SONY

BASEBAND PROCESSOR UNIT

BPU4000

SERVICE MANUAL

1st Edition

⚠ 警告

このマニュアルは， サービス専用です。
お客様が， このマニュアルに記載された設置や保守， 点検， 修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため， サービストレーニングを受けた技術者のみご使用ください。

⚠ WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠ WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠ AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

Model Name	Serial No.
BPU4000 (SY): LEMO Optical Fiber Connector	10001 and Higher
BPU4000 (SY): Tajimi Optical Fiber Connector	30001 and Higher

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CAUTION

The use of optical instruments with this product will increase eye hazard.

This Baseband Processor Unit is classified as a CLASS 1 LASER PRODUCT.

注意

指定以外の電池に交換すると，破裂する危険があります。
必ず指定の電池に交換してください。
使用済みの電池は，国または地域の法令に従って
処理してください。

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
When you dispose of the battery, you must obey the law in the relative area or country.

ATTENTION

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.
Lorsque vous mettez la batterie au rebut, vous devez respecter la législation en vigueur dans le pays ou la région où vous vous trouvez.

VORSICHT

Explosionsgefahr bei Verwendung falscher Batterien.
Batterien nur durch den vom Hersteller empfohlenen oder einen gleichwertigen Typ ersetzen.
Wenn Sie die Batterie entsorgen, müssen Sie die Gesetze der jeweiligen Region und des jeweiligen Landes befolgen.

FÖRSIKTIGHET!

Fara för explosion vid felaktigt placerat batteri.
Byt endast mot samma eller likvärdig typ av batteri, enligt tillverkarens rekommendationer.
När du kasserar batteriet ska du följa rådande lagar för regionen eller landet.

PAS PÅ

Fare for eksplosion, hvis batteriet ikke udskiftes korrekt.
Udskift kun med et batteri af samme eller tilsvarende type, som er anbefalet af fabrikanten.
Når du bortskaffer batteriet, skal du følge lovgivningen i det pågældende område eller land.

HUOMIO

Räjähdysvaara, jos akku vaihdetaan virheellisesti.
Vaihda vain samanlaiseen tai vastaavantyyppiseen, valmistajan suosittelemaan akkuun.
Noudata akun hävittämisessä oman maasi tai alueesi lakeja.

FORSIKTIG

Eksplosjonsfare hvis feil type batteri settes i.
Bytt ut kun med samme type eller tilsvarende anbefalt av produsenten.
Kasser batteriet i henhold til gjeldende avfallsregler.

注意

如果更换的电池不正确，就会有爆炸的危险。
只更换同一类型或制造商推荐的电池型号。
处理电池时，必须遵守相关地区或国家的法律。

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2. Replacement of Main Parts

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Manual Structure

Purpose of this manual

This manual describes the information items that premise the service based on the block-level such as service overview, replacement of main parts, file system, setting menu and etc. assuming use of system and service engineers.

Related manuals

The following manual is provided for this unit in addition to this “Service Manual”.

- Operation Guide (Supplied with this unit)
- Operation Manual CD-ROM (Supplied with this unit)
  This manual contains information required to operate and use the unit.
- Installation Manual (Available on request)
  This manual describes the information on installing the unit.
- Factory Service Manual (Available on request)
  Parts list, circuit diagram, and board layouts of the unit are included to provide information required for part-level service.

Trademarks

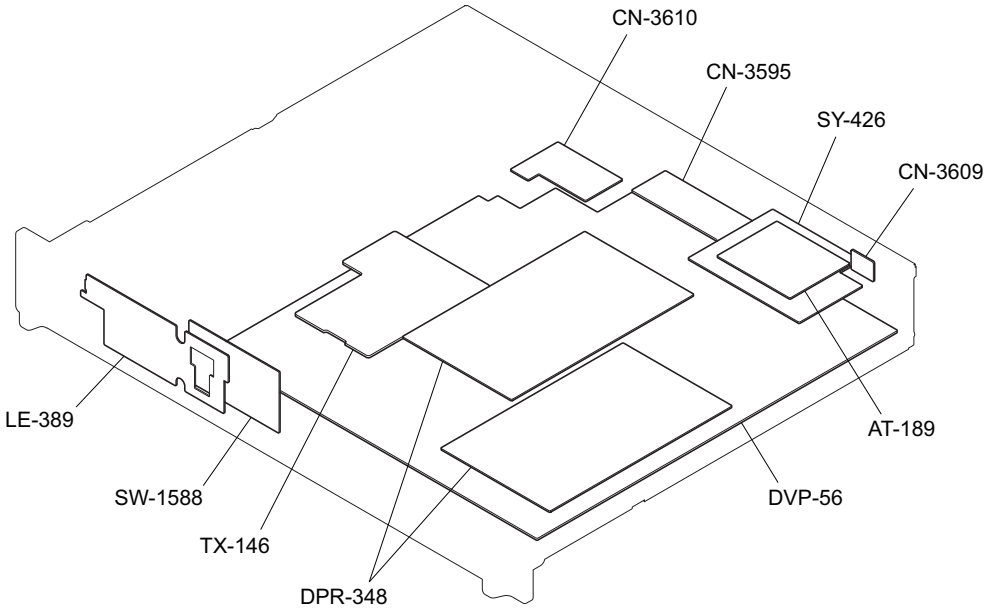
Trademarks and registered trademarks used in this manual are follows.

- FRAM is a registered trademark of Ramtron International Corporation.

Other system names and product names written in this manual are usually registered trademarks or trademarks of respective development manufacturers.

Section 1
Service Overview

1-1. Location of Printed Circuit Boards



1-2. Circuit Description

1-2-1. Signal Processing/Transmission System

TX-146 Board

The TX-146 board receives the return signal (multiplexed from the digital audio signal in the DVP-56 board) and the command signal sent through the DVP-56 board, and then multiplexes these signals and converts them to a serial electrical signal. This serial electrical signal is converted to an optical signal, and the optical signal is sent to the camera system adapter CA4000.
Furthermore, this board converts the serial optical signal sent from the CA4000 to an electrical signal, and separates the main-line signals into a video signal and a command signal, and sends these signals to the DVP-56 board.

DVP-56 Board

When the DVP-56 board receives the RET signal from the CCU (camera control unit), the DVP-56 board extracts the synchronization signal and the command signal. Upon receiving the reference signal from the CCU and an external device, this board performs generator lock.
Furthermore, the DVP-56 board also performs the following processing.

- Generates an SD/HD synchronization signal for reference output.
- Convolutes commands to be sent to the CCU.
- Relays commands to the TX-146 board for communication with the camera system adapter CA4000.
- Processes the RET signal received by the unit and converts the format of the RET signal from the CCU.
- Sends the RET signal and the VF-RET signal processed in the unit to the TX-146 board. Also sends the RET signal to the camera system adapter CA4000.
- Generates voltages necessary for each board from the general power supply.
- Processes the RAW data from the TX-146 board and sends it to the DPR-348 board that makes adjustments for 4K video signals. Also generates a down-converted signal, converts formats of HD adjustments (including color, resolution, and level adjustments), and generates SDI signals, CCU main-line signals, and VF-RET signal for the monitor.
- Maps the 4K signals adjusted in the DPR-348 board to SDI signals.
- Generates output SDI signals from the BNC-type SDI output connectors SLOT2 and SLOT4.
- Performs PsF conversion, Square Division (into four parts) conversion, and delay adjustment by using the DRAM (IC1201 to IC1204).
- Performs embedded audio processing to SDI output signals and CCU main-line signals.
- Relays data with the board on the front panel.

DPR-348 Board

The DPR-348 board receives 4K main-line video signals, adjusts picture quality (including color, resolution, and level adjustments), and outputs 4K main-line signals.
When the HD cutout function is used, an arbitrary position is extracted from the 4K video signal to output it as HD video.

1-2-2. System Control System

AT-189 Board

This board consists of a system control microcomputer (IC200) and a peripheral circuit necessary for the operation of IC200.
The main program is programmed in the flash memory (IC401) on the AT-189 board.

SY-426 Board

The SY-426 board consists of a CPU bridge FPGA and peripheral devices with communication interfaces, LAN, and reference I/O. RCP interface.

1-2-3. Interface Boards

SW-1588 Board

The SW-1588 board contains switches for setting menus, a rotary encoder, and a service USB connector.

LE-389 Board

The LE-389 board contains LEDs including POWER ON indicator, optical signal reception status indicator, and status display (genlock and fan stop) indicator, and controls them.

CN-3609 Board

The CN-3609 board contains the REMOTE connector (8-pin round type).

CN-3610 Board

The CN-3610 board is a relay board to supply power from the camera control unit to the camera system adapter CA4000.

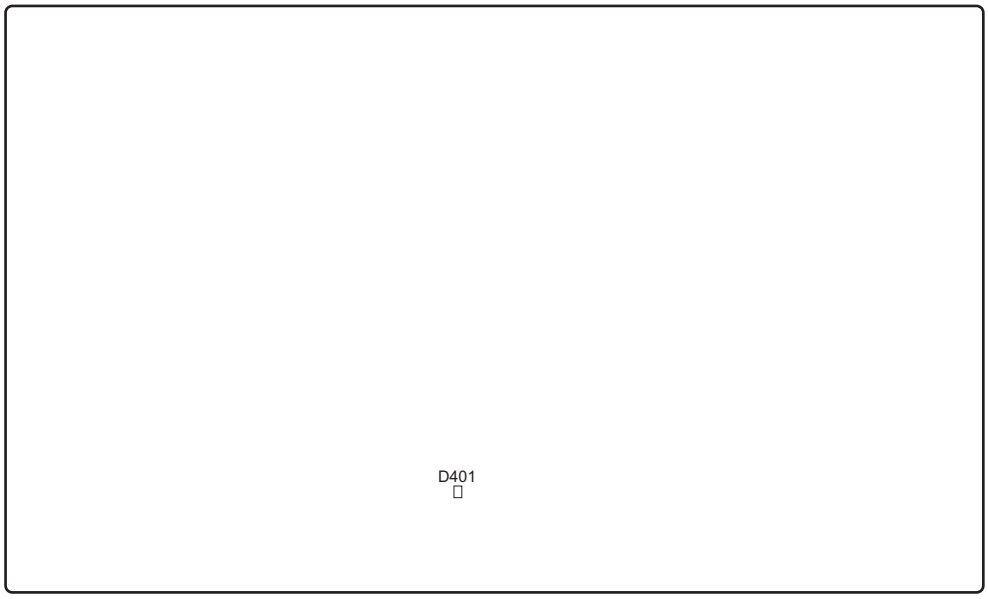
CN-3595 Board

The CN-3595 board contains SDI output connectors (BNC type) SLOT1, and SLOT3.

1-3. Functions of Onboard Switches/LED Indicators

1-3-1. Description of Onboard LED Indicators

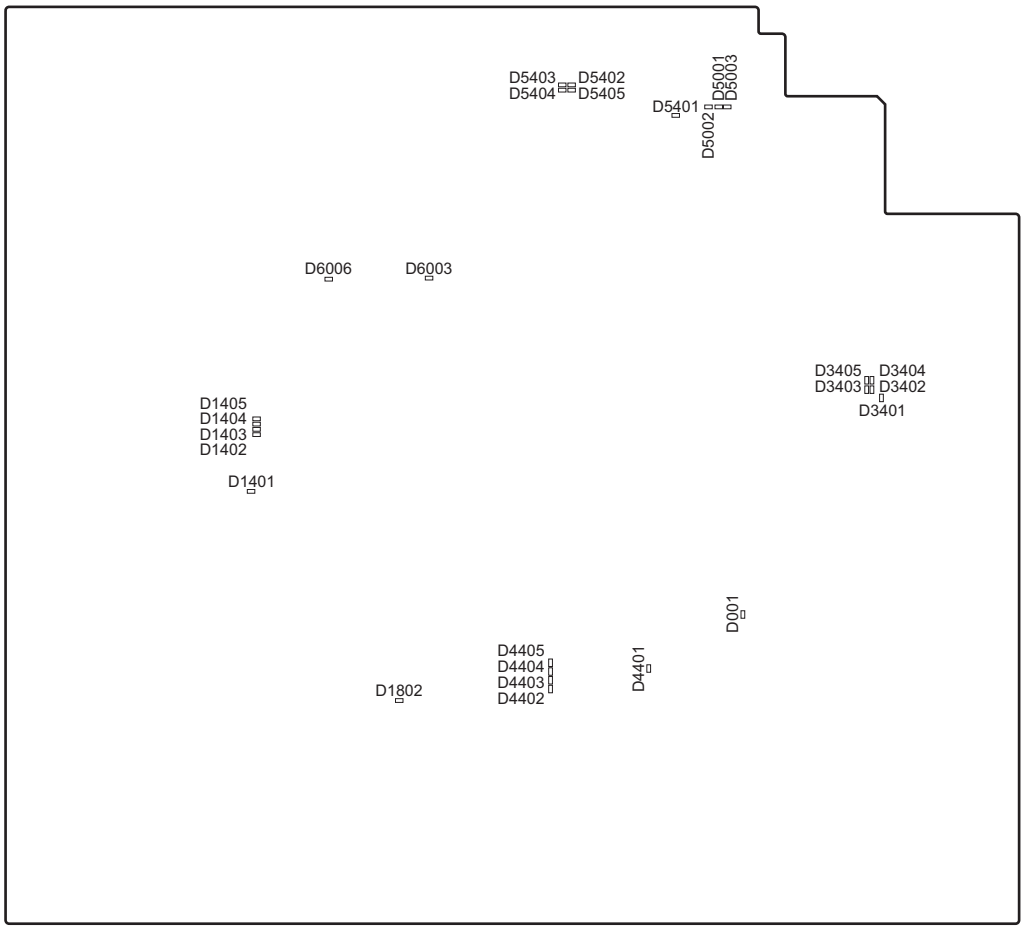
DPR-348 Board



DPR-348 board (Side B)

Ref. No.	Name	Color	Description	Normal State (Power On)
D401	Conf Done	Red	Off when FPGA (IC001) normally completed configuration.	Off

DVP-56 Board



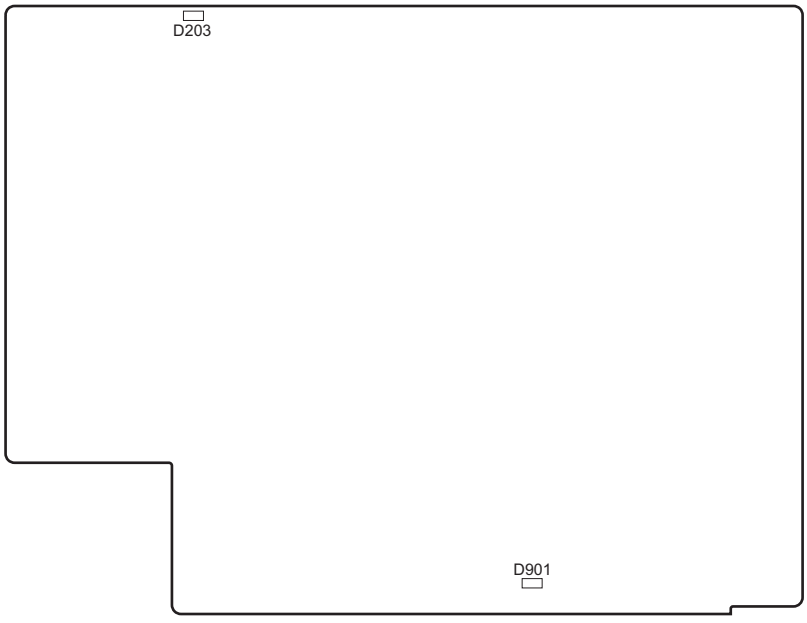
DVP-56 board (Side A)

Ref. No.	Name	Color	Description	Normal State (Power On)
D001	Conf Done	Green	On when all FPGAs normally completed configuration.	On
D1401	DEC Conf_Done	Red	Used for indicating the DEC FPGA (IC1001) configuration status. This LED lights while configuration is NG or in progress.	Off
D1402	—	Green	Factory use	Inconstant
D1403	—	Green	Factory use	Inconstant
D1404	—	Green	Factory use	Inconstant
D1405	—	Green	Factory use	Inconstant
D1802	—	Green	Factory use	Inconstant
D3401	4K-Post Conf_ Done	Red	Used for indicating the 4K-Post FPGA (IC3001) configuration status. This LED lights while configuration is NG or in progress.	Off
D3402	—	Green	Factory use	Inconstant
D3403	—	Green	Factory use	Inconstant
D3404	—	Green	Factory use	Inconstant
D3405	—	Green	Factory use	Inconstant
D4401	2K-Post Conf_ Done	Red	Used for indicating the 2K-Post FPGA (IC4001) configuration status. This LED lights while configuration is NG or in progress.	Off

Continued

Ref. No.	Name	Color	Description	Normal State (Power On)
D4402	—	Green	Factory use	Inconstant
D4403	—	Green	Factory use	Inconstant
D4404	—	Green	Factory use	Inconstant
D4405	—	Green	Factory use	Inconstant
D5001	TFAULT	Red	Used for indicating the optical output status of the optical module for connection to the CCU. This LED lights while optical output of the optical module is stopped or the CCU cable is disconnected.	Off
D5002	TDIS	Red	Used for indicating the transmission status of the optical module for connection to the CCU. This LED lights while optical output of the optical module is stopped or the CCU cable is disconnected.	Off
D5003	LOS	Red	Used for indicating the receiving status of the optical module for connection to the CCU. This LED lights while optical output of the optical module is stopped or the CCU cable is disconnected.	Off
D5401	SDP Conf_Done	Red	Used for indicating the SDP FPGA (IC5001) configuration status. This LED lights while configuration is NG or in progress.	Off
D5402	—	Green	Factory use	Inconstant
D5403	—	Green	Factory use	Inconstant
D5404	—	Green	Factory use	Inconstant
D5405	—	Green	Factory use	Inconstant
D6003	Genlock	Green	Used for indicating the free running or external synchronization status. This LED lights in the external synchronization mode.	Inconstant
D6006	PLL NG	Red	This LED lights while the PLL on the board is unlocked.	Off

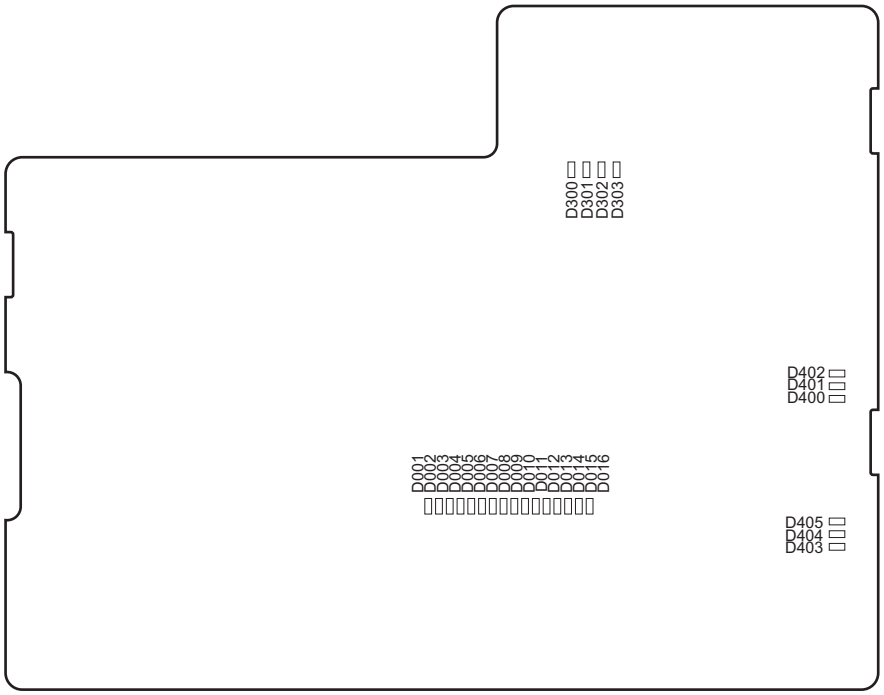
SY-426 Board



SY-426 board (Side A)

Ref. No.	Name	Color	Description	Normal State (Power On)
D203	Power Good	Green	On when +3.2 V power supply in the board is supplied.	On
D901	Conf Done	Red	Off when FPGA (IC705) normally completed configuration.	Off

TX-146 Board



TX-146 board (Side A)

