SONY

HD COLOR CAMERA

# HDC-750A

HDVS

MAINTENANCE MANUAL

Volume 1 1st Edition

Serial No. 10001 and Higher

## ⚠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.

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# Manual Structure

## Purpose of this manual

This manual is the maintenance manual for HD Color Camera HDC-750A.
This manual describes the information items necessary when the unit is supplied and installed, items that premise the service based on the components parts such as alignment, schematic diagrams, board layouts and spare parts lists, assuming use of system and service engineers.

## Contents

The following are summaries of all the sections for understanding the contents of this manual.

### Maintenance Manual Volume 1

#### Section 1 Installation

Describes information about connector input/output signals, instance of system configuration and function of internal switches.

#### Section 2 Service Overview

Describes location of printed circuit board, circuit description, replacement of parts and notes on service.

#### Section 3 Setup Menu

Describes setup menu of the camera and self-diagnosis.

#### Section 4 Electrical Alignment

Describes the general information for electrical adjustment and the adjustment procedure of this unit.

### Maintenance Manual Volume 2

#### Section 1 Spare Parts

Describes exploded views, parts list, supplied accessories and optional fixtures used in the unit.

#### Section 2 Semiconductor Pin Assignments

Describes function diagrams and pin names of semiconductor used in the unit.

#### Section 3 Block Diagrams

Describes overall block diagram and block diagrams for every circuit board.

#### Section 4 Schematic Diagrams

Describes schematic diagrams for every circuit board and frame wiring.

#### Section 5 Board Layouts

Describes board layouts for every circuit board.

## Relative manual

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

- **Operation Manual (Supplied with this unit)**

This manual is necessary for application and operation of this unit.

# Section 1
# Installation

## 1-1. Supplied Accessories

| Accessories | Sony P/N | Q'ty |
|---|---|---|
| Shoulder belt | A-6772-374-A | 1 |
| Tripod adaptor VCT-14 | ———————— | 1 |
| Extension board EX-512 | A-8273-247-A | 1 |
| Operation manual | ———————— | 1 |
| Maintenance manuals Vol.1, Vol.2 | ———————— | 1 each |

## 1-2. Connectors and Cables

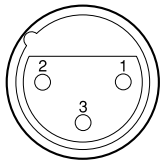
### 1-2-1. Connector Input/Output Signals

#### Output Signal

- **TEST OUT**

  BNC type 75 Ω, 1.0 Vp-p

**MIC IN (3P FEMALE)**




(EXTERNAL VIEW)

| No. | Signal | I/O | Specifications |
|---|---|---|---|
| 1 | MIC (G) | —— | −60 dBu High impedance Balanced |
| 2 | MIC (X) | IN | |
| 3 | MIC (Y) | IN | |

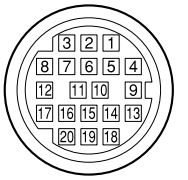
(0 dBu = 0.775 Vrms)

### LENS (12P FEMALE)


(EXTERNAL VIEW)

| No. | Signal | I/O | Specifications |
|---|---|---|---|
| 1 | RET VIDEO ENABLE | IN | ENABLE: 0 V<br>DISABLE: +5 V or OPEN |
| 2 | VTR START /STOP | IN | ENABLE: 0 V<br>DISABLE: +5 V or OPEN |
| 3 | GND | | GND for UNREG |
| 4 | AUTO SERVO | OUT | AUTO: +5 V<br>MANU: 0 V or OPEN |
| 5 | IRIS CONT | OUT | +3.4 V (F16) to<br>+6.2 V (F2.8) |
| 6 | UNREG | OUT | +10.5 V to +17 V |
| 7 | IRIS POSITION | IN | +3.4 V (F16) to<br>+6.2 V (F2.8) |
| 8 | AUTO/MANU | OUT | AUTO IRIS: 0 V<br>MANUAL IRIS: +5 V |
| 9 | EXTENDER ON/OFF | IN | EX 2 ON: 0 V<br>EX 0.8 ON: +3.8 V<br>OFF: +4.8 V |
| 10 | ZOOM POSITION | IN | WIDE: 2 V<br>TELE: 7 V |
| 11 | FOCUS POSI | IN | ∞: 7V<br>min.: 2 V |
| 12 | LENS TX | OUT | Serial data for HKCA-700 |

### VF (20P FEMALE)




(EXTERNAL VIEW)

| No. | Signal | I/O | Specifications |
|---|---|---|---|
| 1 | S-DA TA | IN/OUT | TTL level |
| 2 | NC | | No connection |
| 3 | POWER OFF CTL | OUT | ON: OPEN<br>OFF: GND |
| 4 | SCK | OUT | TTL level |
| 5 | COLOR/BW | IN | B/W: GND<br>COLOR: OPEN |
| 6 | NC | | No connection |
| 7 | NC | | No connection |
| 8 | G TALLY | OUT | ON: 5 V<br>OFF: GND |
| 9 | PEAKING CTL | IN | VF to CAM, Zi = 1 k Ω<br>0 V to 5 V<br>0 V: PEAKING OFF<br>5 V: PEAKING MAX |
| 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 | NC | | No connection |
| 15 | NC | | No connection |
| 16 | NC | | No connection |
| 17 | R TALLY | OUT | ON: 5 V<br>OFF: GND |
| 18 | NC | | No connection |
| 19 | UNREG GND | —— | GND for UNREG |
| 20 | UNREG | OUT | +10.5 V to +17 V |

**CA (68P FEMALE)**


(EXTERNAL VIEW)

| No. | Signal | I/O | Specifications |
|---|---|---|---|
| 1 | UNREG (G) | —— | GND for UNREG |
| 2 | UNREG (G) | —— | |
| 3 | VF UNREG (G) | —— | GND for VF UNREG |
| 4 | LENS UNREG (G) | —— | GND for LENS UNREG |
| 5 | UNREG | IN | +10.5 to +17.0 V |
| 6 | UNREG | IN | |
| 7 | VF UNREG | IN | +10.5 to +17.0 V |
| 8 | LENS UNREG | IN | +10.5 to +17.0 V |
| 9 | SCL (CHU) | IN/OUT | IIC interface, 5 Vp-p |
| 10 | SDA (CHU) | IN/OUT | IIC interface, 5 Vp-p |
| 11 | RM RX DATA (X) | IN | New command interface |
| 12 | RM TX DATA (Y) | OUT | |
| 13 | RM DATA | IN/OUT | GND for RM DATA |
| 14 | CHU POWER SAVE | IN | 0 V: SAVE |
| 15 | ADP SYNC GND | —— | GND for SYNC |
| 16 | ADP SYNC | IN | Negative pulse, 5 Vp-p |
| 17 | NC | | No connection |
| 18 | VF VIDEO (Y) | IN | WPL*1: 0.7 V, 0 Vdc, Zi = 75 Ω |
| 19 | VF VIDEO ($P_B$) | IN | PL*2: ±0.35 V, 0 Vdc, Zi = 75 Ω |
| 20 | VF DTL | OUT | Negative DTL |
| 21 | TEST GND | —— | GND for TEST |
| 22 | NC | | No connection |
| 23 | +5.5 V (CHU) | OUT | |
| 24 | GND (CHU) | —— | |
| 25 | –5.5 V (CHU) | OUT | |
| 26 | NC | | No connection |
| 27 | R CHU VIDEO | OUT | 0.7 V, 0 Vdc, Zo = 75 Ω |
| 28 | NC | | No connection |
| 29 | G CHU VIDEO | OUT | 0.7 V, 0 Vdc, Zo = 75 Ω |
| 30 | NC | | No connection |
| 31 | B CHU VIDEO | | 0.7 V, 0 Vdc, Zo = 75 Ω |
| 32 | NC | | No connection |
| 33 | MIC GND | —— | GND for MIC |
| 34 | MIC (X) | OUT | –60 dBu, Balanced |

| No. | Signal | I/O | Specifications |
|---|---|---|---|
| 35 | UNREG (G) | —— | GND for UNREG |
| 36 | UNREG (G) | —— | |
| 37 | VF UNREG (G) | —— | GND for VF UNREG |
| 38 | LENS UNREG (G) | —— | GND for LENS UNREG |
| 39 | UNREG | IN | +10.5 to +17.0 V |
| 40 | UNREG | IN | |
| 41 | VF UNREG | IN | +10.5 to +17.0 V |
| 42 | LENS UNREG | IN | +10.5 to +17.0 V |
| 43 | SCL (ADP) | IN/OUT | IIC interface, 5 Vp-p |
| 44 | SDA (ADP) | IN/OUT | IIC interface, 5 Vp-p |
| 45 | RM RX DATA (Y) | IN | New command interface |
| 46 | RM TX DATA (X) | OUT | |
| 47 | VTR SAVE | OUT | 0 V: SAVE |
| 48 | VF POWER SAVE | IN | 0 V: SAVE |
| 49 | SKIN MARKER | IN | ON: +5 V<br>OFF: 0 V |
| 50 | AUTO MARKER | OUT | ON: +5 V<br>OFF: 0 V |
| 51 | CHU POWER SAVE | OUT | 0 V: SAVE |
| 52 | VF VIDEO (Y) GND | IN | GND for VF VIDEO(Y) |
| 53 | VF VIDEO ($P_R$) | IN | PL*2: ±0.35 V, 0 Vdc, Zi = 75 Ω |
| 54 | VF VIDEO ($P_B$ $P_R$) GND | —— | GND for VF VIDEO ($P_B$ $P_R$) |
| 55 | TEST | IN | 0.7 V, 0 Vdc, Zi = 75 Ω |
| 56 | NC | | No connection |
| 57 | UNREG (+) SENSE | IN | |
| 58 | UNREG (–) SENSE | IN | |
| 59 | NC | | No connection |
| 60 | NC | | No connection |
| 61 | R CHU VIDEO GND | —— | GND for R CHU VIDEO |
| 62 | NC | | No connection |
| 63 | G CHU VIDEO GND | —— | GND for G CHU VIDEO |
| 64 | NC | | No connection |
| 65 | B CHU VIDEO GND | —— | GND for B CHU VIDEO |
| 66 | CHU SEPARATE | IN | 0V: SEPARATE |
| 67 | NC | | No connection |
| 68 | MIC (Y) | OUT | –60 dBu, Balanced |

*1 WPL: White peak level
*2 PL: Peak level

(0 dBu = 0.775 Vrms)

### 1-2-2. Connection Connectors

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 (BNC) | 1-569-370-12 Plug, BNC or B-B Cable assembly (1.5 m, Option) |
| MIC (3P FEMALE) | 1-508-084-00 XLR, 3P Male or ITT Cannon XLR-3-12C equivalent |

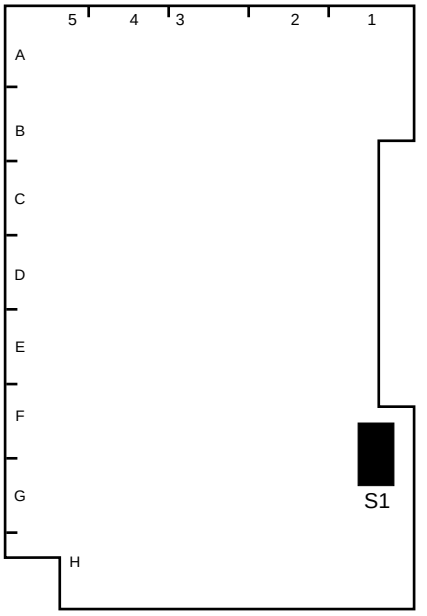
## 1-3. Operating Environment

Operating Temperature: −20 ˚C to +45 ˚C
Storage Temperature: −20 ˚C to +50 ˚C
Humidity: No condensation

- Install the unit in a location as dry and well-ventilated as possible.
- Do not install the unit in the following conditions.
  High temperature room or near the heat source.
  Excessive dust or mechanical vibration.
  Intense magnetic and electric fields.
  A place subjected to direct sunlight or strong light.

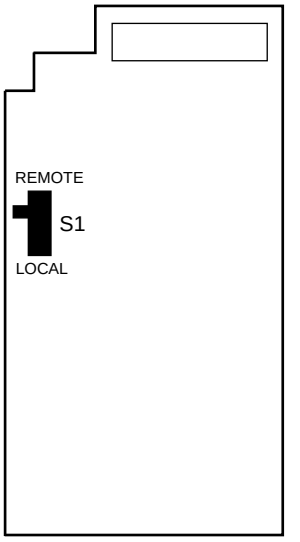
# 1-4. Function of Internal Switches

### IF-569 Board




IF-569 BOARD (A SIDE)

### Driver Board




DRIVER BOARD (A SIDE)

**S1**

**S1-1: Factory-use switch**

Always set to OFF.
Factory-set position: OFF

**S1-2: Selection of HDC-700A and HDC-750A**

ON: HDC-700A
OFF: HDC-750A
Factory-set position: OFF

**Note**

In replacing the IF-569 board, be sure to set the switch S1-2 to the proper position according to the type of the camera.

