SONY

HD COLOR CAMERA

HDC3300

HD SUPER MOTION

Digital HDVS Power HAD EX MEMORY STICK™

MAINTENANCE MANUAL

Volume 1 1st Edition

Serial No. 10001 and Higher: HDC3300 (SY)

Serial No. 40001 and Higher: HDC3300 (CE)

⚠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.

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。
使用済の電池は，説明書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.
Dispose of used batteries according to the manufacturer's instructions.

Vorsicht!

Explosionsgefahr bei unsachgemäßem Austausch der Batterie.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

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.
Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

ADVARSEL

Lithiumbatteri - Eksplosjonsfare.
Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten.
Brukt batteri returneres apparatleverandøren.

VARNING

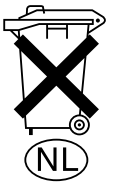
Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en likvärdig typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt gällande föreskrifter.

VAROITUS

Paristo voi räjähtää jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

Voor de klanten in Nederland

Gooi de batterij niet weg maar lever deze in als klein chemisch afval (KCA).



Für Kunden in Deutschland

Entsorgungshinweis: Bitte werfen Sie nur entladene Batterien in die Sammelboxen beim Handel oder den Kommunen. Entladen sind Batterien in der Regel dann, wenn das Gerät abschaltet und signalisiert “Batterie leer” oder nach längerer Gebrauchsdauer der Batterien “nicht mehr einwandfrei funktioniert”. Um sicherzugehen, kleben Sie die Batteriepole z.B. mit einem Klebestreifen ab oder geben Sie die Batterien einzeln in einen Plastikbeutel.

For the customers in Taiwan only

廢電池請回收

Table of Contents

Manual Structure

Purpose of this manual 3
Related manuals 3

1. Service Overview

1-1. Checking before Installation 1-1
1-1-1. Checking the ROM and Software Version 1-1
1-2. Connectors and Cables 1-2
1-2-1. Connector Input/Output Signals 1-2
1-2-2. Wiring Diagrams for Cables 1-6
1-2-3. Connection Connectors/Cables 1-7
1-2-4. Note in connecting CCU connector 1-7
1-3. Location of Printed Circuit Boards 1-8
1-4. Opening/Closing the Side Panel 1-9
1-5. Switch Settings 1-10
1-6. Notes for Replacing Parts 1-13
1-6-1. Notes for Replacing the Flexible Card Wire 1-13
1-6-2. Notes for Replacing the Board 1-14
1-6-3. Notes for Replacing the Connector on the Board 1-14
1-7. Cleaning the Vent Portion of the Fan 1-15
1-8. Cleaning of Connector/Cable 1-16
1-8-1. When the Optical Connector Cleaner (Commercially Available) is Available 1-16
1-8-2. When the Optical Connector Cleaner (Commercially Available) is not Available 1-17
1-9. Notes on Flexible Card Wire 1-18
1-9-1. Disconnecting/ Connecting Flexible Card Wire 1-18
1-9-2. Forming of the Flexible Card Wire 1-19
1-10. Notes on Replacement of Circuit Board 1-20
1-10-1. Description on EEPROM Data 1-20
1-10-2. Adjustment after Replacement of Board 1-20
1-11. How to Supply a Power of +12 V 1-20
1-12. Upgrading the Software 1-21
1-12-1. Upgrading the MAIN Program 1-21
1-12-2. Upgrading the Boot Program 1-22
1-13. Writing and Rewriting the PLD Internal Data 1-23
1-14. Note on Replacement of Lithium Battery 1-24
1-15. Periodic Maintenance and Inspection 1-25
1-15-1. Periodic Check/Replacement Parts 1-25
1-15-2. Recommended Replacing Parts 1-26
1-16. Description of CCD Block Number 1-27
1-17. Optional Fixtures 1-27
1-18. Notes on Repair Parts 1-27
1-19. Unleaded Solder 1-27

2. Replacement of Main Parts

2-1. Replacing the CCD Unit 2-1
2-2. Replacement of CCD Unit Boards 2-2
2-2-1. DR-566 Board 2-2
2-2-2. CN-2744 Board 2-2
2-2-3. PA-331 Board 2-3
2-2-4. TG-250 Board 2-3
2-2-5. CN-2743 Board 2-4
2-3. Replacing the Filter Disk Unit 2-4
2-4. Replacing the Fan 2-5
2-4-1. DC Fan (Front) 2-5
2-4-2. DC Fan (Rear) 2-6
2-4-3. Side Panel Fan (Outside) 2-7
2-5. Replacing the VF DISP Switches (SW-1237 Board) 2-8
2-6. Replacing the Side Switch Panel Assembly (SW-1240 Board) 2-9
2-7. Replacing the Connectors 2-9
2-7-1. EARPHONE Jack (CN-2640 Board) 2-9
2-7-2. DC IN Connector (CN-2623 Board) 2-10
2-7-3. INTERCOM 1/2 Connector (CN-2618 Board) 2-11
2-7-4. LENS Connector (CN-2616 Board) 2-11
2-7-5. MIC 1 IN Connector (CN-2615 Board) 2-12
2-7-6. REMOTE Connector (CN-2622 Board) 2-12
2-7-7. SDI 2 Connector 2-12
2-7-8. RET IN, TEST OUT Connector (CN-2620 Board) 2-13
2-7-9. PROMPTER2 Connector 2-13
2-7-10. BUILD UP Connector (Hot Shoe Assembly) 2-14
2-8. Replacing the Encapsulated Cable Assembly 2-15
2-9. Replacing the DC/DC Converter Unit 2-16
2-10. Replacing the Switching Regulator 2-17
2-11. Replacing the Boards 2-18
2-11-1. CN-2617 Board 2-18
2-11-2. MB-1059S Board 2-19

3. Electrical Alignment

3-1. Preparations 3-1
3-1-1. Equipment Required 3-1
3-1-2. Precautions on Adjustments 3-1
3-1-3. File Data at Adjustment 3-1
3-1-4. Maintaining the Grayscale Chart 3-2
3-1-5. Description on Setup Menu 3-4
3-1-6. Connection of Equipment 3-4
3-1-7. Initial Settings 3-5
3-1-8. Adjustment Items and Setup Menu Items 3-6
3-2. Automatic Adjustment 3-7
3-3. Electrical Adjustment 3-7
3-3-1. RPN Adjustment 3-7
3-3-2. CCD Block Gain Adjustment 3-8
3-3-3. White Shading Adjustment 3-8
3-4. Video System Level Adjustment 3-10
3-4-1. H/V Ratio Adjustment 3-10
3-4-2. Detail Level Adjustment 3-11
3-4-3. Crispening Adjustment 3-12
3-4-4. Level Dependent Adjustment 3-12
3-4-5. Detail Clip Adjustment 3-13
3-4-6. Auto-iris Adjustment 3-14
3-4-7. Pedestal Level Adjustment 3-14
3-4-8. Flare Adjustment 3-15
3-4-9. Gamma Correction Adjustment 3-15
3-4-10. Knee Point/Knee Slope Adjustment 3-16
3-4-11. White Clip Level Adjustment 3-17
3-4-12. File Store 3-17
3-5. ND Offset Adjustment 3-18

Manual Structure

Purpose of this manual

This manual is the maintenance manual Volume 1 for HD Color Camera HDC3300. This manual describes the information items that premise the service based on the components parts such as service overview, replacement of main parts, SERVICE menu, electrical alignment, assuming use of system and service engineers.

Related manuals

Besides this maintenance manual Volume 1 the following manual is available for this unit.

- **HDC3300 Operation Manual (Supplied with HDC3300)**
  This manual is necessary for application and operation of HDC3300.
  Part number: 3-992-725-0X

- **Maintenance Manual Volume 2 (Available on request)**
  Describes the parts list, semiconductor pin assignments, block diagrams, schematic diagrams and board layouts of HDC3300.
  Part number: 9-968-306-0X

- **“Semiconductor Pin Assignments” CD-ROM (Available on request)**
  This “Semiconductor Pin Assignments” CD-ROM allows you to search for semiconductors used in Broadcast and Professional equipment.
  The maintenance manual Volume 2 contains a complete list of semiconductors and their ID Nos., and thus should be used together with the CD-ROM.
  Part number: 9-968-546-0X

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 HDC3300, 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
MSU-700A/750	CPU-293/CPU-286	IC5, IC6/IC5, IC6	Ver. 1.30 or higher
CNU-700	AT-89 or AT-89A	IC4, IC5	Ver. 3.20 or higher
CNU-500	AT-100	IC4, IC5	Ver. 2.80 or higher
RCP-720/721	MPU-79	IC10	Ver. 2.90 or higher
RCP-730/731	MPU-79	IC10	Ver. 2.90 or higher
RCP-740/741	MPU-79	IC10	Ver. 2.90 or higher
RCP-700/701	MPU-92	IC6	Ver. 2.90 or higher
RM-B150	CPU-266	IC4	Ver. 1.00 or higher

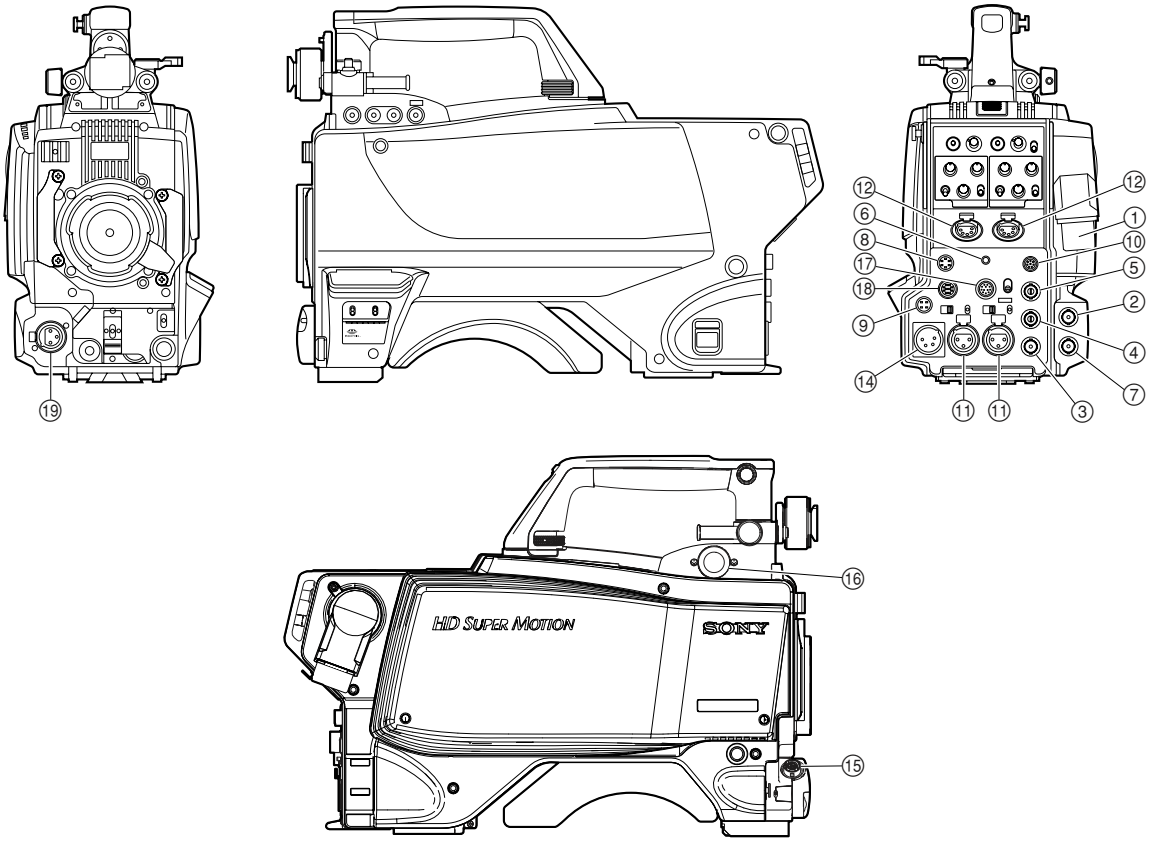
Software

Peripheral equipment	Board name	Software version
MSU-900/950	CPU-396	Ver. 1.02 or higher
RCP-750/751	MPU-123	Ver. 1.21 or higher
RM-B750	MPU-124	Ver. 1.00 or higher
HDCU3300	AT-167S	Ver. 1.00 or higher

1-2. Connectors and Cables

1-2-1. Connector Input/Output Signals

Connector Layout



Input/Output Signals

① CCU connector
10.692/10.681 Gbps serial

Output Signals

② Not used

③ SDI 2
BNC type 75 Ω, 0.8 V p-p
HD SDI signal
SMPTE 292M compliant
or
SD SDI signal
SMPTE 259M compliant

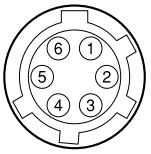
④ TEST OUT
BNC type 75 Ω, 1.0 V p-p

⑤ PROMPTER1 OUT
BNC type 75 Ω, 1.0 V p-p

⑥ EARPHONE OUT
EARPHONE mini jack

⑦ PROMPTER2 OUT
BNC type 75 Ω, 1.0 V p-p

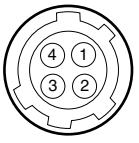
⑧ RET CONTROL (6P FEMALE)



(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

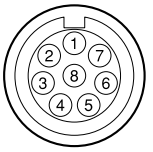
⑨ DC OUT (4P FEMALE)



(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)

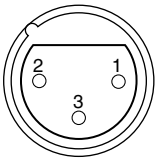
⑩ REMOTE (8P FEMALE)



(External view)

No.	Signal	I/O	Specifications
1	TX (+)	OUT	SERIAL DATA OUT
2	TX (–)	OUT	/TRUNK1 DATA OUT (for RS422A)
3	RX (+)	IN	SERIAL DATA IN
4	RX (–)	IN	/TRUNK1 DATA IN (for RS422A)
5	TX-GND	——	GND for TX
6	POWER (+) OUT	OUT	+26 V, 200 mA (max)
7	POWER (–) OUT	——	GND for UNREG-OUT
8	VIDEO (X)	OUT	75 Z, 1.0 V p-p (SD Video)
	CHASSIS GND	——	CHASSIS GND

⑪ AUDIO IN CH1/CH2 (3P FEMALE)

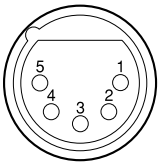


(External view)

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

(0 dBu = 0.775 Vrms)

⑫ INTERCOM 1/2 (5P FEMALE)

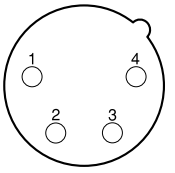


(External view)

No.	Signal	I/O	Specifications
1	EXT-INCOM-T (Y)	IN	−20 dBu (CARBON MIC)
2	EXT-INCOM-T (X)	IN	−60 dBu (DYNAMIC MIC)
3	GND	——	
4	EXT-INCOM-LEFT (X)	OUT	0 dBu
5	EXT-INCOM-RIGHT (X)	OUT	0 dBu

(0 dBu = 0.775 Vrms)

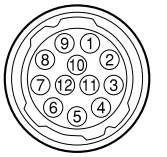
⑭ DC IN (4P MALE)



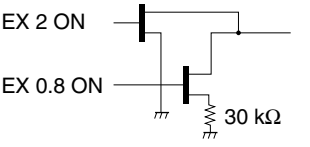
(External view)

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 to 17 V dc

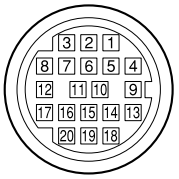
⑮ LENS (12P FEMALE)



(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	(LENS TX)	OUT	

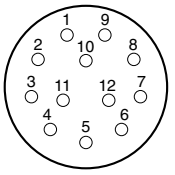
⑯ VF (20P FEMALE)



(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
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

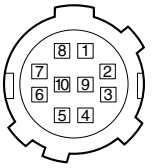
⑰ CRANE (12P FEMALE)



(External view)

No.	Signal		I/O	Specifications
1	Pr VIDEO (X)		OUT	±0.35 V p-p, Zo = 75 Ω
2	Pb VIDEO (X)		OUT	±0.35 V p-p, Zo = 75 Ω
3	NC			No connection
	for RS422A	for RS232C		
4	TX0 (+)	TX1	OUT	TRUNK Data out
5	TX0 (–)	TX0	OUT	
6	RX0 (–)	RX0	IN	TRUNK Data in
7	RX0 (+)	RX1	IN	
8	GND (VIDEO)		——	GND for VIDEO
9	Y VIDEO (X)		OUT	1.0 V p-p, Zo = 75 Ω
10	GND		——	GND for SCL/SDA
11	SCL EXT-VF		OUT	TTL level
12	SDA EXT-VF		IN/OUT	TTL level

⑱ TRACKER (10P FEMALE)

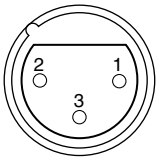


(External view)

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
8	TRACKER TALK (Y)	IN	High impedance balanced
9	G TALLY	OUT	ON : GND OFF : High impedance (Open collector)
10	R TALLY	OUT	ON : GND OFF : High impedance (Open collector)

(0 dBu = 0.775 Vrms)

⑲ MIC 1 IN (3P FEMALE)



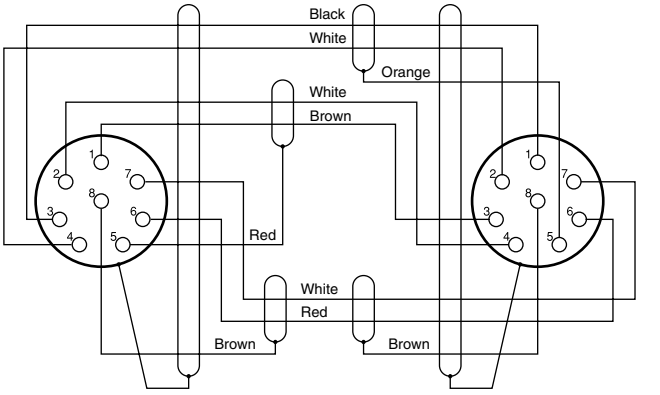
(External view)

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

(0 dBu = 0.755 Vrms)

1-2-2. Wiring Diagrams for Cables

CCA-5 Cable



— 8P CONNECTOR (MALE) —
(WIRING SIDE)

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.

Indication	Connection connector/cable
TEST OUT PROMPTER OUT SDI 2 (BNC)	1-569-370-12 Plug, BNC
AUDIO IN CH1/CH2 MIC 1 IN (3P FEMALE)	1-508-084-00 XLR, 3P Male or ITT Cannon XLR-3-12C equivalent
RET CONTROL (6P FEMALE)	1-560-078-00 Plug, 6P Male or HIROSE HR10-7PA-6P equivalent
DC OUT (4P FEMALE)	1-566-425-11 Plug, 4P Male or HIROSE HR10A-7P-4P equivalent
INTERCOM 1/2 (5P FEMALE)	1-508-370-11 XLR, 5P Male or ITT Cannon XLR-5-12C equivalent
DC IN (4P MALE)	1-508-362-00 XLR, 4P Female or ITT Cannon XLR-4-11C equivalent, or Cable assembly 1-551-577-00 (Supplied with AC-550/550CE)
CRANE (12P FEMALE)	1-819-261-11 Connector, Round Type 12P
REMOTE (8P FEMALE)	• 1-766-848-11 Plug, 8P Male or CCA-5 cable assembly (CCA-5-10 (10 m) /CCA-5-3 (3 m)) (option) ∗2 ∗3 • REMOTE cable 1-783-372-11 (supplied with RM-B150, 10 m) ∗1 ∗2 ∗3
TRACKER (10P FEMALE)	1-506-522-12 Connector, Round Type 10P

∗1: 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.

∗2: If using a cable of length different from a standard product, contact your local Sony Sales Office/Service Center.

Note

∗3: The pin 8 of CCA-5 cable is GND (ground).
The pin 8 of REMOTE cable is not GND (ground).

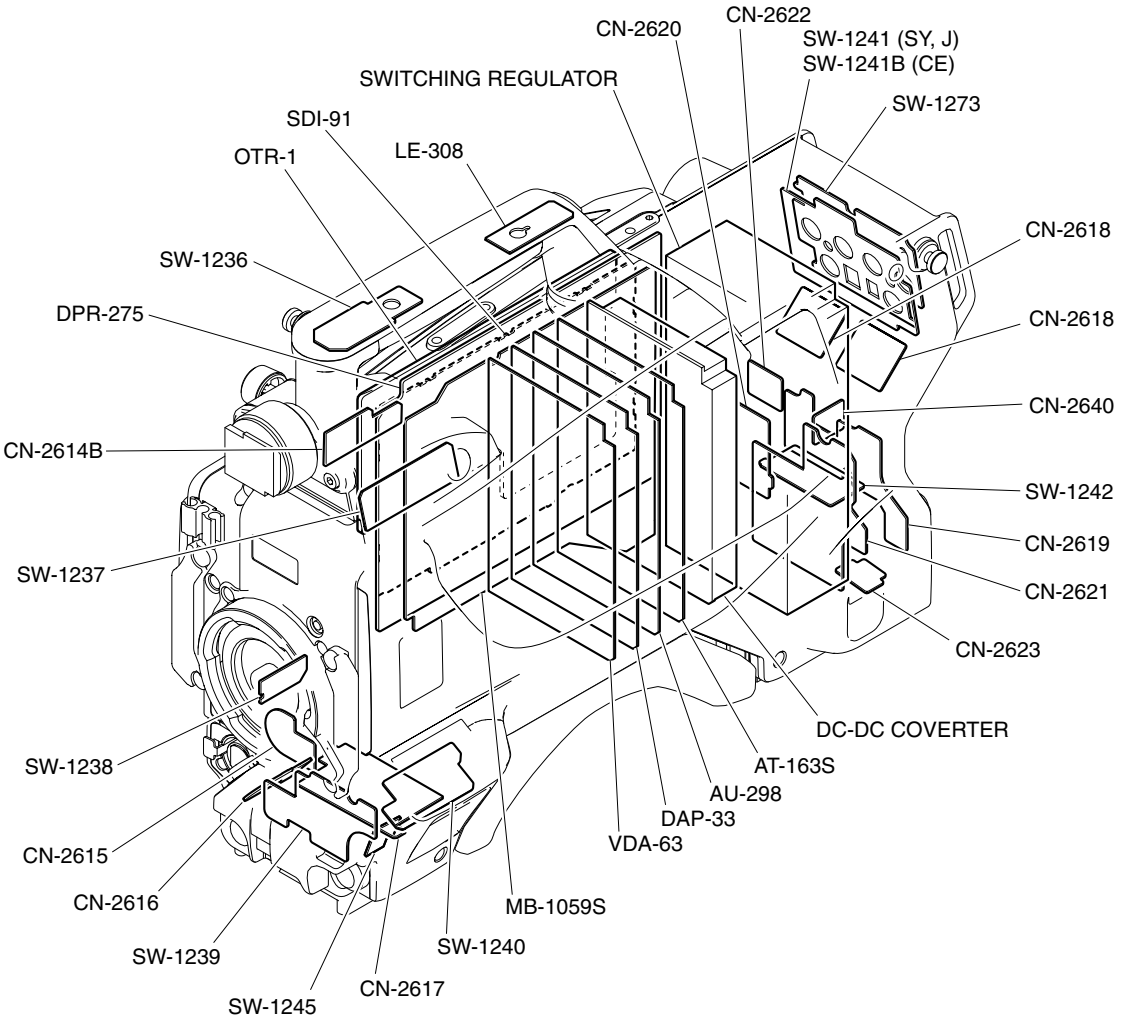
1-2-4. Note in connecting CCU connector

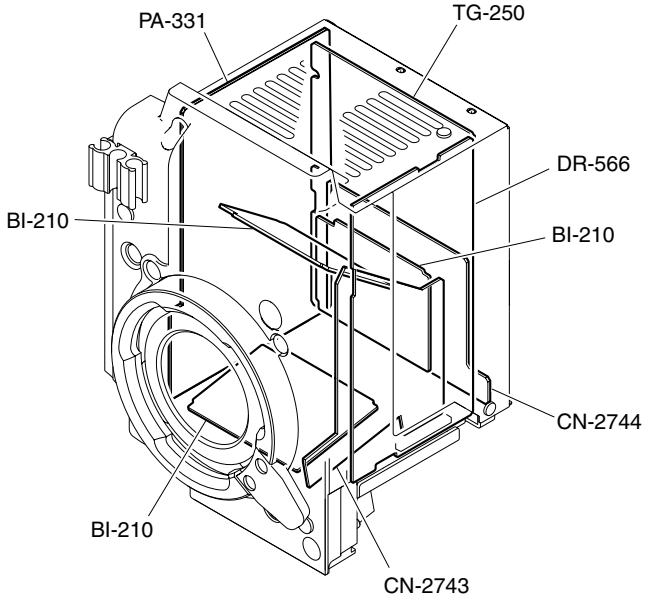
It is recommendable to clean the optical contact portions mentioned below before connecting this unit to the camera control unit.

