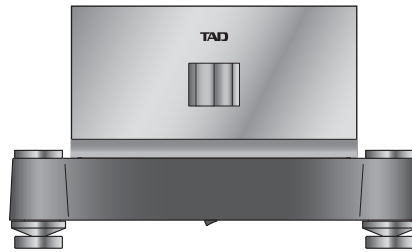


TAD

Service Manual



TAD-M600

ORDER NO.
CRT4485

MONAURAL POWER AMPLIFIER

TAD-M600

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Remarks
TAD-M600	U	AC 120 V	
TAD-M600	Y5	AC 230 V	



For details, refer to "Important Check Points for good servicing".

TECHNICAL AUDIO DEVICES LABORATORIES, INC. 1-1, Shin-ogura, Saiwai-ku, Kawasaki-shi, Kanagawa 212-0031, Japan

SAFETY INFORMATION



This service manual is intended for qualified service technicians ; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.



WARNING

This product may contain a chemical known to the State of California to cause cancer, or birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 - Proposition 65



NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols  (fast operating fuse) and/or  (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible  (fusible de type rapide) et/ou  (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

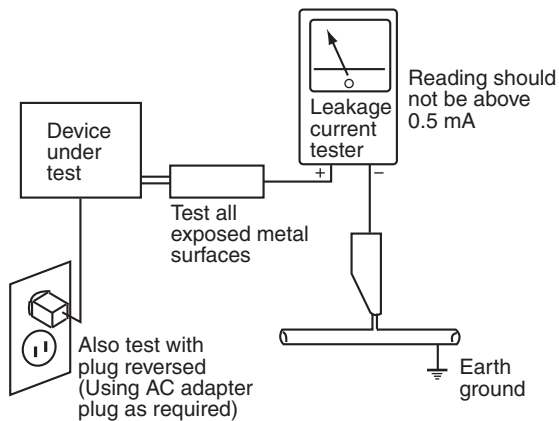
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.




AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a  on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol. Please be sure to confirm and follow these procedures.

1. Product safety



Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

- ① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

- ② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification (addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

- ③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris. Soldering should be finished with the proper quantity. (Refer to the example)

- ④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

- ⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

- ⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs. In addition, be sure that there are no pinched wires, etc.

- ⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

- ⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages. If you find a damaged power cord, please exchange it with a suitable one.

- ⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

- ⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries. Please pay attention to your surroundings and repair safely.

2. Adjustments



To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification. Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts



Use grease and adhesives that are equal to the specified substance. Make sure the proper amount is applied.

4. Cleaning



For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws



To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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1. SERVICE PRECAUTIONS

1.1 NOTES ON SOLDERING

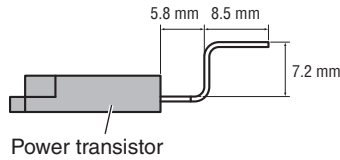
Compared with eutectic solders, lead-free solders have higher bond strengths but slower wetting times and higher melting temperatures (hard to melt/easy to harden).

The following lead-free solders are available as service parts:

- Parts numbers of lead-free solder:
 GYP1006 1.0 in dia.
 GYP1007 0.6 in dia.
 GYP1008 0.3 in dia.

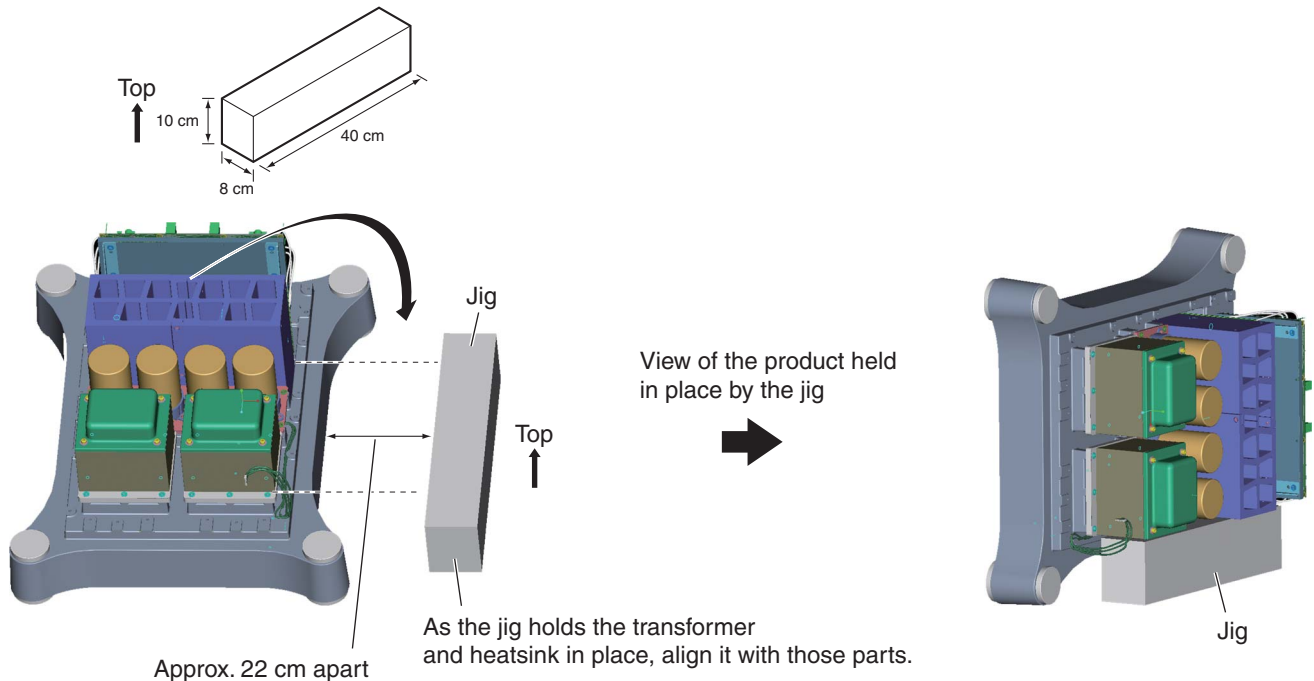
1.2 SERVICE PRECAUTIONS

- Be careful not to scratch or stain the cabinet during servicing, because it may cause a serious complaint.
- As the product weighs 90 kg, be fully careful when handling it. Four people are required when moving it.
- Be careful of the order of wire arrangement at a place where several wires are fixed together with a screw (on the power main electrolytic capacitor, etc.), as this can affect the sound quality. Follow the detailed procedure described in "7. DISASSEMBLY" .
- As the product has conical feet, be very careful not to scratch floor surfaces in the customer's home.
- Leads of power transistors supplied as service parts are NOT bent like ones used on the product. Bend leads of supplied parts as shown the rough indication below before using.



1.3 FOR JIG

Jig for the Product (Recommended Sizes) and How to Use the Jig



2. SPECIFICATIONS

2.1 SPECIFICATIONS

A ■ Amplifier Section

Power output	600 W (20 Hz to 20 kHz, T.H.D., 0.2 %, 4 Ω) 300 W (20 Hz to 20 kHz, T.H.D., 0.2 %, 8 Ω)
Rated distortion	Less than 0.03 % (20 Hz to 20 kHz, 300 W, 4 Ω)
Signal-to-Noise Ratio (IHF, short circuited, A network)	125 dB or higher
Frequency response	1 Hz to 100 kHz, $+0$ -1 dB
Gain.....	29.5 dB
Input terminal (Sensitivity/ Impedance)	1.5 V / 220 kΩ

B ■ Power section/miscellaneous

Power requirements.....	AC 120 V, 60 Hz (TAD-M600/U) AC 230 V, 50/60 Hz (TAD-M600/Y5)
Power consumption	520 W
Dimensions	516 mm (W) × 297 mm (H) × 622 mm (D) (20 ⁵ / ₁₆ in. (W) × 11 ¹¹ / ₁₆ in. (H) × 24 ¹ / ₂ in. (D))
Dimensions (When using spike bases)	516 mm (W) × 307 mm (H) × 622 mm (D) (20 ⁵ / ₁₆ in. (W) × 12 ¹ / ₁₆ in. (H) × 24 ¹ / ₂ in. (D))
Weight	90.0 kg (198.4 lb)

C ■ Accessories

Power cord	1
Spike bases	4
Spike base template.....	1
Hexagon wrench.....	1
Operating Instructions.....	1

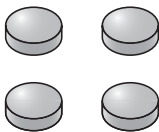
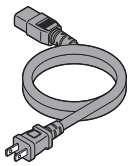
📌 Note

● Specifications and the design are subject to possible modifications without notice, due to improvements.

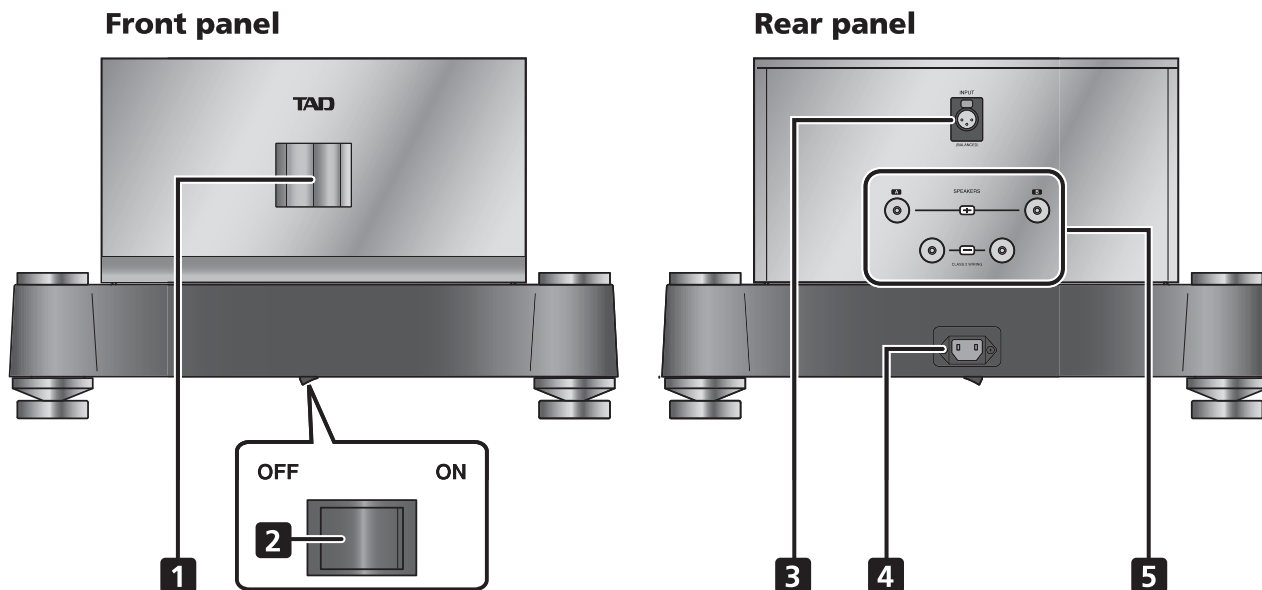
Checking what's in the box

Please check that you have received the following supplied accessories in the accessory box.

- Power cord x 1 (ADG7061: TAD-M600/U)
(ADG7062: TAD-M600/Y5)
- Hexagon wrench x 1 (CBX1012)
- Spike bases x 4
- Spike base template x 1
- Operating Instructions (CRB3085: TAD-M600/U)
(CRD4431: TAD-M600/Y5)



Controls and displays



1. Power indicator

Indicates whether the power is turned on or off. The indicator will light red during start up or if there is a malfunction. The indicator will light yellow when the unit is ready to operate. If the power indicator light turns from yellow to red, turn off the power and refer to *Protection circuit*. If the trouble is still not resolved, ask your dealer.

2. Power switch

Press to turn the power on/off. Flip the switch to the right to turn the power on; flip the switch to the left to turn the power off.

3. INPUT terminal (BALANCED)

Connect to Pre-Amplifier.

4. AC IN connector

Connect the accessory power cord here.

5. SPEAKERS terminals

Connect speakers with impedance of 4 Ω to 16 Ω.

■

1

■

2

■

3

■

4

■

3. BASIC ITEMS FOR SERVICE

3.1 CHECK POINTS AFTER SERVICING

A Items to be checked after servicing

To keep the product quality after servicing, confirm recommended check points shown below.

No.	Procedures	Check points
1	Confirm whether the customer complain has been solved.	The customer complain must not be reappeared. Audio and operations must be normal.
2	Check the analog audio playback. (Make the analog connections with a CD player.)	Each channel audio and operations must be normal.
3	Check the appearance of the product.	No scratches or dirt on its appearance after receiving it for service.

B

■

See the table below for the items to be checked regarding audio.

Item to be checked regarding audio
Distortion
Noise
Volume too low
Volume too high
Volume fluctuating
Sound interrupted

C

■

D

■

E

■

F

8

■

1

■

2

■

3

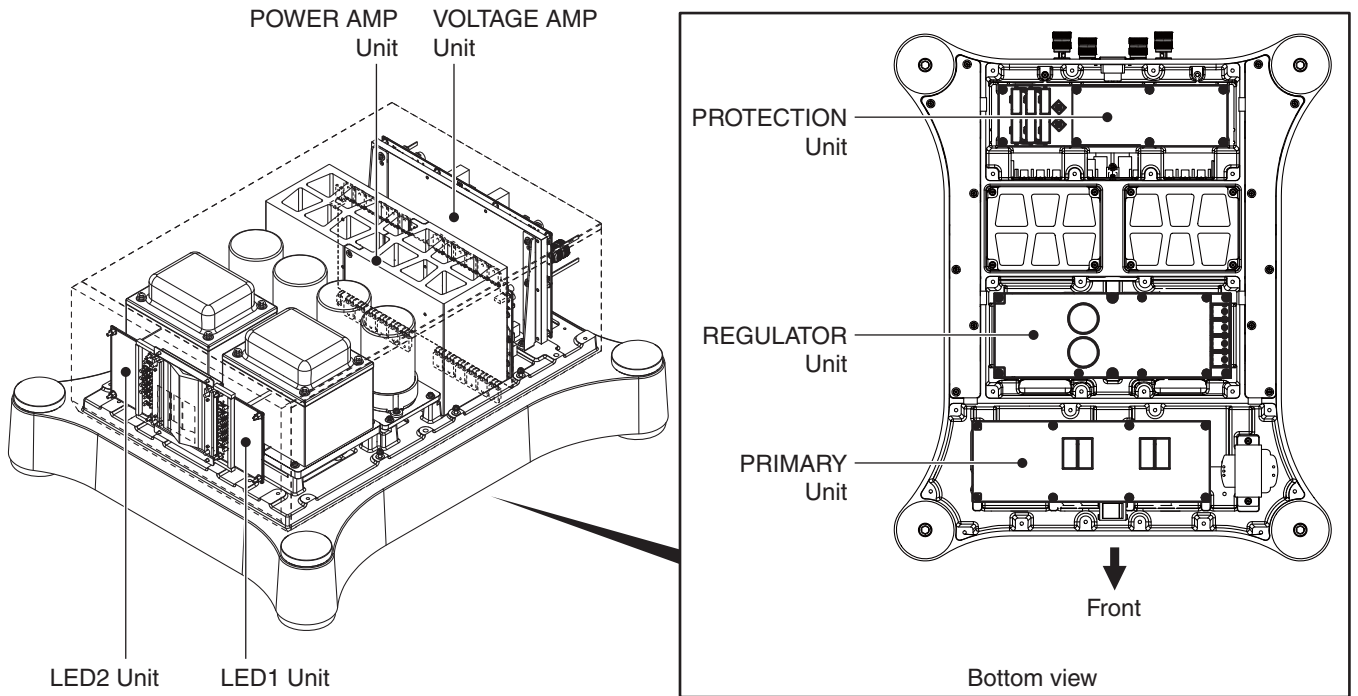
■

4

■

TAD-M600

3.2 PCB LOCATIONS



NOTES :

- Parts marked by "*" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Mark No.	Description	Part No.
----------	-------------	----------

LIST OF ASSEMBLIES

	PRIMARY Unit (TAD-M600/U)	CWH1518
	PRIMARY Unit (TAD-M600/Y5)	CWH1519
	PROTECTION Unit	CWH1521
	LED1 Unit	CWH1522
	LED2 Unit	CWH1523
	POWER AMP Unit	CWH1516
	VOLTAGE AMP Unit	CWH1515
	REGULATOR Unit	CWH1520

4. BLOCK DIAGRAM

4.1 OVERALL WIRING DIAGRAM

A

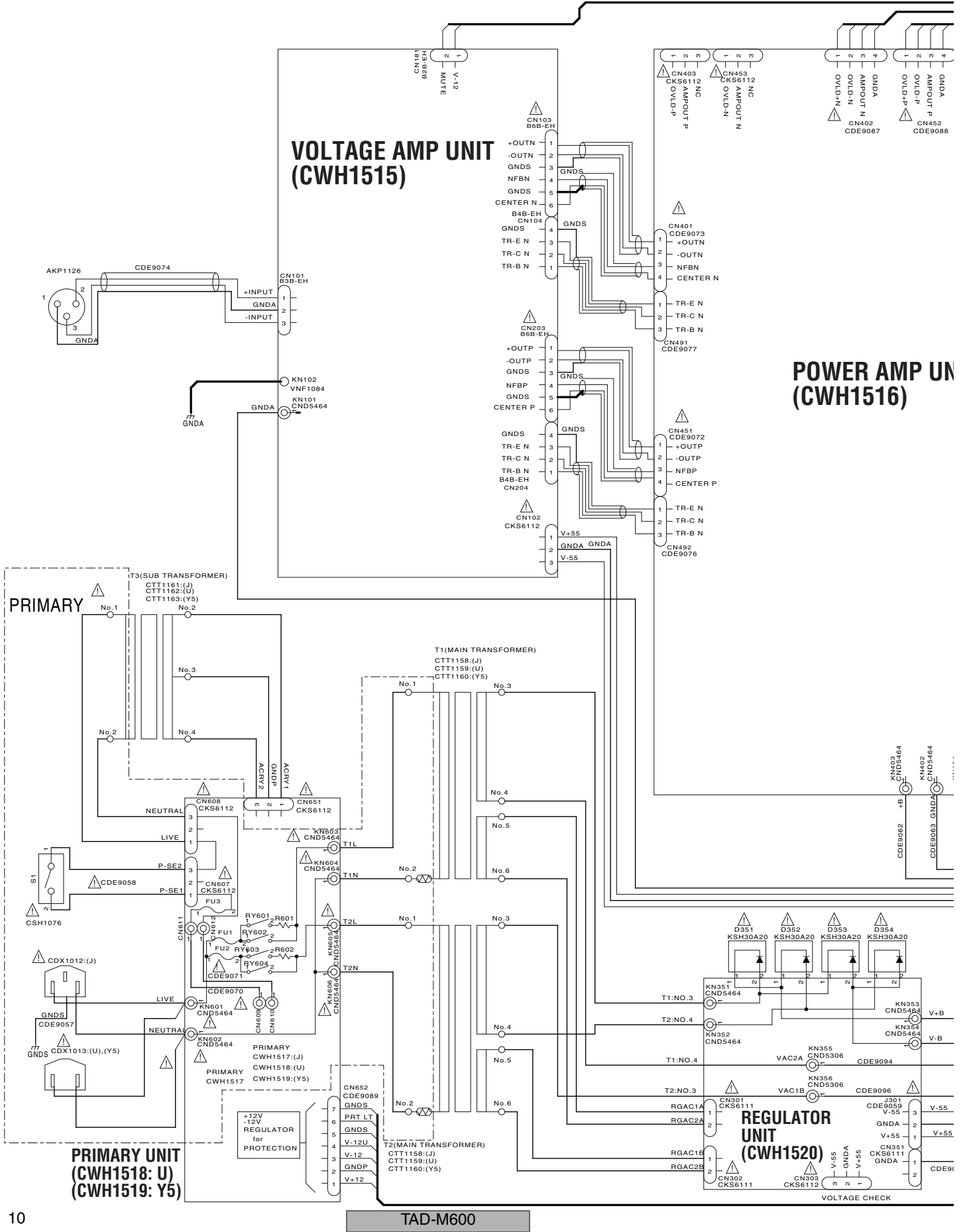
B

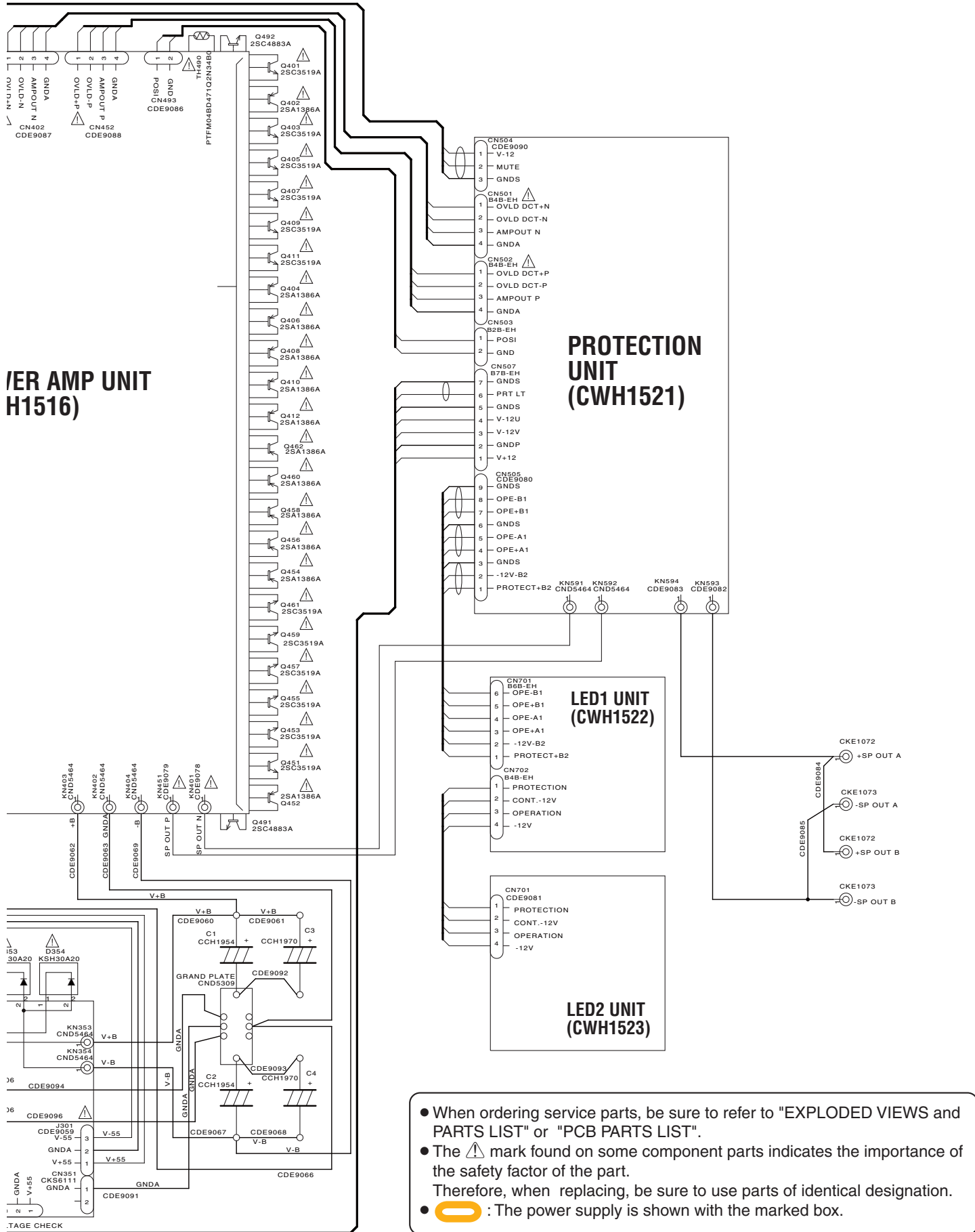
C

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E

F







**DRIVER AMP UNIT
(H1516)**

**PROTECTION UNIT
(CWH1521)**

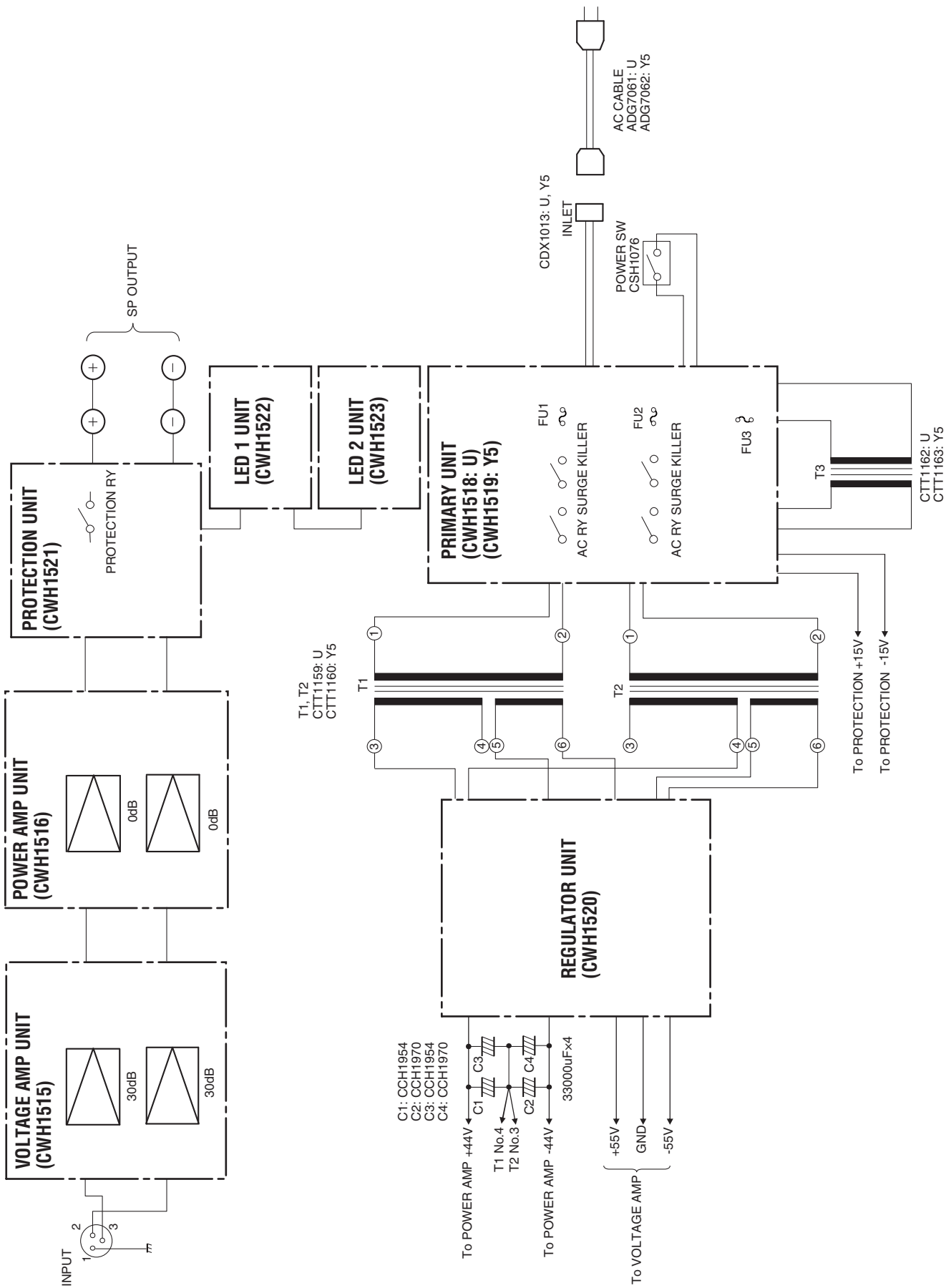
**LED1 UNIT
(CWH1522)**

**LED2 UNIT
(CWH1523)**

- When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
- The  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
-  : The power supply is shown with the marked box.

