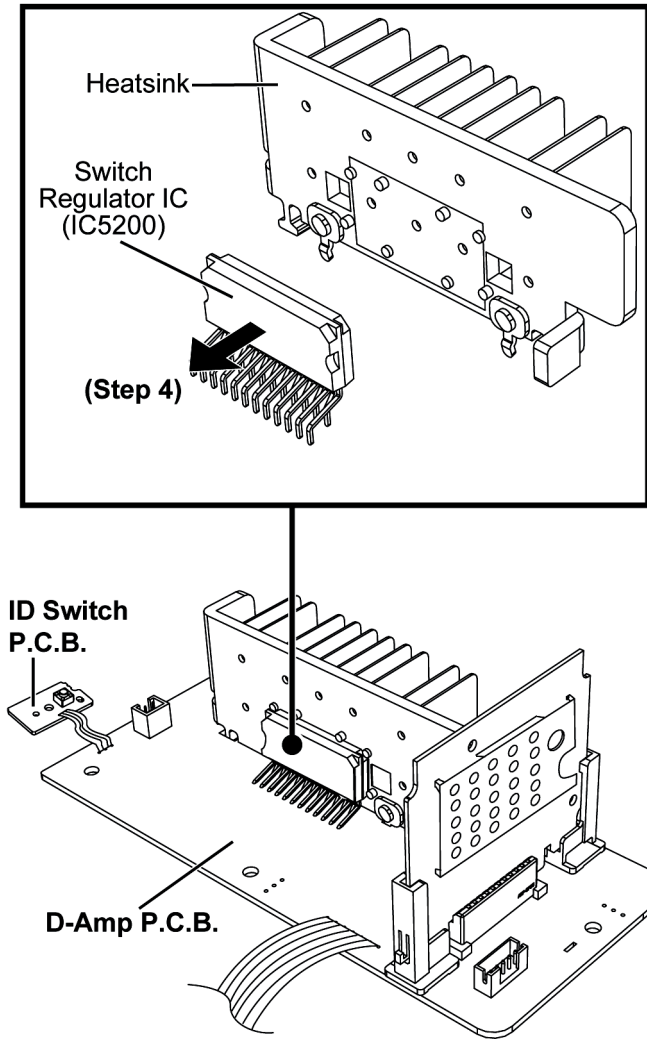
**CAUTION: HOT!!
PLEASE DO NOT
TOUCH THE HEATSINK**



Step 3 : Desolder pins of the Switch Regulator IC (IC5200) on the solder side of D-Amp P.C.B..



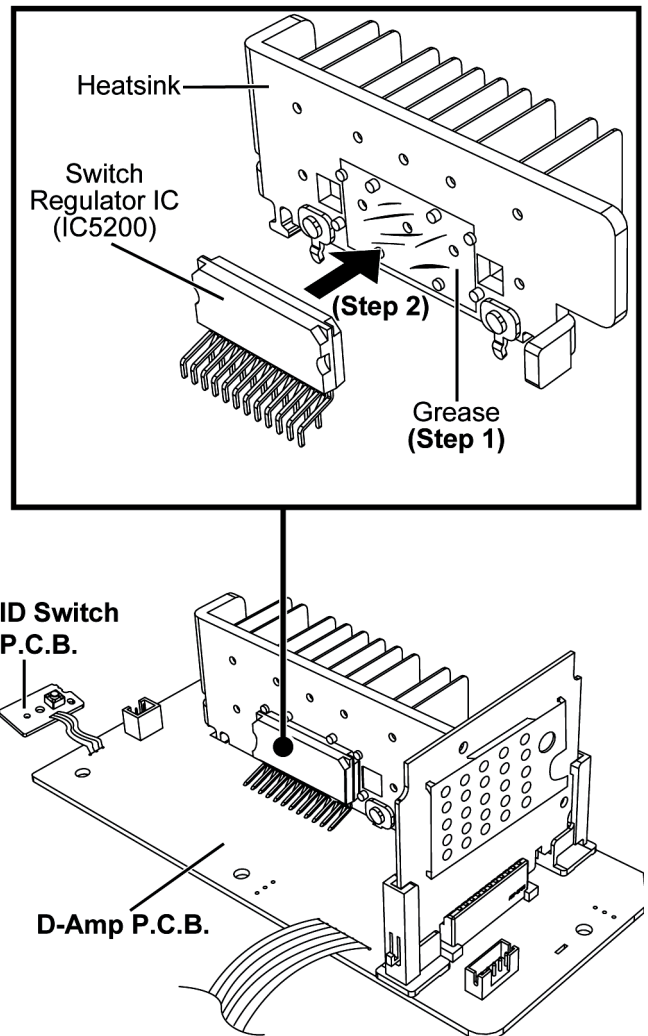
Step 4 : Remove Switch Regulator IC (IC5200) from the Heat-sink Unit.



7.11.2. Assembly of Switch Regulator IC (IC5200)

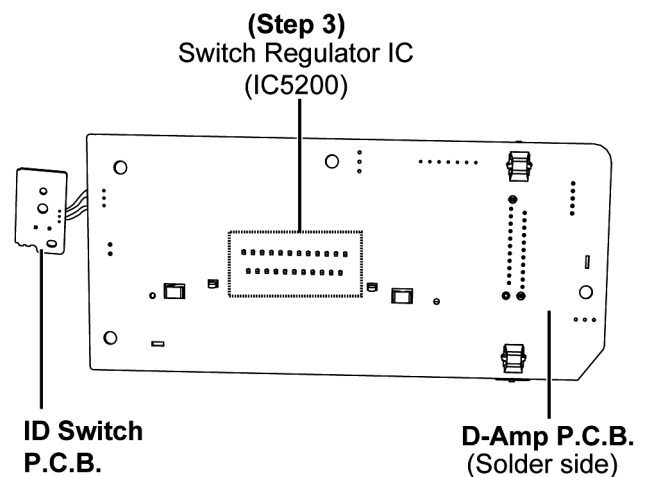
Step 1 : Apply Grease on the Heatsink Unit.

Step 2 : Mount the Switch Regulator IC (IC5200) onto the D-Amp P.C.B..



Step 3 : Solder pins of Switch Regulator IC (IC5200) on the solder side of D-Amp P.C.B..