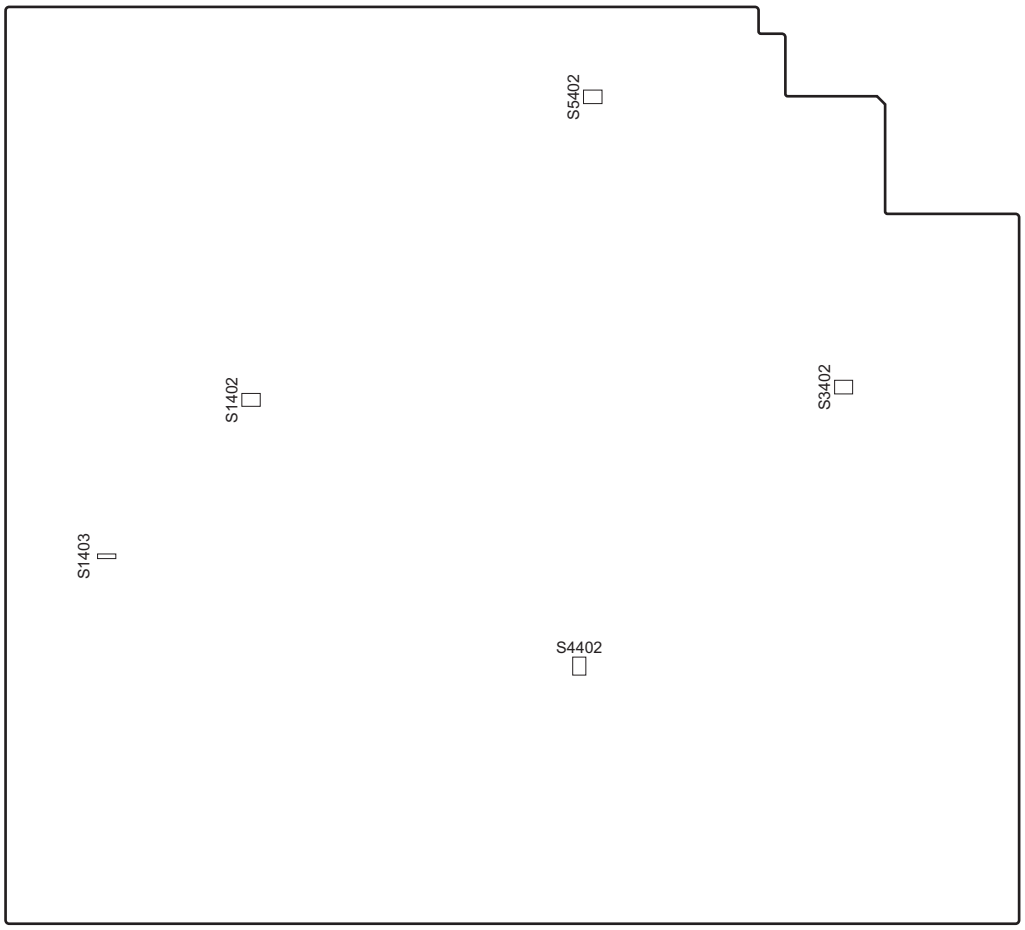
Ref. No.	Name	Color	Description	Normal State (Power On)
D001	LED1	Red	Factory use	Inconstant
D002	LED2	Red	Factory use	Inconstant
D003	LED3	Red	Factory use	Inconstant
D004	LED4	Red	Factory use	Inconstant
D005	LED5	Green	Factory use	Inconstant
D006	LED6	Green	Factory use	Inconstant
D007	LED7	Green	Factory use	Inconstant
D008	LED8	Green	Factory use	Inconstant
D009	LED9	Red	Factory use	Inconstant
D010	LED10	Red	Factory use	Inconstant
D011	LED11	Red	Factory use	Inconstant
D012	LED12	Red	Factory use	Inconstant
D013	LED13	Green	Factory use	Inconstant
D014	LED14	Green	Factory use	Inconstant
D015	LED15	Green	Factory use	Inconstant
D016	LED16	Green	Factory use	Inconstant

Continued

Ref. No.	Name	Color	Description	Normal State (Power On)
D300	TDIS	Red	Used for indicating the transmission status of the optical module for connection to the camera. This LED lights while optical output of the optical module is stopped or the CCU cable is disconnected.	Off
D301	TFAULT	Red	Used for indicating the optical output status of the optical module for connection to the camera. This LED lights while optical output of the optical module is stopped or the CCU cable is disconnected.	Off
D302	MOD_ABS	Red	This LED lights while the optical module is not connected to the connector (CN300).	Off
D303	RX_LOS	Red	Used for indicating the receiving status of the optical module for connection to the camera. This LED lights while optical output of the optical module is stopped or the CCU cable is disconnected.	Off
D400	LOCK1	Red	This LED lights while the clock synthesizer IC405 is not locked.	Off
D401	REF1	Red	This LED lights while the reference clock is not input to the clock synthesizer IC405.	Off
D402	VCXO1	Red	This LED lights while the VCXO clock is not input to the clock synthesizer IC405.	Off
D403	LOCK2	Red	This LED lights while the clock synthesizer IC406 is not locked.	Off
D404	REF2	Red	This LED lights while the reference clock is not input to the clock synthesizer IC406.	Off
D405	VCXO2	Red	This LED lights while the VCXO clock is not input to the clock synthesizer IC406.	Off

1-3-2. Functions of Onboard Switches

DVP-56 Board



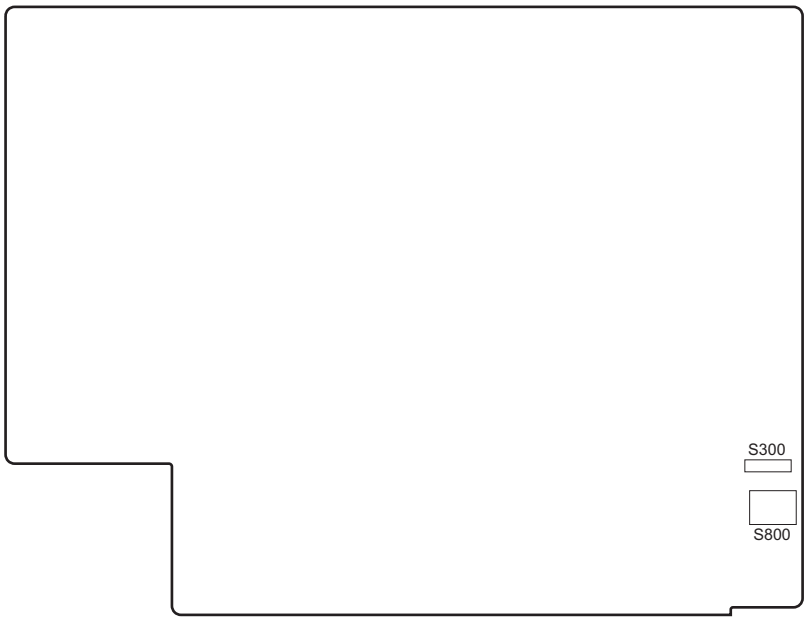
DVP-56 board (Side A)

Note

Do not change the settings of the switches described as “Factory use”.

Ref. No.	Bit	Description	Factory Setting
S1402	1-4	Factory use	Off (ALL)
S1403	1	Factory use	OFF
S3402	1-4	Factory use	Off (ALL)
S4402	1-4	Factory use	Off (ALL)
S5402	1-4	Factory use	Off (ALL)

SY-426 Board



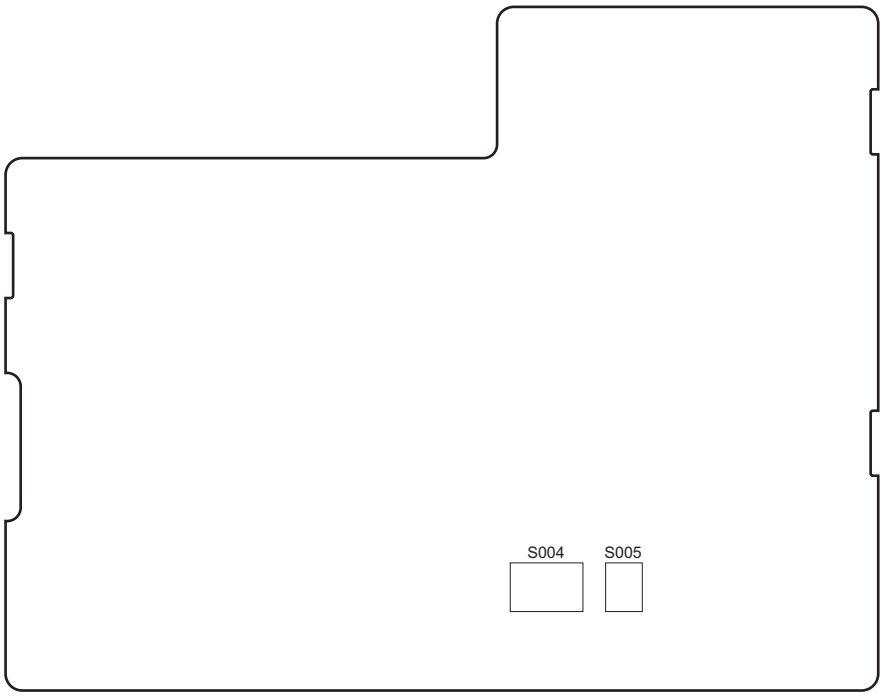
SY-426 board (Side A)

Note

Do not change the settings of the switches described as “Factory use”.

Ref. No.	Bit	Description	Factory Setting
S300	1	Factory use	OFF
S800	1-4	Factory use	OFF (ALL)

TX-146 Board



TX-146 board (Side A)

Note

Do not change the settings of the switches described as "Factory use".

Ref. No.	Bit	Description	Factory Setting
S004	1-8	Factory use	OFF (ALL)
S005	1-4	Factory use	OFF (ALL)

1-4. Replacing Lithium Battery

1-4-1. Note on Replacement of Lithium Battery

A lithium battery is mounted on the SY-426 board to back up the real time clock (RTC). If a battery comes to the lifetime, then RTC stops. Therefore, the battery must be replaced.

- SY-426 board/Lithium secondary battery (ML621 (U)): Sony Part No. ⚠ 1-756-134-15

CAUTION

In replacing, ensure that the battery is installed with "+" and "-" poles connected to the correct terminals. Improper connection may cause an explosion or leakage of fluid, resulting in injury or damage to surrounding properties.

For how to replace a lithium battery, refer to "2. Replacement of Main Parts".

1-5. Cleaning of Connector/Cable

The photo receptive condition of the optical connector can be checked at OPTICAL CONDITION on the front panel of the unit.

- Lit in two green indicators (right): Receive signal condition is very good.
- Lit in one green indicator (2nd from right): Receive signal condition is OK.
- Lit in one yellow indicator (2nd from left): Receive signal level is weak.
- Lit in one red indicator (left): Receive signal level is severely degraded.

When lit in red, be sure to clean the optical contact portions.
When lit in yellow, cleaning is recommended.
The attenuation of the photo-receptive level may cause transmission error. Clean optical contact portions proceeding as follows.
The optical contact portion exist in the optical connector on this unit or camera control, and in the optical/electrical cables.

1-5-1. When the Optical Connector Cleaner (Commercially Available) is Available

Fixtures

- Optical connector cleaner (commercially available)
  - Product name: CLETOP ®
  - 14100402 or 14100403 (stick type) or equivalent
  - 14100402: 2.0 mm
  - 14100403: 2.0/2.5 mm double ended

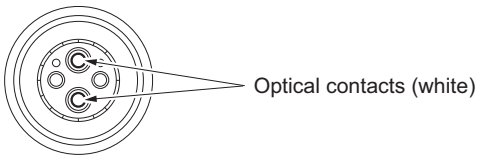
Tip

- Alcohol is not necessary during cleaning.
- Number of possible wipes is one cleaning per a piece. Do not reuse it.

Cleaning Procedure

Male connector

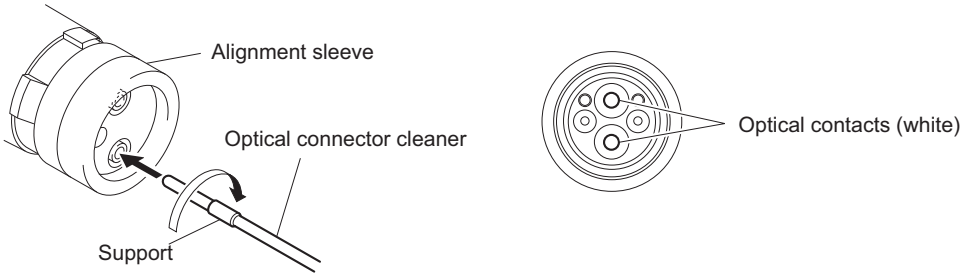
Clean the tip of the white optical contacts using the optical connector cleaner.



Female connector

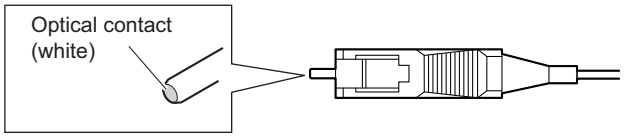
1. Insert the optical connector cleaner straight.
2. Apply sufficient pressure (approximately 600 g to 700 g) to ensure that the optical contact is a little depressed.

3. While pressing the optical connector cleaner against the tip of the optical contact, rotate the optical connector cleaner by 4 to 5 turns clockwise. Holding the optical connector cleaner at around its support facilitates to apply the pressure.



Connector

Clean the tip of the white optical contacts using the optical connector cleaner.



1-5-2. When the Optical Connector Cleaner (Commercially Available) is not Available (Connectors/Cables of LEMO)

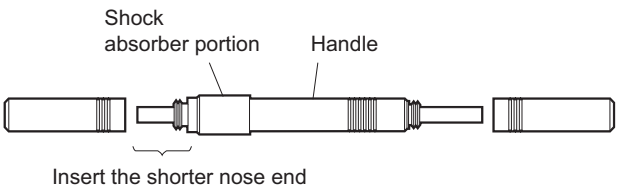
Clean the LEMO connectors and cables using the following procedure.

Fixtures

- Alignment sleeve remover HC-001 (for female connector)
  Sony Part No. : J-6480-010-A or DCC.91.312.5LA manufactured by LEMO, or equivalent

  Note

  Insert the shorter nose end when removing/installing the alignment sleeve. Grasp not the shock absorber portion of the remover but the handle in use.



- Alcohol (commercially available)
- Cotton swabs (commercially available)

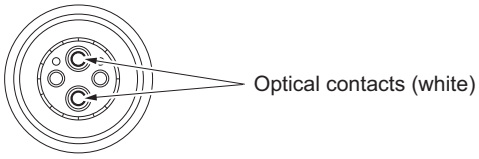
  Note

  Use a cotton swab whose diameter is about 4 mm. If a cotton swab whose diameter exceeds 5 mm is used, the cotton swab cannot be inserted into the end of the connector and the tip of the optical contact cannot be cleaned.

Cleaning Procedure

Male connector

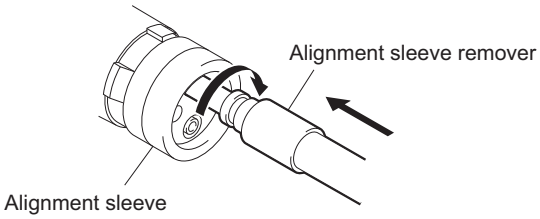
Clean the tip of the white optical contacts with a cotton swab moistened with alcohol.



Female connector

The optical contacts for female connector are in an unexposed state. In cleaning, it is necessary to be exposed by removing the alignment sleeve in advance. Proceed as follows.

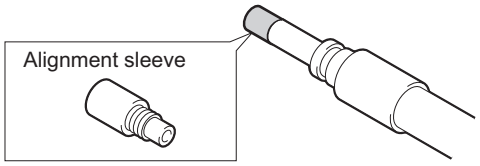
1. Insert the alignment sleeve remover into the alignment sleeve in the straight line and turn it clockwise



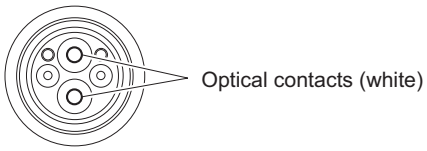
2. When the turn stops, pull out the remover in the straight line forcedly.

Note

The alignment sleeve can be removed/reinstalled with the sleeve itself attached to the tip of the remover. Great care should be taken so as not to lose or damage the alignment sleeve.
Alignment sleeve: Sony Part No. : 9-980-074-01



3. Clean the tip of the white optical contacts with a cotton swab moistened with alcohol.



4. Insert the remover with the alignment sleeve attached to its tip, and push it until it clicks.
5. Rotate the remover counterclockwise to install the alignment sleeve, and extract the remover.

1-5-3. When the Optical Connector Cleaner (Commercially Available) is not Available (Tajimi Electronics Co., Ltd.)

Clean the connectors and cables of Tajimi Electronics using the following procedure.

Fixtures

- Alcohol (commercially available)

- Cotton swabs (commercially available)

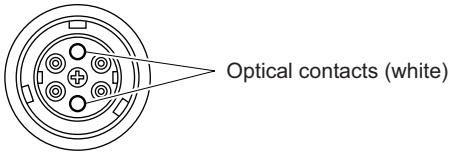
  Note

  Use a cotton swab whose diameter is about 4 mm. If a cotton swab whose diameter exceeds 5 mm is used, the cotton swab cannot be inserted into the end of the connector and the tip of the optical contact cannot be cleaned.

Cleaning Procedure

Male connector

Clean the tip of the white optical contacts with a cotton swab moistened with alcohol.



Female connector

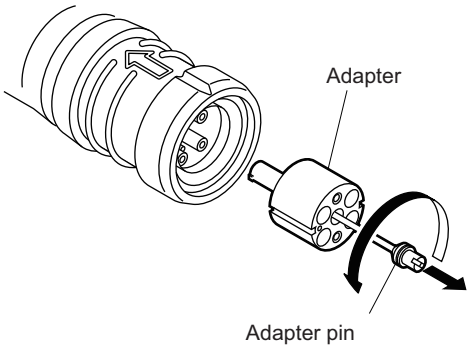
The optical contacts for female connector are in an unexposed state. In cleaning, it is necessary to be exposed by removing the adapter in the connector in advance. Proceed as follows.

1. Loosen the adapter pin at the center of the connector counterclockwise with a screwdriver.

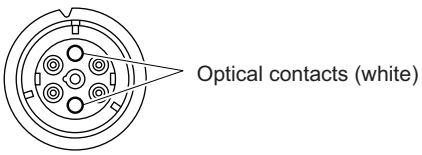
   Tip

   If there is no screwdriver, use the plate attached to the connector cap.

2. Pull the adapter pin out of the connector in the arrow direction.



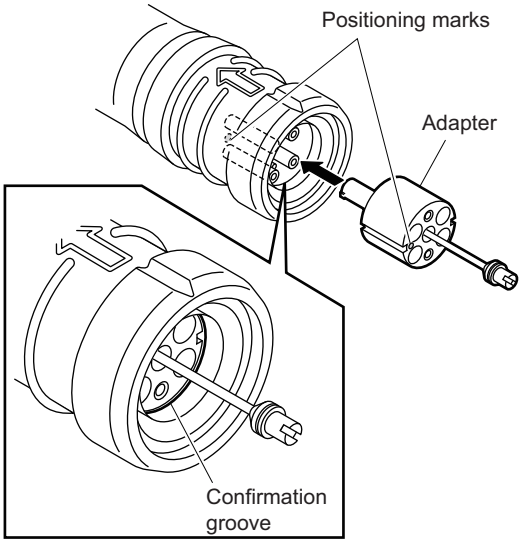
3. Clean the white optical contacts with a cotton swab moistened with alcohol.



4. Match the positioning marks of the adapter and the connector, and then push the adapter into the connector.

   Note

   Push the adapter until the confirmation groove comes in sight as shown in the figure.



5. Tighten the adapter pin clockwise until being lightly fixed.

   Note

   Do not fully tighten the adapter pin. (Extent where adapter pin is lightly fixed)

1-5-4. When the Optical Connector Cleaner (Commercially Available) is not Available (Connector)

Fixtures

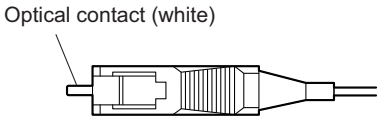
- Alcohol (commercially available)
- Cotton swabs (commercially available)

  Note

  Use a cotton swab whose diameter is about 4 mm. If a cotton swab whose diameter exceeds 5 mm is used, the cotton swab cannot be inserted into the end of the connector and the tip of the optical contact cannot be cleaned.

Cleaning Procedure

Clean the tip of the white optical contacts with a cotton swab moistened with alcohol.



1-6. Fixtures

Part No.	Name	Usage/Note
J-6323-430-A	Torque screwdriver's bit (M3)	Screw tightening
J-6325-110-A	Torque screwdriver's bit (M1.4)	Screw tightening
J-6325-380-A	Torque screwdriver's bit (M2)	Screw tightening
J-6325-400-A	Torque screwdriver (3 kg·cm) (0.3 N·m)	Screw tightening
J-6252-510-A	Torque screwdriver (6 kg·cm) (0.6 N·m)	Screw tightening
J-6252-520-A	Torque screwdriver (12 kg·cm) (1.2 N·m)	Screw tightening
J-6326-120-A	Hexagon bit (size 1.5)	Screw tightening
J-6480-010-A	Alignment sleeve remover HC-001	For Female connector, DCC.91.312.5LA manufactured by LEMO or equivalent
Commercially available	USB drive	Upgrading software, writing and rewriting the PLD internal data

1-7. Upgrading Software Programs

Software programs stored in the ROM (IC401) on the AT-189 board are upgraded by using a USB drive.
The software programs include camera application, OS (operating system), and update software programs. Upgrade these software programs independently.
Use the following procedures to upgrade the software programs.

