HP StorageWorks
XP24000/XP20000 Disk Arrays

Disassembly Manual
for
AE131A Disk Controller (DKC)
and
AE173A/AU Disk Unit (DKU)

Part Number: AE131-96049
Edition: First
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Purpose of This Manual

This manual describes a procedures to remove components that msut beseparately disposed of as required by *DIRECTIVE 2002/96/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on waste electrical and electronic equipment (WEEE).*

Intended Audience

This procedure manual is intended for the workers in the facilities that perform the treatment operation, the employees of the contractor, or any other persons involved in the disassembly procedure.

Safety Guidelines

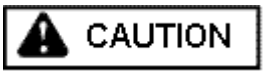
Safety precautions are indicated by the following notation. The notation consists of the safety symbol and/or one of the three keywords: **Danger**, **Warning**, and **Caution**.

Safety Notation

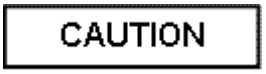
General safety symbol. This symbol is used to alert the user to a potential hazard that may result in personal injury. To avoid possible injury or death, comply with the safety notice following this symbol.

The DANGER notice is used to indicate the presence of an imminent danger that is highly likely to cause serious or fatal injury.

The WARNING notice is used to indicate the presence of a potential danger that may cause serious or fatal injury.



The CAUTION notice (with the safety symbol) is used to indicate the presence of a potential danger that could cause minor or moderate injury.



The CAUTION notice (without the safety symbol) is used to indicate the presence of a potential danger that could cause serious damage to the equipment or damage to property in the vicinity.

The following are general precautions that you should follow to enable you to perform disassembly work safely. Read these precautions carefully and comply with them during work.

Before Starting Work

- Read the safety instructions and procedures described in this manual carefully and comply with them during work.
- The system labels and the manual show the precautions necessary to prevent injury. Understand these precautions fully and comply with them.
- While every consideration has been given to the precautions shown on the system and in this manual, there is always the possibility of unforeseeable situations. When working, take care beyond following the instructions in this guide to avoid injury.

General Precautions

- Be sure to follow the indicated work method and sequence.
- Always use any special tool or material that is specified. If none is specified, use one suited to the purpose.
- Wear protective glasses if there is a possibility that components could scatter or liquid could splash.
- When lifting heavy components, bend your knees and use your leg muscles, keeping your back straight, so as not to injure your spine or back muscles. For heavy components with a safety notice, use machinery or work with another person, observing the instructions in the notice.
- When using an edged tool, take care to keep your fingers and other body parts away from the sharp edge.

Avoiding Electric Shock

- Shut off the power supply from the system.
- Be aware that electrical charge may remain in some parts of the system after the power supply is shut off.
- Before beginning work, remove all metal jewelry or accessories to prevent electrical shock.
- Keep your hands and arms dry during work.

Batteries

- Ignoring the following precautions could cause the battery to overheat, explode or ignite.
    - Do not connect a battery to the power outlet.
    - Do not place the battery pack near a heat source.
    - Do not throw the battery pack into a fire or heat it.
    - Do not use a wire or anything metallic to connect the battery connector's positive and negative terminals. Do not carry or store the battery together with metal parts.
    - Do not put the battery pack into water or let it get wet.
    - Do not puncture the battery with a nail, hit it with a hammer, or step on it.
    - Do not solder the battery directly.
- The electrolyte of this battery is a high-density alkaline solution.
    - If the electrolyte from the battery gets into your eyes, do not rub them. Use tap water or other clean water to wash your eyes thoroughly. Immediately ask for medical treatment. If you fail to follow these instructions, the battery liquid may damage your eyes.
    - If the electrolyte sticks to your skin, it may cause burns. Wash the skin thoroughly with plenty of water and immediately ask for medical treatment.

Moving the System

- To move the system, remove the skirt and raise the leveling bolts.
- When you move the system to a different level, use a temporary bridge that makes the slope angle not more than 8 degrees.
- When raising or lowering the system, use an anti-slip device to stabilize it.

Other Precautions

- Do not lean against the rear cover.
- To avoid injuring your fingers, follow the specified procedure when doing any of the following:
    - Removing the front bezel
    - Removing the rear cover

1. Overview

1.1. External Appearance

The following figures show the exterior of the system to be disassembled.

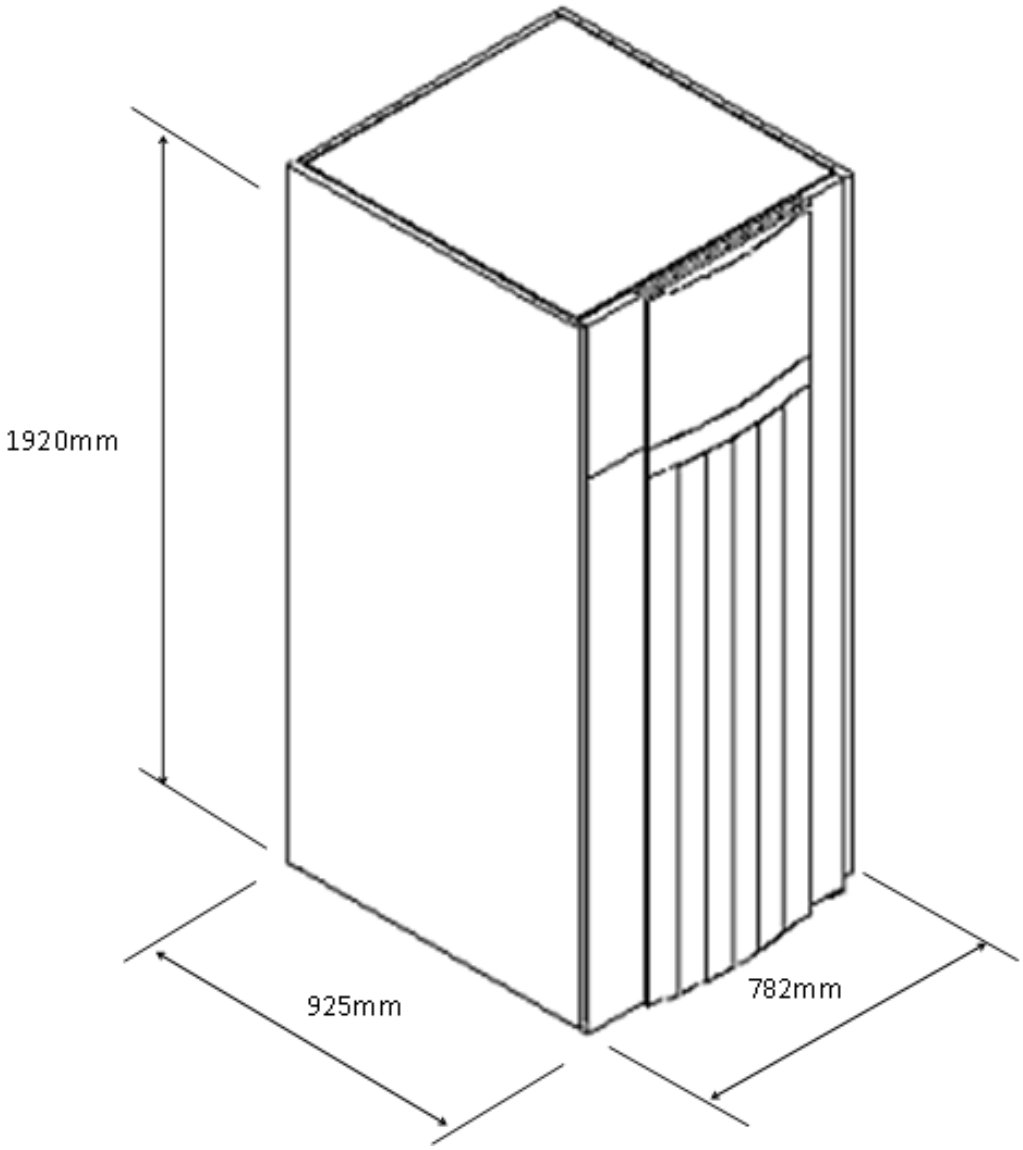


Figure 1. Exterior of the XP20000 AE131A DKC

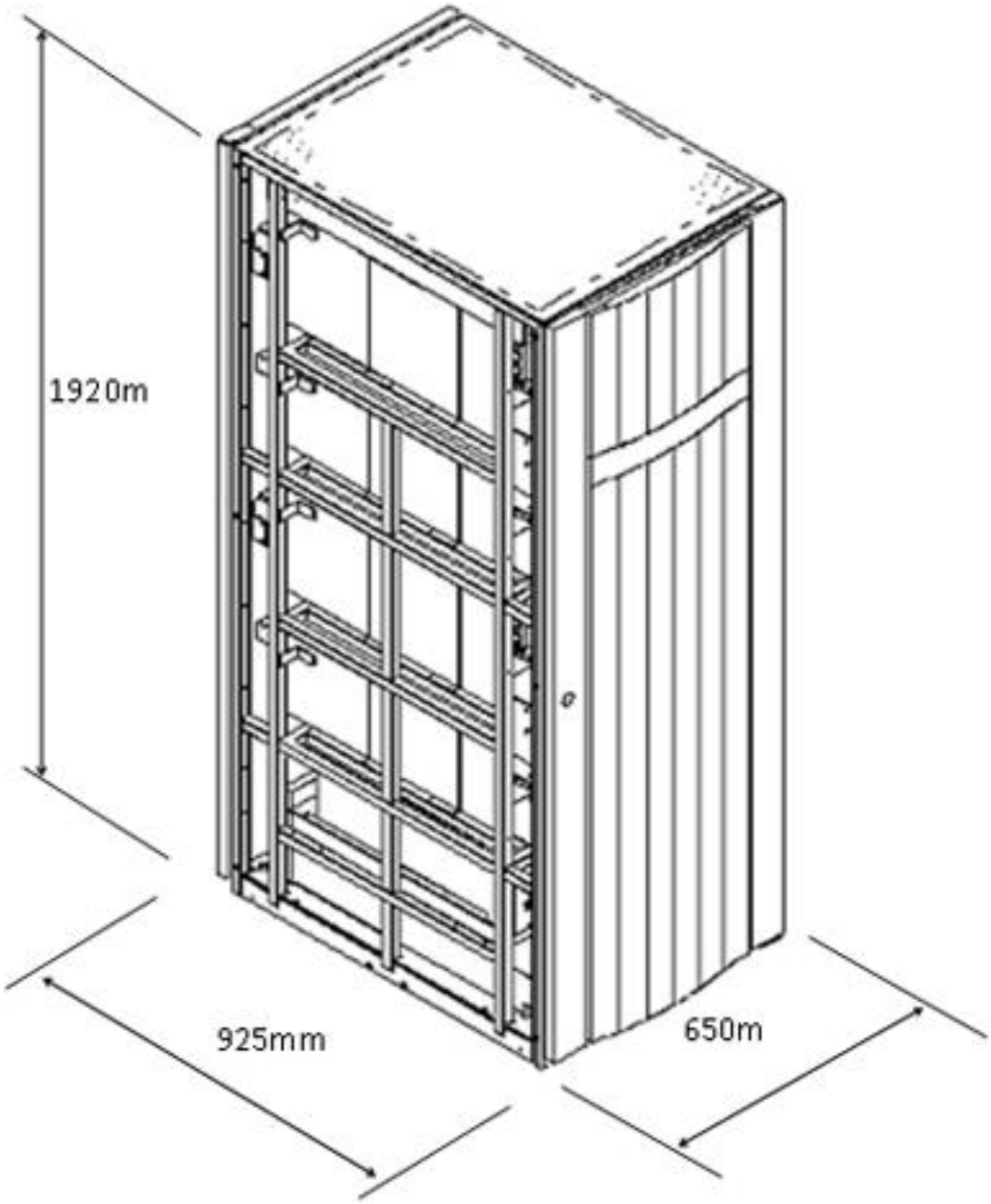


Figure 2. Exterior of XP24000 AE173A/AU DKU

1.2. Components and Parts to Be Removed

The following shows a list of the components and parts to be removed.
The numbers in the figures correspond to those in the table.

Table 1. Components and Parts to Be Removed for the AE131A DKC

No.	Components to be removed	Parts to be removed[1]	Is disassembly work required?	More Information
1	OP-PANEL	Printed Circuit Board	Yes	Disassembling the OP-PANEL
2	SVP	Printed Circuit Board HDD Battery Memory Board	Yes	Disassembling the SVP
3	SVR	Printed Circuit Board	Yes	Disassembling the SVR
4	HDD	HDD	Yes	Disassembling the Hard Drive (HDD)
5	WP-Printed Circuit Board	Printed Circuit Board	No	--
6	SH-Printed Circuit Board	Printed Circuit Board	No	--
7	B/B	Printed Circuit Board	No	--
8	Power supply	Printed Circuit Board	Yes	
9	Battery	Battery Pack Printed Circuit Board	Yes	Disassembling Battery Box PPH1003
10	External cable	AC power cable, etc.	Yes	Removing and Disassembling the AE131A DKC AC Power Cable
11	FDD	Main Board Motor Control Board	Yes	Disassembling the FDD/CD-ROM

[1] The parts to be removed are shown with the shaded enclosure characters in **Error! Reference source not found.** and **Error! Reference source not found.**.

1.2.1. Components to Be Removed

The following figures show the installed location of the components to be removed. The numbers in figures correspond to those in **Components and Parts to Be Removed for the AE131A DKC**