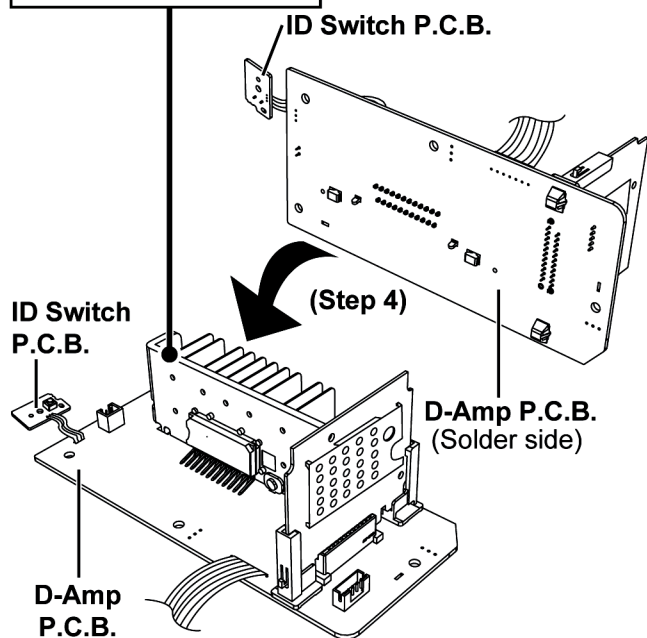
Caution : Ensure the pins of Switch Regulator IC are properly seated & soldered on D-Amp P.C.B. during assembly.



Step 4 : Flip back the D-Amp P.C.B..

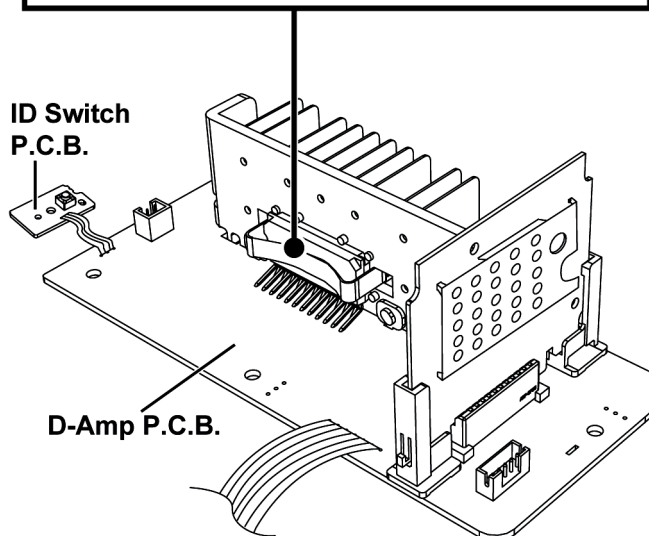
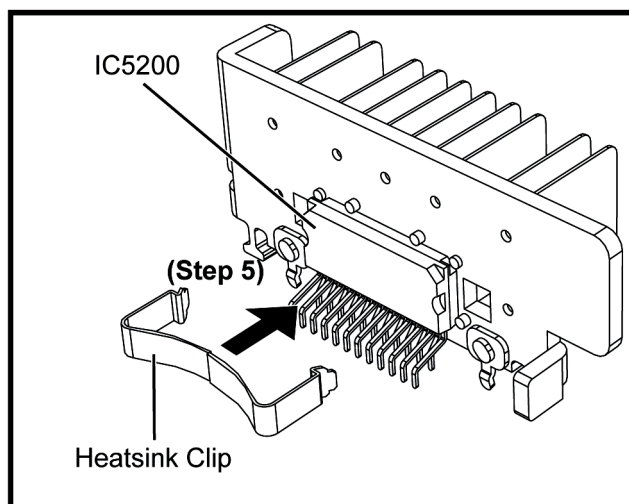
Caution : Avoid touching the Heatsink Unit due to its high temperature after prolonged use. Touching it may lead to injuries.

**CAUTION: HOT!!
PLEASE DO NOT
TOUCH THE HEATSINK**



Step 5 : Fix the Heatsink Clip onto the Heatsink unit.

Caution : Ensure the Heatsink Clip is fully inserted onto the Heatsink unit.



8 Service Position

Note: For description of the disassembly procedures, see the Section 7.

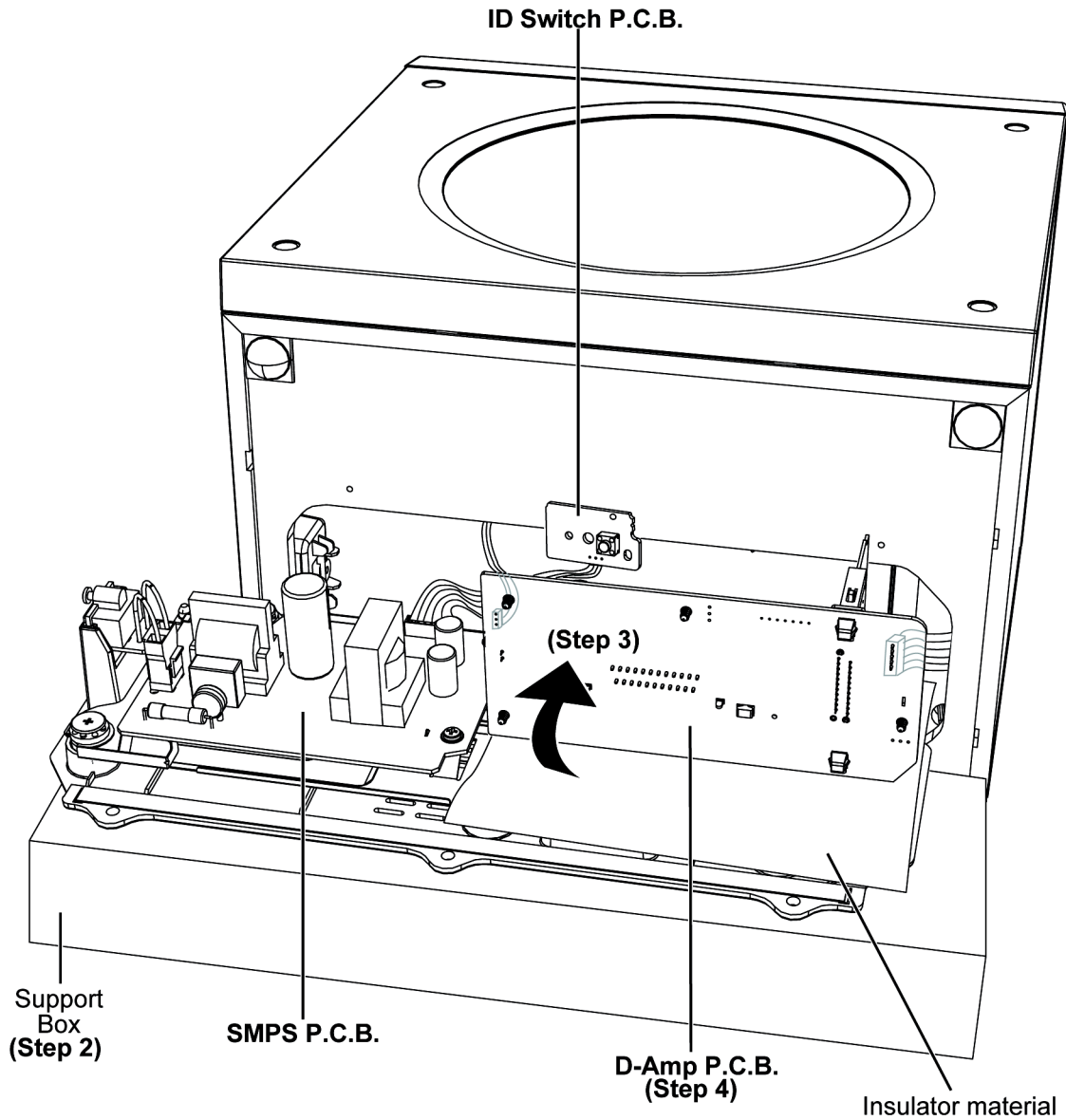
8.1. Checking and Repairing of D-Amp P.C.B.