- CCU connector of this unit
- Camera connector of the camera control unit
- Optical/Electrical cable

For details on a cleaning method, refer to Section 1-8 “Cleaning of Connector/Cable”.

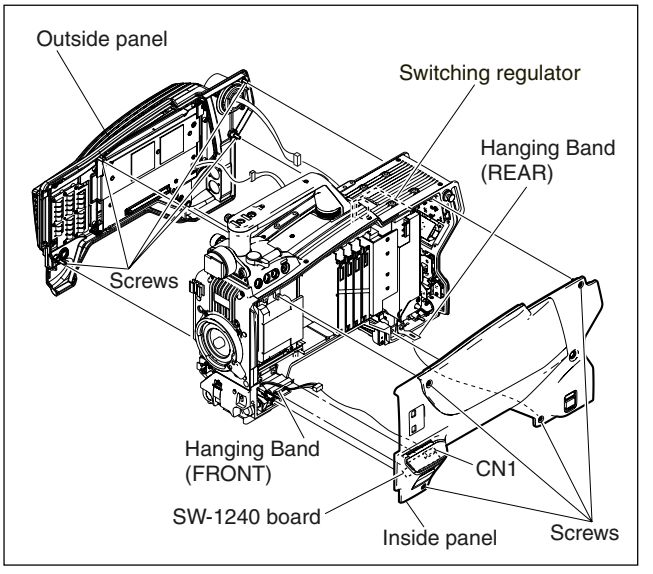
1-3. Location of Printed Circuit Boards





1-4. Opening/Closing the Side Panel

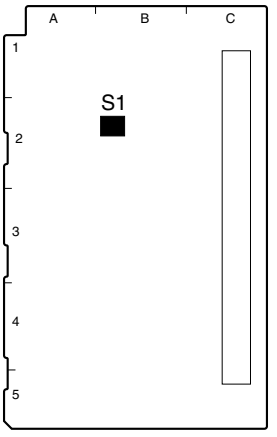
1. Unscrew the nine screws as shown in the figure, then open the inside panel and outside panel.
2. Release the hanging band (FRONT) and hanging band (REAR) from the inside panel.
3. Disconnect the harness from the connector (CN1) on the SW-1240 board, and remove the inside panel.
4. Disconnect the harness from the switching regulator connector and disconnect the harness from the connector on the SDI-91 board of the outside panel, and remove the outside panel.



5. Reinstall the panels by reversing the steps above.

1-5. Switch Settings

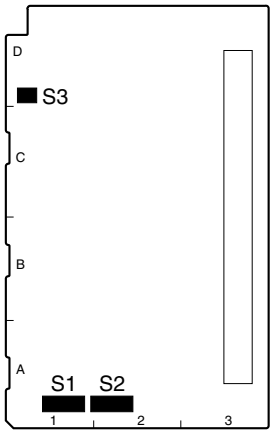
AT-163S Board



AT-163S BOARD (SIDE A)

Ref. No.	Name	Description	Factory setting
S1-1	Reserve	Not used (Fixed to OFF)	OFF
S1-2	All Preset	FRAM clear	OFF
S1-3	Reserve	Not used (Fixed to OFF)	OFF
S1-4	Firmware Load	Forcibly upgrading of firmware	OFF

AU-298 Board



AU-298 BOARD (SIDE A)

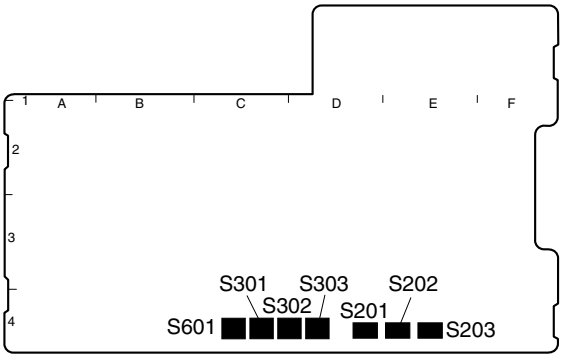
Ref. No.	Name	Description	Factory setting
S1	Reserve	Not used (Fixed to OFF)	NORM
S2	Reserve	Not used (Fixed to OFF)	NORM
S3-1	AB POWER MIC1	Switch ON to supply +12 V for MIC POWER to the microphone connected to the AUDIO IN CH1 connector.	OFF
S3-2	AB POWER MIC2	Switch ON to supply +12 V for MIC POWER to the microphone connected to the AUDIO IN CH2 connector.	OFF

DPR-275 Board

DPR-275 BOARD (SIDE A)

Ref. No.	Name	Description	Factory setting
S1	Reserve	Not used (Fixed to OFF)	OFF

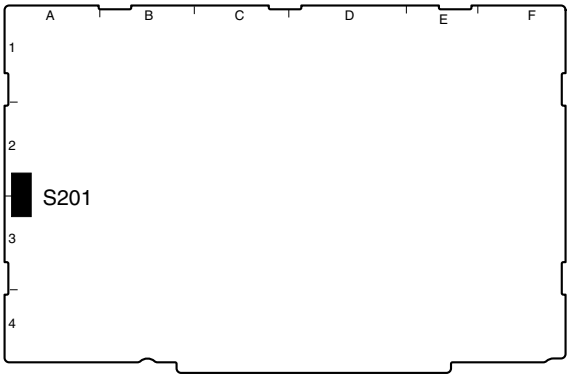
OTR-1 Board



OTR-1 BOARD (SIDE A)

Ref. No.	Name	Description	Factory setting
S201	GCNTRST	CRC error flag clear	OFF
S202	GRST	Data system reset	OFF
S203	DCMRST	Clock system reset	OFF
S301-1	LED Display	LED display	OFF
S301-2	LED Function1	Function select of LED display (D301 to 316)	OFF
S301-3	LED Function2	Function select of LED display (D201 to 208)	OFF
S301-4	Reserve	Not used (fixed to OFF)	OFF
S302-1 to 4	Reserve	Not used (fixed to OFF)	OFF
S303-1 to 4	Reserve	Not used (fixed to OFF)	OFF
S601-1	SEL0	Mode select of CAMERA/CCU (fixed to OFF)	OFF
S601-2	SEL1	Mode select of CAMERA/CCU (fixed to OFF)	OFF
S601-3	EN EXT	External mode select: Enable (fixed to OFF)	OFF
S601-4	CFG MODE	Configuration mode select: controller/ controlled (fixed to OFF)	OFF

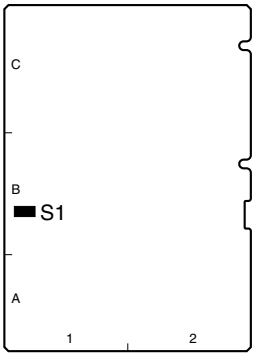
SDI-91 Board



SDI-91 BOARD (SIDE A)

Ref. No.	Name	Description	Factory setting
S201-1	Test	TEST MODE	OFF
S201-2	Prompter2	Prompter output: Active	ON
S201-3 to 8	Reserve	Not used (Fixed to OFF)	OFF

TG-250 Board



TG-250 BOARD (SIDE A)

Ref. No.	Name	Description	Factory setting
S1	Test	Not used	OFF

1-6. Notes for Replacing Parts

There are two kinds of types in the parts below used in this unit.
- Flexible card wires (Refer to Section 1-6-1.)
- Boards (Refer to Section 1-6-2.)
- Connectors on the board (for flexible card wires) (Refer to Section 1-6-3.)

When replacing the parts above, be sure to follow the instructions described in "1-6-1. Notes for Replacing the Flexible Card Wire", "1-6-2. Notes for Replacing the Board", and "1-6-3. Notes for Replacing the Connector on the Board".
Be sure to use the specified parts. Using un-specified parts causes the change in the characteristics of this unit and the unit does not work properly.
Spare parts are listed in the spare parts list of "Spare Parts" Section. In the spare parts list, (GOLD) or (SILVER) is put after each part name to distinguish two kinds of types (gold and silver).

1-6-1. Notes for Replacing the Flexible Card Wire

When replacing the flexible card wires listed below, confirm the conductive (terminal) part color of the flexible card wires and follow the procedure below.

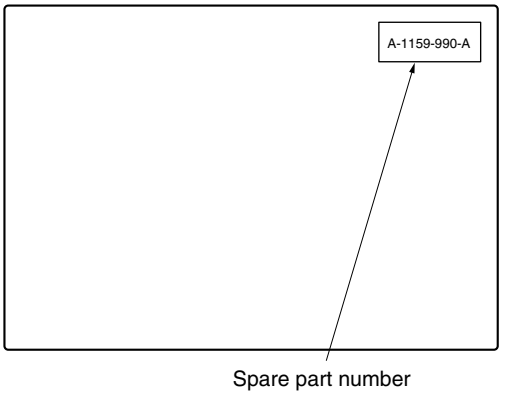
1. Replace the flexible card wire with a flexible card wire whose conductive part is gold when the conductive part of a flexible card wire is gold.
   Note
   For the board on which a connector whose contact surface is gold is used, "G" is put after the board name by silk-screen printing or a "G" seal is attached to the empty space on the board. Example: CN-2619G

2. Replace the flexible card wire with a flexible card wire whose conductive part is silver when the conductive part of a flexible card wire is silver. In this case, silk "G" or a "G" seal is not put on the board name.

Board	Flexible card wire		Board
	Pin	Gold : Parts No.	
CN-2619G	40	1-831-662-11	MB-1059G
CN-2621G	36	1-831-663-11	MB-1059G
MB-1059G	36	1-831-661-11	SW-1273G
CN-2744	40	1-831-658-11	PA-331
CN-2744	30	1-831-656-11	DR-566
DR-566	50	1-831-660-11	TG-250

1-6-2. Notes for Replacing the Board

Replace the board with a board of the same number as the spare part number of the board to be removed when replacing a board.
Example: A spare part number is put on the board.



A spare part number is put on side A or B of the board by silk-screen printing or a spare part code label (spare part number) is attached on side A or B.

1-6-3. Notes for Replacing the Connector on the Board

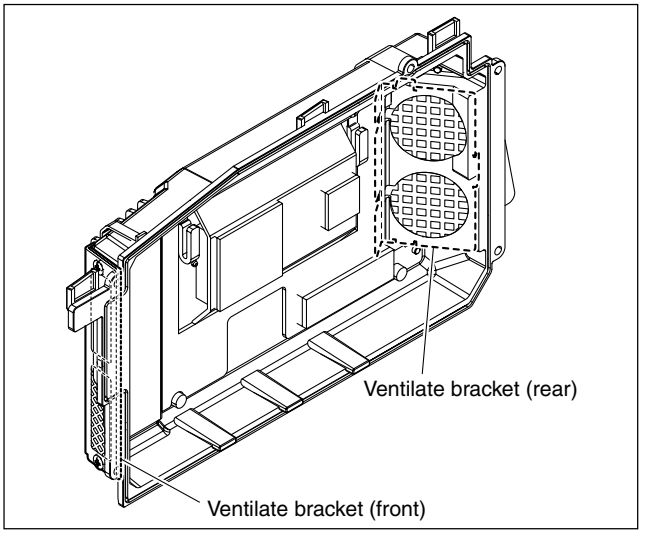
There are two types of connectors for the flexible card wire mounted on the board used in this unit. Distinguish them in the procedure below when replacing these connectors.

1. The contact surface of the connector used for a board is gold when the conductive part of a flexible card wire is gold.
   In a spare parts list, (GOLD) is put after the part name.
2. The contact surface of the connector used for a board is silver when the conductive part of a flexible card wire is silver.
   In a spare parts list, (SILVER) is put after the part name.

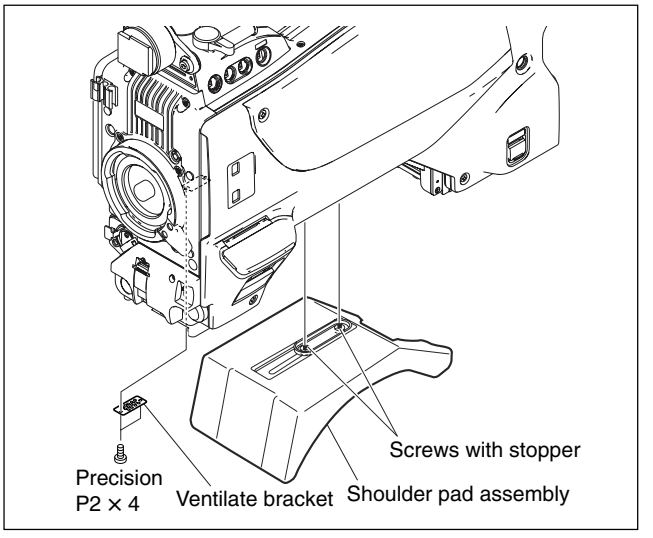
1-7. Cleaning the Vent Portion of the Fan

The ventilate bracket for preventing from dust is attached in the vent portion of the fan. Clean the ventilate bracket every two or three months. Clogging may cause the temperature increases inside the camera and result in a trouble.

1. Remove the heat sink sub assembly.
   (Refer to Section 2-4-3. step 1 to 4)
2. Remove dust on the front and rear ventilate bracket with a vacum cleaner.



3. Loosen the two screws with stopper, and remove the shoulder pad assembly.
4. Remove the two screws, and remove the ventilate bracket.
5. Remove dust on the ventilate bracket with a vacuum cleaner.



1-8. Cleaning of Connector/Cable

The photo receptive condition of the optical connector can be checked at OPTICAL CONDITION of the DTX board of the camera control unit.

When lit in green: Normal (−10.5 dBm or above)
When lit in yellow: Normal (−10.5 to −13.5 dBm)
When lit in red: Abnormal (Less than −13.5 dBm)

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 between the camera and HDCU. In the case of attenuation, be sure to clean optical contact portions proceeding as follows. The optical contact portions exist in the optical connector on the camera or HDCU, and in the optical/electrical cables.

1-8-1. When the Optical Connector Cleaner (Commercially Available) is Available

Tools required

- 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

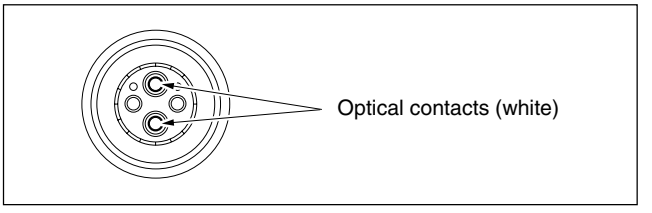
Notes

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

Cleaning procedure

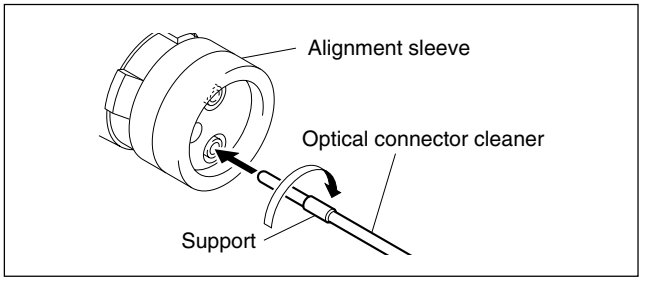
[Male connector]

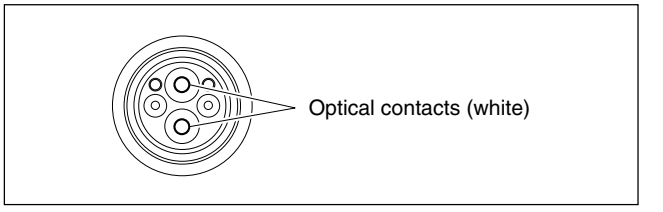
Clean the tip of the white optical contacts using the optical connector cleaner.



[Female connector]

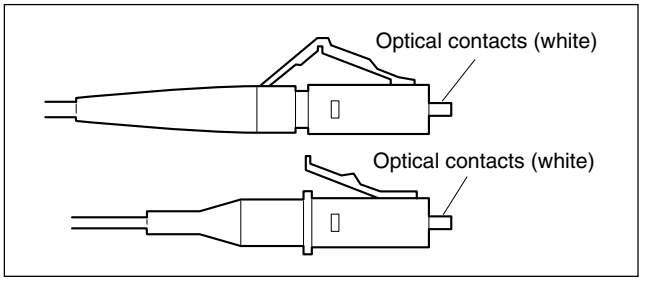
1. Insert the optical connector cleaner straight. Ensure that it is held straight when inserting.
2. Apply sufficient pressure (approximately 600 g to 700 g) to ensure that the optical contact is a little depressed.
3. While pressing the optical connector cleaner against the tip of the optical contact, 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.





[LC type connector]

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



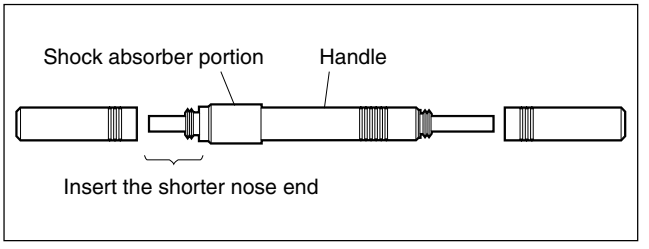
1-8-2. When the Optical Connector Cleaner (Commercially Available) is not Available

Tools required

- Alignment sleeve remover HC-001
  (for female connector)
  Sony P/N: J-6480-010-A

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)

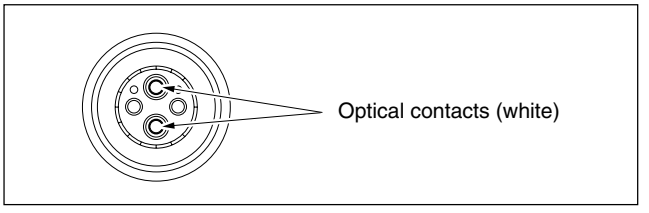
Note

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]

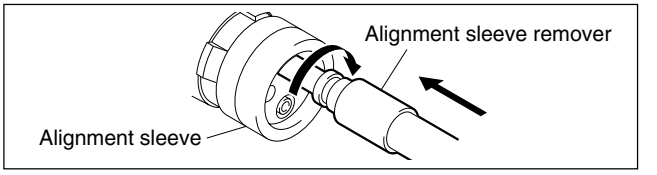
Clean the tip of the white optical contacts by a cotton swab moistened with alcohol.



[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.

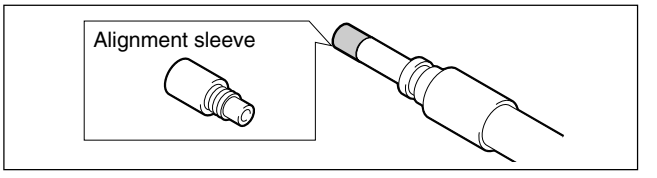
1. Insert the alignment sleeve remover into the alignment sleeve in the straight line and turn it clockwise.



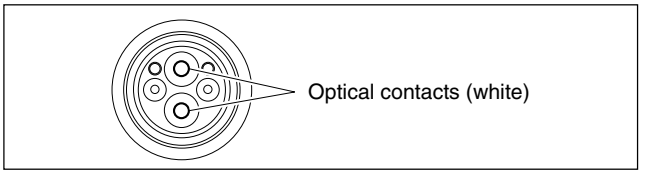
2. When the turn stops, pull out the remover in the straight line forcedly.

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 P/N 9-980-074-01)



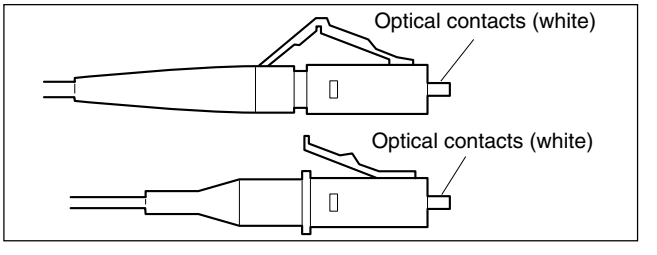
3. Clean the tip of the white optical contacts by a cotton swab moistened with alcohol.



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.

[LC type connector]

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



1-9. Notes on Flexible Card Wire

1-9-1. Disconnecting/Connecting Flexible Card Wire

The flexible card wires are used between the boards of HDC3300. Take care not to bend forcedly these flexible card wires. This shortens the wire life.

Between CN-2744 and DR-566
Between CN-2744 and PA-331
Between TG-250 and DR-566
Between MB-1059S and CN-2619
Between MB-1059S and CN-2621
Between MB-1059S and SW-1273

Type-A

Disconnecting

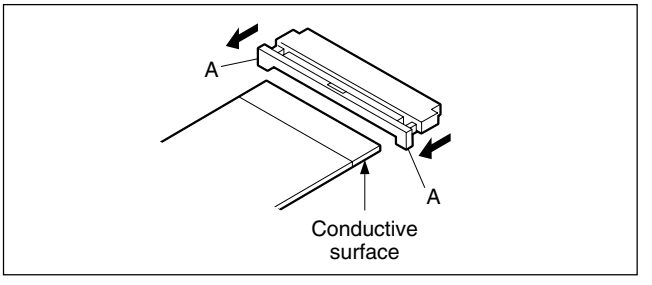
Slide portions A in the direction of the arrow to unlock and pull out the flexible card wire.

Connecting

Notes

- Be careful not to insert the flexible card wire obliquely.
- Check that the conducive surface of the flexible card wire is not soiled with dust.

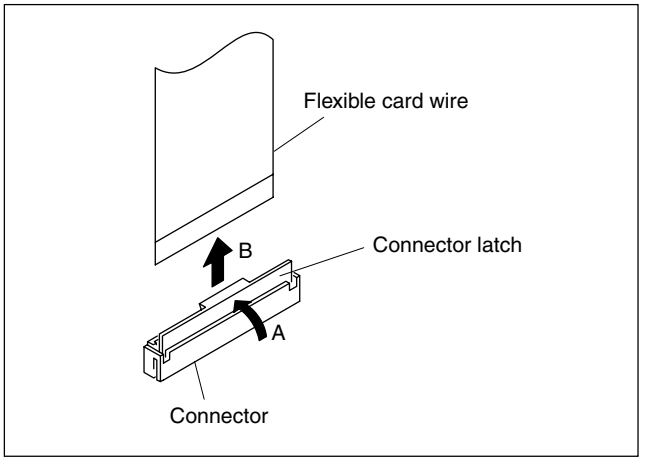
1. Slide portions A in the direction of the arrow and insert the flexible card wire with the conductive surface downward as far as it will go.
2. Slide portions A in the reverse direction to lock.



Type-B

Disconnecting

1. Open the connector latch in the direction of arrow A to release the lock.
2. Remove the flexible card wire in the direction of arrow B.