Tip

The USB connector for connection to a USB drive is located to the right of the assignable button on the front panel. Detach the USB connector cover to connect the USB drive.

1-7-1. Upgrading Camera Application

Equipment Required

USB drive (commercially available)

Tip

For recommended USB drive, refer to “Using a USB Drive” in the operation manual.

Preparation

Copy the camera application update data to the USB drive using the following procedure.

Note

For how to obtain the version update data file (bpu4000_app.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   \MSSONY\PRO\CAMERA\BPU4000
2. Copy the version update data file “bpu4000_app.pkg” to the directory created.

Procedure

1. Connect the USB drive that contains the version update program to the USB connector of this unit.
2. Turn on the power of the unit.
3. Display the “SOFTWARE PACKAGE” page of the SERVICE menu.

   Tip

   For the SERVICE menu, refer to “4-2. SERVICE Menu”.

4. Select “CAMERA APP” and then press the ENTER button.
5. A message “UPDATE OK?” appears. Select “YES.”
6. The unit restarts automatically and the version update starts.
   Upon completion of the version update, a message “UPDATE SUCCEEDED” appears.
7. Turn off and on the power of the unit and confirm that the version has been updated on the “ROM VERSION” page of the DIAGNOSIS menu.

1-7-2. Upgrading OS

Equipment Required

USB drive (commercially available)

Tip

For recommended USB drive, refer to “Using a USB Drive” in the operation manual.

Preparation

Copy the OS update data to the USB drive using the following procedure.

Note

For how to obtain the version update data file (bpu4000_os.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   \MSSONY\PRO\CAMERA\BPU4000
2. Copy the version update data file “bpu4000_os.pkg” to the directory created.

Procedure

1. Connect the USB drive that contains the version update program to the USB connector of this unit.
2. Turn on the power of the unit.
3. Display the "SOFTWARE PACKAGE" page of the SERVICE menu.

   Tip

   For the SERVICE menu, refer to “4-2. SERVICE Menu”.
4. Select "OS" and then press the ENTER button.
5. A message “UPDATE OK?” appears. Select “YES.”
6. The unit restarts automatically and the version update starts.
   Upon completion of the version update, a message “UPDATE SUCCEEDED” appears.
7. Turn off and on the power of the unit and confirm that the version has been updated on the “ROM VERSION” page of the DIAGNOSIS menu.

1-7-3. Upgrading Update Software

Equipment Required

USB drive (commercially available)

Tip

For recommended USB drive, refer to “Using a USB Drive” in the operation manual.

Preparation

Copy the software update data to the USB drive using the following procedure.

Note

For how to obtain the version update data file (bpu4000_updater.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   \MSSONY\PRO\CAMERA\BPU4000
2. Copy the version update data file "bpu4000_updater.pkg" to the directory created.

Procedure

1. Connect the USB drive that contains the version update program to the USB connector of this unit.
2. Turn on the power of the unit.
3. Display the "SOFTWARE PACKAGE" page of the SERVICE menu.

   Tip

   For the SERVICE menu, refer to “4-2. SERVICE Menu”.

4. Select "UPDATER" and then press the ENTER button.
5. A message "UPDATE OK?" appears. Select "YES."
6. The unit restarts automatically and the version update starts.
   Upon completion of the version update, a message “UPDATE SUCCEEDED” appears.
7. Turn off and on the power of the unit and confirm that the version has been updated on the "ROM VERSION" page of the DIAGNOSIS menu.

1-8. PLD

This unit uses the PLD (Programmable Logic Device) that supports USB drive to write and rewrite the internal data.
If the part listed below needs to be replaced or to be upgraded, contact your local Sony Sales Office/Service Center.

Note

The part number of PLD (or ROM for PLD) in which data is not written yet, is shown in "5. Spare Parts".
Therefore, if part replacement is required, write the data by the following procedure.
In the case of the PLD type that runs on the program stored in external ROM, data needs not to be written only by replacing the part if the specific PLD only is defective.

Tip

The USB connector for connection to a USB drive is located to the right of the assignable button on the front panel. Detach the USB connector cover to connect the USB drive.

1-8-1. Corresponding PLD

PLD (Ref. No./Board Name)	File Name
IC004/TX-146	bpu4000_tx.pkg
IC1001/DVP-56	bpu4000_dec.pkg
IC3001/DVP-56	bpu4000_4kpost.pkg
IC4001/DVP-56	bpu4000_2kpost.pkg
IC5001/DVP-56	bpu4000_sdp.pkg
IC001/DPR-348	bpu4000_dpr.pkg
IC001/DPR-348 (option)	bpu4000_dpr_hco.pkg
IC705/SY-426	bpu4000_sy.pkg

1-8-2. Upgrading PLD Data

Equipment Required

USB drive (commercially available)

Tip

For recommended USB drive, refer to "Using a USB Drive" in the operation manual.

Preparation

Copy the PLD update data to the USB drive using the following procedure.

Note

For how to obtain the version update data file (bpu4000_tx.pkg, bpu4000_dec.pkg, bpu4000_4kpost.pkg, bpu4000_2kpost.pkg, bpu4000_sdp.pkg, bpu4000_dpr.pkg, bpu4000_dpr_hco.pkg, bpu4000_sy.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   \MSSONY\PRO\CAMERA\BPU4000
2. Copy the PLD version update data file to be updated to the directory created.

Procedure

1. Connect the USB drive that contains the version update program.
2. Turn on the power of the unit.
3. Display the "PLD PACKAGE" page of the SERVICE menu.

   Tip

   For the SERVICE menu, refer to “4-2. SERVICE Menu”.

4. Confirm that the cursor "?" is displayed to the left of page number, and then press the ENTER button long.
5. Select the PLD to be upgraded and then press the ENTER button.
6. A message "UPDATE OK?" appears. Select "YES."
7. The unit restarts automatically and the version update starts.
   Upon completion of the version update, a message “UPDATE SUCCEEDED” appears.
8. Turn off and on the power of the unit and confirm that the version has been updated on the “ROM VERSION” page of the DIAGNOSIS menu.

1-9. Forced Version Update

If the version of program or data cannot be updated from the SOFTWARE PACKAGE page of the SERVICE menu, the software or PLD data version can be updated by the "forced version update."

Tip

The USB connector for connection to a USB drive is located to the right of the assignable button on the front panel. Detach the USB connector cover to connect the USB drive.

1-9-1. Forced Version Update of Software or PLD Data

Equipment Required

USB drive (commercially available)

Tip

For recommended USB drive, refer to "Using a USB Drive" in the operation manual.

Preparation

Copy the software or PLD data version update data file to the USB drive using the following procedure.

Note

For how to obtain the version update data file, contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   \MSSONY\PRO\CAMERA\BPU4000
2. Copy the version update data file to be updated to the directory created.

   Note

   Do not copy software or PLD data that is not to be updated.

Procedure

1. Connect the USB drive that contains the version update program.
2. Set the DISP/MENU lever on the MENU operation area of the front panel to the MENU side, and set the CANCEL/ENTER lever to the CANCEL side. Turn on the power while pressing the rotary encoder.
   The version of each version update data file copied in the USB drive is updated.

   Tip

   The version update progress status is displayed on the monitor.
3. Upon completion of the version update, a message "UPDATE SUCCEEDED" appears.
4. Turn off and on the power of the unit and confirm that the version has been updated on the "ROM VERSION" page of the DIAGNOSIS menu.

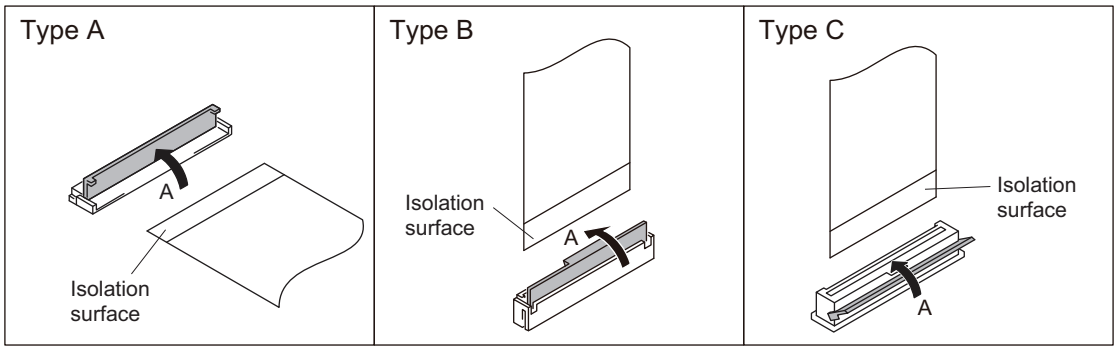
1-10. Flexible Card Wire and Coaxial Cable

1-10-1. Connecting/Disconnecting Flexible Card Wire

Note

- Be very careful not to fold flexible card wires. Life of flexible card wire will be significantly shortened if it is folded.
- Each flexible card wire has conductor side and insulated side. If the flexible card wire is connected in the wrong orientation of the conductor side and the insulated side, the circuit will not function.
- Insert the flexible card wire straight.
- Check that the conductive surface of the flexible card wire is not contaminated.

Type A to C



Disconnecting

1. Turn off the power.
2. Slide or lift up the portion A in the direction of the arrow to unlock and pull out the flexible card wire.

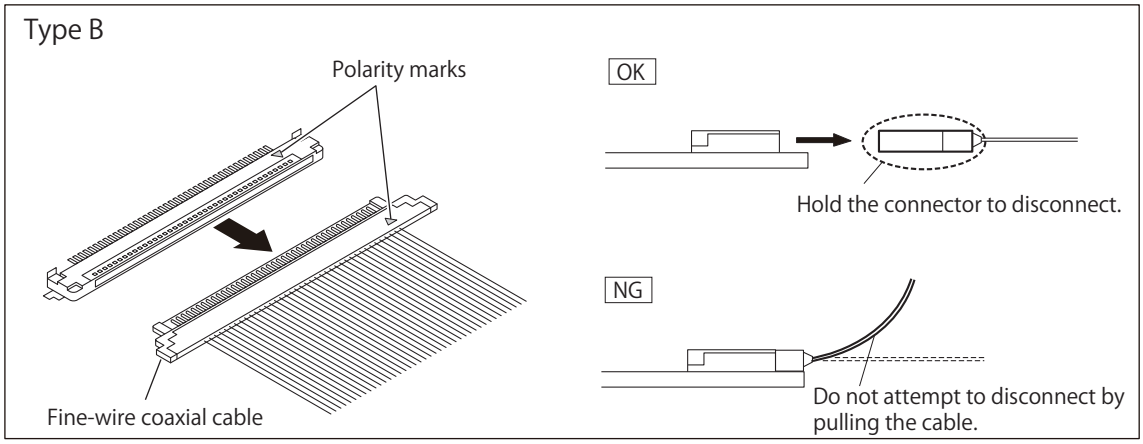
Connecting

1. Insert the flexible card wire firmly as far as it will go with the insulating surface facing upward.
2. Close the latch of the connector in the direction of arrow B to lock the flexible card wire.

1-10-2. Disconnecting/Connecting Fine-Wire Coaxial Cable

Note

- Be very careful when handling the fine-wire coaxial cable so that fine wires are not disconnected.
- When disconnecting the fine-wire coaxial cable, be sure to hold the connector. Do not attempt to pull the cable.
- Check that the contact surface of the fine-wire coaxial cable connector is free from dirt or dust.



Disconnecting

1. Hold the connector and disconnect the fine-wire coaxial cable horizontally or vertically.

Connecting

1. Hold the connector and connect the fine-wire coaxial cable horizontally or vertically while matching the polarity marks.

1-11. Circuit Protection Parts

1-11-1. Circuit Protection Element

This unit is equipped with positive-characteristic thermistors (power thermistors) as circuit protection elements.
The positive-characteristic thermistor limits the electric current flowing through the circuit as the internal resistance increases when an excessive current flows or when the ambient temperature increases. If the positive-characteristic thermistor works, turn off the main power of the unit and inspect the internal circuit of the unit.
After the cause of the fault is eliminated and the positive-characteristic thermistor is cooled down, turn on the main power again. The unit works normally. It takes about one minute to cool down the positive-characteristic thermistor after the main power is turned off.

Board Name	Ref. No.	Address	Part No.	Hold Current
DVP-56	THP001	F7 (Side A)	⚠ 1-804-458-21	0.50 A/20 °C
	THP801	B1 (Side A)	⚠ 1-803-615-21	0.50 A/20 °C
SY-426	THP001	A2 (Side A)	⚠ 1-802-063-21	1.10 A/20 °C
	TH301	C1 (Side B)	⚠ 1-805-726-11	0.20 A/25 °C

1-12. Lead-free Solder

All boards mounted in this unit use lead-free solder. Be sure to use lead-free solder when repairing the boards of this unit. A lead free mark (LF) indicating that the solder contains no lead is printed on each board. (Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

 : LEAD FREE MARK

Note

- The lead-free solder melts at a temperature about 40 °C higher than the ordinary solder, therefore, it is recommended to use the soldering iron having a temperature regulator.
- The ordinary soldering iron can be used but the iron tip has to be applied to the solder joint for a slightly longer time. The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful.

Section 2
Replacement of Main Parts

2-1. Tightening Torque

Torque driver and screw tightening torque

General screws are used in this unit. Be sure to use a torque driver and tighten screws to the specified tightening torque.

Tightening Torque
M2: 0.3 ±0.02 N·m
M2.6: 0.53 ±0.07 N·m
M3: 0.8 ±0.12 N·m

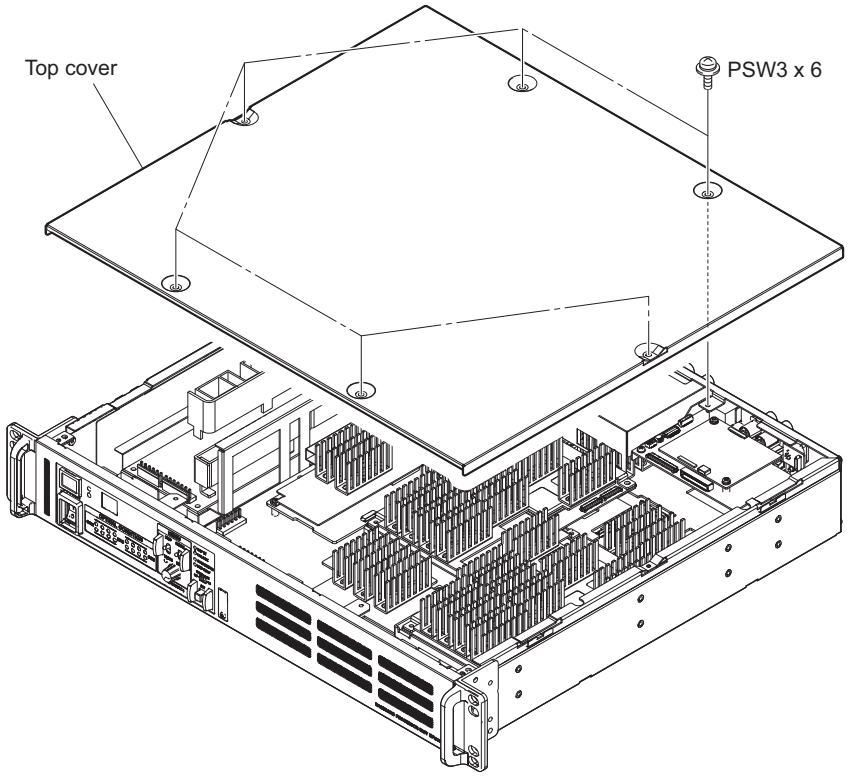
Tip

- When using the torque driver with the notation of cN· m, interpret it as follows.
  Example: 0.8 N· m = 80 cN· m
- Since small screws are used in the unit, they may fall into the unit when they are removed and installed. To prevent screws from falling, it is recommended that the bit of each torque driver be magnetized to a degree that prevents screws from falling.

2-2. Top Cover

Procedure

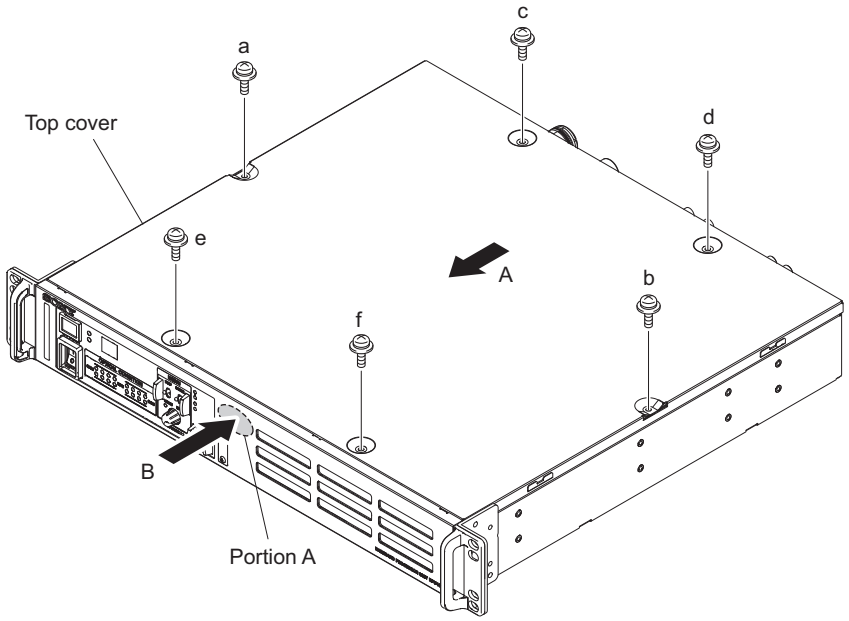
1. Remove the six screws to detach the top cover.



2. Install the removed part by following procedure.

Note

- Tighten the screws a and b while pushing the top cover in the direction of arrow A.
- Tighten the screws c and d.
- Tighten the screws e and f while pushing the portion A in the direction of arrow B.



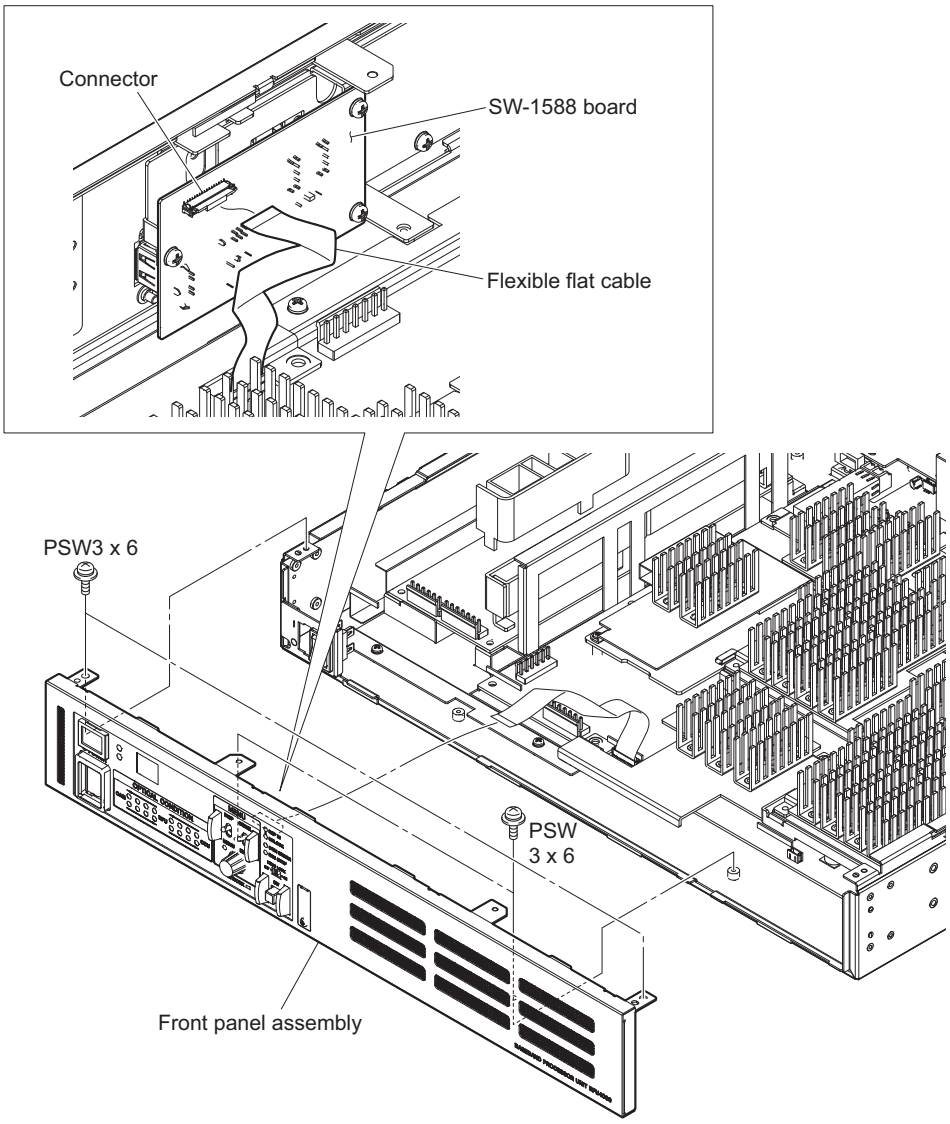
2-3. Front Panel Assembly

Preparation

1. Remove the top cover. (Refer to "2-2. Top Cover")

Procedure

1. Disconnect the flexible flat cable from the connector on the SW-1588 board.
2. Remove the four screws to detach the front panel assembly.



