SONY

COLOR CAMERA

HDC4300

SUPER MOTION

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.
HDC4300 (SY)	10001 and Higher
HDC4300 (CED)	40001 and Higher
HDC4300 (J)	30001 and Higher
HDC4300 (CN)	50001 and Higher

安全のために，周辺機器を接続する際は，過大電圧を持つ可能性があるコネクターを以下のポートに接続しないでください。
：NETWORK TRUNK
上記のポートについては本書の指示に従ってください。

For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to the following port(s).
: NETWORK TRUNK
Follow the instructions for the above port(s).

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.

CLASS 1 LASER PRODUCT
LASER KLASSE 1 PRODUKT
LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

This HD COLOR CAMERA 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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Manual Structure

Manual Structure

This manual is intended for the use of the system engineers and the service engineers, and provides the limited information for block service and the information related to maintenance of the unit,such as service overview, periodic maintenance and inspection, troubleshooting, replacement of main parts, electrical alignment, software upgrade, file system, setup menu and circuit description.

Related manuals

The following manuals are available for this model.
If any of these manuals is required, please contact your local Sony Sales Office/Service Center.

- Operation Manual CD-ROM (Supplied with this unit)
  This manual contains information required to operate and use the unit.
- Factory Service Manual (Available on request)
  This manual provides the limited information for component service and the information related to maintenance of the unit.

Non-disclosed boards

Replacement in units of mount boards or mount components is not possible for boards shown below. Therefore, their circuit diagrams, mount drawings, and components lists are not disclosed.

- BI-291 board
- SE-1093 board

Section 1
Service Overview

1-1. Checking before Installation

1-1-1. Checking the ROM and Software Version

When connecting the peripheral equipment in the list below to this unit, be sure to check that the ROM and software version on each peripheral device is corresponding to the camera to be connected.
If the ROM and software version is lower than the specified below, be sure to perform ROM replacement and updating the software.
If ROM replacement and updating the software are required, contact your local Sony Sales Office/Service Center.

ROM

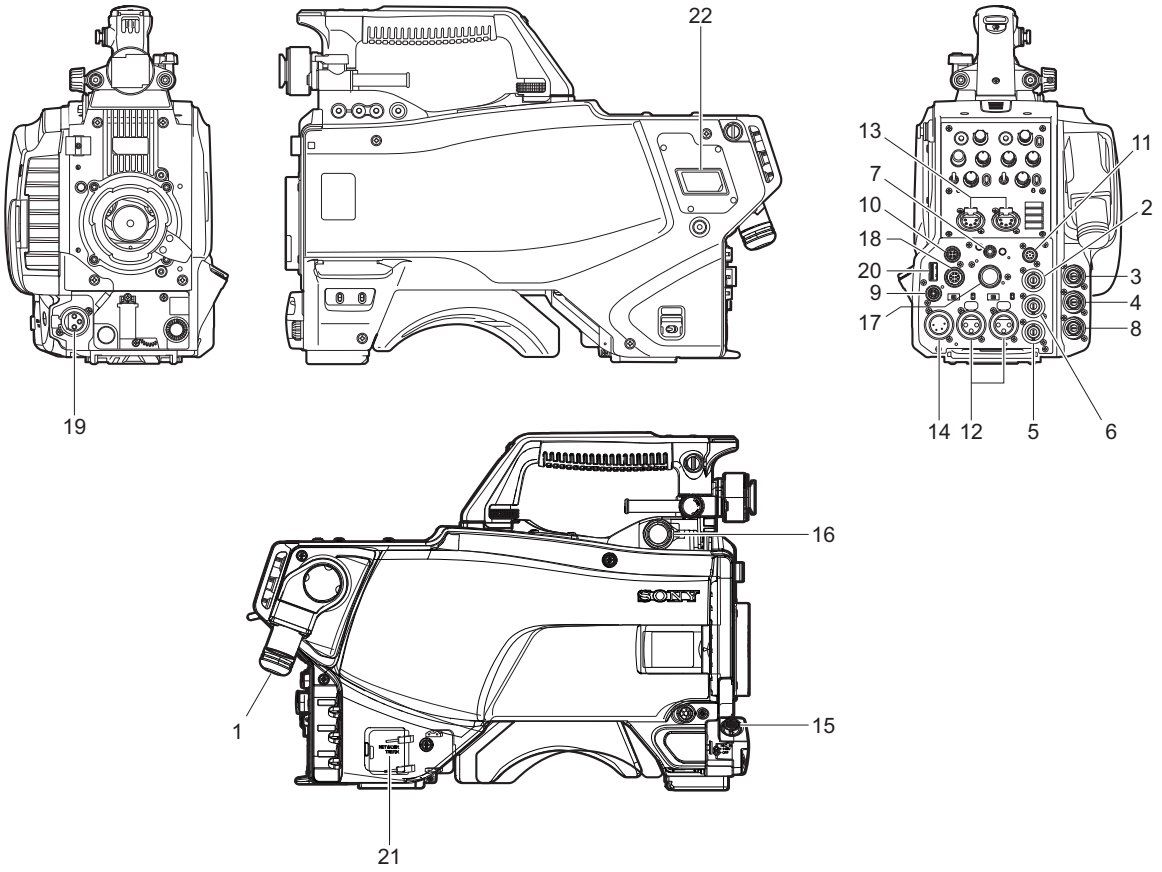
Peripheral Equipment	Board Name	Ref. No.	ROM Version
CNU-700	AT-89 board or AT-89A board	IC4, IC5	Ver. 1.30 and higher

Software

Peripheral Equipment	Board Name	Software Version
RCP-920/921	MPU-143 board	Ver. 1.11 and higher
RCP-1000/1001	MPU-152 board	Ver. 2.50 and higher
RCP-1500/1501/1530	MPU-153 board	Ver. 2.50 and higher
HDCU2000/2500	AT-167A board	Ver. 2.21 and higher
MSU-900/950	CPU-396 board	Ver. 1.21 and higher
MSU-1000	MPU-150 board	Ver. 2.50 and higher
MSU-1500	MPU-151 board	Ver. 2.50 and higher
BPU4000	AT-189 board	Ver. 3.00 and higher

1-2. Connectors and Cables

1-2-1. Connector Input/Output Signals



Input/Output Signals

1. BPU

10.692 Gbps/10.681319 Gbps serial

2. PROMPTER/GENLOCK

BNC type 75 Ω, 1.0 V p-p

3. SDI 1

BNC type
3G SDI signal
SMPTE 424M/425M-B compliant
0.8 Vp-p 75 Ω, 2.97 Gbps/2.9679 Gbps Serial
or HD SDI signal
SMPTE 292M/372M, BTA-S004 compliant
0.8 Vp-p 75 Ω, 1.485 Gbps/1.4835 Gbps Serial

4. SDI 2

BNC type
Output: HD SDI signal
SMPTE 292M/372M, BTA-S004 compliant
0.8 Vp-p 75 Ω, 2.97 Gbps/2.9679 Gbps Serial
Input: HD SDI signal
SMPTE 292M, BTA-S004 compliant
0.8 Vp-p 75 Ω, 1.485 Gbps/1.4835 Gbps Serial

5. SDI-MONI

BNC type
HD SDI signal
SMPTE 292M/372M, BTA-S004 compliant
(HDC2500/2570)
SMPTE 292M, BTA-S004 compliant
(HDC2400/2550)
0.8 Vp-p 75 Ω, 1.485 Gbps/1.4835 Gbps Serial
or SD SDI signal
SMPTE 259M compliant
0.8 Vp-p 75 Ω, 270 Mbps Serial

6. TEST OUT

BNC type 75 Ω, 1.0 V p-p

7. EARPHONE

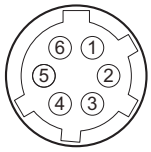
Stereo mini jack

8. PROMPTER2

BNC type 75 Ω, 1.0 V p-p

9. RET CTRL

6-pin, Female

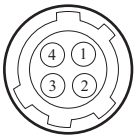


- External View -

No.	Signal	I/O	Specifications
1	INCOM 1 MIC-ON/OFF	IN	Zi ≧ 10 KΩ ON: GND OFF: OPEN
2	INCOM 2 MIC-ON/OFF	IN	Zi ≧ 10 KΩ ON: GND OFF: OPEN
3	GND	—	—
4	RET 3-ON/OFF	IN	Zi ≧ 10 KΩ ON: GND OFF: OPEN
5	RET 1-ON/OFF	IN	Zi ≧ 10 KΩ ON: GND OFF: OPEN
6	RET 2-ON/OFF	IN	Zi ≧ 10 KΩ ON: GND OFF: OPEN

10. DC OUT

4-pin, Female



- External View -

No.	Signal	I/O	Specifications
1	UNREG GND	—	GND for power
2	NC	—	No connection
3	NC	—	No connection
4	UNREG	OUT	+12 V dc, 500 mA (max)

11. REMOTE

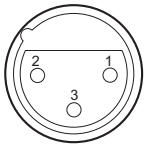
8-pin, Female

- External View -

No.	Signal	I/O	Specifications
1	• TX (X): for RCP • TX1 (+): for TRUNK (RS-422A)	OUT	• SERIAL DATA OUT: for RCP • TRUNK1 DATA OUT: for RS-422A
2	• TX (Y): for RCP • TX1 (–): for TRUNK (RS-422A)	OUT	
3	• RX (X): for RCP • RX1 (+): for TRUNK (RS-422A)	IN	• SERIAL DATA IN: for RCP • TRUNK1 DATA IN: for RS-422A
4	• RX (Y): for RCP • RX1 (–): for TRUNK (RS-422A)	IN	
5	TX-GND	—	GND for TX
6	UNREG-OUT	OUT	UNREG +10.5 V to +17 V dc, 200 mA (max)
7	UNREG-GND	—	GND for UNREG-OUT
8	RCP-PIX: for RCP	OUT	75 Ω, 1.0 V p-p (SD Video)
	CHASSIS GND: for TRUNK (RS-422A)	—	CHASSIS GND

12. AUDIO IN CH1/CH2

XLR 3-pin, Female



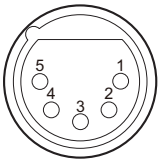
- External View -

(0 dBu = 0.775 V rms)

No.	Signal	I/O	Specifications
1	AUDIO 1/2 (G)	—	–60 dBu, –50 dBu, –40 dBu, –30 dBu, –20 dBu selectable, High impedance, Balanced
2	AUDIO 1/2 (X)	IN	
3	AUDIO 1/2 (Y)	IN	

13. INTERCOM 1, 2

XLR 5-pin, Female



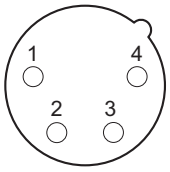
- External View -

(0 dBu = 0.775 V rms)

No.	Signal	I/O	Specifications
1	EXT-INCOM-T (Y)	IN	• –20 dBu: Carbon microphone • –60 dBu: Dynamic microphone
2	EXT-INCOM-T (X)	IN	
3	GND	—	GND
4	EXT-INCOM-LEFT (X)	OUT	0 dBu
5	EXT-INCOM-RIGHT (X)	OUT	

14. DC IN

XLR 4-pin, Male



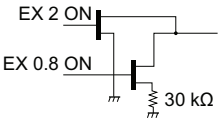
- External View -

No.	Signal	I/O	Specifications
1	EXT_DC (C)	—	GND for DC (+)
2	NC	—	No connection
3	NC	—	No connection
4	EXT_DC (H)	IN	+10.5 V to 17 V dc

15. LENS

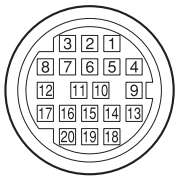
12-pin, Female

- External View -

No.	Signal	I/O	Specifications
1	RET VIDEO ENABLE	IN	• ENABLE: 0 V • DISABLE: +5 V or OPEN
2	VTR CTL	IN	• ENABLE: 0 V • DISABLE: +5 V or OPEN
3	GND	—	GND for UNREG
4	SERVO MA/AT	OUT	• AUTO: +5 V • MANU: 0 V or OPEN
5	IRIS POSITION	OUT	+3.4 V (F16) to +6.2 V (F2.8)
6	UNREG	OUT	+10.5 V to +17 V
7	IRIS POSITION	IN	+3.4 V (F16) to +6.2 V (F2.8)
8	IRIS AT/MA	OUT	• AUTO IRIS: 0 V • MANUAL IRIS: +5 V
9	EXTENDER ON/OFF	IN	• EX 2 ON: GND • EX 0.8 ON: 30 kΩ to GND • OFF: OPEN 
10	ZOOM POSITION	IN	• WIDE: 2 V • TELE: 7 V
11	FOCUS POSI (LENS RX)	IN	• ∞: 7 V • min.: 2 V
12	FOCUS POSI (LENS TX)	OUT	—

16. VF

20-pin, Female



- External View -

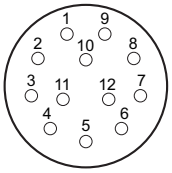
No.	Signal	I/O	Specifications
1	S-DATA	IN/OUT	TTL level
2	NC	—	No connection
3	NC	—	No connection
4	SCK	OUT	TTL level
5	NC	—	No connection
6	NC	—	No connection
7	NC	—	No connection
8	G TALLY	OUT	ON : 5 V OFF : GND
9	NC	—	No connection
10	NC	—	No connection

Continued

No.	Signal	I/O	Specifications
11	NC	—	No connection
12	Y VIDEO	OUT	1.0 V p-p, Zo = 75 Ω
13	VIDEO GND	—	GND for VIDEO
14	Pb VIDEO	OUT	±0.35 V p-p, Zo = 75 Ω
15	Pr VIDEO	OUT	±0.35 V p-p, Zo = 75 Ω
16	NC	—	No connection
17	R TALLY	OUT	ON : 5 V OFF : GND
18	NC	—	No connection
19	UNREG GND	—	GND for UNREG
20	UNREG	OUT	+10.5 V to +17 V

17. CRANE

12-pin, Female



- External View -

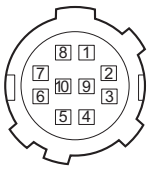
No.	Signal	I/O	Specifications
1	Pr VIDEO (X)	OUT	±0.35 V p-p, Zo = 75Ω
2	Pb VIDEO (X)	OUT	±0.35 V p-p, Zo = 75Ω
3	NC	—	No connection
4	• TX0 (+): for RS-422A • TX1: for RS-232C	OUT	TRUNK data out
5	• TX0 (–): for RS-422A • TX0: for RS-232C	OUT	
6	• RX0 (–): for RS-422A • RX0: for RS-232C	IN	TRUNK data in
7	• RX0 (+): for RS-422A • RX1: for RS-232C	IN	
8	GND (VIDEO)	—	GND for VIDEO
9	Y VIDEO (X)	OUT	1.0 V p-p, Zo = 75Ω
10	GND	—	GND for SCL/SDA

Continued

No.	Signal	I/O	Specifications
11	SCL EXT-VF	OUT	TTL level
12	SDA EXT-VF	IN/ OUT	TTL level

18. TRACKER

10-pin, Female

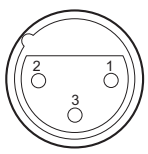


- External View -

No.	Signal	I/O	Specifications
1	TRACKER LEFT	OUT	TRACKER RECEIVE/ PGM –20 dBu unbalanced
2	GND (TALK)	—	GND for TRACKER TALK
3	GND (RECEIVE/PGM/TL)	—	GND for RECEIVE/PGM/TL
4	TRACKER RIGHT	OUT	TRACKER RECEIVE/ PGM –20 dBu unbalanced
5	UNREG	OUT	+12 V (+10.5 to +17.0 V)
6	GND (UNREG)	—	GND for UNREG
7	TRACKER TALK (X)	IN	TRACKER TALK 0 dBu / –20 dBu, High impedance balanced
8	TRACKER TALK (Y)	IN	
9	G TALLY	OUT	ON: GND OFF: High impedance (Open collector)
10	R TALLY	OUT	ON: GND OFF: High impedance (Open collector)

19. MIC 1 IN

XLR 3-pin, Female



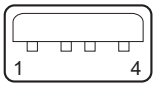
- External View -

(0 dBu = 0.775 V rms)

No.	Signal	I/O	Specifications
1	MIC 1 (G)	—	–60 dBu, –50 dBu, –40 dBu, –30 dBu, –20 dBu selectable, High impedance, Balanced
2	MIC 1 (X)	IN	
3	MIC 1 (Y)	IN	

20. USB

USB (Series A), 4-pin
Signal standard: USB standard Ver. 2.0

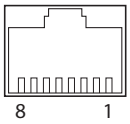


- External View -

No.	Signal	I/O	Specifications
1	VBUS	OUT	USB Vcc (+5 V)
2	D+	IN/ OUT	USB+
3	D–	IN/ OUT	USB–
4	GND	—	GND

21. LAN

8-pin, RJ-45, 10Base-T/100Base-TX



- External View -

No.	Signal	I/O	Specifications
1	TRD + (0)	IN/ OUT	Transmitted/Received Data + (0)
2	TRD - (0)	IN/ OUT	Transmitted/Received Data - (0)
3	TRD + (1)	IN/ OUT	Transmitted/Received Data + (1)
4	TRD + (2)	IN/ OUT	Transmitted/Received Data + (2)
5	TRD - (2)	IN/ OUT	Transmitted/Received Data - (2)
6	TRD - (1)	IN/ OUT	Transmitted/Received Data - (1)
7	TRD + (3)	IN/ OUT	Transmitted/Received Data + (3)
8	TRD - (3)	IN/ OUT	Transmitted/Received Data - (3)

22. DC OUT

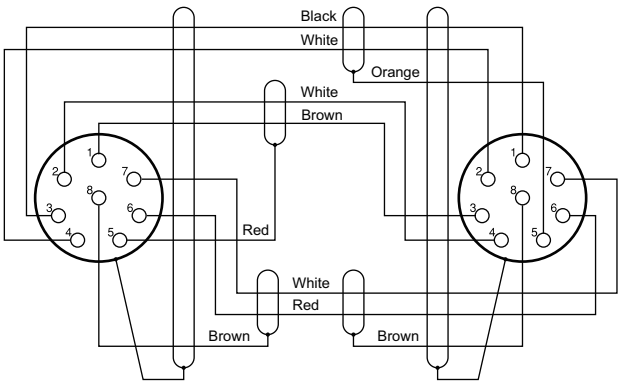
2-pin, Female

- External View -

No.	Signal	I/O	Specifications
1	LIGHT +12 V	OUT	+12 V dc, 2.5 A (max)
2	GND	—	GND for power

1-2-2. Wiring Diagrams for Cables

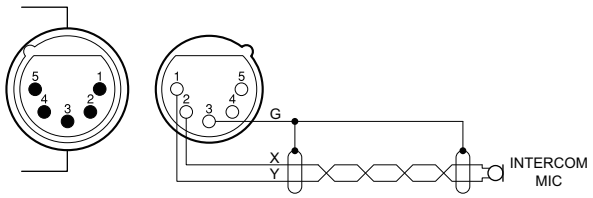
CCA-5 Cable (for REMOTE connector)



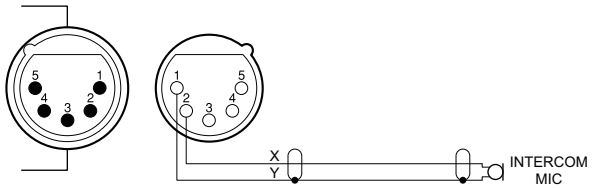
— 8P CONNECTOR (MALE) —
(WIRING SIDE)

INTERCOM MIC Cable

1. Balance (HEAD SET menu UNBAL: OFF)



2. Unbalance (HEAD SET menu UNBAL: ON)



1-2-3. Connection Connectors/Cables

Connection made with the connector panels during installation or service, should be made with the connectors/complete cable assemblies specified in the following list, or equivalent parts.

Connector Name	Connector/Cable
• SDI 1/2 • SDI-MONI • TEST OUT • PROMPTER/ GENLOCK • PROMPTER 2 (BNC)	Plug, BNC (Part No.: 1-569-370-12) or 5CFB coaxial cable/ Recommendation made by Fujikura
• AUDIO IN CH1/CH2 • MIC 1 IN (XLR type 3-pin, Female)	XLR, 3-Pin Male (Part No.: 1-508-084-00) or ITT Cannon XLR-3-12C or equivalent
RET CTRL (6-pin, Female)	Plug, 6-Pin Male (Part No.: 1-560-078-00) or HIROSE HR10-7PA-6P or equivalent
DC OUT (4-pin, Female)	Plug, 4-Pin Male (Part No.: 1-566-425-11) or HIROSE HR10A-7P-4P or equivalent
DC OUT (2-pin, Female)	Power tap (OE) ANTONBAUER 33710 or equivalent
INTERCOM 1/2 (XLR type 5-pin, Female)	XLR, 5-Pin Male (Part No.: 1-508-370-11) or ITT Cannon XLR-5-12C or equivalent
DC IN (XLR type 4-pin, Male)	XLR, 4-Pin Female (Part No.: 1-508-362-00) or ITT Cannon XLR-4-11C or equivalent, or Cable assembly 1-551-577-00 (Supplied with AC-550)
CRANE (12-pin, Female)	Connector, Round Type 12-Pin (Part No.: 1-819-261-11)
REMOTE (8-pin, Female)	• Plug, 8-Pin Male (Part No.: 1-766-848-11) or CCA-5 cable assembly (CCA-5-10 (10 m) /CCA-5-3 (3 m)) (optional)*1*2 • REMOTE cable (Part No.: 1-783-372-11) (supplied with RM-B150, 10 m)*1*2*3
TRACKER (10-pin, Female)	Connector, Round Type 10-Pin (Part No.: 1-506-522-12)

1-2-4. Note in Connecting BPU Connector

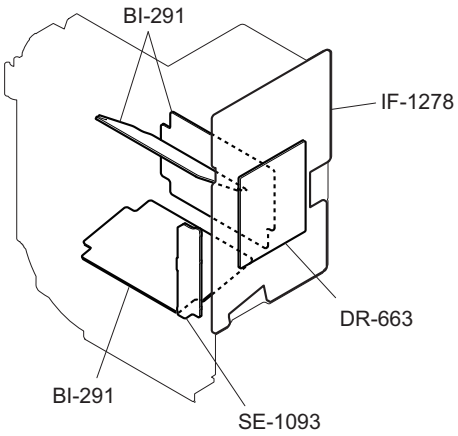
It is recommendable to clean the optical contact portions mentioned below before connecting this unit to the baseband processor unit.

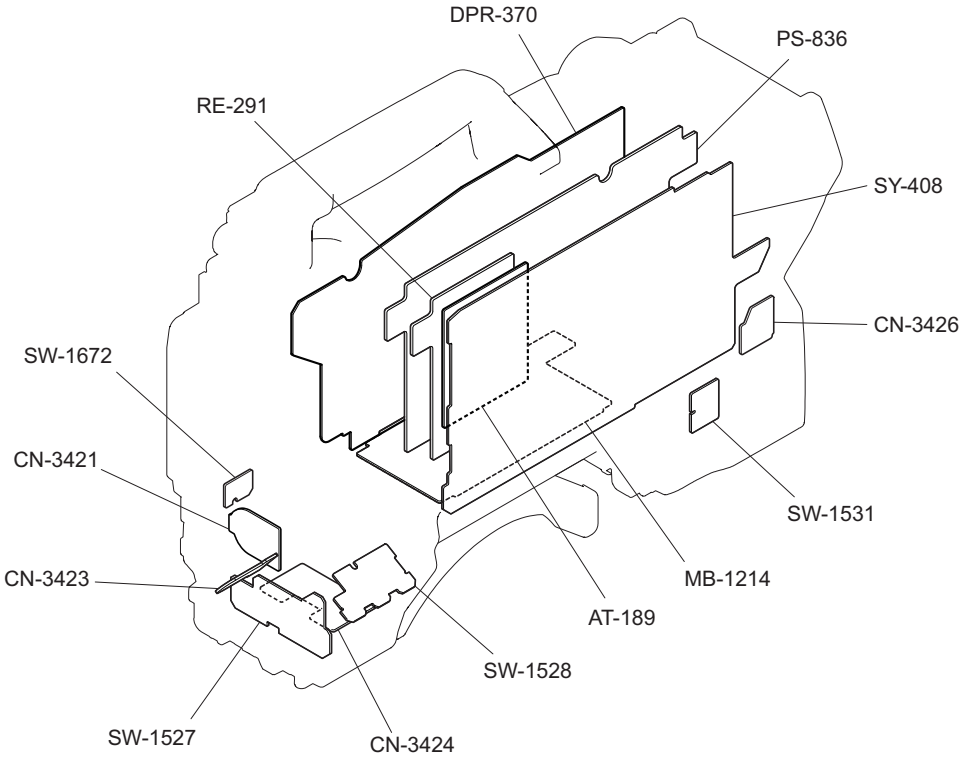
- BPU connector of this unit
- Camera connector of the baseband processor unit
- Optical/Electrical cable

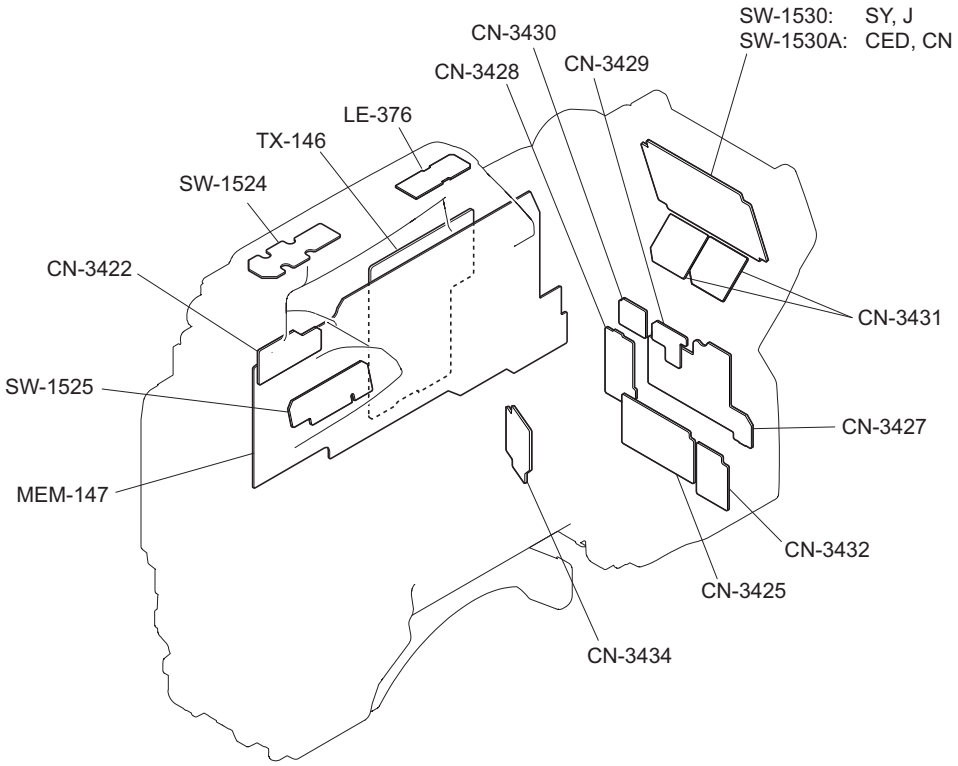
For details on a cleaning method, refer to “2-4. Cleaning of Connector/Cable”.

*1: If using a cable of length different from a standard product, contact your local Sony Sales Office/Service Center.
*2: The pin 8 of CCA-5 cable is GND (ground). The pin 8 of REMOTE cable is not GND (ground).
*3: Use of REMOTE cable enables to monitor video signals. (The pin 8 is available for the video signal line.) The down-converted SD signal is output.

1-3. Location of Printed Circuit Boards






SW-1530: SY, J
SW-1530A: CED, CN
CN-3430
CN-3428
CN-3429
LE-376
TX-146
SW-1524
CN-3422
CN-3431
SW-1525
CN-3427
MEM-147
CN-3432
CN-3425
CN-3434

1-4. Notes on Board Replacing

1-4-1. Description on EEPROM Data

The table below gives the stored data of EEPROM (FRAM) on every printed circuit board.

Board	Ref. No.	Stored Data
IF-1278	IC204	CMOS adjustment data, RPN compensation data
SY-408	IC404, IC405	Paint data etc.
MB-1214	IC2	Model information data

- When replacing the board is needed, remove the IC attached to the former board and replace it to the new board.
- The EEPROM is the storing data inherent in the board.
  The part number listed in "10. Spare Parts" is for EEPROM which is not programmed. If replacement is needed, contact your local Sony Sales Office/Service Center.

1-4-2. Adjustment and Setting Required when Replacing the SY-408 Board

Camera setting status and files are stored in the SY-408 board. When the SY-408 board is replaced, contents of the reference file, scene file, lens file, and operator file are lost. Store these files in a USB drive and then replace the SY-408 board.
The content of the OHB file stored in the OHB assembly is not lost.

Procedure

1. Store the reference file, scene file, and operator file in a USB drive.
   - Reference file (Refer to "7-5. Reference File")
   - Scene file (Refer to "7-4. Scene File")
   - Operator file (Refer to "7-2. Operator File")
2. Replace the SY-408 board. (Refer to "4-8-1. SY-408 Board/AT-189 Board")
3. Upgrade the software to the latest version. (Refer to "6-1. Upgrading Software Programs")
4. Execute REFERENCE (ALL) on the FILE CLEAR page of the FILE menu. (Refer to "7-5. Reference File")

   Note

   Unless REFERENCE (ALL) is executed, the intercom operation panel may not function correctly.

5. Execute STORE FILE on the REFERENCE page of the FILE menu. (Refer to "7-5. Reference File")
6. Execute the auto-adjustment. (Refer to "5-2. Automatic Adjustment")
7. Load the reference file, scene file, and operator file stored in the USB drive in step 1.
   - Reference file (Refer to "7-5. Reference File")
   - Scene file (Refer to "7-4. Scene File")
   - Operator file (Refer to"7-2. Operator File")
8. Execute AUTO LEVEL on the AUTO SETUP page of the MAINTENANCE menu.(Refer to "7-5. Reference File")

1-5. Fixtures/Measuring Equipments List

1-5-1. Service Tools

Part No.	Name	Usage/Note
J-6029-140-B	Pattern box PTB-500	Camera adjustment
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 (For torque screwdriver) (size 1.5)	Screw tightening
J-6394-080-A	Grayscale chart	Transparent type (16 : 9), Camera adjustment
J-6480-010-A	Alignment sleeve remover HC-001	For Female connector, DCC.91.312.5LA manufactured by LEMO or equivalent
J-7120-950-A	Chart adaptor	Adaptor that installs ITE test chart (16 : 9) 310 X200 in PTB-500 (pattern box)
J-7120-960-A	ITE STANDARD TEST CHART	ITE resolution chart (16 : 9)
J-7120-970-A	ITE STANDARD TEST CHART	ITE grayscale chart (γ=0.45) (16 : 9)
J-7120-980-A	ITE STANDARD TEST CHART	ITE inmega cycle chart (16 : 9)
7-600-002-52	Locking compound (TB-1401B)	Inhibits loosening of screws
Commercially available	Loctite (408)	Instant adhesives
Commercially available	Grayscale chart	Reflective type (16 : 9), Camera adjustment
Commercially available	Star chart	Reflective type, Camera adjustment
Commercially available	USB memory	Upgrading software, writing and rewriting the PLD internal data

1-5-2. Measuring Equipment

Use the calibrated equipment or equivalent as listed below for the adjustments.

Equipment	Name
Oscilloscope	Tektronix TDS460A or equivalent
HD waveform monitor	LEADER ELECTRONICS LV5150DA, LV5152DA or equivalent
Frequency counter	Advantest TR5821AK or equivalent
Digital voltmeter	Advantest TR6845 or equivalent
HD color monitor	Sony BVM-D20F1J/D14H5J or equivalent
Luminance meter	Konica Minolta LS-110 or equivalent
Spectrum analyzer	Advantest R3131A or equivalent
Signal generator	Tektronix TSG130A or equivalent
FM signal generator	Rohde & Schwarz SMHU58 or equivalent

1-6. Microphone Power and Intercom Settings

1-6-1. Outputting Microphone Power Voltage +12 V (AB-Power)

A microphone power voltage of +12 V can be supplied to the microphone connected to the AUDIO IN connector.

1. Open the OPTION [S11] page of the SERVICE menu.
2. Set “MIC AB POWER” to “ENABLE”.
3. Set the microphone power switch on the connector panel at the rear of the unit to “•”.
   Power voltage +12 V (AB-Power) is supplied to the microphone connected to the AUDIO IN connector.

1-6-2. Intercom Settings

Since there are several types and usages of the headset for intercom, make appropriate settings for each type.

Talk (Microphone) Settings

Check characteristics of the microphone attached to the headset and make settings by the menu of the unit. Microphone sensitivity, power supply method, balanced/unbalanced input can be set. Intercom 1 and intercom 2 are independent, and therefore make settings for each intercom.

General carbon microphone

1. Set INTERCOM1 MIC (or INTERCOM2 MIC) on the HEAD SET page of the OPERATION menu to “CARBON”.
   Microphone sensitivity, power supply method, balanced/unbalanced input are automatically set.

General dynamic microphone

1. Set INTERCOM1 MIC (or INTERCOM2 MIC) on the HEAD SET page of the OPERATION menu to “DYNAMIC”.
2. Set “UNBAL” (balanced/unbalanced input) on the HEAD SET page according to the microphone.
   Microphone sensitivity and power supply method are automatically set.

Other microphones

1. Set INTERCOM1 MIC (or INTERCOM2 MIC) on the HEAD SET page of the OPERATION menu to “MANUAL”.
2. Set the following items on the HEAD SET page according to the microphone to be used.
   - LEVEL (microphone sensitivity)
   - POWER (power supply method)
   - UNBAL (balanced/unbalanced input)

Receive (Headphone) Settings

Headphone operation varies depending on the headset connection.
The following description is provided when the right ear is connected to Pin 5 of the intercom connector and the left ear is connected to Pin 4 of the intercom connector.

In the case of dual-type headphone to listen the same sound with both ears or single-type headphone

1. Set “INTERCOM RECEIVE SELECT” on the RECEIVE SEL page of the OPERATION menu to “MIX”. The same sound is output from right and left.

In the case of dual-type headphone to listen different right and left sound

1. Set “INTERCOM RECEIVE SELECT” on the RECEIVE SEL page of the OPERATION menu to “SEPARATE”.
2. Set channels (left, right, and both) of items INTRECOM, PGM1, PGM2, and TRACKER on the RECEIVE SEL page.

To adjust the volume of your voice

1. Set volume in SIDE TONE on the INTERCOM LEVEL page of the OPERATION menu.

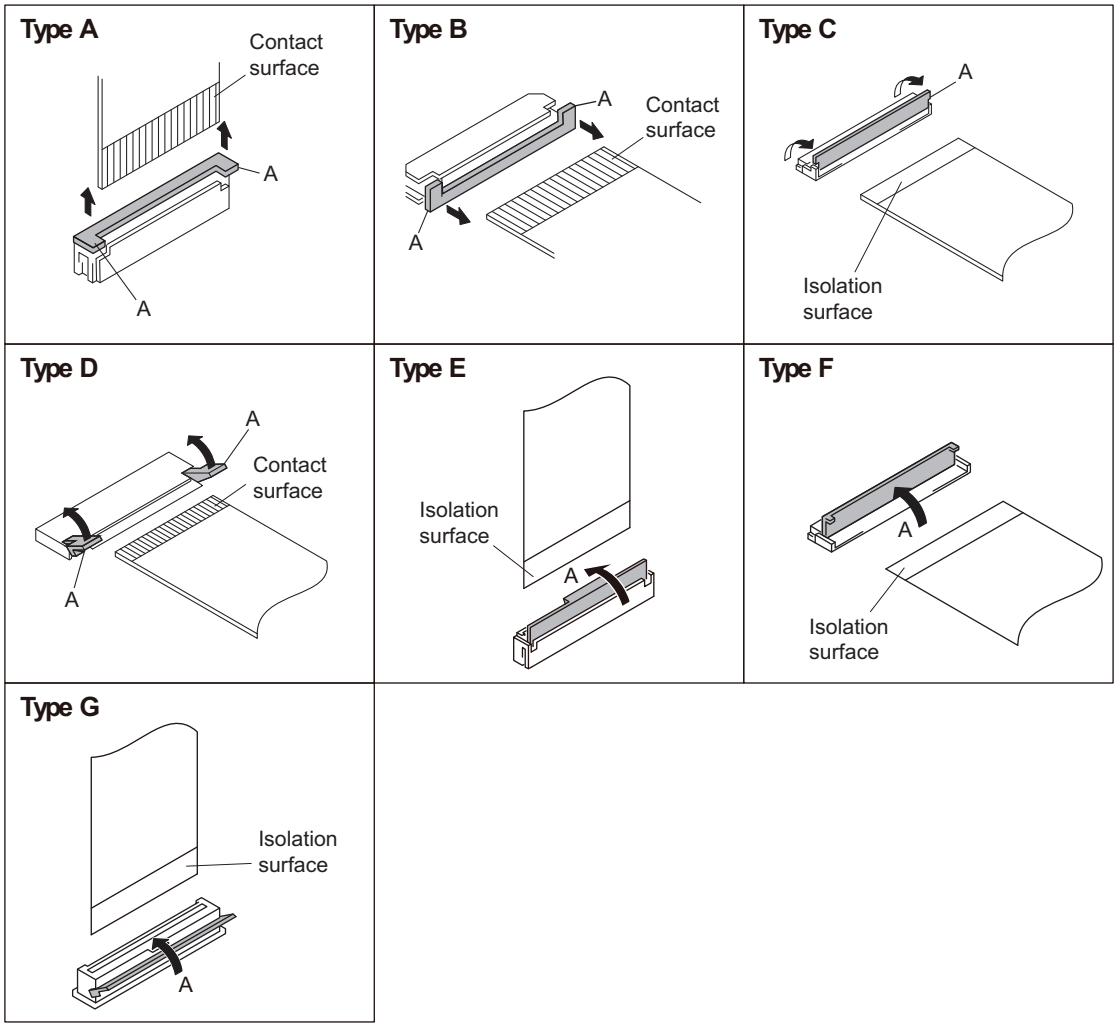
1-7. Flexible Card Wire and Coaxial Cable

1-7-1. 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 G



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 A to lock the flexible card wire.

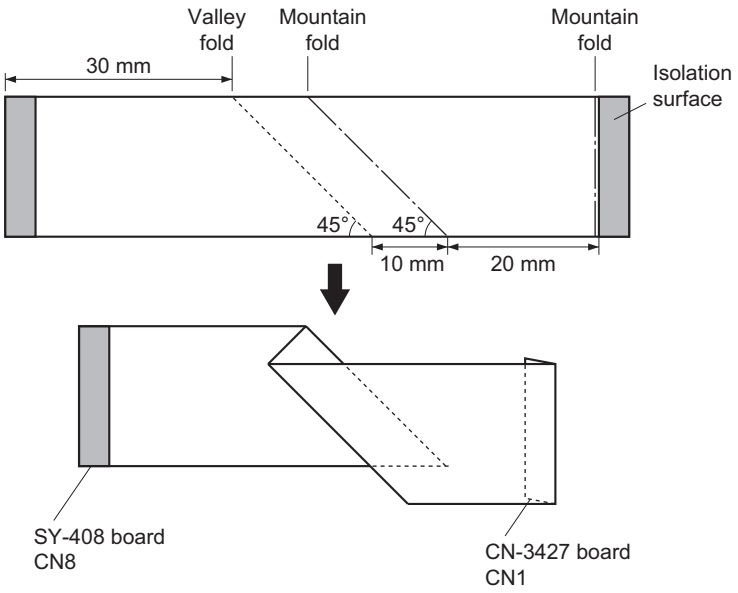
1-7-2. Forming Flexible Card Wire

Before installing a new flexible card wire for repair, fold it by hand according to the following figures.

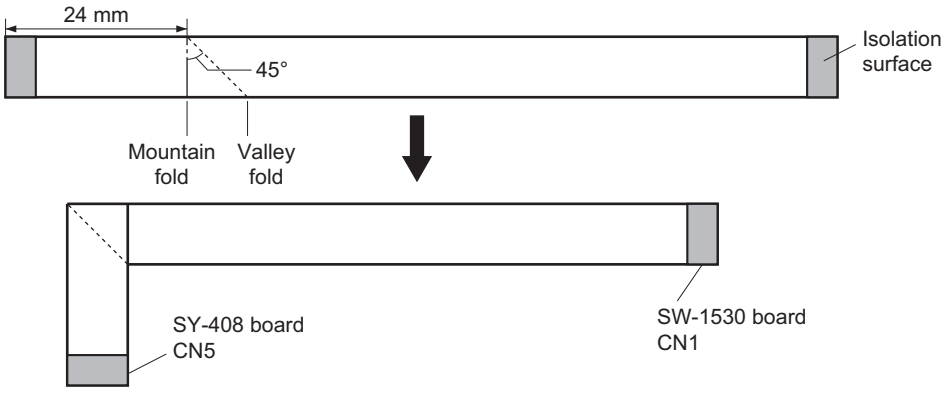
Note

Never fold it back after being formed once.

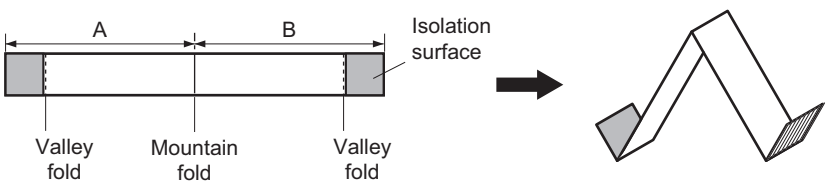
- SY-408 board CN8 ↔ CN-3427 board CN1



- SY-408 board CN5 ↔ SW-1530 board CN1



- SY-408 board CN9 ↔ CN-3426 board CN1



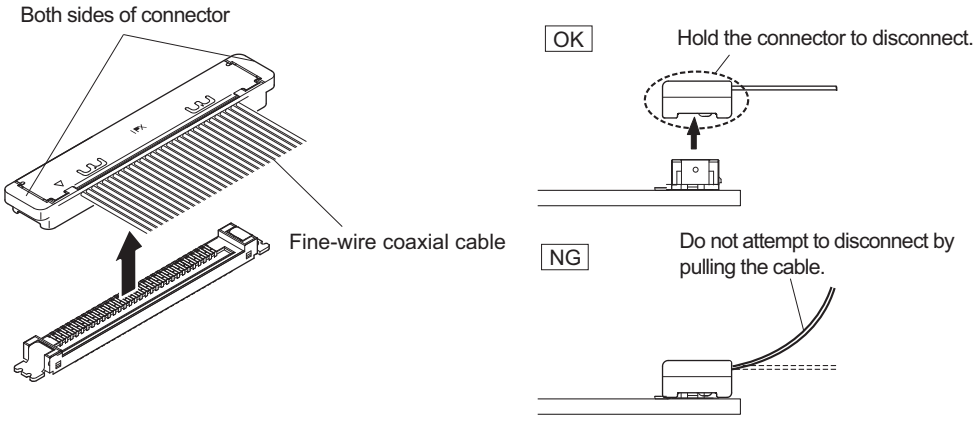
1-7-3. Disconnecting/Connecting Fine-Wire Coaxial Cable

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.

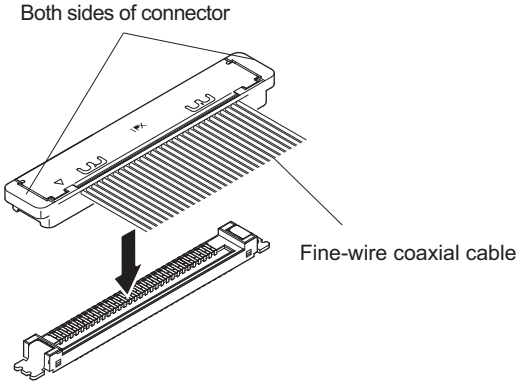
Type A

Disconnecting



1. Hold both sides of the fine-wire coaxial cable connector, and pull the connector in the arrow direction to disconnect it.

Connecting



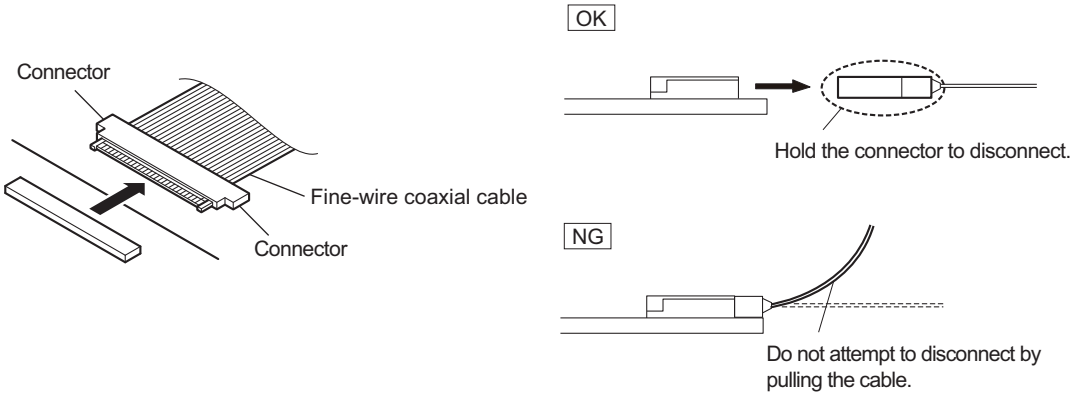
1. Insert the connector of fine-wire coaxial cable in the arrow direction to connect it.

   Note

   Insert firmly the connector of fine-wire coaxial cable in the interior.

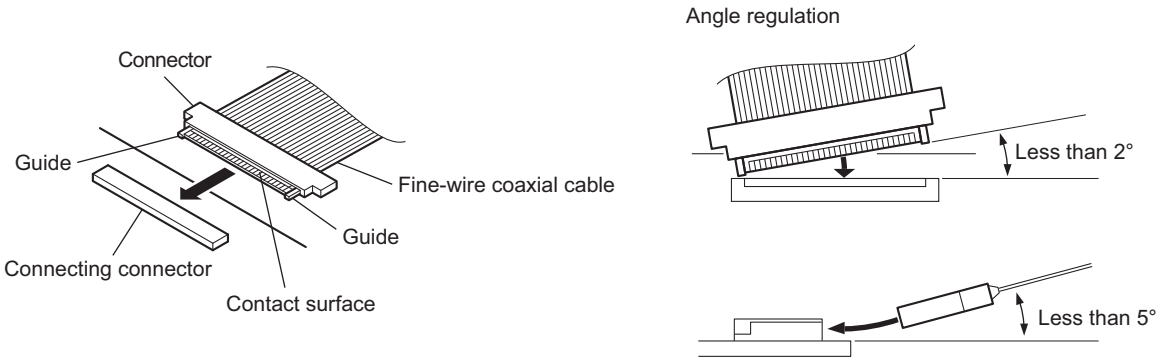
Type B

Disconnecting



1. Hold both sides of the fine-wire coaxial cable connector, and pull the connector straight to disconnect it.

Connecting



Note

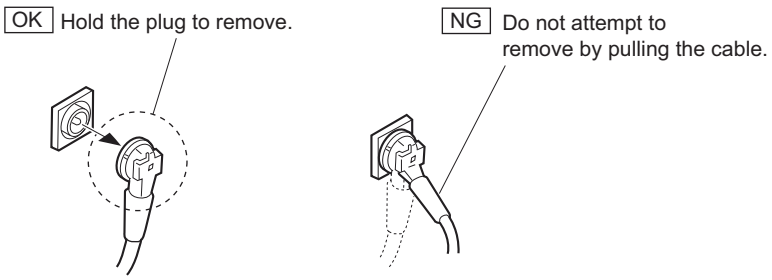
Insert the connector carefully so that the connector guides are not caught by the edge of the mating connector.

1. Hold both sides of the fine-wire coaxial cable connector with the contact surface facing up.
2. Insert the connector straight to meet the angle specified.

1-7-4. Connecting/Disconnecting Coaxial Cable

Type A

Disconnecting



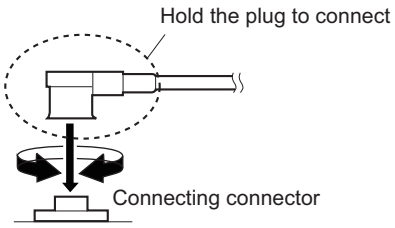
1. Hold the plug of coaxial cable.

2. Pull out the coaxial cable in the direction arrow.

Note

Be sure to hold the plug when disconnecting the coaxial cable. Do not pull the cable.

Connecting



1. Hold the plug of coaxial cable.
2. Connect the coaxial cable perpendicularly to the connector. Push the plug into the connector while turning it clockwise and counterclockwise several times.

1-8. Explanation of Prism Number

The CMOS imager adhering to prism is managed by following mount assembly number.
A-2075-369-A
Example : A00000001 to (8 digit)

1-9. Circuit Protection Parts

1-9-1. Fuses

WARNING

Fuses are essential parts for safe operation. Be sure to use the parts specified in this manual. Replacing a fuse with an unspecified one may cause fire or electric shock.

CAUTION

Replacing any fuse is replaced while power is supplied to the unit may cause electric shock. Before replacing any fuse, turn off the POWER switch and also disconnect the battery pack and the cable from the DC IN connector.

This unit is equipped with fuses. The fuses blow if overcurrent flows in the unit due to an abnormality, In that case, turn off the power of the unit, inspect inside of the unit, and then remove the cause of the overcurrent. After that, replace the defective parts.

Board Name	Ref. No.	Address	Part No.	Ref. No. Address Part No. Part Name/Rating
PS-836	F101	E1 (Side A)	⚠ 1-523-190-11	Fuse (SMD) 6.3 A/250 V
	F102	E3 (Side A)	⚠ 1-523-190-11	Fuse (SMD) 6.3 A/250 V
	F3001	D3 (Side A)	⚠ 1-576-566-21	Fuse (SMD) 15 A/65 V

1-9-2. 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
CN-3427	THP1	B2 (Side A)	⚠ 1-802-108-11	1.50 A/20 ℃
	THP2	B1 (Side A)	⚠ 1-811-201-11	2.60 A/20 ℃
MB-1278	THP1	A2 (Side A)	⚠ 1-811-201-11	2.60 A/20 ℃
	THP3	A1 (Side A)	⚠ 1-811-201-11	2.60 A/20 ℃
	THP4	B2 (Side A)	⚠ 1-811-201-11	2.60 A/20 ℃
	THP5	D2 (Side A)	⚠ 1-803-615-21	0.50 A/20 ℃
PS-836	THP101	C1 (Side A)	⚠ 1-802-108-11	1.50 A/20 ℃
RE-291	THP601	B3 (Side B)	⚠ 1-803-615-21	0.50 A/20 ℃
	THP602	A1 (Side B)	⚠ 1-803-353-21	0.14 A/20 ℃
	THP603	B1 (Side B)	⚠ 1-803-615-21	0.50 A/20 ℃
MEM-147	THP001		⚠ 1-803-615-21	0.5 A/20 ℃
	THP002		⚠ 1-803-615-21	0.5 A/20 ℃
	THP003		⚠ 1-803-615-21	0.5 A/20 ℃

Continued

Board Name	Ref. No.	Address	Part No.	Hold Current
SY-408	THP1	B3 (Side A)	⚠ 1-802-063-21	1.10 A/20 ℃
	THP101	C3 (Side A)	⚠ 1-803-615-21	0.50 A/20 ℃
	THP102	D2 (Side B)	⚠ 1-803-615-21	0.50 A/20 ℃
	THP103	D2 (Side B)	⚠ 1-803-615-21	0.50 A/20 ℃

1-10. 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

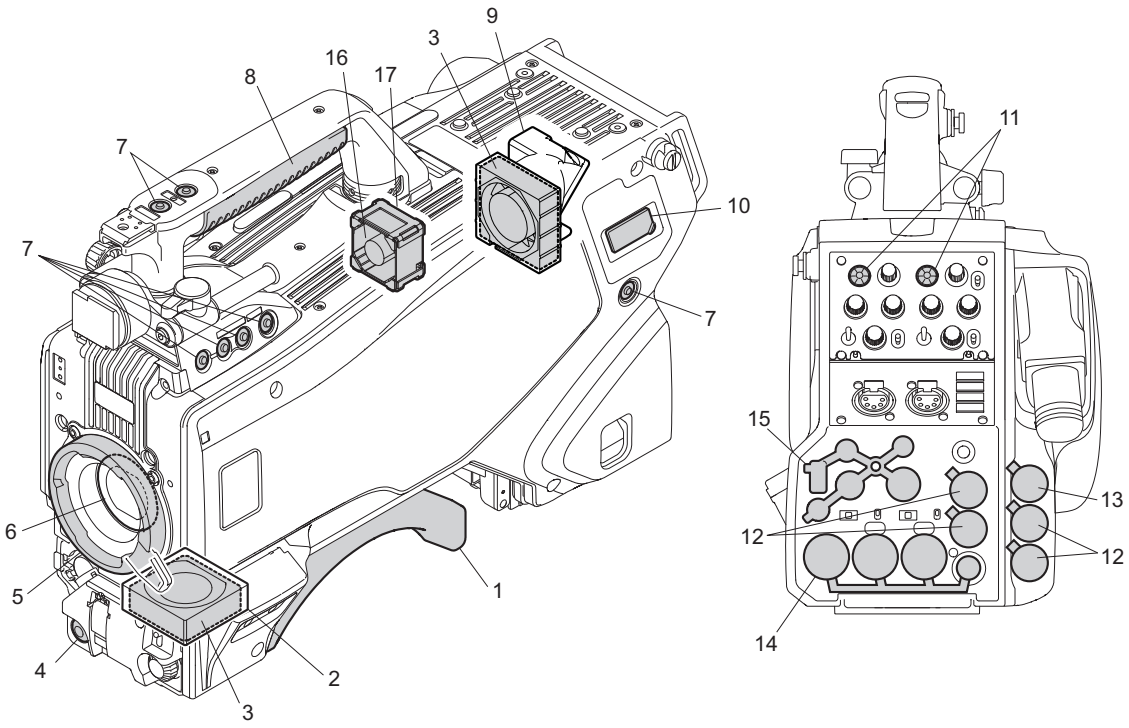
Note

- 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
Periodic Maintenance and Inspection

2-1. Recommended Replacement Parts

This section describes the recommended replacement parts and recommended replacement time.

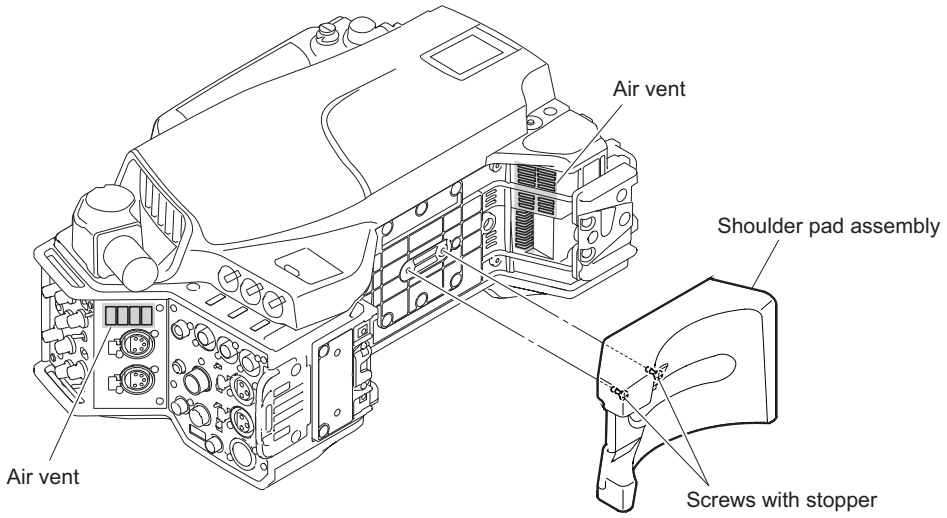


No.	Name	Part No.	Recommended Replacement Timing
1	Shoulder Pad Assembly	A-8286-163-D	Check for deformation and deterioration (abraded or damaged or lost) from time to time. Replace it as necessary.
	Shoulder Pad Assembly (Optional)	A-8286-346-A	
2	Cushion (FAN)	3-796-945-01	
3	DC Fan (40 square)	⚠ 1-787-847-11	
4	VTR Start button	3-679-668-01	
5	Bayonet Ring	4-263-184-04	Replace every 5 years.
6	Optical Filter Unit	1-856-701-11	It can become nebulous (in transparent and whitened) with elapse of time. Then it will not meet it the required characteristics. Replace it as needed.
7	SW Cover	3-676-244-03	Check for deformation and deterioration (abraded or damaged or lost) from time to time. Replace it as necessary.
8	Glip	4-138-676-01	
9	Fan Duct	4-572-051-01	
10	DC OUT Connector Cap	4-415-079-01	
11	SW Cover	4-138-682-01	
12	BNC Cap	3-872-935-01	
13	BNC Cap	3-868-657-03	
14	Rear Connector Cap 2	4-414-618-01	
15	Rear Connector Cap 1	4-414-617-01	
16	DC Fan	⚠ 1-855-374-11	
17	Cushion (FAN)	4-546-928-01	

2-2. Cleaning the Air Vents

Clogging of dust or foreign matters may cause a temperature increase inside the camera, which may result in a failure.
Clean the air vents every two or three months.

1. Loosen the two screws with stopper, and remove the shoulder pad assembly.
2. Remove dust on the air vent areas with a vacuum cleaner.



2-3. Replacing Lithium Battery

2-3-1. Note on Replacement of Lithium Battery

A lithium battery is mounted on the SY-408 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.

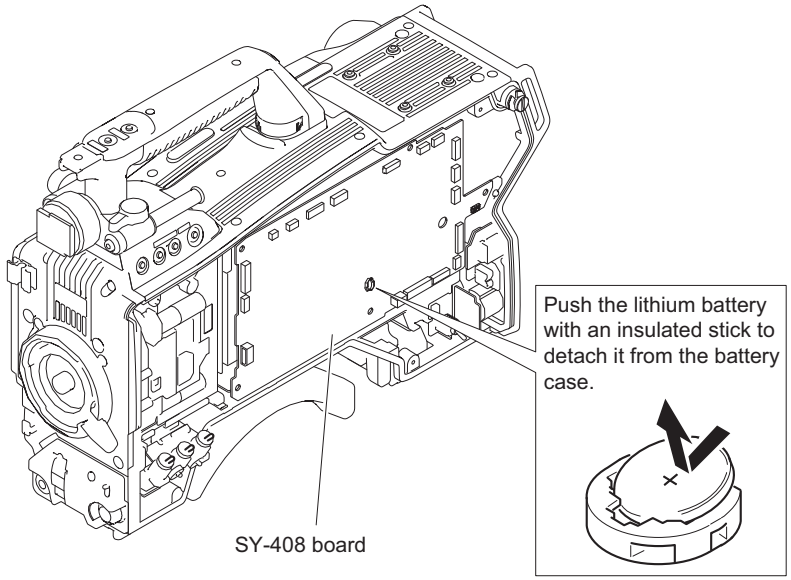
- SY-408 board/Lithium secondary battery (ML621 (U)): Sony Part No. ⚠ 1-756-134-15

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.

2-3-2. Replacing Procedure

1. Remove the two screws and remove the inside panel assembly. (Refer to "4-2. Inside Panel Assembly")
2. Replace the lithium secondary battery (ML621 (U)) on SY-408 board.



Note

Be sure to use an insulating stick to remove the lithium secondary battery (ML621 (U)).

3. Attach the inside panel assembly by reversing the steps of removal.

2-4. Cleaning of Connector/Cable

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

- When lit in two green lamps of right : good receptive condition
- When lit in second green lamp from the right : near good receptive condition
- When lit in second yellow lamp from the left : low receptive condition
- When lit in the first red lamp from the left : more low receptive condition

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 exists in the optical connector on the camera or camera control unit, and in the optical/electrical cables.