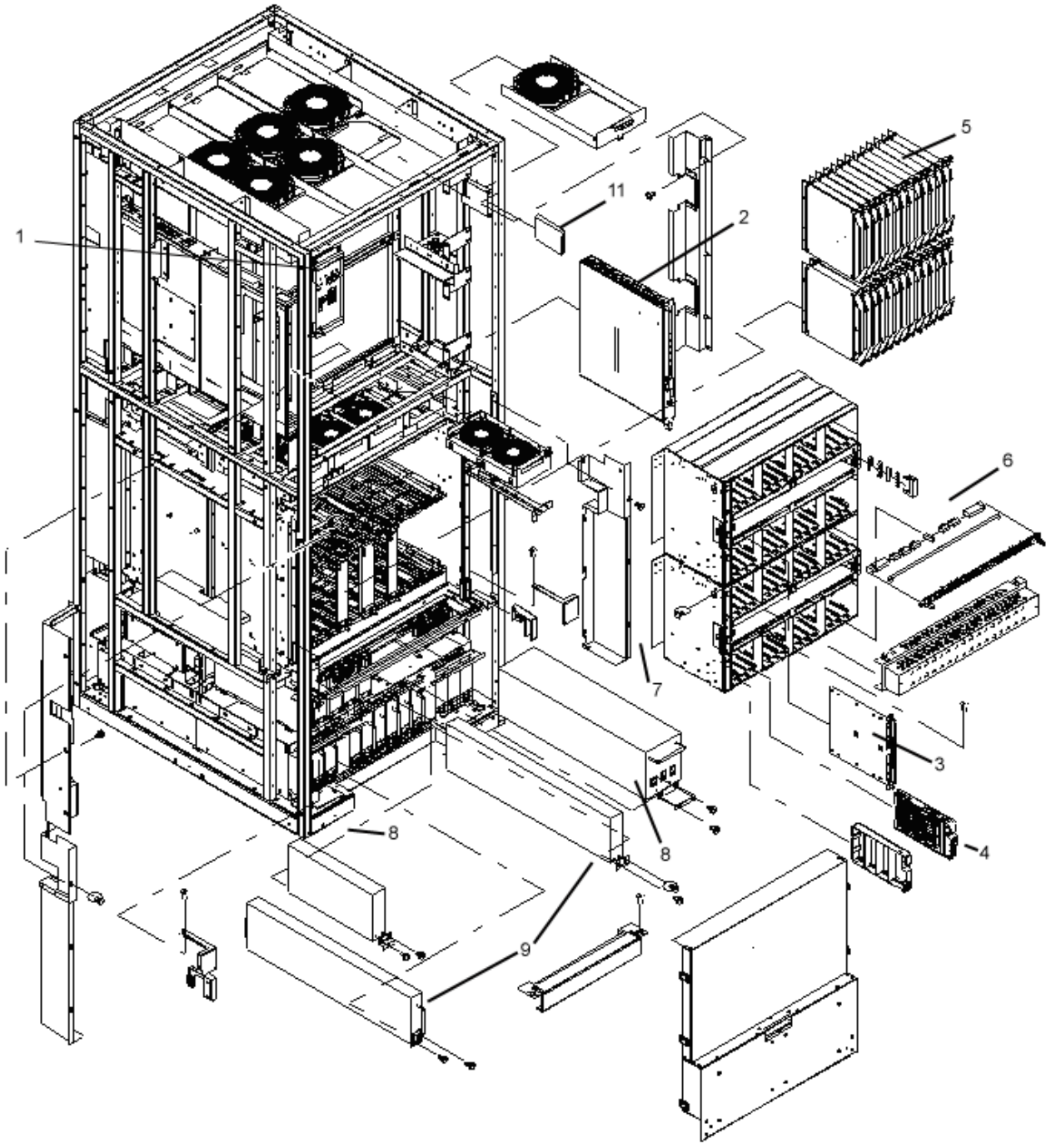


Figure 3. Front of AE131A DKC - parts

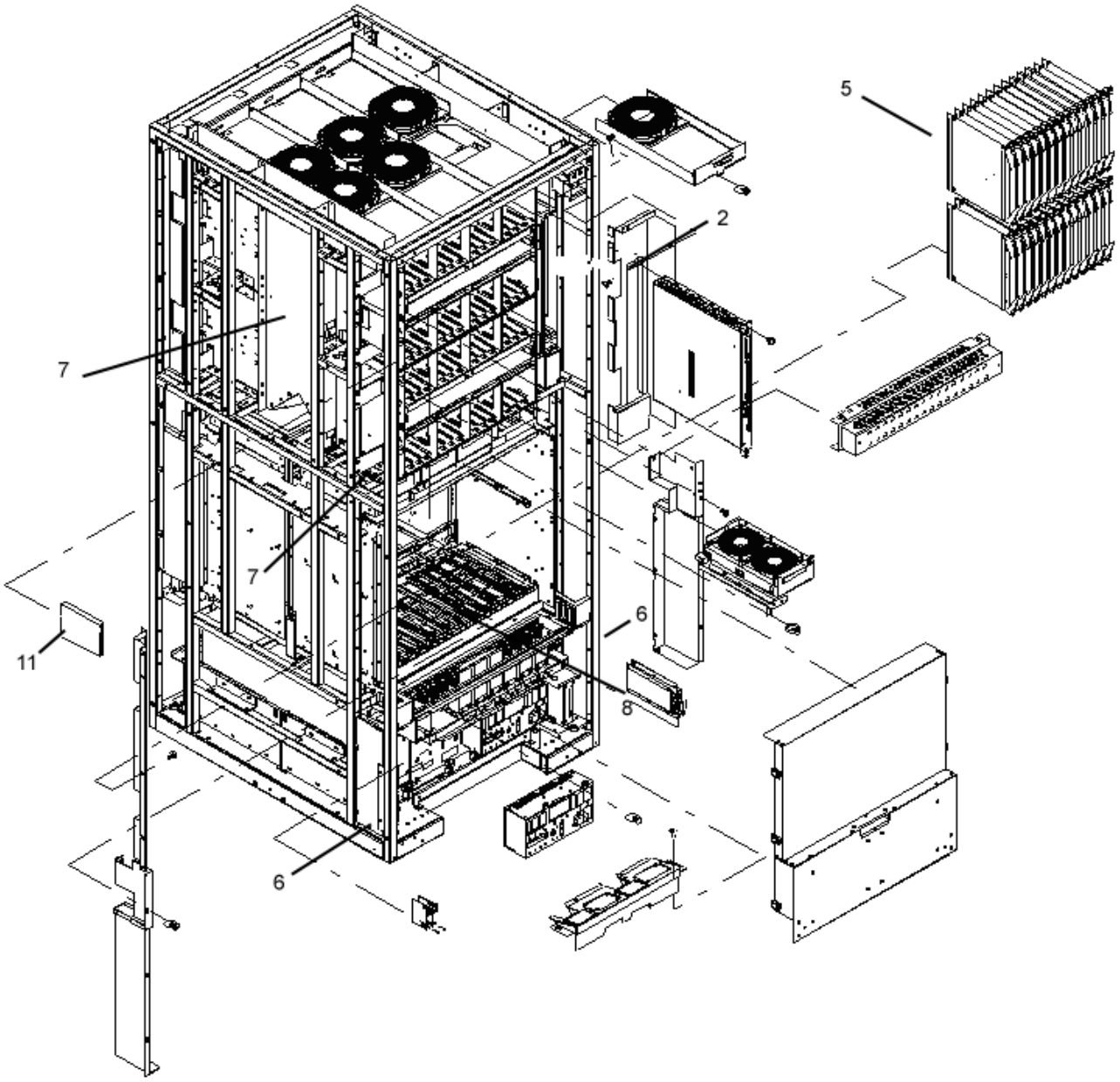


Figure 4. Rear of AE131A DKC - parts

Table 2. Table 1 Components and Parts to Be Removed for the AE173A/AU DKU

No.	Components to be removed	Parts to be removed[1]	Is disassembly work required?	More Information
1	SVR	Printed Circuit Board	Yes	Disassembling the SVR
2	HDD	HDD	Yes	Disassembling the Hard Drive (HDD)
3	SH-Printed Circuit Board	Printed Circuit Board	No	--
4	B/B	Printed Circuit Board	No	--
5	Power supply	Printed Circuit Board	Yes	Disassembling the Power Supply
6	Battery	Battery Pack Printed Circuit Board	Yes	Disassembling the Battery Box
7	External cable	AC power cable, etc.	Yes	Removing and Disassembling the AC Power Cable

[1]The parts to be removed are shown with the shaded enclosure characters in **Error! Reference source not found..**

The following figure shows the installed location of the components to be removed. The numbers in the figures correspond to those in Table 1 Components and Parts to Be Removed for the AE173A/AU DKU.

Installed Location of the AE173A/AU DKU Parts

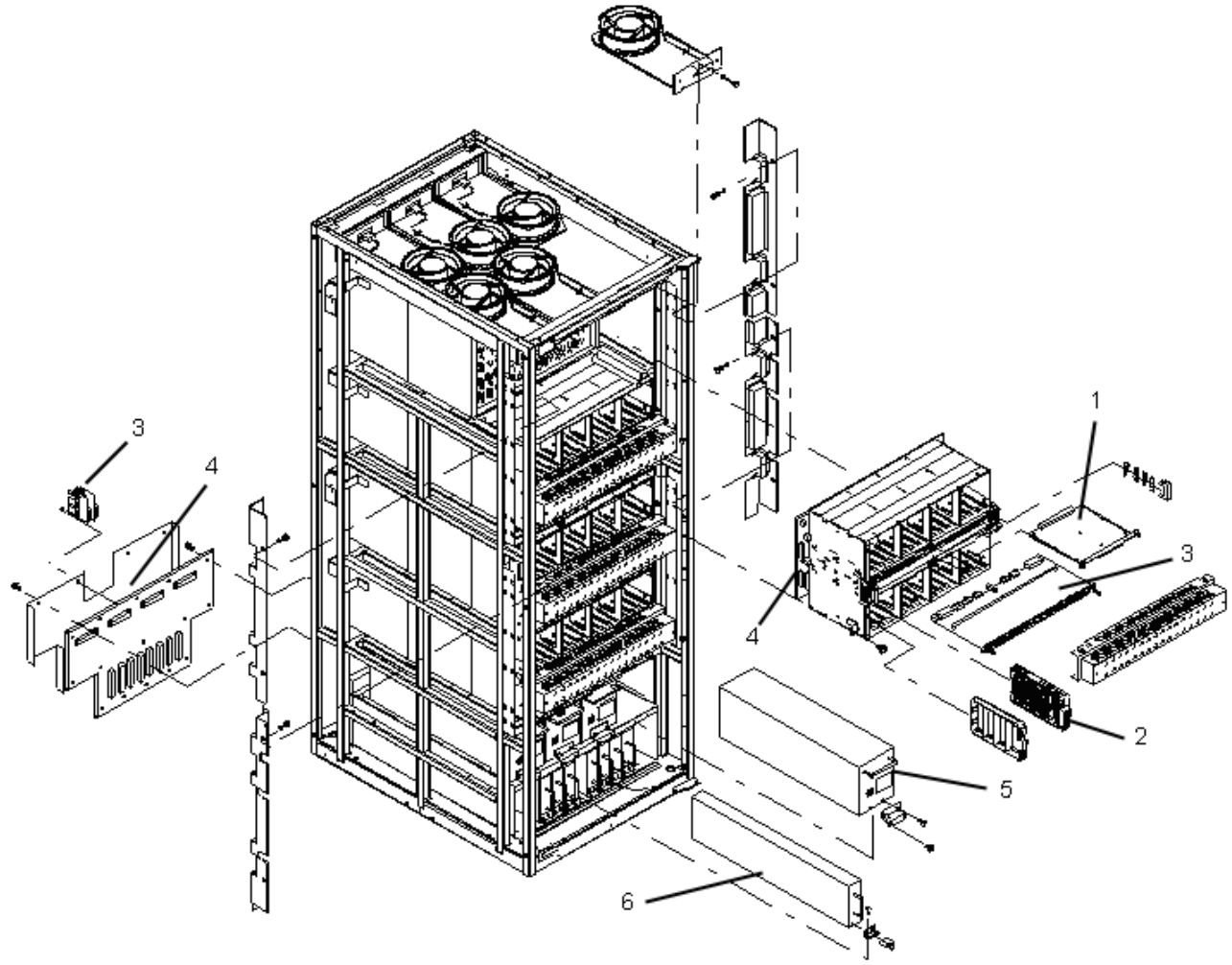


Figure 5. Front and rear AE173A/AU DKC - parts

2. Disassembling the OP-PANEL

1. Remove the four screws that attach cover **B**, and then remove cover **B**.
2. Remove the five screws that attach the printed circuit board.
3. Remove the printed circuit board.

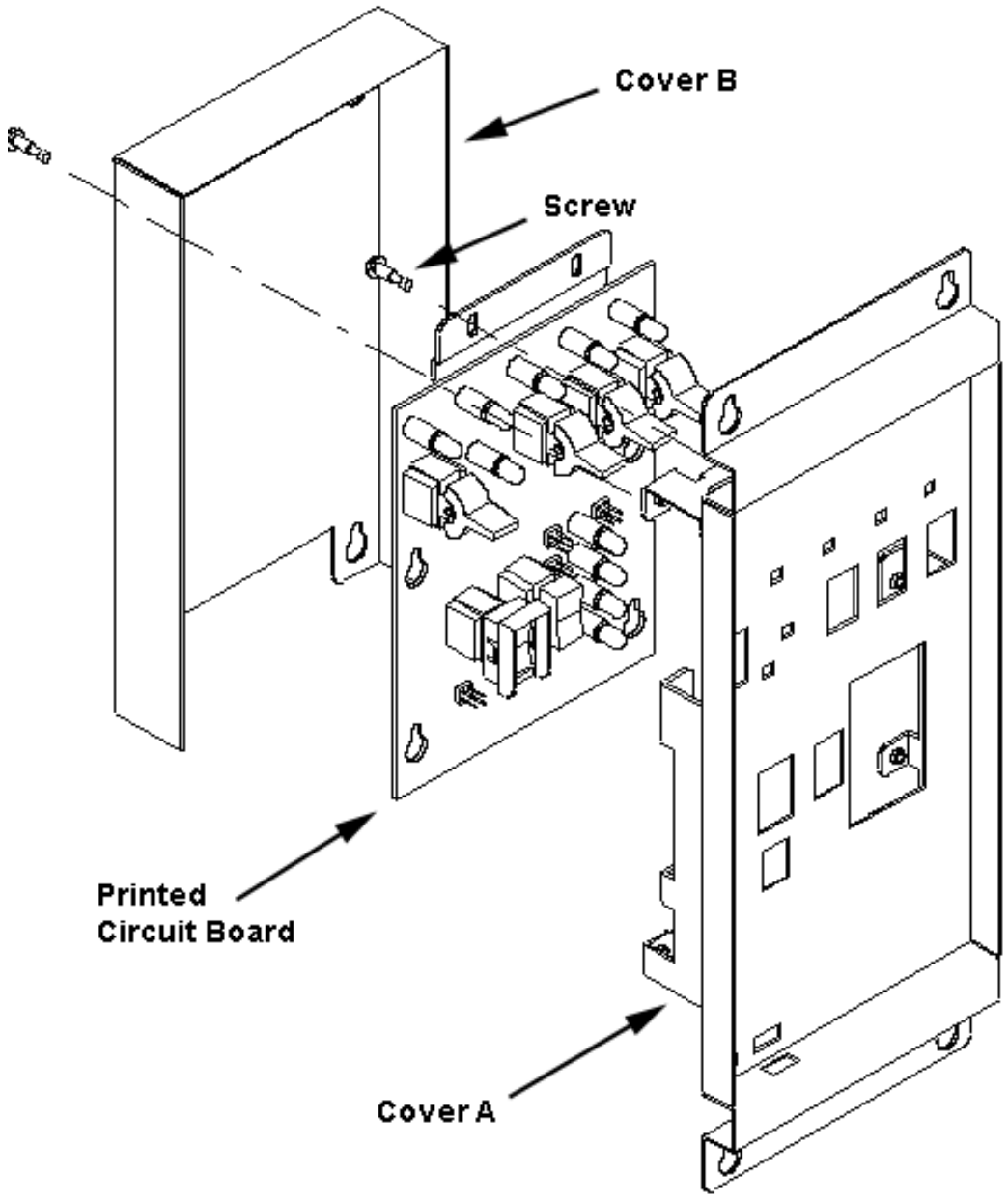


Figure 6. Disassembling the OP-Panel

3. Disassembling the SVP

3.1. Removing the Top Cover

1. Remove the four screws from the side of SVP.
2. Pull off the top cover from SVP.

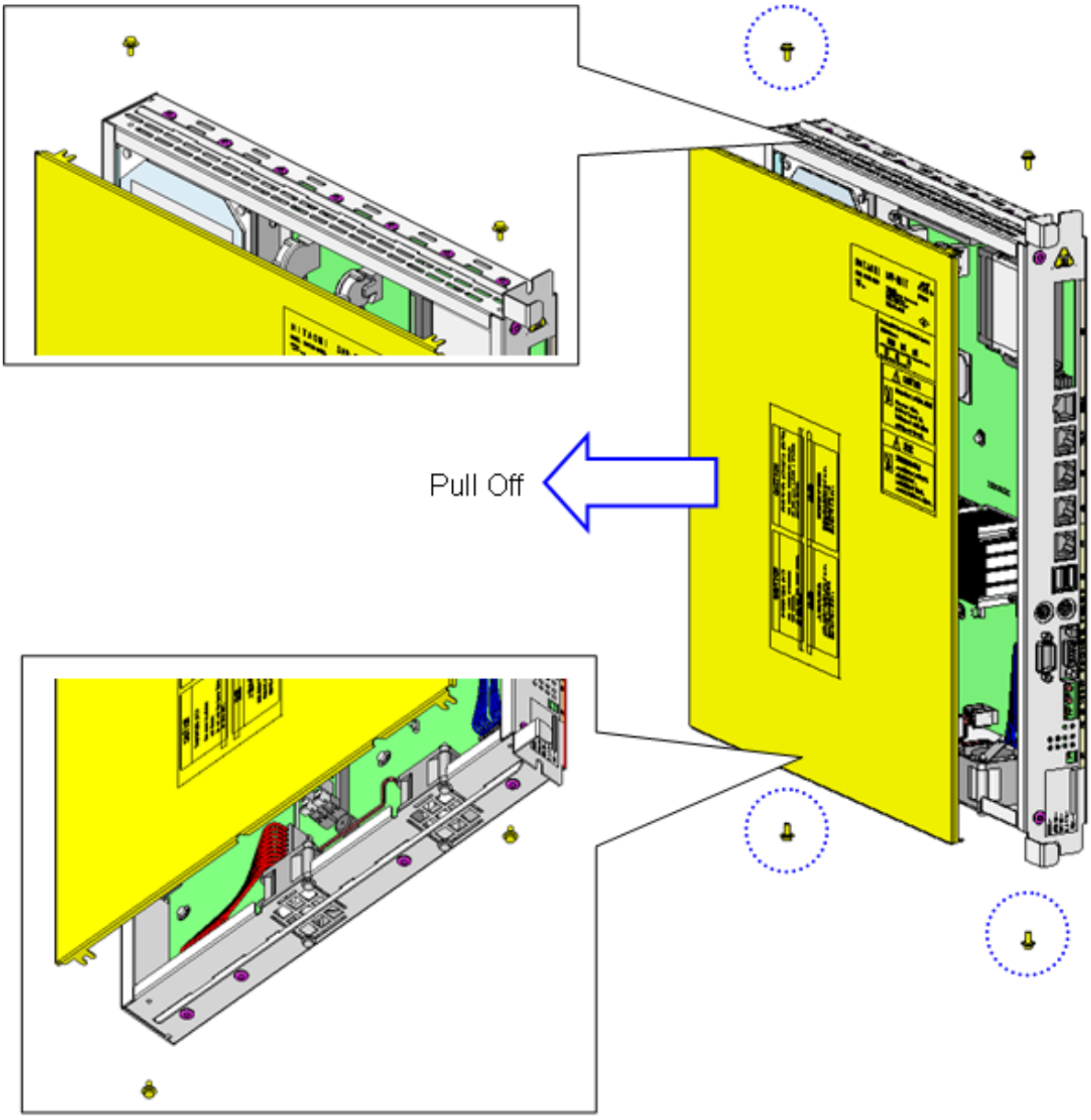


Figure 7. Remove top cover from SVP

3.2. Remove the Cables

1. Remove the five cables from the SVP: IDE cable, HDD PS cable, Main PS cable, PS Control cable, Serial I/F cable
2. Pull off the two fan connectors from the main board.