3. Install the removed parts by reversing the steps of removal.

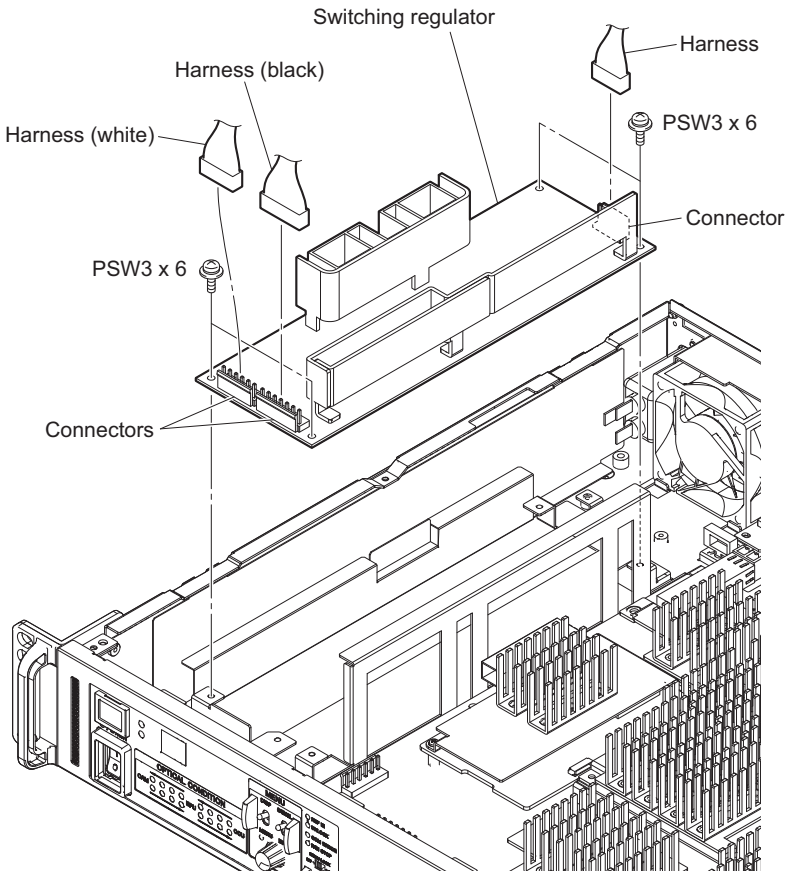
2-4. Switching Regulator

Preparation

1. Remove the top cover. (Refer to “2-2. Top Cover”)

Procedure

1. Disconnect the three harnesses from the three connectors on the switching regulator.
2. Remove the four screws to detach the switching regulator.



3. Install the removed parts by reversing the steps of removal.

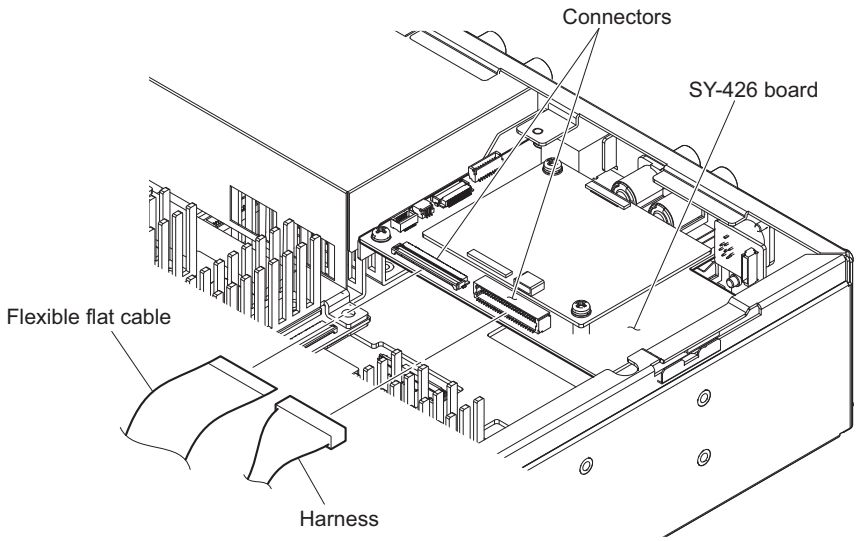
2-5. AT-189 Board/SY-426 Board

Preparation

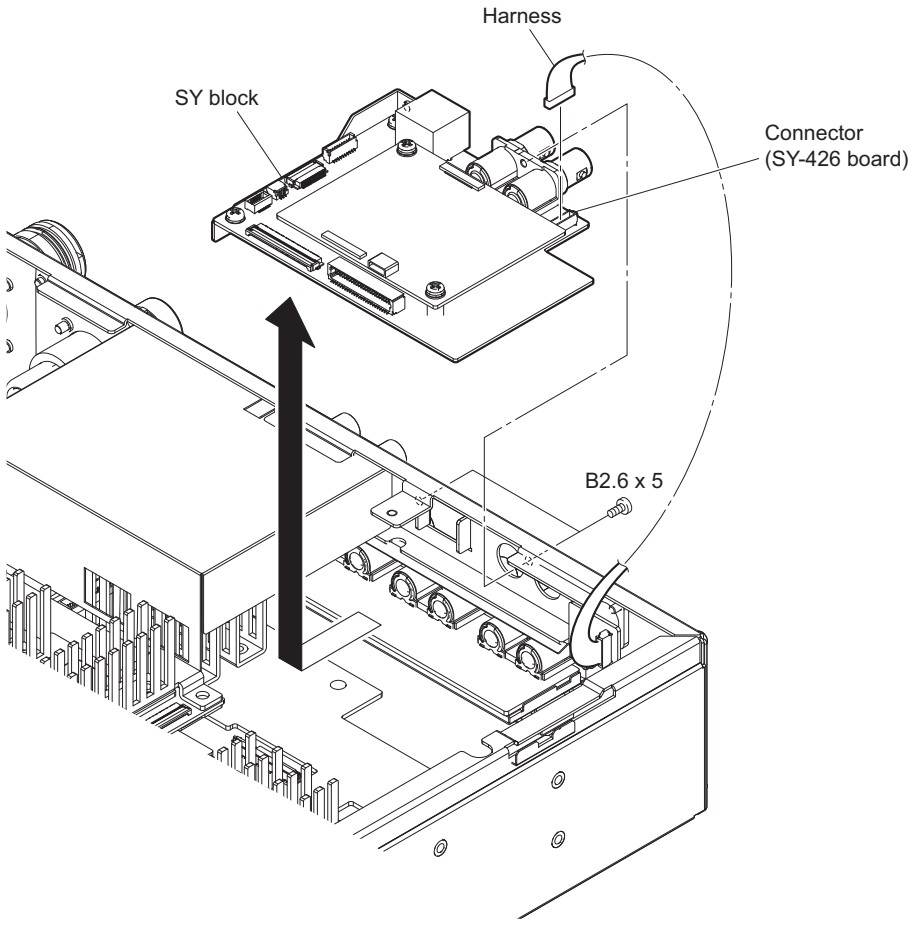
1. Remove the top cover. (Refer to "2-2. Top Cover")

Procedure

1. Disconnect the flexible flat cable and the harness from the two connectors on the SY-426 board.

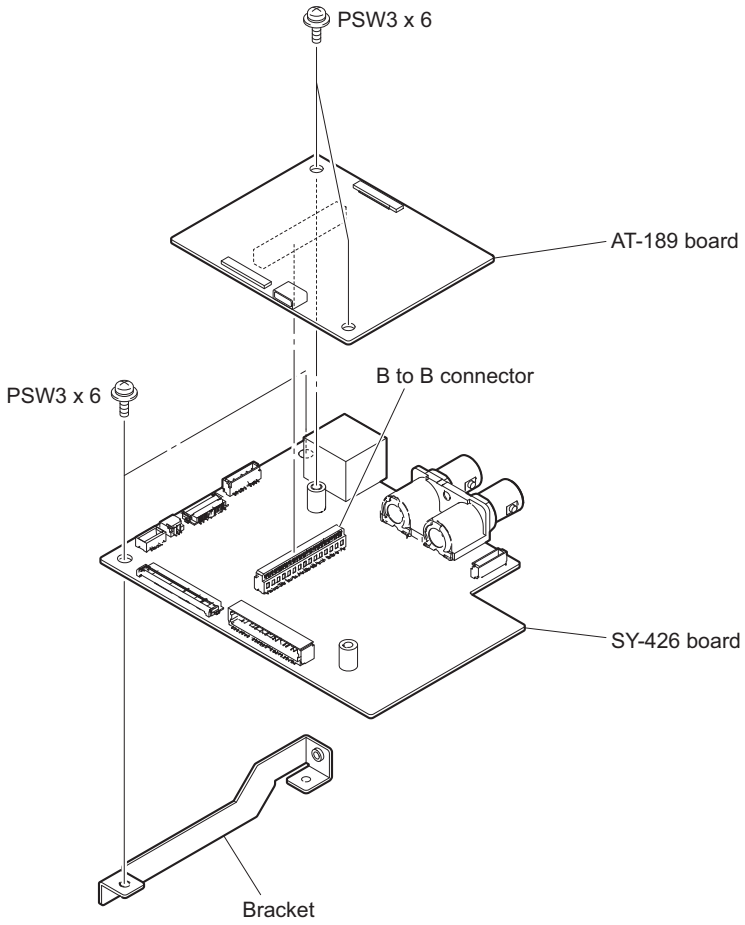


2. Remove the two screws and then lift up the SY block in the direction of the arrow.
3. Disconnect the harness from the connector on the SY-426 board.



4. Remove the two screws to detach the AT-189 board.

5. Remove the two screws and then remove the bracket from the SY-426 board.



6. Install the removed parts by reversing the steps of removal.

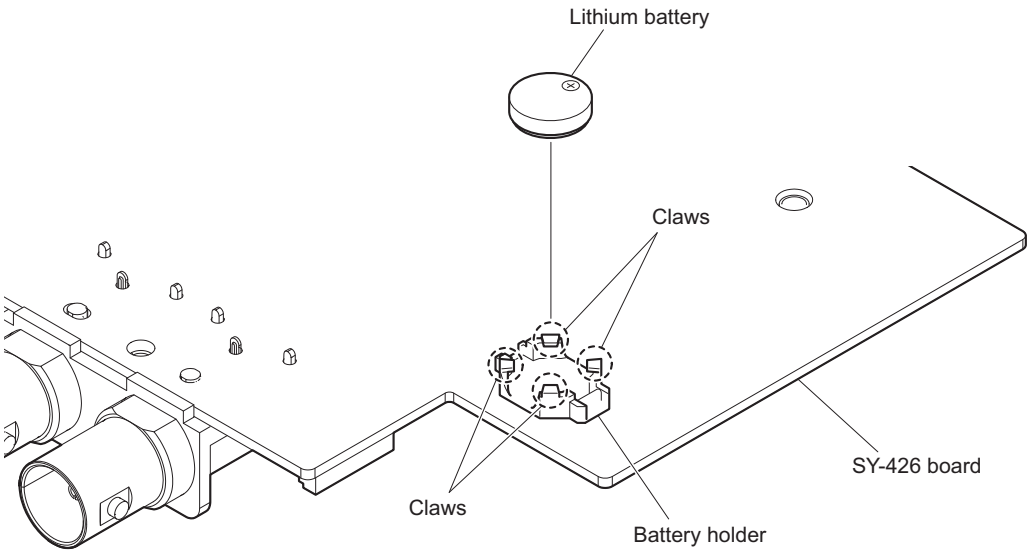
2-6. Lithium Battery

Preparation

1. Remove the top cover. (Refer to "2-2. Top Cover")
2. Remove the SY block. (Refer to "2-5. AT-189 Board/SY-426 Board")

Procedure

1. Remove the lithium battery from the four claws of the battery holder.



2. Install the removed parts by reversing the steps of removal.

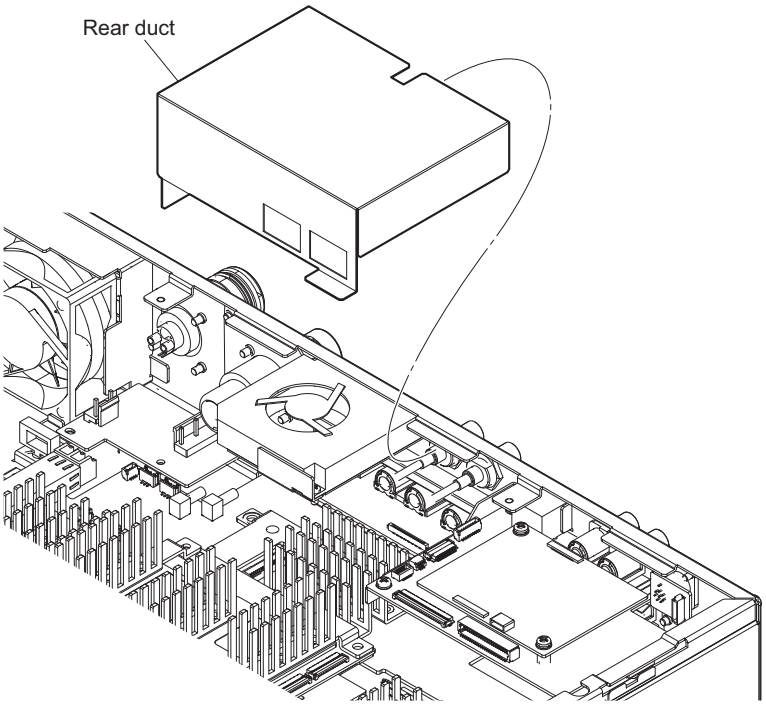
2-7. Sirocco Fan

Preparation

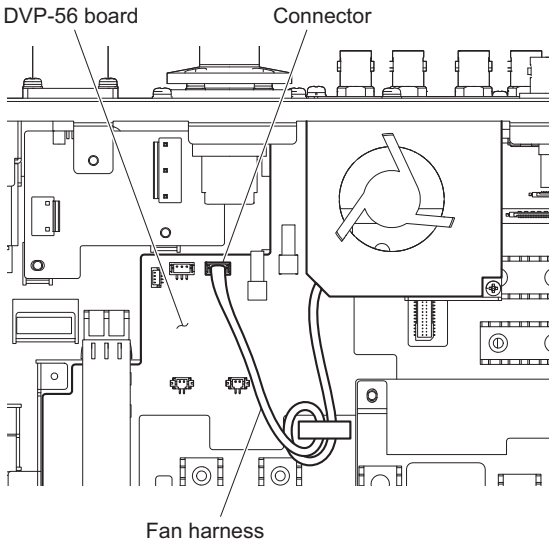
1. Remove the top cover. (Refer to “2-2. Top Cover”)

Procedure

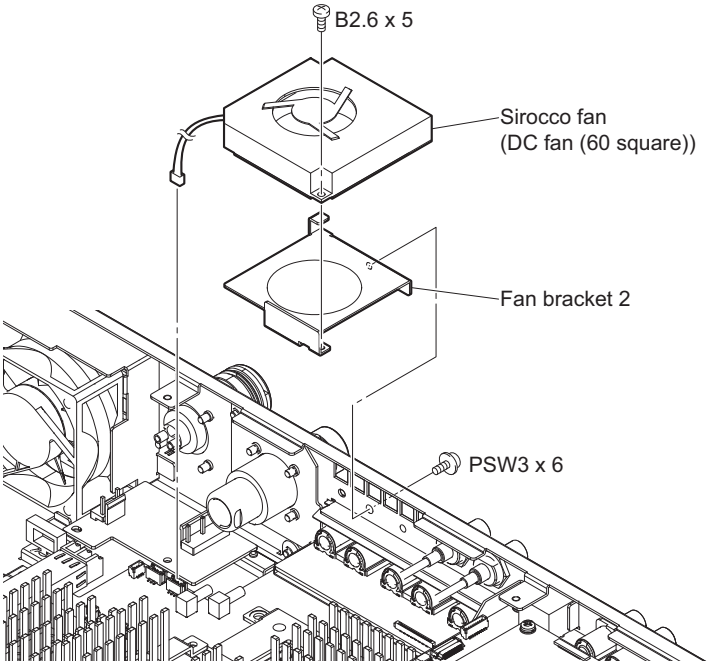
1. Remove the rear duct.



2. Disconnect the fan harness from the connector on the DVP-56 board.



3. Remove the screw (PSW3 x 6) to detach the fan bracket 2.
4. Remove the screw (B2.6 x 5) to detach the sirocco fan.



5. Install the removed parts by reversing the steps of removal.

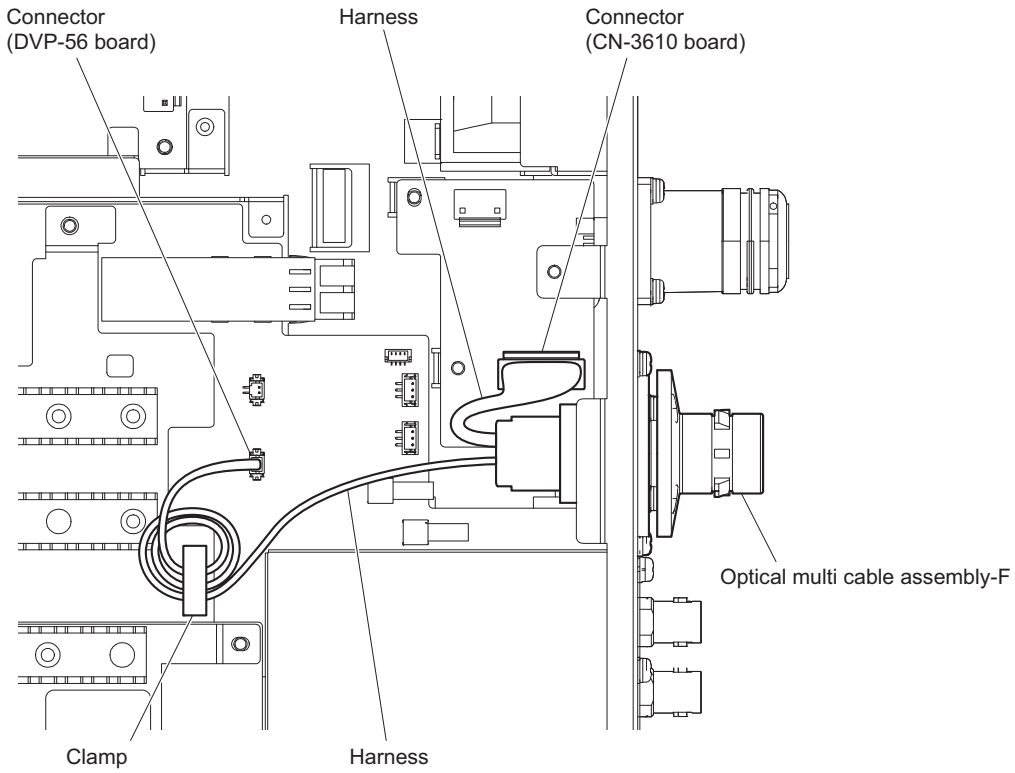
2-8. Optical Multi Cable Assembly-F

Preparation

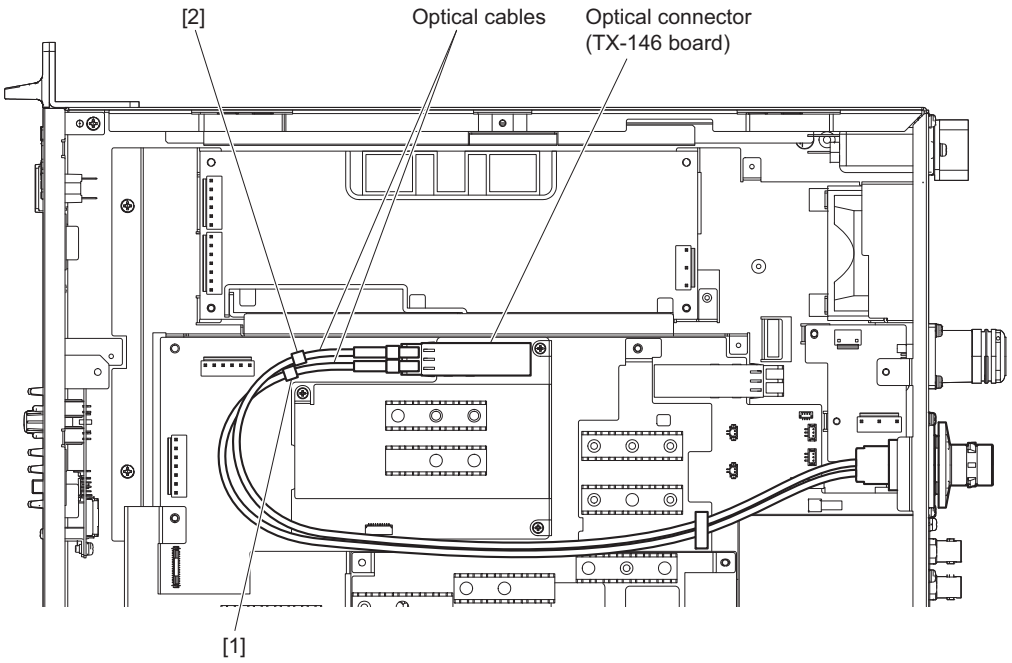
1. Remove the top cover. (Refer to "2-2. Top Cover")

Procedure

1. Disconnect the harness from the connector on the CN-3610 board.
2. Disconnect the harness from the connector on the DVP-56 board and then release the harness from the clamp.