2-4-1. 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

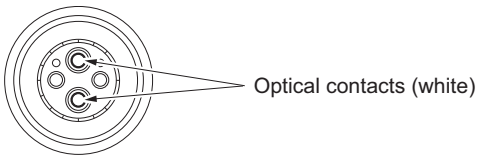
Tip

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

Cleaning Procedure

Male connector

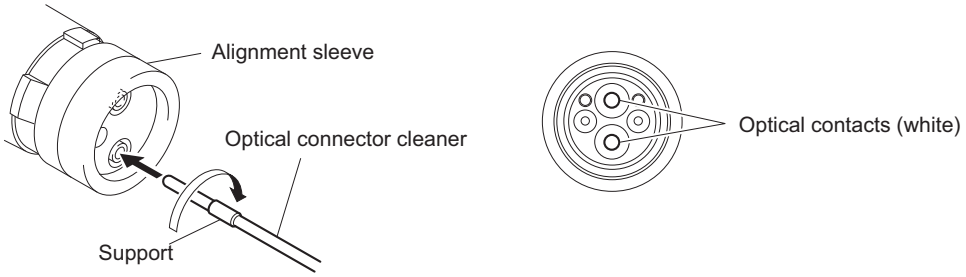
Clean the tip of the white optical contacts using the optical connector cleaner.



Female connector

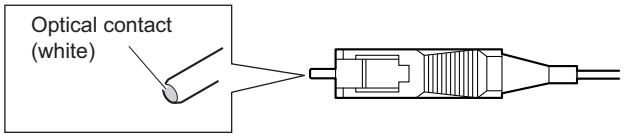
1. Insert the optical connector cleaner straight.
2. Apply sufficient pressure (approximately 600 g to 700 g) to ensure that the optical contact is a little depressed.

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.



2-4-2. When the Optical Connector Cleaner (Commercially Available) is not Available (Connectors/Cables of LEMO)

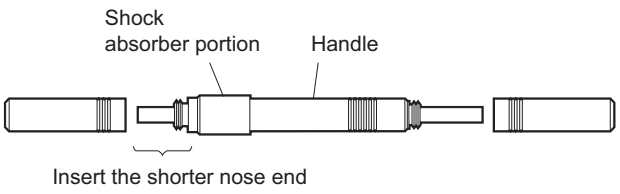
Clean the LEMO connectors and cables using the following procedure.

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)

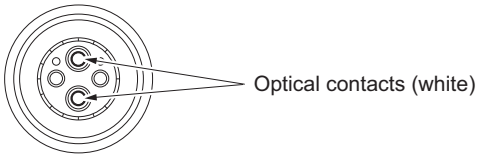
  Note

  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

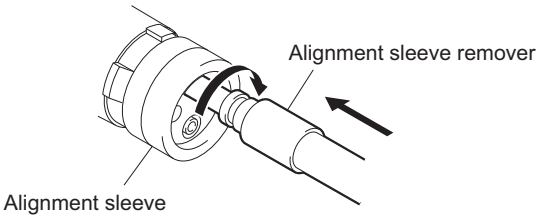
Clean the tip of the white optical contacts with a cotton swab moistened with alcohol.



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.

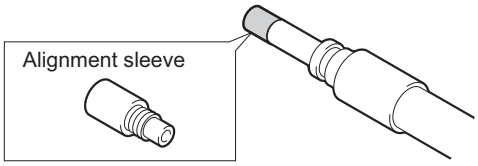
1. Insert the alignment sleeve remover into the alignment sleeve in the straight line and turn it clockwise



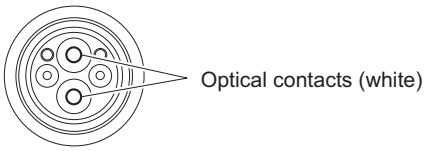
2. When the turn stops, pull out the remover in the straight line forcedly.

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.

2-4-3. 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)

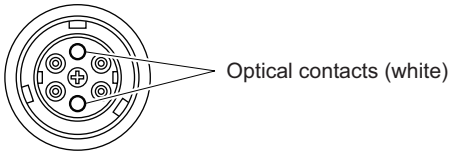
  Note

  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

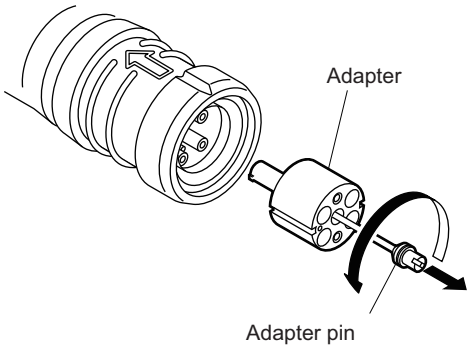
The optical contacts for female connector are in an unexposed state. In cleaning, it is necessary to be exposed by removing the adapter in the connector in advance. Proceed as follows.

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

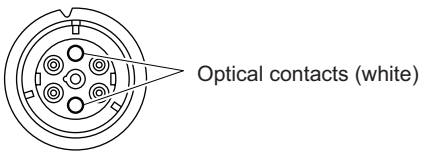
   Tip

   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.



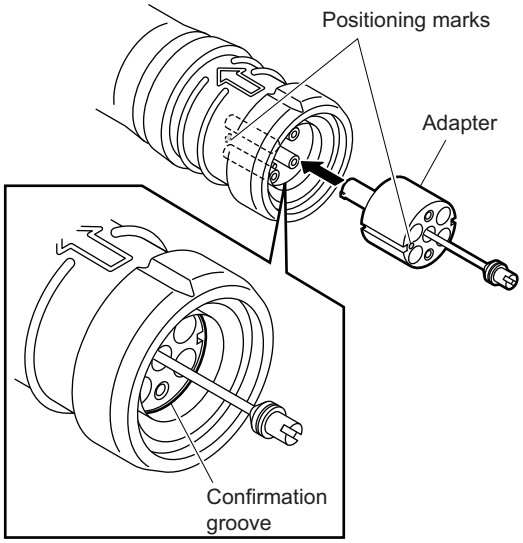
3. Clean the white optical contacts with a cotton swab moistened with alcohol.



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)

2-4-4. When the Optical Connector Cleaner (Commercially Available) is not Available (Connector)

Fixtures

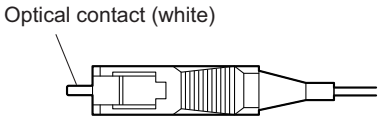
- Alcohol (commercially available)
- Cotton swabs (commercially available)

Note

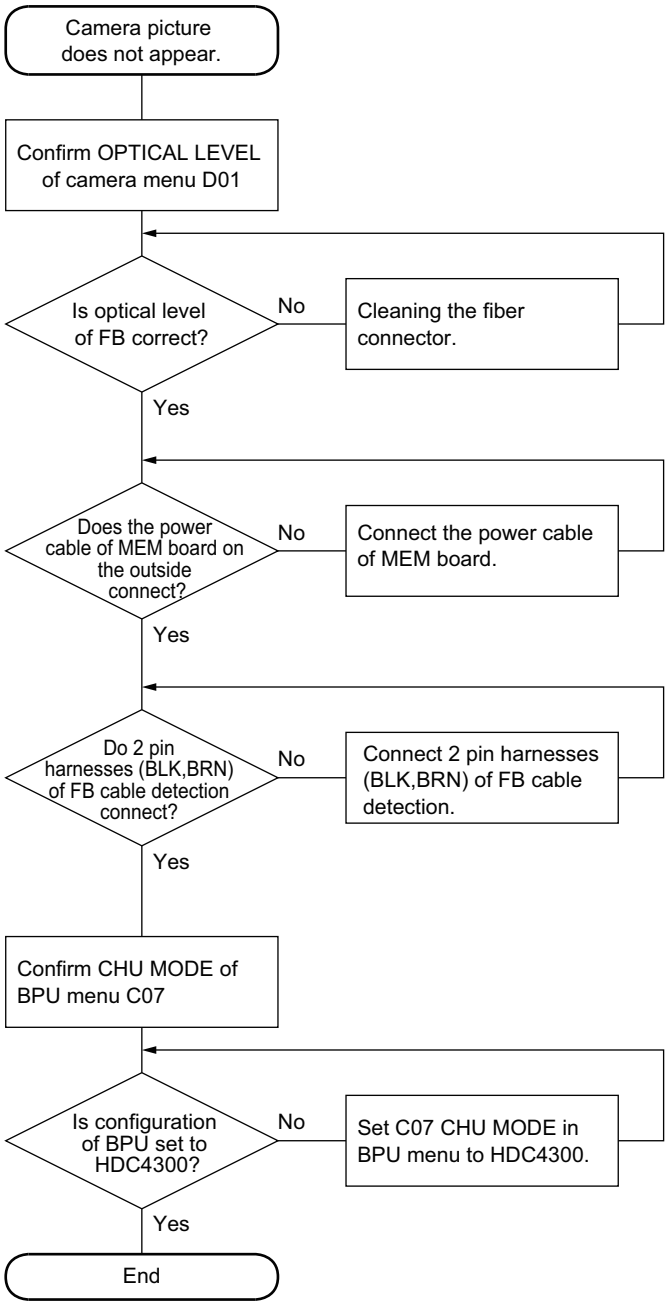
Use a cotton swab whose diameter is about 4 mm. If a cotton swab whose diameter exceeds 5 mm is used, the cotton swab cannot be inserted into the end of the connector and the tip of the optical contact cannot be cleaned.

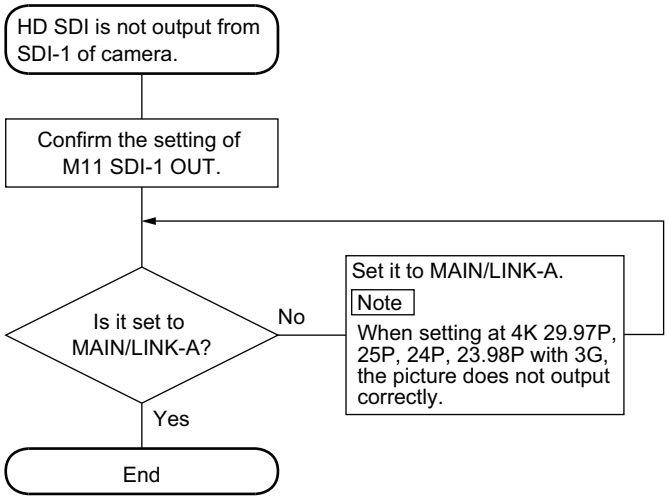
Cleaning Procedure

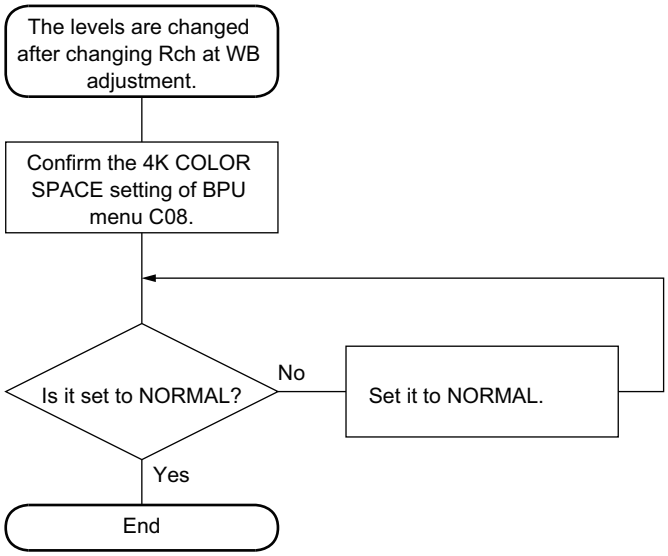
Clean the tip of the white optical contacts with a cotton swab moistened with alcohol.

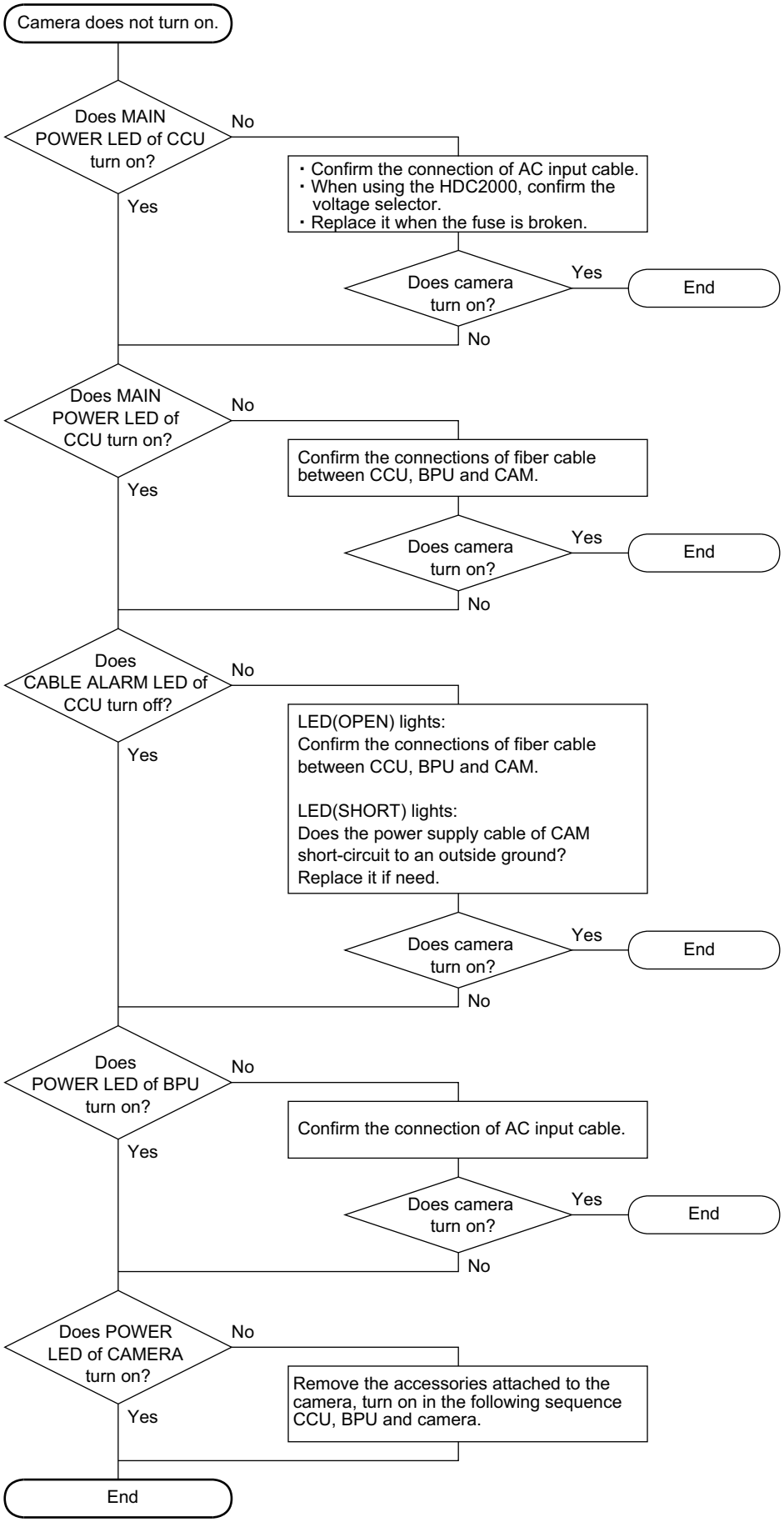


Section 3
Troubleshooting




HD SDI is not output from SDI-1 of camera.
Confirm the setting of M11 SDI-1 OUT.
Is it set to MAIN/LINK-A?
No
Set it to MAIN/LINK-A.
Note
When setting at 4K 29.97P, 25P, 24P, 23.98P with 3G, the picture does not output correctly.
Yes
End


The levels are changed after changing Rch at WB adjustment.
Confirm the 4K COLOR SPACE setting of BPU menu C08.
Is it set to NORMAL?
No
Set it to NORMAL.
Yes
End


Camera does not turn on.
Does MAIN POWER LED of CCU turn on?
No
・Confirm the connection of AC input cable.
・When using the HDC2000, confirm the voltage selector.
・Replace it when the fuse is broken.
Yes
Does camera turn on?
Yes
End
No
Does MAIN POWER LED of CCU turn on?
No
Confirm the connections of fiber cable between CCU, BPU and CAM.
Yes
Does camera turn on?
Yes
End
No
Does CABLE ALARM LED of CCU turn off?
No
LED(OPEN) lights:
Confirm the connections of fiber cable between CCU, BPU and CAM.
LED(SHORT) lights:
Does the power supply cable of CAM short-circuit to an outside ground?
Replace it if need.
Yes
Does camera turn on?
Yes
End
No
Does POWER LED of BPU turn on?
No
Confirm the connection of AC input cable.
Yes
Does camera turn on?
Yes
End
No
Does POWER LED of CAMERA turn on?
No
Remove the accessories attached to the camera, turn on in the following sequence CCU, BPU and camera.
Yes
End

Section 4
Replacement of Main Parts

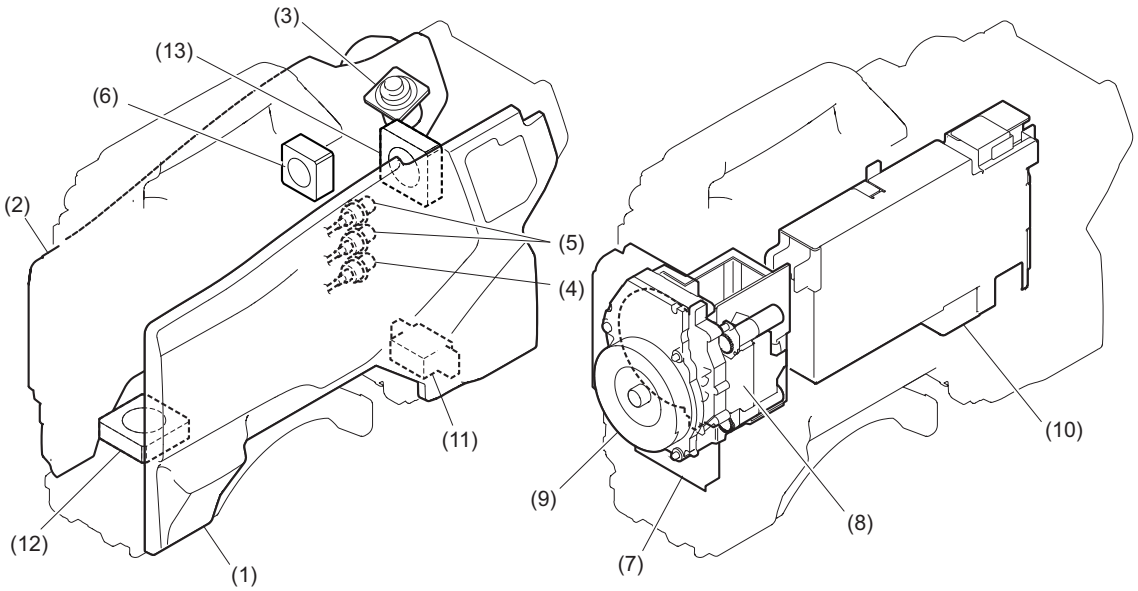
This section explains the replacement procedures of periodic replacement parts, main mechanical parts, and mounted circuit boards.

4-1. General Information for Parts Replacement

4-1-1. Index

This section describes the replacement procedure of the parts below.

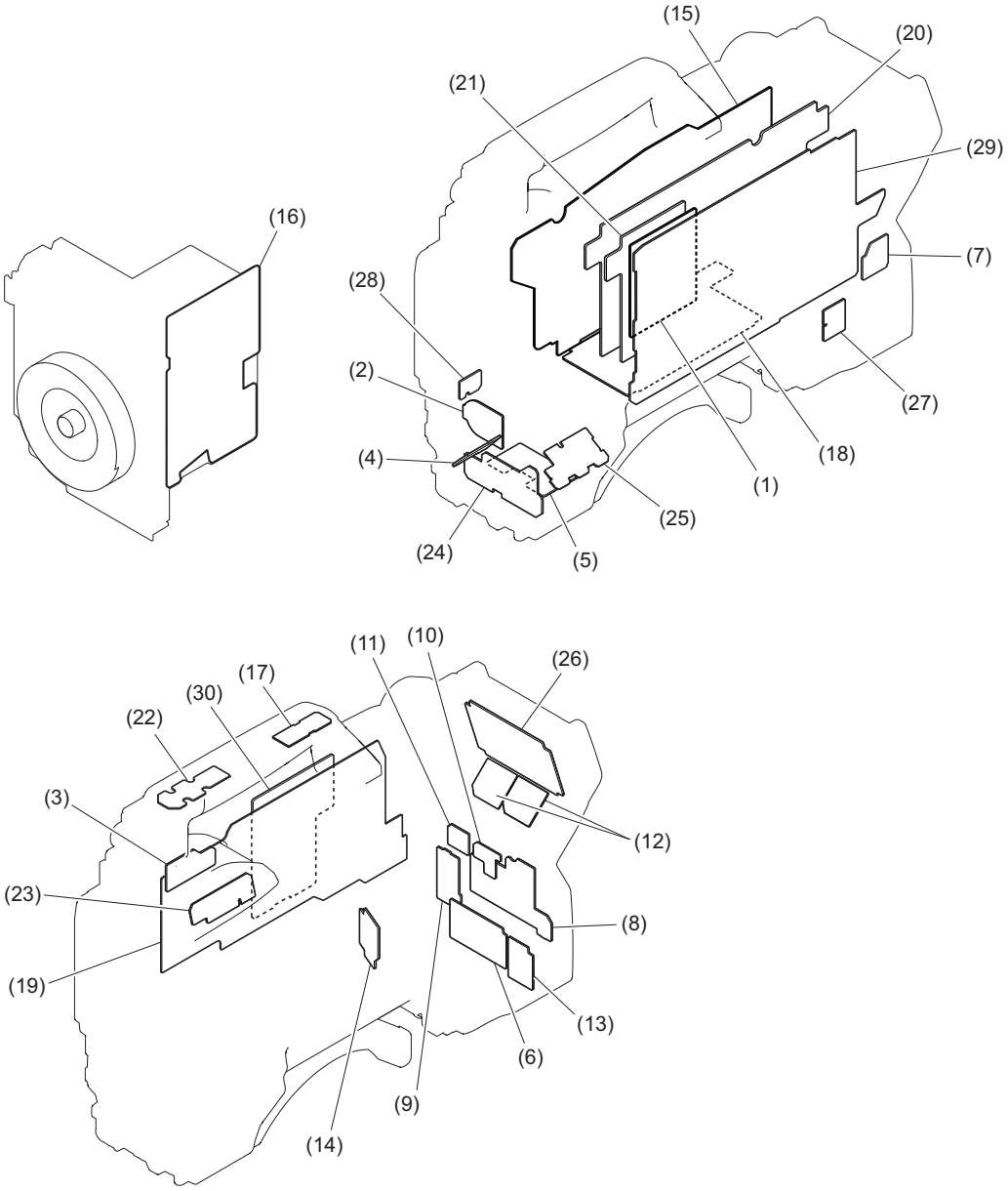
Mechanical parts



No.	Part name	Section
(1)	Inside Panel Assembly	“4-2. Inside Panel Assembly”
(2)	Outside Panel Assembly	“4-3-1. Outside Panel Assembly”
(3)	Optical Multi Cable Assembly	“4-3-5. Optical Multi Cable Assembly”
(4)	PROMPTER Connector	“4-3-6. PROMPTER Connector”
(5)	Coaxial Cable	“4-3-7. Coaxial Cable”
(6)	DC fan (outside)	“4-3-3. DC Fan (Outside panel)”
(7)	Front Assembly	“4-5. Front Assembly”
(8)	FD Assembly	“4-4. FD (Filter Disk) Assembly”
(9)	OHB Assembly	“4-6-1. OHB Assembly”
(10)	Power Block Assembly	“4-8-2. Power Block Assembly (RE-291 Board/PS-836 Board)”
(11)	BUILD UP Connector	“4-8-13. BUILD UP Connector”
(12)	DC Fan (Front)	“4-9. DC Fan (Front)”
(13)	DC Fan (Rear)	“4-10. DC Fan (Rear)”

Mounted circuit boards

After replacing/repairing the mounted circuit boards (or the assembling parts including them), perform the steps after replacement/repair. (Refer to“1-4. Notes on Board Replacing”)



No.	Board name	Procedure	Steps after replacement
(1)	AT-189 board	“4-8-1. SY-408 Board/AT-189 Board”	-
(2)	CN-3421 board	“4-8-8. CN-3421 Board”	-
(3)	CN-3422 board	“4-7-2. VF Connector (CN-3422 Board)”	-
(4)	CN-3423 board	“4-8-6. CN-3423 Board”	-
(5)	CN-3424 board	“4-8-10. CN-3424 Board”	-
(6)	CN-3425 board	“4-11-2. AUDIO IN Connector (CN-3425 Board)”	-
(7)	CN-3426 board	“4-8-11. CN-3426 Board”	-
(8)	CN-3427 board	“4-11-1. CN-3429 Board/CN-3427 Board”	-
(9)	CN-3428 board	“4-11-3. PROMPTER/GENLOCK/TEST OUT Connector (CN-3428 Board)”	-
(10)	CN-3429 board	“4-11-1. CN-3429 Board/CN-3427 Board”	-
(11)	CN-3430 board	“4-11-4. REMOTE Connector (CN-3430 Board)”	-
(12)	CN-3431 board	“4-12-1. INTERCOM Connector (CN-3431 Board)”	-

Continued

No.	Board name	Procedure	Steps after replacement
(13)	CN-3432 board	"4-11-5. DC IN Connector (CN-3432 Board)"	-
(14)	CN-3434 board	"4-3-4. CN-3434 Board"	-
(15)	DPR-370 board	"4-8-3. DPR-370 Board"	-
(16)	IF-1278 board	"4-6-2. IF-1278 Board"	-
(17)	LE-376 board	"4-7-1. LE-376 Board/SW-1524 Board"	-
(18)	MB-1214 board	"4-8-4. MB-1214 Board"	-
(19)	MEM-147 board	"4-3-2. MEM-147 Board/TX-146 Board"	-
(20)	PS-836 board	"4-8-2. Power Block Assembly (RE-291 Board/PS-836 Board)"	-
(21)	RE-291 board	"4-8-2. Power Block Assembly (RE-291 Board/PS-836 Board)"	-
(22)	SW-1524 board	"4-7-1. LE-376 Board/SW-1524 Board"	-
(23)	SW-1525 board	"4-7-3. SW-1525 Board"	-
(24)	SW-1527 board	"4-8-5. SW-1527 Board"	-
(25)	SW-1528 board	"4-8-9. SW-1528 Board"	-
(26)	SW-1530A board	"4-12-2. SW-1530 Board/SW-1530A Board"	-
(27)	SW-1531 board	"4-8-12. SW-1531 Board"	-
(28)	SW-1672 board	"4-8-7. SW-1672 Board"	-
(29)	SY-408 board	"4-8-1. SY-408 Board/AT-189 Board"	"1-4-2. Adjustment and Setting Required when Replacing the SY-408 BoardProcedure"
(30)	TX-146 board	"4-3-2. MEM-147 Board/TX-146 Board"	-

4-1-2. Basic Knowledge

Flexible card wire and fine-wire coaxial cable

When installing the flexible card wire and fine-wire coaxial cable, connect the wire securely referring to "1-7. Flexible Card Wire and Coaxial Cable".

4-1-3. Tightening Torque

Torque driver and screw tightening torque

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

Tightening torque

P1.7 : 0.10 ±0.02 N·m (1.01 ±0.20 kgf·cm)

B2 : 0.30 ±0.02 N·m (3.04 ±0.20 kgf·cm)

K2 : 0.30 ±0.02 N·m (3.04 ±0.20 kgf·cm)

B2.6 : 0.53 ±0.07 N·m (5.30 ±0.70 kgf·cm)

B3 : 0.80 ±0.02 N·m (8.15 ±0.20 kgf·cm)

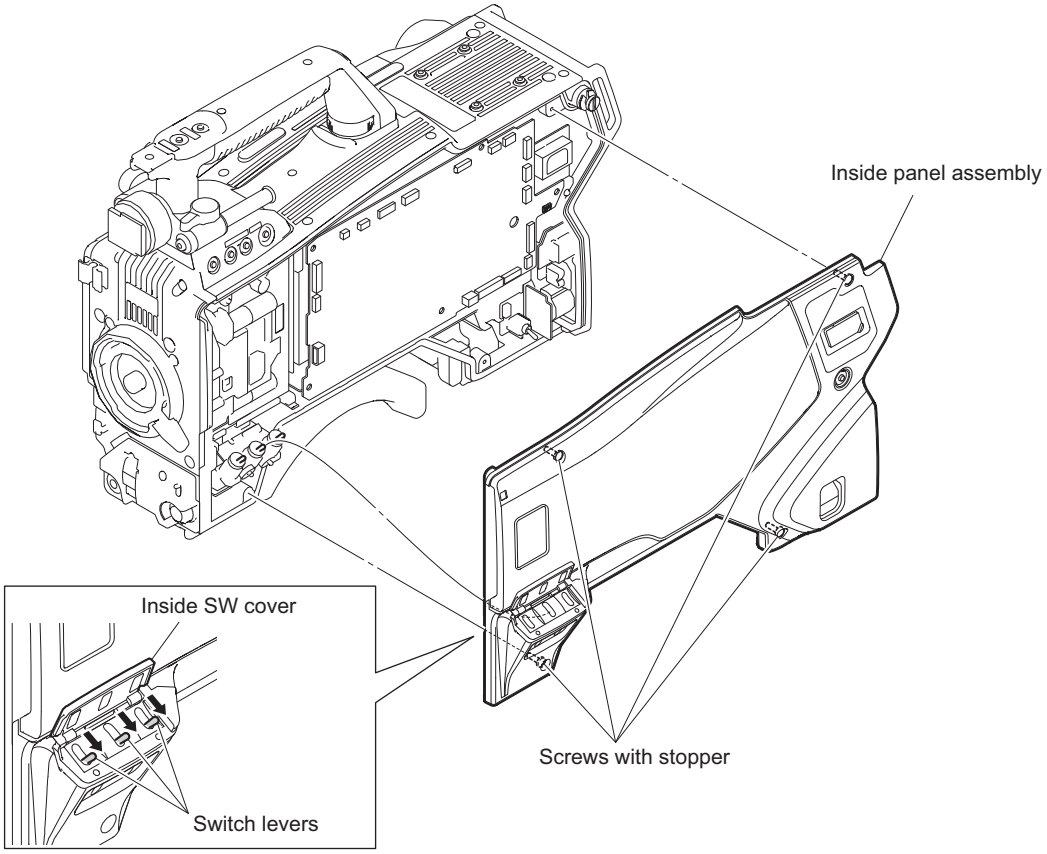
Tip

- 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 this 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.

4-2. Inside Panel Assembly

Procedure

1. Open the inside SW cover and turn the three switch levers in the direction of arrow.
2. Loosen the four screws with stopper, and remove the inside panel assembly.



Note

Turn the switch levers in the arrow direction, and then install the inside panel assembly.

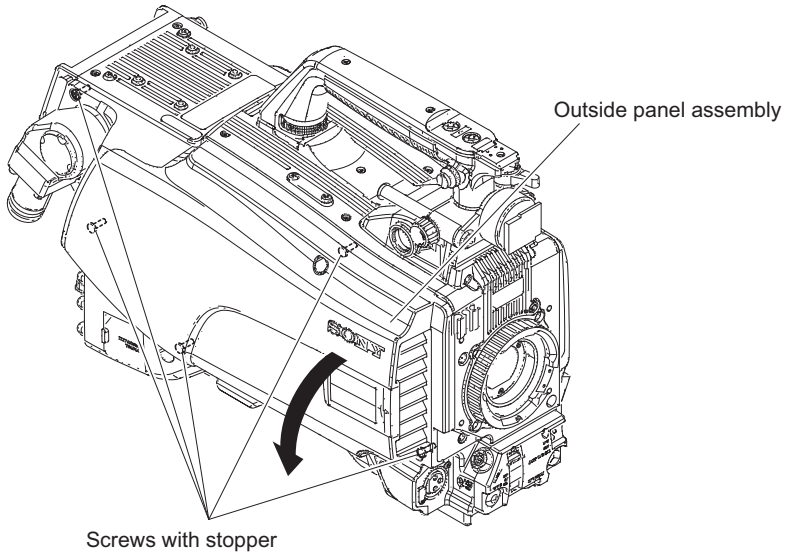
3. Install the inside panel assembly and tighten the four screws with stopper.

4-3. Outside Block

4-3-1. Outside Panel Assembly

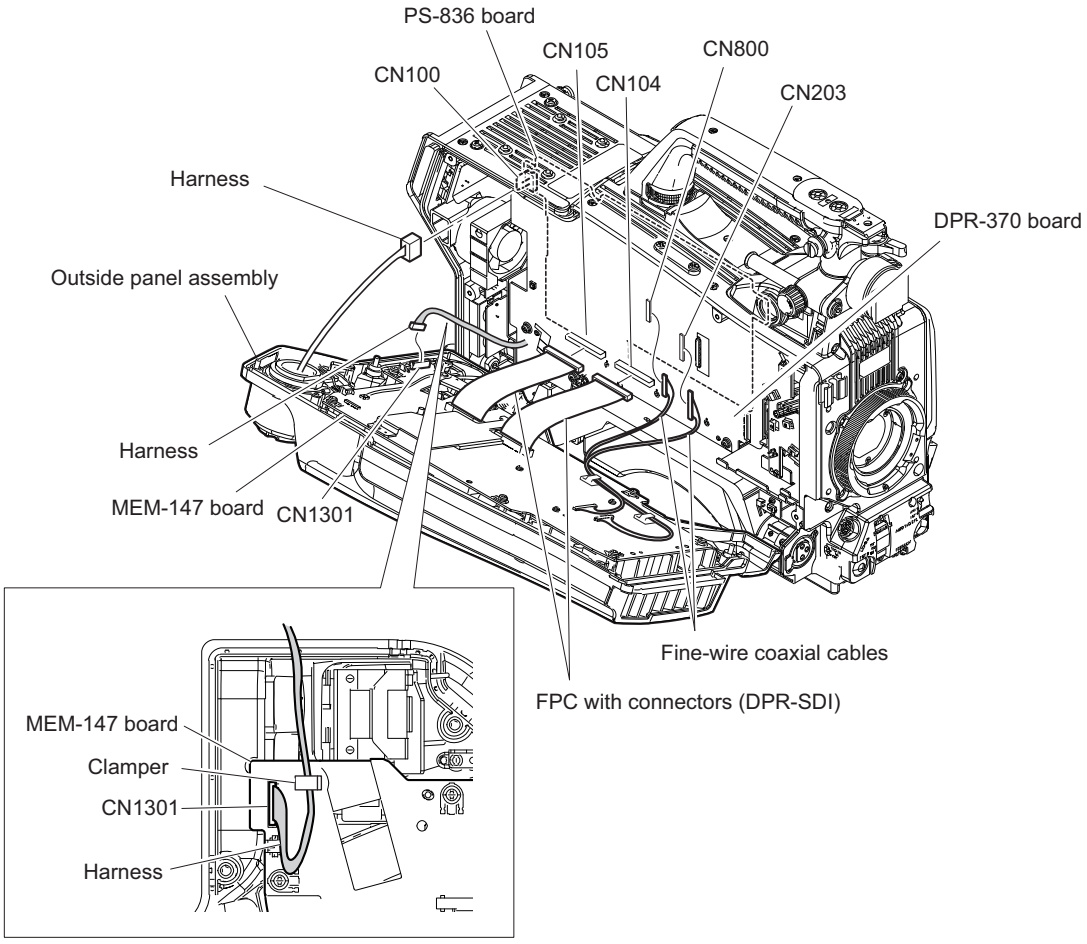
Procedure

1. Loosen the five screws with stopper, and open the outside panel assembly in the direction of arrow.



2. Disconnect the harness from the connector (CN100) on the PS-836 board.
3. Disconnect the two fine-wire coaxial cables from the two connectors (CN800, CN203) on the DPR-370 board.
4. Disconnect the two FPCs with connector (DPR-SDI) from the two connectors (CN104, CN105) on the DPR-370 board.

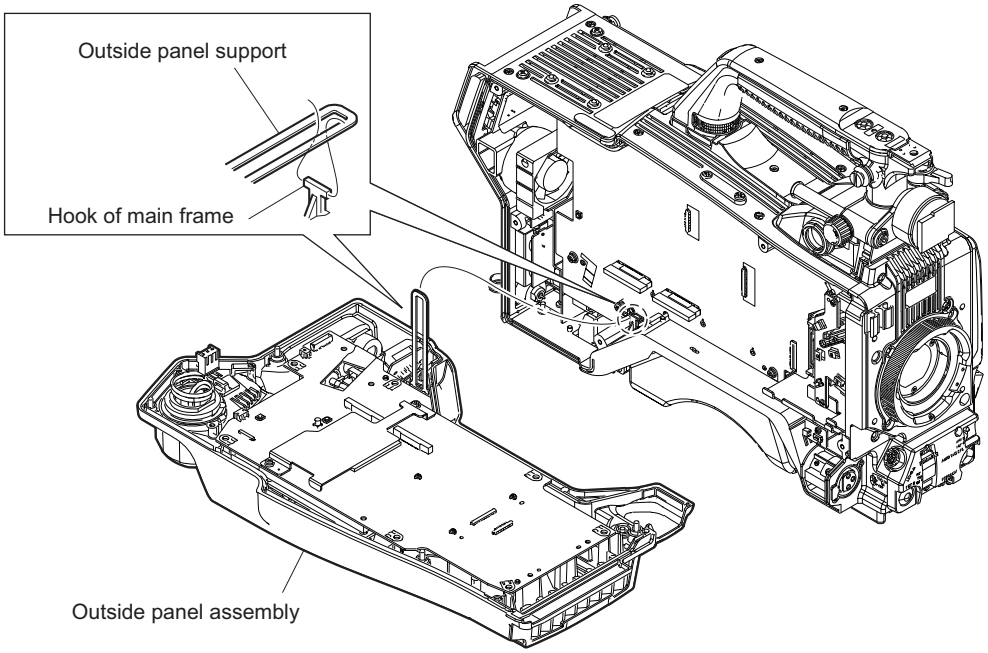
5. Disconnect the harness from the connector (CN1301) on the MEM-147 board and release the harness from the clamper.



Note

When installing the outside panel assembly, arrange the harness as shown in the figure.

6. Remove the outside panel support from the hook of the main frame and remove the outside panel assembly.



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

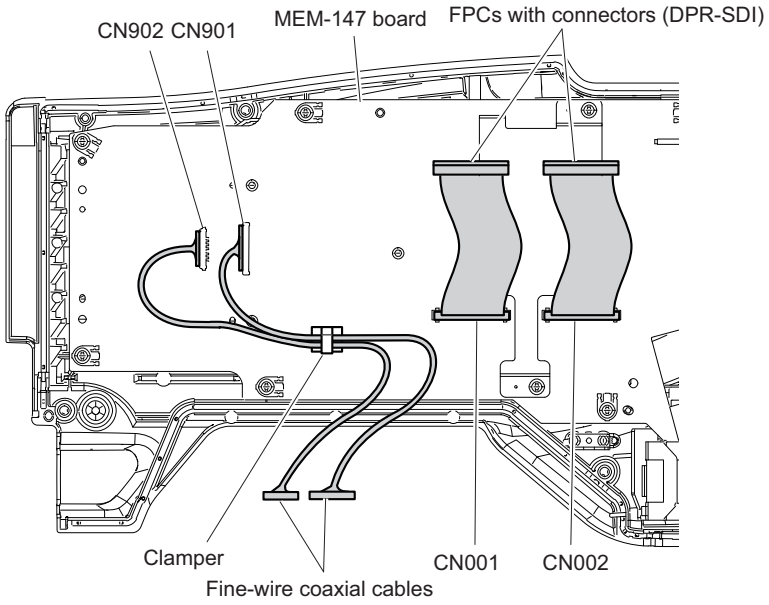
4-3-2. MEM-147 Board/TX-146 Board

Preparation

1. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")

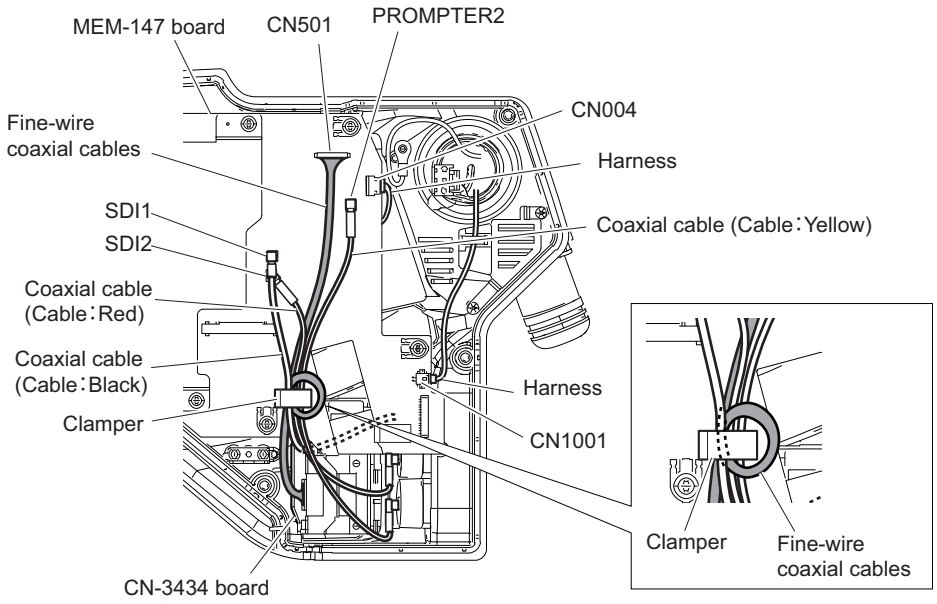
Procedure

1. Disconnect the two FPCs with connectors (DPR-SDI) from the two connectors (CN001, CN102) on the MEM-147 board.
2. Disconnect the two fine-wire coaxial cables from the two connectors (CN901, CN902) on the MEM-147 board, and release the two fine-wire coaxial cables from the clampers.



3. Release the fine-wire coaxial cable and coaxial cables from the clamper.
4. Disconnect the three coaxial cables from the three connectors (SDI1, SDI2, and PROMPTER2) on the MEM-147 board.
5. Disconnect the fine-wire coaxial cable from the connector (CN501) on the MEM-147 board.

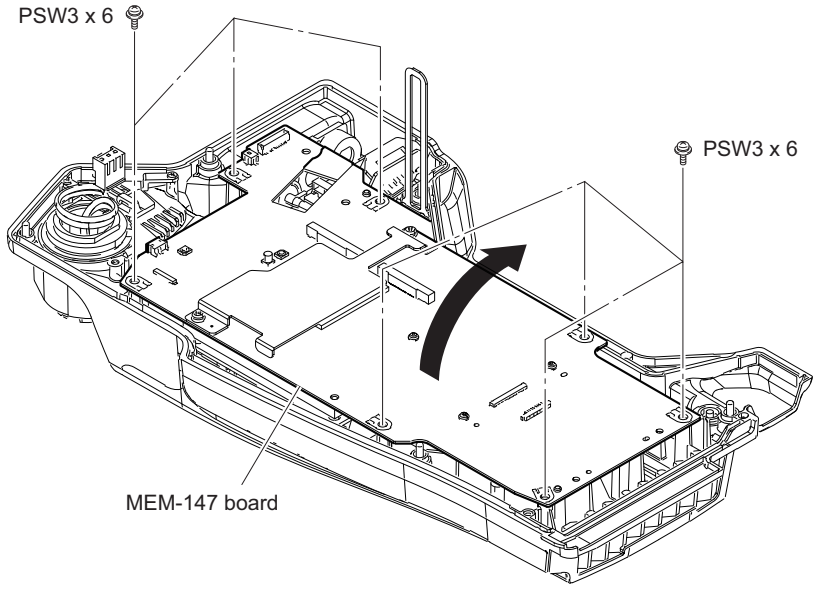
6. Disconnect the two harnesses from the two connectors (CN004, CN1001) on the MEM-147 board.



Note

When connecting the coaxial cables, connect connectors correctly.

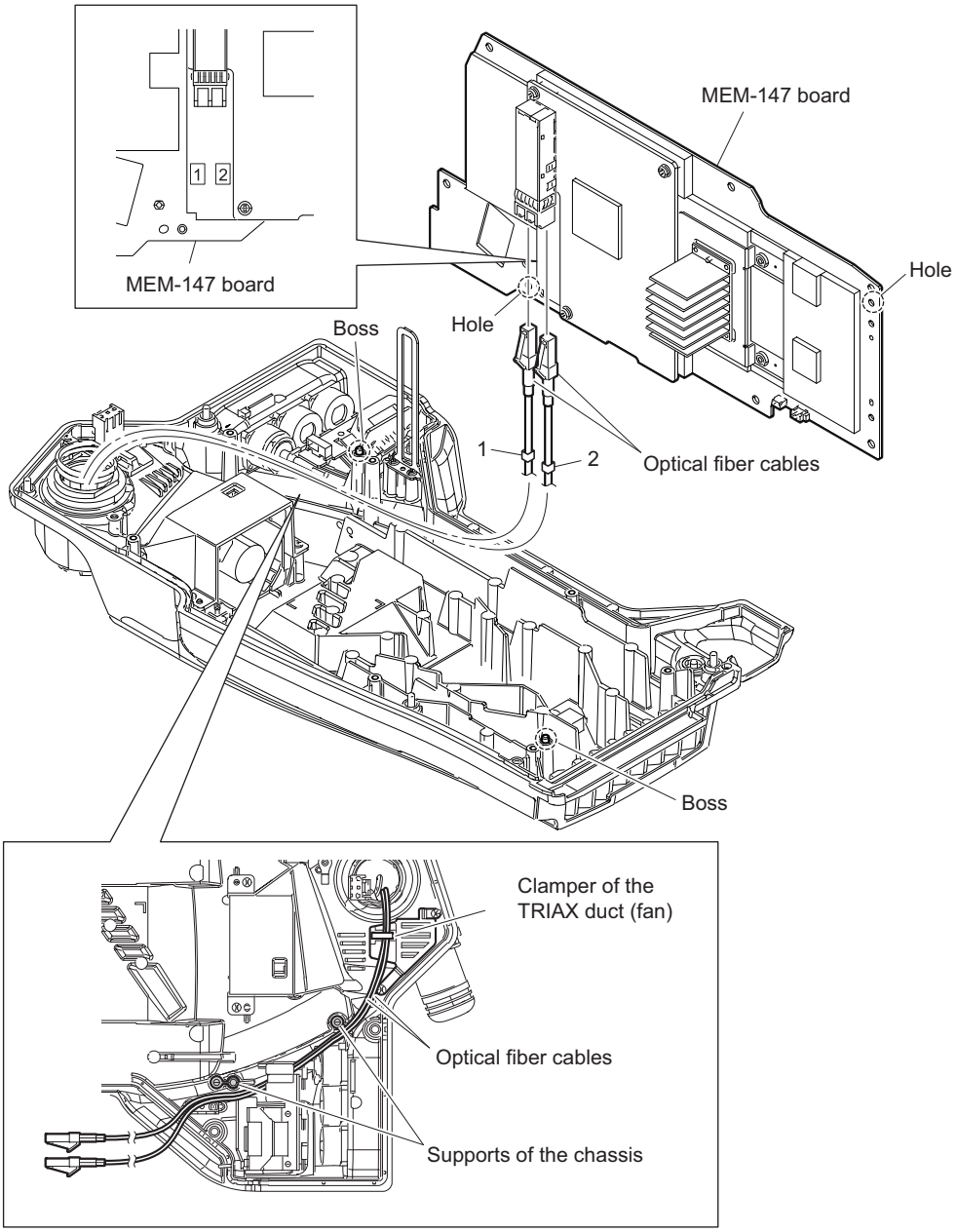
7. Remove the seven screws, and open the MEM-147 board in the direction of the arrow.



8. Disconnect the two optical fiber cables from the two connectors on the MEM-147 board.

Note

- If optical fiber cable is bent or pulled strongly, it may be disconnected. Handle optical fiber cables carefully.
- Do not touch the tip of optical fiber cable connector. This may result in deterioration of signals.

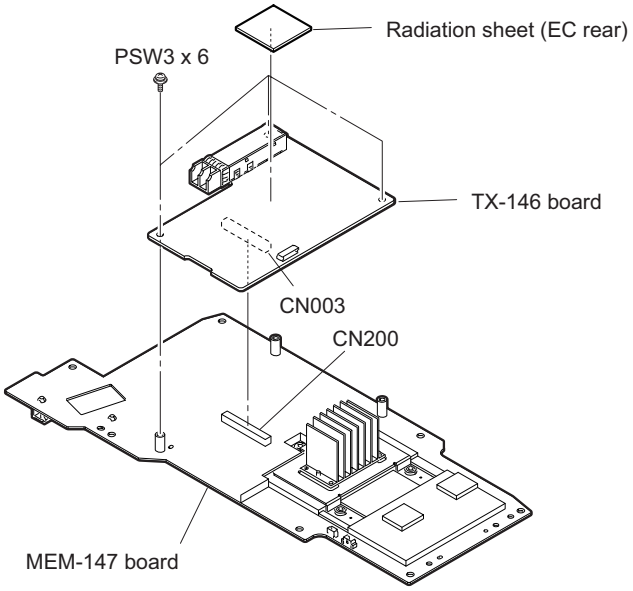


Note

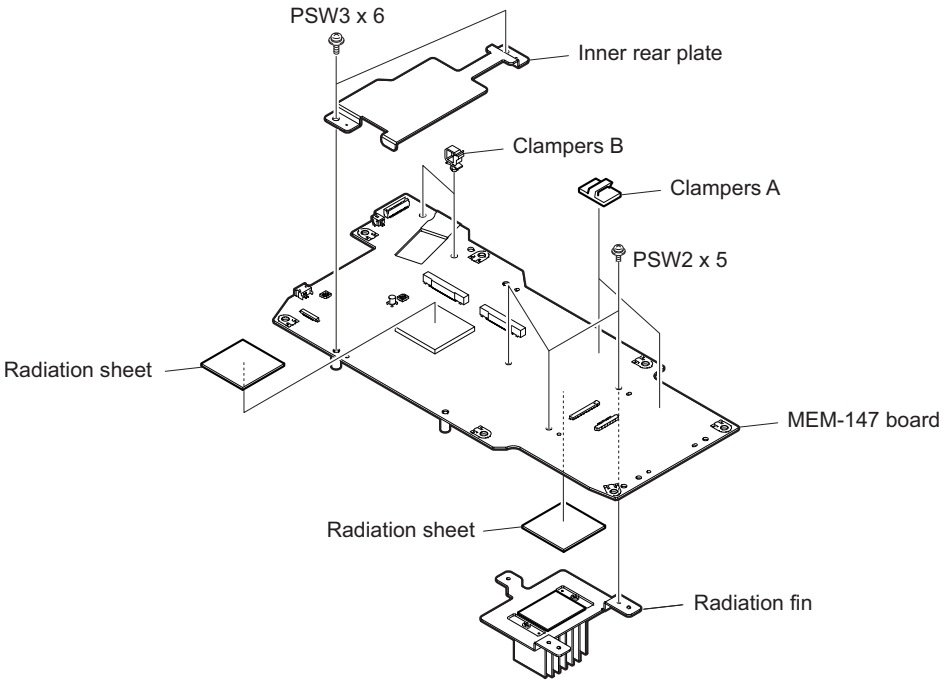
- When connecting the optical fiber cables, check their numbers and connect them correctly and securely insert them to the end of respective connectors.
- When installing the MEM-147 board, match the two bosses with the two holes.
- When installing the MEM-147 board, arrange the optical fiber cables as shown in the figure.

9. Remove the radiation sheet (EC rear) from the TX-146 board.

10. Remove the three screws, and detach the TX-146 board from the connector (CN200) on the MEM-147 board.



11. Remove the two screws (PSW3 x 6), and detach the inner rear plate.
12. Remove the three screws (PSW2 x 5), and detach the radiation fin.
13. Remove the two radiation sheets from the MEM-147 board.
14. Remove the two clampers A and two clampers B from the MEM-147 board.



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

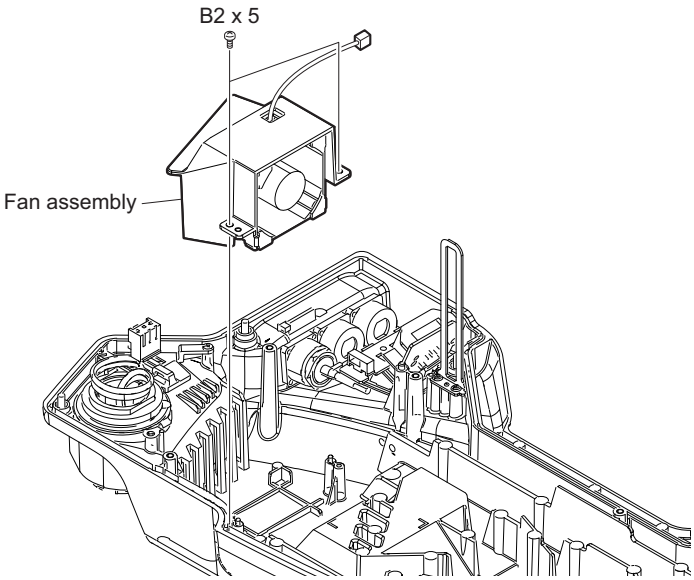
4-3-3. DC Fan (Outside panel)

Preparation

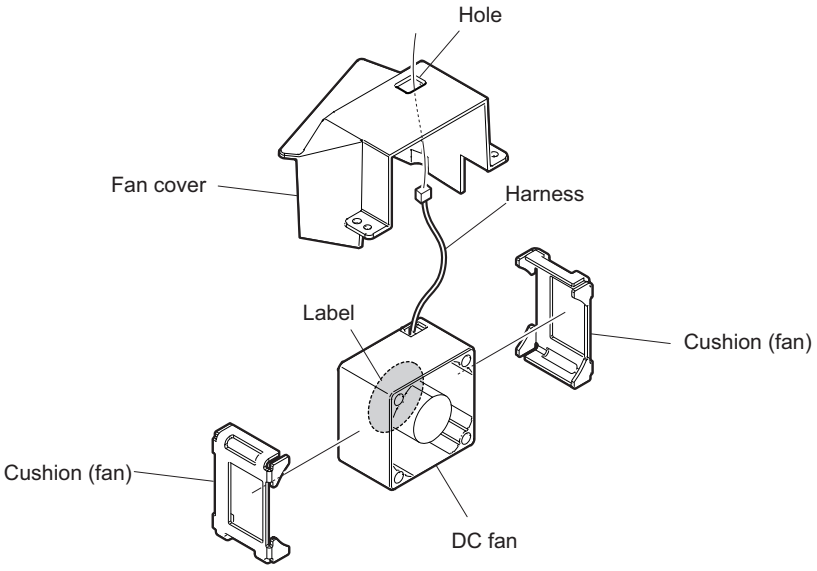
1. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")
2. Remove the MEM-147 board assembly. (Refer to "4-3-2. MEM-147 Board/TX-146 Board")

Procedure

1. Remove the two screws, and detach the fan assembly.



2. Remove the fan cover, and pull out the harness from the hole of the fan cover.
3. Remove the two cushions (fan).



Note

When installing the DC fan, install the DC fan with its label coming to the position shown in the figure.

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

4-3-4. CN-3434 Board

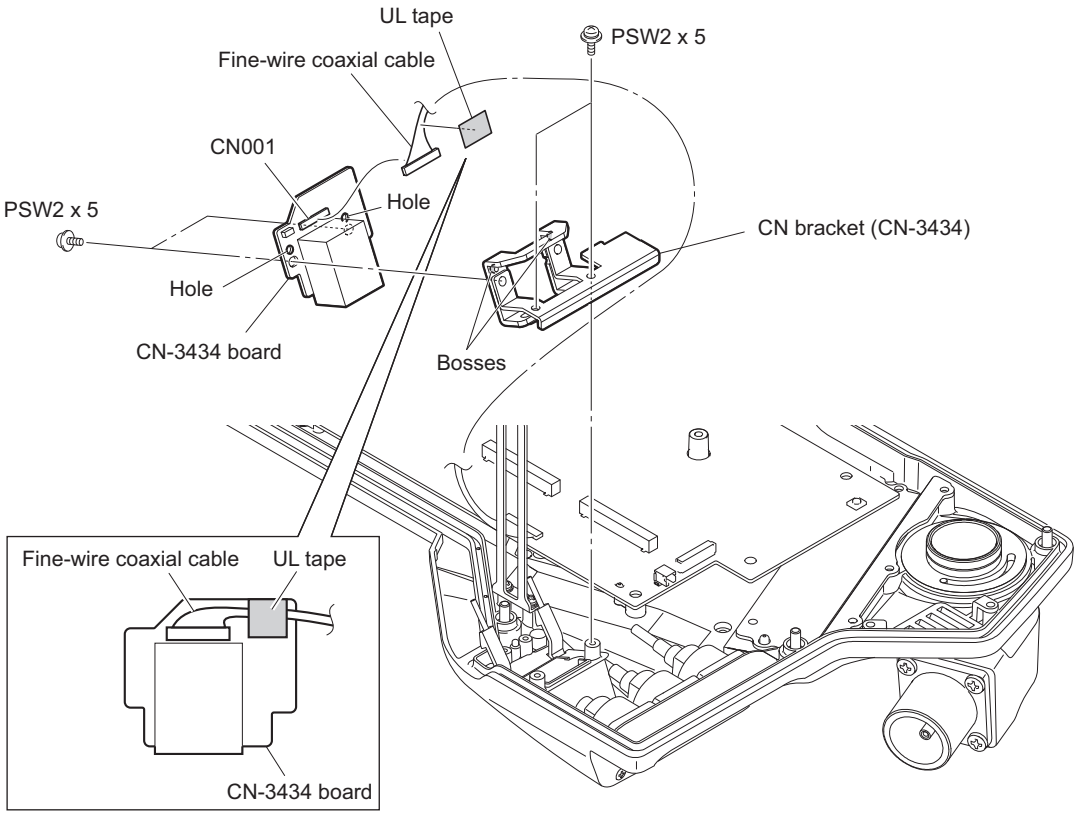
Preparation

1. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")

Procedure

1. Remove the UL tape from the CN-3434 board.
2. Disconnect the fine-wire coaxial cable from the connector (CN001) on the CN-3434 board.

3. Remove the two screws, and detach the CN bracket (CN-3434).
4. Remove the two screws, and detach the CN-3434 board.



Notes

- When installing the CN-3434 board, match the two bosses with the two holes.
- When installing the fine-wire coaxial cable, attach the UL tape at the location shown in the figure.