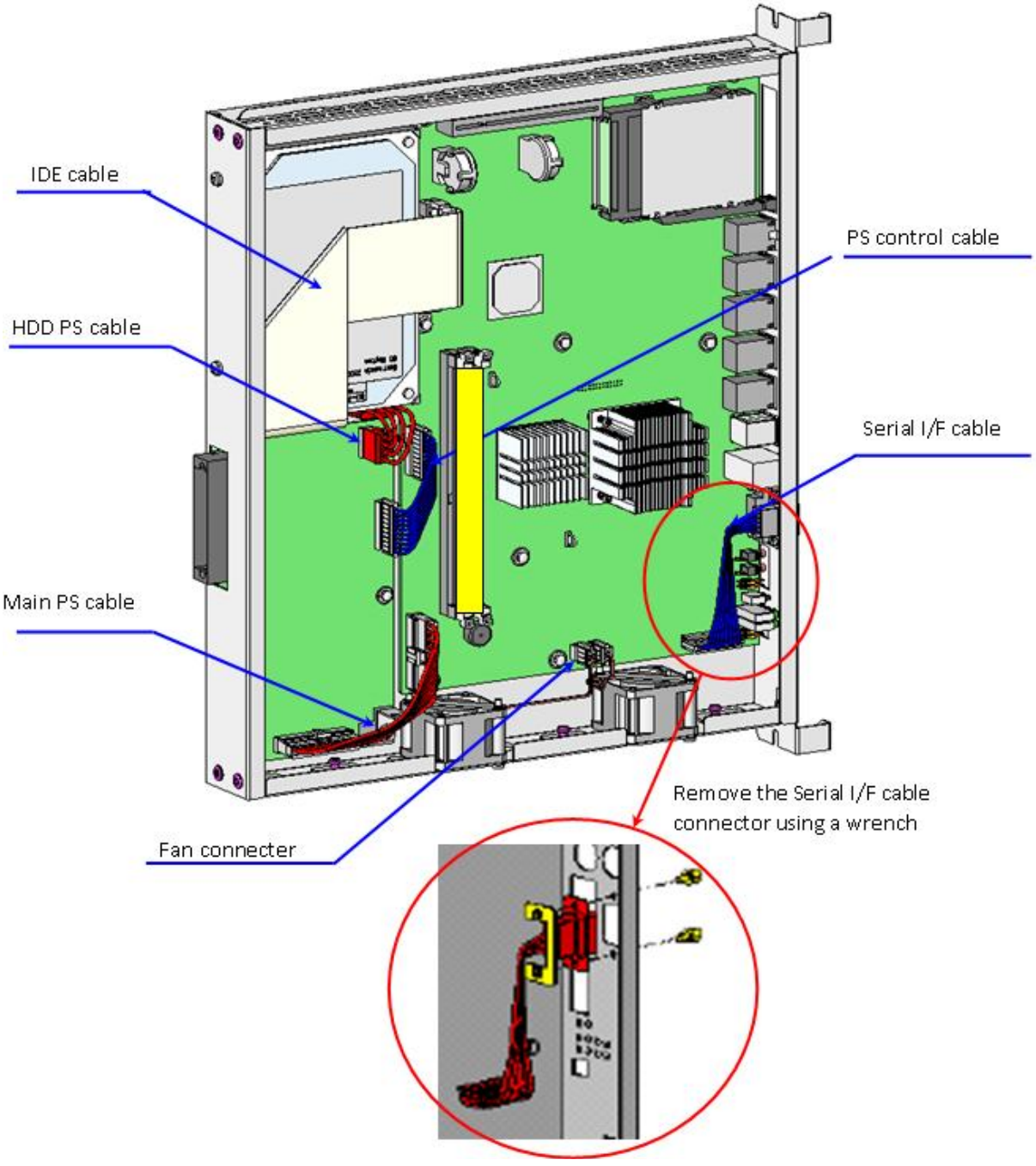


Figure 8. Remove SVP cables

3.3. Remove the Hard Drive

1. Remove four screws from the HDD.
2. Pull off the HDD from SVP.

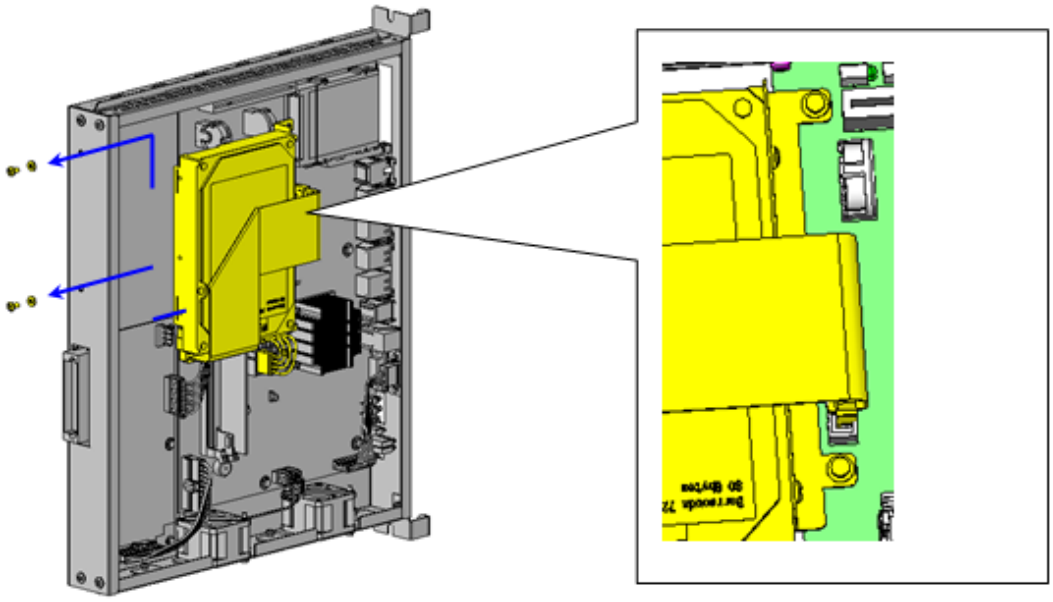


Figure 9. Remove HDD from SVP

3. Remove two screws from the HDD.
4. Pull the bracket off the HDD.

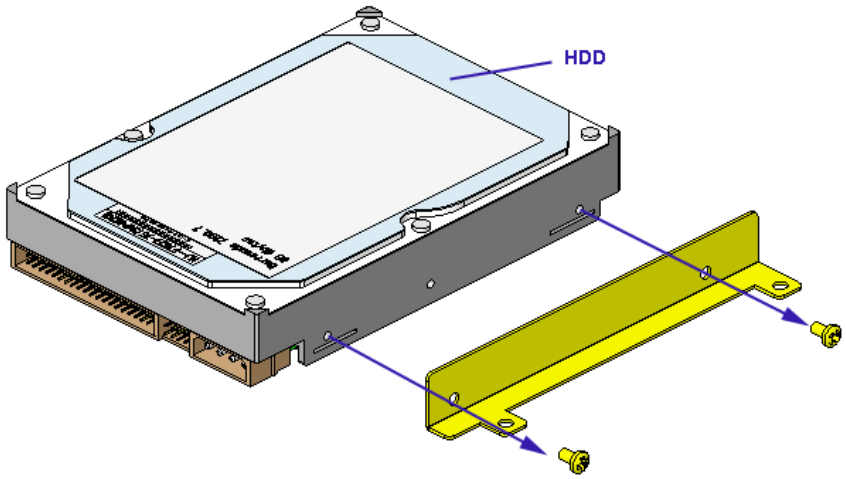


Figure 10. Remove bracket from HDD

3.4. Remove the PS Board

1. Remove six screws from the PS board.
2. Pull the PS board off the SVP.

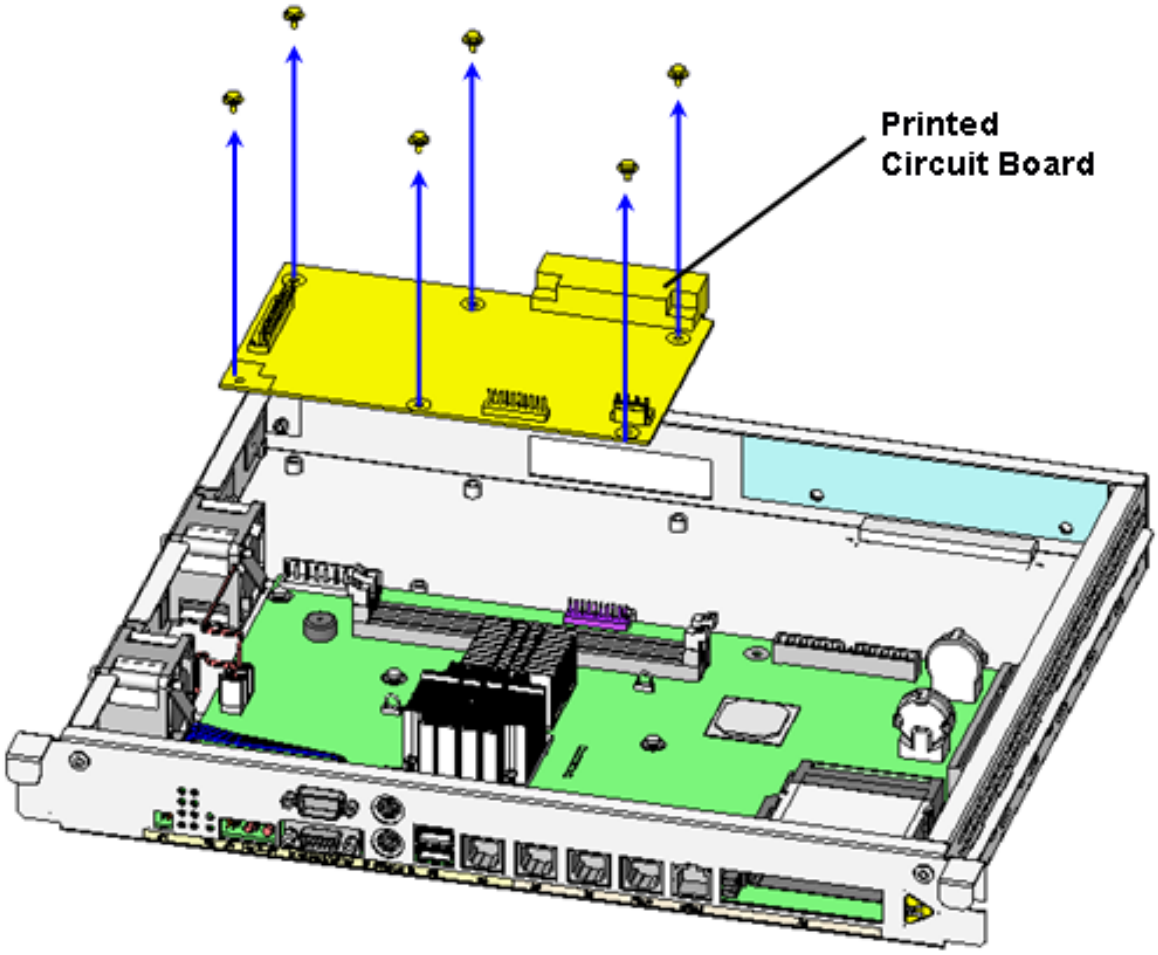


Figure 11. Remove PC board

3.5. Remove the DIMM Memory

1. Pull the memory slot lever open.
2. Pull the DIMM Memory off the SVP.

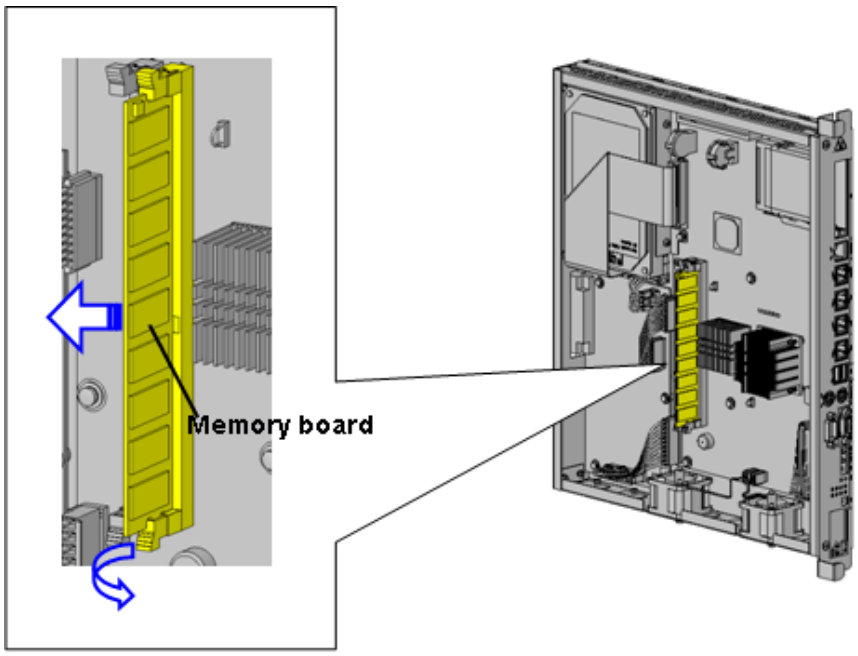


Figure 12. Remove DIMM memory

3.6. Remove the Battery (CR2032 x2)

1. Prepare a non-conductive plastic or wooden stick.
2. Insert the non-conductive stick between the battery and the battery holder.
3. Use the stick to pry the battery out of the holder.