**S1-3: Factory-use switch**

Always set to ON.
Factory-set position: ON

**S1-4, S1-6 to S1-8: Factory-use switches**

Always set to OFF.
Factory-set position: All OFF

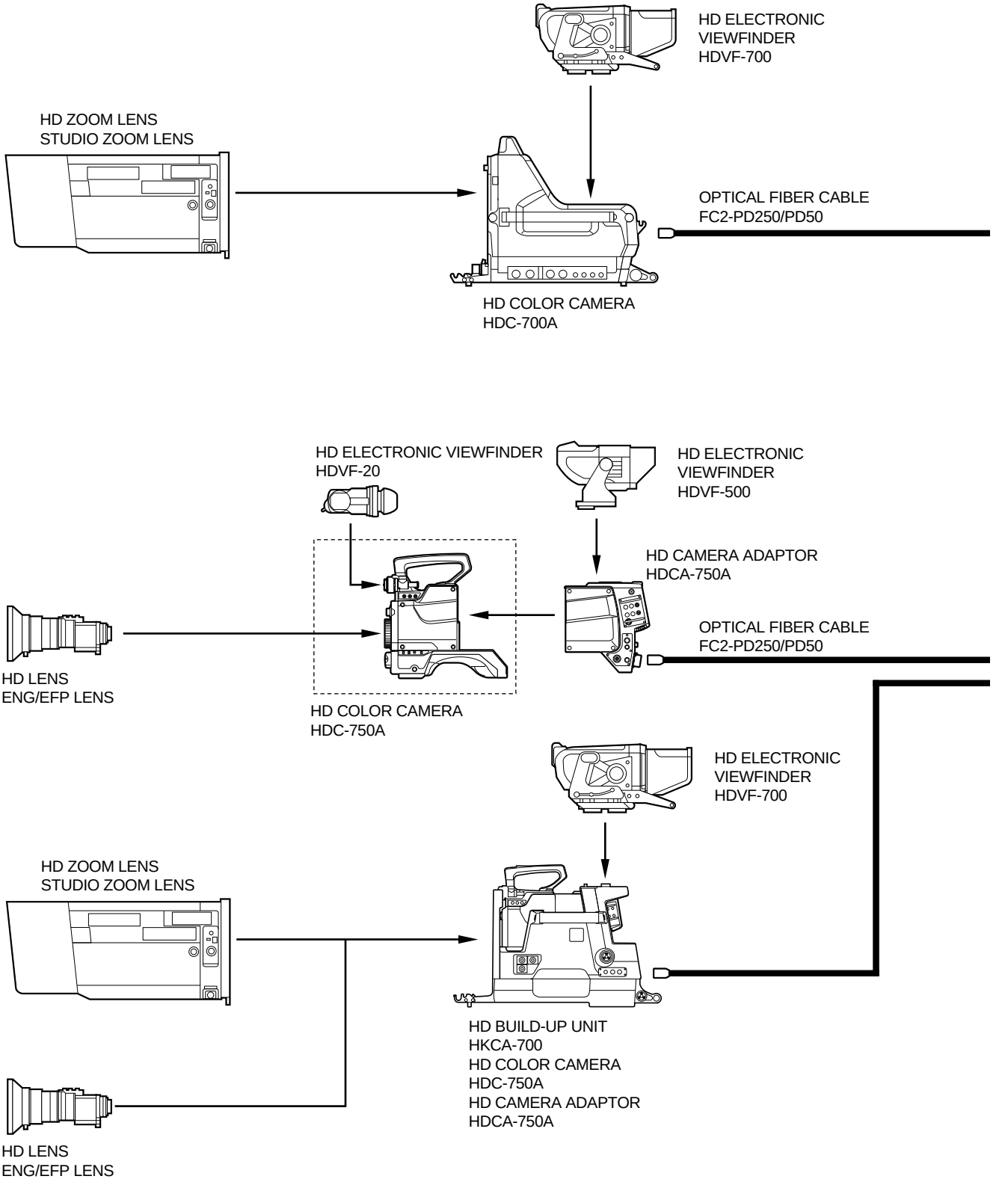
**S1-5: Adjustment switch**

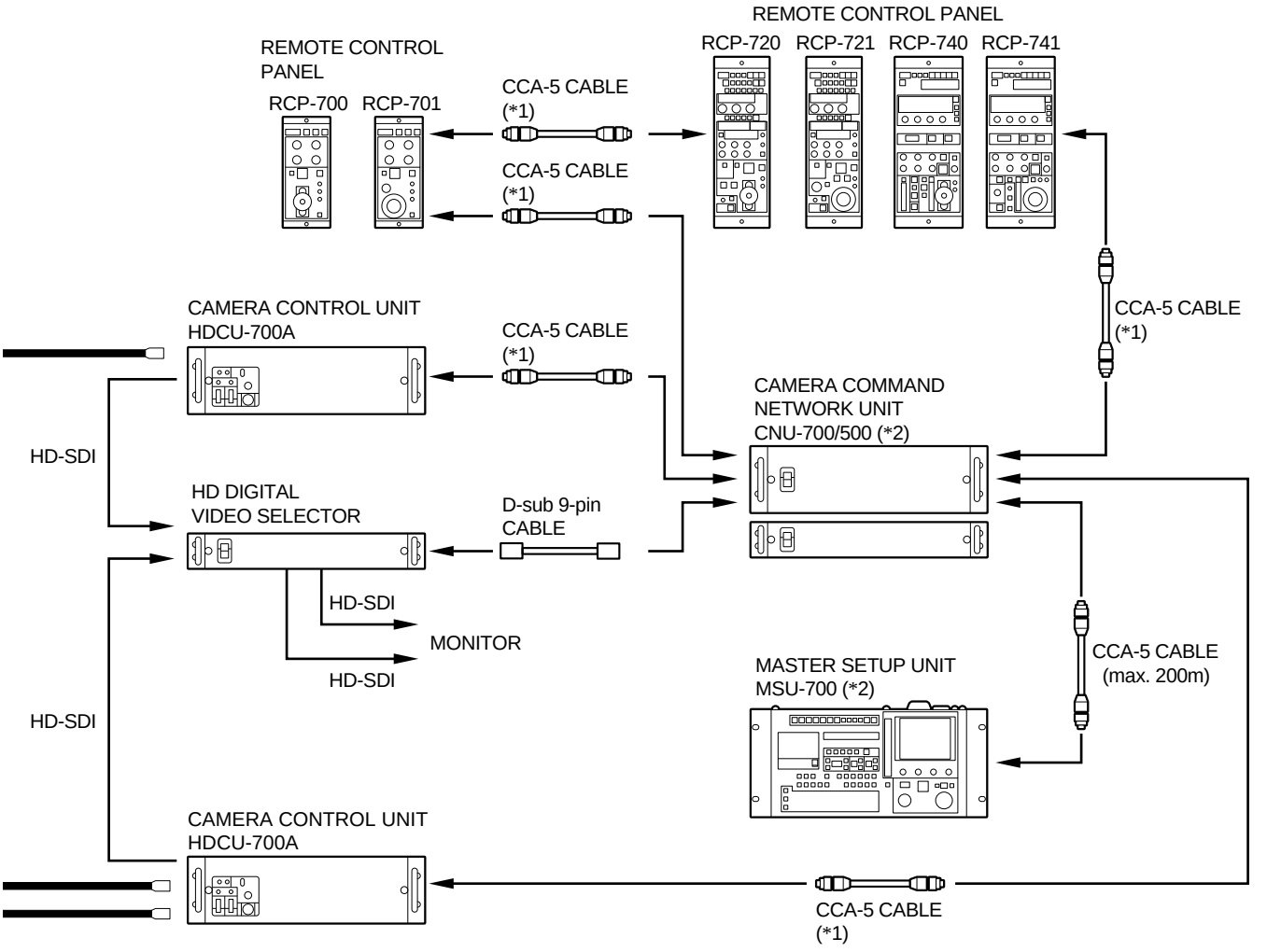
Always set to OFF except at adjustment.
Factory-set position: OFF

**S1: REMOTE/LOCAL switch**

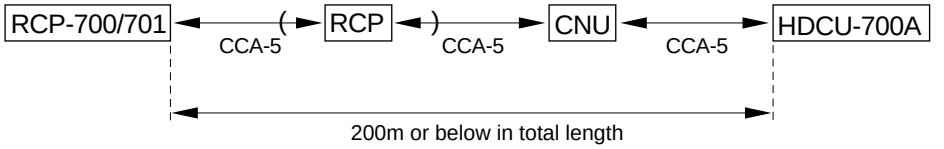
REMOTE: Filter (CC or ND) can be selected by using the HDCU, MSU and RCP and so on.
LOCAL: Filter (CC or ND) can be selected with the knob on the front panel.
Factory-set position: REMOTE

## 1-5. Example of System Configuration





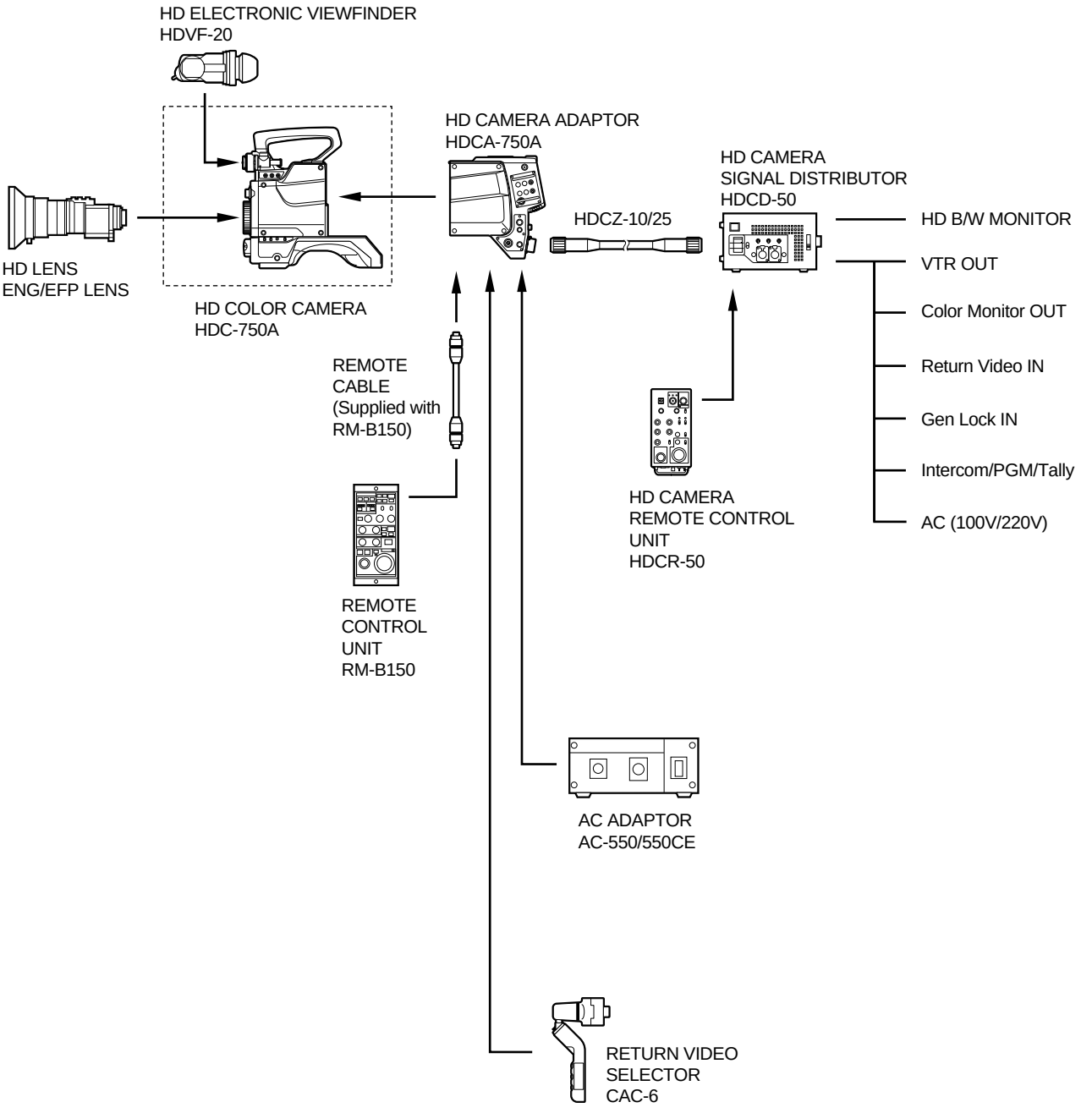

*1: CCA-5 cable length




*2: Installation of HD Master Set-up Kit HKCF-700 is needed.

Optional Accessories

| | |
|---|---|
| For HDC-700A | SCRIPT HOLDER: BKP-7911/7912 |
| For HDC-750A | ELECTRET CONDENSER MICROPHONE: ECM-MS5 |
| | MICROPHONE: C-74 (Sony P/N 1-542-099-11) |
| | CRADLE SUSPENSION: CRS-3P |
| | CARRYING CASE: LC-303SFT |
| For HDCU-700A | HD DIGITAL RATE CONVERTER: HKCU-701A |
| | HD ANALOG INTERFACE: HKCU-702 |


HD ELECTRONIC VIEWFINDER
HDVF-20
HD CAMERA ADAPTOR
HDCA-750A
HD CAMERA
SIGNAL DISTRIBUTOR
HDCD-50
HDCZ-10/25
HD B/W MONITOR
VTR OUT
Color Monitor OUT
Return Video IN
Gen Lock IN
Intercom/PGM/Tally
AC (100V/220V)
HD LENS
ENG/EFP LENS
HD COLOR CAMERA
HDC-750A
REMOTE
CABLE
(Supplied with
RM-B150)
HD CAMERA
REMOTE CONTROL
UNIT
HDCR-50
REMOTE
CONTROL
UNIT
RM-B150
AC ADAPTOR
AC-550/550CE
RETURN VIDEO
SELECTOR
CAC-6

# Section 2
# Service Overview

## 2-1. Notes on Service

### 2-1-1. Extension Board

The extension board is available to check every printed circuit board and to perform adjustment.

| Extension board | Sony P/N | To be extended |
|---|---|---|
| EX-512 | A-8273-247-A | VA-158<br>MX-59<br>PR-200<br>DL-65<br>IE-44<br>Plug-in boards for HDCA |

### 2-1-2. 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**

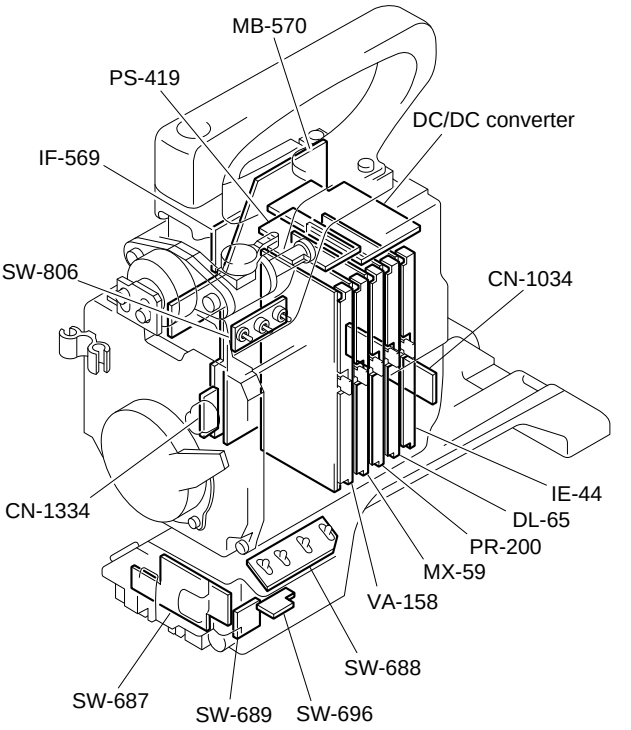
Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

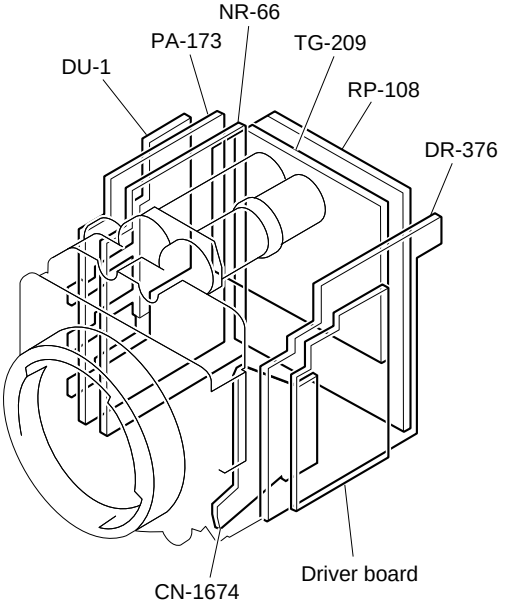
**4. Units Representation**

The following represented units are changed or omitted in writing.

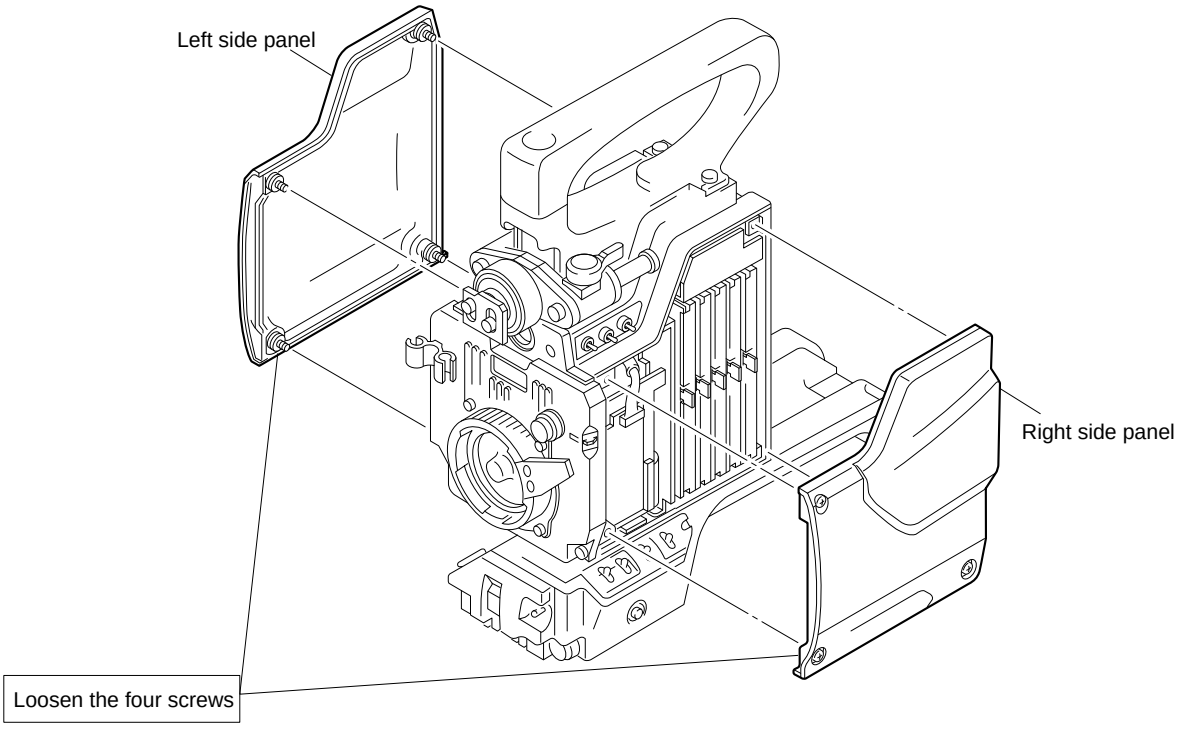
| Units | | Representation |
|---|---|---|
| Capacitance | µF | uF |
| Inductance | µH | uH |
| Resistance | Ω | Abbreviation |
| Temperature | ˚C | XXX-DEG-C |

## 2-2. Location of Printed Circuit Boards



## 2-3. Removal of Cabinet



## 2-4. Circuit Description

### BI-132 board

The BI-132 board supplies the DC bias required for the CCD. The CCD output is sent through a buffer to the NR-66 board. The BI-132 board mounts horizontal clock drivers for the CCD and a reset gate driver.

### CN-1674 board

The CN-1674 board is the relay board that supplies each CCD driving pulse generated on the DR-376 board to the BI-132 board. The CN-1674 board also generates the voltage used for the horizontal clock drivers for the CCD.

### DR-376 board

The DR-376 board mounts the vertical clock drivers for CCD driving, drivers for a shutter pulse and V/H driver. And the DR-376 board generates the V-sub voltage proper to the CCD and then supplies it to the CCD.
The voltage produced using a DC/DC converter is sent through this board to each board.

### TG-209 board

The TG-209 board generates clock pulses and PLL-locks them with the VCO on the SG-226 board (of the camera adaptor) using the VCO control voltage sent from the IF-569 board, to generate each CCD driving pulse or sample-and-hold pulse. These pulse are sent to the DR-376 and PA-173 boards.

### PA-173 board

The CCD output is split into two channels. The PA-173 board is provided with a multiplexer which is used to return the split signals to thier original state.

### NR-66 board

The NR-66 board performs correlative double sampling so as to extract a reset noise from the CCD output.

### DU-1/RP-108 boards

The DU-1 and RP-108 boards mount the APR correction circuit for the CCD.