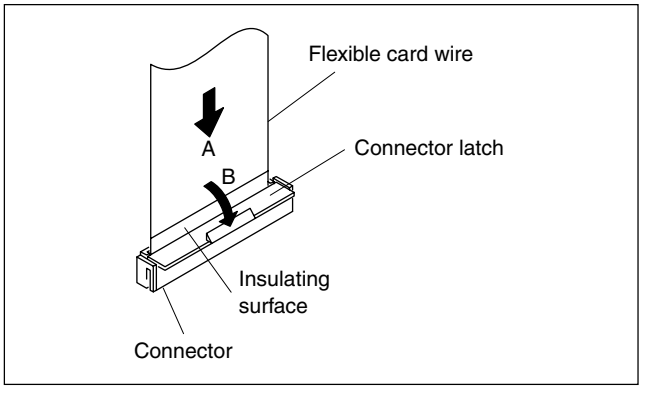


Connecting

Notes

- Be careful not to insert the flexible card wire obliquely.
- Check that the conducive surface of the flexible card wire is not soiled with dust.

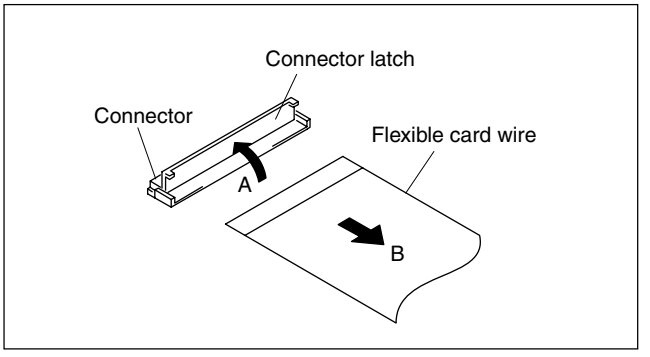
1. Hold the flexible card wire with its insulating surface facing to the front, and insert it in the direction of arrow A.
2. Close the connector latch in the direction of arrow B to lock it.



Type-C

Disconnecting

1. Open the connector latch in the direction of arrow A to release the lock.
2. Remove the flexible card wire in the direction of arrow B.

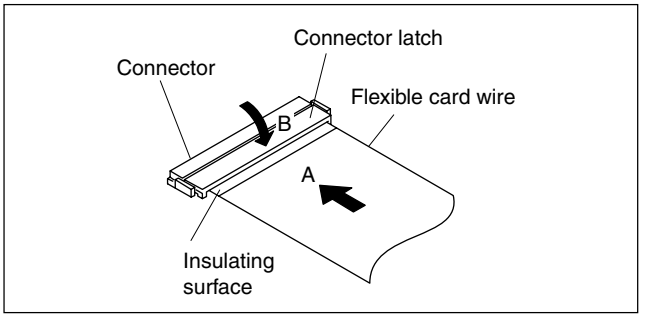


Connecting

Notes

- Be careful not to insert the flexible card wire obliquely.
- Check that the conducive surface of the flexible card wire is not soiled with dust.

1. Hold the flexible card wire with its insulating surface facing upward, and insert it in the direction of arrow A.
2. Close the connector latch in the direction of arrow B to lock it.



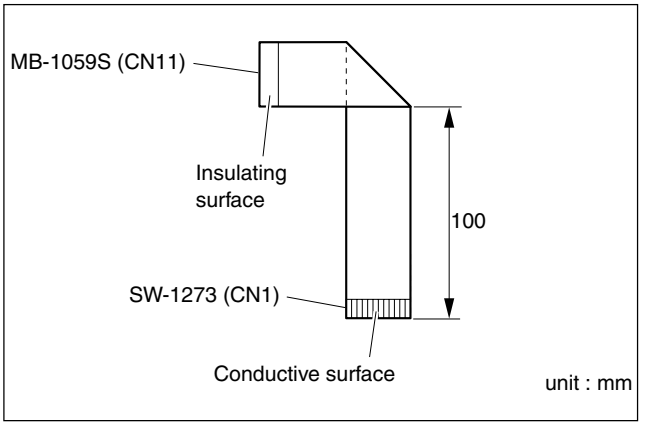
1-9-2. Forming of the Flexible Card Wire

If using a new flexible card wire, be sure to fold it by hand it as shown in the figure before installation.

Note

Never fold it back after being formed once.

MB-1059S board CN11 ↔ SW-1273 board CN1



1-10. Notes on Replacement of Circuit Board

1-10-1. Description on EEPROM Data

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

Board	Ref. No.	Stored data
AT-163S	IC133, IC139, IC141, IC142	Board adjustment data (VDA, DPR), and paint data
	IC403	PLD data
TG-250	IC6	PLD data
	IC39	RPN compensation data
	IC40	CCD adjustment data
AU-298	IC11, IC12, IC13	Status of the stand by intercom
SDI-91	IC212	PLD data
VDA-63	IC109	PLD data
DAP-33	IC202	PLD data
DPR-275	IC405	PLD data

Notes

- When the replacement is needed, remove the IC attached to the former board and replace it to the new board.
- The IC listed above cannot be replaced because it is the EEPROM that is the storing data inherent in the board. The part number listed in “Spare Parts” is for EEPROM which is not programmed. If replacement is needed, contact your local Sony Sales Office/Service Center.

1-10-2. Adjustment after Replacement of Board

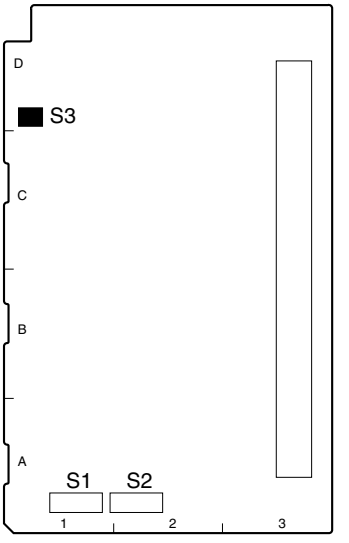
When replacing or repairing the board, perform the electrical alignment referring to Section 3.

1-11. How to Supply a Power of +12 V

HDC3300 can supply +12 V for MIC POWER to the microphone connected to the AUDIO IN connector.

Setting Procedure

Set the switch S3 on the AU-298 board to ON, and set on the MIC POWER switch of AUDIO IN connector referring to the Operation Manual.



AU-298 BOARD (SIDE A)

Ref. No.	Contents
S3-1	Switch ON to supply +12 V for MIC POWER to the microphone connected to the AUDIO IN CH1 connector.
S3-2	Switch ON to supply +12 V for MIC POWER to the microphone connected to the AUDIO IN CH2 connector.

1-12. Upgrading the Software

The ROM (IC109 and IC301 on the AT-163S board) version can be upgraded using the Memory Stick.
For upgrading the software, follow the procedure shown below.

1-12-1. Upgrading the MAIN Program

Tool

Memory stick

Preparation

Copy the upgrading program to the Memory Stick in the following steps.

Note

To get the upgrading program (program files "hdc1000.rom" and "boot.rom"), contact your local Sony Sales Office/Service Center.

(1) Make the following directory on the Memory Stick.
¥MSSONY¥PRO¥CAMERA¥HDC1000

(2) Copy the program files "hdc1000.rom" and "boot.rom" to the directory made by step (1).

Procedures

1. Insert the Memory Stick in which the upgrading program is already saved.
2. Turn on the power while pressing the RET 2 button on the camera front and rotary encoder simultaneously. The upgrading status is displayed on the screen of the view finder.
3. When the version upgrade is completed, the message "Complete" will be displayed.

1-12-2. Upgrading the Boot Program

Tools

- Memory Stick
- ROM-28 board: (Sony Part No. : A-8326-017-A)
- Extension board EX-738: (Sony Part No. : A-8327-351-A)

Preparation

1. Copy the upgrading program to the Memory Stick in the following steps.

   Note

   To get the upgrading program (program files "hdc1000.rom" and "boot.rom"), contact your local Sony Sales Office/Service Center.

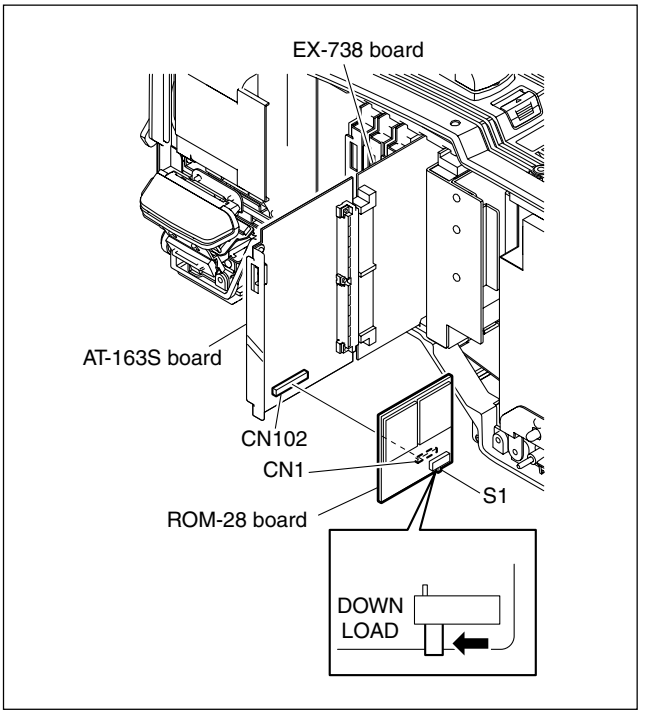
   (1) Make the following directory on the Memory Stick.
   ¥MSSONY¥PRO¥CAMERA¥HDC1000

   (2) Copy the program files "hdc1000.rom" and "boot.rom" to the directory made by step (1).

2. Save the upgrading Boot program in the ROMs H (IC2) and L (IC3) on the ROM-28 board.

   Note

   For details of saving the upgrading program, contact your local Sony Sales Office/Service Center.



Procedures

1. Open the inside panel. (Refer to Section 1-4.)
2. Extend the AT-163S board using the EX-738 board.
3. Insert the Memory Stick in which the upgrading program is already saved.
4. Connect the connector CN1 on the ROM-28 board to the connector CN102 on the AT-163S board.
5. Set the switch S1 on the ROM-28 board to DOWN LOAD side.
6. Turn on the power.
   The upgrading status is displayed on the screen of the view finder.
7. When the version upgrade is completed, the message "Complete" will be displayed.
8. Turn off the power, and remove the ROM-28 board.
9. Put back the AT-163S board to the original position.
10. Turn on the power. The unit will start with the boot program upgraded.

1-13. Writing and Rewriting the PLD Internal Data

This unit uses the PLD (Programmable Logic Device) that supports the e-Production (EPR) system 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 "Section 1. Spare Parts" of Maintenance Manual Volume 2.
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.

e-Production system has the advantages shown below.

- To write/rewrite the PLD internal data:
  1. The standard fixture (cable) can be used.
  2. The standard software (PLD Download Tool) can be used.
- The PLD internal data is controlled in the Sony Database Server under the name of Project file (E_xxx_xxx_xx_xx).
- The printed circuit board is equipped with the standard connector (EPR connector) to write the PLD internal data. The indication "EPR" is shown on the printed circuit board.

Corresponding PLD

PLD (Ref No./board name)	EPR connector (Ref No./board name)	Project file No.
IC404/AT-163S IC403/AT-163S ∗1	CN401/AT-163S	∗6 E_000_001_88_11
IC201/DAP-33 IC202/DAP-33 ∗2	CN2/DAP-33	∗6 E_000_001_89_15
IC408/SDI-91 IC212/SDI-91 ∗3	CN202/SDI-91	∗6 E_000_002_03_04
IC9/TG-250 IC6/TG-250 ∗4	CN2/TG-250	∗6 E_000_002_05_04
IC110/VDA-63 IC109/VDA-63 ∗5	CN100/VDA-63	∗6 E_000_001_90_13
IC1/DPR-275 (PLD) IC405/DPR-275 (ROM)	CN11/DPR-275	∗6 E_000_002_04_02

∗1: IC403/AT-163S is the ROM for IC404/AT-163S.
∗2: IC202/DAP-33 is the ROM for IC201/DAP-33.
∗3: IC212/SDI-91 is the ROM for IC408/SDI-91.
∗4: IC6/TG-250 is the ROM for IC9/TG-250.
∗5: IC109/VDA-63 is the ROM for IC110/VDA-63.
∗6: The file name changes when upgrading.

Equipment required

- PLD download fixture
  (Sony part number: J-7120-140-A)
  The cable to connect PC to this unit.
- PC
  A PC having parallel port.
  A PC in which the PLD Download Tool software is already installed.
  For the applicable OS and the operating environment, refer to "Download Tool Operating Instruction for Device Programming".

Data writing procedure

Data writing procedure in the PLD (or ROM for PLD) is outlined below.
For details of data writing procedure, refer to "Download Tool Operating Instruction for Device Programming", which is available in the same site where the PLD Download Tool software is available.

1. Prepare the Project file.
   Note
   Download the Project file from the Sony Database Server.

2. Turn off the power of this unit. Connect the PC parallel port to the EPR connector of the target board using the PLD download fixture (cable).
3. Turn on the power of this unit.
   Start the Download Tool software and read the Project file.
4. Program the PLD (or ROM for PLD) with the Download Tool software.
5. Upon completion of programming, check that error message is not displayed. Turn off the power of this unit and back on.

1-14. Note on Replacement of Lithium Battery

A lithium battery is mounted on the DAP-33 board to back up Real Time Clock (RTC).
If a battery comes to the lifetime, then RTC stops.
Therefore the battery replacement is required.

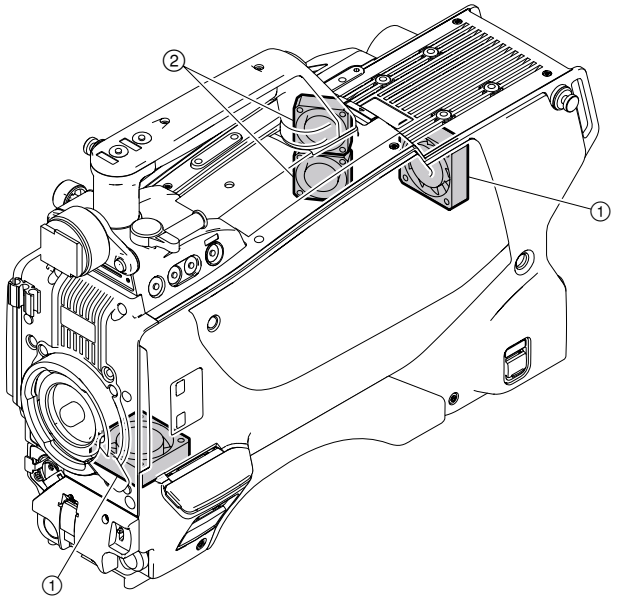
DAP-33 board/CR2032 : Sony part No. (1-528-174-11)

CAUTION
In replacing, ensure that the battery is installed with "+" and "−" poles connected to the correct terminals.
An improper connection may cause an explosion or leakage of fluid.

1-15. Periodic Maintenance and Inspection

1-15-1. Periodic Check/Replacement Parts

This table does not describe the guarantee period of each part.
The replacement period of each part is changed according to the environment and condition.



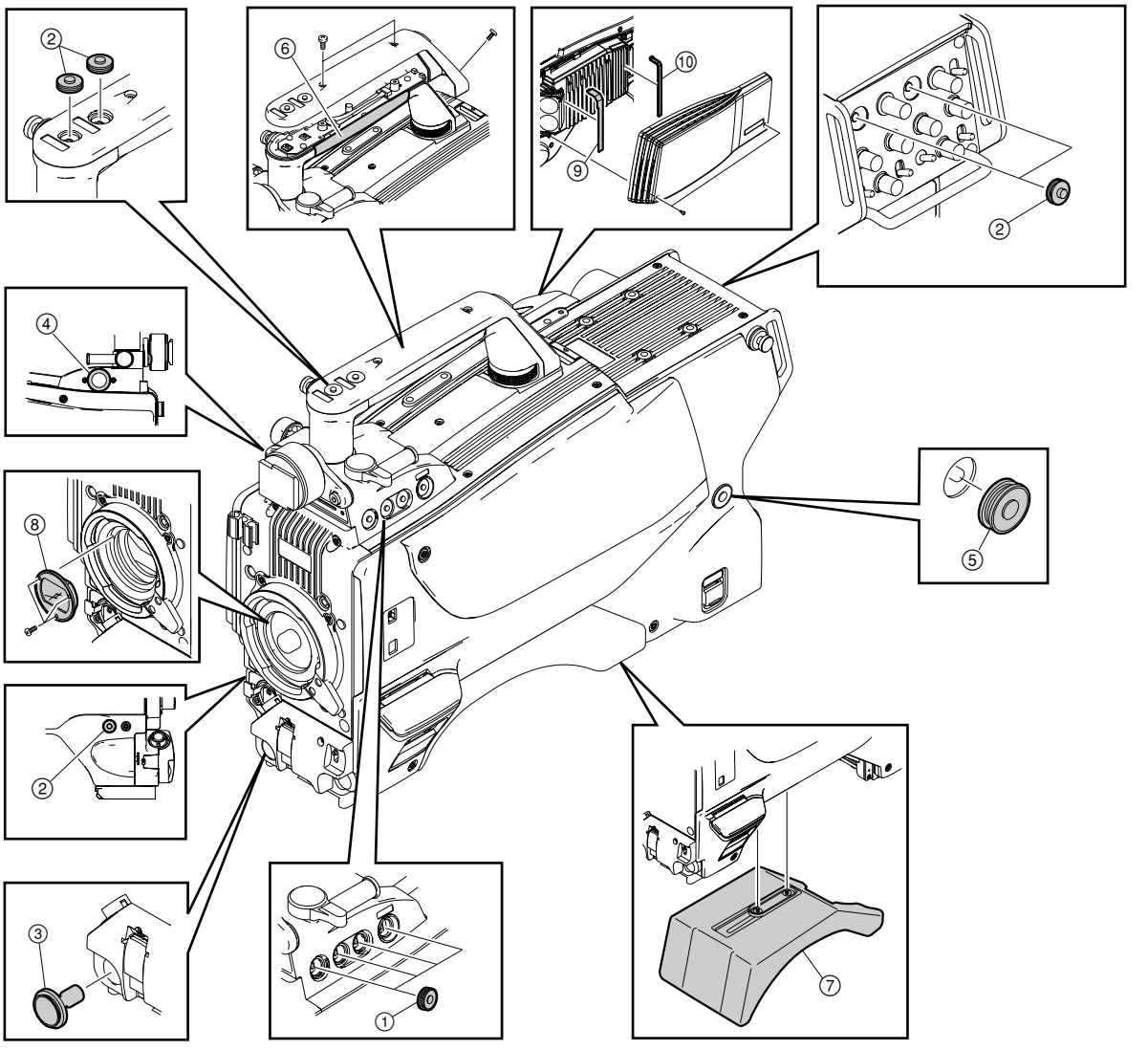
No.	Description	Sony Part No.	Check/ Replacement Period
①	FAN, DC (41 SQUARE)	1-787-070-11	Replace every two years*
②	FAN, DC (30 SQUARE)	1-787-554-11	Replace every two years*

*: When used for eight hours a day.

1-15-2. Recommended Replacing Parts

Following parts are recommended replacing parts. The optical filter unit may become clouded with the lapse of time. By such a cloudy optical filter unit, the characteristics of this camera could not fully exploited, therefore replace it if necessary.
Besides, the parts made of rubber used for this camera may become cracked and split with the lapse of time, therefore also replace it if necessary.

No.	Description	Sony Part No.
①	COVER, SWITCH	3-676-244-0X
②	COVER, SWITCH	3-676-244-2X
③	BUTTON, VTR START	3-679-668-0X
④	PACKING, VF	3-710-024-0X
⑤	CALL COVER	3-857-347-0X
⑥	SHEET, HANDLE	3-872-563-0X
⑦	PAD ASSY, SHOULDER	A-8286-163-X
⑧	FILTER UNIT, OPTICAL	1-758-483-11
⑨	SHEET (L), DROP PROTECTION	3-992-810-02
⑩	SHEET (L), DROP PROTECTION	3-992-811-02



1-16. Description of CCD Block Number

Every CCD unit has its own ID number called CCD block number. It shows the CCD block type and serial number for the CCD block.
The CCD block number label is put in the CCD unit.

Example : MOA xxxxx
- Serial number for the CCD unit
- CCD block type

Model	CCD block type
HDC3300	MOA

For replacing the CCD unit, refer to Section 2-1.

1-17. Optional Fixtures

Name	Sony Part No.	Remarks
EX-738 Board	A-8327-351-A	For extension of plug-in boards
Extension assy, DPR-197	A-8344-327-A	For extension of DPR-275 and SDI-91 boards.
Alignment sleeve remover HC-001	J-6480-010-A	For female connector LEMO® DCC.91.312.5LA or equivalent
PLD download fixture	J-7120-140-A	PLD data download cable

1-18. Notes 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.
Parts list has the present standardized repair parts.

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.

1-19. Unleaded Solder

Boards requiring use of unleaded solder are printed with a lead free mark (LF) indicating the solder contains no lead. (Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Notes

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

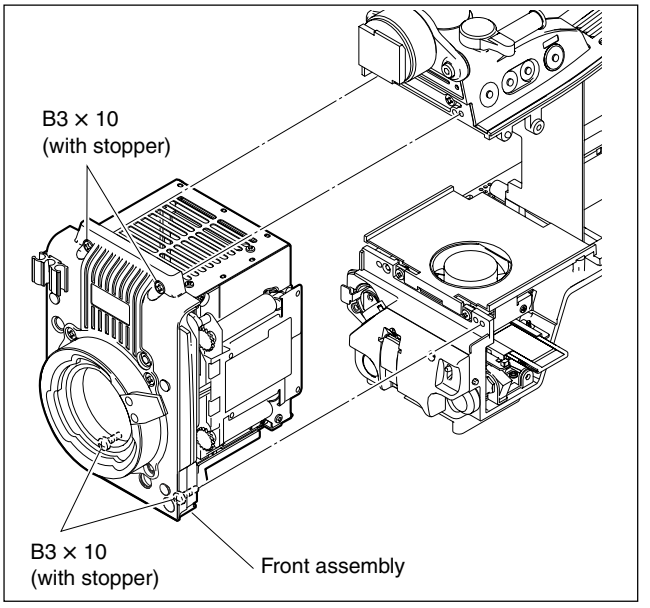
Section 2
Replacement of Main Parts

2-1. Replacing the CCD Unit

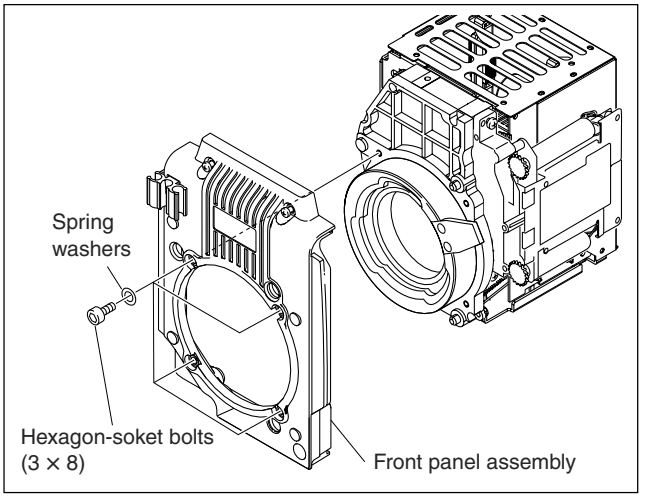
Note

Never remove or install the CCD unit with the power turned on. Because touching internal harness to the cabinet or other printed circuit boards during replacement causes short circuits or electric hazards.
Prior to replacement, be sure to disconnect the optical/electrical cable or the cable connected to the DC IN connector in addition to turning off power switch.