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

4-3-5. Optical Multi Cable Assembly

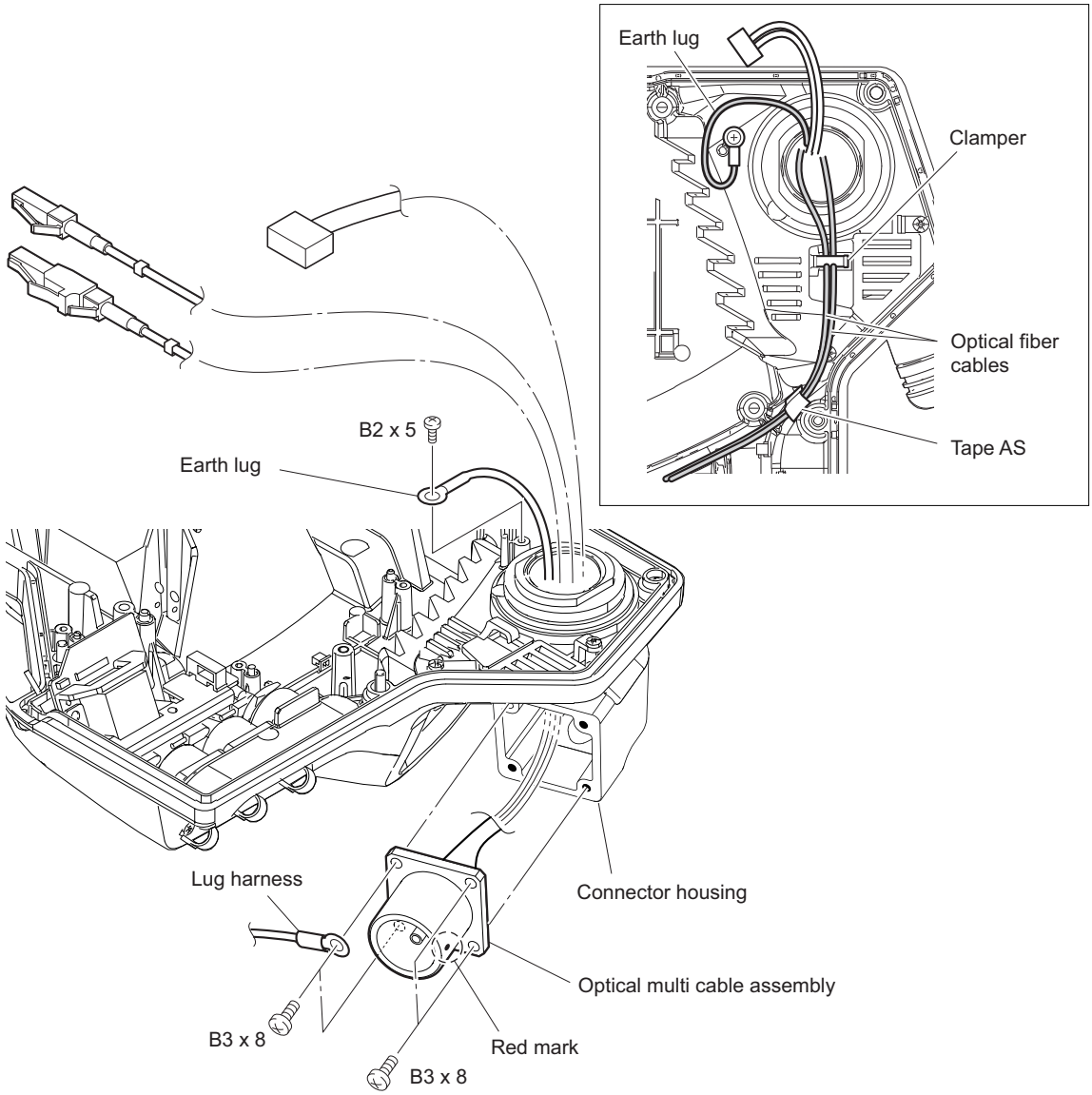
Preparation

1. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")
2. Remove the MEM-147 board assembly. (Refer to"4-3-2. MEM-147 Board/TX-146 Board")

Procedure

1. Remove the screw, and detach the earth lug.
2. Remove the tape AS.
3. Release the two optical fiber cables from the clamper.

4. Remove the four screws, and detach the lug harness and optical multi cable assembly.



Note

When installing the optical multi cable assembly, install it so that the red mark is located shown in the figure.

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

4-3-6. PROMPTER Connector

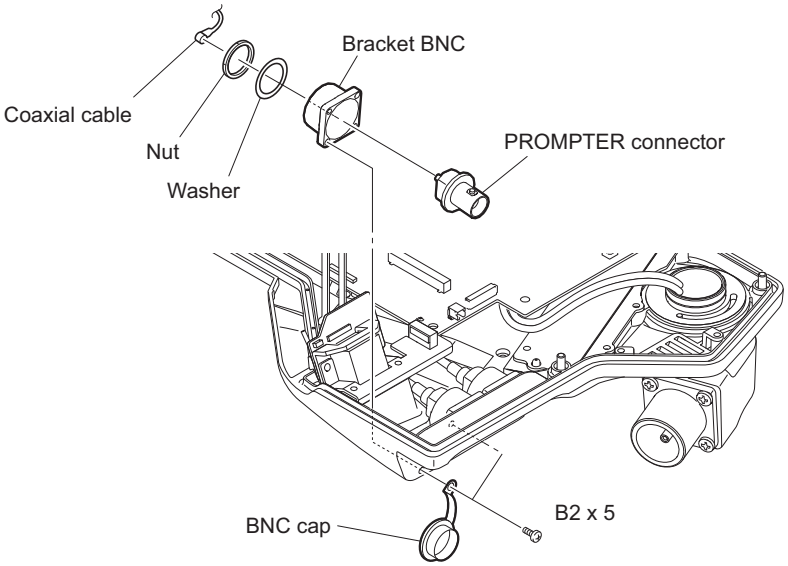
Preparation

1. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")

Procedure

1. Remove the two screws, and detach the BNC cap, and bracket BNC.
2. Disconnect the coaxial cable from the PROMPTER connector.

3. Remove the nut and washer, and detach the PROMPTER connector.



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

4-3-7. Coaxial Cable

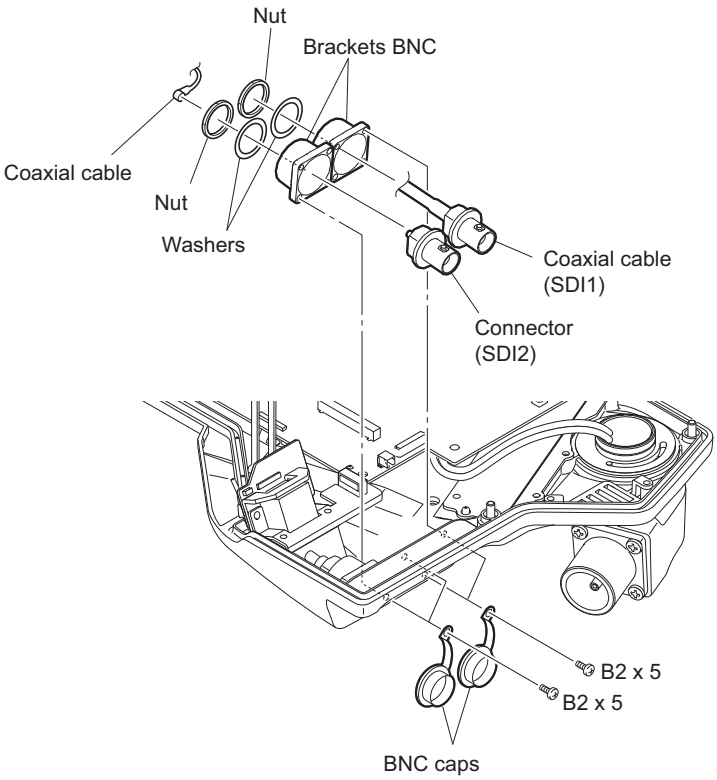
Preparation

1. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")
2. Remove the MEM-147 board assembly. (Refer to"4-3-2. MEM-147 Board/TX-146 Board")

Procedure

1. Disconnect the coaxial cable from the connector (SDI1).
2. Remove the four screws, and detach the two BNC caps, and two brackets BNC.

3. Remove the two nuts and two washers, and detach the coaxial cable (SDI2).



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

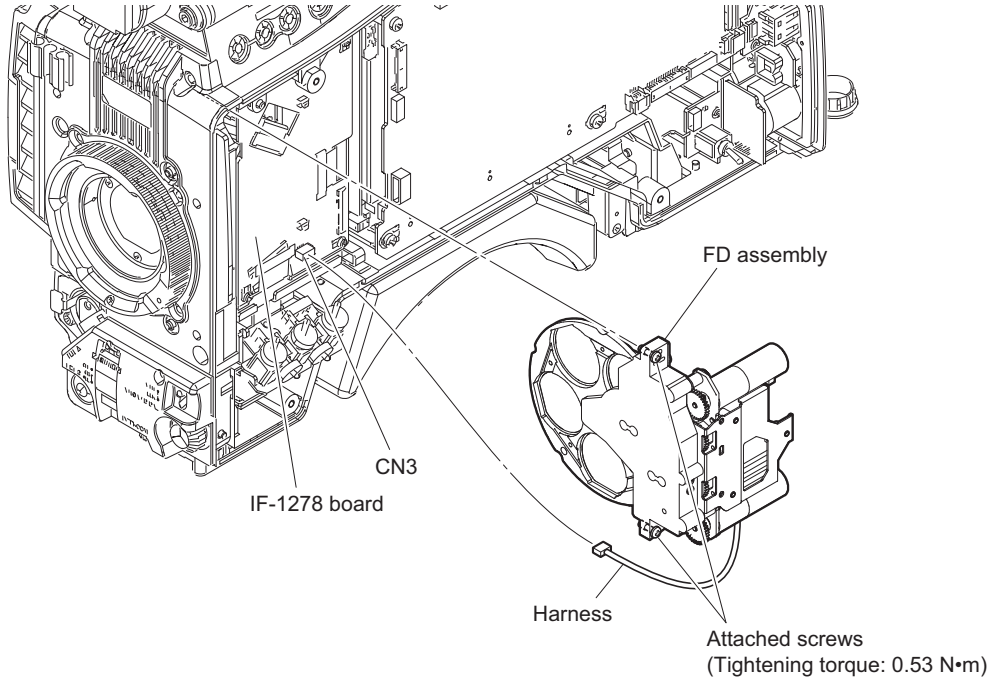
4-4. FD (Filter Disk) Assembly

Preparation

1. Remove the inside panel assembly. (Refer to"4-2. Inside Panel Assembly")

Procedure

1. Disconnect the harness from the connector (CN3) on the IF-1278 board.
2. Loosen the two screws, and detach the FD assembly.



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

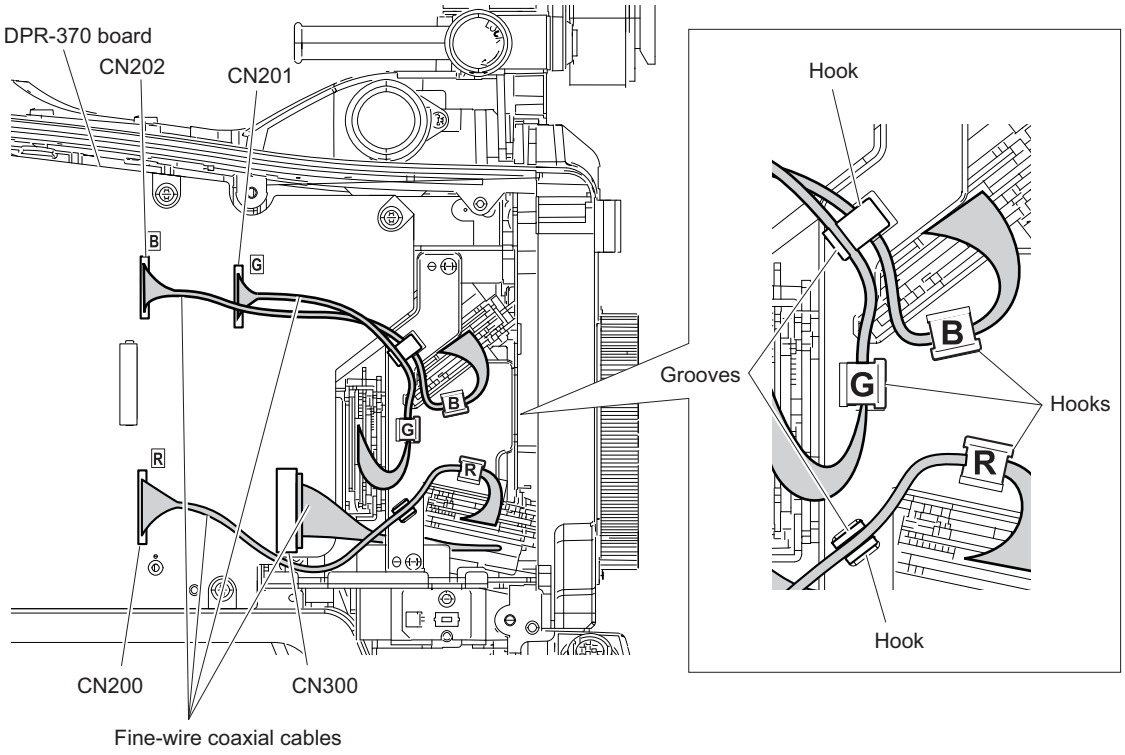
4-5. Front Assembly

Preparation

1. Remove the inside panel assembly. (Refer to"4-2. Inside Panel Assembly")
2. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")

Procedure

1. Disconnect the four fine-wire coaxial cables from the four connectors (CN200, CN201, CN202, CN300) on the DPR-370 board.

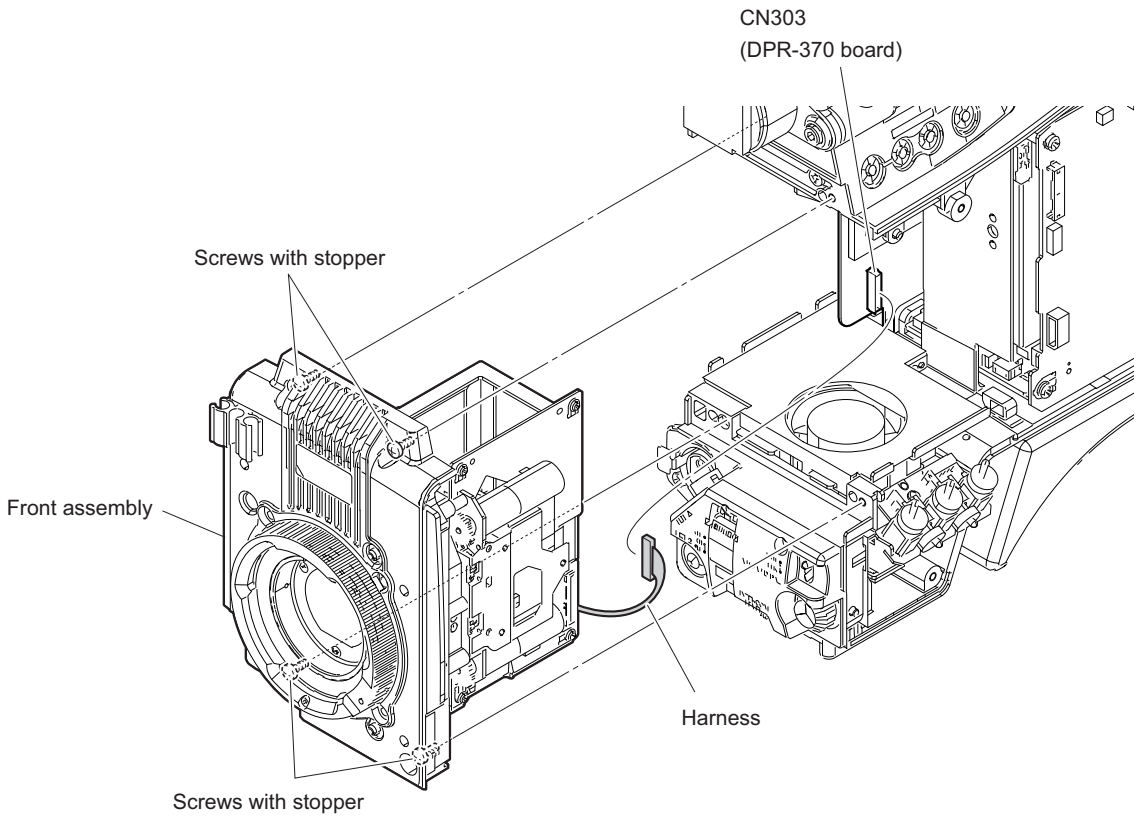


Note

When installing the front assembly, arrange the fine-wire coaxial cables as shown in the figure.

2. Loosen the four screws with stopper, and draw the front assembly.

3. Disconnect the harness from the connector (CN303) on the DPR-370 board.



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

4-6. OHB Block

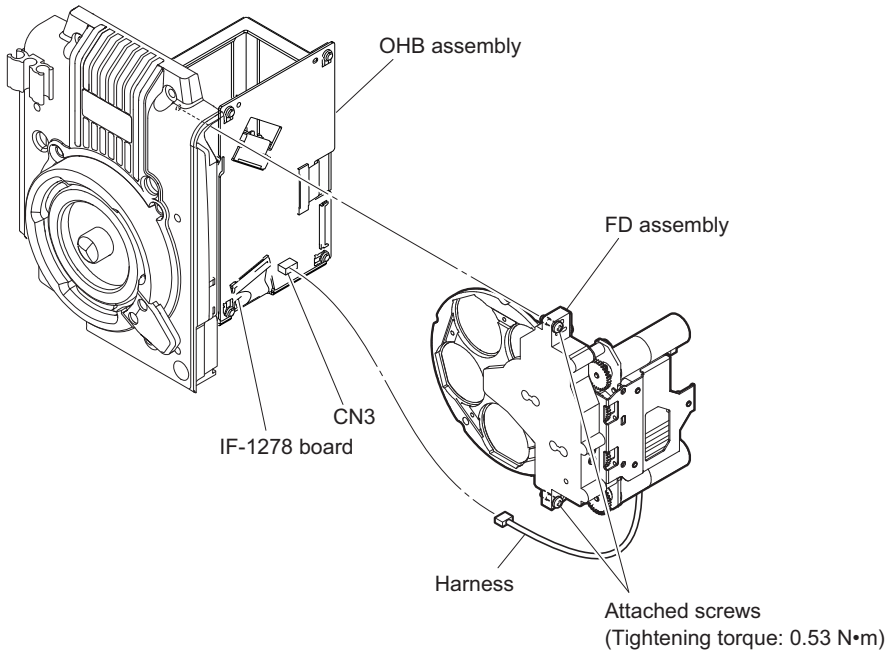
4-6-1. OHB Assembly

Preparation

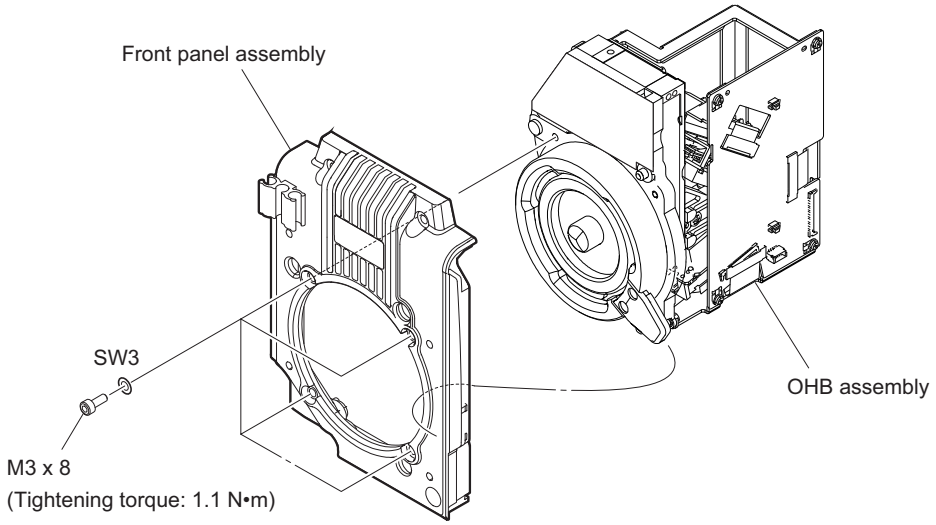
1. Remove the inside panel assembly. (Refer to"4-2. Inside Panel Assembly")
2. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")
3. Remove the front assembly. (Refer to"4-5. Front Assembly")

Procedure

1. Disconnect the harness from the connector (CN3) on the IF-1278 board.
2. Loosen the two screws, and remove the FD assembly from the OHB assembly.



3. Remove the four screws and four washers, and detach the front panel assembly.



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

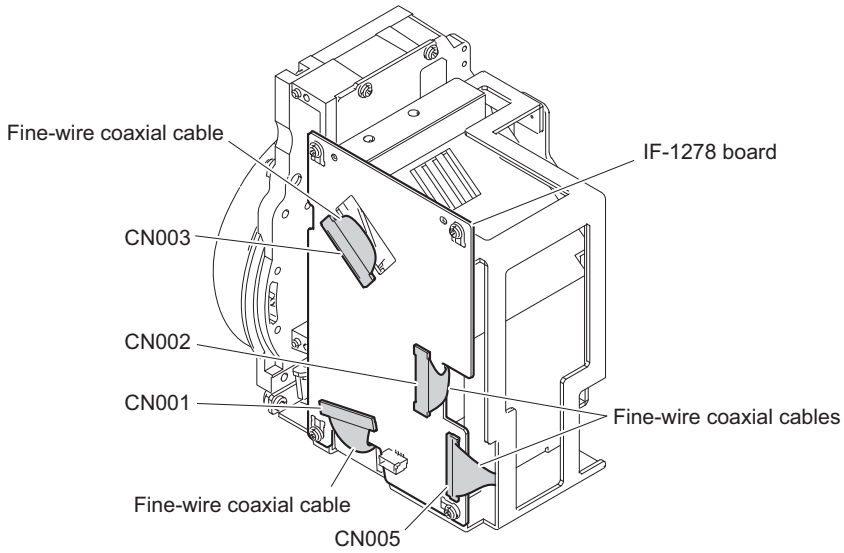
4-6-2. IF-1278 Board

Preparation

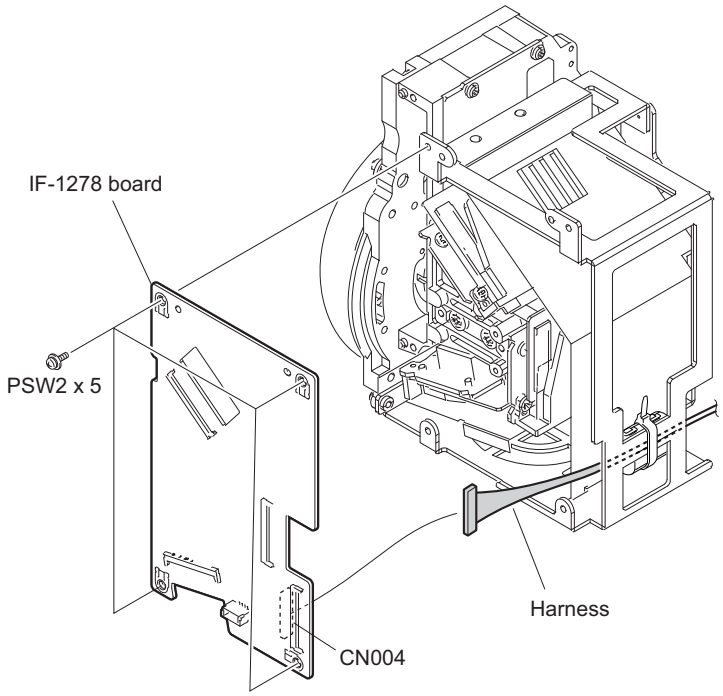
1. Remove the inside panel assembly. (Refer to"4-2. Inside Panel Assembly")
2. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")
3. Remove the front assembly. (Refer to"4-5. Front Assembly")
4. Remove the front panel assembly. (Refer to"4-6-1. OHB Assembly")

Procedure

1. Disconnect the four fine-wire coaxial cables from the four connectors (CN001, CN002, CN003, CN005) on the IF-1278 board.



2. Remove the four screws, and draw the IF-1278 board.
3. Disconnect the harness from the connector (CN004) on the IF-1278 board.



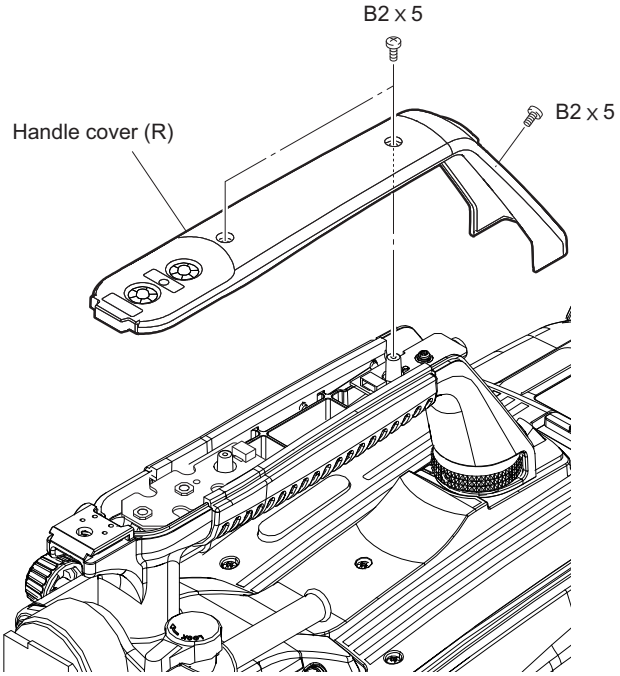
4. Install the removed parts by reversing the steps of removal.

4-7. Handle Block

4-7-1. LE-376 Board/SW-1524 Board

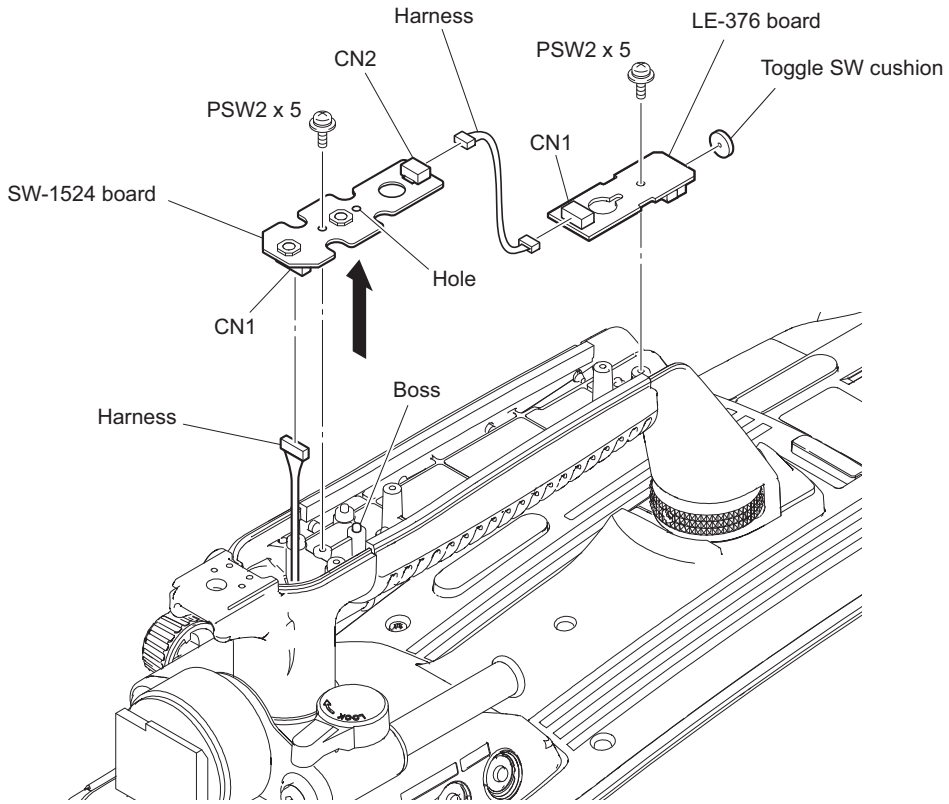
Procedure

1. Remove the three screws, and detach the handle cover (R).



2. Disconnect the harness from the connector (CN1) on the LE-376 board.
3. Remove the screw, and detach the LE-376 board.
4. Remove the toggle SW cushion.
5. Disconnect the harness from the connector (CN2) on the SW-1524 board.
6. Remove the screw, and pull up the SW-1524 board in the direction of arrow.

7. Disconnect the harness from the connector (CN1) on the SW-1524 board.



Note

When installing the SW-1524 board, match the boss with the hole.

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

4-7-2. VF Connector (CN-3422 Board)

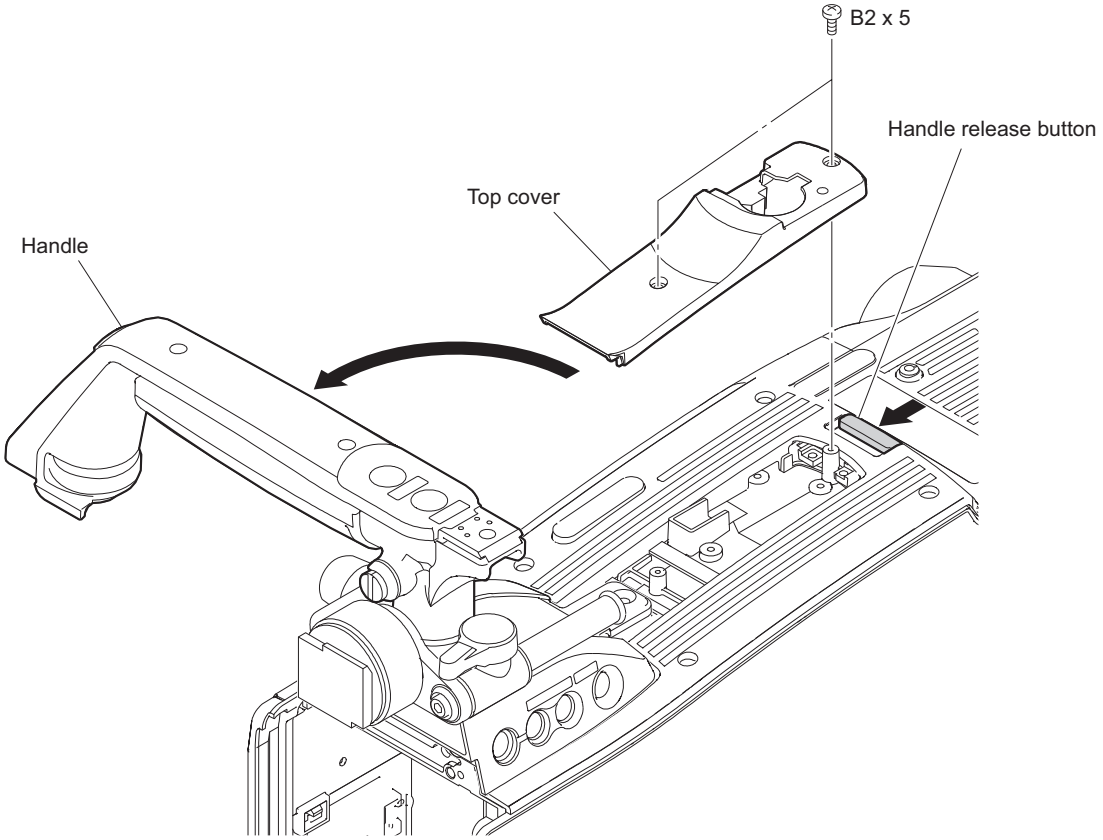
Procedure

1. Remove the front assembly. (Refer to"4-5. Front Assembly" on page 4-17)

Procedure

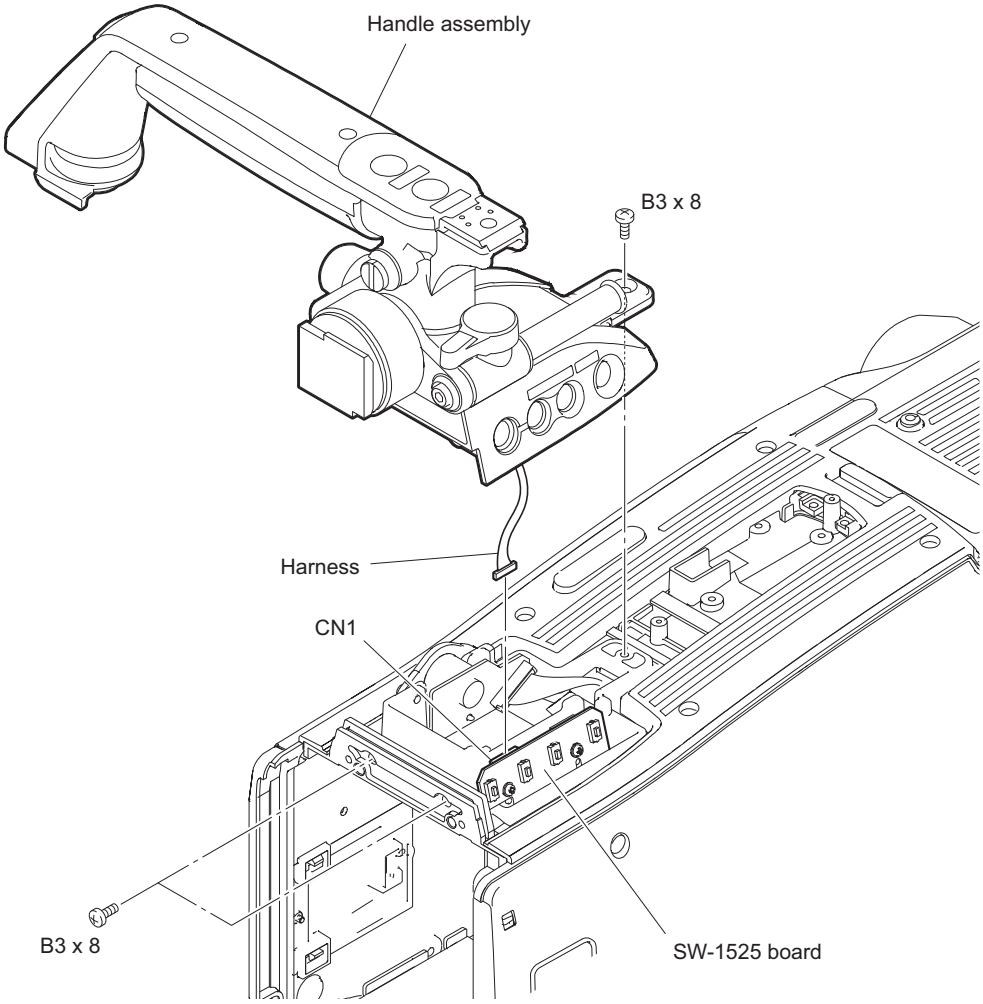
1. Press the handle release button and turn the handle in the direction of arrow.

2. Remove the two screws, and detach the top cover.

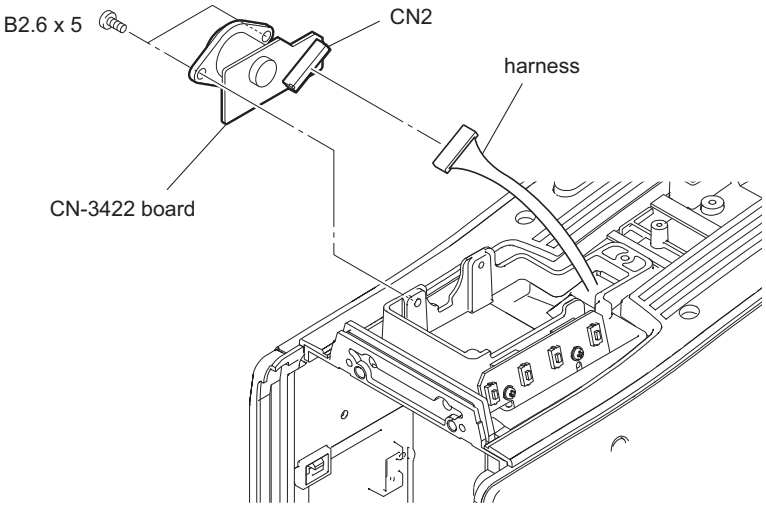


3. Remove the three screws, and pull up the handle assembly.

4. Disconnect the harness from the connector (CN1) on the SW-1525 board and remove the handle assembly.



5. Disconnect the harness from the connector (CN2) on the CN-3422 board.
6. Remove the two screws, and detach the CN-3422 board.



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

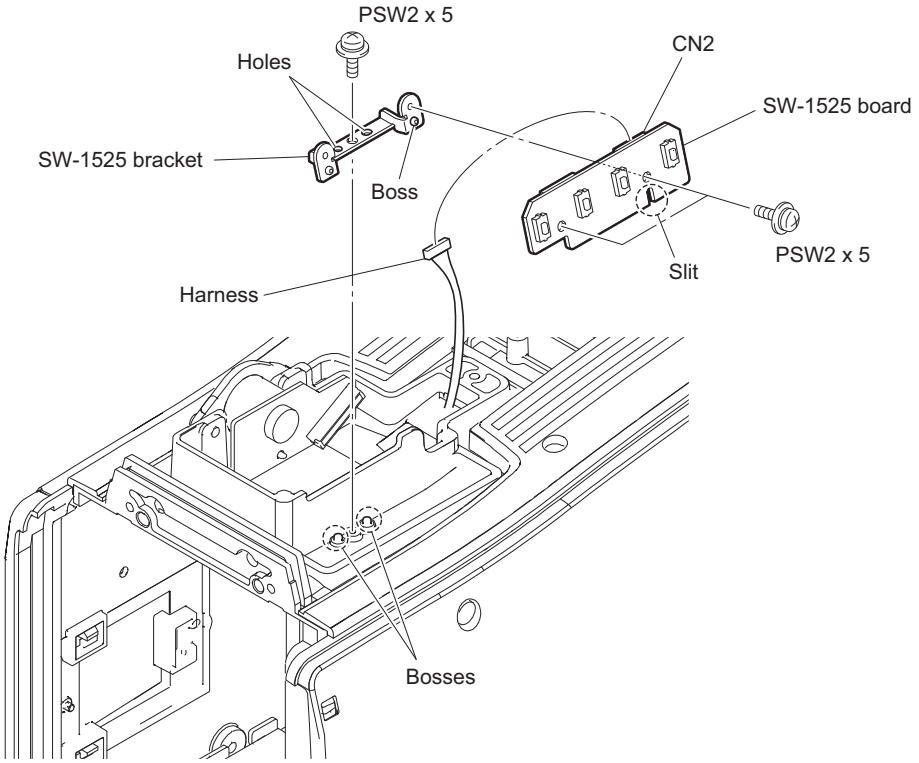
4-7-3. SW-1525 Board

Preparation

1. Remove the front assembly. (Refer to“4-5. Front Assembly” on page 4-17)
2. Remove the handle assembly. (Refer to“4-7-2. VF Connector (CN-3422 Board)”)

Procedure

1. Disconnect the harness from the connector (CN2) on the SW-1525 board.
2. Remove the screw, and detach the SW-1525 bracket.
3. Remove the two screws, and detach the SW-1525 board.



Note

When installing the SW-1525 board to the SW-1525 bracket, match the boss with the slit. When installing the SW-1525 bracket to the main unit, match the two bosses with the two holes.

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

4-8. Main Chassis Block

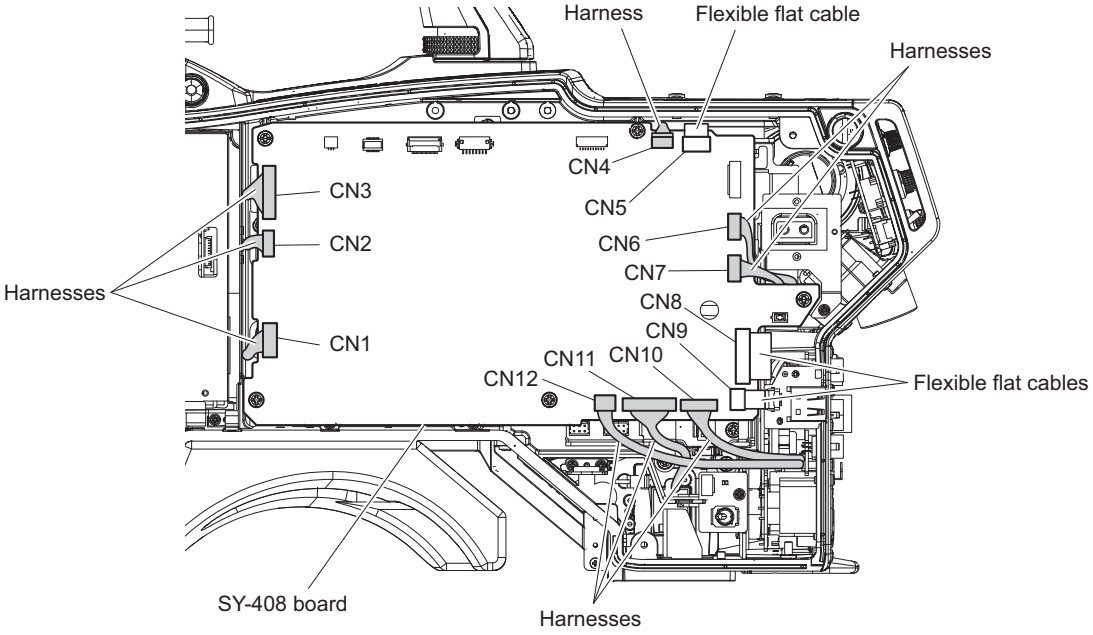
4-8-1. SY-408 Board/AT-189 Board

Preparation

1. Remove the inside panel assembly. (Refer to"4-2. Inside Panel Assembly")

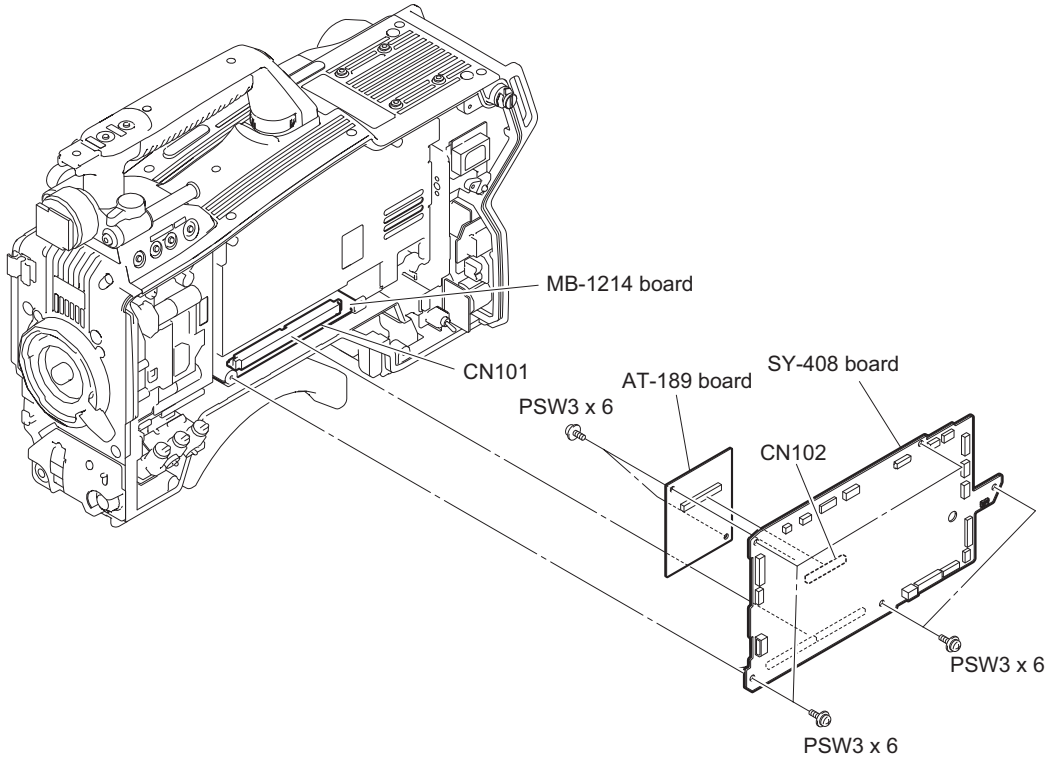
Procedure

1. Disconnect the three flexible flat cables from the three connectors (CN5, CN8, and CN9) on the SY-408 board.
2. Disconnect the nine harnesses from the nine connectors (CN1 to CN4, CN6, CN7, and CN10 to CN12) on the SY-408 board.



3. Remove the five screws.
4. Remove the SY-408 board from the connector (CN101) on the MB-1214 board.

5. Remove the two screws, and detach the AT-189 board from the connector (CN102) on the SY-408 board.



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

4-8-2. Power Block Assembly (RE-291 Board/PS-836 Board)

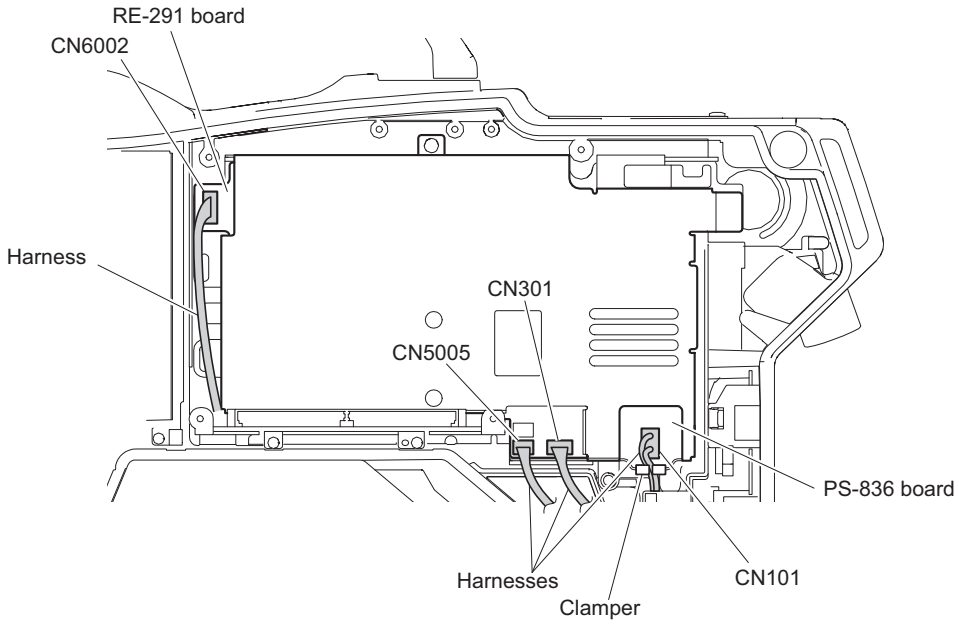
Preparation

1. Remove the inside panel assembly. (Refer to"4-2. Inside Panel Assembly")
2. Remove the SY-408 Board. (Refer to"4-8-1. SY-408 Board/AT-189 Board")
3. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")

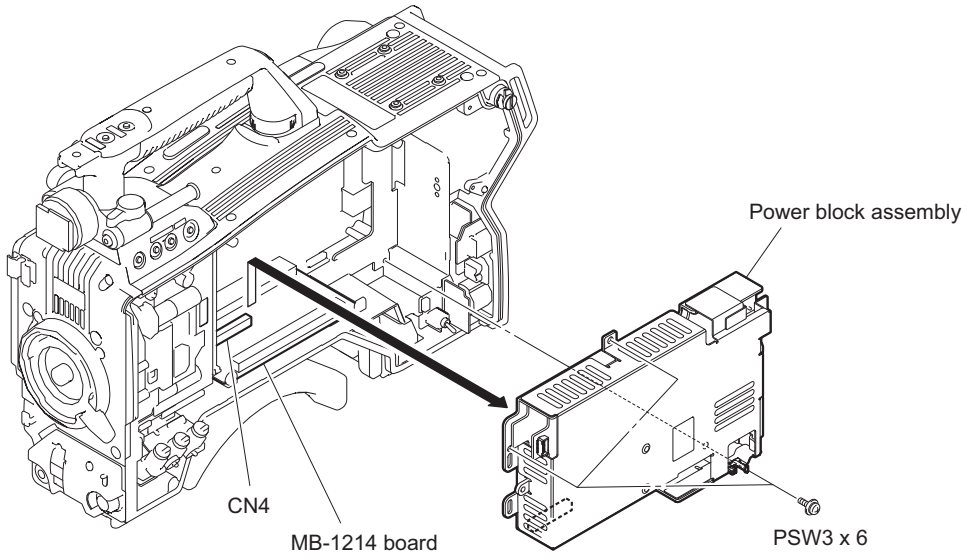
Procedure

1. Disconnect the harness from the connector (CN6002) on the RE-291 board.
2. Release the harness from the clamper.

3. Disconnect the three harnesses from the three connectors (CN101, CN301, and CN5005) on the PS-836 board.

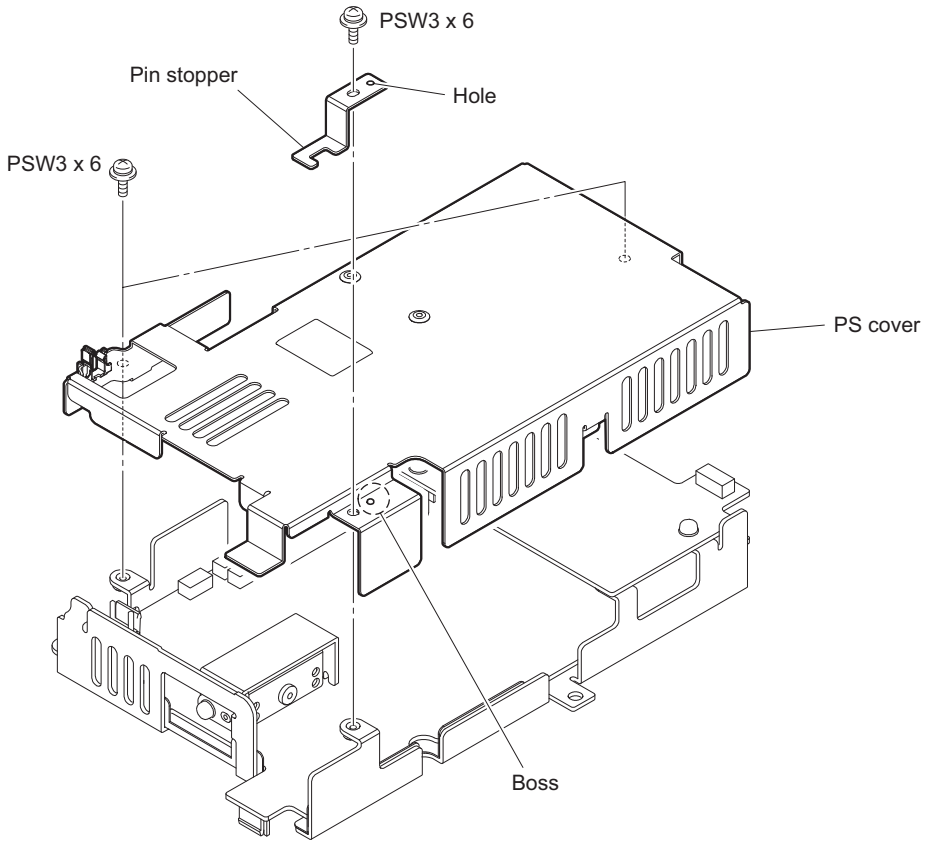


4. Remove the three screws, and detach the power block assembly from the connector (CN4) on the MB-1214 board in the direction of arrow.



5. Remove the screw, and detach the pin stopper.

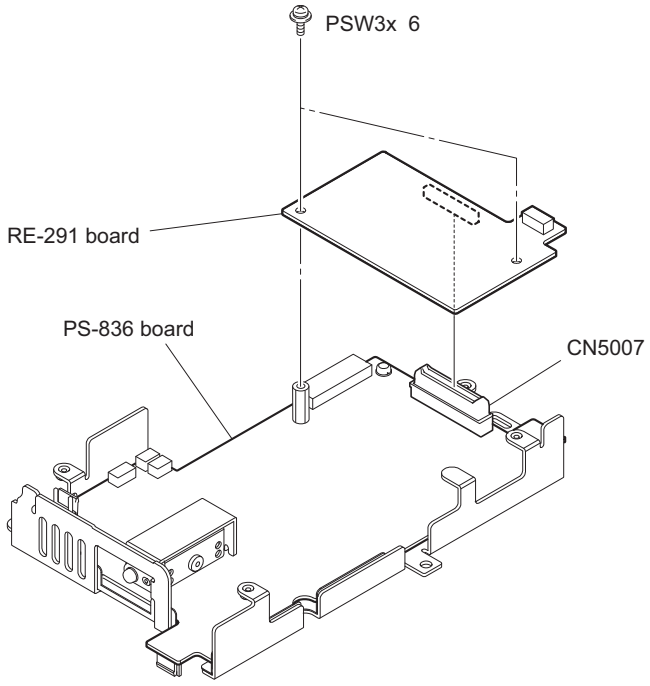
6. Remove the two screws, and detach the PS cover.



Note

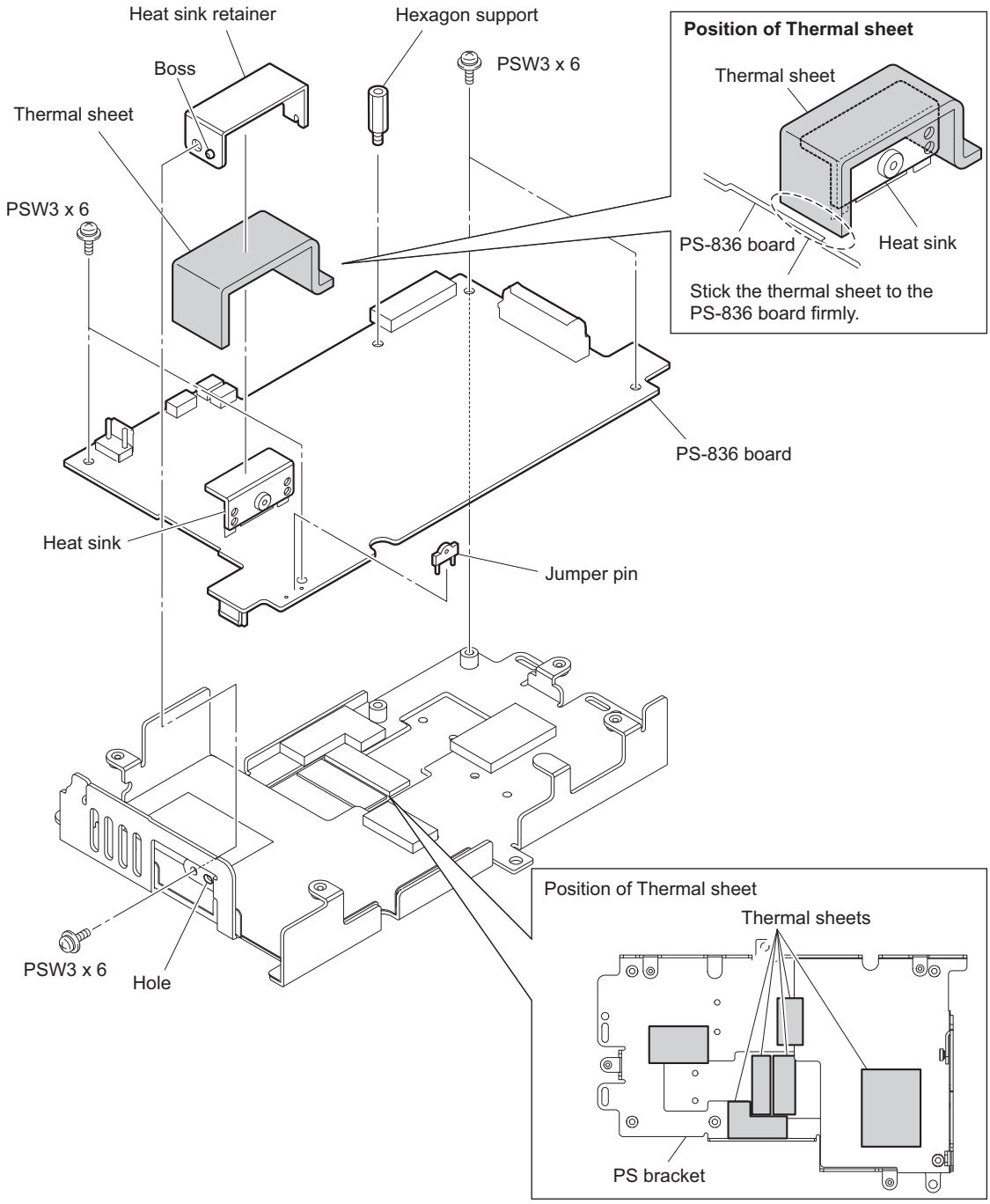
When installing the pin stopper, match the boss with the hole.

7. Remove the two screws, and detach the RE-291 board from the connector (CN5007) on the PS-836 board.



8. Remove the screw, and detach the heat sink retainer and thermal sheet.
9. Remove the hexagon support.
10. Remove the four screws, and detach the PS-836 board.

11. Remove the jumper pin from the PS-836 board.



Note

- When installing the heat sink retainer, match the boss with the hole.
- If any thermal sheet peels off the PS bracket or the heat sink, stick it to the position shown in the figure.

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

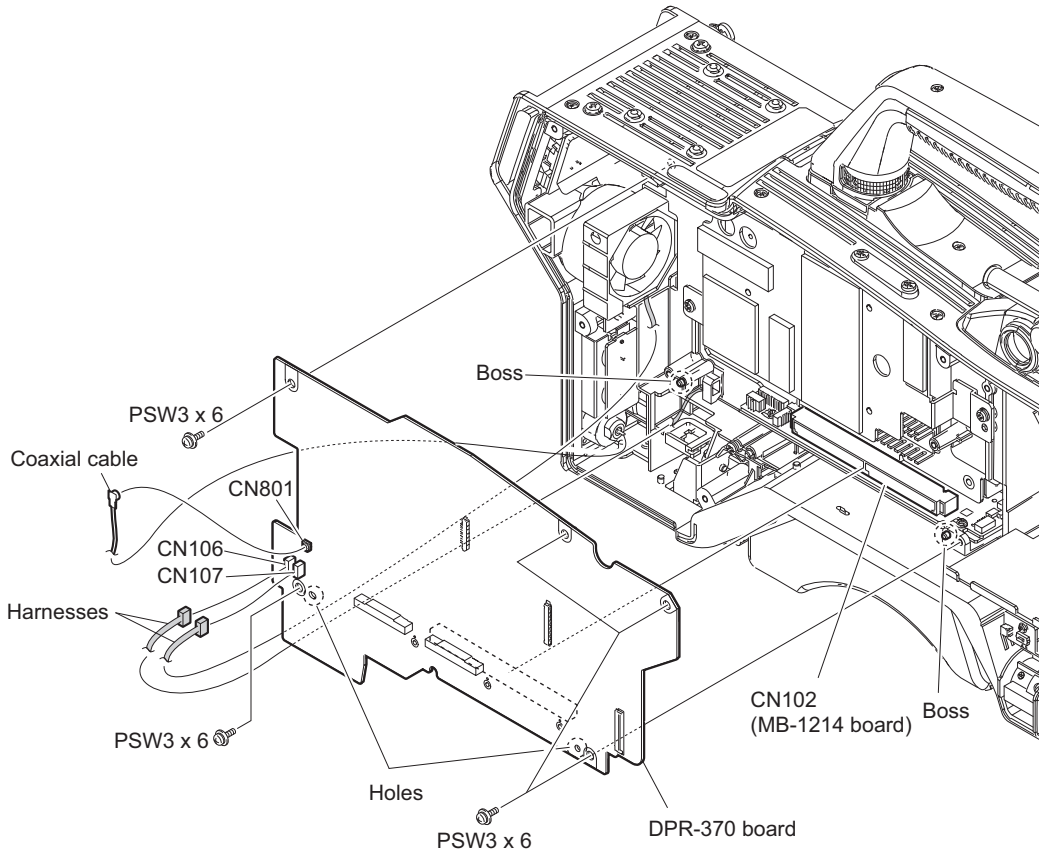
4-8-3. DPR-370 Board

Preparation

1. Remove the inside panel assembly. (Refer to"4-2. Inside Panel Assembly")
2. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")
3. Remove the front assembly. (Refer to"4-5. Front Assembly")

Procedure

1. Disconnect the coaxial cable from the connector (CN801) on the DPR-370 board.
2. Disconnect the two harnesses from the two connectors (CN106, CN107) on the DPR-370 board.
3. Remove the five screws, and detach the DPR-370 board from the connector (CN102) on the MB-1214 board.