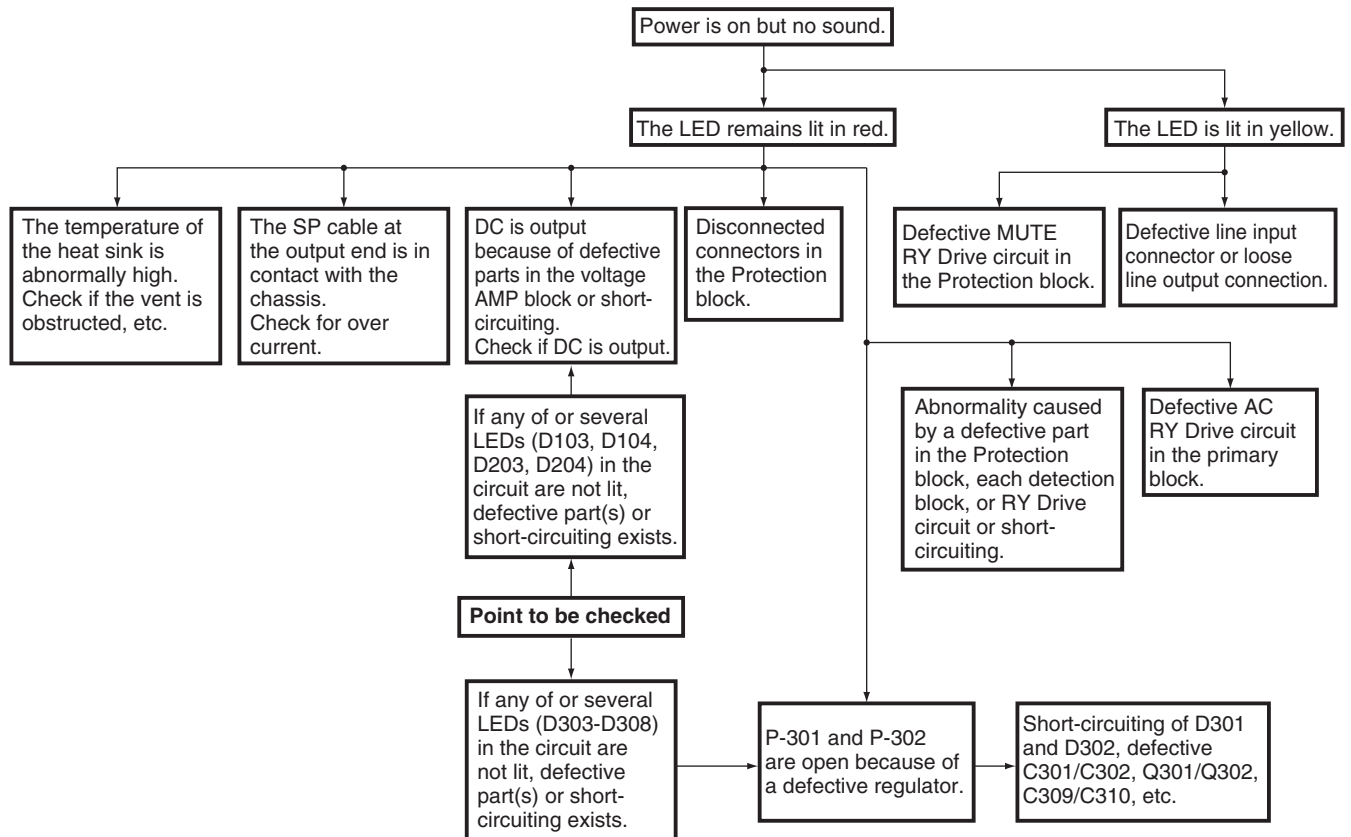
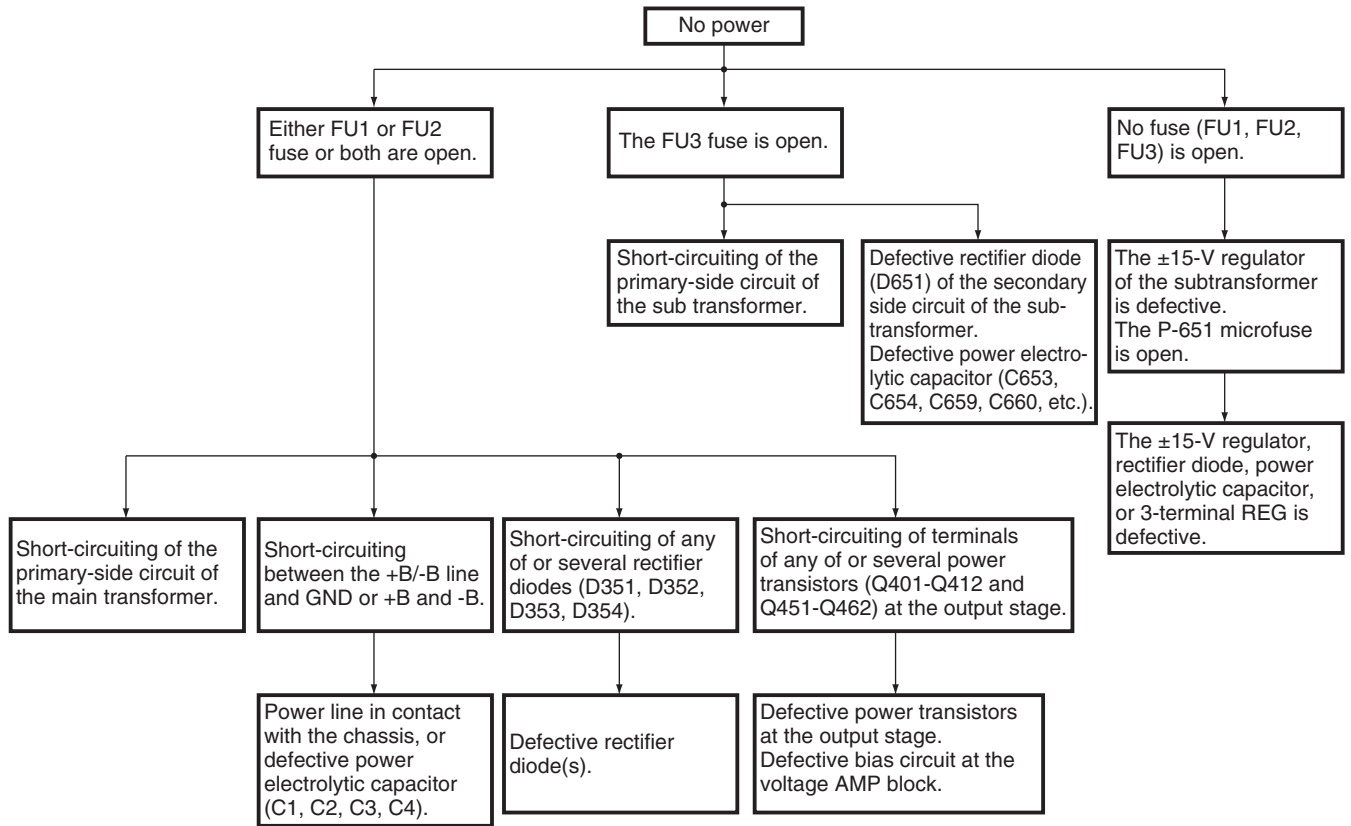
4.2 OVERALL BLOCK DIAGRAM

A
B
C
D
E
F



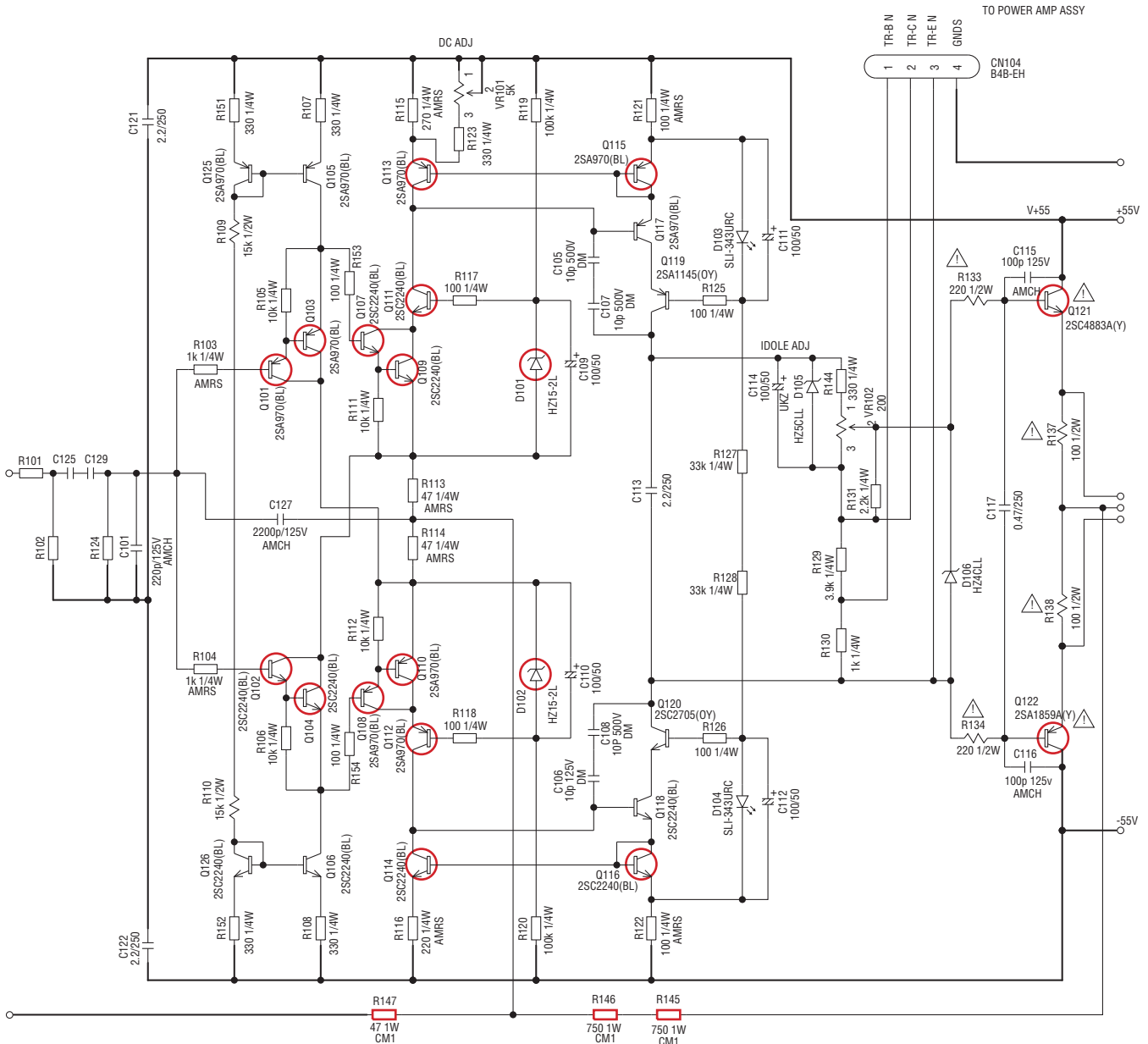
5. DIAGNOSIS

5.1 TROUBLESHOOTING



5.2 CIRCUIT DESCRIPTION

VOLTAGE AMP UNIT



This circuit is a voltage amplifier stage of 30-dB gain. The input block (Q101, Q102, Q103, and Q104) is a buffer amplifier. A current mirror circuit has been adopted as a constant current circuit. Operating it on constant current reduces any influence of temperature drift. A diamond buffer circuit is constructed by cross-connecting this circuit and the initial stage of the amplifier section.

The signal voltage attribute that is input to the initial stage (Q107, Q108, Q109, and Q110) of the amplifier section is converted to current via the current mirror circuit (Q113 \Leftrightarrow Q115, Q114 \Leftrightarrow Q116). A Wilson Mirror circuit has been adopted as a current mirror circuit, for higher accuracy.

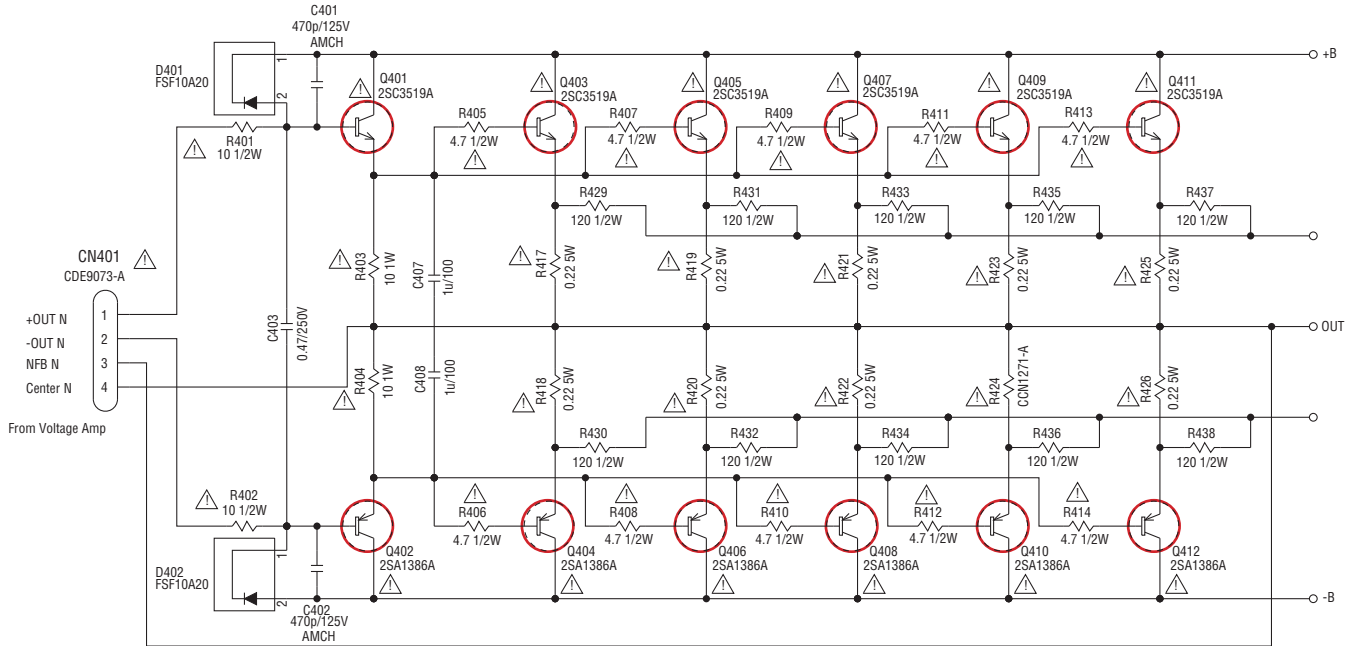
The V/I converted current attribute is converted to voltage with the aid of the input impedance of the SEPP circuit at the output buffer (Q121, Q122) then output.

To improve the high-frequency characteristics, a cascode bootstrap configuration (Q111, D101, Q112, and D102) at the initial stage improves the high-frequency characteristics.

The negative feedback (NFB) is applied from the output stage to the β circuit that consists of R145, R146, and R147. When the feedback is applied to the emitter that is located at the initial stage of the amplifier section, where the impedance is low, the NFB current flows and serves as the current feedback.

As described above, a high-accuracy circuit is adopted in each part, and a simple configuration is adopted in which the voltage attribute is converted to current then reconverted to voltage in one stage. Combined with a current feedback configuration, all these features achieve a highly stable amplifier.

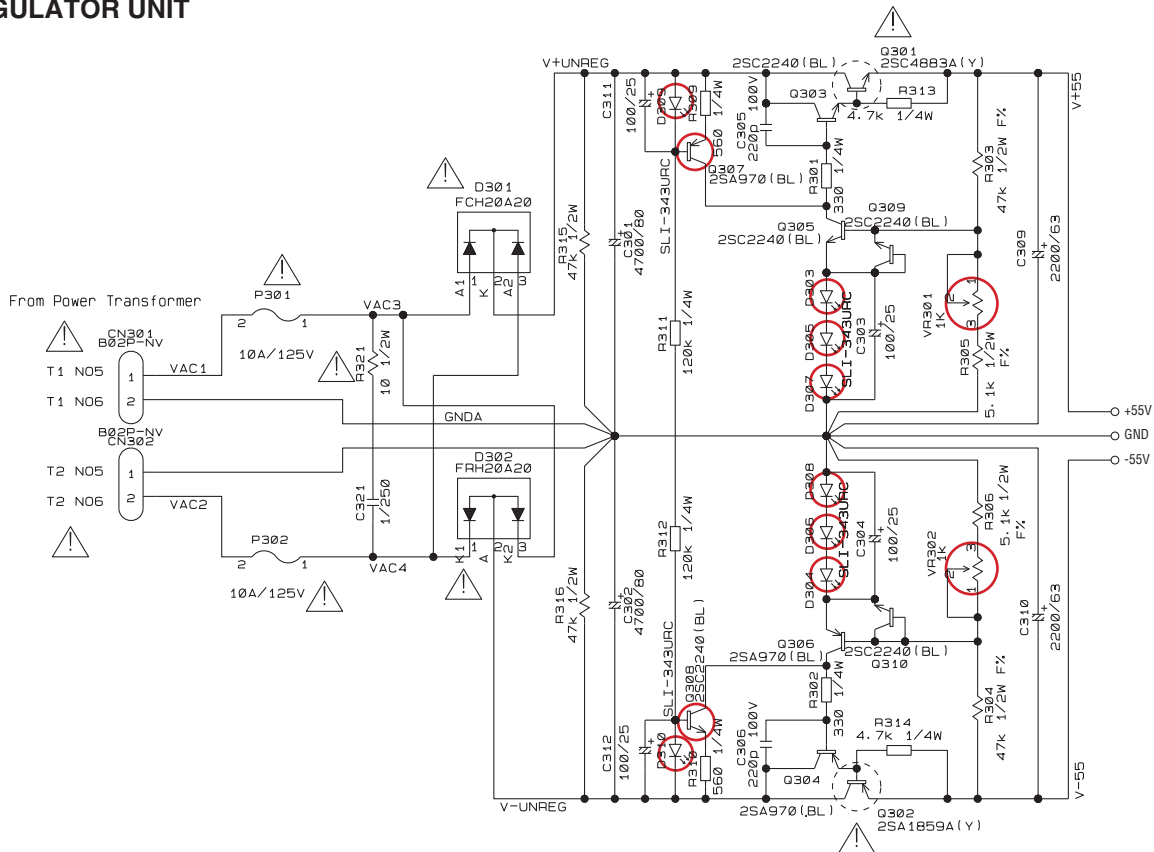
POWER AMP UNIT



This circuit amplifies power. A three-stage Darlington structure is adopted, which includes the output SEPP at the voltage amplifier stage, driver stage (Q401, Q402), and final stage (Q403-Q412), which has 5-parallel push-pull composition.

All these allow driving of 600-W, 4-ohm output speakers without difficulty. This circuit belongs to the AB class, with total idle current of 0.5 A (a product with power output up to 2 W belongs to the A class).

REGULATOR UNIT

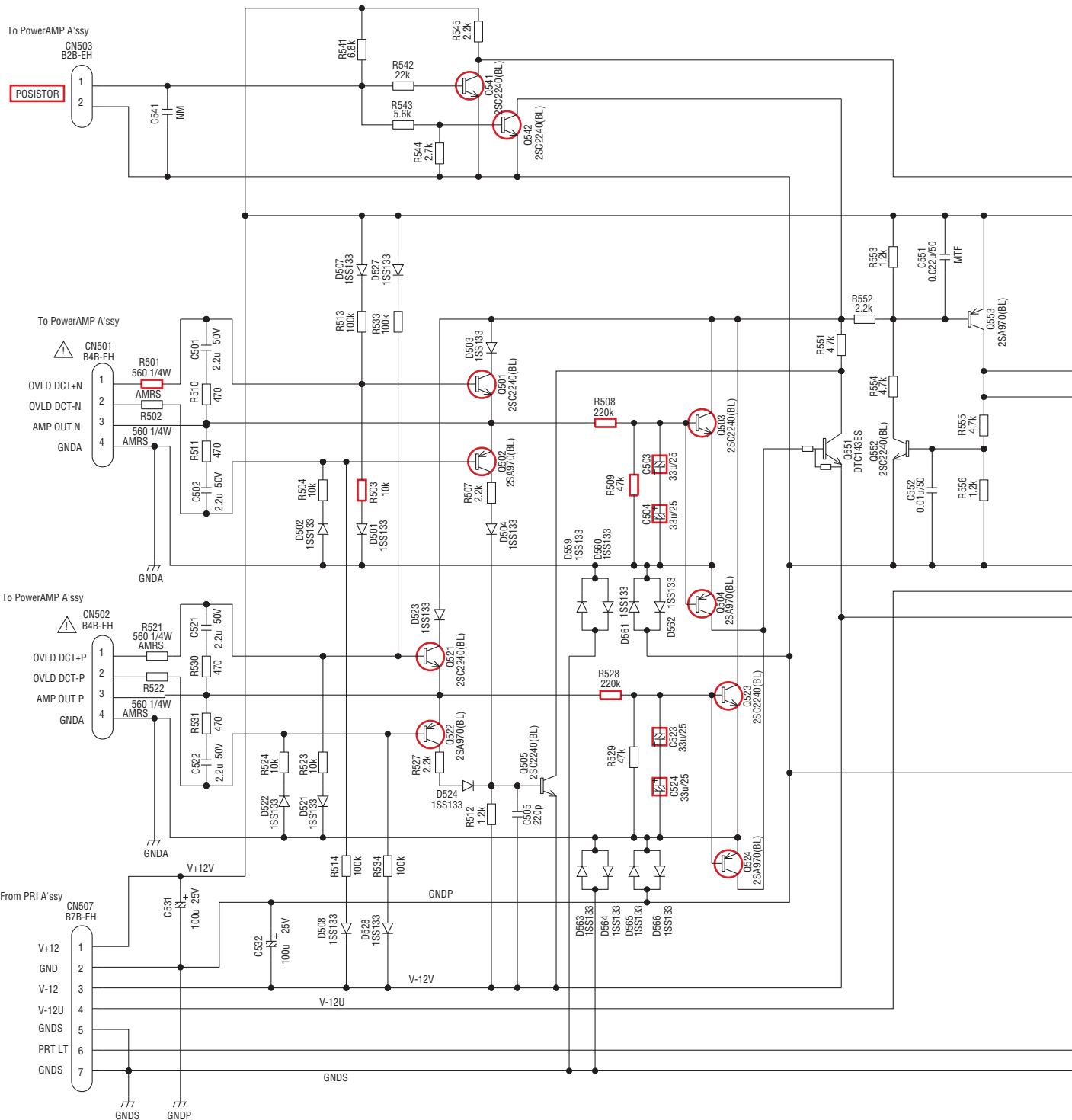


This is a basic feedback-type constant-voltage circuit. The forward voltage (Vf) of the LEDs (D303, D305, D307, D308, D306, D308) is used as the reference voltage, which is 5.4 V (1.8 V x 3).

To suppress the influence of power fluctuations, a current mirror circuit (constant current circuit) that consists of Q307-D309 (Q308-D310) is used. Adjust the output voltage (VR301, VR302) to ±55 V.

A

PROTECTION UNIT



B

C

D

E

F

Overcurrent detection

Each of Q501, Q502, Q521, and Q522 is an overcurrent detection transistor. For example, in the case of Q501, bridge detection by R501, R503, emitter resistor (0.22 ohm ÷ 5 [parallel push-pull circuits] = 0.044 ohm), and load is performed.

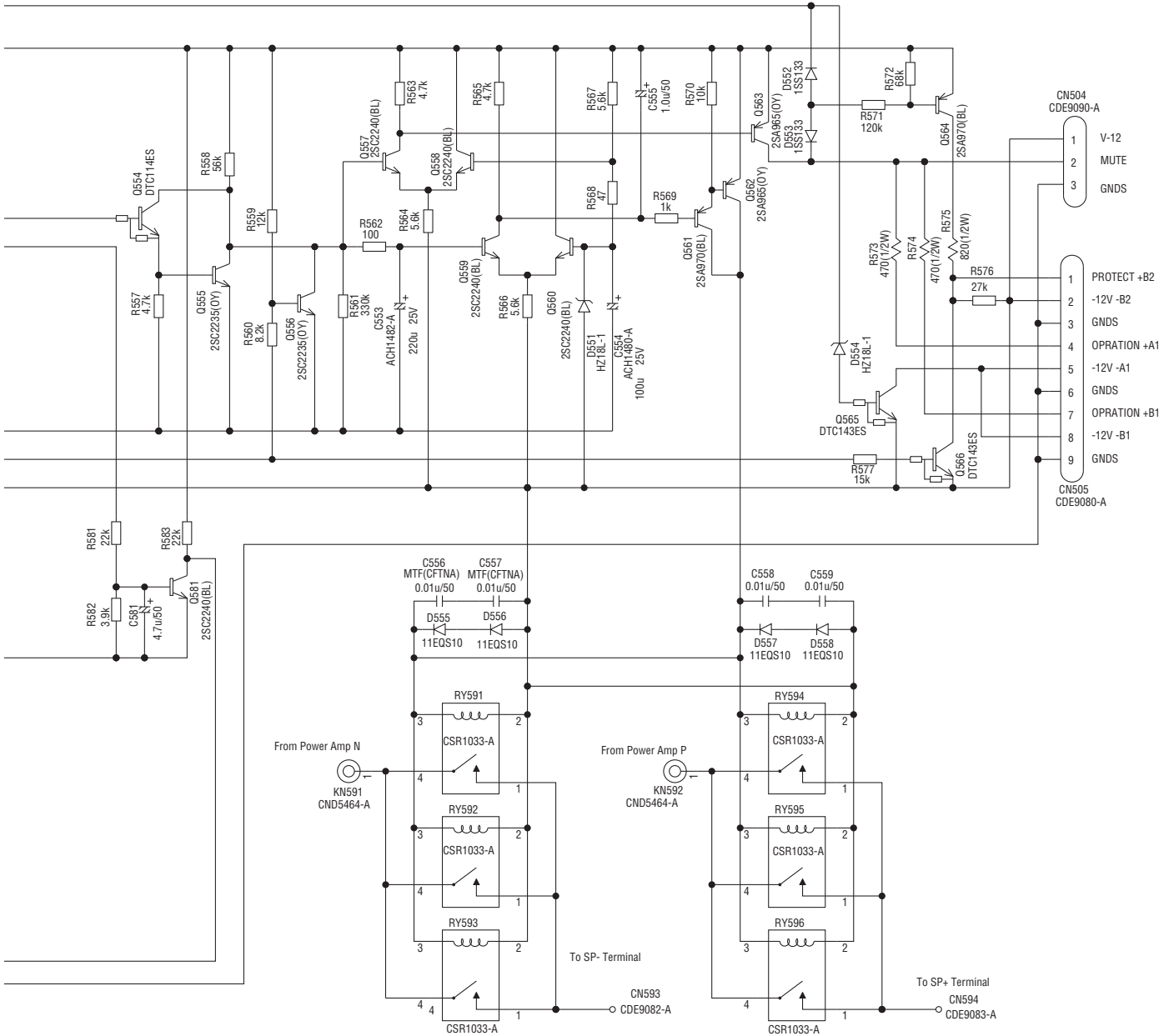
If the bridge becomes out of balance, the transistor is turned on and the protection function is activated (speaker relay: OFF, main power: OFF).

DC detection

DC detection transistors are Q503-Q504 and Q523-Q524.

The low-pass filter (R508-C503 and C504 [R528-C523 and C524]) cuts the AC component.

If current higher than that determined by a ratio of resistance values of R508 and R509 flows and the DC component reaches about 3 V, the transistor is turned on and the protection function is activated (speaker relay: OFF, main power: OFF).



Temperature detection

If the temperature rises, the resistance value of the positive thermistor (TH490) mounted on the heat sink also rises. When the temperature reaches about 95 °C, Q541 is set to ON and the illumination on the front panel turns red.

NOTE: Under such circumstances, the protection function is not activated.)

If the temperature continues to rise and exceeds about 100 °C, Q542 is set to ON and the protection function is activated (speaker relay: OFF, main power: OFF).

For more details on the protection functions, see the descriptions below.

A Detailed Descriptions on the Protection Functions

Power-ON muting function

- When power is set to ON, signal muting is activated for about 8 seconds, resulting in no sound. While muting is activated, the red LEDs are lit.
- After signal muting is released, the red LEDs go dark, the white LEDs light, and sound is output.

Power-ON surge killer function

- The surge killer circuit is activated for about 2 seconds after the power is set to ON to minimize the inrush current of AC power.
- When the surge killer function is released, sound of a relay operation may be output.

B

Overload-detection function

- The overload-detection circuit is instantly (within about 20 msec) activated when the impedance of the speaker that is connected to the load drops to less than 2 ohms, and if the output terminals are short-circuited or the output value becomes larger than the preset value.
- While this function is activated, the white LEDs go dark and the red LEDs light.
- To release this function, turn the unit off and check and correct overload status of the speaker or short-circuiting of the output terminals. Then turn the unit back on again.

Output DC detection function

- If DC voltage of 3 V or higher is generated at the output for some reason (when DC is input while DC is output from the preamplifier, failure in an internal part of the amplifier itself, etc.), the output DC detection circuit is activated.
- While this function is activated, the white LEDs go dark and the red LEDs light.
- To release this function, if DC output from the preamplifier is the cause, turn the unit off, connect the AC power, then turn the unit back on again.
- If failure in an internal part of the amplifier is suspected, repair it.

C

Temperature-detection function

- If there are continuous outputs larger than the upper limit expected from low-load output, or when the ambient temperature is high, the temperature of the heat sink is detected and the protection function will be activated.
- The temperature-detection function is activated in two steps, as described below.
- In the first step, if the temperature exceeds a preset temperature (90-95 °C), the white LEDs go dark and the red LEDs light to warn that the internal temperature of the amplifier is abnormally high, but sound continues to be output.
- In the second step, if the temperature exceeds another preset temperature (a preset temperature of the first step plus about 100 °C), the output is shut off and sound will not be output.
- If the first detection step is activated, lower the output level and the ambient temperature. If the red LEDs go dark and the white LEDs light, the amplifier can be used normally afterwards.
- If the second detection step is activated, turn the unit off. Let it cool down for several dozen minutes and lower the ambient temperature and the amplifier output level before turning it back on again.

D

Power-OFF muting function

- In order to prevent noise from being output when the unit is turned off, output will be instantly (within about 20 msec) shut off and muted.
- In such circumstances, the LEDs go dark when muting is activated.

E

F

Detailed Descriptions on the Protection Operations

Power-ON muting operation

- The voltages at R558 and C553 of the time-constant circuit are compared with the reference voltage at the difference amplifiers, and muting will be released when those voltages exceed the threshold levels. Two difference amplifiers are provided, with the slightly different threshold levels (approx. 50 mV = R568 voltage drop, 50 ms). The output relay is first set to ON then the input relay is set to ON.

Power-ON surge killer operation

- When the voltages at R686 and C682 of the time constant circuit exceed approx. 7.2 V (-12 + D551 + 1.2), Q682 and Q683 are set to ON, the relay of the surge killer circuit is activated, and the surge killer resistor is short-circuited.
- When the unit is turned off, Q681 is set to ON, Q682 and Q683 are set to OFF, and the relay of the surge killer circuit is released.

Overload-detection operation

- The overload status (approx. 0.5 ohm or less) on the + side is detected at Q501 and Q521, and that on the - side is detected at Q502 and Q522. Detection of an abnormality is retained via the latch circuit that consists of Q552 and Q553. Then Q554 together with Q555 is set to ON, C553 is rapidly discharged, the subsequent differential circuit and output/input relays at the relay drive circuit are activated, then signals are set to OFF.
- The white LEDs go dark when Q563 is set to OFF, and the red LEDs light when Q564 is set to ON.
- To prevent arc discharge when the output relay is set to OFF, approx. 4-ms time-constant circuits are provided with the C555 and R565 circuits so that the output relay is activated later than the input relay.

Output DC detection operation

- Audio signals are eliminated at the LPF that consists of R508, R509, C503, C504, and R528, R529, C523 and C524, and + DC output level is detected at Q503 (Q523) and - DC output level is detected at Q504 (Q524). Detection of an abnormality is retained via the latch circuit that consists of Q552 and Q553. The same operations as those for overload detection will then follow.
- The detection levels are Approx. $V_{be} \cdot (R509 / (R508 + R509))$.
- The formula for the equivalent cutoff frequency of the LPF is as follows: Frequency determined by $(R508 (R528) / R509 (R529))$ and $(C503 (C523) / 2)$ multiplied by (output peak voltage/detection level), given that $C503 (C523) = C504 (C524)$.

Temperature-detection operation

- For temperature detection, use a TH490=PTFM04BD471Q2N34B0 (100 °C) type Posistor from Murata Manufacturing that can be secured to the heat sink with screws. The characteristics of this thermistor are as follows: at 80 °C, typical 100 ohms or less; at 90 °C, 330 ohms or less (typ. 100 ohms); at 100 °C, 470 ohms or higher (typ. approx. 1.5 k-ohms).
- In the first detection step, when the resistance value at the Posistor becomes 400 ohms or higher at a preset temperature of 90-95 °C, Q541 is set to ON, Q565 is set to OFF, and the white LEDs go dark. Instead, Q564 is set to ON and the red LEDs light.
- In the second detection step, when the resistance value at the Posistor becomes 1.4 k-ohms or higher at a preset temperature of approx. 100 °C, Q542 is set to ON. Detection of the abnormality is retained via the latch circuit that consists of Q552 and Q553. The same operations as those for overload detection will then follow.
- If the first detection step is activated, lower the output level and the ambient temperature. Q541 will be turned OFF, the red LEDs will go dark, and the white LEDs will light.

Power-OFF muting operation

- At the - voltage rectifier circuit with a small time constant that consists of D654, D655, C661, R652, D656, C662 and R653, negative voltage is discharged for approx. 15 ms when the unit is turned OFF, Q556 is turned ON, and C553 is discharged in the route of R562. Then the input relay (Q556) to which the differential amplifier is directly connected is first released. Then the output relay is released slightly after the input relay when the electric potential at R562 has decreased.
- The current to be fed to the red LEDs is absorbed at Q566 and the red LEDs go dark approximately at the same time as the input relay is turned off.

6. SERVICE MODE

There is no information to be shown in this chapter.

1

2

3

4

7. DISASSEMBLY

A

Note:

Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.

- Be careful not to scratch or stain the cabinet during servicing, because it may cause a serious complaint.
- As the product weighs 90 kg, be fully careful when handling it. Four people are required when moving it.
- Be careful of the order of wire arrangement at a place where several wires are secured together with a screw (on the power main electrolytic capacitor, etc.), as this can affect the sound quality. Follow the detailed procedure described in this section.
- As the product has conical feet, be very careful not to scratch floor surfaces in the customer's home.

B

Disassembly

[1] Exterior Section

[1-1] Panel (Rear)

- (1) Remove the nine screws. (BMZ40P140FCC)
- (2) Remove the panel.
- (3) Release the jumper wires, as required.

Panel

②

① x9

C

D

[1-2] Panel (Top)

- (1) Remove the eight screws. (CBA2215)
- (2) Remove the panel.