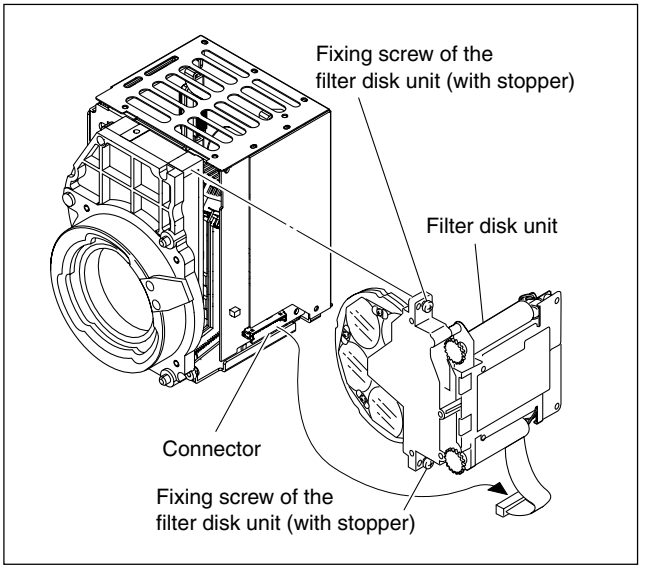
1. Loosen the four screws, and remove the front assembly.



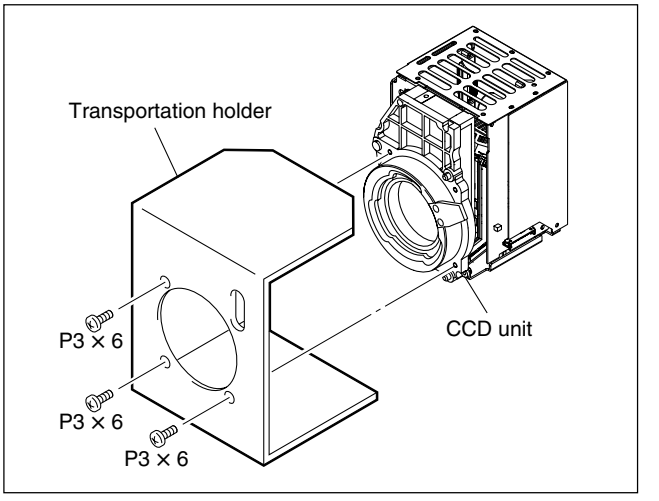
2. Remove the four hexagon-socket bolts and four spring washers, and remove the front panel assembly.



3. Disconnect the harness from the connector of CCD unit, loosen the two fixing screws of the filter disk unit, and remove the filter disk unit.



4. Remove the three screws, and remove the transportation holder from the CCD unit for repair (option).



5. Install the CCD by reversing the steps above.

2-2. Replacement of CCD Unit Boards

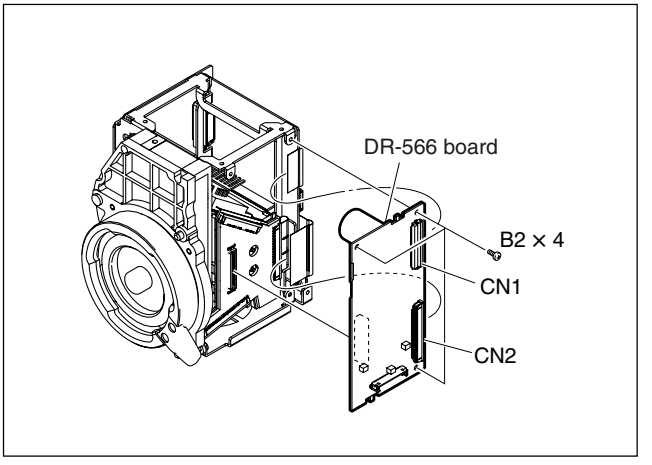
When replacing the boards in the CCD unit, remove the CCD unit from the main unit in advance.
For removing the CCD unit, refer to Section 2-1.

Note

Be careful not to bend the flexible card wire. This shortens the wire life. (Refer to Section 1-9.)

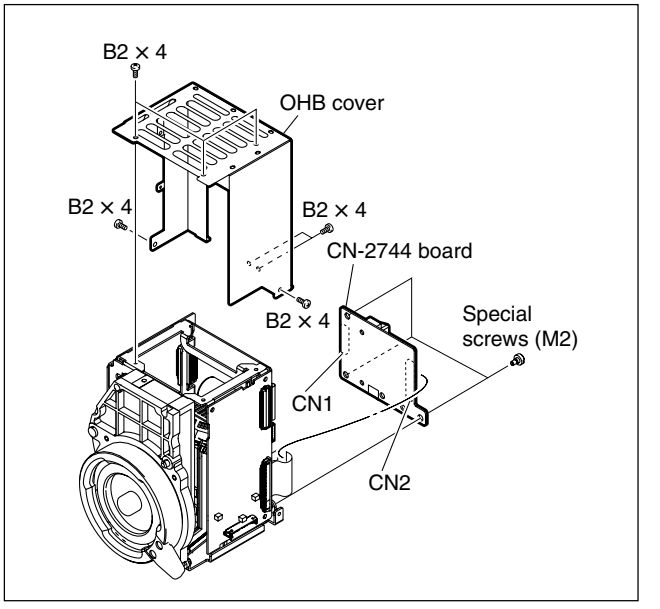
2-2-1. DR-566 Board

1. Remove the five screws to detach the OHB cover. (Refer to Section 2-2-2.)
2. Disconnect the flexible card wires from the connectors (CN1, CN2) on the DR-566 board.
3. Remove the three screws to remove the DR-566 board. Install the board by reversing the steps above.



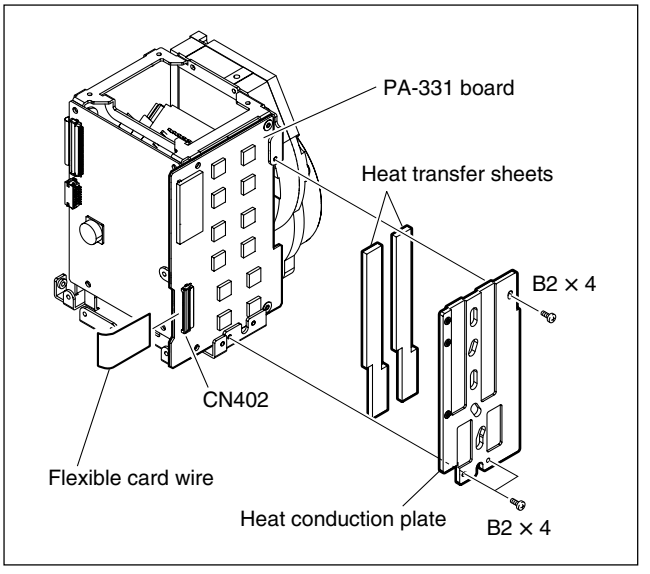
2-2-2. CN-2744 Board

1. Remove the five screws to detach the OHB cover.
2. Disconnect the flexible card wires from the connectors (CN1, CN2) on the CN-2744 board.
3. Remove the three special screws to remove the CN-2744 board.
   Install the board by reversing the steps above.

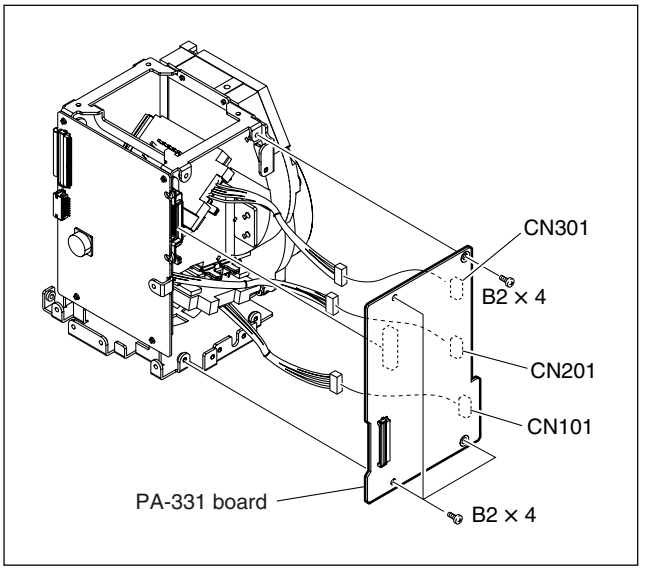


2-2-3. PA-331 Board

1. Remove the five screws to detach the OHB cover. (Refer to Section 2-2-2.)
2. Disconnect the flexible card wire from the connector (CN402) on the PA-331 board.
3. Remove the three screws to detach the heat conduction plate.
4. Peel the two heat transfer sheets off the PA-331 board.

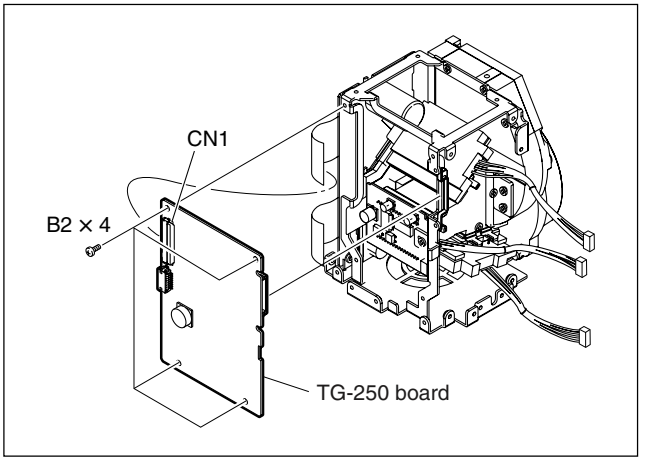


5. Remove the four screws to remove the PA-331 board.
6. Disconnect the harness from the connectors (CN101, CN201, and CN301) on the PA-331 board.
   Install the board by reversing the steps above.



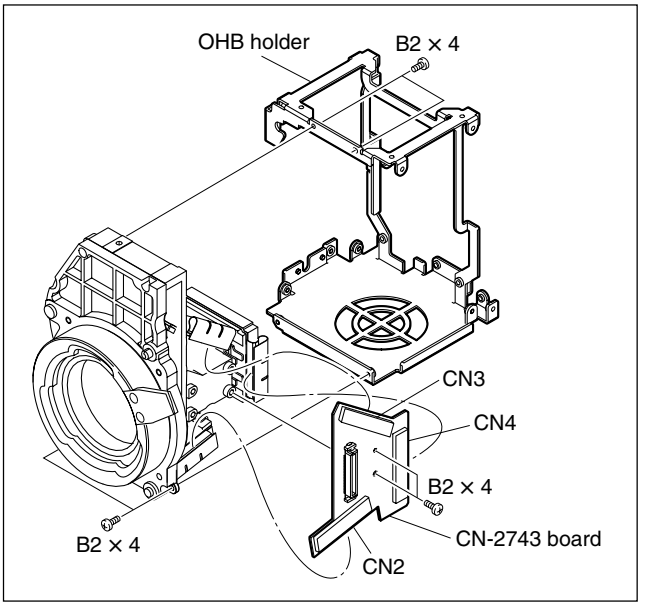
2-2-4. TG-250 Board

1. Remove the CN-2744 board. (Refer to Section 2-2-2.)
2. Remove the PA-331 board. (Refer to Section 2-2-3.)
3. Disconnect the flexible card wire from the connector (CN1) on the TG-250 board.
4. Remove the four screws to remove the TG-250 board.
   Install the board by reversing the steps above.



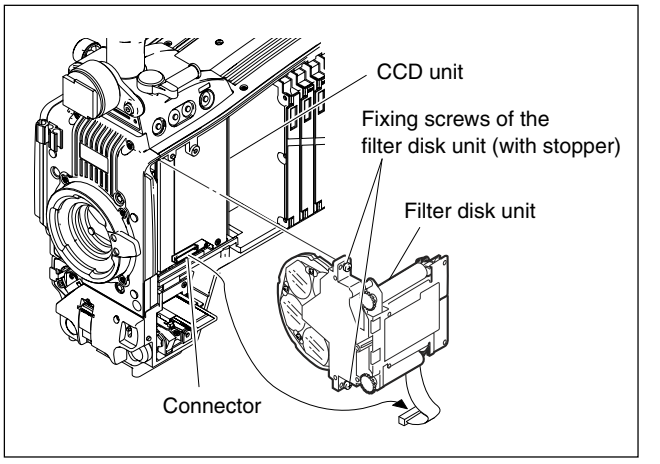
2-2-5. CN-2743 Board

1. Remove the CN-2744 board. (Refer to Section 2-2-2.)
2. Remove the DR-566 board. (Refer to Section 2-2-1.)
3. Remove the PA-331 board. (Refer to Section 2-2-3.)
4. Remove the TG-250 board. (Refer to Section 2-2-4.)
5. Remove the four screws to detach the OHB holder.
6. Disconnect the flexible card boards from the connectors (CN2, CN3, and CN4) on the CN-2743 board.
7. Remove the two screws to remove the CN-2743 board. Install the board by reversing the steps above.



2-3. Replacing the Filter Disk Unit

1. Remove the inside panel. (Refer to Section 1-4.)
2. Disconnect the harness of the filter disk unit from the connector of the CCD unit.
3. Loosen the two fixing screws of the filter disk unit, and remove the filter disk unit.



4. Install the filter disk unit by reversing the steps above.

Note

In installation, do not touch the surface of filters.

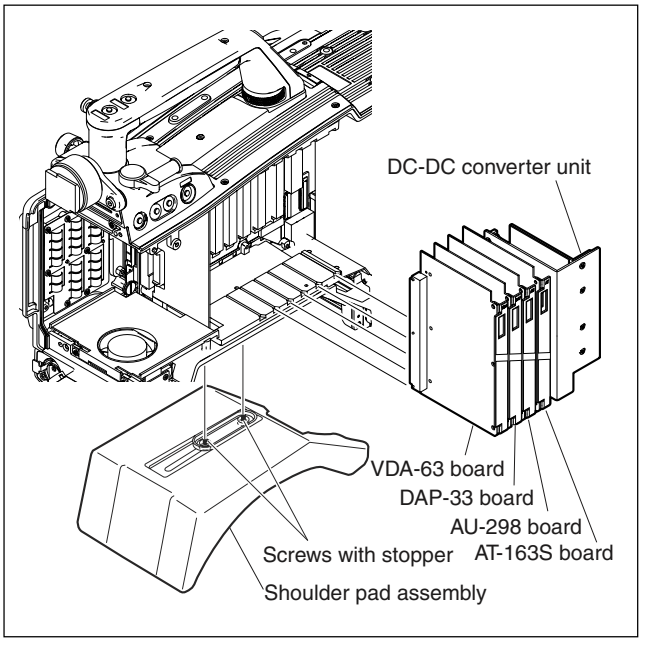
2-4. Replacing the Fan

Note

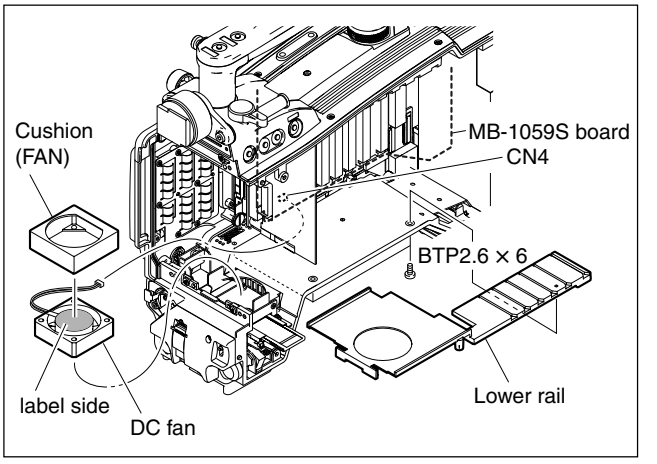
If any fan fails, the inside temperature of the unit will rise. Touching the inside in this state may cause a burn. Power off the unit and leave the unit until the inside cools down before replacing the fan.

2-4-1. DC Fan (Front)

1. Remove the inside panel. (Refer to Section 1-4.)
2. Remove the front assembly. (Refer to Section 2-1.)
3. Loosen the two screws with stopper, and remove the shoulder pad assembly.
4. Draw all the plug-in boards and the DC/DC converter unit along the board rail grooves and remove them.



5. Remove the three screws to detach the lower rail.
6. Disconnect the fan harness from the connector (CN4) on the MB-1059S board.
7. Remove the cushion (FAN) from the DC fan.



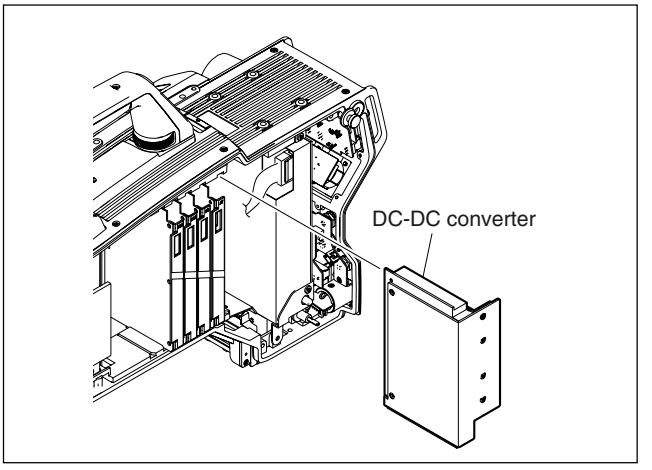
8. Install the front DC fan by reversing the steps above.

Note

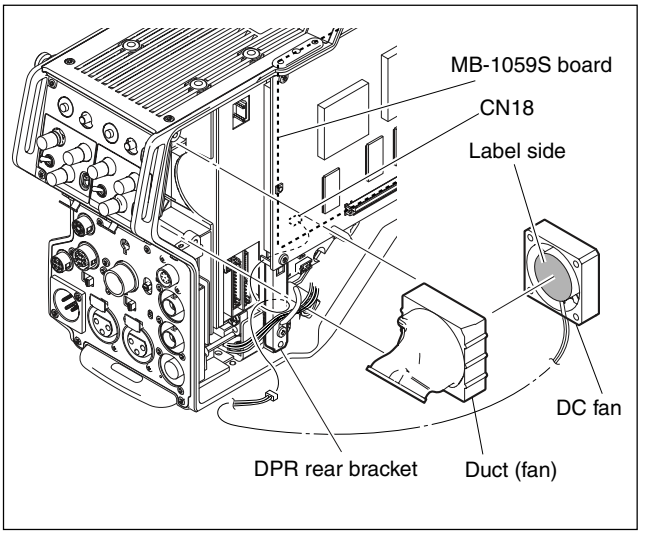
Be careful of the orientation of the label side and the harness when installing the DC fan.

2-4-2. DC Fan (Rear)

1. Remove the inside panel and outside panel. (Refer to Section 1-4.)
2. Draw the DC/DC converter unit along the board rail grooves and remove it.



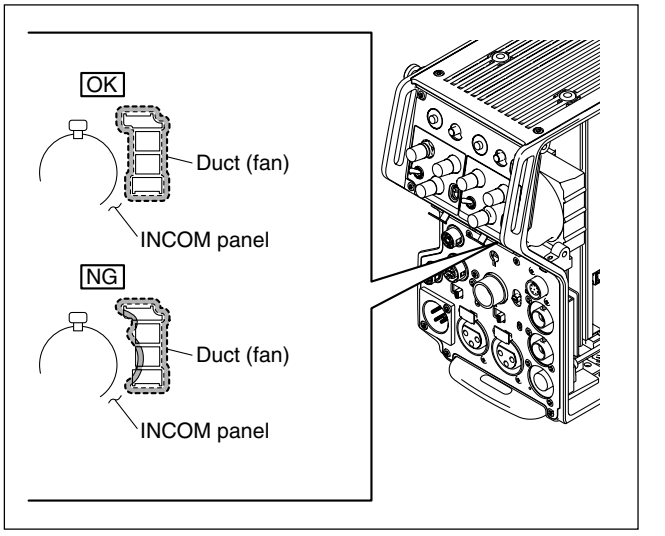
3. Disconnect the fan harness from the connector (CN18) on the MB-1059S board.
4. Remove the fan harness from the DPR rear bracket, and remove the duct (fan).
5. Detach the DC fan from the duct (fan).



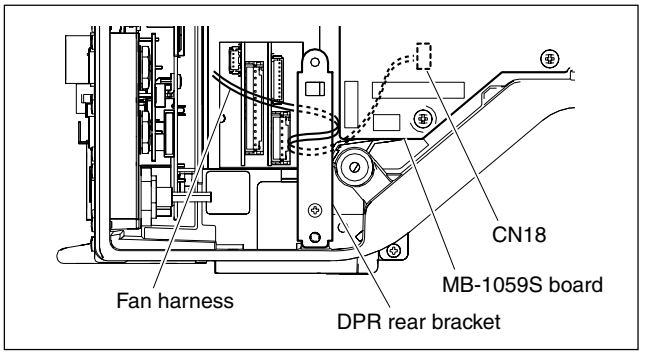
6. Install the rear DC fan by reversing the steps above.

Notes

- Be careful of the orientation of the label side and the harness when installing the DC fan.
- Attach the duct (fan) to the INCOM panel correctly so as to not block the ventilative hole.

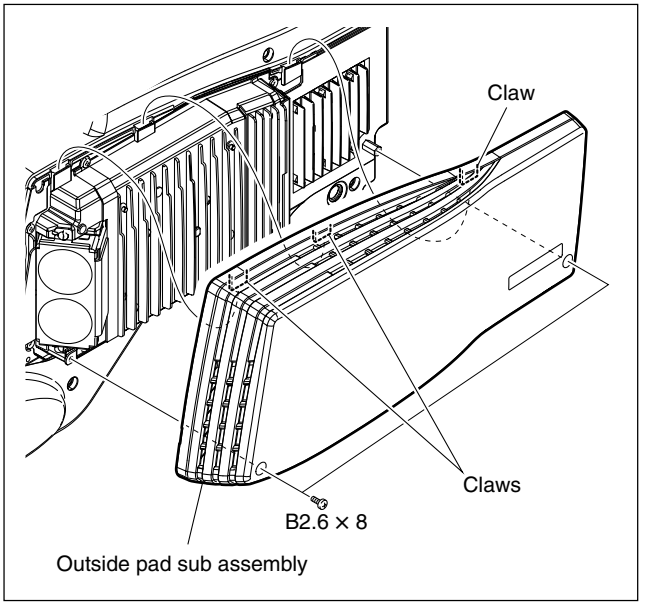


- Arrange the fan harness around the DPR rear bracket as shown below, and then connect it to the connector (CN18) on the MB-1059S board.

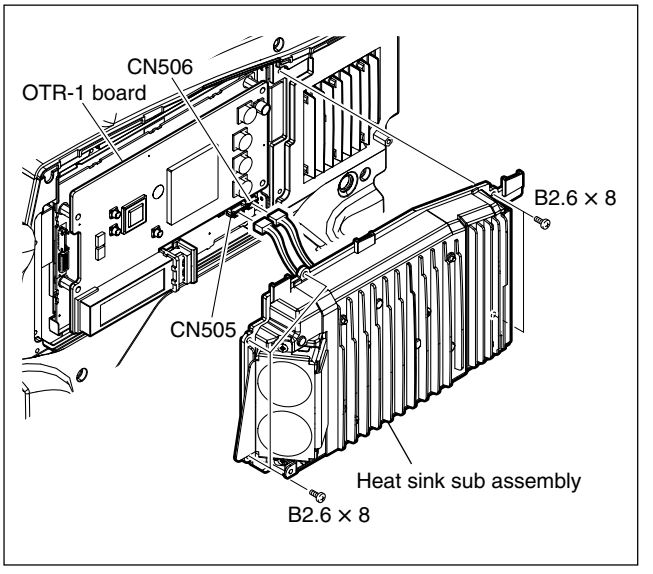


2-4-3. Side Panel Fan (Outside)

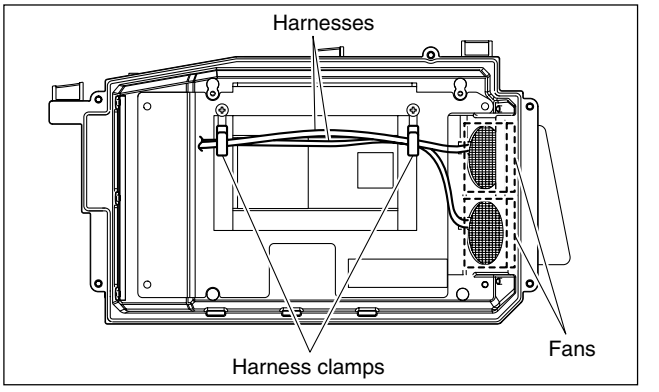
1. Remove the two screws.
2. Remove the outside pad sub assembly while releasing the three claws upward.