### VA-158 board

The VA-158 board consists of the video amplifier, gain-up amplifier, white balancing amplifier, white/black shading correction circuits, test signal generator, diagnosis circuit and so on.
The R, G and B video signals input from the CCD block are passed through the differential amplifier and pre-white-clip correction circuit. And then the residual component of clocks is removed at the LPF. The differential amplifier clamps the black level and also mixes the black shading correction signal with the video signals.
The R, G and B video signals are passed through the pre-set gain adjusting control, the black-set circuit, the gain-up amplifier and white balancing amplifier sequentially and are then output to the MX-59 board. The white balancing amplifier performs the white shading correction too.
In addition, the VA-158 board has the test signal generator which can generate two types of test signals. The test signals can be used for various adjustments or maintenance by switching the output signal from the CCD signal to either of test signals. The adjustment data for the VA-158 board is stored in the EEPROM on the board.

### MX-59 board

The R, G and B video signals from the VA-158 board are input to the flare circuit at first. At the following amplifiers, level adjustment is done and the pedestal is added to the video signals. The resultant signals are output to the PR-200 board. The matrix circuit generates the color correction signal from the R, G and B video signals to improve the color reproduction.
The knee aperture signal generated by the knee aperture circuit is output to the PR-200 board to be mixed with the R, G and B video signals.
The MX-59 board is provided with NAM Y signal generator for auto-iris function and the diagnosis circuit, too. The adjustment data for the MX-59 board is stored in the EEPROM on the board.

### PR-200 board

The R, G and B video signals from the MX-59 board are input to the input amplifier and are then passed through the knee and black gamma circuits. After the gamma correction is performed by the gamma circuit, the video signals are then adjusted in level and are mixed with the knee aperture signal. The resultant signals are output via the output amplifier.
The PR-200 board is provided with the diagnosis circuit, knee saturation circuit, super skin-knee correction circuit, and detection circuit for auto-knee correction. The adjustment data for the PR-200 board is stored in the EEPROM on the board.

### DL-65 board

The DL-65 board generates 1H-delayed R/G/B signals and 2H-delayed G signal, which are needed to create detail signals. The R/G/B video signals are analog-to-digital converted and then enter the FIFO memory to create those delayed signals. The delayed signals are digital-to-analog converted again and are output to the IE-44 board together with a 0H-delayed signal.
The DL-65 board has the diagnosis circuit, too.

### IE-44 board

IE-44 board generates the H/V detail signals. The detail signals are controlled in detail balance, detail level and frequency, and are crispened. The resultant signals are mixed with the main line signal.
In addition, IE-44 board has the color-bar signal generator and diagnosis circuit. The main line signal can be switched over to the color-bar signal according to use.
The main line signal is passed through the white clipping circuit and blanking circuit where the SYNC is added to the signal.
The adjustment data for the IE-44 board is stored in the EEPROM on the board.

### IF-569 board

IF-569 board consists of a microcomputer for system control and its peripheral circuits. The main program is written in the EPROM on the board. And the camera control data is stored in the SRAM, so the data is kept even if powered off owing to the backup circuit. Moreover, the IF-569 board is provided with the interface circuit with the lens and auto-iris control circuit.
In addition, the IF-569 board has an interface circuit supporting the new command system to communicate with the camera adaptor. The interface circuit is used to interface with an 1.5-inch viewfinder through the 2-wired serial bus.

## 2-5. Disconnecting/Connecting Flexible Card Wire

The two flexible card wires are used between the MB-570 board and PA-173 board, MB-570 board and DR-264 board. Take care not to bend forcedly these flexible card wires. This shorten the wire life.

### Disconnecting

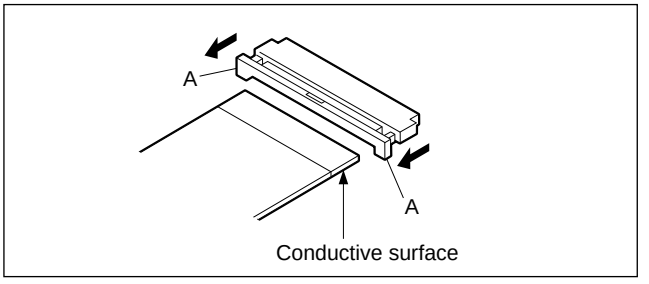
1. Turn off the power.
2. Slide portions A in the direction of the arrow to unlock and pull out the flexible card wire.

### Connecting

**Notes**

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

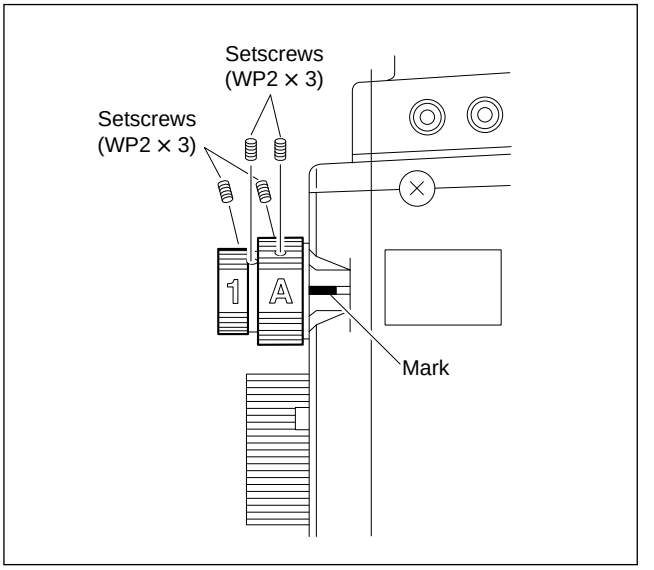
1. Slide portions A in the direction of the arrow and insert the flexible card wire as far as it will go with the conductive surface down.
2. Slide portions A in the reverse direction to lock.




## 2-6. Positioning Adjustment for Filter Knobs

Installing the filter knobs, be sure to perform the following adjustment.

1. Rotate the outer knob shaft until the cross filter can be seen from the lens mount.
2. Align the CC filter knob number A with the mark on the front panel and tighten the two setscrews.
   Tightening torque: $20 \times 10^{-2}$ N•m (2.0 kgf•cm)
3. Rotate the CC filter knob and check that it moves smoothly.
4. Rotate the inner knob shaft until the clear filter (straight through filter) can be seen from the lens mount.
5. Align the ND filter knob number 1 with the mark on the front panel and tighten the two setscrews.
   Tightening torque: $20 \times 10^{-2}$ N•m (2.0 kgf•cm)
6. Rotate the ND filter knob and check that it moves smoothly.



## 2-7. Replacement of CCD Unit

### 2-7-1. Description on 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.

Ex.) AHAxxxxx
- Serial number for CCD block
- CCD block type

### 2-7-2. Replacement of CCD Unit

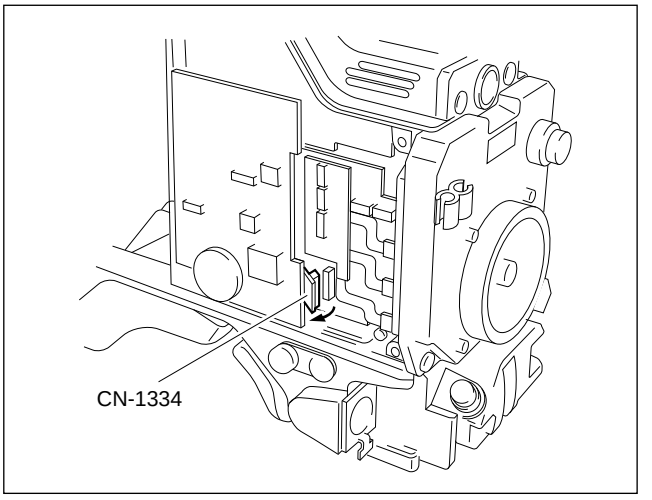
**CAUTION**

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 shorts or electric hazards.
Prior to replacement, be sure to disconnect the optical cable or the cable connected at the DC IN connector in addition to turning off the power switch.

**Note**

If replacing CCD unit, please order the CCD UNIT HKC-C750A through the sales channel.

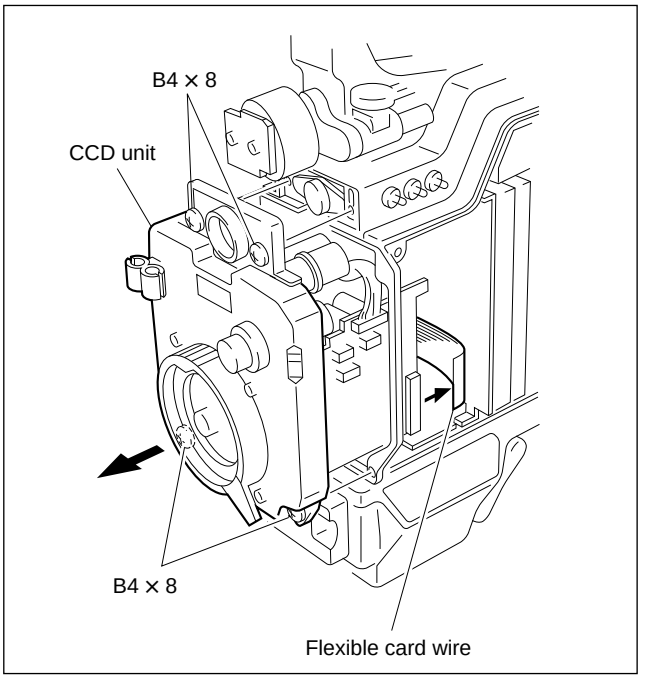
1. Open the right and left side panels referring to Section 2-3.
2. Remove the CN-1334 board.



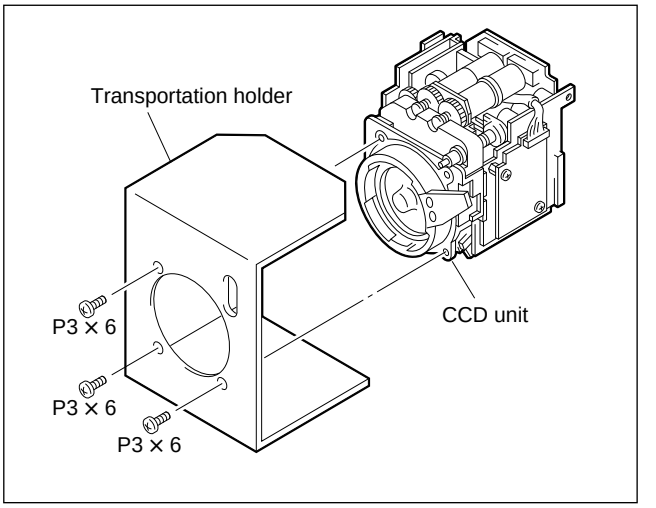

3. Disconnect the flexible card wire. Loosen the four screws and pull out the CCD unit carefully.

**Note**

Refer to Section 2-5 before disconnecting or connecting the flexible card wire.




4. Remove the front panel and the filter disk unit referring to Section 2-8-1.
5. Remove the three screws to remove the transportation holder from a new CCD unit.

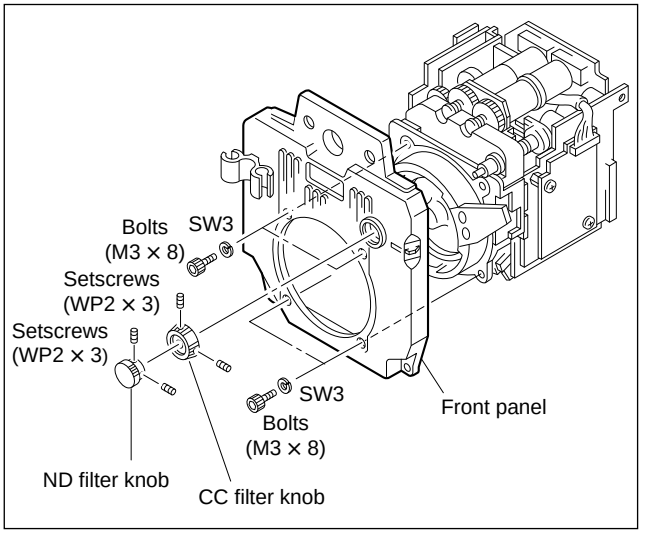



6. Install the front panel and the filter disk unit which were removed in procedure 4. to a new CCD unit.
7. Install a CCD unit in the reverse order of removal.
8. After replacing the CCD unit, be sure to perform adjustment referring to Sections 2-10-3 and 4.

## 2-8. Replacement of Filter Disk Unit

### 2-8-1. Filter Disk Unit

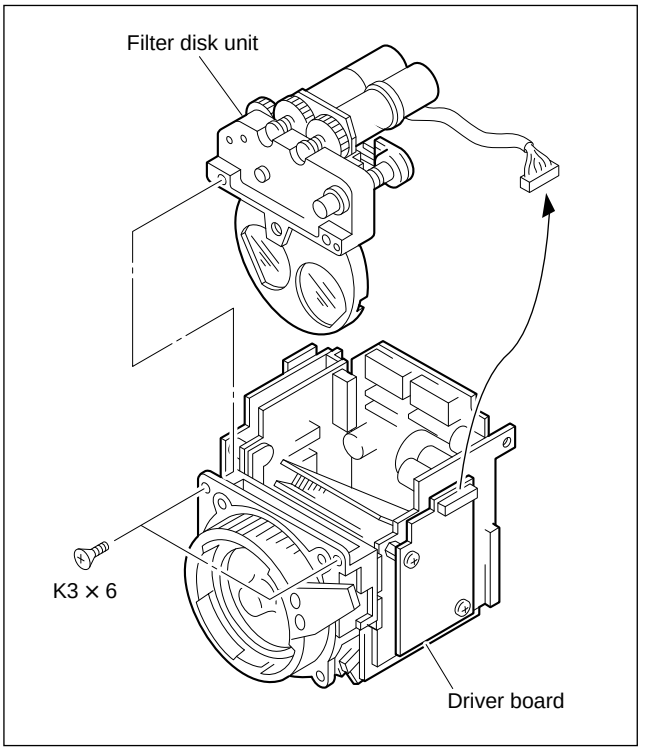
1. Remove the CCD unit referring to Section 2-7-2.
2. Remove the two setscrews each to remove the ND and CC filter knobs.
   Fixture: Allen wrench (width across flat = 0.89 mm)
3. Remove the four bolts to remove the front panel from the CCD unit.
   Fixture: Allen wrench (width across flat = 2.5 mm)




**Note**

It is recommendable to perform procedures 4 and 5 in a clean room.

4. Disconnect the connector from the driver board. And remove the two screws to remove the filter disk unit.



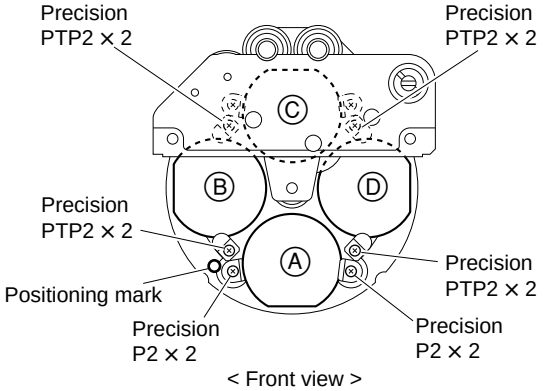

5. Install a new filter disk unit with the two screws which were removed in procedure 4. Connect the connector extending from the filter disk unit to the driver board.
   **Note**
   At installation, do not touch the surface of the filter disk unit.
6. Install the CCD block to the front panel with the four bolts.
   Fixture: Allen wrench (width across flat = 2.5 mm)
   Tightening torque: $110 \times 10^{-2}$ N•m (11 kgf•cm)
7. Install the ND and the CC filter knobs referring to Section 2-6 “Positioning Adjustment for Filter Knob”.
8. After replacement, white balance adjustment is required. Refer to Section 4-8 for details on adjustment.

## 2-8-2. ND/CC Filters

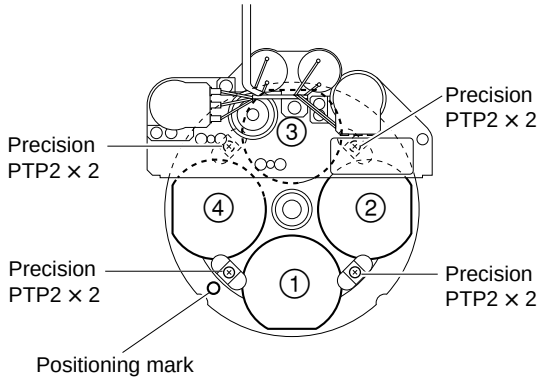
Four ND and CC filters each are provided with the filter disk unit. They have different features respectively. So when replacing filter, install observing the correct installation position and orientation.