Panel

②

① x4

① x4

E

F

20

TAD-M600

1

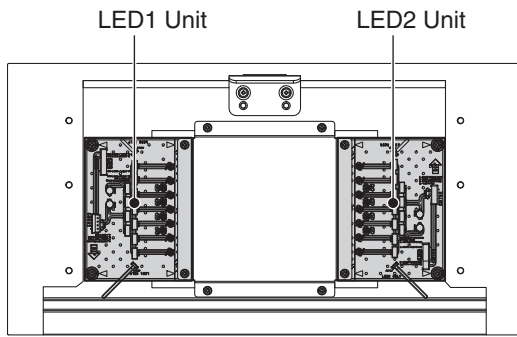
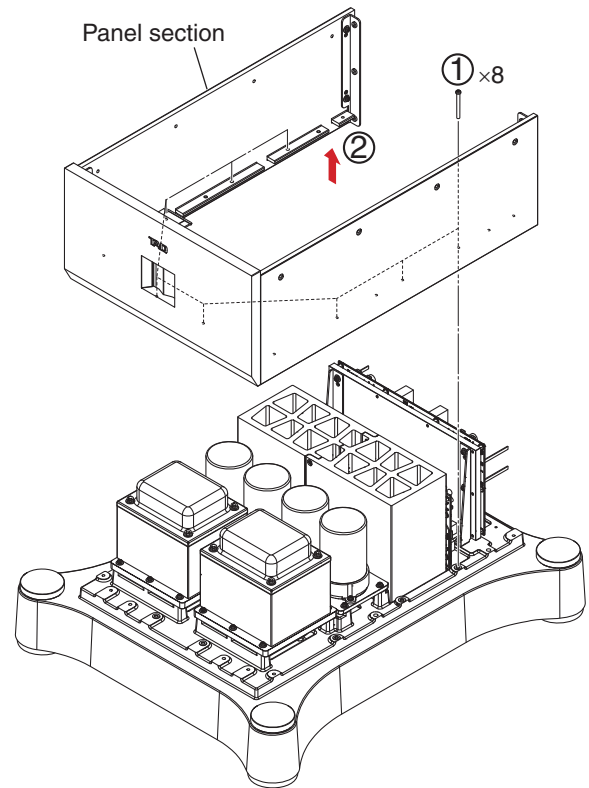
2

3

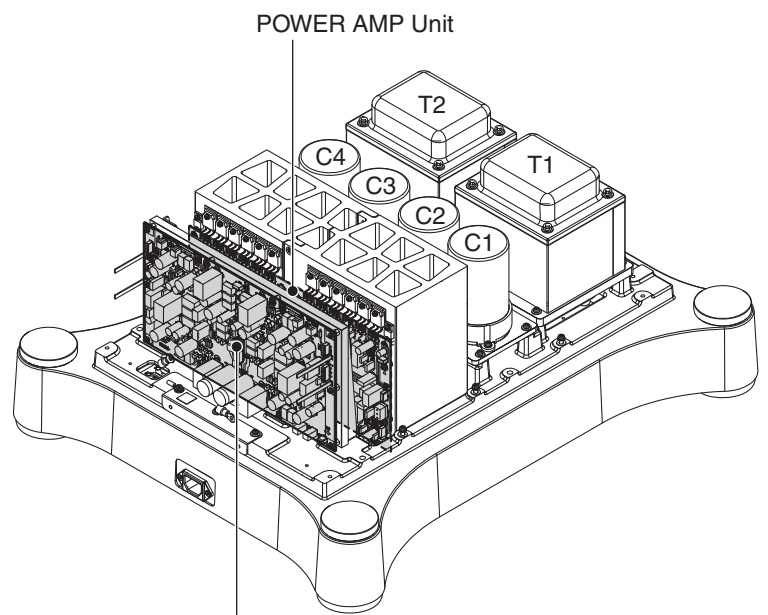
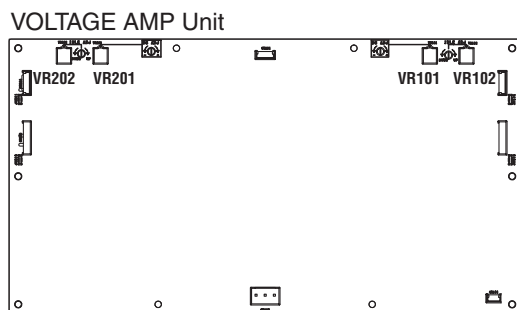
4

[1-3] Panel section (Front and side)

- (1) Remove the eight screws. (CBA2255)
- (2) Remove the panel section.
- (3) Release the jumper wires, as required.



• Rear view

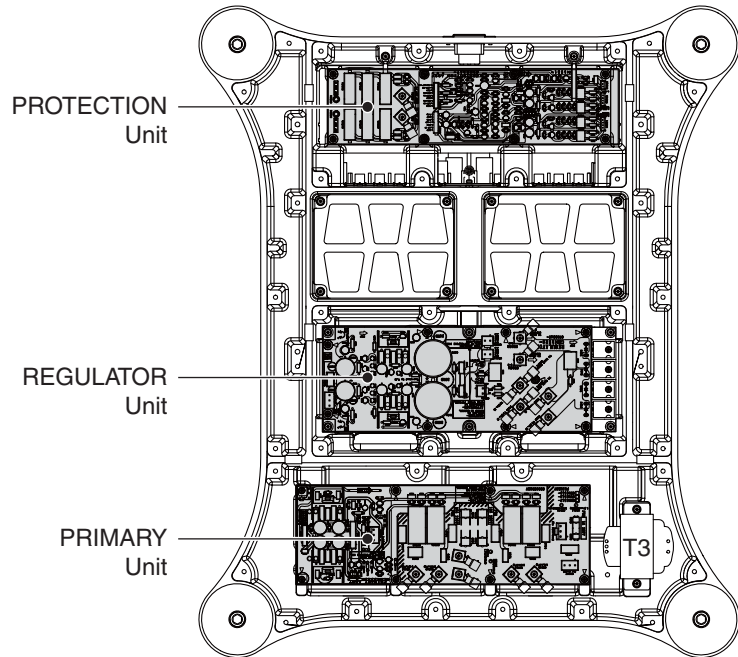
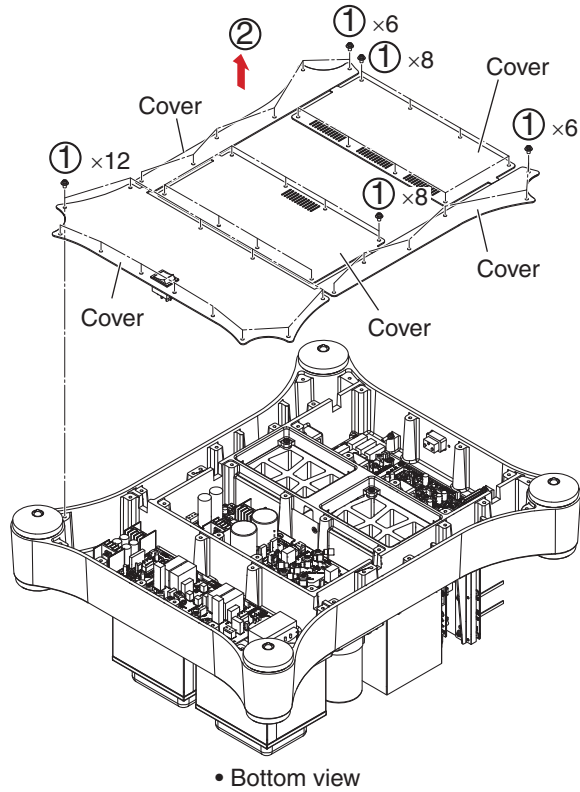


• Rear view

A [2] Bottom Section

[2-1] Covers

- (1) Remove the 40 screws. (PMB40P080FCC)
- (2) Remove the all covers.
- (3) Release the jumper wires, as required.



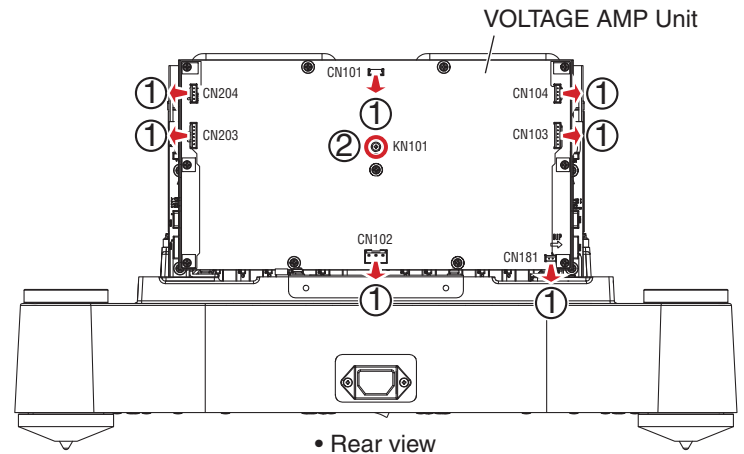
• Bottom view

Disassembly of PCB Assemblies

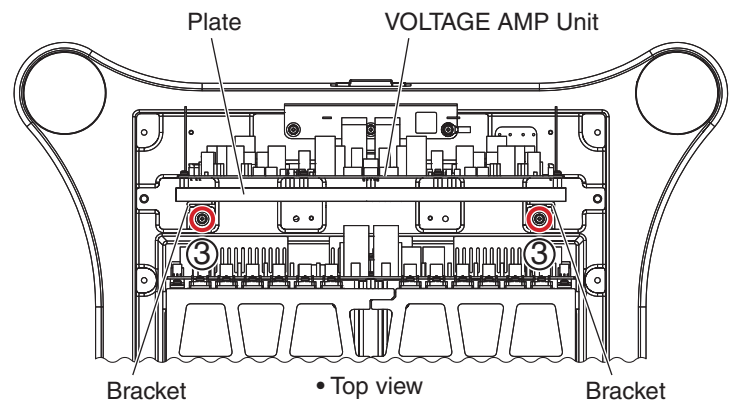
Note: In the following disassembly procedures, the PANEL Assy (including the rear panel) and all the bottom covers are assumed to have been removed.

VOLTAGE AMP Unit

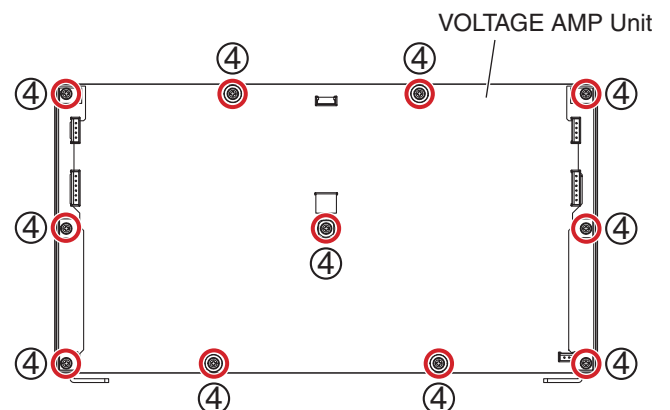
- (1) Remove the CN101 to CN104, CN203, CN204, and CN181.
- (2) Remove the screw for the KN101 then remove the cord (CDE9066).



- (3) Remove the two screws that secure the brackets (CND5327 and CND5328) to the chassis and remove the VOLTAGE AMP Unit together with the plate.

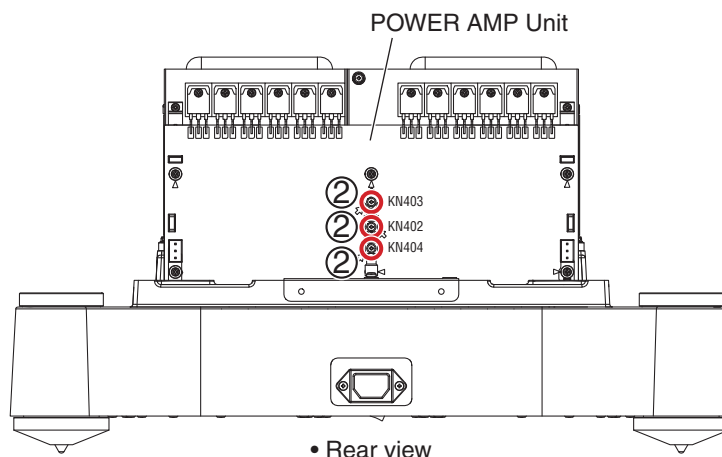


- (4) Remove the 11 screws then remove the VOLTAGE AMP Unit from the plate.

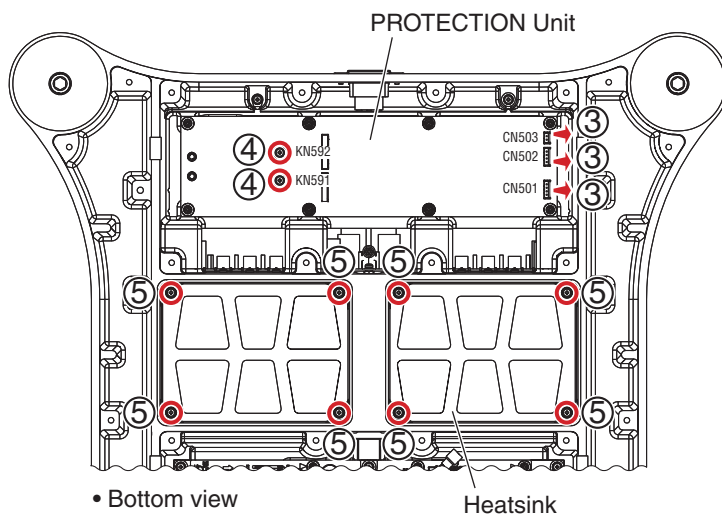


■ POWER AMP Unit

- (1) Remove the VOLTAGE AMP Unit together with the plate. (See “■ VOLTAGE AMP Unit”.)
- (2) Remove the three screws for the KN402, KN403, and KN404 then remove the cords (CDE9062, CDE9063, and CDE9069).



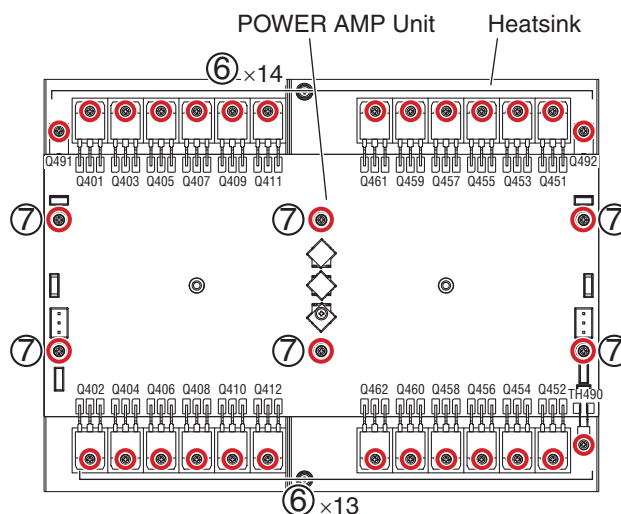
- (3) Remove the CN501, CN502, and CN503 from the PROTECTION Unit.
- (4) Remove the two screws for the KN591 and KN592 from the PROTECTION unit then remove the cords (CDE9078 and CDE9079).
- (5) Remove the eight screws then remove the heatsink from chassis.



- (6) Remove the 27 screws from the all soldered power transistors (Q401 to Q412, Q451 to Q462, Q491 and Q492) and the resistor (TH490).
- (7) Remove the six screws then remove the POWER AMP Unit from the heatsink.

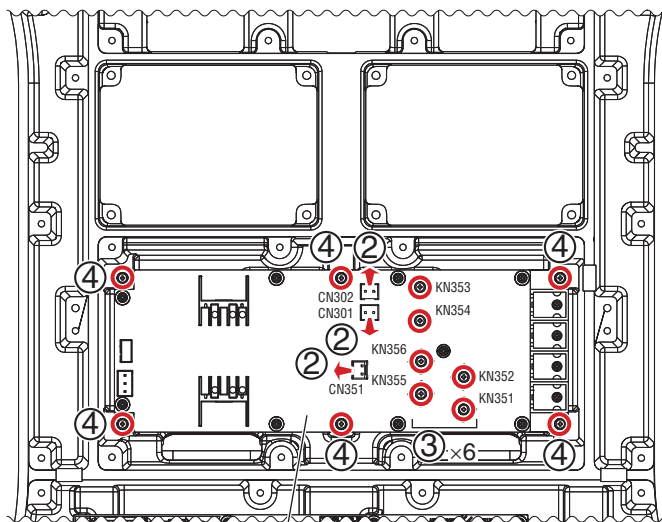
Note on reassembly:

When reassembling, align the sheets (CNN3122) squarely beneath the transistors.



REGULATOR Unit

- (1) Remove the VOLTAGE AMP unit together with the plate. (See "VOLTAGE AMP Unit".)
- (2) Remove the CN301, CN302, and CN351.
- (3) Remove the six screws for the KN351 to KN356 then remove the cords connected.
- (4) Remove the six screws then remove the REGULATOR Unit together with the plate.

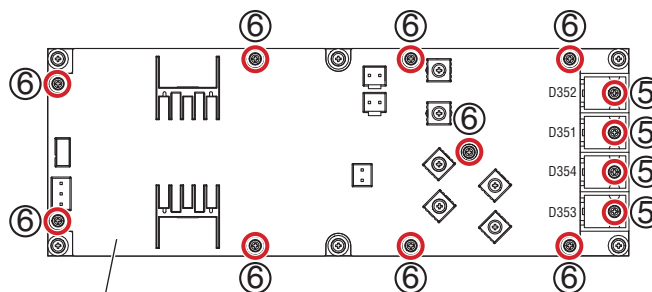


• Bottom view
REGULATOR Unit

- (5) Remove the four screws that secure the rectifier diodes (D351 to D354) to the plate.
- (6) Remove the nine screws then remove the unit from the plate.

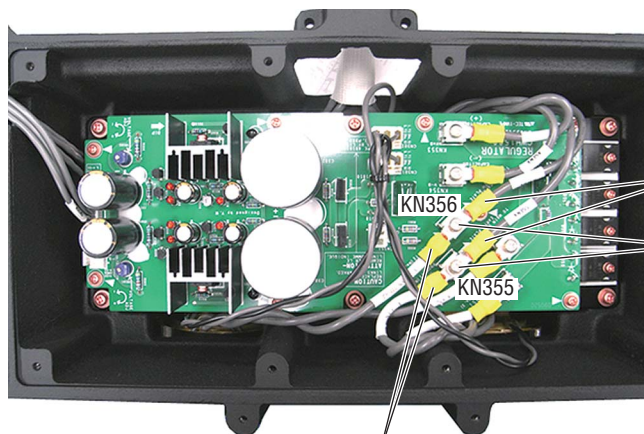
Note on reassembly:

When reassembling, align the sheets (CNN3122) squarely beneath the diodes.



REGULATOR Unit

Point to install several cables



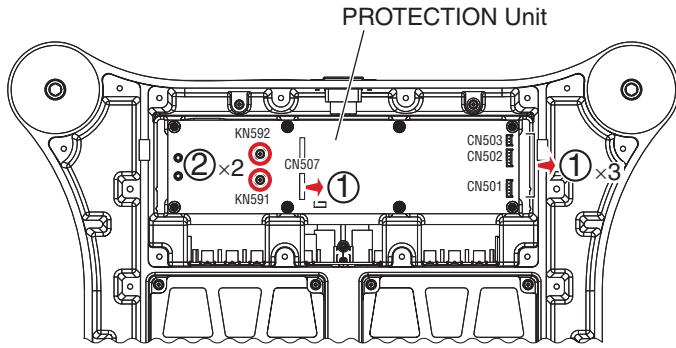
Upper
(from capacitor)

Tighten two cables
together.

Bottom (from transformer)

PROTECTION Unit

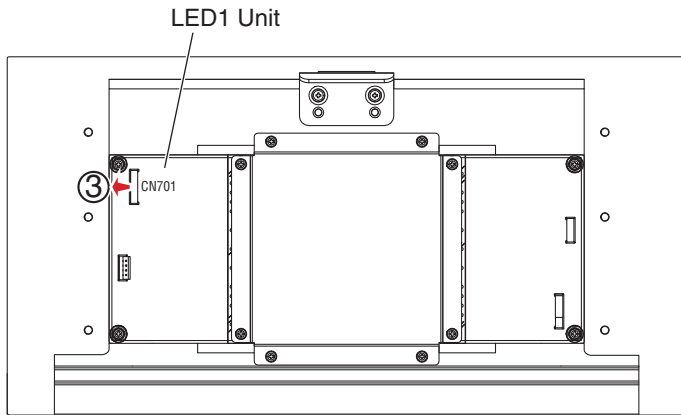
- (1) Remove the CN501, CN502, CN503, and CN507.
- (2) Remove the two screws for the KN591 and KN592 then remove the cords (CDE9078 and CDE9079).



• Bottom view



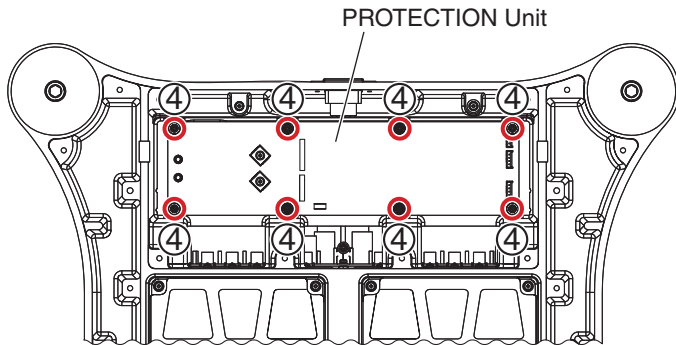
- (3) Remove the CN701 from the LED1 Unit.



• Rear view



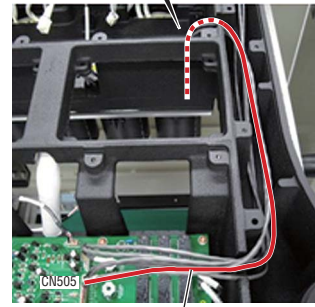
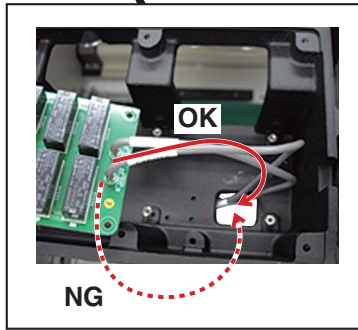
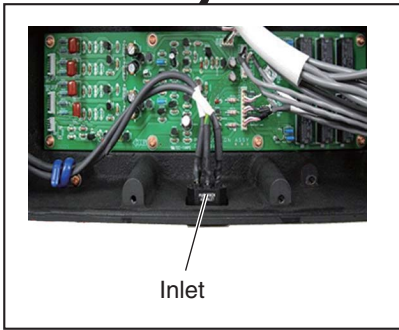
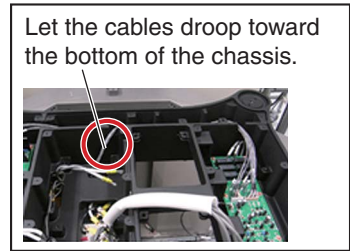
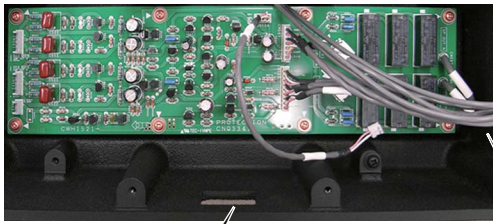
- (4) Remove the eight screws then remove the PROTECTION Unit.



• Bottom view

Note of the wiring

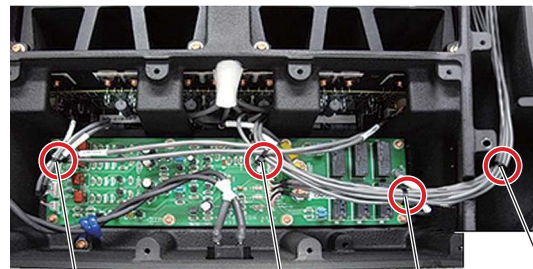
- Before reassembling the PROTECTION Unit, the inlet must be attached.
- When mounting the PROTECTION Unit, incline it so that it will not come into contact with the cables from the inlet.



to LED1 Unit CN701

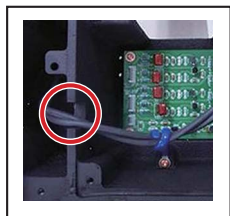


Pull out the cables in the direction of the arrow printed on the board.

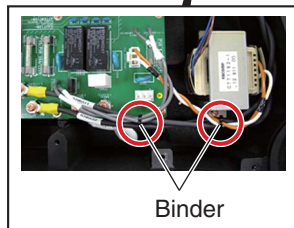
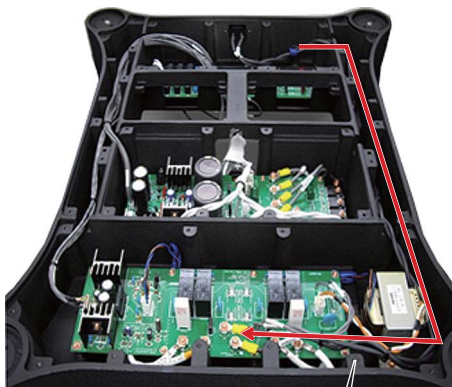


Binder Binder Binder Binder

A Inlet wiring

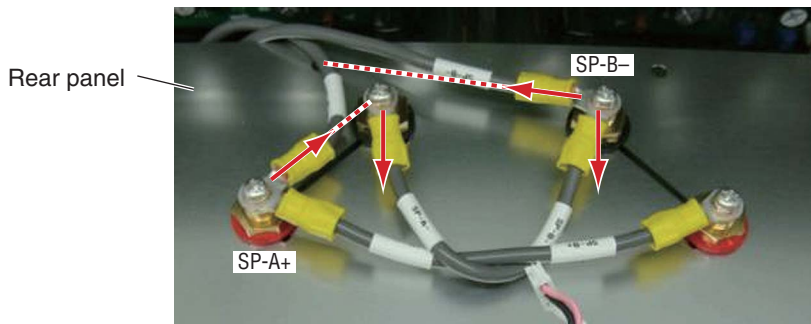


Cord clamer
Secure the cables so that they will not move from side to side in the cord clamer.

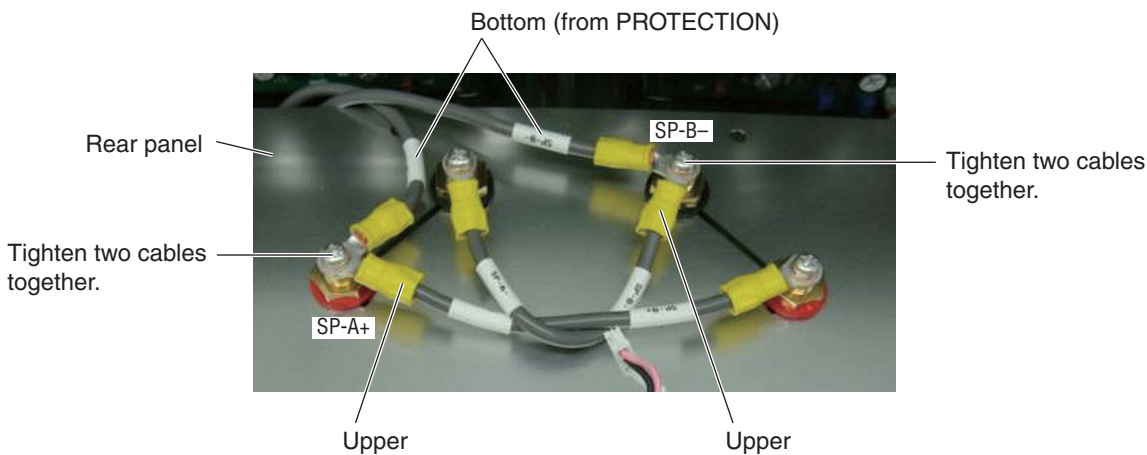


Binder

D Speaker cables wiring

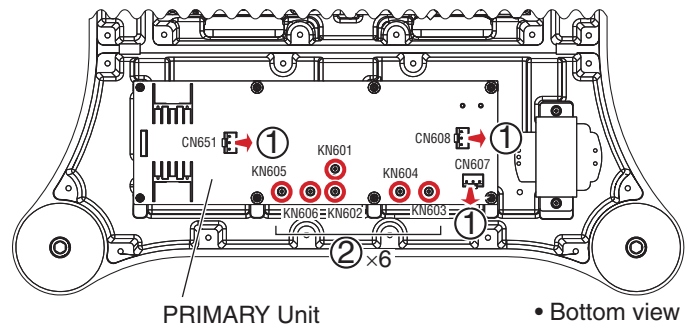


Pull out the cables in the directions indicated by the arrows.
(This is to prevent the cables from coming into contact with the capacitor of the VOLTAGE AMP Unit.)

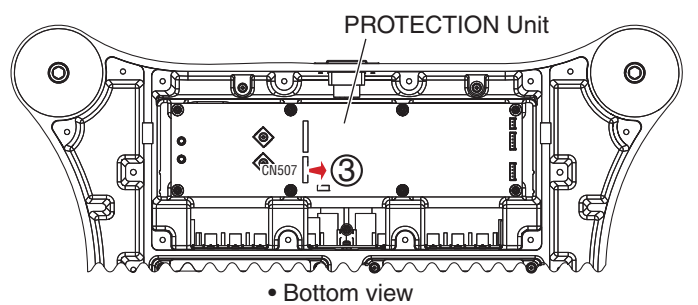


PRIMARY Unit

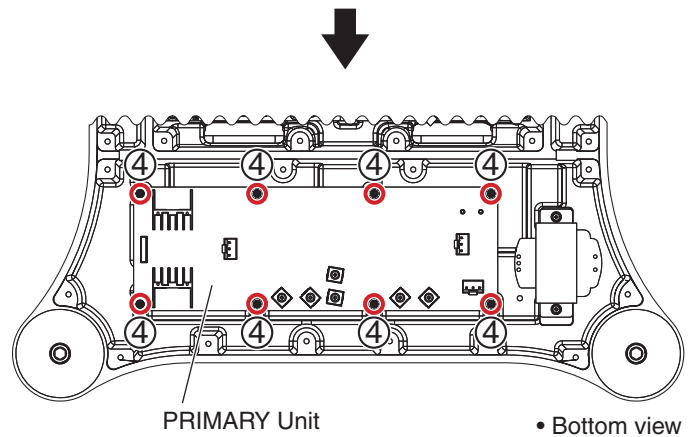
- (1) Remove the CN607, CN608, and CN651.
- (2) Remove the six screws for the KN601 to KN606 then remove the cords connected.



- (3) Remove the CN507 from the PROTECTION Unit.



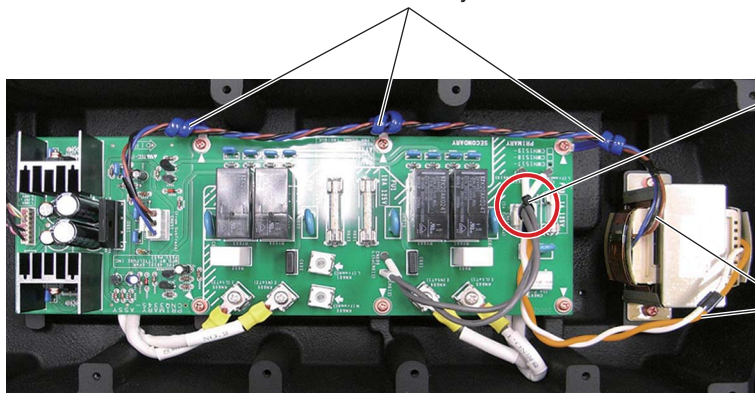
- (4) Remove the eight screws then remove the PRIMARY Unit.



Note of the wiring

Cord clamber

- Align the cord clammers with the edge of the board.
- Do not place the cable under the board.
- Secure the cables so that they will not move from side to side in the cord clamber.



Binder

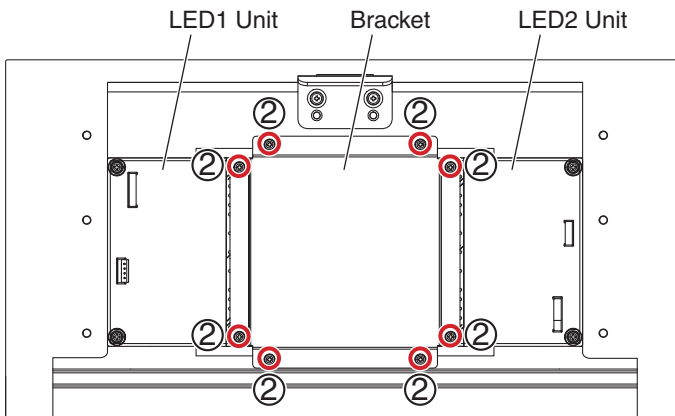
- Bundle the 3 cables from the CN611, CN612, and CN608.
- Secure the bundled cables at the base of the CN608.
- Place the bundled cables apart from the fuse.

Be careful of the orientation of the transformer and the colors of the wires.

Primary side: Orange and white cables
Secondary side: Brown and blue cables

LED1 Unit and LED2 Unit

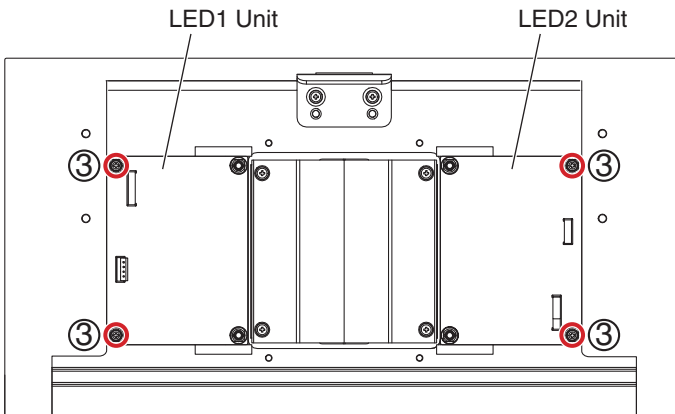
- (1) Remove the front panel.
- (2) Remove the eight screws then remove the bracket (CND5312).