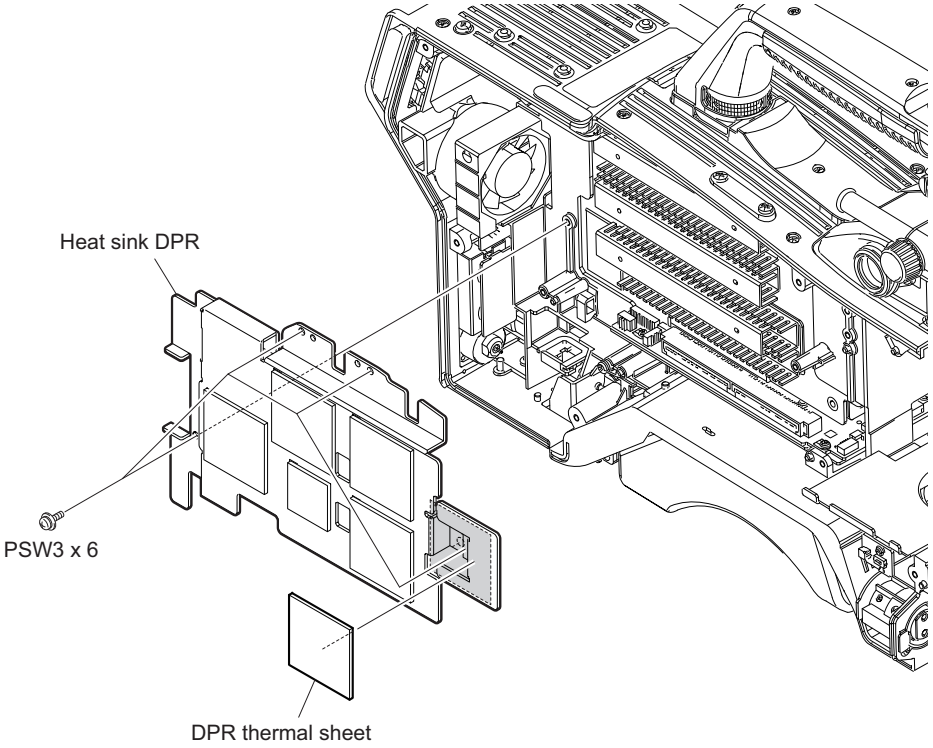


Note

When installing the DPR-370 board, match the two bosses with the two holes.

4. Remove the DPR thermal sheet.

5. Remove the four screws, and detach the heat sink DPR.



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

4-8-4. MB-1214 Board

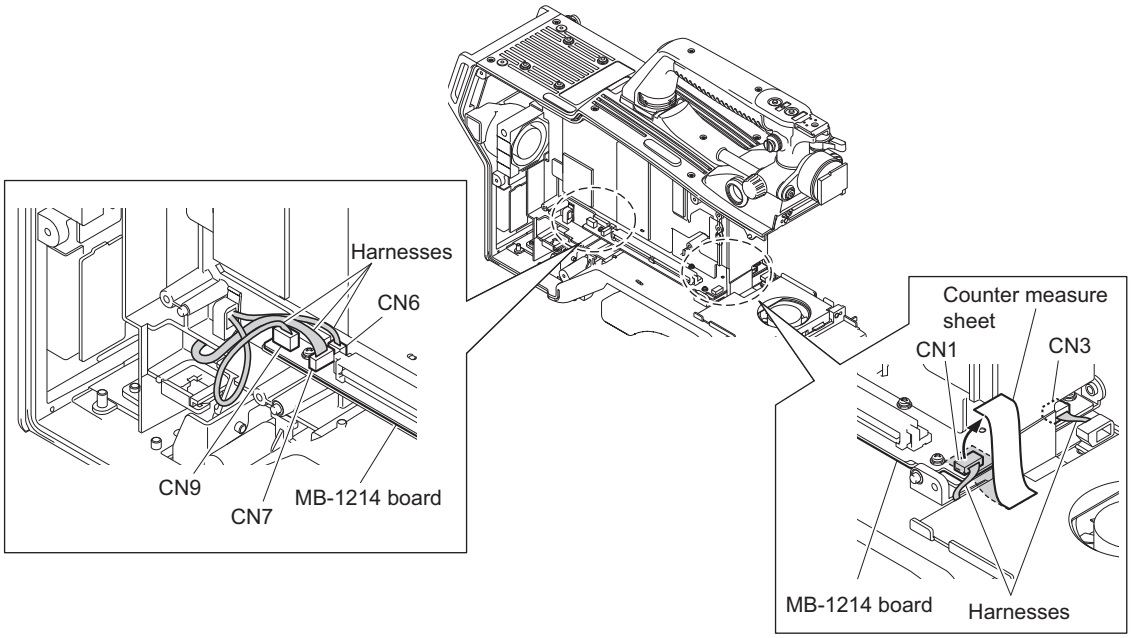
Preparation

1. Remove the inside panel assembly. (Refer to"4-2. Inside Panel Assembly")
2. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")
3. Remove the front assembly. (Refer to"4-5. Front Assembly")
4. Remove the SY-408 board. (Refer to"4-8-1. SY-408 Board/AT-189 Board")
5. Remove the power block assembly. (Refer to"4-8-2. Power Block Assembly (RE-291 Board/PS-836 Board)")
6. Remove the DPR-370 board. (Refer to"4-8-3. DPR-370 Board")

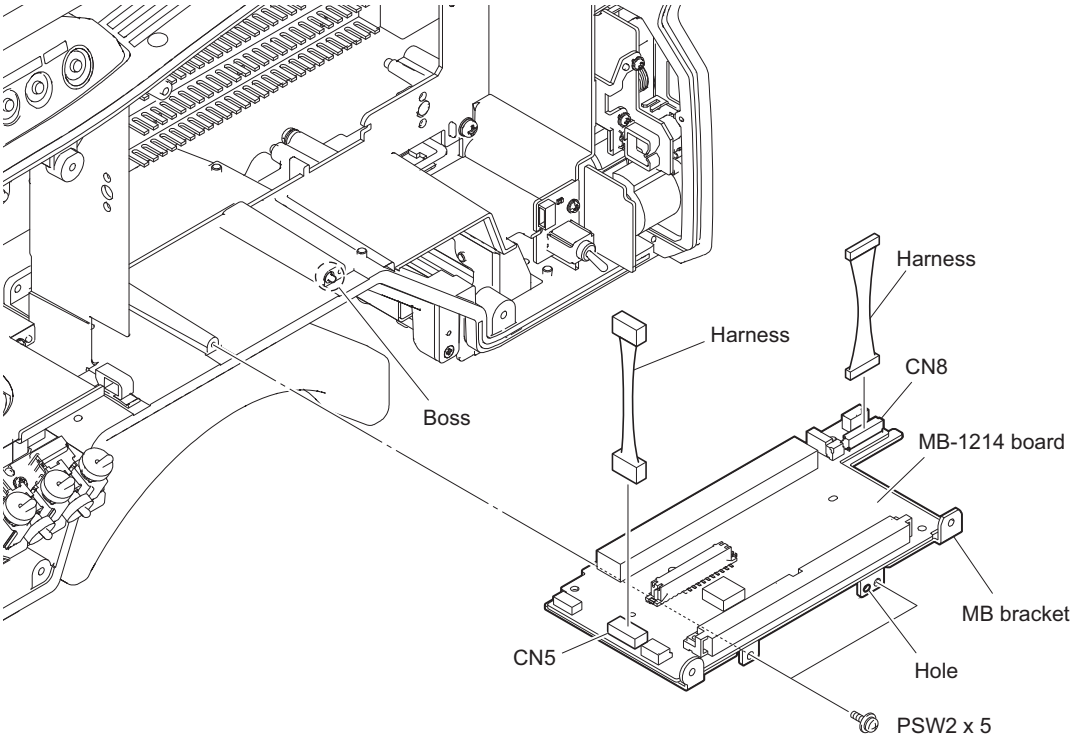
Procedure

1. Disconnect the three harnesses from the three connectors (CN6, CN7, and CN9) on the MB-1214 board.
2. Remove the counter measure sheet from the connector (CN1) on the MB-1214 board.

3. Disconnect the two harnesses from the connectors (CN1, CN3) on the MB-1214 board.



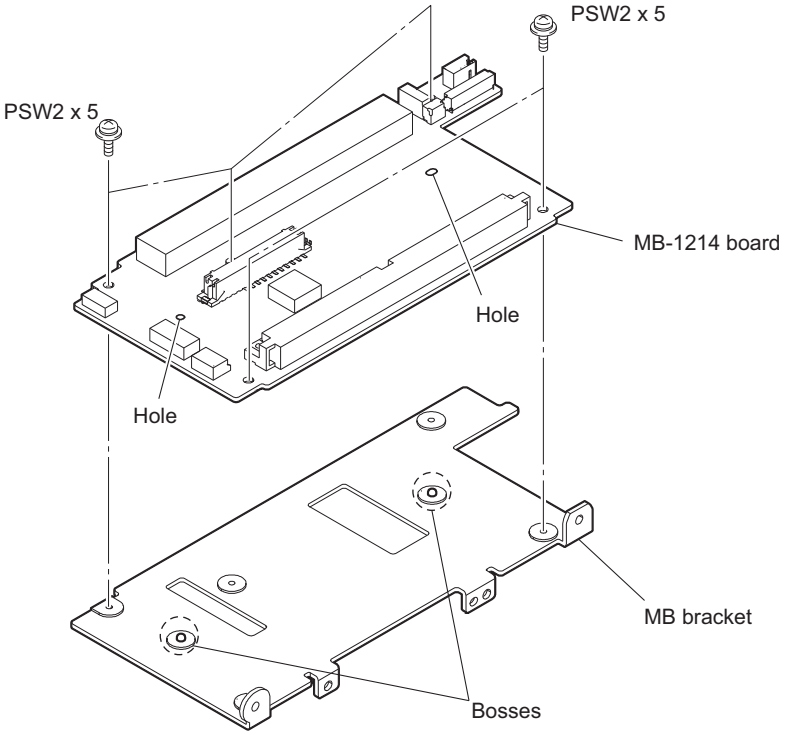
4. Remove the two screws, and detach the MB bracket.
5. Disconnect the two harnesses from the two connectors (CN5, CN8) on the MB-1214 board.



Note

When installing the MB bracket, match the boss with the hole.

6. Remove the five screws, and detach the MB-1214 board from the MB bracket.



Note

When installing the MB-1214 board, match the two bosses with the two holes.

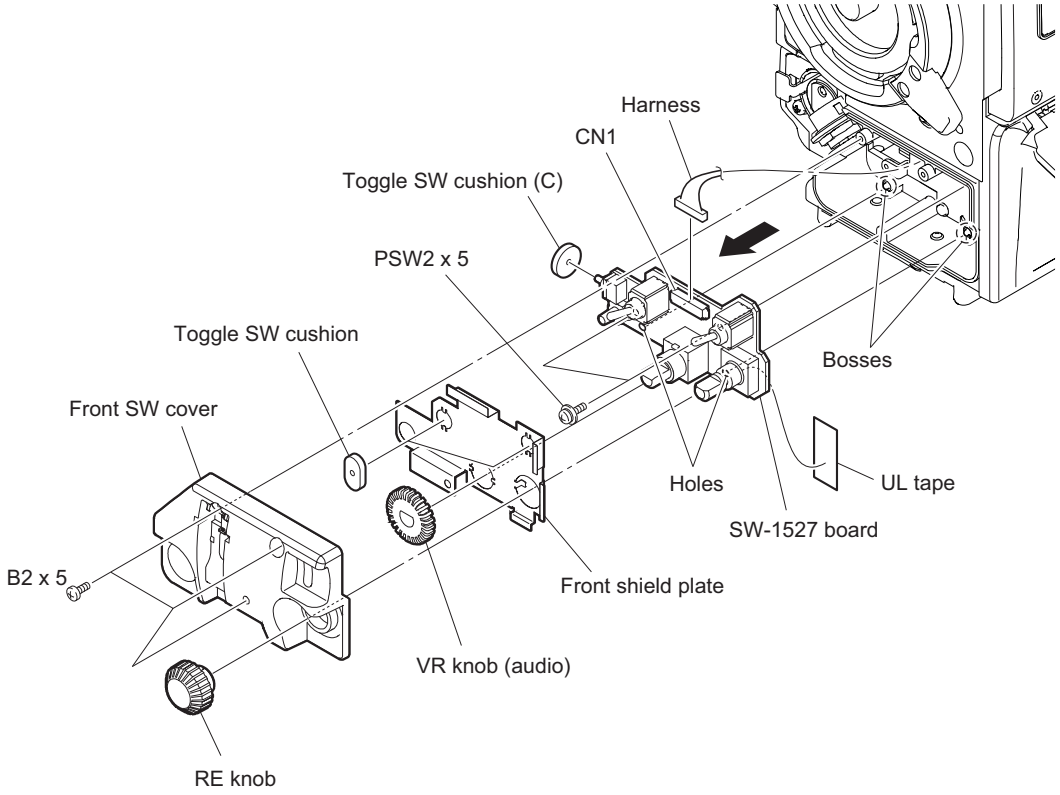
7. Install the removed parts by reversing the steps of removal.

4-8-5. SW-1527 Board

Procedure

1. Remove the RE knob.
2. Remove the three screws (B2 x 5), and detach the front SW cover.
3. Remove the toggle SW cushion (C), two toggle SW cushions, VR knob (audio), and front shield plate.
4. Remove the two screws (PSW2 x 5) and pull out the SW-1527 board in the direction of arrow.
5. Disconnect the harness from the connector (CN1) on the SW-1527 board.

6. Remove the UL tape from the SW-1527 board.



Note

When installing the SW-1527 board, match the two bosses with the two holes.

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

4-8-6. CN-3423 Board

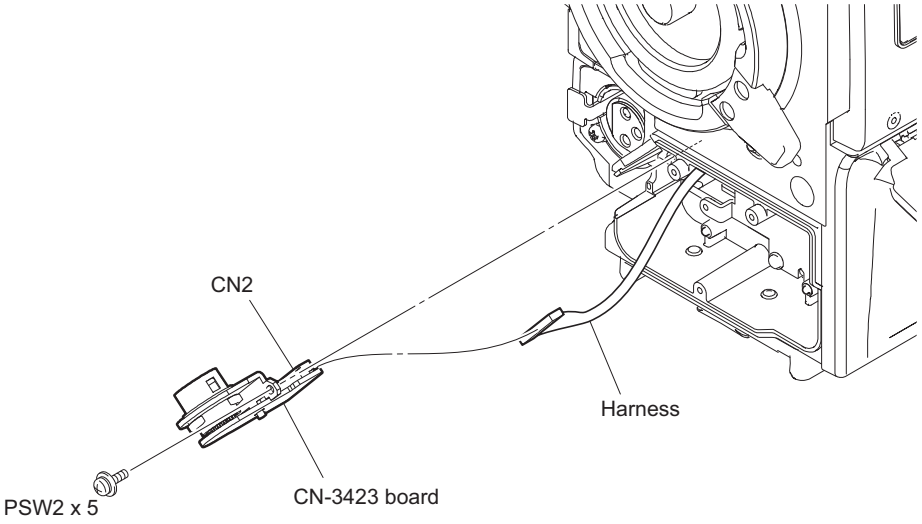
Preparation

1. Remove the SW-1527 Board. (Refer to "4-8-5. SW-1527 Board".)

Procedure

1. Remove the screw and pull out the CN-3423 board.

2. Disconnect the harness from the connector (CN2) on the CN-3423 board.



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

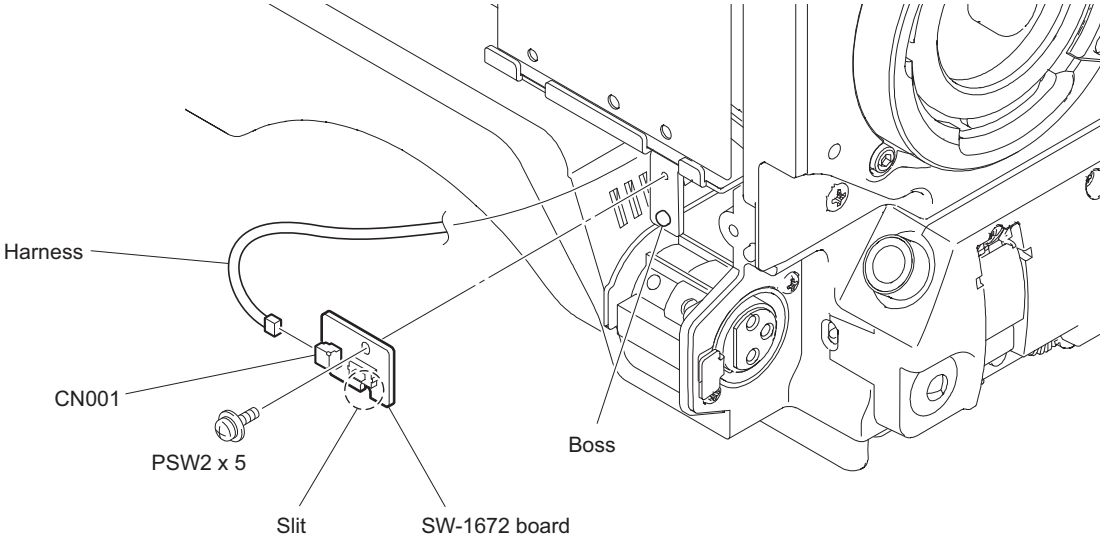
4-8-7. SW-1672 Board

Preparation

1. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")

Procedure

1. Remove the screw and pull out the SW-1672 board.
2. Disconnect the harness from the connector (CN001) on the SW-1672 board.



Note

When installing the SW-1672 board, match the boss with the slit.

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

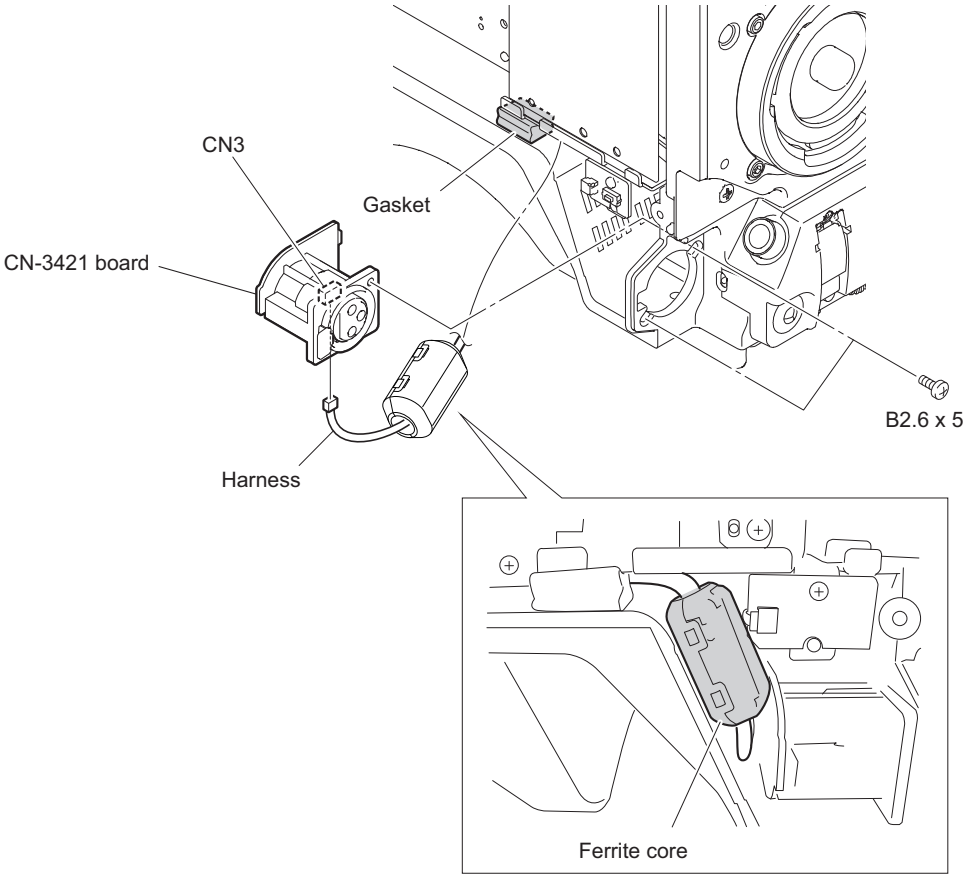
4-8-8. CN-3421 Board

Preparation

1. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")

Procedure

1. Remove the gasket.
2. Remove the two screws and pull out the CN-3421 board.
3. Disconnect the harness from the connector (CN3) on the CN-3421 board.



Note

When installing the CN-3421 board, put the ferrite core in the figure.

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

4-8-9. SW-1528 Board

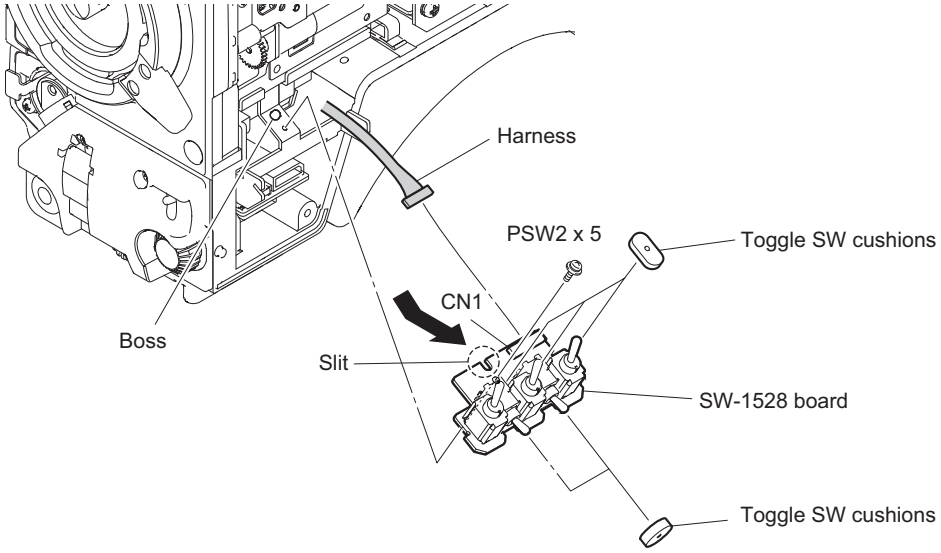
Preparation

1. Remove the inside panel assembly. (Refer to "4-2. Inside Panel Assembly".)

Procedure

1. Remove the five toggle SW cushions.
2. Remove the screw and pull out the SW-1528 board in the direction of arrow.

3. Disconnect the harness from the connector (CN1) on the SW-1528 board.



Note

When installing the SW-1528 board, match boss with the slit.

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

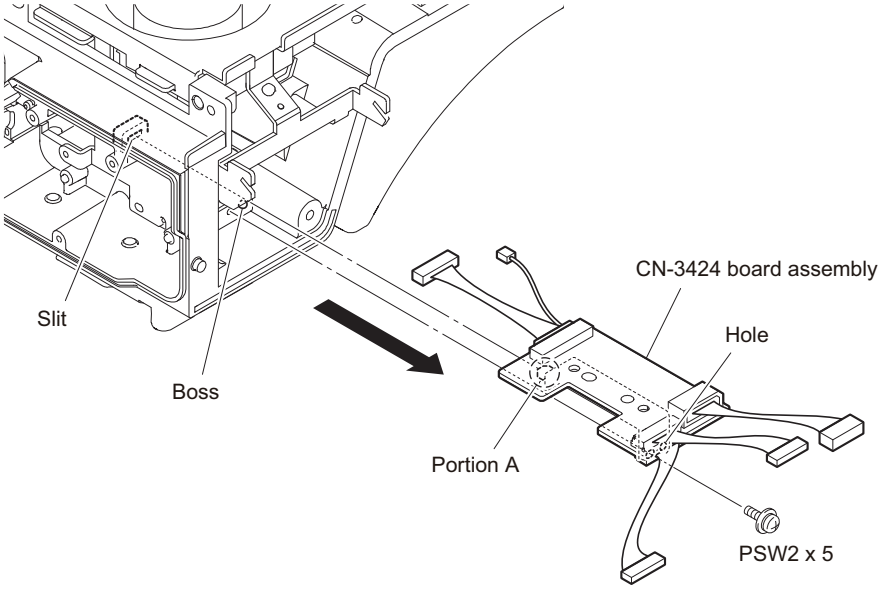
4-8-10. CN-3424 Board

Preparation

1. Remove the inside panel assembly. (Refer to "4-2. Inside Panel Assembly".)
2. Remove the outside panel assembly. (Refer to "4-3-1. Outside Panel Assembly".)
3. Remove the front assembly. (Refer to "4-5. Front Assembly".)
4. Remove the SW-1672 board. (Refer to"4-8-7. SW-1672 Board")
5. Remove the SW-1528 board. (Refer to "4-8-9. SW-1528 Board".)
6. Remove the SW-1527 board. (Refer to"4-8-5. SW-1527 Board")
7. Remove the CN-3423 board. (Refer to"4-8-6. CN-3423 Board")

Procedure

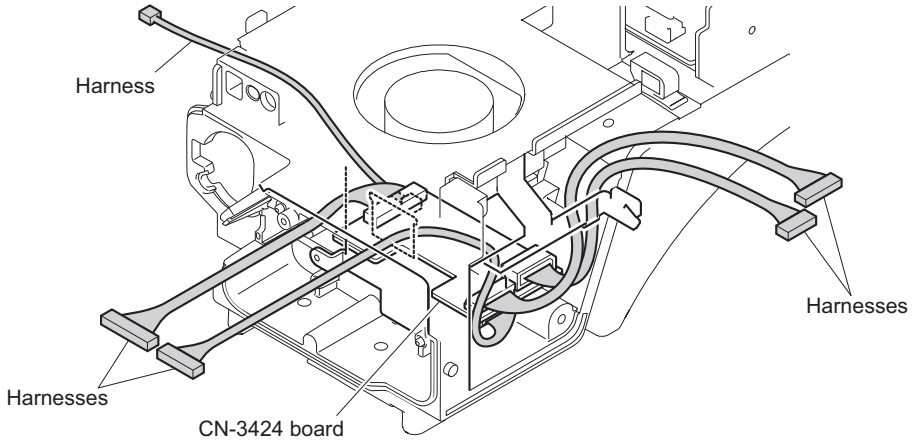
1. Remove the screw, and detach the CN-3424 board assembly.



Note

When installing the CN-3424 board assembly, match the portion A with the slit.

Arrangement the harnesses from the CN-3424 board

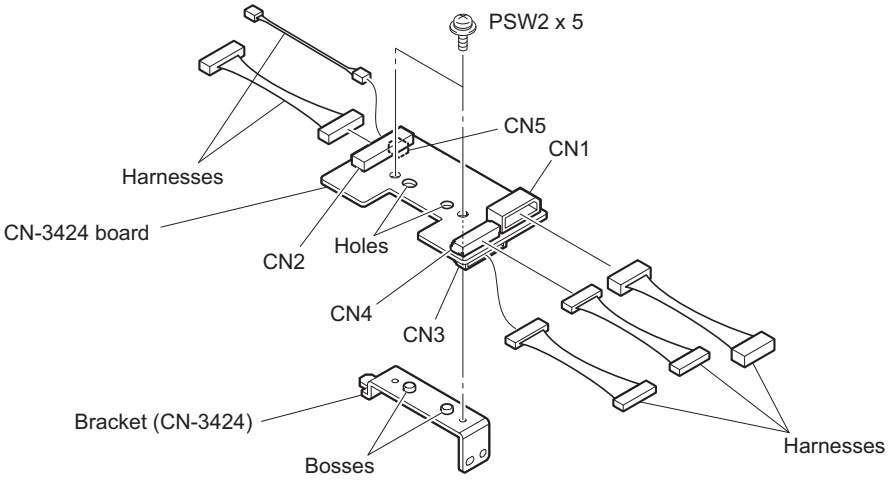


Note

When installing the CN-3424 board, arrange the harnesses as shown in the figure.

2. Disconnect the five harnesses from the five connectors (CN1 to CN5) on the CN-3424 board.

3. Remove the two screws, and detach the bracket (CN-3424).



Note

When installing the bracket (CN-3424), match the two bosses with the two holes.

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

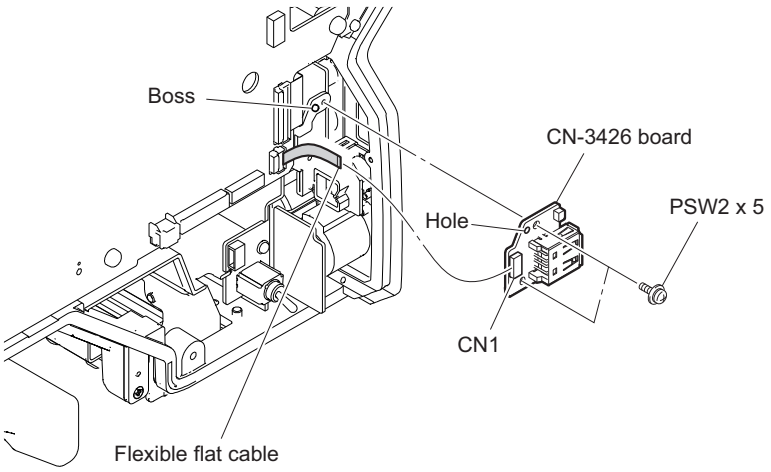
4-8-11. CN-3426 Board

Preparation

1. Remove the inside panel assembly. (Refer to "4-2. Inside Panel Assembly".)

Procedure

1. Disconnect the flexible flat cable from the connector (CN1) on the CN-3426 board.
2. Remove the two screws, and detach the CN-3426 board.



Note

When installing the CN-3426 board, match the boss with the hole.

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

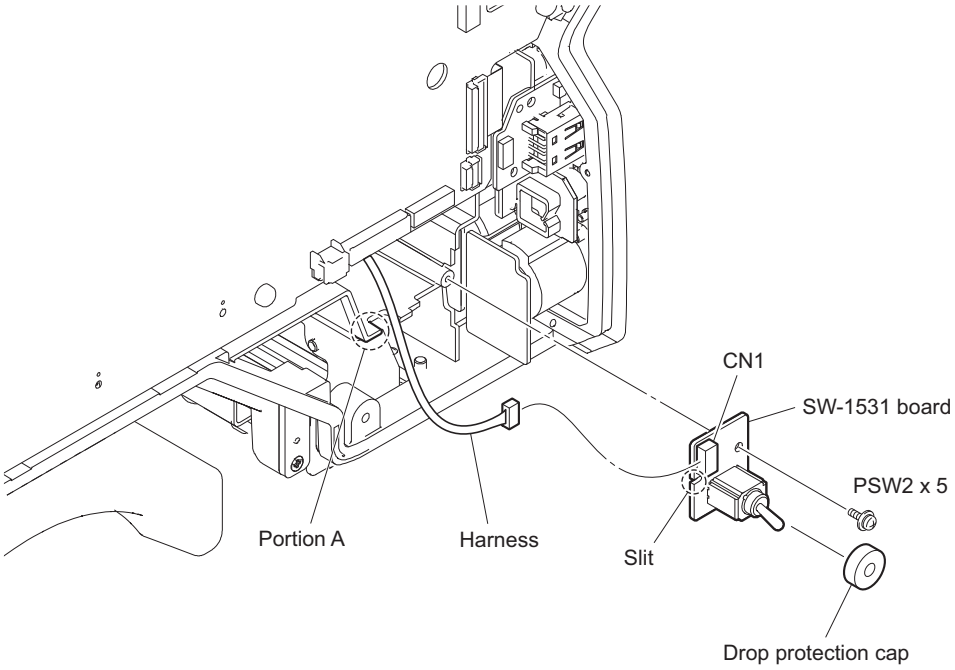
4-8-12. SW-1531 Board

Preparation

1. Remove the inside panel assembly. (Refer to "4-2. Inside Panel Assembly".)

Procedure

1. Remove the drop protection cap.
2. Remove the screw and pull out the SW-1531 board.
3. Disconnect the harness from the connector (CN1) on the SW-1531 board.



Note

When installing the SW-1531 board, match the slit with the portion A.

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

4-8-13. BUILD UP Connector

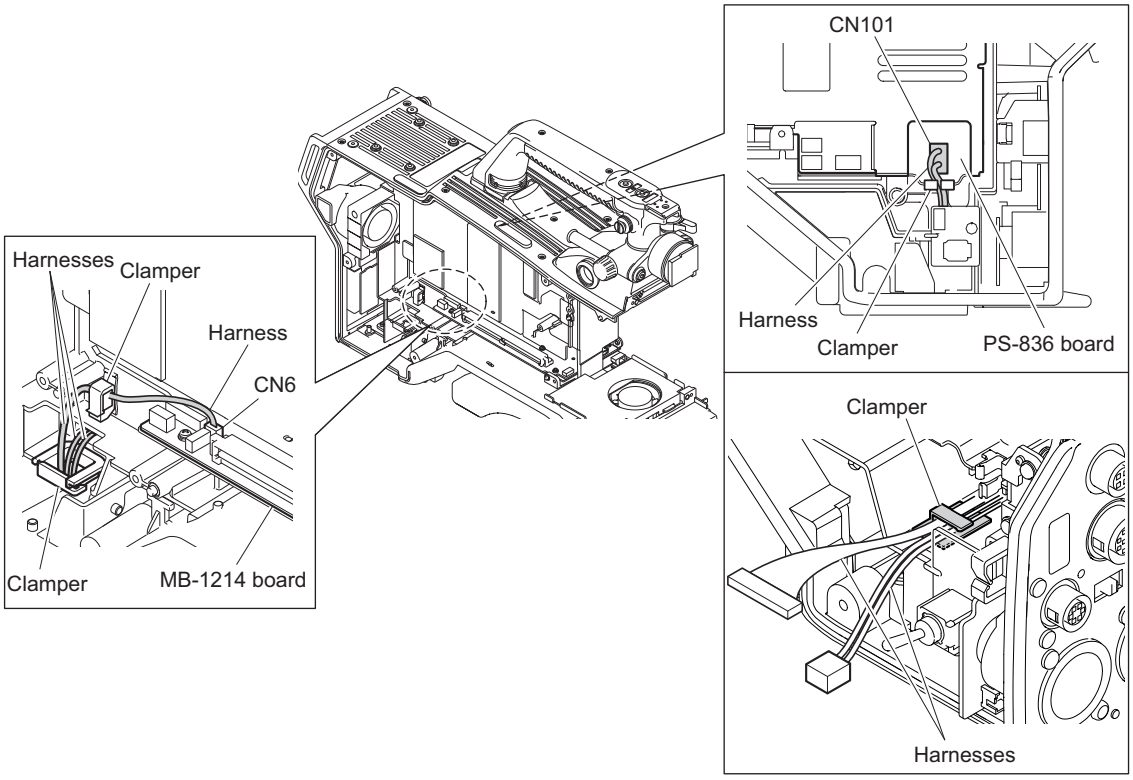
Preparation

1. Remove the inside panel assembly. (Refer to"4-2. Inside Panel Assembly")
2. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")
3. Remove the SY-408 board. (Refer to"4-8-1. SY-408 Board/AT-189 Board")
4. Remove the DPR-370 board. (Refer to"4-8-3. DPR-370 Board")

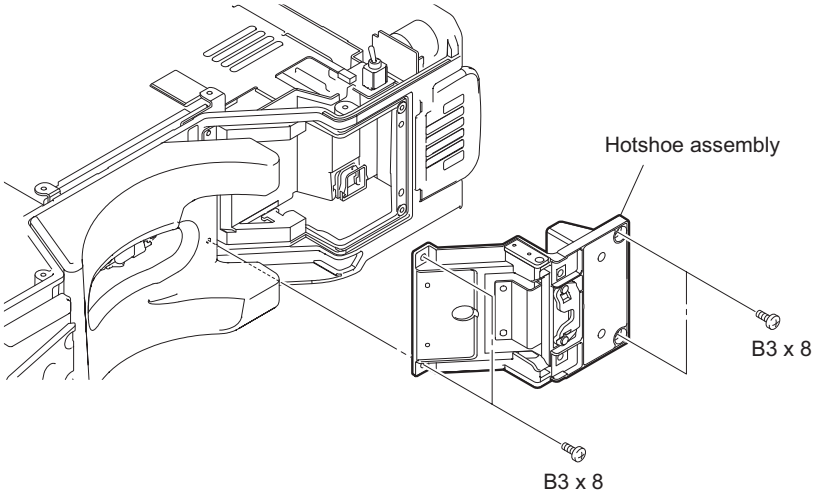
Procedure

1. Disconnect the harness from the connector (CN101) on the PS-836 board, and release the harness from the two clampers.

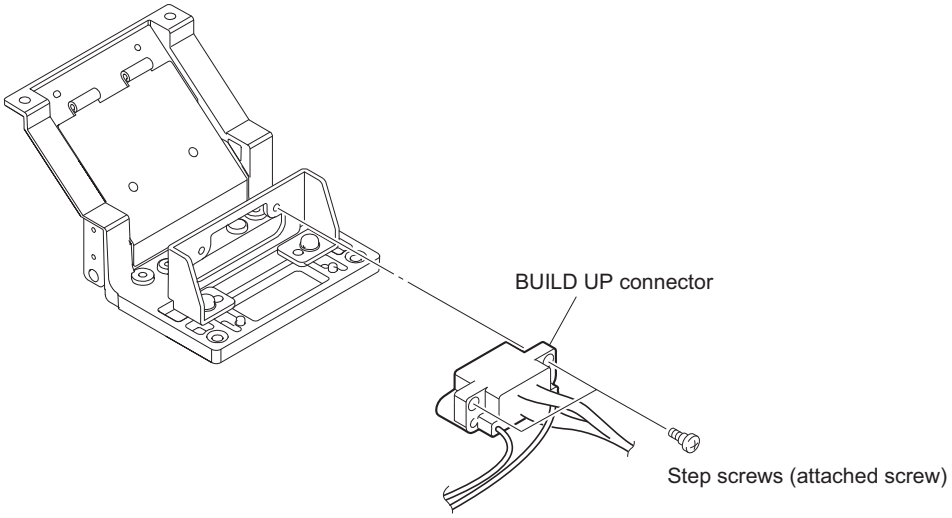
2. Disconnect the harness from the connector (CN6) on the MB-1214 board, and release the harness from the two clampers.



3. Remove the four screws, and detach the hotshoe assembly.



4. Remove the two screws, and detach the BUILD UP connector.



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

4-9. DC Fan (Front)

Preparation

1. Remove the inside panel assembly. (Refer to"4-2. Inside Panel Assembly")
2. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")
3. Remove the front assembly. (Refer to"4-5. Front Assembly")

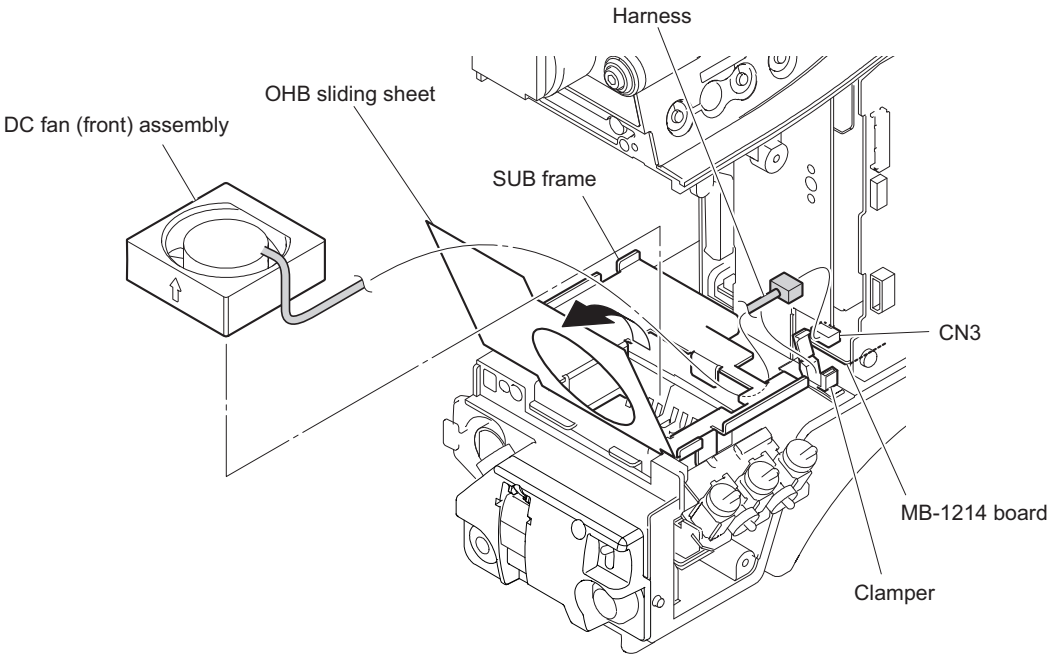
Procedure

1. Release the harness from the clamper.
2. Disconnect the harness from the connector (CN3) on the MB-1214 board.
3. Open the OHB sliding sheet as shown in the figure.

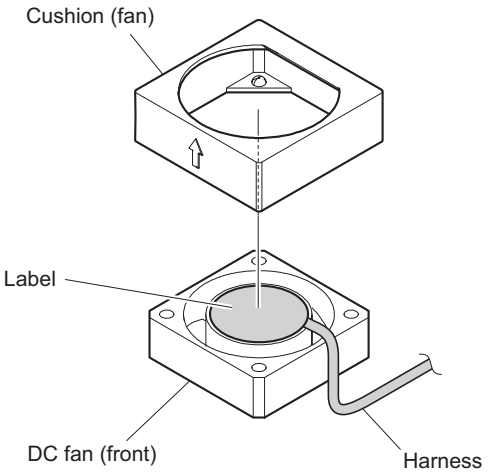
   Note

   The OHB sliding sheet is attached to the SUB frame. When removing it, be careful not to damage the SUB frame.

4. Remove the DC fan (front) assembly.



5. Remove the DC fan (front) from the cushion (fan).



Note

When installing the DC fan (front), carefully peeling off it paying attention to the label and harness locations.

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

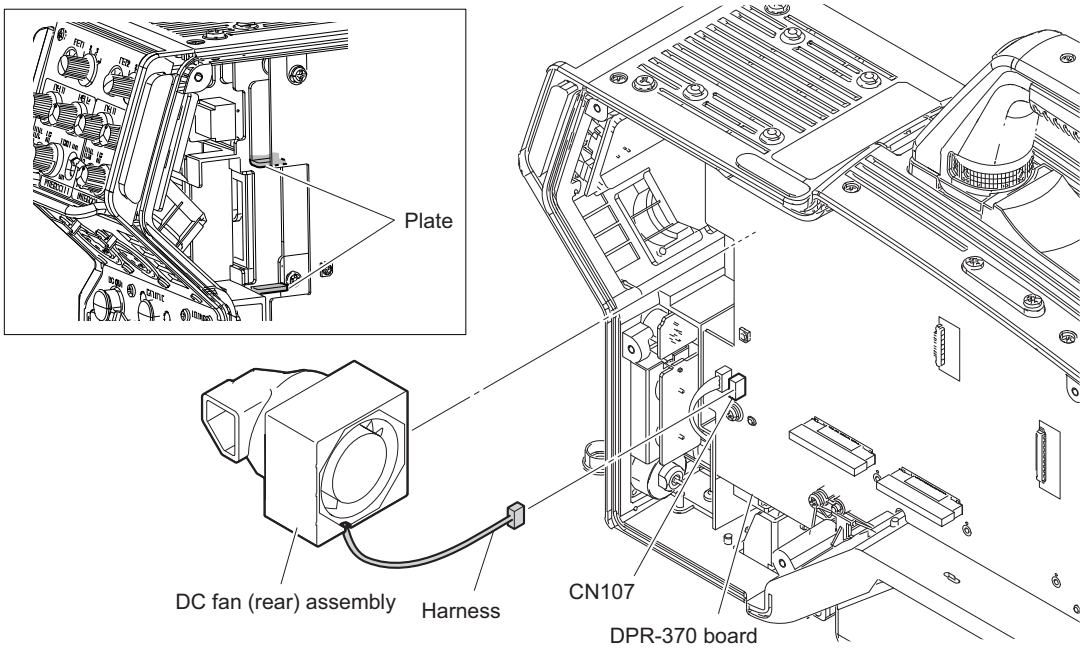
4-10. DC Fan (Rear)

Preparation

1. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")

Procedure

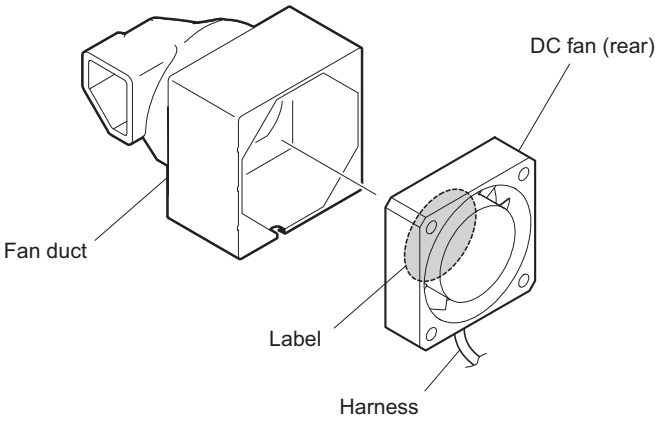
1. Disconnect the harness from the connector (CN107) on the DPR-370 board, and detach the DC fan (rear).



Note

- When installing the DC fan (rear), pay attention that the fan duct is not over the plate.
- When installing the DC fan (rear), be careful not to deform the air vent of the fan duct.

2. Remove the DC fan (rear) from the fan duct.



Note

When installing the DC fan (rear), carefully install it paying attention to the label and harness locations.

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

4-11. MIC Panel Block

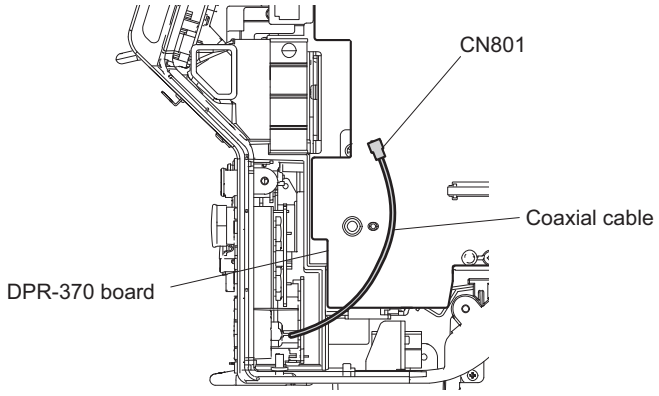
4-11-1. CN-3429 Board/CN-3427 Board

Preparation

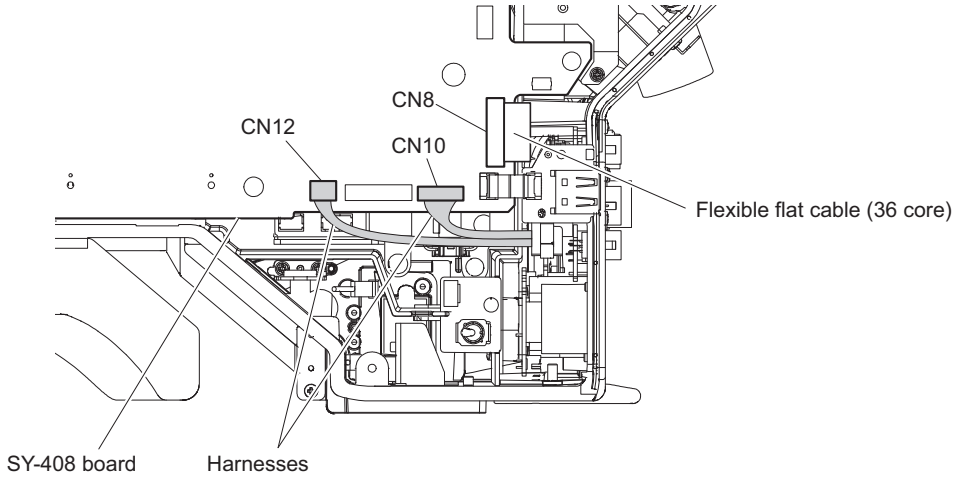
1. Remove the inside panel assembly. (Refer to"4-2. Inside Panel Assembly")
2. Remove the outside panel assembly. (Refer to"4-3-1. Outside Panel Assembly")

Procedure

1. Disconnect the coaxial cable from the connector (CN801) on the DPR-370 board.

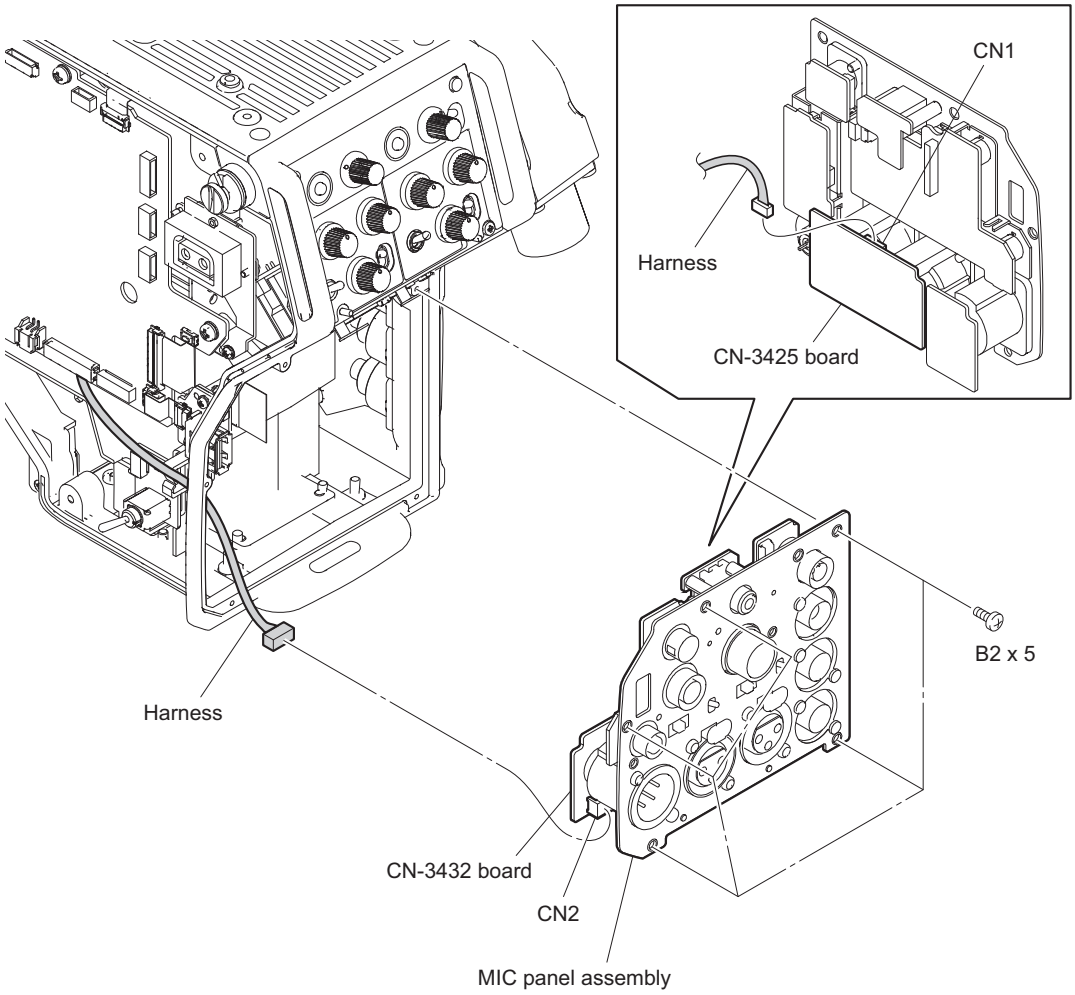


2. Disconnect the flexible flat cable from the connector (CN8) on the SY-408 board.
3. Disconnect the two harnesses from the two connectors (CN10, CN12) on the SY-408 board.

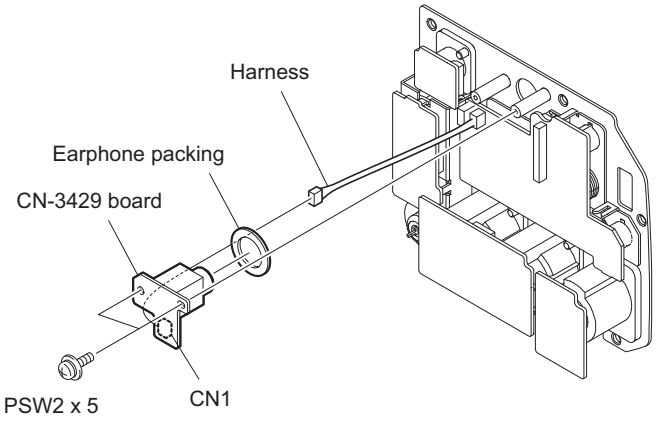


4. Remove the five screws and pull out the MIC panel assembly.
5. Disconnect the harness from the connector (CN2) on the CN-3432 board.

6. Disconnect the harness from the connector (CN1) on the CN-3425 board.

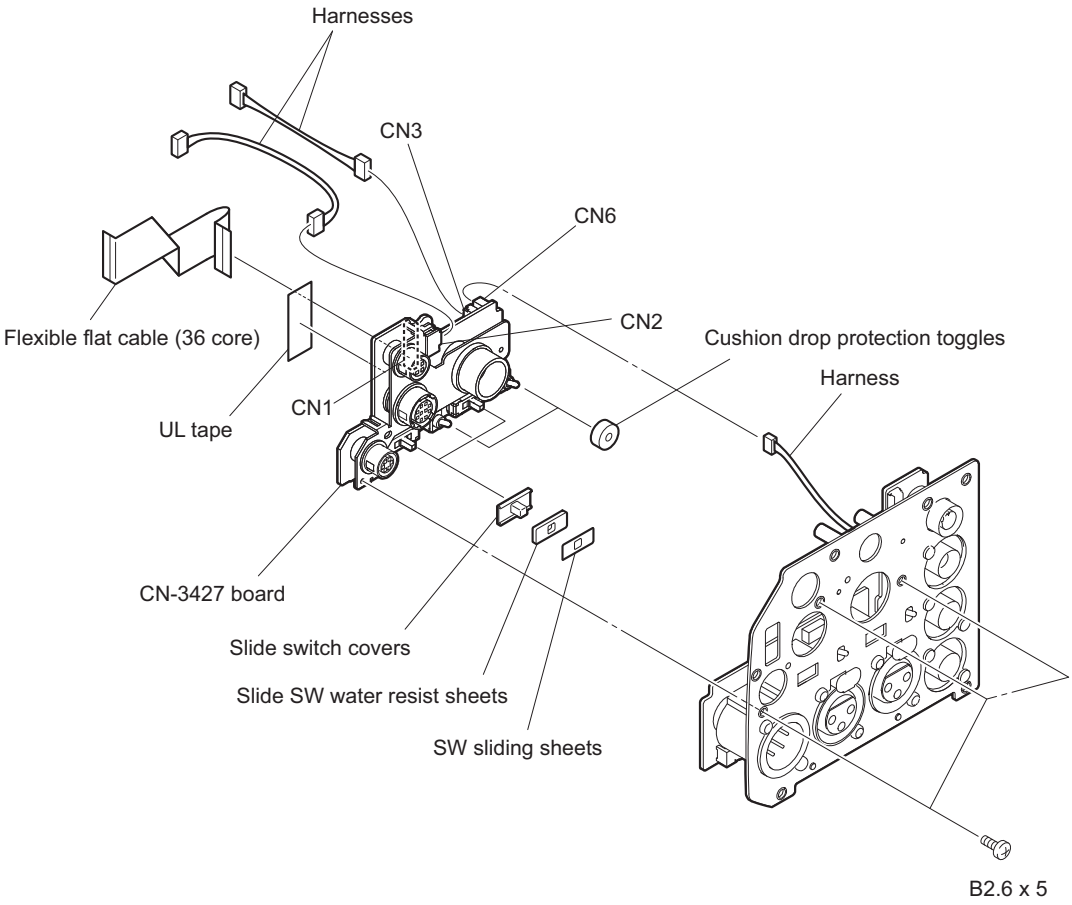


7. Remove the two screws and pull out the CN-3429 board.
8. Disconnect the harness from the connector (CN1) on the CN-3429 board and remove the earphone packing.



9. Disconnect the flexible flat cable from the connector (CN1) on the CN-3427 board.
10. Remove the UL tape.
11. Disconnect the three harnesses from the three connectors (CN2 CN3 and CN6) on the CN-3427 board.

12. Remove the three screws, and detach the CN-3427 board, two cushion drop protection toggles, two SW sliding sheets, two slide SW water resist sheets, and two slide switch covers.



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

4-11-2. AUDIO IN Connector (CN-3425 Board)

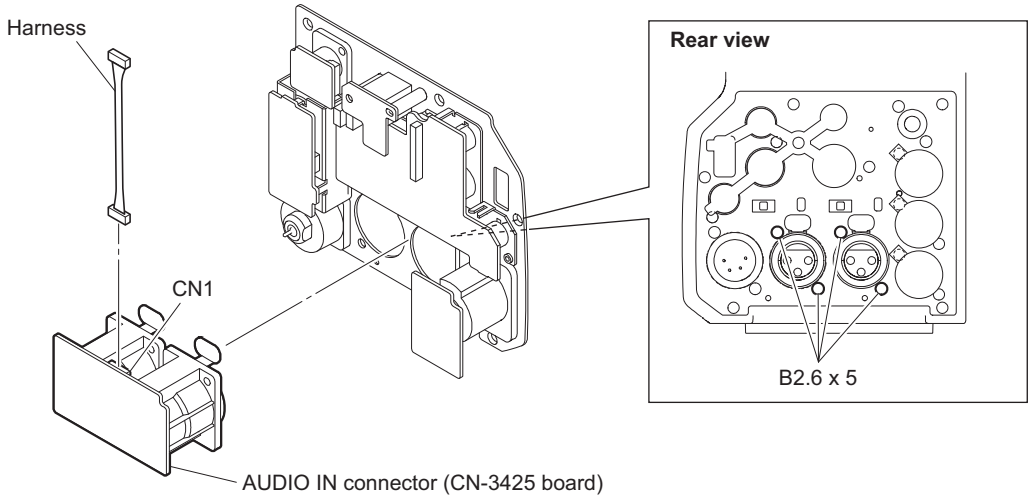
Preparation

1. Remove the MIC panel assembly. (Refer to“4-11-1. CN-3429 Board/CN-3427 Board” on page 4-47)

Procedure

1. Remove the four screws, and detach the CN-3425 board.

2. Disconnect the harness from the connector (CN1) on the CN-3425 board.



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

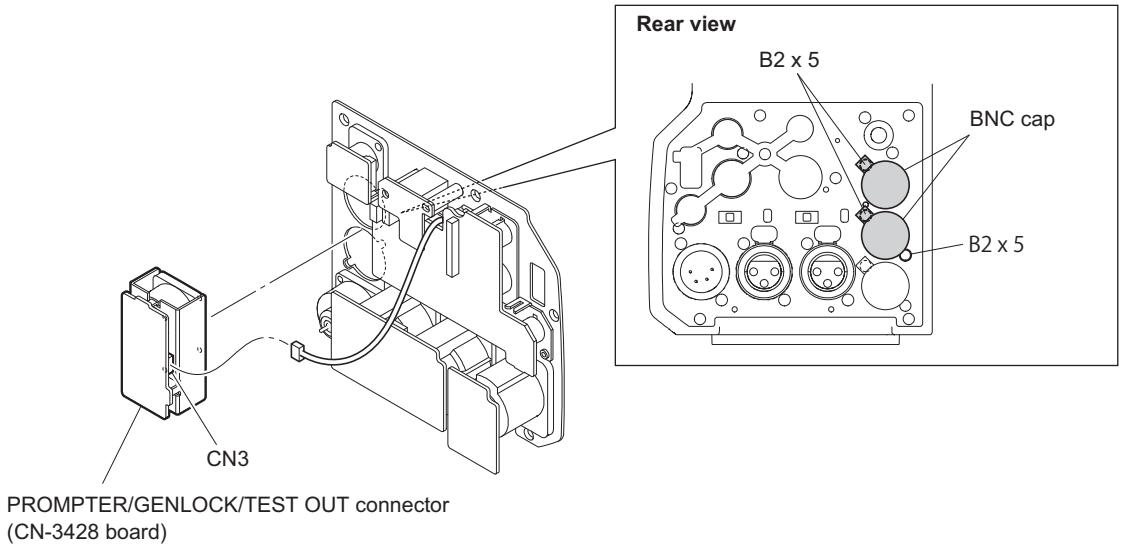
4-11-3. PROMPTER/GENLOCK/TEST OUT Connector (CN-3428 Board)

Preparation

1. Remove the MIC panel assembly. (Refer to"4-11-1. CN-3429 Board/CN-3427 Board" on page 4-47)

Procedure

1. Remove the three screws, and detach the two BNC caps and the PROMPTER/GENLOCK/TEST OUT connector (CN-3428 board).
2. Disconnect the harness from the connector (CN3) on the PROMPTER/GENLOCK/TEST OUT connector (CN-3428 board).