### ND/CC Filter List

| Filter | Fig. | Type | Sony P/N | Orientation |
|---|---|---|---|---|
| CC | Ⓐ | Cross | 9-939-645-01 | Cut surface facing the lens |
| | Ⓑ | Clear | 9-939-640-01 | No orientation |
| | Ⓒ | 4300K (light brown) | 9-939-647-01 | No orientation |
| | Ⓓ | 6300K (dark brown) | 9-939-648-01 | No orientation |
| ND | ① | Clear | 9-939-640-01 | No orientation |
| | ② | 1/4 ND (light gray) | 9-939-641-01 | ND-coated (black-coated) surface facing the lens |
| | ③ | 1/16 ND | 9-939-643-01 | |
| | ④ | 1/64 ND (dark gray) | 9-939-644-01 | No orientation |




< Front view >




< Rear view >

### Replacement

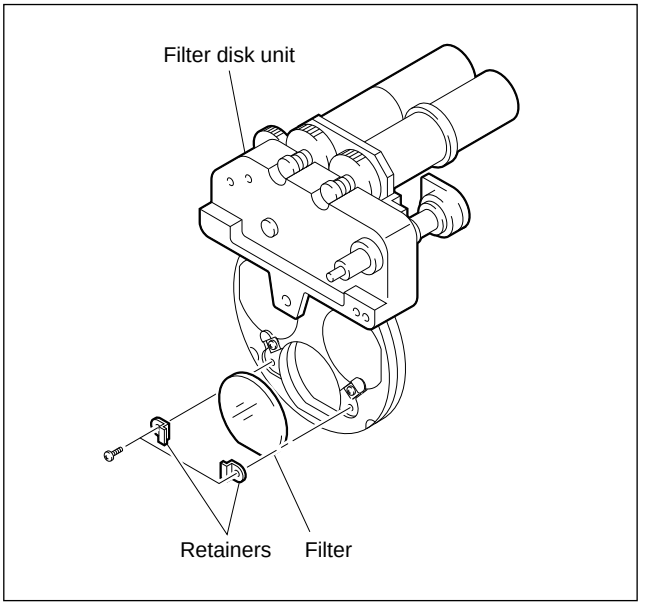
**Note**

It is recommendable to replace the ND or CC filter in a clean room.

1. Remove the filter disk unit referring to Section 2-8-1.
2. Remove the two screws to remove retainers securing the filter to be replaced.
3. Install a new filter using the screws and retainers which were removed in procedure 2.

   **Notes**

   - When installing a CC cross filter or ND filter, take care that it is established to the correct orientation.
   - The shape of the retainers and the size of fixing screws differ according to the type of filter secured by them.



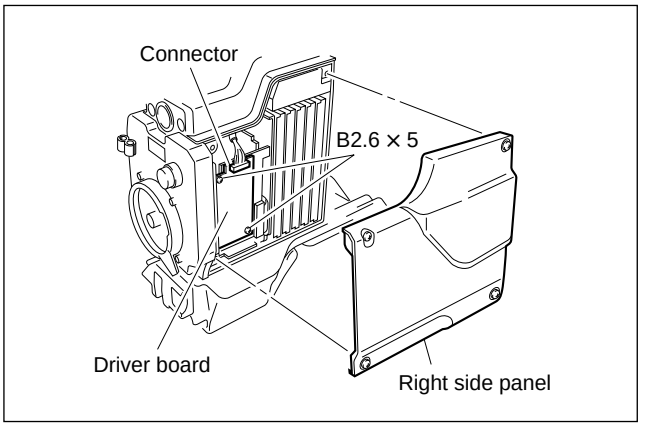

4. Install the filter disk unit in the camera referring to Section 2-8-1.

### Adjustment

After replacement, white balance adjustment is required. Refer to Section 4-8 for details on adjustment.

### 2-8-3. Driver board

1. Remove the right side panel referring to Section 2-3.
2. Remove the connector and two screws to remove the driver board.

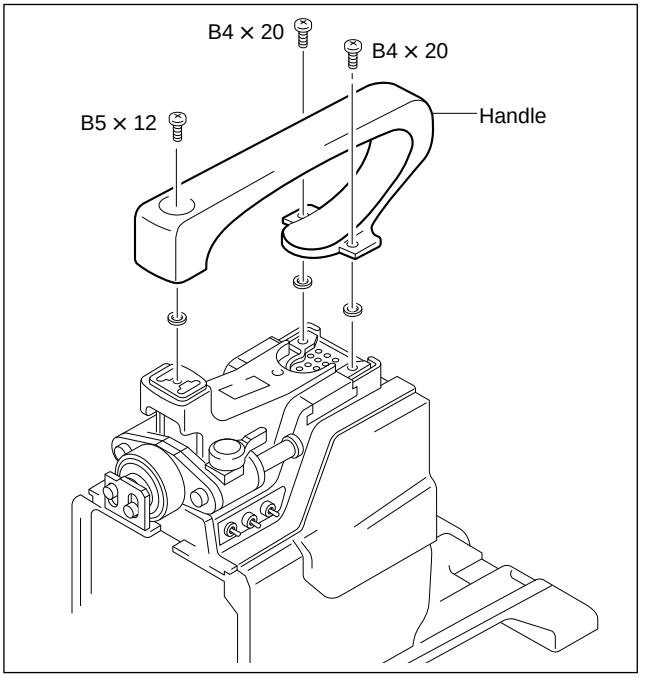



3. Install a new board in the reverse order of removal.
4. After replacing the board, be sure to perform adjustment referring to Sections 2-10-3 and 4.

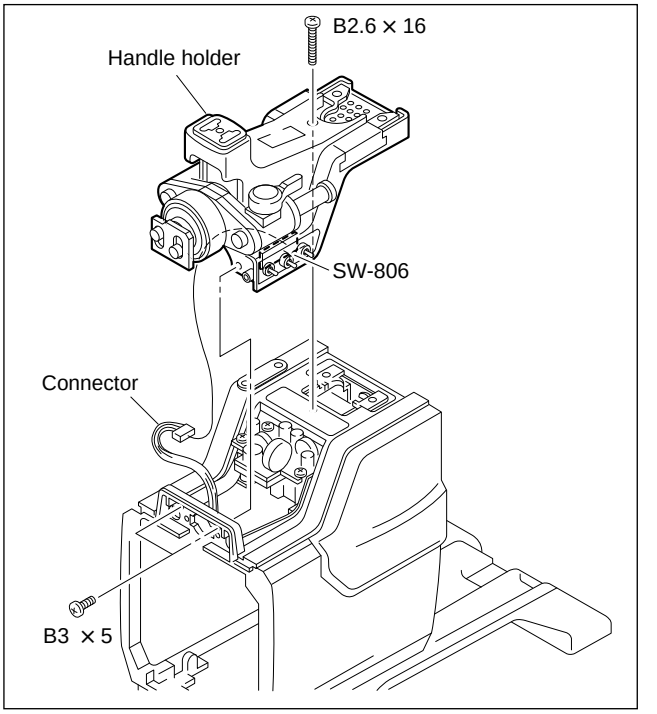
## 2-9. Replacement of DC/DC Converter Unit

The unit is provided with the two types of DC/DC converter units.

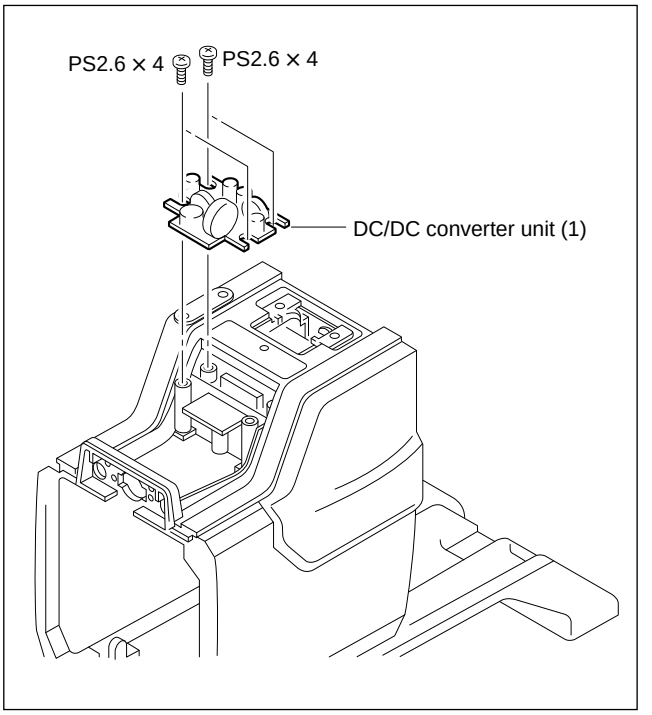
1. Remove the CCD unit referring to Section 2-7.
2. Remove the three screws to remove the handle.



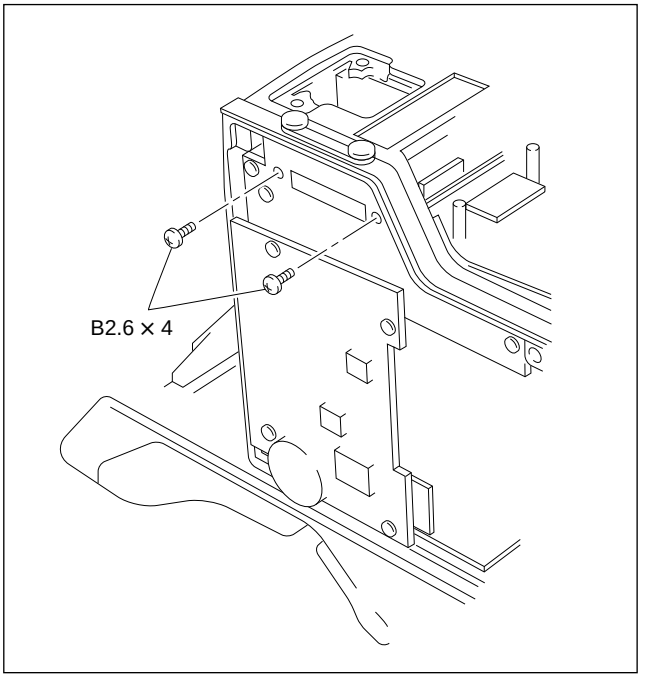

3. Remove the three screws. Disconnect the connector from the SW-806 board and remove the handle holder.



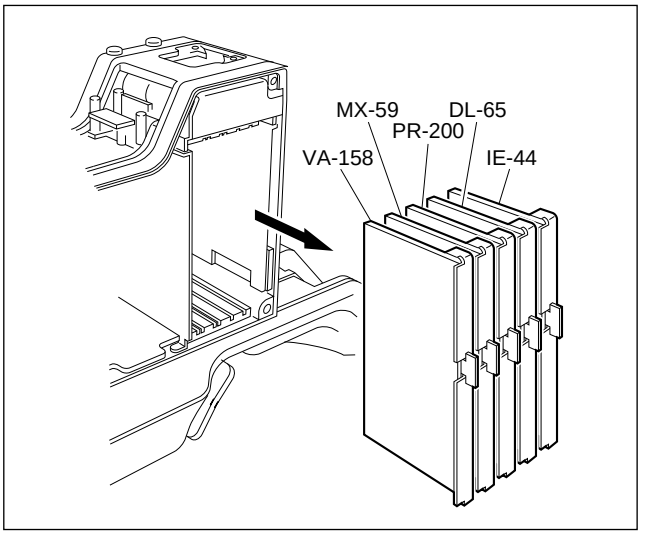
4. Remove the four screws and pull out the DC/DC converter unit (1), that is PS-419 board.



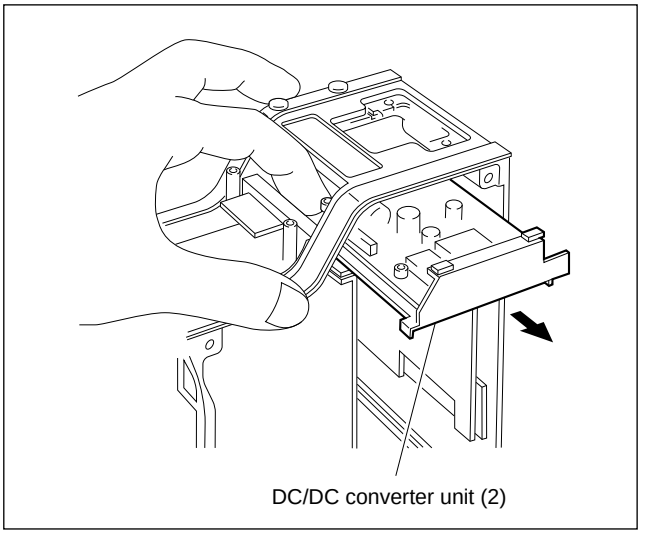

5. Remove the two screws.




6. Pull out the five plug-in boards.




7. Remove the DC/DC converter unit (2) pushing it toward you as shown in the figure.




8. Install a new DC/DC converter unit in the reverse order of removal.

# 2-10. Replacement of Circuit Board

## 2-10-1. Note on Replacement of Parts in RP-108 and NR-66 Boards

Electrical parts mounted on the RP-108 and NR-66 boards used in the CCD unit cannot be replaced.
If the electrical parts is out of order, replace the whole of mounted circuit boards RP-108 and NR-66.

## 2-10-2. Description on EEPROM Data

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

| Board | Ref.No. | Stored data |
|---|---|---|
| VA-158 | IC29 | VA-158 adjustment data, Board name |
| MX-59 | IC8 | MX-59 adjustment data, Board name |
| PR-200 | IC16 | PR-200 adjustment data, Board name |
| DL-65 | IC714 | Board name |
| IE-44 | IC612 | IE-44 adjustment data, Board name |
| IF-569 | IC38 | Reference file, Board name |
| MB-570 | IC1 | Camera ID |

**Note**

The IC listed above cannot be replaced because it is the EEPROM that is storing data inherent in the board. The part number listed in Section 1 “Spare Parts” of HDC-750A maintenance manual volume 2 is for EEPROM which is not programmed. If replacement is needed, consult your Sony representatives.

## 2-10-3. Adjustment after Replacement of Board

When replacing some electrical parts on the circuit board, or the circuit board itself, be sure to perform the following adjustments after replacement. If no adjustment item is listed, no adjustment is required.

| Board/Block | For Part Replacement | For Board Replacement |
|---|---|---|
| VA-158 | 4-3. VA-158 Board Adjustment | 4-3-2. VA Gain Adjustment |
| MX-59 | —— | —— |
| PR-200 | —— | —— |
| DL-65 | 4-6. IE-44 Board Adjustment | 4-6-2. Video Level Adjustment |
| IE-44 | 4-6. IE-44 Board Adjustment | 4-6-2. Video Level Adjustment |
| IF-569 | —— | 4-7. Overall Video Adjustment |
| PS-419 | —— | —— |
| MB-570 | —— | —— |
| DC/DC converter | —— | —— |
| DRIVER Board | 4-2. Filter Drive Board Adjustment | 4-2. Filter Drive Adjustment |
| CCD Unit | 4-3. VA-158 Board Adjustment | 4-3-2. VA Gain Adjustment |

## 2-10-4. Replacement of IF-569 Board

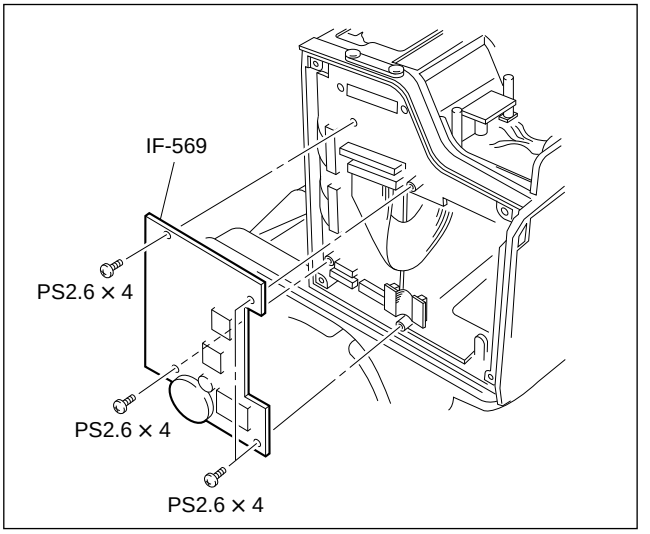
When the IF-569 board, replace the lithium battery (CR2025) with a new one at the same time. The lithium battery is commercially available. When installing, connect it properly referring to Section 2-17. And make sure that the switch S1-2 on a new IF-569 board is set to ON, too. Refer to Section 1-4 for details on the switch.

## 2-10-5. Replacement of MB-570 Board

**Note**

When replacing the MB-570 board, it is necessary to set the camera ID. Make the setting referring to Section 3-1-3 “Maintenance Menu”.

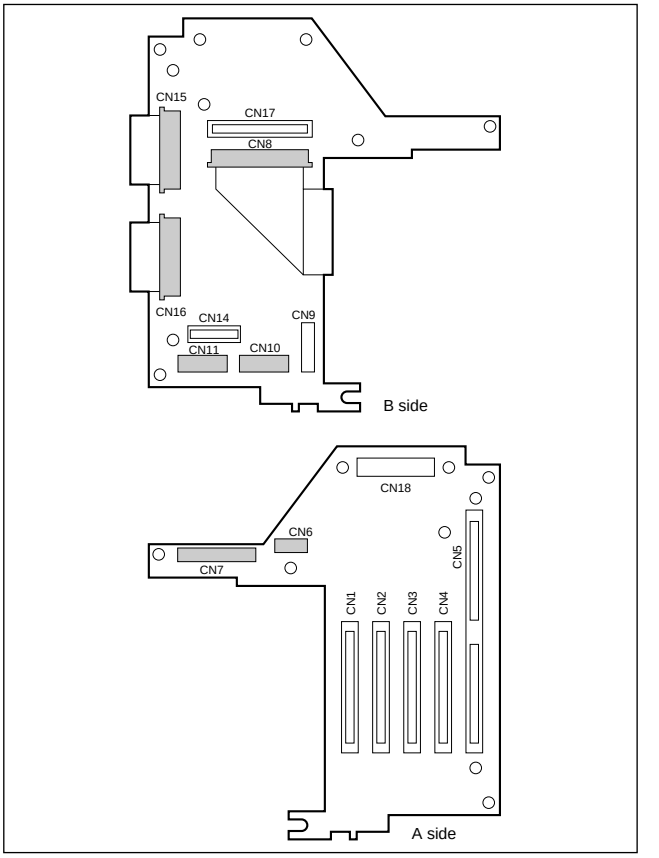
1. Remove the CCD unit referring to Section 2-7-2.
2. Remove the two DC/DC converter units carrying out procedures 1 to 7 in Section 2-9 “Replacement of DC/DC converter unit”.
3. Remove the four screws to remove IF-569 board.