• Rear view



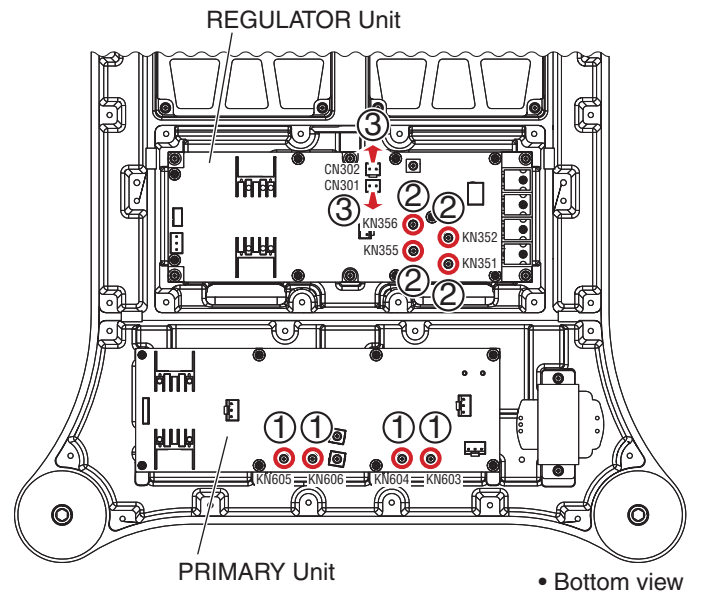
- (3) Remove the four screws then remove the LED1 and LED2 Units.



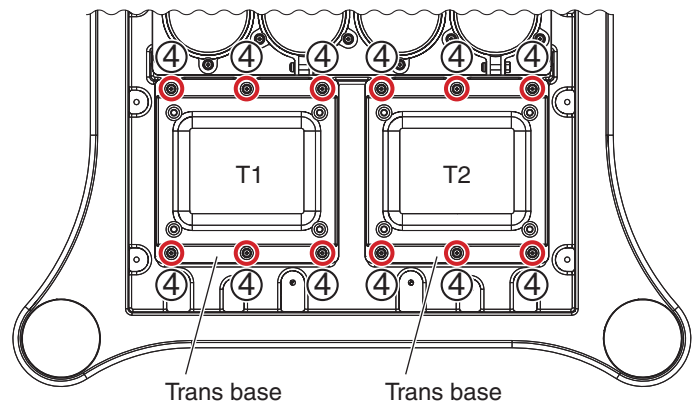
• Rear view

Transformers

- (1) Remove the four screws for the KN603, KN604, KN605 and KN606 from the PRIMARY Unit then remove the primary lead wires for the transformer.
- (2) Remove the four screws for the KN351, KN352, KN355, and KN356 from the REGULATOR Unit then remove the secondary lead wires for the transformer.
- (3) Remove the CN301 and CN302 from the REGULATOR Unit.



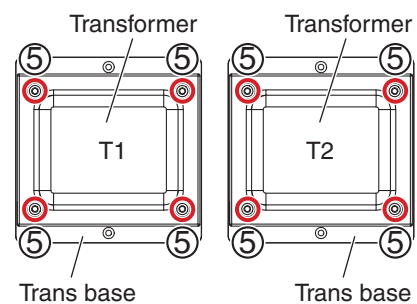
- (4) Remove the 12 screws then remove the trans base together with the transformers.



- (5) Remove the eight hexagonal screws then remove the transformer from the trans base.

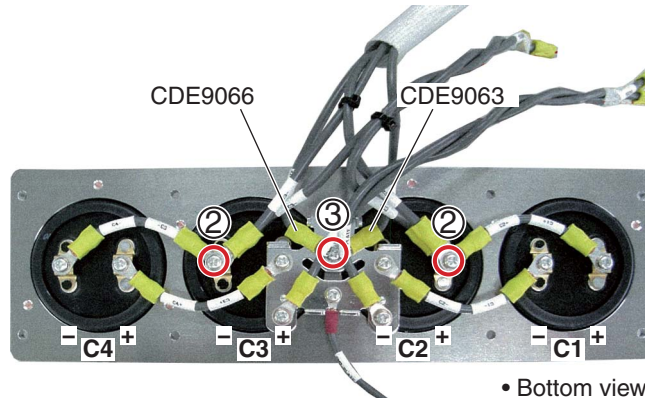
Note:

Remove the PRIMARY and/or REGULATOR Units, as required.

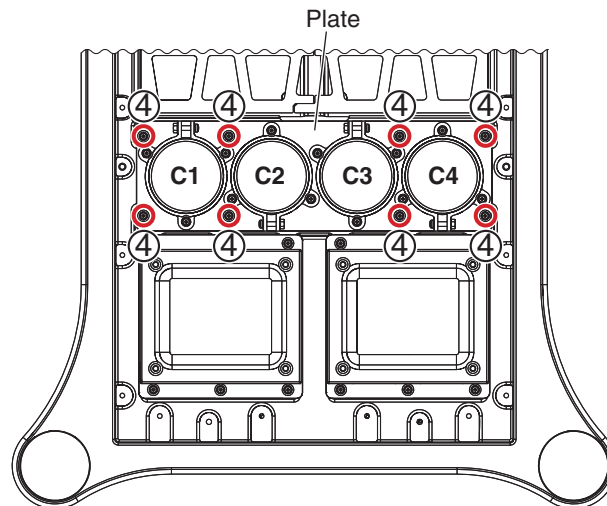


A ■ Capacitors

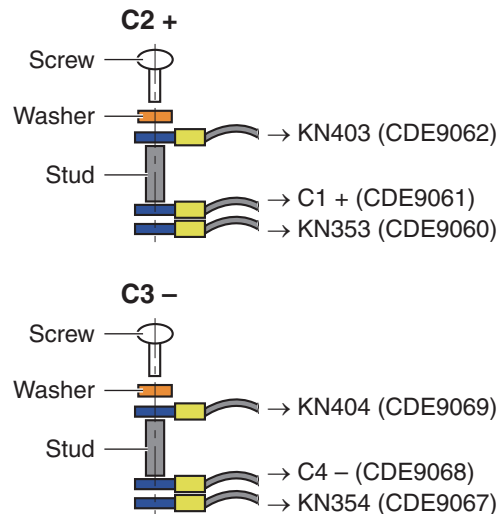
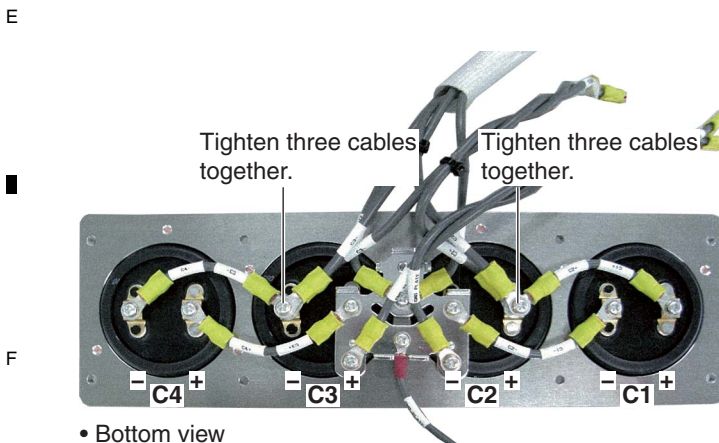
- (1) Remove the REGULATOR Unit together with the plate. (See “■ REGULATOR Unit”.)
- (2) Remove the two screws from the positive electrode of C2 and the negative electrode of C3 then remove the lead wires.
- (3) Remove the screw then remove the cords (CDE9063 and CDE9066).



- (4) Remove the eight screws then remove the plate together with the main electrolytic capacitor.



Point to install several cables

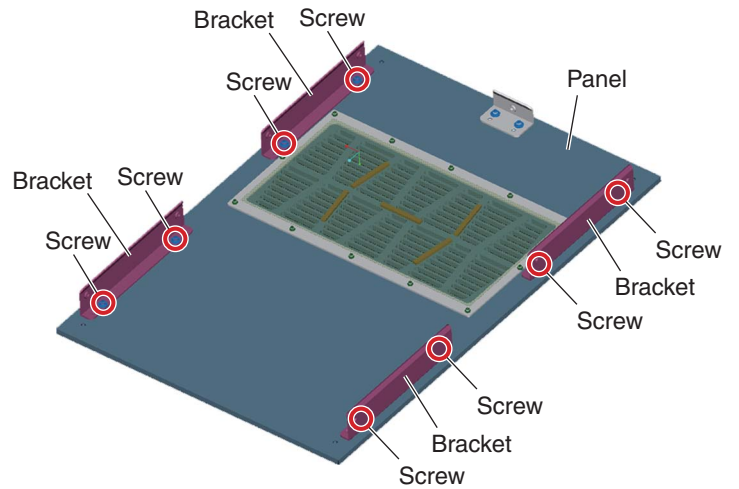


Assembling of The Panel Section

[1] Top Section

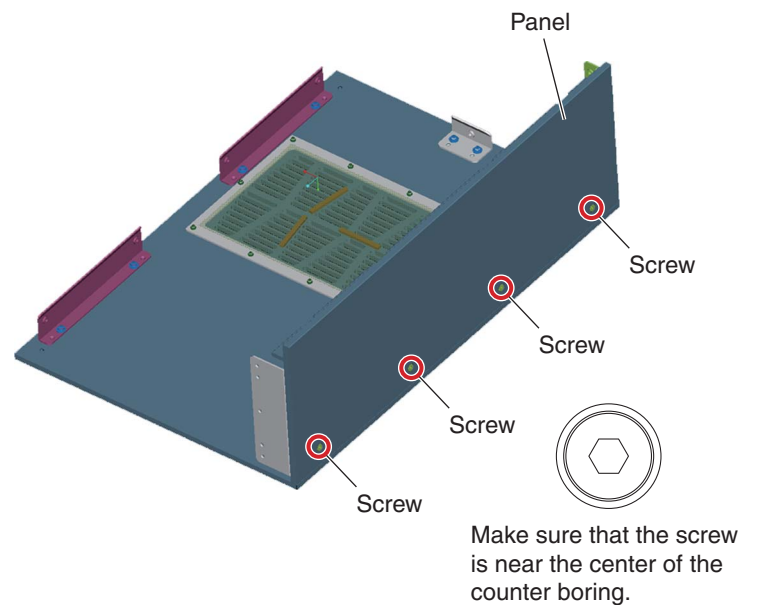
Place the 4 brackets (CND5455) on the panel (CNS9980) and secure them using the 8 screws (PMB40P080FCC).

(Tighten the screws loosely so that the brackets can move slightly.)

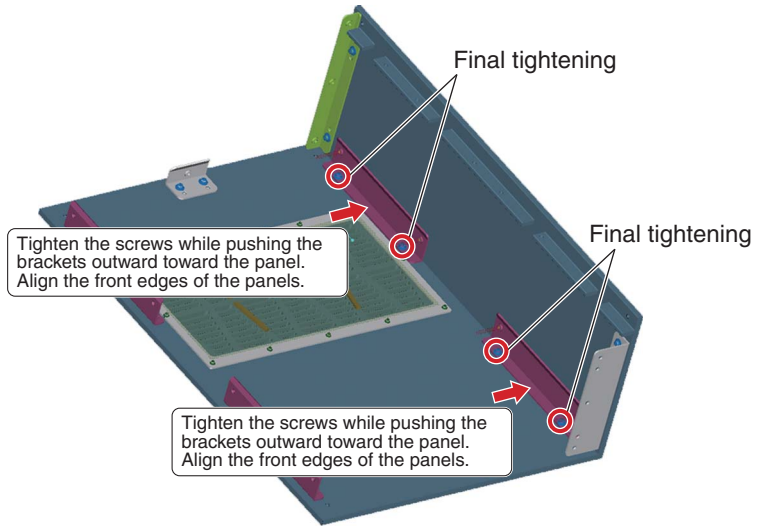


[2] Side Section

Place the side panel (CNS9978) then lightly secure it (temporary tightening,) using the 4 screws (CBA2215). Be sure to place each screw near the center of the hole (counter boring).

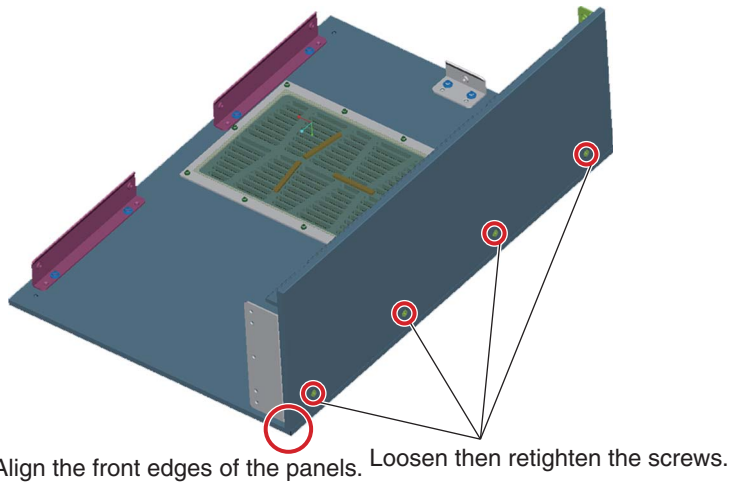


A After aligning the front edges of the panels, tighten the 4 screws (PMB40P080FCC) securely (final tightening) while pushing the brackets outward.



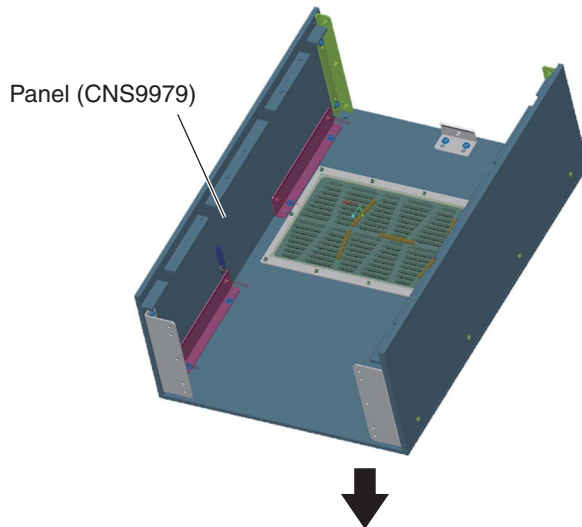
B

C Loosen the 4 side screws (CBA2215) then retighten them while pushing one panel against another, paying attention that there will be no gap between the panels (final tightening). At this time also, align the front edges of the panels.



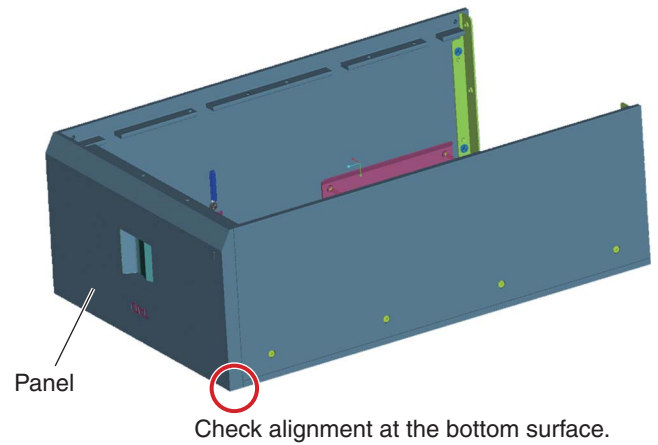
D

E Mount the opposite side panel in the same way.

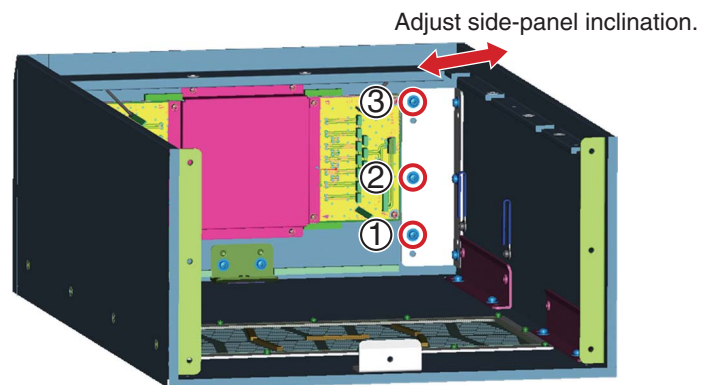


[3] Front Section

Place the panel (CNS9976). Make sure that there is no unevenness or gap between panels in each surface.



Secure the screws (PMB40P080FCC) in order from the bottom, paying attention that there will be no unevenness or gap between panels in each surface, as in a previous procedure . As the side panels tend to incline, secure the screws while adjusting the panel positions by hand. Secure the screws of both side panels.



Before attaching this panel assy to the main unit (chassis,) the top panel must be detached.

Procedure

- ① Detach the top panel then mount the U-shaped panel assy on the main unit.
- ② Temporarily secure the rear panel.
- ③ Secure the panel assy to the main unit, using the screws.
- ④ Secure the top panel again.
- ⑤ Secure the rear panel (final tightening).

8. EACH SETTING AND ADJUSTMENT

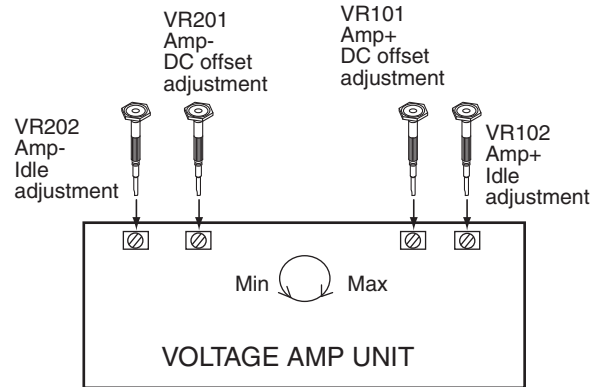
8.1 CD ADJUSTMENT

DC OFFSET VOLTAGE AND IDLE CURRENT ADJUSTMENTS

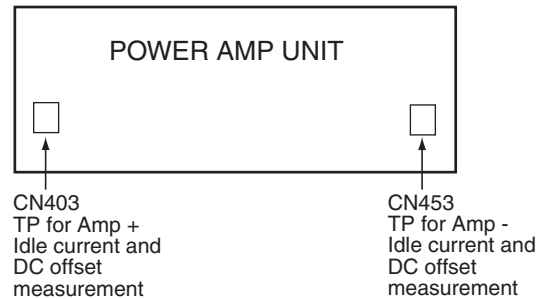
[Adjustments Procedure]

- (1) Fully turn the VR102 and VR202 semifixed resistors counterclockwise (for setting the idle current to minimum) before turning on the unit.
- (2) Turn on the unit with no load and no signal input.
- (3) Adjust the VR101 and VR102 semifixed resistors for DC offset adjustment so that the DC offset voltages for AMP+ and AMP- become $0\text{ mV} \pm 20\text{ mV}$.
- (4) Adjust the VR102 and VR202 semifixed resistors for idle current adjustment so that the voltages at the end of the emitter resistor for AMP+ and AMP- become $11\text{ mV} \pm 3\text{ mV}$.
- (5) Let the unit sit for 30 minutes under windless conditions.
- (6) Adjust the VR102 and VR202 semifixed resistors for idle current adjustment so that the voltages at the end of the emitter resistor for AMP+ and AMP- become $15\text{ mV} \pm 3\text{ mV}$.
- (7) Adjust the VR101 and VR102 semifixed resistors for DC offset adjustment so that the DC offset voltages for AMP+ and AMP- become $0\text{ mV} \pm 20\text{ mV}$.

[Adjustment Points]



[Measurement Points]



● When measuring the idle current (the voltages at the end of the emitter resistor)

CN403, CN453 (3P NV pin)
1: OVLD+
2: AMP OUT+/-
3: NC

Jigs for measurement: 3P NV connector

Measurement points: Measure the voltage between pin 1 and pin 2.

● When measuring the DC offset voltage

CN403, CN453 (3P NV pin)
1: OVLD+
2: AMP OUT+/-
3: NC

Jigs for measurement: 3P NV connector

Measurement points: Measure the voltage between pin 2 and GND.



5



6



7



8



A



B



C



D



E



F



5



6

TAD-M600



7



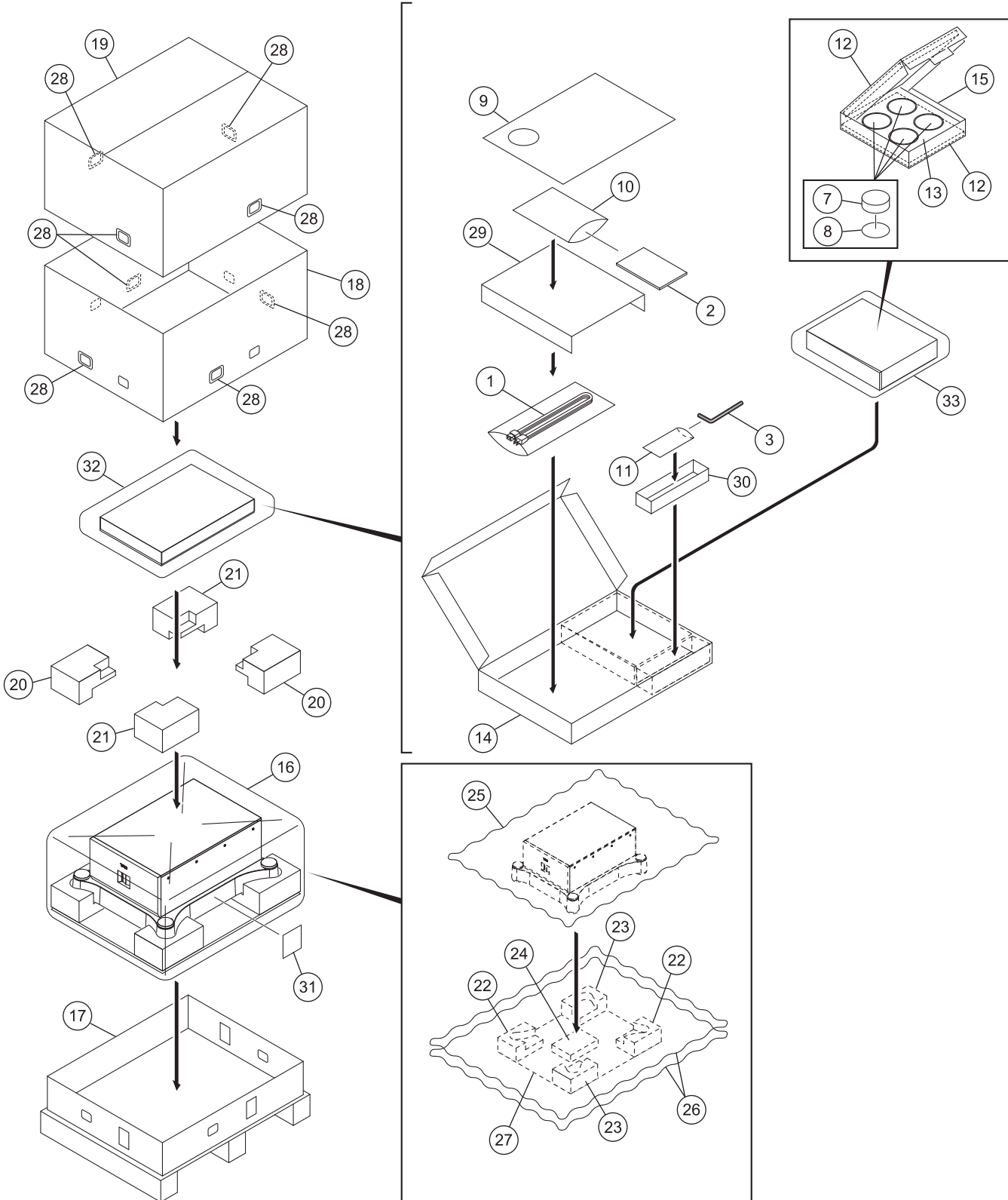
8



9. EXPLODED VIEWS AND PARTS LIST

- NOTES:
- Parts marked by “ * ” are generally unavailable because they are not in our Master Spare Parts List.
 - The \triangle mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
 - Screws adjacent to ∇ mark on product are used for disassembly.
 - For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)

9.1 PACKING SECTION



(1) PACKING SECTION PARTS LIST

<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>
⚠	1 Power Cord	See Contrast table (2)	16	Polyethylene Bag	CEG1434
	2 Operating Instructions	See Contrast table (2)	17	Unit Box	CHA3774
	3 Hexagon wrench	CBX1012	18	Unit Box	CHA3775
	4 •••••		19	Unit Box	See Contrast table (2)
	5 •••••		20	Protector	CHP3891
	6 •••••		21	Protector	CHP3892
	7 Spike Bases	CLA4915	22	Protector	CHP3893
	8 Felt	CNN3302	23	Protector	CHP3894
	9 Sheet	CEE1036	24	Protector	CHP3955
	10 Polyethylene Bag	CEG1190	25	Jacket	CHV1004
	11 Polyethylene Bag	CEG1250	26	Sheet	CHV1005
	12 Shock Absorber	CHW2125	*	27 Board	CHW2134
	13 Shock Absorber	CHW2126		28 Holder	CNW1829
	14 Accessory Box	CHW2127		29 Partition	CHW2135
	15 Insulator Box	CHW2128		30 Partition	CHW2136
				31 Label	CAN6233
				32 Sheet	CHV1006
				33 Sheet	CHV1007

(2) CONTRAST TABLE

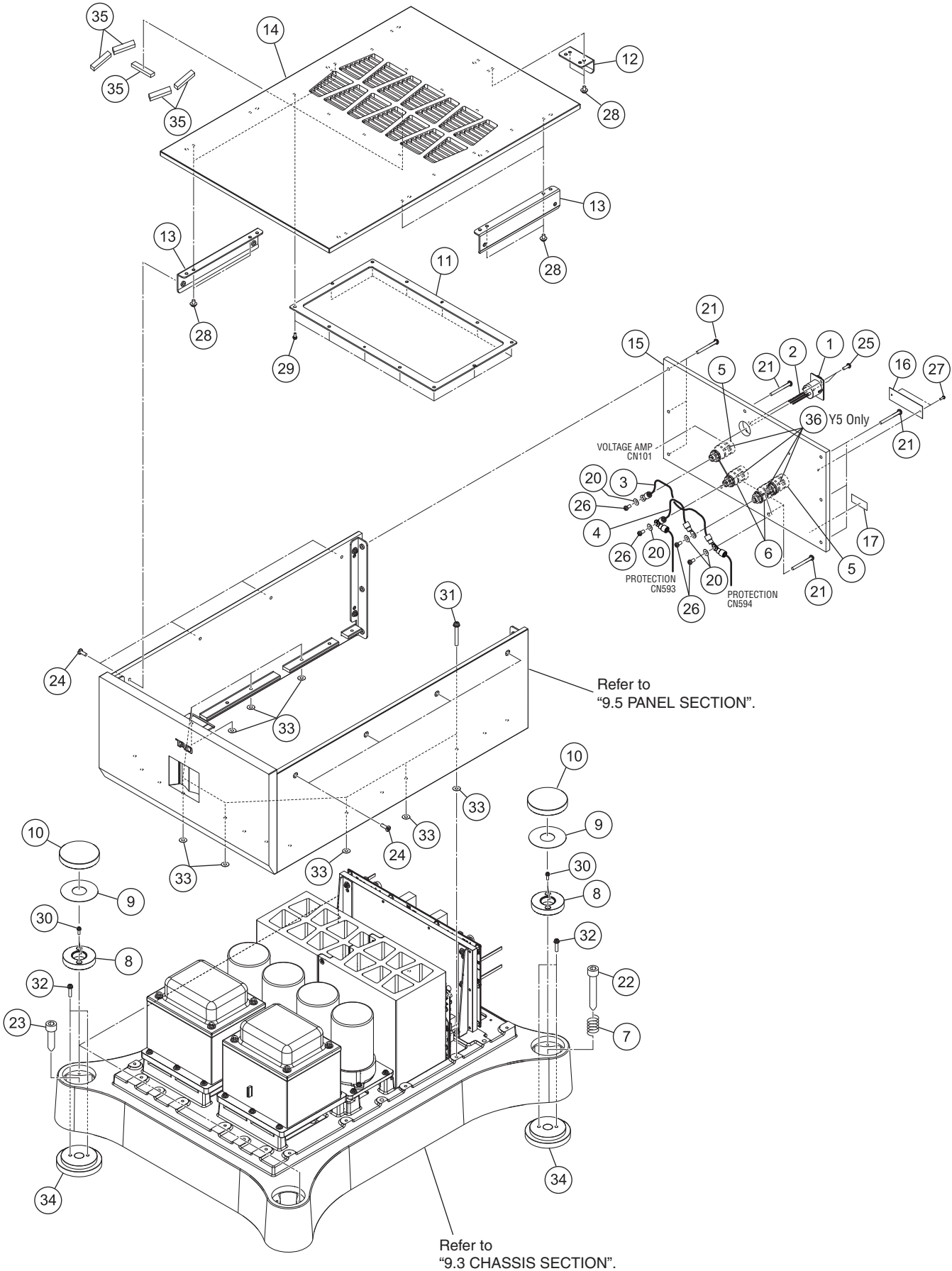
TAD-M600/U and Y5 are constructed the same except for the following:

Mark	No.	Symbol and Description	TAD-M600/U	TAD-M600/Y5
⚠	1	Power Cord	ADG7061	ADG7062
	2	Operating Instructions (English)	CRB3085	Not used
	2	Operating Instructions (English)	Not used	CRD4431
	19	Unit Box	CHG7036	CHG7037

9.2 EXTERIOR SECTION

1 2 3 4

A
B
C
D
E
F



1 2 3 4

(1) EXTERIOR SECTION PARTS LIST

<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>
1	Socket (3P)	AKP1126	21	Screw	BMZ40P140FCC
2	Cord	CDE9074	22	Bolt	CBA2211
3	Cord	CDE9084	23	Bolt	CBA2214
4	Cord	CDE9085	24	Screw	CBA2215
5	Terminal	CKE1072	25	Screw	CMZ30P080FCC
6	Terminal	CKE1073	26	Screw	PMZ40P080CSN
7	Coil Spring	CBH3039	27	Screw	SMZ20H050S
8	Plate	CND5329	28	Screw	PMB40P080FCC
9	Felt	CNN3233	29	Screw	PMH30P080FCC
10	Cover	CNW1730	30	Screw	PMH30P100FCC
11	Net	CND5387	31	Screw	CBA2255
12	Bracket	CND5451	32	Screw	PMH40P180FCC
13	Bracket	CND5455	33	Washer	CBF1101
14	Panel	CNS9980	34	Cover	CNW1729
15	Panel	See Contrast table (2)	35	Cushion	CNN3338
*	16 Plate	CNU1111	36	Rivet	See Contrast table (2)
*	17 Label (Blank)	CAL8323			
	18 •••••				
	19 •••••				
	20 Washer	WS40PKI			

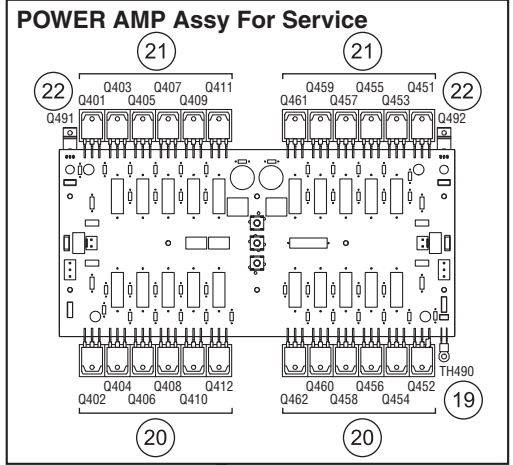
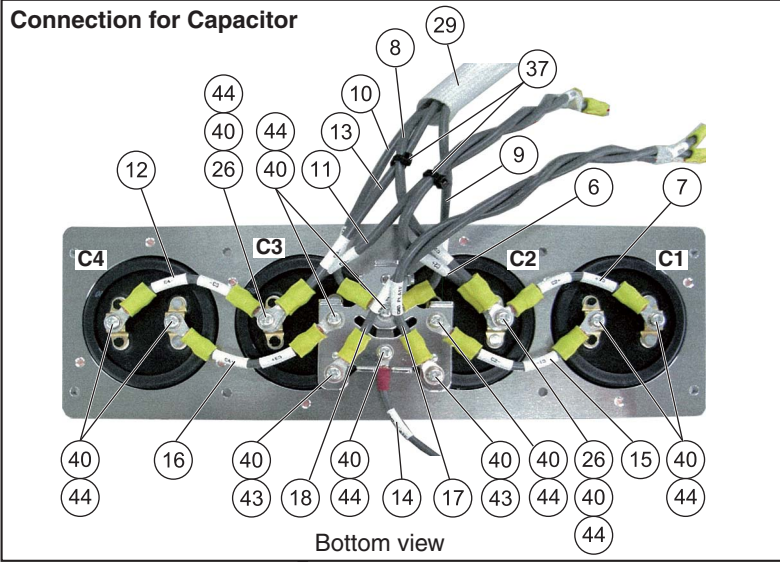
(2) CONTRAST TABLE