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

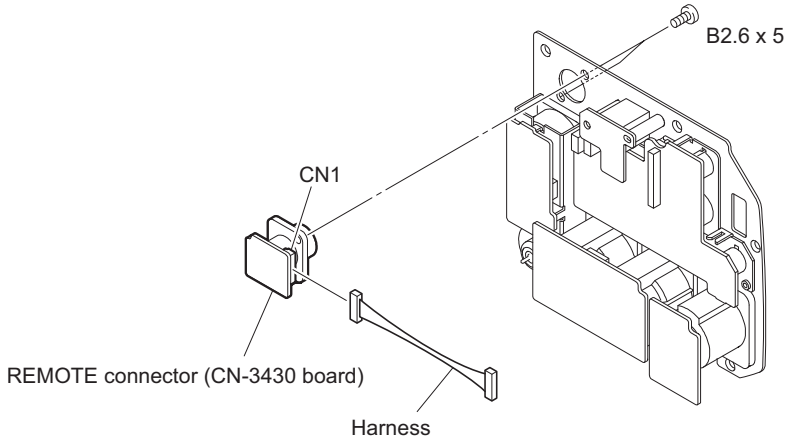
4-11-4. REMOTE Connector (CN-3430 Board)

Preparation

1. Remove the MIC panel assembly. (Refer to"4-11-1. CN-3429 Board/CN-3427 Board" on page 4-47)

Procedure

1. Remove the two screws, and detach the REMOTE connector (CN-3430 board).
2. Disconnect the harness from the connector (CN1) on the REMOTE connector (CN-3430 board).



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

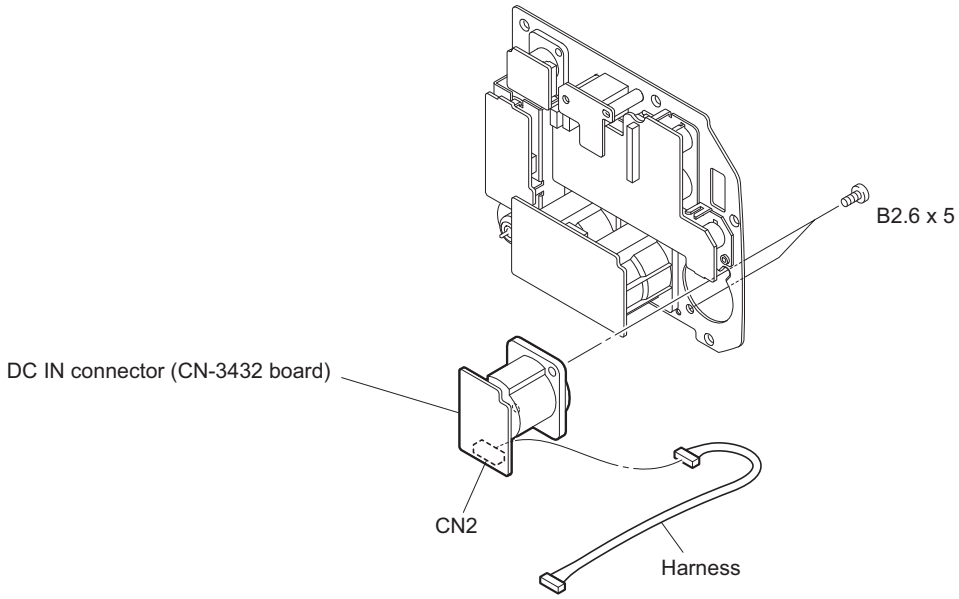
4-11-5. DC IN Connector (CN-3432 Board)

Preparation

1. Remove the MIC panel assembly. (Refer to“4-11-1. CN-3429 Board/CN-3427 Board” on page 4-47)

Procedure

1. Remove the two screws, and detach the DC IN connector (CN-3432 board).
2. Disconnect the harness from the connector (CN2) on the DC IN connector (CN-3432 board).



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

4-12. INCOM Panel Assembly

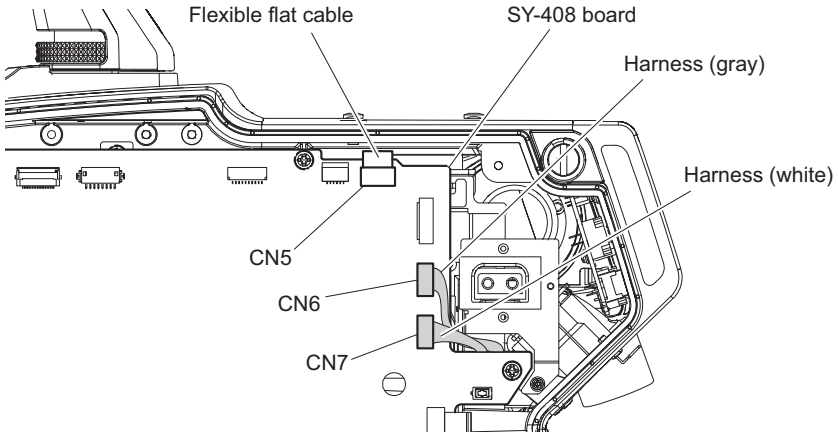
4-12-1. INTERCOM Connector (CN-3431 Board)

Preparation

1. Remove the inside panel assembly. (Refer to"4-2. Inside Panel Assembly")

Procedure

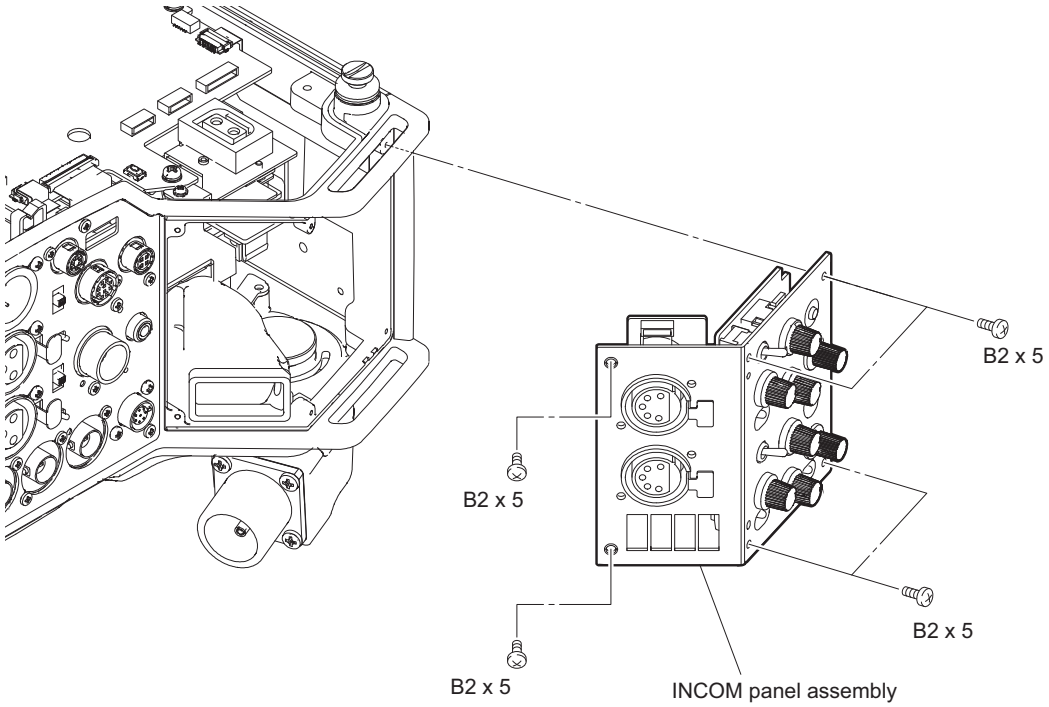
1. Disconnect the flexible flat cable from the connector (CN5) on the SY-408 board.
2. Disconnect the two harnesses from the two connectors (CN6, CN7) on the SY-408 board.



Note

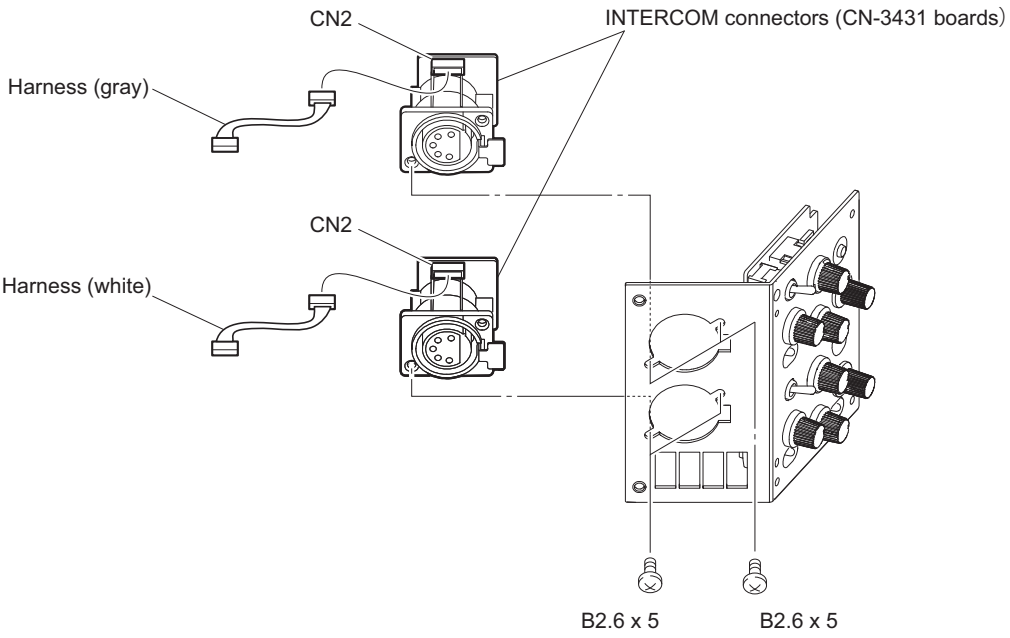
When connecting the two harnesses, pay attention to their colors.

3. Remove the six screws, and detach the INCOM panel assembly.



4. Remove the four screws, and detach the two INTERCOM connectors (CN-3431 boards).

5. Disconnect the two harnesses from the connectors (CN2) on the INTERCOM connectors (CN-3431 boards).



Note

When connecting the two harnesses, pay attention to their colors.

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

4-12-2. SW-1530 Board/SW-1530A Board

Note

SW-1530 board is used for the SY/JN model or SW-1530A board is used for the CE/E3 model of this unit. The following shows how to remove the SW-1530 board as an example.

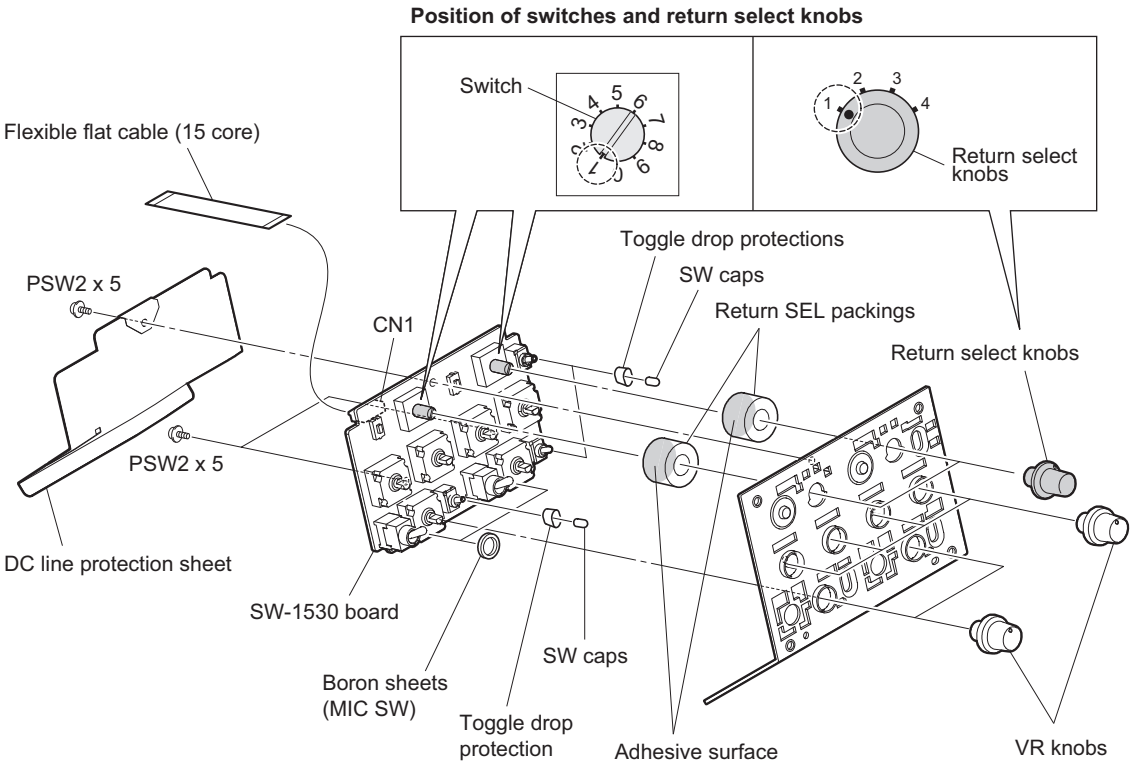
Preparation

1. Remove the INTERCOM connector (CN-3431 board). (Refer to"4-12-1. INTERCOM Connector (CN-3431 Board)" on page 4-52)

Procedure

1. Remove the two return select knobs.
2. Remove the six VR knobs.
3. Remove the screw, and detach the DC line protection sheet.
4. Remove the two screws, and detach the SW-1530 board.
5. Disconnect the flexible flat cable from the connector (CN1) on the SW-1530 board.

6. Remove the three SW caps, three toggle drop protections, two boron sheets (MIC SW), and the two return SEL packings.



Notes

- When installing the return select knob and VR knob, apply locking compound to the inside of the knobs.
- When installing the return select knob, set the marks of the switch and the return select knob on the SW-1530 board to the positions shown in the figure.
- When installing the return SEL packing, stick the adhesive surface to the board side.

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

Section 5
Electrical Alignment

When any board of this unit is repaired or replaced, adjust this unit for electrical adjustments as this section.

Note

- Perform the "5-4. Video System Level Adjustment" according to the system that the customer uses.
- Master setup unit MSU-1000/1500 is used for electrical adjustments of the unit.
  Without using master setup unit (here after MSU), the electrical alignment also can be made using setting menu of the camera.
  Refer to "5-1-7. Setup Menu Correspondence List" for detail of setup menu.

5-1. Preparations

Turn on the external main power switch before starting adjustments, and warm up the unit for about 10 minutes.

5-1-1. Required Equipment, Tool

Note

Use calibrated equipment and tools.

Equipment Required

Name	Equipment
HD waveform monitor	Leader Electronics LV5150DA, Leader Electronics LV5152DA (multi format) or equivalent
HD color monitor	Sony BVM-D20F1J/BVM-D14H5J or equivalent
Oscilloscope	Tektronix TDS460A or equivalent
Master setup unit	Sony MSU-1000/1500
HD viewfinder	Sony HDVF-20A/200/C30WR/C35W
Lens	Canon HJ18 or equivalent

Tool

Name	Sony Part No.	Remarks
Grayscale chart (16 : 9 reflective type)	—	Commercially available Since time degradation is appeared, replace for every two years. (The exchange time, change by the safekeeping situation.)
Grayscale chart (16 : 9 transparent type)	J-6394-080-A	Use when the grayscale chart (16 : 9 reflective type) is not available.
Pattern box PTB-500	J-6029-140-B	

5-1-2. File Data at Adjustment

The file structure of the adjustment data of this unit is as follows.

For detail of adjustment data, Refer to “7. File System”.

Reference File

- The reference file stores the custom paint data adjusted by the video engineer as standard paint data.
- The service engineer can store reference file in the camera and USB drive.
- The reference file stored in the USB drive(For back up) can be reset after adjustment.

Lens File

- Lens file is used for compensating the deviation generated by switching the lens extender from OFF to ON and for compensating the difference in the characteristics between lenses.
- The lens file is saved to a camera.
- When adjusting with lens file, mount the lens that customer uses actually.

OHB File

- OHB file is used for adjustment for the CMOS block maintenance.
- OHB file is saved in the camera.

5-1-3. Handling the Grayscale Chart

It is preferable to use an 89.9%-reflective grayscale chart for electrical adjustments.
If a reflective chart is not available, use a calibrated pattern box and a transparent grayscale chart for adjustments.
Before beginning adjustment, set the illumination of the light source (or the luminous intensity on the chart surface) properly proceeding as follows and set the color temperature to 3200 K exactly by adjusting light.

Information on the Reflective Grayscale Chart (16 : 9)

Recommended chart

The reflective grayscale chart (16 : 9) is commercially available.

- Product name: Reflective grayscale chart
- Supplier: MURAKAMI COLOR RESEARCH LABORATORY

Handling precautions

- Do not touch the chart’s surface with bare hands.
- Do not subject the surface to dirt or scratches.
- Do not prolonged exposure to sunlight.
- Protect the chart from excessive moisture or harmful gas.
- Avoid resting articles against the case.
- When the chart is not used for a long period and is stored, open the case and dry the chart for about an hour once or twice a month.

Setting Illumination

Measuring equipment : Illuminance meter (Calibrated)

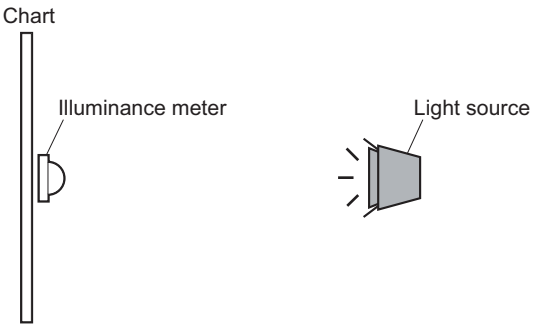
Procedure

1. Turn on the light source.

2. arm up for about 30 minutes.
3. Place the illuminance meter on the chart surface.
4. Adjust the position and angle of the light source so that the whole surface of the chart is evenly 2000 lx.

Note

Light the chart from almost the same direction and height as the camera to shoot the chart.



Transparent grayscale chart (16:9)

Recommended chart

- Product name: Grayscale chart (16:9 transparent type)
- Sony Part No.:J-6394-080-A

Handling precautions

Use calibrated pattern box.

Setting Illumination

Measuring equipment : Illuminance meter
(KONICA MINOLTA LS-110 or equivalent , Calibrated)

Preparation

1. Place the pattern box where the chart is not exposed to light, such as a darkroom.
   (Or cover the pattern box with a cover whose inside is painted in black.)
2. Light the pattern box.
3. Warm up the pattern box for about 30 minutes.

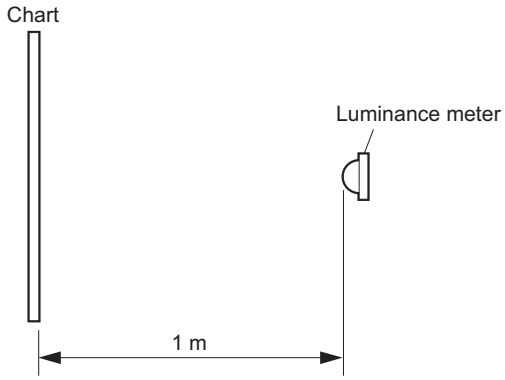
Procedure

1. Fix the luminance meter facing straight to the chart at a distance of 1 m from it.

2. Adjust the luminance control of the pattern box so that the white portion in the center of the chart is 573 ±6 cd/m^2

Tip

This corresponds to the luminous intensity on the 89.9%-reflective chart at 2000 lx.



5-1-4. Setup Menu

Camera equips setup menu. Some of adjustments given in this section use the setup menu without MSU.
In setup menu, operate from [TOP MENU] screen on the camera.
Configuration of [TOP MENU] screen is as follows.

- USER menu
- USER MENU CUSTOMIZE menu
- OPERATION menu
- PAINT menu
- MAINTENANCE menu
- FILE menu
- DIAGNOSIS menu
- SERVICE menu

Note

Display of [SERVICE] menu, refer to “How to Display the SERVICE Menu”.

The setup menu operation is described as follows.
Example: When the AUTO SETUP page of MAINTENANCE menu is selected from the TOP menu and AUTO LEVEL is performed.
MENU: MAINTENANCE
PAGE: AUTO SETUP
ITEM: AUTO LEVEL

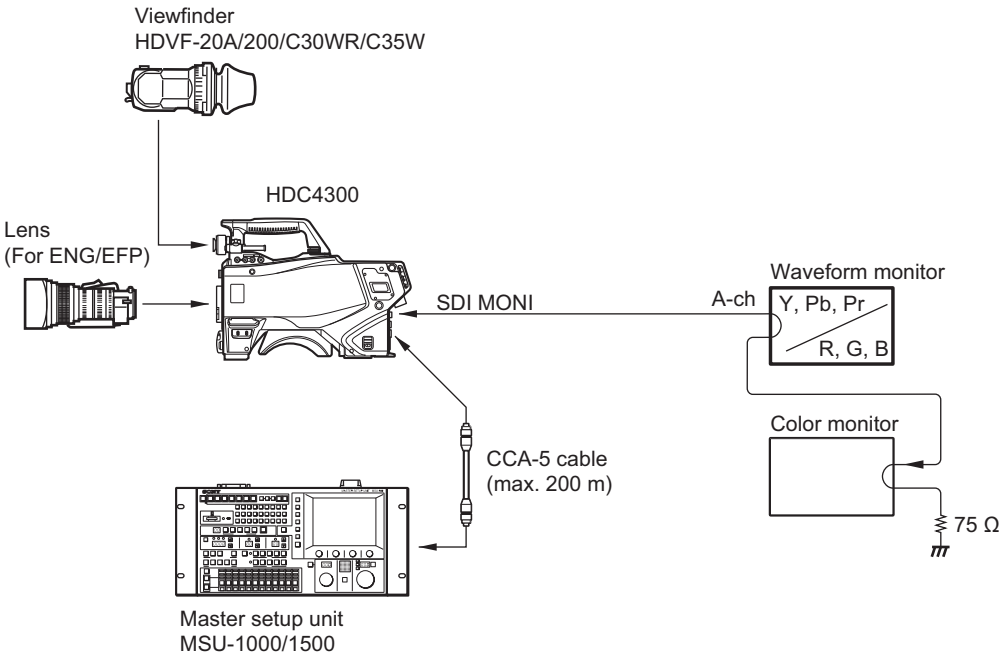
How to Display the SERVICE Menu

Set the DISPLAY switch to “MENU” while pressing the ASSIGNABLE 1 switch on the side of the camera and the rotary encoder on the front of the camera.
[SERVICE] menu is displayed on the [TOP MENU] screen.
Display screen of [SERVICE] menu, Refer to “8-2. SERVICE Menu”.

How to Change the Setting Values

There are menu items that can be changed setup value by turning the rotary encoder.
The setup value is changed, confirmed or cancelled by following method.
Change: Turn the rotary encoder.
Confirm: Press the rotary encoder.
Cancel: Switch the STATUS/CANCEL to "CANCEL". Before confirming, value can be returned to previous.

5-1-5. Connection of Equipment



5-1-6. Initial Settings

There are following Initial Settings.

- Set using the MSU.
- Set using setup menu and switches of the camera.

Before starting "5-2. Automatic Adjustment" or later, perform the initial setting.

When Adjusting Using the MSU

Set each button as follows.

- Power supply and signal switching block
  - ALL button → OFF (dark)
  - CAM PW button → ON (lit)
  - VF PW button → ON (lit)
  - TEST 1 button → OFF (dark)
  - TEST 2 button → OFF (dark)
  - BARS button → OFF (dark)
  - CLOSE button → ON (lit)

- Camera/CCU circuit ON/OFF block
  - KNEE OFF button → OFF (lit)
  - DETAIL OFF button → OFF (lit)
  - MATRIX OFF button → OFF (lit)
  - AUTO KNEE button → OFF (dark)
  - SKIN DETAIL button → OFF (dark)
- Others
  - GAMMA OFF button → ON (dark)
  - MASTER GAIN → 0 (0 dB)
  - FILTER button (ND) → 1 (CLEAR)
  - FILTER button (CC) → B (3200 K)
  - ON button (shutter control block) → OFF (dark)

When Adjusting Using the Setup Menu

Set each item and the switch, etc. as follows.

- PAINT menu

Page	Setting Item	Initial Setting
SW STATUS	FLARE	ON
	GAMMA	ON
	BLK GAM	OFF
	KNEE	OFF
	WHT CLIP	OFF
	DETAIL	ON
	LVL DEP	ON
	SKIN DTL	OFF
	MATRIX	OFF
VIDEO LEVEL	TEST	OFF

- Side panel
  - GAIN switch → L (0 dB)
  - AUTO/AUTO KNEE switch → CAM/OFF
  - WHITE BAL switch → PRST
- Front panel
  - SHUTTER switch → OFF
- Filter position
  - ND filter → 1 (CLEAR)
  - CC filter → B (3200 K)

5-1-7. Setup Menu Correspondence List

The camera setup menu items corresponding to the adjustment items of MSU are described.
Refer to the following tables when using the camera setup menu for electrical adjustments without using MSU

PAINT

- MSU :
  [PAINT] button → ON(lit).

- Camera setup menu:
  Select [PAINT] menu

Menu item of MSU			Menu item of camera		
Menu	**Sub Menu**	**Adjustment Item**	**MENU**	**PAGE**	**ITEM**
Black		R/G/B	PAINT	VIDEO LEVEL	BLACK R/G/B/M
		Master			
Flare		R/G/B			FLARE R/G/B/M
		Master			
Detail	1/3	Level		DETAIL 1	LEVEL
		Limiter			LIMITER [M]
		Crispening			CRISP
		Level Dep			LVL DEP
	2/3	H/V Ratio			HV RATIO
	3/3	W Limiter			LIMITER WHT
		B Limiter			LIMITER BLK
Gamma	Gamma	R/G/B		GAMMA	LEVEL R/G/B/M
		Master			
Knee	Knee Point	R/G/B		KNEE	POINT R/G/B/M
		Master			
	Knee Slope	R/G/B			SLOPE R/G/B/M
		Master			
White Clip		R/G/B			WHT CLP R/G/B/M
		Master			

FILE

- MSU :
  [FILE] button → ON (lit)
- Camera setup menu :
  Select [FILE] menu

Menu item of MSU		Menu item of camera		
Menu	**Sub Menu**	**MENU**	**PAGE**	**ITEM**
Ref File	Ref Store	FILE	REFERENCE	STORE FILE
Lens File	Lens Store		LENS FILE	STORE FILE
OHB File	OHB Store		OHB FILE	STORE FILE

MAINTENANCE

- MSU :
  [MAINTENANCE] button → ON (lit)
- Camera setup menu :
  Select [MAINTENANCE] menu

Menu item of MSU				Menu item of camera		
Menu	**Secondary Menu**	**Sub Menu**	**Adjust-ment**	**MENU**	**PAGE**	**ITEM**
Camera	White Shading	R/G/B	H SAW	MAINTENANCE	WHITE SHADING	H SAW R/G/B
			H PARA			H PARA R/G/B
			V SAW			V SAW R/G/B
			V PARA			V PARA R/G/B
Lens	Auto Iris Settings		Level		AUTO IRIS	IRIS LEVEL
			APL Ratio			APL RATIO
	V Mod Saw		R/G/B	PAINT	VIDEO LEV-EL	V MOD R/G/B/M
			Master			

5-2. Automatic Adjustment

5-2-1. Execute the Automatic Level Setup

1. Press the LEVEL button (AUTO SETUP block) of MSU.
   LEVEL button lights. (ON)
2. Press the START/BREAK button (AUTO SETUP block) of MSU.
   START/BREAK button lights (ON), automatic adjustment is executed.
   After the adjustment is completed, the message “Completed” is displayed.

Tip

When performing automatic adjustment using the camera menu, set the setup menu as follows.
MENU: MAINTENANCE
PAGE: AUTO SETUP
ITEM: AUTO LEVEL

5-3. Camera System Adjustment

5-3-1. Black Set Adjustment

Measuring equipment : waveform monitor(R,G,B)
Measuring point : SDI 1 terminal

Preparation

- Setting for MSU
  CLOSE button → ON (lit)
  MASTER GAIN → 12

Procedure

1. Set as follows by camera setup menu.
   MENU：MAINTENANCE
   PAGE：OUTPUT FORMAT
   ITEM：CURRENT → 4K59.94P
2. Open following page by camera setup menu.
   MENU：SERVICE
   PAGE：BLACK SHADING
3. Adjust this using the waveform monitor so that the pedestal level of R,G or B each channel becomes equal within a range of -6 to +12 dB.
   ITEM：BLK SET [R], [G], [B]
4. Store the file.
   MENU：SERVICE
   PAGE：BLACK SHADING
   ITEM：STORE FILE
5. Change item of procedure 1, store the file every following format.

   Format
   - 4K59.94P (2x)
   - HD59.94P (2x)
   - HD59.94P (4x)
   - HD59.94P (8x)

   File store
   MENU：SERVICE
   PAGE：BLACK SHADING
   ITEM：STORE FILE

5-3-2. Sensitivity Adjustment

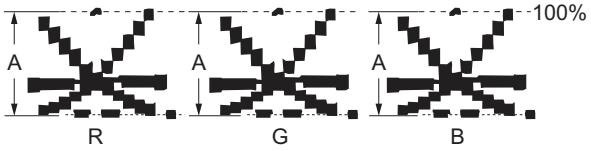
Measuring equipment : waveform monitor (R,G,B)
Measuring point : SDI 1 terminal
Subject : Grayscale chart

Preparation

- Setting for MSU
  CLOSE button → OFF (dark)
  GAMMA OFF button → OFF (lit)
  MASTER GAIN → 0
  DETAIL OFF button → OFF (lit)
- Attach the lens to the camera.
  Refer to “5-1-1. Required Equipment, Tool” for using the lens.

Procedure

1. Press the TEST 1 button of MSU.
   The TEST 1 button lights (ON), TEST SAW waveform is output.
2. Check that the amplitude is 700 mV using the waveform monitor.
   If the amplitude is not 700 mV, check that WHITE [R], [G], [B] values are 0.
   MENU：PAINT
   PAGE：VIDEO LEVEL
   ITEM：WHITE [R], [G], [B]
3. Press the TEST 1 button of MSU.
   The TEST 1 button is turned off (OFF), TEST SAW waveform is not output.
4. Shoot the grayscale chart so that the chart frame is aligned with the under scanned monitor frame.
5. Set the lens iris as follows.
   F8（59.94P）
6. Set as follows by camera setup menu.
   MENU：MAINTENANCE
   PAGE：OUTPUT FORMAT
   ITEM：CURRENT → 4K59.94P
7. Set as follows by camera setup menu.
   MENU：SERVICE
   PAGE：OHB_ADJ1
   ITEM：FILTER → OFF
   ITEM：MONITOR SEL → R
8. Adjust [R1] and [R2] of [GAIN CONT] so that A portion level of R channel waveform becomes 100%.
   The values of [R1] and [R2] should be same.
9. Adjust [G1],[G2],[B1] and [B2] of [GAIN CONT] in the same way as step 8.



10. Store the file.
    MENU：SERVICE
    PAGE：OHB_ADJ1
    ITEM：STORE FILE

11. Change the items of step 6, File the store every following format.

Format

- 4K59.94P (2x)
- HD59.94P (2x)
- HD59.94P (4x)
- HD59.94P (8x)

File store

MENU：SERVICE
PAGE：OHB_ADJ1
ITEM：STORE FILE

5-3-3. Black Shading Adjustment

Preparation

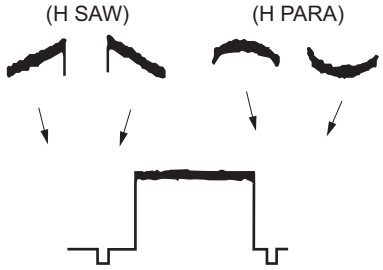
- Setting for MSU
  CLOSE button → ON (lit)
  GAMMA OFF button → OFF (lit)
  MASTER GAIN → 12
  MASTER BLACK → 30

Procedure

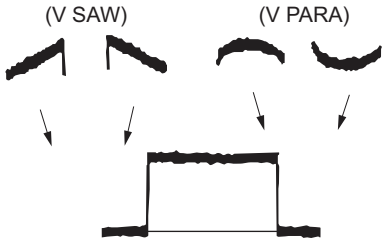
1. Set as follows by camera setup menu.
   MENU：MAINTENANCE
   PAGE：OUTPUT FORMAT
   ITEM：CURRENT → 4K59.94P
2. Set as follows by camera setup menu.
   MENU：SERVICE
   PAGE：BLACK SHADING
   ITEM：MONITOR SEL → R

3. Adjust so that R channel waveform becomes as flat as possible.
   ITEM : H SAW [R]
   ITEM : H PARA [R]
   ITEM : V SAW [R]
   ITEM : V PARA [R]

H: LINE



V: FIELD



4. Also adjust G and B channels in the same way as step 3.
   MENU : SERVICE
   PAGE : BLACK SHADING
   ITEM : MONITOR SEL → G
   ITEM : MONITOR SEL → B
5. Store the file.
   MENU : SERVICE
   PAGE : BLACK SHADING
   ITEM : STORE FILE
6. File the store every following format by camera setup menu.

   Format
   - 4K59.94P (2x)
   - HD59.94P (2x)
   - HD59.94P (4x)
   - HD59.94P (8x)

   File store

   MENU : SERVICE
   PAGE : BLACK SHADING
   ITEM : STORE FILE

5-3-4. White Shading Adjustment

When the next condition corresponds to even one, white shading is not adjusted correctly.

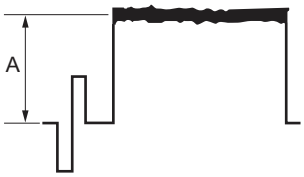
Note

- The brightness of the subject is uneven.
- The brightness is not set correctly.
- Iris value of lens is not set correctly.
- Zoom position is not set correctly.

Obey the contents of following preparation and procedure, use calibrated equipment and tools.

Preparation

- Setting of MSU
  KNEE OFF button → OFF (lit)
- Shoot the full-white pattern so that it is aligned with the under scanned monitor frame.
- Lens iris: F4 to F5.6
- A = 600 ± 20 mV
  If the lens aperture is greater than F5.6, adjust the light amount with the shutter.



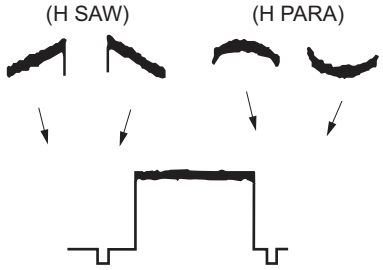
- Lens focus: ∞
- Set the lens extender or shrinker as follows.
  Lens extender (x2) → OFF
  Lens shrinker (x0.8) → OFF
- Set as follows by camera setup menu.
  MENU: OPERATION
  PAGE: LENS FILE
  ITEM: FILE
  1. Select the file in accordance with the lens attached. If there is no appropriate file, select NO OFFSET.
  2. Change the name of lens with MSU.

Procedure

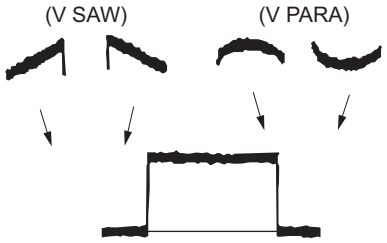
1. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message "AWB : OK" is displayed.
2. Open the following items with using the MSU.
   (1) MAINTENANCE button → ON (lit)
   (2) Touch panel operation: [Camera] → [White Shading] → [R]

3. Adjust the waveform on the monitor so that the waveform levels out it as much as possible.
   Adjustment item : H SAW
   Adjustment item : H PARA
   Adjustment item : V SAW
   Adjustment item : V PARA

H: LINE



V: FIELD



4. Make the same adjustment for channels G and B.
5. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB : OK” is displayed. OHB File Store

Store the OHB file in the MSU menu.

Store the OHB file in the MSU menu.

Procedure

1. FILE button → ON (dark)
2. Touch panel operation : [OHB File] → [OHB Store] → [Store]
   When the store operation is completed, the message “OHB File Store” is displayed.

Adjustment for Lens Extender or Shrinker

When the WHITE or shading of V is out of alignment by using the lens extender or lens shrinker, perform the following lens adjustment after storing the OHB file

Procedure

1. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB : OK” is displayed.
2. Set the lens extender to ×1.
3. Operate the control panel of MSU, and store the lens file.
   (1) FILE button → ON (lit)
   (2) Touch panel operation : [Lens File] → [Lens Store] → [Store]

4. Set the lens extender or the lens shrinker as follows.
   - Lens extender (×2) → ON
   - Lens shrinker (×0.8) → ON
5. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (dark)
   After the adjustment is completed, the message “AWB : OK” is displayed.
6. Operate the control panel of MSU, and adjust as follows.
   (1) MAINTENANCE button → ON (lit)
   (2) Touch panel operation : [Lens] → [V Mod Saw]
   (3) Set the V modulation correction value as required.
   Adjustment item: R, G, B
7. Operate the control panel of MSU, and store the lens file.
   (1) FILE button → ON (lit)
   (2) Touch panel operation : [Lens File] → [Lens Store] → [Store]
8. Return the setting of lens extender or lens shrinker.
   - Lens extender (×2) → OFF
   - Lens shrinker (×0.8) → OFF

5-4. Video System Level Adjustment

Note

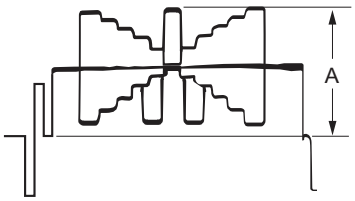
Perform the video system level adjustment according to the system that the customer uses.

5-4-1. H/V Ratio Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector
Object: Grayscale chart

Preparation

- Setting for MSU
  DETAIL OFF button → ON (dark)
  KNEE OFF button → OFF (lit)
- Shoot the grayscale chart so that the chart frame is aligned with the under scanned monitor frame.
- Lens iris: F4 to F5.6
- A = 600 ±20 mV
  If the lens aperture is greater than F5.6, adjust the light amount with the shutter.



Procedure

1. Operate the control panel of MSU, and set as follows.

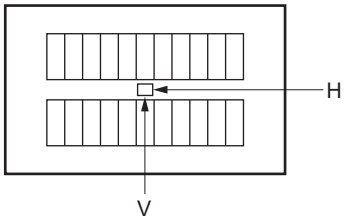
   Note

   Customer's settings must be restored after the adjustment. Write down the customer's settings.

   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Detail] → [1/3]
   Set each item as follows:
   - Level → 99
   - Limiter → 0
   - Crispening → –25
   - Level Dep → 25

2. Operate the [PAINT] menu of MSU, and set as follows.
   Touch panel operation: (Page 1) → [Detail] → [2/3]

3. Adjust the H/V Ratio adjustment, a ratio between H and V detail amounts (white) to be added shall be equal.
   - Adjustment item : [H/V Ration] (Reference value: 20 to 40)



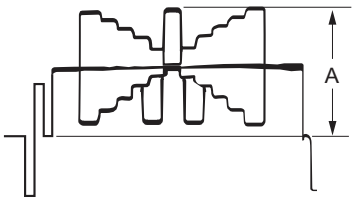
4. Change the settings to the recorded customer's settings.
5. Store the reference file.
   (Refer to the "5-4-12. File Store".

5-4-2. Detail Level Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector
Object: Grayscale chart

Preparation

- Setting for MSU
  DETAIL OFF button → ON (dark)
  KNEE OFF button → OFF (lit)
- Shoot the grayscale chart so that the chart frame is aligned with the under scanned monitor frame.
- Lens iris: F4 to F5.6
- A = 600 ±20 mV
  If the lens aperture is greater than F5.6, adjust the light amount with the shutter.



Procedure

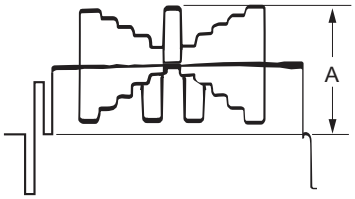
1. Operate the menu of MSU.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Detail] → [1/3]
2. Adjust the detail level to be added to each step of the grayscale to the desired level.
   - Adjustment item : [Level]
3. Store the reference file.
   (Refer to the "5-4-12. File Store".

5-4-3. Crispening Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector
Object: Grayscale chart

Preparation

- Setting for MSU
  DETAIL OFF button → ON (dark)
- Shoot the grayscale chart so that the chart frame is aligned with the under scanned monitor frame.
- Lens iris: F4 to F5.6
- A = 600 ± 20 mV
- If the lens aperture is greater than F5.6, adjust the light amount with the shutter.



Procedure

1. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB : OK” is displayed.
2. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Detail] → [1/3]
   (3) Set adjustment item [Crispening] to -99.
3. Adjust the value of crispening.
   - Adjustment item : [Crispening]
   (1) Turn the adjustment knob of MSU to plus direction slowly.
   (2) Stop the adjustment knob of MSU at the where the noise at the black level of the waveform just decreases.
4. Store the reference file.
   (Refer to the “5-4-12. File Store”.

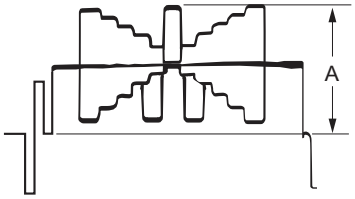
5-4-4. Level Dependent Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector
Object: Grayscale chart

Preparation

- Setting for MSU
  DETAIL OFF button → ON (dark)
- Shoot the grayscale chart so that the chart frame is aligned with the under scanned monitor frame.

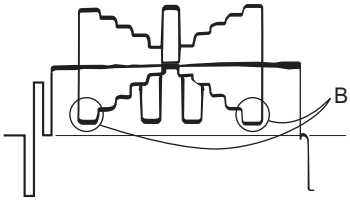
- Lens iris: F4 to F5.6
- A = 600 ±20 mV
  If the lens aperture is greater than F5.6, adjust the light amount with the shutter.



Procedure

1. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Detail] → [1/3] → [Level Dep]
2. Set adjustment item [Level Dep] to -99 by adjustment nob of MSU.
3. Adjust the level dependent.
   - Adjustment item : [Level Dep]

   (1) Turn the adjustment knob of MSU to plus direction slowly.
   (2) Stop the adjustment knob of MSU at the where the edge of B portion on the waveform just decreases. Or adjust for the desired level.



4. Store the reference file.
   Refer to the “5-4-12. File Store”.
5. After completing this adjustment, perform “5-4-1. H/V Ratio Adjustment”.

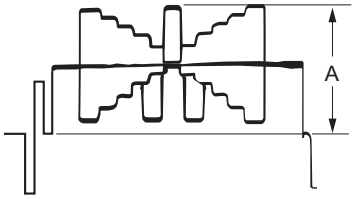
5-4-5. Detail Clip Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector
Object: Grayscale chart

Preparation

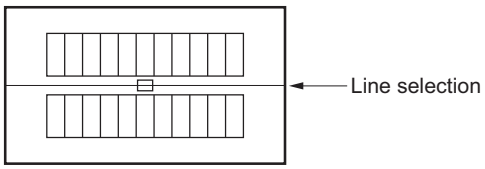
- Setting for
  DETAIL OFF button → ON (dark)
  KNEE OFF button → OFF (lit)
- Shoot the grayscale chart so that the chart frame is aligned with the under scanned monitor frame.
- Lens iris: F4 to F5.6

- A = 600 ±20 mV
  If the lens aperture is greater than F5.6, adjust the light amount with the shutter.

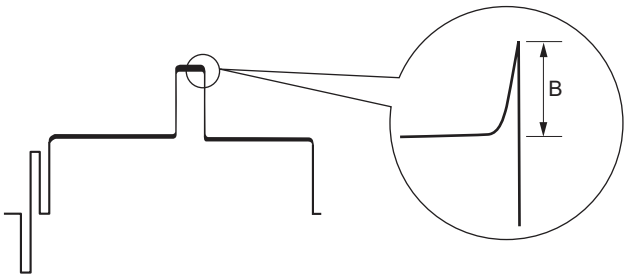


Procedure

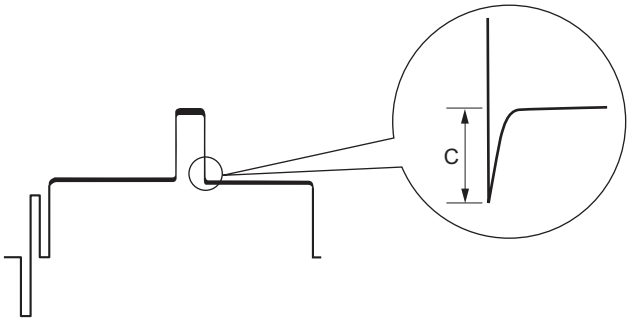
1. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB : OK” is displayed.
2. Make a line selection at the center white portion of the grayscale chart.



3. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Detail] → [3/3]
4. Adjust the edge at portion B(white) to the desired clip level.
   - Adjustment item : [W Limiter]



5. Adjust the edge at portion C(black) to the desired clip level.
   - Adjustment item : [B Limiter]



6. Store the reference file.
   (Refer to the “5-4-12. File Store”.

5-4-6. Auto-iris Adjustment

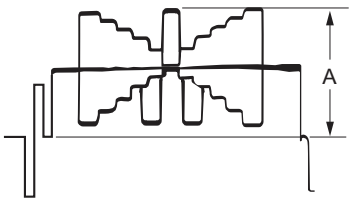
Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector
Object: Grayscale chart

Preparation

- Setting for MSU
  AUTO IRIS button → ON (lit)
  DETAIL OFF button → ON (dark)
  KNEE OFF button → OFF (lit)
- Shoot the grayscale chart so that the chart frame is aligned with the under scanned monitor frame.

Procedure

1. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON(lit)
   After the adjustment is completed, the message "AWB : OK" is displayed.
2. Operate the control panel of MSU, and set as follows.
   (1) MAINTENANCE button → ON (lit)
   (2) Touch panel operation: [Detail] → [Auto Iris Settings]
3. To set the operation mode of auto-iris that is depending on a use, set the reaction degree of auto-iris.
   (It can be set between the average and the peak value of video signal.)
   - Adjustment item : [APL Ratio]
     (-99 : peak value to 99 : average)
4. Adjust the convergence level of auto-iris so that the level of portion A on the waveform becomes the specification.
   - Adjustment item : [Level]
   - Specification : A = 700±7 mV



5. Store the reference file.
   (Refer to the “5-4-12. File Store”.)

5-4-7. Pedestal Level Adjustment

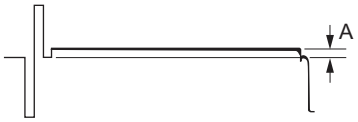
Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector

Preparation

- Setting for MSU
  CLOSE button → ON (lit)
- Shoot the grayscale chart so that the chart frame is aligned with the under scanned monitor frame.

Procedure

1. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Black]
2. Adjust the levels A to desired level for R, G and B respectively.
   To adjust all levels for R, G and B simultaneously, adjust them using Master.
   - Adjustment item : [R], [G], [B], [Master]
   - Reference value : A = 21 mV



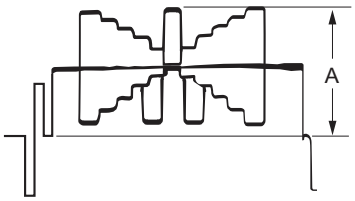
3. Store the reference file.
   (Refer to the "5-4-12. File Store".)

5-4-8. Flare Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector
Object: Grayscale chart

Preparation

- Setting for MSU
  DETAIL OFF button → ON (dark)
  KNEE OFF button → OFF (lit)
  MATRIX OFF button → OFF (lit)
- Shoot the grayscale chart so that the chart frame is aligned with the under scanned monitor frame.
- Lens iris: F4 to F5.6
- A = 600 ±20 mV
  If the lens aperture is greater than F5.6, adjust the light amount with the shutter.

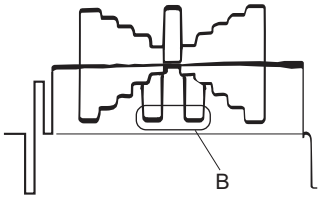


-

Procedure

1. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Flare]

2. Adjust the levels B to desired level for R, G and B respectively.
   To adjust all levels for R, G and B simultaneously, adjust them using Master.
   - Adjustment item : [R], [G], [B], [Master]



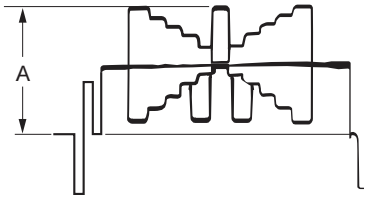
3. Store the reference file.
   (Refer to the "5-4-12. File Store".)

5-4-9. Gamma Correction Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector
Object: Grayscale chart

Preparation

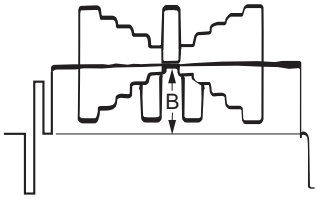
- Setting for MSU
  KNEE OFF button → OFF (lit)
  GAMMA OFF button → ON (dark)
- Shoot the grayscale chart so that the chart frame is aligned with the under scanned monitor frame.
- Lens iris: A = 700 ±20 mV



Procedure

1. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message "AWB : OK" is displayed.
2. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Gamma]

3. Adjust the levels B to desired level for R, G and B respectively.
   To adjust all levels for R, G and B simultaneously, adjust them using Master.
   - Adjustment item : [R], [G], [B], [Master]



4. Store the reference file.
   (Refer to the "5-4-12. File Store".)

5-4-10. Knee Point/Knee Slope Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector

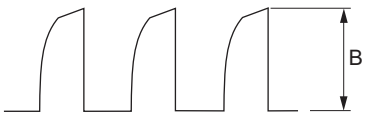
Preparation

- Setting for MSU
  MASTER GAIN → 6
  TEST 1 button → ON (lit)
  KNEE OFF button → ON (dark)

Procedure

1. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Knee] → [Knee Slope]
   (3) Set adjustment item[Master] to -99.
2. Operate the control panel of MSU, and set as follows.
   Touch panel operation: (Page 1) → [Knee] → [Knee Point]
3. Adjust the levels A to desired level for R, G and B respectively.。
   To adjust all levels for R, G and B simultaneously, adjust them using Master.
   - Adjustment item : [R], [G], [B], [Master]
   - Reference value : A = 686 mV

4. Operate the control panel of MSU, and set as follows.
   Touch panel operation: (Page 1) → [Knee] → [Knee Slope]
5. Adjust the levels B to desired level for R, G and B respectively.
   - Adjustment item : [R], [G], [B], [Master]
   - Reference value : B = 735 mV



6. Store the reference file.
   (Refer to the "5-4-12. File Store".)

Setting after Adjustment

- Setting for MSU
  MASTER GAIN → 0
  TEST 1 button → OFF (dark)
  KNEE OFF button → OFF (lit)

5-4-11. White Clip Level Adjustment

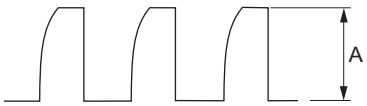
Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector

Preparation

- Setting for MSU
  MASTER GAIN → 12
  TEST 1 button → ON (lit)

Procedure

1. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 2) → [White Clip]
2. Adjust the levels A to desired level for R, G and B respectively.
   To adjust all levels for R, G and B simultaneously, adjust them using Master.
   - Adjustment item : [R], [G], [B], [Master]
   - Reference value : A = 756 mV



3. Store the reference file.
   (Refer to the "5-4-12. File Store".)

Setting after Adjustment

- Setting for MSU
  MASTER GAIN → 0
  TEST 1 button → OFF (dark)

5-4-12. File Store

After adjustments described in "5-4. Video System Level Adjustment" are completed, be sure to store the reference file.

Reference File Store

1. Operate the control panel of MSU, and store file.
   (1) FILE button → ON (lit)
   (2) Touch panel operation: [Ref File] → [Ref Store] → [Store]
   After the reference file entry is completed, a message “Completed” is displayed.

5-5. ND Offset Adjustment

5-5-1. White Balance Compensation

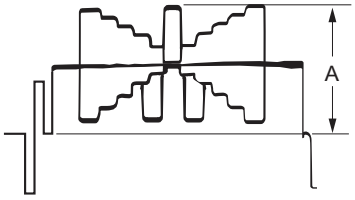
Note

When the filter disk unit is replaced alone, the correction of white balance is required. Proceed as follows.

Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector
Object: Grayscale chart

Preparation

- Setting for MSU
  AUTO IRIS button → ON (lit)
  MASTER GAIN → 0
- Shoot the grayscale chart so that the chart frame is aligned with the under scanned monitor frame.
- Lens iris: F4 to F5.6
- A = 600 ±20 mV
  If the lens aperture is greater than F5.6, adjust the light amount with the shutter.



Procedure

1. Operate the control panel of MSU, and set as follows.
   - FILTER CONTROL button → ON (lit)
   - ND1 button → ON (lit)
2. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB : OK” is displayed. 。
3. Operate the control panel of MSU, and set as follows.
   - ND2 button → ON (lit)
   - MASTER GAIN → 0 dB
4. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB : OK” is displayed.
5. Operate the control panel of MSU, and set as follows.
   - ND3 button → ON (lit)
   - MASTER GAIN → 0 dB
6. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON(lit)
   After the adjustment is completed, the message “AWB : OK” is displayed.
7. Operate the control panel of MSU, and set as follows.
   - ND4 button → ON (lit)
   - MASTER GAIN → 6 dB

8. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON(lit)
   After the adjustment is completed, the message "AWB : OK" is displayed.
9. Operate the control panel of MSU, and set as follows.
   - ND5 button → ON (lit)
   - MASTER GAIN → 12 dB
10. Operate the control panel of MSU, and perform the automatic white balance adjustment.
    WHITE button → ON (lit)
    After the adjustment is completed, the message "AWB : OK" is displayed.

OHB File Store

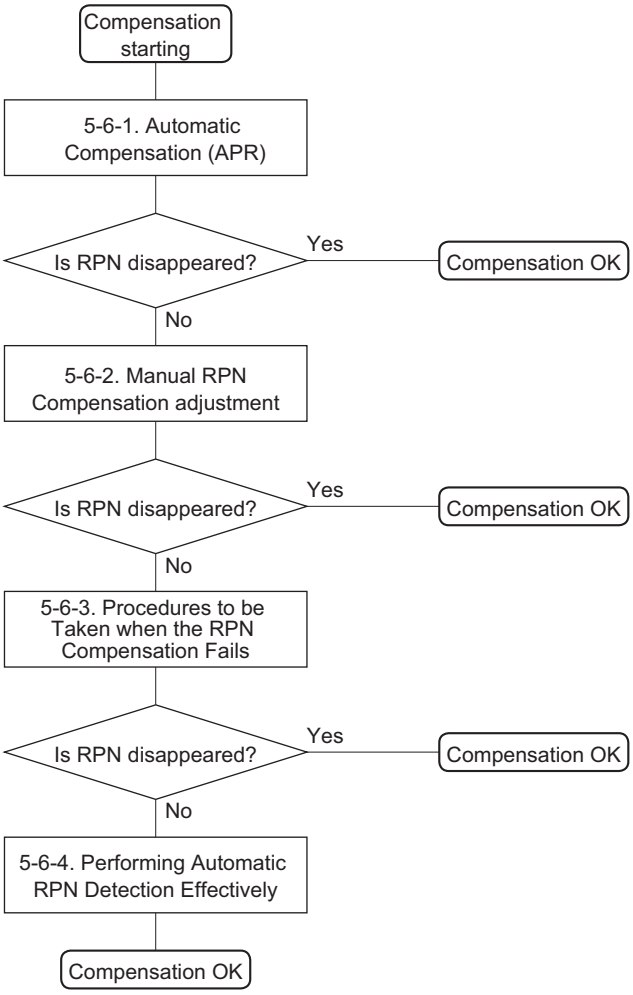
1. Operate the control panel of MSU, and set as follows.
   (1) FILE button → ON (lit)
   (2) Touch panel operation : [OHB File] → [OHB Store] → [Store]
   After recording is completed, a message “OHB File Stored” is displayed.

Setting after adjustment

- Setting for MSU
  MASTER GAIN → 0

5-6. RPN Compensation

- When executing the automatic compensation (APR) from MSU or setting menu, the residual point noise (RPN) of the CMOS image sensor is compensated.
- To compensate the RPN, compensate according to the following chart.



5-6-1. Automatic Compensation (APR)

When an RPN is detected in the screen, perform the automatic compensation (APR).

RPN automatic compensation (APR)

Note

- When automatic compensation is performed, reset the revision data at the time of the last time detection. Automatic detection of RPN is performed.
- RPN automatic compensation should be performed both HD and 4K.
- Manual RPN compensation adjustment data is not affected by executing the RPN automatic compensation(APR).
- RPN automatic compensation(APR) may take several minutes.

1. Execute RPN automatic compensation(APR) from MSU or execute AUTO CONCEAL of [RPN MANAGE] in the SERVICE menu.

5-6-2. Manual RPN Compensation Adjustment

When RPN is not compensated after RPN automatic compensation was performed, execute the manual RPN compensation adjustment.

Preparation

1. Execute RPN automatic compensation(APR).

Procedure

1. Open following page by camera setup menu.
   MENU : SERVICE
   PAGE : MANUAL RPN

```
<MANUAL RPN>      S03 TOP

 RPN CH SELECT   :       R
 RPN CURSOR      :     OFF
 CURSOR H POS.   :    1008
 CURSOR V POS.   :     576
 CURSOR JUMP     :    CURR
 RPN WIDTH       :       1
 RECORD RPN      :    EXEC
 DELETE RPN      :    EXEC
 MONITOR SEL     :  YPbPr
```

2. Select the channel (R, G, or B) that is to be compensated.
   ITEM: RPN CH SELECT → R, G, B
3. Display the cross cursor.
   ITEM: RPN CURSOR → ON
4. Set the cross cursor center at the target RPN.
   ITEM: CURSOR H POS.
   ITEM: CURSOR V POS.
5. Execute record of RPN compensation adjustment data.
   ITEM: RECORD RPN → EXEC
   A message “RECORD DATA OK? YES → NO” is displayed.

   Note

   In the case of RPN is disappeared in the screen, perform step 6.
   In the case of RPN is appeared in the screen, the cross cursor may not move to the position of RPN. Perform procedures as follows.
   (1) Select(turn the knob) "NO" by rotary encoder and confirm(press the button).
   (2) Shift the center of cross cursor by one line or one pixel and move to position of RPN.
   (3) Perform step 5.

6. Select(turn the knob) “YES” by rotary encoder and confirm(press the button).
   The message “COMPLETE” is displayed, the compensation data is recorded.