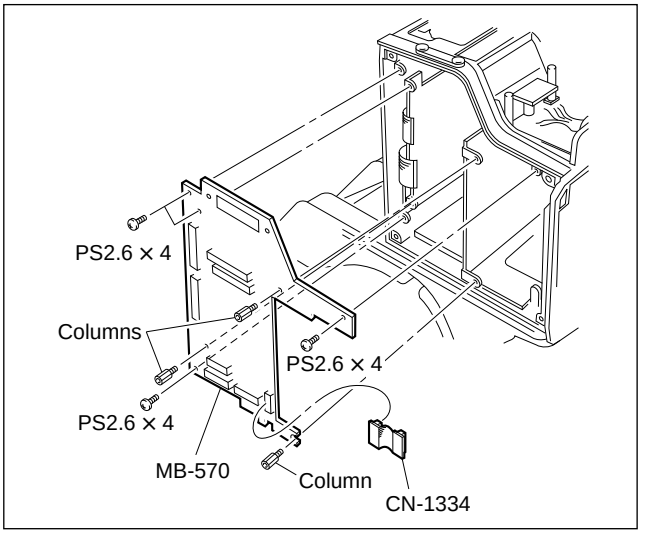

4. Disconnect the connectors (CN6, CN7, CN10, CN11) and flexible card wires (CN8, CN15, CN16) as shown in the figure.

   **Note**

   Refer to Section 2-5 before disconnecting or connecting the flexible card wire.




5. Remove the CN-1334 board. Remove the four screws and three columns to remove the MB-570 board.



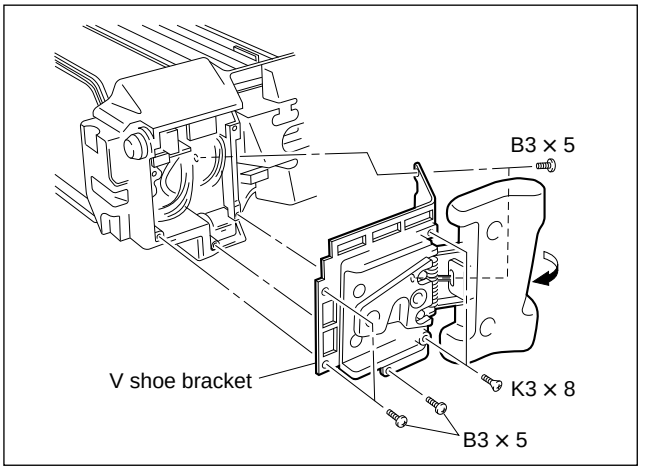

6. Install a new board in the reverse order of removal.

## 2-11. Replacement of Fan

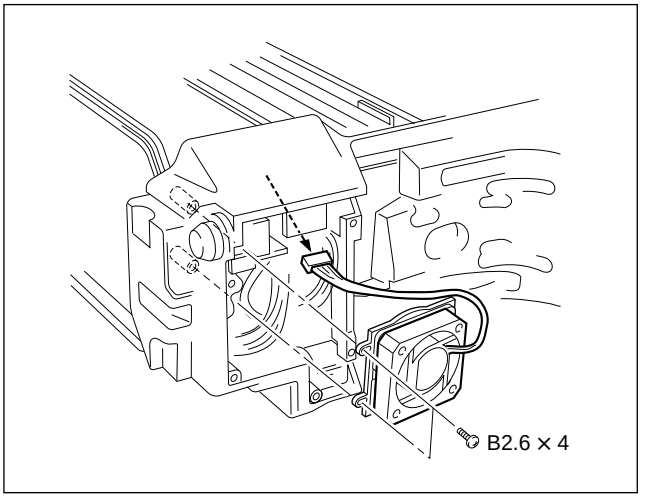
**CAUTION**

If the fan is out of order, the inside temperature of the unit will rise. Touching the inside in this state may cause a burn. When replacing the fan, allow a few minute after powering off until the inside cools off.

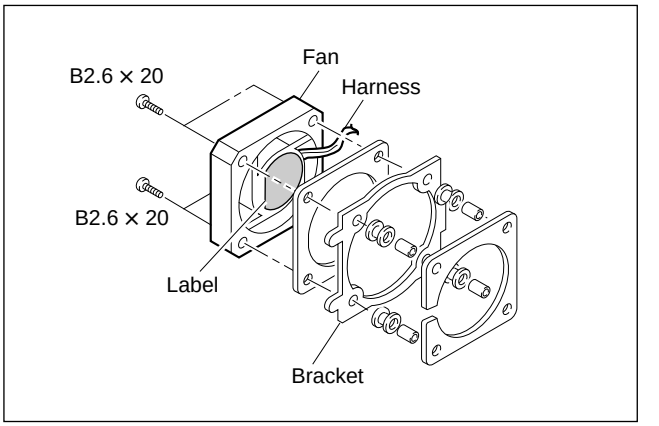
1. Perform the procedures 1 to 3 in Section 2-7-2 to remove the CCD unit.
2. Remove the seven screws to remove the V shoe bracket.




3. Remove the two screws. Disconnect the harness from the SW-688 board.



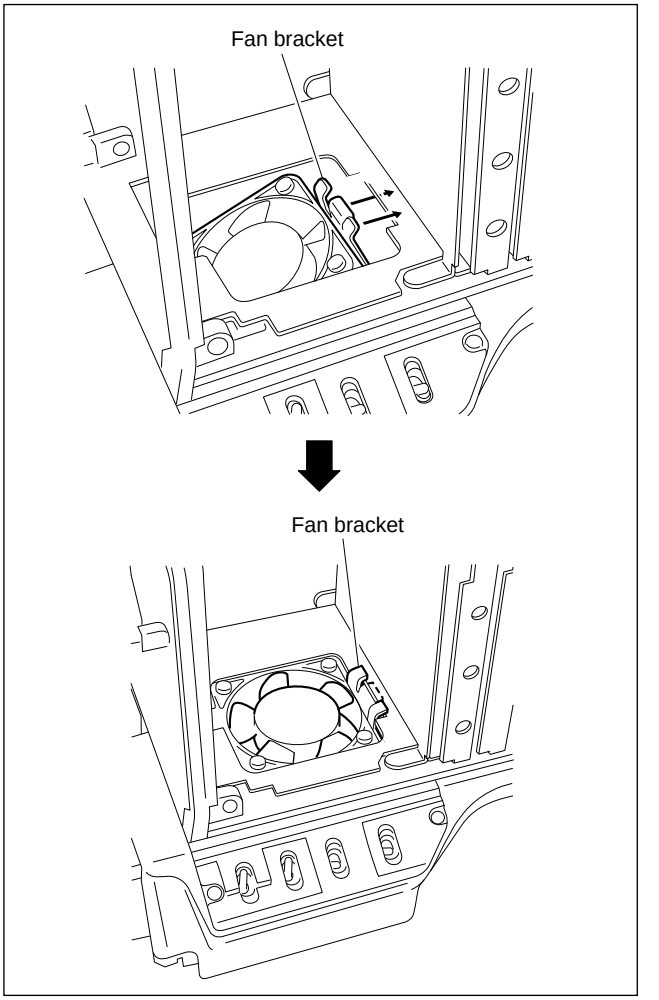

4. Remove the four screws to remove the fan.




5. Install a new fan in the reverse order of removal.

**Notes at installation**

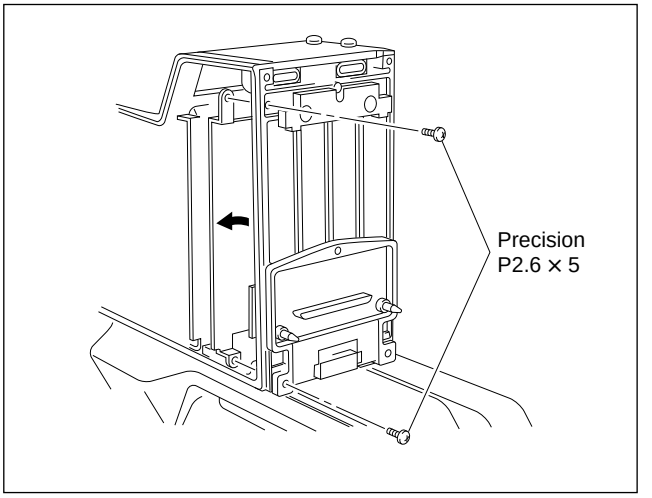
- Install the fan to the bracket with care so that the label faces the bracket and the fan harness is routed as shown in the above figure.
- Insure a proper fit between the fan bracket and chassis as shown in the figure below.



# 2-12. Replacement of Connector

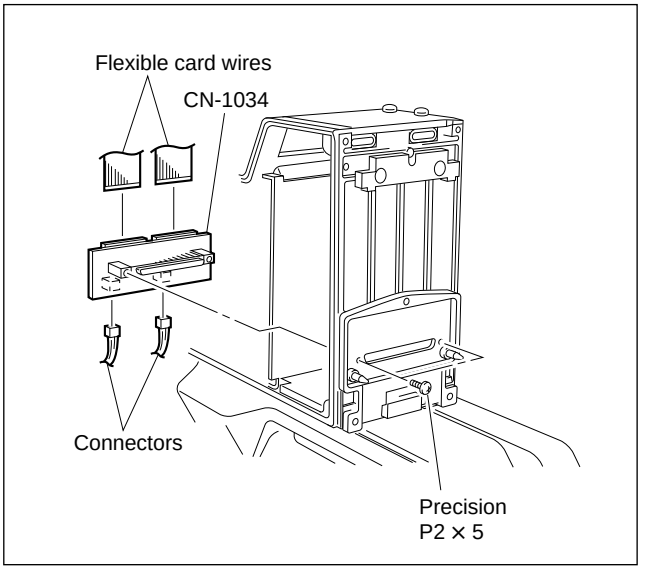
## 2-12-1. 68-pin Connector

1. Remove the two DC/DC converter units carrying out procedures 1 to 7 in Section 2-9 “Replacement of DC/DC converter unit”.
2. Remove the two screws.
3. Remove the two screws securing the CN-1034 board. Disconnect the two connectors and two flexible card wires.




**Note**

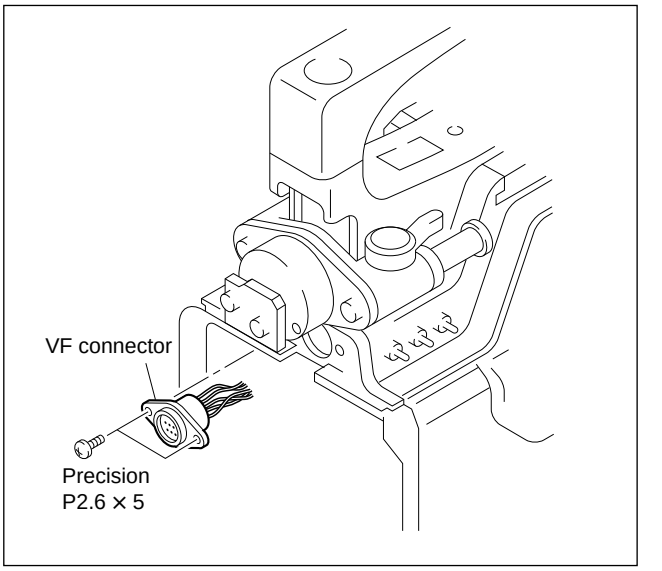
Refer to Section 2-5 before disconnecting or connecting the flexible card wire.




4. Replace the CN-1034 board with the connector mounted. Install a new connector in the reverse order of removal.

## 2-12-2. VF Connector

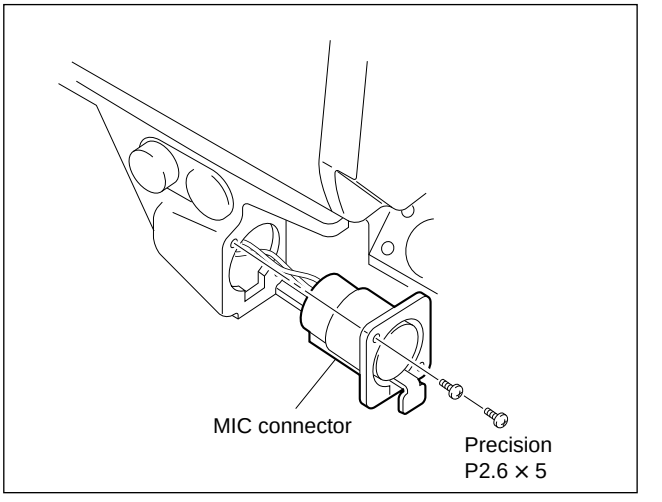
1. Remove the CCD unit referring to Section 2-7.
2. Remove the two screws to pull out the VF connector. Desolder the VF connector.




3. Install a new connector in the reverse order of removal.

## 2-12-3. MIC Connector

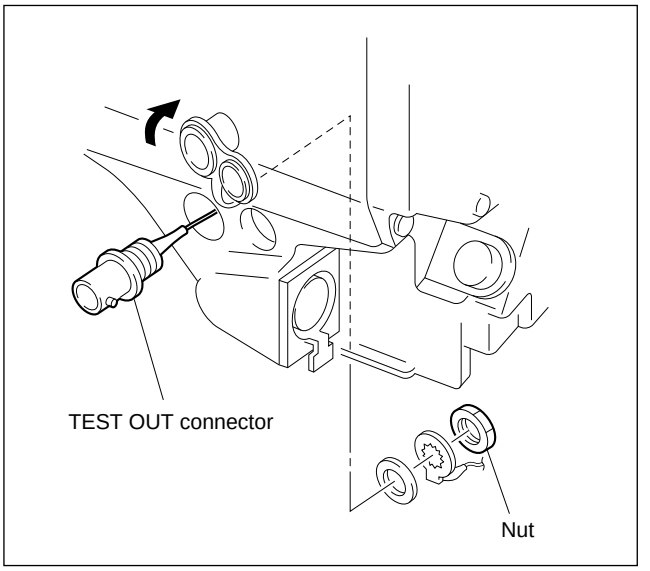
1. Remove the two screws to pull out the MIC connector. Desolder the MIC connector.




2. Install a new connector in the reverse order of removal.

## 2-12-4. TEST OUT Connector

1. Perform the procedure 2 in Section 2-13-1 “On the Side Switch Panel” to remove the V shoe bracket.
2. Remove the nut from the TEST OUT connector. Desolder the TEST OUT connector.

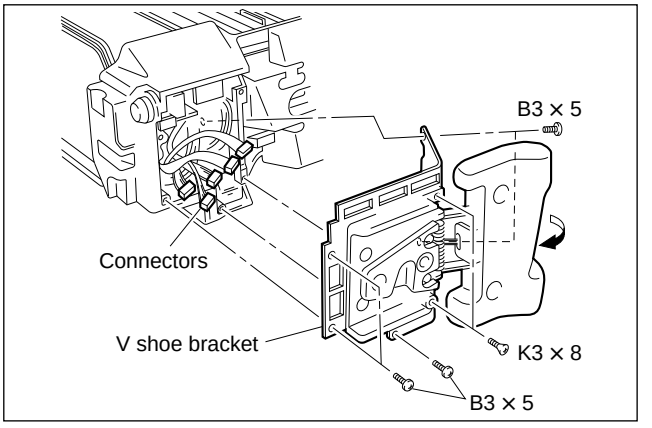



3. Install a new connector in the reverse order of removal.
4. Be sure to lock the tightened nut with paint.

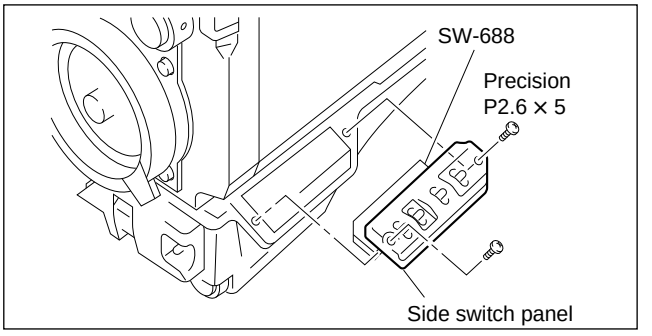
# 2-13. Replacement of Function Switches

## 2-13-1. On the Side Switch Panel

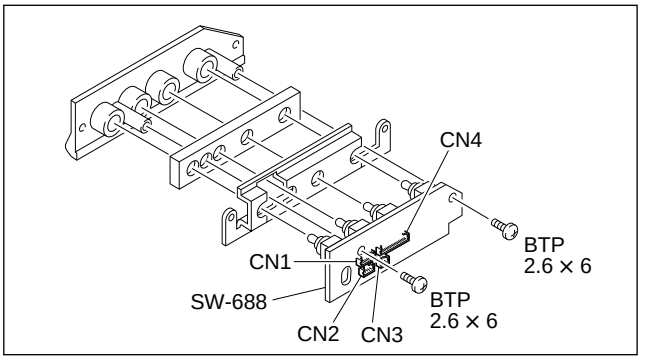
1. Remove the right side panel referring to Section 2-3.
2. Remove the seven screws to remove the V shoe bracket. Disconnect the five connectors from the SW-688 board.