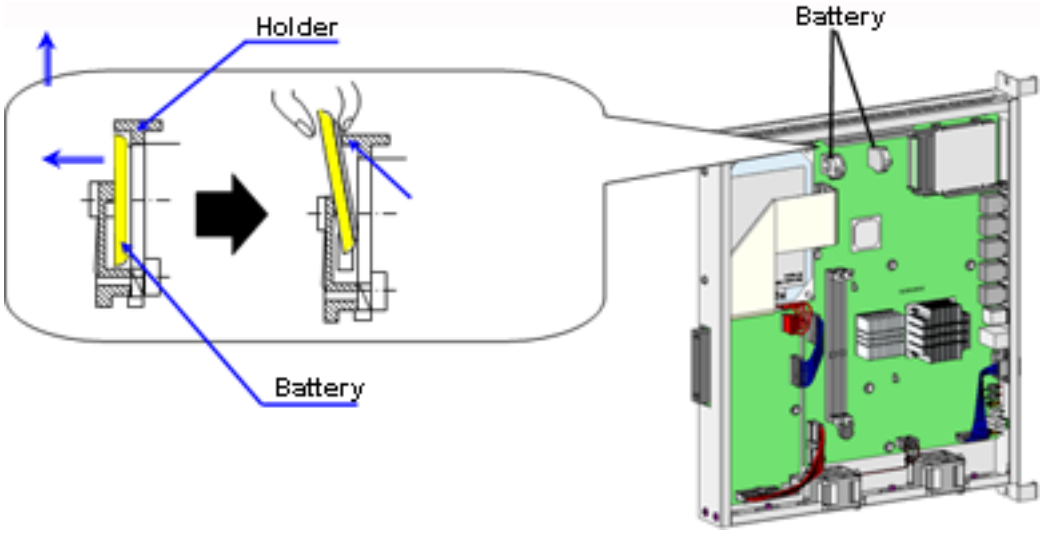


Figure 13. Remove the battery

3.7. Remove the Main Board

1. Remove the eight screws on the main board.
2. Pull the main board off the SVP.

> ⚠ CAUTION
>
> The CPU heat sink becomes very hot during operation. Allow to cool before touching.

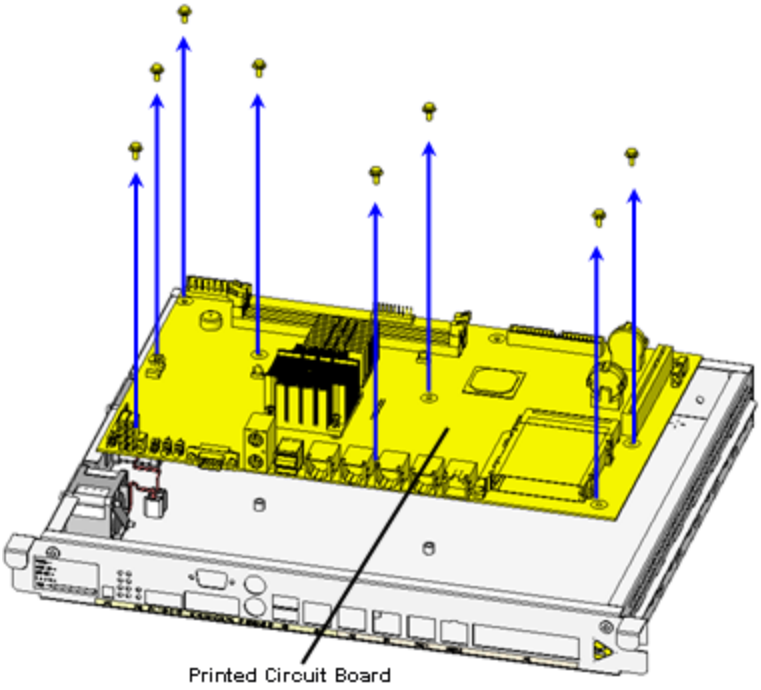


Figure 14. Remove the main board

3.8. Remove the Fan

1. Remove two screws respectively from each fan.
2. Remove the two fans from the SVP.

4. Disassembling the FDD/CD-ROM

4.1. Removing the Top and Bottom Cover

1. Remove the screw.
2. Open the four tabs, and pull off each cover.

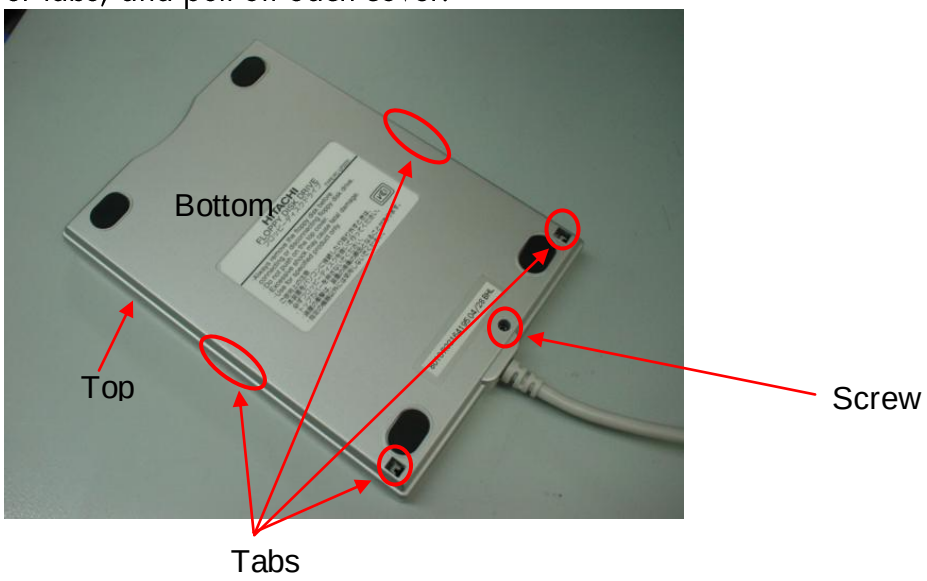


Figure 15. Removing the covers

4.2. Removing the Shield Cover

1. Remove the screw.
2. Slide the shield cover off to remove it.

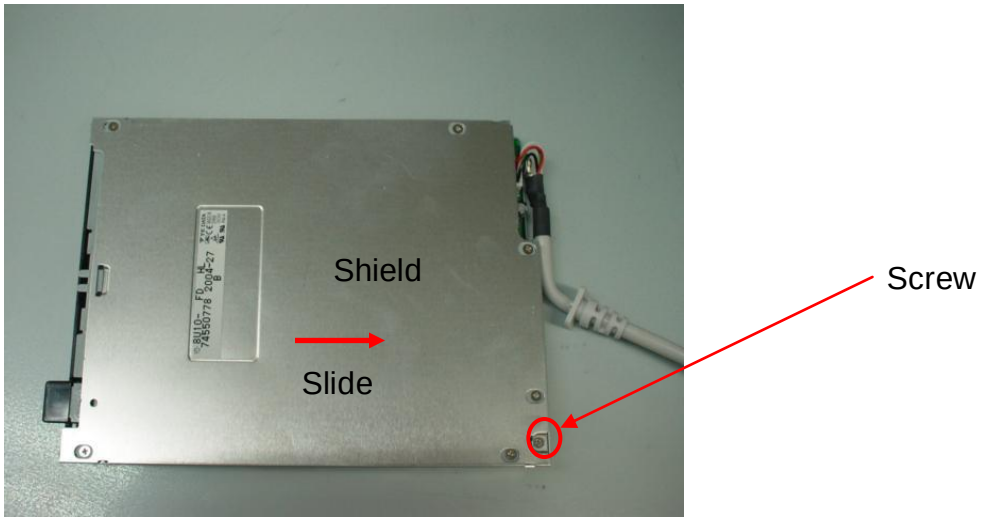


Figure 16. Removing the shield cover

4.3. Removing the Upper Chassis

1. Remove the six screws.
2. Slide the upper chassis to remove it.

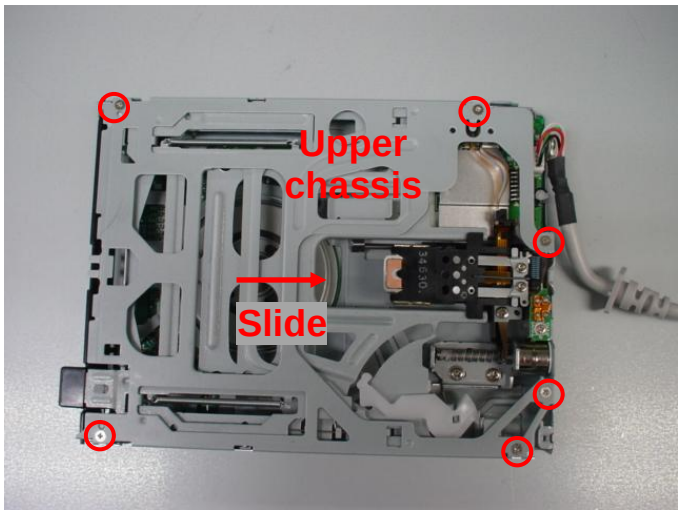


Figure 17. Removing the upper chassis

4.4. Removing Cables

1. Pull out the connector, and detach the I/F cable.
2. Cut off the three flexible printed circuit (FPC) cables.

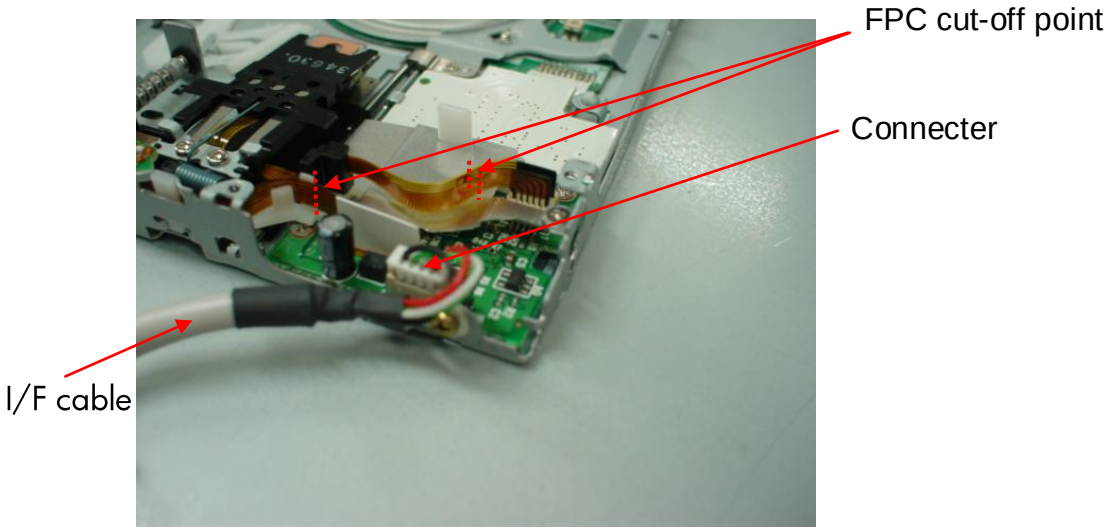


Figure 18. Removing the cables

4.5. Removing a Main Board

1. Remove the three screws.
2. Cut the flexible printed circuit (FPC) cable.
3. Detach the main board.

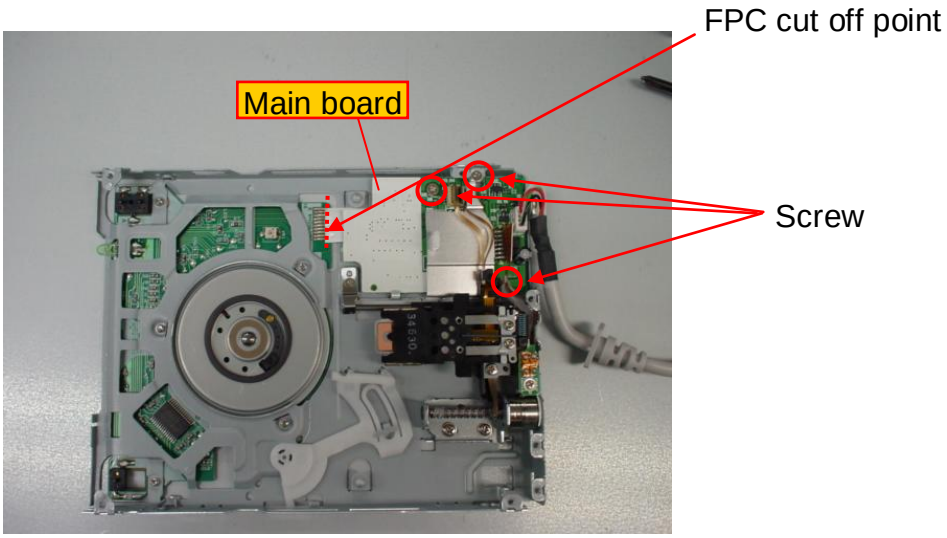


Figure 19. Removing a main board

4.6. Removing a Motor Control Board

1. Remove the five screws.
2. Detach the motor control board.

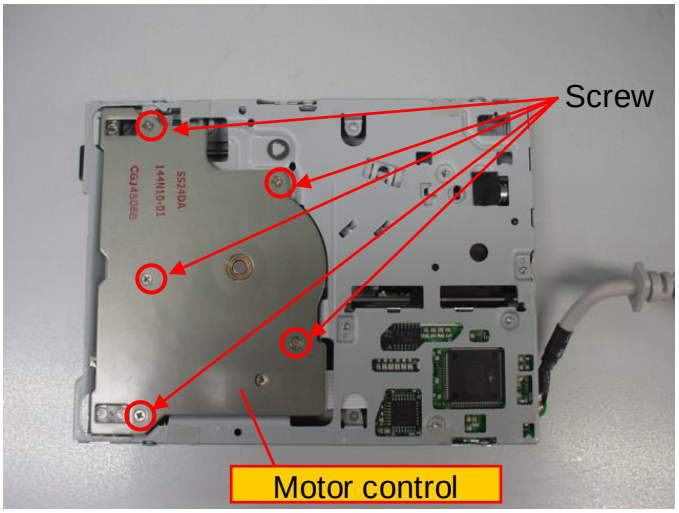


Figure 20. Removing a motor control board

5. Disassembling the Power Supply

The ***AE131A DKC*** and ***AE173A/AU DKU*** use two different power supplies. Follow the procedure for disassembling to the power supply.

5.1. Disassembling the Power Supply PPD0720

5.1.1. Removing the cover

Remove the seven M3 screws, and then remove the cover.