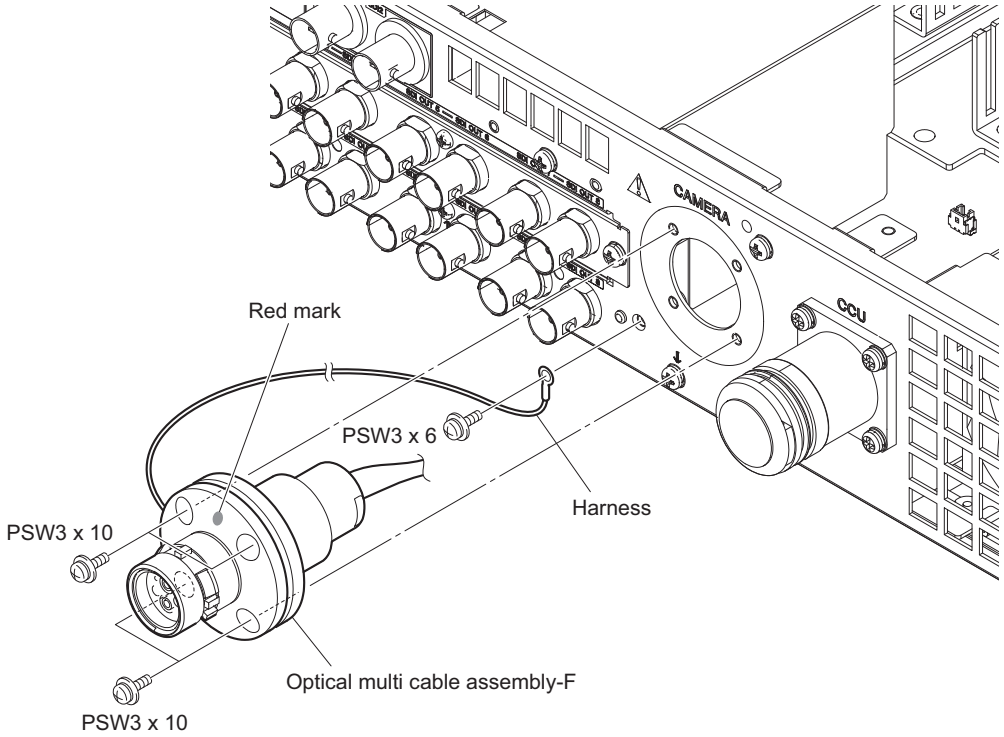
3. Disconnect the two optical cables from the optical connector on the TX-146 board.



Note

When reconnecting the optical cables, connect correct connectors.

4. Remove the screw (PSW3 x 6) to detach the harness.
5. Remove the four screws (PSW3 x 10) to detach the optical multi cable assembly-F.



Note

When installing the optical multi cable assembly-F, attach it with the red mark facing up.

6. Install the removed parts by reversing the steps of removal.

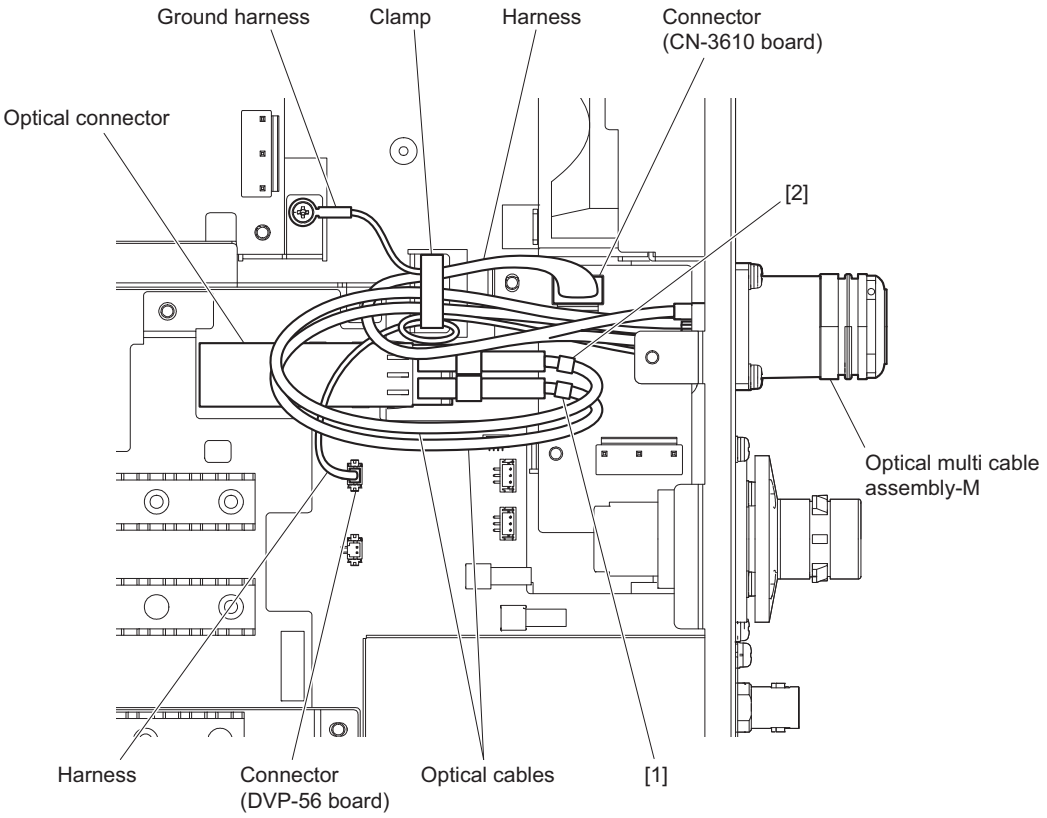
2-9. Optical Multi Cable Assembly-M

Preparation

1. Remove the top cover. (Refer to "2-2. Top Cover")

Procedure

1. Open the clamp.
2. Disconnect the harness from the connector on the CN-3610 board.
3. Remove the screw to detach the ground harness.
4. Disconnect the two optical cables from the optical connector.
5. Disconnect the harness from the connector on the DVP-56 board.

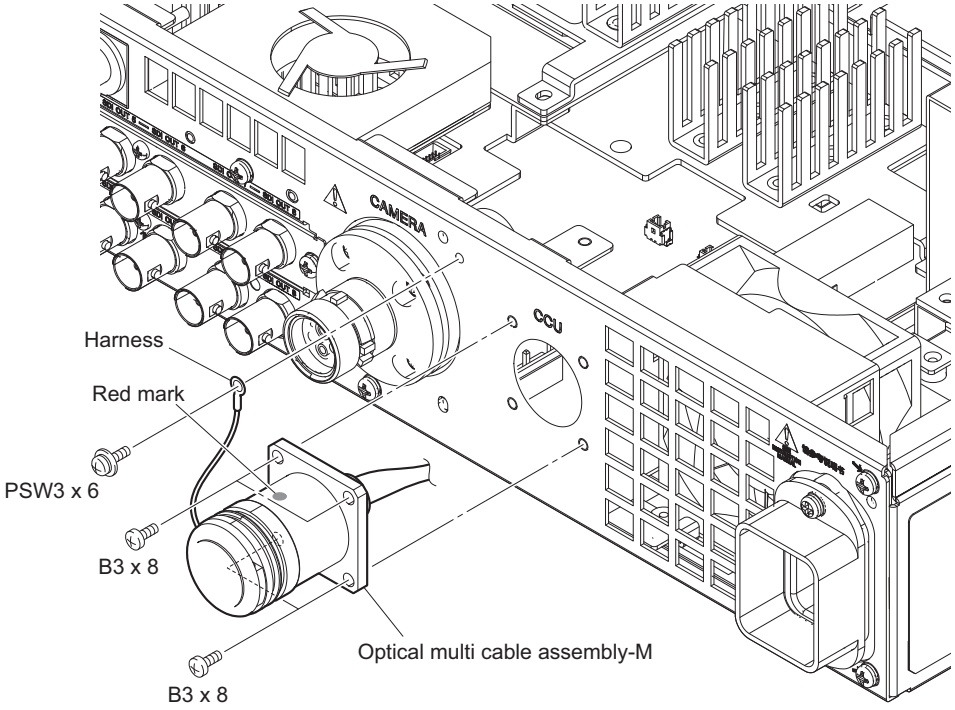


Note

When reconnecting the optical cable, connect correct connectors.

6. Remove the screw (PSW3 x 6) to detach the harness.

7. Remove the four screws (B3 x 8) to detach the optical multi cable assembly-M.



Note

when installing the optical multi cable assembly-M, attach it with the red mark facing up.

8. Install the removed parts by reversing the steps of removal.

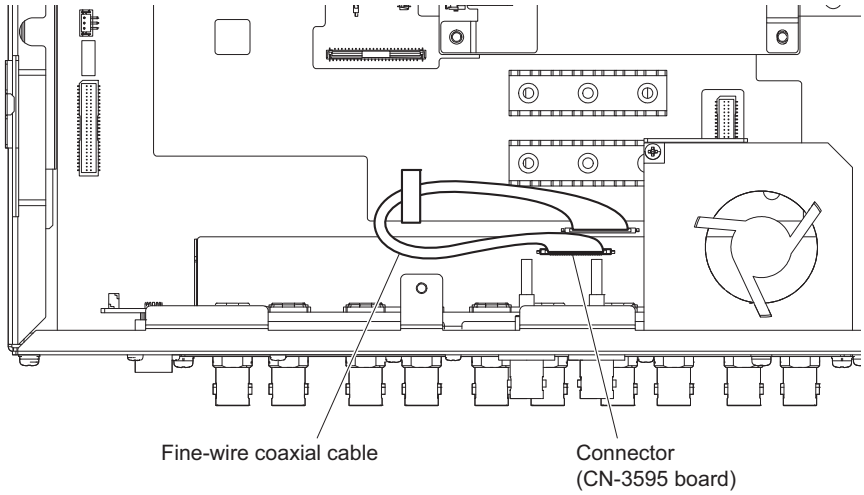
2-10. CN-3595 Board

Preparation

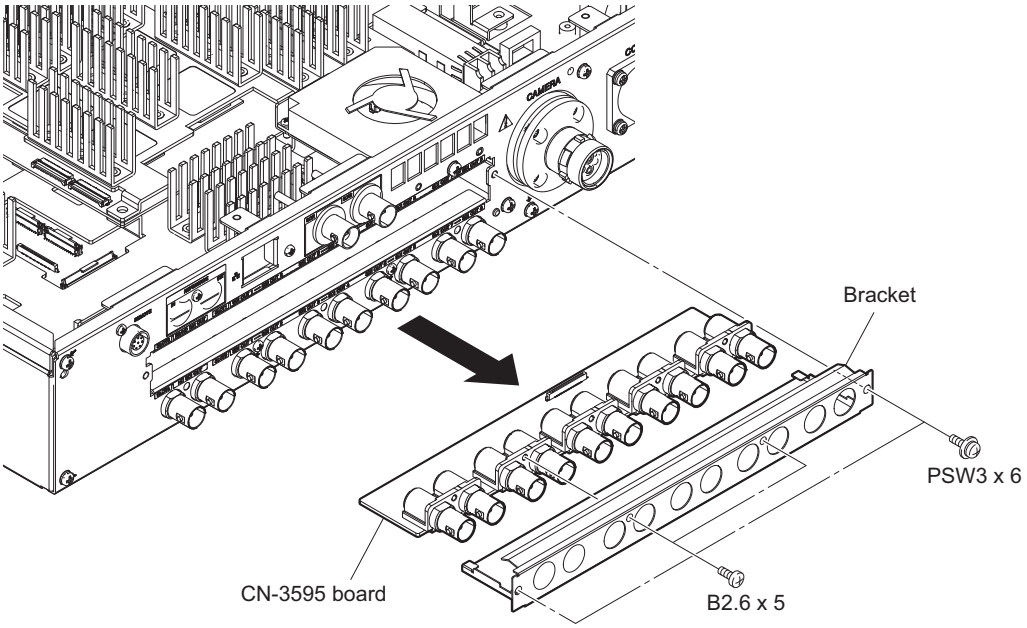
1. Remove the top cover. (Refer to "2-2. Top Cover")
2. Remove the SY-426 board. (Refer to "2-5. AT-189 Board/SY-426 Board")
3. Remove the rear duct. (Refer to "2-7. Sirocco Fan")

Procedure

1. Disconnect the fine-wire coaxial cable from the connector on the CN-3595 board.



2. Remove the two screws (PSW3 x 6) to detach the bracket in the direction of the arrow.
3. Remove the two screws (B2.6 x 5) to detach the CN-3595 board.



4. Install the removed parts by reversing the steps of removal.

2-11. DPR-348 Board

Note

The following parts are recommended replacement parts. Prepare new parts in advance.

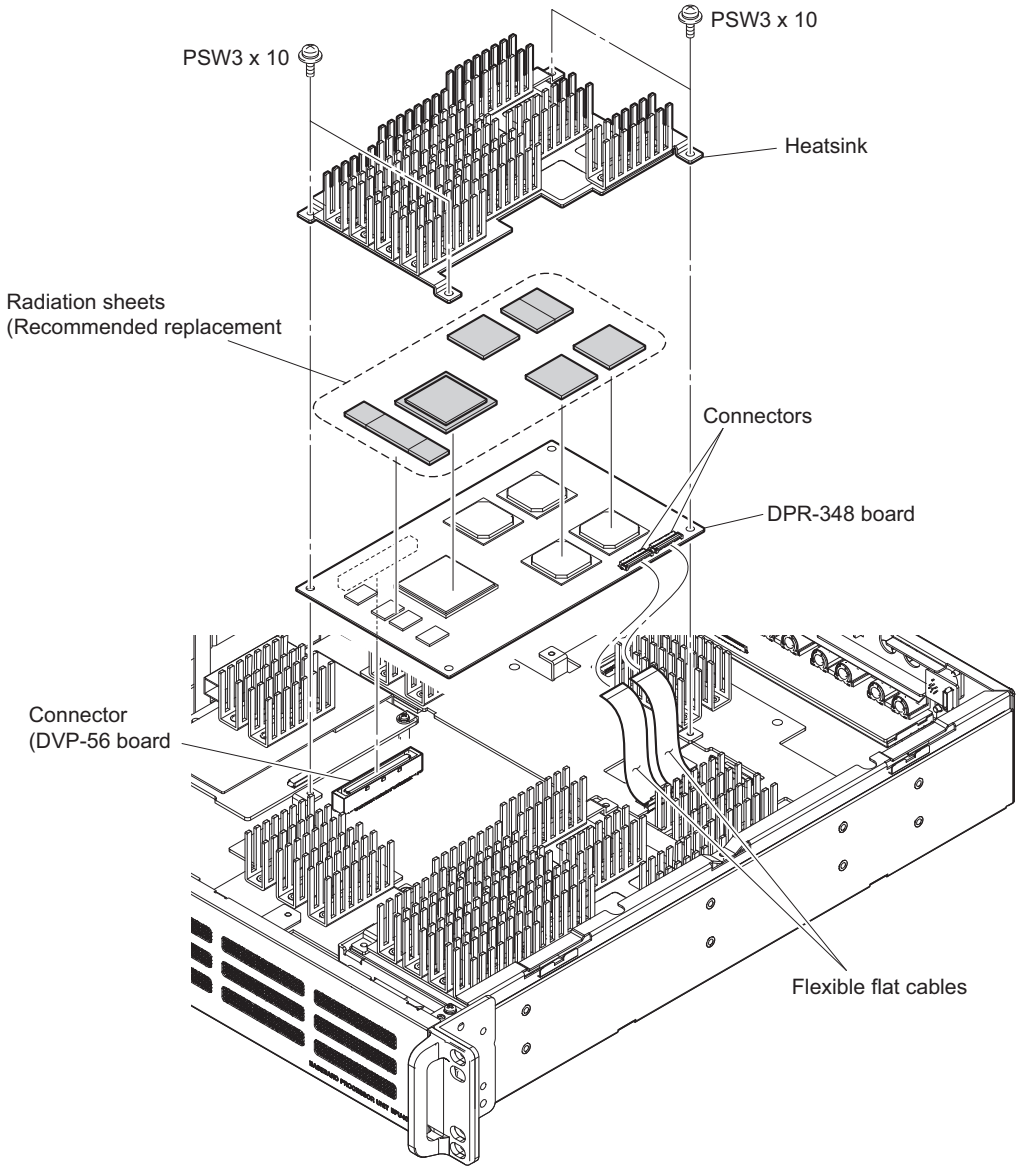
- radiation sheet (A), heat trans sheet (1), heat trans sheet (2)

Preparation

1. Remove the top cover. (Refer to "2-2. Top Cover")
2. Remove the rear duct. (Refer to "2-7. Sirocco Fan")

Procedure

1. Remove the four screws to detach the heatsink.
2. Disconnect the two flexible flat cables from the two connectors on the DPR-348 board.
3. Disconnect the DPR-348 board from the connector on the DVP-56 board.
4. Remove the ten radiation sheets (radiation sheet (A), heat trans sheet (1), heat trans sheet (2)), from the DPR-348 board.



5. Install the removed parts by reversing the steps of removal.

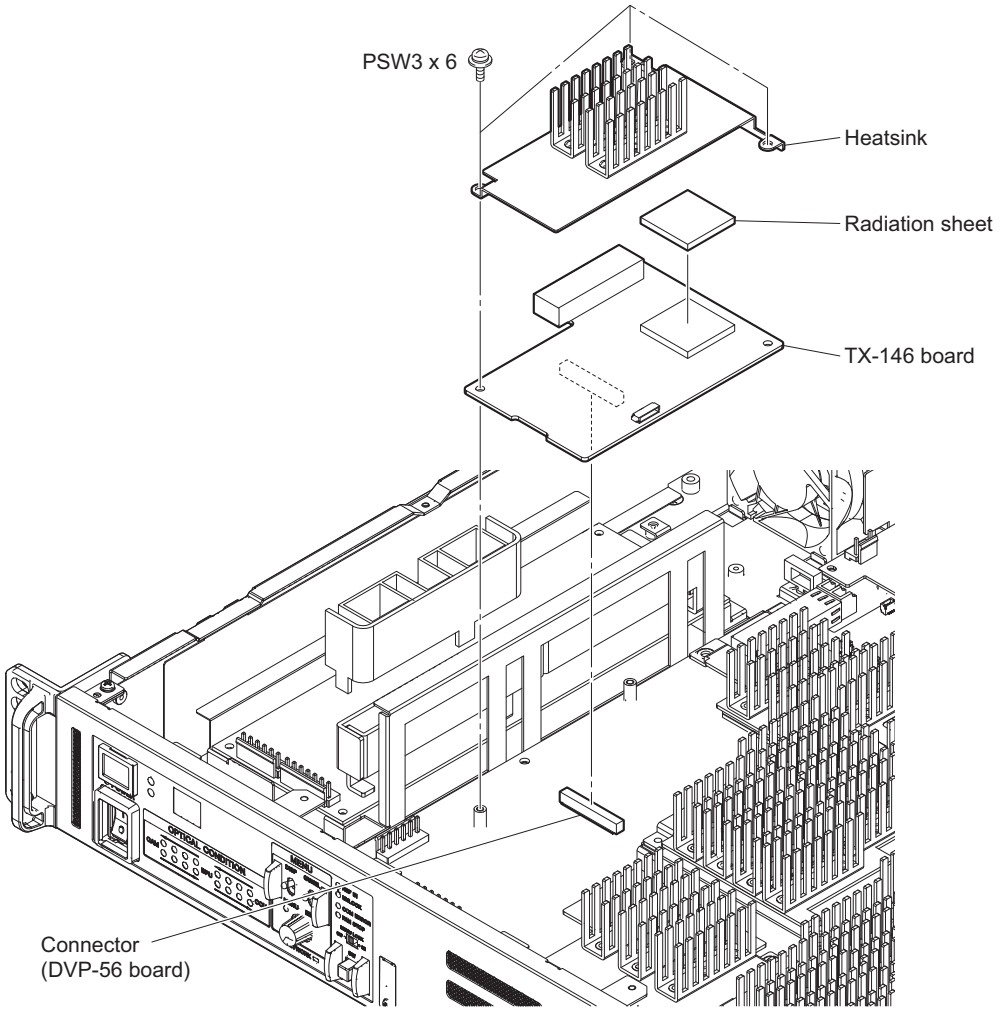
2-12. TX-146 Board

Preparation

1. Remove the top cover. (Refer to “2-2. Top Cover”)
2. Disconnect the two optical cables from the optical connector on the TX-146 board. (Refer to (“2-8. Optical Multi Cable Assembly-F”)

Procedure

1. Remove the three screws to detach the heatsink.
2. Remove the radiation sheet.
3. Disconnect the TX-146 board from the connector on the DVP-56 board.