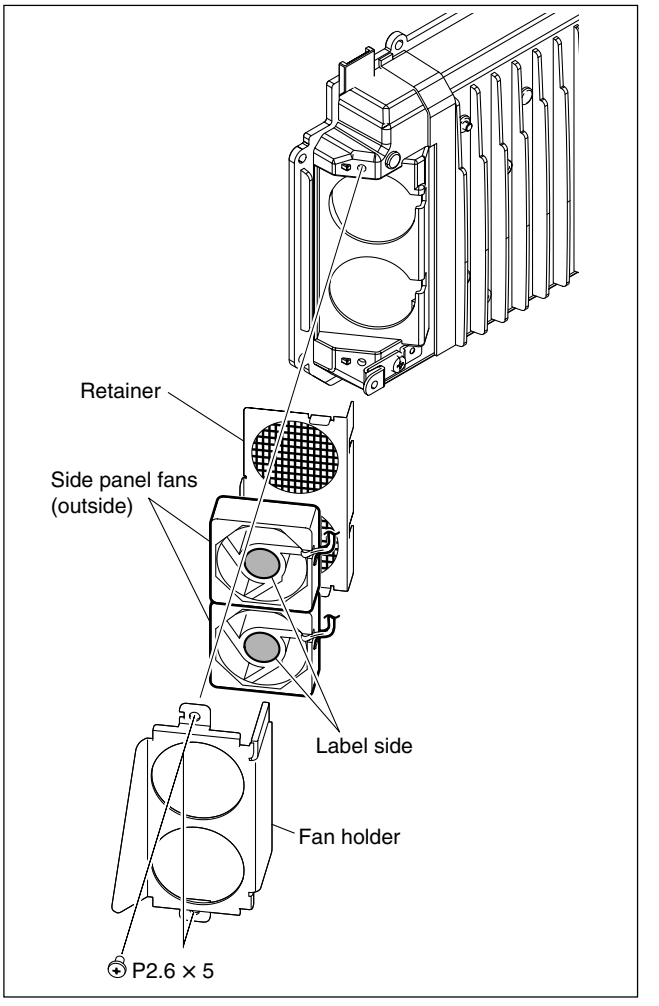
3. Remove the five screws.
4. Disconnect the harness from the connectors (CN505 and CN506) on the OTR-1 board, and remove the heat sink sub assembly.



5. Release the harness from the two harness clamps.



6. Remove the two screws, and remove the side panel fan (outside), fan holder and retainer.



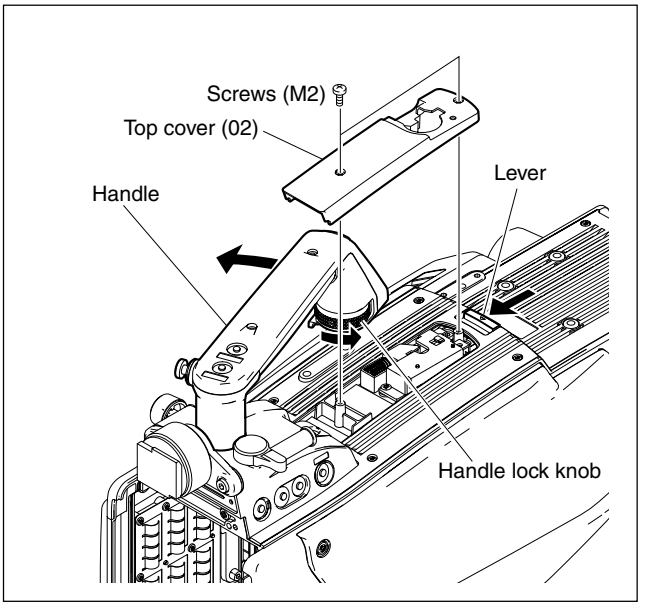
7. Install the side panel fan (outside) by reversing the steps above.

Notes

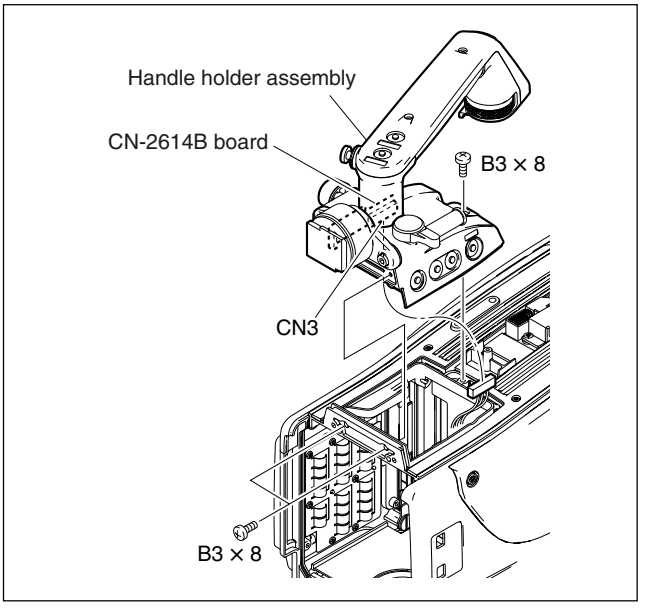
Be careful of the orientation of the label side and the harness when installing the side panel fan (outside).

2-5. Replacing the VF DISP Switches (SW-1237 Board)

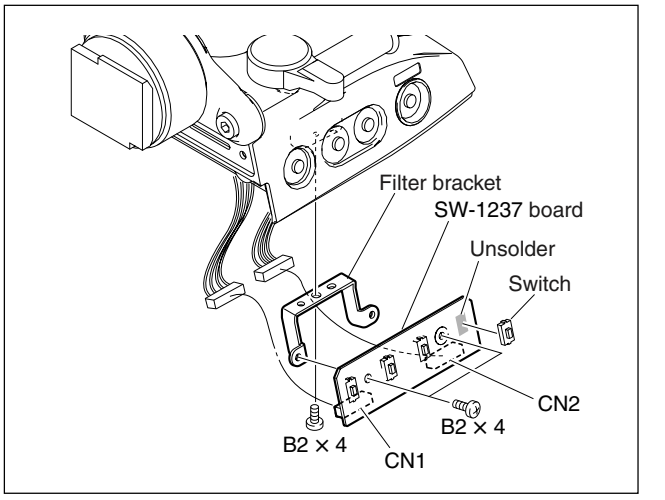
1. Remove the front assembly. (Refer to Section 2-1.)
2. Loosen the handle lock knob, and turn the handle while pressing the lever.
3. Remove the two screws, and remove the top cover (02) while pressing the lever.



4. Remove the three screws and pull out the handle holder assembly.
5. Disconnect the harness from the connector (CN3) on the CN-2614B board.



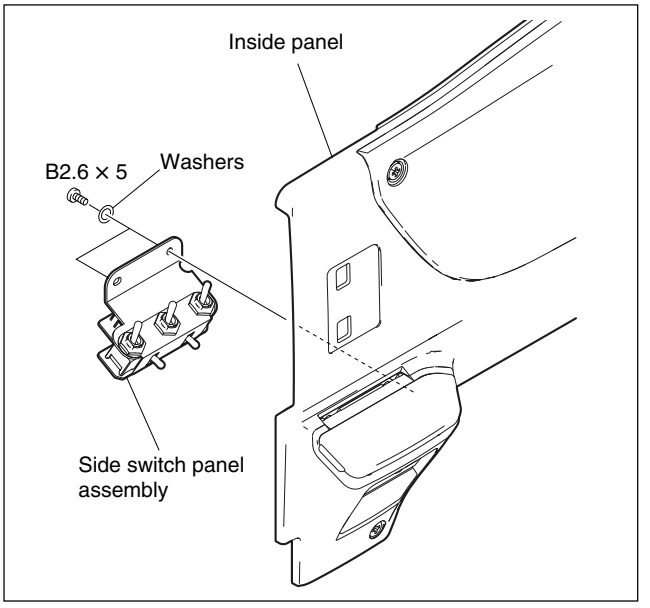
6. Disconnect the harnesses from the connectors (CN1, CN2) on the SW-1237 board.
7. Remove the screw, and remove the SW-1237 board.
8. Remove the two screws to detach the filter bracket from the SW-1237 board.
9. Unsolder the switch to be replaced from the SW-1237 board.



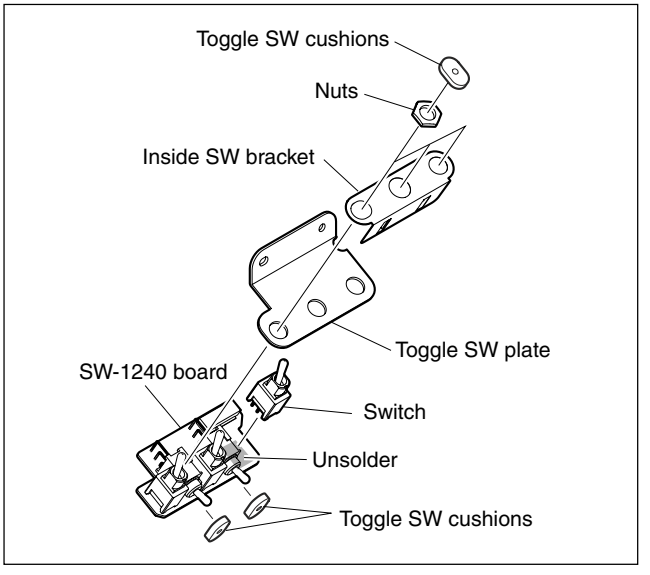
10. Install a new switch by reversing the steps above.

2-6. Replacing the Side Switch Panel Assembly (SW-1240 Board)

1. Remove the inside panel. (Refer to Section 1-4.)
2. Remove the two screws, and remove the side switch panel assembly.



3. Remove the five toggle switch cushions from the side switch panel assembly.
4. Remove the three nuts to detach the inside switch bracket and the toggle switch plate from the SW-1240 board.
5. Unsolder the switch to be replaced from the SW-1240 board.



6. Install a new switch by reversing the steps above.

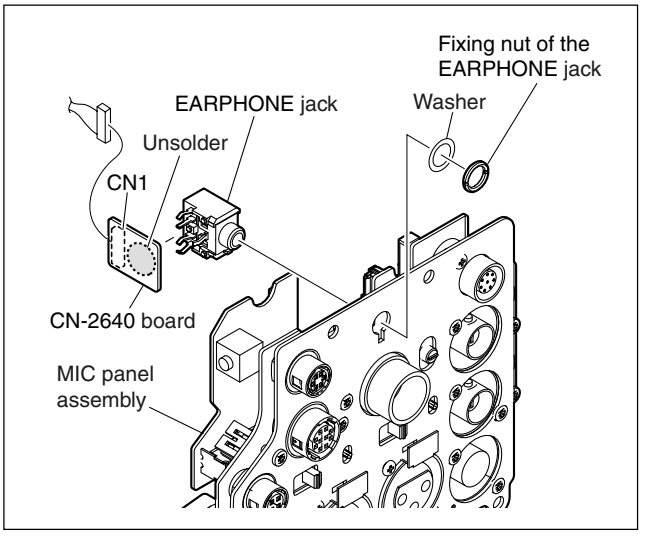
2-7. Replacing the Connectors

Note

Be careful not to bend the flexible card wire. This shortens the wire life. (Refer to Section 1-9.)

2-7-1. EARPHONE Jack (CN-2640 Board)

1. Remove the MIC panel assembly. (Refer to Section 2-7-2.)
2. Disconnect the harness from the connector (CN1) on the CN-2640 board.
3. Remove the fixing nut of the EARPHONE jack to detach the washer and the CN-2640 board.
4. Unsolder the EARPHONE jack from the CN-2640 board.



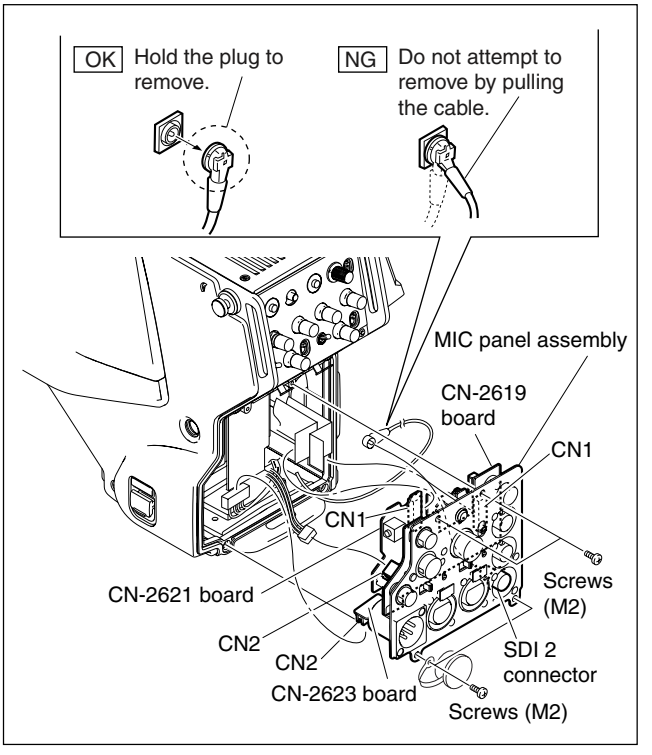
5. Install a new EARPHONE jack by reversing the steps above.

2-7-2. DC IN Connector (CN-2623 Board)

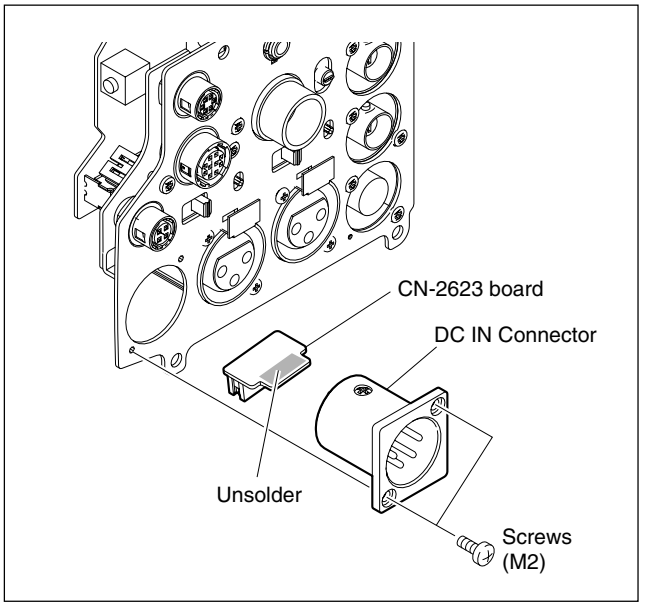
1. Remove the four screws, and pull out the MIC panel assembly.
2. Disconnect the flexible card wires from the connector (CN1) on the CN-2619 board and from the connector (CN1) on the CN-2621 board.
3. Disconnect the harnesses from the connector (CN2) on the CN-2619 board and from the connector (CN2) on the CN-2623 board.
4. Disconnect the coaxial cable from the SDI 2 connector, and remove the MIC panel assembly.

   Note

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



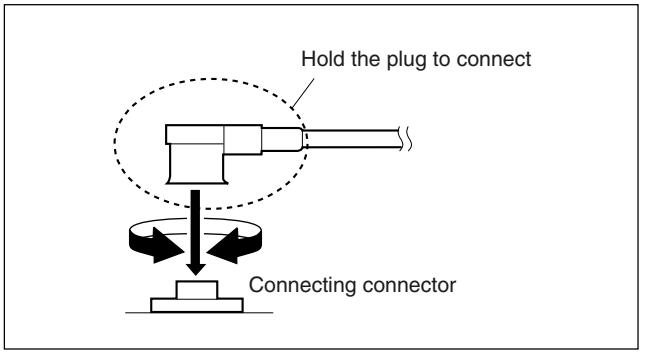
5. Remove the two screws, and remove the CN-2623 board.
6. Unsolder the DC IN connector from the CN-2623 board.



7. Install a new DC IN connector by reversing the steps above.

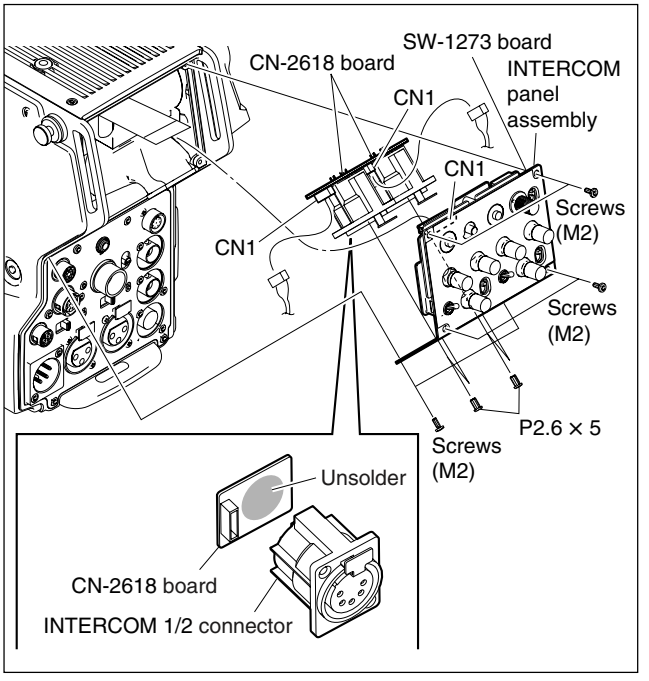
   Note

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



2-7-3. INTERCOM 1/2 Connector (CN-2618 Board)

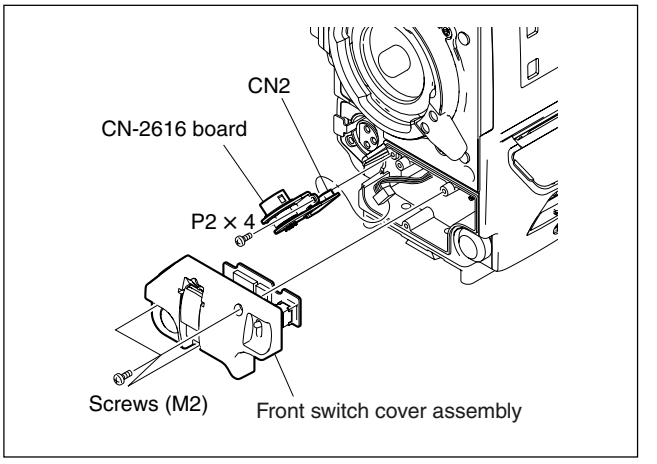
1. Remove the six screws and pull out the INTERCOM panel assembly.
2. Disconnect the flexible card wire from the connector (CN1) on the SW-1273 board.
3. Remove the two screws, and remove the CN-2618 board.
4. Disconnect the harness from the connector (CN1) on the CN-2618 board.
5. Unsolder the INTERCOM 1 or INTERCOM 2 connector from the CN-2618 board.



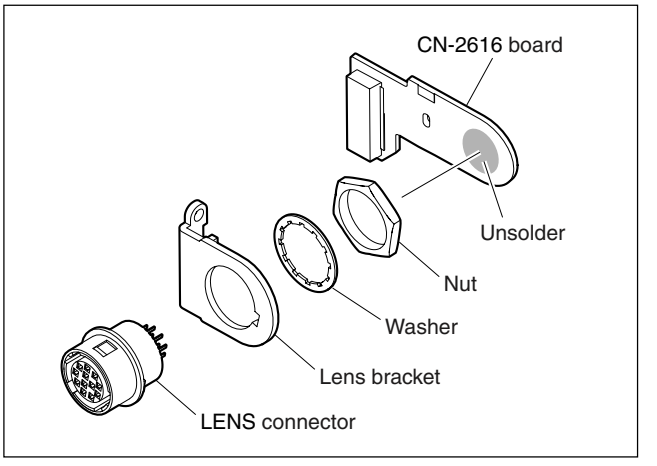
6. Install a new INTERCOM 1 or INTERCOM 2 connector by reversing the steps above.

2-7-4. LENS Connector (CN-2616 Board)

1. Remove the three screws, and pull out the front switch cover assembly.
2. Remove the screw, and pull out the CN-2616 board.
3. Disconnect the harness from the connector (CN2) on the CN-2616 board.



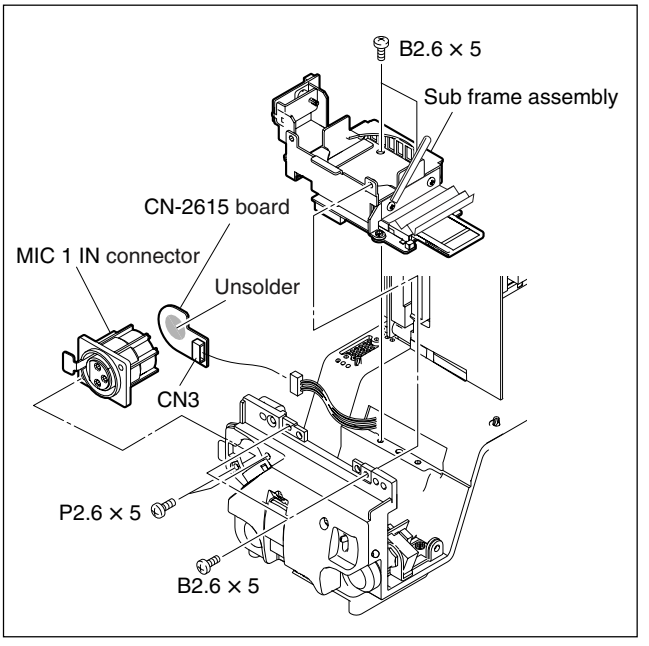
4. Unsolder the LENS connector from the CN-2616 board.
5. Remove the nut to detach the washer and lens bracket from the LENS connector.



6. Install a new LENS connector by reversing the steps above.

2-7-5. MIC 1 IN Connector (CN-2615 Board)

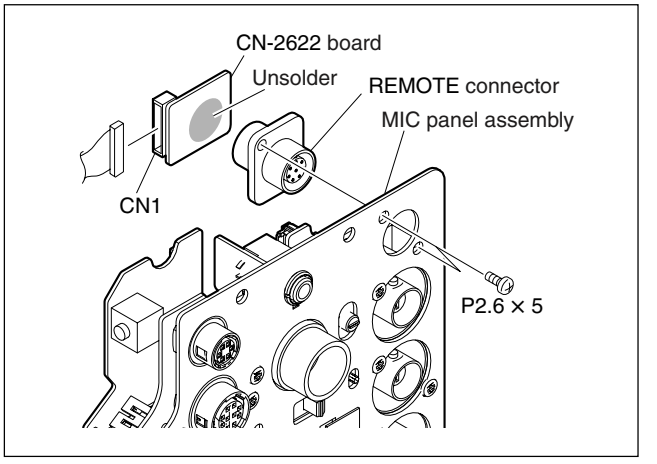
1. Remove the inside panel and outside panel. (Refer to Section 1-4.)
2. Remove the DC fan (front). (Refer to Section 2-4-1.)
3. Remove the four screws, and lift the sub frame assembly.
4. Remove the two screws, and remove the CN-2615 board.
5. Disconnect the harness from the connector (CN3) on the CN-2615 board.
6. Unsolder the MIC 1 IN connector from the CN-2615 board.