- Front panel: Three screws (a)
- Side panel: Four screws (b)

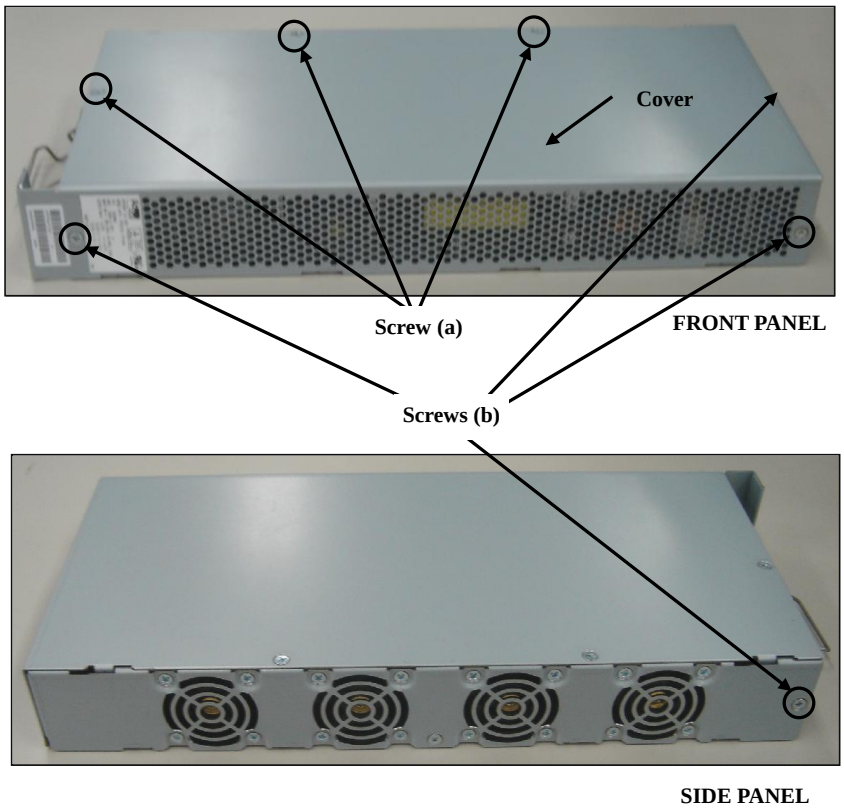
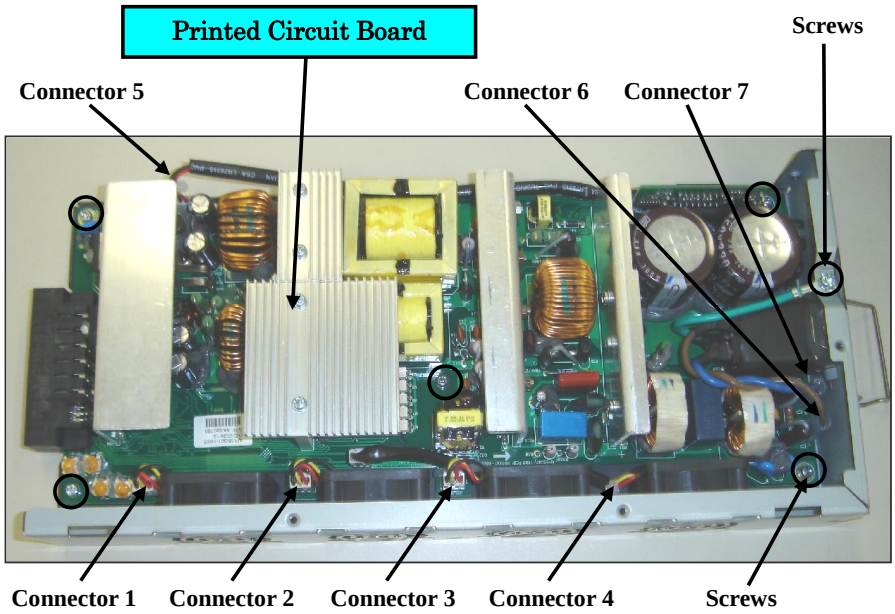


Figure 21. Removing cover from PPD0720

5.1.2. Removing Printed Circuit Board 1

1. Remove the connectors 1 to 7.
2. Remove the single M3 screw, and then remove the connecter assembly.
3. Remove five screws, and then remove printed circuit board 1.



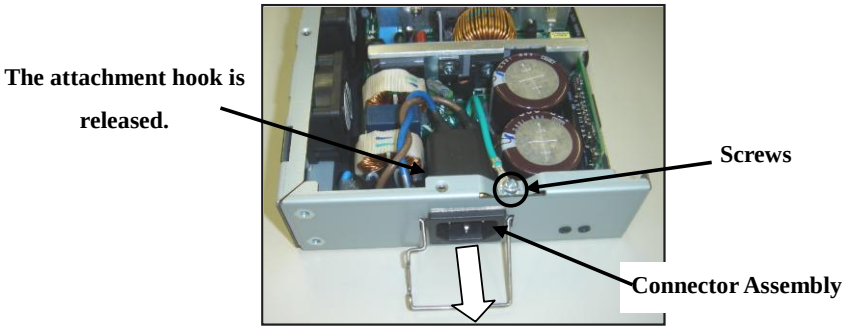


Figure 22. Removing PCB 1 from PPD0720

5.1.3. Removing the Fan Assembly

Remove the 16 screws, and then remove the fan assembly.

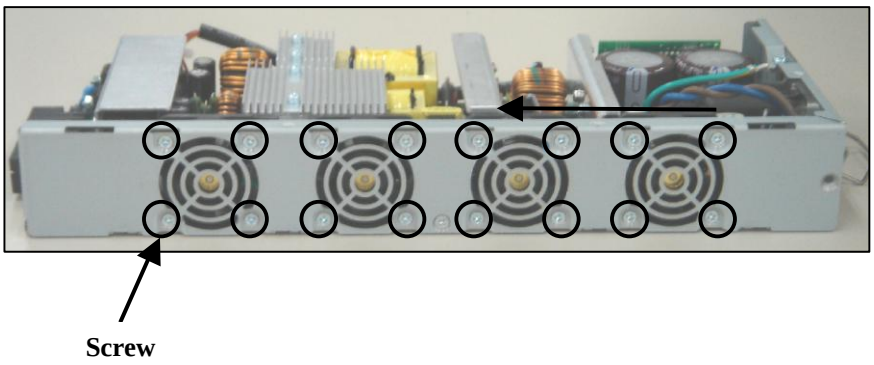


Figure 23. Removing the fan assembly from PPD0720

5.2. Disassembling the Power Supply PPD2960

5.2.1. Removing Cover 1

Remove the 22 screws, and then remove the cover.

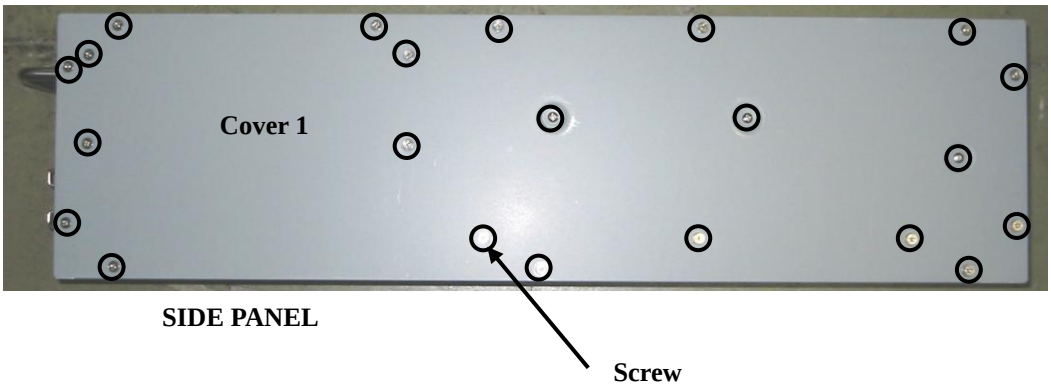


Figure 24. Remove cover 1 from PPD2960

5.2.2. Removing Covers 2 and 3

Remove the 10 screws, and then remove covers 2 and 3.

- Top panel: Eight screws (a)
- Front panel: Two screws (b)

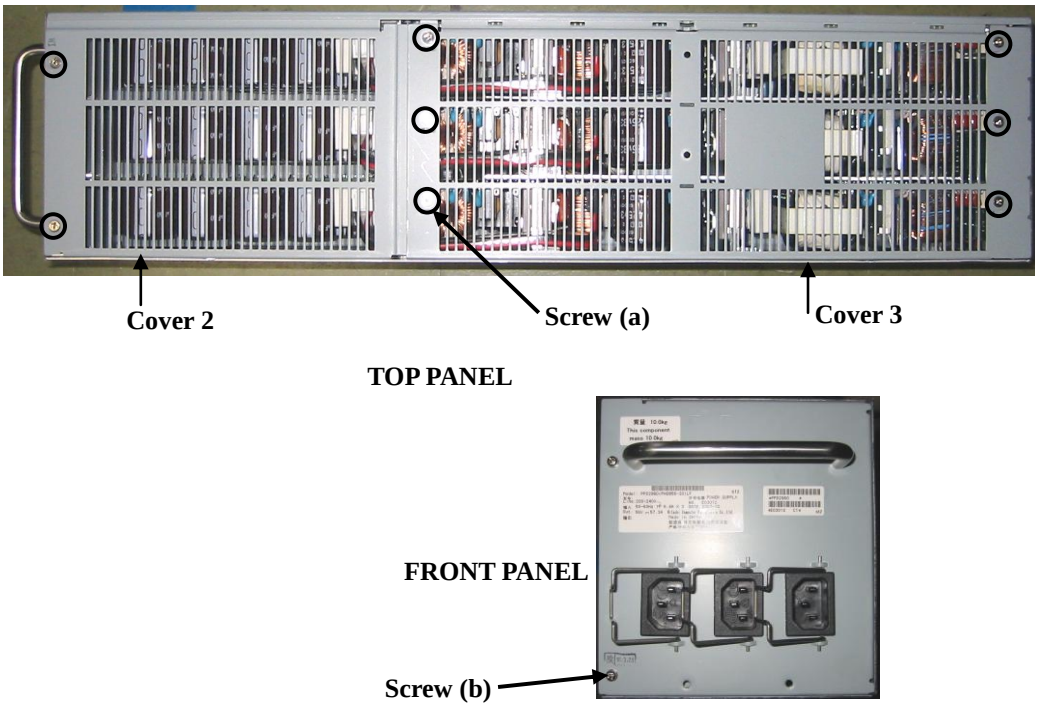


Figure 25. Remove covers 2 and 3 from PPD2960

5.2.3. Remove the Front Assembly.

1. Remove the 21 screws, and then remove the front assembly.
2. Remove connectors 1 to 3.

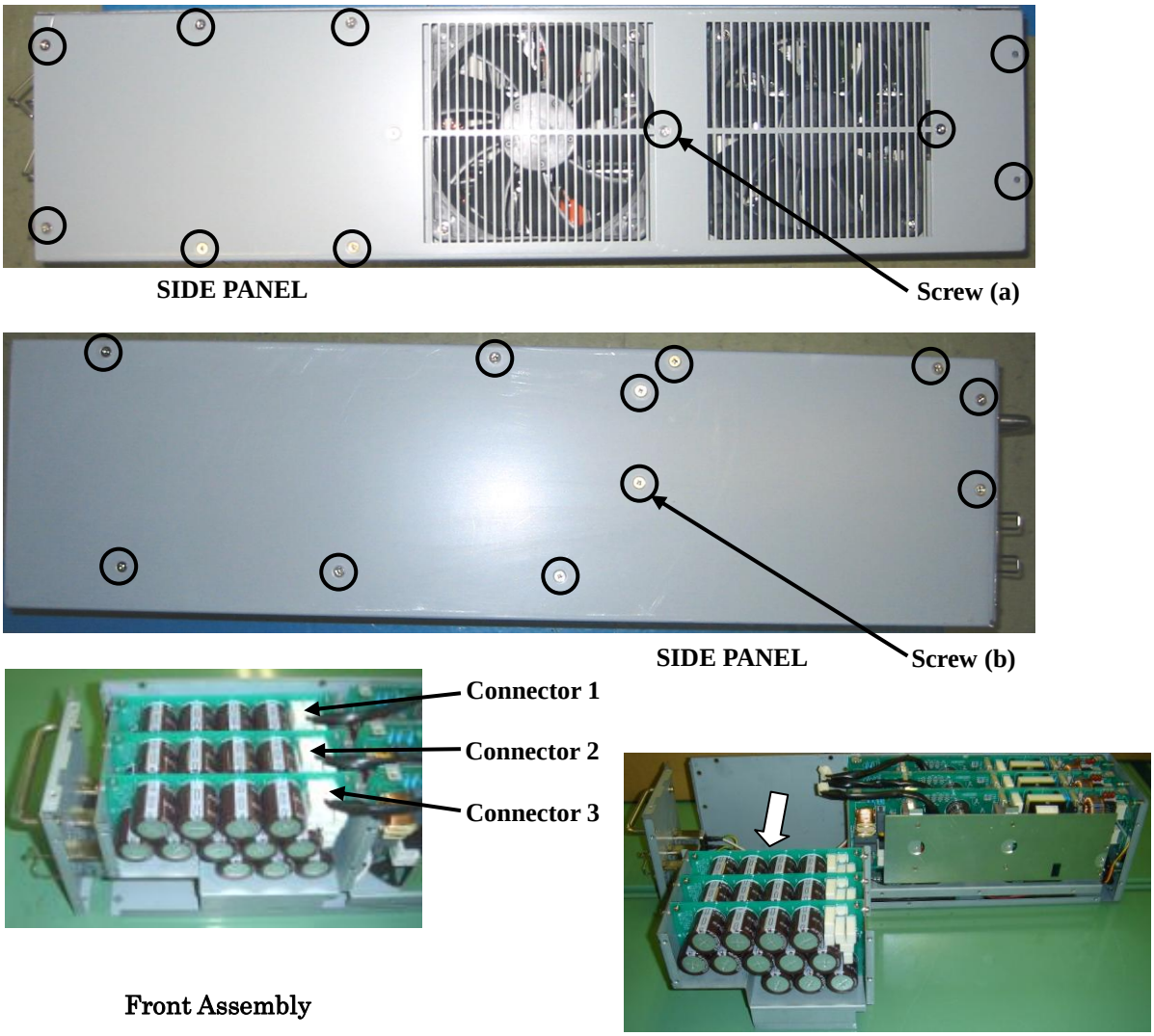


Figure 26. Remove front assembly from PPD2960

5.2.4. Removing Printed Circuit Boards 1, 2, and 3

Remove the five screws, and then remove printed circuit boards 1, 2, and 3.

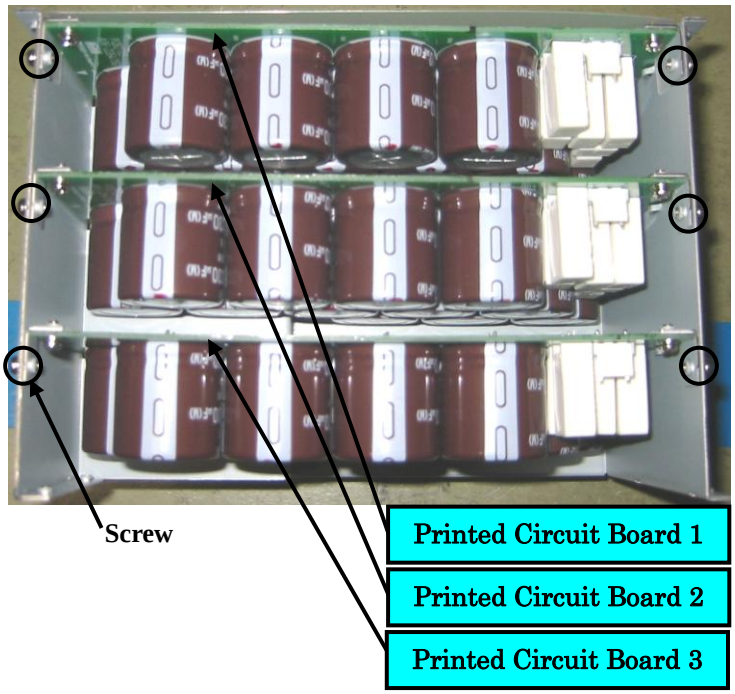


Figure 27. Removing PCB 1, 2, and 3 from PPD2960

5.2.5. Removing the Connecter Assembly

1. Remove connectors 1 to 3.
2. Remove the three screws, and then remove the connecter assembly.

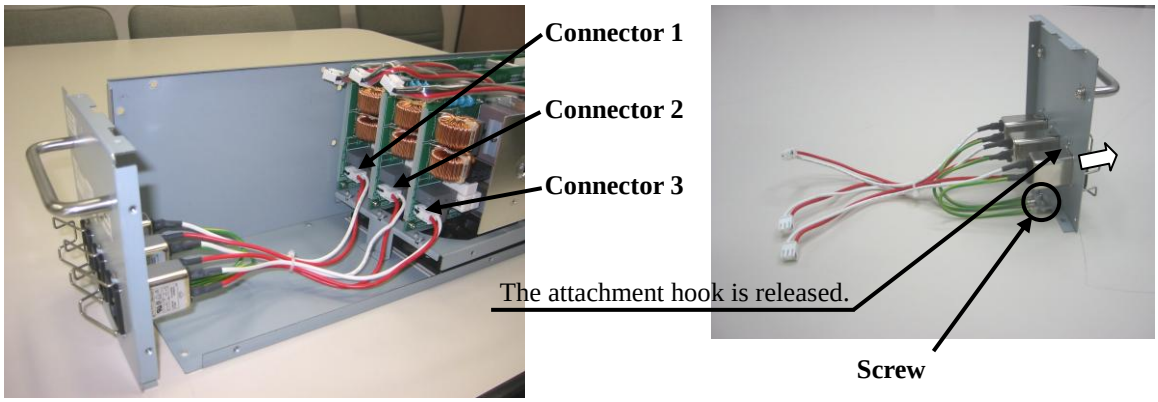


Figure 28. Remove the connector assembly from PPD2960

5.2.6. Removing Printed Circuit Boards 4 to 7 and the Fan

1. Remove connectors 1 to 8, and then remove printed circuit board 4.
2. Remove the six screws (a), and then remove printed circuit boards 5 to 7.
3. Remove the four screws (b), and then remove the fan.