   Tip

   If a compensation pixel has been wrongly recorded, delete the RPN data.
   ITEM: DELETE RPN → EXEC

7. Repeat steps 4 to 6 to compensate other RPNs.

Setting after adjustment

1. Hide the cross cursor.
   ITEM: RPN CURSOR → OFF

5-6-3. Procedures to be Taken when the RPN Compensation Fails

When the RPN compensation is not successful even after the manual RPN compensation adjustment was made, the following causes are possible.

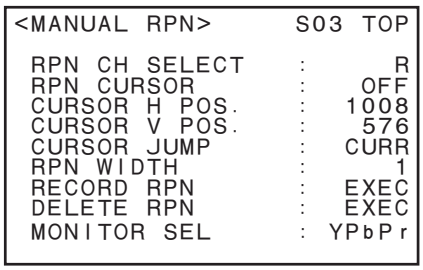
- An adjacent wrong position was compensated.
- The compensation failed due to the influence of other RPNs.

Note

Appearance of an RPN next to the pixel to be compensated means that adjacent RPNs exit. If an RPN appears in the diagonal direction, the RPN cannot be compensated. In this case, the CCD or the CCD block must be replaced.
For more information, contact your local Sony Sales Office/Service Center.

Procedure

1. Open following page by camera setup menu.
   MENU: SERVICE
   PAGE: MANUAL RPN



2. Display the cross cursor.
   ITEM: RPN CURSOR → ON
3. Check whether there are any compensated pixels close to the pixel to be compensated.
   - When the target pixel is above the cursor position,
     ITEM: CURSOR JUMP → PREV
   - When the target pixel is under the cursor position,
     ITEM: CURSOR JUMP → NEXT

   Tip

   To compensate effectively RPN, perform as follows.
   - After placing the cursor in advance close to the pixel to be compensated by using CURSOR H POS. and CURSOR V POS, execute the CURSOR JUMP function.

4. When the cursor stopped at a position near the target pixel, Delete the compensation data at stop position of cursor.
   (1) Delete the compensation data.
   ITEM: DELETE RPN → EXEC
   A message “DELETE DATA OK? YES → NO” is displayed.
   (2) Select (turn the knob) "YES" by rotary encoder and confirm (press the button).
5. When the cursor is not moved by executing the CURSOR JUMP, move the cursor in the direction of horizontal or vertical, and execute it again.
   ITEM: CURSOR H POS.
   ITEM: CURSOR V POS.

6. Record the RPN compensation adjustment data.
   ITEM: RECORD RPN → EXEC
   A message “RECORD DATA OK? YES → NO” is displayed.
7. After confirming that RPN disappears, select(turn the knob) "YES" by rotary encoder and confirm(press the button).
   Message “COMPLETE” is displayed, the compensation data is recorded.

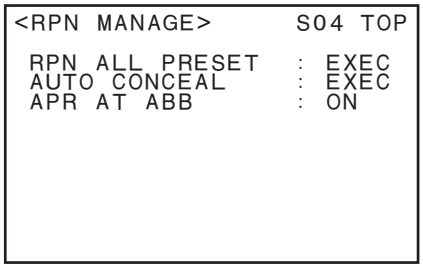
5-6-4. Performing Automatic RPN Detection Effectively

Preparation

- Lens iris→ CLOSE
- Setting for MSU
  BARS button → OFF (dark)
  SHUTTER button → OFF (dark)

Procedure

1. Open the following page by camera setup menu.
   MENU: SERVICE
   PAGE: RPN MANAGE



2. Execute the automatic compensation of RPN.
   ITEM: AUTO CONCEAL → EXEC

Section 6
Software Upgrade

6-1. Upgrading Software Programs

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

6-1-1. 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 (hdc4300_app.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   \MSSONY\PRO\CAMERA\HDC4300
2. Copy the version update data file "hdc4300_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 unit.
3. Display the "ROM VERSION" page of the DIAGNOSIS menu.
4. Confirm that the cursor “?” is displayed to the left of D03, and then press the ENTER button long.
5. Updatable items become selectable. Select "CAMERA APP" and then press the ENTER button.
6. A message “VERSION UP 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 unit and confirm that the version has been updated on the "ROM VERSION" page of the DIAGNOSIS menu.

6-1-2. 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 (hdc4300_os.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   \MSSONY\PRO\CAMERA\HDC4300
2. Copy the version update data file “hdc4300_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 unit.
3. Display the “ROM VERSION” page of the DIAGNOSIS menu.
4. Confirm that the cursor “?” is displayed to the left of D03, and then press the ENTER button long.
5. Updatable items become selectable. Select “OS” and then press the ENTER button.
6. A message “VERSION UP 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 unit and confirm that the version has been updated on the “ROM VERSION” page of the DIAGNOSIS menu.

6-2. 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 "10. 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.

6-2-1. Corresponding PLD

PLD (Ref. No./Board Name)	File Name
IC1001/SY-408 IC1102/SY-408*1	hdc4300_sy.pkg
IC700/DPR-370 IC701/DPR-370 *2 (Config-ROM)	hdc4300_dpr2.pkg
IC1300/DPR-370 IC1309/DPR-370 *3 (Config-ROM)	hdc4300_dpr1.pkg
IC201/MEM-147 IC402/MEM-147 *4 (Config-ROM)	hdc4300_mem2.pkg
IC901/MEM-147 IC1203, IC1204/MEM-147 *5 (Config-ROM)	hdc4300_mem1.pkg
IC001/TX-146 IC004/TX-146 *6 (Config-ROM)	hdc4300_tx.pkg

6-2-2. 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 PLD update data to the USB drive using the following procedure.

Note

For how to obtain the version update data file (hdc4300_sy.pkg, hdc4300_dpr1.pkg, hdc4300_dpr2.pkg, hdc4300_mem1.pkg, hdc4300_mem2.pkg, hdc4300_tx.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   \MSSONY\PRO\CAMERA\HDC4300
2. Copy the PLD version update data file to be updated to the directory created.

*1: IC1102 (SY-408) is the ROM for IC1001 (SY-408).
*2: IC701 (DPR-370) is the ROM for IC700 (DPR-370).
*3: IC1309 (DPR-370) is the ROM for IC1300 (DPR-370).
*4: IC402 (MEM-147) is the ROM for IC201 (MEM-147).
*5: IC1203, IC1204 (MEM-147) is the ROM for IC901 (MEM-147).
*6: IC004 (TX-146) is the ROM for IC001 (TX-146).

Procedure

1. Connect the USB drive that contains the version update program.
2. Turn on the unit.
3. Display the “ROM VERSION” page of the DIAGNOSIS menu.
4. Confirm that the cursor “?” is displayed to the left of D03, and then press the ENTER button long.
5. Updatable items become selectable. Select the PLD to be upgraded and then press the ENTER button.
6. A message “VERSION UP 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 unit and confirm that the version has been updated on the “ROM VERSION” page of the DIAGNOSIS menu.

6-3. Forced Version Update

If the version of program or data cannot be updated from the ROM VERSION page of the DIAGNOSIS menu, the software or PLD data version can be updated by the “forced version update.”

6-3-1. 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\HDC4300
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. Turn on the unit while pressing the RET 2 button and the rotary encoder on the front of the unit.
   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 viewfinder.

3. Upon completion of the version update, a message “UPDATE SUCCEEDED” appears.
4. Turn off and on the unit and confirm that the version has been updated on the “ROM VERSION” page of the DIAGNOSIS menu.

Section 7
File System

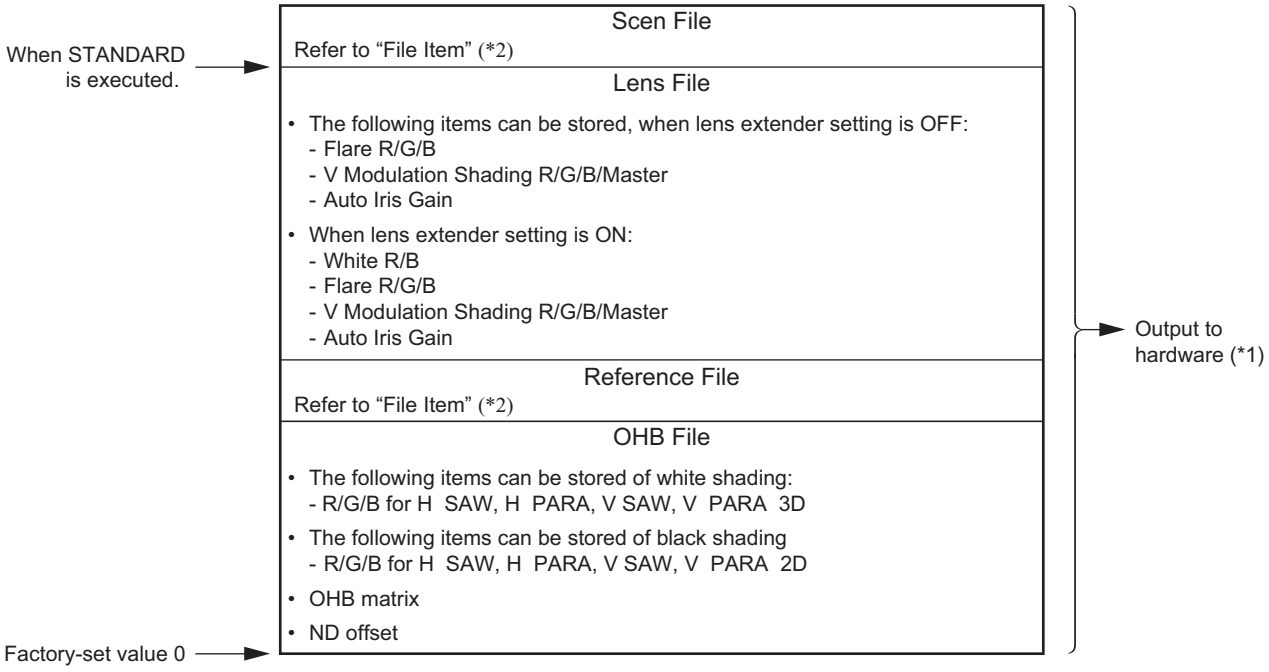
This unit is equipped with the file systems for managing data.
In this section, the menu operations are described as follows.
Example: When executing WRITE (CAM → USB) on the OPERATOR FILE page of the OPERATION menu
[OPERATION] → [OPERATOR FILE] → [WRITE (CAM → USB)]
As for the details on the setup menu, refer to “8. Setup Menu”.

7-1. File Structure

The following six types of files are available. As for the items to be stored in each file, refer to “7-8. File Items”.

1. Operator File (Refer to “7-2. Operator File”.)
   Stores the items displayed on the viewfinder and switch settings for camera operator. This file can be stored in a USB drive, yet video data (paint data) cannot be stored.
2. Preset Operator File (Refer to “7-3. Preset Operator File”.)
   Stores the factory settings of Operator File.
   This file can be stored in the camera, yet video data (paint data) cannot be stored.
3. Scene File (Refer to “7-4. Scene File”.)
   Stores the temporary video setting data according to the scene. This file can be stored in the camera and a USB drive.
4. Reference File (Refer to “7-5. Reference File”.)
   Stores the custom paint data adjusted by the video engineer. This file can be stored in the camera and a USB drive.
5. Lens File (Refer to “7-6. Lens File”.)
   Used for compensation of the deviation which is generated by switching the lens extender from OFF to ON and for compensation of the difference in the characteristics between lenses. This file is stored in the camera.
6. OHB File (Refer to “7-7. OHB File”.)
   Used for adjustment of the CMOS block maintenance. This file can be stored in the camera.

7-1-1. Structure of Paint Related Files



(*1): The additional data of each file is sent to each circuit in the unit.

(*2): For items that can be stored in the scene file and the reference file, refer to “7-8. File Items”.

7-2. Operator File

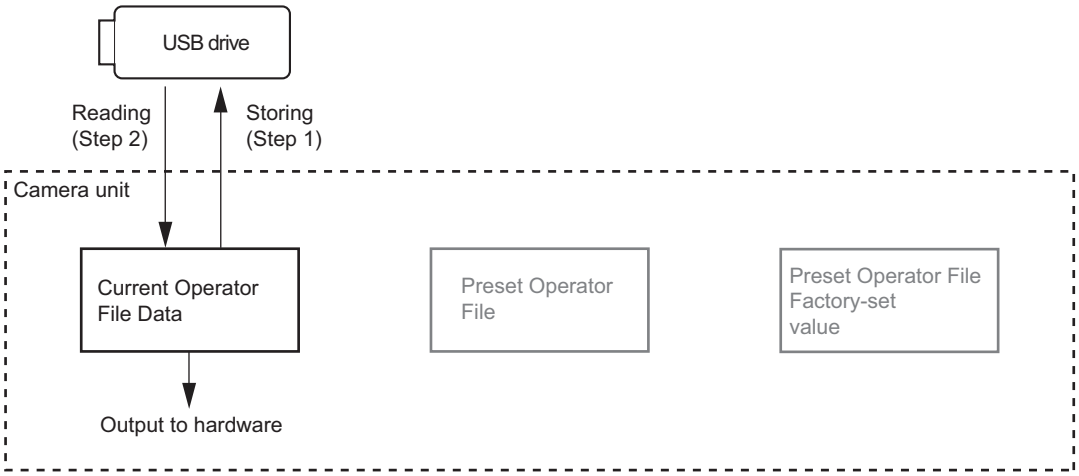
The operator file can be stored and read in the camera.
Use the setup menu to store the operator file in and read the operator file from the USB memory.

Note

- Operator file data stored in the USB drive cannot be read when the power is just turned ON.
- The current operator file data is retained even when the power is turned off.

7-2-1. Operator File Operation

Outline Figure of Operation



Storing

Reference: Refer to step 1 of “Outline Figure of Operation”.

Using OPERATION Menu of This Unit

Stores the current status in the USB drive.
[OPERATION] → [OPERATOR FILE] → [WRITE (CAM → USB)]

Reading

Reference: Refer to step 2 of “Outline Figure of Operation”.

Using OPERATION Menu of This Unit

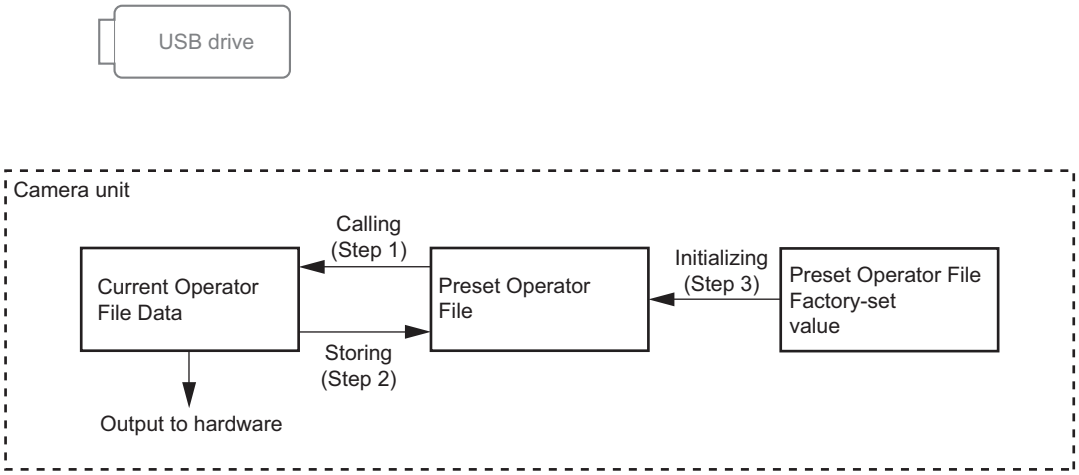
Reads the operator file stored in the USB drive to the camera.
[OPERATION] → [OPERATOR FILE] → [READ (USB → CAM)]

7-3. Preset Operator File

Preset Operator File can be stored data in the camera. Data is called and stored using the setup menu. Items to be stored as Preset Operator File are the same as Operator File.

7-3-1. Preset Operator File Operation

Outline Figure of Operation



Calling

Reference: Refer to step 1 of “Outline Figure of Operation”.

Using OPERATION Menu of This Unit

Calls the preset operator file stored in the camera as the current operator file.
[OPERATION] → [OPERATOR FILE] → [PRESET]

Storing

Reference: Refer to step 2 of “Outline Figure of Operation”.

Using FILE Menu of This Unit

Stores the current operator file as the preset operator file.
[FILE] → [OPERATOR FILE] → [STORE PRESET FILE]

Initializing

Reference: Refer to step 3 of “Outline Figure of Operation”.

Using FILE Menu of This Unit

Introduce preset operator file from the factory settings.
[FILE] → [FILE CLEAR] → [PRESET OPERATOR]

7-4. Scene File

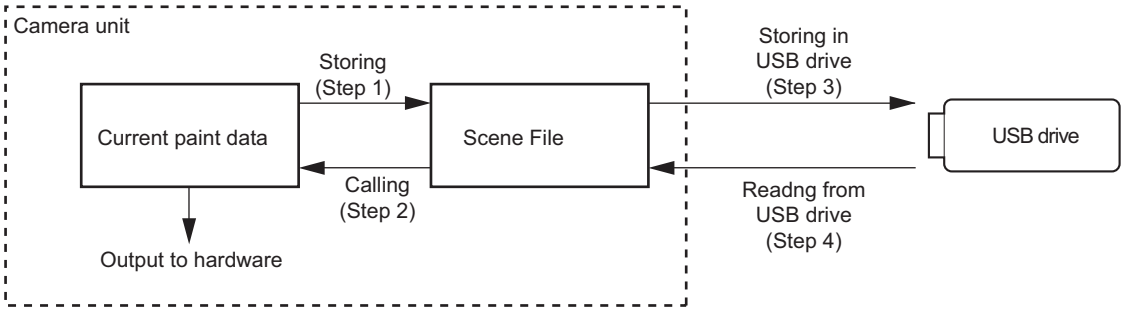
Scene files can be stored in the camera and USB drive.
Scene files can also be stored in the memory stick if the master setup unit (MSU) is used. For details, refer to the MSU operation manual.
Data is stored and called using the setup menu or MSU.
Scene files can be copied between cameras using the USB drive.

Note

Scene Files are files for storing the differences from the Reference File. Therefore, when the Reference File is changed, output of the Scene File item corresponding to the item changed in the Reference File also varies.

7-4-1. Scene File Operation

Outline Figure of Operation



Storing

Reference: Refer to step 1 of “Outline Figure of Operation”.

Using PAINT Menu of This Unit

1. Change the scene file item to the desired value.
2. Select the scene file number [1] to [5] to be stored.
   [PAINT] →[SCENE FILE] → [STORE] → [1] ～ [5]

With MSU (Master Setup Unit)

1. Change the scene file item to the desired value.
2. Press the STORE button in the functional operation area on the operation panel.
3. Press the scene file number button in the functional operation area on the operation panel.

Calling and Clearing the Call

Reference: Refer to step 2 of “Outline Figure of Operation”.

Using PAINT Menu of This Unit

Select the scene file number to be called on the SCENE FILE page.
[PAINT] →[SCENE FILE] → [1] ～ [5]
A file currently being called is indicated with its file number highlighted. Select the number again to cancel the call and resume the previous status.

With MSU (Master Setup Unit)

When the number button of the scene file you want to call is pressed and lit while the STORE button on the operation panel is not lit, the scene file of the number is called. Repressing the number button cancels calling of the scene file and the state before calling is restored.

Storing the Scene File to the USB Drive

Reference: Refer to step 3 of “Outline Figure of Operation”.

Using PAINT Menu of This Unit

Stores the scene file stored in the camera to the USB drive.
[PAINT] → [SCENE FILE] → [WRITE (CAM → USB)]

Reading the Scene File from the USB Drive

Reference: Refer to step 4 of “Outline Figure of Operation”.

Using PAINT Menu of This Unit

Reads the scene file stored in the USB drive to the camera.
[PAINT] → [SCENE FILE] → [READ (USB → CAM)]

Note

Scene File data stored in the USB drive cannot be read when the power is just turned on.

7-5. Reference File

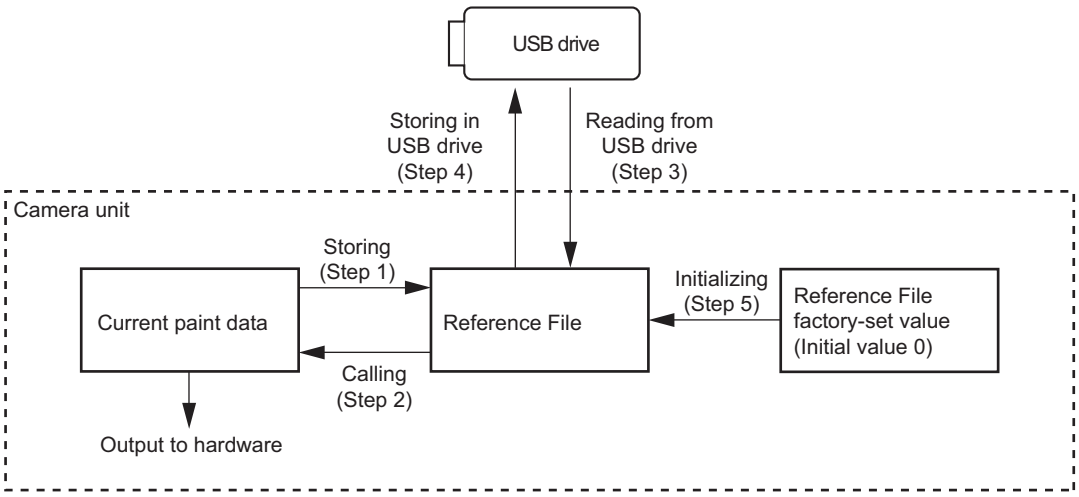
Reference files can be stored in the camera and USB drive.
Reference files can also be stored in the memory stick if the master setup unit (MSU) is used. For details, refer to the MSU operation manual.
Data is stored and called using the setup menu or MSU.
Reference files can be copied between cameras using the USB drive.

Note

Reference File stores the differential data taking the factory-setting as 0. Therefore, initializing the Reference File brings the settings to the same status at the factory setting. If Lens File or OHB File retains the data, they need to be initialized as well.
To initialize data, use the setup menu. You can select all file items or only specified items to initialize.

7-5-1. Reference File Operation

Outline Figure of Operation



Storing

Reference: Refer to step 1 of “Outline Figure of Operation”.

Using FILE Menu of This Unit

Reference file is stored in the camera and the numerical data is displayed as 0. (Excluding some items. Refer to “7-8. File Items”.)
[FILE] → [REFERENCE] → [STORE FILE]

With MSU (Master Setup Unit)

1. Press the FILE button in the functional operation area on the operation panel.
2. Select [Reference] → [Reference Store] by the menu operation.
   Reference file is stored in the camera and the numerical data is displayed as 0. (Excluding some items. Refer to “7-8. File Items”.)

Calling

Reference: Refer to step 2 of “Outline Figure of Operation”. Refer to“7-1-1. Structure of Paint Related Files”.

Using PAINT Menu of This Unit

Temporary paint (values of each item) and selection of scene file are reset, and the state when the reference file was stored is resumed.
[PAINT] →[SCENE FILE] → [STANDARD]

With MSU (Master Setup Unit)

Pressing the STANDARD button in the camera/panel control area on the operation panel restores the state when the reference file was stored.

Reading the Reference File from the USB Drive

Reference: Refer to step 3 of “Outline Figure of Operation”.

Using FILE Menu of This Unit

Reference File data stored in the camera can be changed by reading the Reference File data stored in the USB drive.
[FILE] → [REFERENCE] → [READ (USB → CAM)]

Note

Reference file data stored in the USB drive cannot be read when the power is just turned on.

Storing the Reference File in the USB Drive

Reference: Refer to step 4 of “Outline Figure of Operation”.

Using FILE Menu of This Unit

Stores the reference file stored in the camera to the USB drive.
[FILE] → [REFERENCE] → [WRITE (CAM → USB)]

Initializing All File Items

Reference: Refer to step 5 of “Outline Figure of Operation”.

Using FILE Menu of This Unit

Re-set the reference file to the factory settings (default value: 0).
[FILE] → [FILE CLEAR] → [REFERENCE (ALL)]

7-6. Lens File

The Lens File stores the differential data from the Reference File.
Lens File stores the data to compensate the differences of the white shading, flare balance, and white balance, which occur when the lens extender is set to ON. It also stores the minimum f-stop value and name of the lens. These adjustment data are stored in the camera.
Lens File data of up to 16 files can be stored for a lens that is not compatible with serial communication and Lens File data of up to 25 files can be stored for a lens compatible with serial communication.
The adjustment data can be called by selecting a Lens File.

Note

Before creating the Lens File, perform the necessary adjustments by using the lens usually used and register the Reference File.

7-6-1. Lens File

Adjusting the Lens File Data

Using a lens that is not compatible with serial communication

1. Mount the lens and select the file with the same name as the mounted lens from the setup menu. If no file with the same name as the lens exists, select NO OFFSET.
   [FILE] → [LENS FILE] → [No.] (Select a lens number)
2. Set the lens name and minimum f-stop value.
3. Set the lens extender to OFF.
4. Shoot the white pattern, and fine-adjust it with V modulation R/G/B/Master so that the video level is around 80% (560 mV) with the lens iris set around F4 and the zoom control in the center of the ring.
   [PAINT] → [VIDEO LEVEL] → [V MOD R/G/B/M]
5. Adjust the white balance and flare balance with the grayscale chart.
6. Zoom the lens and adjust the center marker to a position at which the object does not deviate.

   Note

   The center marker position is stored in the Lens File immediately after the position is aligned. Note that the center marker position is not stored when Lens File Store is executed.

7. Store the lens file.
   [FILE] → [LENS FILE] → [STORE FILE]
8. Set the lens extender to ON and repeat steps 4 to 7.

For lens compatible with serial communication

1. Check that the lens number is No. 17.
2. Also check that the name of the lens and minimum f-stop value.

3. Turn on the dynamic shading.

   Note

   If the dynamic shading is turned on by using the lens compatible with serial communication, you do not require the V modulation adjustment. Adjust the white shading or V modulation only when the deviation occurs. In this case, the data will not be stored in the Lens File.

   - Automatic white shading adjustment:
     Shoot the white pattern so that the video level is around 80% (560 mV).
     [MAINTENANCE] → [WHITE SHADING] → [AUTO WHITE SHADING]
     Or adjust the R/G/B/ white shading V SAW, V PARA, H SAW, and H PARA.
     [MAINTENANCE] → [WHITE SHADING] → [V SAW R/G/B], [V PARA R/G/B], [H SAW R/G/B], [H PARA R/G/B]
   - V modulation adjustment:
     Shoot the white pattern, and fine-adjust it with V modulation R/G/B/Master so that the video level is around 80% (560 mV) with the lens iris set around F4 and the zoom control in the center of the ring.
     [PAINT] → [VIDEO LEVEL] → [V MOD R/G/B/M]
4. Set the lens extender to OFF.
5. Adjust the white balance and flare balance with the grayscale chart.
6. Zoom the lens and adjust the center marker to a position at which the object does not deviate.

   Note

   The center marker position is stored in the Lens File immediately without using lens file store after the position is aligned. The center marker position also is stored by changing it at the time of normal use.

7. Store the lens file.
   [FILE] → [LENS FILE] → [STORE FILE]
8. Set the lens extender to ON and repeat steps 5 to 7.

Calling

Using OPERATION Menu of This Unit

Calls the lens file stored in the camera.
[FILE] → [LENS FILE] → [No.]

7-7. OHB File

OHB File is used to store the adjustment values specific to the CMOS block.
OHB File data is stored in the camera.

7-7-1. OHB File Operation

Adjusting and Storing

Using FILE/MAINTENANCE Menu of This Unit

1. Calls the reference file stored in the camera.
   [FILE] → [REFERENCE] → [STANDARD]
2. Perform the automatic black shading adjustment.
   [MAINTENANCE] → [BLACK SHADING] → [AUTO BLACK SHADING]
   Repeat this operation 3 times or more.
   When adjustment is not completed correctly, adjust the black shading automatically again.
   Or adjust the black shading V SAW, V PARA, H SAW, and H PARA on R/G/B respectively.
   [MAINTENANCE] → [BLACK SHADING] → [V SAW R/G/B], [V PARA R/G/B], [H SAW R/G/B] , [H PARA R/G/B]
3. Perform the automatic black balance adjustment.
   [MAINTENANCE] → [AUTO SETUP] → [AUTO BLACK]
4. Perform the automatic white shading adjustment.
   Shoot the white pattern so that the video level is around 80% (560 mV).
   [MAINTENANCE] → [WHITE SHADING] → [AUTO WHITE SHADING]
   Repeat this operation 3 times or more.
   When adjustment is not completed correctly, adjust the white shading automatically again.
   Or adjust the white shading V SAW, V PARA, H SAW, and H PARA on R/G/B respectively.
   [MAINTENANCE] → [WHITE SHADING] → [V SAW R/G/B], [V PARA R/G/B], [H SAW R/G/B] , [H PARA R/G/B]
5. Adjust the ND offset for all of ND filter 1 to ND filter 5.

   Tip

   To change ND filters, press the ND filter switching button while pressing the FILTER LOCAL button.

   (1) Select 5 with the ND filter knob, and shoot the white pattern so that the video level is 50% (350 mV).
   (2) Select 1 with the ND filter knob, and adjust the lens iris so that the video level is 80 to 50% (560 to 350 mV), and then perform the automatic white balance adjustment.
   (3) Select 2 with the ND filter knob, and adjust in the same manner as step 2).
   (4) Select 3 with the ND filter knob, and adjust in the same manner as step 2).
   (5) Select 4 with the ND filter knob, and adjust in the same manner as step 2).
   (6) Select 5 with the ND filter knob, and adjust in the same manner as step 2).
6. Perform the OHB matrix adjustment.
   [MAINTENANCE] → [OHB MATRIX] → [OHB MATRIX: ON]
7. Store the OHB File.
   [FILE] → [OHB FILE] → [STORE FILE]

With MSU (Master Setup Unit)

1. Press the STANDARD button in the camera/panel control area on the operation panel (ON: lit).
2. Press the FILE button in the menu operation area on the operation panel (ON: lit).

3. Perform the automatic black shading adjustment.
   [OHB] → [Auto B Shading]
   Repeat this operation 3 times or more.
   When adjustment is not completed correctly, adjust the black shading automatically again.
   Or adjust the black shading V SAW, V PARA, H SAW, and H PARA on R/G/B respectively.
   [OHB] → [Adjusting] → [Black Shading] → [R/G/B] → [V SAW], [V PARA], [H SAW] , [H PARA]
4. Perform the automatic black balance adjustment.
   Press the BLACK button in the camera/panel control area on the operation panel (ON: lit).
   Or select [OHB] → [Auto Black] by the menu operation.
5. Perform the automatic white shading adjustment.
   Shoot the white pattern so that the video level is around 80% (560 mV).
   [OHB] → [Auto W Shading]
   Repeat this operation 3 times or more.
   When adjustment is not completed correctly, adjust the white shading automatically again.
   Or adjust the white shading V SAW, V PARA, H SAW, and H PARA on R/G/B respectively.
   [OHB] → [Adjusting] → [White Shading] → [R/G/B] → [V SAW], [V PARA], [H SAW] , [H PARA]
6. Adjust the ND offset for all of ND filter 1 to ND filter 5.

   Tip

   To change ND filters, press the ND filter switching button while pressing the FILTER LOCAL button.

   (1) Select 5 with the ND filter knob, and shoot the white pattern so that the video level is 50% (350 mV).
   (2) Select 1 with the ND filter knob, and adjust the lens iris so that the video level is 80 to 50% (560 to 350 mV).
   (3) Perform the automatic white shading adjustment.
   Press the WHITE button in the camera/panel control area on the operation panel (ON: lit).
   Or select [OHB] → [Auto White] by the menu operation.
   (4) Select 2 with the ND filter knob, and adjust in the same manner as step 2) to 3).
   (5) Select 3 with the ND filter knob, and adjust in the same manner as step 2) to 3).
   (6) Select 4 with the ND filter knob, and adjust in the same manner as step 2) to 3).
   (7) Select 5 with the ND filter knob, and adjust in the same manner as step 2) to 3).
7. Perform the OHB matrix adjustment.
   [OHB] → [Adjusting] →[Matrix]
   Change the adjustment display by pressing the button 1, 2 of sub menu, and adjust the value of the OHB matrix.
8. Store the OHB File.
   [OHB] → [OHB Store] → [Store]

7-8. File Items

You can save the data tat is set with the setup menu in files.
This section lists the destination files in which the respective setting data can be stored.
This section also shows the indication mode (absolute or relative) of each setting and the default settings when the unit was shipped from the factory.

Description on symbols

○: When executing each file store, it indicates items that can be stored in the file. (If ON or OFF is described in the list, the setting is stored as it is.)
×: Setting is not stored in the file.
—: Unstorable because of temporary operation, etc.

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
GAIN	Master Gain Select		○	○	×	×	×	–6 dB to +12 dB
Iris		IRIS	×	×	×	×	×	
	Auto Iris on		○	○	×	×	×	
		Level	○	○	×	×	×	
		APL	○	○	×	×	×	
		Gain	○	○	○	×	×	
		Over ride	×	×	×	×	×	
	Detect Pattern		○	○	○	×	×	
	Close		×	OFF	×	×	×	
Shutter	Shutter ON		○	OFF	×	×	×	
	Shutter Select		○	×	×	×	×	
ECS	ECS ON		○	OFF	×	×	×	
		ECS Frequency	○	×	×	×	×	
Black Shading		Black Shading H Saw-R	×	×	×	×	○	
		Black Shading H Saw-G	×	×	×	×	○	
		Black Shading H Saw-B	×	×	×	×	○	
		Black Shading V Saw-R	×	×	×	×	○	
		Black Shading V Saw-G	×	×	×	×	○	
		Black Shading V Saw-B	×	×	×	×	○	
		Black Shading H Para-R	×	×	×	×	○	
		Black Shading H Para-G	×	×	×	×	○	
		Black Shading H Para-B	×	×	×	×	○	
		Black Shading V Para-R	×	×	×	×	○	
		Black Shading V Para-G	×	×	×	×	○	

Continued

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
		Black Shading V Para-B	×	×	×	×	○	
	Auto Black Shading		×	×	×	×	×	
Black set		Black Set-R	×	×	×	×	○	
		Black Set-G	×	×	×	×	○	
		Black Set-B	×	×	×	×	○	
Test	Test1 on (TEST SAW)		×	×	×	×	×	
	Test2 ON		×	×	×	×	×	
	Test2 Mode 3step/10step		×	×	×	×	×	
Optical filter	Filter1 (ND)		○	×	×	×	×	
	Filter2 (CC)		○	×	×	×	×	
	Filter Remote/ Local		×	×	×	×	×	
5600k	5600K ON		○	OFF	×	×	×	
White Shading		White Shading H Saw-R	×	×	×	×	○	
		White Shading H Saw-G	×	×	×	×	○	
		White Shading H Saw-B	×	×	×	×	○	
		White Shading V Saw-R	×	×	×	×	○	
		White Shading V Saw-G	×	×	×	×	○	
		White Shading V Saw-B	×	×	×	×	○	
		White Shading H Para-R	×	×	×	×	○	
		White Shading H Para-G	×	×	×	×	○	
		White Shading H Para-B	×	×	×	×	○	
		White Shading V Para-R	×	×	×	×	○	
		White Shading V Para-G	×	×	×	×	○	
		White Shading V Para-B	×	×	×	×	○	
	Auto White Shading		×	×	×	×	×	
V Modulation	V Mod Shading OFF		×	ON	×	×	×	
		Mod Shading V Saw-R	×	×	○	×	×	
		Mod Shading V Saw-G	×	×	○	×	×	
		Mod Shading V Saw-B	×	×	○	×	×	
		Master V Mod Saw	×	×	○	×	×	

Continued

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
	Dynamic Shading Compensation ON		×	×	×	×	×	
White		White-R	○	○	OFFSET	×	×	
		White-G	○	○	×	×	×	
		White-B	○	○	OFFSET	×	×	
		color temp	—	—	—	—	—	
		balance	—	—	—	—	—	
		Master White Gain	×	×	×	×	×	
	Auto White Balance		×	×	×	×	×	
Flare	Flare OFF		○	ON	×	×	×	
		Flare-R	○	○	○	×	×	
		Flare-G	○	○	○	×	×	
		Flare-B	○	○	○	×	×	
Black		Master Black	○	○	×	×	×	
		Black-R	○	○	×	×	×	
		Black-G	○	○	×	×	×	
		Black-B	○	○	×	×	×	
	Auto Black Balance		×	×	×	×	×	
Detail	Detail Off		○	ON	×	×	×	
		Detail Level	○	○	×	×	×	
		Detail Limiter	○	×	×	×	×	
		Detail White Limiter	○	○	×	×	×	
		Detail Black Limiter	○	○	×	×	×	
		Detail Crispening	○	○	×	×	×	
		H Detail Frequency	○	○	×	×	×	
		Mix Ratio	○	○	×	×	×	
	V DTL control mode		×	○	×	×	×	
		Detail H/V Ratio	○	○	×	×	×	
	Level Dep. Off		○	○	×	×	×	
		Detail Level Depend	○	○	×	×	×	
	Knee Aparture On		○	○	×	×	×	
		Knee Aparture	○	○	×	×	×	
HD Detail	Detail Off		○	ON	×	×	×	
		Detail Level	○	○	×	×	×	
		Detail Limiter	○	×	×	×	×	

Continued

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
		Detail White Limiter	○	○	×	×	×	
		Detail Black Limiter	○	○	×	×	×	
		Detail Crispening	○	○	×	×	×	
		H Detail Frequency	○	○	×	×	×	
		Detail H/V Ratio	○	○	×	×	×	
	Level Dep. Off		○	○	×	×	×	
		Detail Level Depend	○	○	×	×	×	
Skin Detail	Skin DTL On		○	○	×	×	×	
	Natural Skin Detail ON		○	○	×	×	×	
	Skin gate ON		×	×	×	×	×	
	Skin gate (CCU)		×	×	×	×	×	
	Skin Detail Auto Hue (ch1)		×	×	×	×	×	
	Skin Detail Auto Hue (ch2)		×	×	×	×	×	
	Skin Detail Auto Hue (ch3)		×	×	×	×	×	
	Skin 1 On		○	○	×	×	×	
	Skin 1 Gate On		×	×	×	×	×	
		Skin 1 Level	○	○	×	×	×	
		Skin 1 Phase	○	○	×	×	×	
		Skin 1 Width	○	○	×	×	×	
		Skin 1 Sat	○	○	×	×	×	
		Skin 1 Y Limit	○	○	×	×	×	
	Skin 2 On		○	○	×	×	×	
	Skin 2 Gate On		×	×	×	×	×	
		Skin 2 Level	○	○	×	×	×	
		Skin 2 Phase	○	○	×	×	×	
		Skin 2 Width	○	○	×	×	×	
		Skin 2 Sat	○	○	×	×	×	
		Skin 2 Y Limit	○	○	×	×	×	
	Skin 3 On		○	○	×	×	×	
	Skin 3 Gate On		×	×	×	×	×	
		Skin 3 Level	○	○	×	×	×	
		Skin 3 Phase	○	○	×	×	×	
		Skin 3 Width	○	○	×	×	×	
		Skin 3 Sat	○	○	×	×	×	
		Skin 3 Y Limit	○	○	×	×	×	
Matrix	Matrix Off		○	○	×	×	×	

Continued

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
	Preset Matrix on		○	○	×	×	×	
	Preset Matrix Sel		×	×	×	×	×	
	User Matrix on		○	○	×	×	×	
		R-G	○	○	×	×	×	
		R-B	○	○	×	×	×	
		G-R	○	○	×	×	×	
		G-B	○	○	×	×	×	
		B-R	○	○	×	×	×	
		B-G	○	○	×	×	×	
	Multi Matrix On		○	○	×	×	×	
		gate	×	×	×	×	×	
		Phase select	×	×	×	×	×	
		Hue	○	○	×	×	×	
		Saturation	○	○	×	×	×	
	Adaptive Matrix On		○	○	×	×	×	
	Adaptive Matrix Level		○	○	×	×	×	
Digital liner saturation	saturation on		○	○	×	×	×	
		saturation	○	○	×	×	×	
OHB matrix	OHB Matrix On		×	○	×	×	×	
		Phase select	×	×	×	×	×	
		Hue	×	×	×	×	○	
		Saturation	×	×	×	×	○	
Black Gamma	Black Gamma On		○	○	×	×	×	
		R Black Gamma	○	○	×	×	×	
		G Black Gamma	○	○	×	×	×	
		B Black Gamma	○	○	×	×	×	
		M Black Gamma	○	○	×	×	×	
	Black Gamma (RGB) Range		○	○	×	×	×	
Low key saturation	Low Key Saturation ON		○	○	×	×	×	
	Range		○	○	×	×	×	
		Low Key Saturation level	○	○	×	×	×	
Gamma	Gamma Off		○	ON	×	×	×	
	Gamma Category Select		○	○	×	×	×	
	STANDARD Gamma Table Select		○	○	×	×	×	

Continued

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
	HYPER Gamma Table Select		○	○	×	×	×	
	Cine Gamma Table Select		○	○	×	×	×	
	User Gamma Table Select		○	○	×	×	×	
	Step Gamma (0.90 ～ 0.35)		○	○	×	×	×	
		R Gamma	○	○ (RGB mode)	×	×	×	
		G Gamma	○	○	×	×	×	
		B Gamma	○	○ (RGB mode)	×	×	×	
		M Gamma	○	○	×	×	×	
Knee	Knee Off		○	○	×	×	×	
		R Knee point	○	○	×	×	×	
		G Knee point	○	○	×	×	×	
		B Knee point	○	○	×	×	×	
		M Knee point	○	○	×	×	×	
		R Knee Slope	○	○	×	×	×	
		G Knee Slope	○	○	×	×	×	
		B Knee Slope	○	○	×	×	×	
		M Knee Slope	○	○	×	×	×	
	Knee Max On		×	OFF	×	×	×	
	Knee Saturation on		○	○	×	×	×	
		Knee saturation	○	○	×	×	×	
	Auto Knee (DCC) on		○	○	×	×	×	
		Auto Knee Point Limit	○	○	×	×	×	
		Auto Knee Slope	○	○	×	×	×	
White Clip	White Clip Off		○	ON	×	×	×	
		R White Clip	○	○	×	×	×	
		G White Clip	○	○	×	×	×	
		B White Clip	○	○	×	×	×	
		M White Clip	○	○	×	×	×	
Noise Suppression	Noise Suppression ON		○	○	×	×	×	
	Level		○	○	×	×	×	
Mono Color	Mono Color On		○	OFF	_	_	_	Connected with CCU only
		Mono Color Saturation	○	○	_	_	_	Connected with CCU only
		Mono Color Hue	○	○	_	_	_	Connected with CCU only

Continued

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
SD Detail	SD Detail Off		○	○	_	_	_	Connected with CCU only
		SD Detail Level	○	○	_	_	_	Connected with CCU only
		SD Detail Limiter	○	○	_	_	_	Connected with CCU only
		SD Detail White Limiter	○	○	_	_	_	Connected with CCU only
		SD Detail Black Limiter	○	○	_	_	_	Connected with CCU only
		SD Detail Crispening	○	○	_	_	_	Connected with CCU only
		SD H Detail Frequency	○	○	_	_	_	Connected with CCU only
		SD Detail H/V Ratio	○	○	_	_	_	Connected with CCU only
		SD Detail Level Depend	○	○	_	_	_	Connected with CCU only
		SD Detail Comb	○	○	_	_	_	Connected with CCU only
Cross Color Reduce	Cross Color Reduce Off		○	○	_	_	_	Connected with CCU only
		Cross Color Reduce Level	○	○	_	_	_	Connected with CCU only
		Cross Color Reduce Coring	○	○	_	_	_	Connected with CCU only
SD Matrix	SD Matrix Off		○	○	_	_	_	Connected with CCU only
	SD Preset Matrix On		○	○	_	_	_	Connected with CCU only
	SD User Matrix On		○	○	_	_	_	Connected with CCU only
		R-G	○	○	_	_	_	Connected with CCU only
		R-B	○	○	_	_	_	Connected with CCU only
		G-R	○	○	_	_	_	Connected with CCU only

Continued

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
		G-B	○	○	_	_	_	Connected with CCU only
		B-R	○	○	_	_	_	Connected with CCU only
		B-G	○	○	_	_	_	Connected with CCU only
	SD Multi Matrix On		○	○	_	_	_	Connected with CCU only
		Phase select	×	×	_	_	_	Connected with CCU only
		Hue	○	○	_	_	_	Connected with CCU only
		Saturation	○	○	_	_	_	Connected with CCU only
SD Gamma	SD Gamma Off		○	ON	_	_	_	Connected with CCU only
		SD M Gamma	○	○	_	_	_	Connected with CCU only
Level auto set up	level auto set up		×	×	×	×	×	
	White Setup Mode		×	×	×	×	×	
Digital extender	digital extender on		×	×	×	×	×	

Menu	Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
USER MENU customize		—	—	—	○	—	

Continued

Menu	Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
VF DISPLAY	EX	—	—	—	○	—	
	ZOOM	—	—	—	○	—	
	DISP	—	—	—	○	—	
	FOCUS	—	—	—	○	—	
	ND	—	—	—	○	—	
	CC	—	—	—	○	—	
	5600K	—	—	—	○	—	
	IRIS	—	—	—	○	—	
	WHITE	—	—	—	○	—	
	D.EXT	—	—	—	○	—	
	OPAC	—	—	—	○	—	
	GAIN	—	—	—	○	—	
	SHUTTER	—	—	—	○	—	
	BATT	—	—	—	○	—	
	RETURN	—	—	—	○	—	
	TALK	—	—	—	○	—	
	MESSAG	—	—	—	○	—	
! IND	ND	—	—	—	○	—	
	CC	—	—	—	○	—	
	WHITE	—	—	—	○	—	
	5600K	—	—	—	○	—	
	GAIN	—	—	—	○	—	
	SHUTTER	—	—	—	○	—	
	FAN	—	—	—	○	—	
	EXT	—	—	—	○	—	
	FORMAT	—	—	—	○	—	
	Y TALLY	—	—	—	○	—	
VF MARKER	MARKER	—	—	—	○	—	
	LEVEL	—	—	—	○	—	
	CENTER	—	—	—	○	—	
	SAFETY ZONE	—	—	—	○	—	
	EFFECT	—	—	—	○	—	
	ASPECT	—	—	—	○	—	
	MASK	—	—	—	○	—	
	SAFETY	—	—	—	○	—	

Continued

Menu	Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
VF DETAIL	VF DETAIL	—	—	—	○	—	
	CRISP	—	—	—	○	—	
	FREQUENCY	—	—	—	○	—	
	FLICKER	—	—	—	○	—	
	AREA	—	—	—	○	—	
	ZOOM LINK	—	—	—	○	—	
	COLOR DETAIL	—	—	—	○	—	
	PEAK COLOR	—	—	—	○	—	
	CHROMA LEVEL	—	—	—	○	—	
	RETURN DISABLE	—	—	—	○	—	
FOCUS ASSIST	INDICATOR	—	—	—	○	—	
	MODE	—	—	—	○	—	
	LEVEL	—	—	—	○	—	
	GAIN	—	—	—	○	—	
	OFFSET	—	—	—	○	—	
	AREA MAKER	—	—	—	○	—	
	SIZE	—	—	—	○	—	
	POSITION	—	—	—	○	—	
	POSITION H	—	—	—	○	—	
	POSITION V	—	—	—	○	—	
ZEBRA	ZEBRA	—	—	—	○	—	
	ZEBRA1 LEVEL	—	—	—	○	—	
	ZEBRA1 WIDTH	—	—	—	○	—	
	ZEBRA2 LEVEL	—	—	—	○	—	
CURSOR	CURSOR	—	—	—	○	—	
	LEVEL	—	—	—	○	—	
	BOX/CROSS	—	—	—	○	—	
	H POSITION	—	—	—	○	—	
	V POSITION	—	—	—	○	—	
	WIDTH	—	—	—	○	—	
	HEIGHT	—	—	—	○	—	
	BOX MEMOR	—	—	—	○	—	
	H POSI	—	—	—	○	—	
	V POSI	—	—	—	○	—	
	WIDTH	—	—	—	○	—	
	HEIGHT	—	—	—	○	—	

Continued

Menu	Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
SPIRIT LEVEL	INDICATOR	—	—	—	○	—	
	MODE	—	—	—	○	—	
	REVERSE	—	—	—	○	—	
	SCALE	—	—	—	○	—	
	H POSITION	—	—	—	○	—	
	V POSITION	—	—	—	○	—	
	OFFSET	—	—	—	○	—	
VF OUT	VF OUT	—	—	—	○	—	
	RET MIX VF	—	—	—	○	—	
	MIX DIREC-TION	—	—	—	○	—	
	MIX VF MODE	—	—	—	○	—	
	MIX VF LEV-EL	—	—	—	○	—	
	CHARACTER LEVEL	—	—	—	○	—	
	PinP	—	—	—	○	—	
	POSITION	—	—	—	○	—	
	SIZE	—	—	—	○	—	
	MODE	—	—	—	○	—	
SWITCH AS-SIGN1	GAIN [L]	—	—	—	○	—	
	GAIN [M]	—	—	—	○	—	
	GAIN [H]	—	—	—	○	—	
	ASSIGNABLE	—	—	—	○	—	
SWITCH AS-SIGN2	LENS VTR S/S	—	—	—	○	—	
	FRONT RET1	—	—	—	○	—	
	FRONT RET2	—	—	—	○	—	
	HANDLE SW1	—	—	—	○	—	
	HANDLE SW2	—	—	—	○	—	
	ZOOM SPEED	—	—	—	○	—	
EXT SWITCH	RET CTRL CONNECTOR	—	—	—	○	—	
	RET1 Pin5:	—	—	—	○	—	
	RET2 Pin6:	—	—	—	○	—	
	RET3 Pin4:	—	—	—	○	—	
	INCOM1 Pin1:	—	—	—	○	—	
	INCOM2 Pin2:	—	—	—	○	—	
RETURN	RET1 SW SEL	—	—	—	○	—	
	RET2 SW SEL	—	—	—	○	—	
	RET3 SW SEL	—	—	—	○	—	
	RET1 SW +RET2 SW	—	—	—	○	—	
	VBS RET AS-PECT	—	—	—	○	—	

Continued

Menu	Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
HEADSET MIC	INTERCOM1	—	—	—	○	—	
	LEVEL	—	—	—	○	—	
	POWER	—	—	—	○	—	
	UNBAL	—	—	—	○	—	
	INTERCOM2	—	—	—	○	—	
	LEVEL	—	—	—	○	—	
	POWER	—	—	—	○	—	
	UNBAL	—	—	—	○	—	
INTERCOM 1	INTERCOM1 RECEIVE SELECT	—	—	—	○	—	
	INTERCOM	—	—	—	○	—	
	PGM1	—	—	—	○	—	
	PGM2	—	—	—	○	—	
	TRACKER	—	—	—	○	—	
	SIDE TONE	—	—	—	○	—	
	INTER-COM1/2	—	—	—	○	—	
INTERCOM 2	INTERCOM2 RECEIVE SELECT	—	—	—	○	—	
	INTERCOM	—	—	—	○	—	
	PGM1	—	—	—	○	—	
	PGM2	—	—	—	○	—	
	TRACKER	—	—	—	○	—	
	SIDE TONE	—	—	—	○	—	
	INTER-COM1/2	—	—	—	○	—	
TRACKER	TRACKER RECEIVE SELECT	—	—	—	○	—	
	INTERCOM	—	—	—	○	—	
	PGM1	—	—	—	○	—	
	PGM2	—	—	—	○	—	
	INPUT LEVEL	—	—	—	○	—	
	OUTPUT LEVEL L-CH	—	—	—	○	—	
	R-CH	—	—	—	○	—	
EARPHONE	EARPHONE RECEIVE SELECT	—	—	—	○	—	
	INTERCOM	—	—	—	○	—	
	PGM1	—	—	—	○	—	
	PGM2	—	—	—	○	—	
	TRACKER	—	—	—	○	—	

Section 8
Setup Menu

8-1. Overview of Setup Menu

Some of adjustments given in this section use the setup menu. The setup menu consists of the following menus.
Besides there is a TOP menu indicating the entire configuration of menu items.

- USER menu
- USER MENU CUSTOMIZE menu
- OPERATION menu
- PAINT menu
- MAINTENANCE menu
- FILE menu
- DIAGNOSIS menu
- SERVICE menu

In this section, describes the setup menu operation as follows.
For example: When AUTO LEVEL in AUTO SETUP page of MAINTENANCE menu is performed:
MENU: MAINTENANCE
PAGE: AUTO SETUP
ITEM: AUTO LEVEL

8-1-1. How to Display the SERVICE Menu/ How to Change the Setting Values

How to Display the SERVICE Menu

Set the DISPLAY switch to “MENU” while pressing the ASSIGNABLE 1 switch and the rotary encoder.

How to Change the Setting Values

To enter or cancel the setting value of items, which can be changed by turning the rotary encoder, proceed as follows.
To enter the setting value: Press the rotary encoder.
Pressing the STATUS/CANCEL switch toward the “CANCEL” side, it is returned to the data before adjustment.
After the setting value is entered, the setting cannot be canceled.

8-1-2. Settable Special Functions

The following functions are made available by settings in the SERVICE menu. Note that they are limited functions.
In addition, settings of the number of scene files and setting of the resume of filter position are available.
Refer to the description in “8-2. SERVICE Menu”.

When an Auto Focus Lens is Used

When an auto focus lens of Fujinon or Canon is used, a focal area marker and a focusing indicator can be displayed on the viewfinder.

Note

However, there are the following restrictions.

- When AF DISPLAY is set to ON, the EFFECT display cannot be used. Instead of the EFFECT display, you can select 100% of the SAFETY ZONE display that usually cannot be selected.
- If “Digital extender” is used, the area marker is not displayed correctly.

Procedure

1. Set AF DISPLAY in “SETUP” in the SERVICE menu to ON.
   The focusing indicator appears according to the area marker display switch of the lens. The area marker is a rectangular frame in which auto focus is detected.
2. “AF” is added to “VF DISPLAY” in the Operation menu. When this “AF” is set to ON, the focusing indicator appears.
   Focusing indicator:
   ▲ Front focus
   ■ Focal point
   ▼Rear focus

8-2. SERVICE Menu

This unit is provided with the SERVICE menu that is useful for maintenance and adjustment of the camera.
The menu content is displayed on the viewfinder.
For how to display the SERVICE menu, refer to "8-1-1. How to Display the SERVICE Menu/ How to Change the Setting Values".

8-2-1. SERVICE Menu List

Menu Page No.	Menu Page Name	Remarks	Reference Page
S01	SET UP	Scene files number setting, Focal area marker and a focusing indicator displaying, Resume setting of filter position, Lens communications setting, Return switching time setting, PsF delay time setting	page 8-4
S02	CC FILTER	Color temperature conversion filter setting	page 8-5
S03	MANUAL RPN	Manual RPN compensation	page 8-5
S04	RPN MANAGE	RPN automatic detection	page 8-5
S05	OHB-ADJ1	Sensitivity adjustment	page 8-6
S06	BLACK SHADING	Black shading adjustment	page 8-6
S07	WHITE SHADING	White shading adjustment	page 8-6
S08	OHB MATRIX	OHB matrix adjustment	page 8-7
S09	INTERCOM	Intercom system setting	page 8-7
S10	POWER SUPPLY STATUS2	Display of power supply state	page 8-8
S11	SERIAL NO.	Model name displaying, Serial number displaying	page 8-8
S12	OPTION	Gain extend, Chroma filter characteristic setting, Volume over setting, Front microphone stereo setting, Microphone AB power active setting	page 8-8
S13	CUSTOMIZE	Page for Extensions	page 8-9

8-2-2. Description of SERVICE Menu

Tip

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

SET UP

```
<SET UP>                          S01 TOP

 SCENE FILE TYPE            :         5

 AF DISPLAY                 :       OFF
 FILTER RESUME              :       OFF

 LENS IF MODE               :      AUTO

 RET TRANSITION TIME        :        12
 PsF DELAY MODE             :0.5FRAME
```

SCENE FILE TYPE

Setting of the number of scene files that a camera can have. A number of 5 or 32 can be set.

Note

Note that, when the number of scene files is changed from 32 to 5, the data of the sixth and the following scene files are lost.

AF DISPLAY

When an auto focus lens is used, a focal area marker and a focusing indicator can be displayed on the viewfinder. For details, refer to “When an Auto Focus Lens is Used”.

FILTER RESUME

When the FILTER LOCAL button is set to ON and OFF in these cameras, the filter position of camera operates as follows by setting the FILTER RESUME.
ON: Filter position before the FILTER LOCAL button is set to ON.
OFF: Filter position is not changed.

LENS IF MODE

When a lens that is able to communicate with a camera through the serial interface, the interface mode can be changed forcibly to the parallel interface.
AUTO: Sets an interface automatically.
PARA: Sets a parallel interface forcibly.

RET TRANSITION TIME

When using the RET2 switch after using RET1 switch, set the Insertion Mute time. If the Mute time is short, the noise may be appeared at the time of changing from RET1 to RET2.

PsF DELAY MODE

Set the delay time at the PsF format.

CC FILTER

```
<CC FILTER>                    S02 TOP

 A:   3200
 B:   3200
 C:   4300
 D:   6300
 E:   8000
```

When the CC filter is replaced with a nonstandard color temperature conversion filter, change this setting. However, when the CC filter is replaced with a filter without color temperature conversion, such as cross filter, set 3200K. This setting is a reference for color temperature display and the color temperature control function.

MANUAL RPN

```
<MANUAL RPN>                   S03 TOP

 RPN CH SELECT   :      R
 RPN CURSOR      :    OFF
 CURSOR H POS.   :   1006
 CURSOR V POS.   :    575
 CURSOR JUMP     :   CURR
 RPN WIDTH       :      1
 RECORD RPN      :   EXEC
 DELETE RPN      :   EXEC
 FIELD/FRAME     :  FIELD
 MONITOR SEL     :  YPbPr
```

The MANUAL RPN menu is used for manual RPN compensation. For details, refer to “5-6-2. Manual RPN Compensation Adjustment”.

RPN MANAGE

```
<RPN MANAGE>                   S04 TOP

 RPN ALL PRESET  :   EXEC
 AUTO CONCEAL    :   EXEC
 APR AT ABB      :     ON
```

The RPN MANAGE menu is used for RPN compensation setting and management. For details, refer to “5-6-4. Performing Automatic RPN Detection Effectively”.

OHB_ADJ1

```
<OHB-ADJ1>                          S05 TOP

 1080-59.94i [4:2:2]
              [R1] [G1] [B1]
 GAIN_CONT: C7   A9   B1
              [R2] [G2] [B2]
 GAIN_CONT: C2   A2   A6

 FILTER    :  ON
 MONITOR SEL       : YPbPr
 STORE FILE :  EXEC
```

The OHB_ADJ1 menu is used for adjustment of the CMOS block. For details, refer to "5-3-2. Sensitivity Adjustment".

BLACK SHADING

```
<BLACK SHADING>                     S06 TOP

 1080-59.94i [4:2:2]
           [R]  [G]  [B]
 V SAW   : 01   00   03
 V PARA  : FF   FF   FE
 H SAW   : 00   00   00
 H PARA  : 01   01   02
 BLK SET: 00   01   19
  OFFSET: 01   00   FB
 GAIN:   0dB
  MONITOR SEL       : YPbPr
  STORE FILE:   EXEC
```

The BLACK SHADING menu is used for adjustment of the black shading. For details, refer to the sections below.

- "5-3-1. Black Set Adjustment"
- "5-3-3. Black Shading Adjustment"

WHITE SHADING

```
<WHITE SHADING>                     S07 TOP

             [R]  [G]  [B]
 V SAW   :   F6   0F   06
 V PARA  :   F6   F4   F5
 H SAW   :   0C   FA   04
 H PARA  :   FA   F6   F7
 WHITE   :    0    0    0

  STORE FILE:   EXEC
  COLOR_TEMP_SEL: 3200K
```

The WHITE SHADING menu is used for adjustment of the white shading. For details, refer to "5-3-2. Sensitivity Adjustment".