Step 1 : Remove Amp Module Assembly.

Step 2 : Place the Support Box underneath the Amp Module Assembly.

Step 3 : Flip over ID Switch P.C.B. and D-Amp P.C.B. as arrow shown.

Step 4 : D-Amp P.C.B. can be checked and repaired as diagram shown.



9 Voltage Measurement & Waveform Chart

Note:

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard.
- Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
- Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point because it may differ from actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

9.1. D-AMP P.C.B.

REF NO.	IC3001																			
MODE	1	2	3	4	5	6	7	8												
CD PLAY	0	0	0	-15.0	0	0	0	16.0												
STANDBY	0	0	0	-15.1	0	0	0	16.0												

REF NO.	IC3002																			
MODE	1	2	3	4	5	6	7	8												
CD PLAY	0	0	0	-14.9	0	0	-0.3	16.0												
STANDBY	0	0	0	-15.1	0	0	-0.3	16.0												

REF NO.	IC5200																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	-19.5	0	0	24.3	0	-24.8	-16.3	24.9	8.9	0	-25.0	-15.0	-25.0	-0.2	8.8	24.9	-24.8	-24.8	0	24.6
STANDBY	-19.5	0	0	24.6	0	-24.9	-16.4	24.9	8.9	0	-25.1	-15.0	-25.1	0	8.9	24.9	-24.9	-24.9	0	24.6

REF NO.	IC5200																			
MODE	21	22	23																	
CD PLAY	0	0	4.7																	
STANDBY	0	0	2.3																	

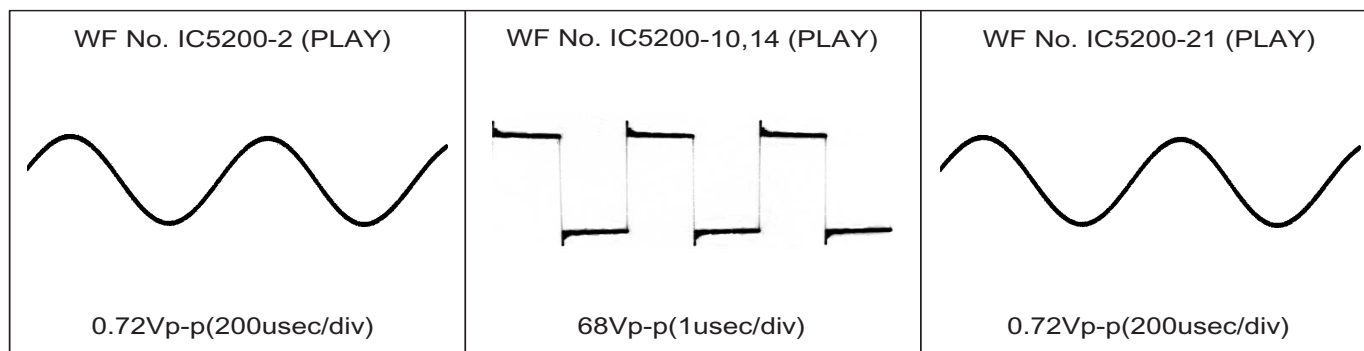
REF NO.	Q1003				Q1004				Q1005				Q1006				Q1007			
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B	
CD PLAY	24.3	24.3	23.6		5.0	4.8	4.1		0	0	3.1		0	4.6	0		0	3.5	0	
STANDBY	24.2	24.2	23.6		4.4	4.6	3.9		0	0	3.1		0	0	3.1		0	2.9	0	

REF NO.	Q1008				Q1009				Q1010				Q1011				Q2002			
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B	
CD PLAY	0	3.7	0		0	0	3.3		24.2	24.2	0		-25.0	-25.0	-24.4		16.0	24.0	16.0	
STANDBY	0	3.0	0		0	0	3.3		24.2	24.2	0		-25.0	-25.1	-24.5		16.0	23.9	16.6	

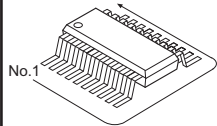
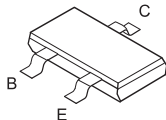
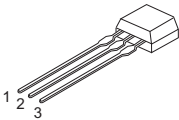
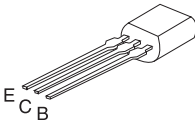
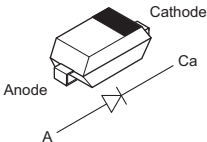
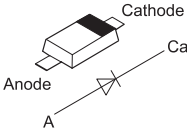
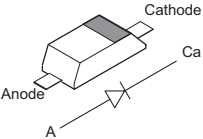
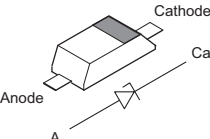
REF NO.	Q2010				Q2011															
MODE	E	C	B		E	C	B													
CD PLAY	0	-15.7	-0.6		-15.1	-24.7	-15.7													
STANDBY	0	-15.7	-0.6		-15.1	-24.8	-15.7													

SB-WA500PP D-AMP P.C.B.