7. Install a new MIC 1 IN connector by reversing the steps above.

2-7-6. REMOTE Connector (CN-2622 Board)

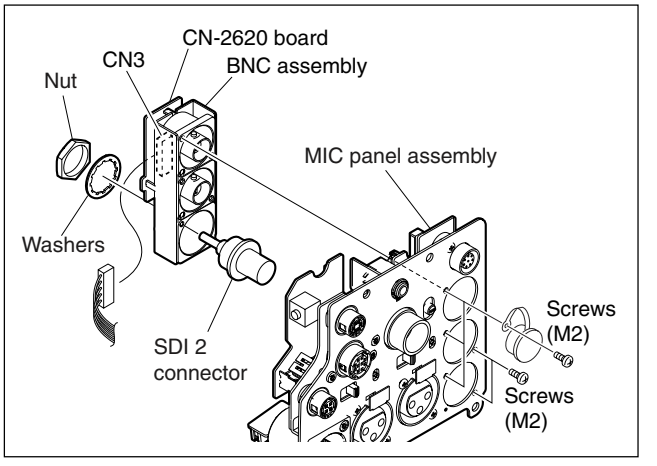
1. Remove the MIC panel assembly. (Refer to Section 2-7-2.)
2. Remove the two screws, and remove the CN-2622 board.
3. Disconnect the harness from the connector (CN1) on the CN-2622 board.
4. Unsolder the REMOTE connector from the CN-2622 board.



5. Install a new REMOTE connector by reversing the steps above.

2-7-7. SDI 2 Connector

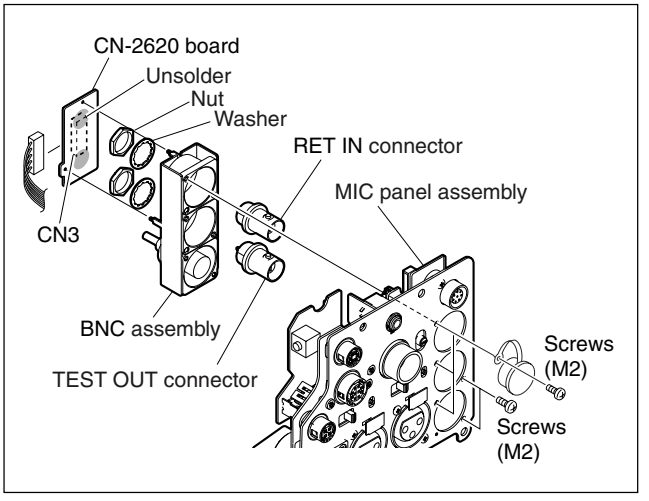
1. Remove the MIC panel assembly. (Refer to Section 2-7-2.)
2. Remove the five screws, and remove the BNC assembly.
3. Disconnect the harness from the connector (CN3) on the CN-2620 board.
4. Remove the nut to detach the SDI 2 connector.



5. Install a new SDI 2 connector by reversing the steps above.

2-7-8. RET IN, TEST OUT Connector (CN-2620 Board)

1. Remove the MIC panel assembly. (Refer to Section 2-7-2.)
2. Remove the five screws, and remove the BNC assembly.
3. Disconnect the harness from the connector (CN3) on the CN-2620 board.
4. Unsolder the RET IN, TEST OUT connector from the CN-2620 board.
5. Remove the nut to detach the RET IN, TEST OUT connector.



6. Install a new RET IN, TEST OUT connector by reversing the steps above.

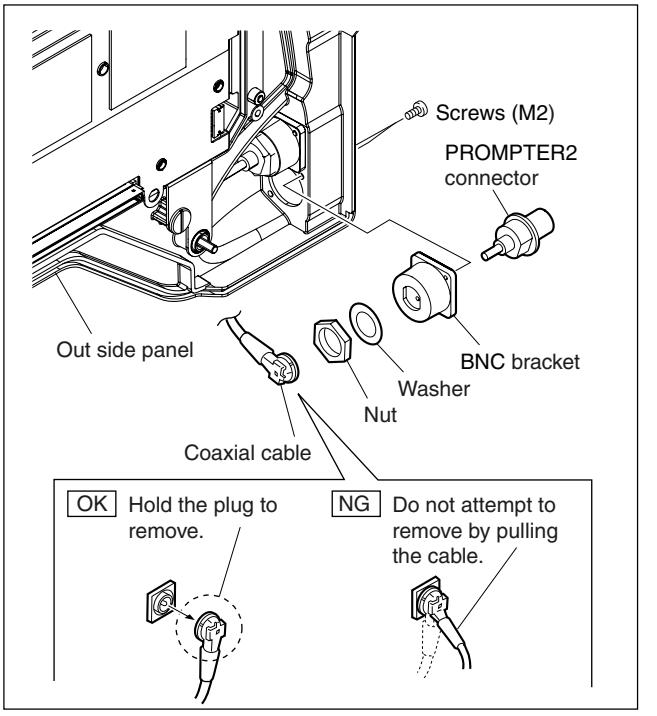
2-7-9. PROMPTER2 Connector

1. Remove the outside panel. (Refer to Section 1-4.)
2. Remove the two screws to detach the BNC bracket.
3. Disconnect the coaxial cable from the PROMPTER2 connector.

Note

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

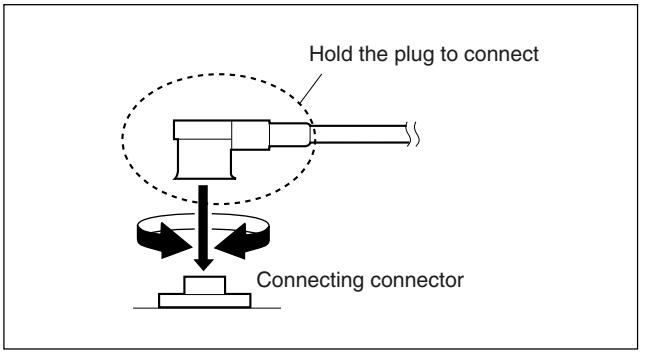
4. Remove the nut to detach the PROMPTER2 connector.



5. Install a new PROMPTER2 connector by reversing the steps above.

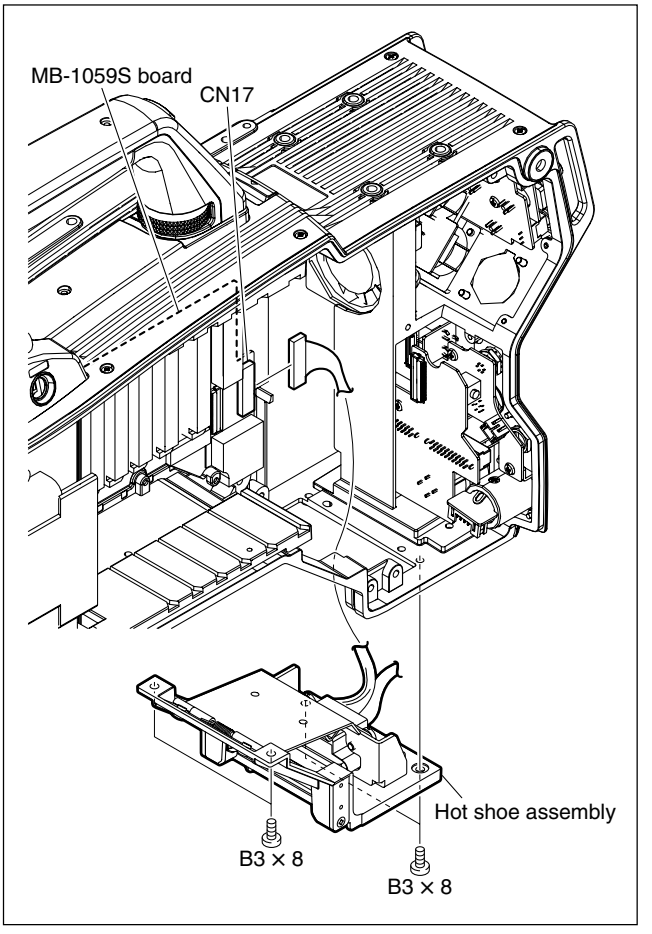
Note

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

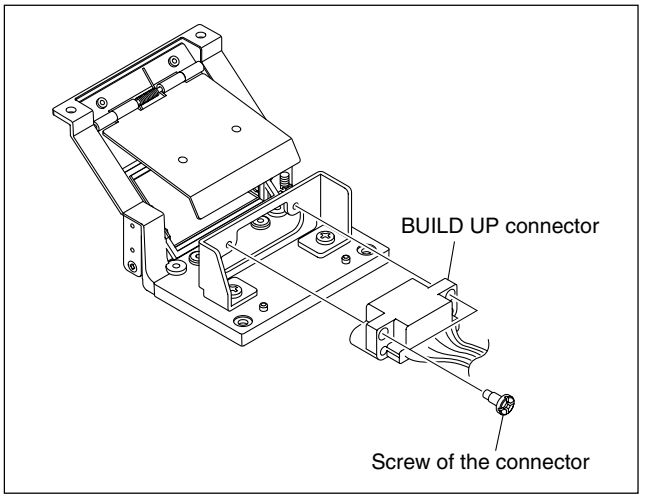


2-7-10. BUILD UP Connector (Hot Shoe Assembly)

1. Remove the inside panel and outside panel. (Refer to Section 1-4.)
2. Remove the switching regulator. (Refer to Section 2-10.)
3. Disconnect the harness from the connector (CN17) on the MB-1059S board.
4. Remove the four screws, and remove the hot shoe assembly.



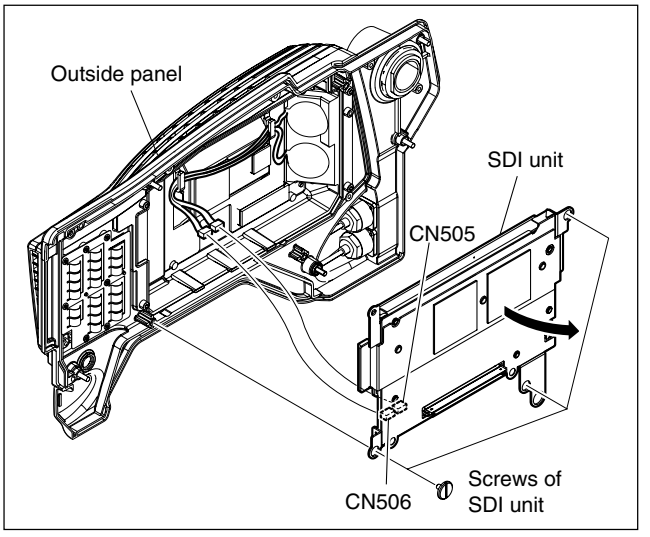
5. Remove the two fixing screws of the connector and remove the BUILD UP connector.



6. Install a new BUILD UP connector by reversing the steps above.

2-8. Replacing the Encapsulated Cable Assembly

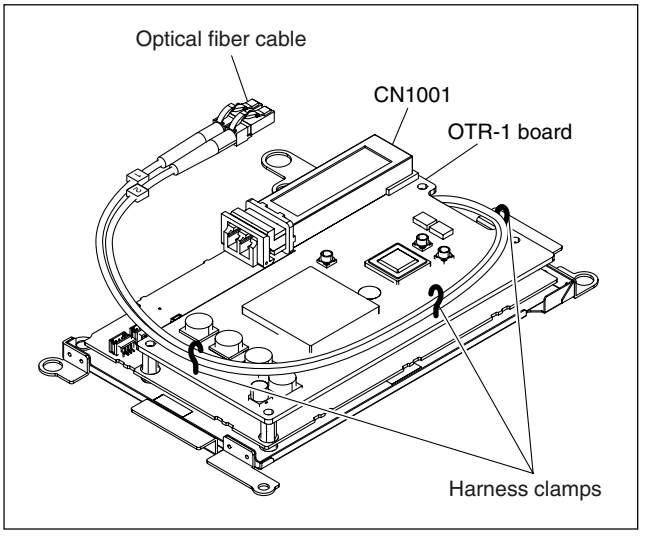
1. Remove the outside panel. (Refer to Section 1-4.)
2. Remove the three screws of the SDI unit, and open it in the arrow direction.
3. Disconnect the two harnesses from the connectors (CN505 and CN506) on the SDI-91 board.



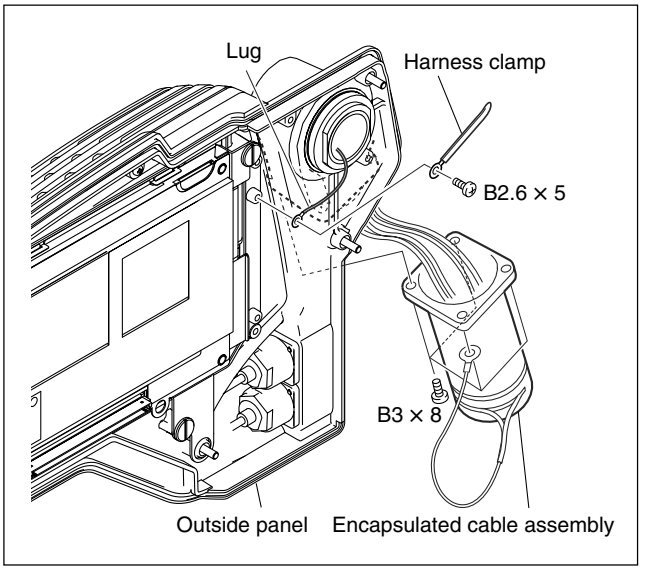
4. Release the cables from the three harness clamps.
5. Disconnect the optical fiber cables from the optical converter module CN1001 on the OTR-1 board.

Notes

- 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.



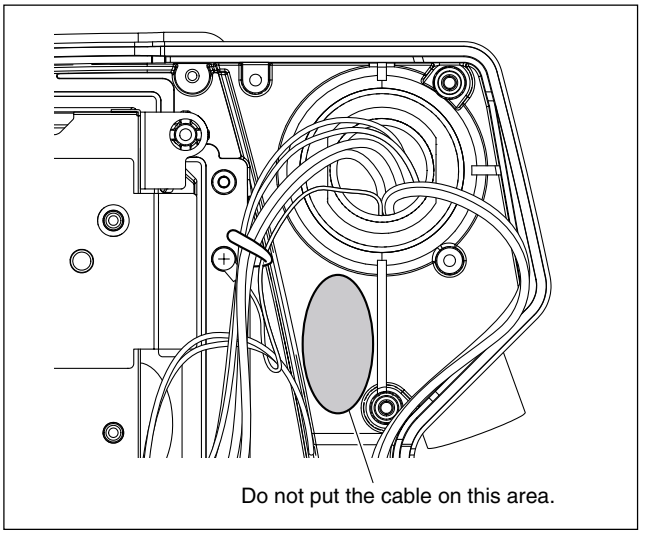
7. Remove the screw to detach the harness clamp and the lug.
8. Remove the four screws, and pull out the encapsulated cable assembly.



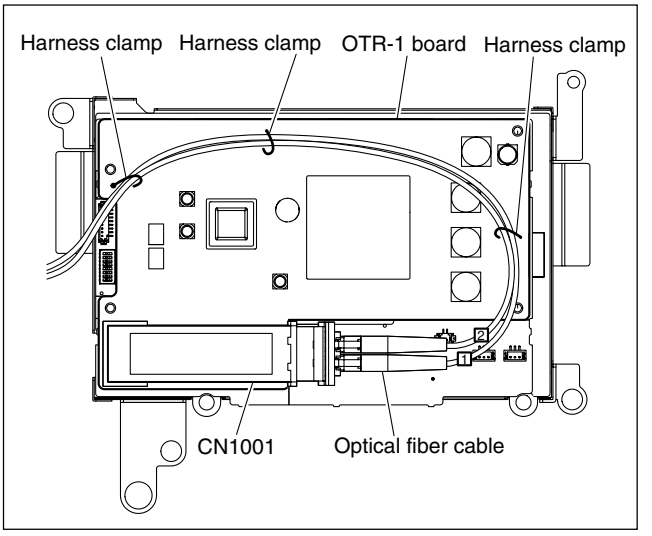
9. Install the encapsulated cable assembly by reversing the steps above.

Notes

- To clamp the optical fiber cable, draw it out of the hole in the outside panel as shown in the figure, and then clamp it with the cable clamp facing up.



- Check cable numbers when connecting optical fiber cables, and insert the cable connector as far as it will go.
- Arrange the harness and cables as shown below, and clamp them with the three harness clamps and UL tape.



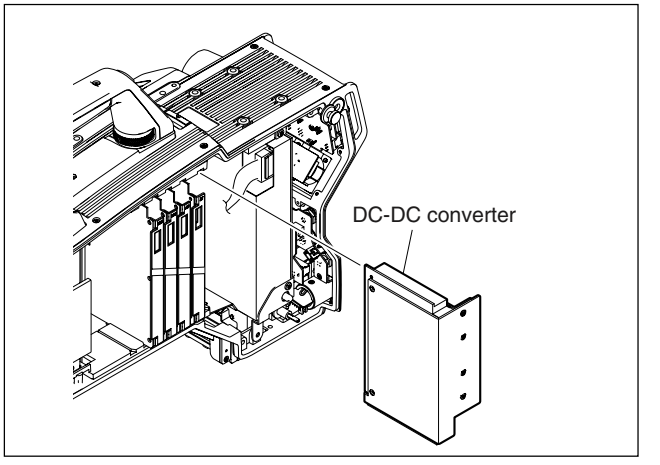
- When connecting the optical fiber cables to the optical converter module CN1001 on the OTR-1 board, clean the connecting connectors. (Refer to Section 1-8.)

2-9. Replacing the DC/DC Converter Unit

WARNING

The DC/DC converter unit is a critical part for safety. If it is replaced with an unspecified part, a fire or electric shock may be caused.
Be sure to use the specified DC/DC converter unit below for replacement.
CONVERTER UNIT, DC-DC: ⚠ 1-478-790-21

1. Remove the inside panel. (Refer to Section 1-4.)
2. Draw the DC/DC converter unit along the board rail groove, and remove it.



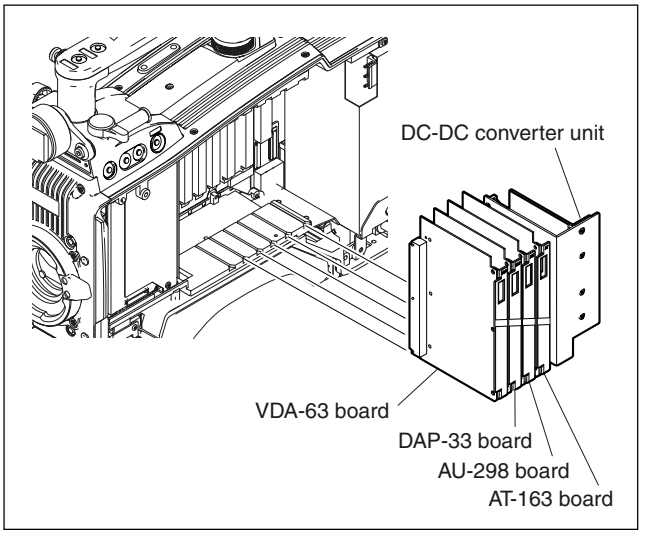
3. Install the DC/DC converter unit by reversing the steps above.

2-10. Replacing the Switching Regulator

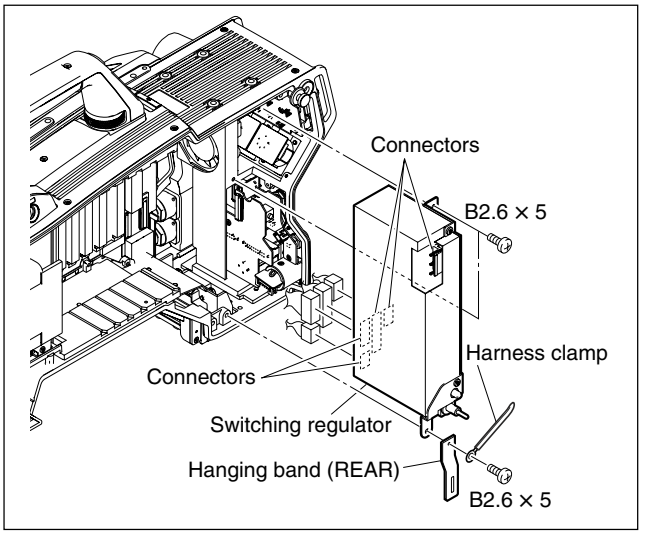
WARNING

The switching regulator is a critical part for safety. If it is replaced with an unspecified part, a fire or electric shock may be caused.
Be sure to use the specified switching regulator below for replacement.
REGULATOR, SWITCHING: ⚠ 1-468-862-11

1. Remove the inside panel and outside panel. (Refer to Section 1-4.)
2. Draw all the plug-in boards and the DC/DC converter unit along the board rail grooves and remove them.



3. Disconnect the harnesses from the five connectors on the switching regulator.
4. Remove the three screws, and remove the switching regulator, hanging band (REAR), and the harness clamp.

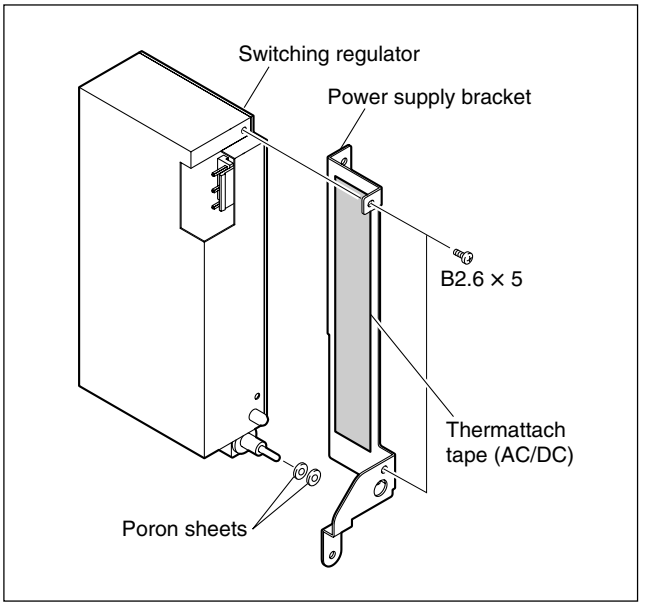


5. Remove the two screws to detach the power supply bracket from the switching regulator.

Notes

- There is the thermattach tape (AC/DC) between the switching regulator and power supply bracket. Detach the power supply bracket slowly and surely.
- Replace the thermattach tape (AC/DC) with new one.