TAD-M600/U and Y5 are constructed the same except for the following:

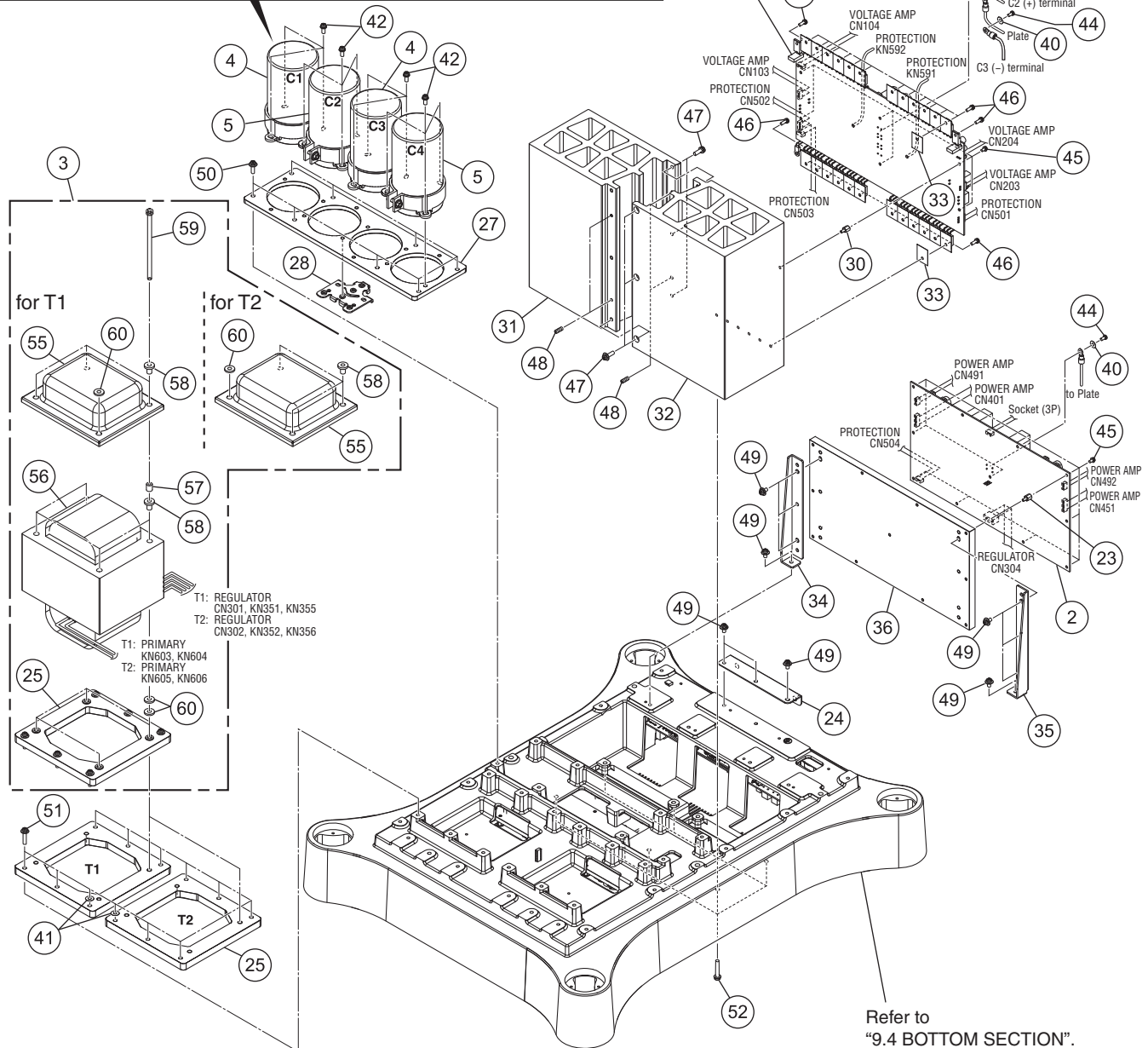
Mark	No.	Symbol and Description	TAD-M600/U	TAD-M600/Y5
	15	Panel	CNS9982	CNS9983
	36	Rivet	Not used	VEC1907

9.3 CHASSIS SECTION

A



C



F

(1) CHASSIS SECTION PARTS LIST

<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>
1	POWER AMP Assy For Service	CXX2894	31	Heatsink	CND5365
2	VOLTAGE AMP Unit	CWH1515	32	Heatsink	CND5366
3	Transformer Assy (T1, T2)	See Contrast table (2)	33	Sheet	CNN3122
4	Capacitor (C1, C3)	CCH1954	34	Bracket	CND5327
5	Capacitor (C2, C4)	CCH1970	35	Bracket	CND5328
6	Cord	CDE9060	36	Plate	CND5332
7	Cord	CDE9061	*	37 Binder (BK-1)	ZCA-BK1
8	Cord	CDE9062	38	•••••	
9	Cord	CDE9063	39	•••••	
10	Cord	CDE9066	40	Washer	WS40PKI
11	Cord	CDE9067	41	Nut	WH40FCU
12	Cord	CDE9068	42	Screw	PMH40P100FCC
13	Cord	CDE9069	43	Screw	PMZ40P060CSN
14	Cord	CDE9091	44	Screw	PMZ40P080CSN
15	Cord	CDE9092	45	Screw	PMH30P060FCC
16	Cord	CDE9093	46	Screw	PMH30P100FCC
17	Cord	CDE9094	47	Screw	PMH40P100FCC
18	Cord	CDE9096	48	Screw	ZMK30H080FBK
⚠	19 Posistor	PTFM04BD471Q2N34B0	49	Screw	PMB40P080FCC
⚠	20 Transistor	2SA1386A	50	Screw	PMB40P140FCC
⚠	21 Transistor	2SC3519A	51	Screw	PMB40P200FCC
	22 Transistor	2SC4883A	52	Screw	PMH40P180FCC
*	23 Stud	CLA4923	53	•••••	
	24 Bracket	CND5330	54	•••••	
	25 Plate	CND5323	*	55 Cover	CNB3630
*	26 Stud	CLA4935	⚠	56 Transformer	See Contrast table (2)
	27 Plate	CND5308	*	57 Spacer	CNW1830
	28 Plate	CND5309	58	Spacer	CND5324
	29 Tube	CNN3231	59	Screw	CBA2210
*	30 Stud	CLA4923	60	Nut	WH50FCU

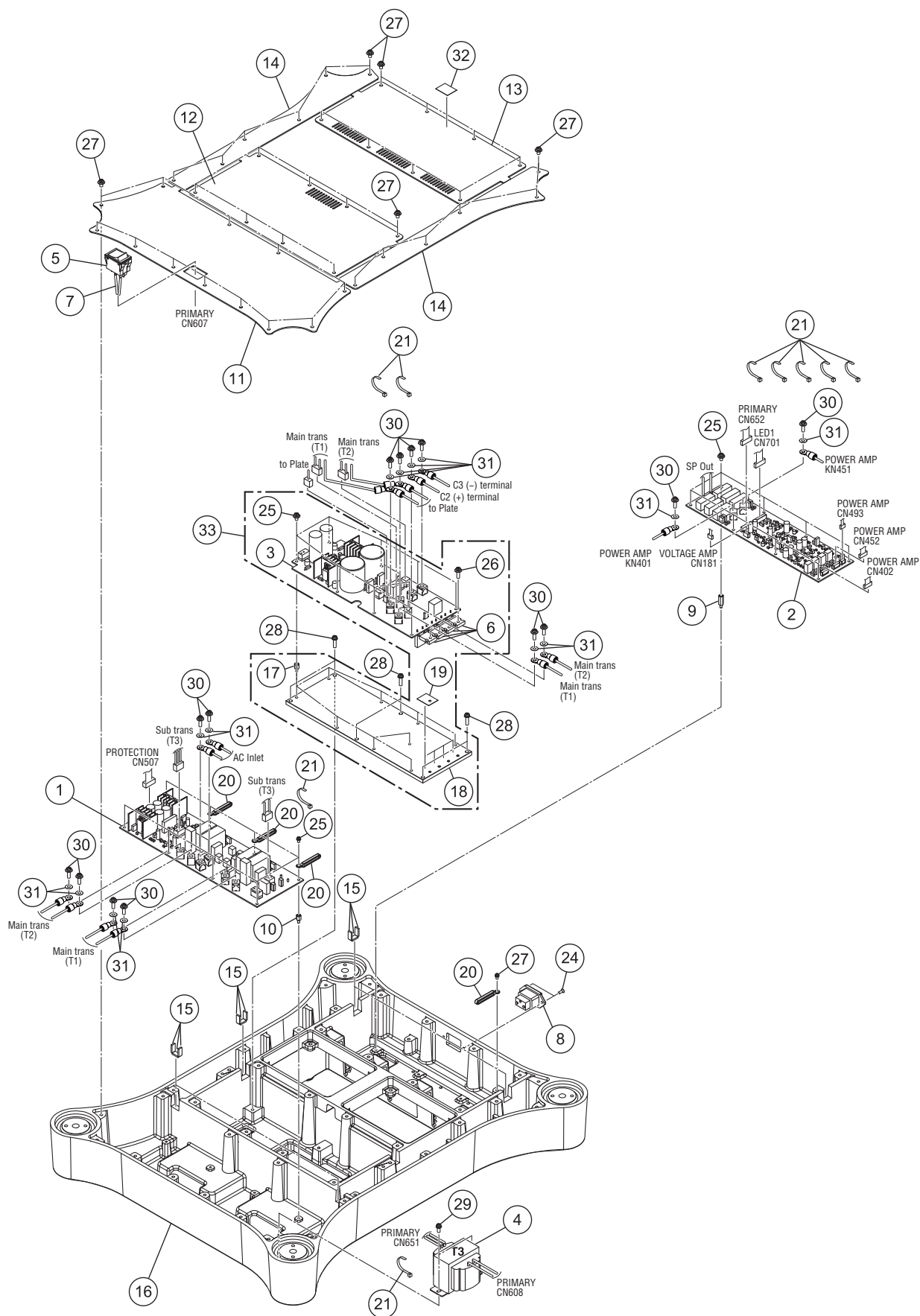
(2) CONTRAST TABLE

TAD-M600/U and Y5 are constructed the same except for the following:

Mark	No.	Symbol and Description	TAD-M600/U	TAD-M600/Y5
	3	Transformer Assy (T1, T2)	CXE2850	CXE2851
⚠	56	Transformer (T1, T2)	CTT1159	CTT1160

9.4 BOTTOM SECTION

• Bottom view



(1) BOTTOM SECTION PARTS LIST

<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>
	1 PRIMARY Unit	See Contrast table (2)		16 Chassis	CNR2035
	2 PROTECTION Unit	CWH1521	*	17 Stud	CLA4923
*	3 REGULATOR Unit	CWH1520		18 Plate	CND5307
⚠	4 Transformer (T3)	See Contrast table (2)		19 Sheet	CNN3122
⚠	5 Switch	CSH1076		20 Cord Clamper	RNH1005
⚠	6 Diode	KSH30A20	*	21 Binder (BK-1)	ZCA-BK1
⚠	7 Cord	CDE9058		22 •••••	
	8 Other Cord	CDX1012		23 •••••	
*	9 Stud	CLA4934		24 Screw	CBA2242
	10 Stud	CLA4937		25 Screw	PMH30P060FCC
	11 Cover	CNB3635		26 Screw	PMH30P100FCC
	12 Cover	CNB3613		27 Screw	PMB40P080FCC
	13 Cover	CNB3614		28 Screw	PMB40P140FCC
	14 Cover	CNB3615		29 Screw	PMH40P100FCC
	15 Cushion	CNN3215		30 Screw	PMZ40P080CSN
				31 Washer	WS40PKI
			*	32 Label	CAN6432
				33 Regulator Assy	CWX3808

(2) CONTRAST TABLE

TAD-M600/U and Y5 are constructed the same except for the following:

Mark	No.	Symbol and Description	TAD-M600/U	TAD-M600/Y5
	1	PRIMARY Unit	CWH1518	CWH1519
⚠	4	Transformer (T3)	CTT1162	CTT1163

9.5 PANEL SECTION

A

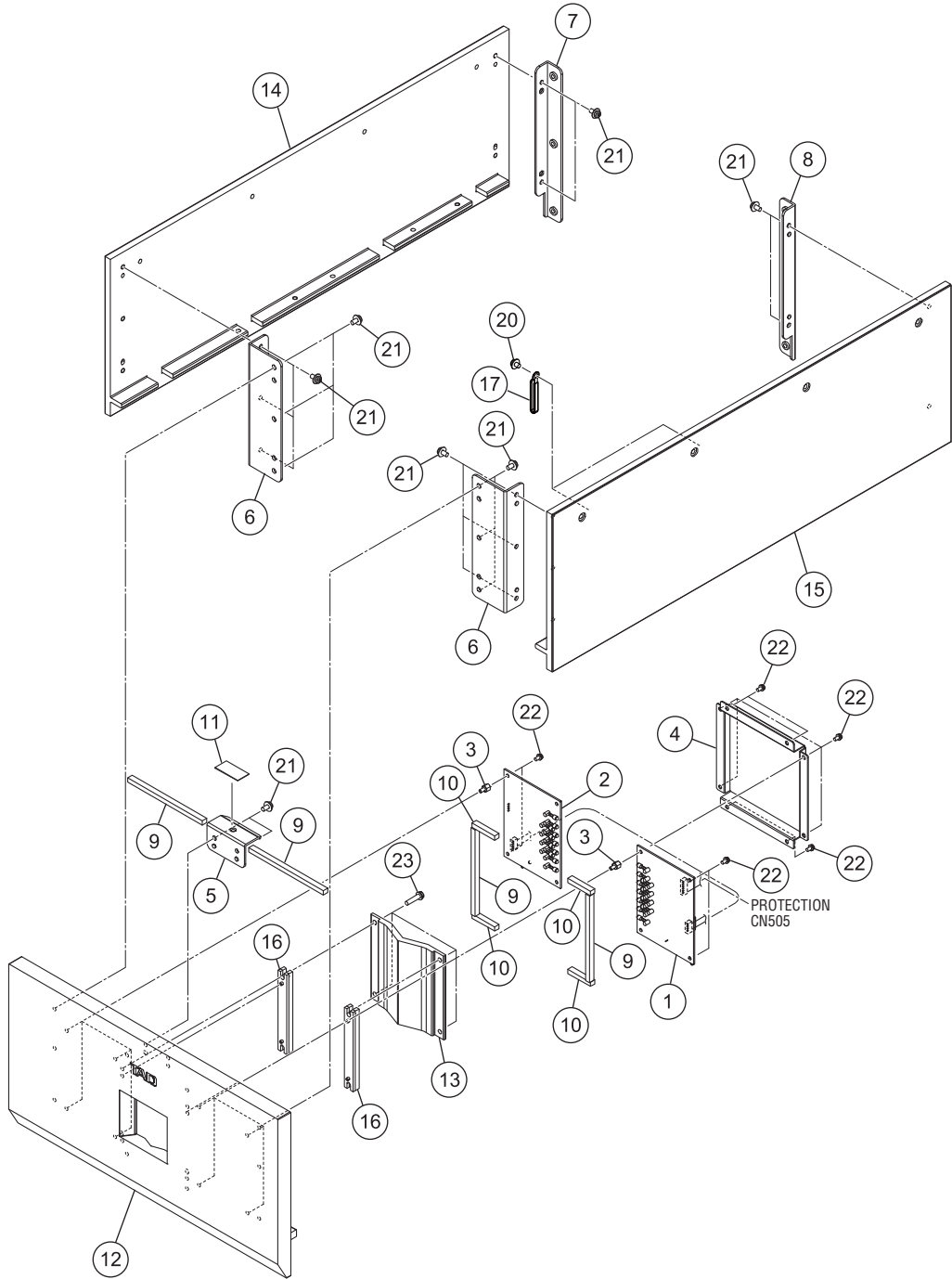
B

C

D

E

F



PANEL SECTION PARTS LIST

<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>	
1	LED1 Unit	CWH1522	
2	LED2 Unit	CWH1523	A
*	3 Stud	CLA4907	
4	Bracket	CND5312	
5	Bracket	CND5451	
6	Bracket	CND5452	
7	Bracket	CND5453	
8	Bracket	CND5454	
9	Cushion	CNN3071	
10	Cushion	CNN3214	B
11	Cushion	CNN3215	
12	Panel	CNS9976	
13	Panel	CNS9977	
14	Panel	CNS9978	
15	Panel	CNS9979	
16	Lighting Conductor	CNW1728	
17	Cord Clamper	RNH1005	
18	•••••		
19	•••••		
20	Screw	PMB40P060FCC	C
21	Screw	PMB40P080FCC	
22	Screw	PMH30P060FCC	
23	Screw	PMH40P180FCC	

10. SCHEMATIC DIAGRAM

10.1 VOLTAGE AMP UNIT

1

2

3

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A

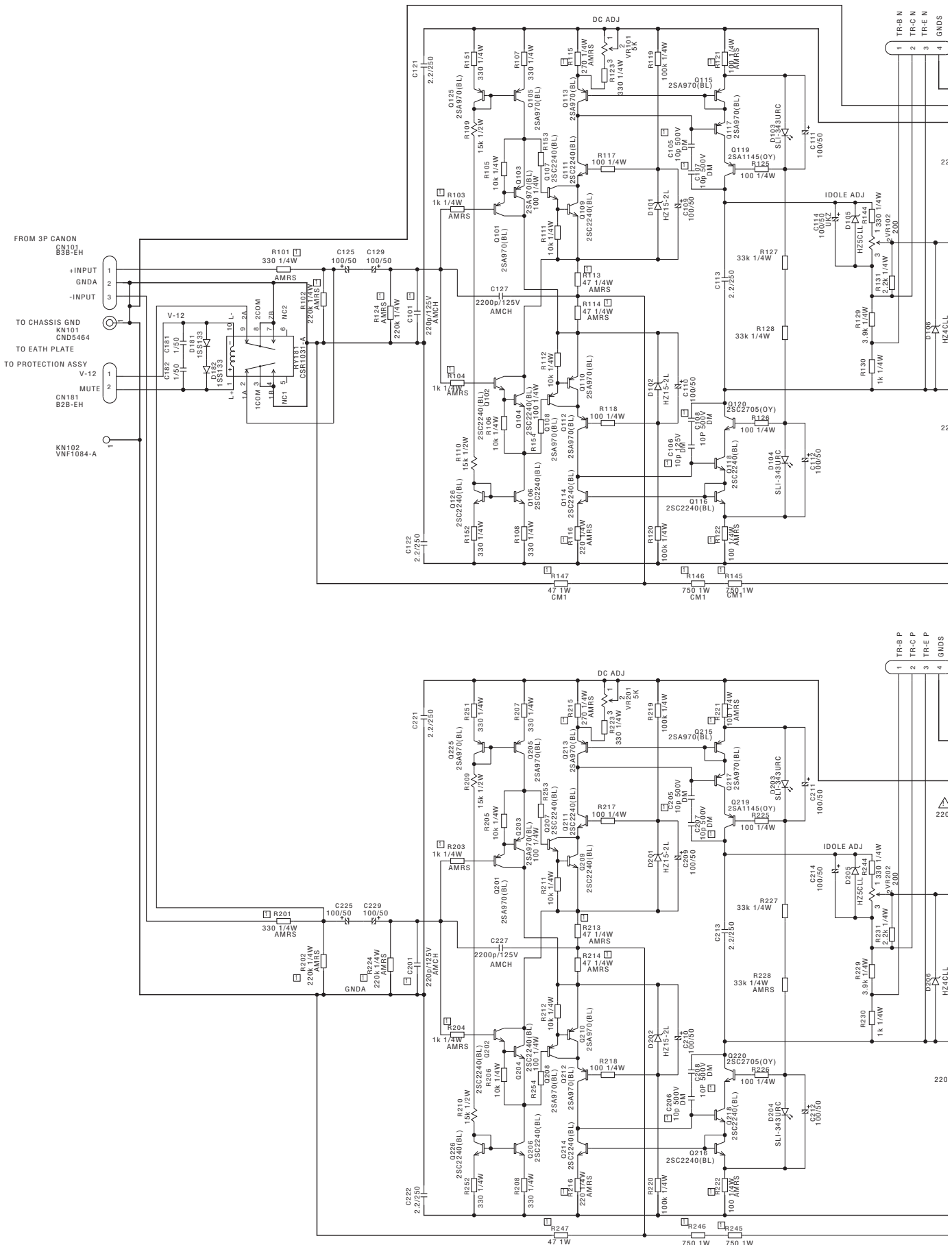
B

C

D

E

F



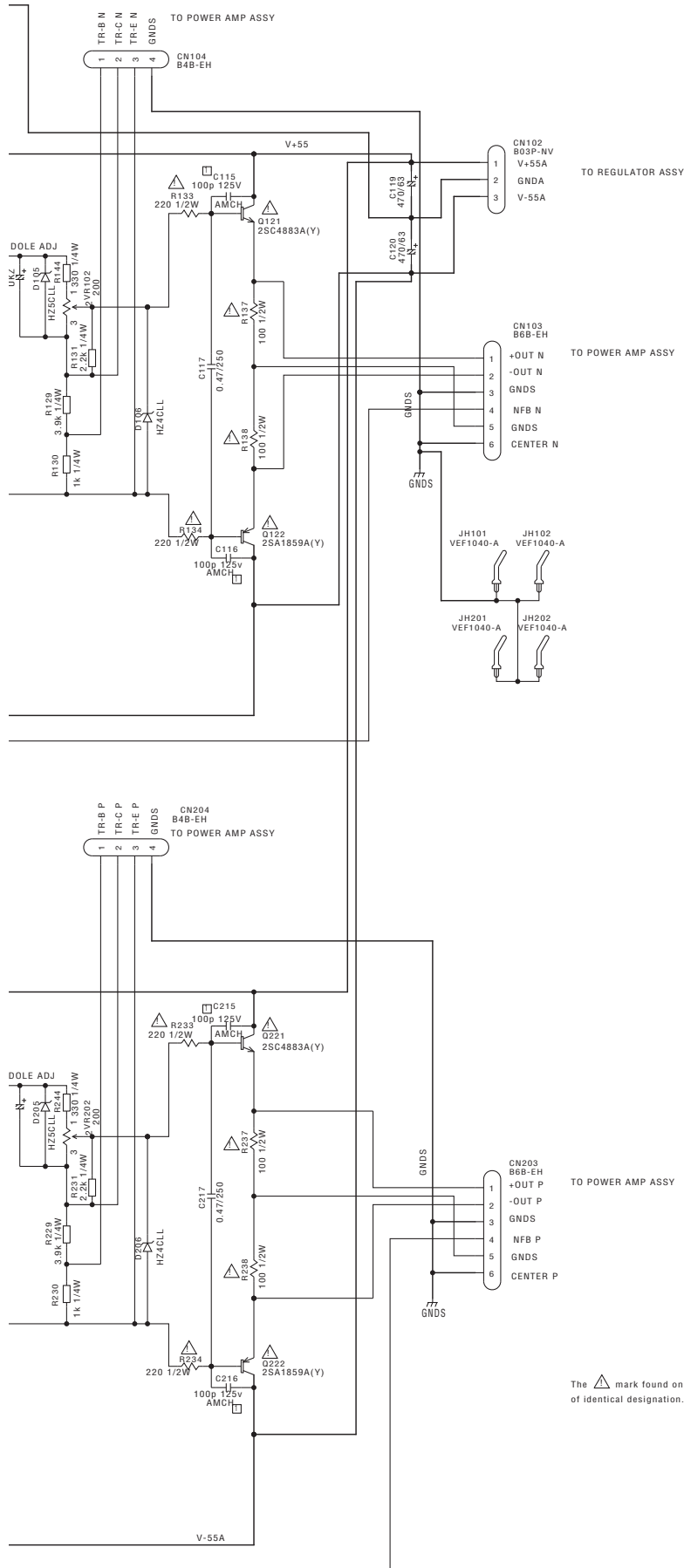
1

2

3

4

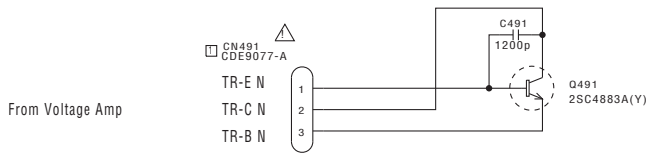
VOLTAGE AMP UNIT (CWH1515)



The Δ mark found on some component parts should be replaced with same parts (safety regulation authorized) of identical designation.

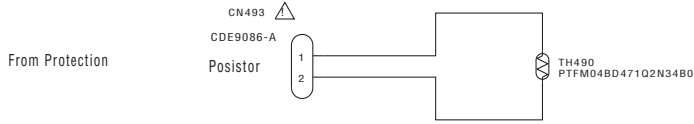
10.2 POWER AMP UNIT

A



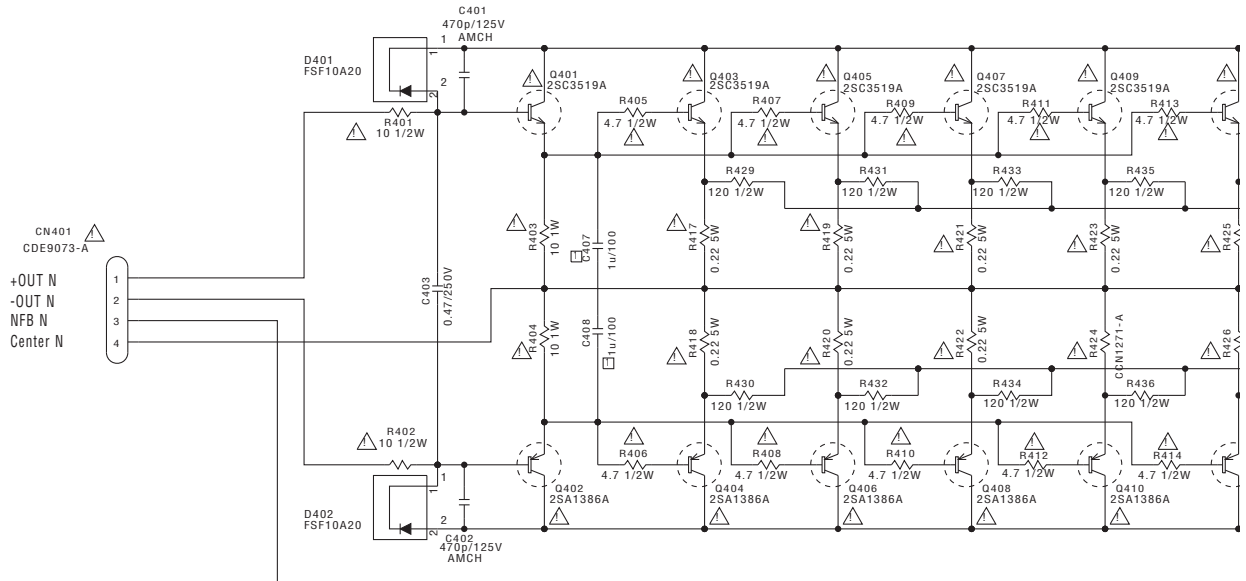
From Protection

B

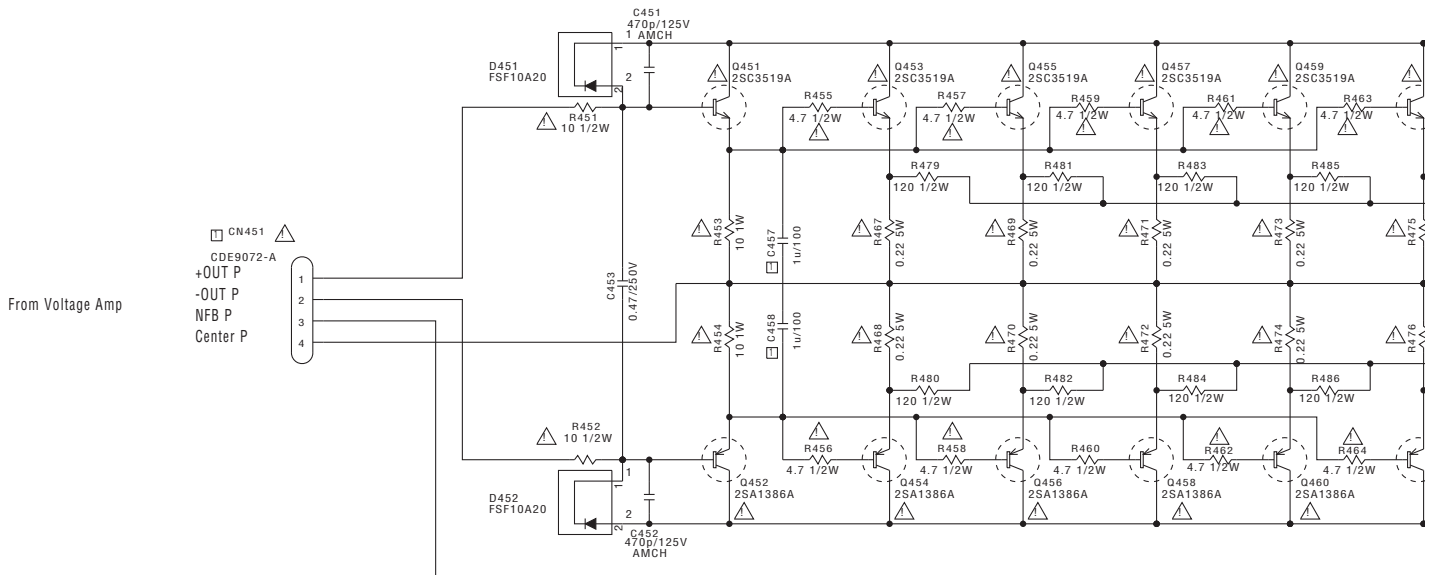


From Voltage Amp

C

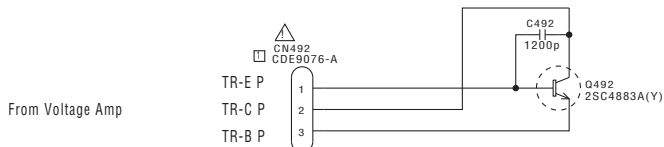


D



E

F



POWER AMP UNIT (CWH1516)