9.2. Waveform Chart



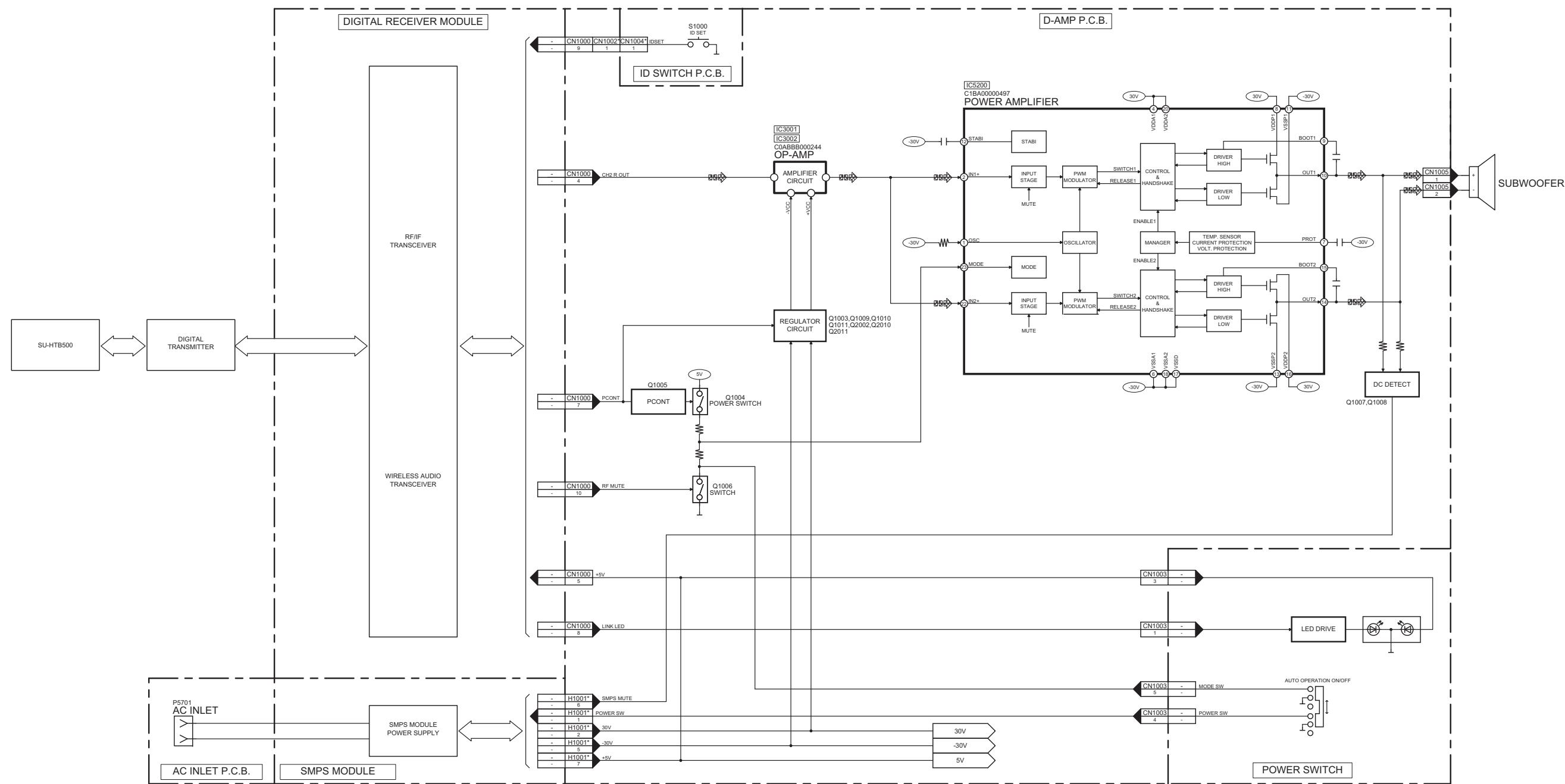
10 Illustration of IC's, Transistors and Diodes

<p>C0ABBB000244 (8P) C1BA00000497 (24P)</p> 	<p>B1ABCF000176 B1ADCE000012 B1GBCFFGG0030 B1GBCFJJ0051 B1GDCFJJ0047</p> 		<p>B1ACCF000094</p> 	<p>B1ACKD000006 B1AAKD000012</p> 	<p>B0ECKP000002</p> 
<p>MA2J1110GL</p> 	<p>B0ACCK000005</p> 	<p>B0BC01600013</p> 			

11 Block Diagram

11.1. RECEIVER BLOCK DIAGRAM

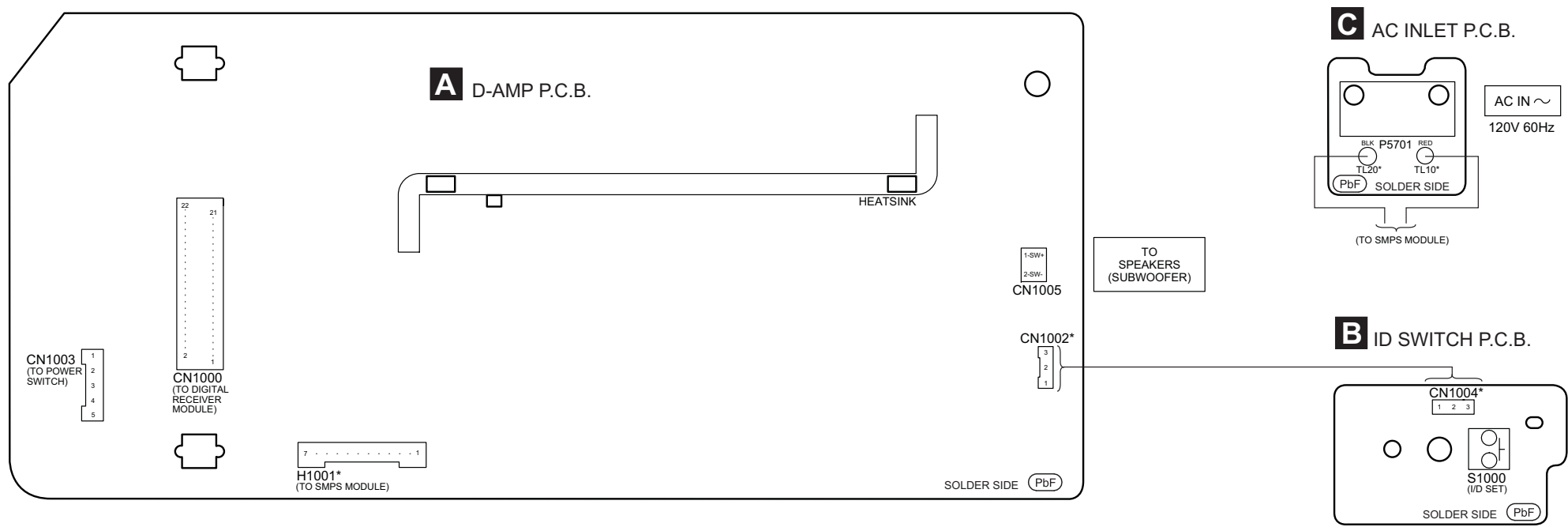
🔊 : AUDIO OUTPUT SIGNAL LINE



NOTE: “ * ” REF IS FOR INDICATION ONLY

SB-WA500PP RECEIVER BLOCK DIAGRAM

12 Wiring Connection Diagram



NOTE: “ * ” REF IS FOR INDICATION ONLY.

SB-WA500PP
WIRING CONNECTION DIAGRAM

13 Schematic Diagram Notes


(All schematic diagrams may be modified at any time with the development of new technology)

Notes:

S1000: POWER switch ().

- “ * ” REF IS FOR INDICATION ONLY.

- **Importance safety notice :**

Components identified by () mark have special characteristics important for safety.


Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

- Capacitor values are in microfarad(μ F) unless specified otherwise, F=Farad, pF=Pico-Farad

Resistance values are in ohm(Ω), unless specified otherwise, 1K=1,000 Ω , 1M=1,000K Ω

- **Voltage and Signal lines:**

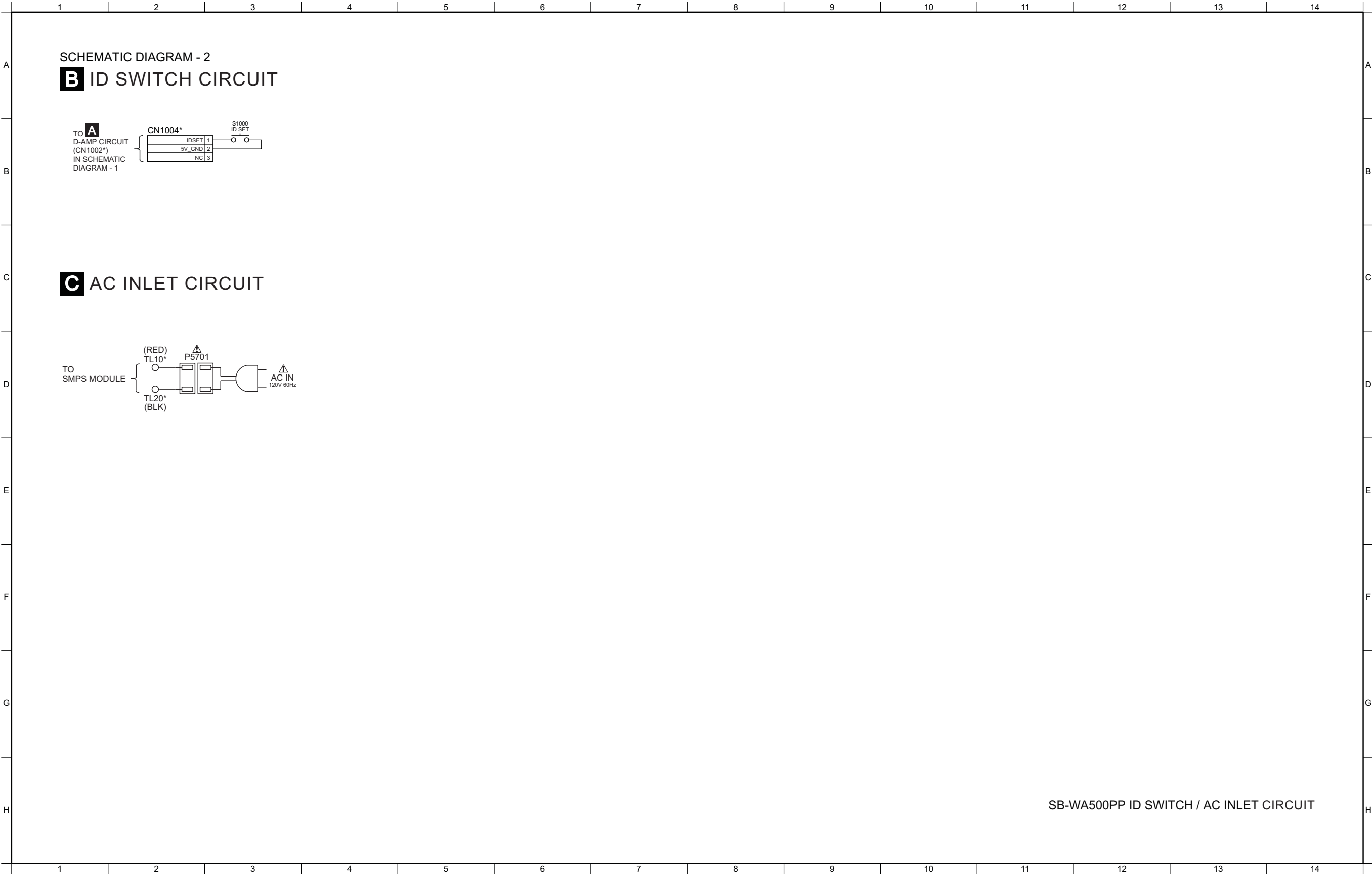
 : +B signal line

 : Audio Output signal line

14.1. D-AMP CIRCUIT

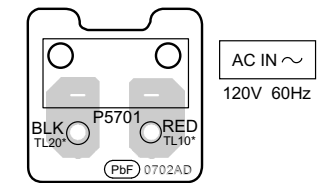


14.2. ID SWITCH CIRCUIT, AC INLET CIRCUIT



15.1. D-AMP P.C.B., ID SWITCH P.C.B., AC INLET P.C.B.

C AC INLET P.C.B. (REPX0865CD)