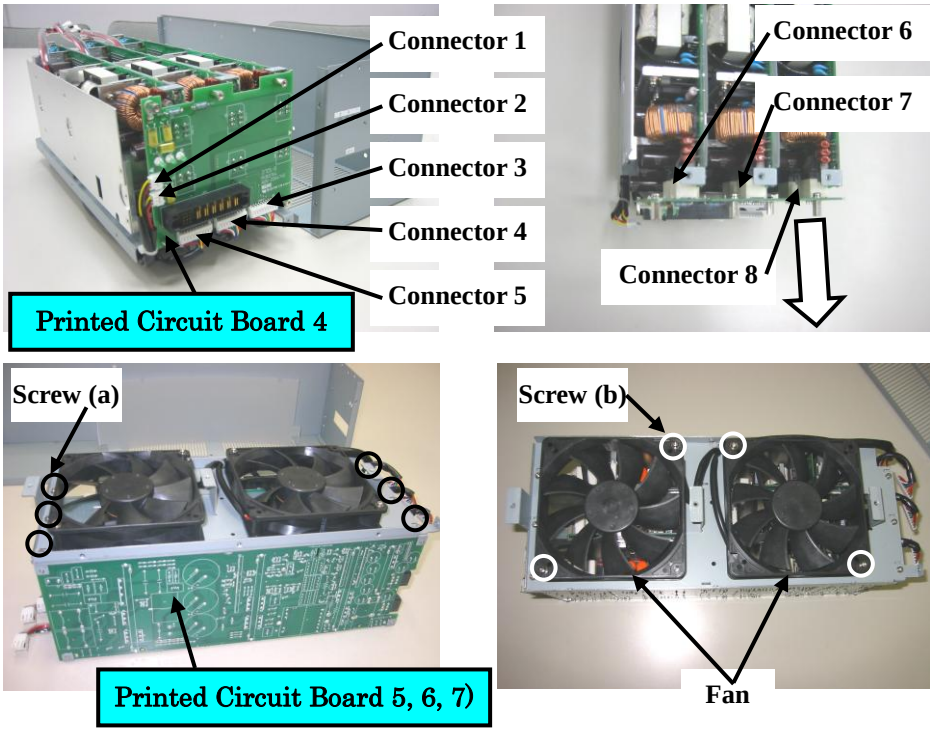


Figure 29. Removing PCB 4, 5, 6, 7, and the fan from PPD2960

5.3. Disassembling the Power Supply HS0720

5.3.1. Removing the Cover

Remove the 15 screws, and then remove the cover by pulling it upward.

- Side panel: Seven screws (a)
- Top panel: Two screws (b
- Side panel: Six screws (c)

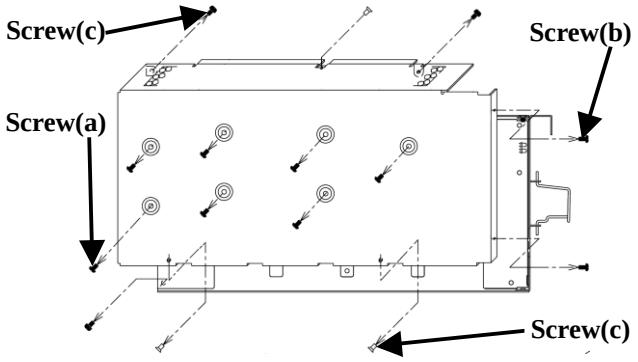


Figure 30. Remove cover from HS0720

5.3.2. Removing Printed Circuit Board 1

1. Remove connectors 1-5 that are connected to printed circuit board 1.
2. Remove the screw, and then remove the connecter assembly.
3. Remove the six screws, and then remove printed circuit board 1.

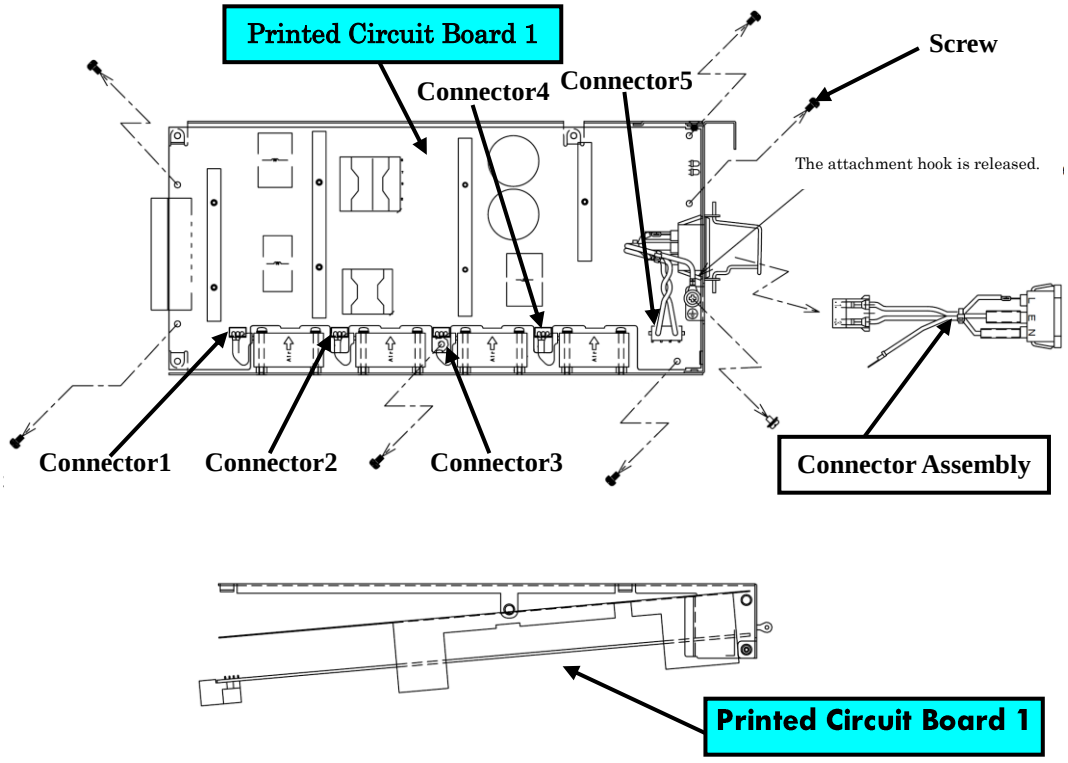


Figure 31. Remove PCB 1 from HS0720

5.3.3. Removing the Fan Assembly

Remove the eight screws, and then remove the fan assembly.

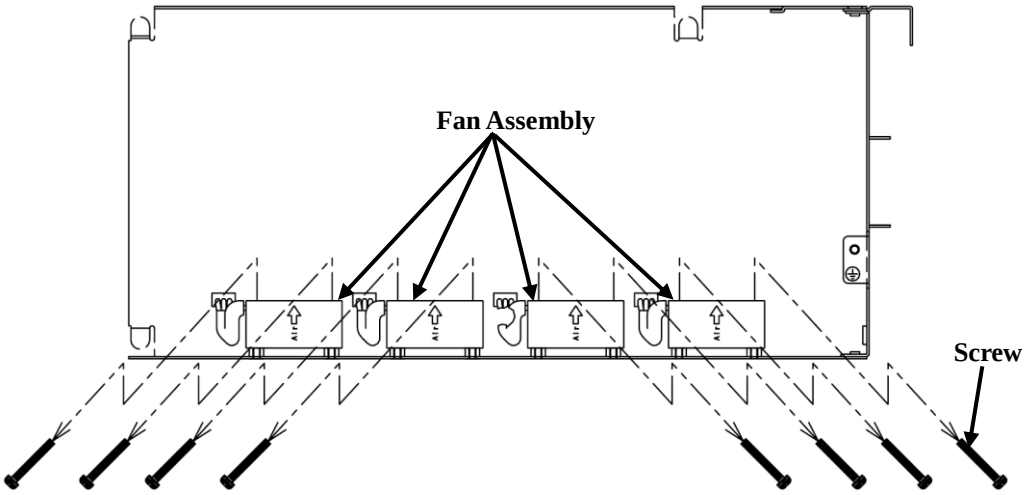


Figure 32. Remove the fan assembly from HS0720

5.4. Disassembling the Power Supply HS2960

5.4.1. Removing the Cover

Remove the 11 screws, and then remove the cover by pulling it upward.

- Top panel: Six screws
- Side panel: Five screws

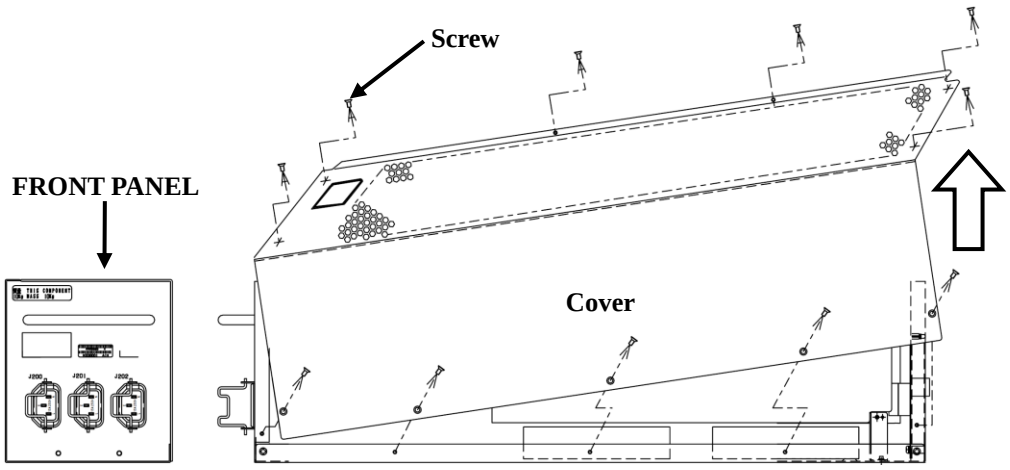


Figure 33. Remove the cover from HS2960

5.4.2. Removing the Front Panel

1. Remove the three screws, and then open the front panel.
2. Remove the screw, and then remove the connecter assembly.

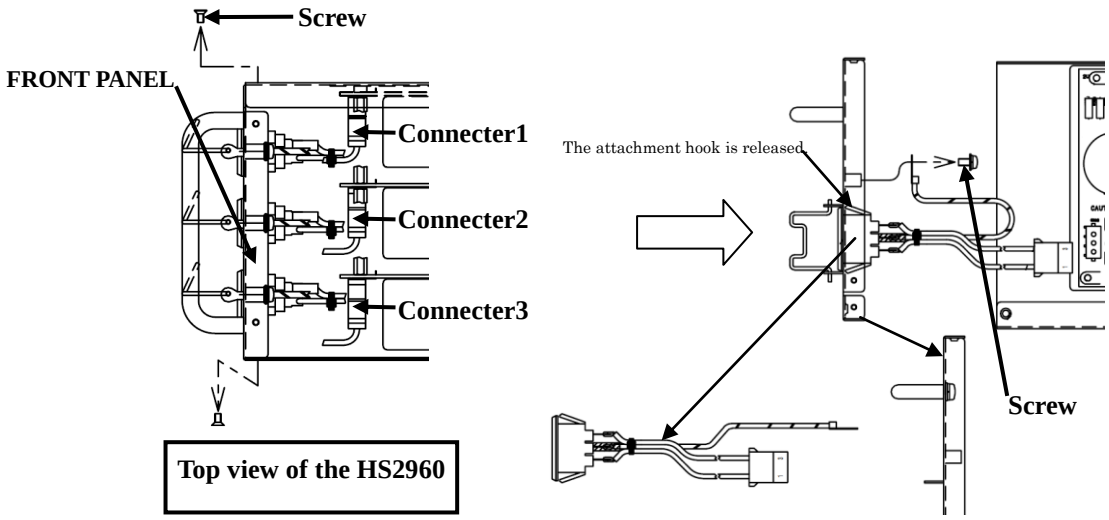


Figure 34. Remove the front panel from HS2960

5.4.3. Removing Printed Circuit Boards 1-3 from the Front

1. Remove connectors 1-6, that are connected to printed circuit boards 1-3.
2. Remove the seven screws and eight props, and then remove printed circuit boards 1-3.

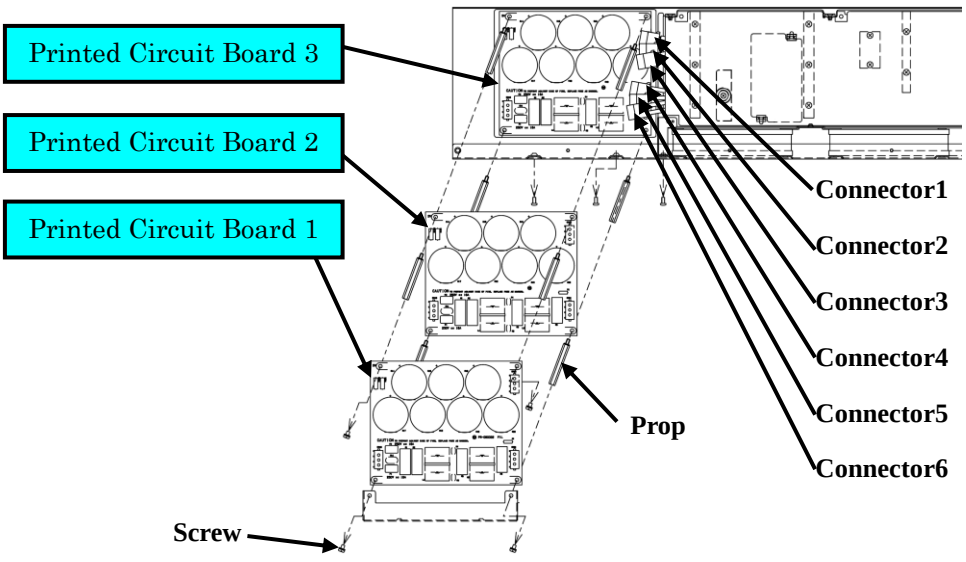


Figure 35. Remove PCB 1, 2, and 3 from the front of HS2960

5.4.4. Removing the Rear Panel

Remove the three screws, and then remove the rear panel.