A

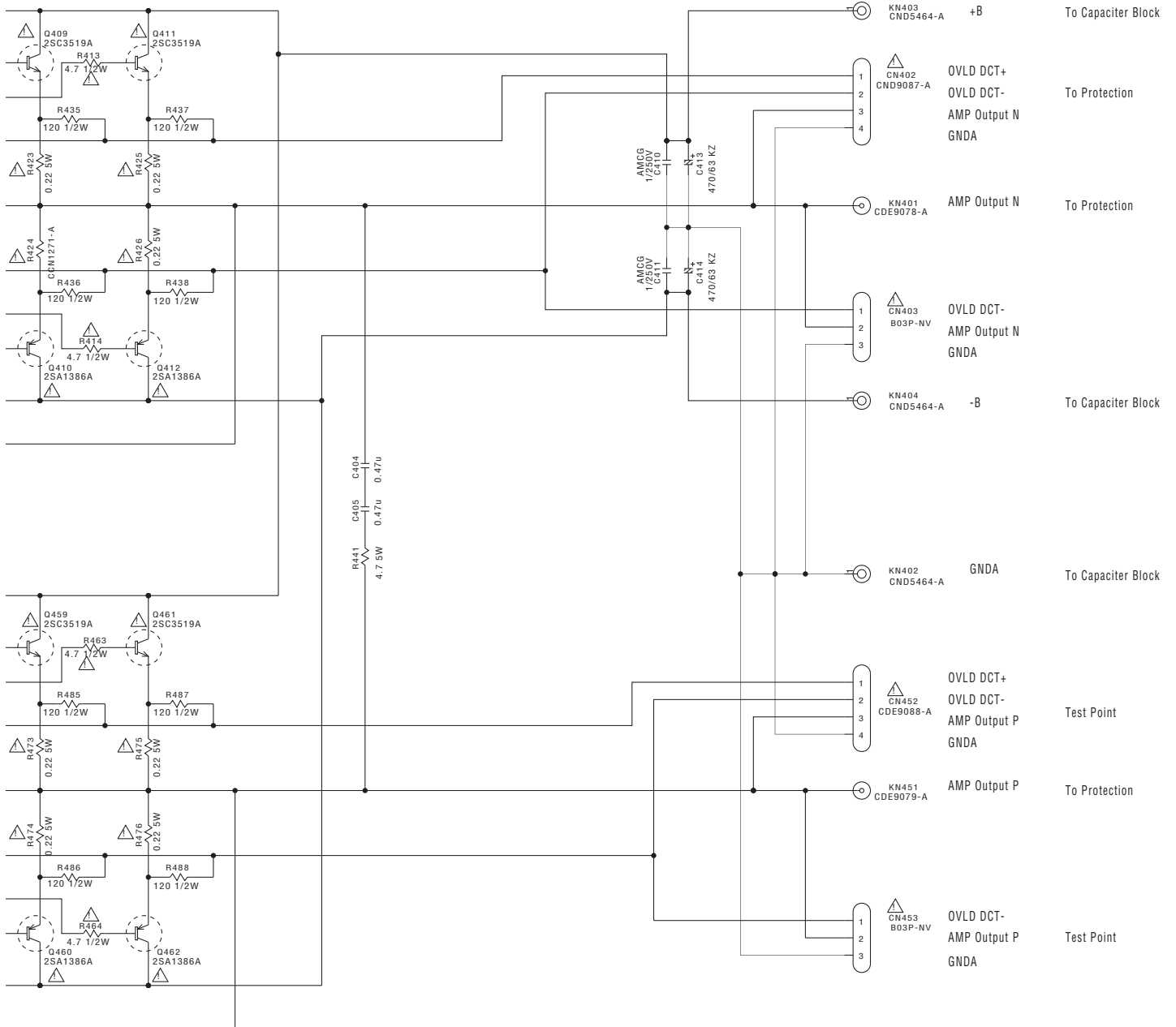
B


C

D

E

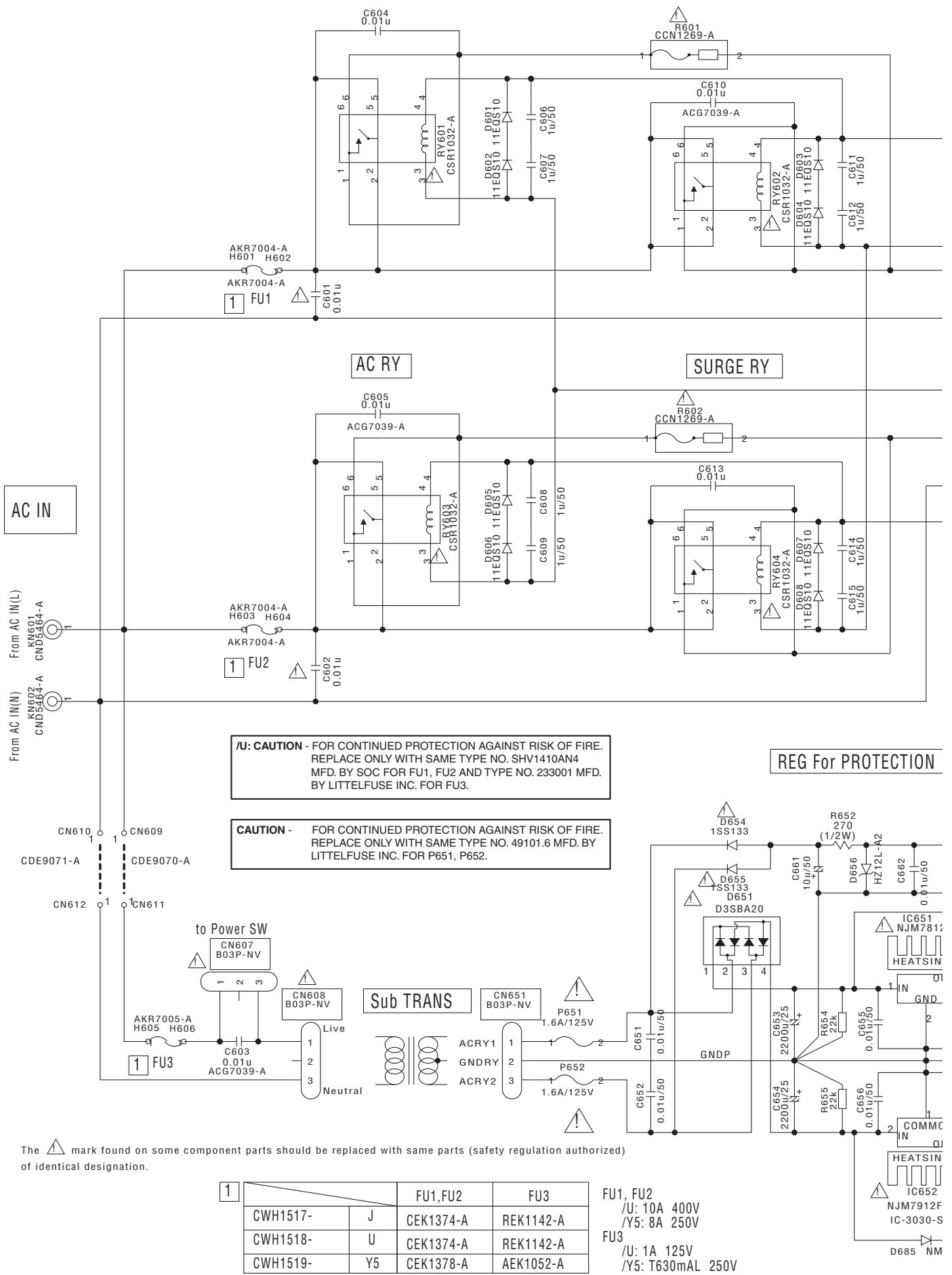
F



The  mark found on some component parts should be replaced with same parts (safety regulation authorized) of identical designation.

10.3 PRIMARY UNIT

A
B
C
D
E
F



!U: CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. SHV1410AN4 MFD. BY SOC FOR FU1, FU2 AND TYPE NO. 233001 MFD. BY LITTELFUSE INC. FOR FU3.

CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 49101.6 MFD. BY LITTELFUSE INC. FOR P651, P652.

The mark found on some component parts should be replaced with same parts (safety regulation authorized) of identical designation.

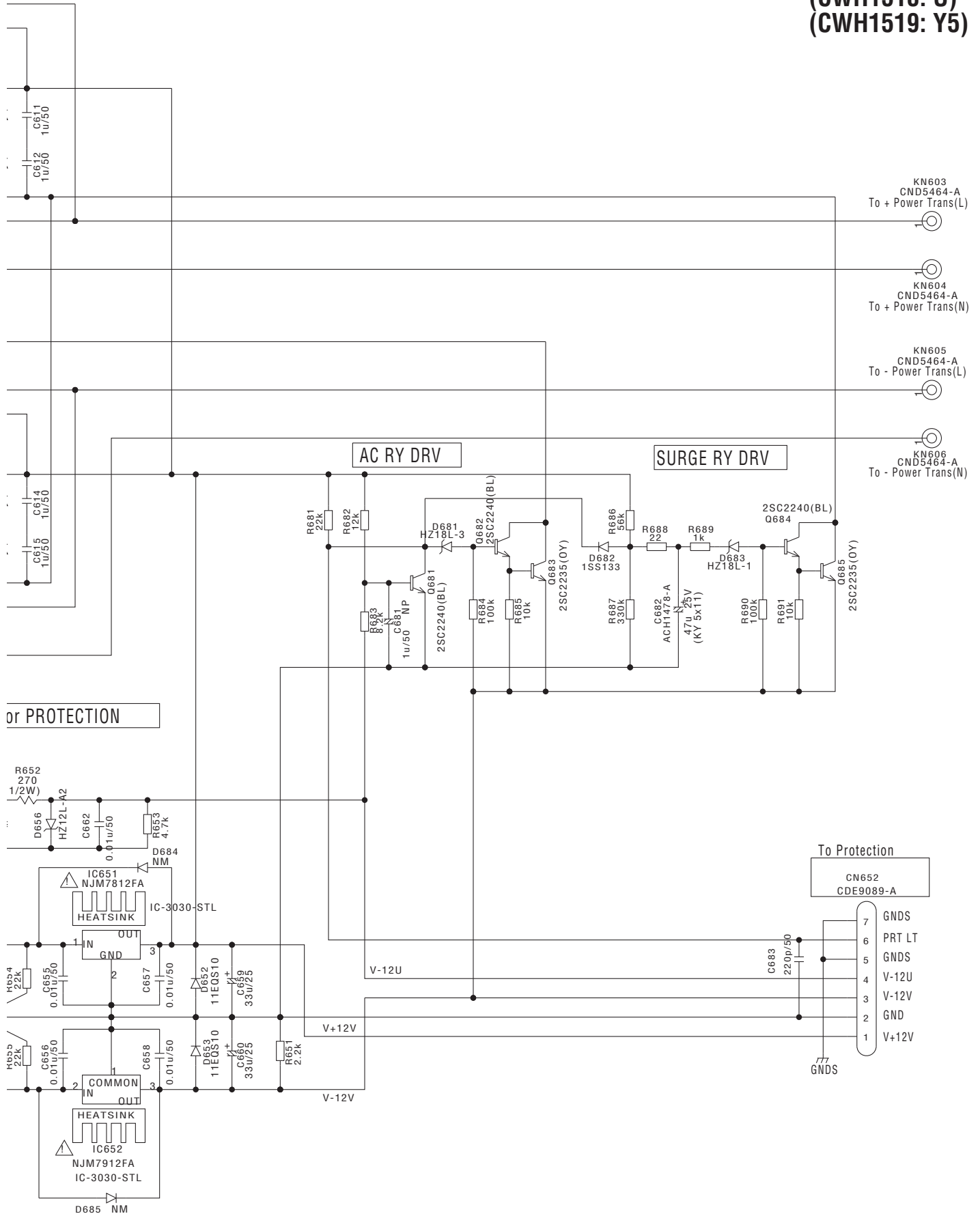
		FU1, FU2	FU3	
1	CWH1517-	J	CEK1374-A	REK1142-A
	CWH1518-	U	CEK1374-A	REK1142-A
	CWH1519-	Y5	CEK1378-A	AEK1052-A

FU1, FU2
/U: 10A 400V
/Y5: 8A 250V
FU3
/U: 1A 125V
/Y5: T630mAL 250V

TAD-M600

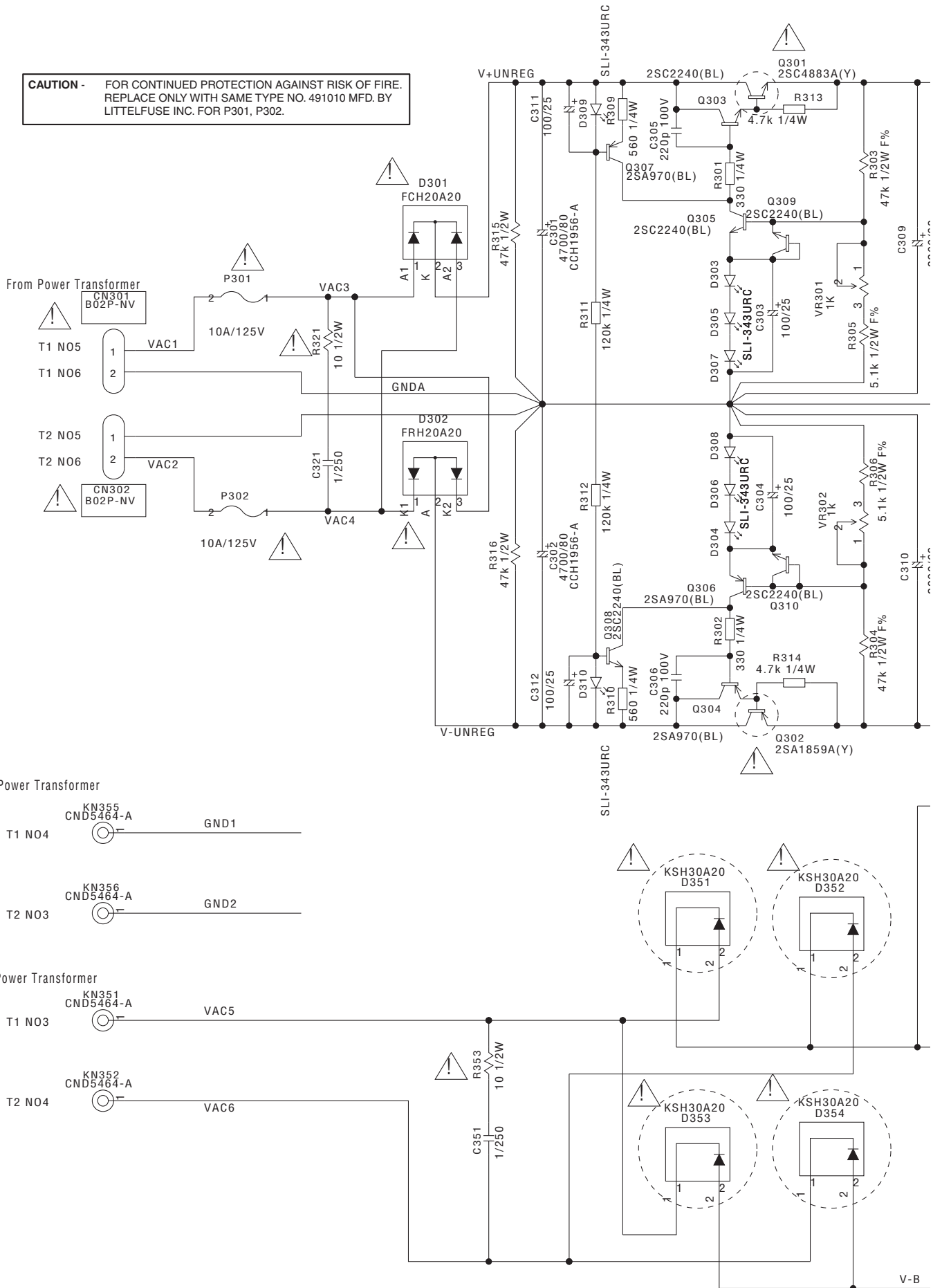
PRIMARY UNIT (CWH1518: U) (CWH1519: Y5)

A
B
C
D
E
F



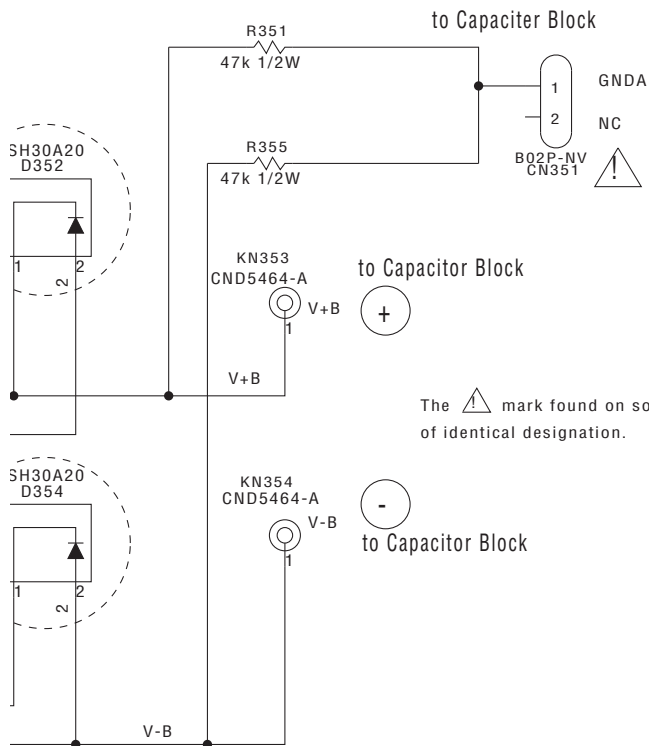
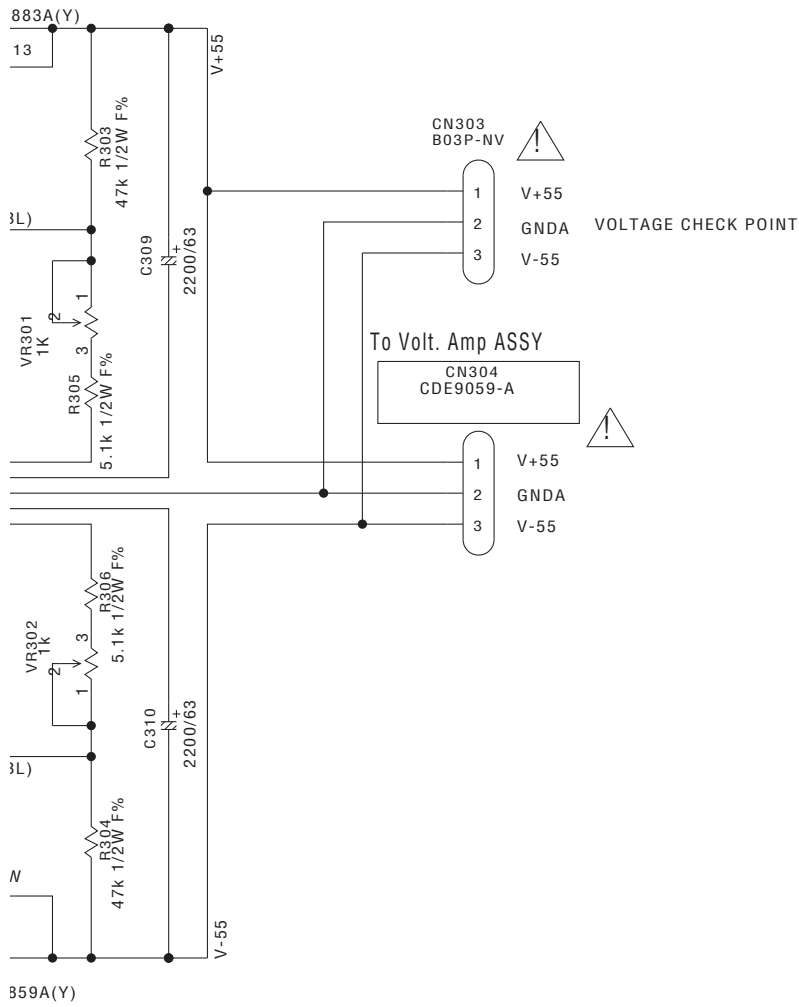
10.4 REGULATOR UNIT

CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 491010 MFD. BY LITTELFUSE INC. FOR P301, P302.



REGULATOR UNIT (CWH1520)

A
B
C
D
E
F



The mark found on some component parts should be replaced with same parts (safety regulation authorized) of identical designation.

10.5 PROTECTION UNIT

1

2

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4

A

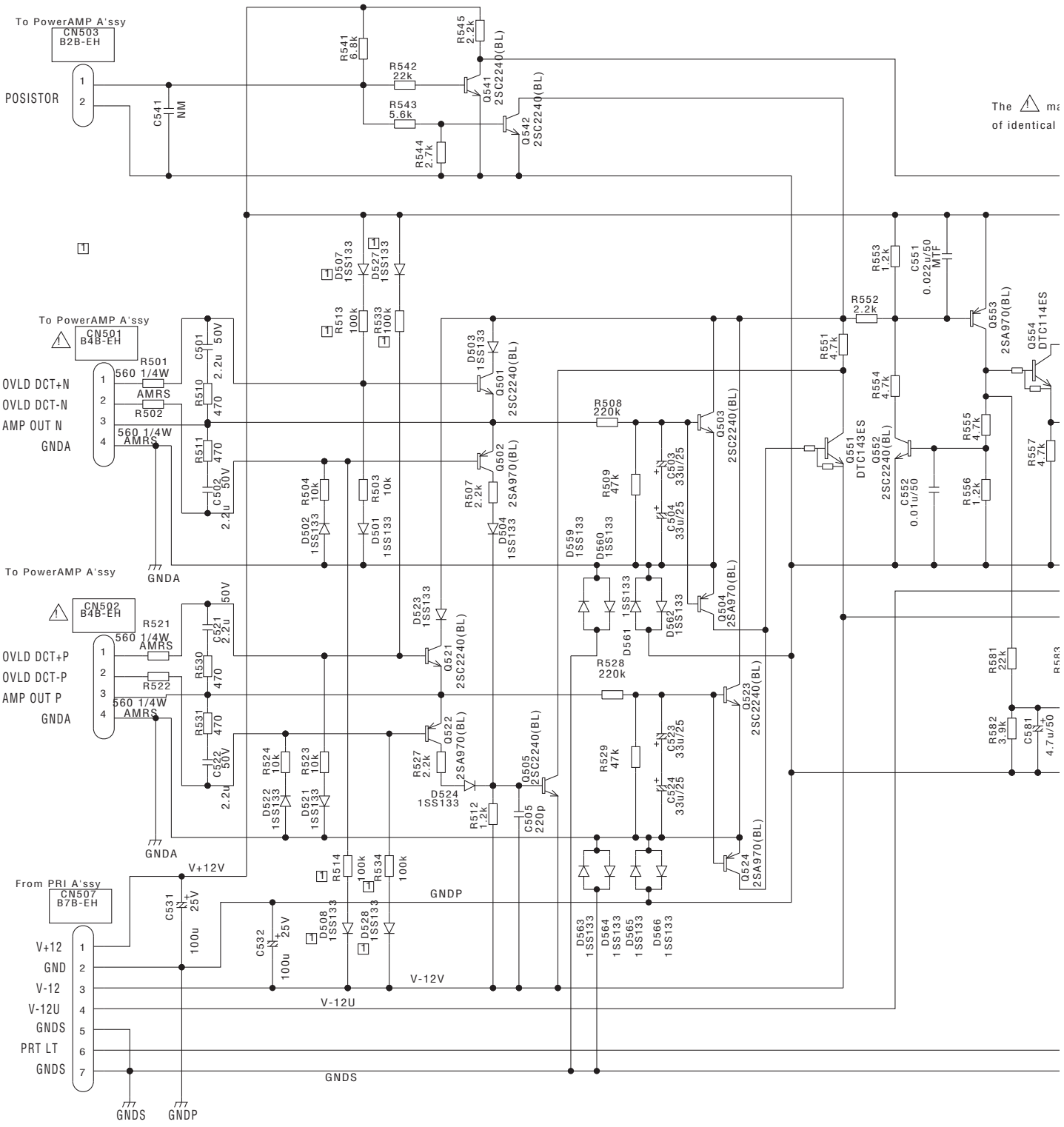
B

C

D

E

F



The \triangle m_z of identical

1

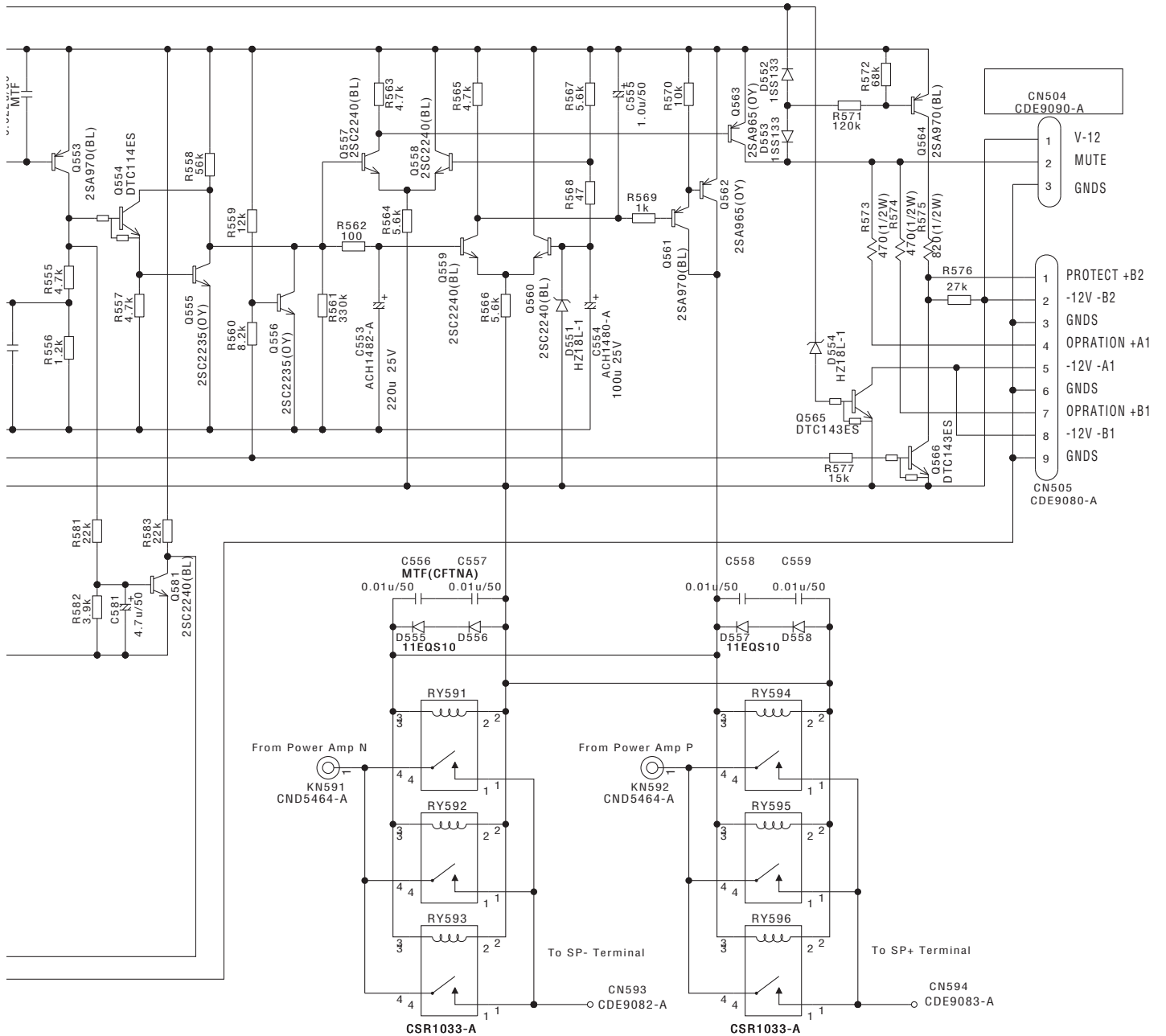
2

3

4

PROTECTION UNIT (CWH1521)

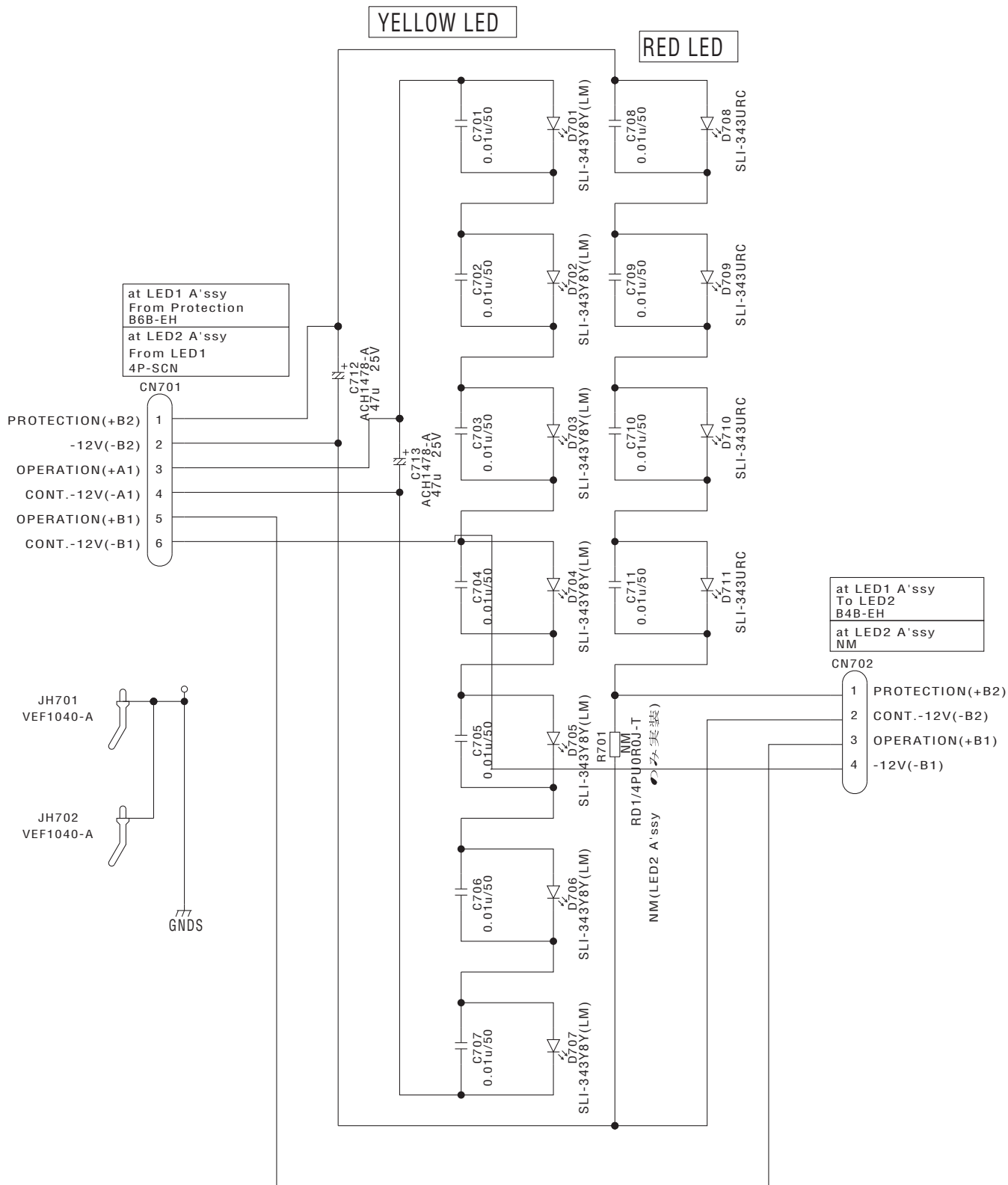
The \triangle mark found on some component parts should be replaced with same parts (safety regulation authorized) of identical designation.