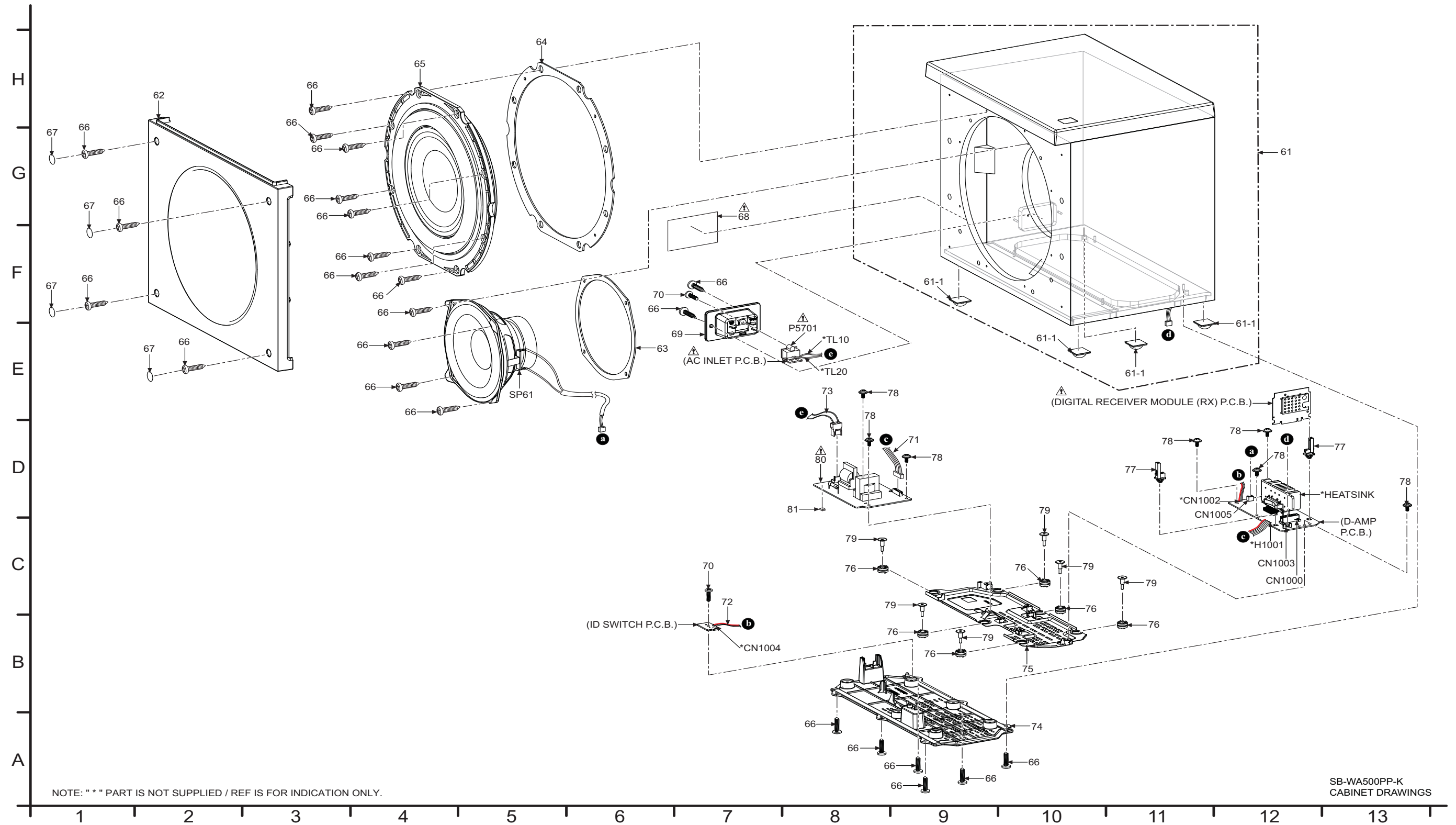


SB-WA500PP
D-AMP / ID SWITCH / AC INLET P.C.B.

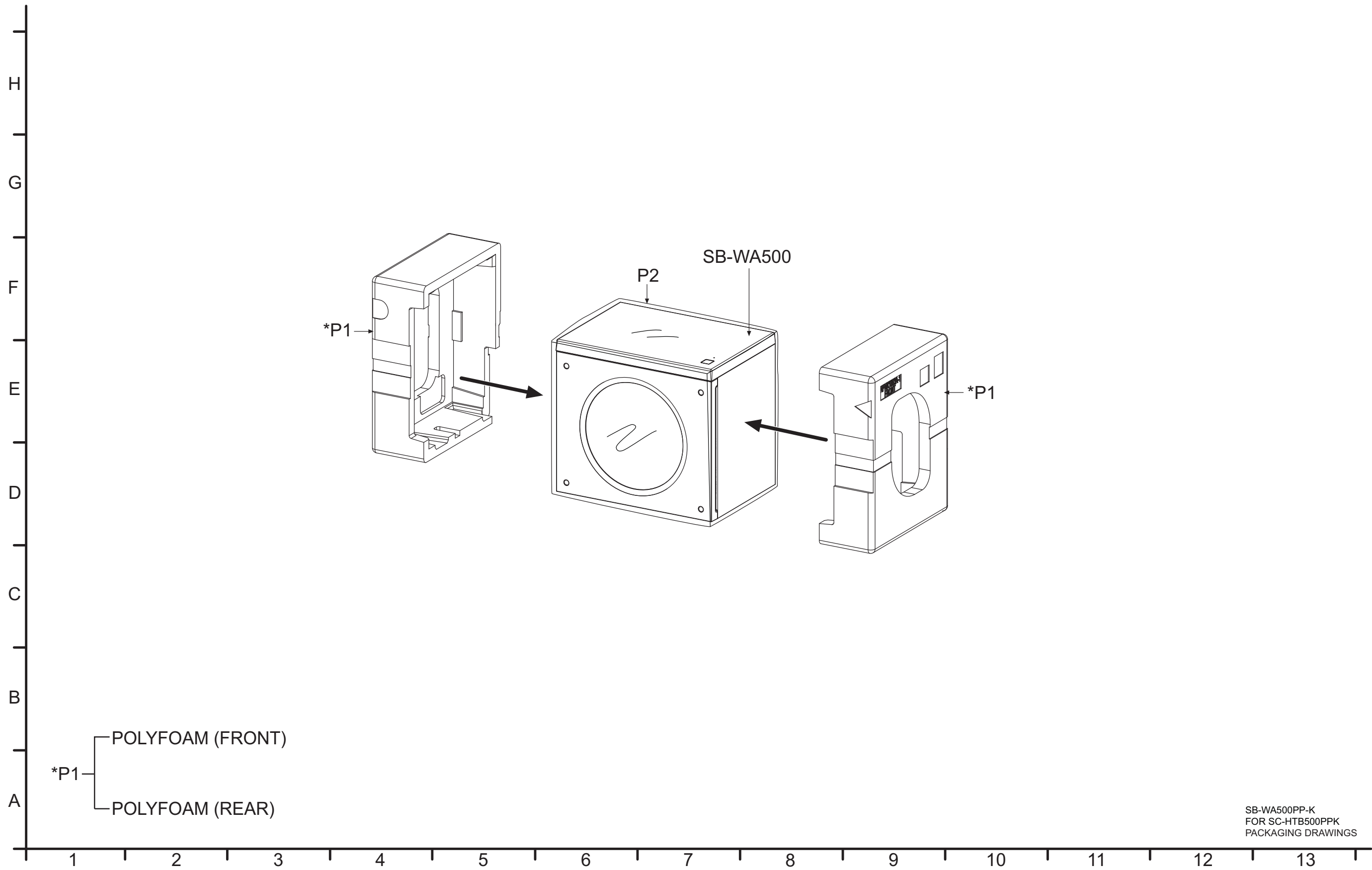
16 Exploded View and Replacement Parts List

16.1. Exploded View and Mechanical replacement Parts List

16.1.1. Cabinet Parts Location



16.1.2. Packaging



16.1.3. Mechanical Repacement Parts List

Important Safety Notice

Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

RTL (Retention Time Limited)

Note: The marking (RTL) indicates that the Retention Time is Limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

Note:

- When replacing any of these components, be sure to use only manufacturer's specified parts shown in the replacement part list.
- The parenthesized indications on the Remarks column specify the destination & product color (Refer to the cover page for the information).
- Parts without these indications shall be used for all areas.
- This product uses a laser diode. Refer to "Precaution of Laser Diode".
- All parts mentioned are supplied by PAVCSG unless indicated likewise.
- Parts mentioned [SPG] in the Remarks column are supplied by PAVC-CSG.
- Reference for O/I book languages are as follows:

Ar:	Arabic	Du:	Dutch	It:	Italian	Sp:	Spanish
Cf:	Canadian French	En:	English	Ko:	Korean	Sw:	Swedish
Cz:	Czech	Fr:	French	Po:	Polish	Co:	Traditional Chinese
Da:	Danish	Ge:	German	Ru:	Russian	Cn:	Simplified Chinese
Pe:	Persian	Ur:	Ukraine	Pr:	Portuguese		