4. Install the removed parts by reversing the steps of removal.

2-13. DC Fan

Note

The following parts are recommended replacement parts. Prepare new parts in advance.

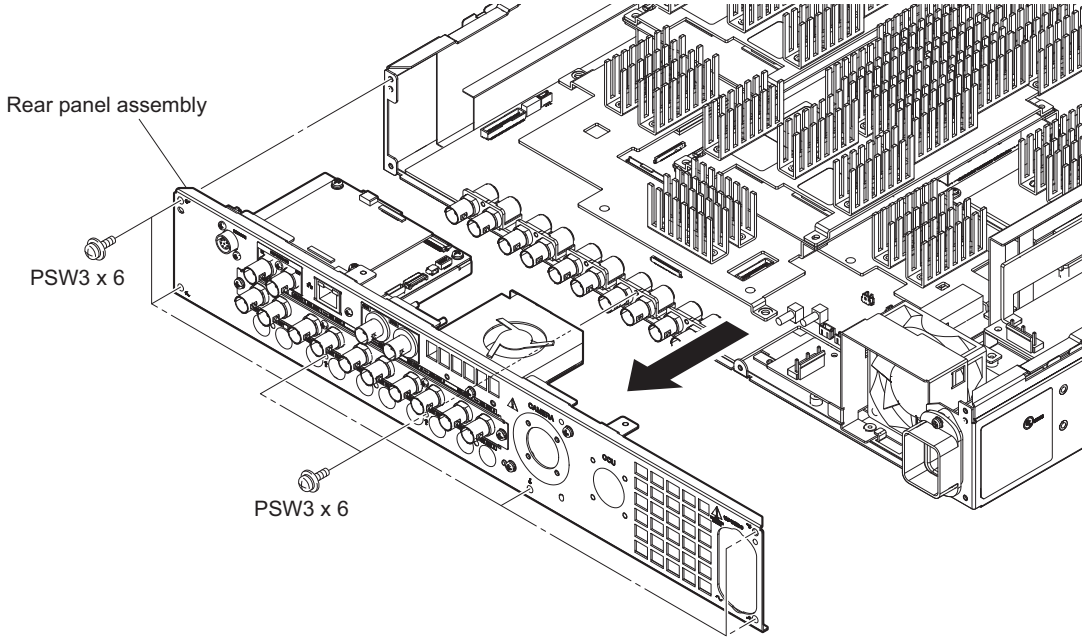
- Fan cushion

Preparation

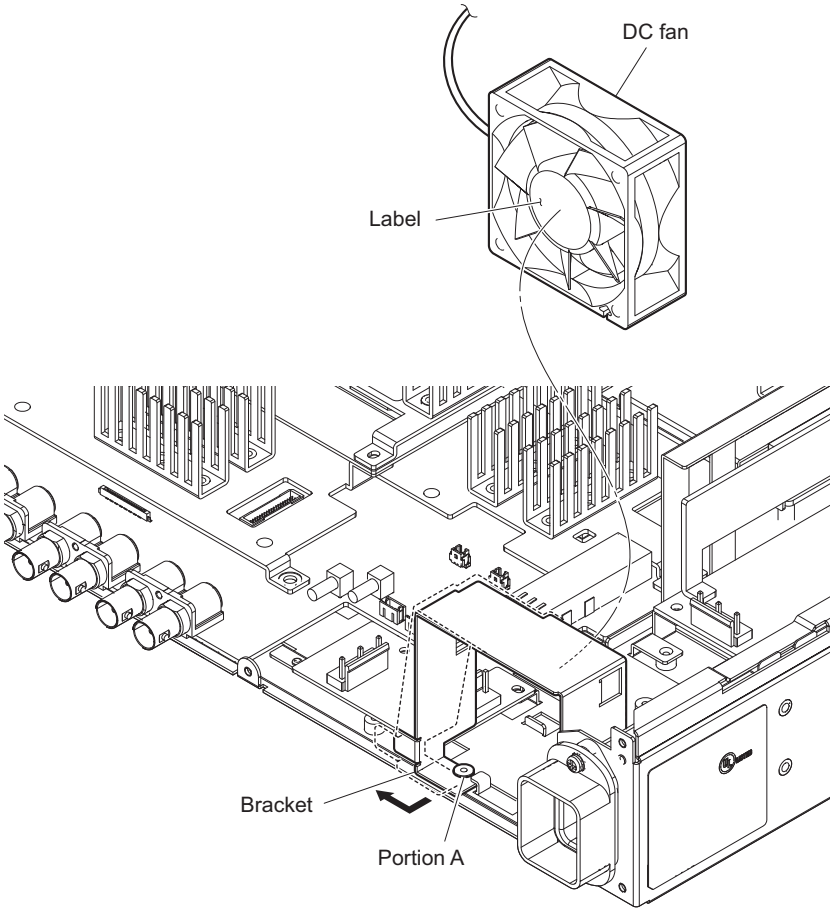
1. Remove the top cover. (Refer to "2-2. Top Cover")
2. Disconnect the flexible flat cable and the harness from the two connectors on the SY-426 board. (Refer to "2-5. AT-189 Board/SY-426 Board")
3. Remove the rear duct. (Refer to "2-7. Sirocco Fan")
4. Disconnect the fan harness from the connector on the DVP-56 board. (Refer to "2-7. Sirocco Fan")
5. Remove the optical multi cable assembly-F. (Refer to "2-8. Optical Multi Cable Assembly-F")
6. Remove the optical multi cable assembly-M. (Refer to "2-9. Optical Multi Cable Assembly-M")

Procedure

1. Remove the seven screws to detach the rear panel assembly.



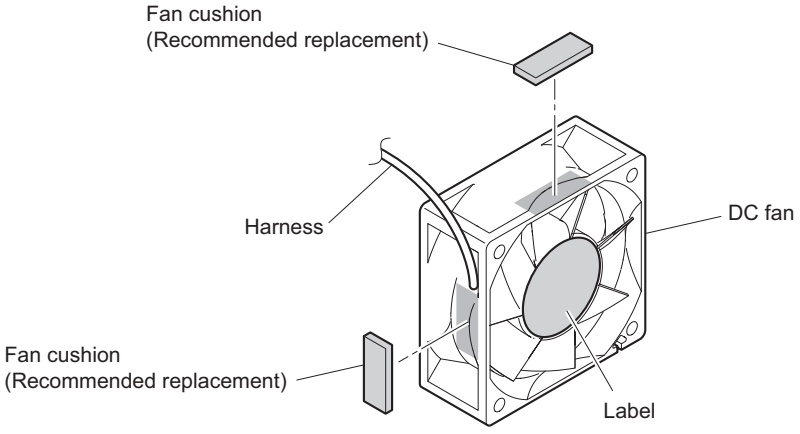
2. Release the bracket from the portion A and then remove the DC fan.



Note

Install the DC fan carefully paying attention to the label side and the harness position.

3. Remove the two fan cushions.



4. Install the removed parts by reversing the steps of removal.

2-14. DVP-56 Board

Note

The following parts are not reusable. Prepare new parts in advance.

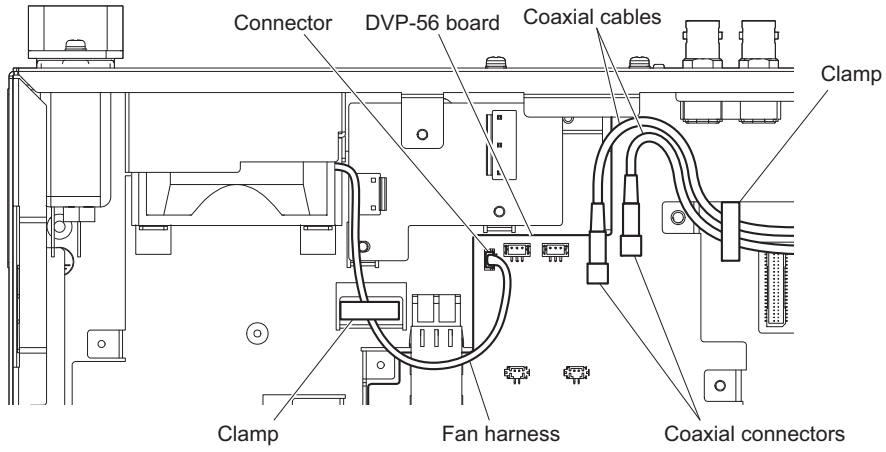
- Heat trans sheet (2)

Preparation

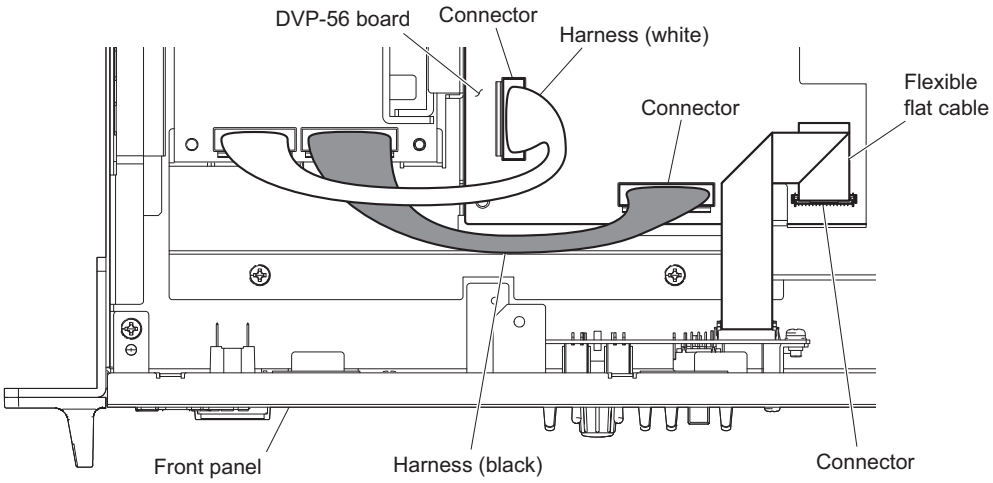
1. Remove the top cover. (Refer to "2-2. Top Cover")
2. Remove the sirocco fan. (Refer to "2-7. Sirocco Fan")
3. Remove the SY block. (Refer to "2-5. AT-189 Board/SY-426 Board")
4. Remove the optical multi cable assembly-F. (Refer to "2-8. Optical Multi Cable Assembly-F")
5. Remove the optical multi cable assembly-M. (Refer to "2-9. Optical Multi Cable Assembly-M")
6. Remove the CN-3595 board. (Refer to "2-10. CN-3595 Board")
7. Remove the two DPR-348 boards. (Refer to "2-11. DPR-348 Board")
8. Remove the TX-146 board. (Refer to "2-12. TX-146 Board")

Procedure

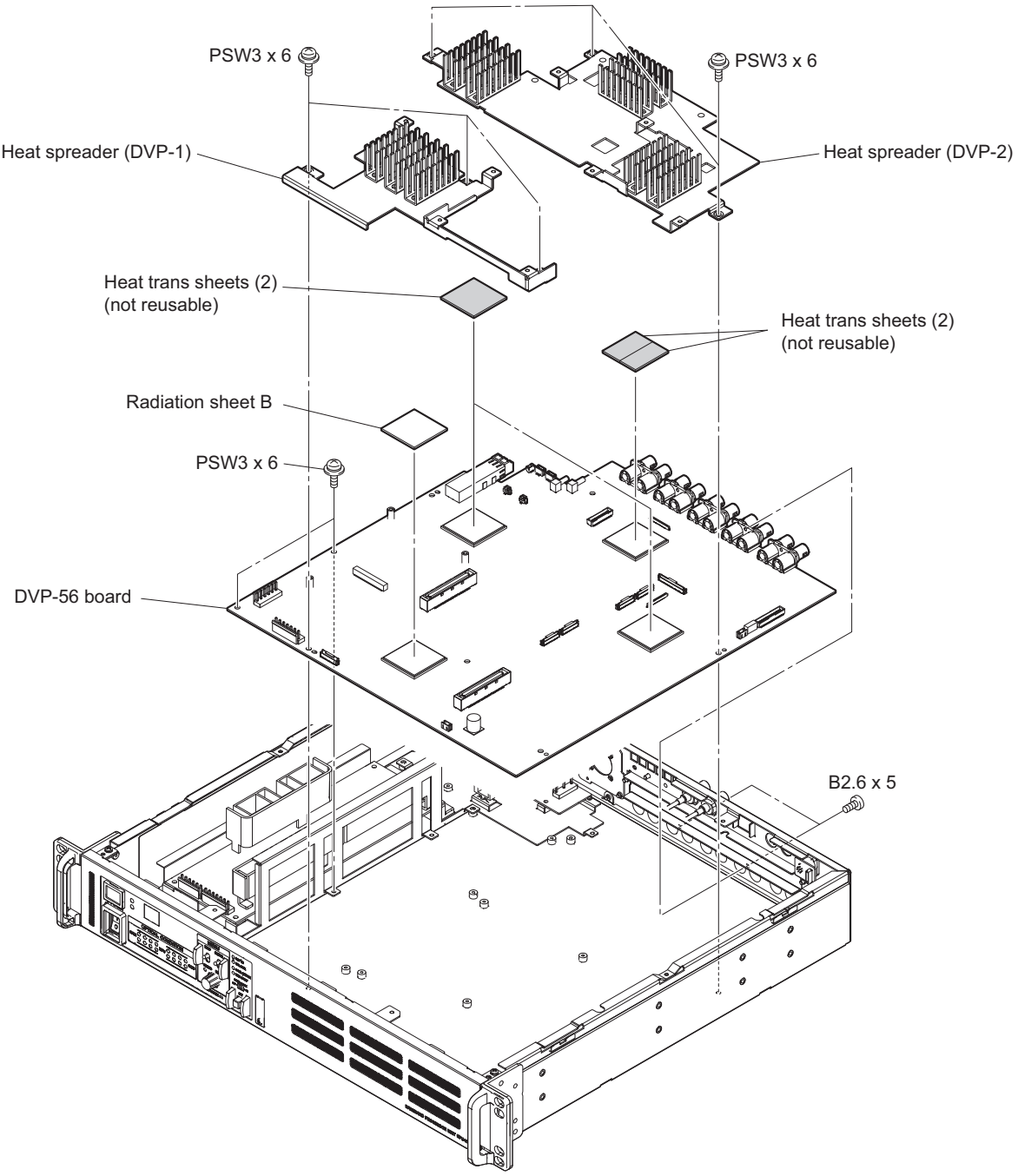
1. Open the two clamps.
2. Disconnect the fan harness from the connector on the DVP-56 board.
3. Disconnect the two coaxial cables from the two coaxial connectors on the DVP-56 board.



4. Disconnect the flexible flat cable from the connector on the DVP-56 board.
5. Disconnect the two harnesses from the two connectors on the DVP-56 board.



6. Remove the six screws (PSW3 x 6) to detach the heat spreader (DVP-1) and the heat spreader (DVP-2).
7. Remove the two screws (B2.6 x 5).
8. Remove the two screws (PSW3 x 6) to detach the DVP-56 board.
9. Remove the four heat trans sheets (2) and the one radiation sheet B from the DVP-56 board.



10. Install the removed parts by reversing the steps of removal.

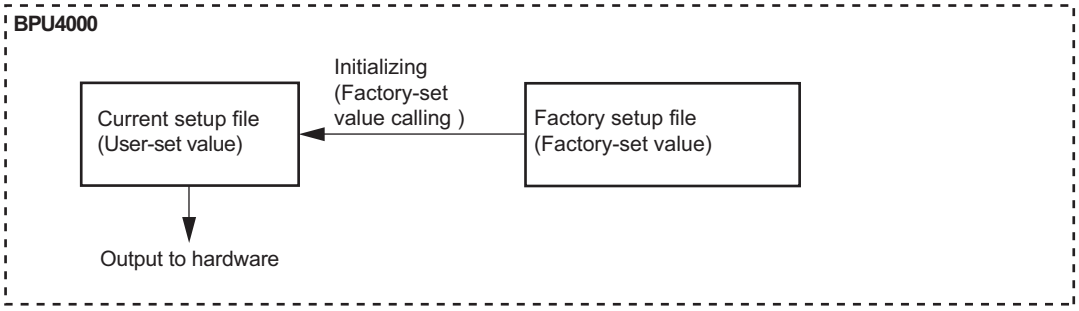
Section 3
File System

A file system to manage data is provided in this unit.

3-1. File Configuration

3-1-1. Setup File

Values to be set by users are stored in the unit using the menu of the unit.
The current setup file retains settings even during power-off.



Initialization

Settings can be initialized to the factory settings.
Execute CLEAR BPU SETTINGS on the OTHERS page of the CONFIGURATION menu referring to “Menu Settings” in the operation manual.

Section 4
Menu Settings

This unit can display the unit status and entire system status on the monitor connected to the SDI output connectors (SLOT3, SLOT4) to check or change settings.

Note

Connector SLOT3 are available for displaying menu and others only when "M" is selected for the M/C setting of item SLOT3 on the OUTPUT FORMAT page of the CONFIGURATION menu.

4-1. Preparations

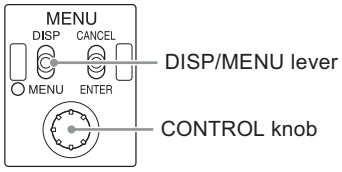
4-1-1. Display/Hide the Status Screen

To Display the Status Screen

Set the DISP/MENU lever to the DISP position

Tip

Turning the CONTROL knob changes the displayed page.



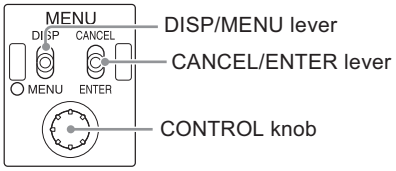
To Exit the Status Screen Display

In status screen display mode, set the DISP/MENU lever to the DISP position.

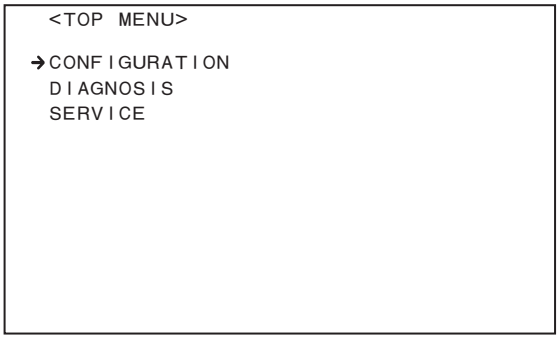
4-1-2. Starting/Exiting the SERVICE Menu

Starting

1. When the status screen or menu screen is displayed, hide the screen.
   - When the status screen is displayed, turn the DISP/MENU lever to the DISP side once.
   - When the menu screen is displayed, turn the DISP/MENU lever to the MENU side once.
2. While pressing the CONTROL knob, turn the CANCEL/ENTER lever quickly to the ENTER side twice.
3. Turn the DISP/MENU lever to the MENU side within two seconds.



4. Check that the following screen appears. If it does not appear, repeat steps 1 to 3.



5. Set the cursor to “SERVICE” and press the ENTER button.
   The SERVICE menu is displayed.

Exiting

1. When the status screen or menu screen is displayed, hide the screen.
2. Turn the CANCEL/ENTER lever quickly to the CANCEL side twice.

Changing Setting Values

To enter:

Press the CONTROL knob. Or turn the CANCEL/ENTER lever to the ENTER side.

To cancel

Turn the CANCEL/ENTER lever to the CANCEL side before pressing the CONTROL knob. The setting of the selected item is restored.

To suspend:

Turn the DISP/MENU lever to the MENU. The menu disappears. To restart the setting operation, turn the DISP/MENU lever again to the MENU side.

4-2. SERVICE Menu

This unit is provided with the SERVICE menu useful for maintenance.
Contents of the menu are displayed on the monitor connected to the SDI output connectors (SLOT3, SLOT4).
For how to display the SERVICE menu, refer to "4-1-2. Starting/Exiting the SERVICE Menu Starting".

4-2-1. SERVICE Menu List

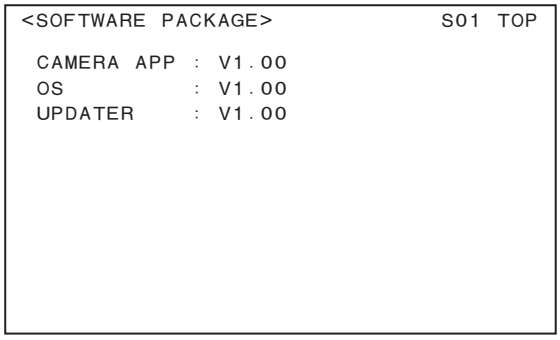
Menu Page No.	Menu Page Name	Remarks	Reference Page
S01	SOFTAWRE PACK-AGE	Software version displaying and upgrading	page 4-3
S02	PLD PACKAGE	PLD version displaying and upgrading	page 4-4

4-2-2. Description of SERVICE Menu

Tip

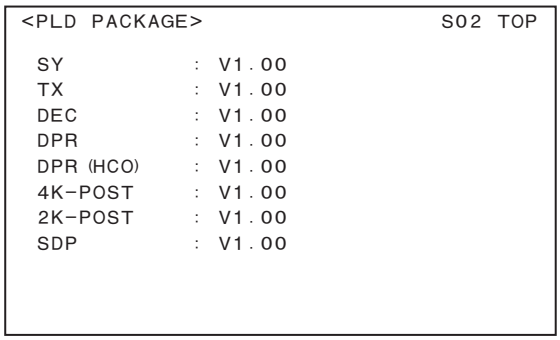
The display screen appearing in this section shows the factory settings.