3. Remove the two screws to remove the side switch panel.



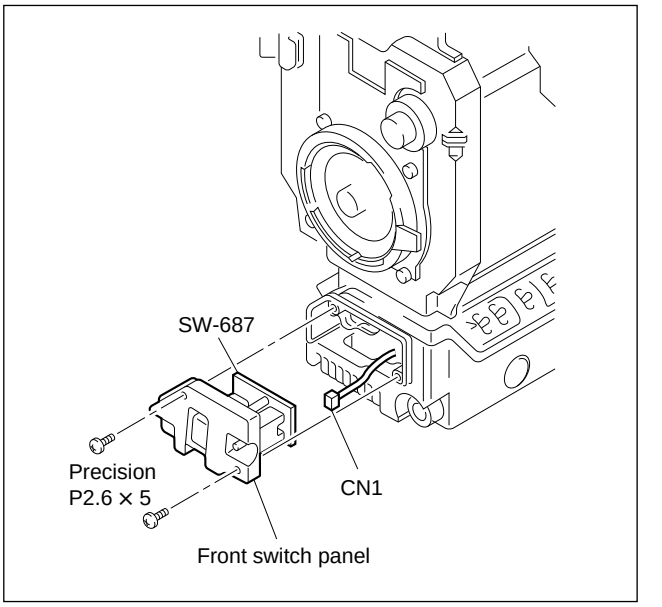

4. Remove the two screws securing the SW-688 board to the bracket.



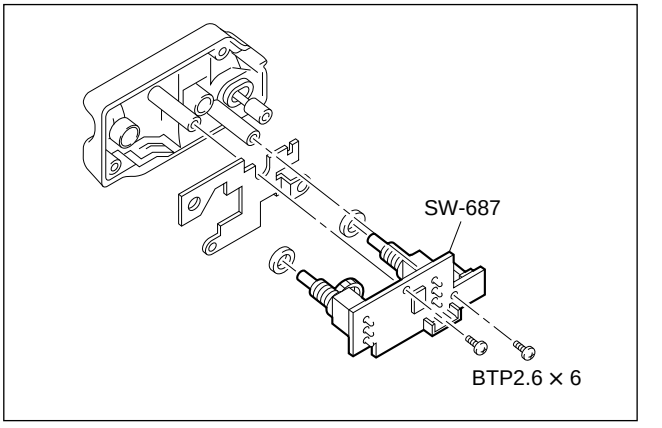

5. Desolder the switch to be replaced.
   Install a new switch in the reverse order of removal.

## 2-13-2. On the Front Switch Panel

1. Remove the two screws to remove the front switch panel. Disconnect CN1 from the SW-687 board.



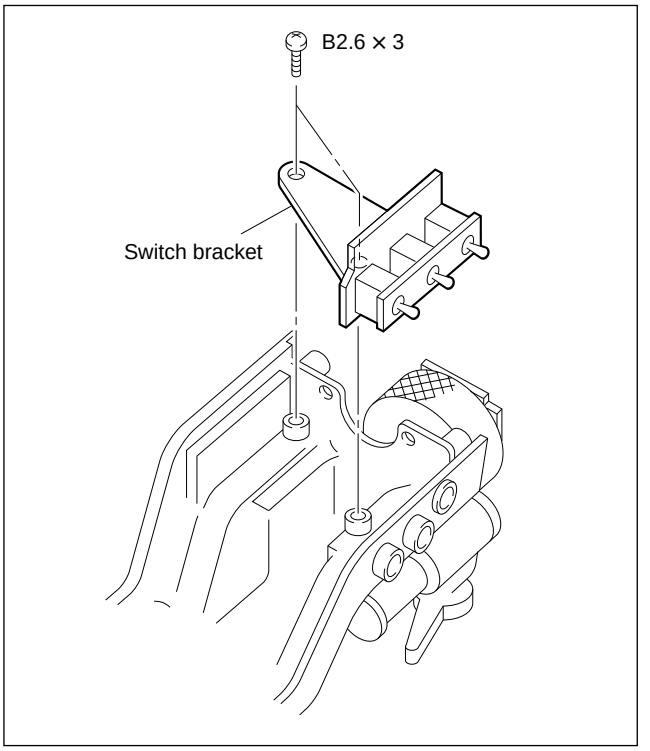

2. Remove the two screws securing the SW-687 board to the panel.



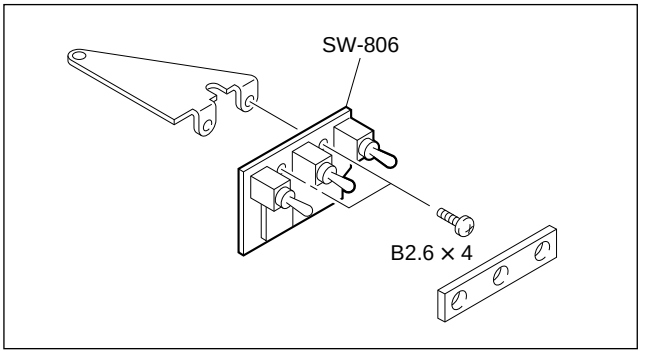

3. Desolder the switch to be replaced.
   Install a new switch in the reverse order of removal.

## 2-13-3. On the Top Panel

1. Perform the procedures 1 to 3 in Section 2-9 “Replacement of DC/DC Converter Unit” to remove the handle and handle holder.
2. Remove the two screws securing the switch bracket.




3. Remove the two screws and remove the SW-806 board.

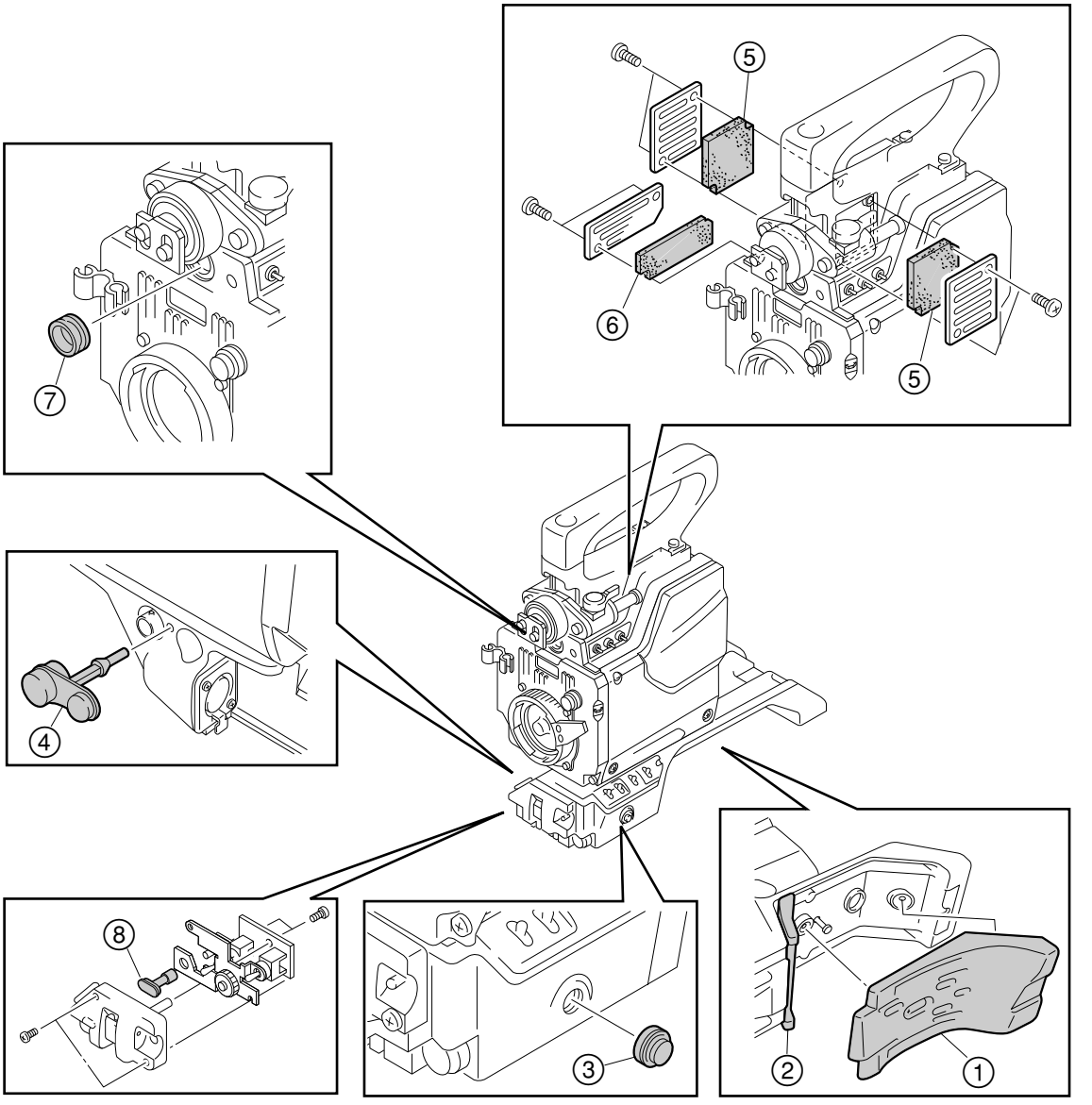



4. Desolder the switch to be replaced.
   Install a new switch in the reverse order of removal.

## 2-14. Periodic Replacement Part

The unit is equipped with the fan (P/N 1-698-775-1X) which is a periodic replacement part. It is recommended to replace the fan every two years. Refer to Section 2-11 for details on replacement.
And the parts listed below are recommended replacement parts. They are subject to cracks with the lapse of time. Check sometimes by visual, and replace as necessary.

| No. | Description | P/N |
|---|---|---|
| ① | PAD ASSY (LARGE) | A-8278-237-X |
| ② | PAD ASSY (SMALL) | A-8278-238-X |
| ③ | COVER, SW | 3-676-244-1X |
| ④ | CAP, CONNECTOR | 3-692-644-0X |
| ⑤ | FILTER (1), DUST PROTECTION | 3-696-950-0X |
| ⑥ | FILTER (2), DUST PROTECTION | 3-696-951-0X |
| ⑦ | PACKING, VF | 3-710-024-0X |
| ⑧ | BUTTON, VTR START | 3-729-069-0X |

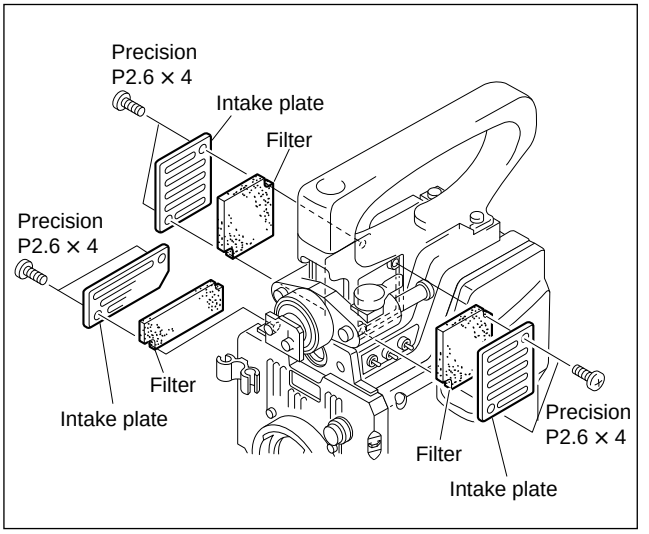


## 2-15. Cleaning of Dustproof Filter

Clean the dustproof filters periodically every two or three months. Clogged filter may cause trouble because the inside temperature of the unit will rise.

### Removal

1. Remove the two screws securing the each intake plate.
2. Remove each filter.




### Cleaning

Wash with neutral detergent by your hand and dry it in a shade.

## 2-16. Cares After Using at Special Environment

It is recommended to check the following items after gathering the news at seaside, dust area or spa.

1. Clean off sand and other dust in the unit carefully.
2. Do not allow salt in seawater or sulfur in spa to contact a not-painted surface of the cabinet. They may cause to corrode. Clean with alcohol immediately if contacted.
3. Clean the connection surface of connectors.
4. Carry out the common operation check and confirm that the unit normally operates.

## 2-17. Note on Replacement of Lithium Battery

The unit has a lithium battery on the IF-569 board. If the lithium battery runs down, adjustment data and so on set by MSU, RCP or using the setup menu are reset to their factory-set values. And the scene file is cleared.
The lithium battery running down, setup the unit again as necessary.

BT1/IF-569 board: CR2025 (commercially available)

**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.

# Section 3
# Setup Menu

## 3-1. Setup Menu

The Setup menu is used to select settings of camera operation, select items to be displayed on the view-finder screen, and select the way the items are displayed.
It is also used for adjustment. The menu appears on the viewfinder screen.
The same signal as output to the viewfinder is output at the TEST OUT connector.

### • Configuration of the setup menu

The setup menu consists of the following menus.
- Operation menu
- Paint menu
- Maintenance menu
- File menu
- Diag Disp menu
- SYS Config menu

### • Selecting menu to be displayed

By setting the switches on the SG-226 board of the camera adaptor HDCA-750A, menus to be displayed on the viewfinder can be selected. Select in combination of switches S2-1 to S2-3. When the unit is shipped at the factory, all menus can be activated.

( ) in parentheses: Factory-set positions

| Switch Settings | | | Setup Menu | | | | | |
|---|---|---|---|---|---|---|---|---|
| S2-1 | S2-2 | S2-3 | Operation | Paint | Maintenance | File | Diag Disp | SYS Config |
| Off | Off | Off | Yes | No | No | No | No | No |
| On, | Off | Off | Yes | Yes | No | No | No | No |
| Off | On, | Off | Yes | Yes | Yes | No | No | No |
| On | On, | Off | Yes | Yes | Yes | Yes | No | No |
| Off | Off | On | Yes | Yes | Yes | Yes | Yes | No |
| (On) | (Off) | (On) | Yes | Yes | Yes | Yes | Yes | Yes |

### • Equipment required

Camera Adaptor HDCA-750A
Viewfinder HDVF-20 ( or monochrome monitor)
Supply power from a camera control unit HDCU-700A or AC adaptor AC-550/550CE to the camera adaptor.

## • Switches and button

### VF DISP switch

ON: Displays characters and messages indicating the video camera settings and operation status

OFF: No character or marker display appears on the viewfinder screen

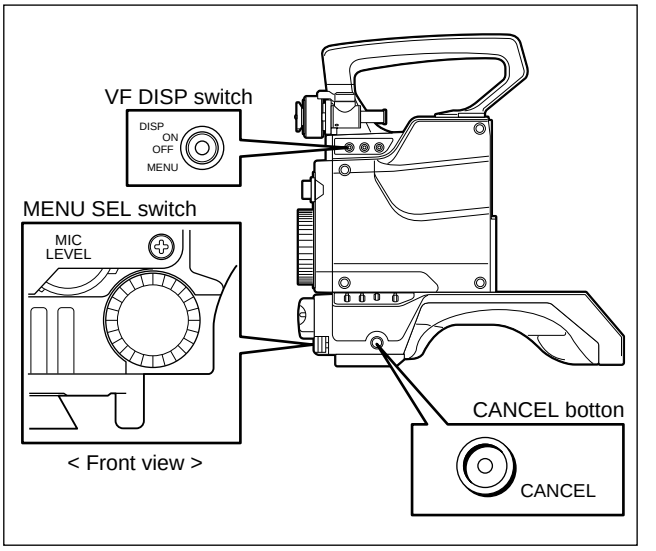
MENU: The setup menu appears on the viewfinder screen

### MENU SEL switch

Selects the menu item or setting value displayed on the viewfinder screen.

### CANCEL button

Cancels the contents of a menu setting, or returns to the page select mode or TOP menu.




**Note**

The TOP menu screen indicates the entire configuration of menu items. To display the TOP menu, set the VF DISP switch to MENU (from OFF) while holding down the MENU SEL switch.

## • Basic operation

1. Displaying the menu
   To display the Operation menu, set the VF DISP switch to MENU.
   To display the other menus than the Operation menu, first of all, the TOP menu shall be displayed.
   To display the TOP menu, set the VF DISP switch to MENU (from OFF) while holding down the MENU SEL switch. Then turn the MENU SEL switch to move the cursor to a menu item which you want and then press the MENU SEL switch.
2. To shift the page, turn the MENU SEL switch with a page scroll bar displayed at the top-right of the screen until the desired page is displayed and press the MENU SEL switch.
   The menu enters the item select mode and the page scroll bar disappears.
3. To shift the item, turn the MENU SEL switch until the → cursor points the item to be set and press the MENU SEL switch.
4. To change the value, turn the MENU SEL switch.
   You can change the values quickly by turning the MENU SEL switch fast. You can make very fine adjustments by turning the switch slowly. By pressing the MENU SEL switch, the setting is entered.
5. The menu is returned to the item select mode or page select mode every time the CANCEL button is pressed.
6. To exit from the setup menu, set the VF DISP switch to OFF.