Safety	Ref. No.	Part No.	Part Name & Description	QTY	Remarks
			CABINET AND CHASSIS		
	61	RAPX1081-K	SPEAKER CABINET ASS'Y	1	
	61-1	RKAX0038A-1	LEG CUSHION	4	
	62	RYBX1011-K	SIDE PANEL UNIT	1	
	63	RMQX0308	EVA PACKING (DRIVER UNIT)	1	
	64	RMQX0309	EVA PACKING (PASSIVE RADIATOR)	1	
	65	L0AZ25A00001	PASSIVE RADIATOR	1	
	66	XTB4+16AFJK	SCREW	24	
	67	RMVX0095-K	SCREW COVER	4	
⚠	68	RGNX1154-K	SPEC LABEL	1	
	69	RGFX1037-K	AC COVER	1	
	70	XTB3+10JFJK	SCREW	2	
	71	REXX1117	7P CABLE WIRE (SMPS-D-AMP)	1	
	72	REXX1118	3P CABLE WIRE (ID SWITCH-D-AMP)	1	
	73	REXX1127	2P WIRE (SMPS-AC INLET)	1	
	74	RKX1002-K	BOTTOM CHASSIS ASS'Y	1	
	75	RMKX1019	METAL CHASSIS	1	
	76	VMG1719	DAMPER	6	
	77	RMNX0224-1	PCB HOLDER	2	
	78	RHDX301002	SCREW	7	
	79	RHDX03001	SCREW	6	
⚠	80	N0AB6GY00007	SMPS MODULE P.C.B.	1	
	81	RKAX1017A	SILICON SPACER	1	

Safety	Ref. No.	Part No.	Part Name & Description	QTY	Remarks
			SPEAKER		
	SP61	L0AA16A00046	WOOFER UNIT	1	
			PACKING MATERIALS		
	P1	RPNX1063-1	POLYFOAM (SB)	1	
	P2	RPF1034	MIRAMAT BAG (SB)	1	

16.2. Electrical Replacement Parts List

Important Safety Notice

Components identified by \triangle mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

RTL (Retention Time Limited)

Note: The marking (RTL) indicates that the Retention Time is Limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

Note:

- When replacing any of these components, be sure to use only manufacturer's specified parts shown in the replacement part list.
- The parenthesized indications on the Remarks column specify the destination & product color (Refer to the cover page for the information).
- Parts without these indications shall be used for all areas.
- This product uses a laser diode. Refer to "Precaution of Laser Diode".
- Capacitor value are in microfarads (μ F) unless specified otherwise, P=Pico-farads (pF), F=Farads.
- Resistance values are in ohms, unless specified otherwise, 1K=1000 (OHM).
- All parts mentioned are supplied by PAVCSG unless indicated likewise.
- Parts mentioned [SPG] in the Remarks column are supplied by PAVC-CSG.

Safety	Ref. No.	Part No.	Part Name & Description	QTY	Remarks
			PRINTED CIRCUIT BOARDS		
\triangle	PCB1	REPX0771C	RX MODULE P.C.B.	1	
\triangle	PCB2	REPX0770C	TX MODULE P.C.B.	1	
	PCB3	REPX0865CA	D-AMP P.C.B.	1	(RTL)
	PCB4	REPX0865CA	ID SWITCH P.C.B.	1	(RTL)
\triangle	PCB5	REPX0865CD	AC INLET P.C.B.	1	(RTL)
			INTEGRATED CIRCUITS		
	IC3001	C0ABBB000244	IC	1	
	IC3002	C0ABBB000244	IC	1	
	IC5200	C1BA00000497	IC	1	
			TRANSISTORS		
	Q1003	B1ACKD000006	TRANSISTOR	1	
	Q1004	B1ADCE000012	TRANSISTOR	1	
	Q1005	B1GBCFJJ0051	TRANSISTOR	1	
	Q1006	B1GBCFGG0030	TRANSISTOR	1	
	Q1007	B1ABCF000176	TRANSISTOR	1	
	Q1008	B1ABCF000176	TRANSISTOR	1	
	Q1009	B1GBCFJJ0051	TRANSISTOR	1	
	Q1010	B1GDCFJJ0047	TRANSISTOR	1	
	Q1011	B1AAKD000012	TRANSISTOR	1	
	Q2002	B1AAKD000012	TRANSISTOR	1	
	Q2010	B1ACCF000094	TRANSISTOR	1	
	Q2011	B1ACKD000006	TRANSISTOR	1	
			DIODES		
	D1000	B0ECKP000002	DIODE	1	
	D1003	D0GBR00JA008	0 1/16W	1	
	D2000	B0BC01600013	DIODE	1	

Safety	Ref. No.	Part No.	Part Name & Description	QTY	Remarks
	D5743	B0ACCK000005	DIODE	1	
	D5745	B0ACCK000005	DIODE	1	
			SWITCHES		
	S1000	EVQ21405R	SW POWER	1	
			CONNECTORS		
	CN1000	K1MY22A00003	22P CONNECTOR	1	
	CN1003	K1KA05AA0193	5P CONNECTOR	1	
	CN1005	K1KA02AA0186	2P CONNECTOR	1	
			JACK		
\triangle	P5701	K2ABYA000001	AC INLET	1	
			COILS AND INDUCTOR		
	L1000	G0A150L00003	COIL	1	
\triangle	L1001	G0B340J00002	LINE FILTER	1	
	L1003	J0JKB0000020	INDUCTOR	1	
	L1004	J0JKB0000020	INDUCTOR	1	
			COMPONENT COMBINATION		
	Z1000	K4CZ01000027	TERMINAL	1	
	Z1001	K4CZ01000027	TERMINAL	1	
	Z1002	K4CZ01000027	TERMINAL	1	
			CHIP JUMPERS		
	K7	D0GBR00JA008	0 1/16W	1	
	W1002	D0GBR00JA008	0 1/16W	1	
	W1003	D0GBR00JA008	0 1/16W	1	
	W1031	D0GBR00JA008	0 1/16W	1	
	W1047	D0GDR00JA017	0 1/10W	1	