OHB MATRIX

```
<OHB MATRIX>                    S08 TOP

 PHASE : 00    ALL CLEAR
 HUE   : 00
 SAT   : 00

 STORE FILE:  EXEC
 MATRIX : OFF
 PRESET : --
        : --
 USER MATRIX : --
 MULTI MATRIX: --
```

The OHB MATRIX menu is used for adjustment of the OHB matrix. Use this menu only when it is necessary to adjust subtle differences in color reproduction between CMOS blocks.

INTERCOM

```
<INTERCOM>                      S09 TOP

 INTERCOM2 INTERFACE :  (4WIRE)
 INTERCOM2 INTERFACE :  (ENABLE)
 DISP INTERCOM1 ONLY :   OFF
```

INTERCOM2 INTERFACE

Specifies the interface(level) of microphone that connect the INTERCOM2 connector.

RTS : Intercom level of RTS company

CLEARCOM: Intercom level of Clear-Com an HME company

Note

The setting is valid when S3 switch is set to RTS side on the SY-408 board.

INTERCOM2 VR

When using intercom of RTS company or Clear-Com an HME company, set the INTERCOM2 volume on the rear panel to valid or invalid. (default : invalid)

Note

The setting is valid when S3 switch is set to RTS side on the SY-408 board.

DISP INTERCOM1 ONLY

When selecting INTERCOM2 switch on the rear panel to MIC ON, set indication/ non-indication of "TALK" in the viewfinder.

ON : non-indication

OFF : indication

Tip

When switching the microphone ON/OFF by a belt pack etc., "TALK" in the viewfinder can be hidden.

POWER SUPPLY STATUS2

This is the page for analysis about the consumption electricity.

SERIAL NO.

Tip

The display screen is the case of serial number 10001 of HDC4300.

```
<SERIAL NO.>                    S11 TOP

 MODEL            : HDC4300
 NO.              : 10001

 OHB TYPE         : OPTION BASIC
```

The SERIAL NO. menu is used displaying the current model name, serial number and the OHB type.

OPTION

```
<OPTION>                        S12 TOP

 GAIN EXTEND       :        OFF
 CHROMA FILTER     :       FULL
 MIC AB POWER      :    DISABLE
 VR OVERFLOW       :        OFF
 FRONT MIC STEREO  :        OFF
```

GAIN EXTEND

When GAIN EXTEND is set to ON, the master gain is extended up to +36 dB.

When it is set to OFF, the master gain is extended to +12 dB.

CHROMA FILTER

Chroma filter characteristic setting.

MIC AB POWER

It is used in the microphone power setting.

When MIC AB POWER is set to “ENABLE” and the microphone power switch on the connector panel at the rear of the unit is set to “•” (down), AB POWER (12 V) is supplied to the microphone.

Note

When the microphone power switch is set to “•” (down) with this function enabled, do not connect any microphone that does not support AB POWER. If such microphone is connected, it may be damaged.

VR OVERFLOW

Switch the IRIS knob on the control panel of the RCP-1000/1500 series so that the relative value mode turns to OFF and the absolute value mode turns to ON.

FRONT MIC STEREO

Change the front microphone to stereo. (The repair of hardware is necessary.)

CUSTOMIZE

For the function expansion in the future.

Section 9
Circuit Description

9-1. Optical System (OHB Block)

9-1-1. BI-291 board

This board equips 2/3 inch backside illumination type 4K CMOS image sensor (IC005).
BI-291 boards are used for R, G and B respectively.

9-1-2. IF-1278 board

This board equips power supply of CMOS image sensor and flash memory for saving the APR data.

9-2. Signal Processing/Transmission System

9-2-1. TX-146 Board

TX-146 board is used in this unit and base band processor unit BPU4000.
The main line signal that is superimposed by video signal and digital audio signal at MEM-147 board and the command signal via MEM-147 board are superimposed, it is converted to serial electric signal. This serial electric signal is converted electric to optic and it is sent to BPU4000.
Serial optic signal from BPU4000 is converted optic to electric, it separates return and command signals and is sent to DPR-370 board.

9-2-2. MEM-147 Board

In MEM-147 board, linear RGB signal that is processed at camera signal process LSI on the DPR-307 is compressed at the IC901 and is sent to TX-146 board.
The utility system process of each Trunk/Prompter signal etc. are performed at IC201.

9-2-3. DPR-370 Board

Black shading adjustment, RPN compensation (automatic compensation[APR]),black balance automatic adjustment (ABB), shutter adjustment, Noise Reduction, aberration compensation and White/Gain adjustment are performed by R/G/B signal input from CMOS block. The main line signal is sent to the MEM-147 board.
Analog VF signal, embedded audio and lens control except picture process are performed.

9-3. System Control System

9-3-1. SY-408 Board

The SY-408 board consists of a CPU (IC1001) and peripheral devices that provide an interface circuit, synchronizing separator circuit, video amplifier circuit, and audio circuit.

9-3-2. 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 written in the flash memory (IC401) on the AT-189 board.

9-3-3. MB-1214 Board

The MB-1214 board is the motherboard of this unit. This board contains interface connectors to be connected to other boards, inductors for power filters on each board, capacitors, and positive thermistors (overcurrent protection device).

Section 10
Spare Parts

10-1. 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

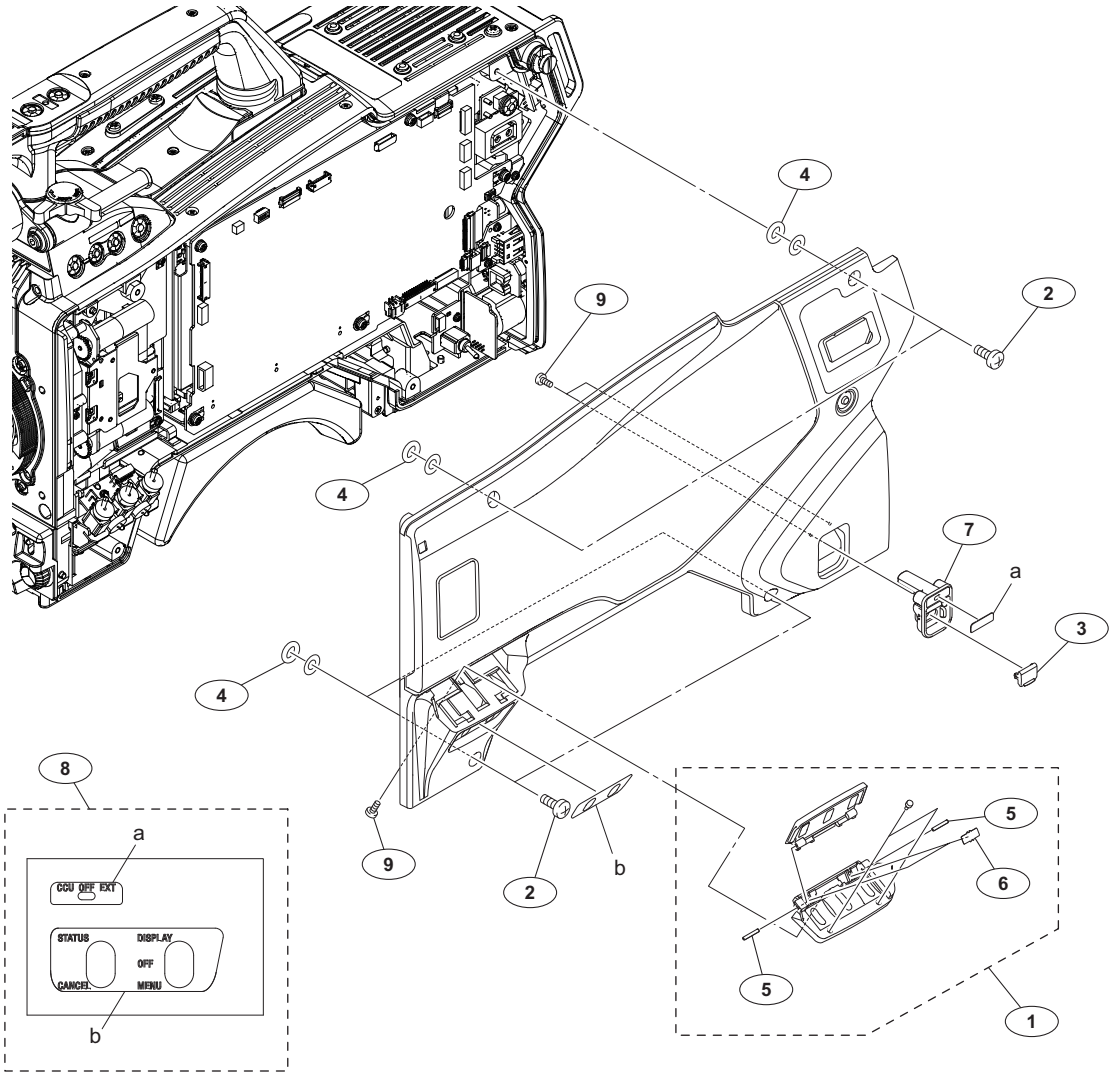
部品表の SP（Supply code）欄に “o” で示される部品は在庫していないことがあり，納期が長くなることがあります。

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。

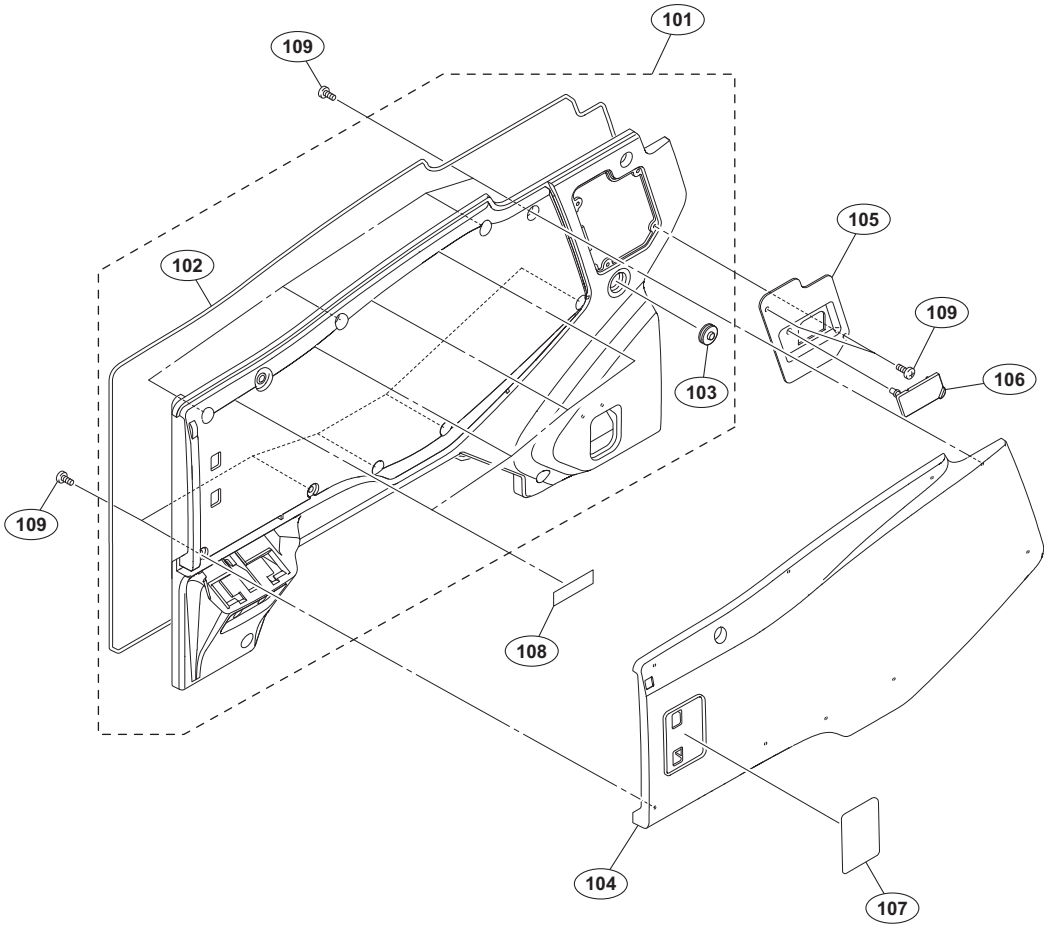
10-2. Exploded Views

Inside-1



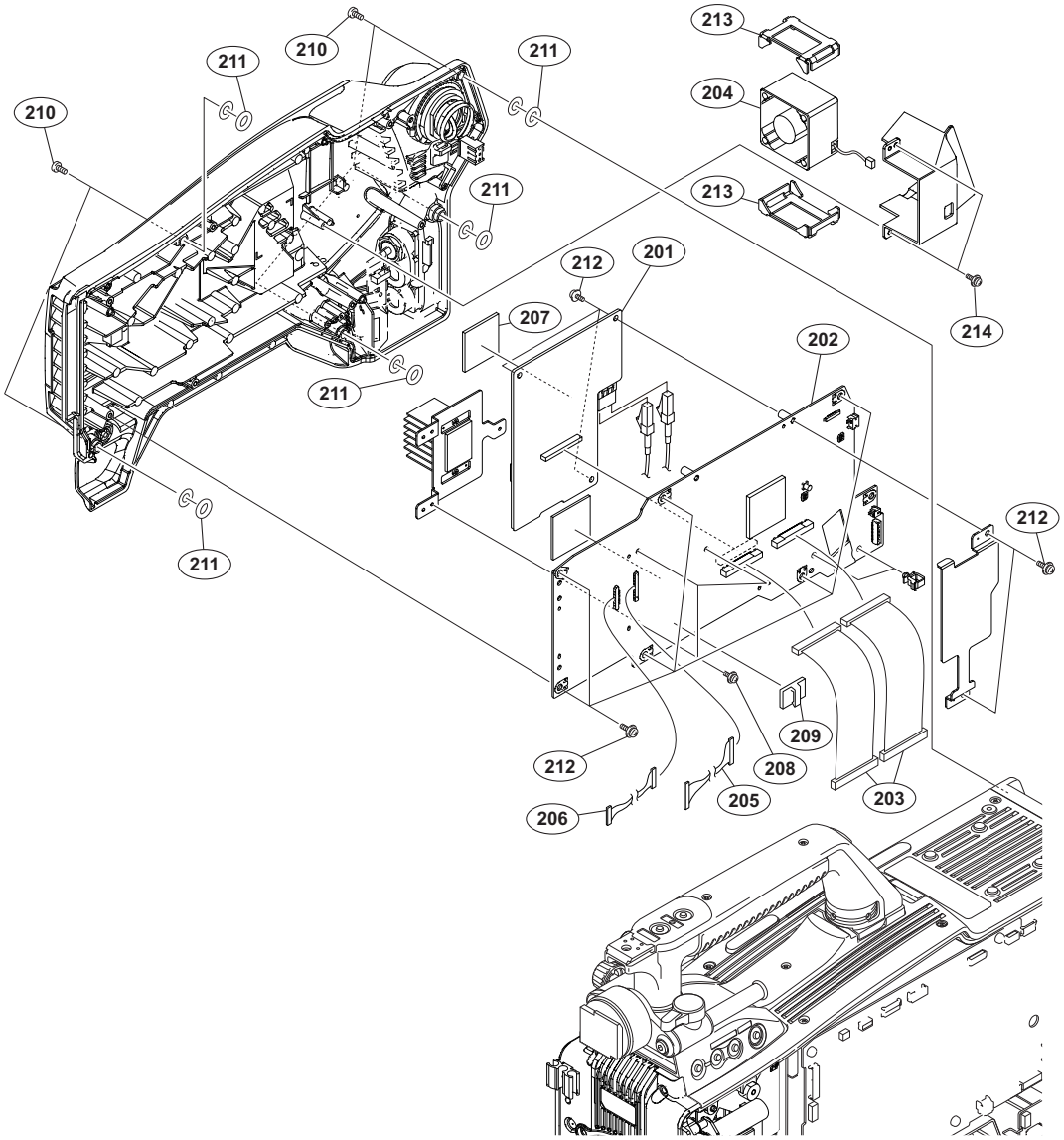
No.	Part No.	SP	Description
1	A-1838-923-A	s	INSIDE SWITCHCOVER ASSY
2	3-603-679-02	s	STAINLESS SCREW +B3X10
3	3-612-669-01	o	LID,POWER SW
4	3-672-250-01	s	RING (M2.6), O
5	3-703-575-11	s	PIN (DIA. 1.2X8), PARALLEL
6	3-742-066-11	o	SPRING, SHUTTER
7	4-400-101-01	s	POWER SW HOUSING
8	4-410-956-01	s	SHEET, INSIDE(MULTI)
9	4-654-273-02	s	ACE (M2), LOCK [B2x5]

Inside-2



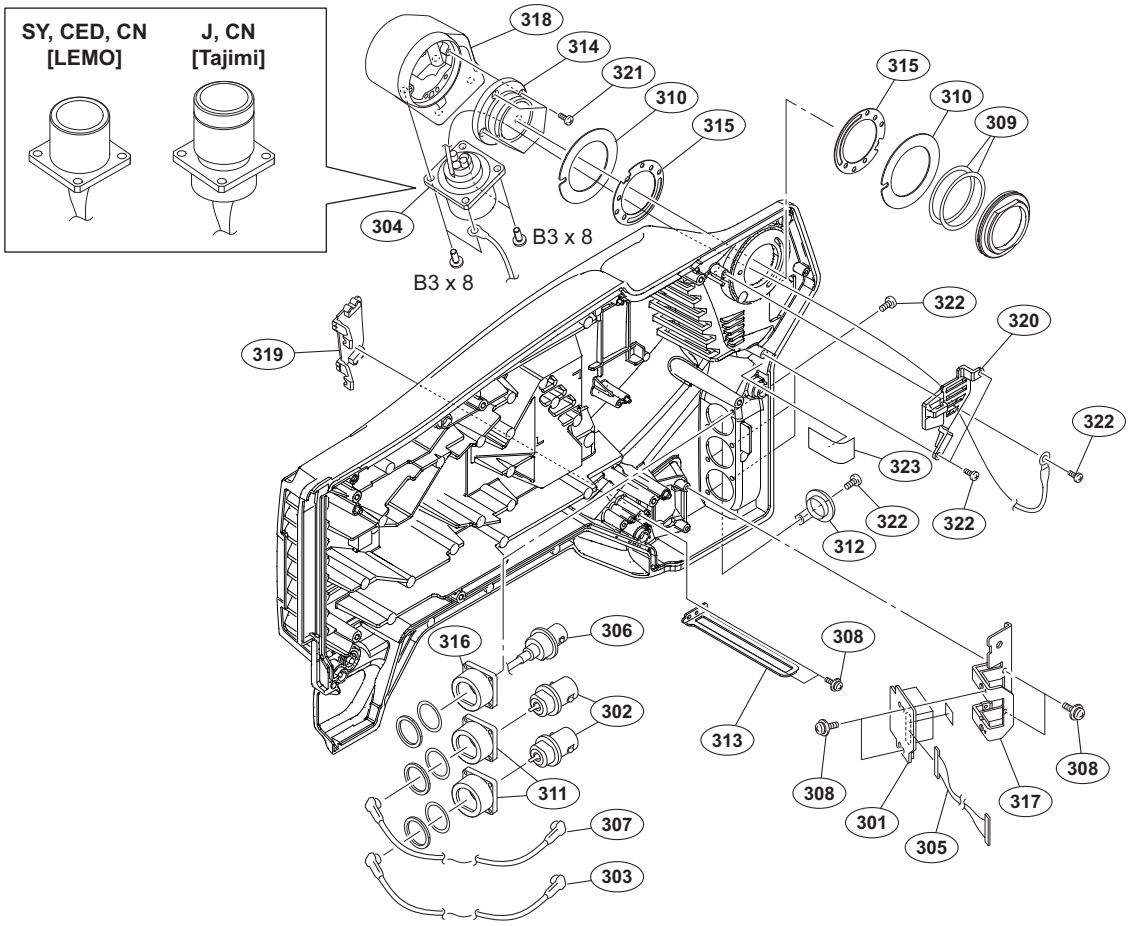
No.	Part No.	SP	Description
101	A-1838-924-A	s	INSIDE PANEL SUBASSY
102	3-624-455-01	s	TUBE,SHIELD
103	3-676-244-04	s	COVER, SWITCH
104	4-294-962-01	s	INSIDE PAD
105	4-415-077-01	s	PANEL, BLANK(DC OUT)
106	4-415-079-01	s	CAP, CONNECTOR(DC OUT)
107	4-575-378-01	s	LABEL, FILTER
108	4-422-703-01	s	TAPE, VHB
109	4-654-273-02	s	ACE (M2), LOCK [B2x5]

Outside-1



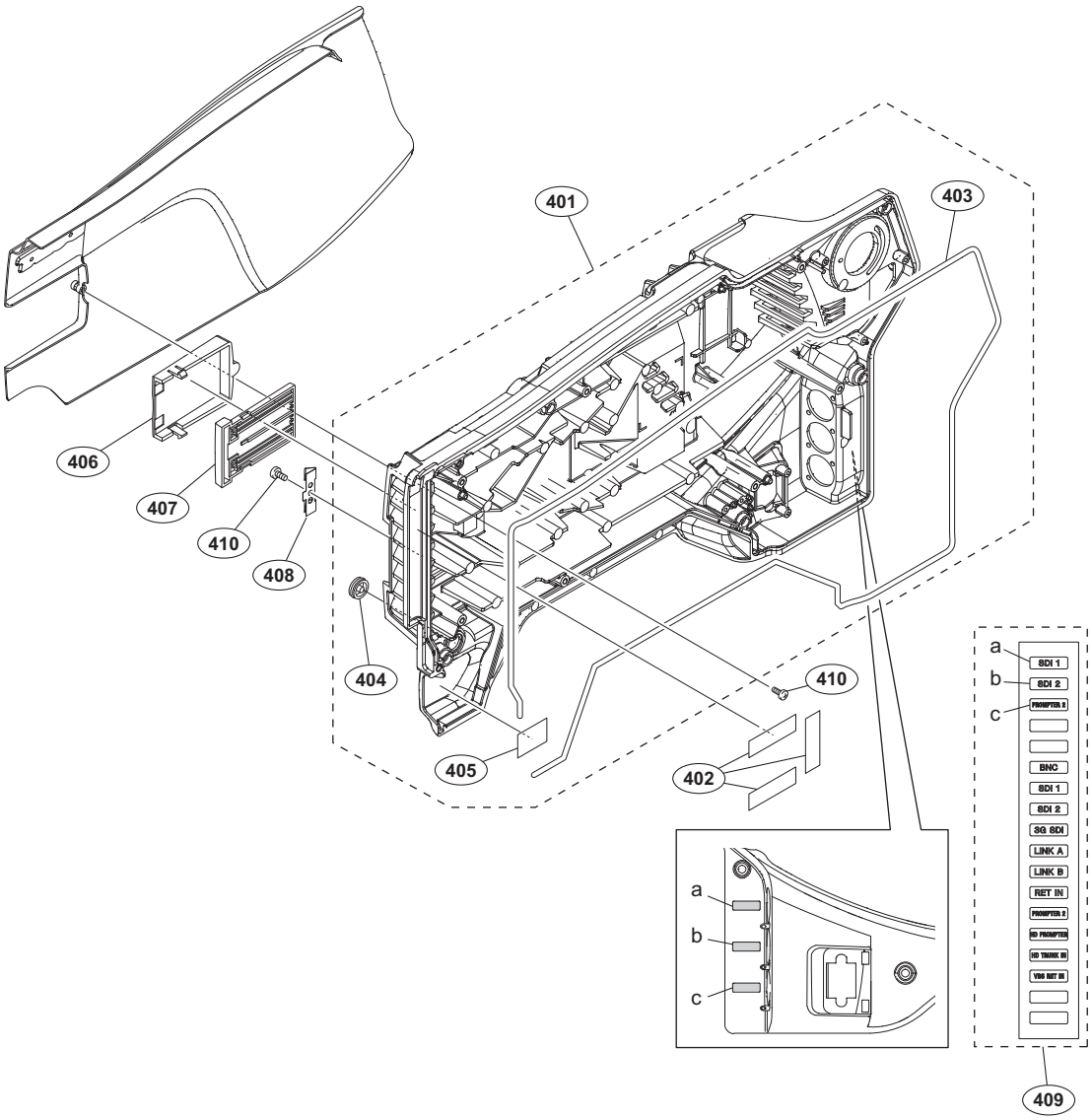
No.	Part No.	SP	Description
201	A-1990-524-A	s	MOUNTED CIRCUIT BOARD, TX-146
202	A-2078-338-A	s	MOUNTED CIRCUIT BOARD, MEM-147
203	1-839-904-11	s	FPC WITH CONNECTOR (DPR-SDI)
204 ⚠	1-855-374-11	s	DC FAN
205	1-969-473-11	s	WIRE, CONNECTOR WITH LEAD (AVP)
206	1-970-791-11	s	WIRE,CONNECTORWITHLEAD
207	3-877-896-02	s	SHEET (EC REAR), RADIATION
208	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
209	3-257-200-01	s	CLAMP, CORD
210	3-603-679-02	s	STAINLESS SCREW +B3X10
211	3-672-250-01	s	RING (M2.6), O
212	4-382-854-51	s	SCREW (M3X6), P, SW (+)
213	4-546-928-01	s	CUSHION (FAN)
214	4-654-273-02	s	ACE (M2), LOCK [B2x5]

Outside-2



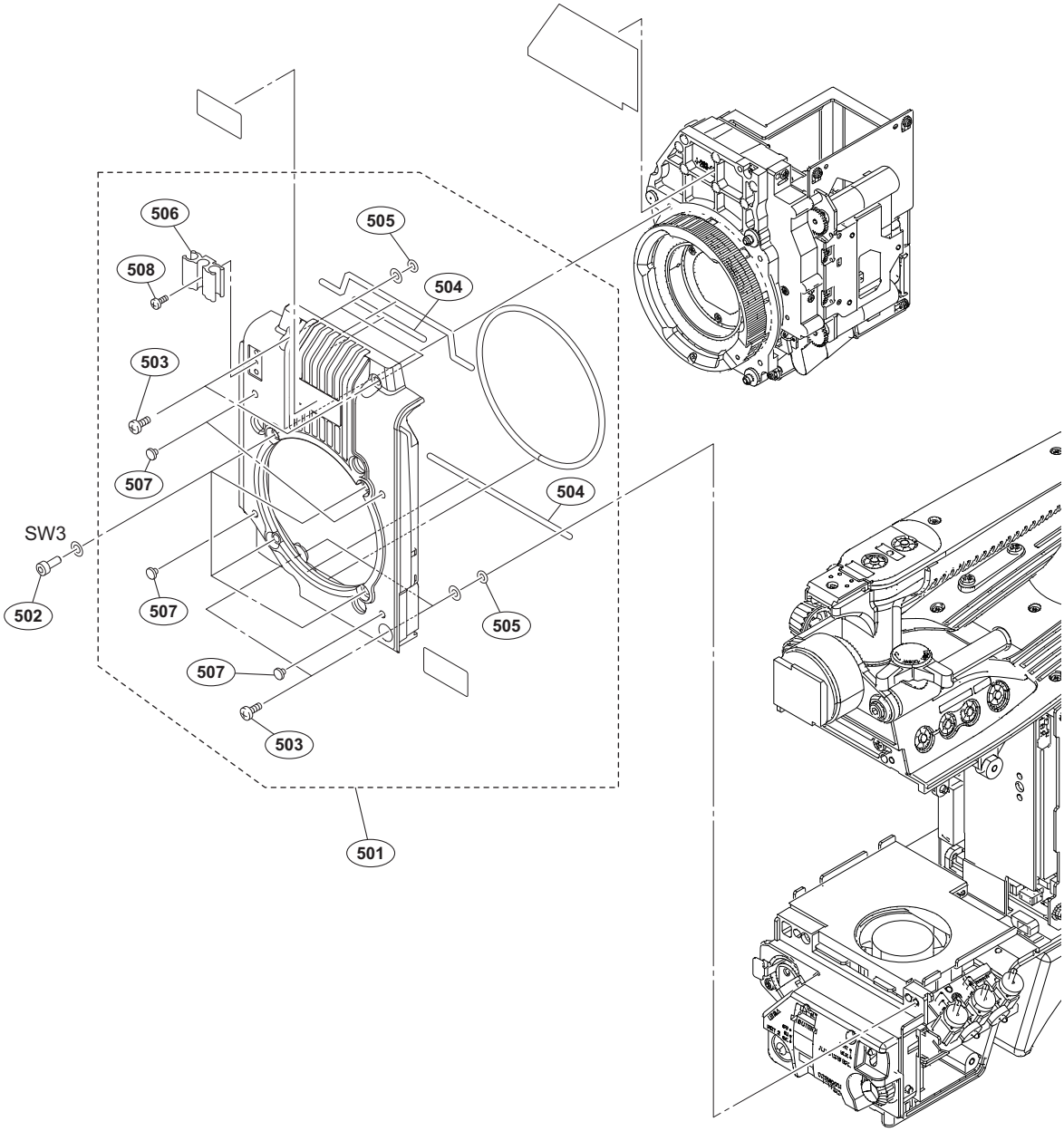
No.	Part No.	SP	Description
301	A-1860-045-A	s	MOUNTED CIRCUIT BOARD, CN-3434
302	1-784-240-11	s	CONVERTER, COAXIAL CONNECTOR
303	1-830-739-11	s	CABLE ASSEMBLY, COAXIAL
304	⚠ 1-839-826-11	s	OPTICAL MULTI CABLE ASSEMBLY-M [LEMO] (SY, CED, CN)
	⚠ 1-839-827-11	s	OPTICAL MULTI CABLE ASSEMBLY [Tajimi] (J, CN)
305	1-970-792-11	s	CABLE, CONNECTOR WITH COAXIAL
306	1-970-793-11	s	COAXIAL CABLE WITH CONNECTOR
307	1-970-794-11	s	COAXIAL CABLE WITH CONNECTOR
308	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
309	3-176-525-01	o	WASHER, SPRING
310	3-602-464-02	s	WASHER, CONDUCTIVE
311	3-863-319-01	s	BRACKET BNC
312	3-872-935-01	s	CAP,BNC
313	4-138-680-01	s	SUPPORT, OUTSIDE PANEL
314	4-138-689-01	s	SHAFT, ROTARY(TRIAX)
315	4-138-707-01	s	WASHER, TRIAX(2)
316	4-184-884-01	s	BRACKET BNC
317	4-293-494-03	s	CN BRACKET(CN-3434)
318	4-293-502-01	s	CONNECTOR HOUSING
319	4-293-509-02	s	ETHER CAP
320	4-424-320-03	s	TRIAX DUCT (FAN)
321	4-559-446-01	s	SCREW, +P2.6X5 LOCK ACE
322	4-654-273-02	s	ACE (M2), LOCK [B2x5]
323	3-079-115-01	s	TAPE AS
	7-682-548-09	s	SCREW +B 3X8

Outside-3



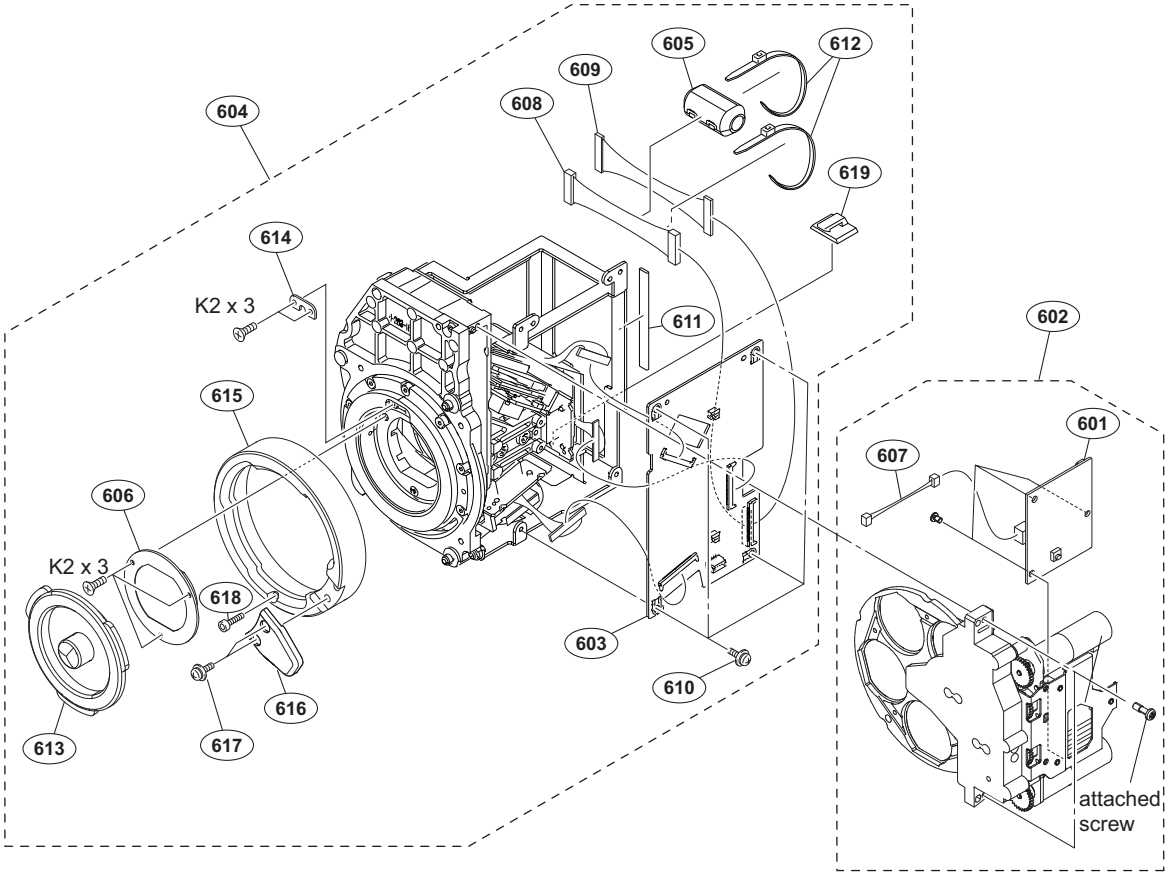
No.	Part No.	SP	Description
401	A-2077-293-A	s	OUTSIDE PANEL SUB ASSY
402	3-079-115-01	s	TAPE AS
403	3-624-455-01	s	TUBE,SHIELD
404	3-676-244-04	s	COVER, SWITCH
405	4-144-604-01	s	SOFT SHIELD (3154)
406	4-293-514-01	s	NUMBER FRAME
407	4-293-515-01	s	NUMBER FRAME BASE
408	4-298-877-01	s	SPRING, NUMBER FRAME
409	4-411-059-01	s	LABEL(BNC)
410	4-654-273-02	s	ACE (M2), LOCK [B2x5]

Front Panel



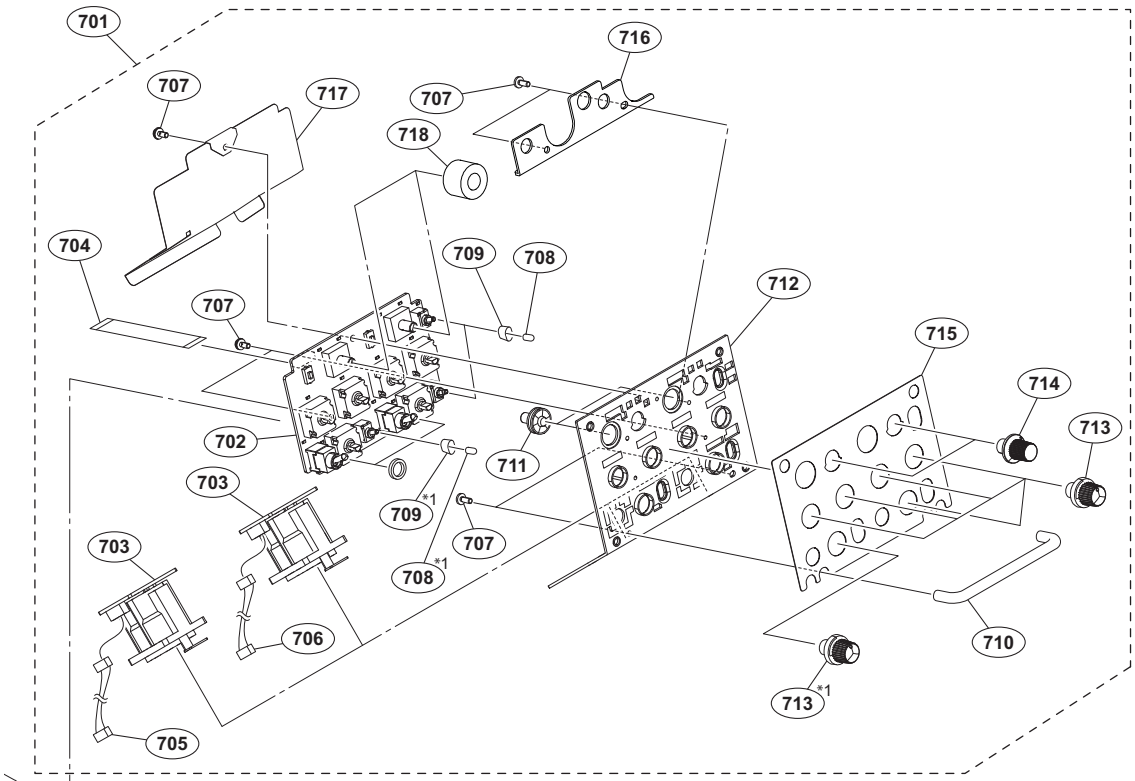
No.	Part No.	SP	Description
501	A-1838-946-A	s	FRONT PANEL ASSY
502	2-623-773-11	s	BOLT (M3X8), STAINLESS
503	3-603-679-02	s	STAINLESS SCREW +B3X10
504	3-624-455-01	s	TUBE,SHIELD
505	3-672-250-01	s	RING (M2.6), O
506	3-870-272-02	s	CLAMP, CABLE
507	4-138-679-01	s	SCREW, BLIND
508	4-654-273-02	s	ACE (M2), LOCK [B2x5]
	7-623-208-22	s	SW 3,TYPE 2

OHB Block

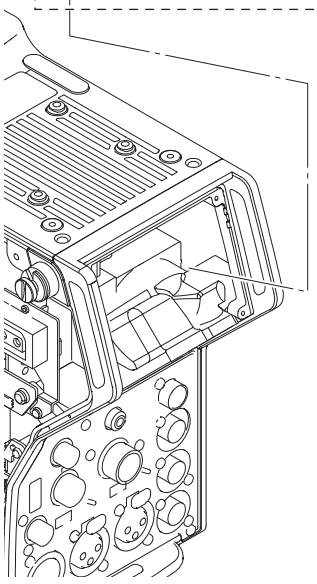


No.	Part No.	SP	Description
601	A-1813-088-A	s	MOUNTED CIRCUIT BOARD, DR-663
602	A-1845-719-A	s	FD ASSY
603	A-2076-813-A	s	MOUNTED CIRCUIT BOARD, IF-1278
604	A-2078-341-A	s	CMOS BLOCK ASSY (RP)
605	1-543-793-11	s	FILTER, CLAMP (FERRITE CORE)
606	1-856-701-11	s	OPTICAL FILTER UNIT
607	1-967-833-11	s	HARNESS, SUB (FT-I2C)
608	1-970-788-11	s	HARNESS, SUB (CIS-PWR)
609	1-970-790-11	s	HARNESS, SUB(DPR-IF(40))
610	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
611	3-100-481-01	s	GASKET (4X5X50)
612	3-655-653-01	s	BAND (TAITON), BINDING
613	3-699-048-01	s	CAP, MOUNT
614	3-776-897-02	s	GUIDE PLATE
615	4-263-184-04	s	RING, BAYONET
616	4-562-323-01	s	LEVER, MOUNT
617	4-654-273-02	s	ACE (M2), LOCK [B2x5]
618	4-264-474-01	s	BOLT,BHS M2X15
619	3-257-200-01		CLAMP, CORD
	7-627-452-18	s	SCREW,PRECISION +K 2X3

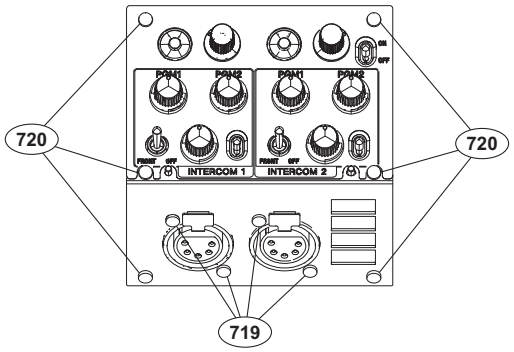
Incom Panel



708 *1 709 *1 713 *1 : SY, J only

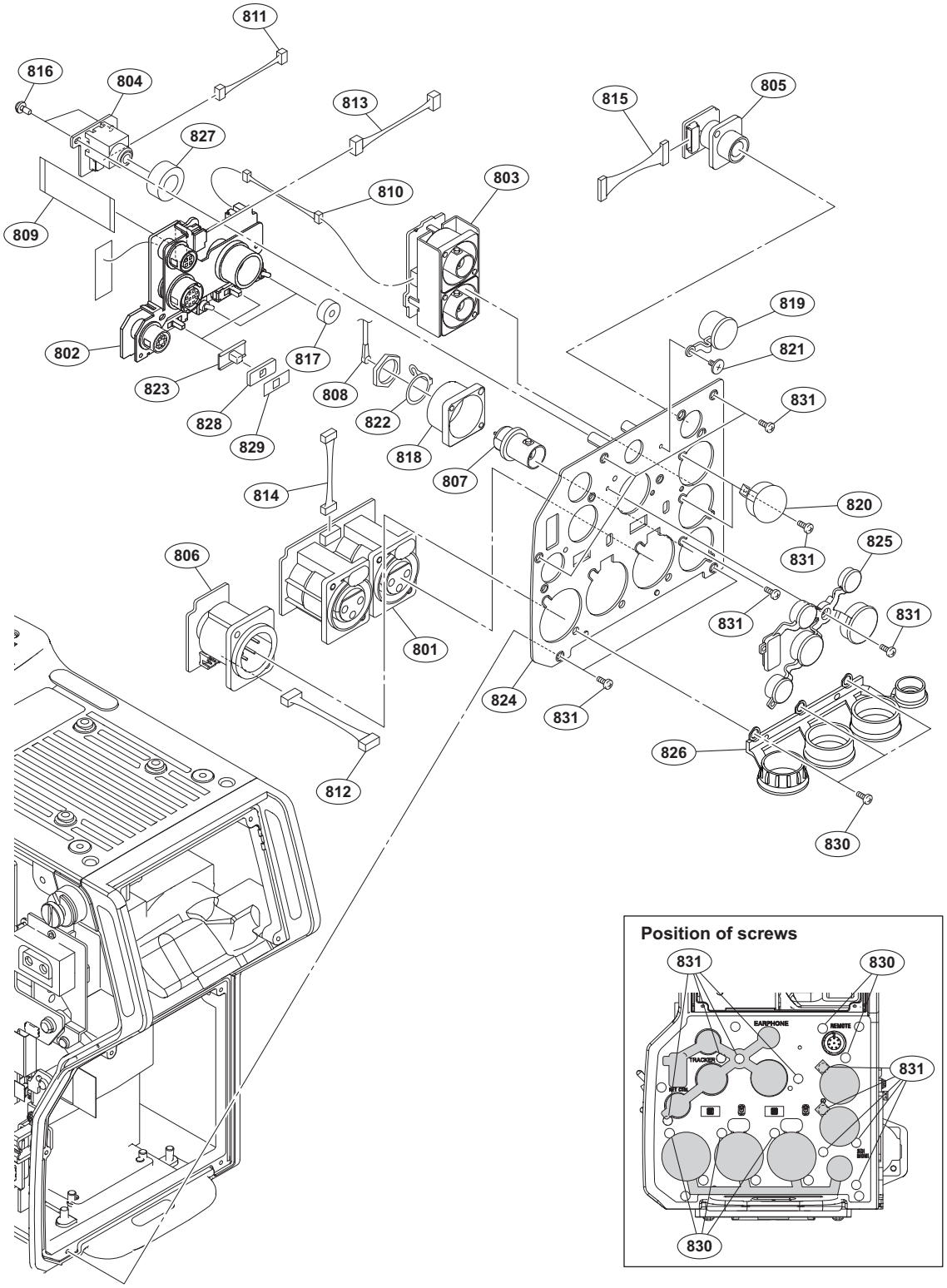


Position of screws



No.	Part No.	SP	Description
701	A-1838-500-A	s	INCOMEPANEL ASSY (SY, J)
	A-1860-831-A	s	INCOMEPANEL ASSY (E) (CED, CN)
702	A-1859-146-A	s	MOUNTED CIRCUIT BOARD, SW-1530A (CED, CN)
	A-1860-030-A	s	MOUNTED CIRCUIT BOARD, SW-1530 (SY, J)
703	A-1860-042-A	s	MOUNTED CIRCUIT BOARD, CN-3431
704	1-836-443-11	s	CABLE, FLEXIBLE FLAT (15 CORE)
705	1-968-145-12	s	HARNESS, SUB (INCOM2)
706	1-968-151-12	s	HARNESS, SUB (INCOM1)
707	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
708	3-869-842-01	s	CAP,SW
709	3-903-660-01	s	DROP PROTECTION,TOGGLE
710	3-903-661-01	s	ROD,GURAD
711	4-138-682-01	s	SW COVER
712	⚠ 4-414-613-03	s	PANEL, INCOM (SY, J)
	⚠ 4-414-614-02	s	PANEL, INCOM (P) (CED, CN)
713	4-414-615-01	s	KNOB, VR
714	4-414-616-01	s	KNOB, RETURN SELECT
715	4-414-619-02	s	SHEET, INCOM (SY, J)
	4-414-622-02	s	SHEET, INCOM CE (CED, CN)
716	4-414-620-02	s	SUPPORT, INCOM PACKING
717	4-414-621-02	s	SHEET, DC LINE PROTECTION
718	4-414-623-02	s	PACKING, RETURN SEL
719	4-559-446-01	s	SCREW, +P2.6X5 LOCK ACE
720	4-654-273-02	s	ACE (M2), LOCK [B2x5]

Mic Panel

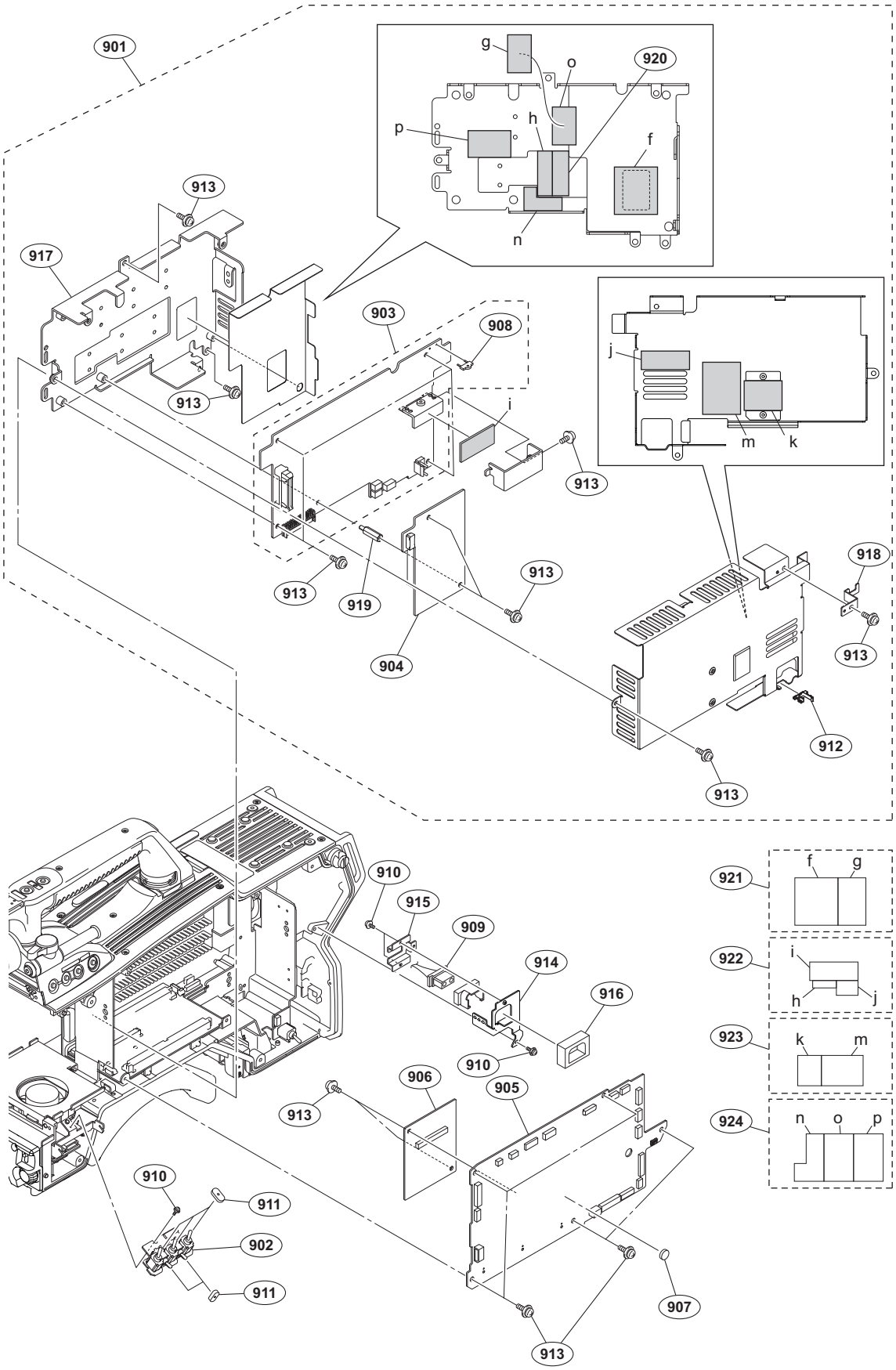


No.	Part No.	SP	Description
801	A-1860-036-A	s	MOUNTED CIRCUIT BOARD, CN-3425
802	A-1860-038-A	s	MOUNTED CIRCUIT BOARD, CN-3427
803	A-1860-039-A	s	MOUNTED CIRCUIT BOARD, CN-3428
804	A-1860-040-A	s	MOUNTED CIRCUIT BOARD, CN-3429
805	A-1860-041-A	s	MOUNTED CIRCUIT BOARD, CN-3430
806	A-1860-043-A	s	MOUNTED CIRCUIT BOARD, CN-3432
807	1-784-240-11	s	CONVERTER, COAXIAL CONNECTOR
808	1-830-742-11	s	CABLE ASSEMBLY, COAXIAL
809	1-831-147-11	s	CABLE, FLEXIBLE FLAT (36 CORE)
810	1-968-142-11	s	HARNESS, SUB (TEST)
811	1-968-143-11	s	HARNESS, SUB (EARPHONE)
812	1-968-146-11	s	HARNESS, SUB (EXT DC IN)
813	1-968-150-11	s	HARNESS, SUB (UNREG)
814	1-968-153-11	s	HARNESS, SUB (MIC)
815	1-968-154-11	s	HARNESS, SUB (REMOTE)

Mic Panel

No.	Part No.	SP	Description
816	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
817	3-796-993-01	s	CUSHION DROP PROTECTION TOGGLE
818	3-863-319-01	s	BRACKET BNC
819	3-868-657-03	s	CAP,BNC
820	3-872-935-01	s	CAP,BNC
821	3-965-077-02	s	SCREW, SPECIAL (M2) [M2x2.4]
822	4-136-517-01	s	WASHER, BNC COAXIAL FIXED
823	4-138-687-01	s	COVER, SLIDE SWITCH
824	4-414-612-04	s	PANEL, MIC
825	4-414-617-01	s	CAP, REAR CONNECTOR 1
826	4-414-618-01	s	CAP, REAR CONNECTOR 2
827	4-414-624-01	s	PACKING, EARPHONE
828	4-414-625-01	s	SHEET, SLIDE SW WATER RESIST
829	4-432-516-02	s	SLIDING SHEET, SW
830	4-559-446-01	s	SCREW, +P2.6X5 LOCK ACE
831	4-654-273-02	s	ACE (M2), LOCK [B2x5]

PS Block

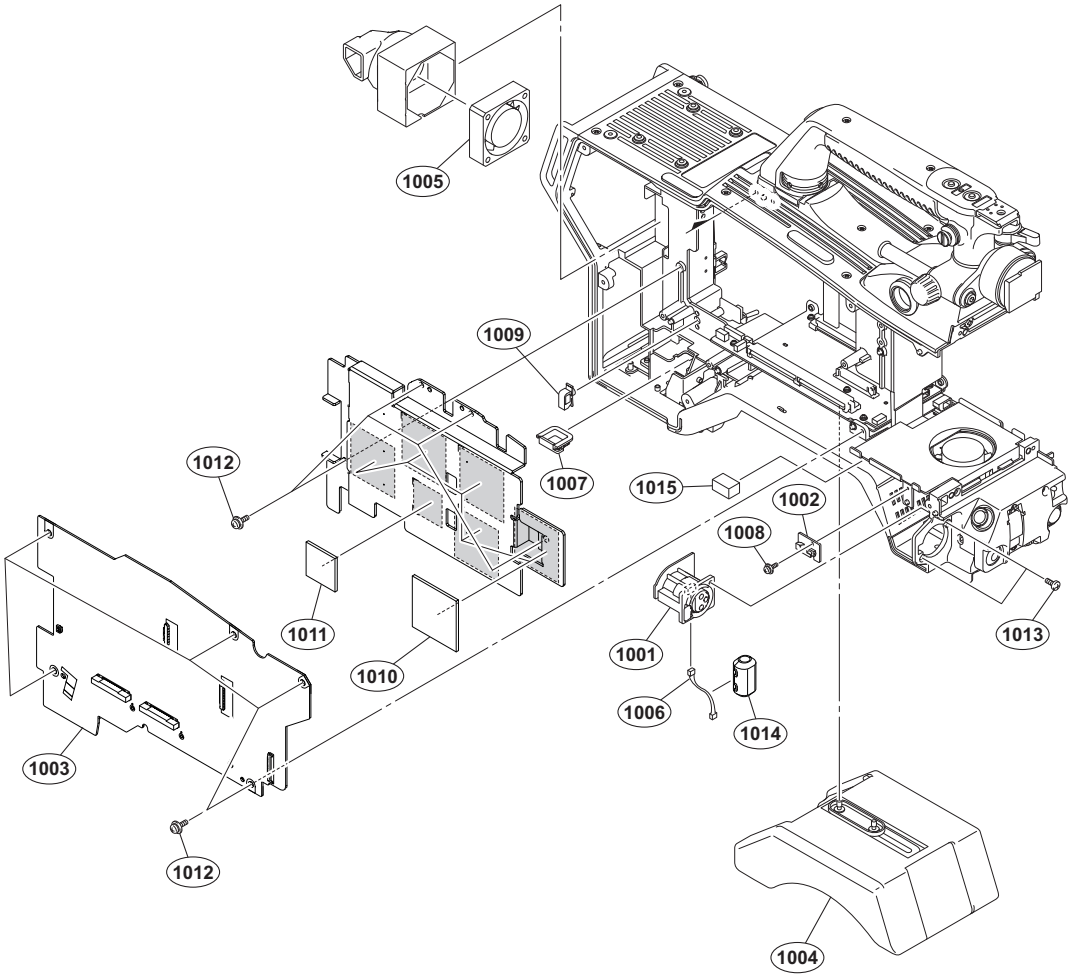


No.	Part No.	SP	Description
901	⚠ A-1838-556-B	s	POWER BLOCK ASSY
902	A-1860-029-A	s	MOUNTED CIRCUIT BOARD, SW-1528
903	A-1860-206-A	s	MOUNTED CIRCUIT BOARD, PS-836

PS Block

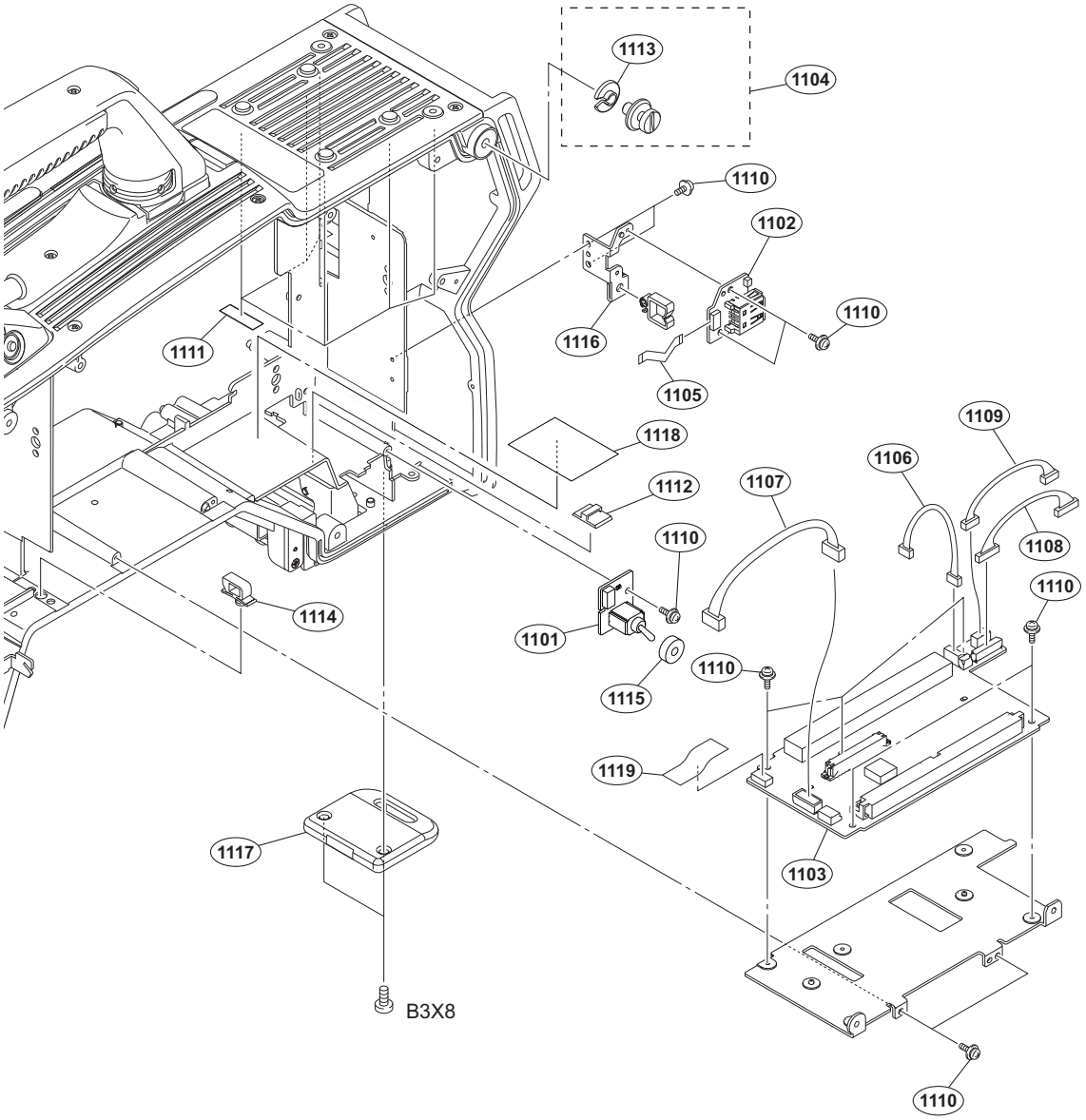
No.	Part No.	SP	Description
904	A-1872-945-A	s	MOUNTED CIRCUIT BOARD, RE-291
905	A-2078-339-A	s	MOUNTED CIRCUIT BOARD, SY-408
906	A-2078-340-A	s	MOUNTED CIRCUIT BOARD, AT-189
907	⚠ 1-756-134-16	s	BATTERY, LITHIUM (SECONDARY)
908	1-780-834-11	s	PIN, JUMPER
909	1-968-160-11	s	HARNESS, SUB (DC-OUT)
910	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
911	3-872-587-01	s	CUSHION,TOGGLE-SW
912	4-137-926-01	s	SADDLE (LES-0505), EDGE
913	4-382-854-51	s	SCREW (M3X6), P, SW (+)
914	4-415-075-02	s	BRACKET, DC OUT
915	4-415-076-02	s	COVER, DC OUT
916	4-415-078-01	s	PACKING, DC OUT
917	4-415-274-01	s	PS BRACKET
918	4-415-278-01	s	STOPPER, PIN
919	4-415-279-01	s	SUPPORT (3SQ-16), HEXAGON
920	4-415-280-01	s	SHEET (T1), THERMAL
921	4-415-281-02	s	SHEET(T1.5),THERMAL
922	4-415-282-01	s	SHEET (T2), THERMAL
923	4-415-283-01	s	SHEET (T3.5), THERMAL
924	4-415-284-02	s	SHEET (T4), THERMAL