SOFTWARE PACKAGE



Display the current software version.
Place the cursor on the version to update the version.
For how to update the software version, refer to "1-7. Upgrading Software Programs".

PLD PACKAGE



Display the current PLD version.

Place the cursor on the version to update the version.

For how to update the PLD version, refer to “1-8. PLD”.

Section 5
Spare Parts

5-1. Note on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.

3. Stock of Parts

Parts marked with "o" at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Harness

Harnesses with no part number are not registered as spare parts.

1. 安全重要部品

⚠警告

⚠印のついた部品は安全性を維持するために重要な部品です。したがって，交換する時は必ず指定の部品を使ってください。

2. 部品の共通化

ソニーから供給する補修用部品は，セットに使われているものと異なることがあります。
これは部品の共通化，改良等によるものです。

3. 部品の在庫

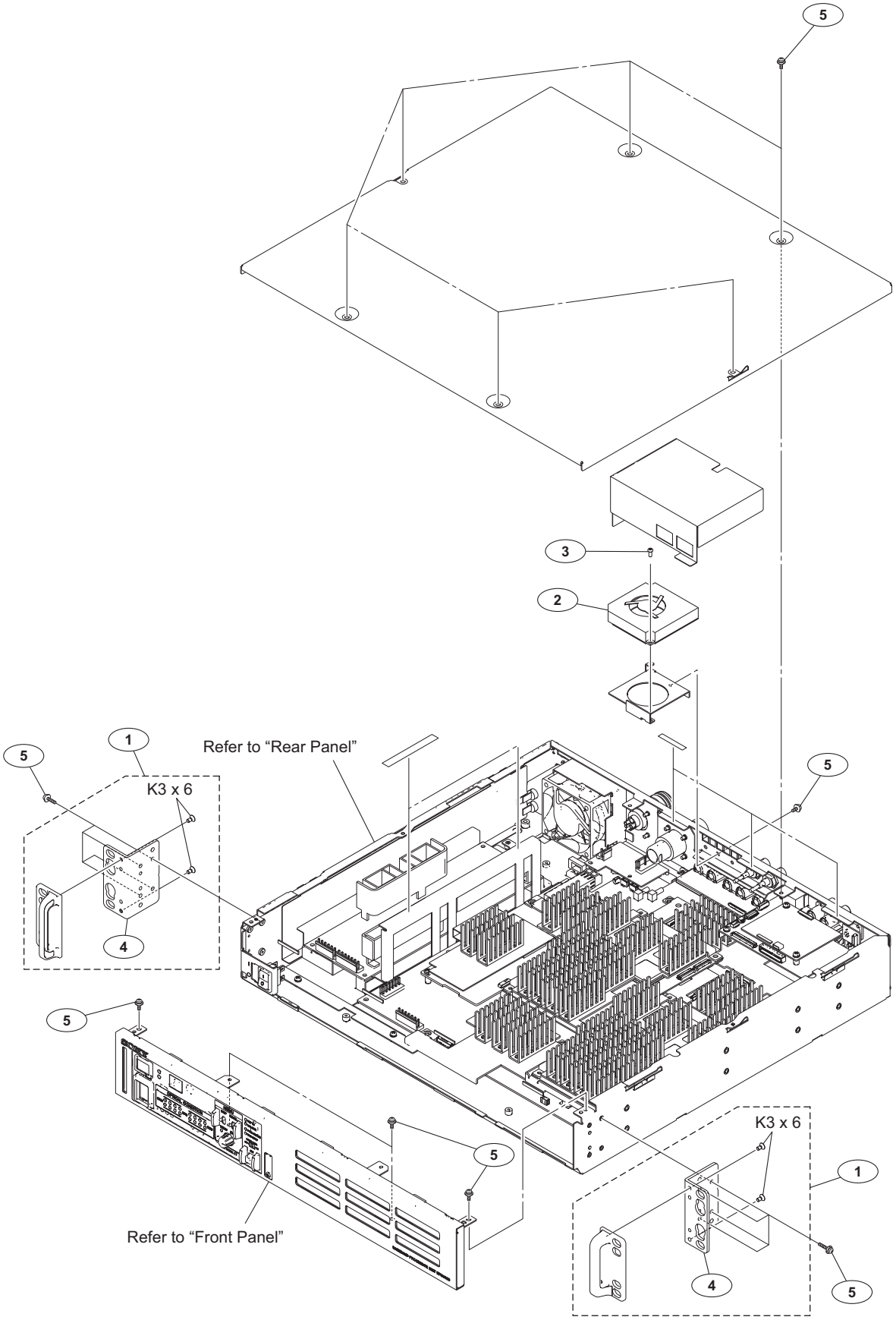
部品表の SP（Supply code）欄に "o" で示される部品は在庫していないことがあり，納期が長くなることがあります。

4. ハーネス

部品番号の記載されていないハーネスは，サービス部品として登録されていません。

5-2. Exploded Views

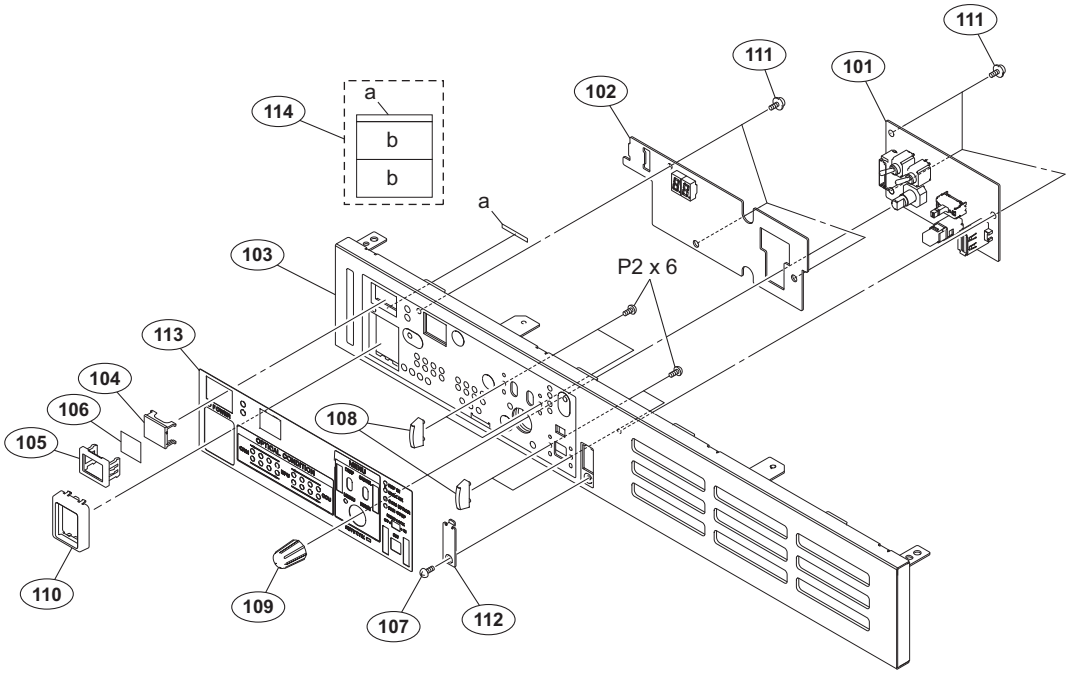
Overall



Overall

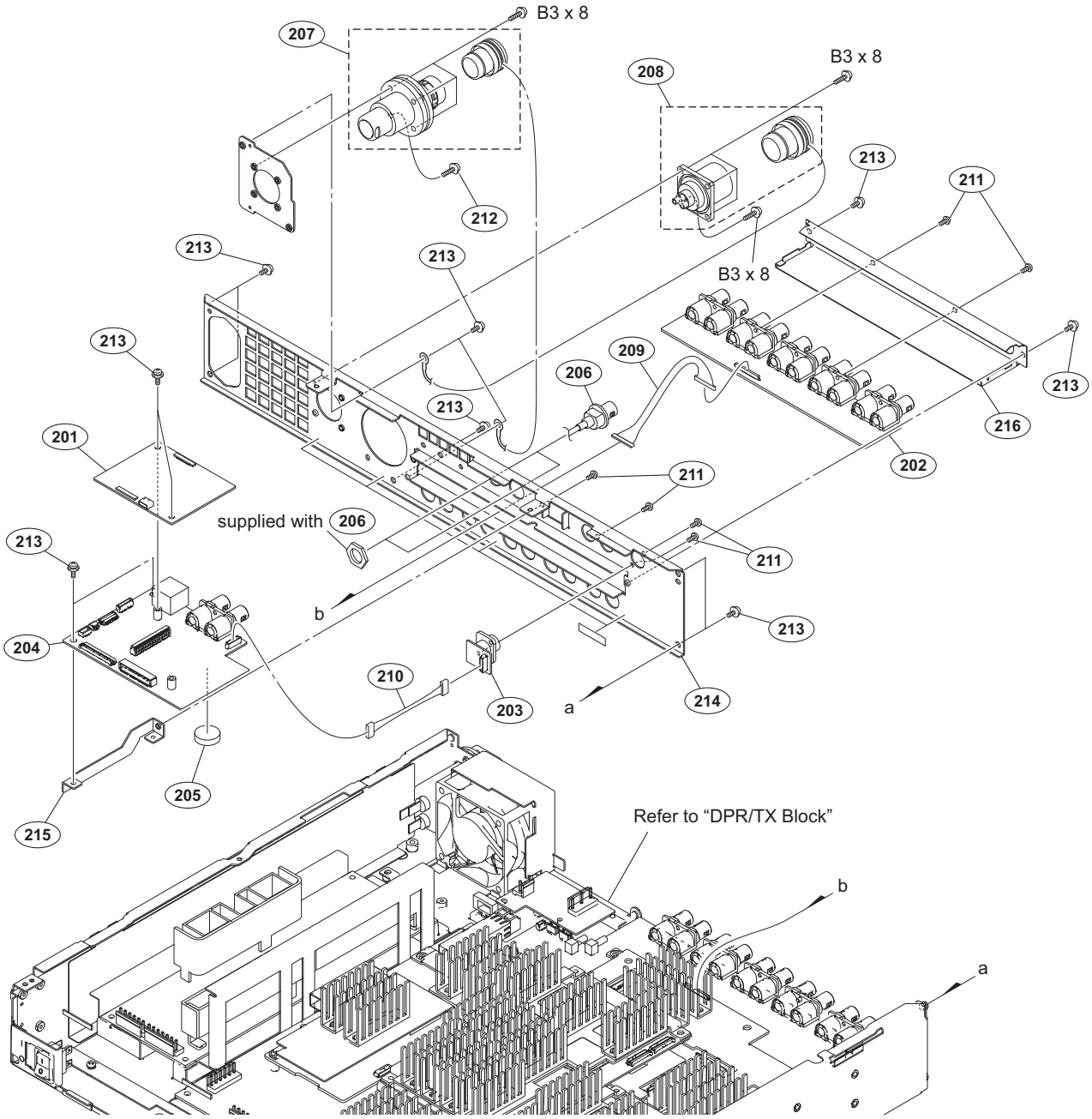
	Part No.	SP	Description
1	A-2034-689-A	s	BRACKET ASSY, RACK
2	⚠ 1-787-612-21	s	FAN, DC (60 SQUARE)
3	3-637-901-11	s	SCREW M2.6X5 [B2.6X5]
4	4-299-632-01	s	RACK BRACKET (U)
5	4-382-854-51	s	SCREW (M3X6), P, SW (+)
	7-682-247-09	s	SCREW +K 3X6

Front Panel



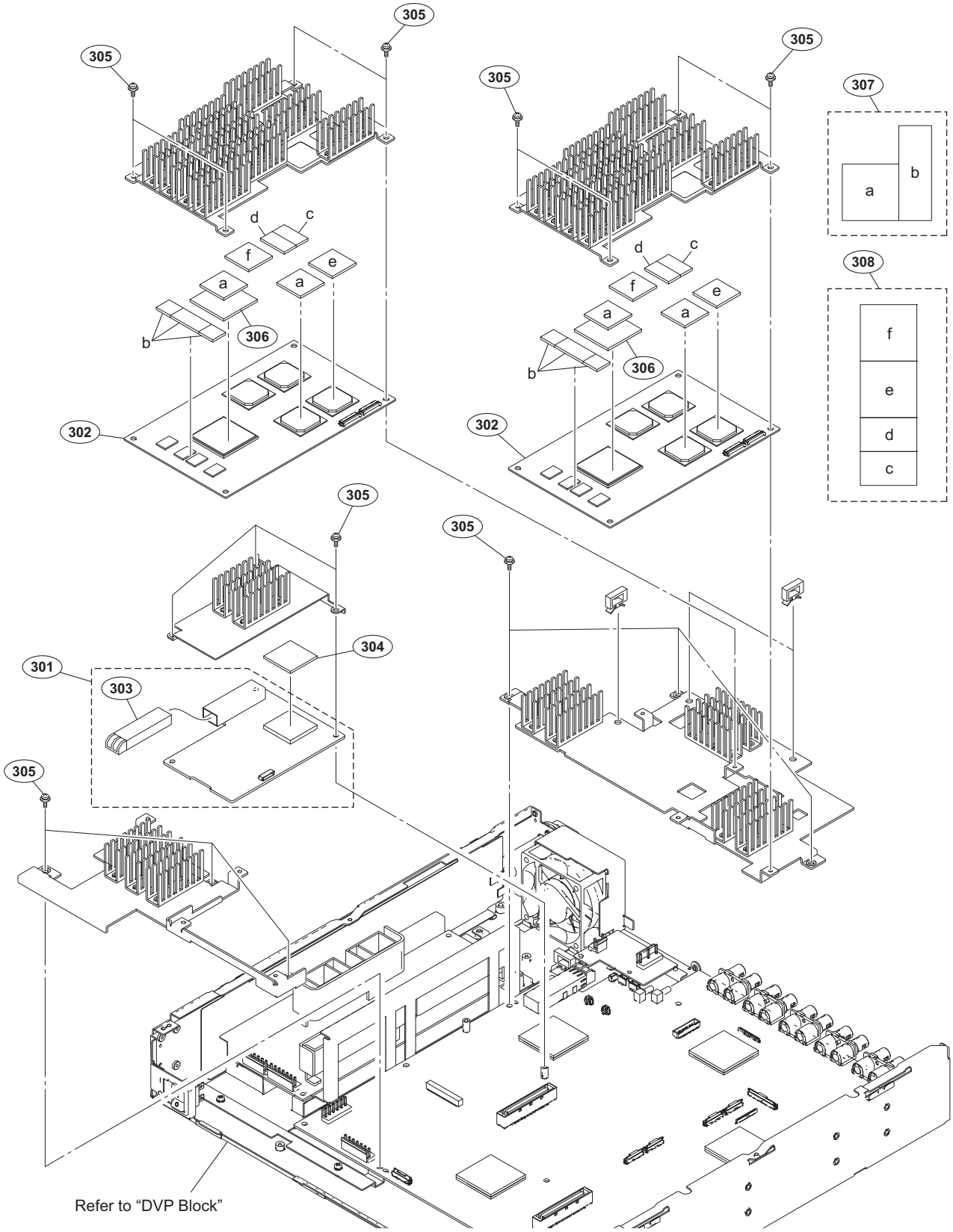
	Part No.	SP	Description
101	A-1992-447-A	s	MOUNTED CIRCUIT BOARD, SW-1588
102	A-1992-457-A	s	MOUNTED CIRCUIT BOARD, LE-389
103	X-2588-958-2	s	FRONT PANEL (BPU)
104	2-139-192-01	s	FRAME, INDICATOR WINDOW
105	2-139-193-02	s	WINDOW, INDICATOR
106	2-249-353-01	s	COVER, LAMP
107	3-637-901-11	s	SCREW M2.6X5 [B2.6X5]
108	3-717-380-02	o	GUARD, REC
109	4-139-232-01	s	KNOB, ROTARY ENCODER
110	4-171-340-01	s	GUARD, SWITCH AC
111	4-382-854-51	s	SCREW (M3X6), P, SW (+)
112	4-489-665-01	s	USB LID
113	4-489-666-01	s	SHEET,FRONT PANEL
114	4-489-674-01	s	FAN CUSHION
	7-685-104-11	s	SCREW +P 2X6 TYPE2 NON-SLIT

Rear Panel



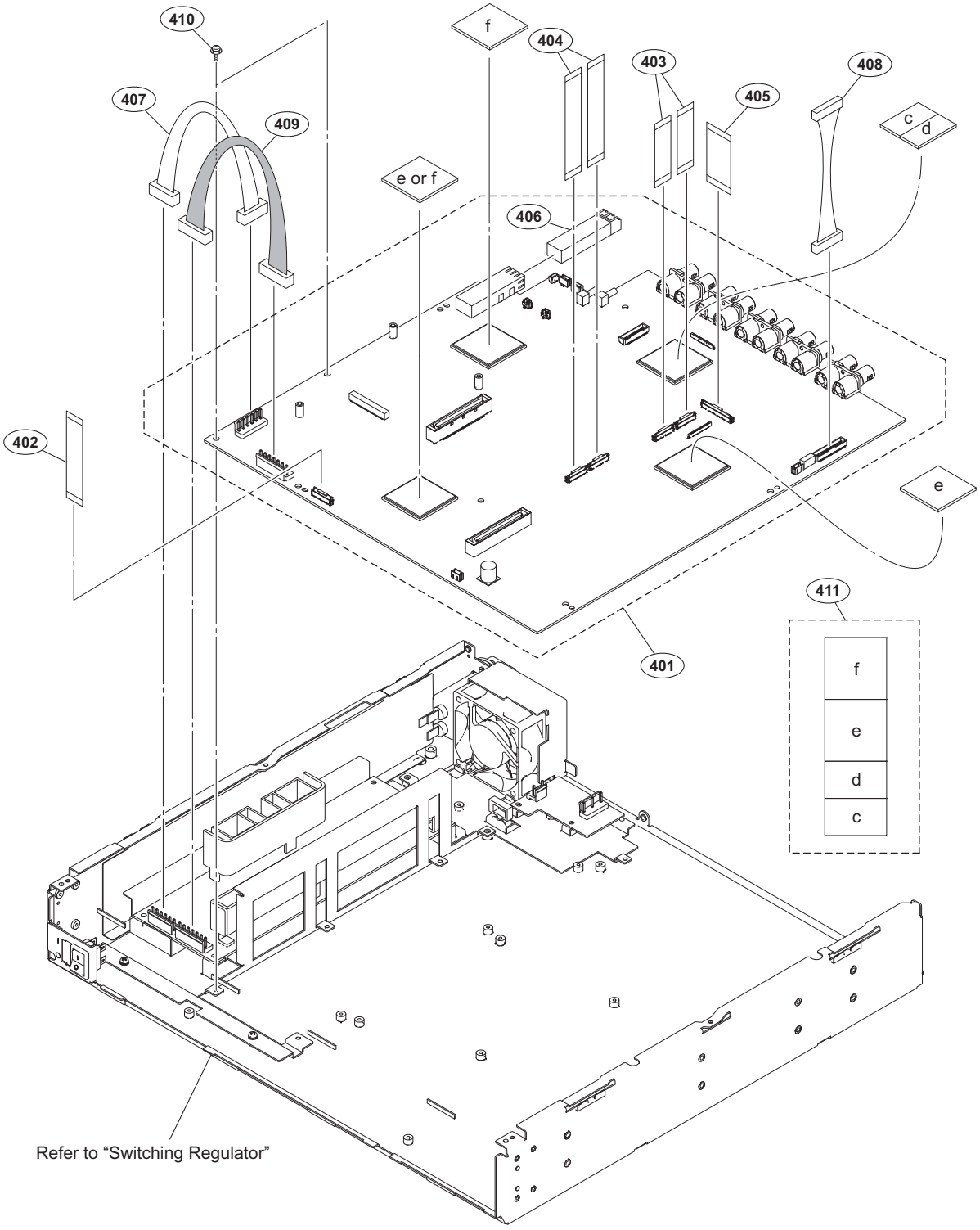
	Part No.	SP	Description
201	A-1859-953-A	s	MOUNTED CIRCUIT BOARD, AT-189
202	A-1992-449-A	s	MOUNTED CIRCUIT BOARD, CN-3595
203	A-1992-454-A	s	MOUNTED CIRCUIT BOARD, CN-3609
204	A-1992-456-A	s	MOUNTED CIRCUIT BOARD, SY-426
205	⚠ 1-756-134-15	s	BATTERY, LITHIUM (SECONDARY)
206	1-837-868-11	s	CABLE ASSY, COAXIAL
207	⚠ 1-838-240-13	s	OPTICAL MULTI CABLE ASSEMBLY-F [LEMO]
	⚠ 1-838-251-12	s	OPTICAL MULTI CABLE ASSEMBLY [Tajimi]
208	⚠ 1-839-826-11	s	OPTICAL MULTI CABLE ASSEMBLY-M [LEMO]
	⚠ 1-839-827-11	s	OPTICAL MULTI CABLE ASSEMBLY [Tajimi]
209	1-969-473-11	s	WIRE, CONNECTOR WITH LEAD (AVP
210	1-970-090-11	s	HARNESS, SUB (SY CN (RM))
211	3-637-901-11	s	SCREW M2.6X5 [B2.6X5]
212	4-382-854-11	s	SCREW (M3X10), P, SW (+)
213	4-382-854-51	s	SCREW (M3X6), P, SW (+)
214	⚠ 4-489-657-01	s	REAR PANEL
215	4-489-658-01	s	BRACKET (SY-426)
216	4-489-659-01	s	BRACKET (CN-3595)
	7-682-548-04	s	SCREW +B 3X8