10.6 LED1 and LED2 UNITS

LED1 UNIT
(CWH1522)

LED2 UNIT
(CWH1523)





5



6



7



8



A



B



C



D



E



F



5



6

TAD-M600



7



8

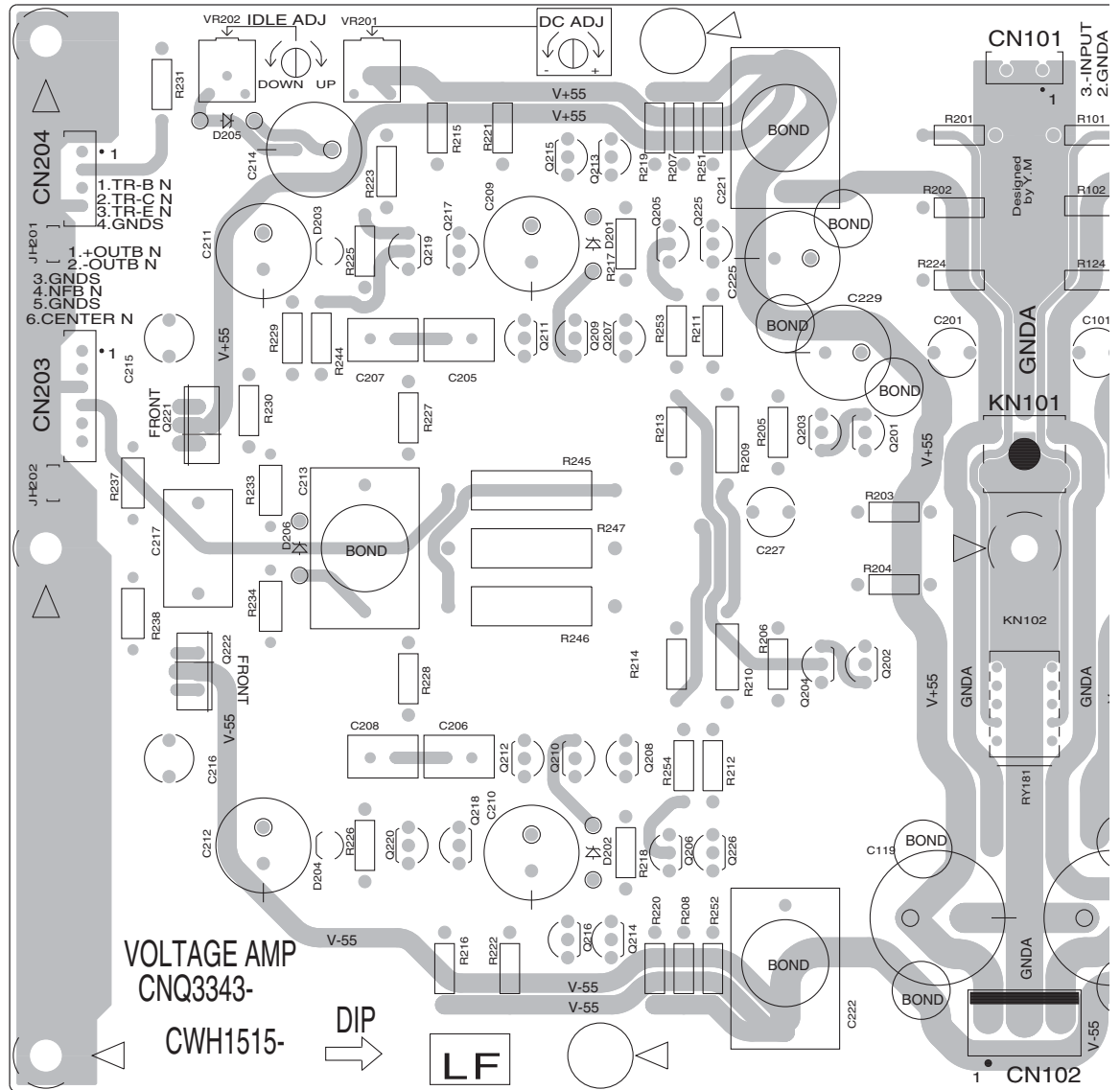


11. PCB CONNECTION DIAGRAM

11.1 VOLTAGE AMP UNIT

SIDE A

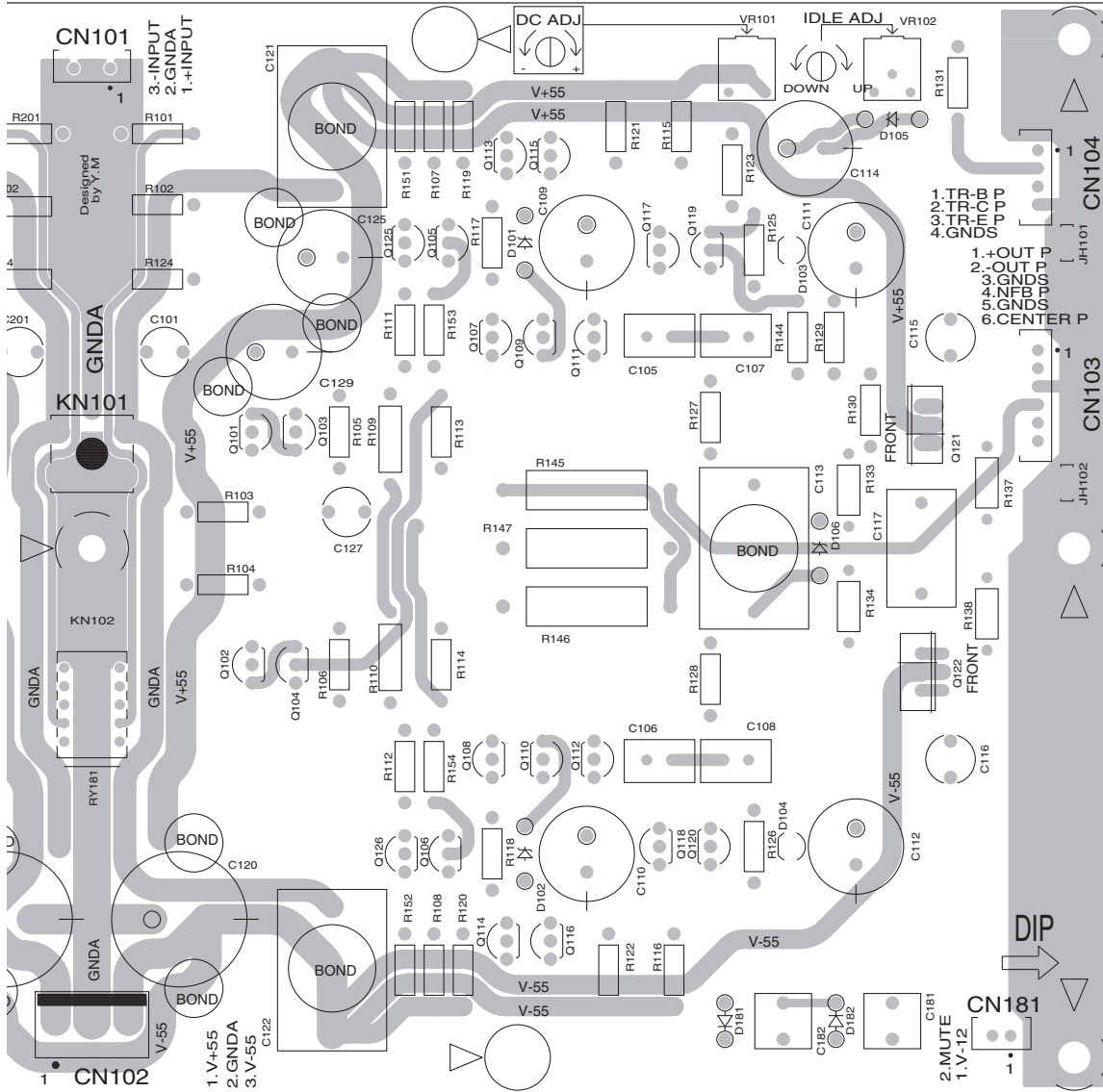
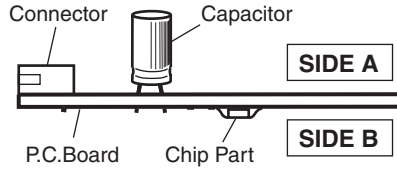
VOLTAGE AMP UNIT



NOTE FOR PCB DIAGRAMS :

1. The parts mounted on this PCB include all necessary parts for several destinations. For further information for respective destinations, be sure to check with the schematic diagram.