DPR Block



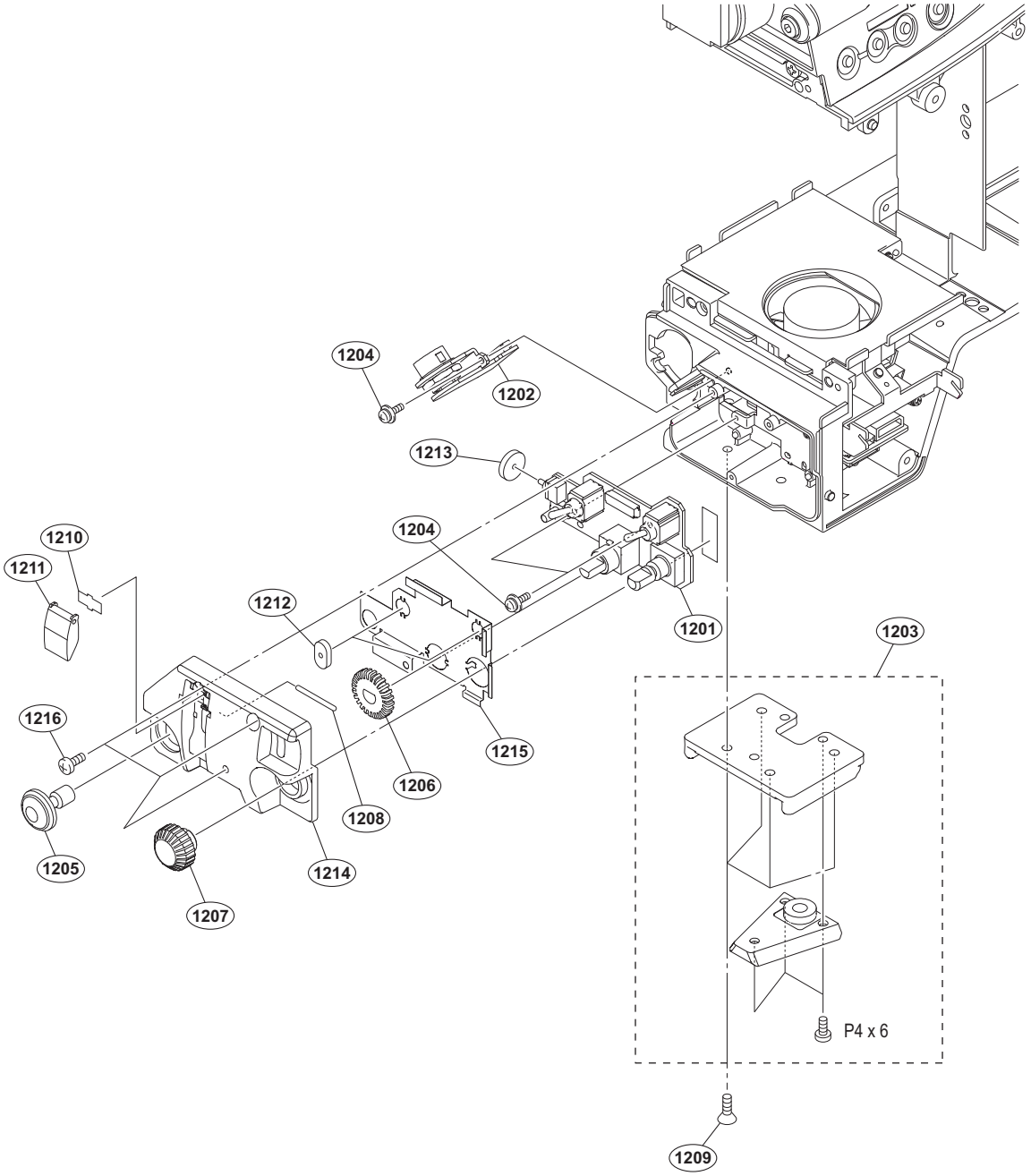
No.	Part No.	SP	Description
1001	A-1860-032-A	s	MOUNTED CIRCUIT BOARD, CN-3421
1002	A-2076-814-A	s	MOUNTED CIRCUIT BOARD, SW-1672
1003	A-2078-337-A	s	MOUNTED CIRCUIT BOARD, DPR-370
1004	A-8286-163-D	s	PAD ASSY,SHOULDER
1005	⚠ 1-855-374-11	s	DC FAN
1006	1-968-158-11	s	HARNESS, SUB (FRONT MIC)
1007	2-433-598-01	s	HOLDER (LT-11U), WIRE
1008	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1009	3-853-802-01	s	CLAMP,REUSE
1010	4-574-579-01	s	SHEET (2.0 (38X38)), RADIATION
1011	4-533-878-01	s	SHEET, RADIATION (L)
1012	4-382-854-51	s	SCREW (M3X6), P, SW (+)
1013	4-559-446-01	s	SCREW, +P2.6X5 LOCK ACE
1014	1-543-793-11	s	FILTER, CLAMP (FERRITE CORE)
1015	4-542-018-01	s	GASKET (10X10X15)

MB Block



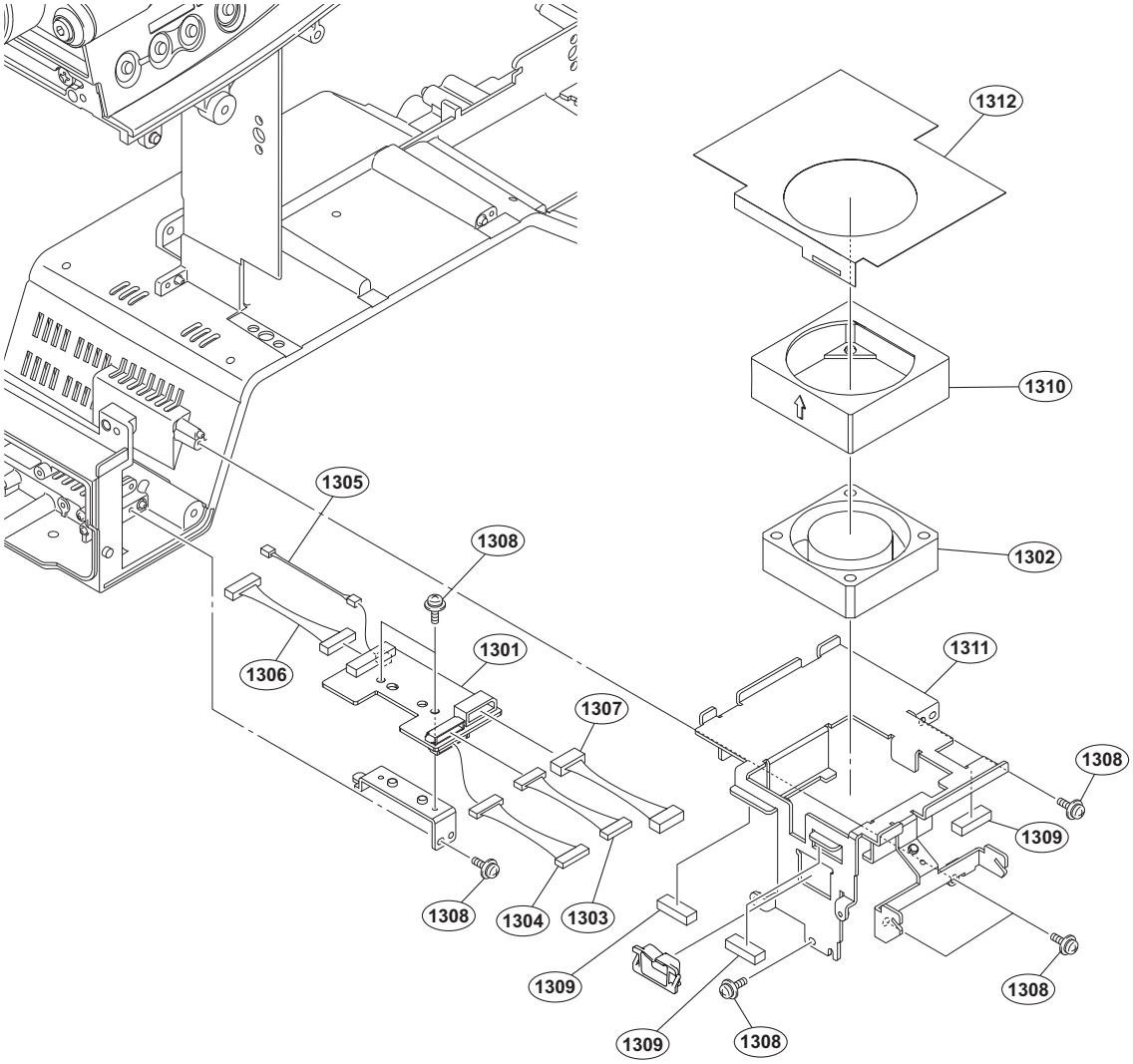
No.	Part No.	SP	Description
1101	A-1860-031-A	s	MOUNTED CIRCUIT BOARD, SW-1531
1102	A-1860-037-A	s	MOUNTED CIRCUIT BOARD, CN-3426
1103	A-2076-811-A	s	MOUNTED CIRCUIT BOARD, MB-1214
1104	X-3710-037-1	s	SUSPENSION ASSY (C)
1105	1-831-078-11	s	CABLE, FLEXIBLE FLAT (10 CORE)
1106	1-968-156-11	s	HARNESS, SUB (POWER SW)
1107	1-968-162-11	s	HARNESS, SUB (PS CONT, FRONT)
1108	1-970-789-11	s	HARNESS, SUB (MEM-PWR)
1109	1-970-795-11	s	HARNESS, SUB (MB-DPR-FAN)
1110	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1111	3-079-115-01	s	TAPE AS
1112	3-257-200-01	s	CLAMP, CORD
1113	3-654-615-02	s	COLLAR, SUSPENSION
1114	3-853-802-01	s	CLAMP,REUSE
1115	3-870-137-02	s	CAP, DROP PROTECTION
1116	4-293-489-01	s	BRACKET CN-3426
1117	4-293-492-01	s	GUARD, TAIL
1118	4-409-534-01	s	SHEET, PS CASE THERMAL
1119	4-573-728-01		SHEET, COUNTERMEASURE
	7-682-548-09	s	SCREW +B 3X8

Front SW Block



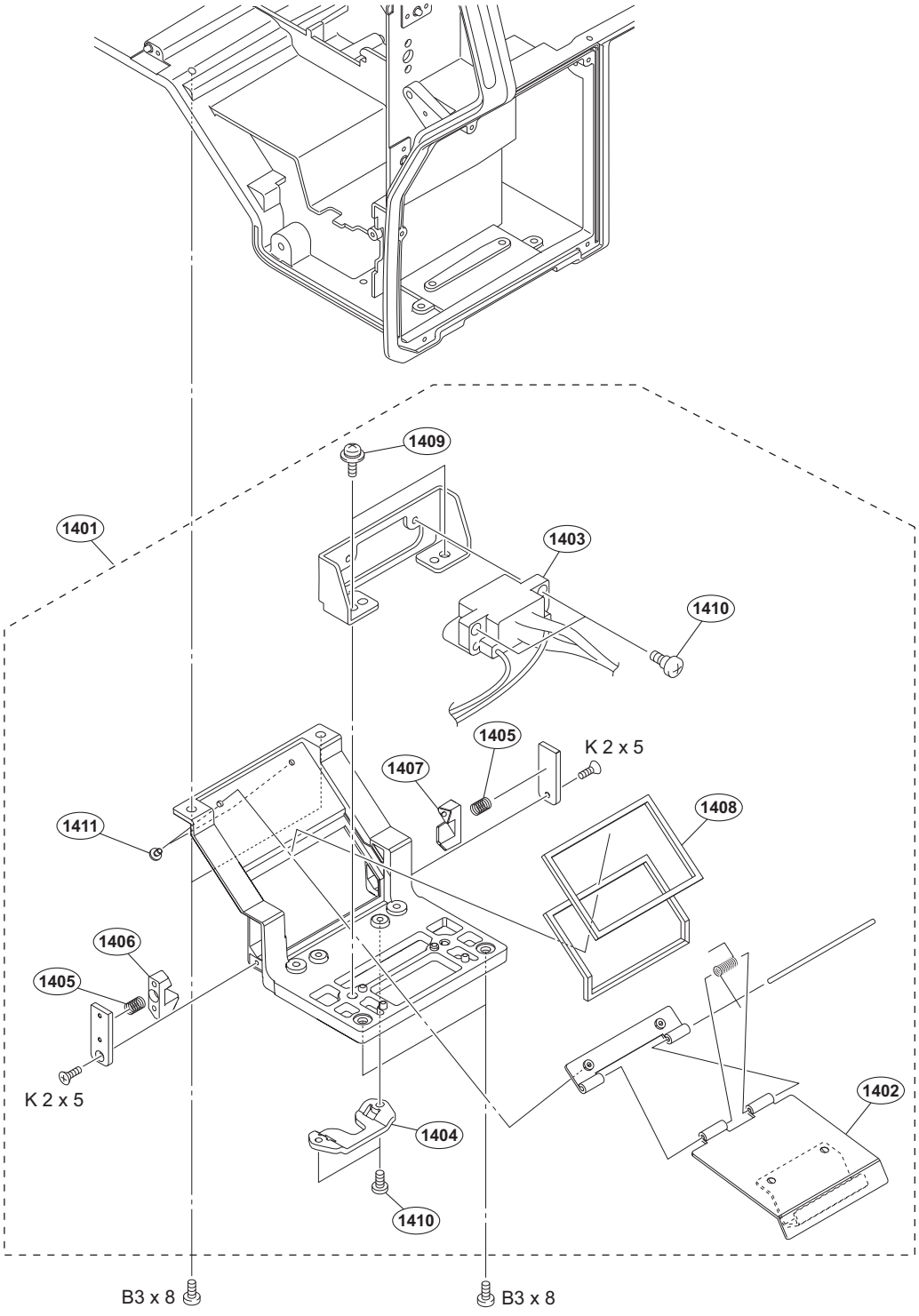
No.	Part No.	SP	Description
1201	A-1860-028-A	s	MOUNTED CIRCUIT BOARD, SW-1527
1202	A-1860-034-A	s	MOUNTED CIRCUIT BOARD, CN-3423
1203	A-8279-993-D	s	SHOE(D)ASSY,V
1204	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1205	3-679-668-02	s	BUTTON,VTR START
1206	3-679-679-05	s	KNOB,VR(AUDIO)
1207	3-692-111-02	s	KNOB,RE
1208	3-703-357-08	s	PIN (DIA. 1.6 SERIES)
1209	3-729-072-02	s	SCREW, +K (4X8)
1210	3-742-066-01	s	SPRING, SHUTTER
1211	3-742-067-06	s	LID, SHUTTER
1212	3-872-587-01	s	CUSHION,TOGGLE-SW
1213	3-872-601-01	s	TOGGLE SW CUSHION(C)
1214	4-293-503-01	s	FRONT SW COVER
1215	4-298-963-02	s	FRONT SHIELD PLATE
1216	4-654-273-02	s	ACE (M2), LOCK [B2x5]
	7-682-160-09	s	SCREW +P 4X6

Front Fan



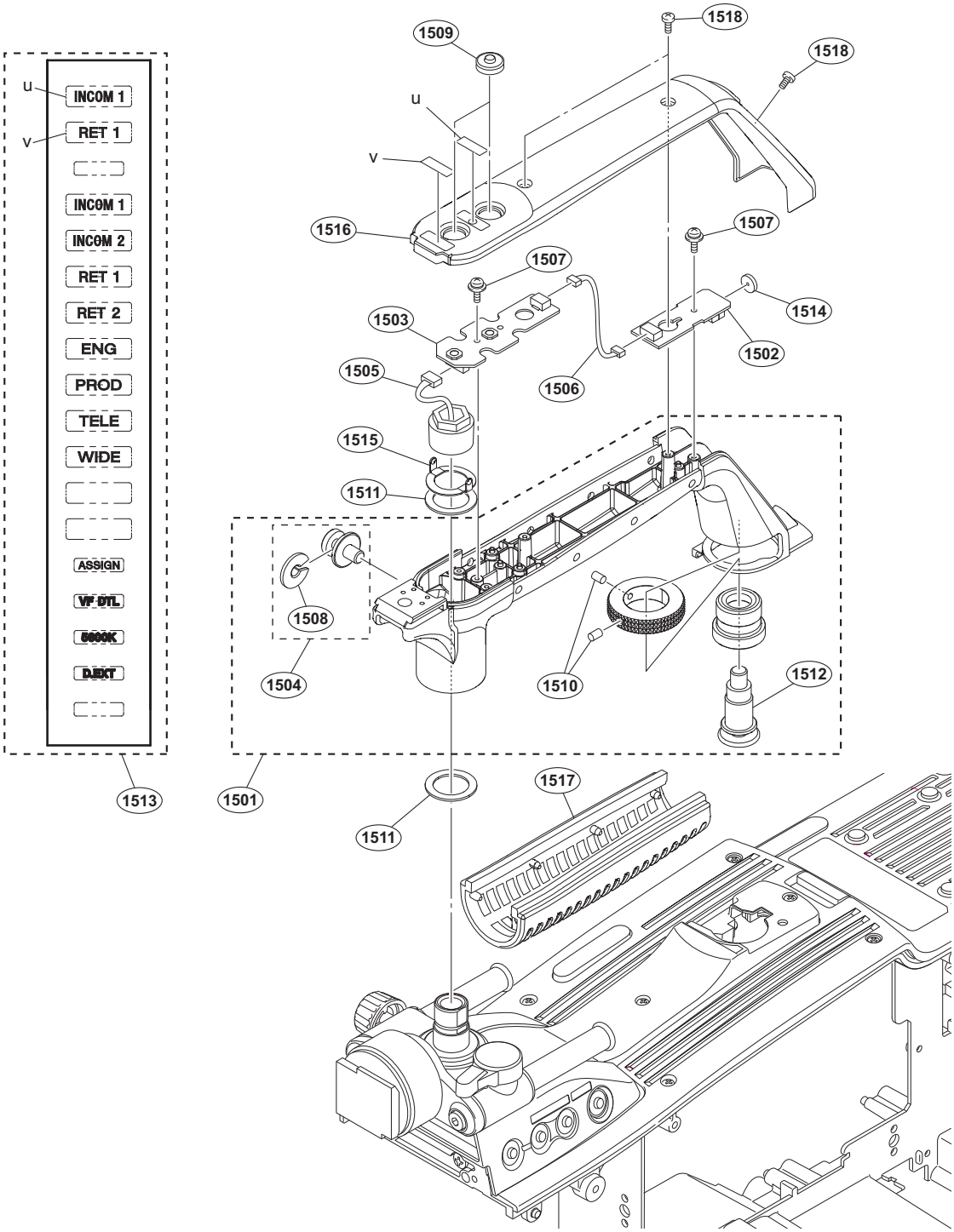
No.	Part No.	SP	Description
1301	A-1860-035-A	s	MOUNTED CIRCUIT BOARD, CN-3424
1302	⚠ 1-787-847-11	s	FAN, DC (40SQUARE)
1303	1-968-147-11	s	HARNESS, SUB (INSIDE SW)
1304	1-968-148-11	s	HARNESS, SUB (FRONT SW)
1305	1-968-157-11	s	HARNESS, SUB (RET SW)
1306	1-968-159-11	s	HARNESS, SUB (LENS)
1307	1-968-162-11	s	HARNESS, SUB (PS CONT, FRONT)
1308	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1309	3-629-684-02	s	FORM,SHIELD
1310	3-796-945-01	s	CUSHION,FAN
1311	4-293-504-01	s	FRAME, SUB
1312	4-411-696-01	s	SLIDING SHEET, OHB

Hotshoe Block



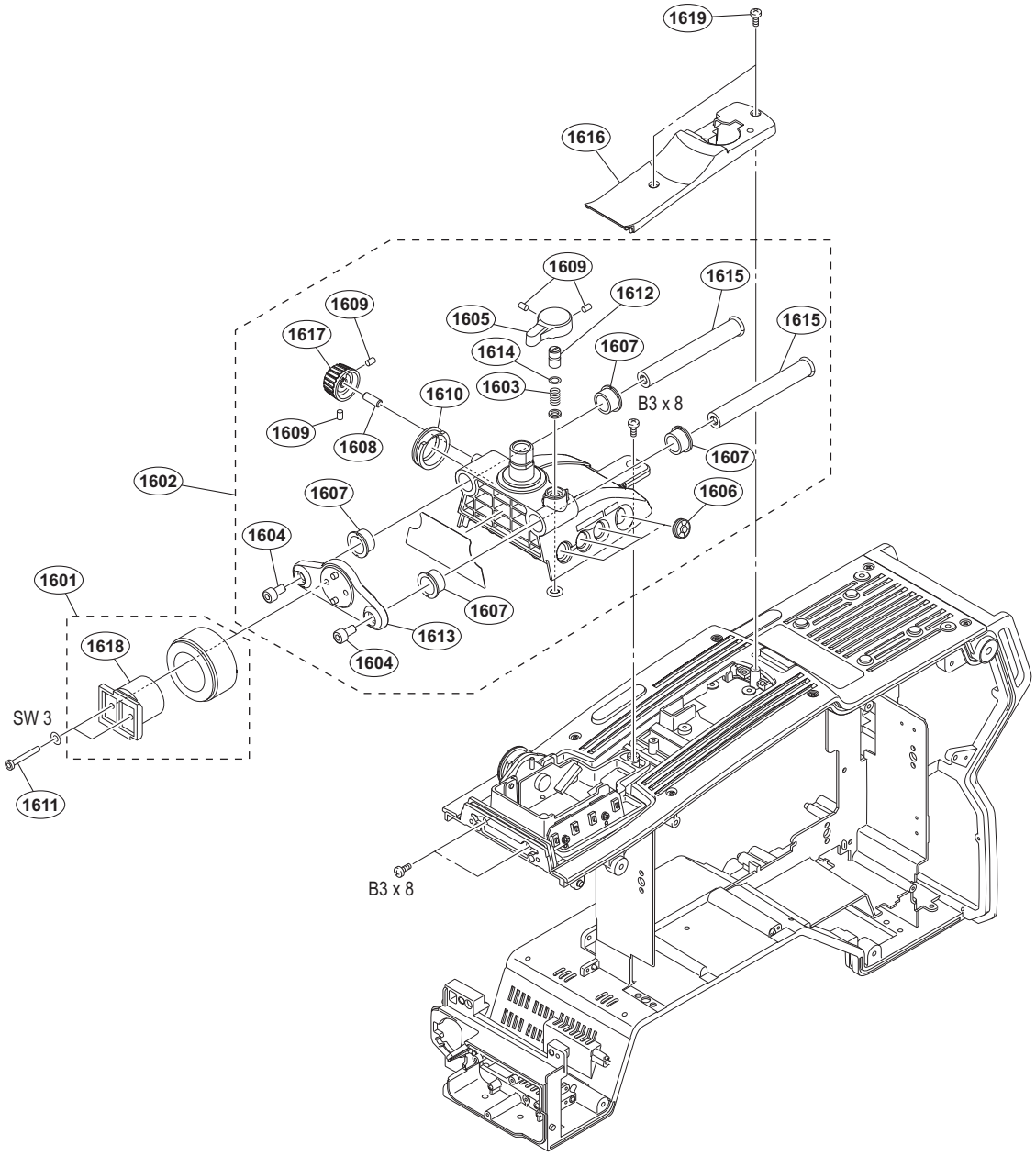
No.	Part No.	SP	Description
1401	A-1842-424-A	s	HOTSHOE ASSY(AL)
1402	X-3704-670-2	s	HOT DOOR
1403	1-968-152-11	s	HARNESS, SUB (BUILD UP)
1404	3-626-781-03	s	STOPPER
1405	3-872-522-02	s	SPRING,COMPRESSION(STOPPER)
1406	3-872-550-02	s	STOPPER(R),HOT DOOR
1407	3-872-551-02	s	STOPPER(L),HOT DOOR
1408	3-872-573-02	s	WATER PROTECT(HOT DOOR)
1409	4-382-854-51	s	SCREW (M3X6), P, SW (+)
1410	4-559-446-01	s	SCREW, +P2.6X5 LOCK ACE
1411	4-654-273-02	s	ACE (M2), LOCK [B2x5]
	7-621-555-30	s	SCREW +K 2X5
	7-682-548-09	s	SCREW +B 3X8

Handle-1



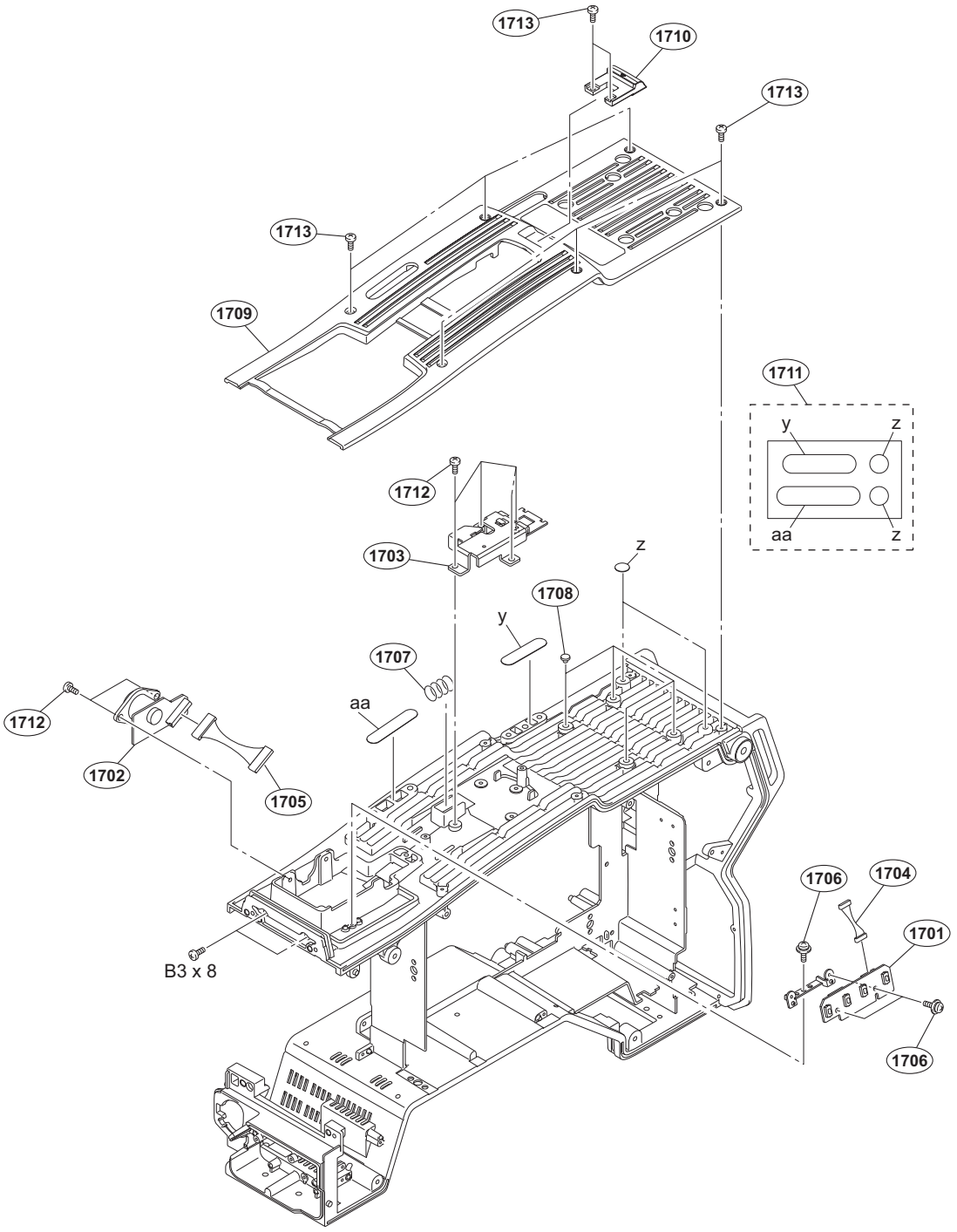
No.	Part No.	SP	Description
1501	A-1675-895-C	s	HANDLE SUB ASSY
1502	A-1860-024-A	s	MOUNTED CIRCUIT BOARD, LE-376
1503	A-1860-025-A	s	MOUNTED CIRCUIT BOARD, SW-1524
1504	X-3710-037-1	s	SUSPENSION ASSY (C)
1505	1-968-144-11	s	HARNESS, SUB (HANDLE SW)
1506	1-968-155-11	s	HARNESS, SUB (HANDLE TALLY)
1507	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1508	3-654-615-02	s	COLLAR, SUSPENSION
1509	3-676-244-04	s	COVER, SWITCH
1510	3-701-507-01	s	SET SCREW, DOUBLE POINT,(M3X5)
1511	3-872-534-02	s	WASHER02
1512	3-872-537-01	s	PIN,HANDLE LOCK
1513	3-872-580-03	s	LABEL(HANDLE)
1514	3-872-601-01	s	TOGGLE SW CUSHION(C)
1515	3-872-609-02	s	WASHER01
1516	4-136-010-02	s	HANDLE COVER(R)
1517	4-138-676-01	s	GRIP
1518	4-654-273-02	s	ACE (M2), LOCK [B2x5]

Handle-2



No.	Part No.	SP	Description
1601	A-2065-043-A	s	SHOE ASSY,VF
1602	X-2583-014-3	s	HANDLEHOLDER(AL) SUBASSY
1603	3-612-822-01	s	SPRING,COMPRESSION
1604	3-657-705-91	s	BOLT (M4X8), HEXAGON HOLE
1605	3-673-046-03	s	LEVER, LOCK
1606	3-676-244-04	s	COVER, SWITCH
1607	3-679-684-01	o	REST,ARM
1608	3-690-660-02	s	LOCK,SCREW
1609	3-701-507-01	s	SET SCREW, DOUBLE POINT,(M3X5)
1610	3-710-024-02	s	PACKING, VF
1611	3-711-765-01	s	BOLT (M3), HEXAGON SOCKET
1612	3-711-794-12	s	PIN, STOPPER
1613	3-872-615-02	s	PLATE,VF SLIDE
1614	3-895-622-01	s	RING (DIA. 5), O
1615	4-137-907-02	s	PIPE,VF SLIDE(LONG)
1616	4-293-491-01	s	COVER, TOP(2)
1617	4-549-633-01	s	KNOB, LOCK
1618	4-558-057-01	s	SHOE,SLIDE
1619	4-654-273-02	s	ACE (M2), LOCK [B2x5]
	7-623-208-22	s	SW 3,TYPE 2
	7-682-548-09	s	SCREW +B 3X8

Handle-3



No.	Part No.	SP	Description
1701	A-1860-026-A	s	MOUNTED CIRCUIT BOARD, SW-1525
1702	A-1860-033-A	s	MOUNTED CIRCUIT BOARD, CN-3422
1703	X-3704-669-2	s	PLATE ASSY, HANDLE AXIS HOLD
1704	1-968-141-11	s	HARNESS, SUB (FILTER SW)
1705	1-968-149-11	s	HARNESS, SUB (VF)
1706	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1707	3-872-543-01	s	SPRING,COMPRESSION(HANDLELOCK)
1708	4-138-679-01	s	SCREW, BLIND
1709	4-293-486-02	s	COVER, TOP
1710	4-299-188-01	s	BUTTON, HANDLE RELEASE
1711	4-408-829-01	s	SHEET, TOP
1712	4-559-446-01	s	SCREW, +P2.6X5 LOCK ACE
1713	4-654-273-02	s	ACE (M2), LOCK [B2x5]
	7-682-548-09	s	SCREW +B 3X8

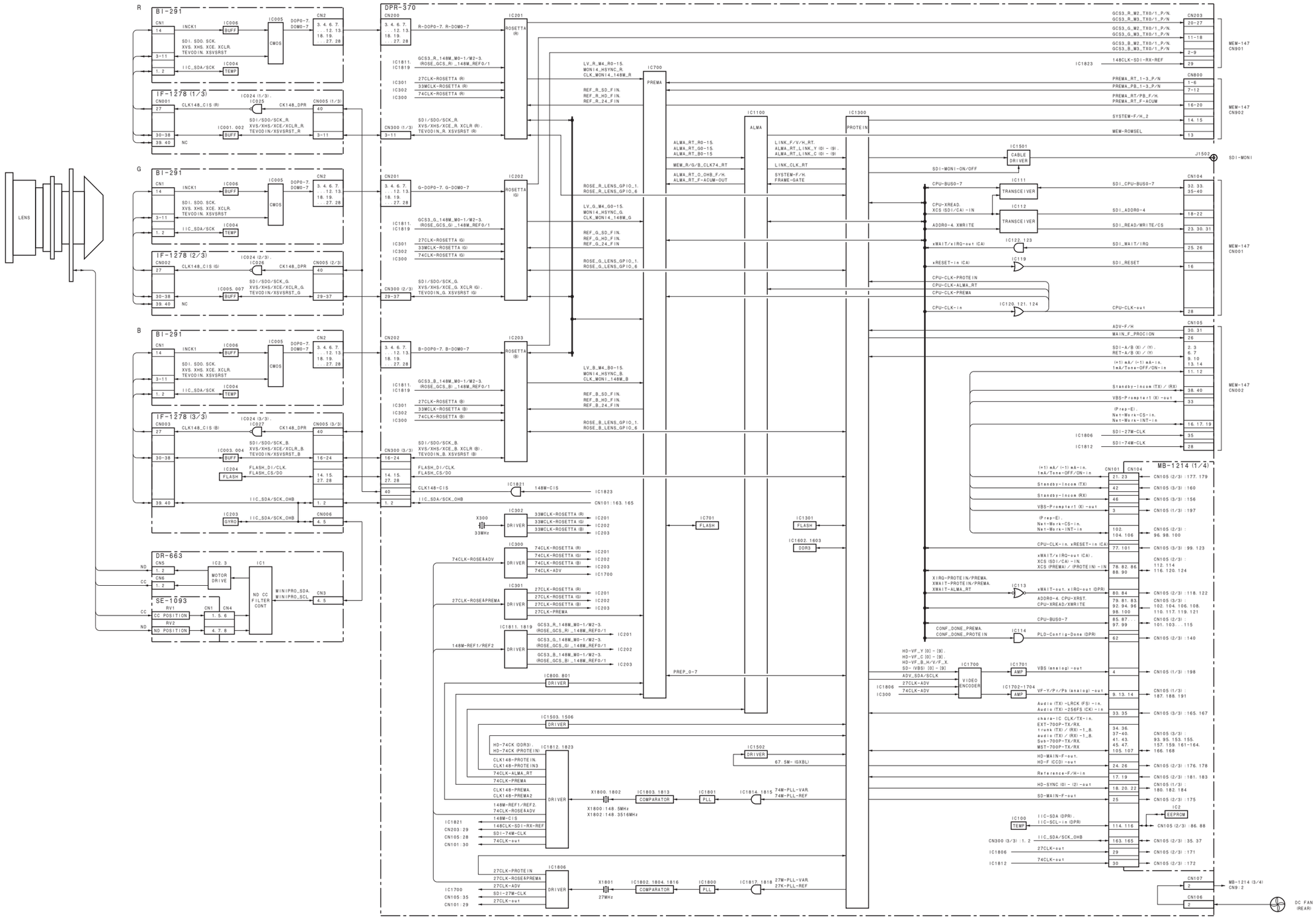
10-3. Supplied Accessories

Supplied Accessories

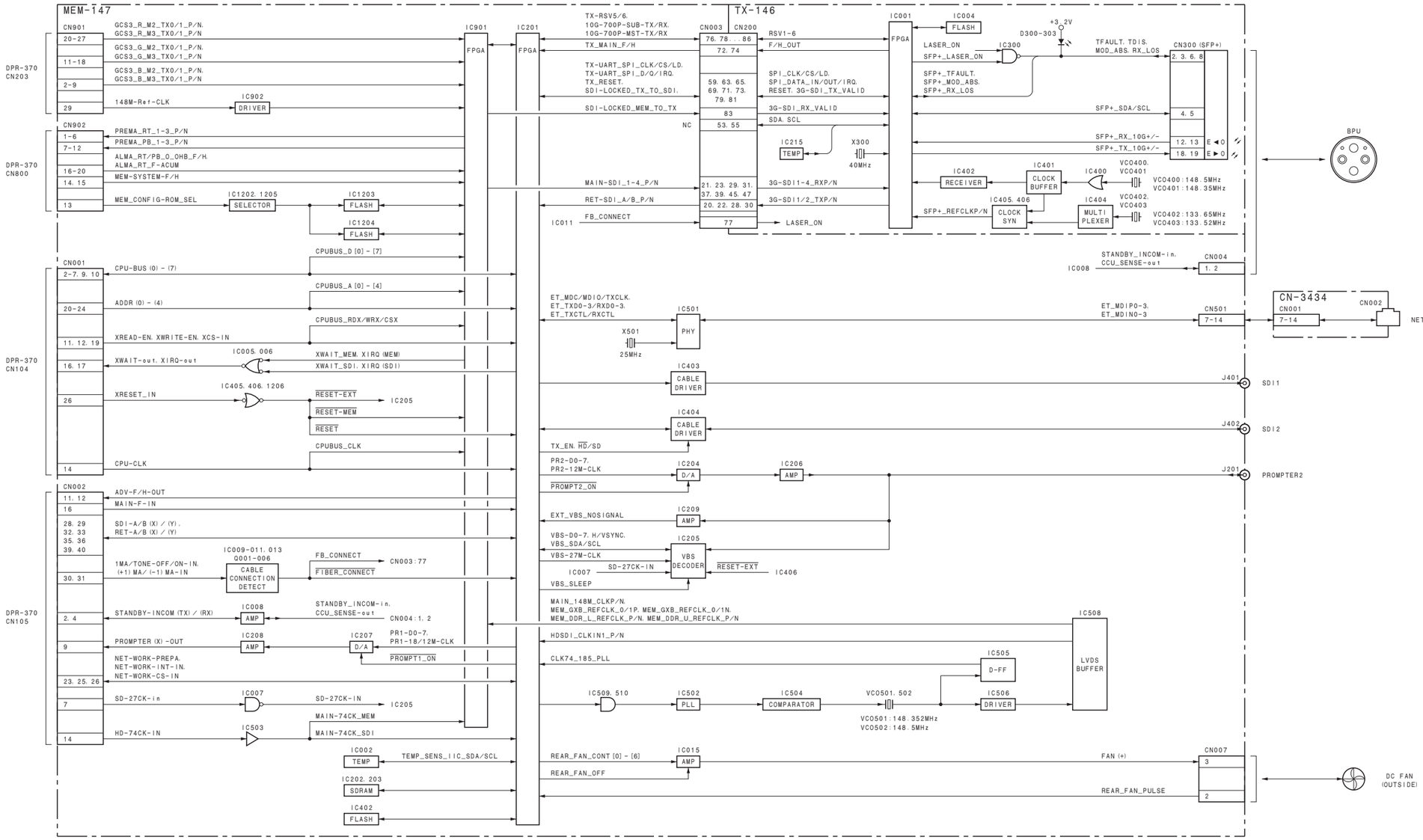
Q'ty	Part No.	SP	Description
1pc	4-138-677-01	s	BRACKET, BELT
1pc	4-138-758-01	s	CLAMP BELT, CABLE
1pc	4-408-856-01	s	LABEL, NUMBER
2pcs	7-682-548-09	s	SCREW +B 3X8

Section 11
Block Diagrams

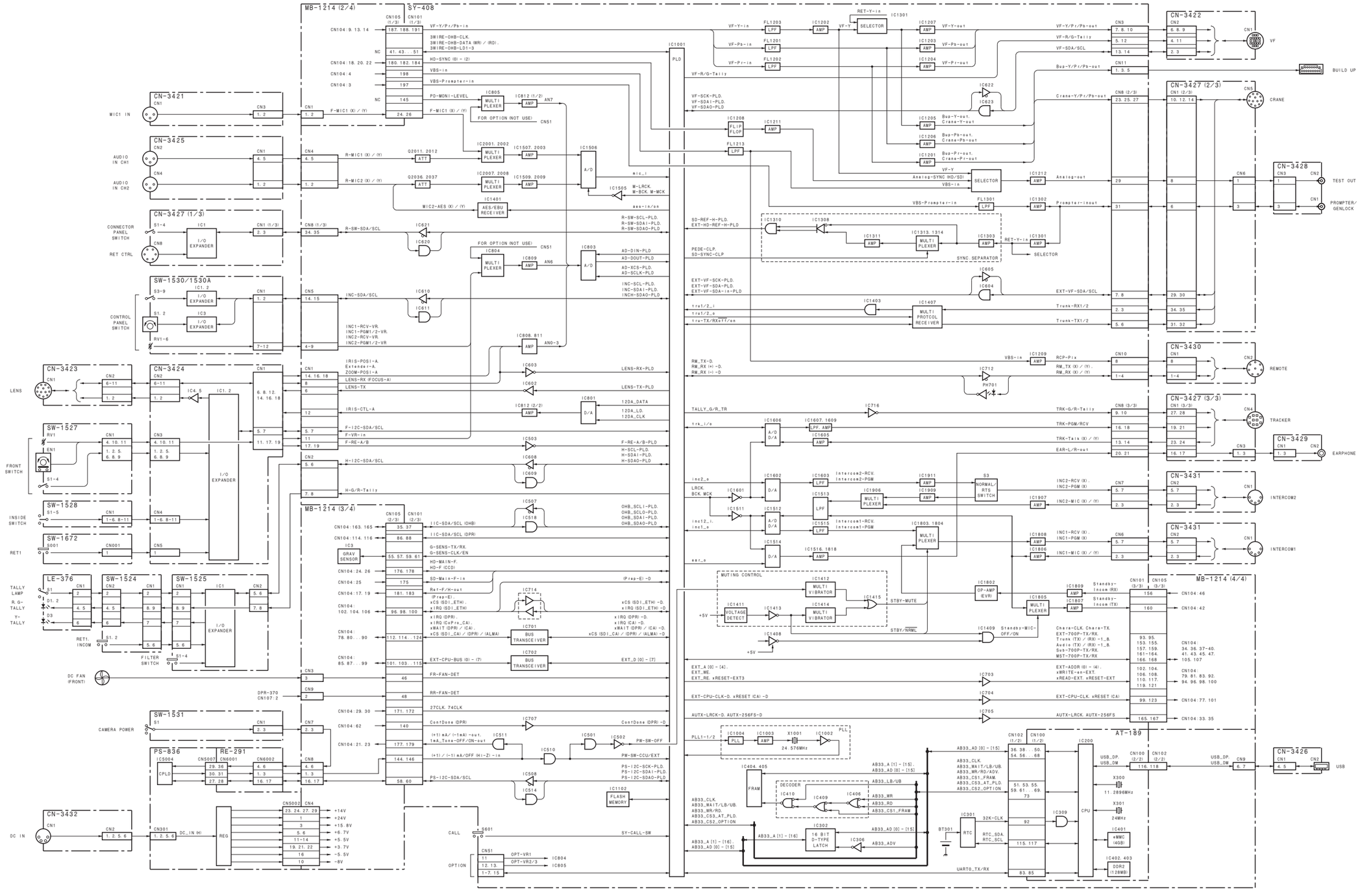
Overall
Overall (1/3)



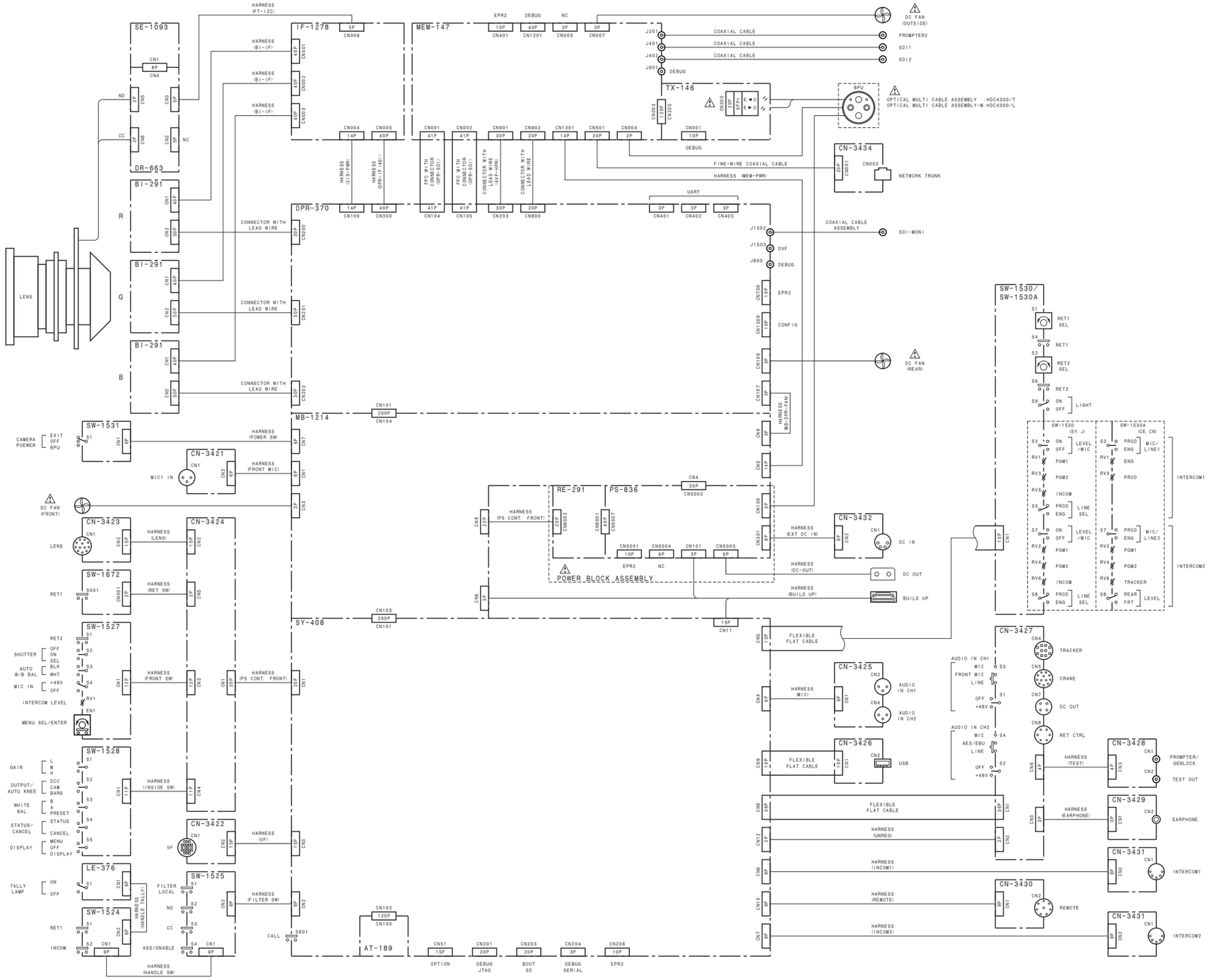
Overall (2/3)


MEM-147
TX-146
DPR-370 CN203
DPR-370 CN800
DPR-370 CN104
DPR-370 CN105
CN901
CN902
CN001
CN002
GCS3_R_M2_TXO/1_P/N.
GCS3_R_M3_TXO/1_P/N
GCS3_G_M2_TXO/1_P/N.
GCS3_G_M3_TXO/1_P/N
GCS3_B_M2_TXO/1_P/N.
GCS3_B_M3_TXO/1_P/N
148M-Ref-CLK
IC902
DRIVER
PREMA_RT_1-3_P/N
PREMA_PB_1-3_P/N
ALMA_RT/PB_O_OHB_F/H.
ALMA_RT_F-ACUM
MEM-SYSTEM-F/H
MEM_CONFIG-ROM_SEL
IC1202. 1205
SELECTOR
IC1203
FLASH
IC1204
FLASH
CPUBUS_D [0] - [7]
CPU-BUS (0) - (7)
CPUBUS_A [0] - [4]
ADDR (0) - (4)
CPUBUS_RDX/WRX/CSX
XREAD-EN. XWRITE-EN. XCS-IN
XWAIT-out. XIRQ-out
IC005. 006
XWAIT_MEM. XIRQ (MEM)
XWAIT_SDI. XIRQ (SDI)
XRESET_IN
IC405. 406. 1206
RESET-EXT
IC205
RESET-MEM
RESET
CPUBUS_CLK
CPU-CLK
ADV-F/H-OUT
MAIN-F-IN
SDI-A/B (X) / (Y).
RET-A/B (X) / (Y)
1MA/TONE-OFF/ON-IN.
(+1) MA/ (-1) MA-IN
IC009-011. 013
Q001-006
CABLE CONNECTION DETECT
FB_CONNECT
FIBER_CONNECT
CN003: 77
STANDBY-INCOM (TX) / (RX)
IC008
AMP
STANDBY_INCOM-in.
CCU_SENSE-out
CN004: 1. 2
PROMPTER (X) -OUT
IC208
AMP
IC207
D/A
PR1-D0-7.
PR1-18/12M-CLK
PROMPT1_ON
NET-WORK-PREPA.
NET-WORK-INT-IN.
NET-WORK-CS-IN
SD-27CK-in
IC007
SD-27CK-IN
IC205
MAIN-74CK_MEM
HD-74CK-IN
IC503
MAIN-74CK_SDI
IC002
TEMP
TEMP_SENS_IIC_SDA/SCL
IC202. 203
SDRAM
IC402
FLASH
IC901
IC201
FPGA
TX-RSV5/6.
10G-700P-SUB-TX/RX.
10G-700P-MST-TX/RX
TX_MAIN_F/H
TX-UART_SPI_CLK/CS/LD.
TX-UART_SPI_D/O/IRQ.
TX_RESET.
SDI-LOCKED_TX_TO_SDI.
SDI-LOCKED_MEM_TO_TX
MAIN-SDI_1-4_P/N
RET-SDI_A/B_P/N
FB_CONNECT
IC011
CN003
CN200
76. 78. . 86
72. 74
59. 63. 65. 69. 71. 73. 79. 81
83
53. 55
21. 23. 29. 31. 37. 39. 45. 47
20. 22. 28. 30
77
NC
RSV1-6
F/H_OUT
SPI_CLK/CS/LD.
SPI_DATA_IN/OUT/IRQ.
RESET. 3G-SDI_TX_VALID
3G-SDI_RX_VALID
SDA. SCL
IC215
TEMP
X300
40MHz
3G-SDI1-4_RXP/N
3G-SDI1/2_TXP/N
LASER_ON
IC001
FPGA
IC004
FLASH
+3. 2V
D300-303
LASER_ON
IC300
SFP+_LASER_ON
SFP+_TFAULT.
SFP+_MOD_ABS.
SFP+_RX_LOS
SFP+_SDA/SCL
SFP+_RX_10G+/-
SFP+_TX_10G+/-
TFAULT. TDIS.
MOD_ABS. RX_LOS
CN300 (SFP+)
2. 3. 6. 8
4. 5
12. 13
18. 19
E ◄ O
E ► O
BPU
IC402
RECEIVER
IC401
CLOCK BUFFER
IC400
VCO400.
VCO401
VCO400: 148. 5MHz
VCO401: 148. 35MHz
IC405. 406
CLOCK SYN
SFP+_REFCLKP/N
IC404
MULTI PLEXER
VCO402.
VCO403
VCO402: 133. 65MHz
VCO403: 133. 52MHz
STANDBY_INCOM-in.
CCU_SENSE-out
IC008
CN004
1. 2
CN-3434
CN001
7-14
CN002
NETWORK TRUNK
ET_MDC/MDIO/TXCLK.
ET_TXD0-3/RXD0-3.
ET_TXCTL/RXCTL
IC501
PHY
X501
25MHz
ET_MDIP0-3.
ET_MDIN0-3
CN501
7-14
IC403
CABLE DRIVER
J401
SDI1
IC404
CABLE DRIVER
J402
SDI2
TX_EN. HD/SD
PR2-D0-7.
PR2-12M-CLK
IC204
D/A
IC206
AMP
PROMPT2_ON
J201
PROMPTER2
EXT_VBS_NOSIGNAL
IC209
AMP
VBS-D0-7. H/VSYNC.
VBS_SDA/SCL
VBS-27M-CLK
IC205
VBS DECODER
IC007
SD-27CK-IN
RESET-EXT
IC406
VBS_SLEEP
MAIN_148M_CLKP/N.
MEM_GXB_REFCLK_0/1P. MEM_GXB_REFCLK_0/1N.
MEM_DDR_L_REFCLK_P/N. MEM_DDR_U_REFCLK_P/N
IC508
HDSDI_CLKIN1_P/N
CLK74_185_PLL
IC505
D-FF
LVDS BUFFER
IC509. 510
IC502
PLL
IC504
COMPARATOR
VCO501. 502
VCO501: 148. 352MHz
VCO502: 148. 5MHz
IC506
DRIVER
REAR_FAN_CONT [0] - [6]
IC015
AMP
REAR_FAN_OFF
FAN (+)
REAR_FAN_PULSE
CN007
3
2
DC FAN (OUTSIDE)

Overall (3/3)


MB-1214 (2/4)
SY-408
CN-3421
CN-3425
CN-3427 (1/3)
SW-1530/1530A
CN-3423
CN-3424
SW-1527
SW-1528
SW-1672
LE-376
SW-1524
SW-1525
SW-1531
PS-836
RE-291
CN-3432
MB-1214 (3/4)
MB-1214 (4/4)
CN-3422
CN-3427 (2/3)
CN-3428
CN-3430
CN-3427 (3/3)
CN-3429
CN-3431
CN-3426
AT-189
VF
BUILD UP
CRANE
TEST OUT
PROMPTER/ GENLOCK
REMOTE
TRACKER
EARPHONE
INTERCOM2
INTERCOM1
USB
MIC1 IN
AUDIO IN CH1
AUDIO IN CH2
CONNECTOR PANEL SWITCH
RET CTRL
CONTROL PANEL SWITCH
LENS
FRONT SWITCH
INSIDE SWITCH
RET1
TALLY LAMP
R.G-TALLY
Y-TALLY
FILTER SWITCH
DC FAN (FRONT)
CAMERA POWER
DC IN
CALL
OPTION
FLASH MEMORY
CPU
FPGA
RTC
DDR2 (128MB)
xMMC (4GB)
VF-Y/Pr/Pb-in
VF-Y-in
VF-Pb-in
VF-Pr-in
VF-R/G-Tally
VF-SCK-PLD.
VF-SDAI-PLD.
VF-SDAO-PLD
F-MIC1 (X) / (Y)
R-MIC1 (X) / (Y)
R-MIC2 (X) / (Y)
MIC2-AES (X) / (Y)
R-SW-SDA/SCL
INC-SDA/SCL
INC1-RCV-VR.
INC1-PGM1/2-VR.
INC2-RCV-VR.
INC2-PGM1/2-VR
IRIS-POSI-A.
Extender-A.
ZOOM-POSI-A
LENS-RX (FOCUS-A)
LENS-TX
IRIS-CTL-A
F-I2C-SDA/SCL
F-VR-in
F-RE-A/B
H-I2C-SDA/SCL
H-G/R-Tally
OHB_SCLI-PLD.
OHB_SCLO-PLD.
OHB_SDA1-PLD.
OHB_SDAO-PLD
I2C-SDA/SCL (OHB)
I2C-SDA/SCL (DPR)
G-SENS-TX/RX.
G-SENS-CLK/EN
HD-MAIN-F.
HD-F (CCD)
SD-Main-F-in
Ref-F/H-out
(Prep-E)
xCS (SDI_ETH) -D.
xIRQ (SDI_ETH) -D
xIRQ (DPR) -D.
xIRQ (CaPre_CA) -D.
xWAIT (DPR) / (CA) -D.
xCS (SDI_CA) / (DPR) / (ALMA) -D
EXT-CPU-BUS (0) - (7)
FR-FAN-DET
RR-FAN-DET
27CLK. 74CLK
ContDone (DPR)
(+1) mA/ (-1mA) -out.
1mA_Tone-OFF/ON-out
(+1) / (-1) mA/OFF (H-Z) -in
PS-I2C-SDA/SCL
SY-CALL-SW
OPT-VR1
OPT-VR2/3
+14V
+24V
+15.8V
+6.7V
+5.5V
+3.7V
-5.5V
-8V
DC_IN (H)
VF-Y-out
VF-Pb-out
VF-Pr-out
Bup-Y/Pr/Pb-out
Crane-Y/Pr/Pb-out
Bup-Y-out. Crane-Y-out
Bup-Pb-out. Crane-Pb-out
Bup-Pr-out. Crane-Pr-out
VF-Y Analog-SYNC (HD/SD) VBS-in
Analog-out
VBS-Prompter-in
Prompter-inout
RET-Y-in
SELECTOR
SYNC.SEPARATOR
EXT-VF-SCK-PLD.
EXT-VF-SDA-PLD.
EXT-VF-SDA-in-PLD
EXT-VF-SDA/SCL
Trunk-RX1/2
Trunk-TX1/2
RW_TX-D.
RW_RX (+) -D.
RW_RX (-) -D
VBS-in
RCP-Pix
RW_TX (X) / (Y).
RW_RX (X) / (Y)
TALLY_G/R_TR
TRK-G/R-Tally
TRK-PGM/RCV
TRK-Talk (X) / (Y)
EAR-L/R-out
Intercom2-RCV.
Intercom2-PGM
Intercom1-RCV.
Intercom1-PGM
INC2-RCV (X).
INC2-PGM (X)
INC2-MIC (X) / (Y)
INC1-RCV (X).
INC1-PGM (X)
INC1-MIC (X) / (Y)
NORMAL/ RTS SWITCH
MUTING CONTROL
VOLTAGE DETECT
MULTI VIBRATOR
STBY-MUTE
STBY/xNRML
OP-AMP (EVR)
Standby-MIC-OFF/ON
Standby-Incom (RX)
Standby-Incom (TX)
Chara-CLK. Chara-TX.
EXT-700P-TX/RX.
Trunk (TX) / (RX) -1_8.
Aucis (TX) / (RX) -1_8.
Sub-700P-TX/RX.
MST-700P-TX/RX
EXT-ADDR (0) - (4).
xWRITE-ex-EXT.
xREAD-EXT. xRESET-EXT
EXT-CPU-CLK. xRESET (CA)
AUTX-LRCK. AUTX-256FS
PLL1-1/2
24.576MHz
AB33_AD (0) - [15]
AB33_CLK.
AB33_WAIT/LB/UB.
AB33_WR/RD/ADV.
AB33_CS1_FRAM.
AB33_CS3_AT_PLD.
AB33_CS2_OPTION
AB33_A (1) - [16].
AB33_AD (0) - [15]
AB33_LB/UB
AB33_WR
AB33_RD
AB33_CS1_FRAM
AB33_ADV
32K-CLK
RTC_SDA.
RTC_SCL
UART0_TX/RX
USB_DP.
USB_DM
11.2896MHz
24MHz

Frame Wiring



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