Safety	Ref. No.	Part No.	Part Name & Description	QTY	Remarks
	W1048	D0GBR00JA008	0 1/16W	1	
	W1052	D0GBR00JA008	0 1/16W	1	
			RESISTORS		
	R1000	D0GB154JA008	150K 1/16W	1	
	R1001	ERG2SJ122E	1.2K 2W	1	
	R1002	ERG2SJ122E	1.2K 2W	1	
	R1007	D0GB122JA008	1.2K 1/16W	1	
	R1008	D0GB122JA008	1.2K 1/16W	1	
	R1009	D0GB472JA008	4.7K 1/16W	1	
	R1010	D0GBR00JA008	0 1/16W	1	
	R1011	D0GB822JA008	8.2K 1/16W	1	
	R1013	D0GB104JA008	100K 1/16W	1	
	R1014	D0GB823JA008	82K 1/16W	1	
	R1015	D0GB333JA008	33K 1/16W	1	
	R1020	D0GB273JA008	27K 1/16W	1	
	R1021	D0GB823JA008	82K 1/16W	1	
	R1031	D0GBR00JA008	0 1/16W	1	
	R1033	D0GBR00JA008	0 1/16W	1	
	R1034	D0GBR00JA008	0 1/16W	1	
	R1107	ERJ1TYJ220U	22 1W	1	
	R1108	D0GB562JA008	5.6K 1/16W	1	
	R1207	ERJ1TYJ220U	22 1W	1	
	R1208	D0GB562JA008	5.6K 1/16W	1	
	R2000	D0GB220JA008	22 1/16W	1	
	R2004	D0GB272JA008	2.7K 1/16W	1	
	R2005	D0GB270JA007	27 1/10W	1	
	R2006	D0GB103JA008	10K 1/16W	1	
	R2010	D0GB220JA008	22 1/16W	1	
	R2012	D0GB272JA008	2.7K 1/16W	1	
	R2013	D0GB822JA008	8.2K 1/16W	1	
	R2014	D0GB561JA008	560 1/16W	1	
	R3102	D0GB562JA008	5.6K 1/16W	1	
	R3103	D0GB821JA007	820 1/10W	1	
	R3107	D0GB391JA008	390 1/16W	1	
	R3108	D0GB682JA007	6.8K 1/16W	1	
	R3111	D0GBR00JA008	0 1/16W	1	
	R3112	D0GBR00JA008	0 1/16W	1	
	R3202	D0GB822JA008	8.2K 1/16W	1	
	R3203	D0GB273JA008	27K 1/16W	1	
	R3207	D0GB562JA008	5.6K 1/16W	1	
	R3208	D0GB223JA007	22K 1/10W	1	
	R3213	D0GBR00JA008	0 1/16W	1	
	R3214	D0GBR00JA008	0 1/16W	1	
	R5200	D0GF100JA014	10 1/8W	1	
	R5201	D0GF100JA014	10 1/8W	1	
	R5204	D0GB152JA008	1.5K 1/16W	1	
	R5205	D0GB562JA008	5.6K 1/16W	1	
	R5206	D0GB562JA008	5.6K 1/16W	1	
	R5207	D0GB562JA008	5.6K 1/16W	1	
	R5208	D0GB562JA008	5.6K 1/16W	1	
	R5210	D0GF100JA014	10 1/8W	1	
	R5211	D0GF100JA014	10 1/8W	1	
	R5767	D0GB182JA007	1.8K 1/16W	1	
	R5768	D0GB182JA007	1.8K 1/16W	1	
	R5769	D0GB122JA008	1.2K 1/16W	1	
			CAPACITORS		
	C1000	D0GBR00JA008	0 1/16W	1	
	C1002	F1H1H104A013	0.1uF 50V	1	
	C1003	F1H1H104A013	0.1uF 50V	1	
	C1004	F2A1V102B074	1000uF 35V	1	
	C1005	F1H1H104A013	0.1uF 50V	1	
	C1006	F1H1H104A013	0.1uF 50V	1	
	C1007	F1H1H104A013	0.1uF 50V	1	
	C1009	F2A0J681A550	680uF 6.3V	1	
	C1011	F2A1V102B074	1000uF 35V	1	
	C1012	F1H1H104A013	0.1uF 50V	1	
	C1014	F2A0J101A245	100uF 6.3V	1	
	C1116	ECQV1H684JL3	0.68uF 50V	1	
	C1117	F1H1H104A013	0.1uF 50V	1	

Safety	Ref. No.	Part No.	Part Name & Description	QTY	Remarks
	C1118	F1H1H104A013	0.1uF 50V	1	
	C1216	ECQV1H684JL3	0.68uF 50V	1	
	C1217	F1H1H104A013	0.1uF 50V	1	
	C1218	F1H1H104A013	0.1uF 50V	1	
	C2000	F1H1H104A013	0.1uF 50V	1	
	C2001	ECA1EAM101XB	100uF 25V	1	
	C2005	F1H1H104A013	0.1uF 50V	1	
	C2006	F1H1H104A013	0.1uF 50V	1	
	C2010	ECA1EAM101XB	100uF 25V	1	
	C2011	F1H1H104A013	0.1uF 50V	1	
	C2014	F1H1H104A013	0.1uF 50V	1	
	C2015	F1H1H104A013	0.1uF 50V	1	
	C3103	F1H0J4750005	4.7uF 6.3V	1	
	C3104	F1H0J4750005	4.7uF 6.3V	1	
	C3105	F1H1H102A219	1000pF 50V	1	
	C3106	F1H1H101A230	100pF 50V	1	
	C3203	F1H1C3330001	0.033uF 16V	1	
	C3204	F1H1C223A001	0.022uF 16V	1	
	C3205	F1H1C3330001	0.033uF 16V	1	
	C3206	F1H1C3330001	0.033uF 16V	1	
	C5200	F1H1H104A013	0.1uF 50V	1	
	C5201	F1H1H153A219	0.015uF 50V	1	
	C5202	F1H1C224A068	0.022uF 16V	1	
	C5203	F1J2A221A030	220pF 100V	1	
	C5204	F1H1H153A219	0.015uF 50V	1	
	C5205	F1J2A221A030	220pF 100V	1	
	C5206	F1H1H104A013	0.1uF 50V	1	
	C5207	F1H1H104A013	0.1uF 50V	1	
	C5208	F1H1H104A013	0.1uF 50V	1	
	C5209	F1H1H104A013	0.1uF 50V	1	
	C5210	F1K2A1040007	0.1uF 100V	1	
	C5211	F1J2A221A030	220pF 100V	1	
	C5212	F1H1H221A792	220pF 50V	1	
	C5213	F1H1H104A013	0.1uF 50V	1	
	C5214	F1H1H104A013	0.1uF 50V	1	
	C5215	F1K2A1040007	0.1uF 100V	1	
	C5216	F1H1H331A013	330pF 50V	1	
	C5218	F1J2A221A030	220pF 100V	1	
	C5219	F1K2A1040007	0.1uF 100V	1	
	C5220	F1H1H104A013	0.1uF 50V	1	
	C5221	F1H1H102A219	1000pF 50V	1	
	C5222	F1H1A474A025	0.47uF 10V	1	
	C5223	F1H1A474A025	0.47uF 10V	1	
	C5224	F1H1H331A013	330pF 50V	1	
	C5231	F1H1H102A219	1000pF 50V	1	
	C5232	F1H1A474A025	0.47uF 10V	1	
	C5233	F1H1A474A025	0.47uF 10V	1	
	C5234	F1H1H102A219	1000pF 50V	1	
	C5240	F2A1J470A050	47uF 63V	1	
	C5522	F1H1H104A013	0.1uF 50V	1	
	C5523	F1H1H104A013	0.1uF 50V	1	
	C5602	F2A1C100A234	10uF 16V	1	
	C5603	F1H1H104A013	0.1uF 50V	1	

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