6. Remove the two poron sheets from the switching regulator.

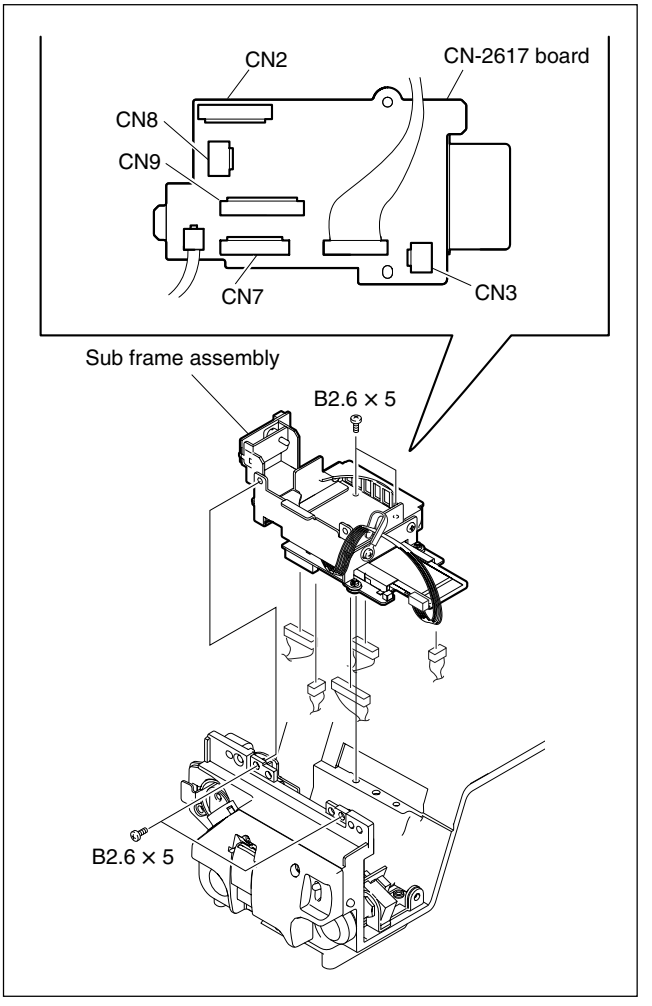


7. Install the switching regulator by reversing the steps above.

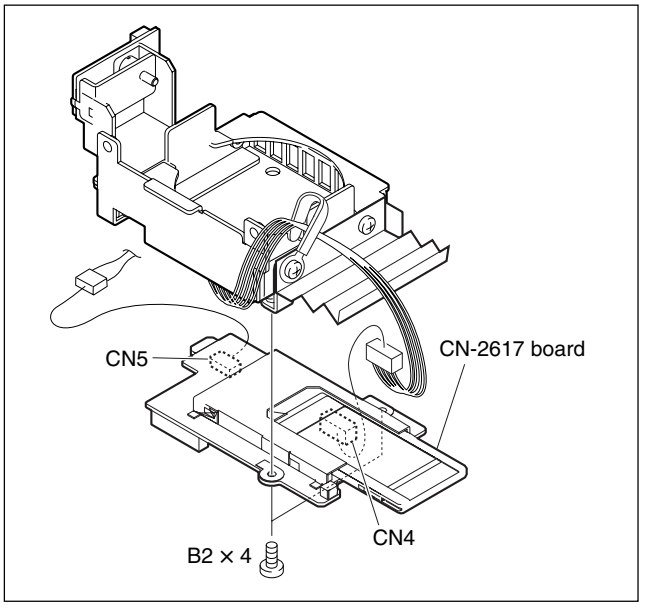
2-11. Replacing the Boards

2-11-1. CN-2617 Board

1. Remove the inside panel and outside panel. (Refer to Section 1-4.)
2. Remove the DC fan (front). (Refer to Section 2-4-1.)
3. Remove the four screws, and lift the sub frame assembly.
4. Disconnect the harnesses from the connectors (CN2, CN3, CN7, CN8, and CN9) on the CN-2617 board, and remove the sub frame assembly.



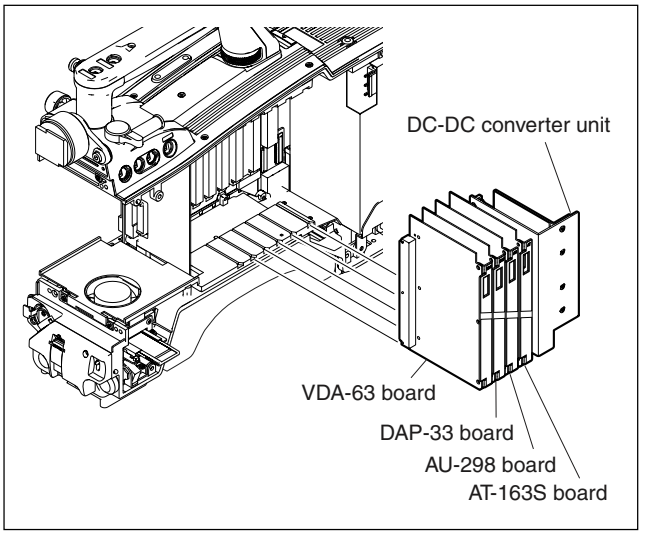
5. Disconnect the harnesses from the connectors (CN4, CN5) on the CN-2617 board.
6. Remove the two screws, and remove the CN-2617 board.



7. Install the CN-2617 board by reversing the steps above.

2-11-2. MB-1059S Board

1. Remove the inside panel and outside panel. (Refer to Section 1-4.)
2. Remove the front assembly. (Refer to Section 2-1.)
3. Draw all the plug-in boards and the DC/DC converter unit along the board rail grooves and remove them.

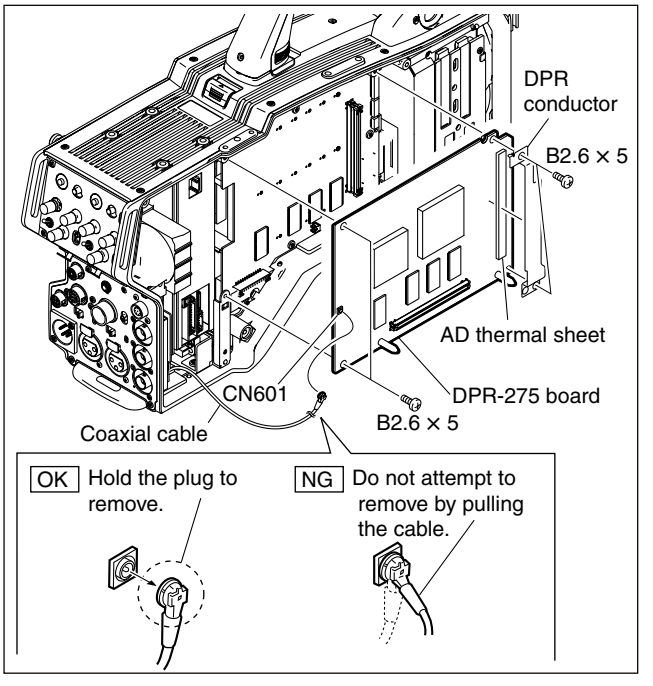


4. Disconnect the coaxial cable from the connector (CN601) on the DPR-275 board.

Note

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

5. Remove the four screws to detach the DPR-275 board.

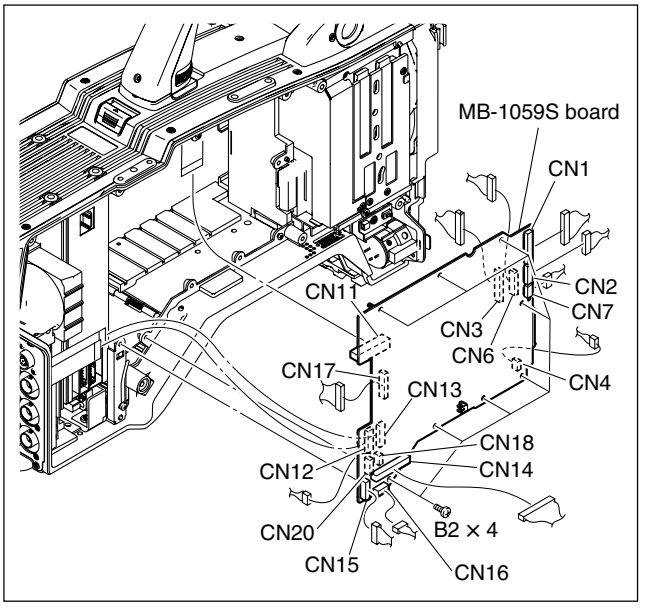


6. Disconnect the harnesses and flexible card wires from all the connectors on the MB-1059S board.

Note

Life of flexible card wire will be significantly shortened if it is folded. Be very careful not to fold the flexible card wires. (Refer to Section 1-9.)

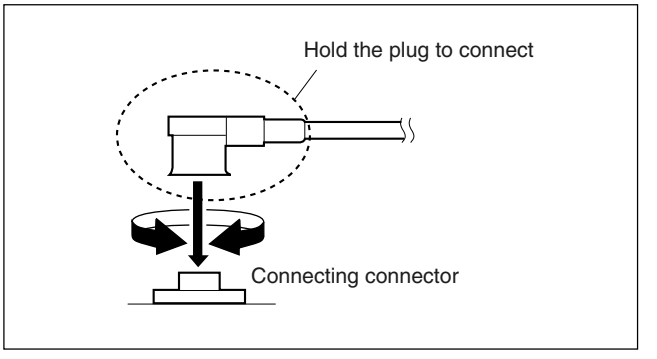
7. Remove the eight screws, and remove the MB-1059S board.



8. Install the MB-1059S board by reversing the steps above.

Note

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



Section 3
Electrical Alignment

When any board of HDC3300 is repaired or replaced, perform electrical adjustments of this section.
Adjust the unit combining with HDCU3300.

Notes

- Perform video system level adjustment (Section 3-4) according to customer needs.
- One of master setup units MSU-900, etc. is used for electrical adjustments of the unit.
  Refer to Section 3-1-8 when using the camera setup menu for electrical adjustments without using MSU-900.

3-1. Preparations

3-1-1. Equipment Required

Measuring equipment

- HDTV serial digital waveform monitor
  Leader Electronics LV5150DA, Leader Electronics LV5152DA (multi format) or equivalent
- HD color monitor
  Sony BVM-D20F1/BVM-D14H5 or equivalent
- Oscilloscope
  Tektronix TDS460A or equivalent

Related Equipment

- HDVS camera system
  HDCU3300 (HD Camera Control Unit)
  MSU-700A/750/900/950 (Master Setup Unit)
  HDVF-20A (HD Electronic Viewfinder)
- Lens
  Canon HJ18

Tools

- Pattern box PTB-500
  Sony Part No. : J-6029-140-B
- Grayscale chart (16 : 9 transparent type)
  Sony Part No. : J-6394-080-A
- Grayscale chart (4 : 3 reflective type)
  Commercially available

3-1-2. Precautions on Adjustments

- Turn ON the main power switch (external) before adjusting, and warm up the unit for about 10 minutes.
- All measuring equipment must be calibrated.
- Periodic Maintenance must be conducted for the pattern box.
- “Section 3-1-7. Initial Settings” must be completed.

3-1-3. File Data at Adjustment

The file structure of the adjustment data of HDC3300 is as follows.

- Lens file is 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. Mount the lens actually used during the adjustment.
- The reference file stores the custom paint data adjusted by the video engineer. This file is stored in the camera and memory stick. Therefore, before performing adjustment, store this data in the memory stick first, and reset this data from the memory stick after adjustment.
- OHB file is used for adjustment of the CCD block maintenance. This file is stored in the camera.

3-1-4. Maintaining the Grayscale Chart

For the adjustment, using an 89.9 %-reflective grayscale chart is preferable.
If a reflective chart is not available, use a well-maintained pattern box and a transparent grayscale chart for adjustment.
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 (9 : 6)

Recommended chart

The reflective grayscale chart (9 : 6) is commercially available.

Recommended chart: Reflective grayscale chart (with a special case)
MURAKAMI COLOR RESEARCH LABORATORY GS-3
or equivalent

Handling precautions

- Do not touch the chart's surface.
- Do not subject the surface to dirt, scratches or prolonged exposure to sunlight.
- Protect the chart from excessive moisture and 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.

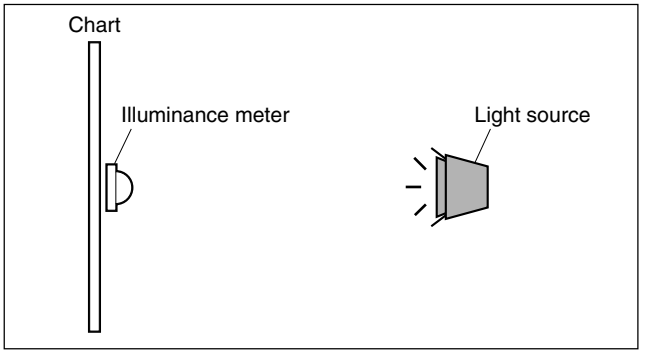
Replacement period when the chart is used as the reference

The reflective grayscale chart should be replaced every two years if it used as the reference. Because the chart deteriorates with time and proper adjustment cannot be achieved.
Replacement period varies according to storage conditions of the chart.

Setting illumination (when the reflective chart is used)

Equipment: Illuminance meter (Calibrated)

1. Turn on the light source and warm up for about 30 minutes.
2. Place the illuminance meter on the chart surface. 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.



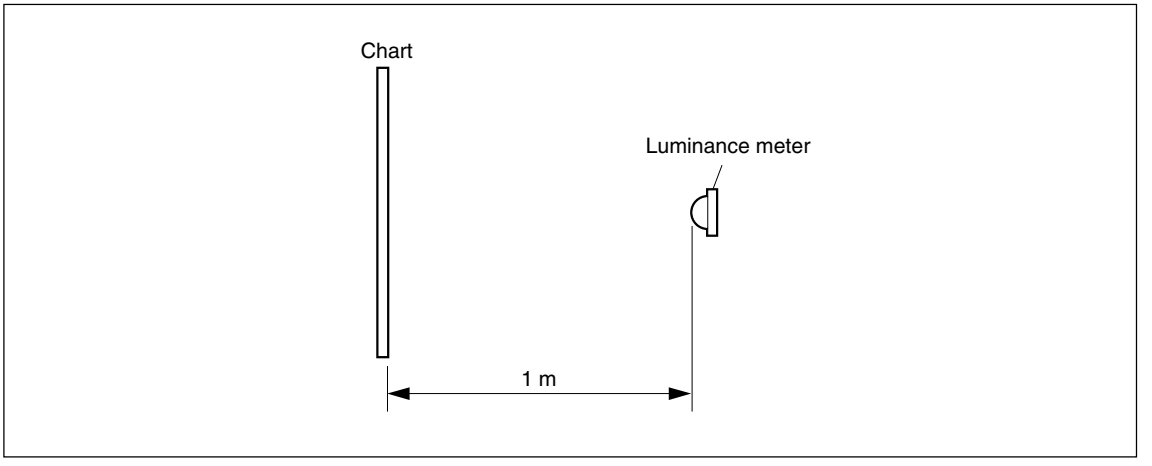
Setting luminous intensity (when the transparent chart is used)

Equipment: Luminance meter (Minolta LS-110 or equivalent. Calibrated.)

1. Light the pattern box and warm up for about 30 minutes.
2. 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.)
3. Place the luminance meter facing straight to the chart at a distance of 1 m from it.
4. 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.

   Note

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



3-1-5. Description on 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 MAINTENACE menu 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 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:

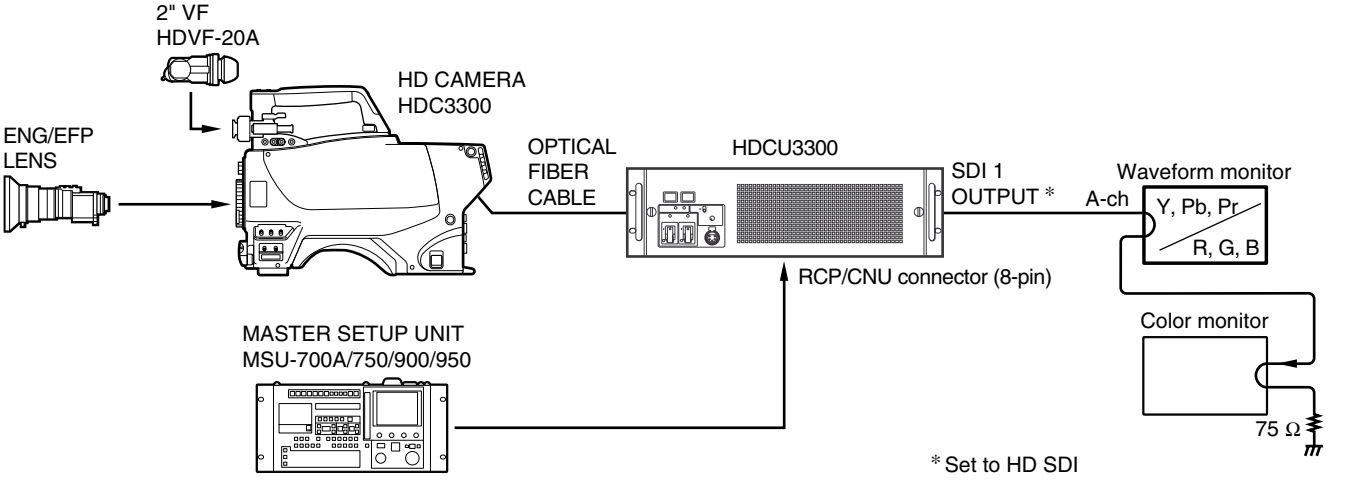
Press the rotary encoder.

To cancel the setting value:

Before pressing the rotary encoder, press the MENU switch toward the “CANCEL” side. The original setting is restored.

After the rotary encoder is pressed, the setting cannot be canceled.

3-1-6. Connection of Equipment



3-1-7. Initial Settings

Note

In this section, describes the adjustment procedures using MSU-900.

MSU control panel

When MSU-700A/900 is used

- 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)
  - LVL DEP 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(ND) button → 1 (CLEAR)
  - FILTER(CC) button → B (3200K)
  - ECS/SHUTTER ON button → OFF (dark)

When MSU-750/950 is used

- Power supply and signal switching block
  - ALL button → OFF (dark)
  - CAM PW button → ON (lit)
  - VF PW button → ON (lit)
  - TEST button → OFF (dark)
  - BARS button → OFF (dark)
  - CLOSE button → ON (lit)
- Camera/CCU circuit ON/OFF block
  - Knee Off* → OFF (lit in reverse)
  - Detail Off* → OFF (lit in reverse)
  - Level Dep Off* → OFF (lit in reverse)
  - Matrix Off* → OFF (lit in reverse)
  - AUTO KNEE button → OFF (dark)
  - SKIN DETAIL button → OFF (dark)
- Others
  - Gamma Off* → ON (lit normally)
  - Master Gain* → 0 (0 dB)
  - ND (1/2/3/4/5)* → 1 (CLEAR)
  - CC (A/B/C/D/E)* → B (3200K)
  - ECS/Shutter* → OFF (lit normally)

*: Push the FUNCTION button, then select the function menu display.

When adjusting using the Setup menu

- 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

3-1-8. Adjustment Items and Setup Menu Items

Refer to the following table when using the camera setup menu for electrical adjustments without using MSU-900.
The table shows camera menu items corresponding to adjustment items of MSU-900.

Maintenance menu (MAINTENANCE button/MSU-900 → ON (lit))

Menu item of the MSU-900				Menu item of the camera		
Menu	**Secondary menu**	**Sub menu**	**Adjusting item**	**MENU**	**PAGE**	**ITEM**
Adjusting	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
Auto Setup	Auto Level			MAINTENANCE	AUTO SETUP	AUTO LEVEL
Lens Adjusting	V Mod Saw		R/G/B	PAINT	VIDEO LEVEL	V MOD R/G/B
	Auto Iris		Level	MAINTENANCE	AUTO IRIS	IRIS LEVEL
			APL Ratio			APL RATIO

File control menu (FILE button/MSU-900 → ON (lit))

Menu item of the MSU-900		Menu item of the camera		
Menu	**Sub menu**	**MENU**	**PAGE**	**ITEM**
Reference	Ref Store	FILE	REFERENCE	STORE FILE
Lens File	Lens Store		LENS FILE	STORE FILE
OHB File	OHB Store		OHB FILE	STORE FILE

Paint menu page 1/3 (PAINT button/MSU-900 → ON (lit))

Menu item of the MSU-900			Menu item of the camera		
Menu	**Sub menu**	**Adjusting Item**	**MENU**	**PAGE**	**ITEM**
Black		R/G/B/Master	PAINT	VIDEO LEVEL	BLACK R/G/B/M
Flare		R/G/B			FLARE R/G/B
Detail	Detail 1	Level		DETAIL 1	LEVEL
		Limiter			LIMITER [M]
		Crispning			CRISP
		Level Dep			LVL DEP
	Detail 2	H/V Ratio			H/V RATIO
	Detail 3	W.Limiter			LIMITER [WHT]
		B.Limiter			LIMITER [BLK]

Paint menu page 2/3 (PAINT button/MSU-900 → ON (lit))

Menu item of the MSU-900		Menu item of the camera		
Menu	**Adjusting item**	**MENU**	**PAGE**	**ITEM**
Gamma	R/G/B/Master	PAINT	GAMMA	LEVEL R/G/B/M
Knee Point	R/G/B/Master		KNEE	POINT R/G/B/M
Knee Slope	R/G/B/Master			SLOPE R/G/B/M
White Clip	R/G/B/Master			WHT CLP R/G/B/M

3-2. Automatic Adjustment

To execute the automatic adjustment

1. **MSU menu operation:**
   - MAINTENANCE button → ON (lit)
   - Touch panel operation
     Auto Setup → Auto Level

     Note

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

2. When the adjustment is completed, the message "Completed" will be displayed.

3-3. Electrical Adjustment

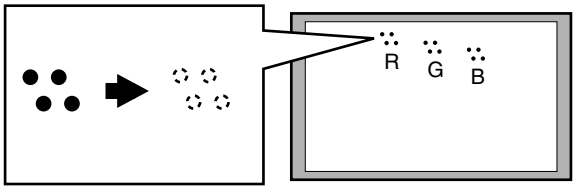
3-3-1. RPN Adjustment

Preparations

- Adjust the color monitor manually for a clearer view.
- Setting for MSU-900
  CLOSE button → ON (lit)
  DETAIL OFF button → OFF (lit)
  MASTER GAIN → 12
- Menu setting
  MENU : SERVICE
  PAGE : OHB-ADJ2
  ITEM: CONC.TEST MODE → ON

Adjustment Procedure

1. **Adjustment Item:**
   MENU: FACTORY
   PAGE: OHB-ADJ2
   ITEM: DC_ADJ_C [R1], [G1], [B1]
   Specification:
   Adjust SH_ADJ_A [R1], [G1], [B1] and SH_ADJ_A [R2], [G2], [B2] values so that the points (four for each R, G, and B) on the color monitor disappear.



Color monitor

2. Perform the file store.
   MENU: SERVICE
   PAGE: OHB-ADJ2
   ITEM: STORE FILE

Setting After Adjustment

- Menu setting
  MENU: SERVICE
  PAGE: OHB-ADJ2
  ITEM: CONC.TEST MODE → OFF
- MSU-900 setting
  MASTER GAIN → 0

3-3-2. CCD Block Gain Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)
Object: Grayscale chart

Preparations

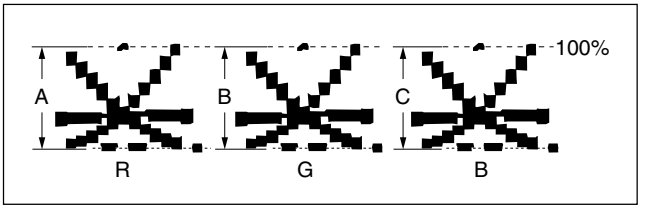
- Setting for MSU-900
  CLOSE button → OFF (dark)
  GAMMA OFF button → OFF (lit)
  DETAIL OFF button → OFF (lit)
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: F7

  Note

  Use a lens of the transmittance of Cannon HJ18 or equivalent.

Adjustment Procedure

1. **Adjustment Item:**
   MENU: SERVICE
   PAGE: OHB-ADJ1
   ITEM: GAIN_CONT [R1], [G1], [B1], [R2], [G2], [B2]
   Specification:
   A = B = C = 100 %



2. Perform the file store.
   MENU: SERVICE
   PAGE: OHB-ADJ1
   ITEM: STORE FILE

Setting After Adjustment

- Setting for MSU-900
  GAMMA OFF button → ON (dark)
  DETAIL OFF button → ON (dark)

3-3-3. White Shading Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)
Object: Full white pattern

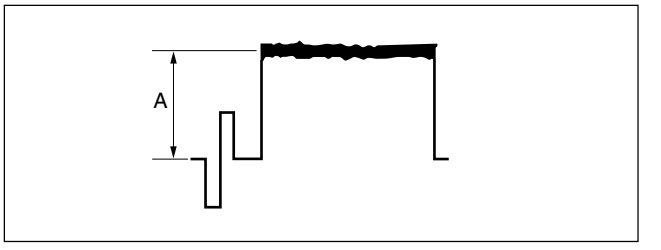
Note

When performing the white shading adjustment, make sure the following conditions are proper. If not, proper adjustment can not be obtained.