## • ROM version

Contents in the menu and factory settings may differ from the descriptions in this manual depending on the version of ROMs (IC26/IF-569, IC24/SG-226 for camera adaptor).
In this section, an item under “Ver.” in the table shows a ROM version. If any version is given, it shows that the function for the item is added or changed, and the ROM with that version or higher version supports the function, If no version is given, it shows that every ROM version supports the function.

## 3-1-1. Operation Menu

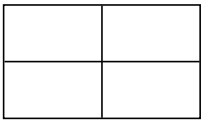
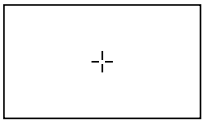
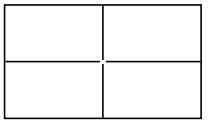
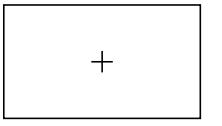
The Operation menu contains items contained for changing camera settings to suit shooting conditions during normal camera operations.

(Boxed items under “Settings” indicate the factory setting.)

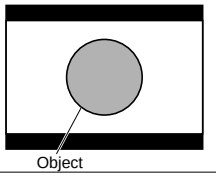
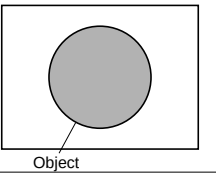
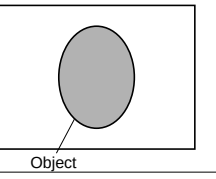
| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| VF Display | | EX | On, [Off] | Turns the lens extender indication on and off |
| | | Zoom | On, [Off] | Turns the zoom position indication on and off |
| | | Focus | On, [Off] | (Does not function in this unit) |
| | | SHUTT | On, [Off] | Turns on and off the indications of shutter speed/mode |
| | | Iris | On, [Off] | Turns the iris setting indication on and off |
| | | D5600K | On, [Off] | Turns the D5600K function indication on and off |
| | | Tape | On, [Off] | Turns the tape-remaining indication on and off<br>(Automatically turned off in connection with HDCU/ RCP) |
| | | RET No | [On], Off | Turns the return video indication on and off |
| | | CAM ID | On, [Off] | Turns the camera ID indication on and off |
| | | VOLT CAM | On, [Off] | Turns the camera input voltage indication on and off |
| | | VOLT VTR | On, [Off] | Turns the VTR input voltage indication on and off |
| | | MSG | On, [Off] | Turns on and off the indication of message in changing each setting of filter, white balance memory, gain value, DCC (Auto Knee) and SHUTT<br>The indication is displayed within three seconds in the center of the viewfinder screen |
| | | Filter | On, [Off], CHG | Turns the optical filter indication on and off<br>CHG: Indicated only when the setting differs from the standard setting (FILTER: 1B) |
| | | White | On, [Off], CHG | Turns the white balance memory indication on and off<br>CHG: Indicated only when the setting differs from the standard setting (WHITE: A) |
| | | Gain | On, [Off], CHG | Turns the gain value indication on and off<br>CHG: Indicated only when the setting differs from the standard setting (GAIN: 0 dB) |
| “!” LED | | | | Turns on and off the operation status warning indicator on the VF<br>Off: Not lit under any conditions<br>On: Lit when the camera is used under one or more of the following conditions |
| | | Gain | [On], Off | Gain: Gain is set to anything but 0 dB |
| | | Shutter/ECS | [On], Off | Shutter/ECS: Shutter is set to anything but “Off” |
| | | S-EVS | [On], Off | S-EVS: S-EVS mode is at “On” |
| | | D5600K | [On], Off | D5600K: D5600K is at “On” |
| | | White Preset | [On], Off | White Preset: White BAL switch is at “PRST” |
| | | Filter | [On], Off | Filter: Filter selector is set to anything but 1B |
| | | Extender | [On], Off | Extender: The lens extender is in use |
| | | Fan | [On], Off | Fan: Fan mode is at “Off” (forcibly off) |
| | | 60Hz | [On], Off | 60Hz: Field frequency is set at 60 Hz |
| | | Optical | [On], Off | Optical: “Optical” showing a photo-receptive condition indicates anything but “GRN” |

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| Marker | | Marker | [On], Off | Turns all the marker indications in the VF on and off (Corresponds to the DISPLAY/ASPECT switch on the VF) |
| | | Center | On, [Off] | Turns the center marker indication on and off |
| | | Center SEL | [1], 2, 3, 4 | Selects the center marker type a) |
| | | Safety Zone | On, [Off] | Turns the safety zone marker indication on and off |
| | | Safety Area | 80, [90], 92.5, 95% | Selects the safety zone area enclosed by the safety zone marker |
| | | MKR Mode | 16:9, [4:3], VISTA | Selects the marker mode<br>**Note**<br>Selects forcibly 4:3 when VF Scan on the VF Setup page is set at 4:3 |
| | | Frame | On, [Off] | Turns the 4:3 frame marker or VISTA frame marker indication on and off |
| | | Mask | On, [Off] | Turns the 4:3 mask or VISTA mask indication on and off |
| | | Mask LVL | 0 to 100 ([60]) | Sets the 4:3 mask or VISTA mask indication level |
| | | Effect | On, [Off] | Turns the effective area indication of the picture elements on and off |
| Gain SW | | Low | –3, [0], 3, 6, 12 dB | Selects the gain value for each gain switch position (Low, Middle, High) |
| | | Middle | –3, 0 , 3, [6], 12 dB | |
| | | High | –3, 0, 3, 6, [12] dB | |
| VF Setup | | VF Detail | On, [Off] | Turns the VF detail function on and off |
| | | Zebra | On, [Off] | Turns on and off the zebra pattern display |
| | | | [70], 90, 70&90 % | Selects the zebra pattern |
| | | VF Scan | [16:9], 4:3, Squeeze | Selects the VF scan mode b) |

a)

| Setting | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| VF Screen |  |  |  |  |

b)

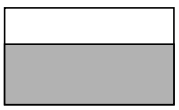
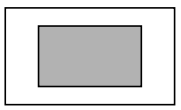
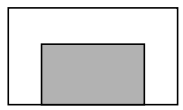
| Setting | 16 : 9 | 4 : 3 | Squeeze |
|---|---|---|---|
| VF Screen |  |  |  |

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| Audio | | Input Mode | [1], 2, 3, 4, 5 | Select according to equipment to be connected to the MIC connector c) |
| | | Mic1 Gain | [–60], –50, –40, –30, –20 dB | Selects the input gain at MIC 1 connector of the camera adaptor (The setting is invalid when LINE input is selected) |
| | | Mic2 Gain | [–60], –50, –40, –30, –20 dB | Selects the input gain at MIC 2 connector of the camera adaptor (The setting is invalid when LINE input is selected) |
| | | Mic Power | [Off], 12 V, 48 V | Select according to the type of programmable microphone to be connected to MIC 1/2 connector of the camera adaptor<br>Off: Microphone requiring no power<br>12 V: AB POWERING 12 V microphone<br>48 V: PHANTOM microphone |
| | | Incom1/2 | [PROD], ENG | Selects the producer or engineer line at INCOM 1/2 connector of the camera adaptor |
| Auto Iris | | Auto Iris | [On], Off | Turns the auto-iris function on and off |
| | | Window SEL | [1], 2, 3, 4, 5 | Selects the type of auto-iris window d) |
| | | Iris Close | On, [Off] | Turns the iris closing function on and off |
| Battery /D56 | | BATT Type | [Lithium], Othres, CCU, Anton, BP-90 | Select according to a battery in use<br>This setting enables the battery alarm voltage indication corresponding to the battery characteristics |
| | | Alarm VOLT | | Indicates the battery alarm voltage indication |
| | | D5600K | On, [Off] | Turns on and off the function to achieve the D5600K color temperature electrically |
| | | Lens File | 1 to [16] | Selects a lens file appropriate for a mounted lens from 16 kinds of the lens files |

c)

| Setting | CCU output | Connector (camera) | Input level |
|---|---|---|---|
| 1 | CH1<br>CH2 | MIC1 (of camera adaptor)<br>MIC2 (of camera adaptor) | MIC<br>MIC |
| 2 | CH1<br>CH2 | MIC1 (of camera adaptor)<br>MIC2 (of camera adaptor) | LINE<br>LINE |
| 3 | CH1<br>CH2 | MIC (of camera)<br>MIC2 (of camera adaptor) | MIC<br>MIC |
| 4 | CH1<br>CH2 | MIC (of camera)<br>MIC2 (of camera adaptor) | MIC<br>LINE |
| 5 | CH2 | MIC2 (of camera adaptor) | AES/EBU |

d)

| Setting | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| VF Screen |  |  |  |  |  |

Auto-iris window frame is shown in a shaded pattern .

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| Others | | Cable COMP | Off, [25m], 50m | Turn on and off the VTR (26P) cable lengh compensation function and selects the compensation length |
| | | LENS RET | [RET1], RET2, RET3, RET4 | Selects the return video that is displayed when you press the RET button of a lens<br>(This setting is valid in connection with HDCU) |
| | | LENS VTR | Incom1, Incom2, RET1, [RET2], RET3, RET4 | Selects the VTR button mode of a lens<br>(This setting is valid in connection with HDCU)<br>Incom1: VTR button activates to turn on and off the Incom 1 TALK<br>Incom2: VTR button activates to turn on and off the Incom 2 TALK<br>RET1/RET2/RET3/RET4: VTR button activates to select the return video |
| | | CAM VTR | [Incom1], Incom2, RET1, RET2, RET3, RET4 | Selects the return video that is displayed when you press the RET button of a camera<br>(This setting is valid in connection with HDCU)<br>Incom1: VTR button activates to turn on and off the Incom 1 TALK<br>Incom2: VTR button activates to turn on and off the Incom 2 TALK<br>RET1/RET2/RET3/RET4: VTR button activates to select the return video |
| Operator File | | Recall | Press MENU SEL switch to execute | Recalls the user's operator file |
| | | Store | Press MENU SEL switch to execute | Stores the user's operator file |
| | | Preset | Press MENU SEL switch to execute | Returns the operator file items to their preset values |

## 3-1-2. Paint Menu

The Paint menu is used for white and other paint adjustments items.
To activate the Paint menu, first display the TOP menu.

(Boxed items under “Settings” indicate the factory setting.)

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| SW Status | | Flare | [On], Off | Indicates the status of various function switches |
| | | Gamma | [On], Off | |
| | | BLK Gamma | On, [Off] | |
| | | Knee | [On], Off | |
| | | White Clip | [On], Off | |
| | | Detail | [On], Off | |
| | | Level DEP | [On], Off | |
| | | Skin Detail | On, [Off] | |
| | | Matrix | On, [Off] | |
| Video Level | | White R/G/B | –99 to 99 ([0]) | Adjusts the R, G, or B gain level |
| | | Black R/G/B/M | –99 to 99 ([0]) | Adjusts the R, G, B or master black level |
| | | Flare R/G/B | –99 to 99 ([0]) | Adjusts the R, G, or B flare level |
| | | Gamma R/G/B/M | –99 to 99 ([0]) | Adjusts the R, G, B or master gamma correction curve |
| | | Flare | [On], Off | Turns the flare correction circuit on and off |
| | | Test | [Off], 1, 2 | Selects the TEST signal<br>Off: No test signal is output<br>1: Outputs the sawtooth waveform test signal<br>2: Outputs the 3-step waveform test signal |
| | | Clear | Press MENU SEL switch to execute | Resets numeric settings on the Video Level page to 0<br>(When you press MENU SEL switch, the “Clear” indication flashes. Press MENU SEL switch again to execute; press CANCEL button to cancel) |
| Gamma | | Gamma R/G/B/M | –99 to 99 ([0]) | Adjusts the R, G, B or master gamma correction curve |
| | | BLK GAM R/G/B/M | –99 to 99 ([0]) | Adjusts the R, G, B or master black gamma level |
| | | Coarse | 0.40, [0.45], 0.50 | Selects the master gamma value in steps |
| | | Gamma | [On], Off | Turns the gamma correction function on and off |
| | | BLK Gamma | On, [Off] | Turns the black gamma correction function on and off |
| | | Test | [Off], 1, 2 | Selects the TEST signal<br>Off: No test signal is output<br>1: Outputs the sawtooth waveform test signal<br>2: Outputs the 3-step waveform test signal |
| | | Clear | Press MENU SEL switch to execute | Resets numeric settings on the Gamma page to 0<br>(When you press MENU SEL switch, the “Clear” indication flashes. Press MENU SEL switch again to execute; press CANCEL button to cancel) |

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| Knee 1 | | Point R/G/B/M | –99 to 99 ([0]) | Adjusts the R, G, B or master knee point level when the auto knee function is turned off |
| | | Slope R/G/B/M | –99 to 99 ([0]) | Adjusts the R, G, B or master knee slope level when the auto knee function is turned off |
| | | W.CLP R/G/B/M | –99 to 99 ([0]) | Adjusts the R, G, B or master white clip level |
| | | Knee | [On], Off | Turns the knee correction circuit on and off |
| | | Auto Knee | On, [Off] | Turns the auto knee function on and off |
| | | White Clip | [On], Off | Turns the white clip function on and off |
| | | Test | [Off], 1, 2 | Selects the TEST signal<br>Off: No test signal is output<br>1: Outputs the sawtooth waveform test signal<br>2: Outputs the 3-step waveform test signal |
| | | Clear | Press MENU SEL switch to execute | Resets numeric settings on the Knee 1 page to 0<br>(When you press MENU SEL switch, the “Clear” indication flashes. Press MENU SEL switch again to execute; press CANCEL button to cancel) |
| Knee 2 | | Knee Saturation | On, [Off] | Turns the knee saturation function on and off |
| | | Knee SAT Level | –99 to 99 ([–99]) | Adjusts the knee saturation level |
| | | Super Skin Knee | On, [Off] | Turns on and off the function to improve the color reproduction of a skin color in a highlight shot scene |
| | | Test | [Off], 1, 2 | Selects the TEST signal<br>Off: No test signal is output<br>1: Outputs the sawtooth waveform test signal<br>2: Outputs the 3-step waveform test signal |
| | | Clear | Press MENU SEL switch to execute | Resets numeric settings on the Knee 2 page to 0<br>(When you press MENU SEL switch, the “Clear” indication flashes. Press MENU SEL switch again to execute; press CANCEL button to cancel) |
| Detail 1 | | Detail | [On], Off | Turns on and off the function to improve resolution by adding the detail signal |
| | | Level | –99 to 99 ([–60]) | Adjusts the master level for the detail signal |
| | | Limiter | –99 to 99 ([0]) | Adjusts the clipping level against the maximum detail level |
| | | Crispening | –99 to 99 ([–25]) | Adjusts the level at which the detail signal is crispened |
| | | H/V Ratio | –99 to 99 ([0]) | Adjusts the mix ratio of H and V detail signals |
| | | Frequency | –99 to 99 ([0]) | Adjusts the boost frequency for H detail signal |
| | | Level DEP | –99 to 99 ([25]) | Adjusts the level to control the detail signal used at lower signal level |
| | | Level DEP | [On], Off | Turns the level dependence function on and off |
| | | Clear | Press MENU SEL switch to execute | Resets numeric settings on the Detail 1 page to 0<br>(When you press MENU SEL switch, the “Clear” indication flashes. Press MENU SEL switch again to execute; press CANCEL button to cancel) |

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| Detail 2 | | Detail | [On], Off | Turns on and off the function to improve resolution by adding the detail signal |
| | | W.Limiter | –99 to 99 ([0]) | Adjusts the clipping level against the higher detail signal at the maximum level |
| | | B.Limiter | –99 to 99 ([0]) | Adjusts the clipping level against the lower detail signal at the minimum level |
| | | K.AP.Gain | –99 to 99 ([50]) | Adjusts the knee aperture gain |
| | | Knee APERT | –99 to 99 ([0]) | Adjusts the knee aperture level |
| | | Knee APERT | On, [Off] | Turns the knee aperture function on and off |
| | | Clear | Press MENU SEL switch to execute | Resets numeric settings on the Detail 2 page to 0<br>(When you press MENU SEL switch, the “Clear” indication flashes. Press MENU SEL switch again to execute; press CANCEL button to cancel) |
| Skin Detail | | Skin Detail | On, [Off] | Turns the skin detail function on and off |
| | | Level | –99 to 99 ([0]) | Adjusts the level of the skin detail |
| | | Phase | 0 to 359 (DEG) ([0]) | Adjusts the hue for the skin detail function |
| | | Width | 0 to 90 (DEG) ([0]) | Adjusts the color width for the skin detail function |
| | | Saturation | –99 to 99 ([0]) | Adjusts the color saturation for the skin detail function |
| | | Gate | On, [Off] | Turns on and off the area display for the skin detail on the viewfinder screen |
| | | Clear | Press MENU SEL switch to execute | Resets numeric settings on the Skin Detail page to 0<br>(When you press MENU SEL switch, the “Clear” indication flashes. Press MENU SEL switch again to execute; press CANCEL button to cancel) |
| Matrix | | R-G, R-B | –99 to 99 ([0]) | Sets an optional value as the constant of the liner matrix for R-G, R-B, G-R, G-B, B-R and B-G (Compensates the user’s matrix ) |
| | | G-R, G-B | –99 to 99 ([0]) | |
| | | B-R, B-G | –99 to 99 ([0]) | |
| | | Matrix | On, [Off] | Turns the matrix compensation on and off |
| | | User MTX | On, [Off] | Turns the user’s matrix compensation on and off |
| | | Preset MTX | [On], Off | Turns the preset linear matrix (fixed constant compensation) on and off |
| | | PRE MTX SEL | [SMPTE-240M]<br>REC-709<br>SMPTE-WIDE<br>NTSC<br>EBU | Selects the preset linear matrix (fixed constant compensation) |
| | | Test | [Off], 1, 2 | Selects the TEST signal<br>Off: No test signal is output<br>1: Outputs the sawtooth waveform test signal<br>2: Outputs the 3-step waveform test signal |
| | | Clear | Press MENU SEL switch to execute | Resets numeric settings on the Matrix page to 0<br>(When you press MENU SEL switch, the “Clear” indication flashes. Press MENU SEL switch again to execute; press CANCEL button to cancel) |