- Top panel: Two screw
- Side panel: One screw

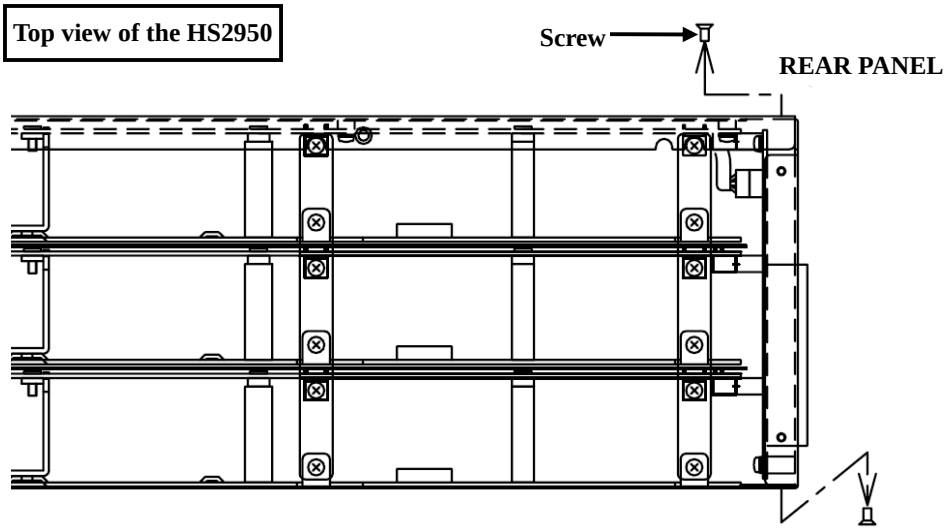


Figure 36. Remove the rear panel from HS2960

5.4.5. Removing Printed Circuit Board 4 at the Rear

1. Pull printed circuit board 4 toward you and separate it from the rear printed circuit board and the two connectors.
2. Remove the five screws, and then remove printed circuit board 4.

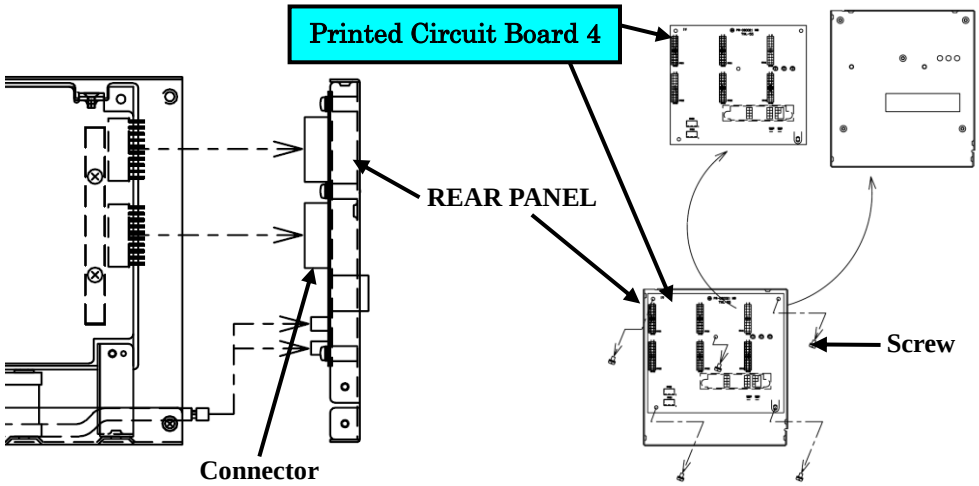


Figure 37. Remove PCB 4 from HS2960

5.4.6. Removing Printed Circuit Boards 5-6

1. Remove the four screws (a) from the chassis.
2. Remove the 18 screws (b) that attach printed circuit boards 5 and 6.
3. After removing the bracket, remove printed circuit boards 5 and 6.

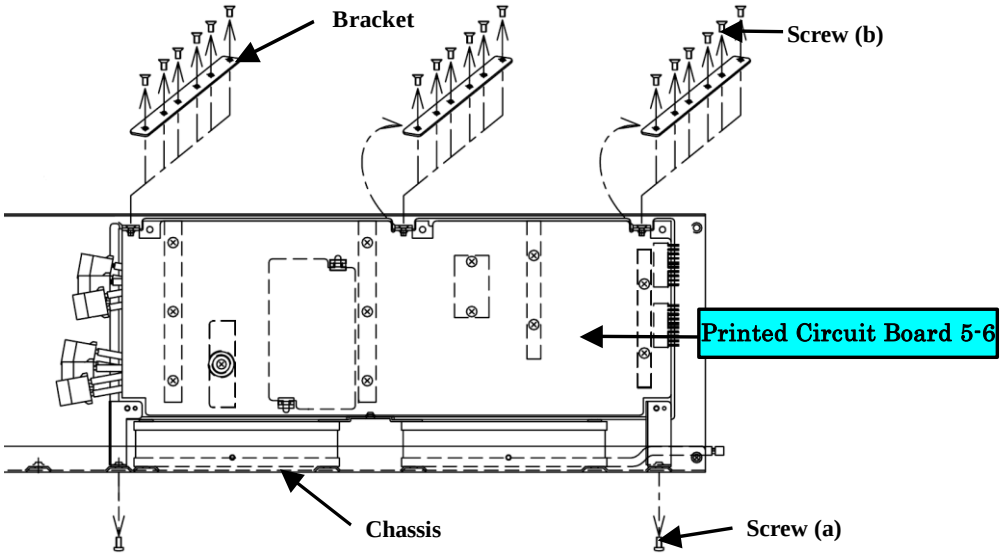


Figure 38. Remove PCB 5 and 6 from HS2960

5.4.7. Removing Printed Circuit Board 7

Remove the five screws, and then remove printed circuit board 7.

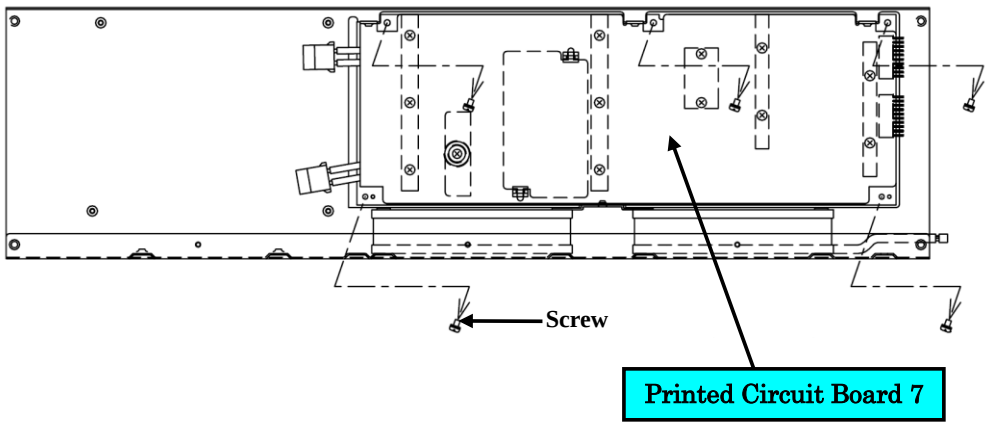


Figure 39. Remove PCB 7 from HS2960

5.4.8. Removing the Fan Assembly

Remove the eight screws and four flange nuts, and then remove the fan assembly.

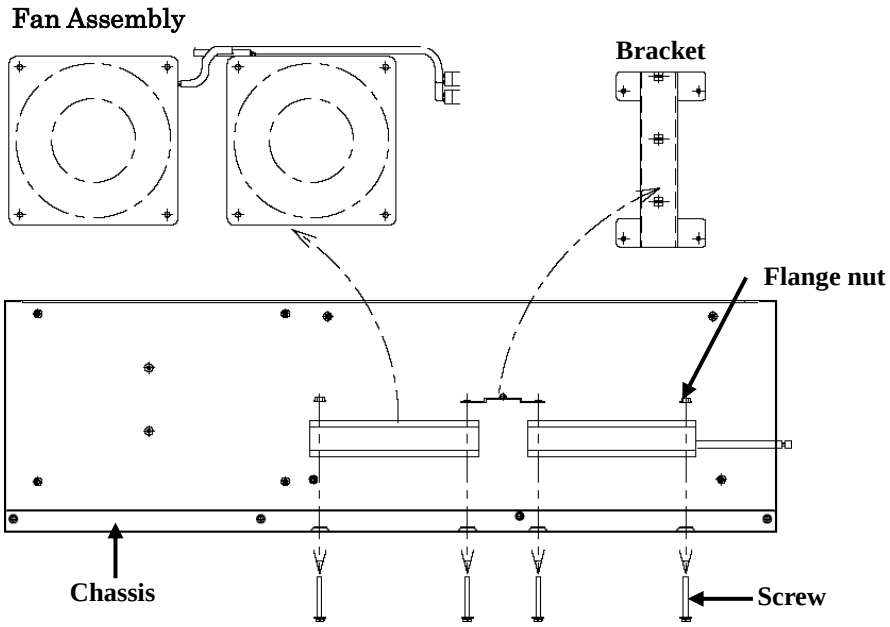


Figure 40. Remove the fan assembly from HS2960

6. Disassembling the SVR

Remove the eight screws, and then remove the SVR.

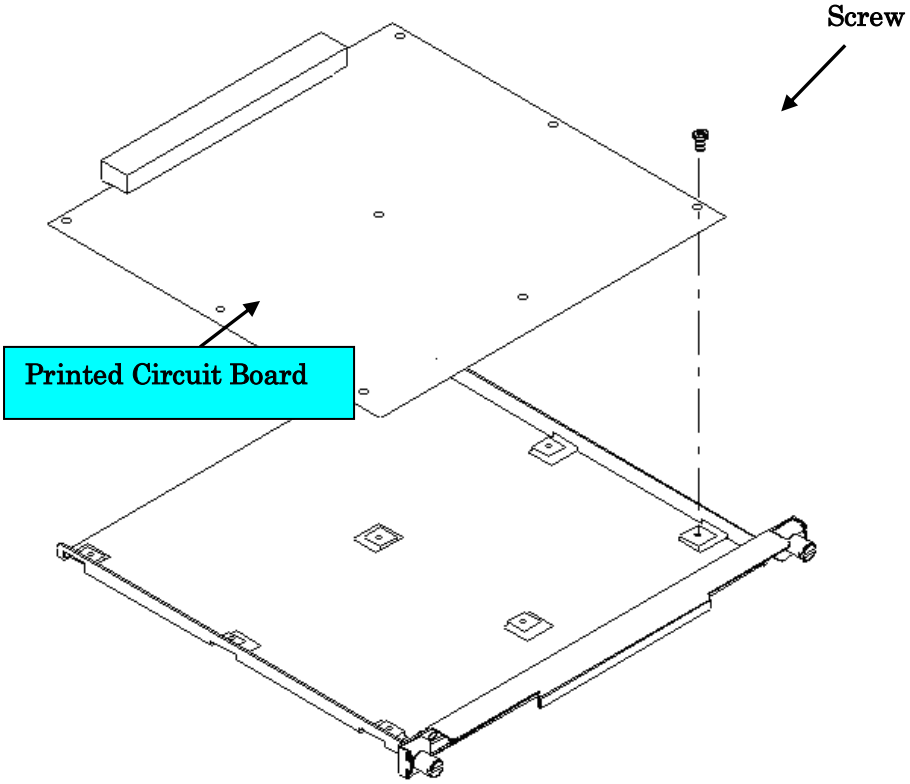


Figure 41. Disassembling the SVR

7. Disassembling the Hard Drive (HDD)

Remove the four screws, and then remove the HDD.

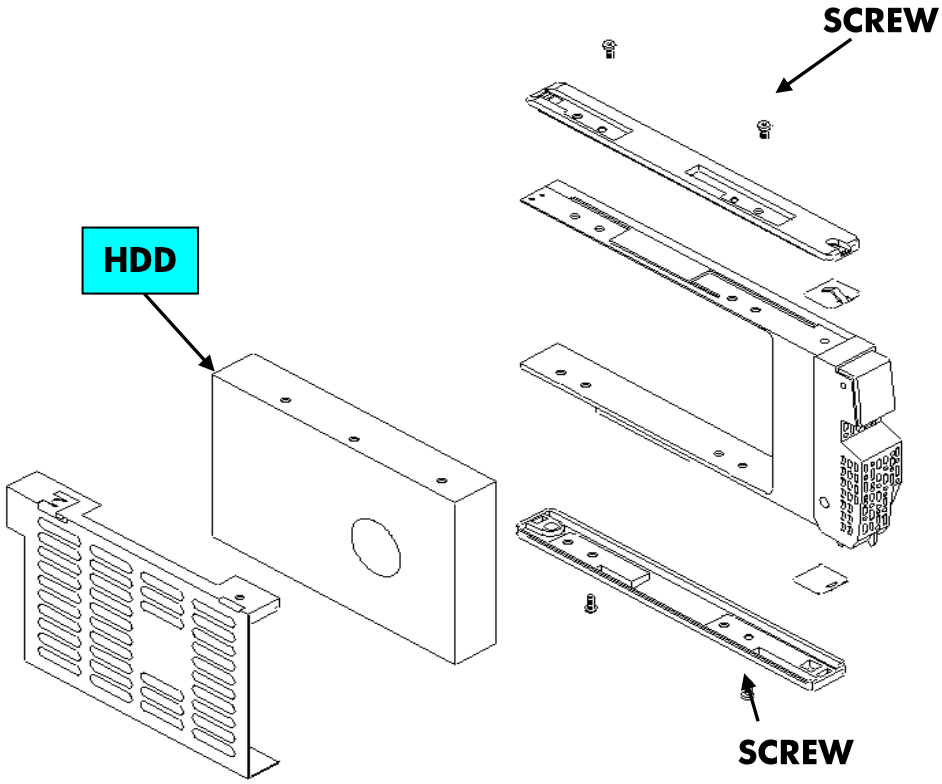


Figure 42. Disassembling the hard drive

8. Disassembling the Battery Box

8.1. Removing the Cover

1. Remove the 17 M3 screws, and then remove covers 1 and 2 by pulling them upward.
   - Top panel: Eleven screws
   - Side panel: Six screws

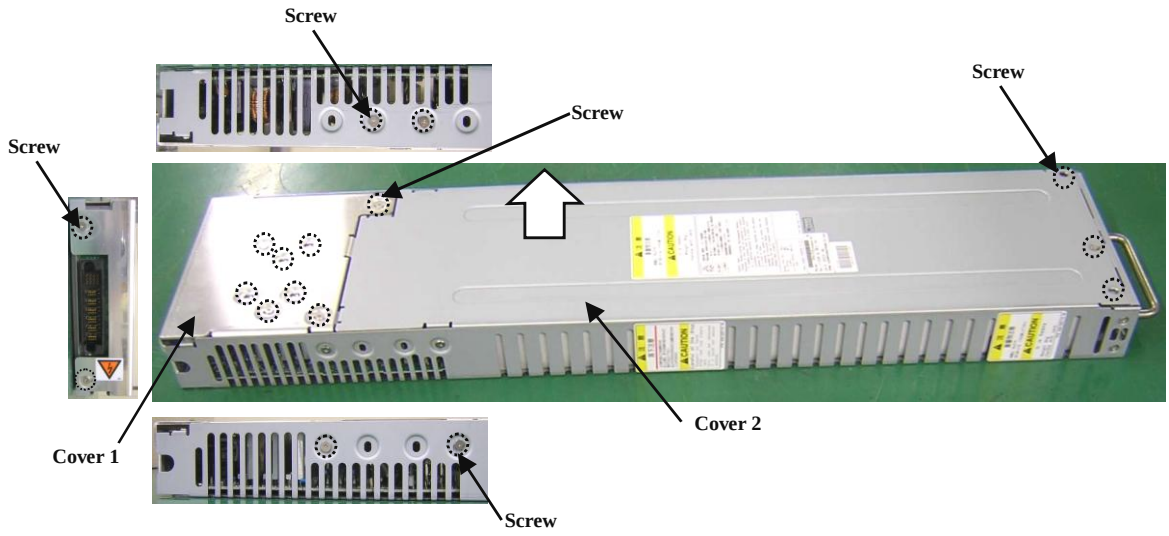


Figure 43. Remove the cover from the battery box

8.2. Removing the Battery

1. Remove connectors 1-4 that are connected to printed circuit board 1.
2. Remove the two M3 screws, and then remove the bracket.
3. Remove the battery pack by pulling it upward.