- White pattern is not uneven.
- Luminance is correctly adjusted.
- Iris and zoom control of the lens are correctly adjusted.

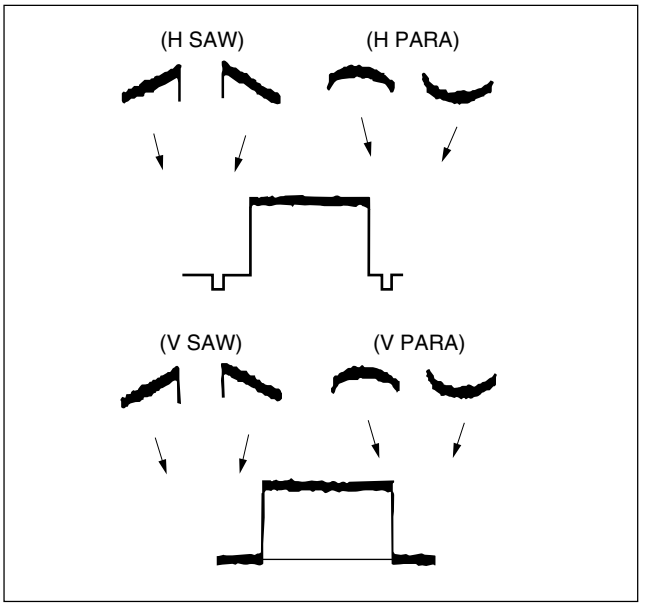
Preparations

- Setting for MSU-900
  KNEE OFF button → OFF (lit)
- Shoot the fully occupied white area of the white pattern on the underscanned monitor frame.
- Iris of the lens: A = 600 ±20 mV (at F4 to F5.6)
  (If the lens aperture is greater than F5.6, adjust the light amounts with shutter.)
- Lens Focus: ∞
- Lens Extender/Shrinker: ×2, ×0.8 → OFF
- Set the setup menu as follows.
  MENU: OPERATION
  PAGE: LENS FILE
  ITEM: FILE
  (Select the file in accordance with the lens attached. If there is no appropriate file, select NO OFFSET, then change the name of lens with MSU.)



Adjustment Procedure

1. Adjust the white balance.
   WHITE button/MSU-900 → ON (lit)
2. If the shading is monitored, proceed as follows.
   MSU menu operation:
   - MAINTENANCE button → ON (lit)
   - Touch panel operation
     Adjusting → White Shading → R
   - Adjustment Items: H Saw, H Para, V Saw, V Para



3. Adjust for G-ch in the same manner.
4. Adjust for B-ch in the same manner.
5. Adjust the white balance.
   WHITE button/MSU-900 → ON (lit)

OHB File Store

MSU menu operation:

- FILE button → ON (lit)
- Touch panel operation
  OHB File → OHB Store → Store

Adjustment for Lens Extender/Shrinker

When the WHITE or shading of V is out of alignment by using the lens extender or lens shrinker, perform the following adjustment (lens adjustment) after the completion of OHB file store.

6. Adjust the white balance.
   WHITE button/MSU-900 → ON (lit)
7. (In the status of lens: ×1) Perform the lens file store.
   MSU menu operation:
   - FILE button → ON (lit)
   - Touch panel operation
     Lens File → Lens Store → Store
8. Lens extender (×2) → ON
   or lens shrinker (×0.8) → ON
9. Adjust the white balance.
   WHITE button/MSU-900 → ON (lit)
10. **MSU menu operation:**
    - MAINTENANCE button → ON (lit)
    - Touch panel operation
      Lens Adjusting → V Mod Saw

    Adjustment Item: R, G, B
    Specification: Set the V modulation correction value as required.
11. Perform the lens file store.
    MSU menu operation:
    - FILE button → ON (lit)
    - Touch panel operation
      Lens File → Lens Store → Store
12. Lens extender (×2) → OFF
    or lens shrinker (×0.8) → OFF

3-4. Video System Level Adjustment

Note

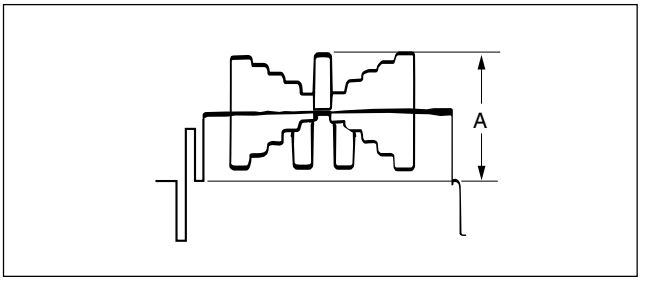
Perform the video system level adjustment at the request of the customer.

3-4-1. H/V Ratio Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)
Object: Grayscale chart

Preparations

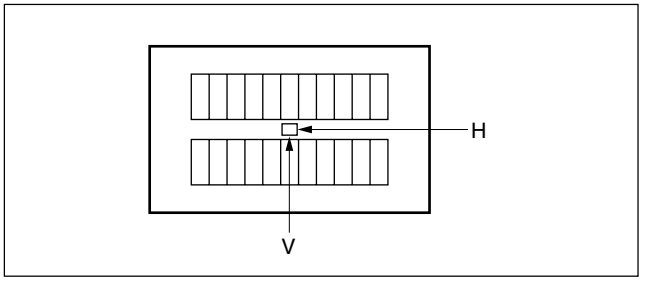
- Setting for MSU-900
  DETAIL OFF button → ON (dark)
  KNEE OFF button → OFF (lit)
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 600 ±20 mV



Adjustment Procedure

1. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → Detail → Detail 1
   - Set each item as follows.
     Level → 99
     Limiter → 0
     Crispening → −25
     Level Dep → 25
2. **MSU menu operation:**
   - Touch panel operation
     Detail 2

   Adjustment Item: H/V Ratio
   Specification: A ratio between H and V detail amounts (white) to be added shall be equal. (from 20 to 40)

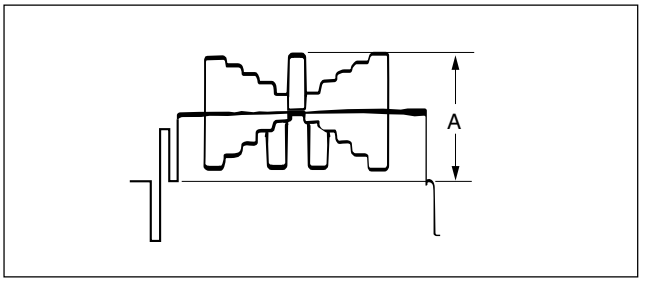


3-4-2. Detail Level Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)
Object: Grayscale chart

Preparations

- Setting for MSU-900
  DETAIL OFF button → ON (dark)
  KNEE OFF button → OFF (lit)
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 600 ±20 mV



Adjustment Procedure

MSU menu operation:

- PAINT button → ON (lit)
- Touch panel operation
  (Page 1/3) → Detail → Detail 1

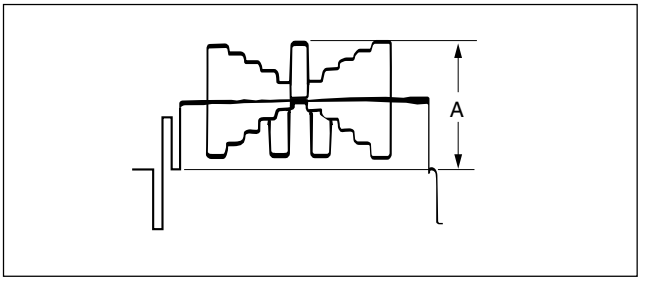
Adjustment Item: Level
Specification: Adjust the detail level to be added to each step of the grayscale for the desired level.

3-4-3. Crispening Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)
Object: Grayscale chart

Preparations

- Setting for MSU-900
  DETAIL OFF button → ON (dark)
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 600 ±20 mV



Adjustment Procedure

1. Adjust the white balance.
   WHITE button/MSU-900 → ON (lit)
2. Adjust the crispening level.
   MSU menu operation:
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → Detail → Detail 1

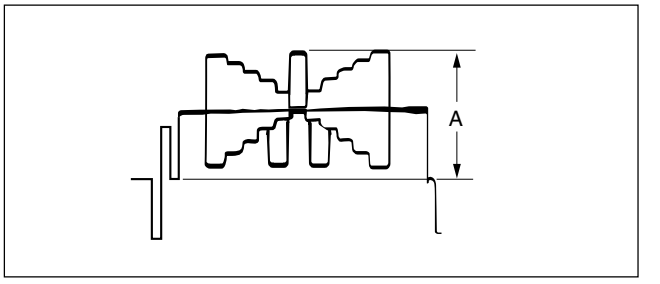
   Adjustment Item: Crispening
   Specification: Set Crispening to −99 once, and turn slowly for increment until the noise at the black level of the waveform just decreases, or until an appropriate crispening level is obtained.

3-4-4. Level Dependent Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)
Object: Grayscale chart

Preparations

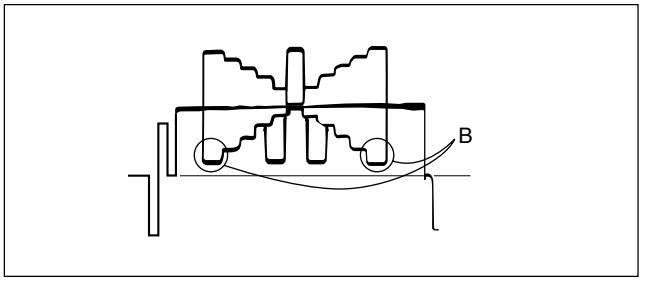
- Setting for MSU-900
  DETAIL OFF button → ON (dark)
  LEVEL DEP OFF button → ON (dark)
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 600 ±20 mV



Adjustment Procedure

MSU menu operation:
- PAINT button → ON (lit)
- Touch panel operation
  (Page 1/3) → Detail → Detail 1

Adjustment Item: Level Dep
Specification: Set Level Dep to −99 once. And turn slowly for increment until spikes at portions B just decrease. Or adjust for the desired level.



Note

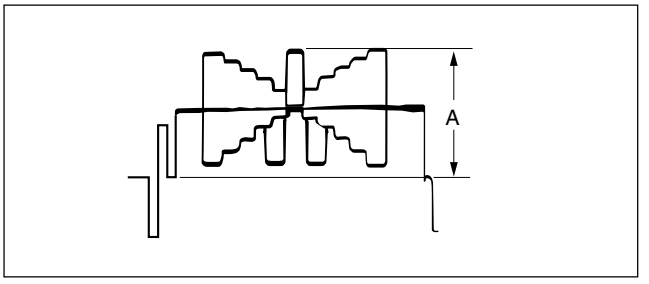
After adjustment is completed, be sure to perform Section 3-4-1 “H/V Ratio Adjustment”.

3-4-5. Detail Clip Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)
Object: Grayscale chart

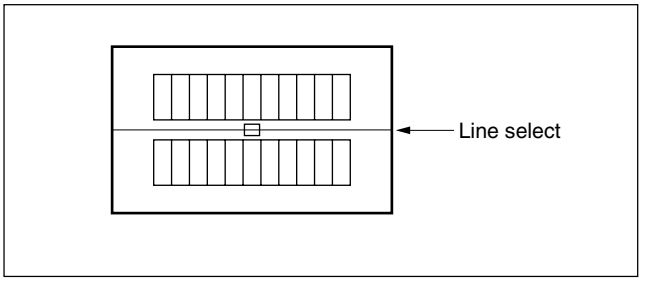
Preparations

- Setting for MSU-900
  KNEE OFF button → OFF (lit)
  DETAIL OFF button → ON (dark)
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 600 ±20 mV



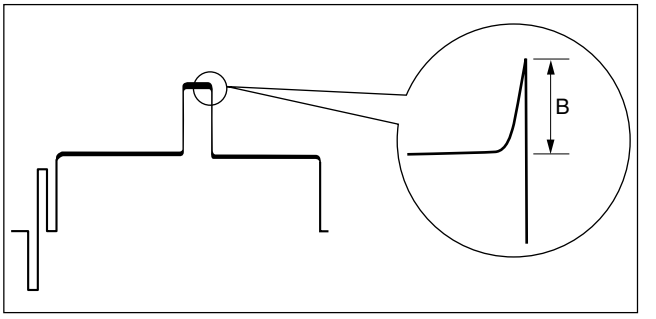
Adjustment Procedure

1. Adjust the white balance.
   WHITE button/MSU-900 → ON (lit)
2. Make a line selection at the center white portion of the grayscale chart.



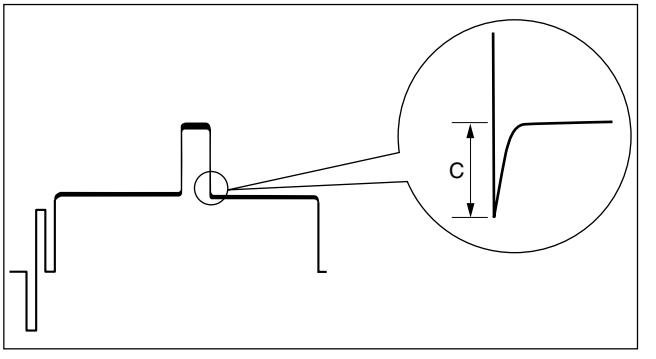
3. Adjust the white limiter.
   MSU menu operation:
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → Detail → Detail 3

   Adjustment Item: W.Limiter
   Specification: Adjust the edge at portion B for the desired clip level.



4. Adjust the black limiter.
   MSU menu operation:
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → Detail → Detail 3

   Adjustment Item: B.Limiter
   Specification: Adjust the edge at portion C for the desired clip level.



3-4-6. Auto-iris Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)
Object: Grayscale chart

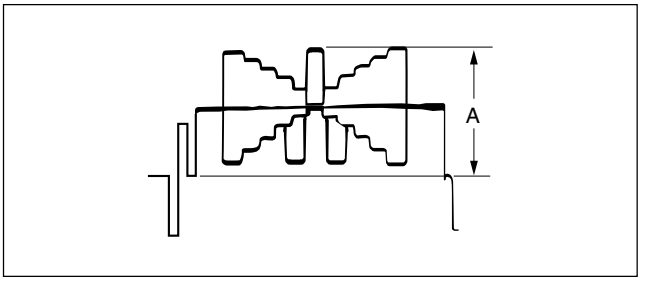
Preparations

- Setting for MSU-900
  AUTO button (Iris control block) → ON (lit)
  KNEE OFF button → OFF (lit)
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.

Adjustment Procedure

1. Adjust the white balance.
   WHITE button/MSU-900 → ON (lit)
2. Adjust APL ratio.
   MSU menu operation:
   - MAINTENANCE button → ON (lit)
   - Touch panel operation
     Lens Adjusting → Auto Iris

   Adjustment Item: APL Ratio
   Specification: Set the auto-iris operation mode as required. (It can be set between the average and the peak value of video signal.)
   99 → average
   −99 → peak value
3. Adjust the auto-iris level.
   MSU menu operation:
   Adjustment Item: Level
   Specification: A = 700 ± 7 mV



3-4-7. Pedestal Level Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)

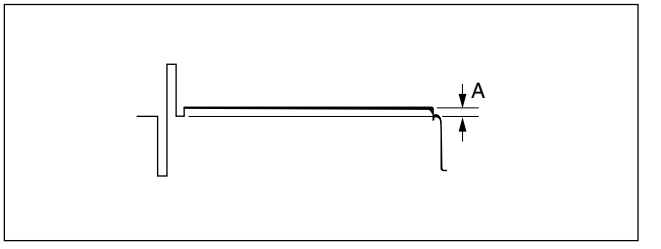
Preparations

- Settings for MSU-900
  CLOSE button → ON (lit)

Adjustment Procedure

1. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → Black

   Adjustment Item: R, G, B Master
   Specification: Adjust the levels A for preferred level for R, G and B respectively. To adjust all levels for R, G and B simultaneously, adjust them using the Master.
   (Reference value: A = 21 mV)

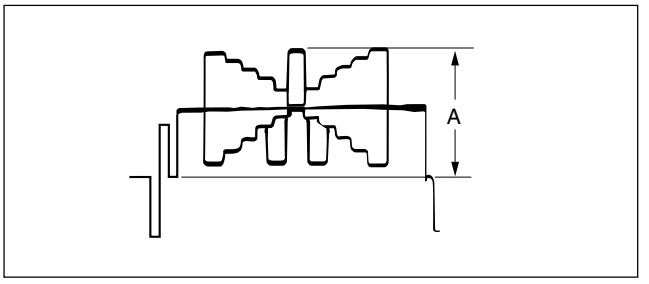


3-4-8. Flare Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)
Object: Grayscale chart

Preparations

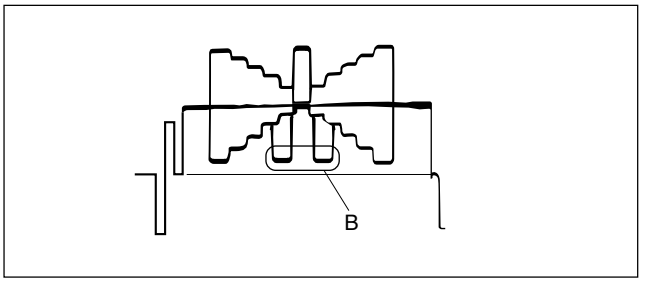
- Setting for MSU-900
  KNEE OFF button → OFF (lit)
  DETAIL OFF button → OFF (lit)
  MATRIX OFF button → OFF (lit)
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 600 ±20 mV



Adjustment Procedure

1. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → Flare

   Adjustment Item: R, G, B
   Specification: Adjust the levels B for preferred level for R, G and B respectively.

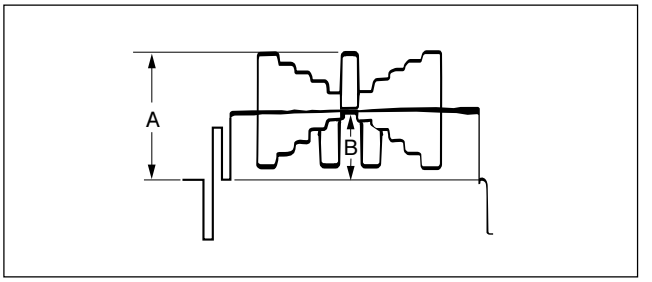


3-4-9. Gamma Correction Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)
Object: Grayscale chart

Preparations

- Setting for MSU-900
  KNEE OFF button → OFF (lit)
  GAMMA OFF button → ON (dark)
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 700 ±20 mV



Adjustment Procedure

1. Adjust the white balance.
   WHITE button/MSU-900 → ON (lit)
2. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 2/3) → Gamma

   Adjustment Item: R, G, B, Master
   Specification: Adjust the cross points B of the grayscale for preferred level for R, G and B respectively.
   To adjust all cross points for R, G and B simultaneously, adjust them using the Master.

3-4-10. Knee Point/Knee Slope Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)

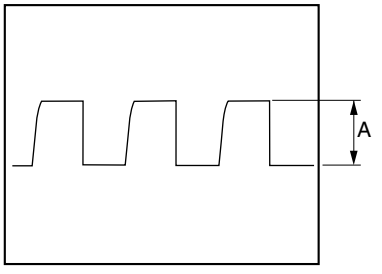
Preparations

- Setting for MSU-900
  MASTER GAIN → +6 dB
  TEST1 button → ON (lit)
  KNEE OFF button → ON (dark)

Adjustment Procedure

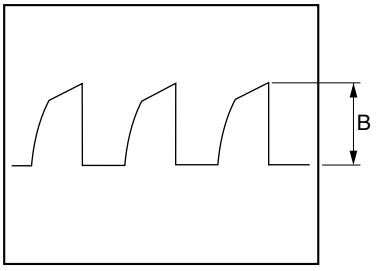
1. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 2/3) → Knee Slope
   - Set Master to +99.
2. **MSU menu operation:**
   - Touch panel operation
     (Page 2/3) → Knee Point

   Adjustment Item: R, G, B Master
   Specification: Adjust the levels A for preferred level for R, G and B respectively. To adjust all levels for R, G and B simultaneously, adjust them using the Master.
   (Reference value: A = 686 mV)



3. **MSU menu operation:**
   - Touch panel operation
     (Page 2/3) → Knee Slope

   Adjustment Item: R, G, B Master
   Specification: Adjust the levels B for preferred level for R, G and B respectively. To adjust all levels for R, G and B simultaneously, adjust them using the Master.
   (Reference value: B = 735 mV)



Setting after Adjustment

- MASTER GAIN/MSU-900 → 0 dB
- KNEE OFF button/MSU-900 → OFF (lit)

3-4-11. White Clip Level Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)

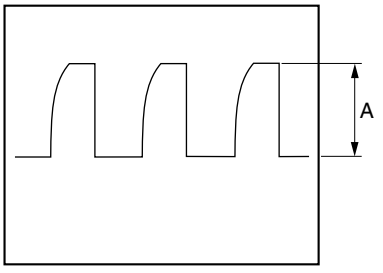
Preparations

- Setting for MSU-900
  MASTER GAIN → +12 dB
  TEST1 button → ON (lit)

Adjustment Procedure

1. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 2/3) → White Clip

   Adjustment Item: Adjust the levels A for preferred level for R, G and B respectively. To adjust all levels for R, G and B simultaneously, adjust them using the Master.
   (Reference value: A = 756 mV)



Setting after Adjustment

- MASTER GAIN/MSU-900 → 0 dB
- TEST1 button/MSU-900 → OFF (dark)

3-4-12. File Store

After adjustments described in Section 3-4 are completed, be sure to execute the reference file store.

1. **MSU menu operation:**
   - FILE button → ON (lit)
   - Touch panel operation
     Reference → Ref Store → Start
2. When the store operation is completed, the message "Completed" is displayed.

3-5. ND Offset Adjustment

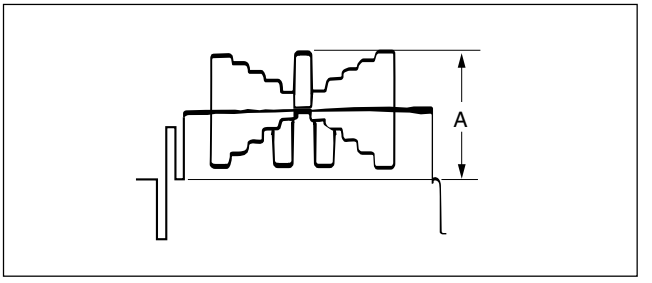
When the filter disk unit is replaced alone, the correction of white balance is required. Proceed as follows.

Equipment: Waveform monitor (R, G, B)
Test Point: HD SDI connector (HDCU3300)
Object: Grayscale chart

Preparations

- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Setting for MSU-900
  AUTO button (Iris control block) → ON (lit)
- Iris of the lens: A = 600 ±20 mV

Adjustment Procedure



1. FILTER CTRL button/MSU-900 → ON (lit)
2. Select the ND 1 filter.
   ND 1 button/MSU-900 → ON (lit)
3. Adjust the white balance.
   WHITE button/MSU-900 → ON (lit)
4. After the white balance adjustment is completed, switch the filter from ND2 to ND5, and adjust the white balance for each.
   Set the GAIN for each ND filter as follows.
   MASTER GAIN/MSU-900
   - ND filter 2: 0 dB
   - ND filter 3: 0 dB
   - ND filter 4: 6 dB
   - ND filter 5: 12 dB

OHB File Store

1. **MSU menu operation:**
   - FILE button → ON (lit)
   - Touch panel operation
     OHB File → OHB Store → Store
2. When the store operation is completed, the message "OHB File Stored" is displayed.

Setting after Adjustment

- MASTER GAIN/MSU-900 → 0 dB

HDC3300 (CE)
HDC3300 (SY) E
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