2. View point of PCB diagrams.



SIDE B

A

B

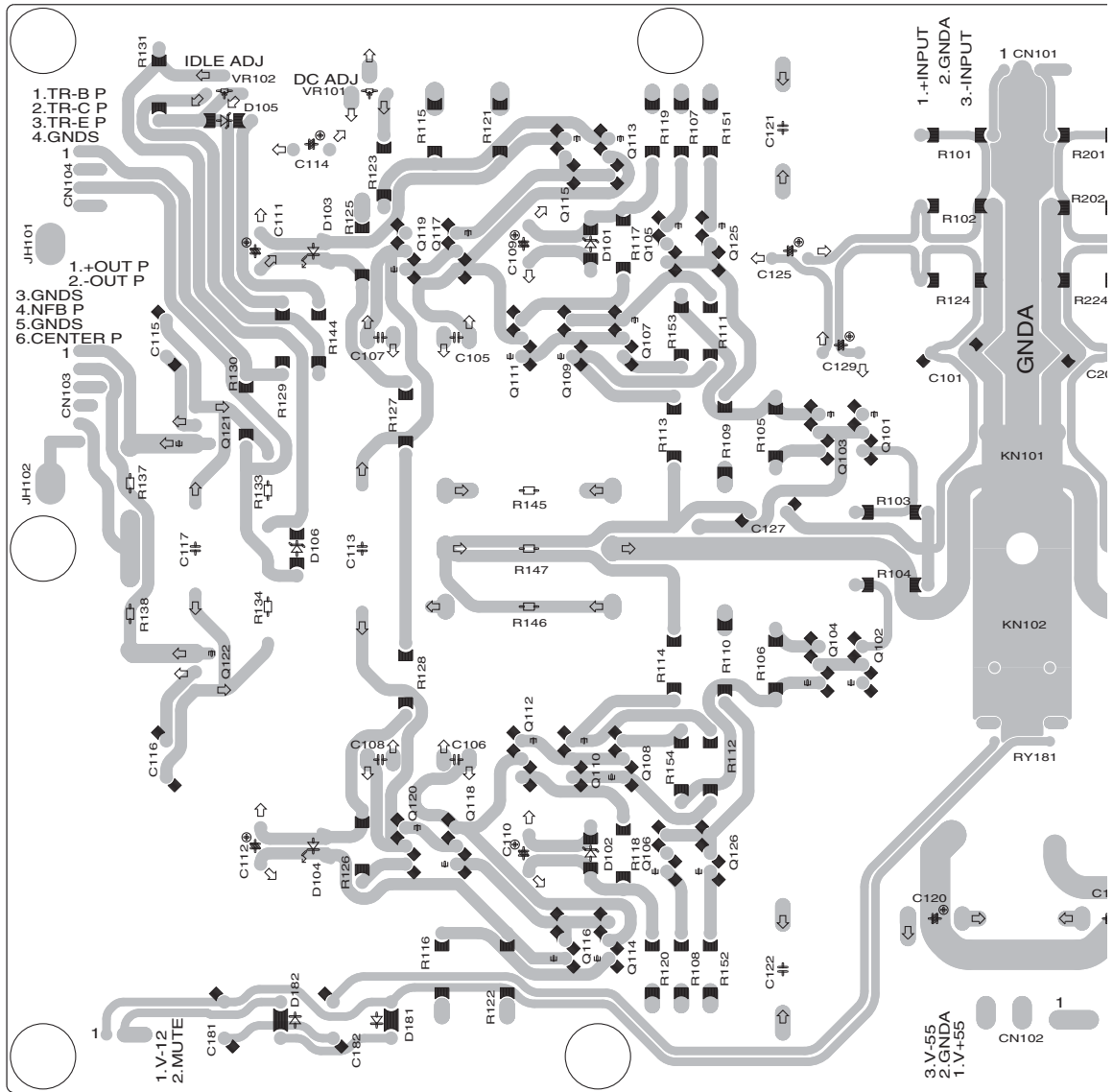
C

D

E

F

VOLTAGE AMP UNIT



SIDE B

A

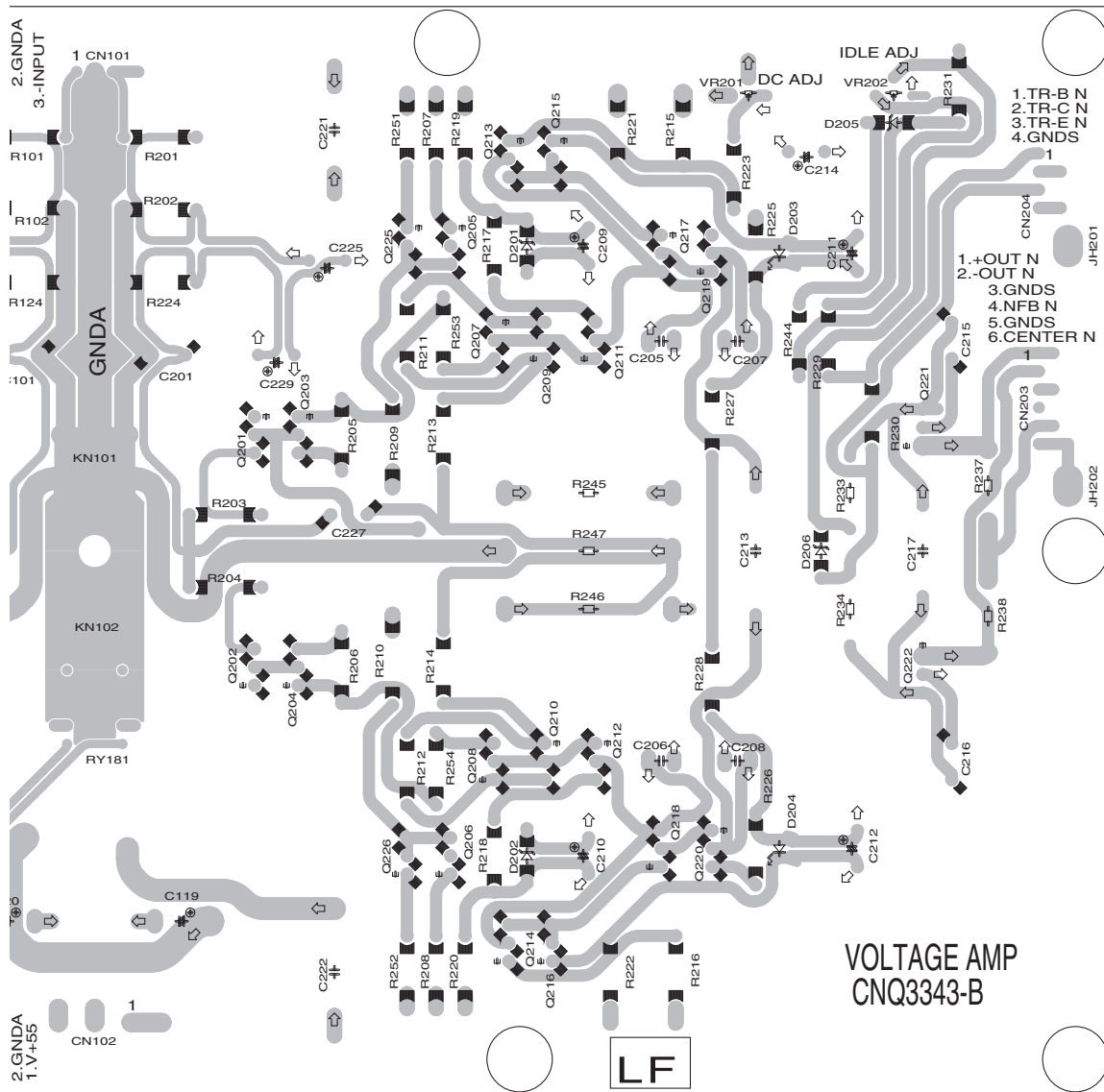
B

C

D

E

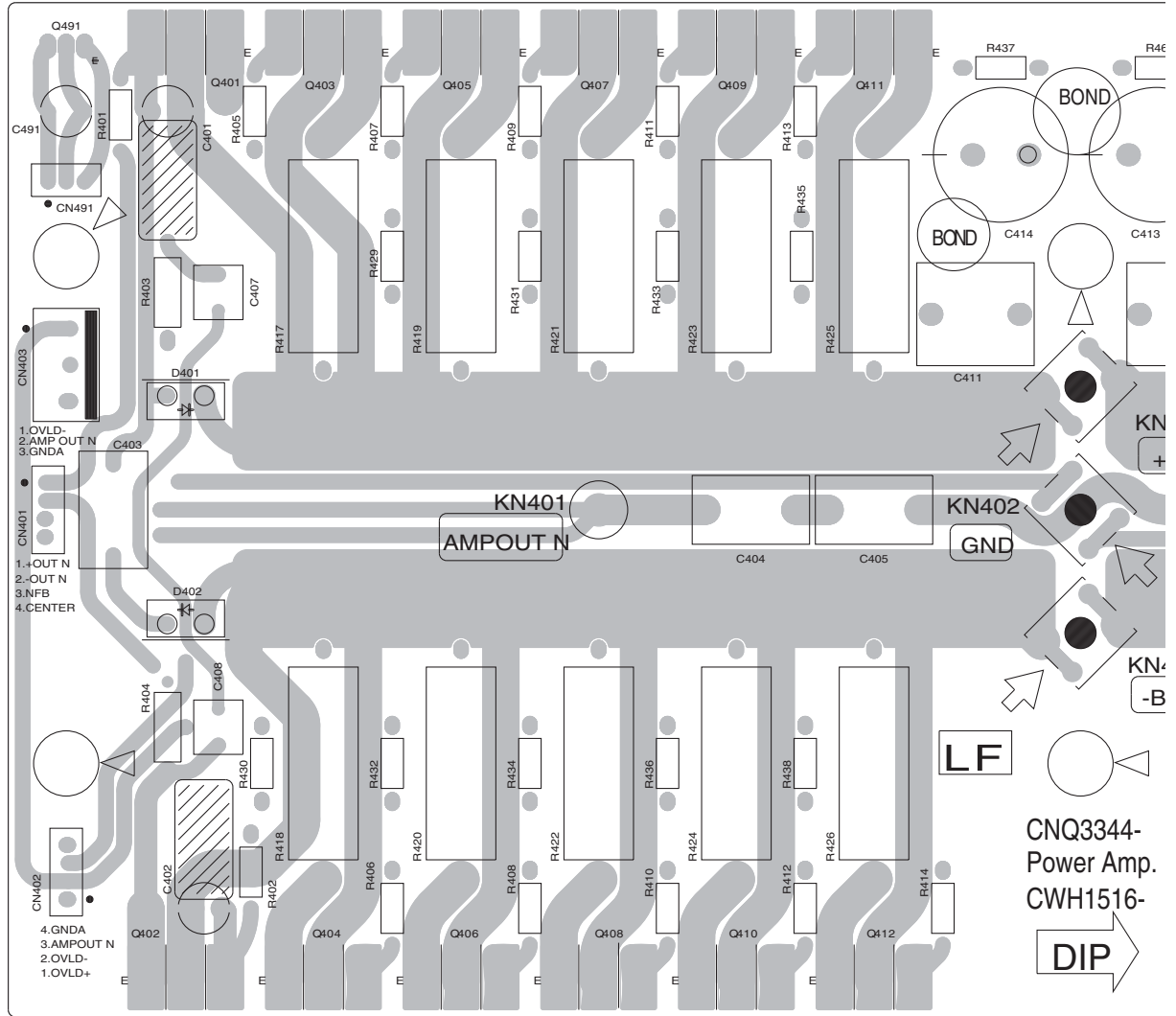
F



11.2 POWER AMP UNIT

SIDE A

POWER AMP UNIT



SIDE A

A

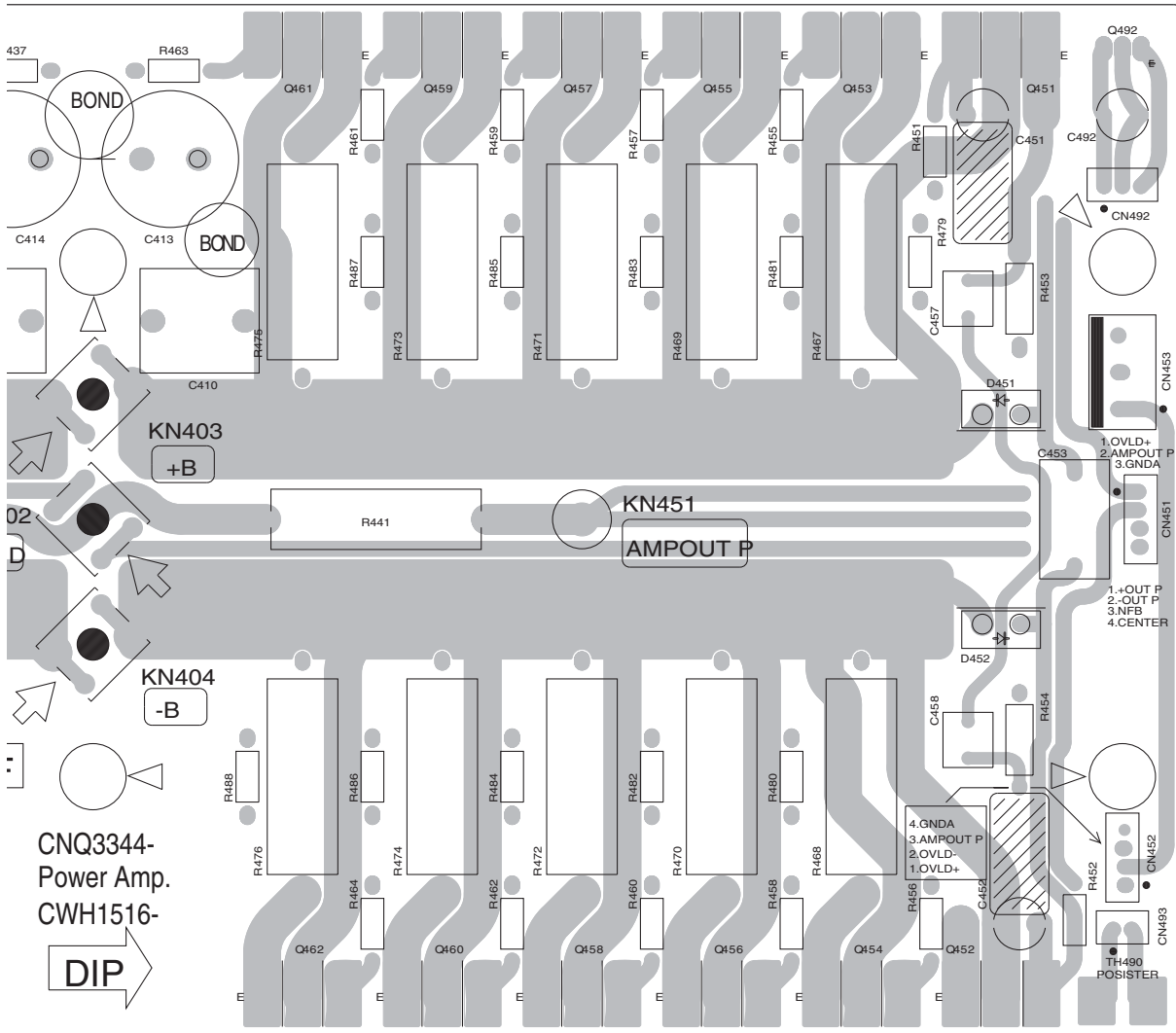
B

C

D

E

F



SIDE B

A

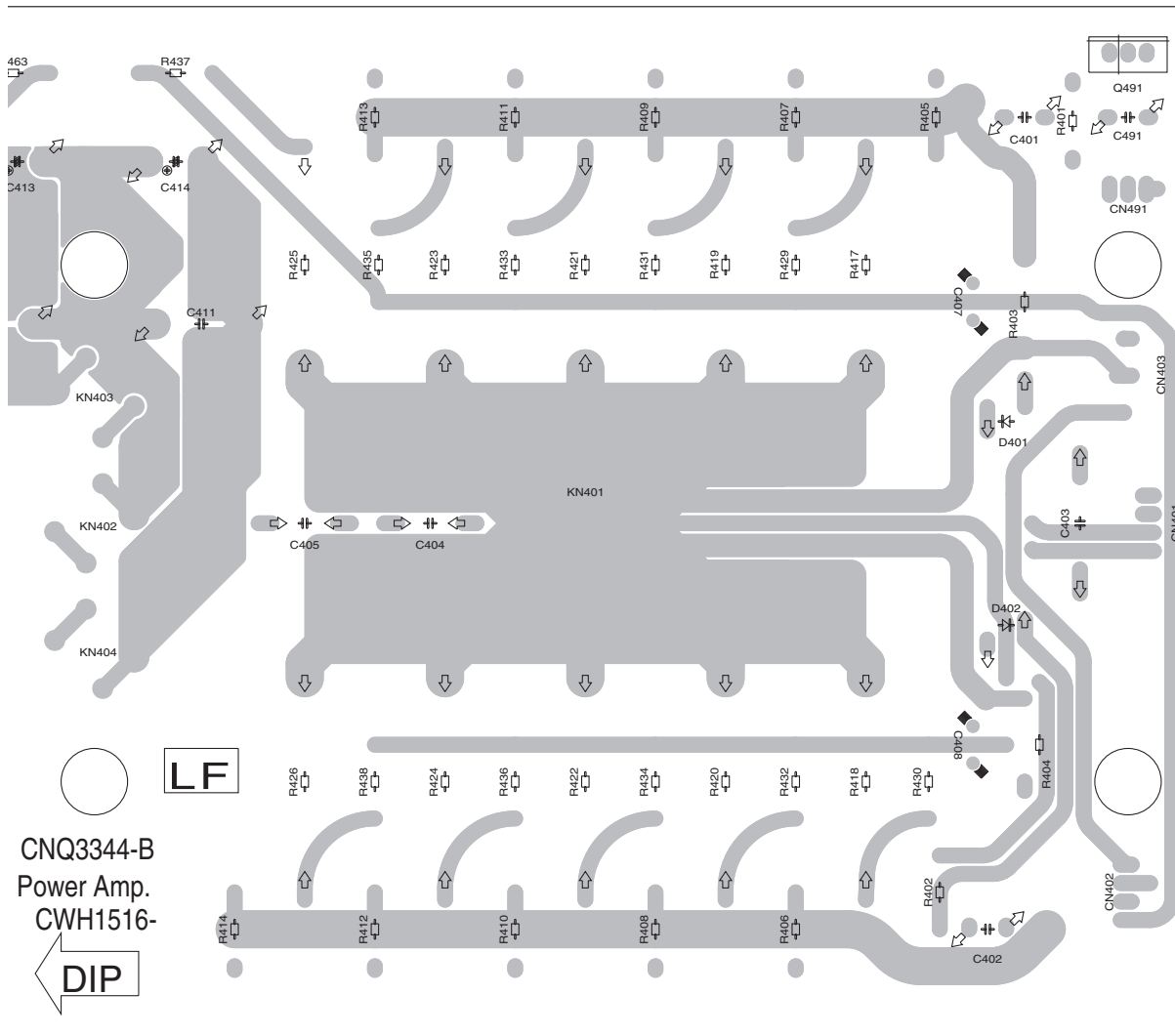
B

C

D

E

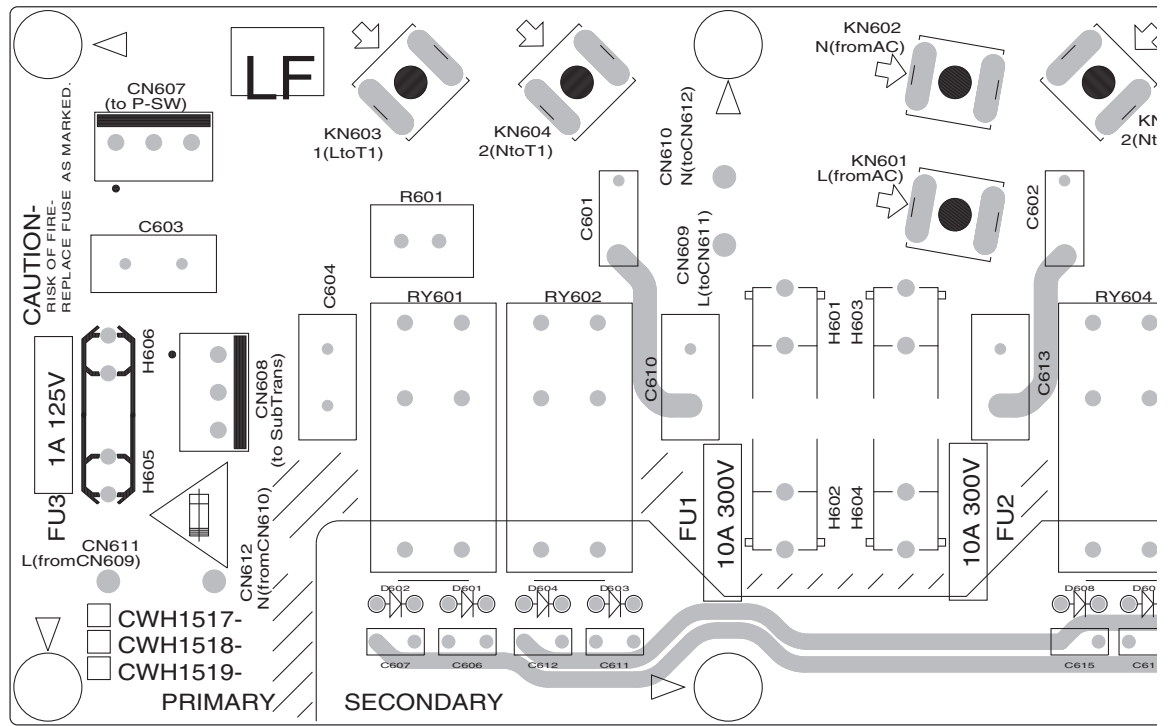
F



11.3 PRIMARY UNIT

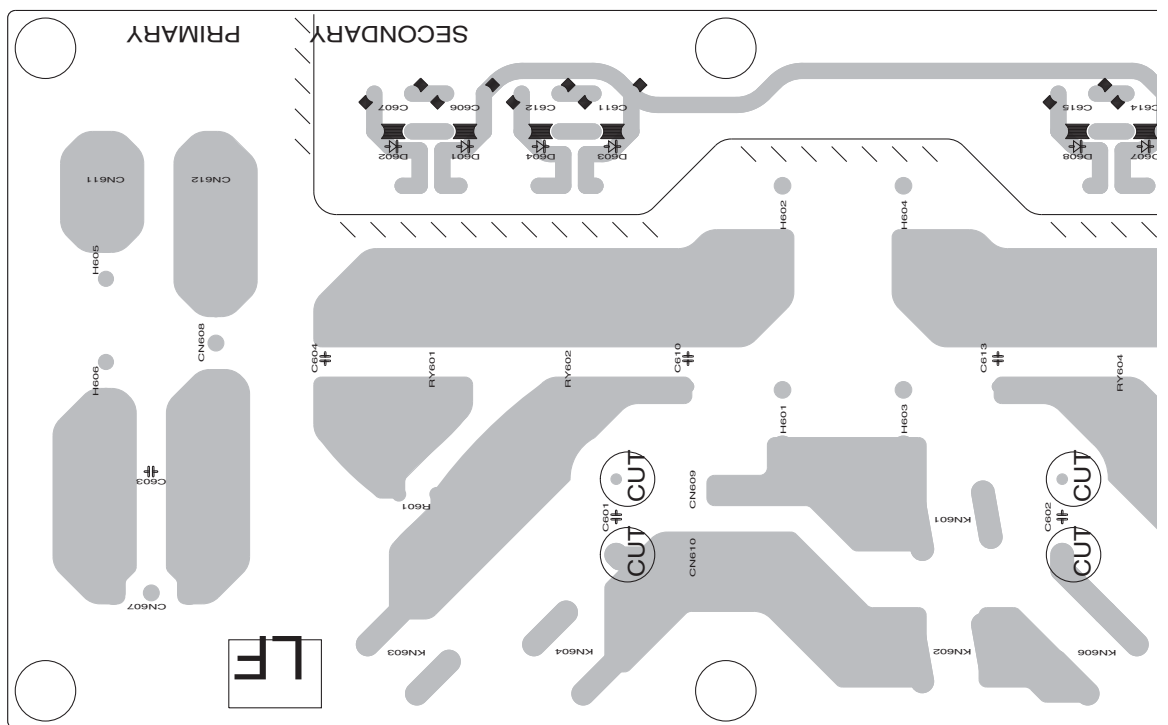
SIDE A

PRIMARY UNIT



SIDE B

PRIMARY UNIT

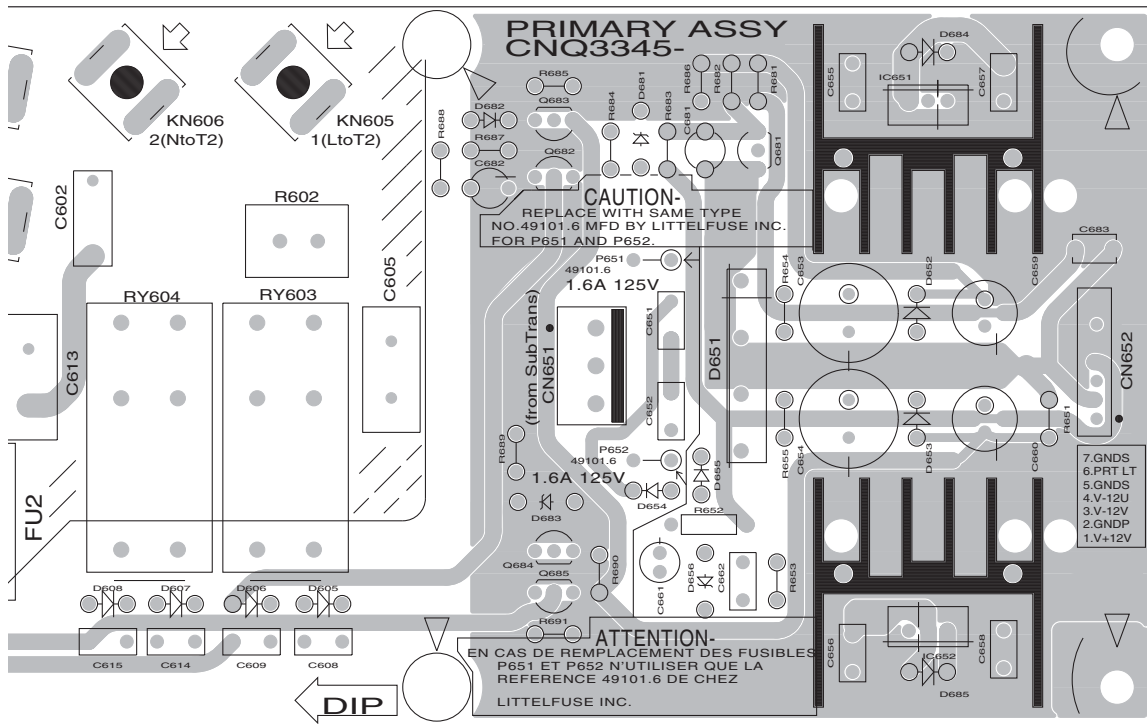


SIDE A

A

B

C

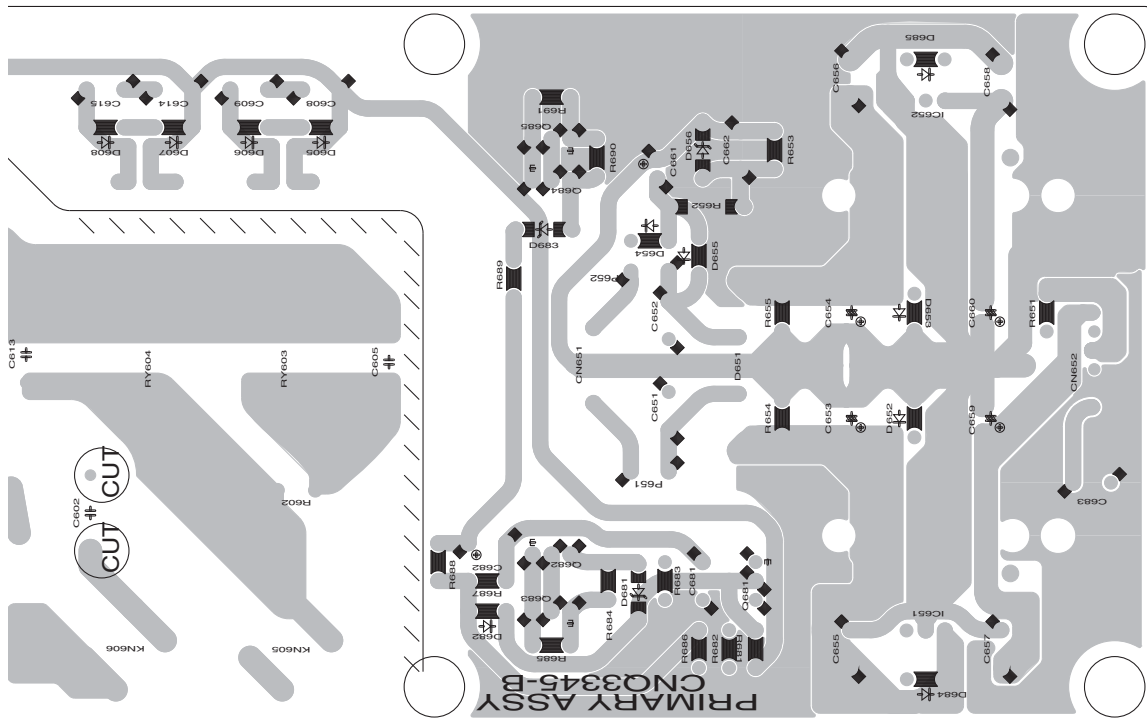


SIDE B

D

E

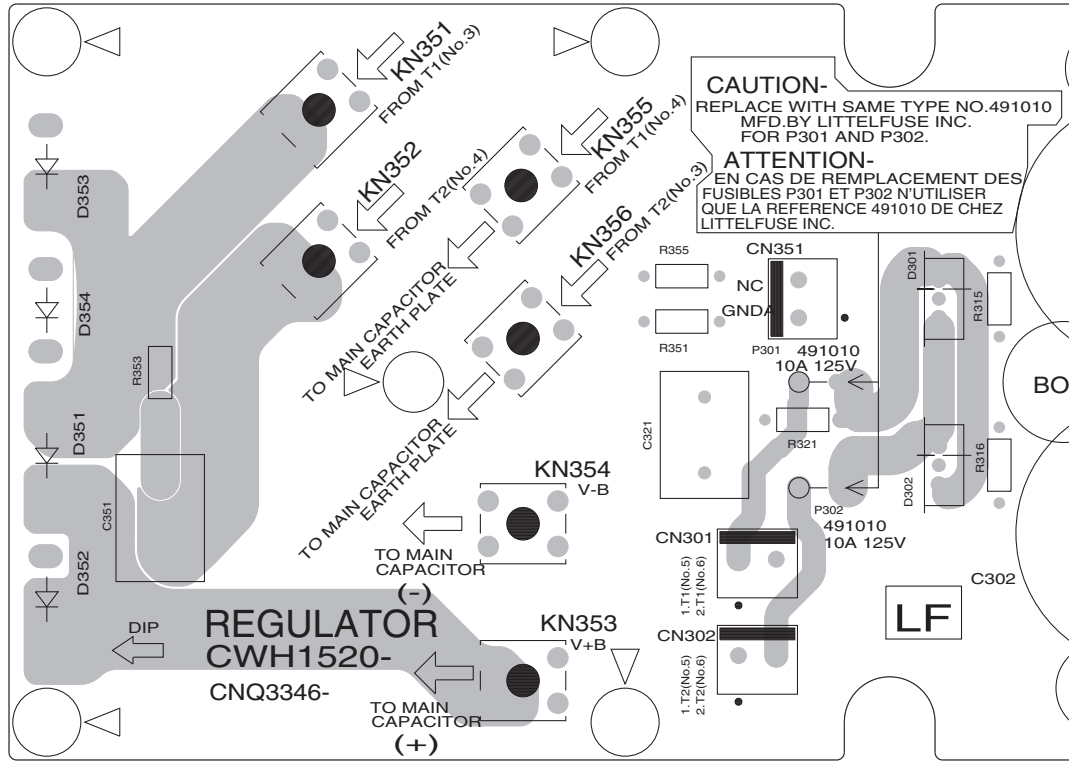
F



11.4 REGULATOR UNIT

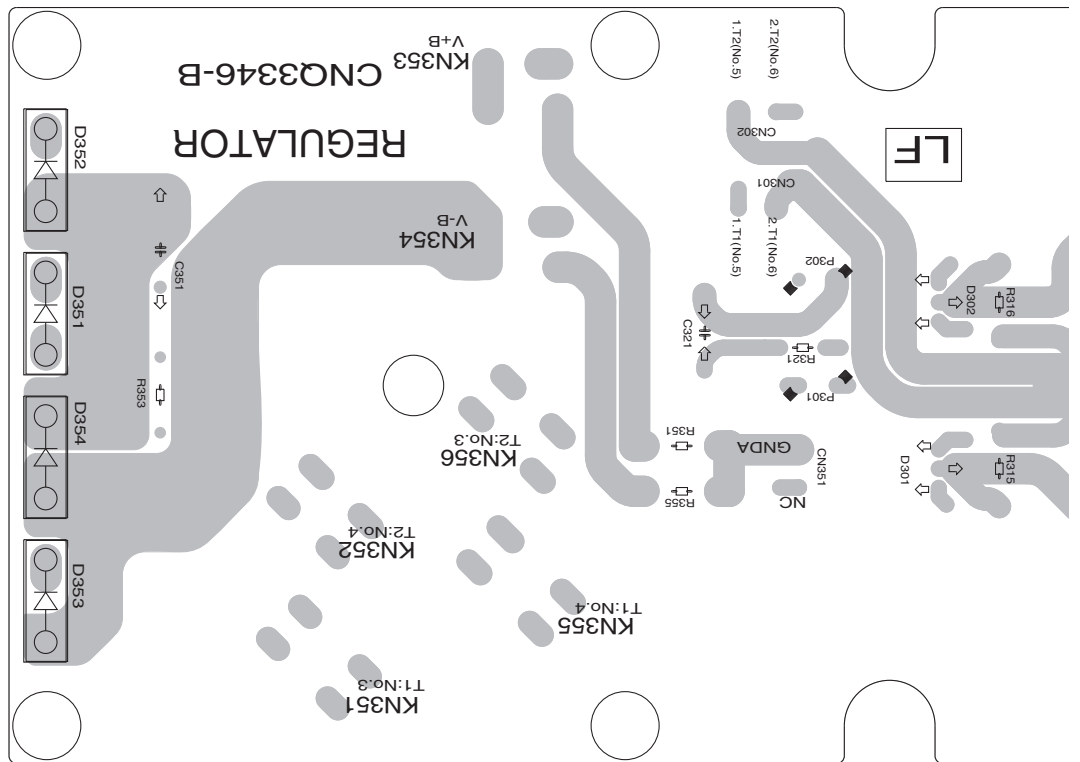
SIDE A

REGULATOR UNIT



SIDE B

REGULATOR UNIT

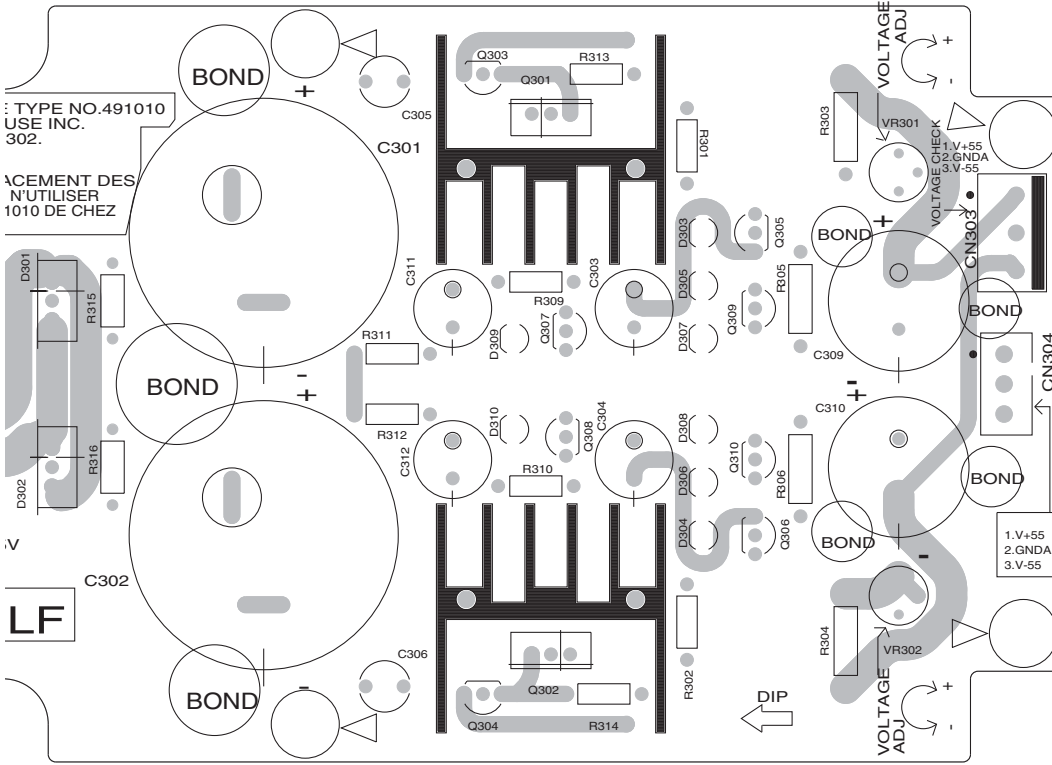


SIDE A

A

B

C

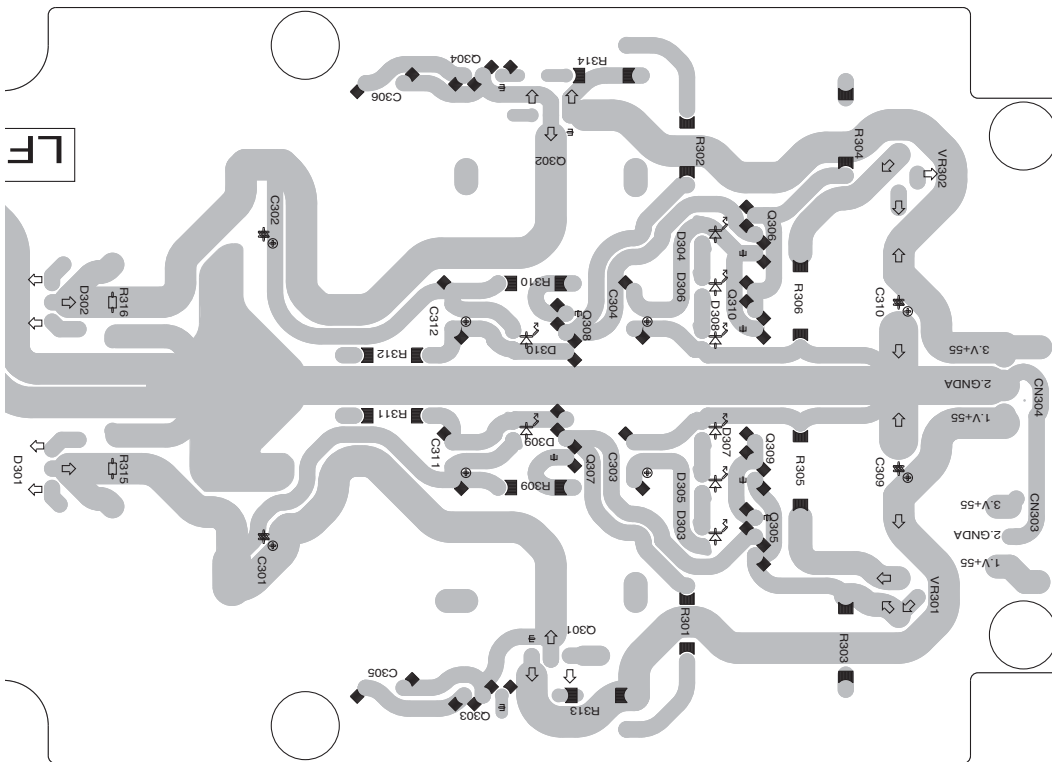


SIDE B

D

E

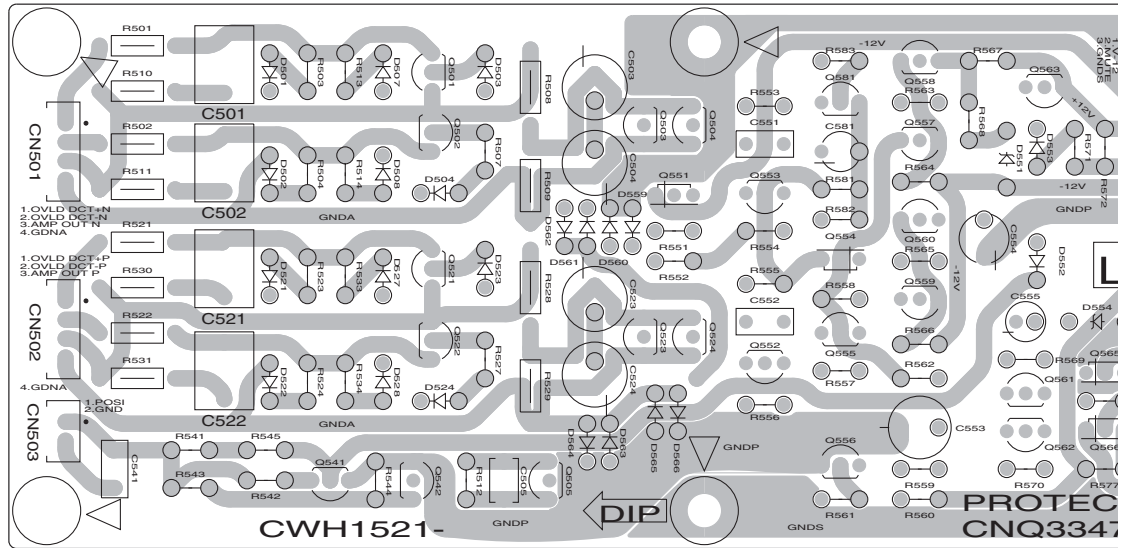
F



11.5 PROTECTION UNIT

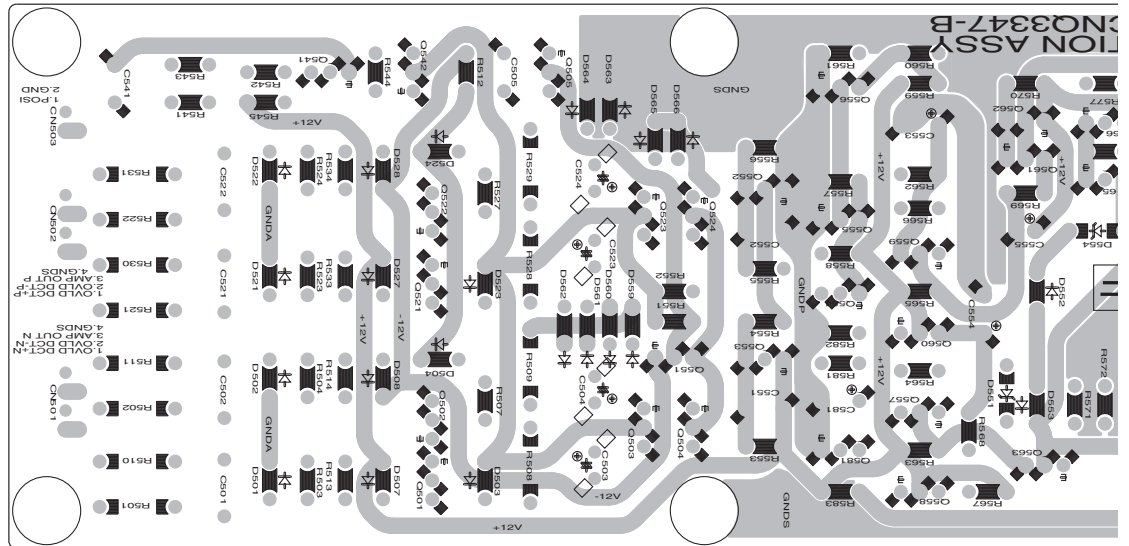
SIDE A

PROTECTION UNIT



SIDE B

PROTECTION UNIT

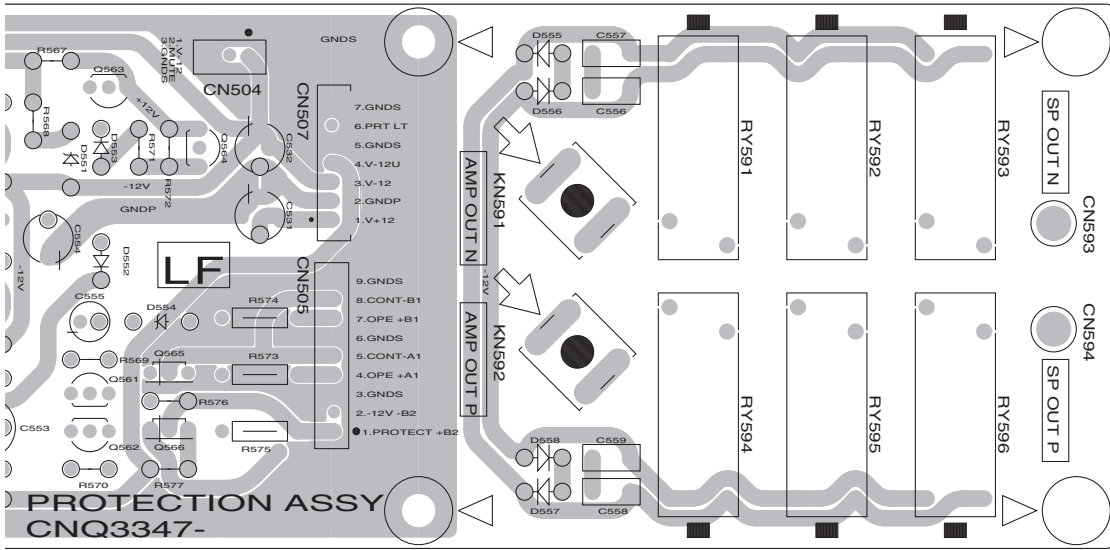


SIDE A

A

B

C

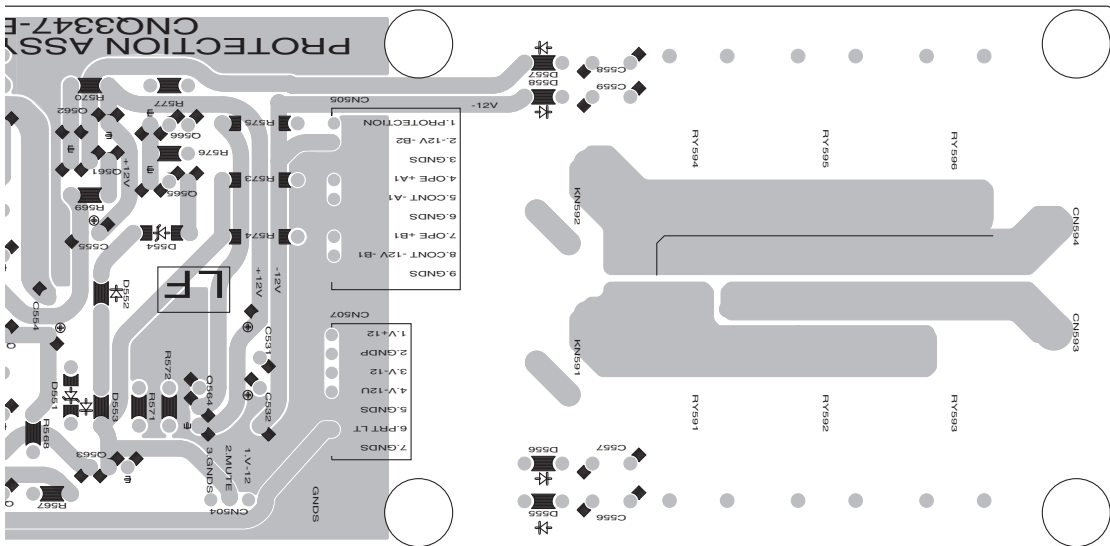


SIDE B

D

E

F

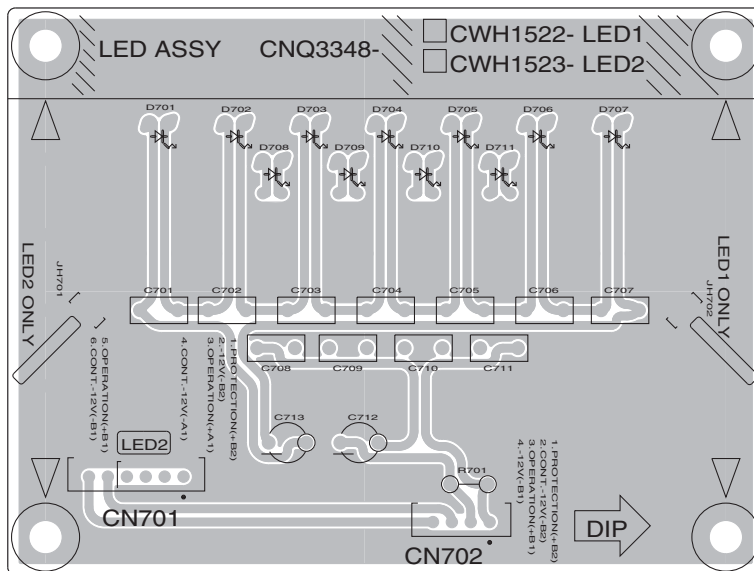


11.6 LED1 and LED2 UNITS

SIDE A

SIDE A

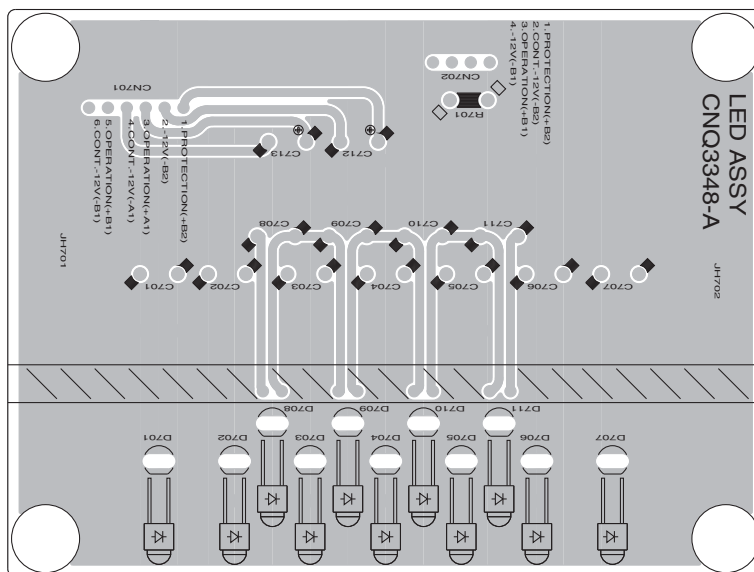
**LED1 UNIT
LED2 UNIT**



SIDE B

SIDE B

**LED1 UNIT
LED2 UNIT**



Mark No.	Description	Part No.
C	606-609,611,612	CFTNA103J50
C	614,615,651,652	CFTNA103J50
C	653,654	CEHAZL222M25
C	655-658,662	CFTNA103J50
C	659,660	CCH1951
C	661	CEHAT100M50
C	681	CEANP1R0M50
C	682	ACH1478
C	683	CQMA221J50

Mark No.	Description	Part No.
LED1 UNIT		
SEMICONDUCTORS		
D	701-707	SLI-343Y8Y(LM)
D	708-711	SLI-343URC
MISCELLANEOUS		
CN	701 CONNECTOR	B6B-EH
CN	702 CONNECTOR	B4B-EH
JH	702 PCB BINDER	VEF1040
CAPACITORS		
C	701-711	CFTNA103J50
C	712	ACH1478

PROTECTION UNIT

SEMICONDUCTORS

Q	501,503,505,521	2SC2240
Q	502,504,522,524	2SA970
Q	523,541,542,552	2SC2240
Q	551,565,566	DTC143ES
Q	553,561,564	2SA970

Q	554	DTC114ES
Q	555,556	2SC2235
Q	557-560,581	2SC2240
Q	562,563	2SA965
D	501-504,507,508	1SS133

D	521-524,527,528	1SS133
D	551,554	HZ18L(1)
D	552,553,559-566	1SS133
D	555-558	11EQS10

MISCELLANEOUS

KN	591,592 HOLDER	CND5464
RY	591-596 RELAY	CSR1033
CN	501,502 CONNECTOR	B4B-EH
CN	503 2P TOP POST	B2B-EH
CN	504 CORD	CDE9090

CN	505 CORD	CDE9080
CN	507 CONNECTOR	B7B-EH
CN	593 CORD	CDE9082
CN	594 CORD	CDE9083

RESISTORS

R	501,502,521,522	CCN1273
R	508,528	CCN1266
R	509,529	CCN1258
R	510,511,530,531	CCN1240
R	573,574	RD1/2PM471J

R	575	RD1/2PM821J
Other Resistors		RD1/4PU###J

CAPACITORS

C	501,502,521,522	CFTLA225J50
C	503,504,523,524	CCH1951
C	505	CQMA221J50
C	531,532,554	ACH1480
C	551	CFTNA223J50

C	552,556-559	CFTNA103J50
C	553	ACH1482
C	555	CEHAT1R0M50
C	581	CEHAT4R7M50

LED2 UNIT

SEMICONDUCTORS

D	701-707	SLI-343Y8Y(LM)
D	708-711	SLI-343URC

MISCELLANEOUS

CN	701 CORD	CDE9081
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RESISTORS

All Resistors		RD1/4PU###J
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MISCELLANEOUS

JH	701 PCB BINDER	VEF1040
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CAPACITORS

C	701-711	CFTNA103J50
C	712	ACH1478

VOLTAGE AMP UNIT

SEMICONDUCTORS

Q	101,103,105,108	2SA970
Q	102,104,106,107	2SC2240
Q	109,111,114,116	2SC2240
Q	110,112,113,115	2SA970
Q	117,125,201,203	2SA970

Q	118,126,202,204	2SC2240
Q	119,219	2SA1145
Q	120,220	2SC2705
Q	121,221	2SC4883A
Q	122,222	2SA1859A

Q	205,208,210,212	2SA970
Q	206,207,209,211	2SC2240
Q	213,215,217,225	2SA970
Q	214,216,218,226	2SC2240
D	101,102,201,202	HZ15L(2)

D	103,104,203,204	SLI-343URC
D	105,205	HZ5LL(C)
D	106,206	HZ4LL(C)
D	181,182	1SS133

MISCELLANEOUS

KN	101 HOLDER	CND5464
KN	102 WRAPPING TERMINAL	VNF1084
VR	101,201 SEMI FIXED RESISTOR	CCP1569
VR	102,202 SEMI FIXED RESISTOR	CCP1567
RY	181 RELAY	CSR1031

CN	101 3P TOP POST	B3B-EH
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Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	CN 102	CONNECTOR	CKS6112		VR 301,302	SEMI FIXED RESISTOR	CCP1568
	CN 103,203	CONNECTOR	B6B-EH		CN 301,302,351	CONNECTOR	CKS6111
	CN 104,204	CONNECTOR	B4B-EH		CN 303	CONNECTOR	CKS6112
	CN 181	2P TOP POST	B2B-EH		CN 304	CORD	CDE9059
	255	SPACER	CNW1813		358	HEAT SINK	CND5521
	JH 101,102,201,202	PCB BINDER	VEF1040		360	SCREW	PMH30P080FCC
					362	SPACER	CNW1813
					P	301,302 PROTECTOR (10 A)	AEK7022
<u>RESISTORS</u>				<u>RESISTORS</u>			
	R	101,107,108,123	CCN1237		R	301,302	CCN1237
	R	102,124,202,224	CCN1266		R	303,304	CCN1291
	R	103,104,130,203	CCN1231		R	305,306	CCN1292
	R	105,106,111,112	CCN1232		R	309,310	CCN1273
	R	109,110,209,210	CCN1267		R	311,312	CCN1265
	R	113,114,213,214	CCN1290		R	313,314	CCN1272
	R	115,215	CCN1289		R	315,316,351,355	CCN1268
	R	116,216	CCN1288		R	321,353	CCN1193
	R	117,118,121,122	CCN1230	<u>CAPACITORS</u>			
	R	119,120,219,220	CCN1259		C	301,302	CCH1956
	R	125,126,153,154	CCN1230		C	303,304,311,312	CCH1966
	R	127,128,227,228	CCN1249		C	305,306	CCE1044
	R	129,229	CCN1294		C	309,310	CCH1964
	R	131,231	CCN1235		C	321,351	CCE1040
	R	133,134,233,234	CCN1197				
	R	137,138,237,238	CCN1276				
	R	144,151,152,201	CCN1237				
	R	145,146,245,246	CCN1298				
	R	147,247	CCN1297				
	R	204,230	CCN1231				
	R	205,206,211,212	CCN1232				
	R	207,208,223,244	CCN1237				
	R	217,218,221,222	CCN1230				
	R	225,226,253,254	CCN1230				
	R	251,252	CCN1237				
<u>CAPACITORS</u>							
	C	101,201	CCE1044				
	C	105-108,205-208	CCF1008				
	C	109-112,114,125	CCH1965				
	C	113,121,122,213	CCE1041				
	C	115,116,215,216	CCE1043				
	C	117,217	CCE1045				
	C	119,120	CCH1953				
	C	127,227	CCE1056				
	C	129,209-212,214	CCH1965				
	C	181,182	CFTNA105J50				
	C	221,222	CCE1041				
	C	225,229	CCH1965				
REGULATOR UNIT							
<u>SEMICONDUCTORS</u>							
	Q	301	2SC4883A				
	Q	302	2SA1859A				
	Q	303,305,308-310	2SC2240				
	Q	304,306,307	2SA970				
	D	301	FCH20A20				
	D	302	FRH20A20				
	D	303-310	SLI-343URC				
<u>MISCELLANEOUS</u>							
	KN	351-356	HOLDER				
			CND5464				