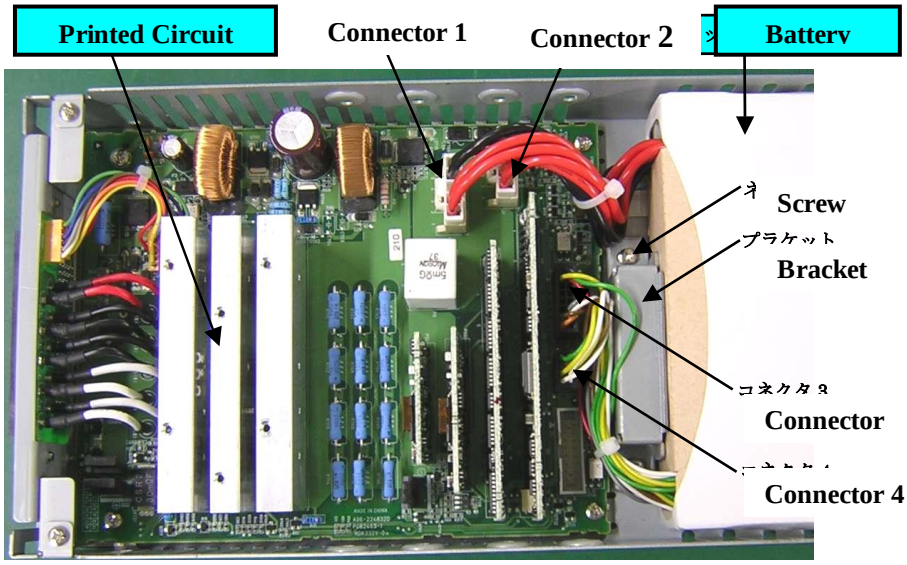


Figure 44. Remove the battery

8.3. Removing the Printed Circuit Boards 1 and 2

1. Remove the flat cables connected to printed circuit boards 1 and 2.
2. Remove the four M3 screws that attach printed circuit board 1 and the two M3 screws and two washers on the side panel, and then remove printed circuit board 1 by pulling upward.
3. Remove the two M3 screws that attach printed circuit board 2, and then remove printed circuit board 2 by pulling upward.

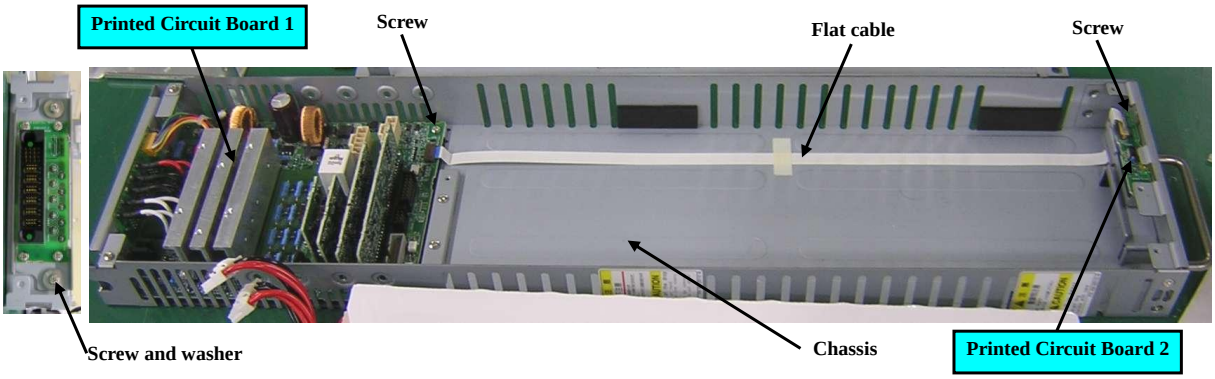


Figure 45. Remove PCB 1 and 2 from battery box

8.4. Disassembling Battery Box PPH1003

8.4.1. Removing the Cover

Remove the seven M3 screws, and then remove the cover by pulling it upward.

- Top panel: Three screws
- Side panel: Four screws

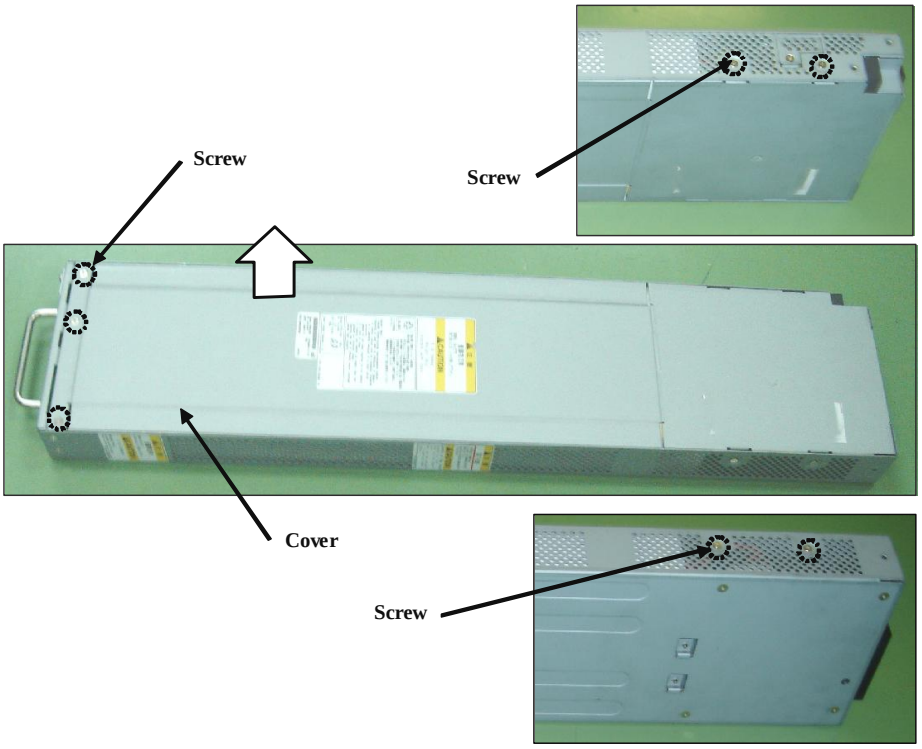


Figure 46. Remove the cover from battery box PPH1003

8.4.2. Removing the Battery Pack

1. Remove connectors 1-6 that are connected to printed circuit board 1.
2. Remove the two M3 screws, and then remove the bracket.
3. Remove the battery pack by pulling it upward.

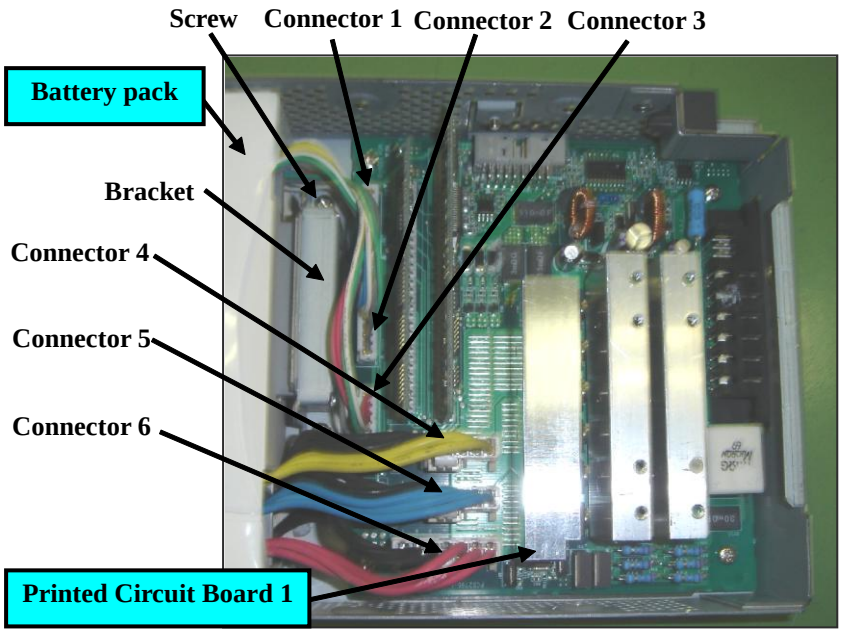


Figure 47. Remove the battery pack from PPH1003

8.4.3. Removing the Printed Circuit Boards 1 and 2

1. Remove the flat cables connected to printed circuit boards 1 and 2.
2. Remove the four M3 screws that attach printed circuit board 1 and then remove the printed circuit board 1 by pulling upward.
3. Remove the two M3 screws that attach the printed circuit board 2, and then remove the printed circuit board 2 by pulling upward.

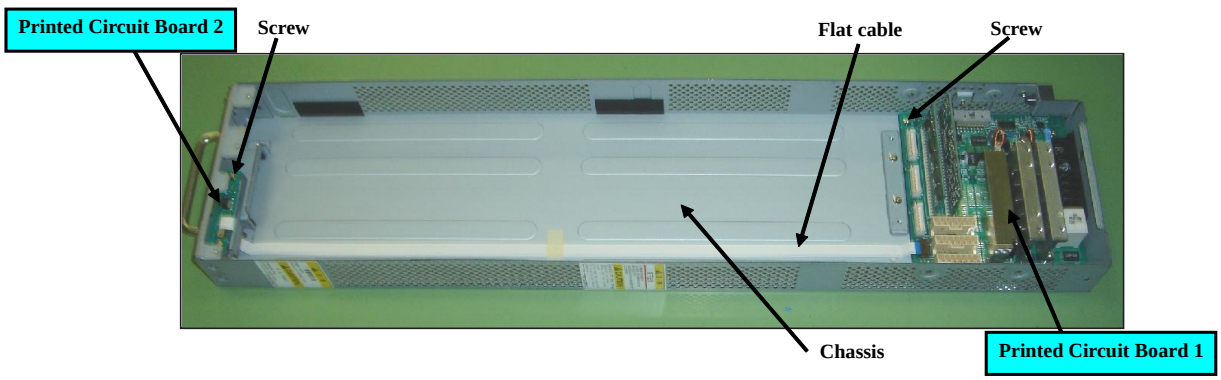


Figure 48. Remove PCB 1and 2 from PPH1003

9. Removing and Disassembling the AC Power Cable

9.1. Removing and Disassembling the AE131A DKC AC Power Cable

1. Loosen the screws, and then remove the terminal block cover.
2. Remove the screws, and then remove the AC power cable and the FG cable.

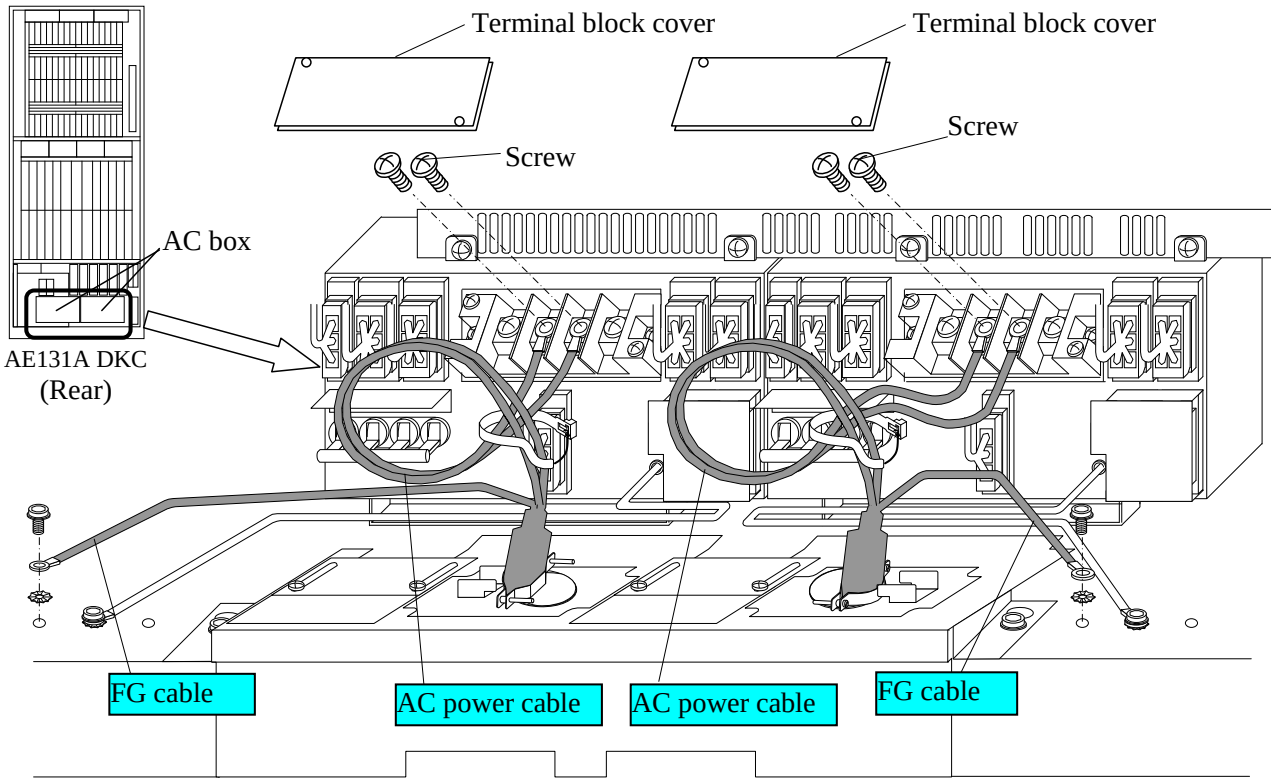


Figure 49. Removing the AE131A DKC Power Cable

9.2. Removing and Disassembling the AE173A/AU DKU AC Power Cable

1. Loosen the screws, and then remove the terminal block cover.
2. Remove the screws, and then remove the AC power cable and the FG cable.

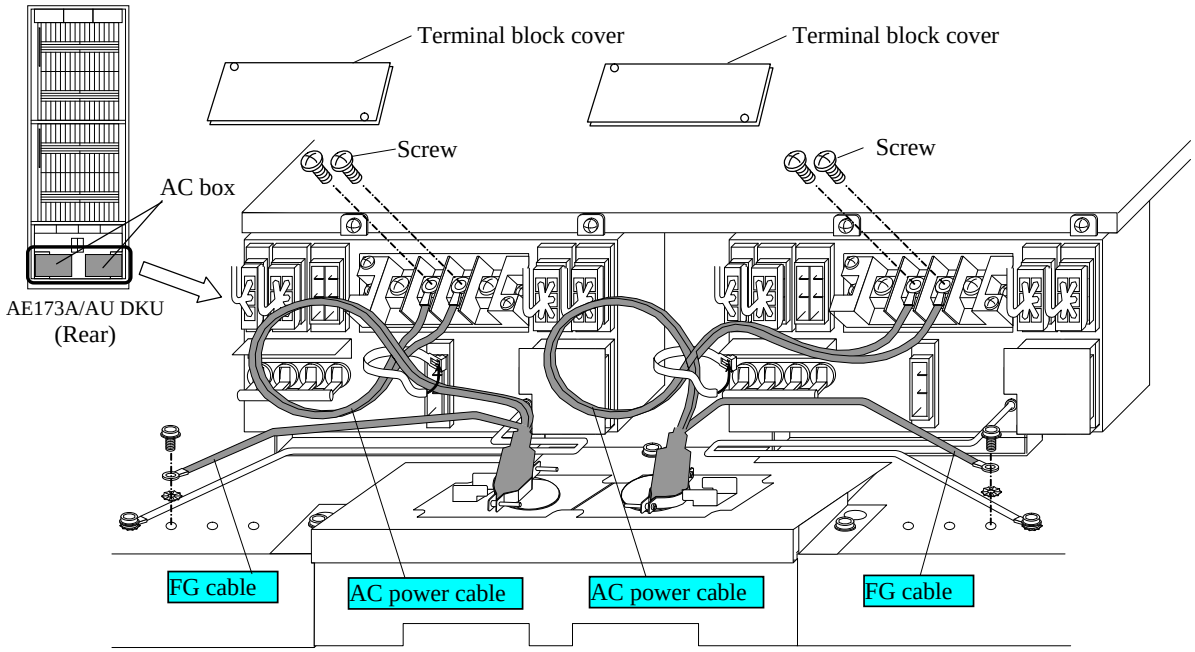


Figure 50. Removing the AE173A/AU DKU AC power cable