DPR/TX Block



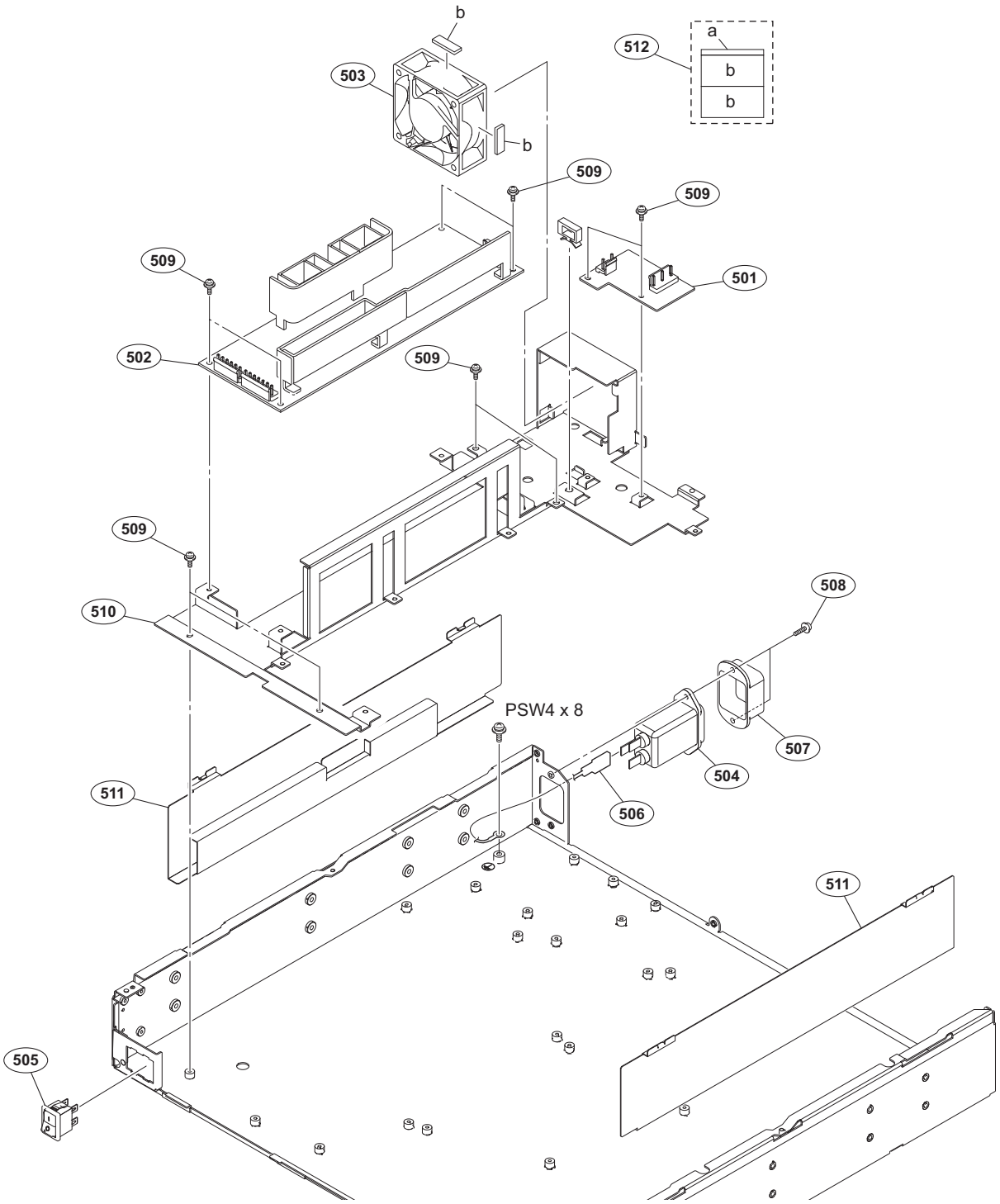
	Part No.	SP	Description
301	A-1990-524-A	s	MOUNTED CIRCUIT BOARD, TX-146
302	A-1992-453-A	s	MOUNTED CIRCUIT BOARD, DPR-348
303	⚠ 1-458-776-11	s	MODULE, OPTICAL (SFP+)
304	2-586-175-11	s	SHEET B, RADIATION
305	4-382-854-51	s	SCREW (M3X6), P, SW (+)
306	3-617-806-01	s	SHEET, RADIATION (A)
307	4-185-547-01	s	SHEET, HEAT TRANS (1)
308	4-185-548-01	s	SHEET, HEAT TRANS (2)

DVP Block



	Part No.	SP	Description		Part No.	SP	Description
401	A-1992-452-A	s	MOUNTED CIRCUIT BOARD, DVP-56	411	4-185-548-01	s	SHEET, HEAT TRANS (2)
402	1-831-106-11	s	CABLE, FLEXIBLE FLAT (30 CORE)				
403	1-831-125-11	s	CABLE, FLEXIBLE FLAT (30 CORE)				
404	1-831-130-11	s	CABLE, FLEXIBLE FLAT (30 CORE)				
405	1-831-157-11	s	CABLE, FLEXIBLE FLAT (50 CORE)				
406	⚠ 1-840-881-12	s	MODULE OPTICAL (SFP)				
407	1-970-092-11	s	HARNESS, SUB (DVP POWER1)				
408	1-970-094-11	s	HARNESS, SUB (DVP SY(SHD))				
409	1-970-095-11	s	HARNESS, SUB (DVP POWER2)				
410	4-382-854-51	s	SCREW (M3X6), P, SW (+)				

Switching Regulator



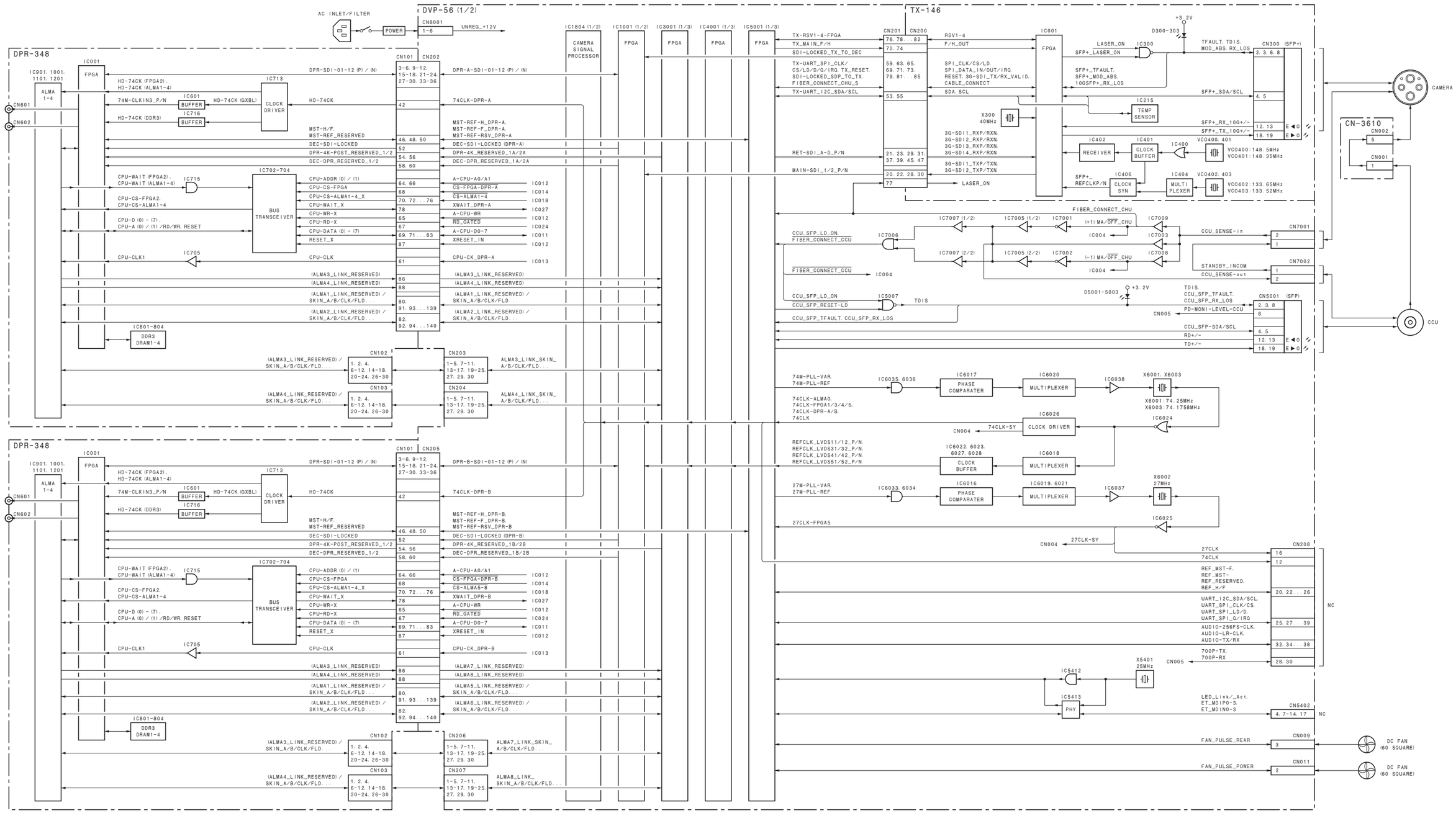
	Part No.	SP	Description
501	A-1992-455-A	s	MOUNTED CIRCUIT BOARD, CN-3610
502	⚠ 1-474-416-11	s	REGULATOR, SWITCHING
503	⚠ 1-787-947-11	s	FAN, DC (60 SQUARE)
504	⚠ 1-843-601-11	s	INLET (WITH NOISE FILTER)
505	1-970-091-11	s	HARNESS, SUB (POWER INLET)
506	1-970-093-11	s	HARNESS, SUB (EARTH)
507	2-990-241-02	s	HOLDER (A), PLUG
508	4-382-854-11	s	SCREW (M3X10), P, SW (+)
509	4-382-854-51	s	SCREW (M3X6), P, SW (+)
510	4-468-995-01	s	SUBFRAME
511	4-489-672-02	s	SCREW GUARD
512	4-489-674-01	s	FAN CUSHION
	7-682-961-01	s	SCREW +PSW 4X8

5-3. Supplied Accessories

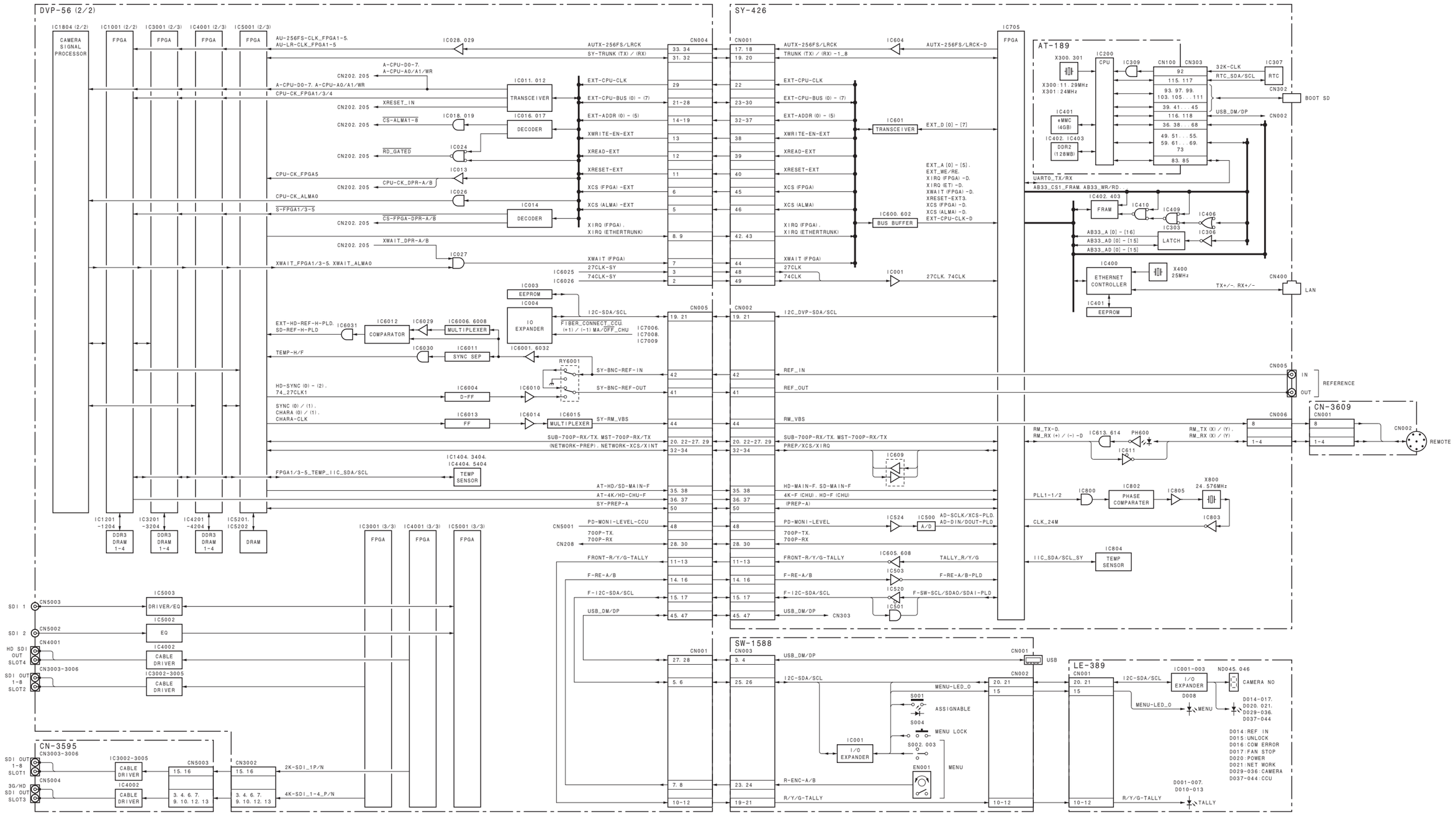
Q'ty	Part No.	SP	Description
1pc	A-8278-054-B	s	REMOTE INDICATOR ASSY
1pc	⚠ 4-530-799-01	s	CD-ROM PACK

Section 6
Diagrams

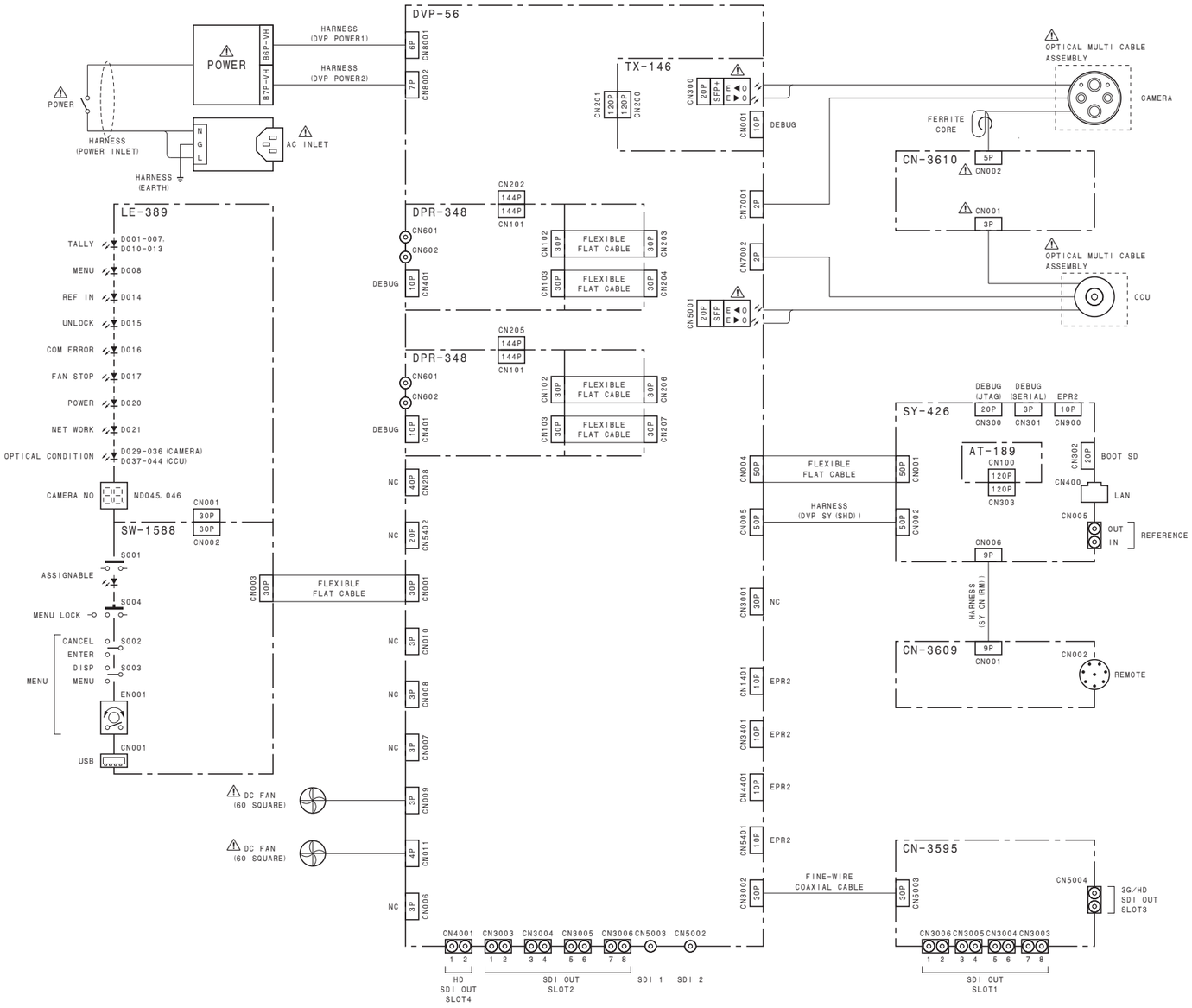
Overall (1/2)



Overall (2/2)


DVP-56 (2/2)
SY-426
CAMERA SIGNAL PROCESSOR
FPGA
DDR3 DRAM 1-4
DRAM
TRANSCEIVER
DECODER
EEPROM
IO EXPANDER
COMPARATOR
MULTIPLEXER
SYNC SEP
D-FF
FF
TEMP SENSOR
DRIVER/EQ
EQ
CABLE DRIVER
BUS BUFFER
A/D
AT-189
CPU
RTC
BOOT SD
eMMC (4GB)
DDR2 (128MB)
FRAM
LATCH
ETHERNET CONTROLLER
LAN
PHASE COMPARATER
REFERENCE
REMOTE
CN-3609
CN-3595
SW-1588
LE-389
ASSIGNABLE
MENU LOCK
MENU
CAMERA NO
TALLY
SDI 1
SDI 2
HD SDI OUT SLOT4
SDI OUT 1-8 SLOT2
SDI OUT 1-8 SLOT1
3G/HD SDI OUT SLOT3
D014:REF IN
D015:UNLOCK
D016:COM ERROR
D017:FAN STOP
D020:POWER
D021:NET WORK
D029-036:CAMERA
D037-044:CCU

Frame Wiring



SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers’ instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 5.25 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20 V AC range are suitable. (See Fig. A)

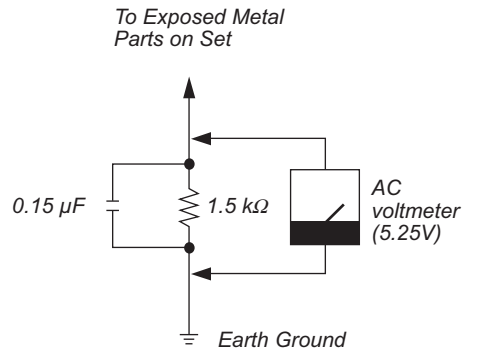


Fig A. Using an AC voltmeter to check AC leakage.

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