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| Low-Key SAT | | LK CLP LVL | –99 to 99 (0) | Adjusts the chroma level at a point where the luminous intensity of a object is low |
| | | LK Saturation | On, Off | Turns the above-mentioned LK CLP LVL function on and off |
| | | Clear | Press MENU SEL switch to execute | Resets numeric settings on the Low-Key SAT page to 0<br>(When you press MENU SEL switch, the “Clear” indication flashes. Press MENU SEL switch again to execute; press CANCEL button to cancel) |
| Shutter | | Shutter/ECS | On, Off | Turns the shutter/ECS mode on and off |
| | | | 1/100, 1/125, 1/500, 1/1000, 1/2000, ECS | Selects the shutter or ECS mode<br>(Corresponds to the shutter switch of the unit) |
| | | ECS | 30.0 to 7000 (30.0) Hz | Sets the ECS frequency |
| | | S-EVS | On, Off | Turns the S-EVS mode on and off. |
| | | | 0 to 100 (0) % | Sets the desired resolution in % |
| Scene File | | 1 | Storing and recalling a scene file (painting data corresponding to a shot scene) | |
| | | 2 | **Storing a scene file** | |
| | | 3 | 1. Turn MENU SEL switch to move the → cursor to “File Store”, then press MENU SEL switch | |
| | | 4 | “File Store” flashes on the viewfinder screen | |
| | | 5 | 2. Select the file number (1 to 5) | |
| | | File Store | (If data is already stored at the selected file, the new data replaces the current data) | |
| | | | **Recalling a scene file** | |
| | | | Turn MENU SEL switch to move the Æ cursor to the desired file number, then press MENU SEL switch | |
| | | | • Every time MENU SEL switch is pressed, the scene file replaces the current settings | |
| | | | • When the scene file is recalled, an asterisk appears next to the number | |
| | | Standard | Returns the current amount of paint adjustments and switch setting to their reference values | |

## 3-1-3. Maintenance Menu

The Maintenance menu is used for adjustment items necessary for camera's maintenance, such as shading adjustment and so on. To activate the Maintenance menu, first display the TOP menu.

(Boxed items under "Settings" indicate the factory setting.)

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| Auto Setup | | Auto Black | Press MENU SEL switch to execute | Starts to automatically adjust the black balance<br>(To abort a processing during execution, press MENU SEL switch) |
| | | Auto White | Press MENU SEL switch to execute | Starts to automatically adjust the white balance<br>(To abort a processing during execution, press MENU SEL switch) |
| | | Auto Level | Press MENU SEL switch to execute | Starts to automatically adjust the level in the internal circuits e)<br>(To abort a processing during execution, press MENU SEL switch) |
| | | TEST | [Off], 1, 2 | Selects the TEST signal<br>Off: No test signal is output<br>1: Outputs the sawtooth waveform test signal<br>2: Outputs the 3-step waveform test signal |
| White Shading | | V SAW R/G/B/M | −99 to +99 ([XX]) | Adjusts the volume of V.SAW compensation for the R, G, B or master white shading |
| | | V PARA R/G/B | −99 to +99 ([XX]) | Adjusts the volume of V.PARA compensation for the R, G, or B white shading |
| | | H SAW R/G/B | −99 to +99 ([XX]) | Adjusts the volume of H.SAW compensation for the R, G, or B white shading |
| | | H PARA R/G/B | −99 to +99 ([XX]) | Adjusts the volume of H.PARA compensation for the R, G, or B white shading |
| | | White R/G/B | −99 to +99 ([XX]) | Adjusts the R, G, or B white level |
| | | Auto White | Press MENU SEL switch to execute | Starts to automatically adjust the white balance |
| | | Clear | Press MENU SEL switch to execute | Resets numeric settings on the White Shading page to 0<br>(When you press MENU SEL switch, the "Clear" indication flashes. Press MENU SEL switch again to execute; press CANCEL button to cancel) |
| Black Shading | | V SAW R/G/B | −99 to +99 ([XX]) | Adjusts the volume of V.SAW compensation for the R, G, or B black shading |
| | | V PARA R/G/B | −99 to +99 ([XX]) | Adjusts the volume of V.PARA compensation for the R, G, or B black shading |
| | | H SAW R/G/B | −99 to +99 ([XX]) | Adjusts the volume of H.SAW compensation for the R, G, or B black shading |
| | | H PARA R/G/B | −99 to +99 ([XX]) | Adjusts the volume of H.PARA compensation for the R, G, or B black shading |
| | | BLK Set R/G/B | −99 to +99 ([XX]) | Adjusts the volume of black set compensation for the R, G, or B black shading |
| | | BLK R/G/B/M | −99 to +99 ([XX]) | Adjusts the R, G, B or master black level |
| | | Master Gain | −3, [0], 3, 6, 12 dB | Selects the master gain value |
| | | Clear | Press MENU SEL switch to execute | Resets numeric settings on the Black Shading page to 0<br>(When you press the MENU SEL switch, the "Clear" indication flashes Press the MENU SEL switch again to execute; press CANCEL button to cancel) |

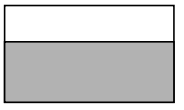
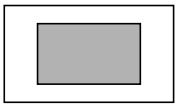
e) When executing the Auto Level, paint data is temporarily cleared and the automatic level adjustment is performed in sequence. After the adjustment is complete, adjustment result is stored as a master setup data.

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| Camera Setup | | H Phase | –100 to 100 (0) | Adjusts the H phase |
| | | FREQ SEL | 60, 59.94 Hz | Selects the field frequency |
| | | Fan Mode | Auto1, Auto2, MIN, Off | Auto1: Normal mode<br>Auto2: Silent mode<br>MIN: Minimum turn mode<br>Off: Forcibly turned off |
| | | Link Tally | On, Off | On: The unit enters the above-mentioned MIN mode with a tally signal input<br>Off: The mode determined by the above setting is valid all the time |
| | | BATT Type | Lithium, Others, CCU, Anton, BP-90 | Select according to a battery in use<br>This setting enables the battery alarm voltage indication corresponding to the battery characteristics |
| | | Alarm VOLT | 10.0 to 13.0 V (10.0) | Sets the battery alarm voltage (Stores the voltages for every battery) |
| SDI/VTR Setup | | Prompter | On, Off | On: Prompter signal is output at GLK/PROMPT connector of the camera adaptor<br>(This setting is valid only when HDCU is connected )<br>Off: No prompter signal is output |
| | | Serial Output | On, Off | On: SDI signal is output at SERIAL OUT connector of camera adaptor<br>Off: No SDI signal is output<br>(This setting is valid only when the camera is used alone ) |
| | | Optical | | Displays a photo-receptive condition of the optical connector of camera adaptor<br>(Corresponds to the indicator on DPR-77 board of HDCU ) f)<br>–––: When the camera is used alone<br>GRN: Normal (–17 dBm * or more)<br>YEW: Normal (–17 to –20 dBm *)<br>RED: Abnormal (less than –20 dBm *)<br>NG: Out of sync with HDCU<br>* 0dBm = 1 mW |
| | | Cable COMP | On, Off | Turns on and off the VTR (26P) cable compensation |
| | | Output Signal | RGB, YPbPr | Selects the main signal to be output to a VTR |
| | | CN Output | Main, RET | Sets the VTR connector |
| Date/Time | | DD/MM/YY<br>HH:MM | | Adjusts a built-in calendar and timer |
| | | Area SEL | GMT–12 to +12 (+9) | Sets the standard time in various countries |
| | | Timer | | Indicates the power-on time of the unit |
| Camera ID | | Camera ID | | Sets a camera ID of up to ten alphanumerics, symbols, and spaces |

f) If “RED” is indicated, be sure to clean the optical connector or optical connector cable. If “YEW” is indicated, cleaning them is recommended. For details on how to clean, refer to the maintenance manual supplied with the camera adaptor.

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| Auto Iris | | Auto Iris | [On], Off | Turns the auto-iris function on and off |
| | | Window SEL | [1], 2, 3, 4, 5 | Selects the type of auto-iris window d) |
| | | Level | −99 to 99 ([0]) | Sets the auto-iris level |
| | | APL Ratio | −99 to 99 ([0]) | Sets the volume of the effect of the auto-iris function<br>−99 (PEAK) ↔ 99(AVERAGE) |
| | | Iris Gain | −99 to 99 ([0]) | Sets the iris gain |
| | | Iris Close | On, [Off] | Turns the iris closing function on and off |
| W/B Offset | | White Offset | Press MENU SEL switch to execute | Stores the offset value which is obtained from a manual adjustment when the white balance could not be completely adjusted in the auto adjustment mode |
| | | Black Offset | Press MENU SEL switch to execute | Stores the offset value which is obtained from a manual adjustment when the black balance could not be completely adjusted in the auto adjustment mode |
| | | Offset Clear | Press MENU SEL switch to execute | Clears the both offset values for the white and black balance adjustments |
| ND Offset | | ND Position | | Indecates the ND filter number in use |
| | | ND OFST Store | Enable, [Disable] | Enable: When the OHB file store is stored, the white offset value for ND filter is stored at the same time<br>Disable: Even though the OHB file store is executed, the white offset value for ND filter is not stored at the same time<br>**[Note]**<br>The setting is returned to Disable when the unit is powered off |
| | | Auto White | Press MENU SEL switch to execute | Starts to automatically adjust the white balance<br>(To abort a precessing during excution, press MENU SEL switch) |
| | | OHB File Store | Press MENU SEL switch to execute | Stores specific data for a CCD unit to be used as the OHB files<br>The standard values are stored at the factory |
| | | ND OFST Clear | Press MENU SEL switch to execute | Clears the white offset value for the ND filter |

d)

| Setting | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| VF Screen |  |  |  |  |  |

Auto-iris window frame is shown in a shaded pattern ▭.

## 3-1-4. File Menu

The File menu stores and clears the adjustment values or setting values stored in the Reference, OHB, Operator and Lens files.
To activate the File menu, first display the TOP menu.

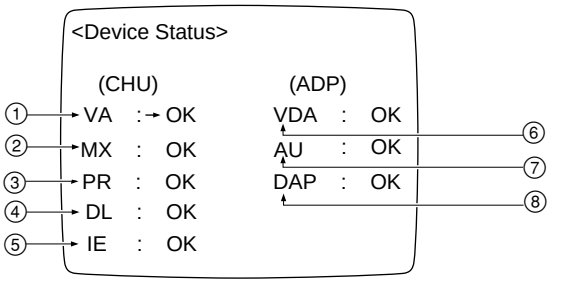
| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| Reference File | | Store File | Press MENU SEL switch to execute | Stores the reference values used for automatic setup adjustment and the standard settings of the switches as the reference files<br>**Notes**<br>• When executing the Store File on the Reference File page, settings of items which have been set just before the file store through the Paint, Maintenance and SYS Config menus are registered as the reference values<br>• If changed values is to be returned to the reference values stored in the reference files, recall the standard file using an MSU/RCP or the setup menu |
| | | Clear File | Press MENU SEL switch to execute | Clears the adjustment values stored as the reference files (Temporarily clears the current reference files)<br>**Note**<br>If the unit is powered off without execution of the Store File after clearing the file, the original setting is restored |
| | | 10sec Clear | On, [Off] | Turns on and off the function to clear the reference value by continuing to push up MENU SELECT switch to ENTER more than ten seconds<br>(With 10 sec Clear set at On, move the cursor to a menu item to be cleared, and press the MENU SEL switch more than ten seconds while "?" is brinking. The reference item can be cleared)<br>**Note**<br>The setting is returned to Off when the unit is powered off<br>When the unit is powered off without execution of the Store File after the file is cleared, the original setting is restored |
| OHB File | | Store File | Press MENU SEL switch to execute | Stores specific data for a CCD unit to be used as the OHB files The standard values are stored at the factor (Stores the white offset value for ND filter, OHB matrix data and so on) |
| Operator File | | Store Preset File | Press MENU SEL switch to execute | Stores the user's preset values of the operator file |
| | | Clear Preset File | Press MENU SEL switch to execute | Returns the preset values of the operator file to their factory settings |
| Lens File | | File | 1 to [16] | Selects a lens file appropriate for a mounted lens from 16 kinds of the lens files |
| | | F Stop | F1.0 to F3.4 ([F1.5]) | Sets a stop number of a lens |
| | | Store File | Press MENU SEL switch to execute | Stores the adjustment value on each item (except the location of the center marker) as the lens file |
| | | Clear Current File | Press MENU SEL switch to execute | Returns the selected lens file to the factory setting |
| | | Center H POS | –20 to 20 ([0]) | Shifts horizontally the location of the center marker on the screen<br>20 (right) ↔ –20 (left) |
| | | Center V POS | –20 to 20 ([0]) | Shifts vertically the location of the center marker on the screen<br>20 (down) ↔ –20 (up) |
| | | Center POS Store | Press MENU SEL switch to execute | Stores the location of the center marker at present in the selected lens file number |

## 3-1-5. Diag Disp Menu

The Diag Disp menu indicates the self-diagnosis of every plug-in board and the ROM version of the ROM used in the unit, HDCA or HDCU.
To activate the Diag Disp menu, first display the TOP menu.

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| ROM Version | | CHU | | Indicates the ROM version for IC26/IF-569 board |
| | | ADP | | Indicates the ROM version for IC29/SG-226 board of HDCA |
| | | CCU | | Indicates the ROM version for IC38/AT-103A board of HDCU |
| Device Status g) | | VA | OK, NG | Displays a diagnostic state of the VA board |
| | | MX | OK, NG | Displays a diagnostic state of the MX board |
| | | PR | OK, NG | Displays a diagnostic state of the PR board |
| | | DL | OK, NG | Displays a diagnostic state of the DL board |
| | | IE | OK, NG | Displays a diagnostic state of the IE board |
| | | VDA | OK, NG | Displays a diagnostic state of VDA board of the camera adaptor |
| | | AU | OK, NG | Displays a diagnostic state of AU board of the camera adaptor |
| | | DAP | OK, NG | Displays a diagnostic state of DAP board of the camera adaptor |

g)




| Marks | Board | Criteria for Judging NG |
|---|---|---|
| ① | VA-158 | Checks whether the video signals are properly output at pin 6 of IC310,IC510 and IC710 each, or not |
| ② | MX-59 | Checks whether the video signals are properly output at pin 6 of IC105,IC205 and IC305 each, or not |
| ③ | PR-200 | Checks whether the video signals are properly output at pin 6 of IC215,IC417 and IC615 each, or not |
| ④ | DL-65 | Checks whether the video signals are properly output at pin 6 of IC109,IC309 and IC509 each, or not |
| ⑤ | IE-44 | Checks whether the video signals are properly output at pin 6 of IC104,IC204 and IC304 each, or not |
| ⑥ | VDA-31A | Checks whether the video signals are properly output at pin 6 of IC106,IC206 and IC306 each, or not |
| ⑦ | AU-203 | Checks the voltage at +5 V regulated line |
| ⑧ | DAP-5 | Checks the audio clocks (13.5 MHz) at pin 43 of IC2 |

## 3-1-6. SYS Config Menu

The SYS Config menu is used to set operating mode of the tally lamps or to make adjustments of limited service.
To activate the SYS Config menu, first display the TOP menu.

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| Tally | | Own Call | R, [F&R], Off | Selects whether tally lamps are lit or not, or which tally lamp is lit when the CALL switch on the camera adaptor is pressed (This setting is valid only when the HDCU is connected to the camera<br>When the camera is used alone without being connected to RCP/MSU, this setting is turned off regardless of the menu indication )<br>R: One or two rear tally lamps h) are lit<br>F&R: Both rear h) and front k) tally lamps are lit<br>OFF: No tally lamp is lit |
| | | F Tally RVS | [On], Off | Tally lamps stay lit while the tally signal is input from the HDCU or VTR<br>This item selects the operating mode of the tally lamps when a CALL button of MSU or RCP is pressed while lit<br>On: Both rear h) and front k) tally lamps go out<br>Off: Rear h) tally lamps alone go out |
| | | (Back Tally) | | |
| | | R Tally | [On], Off | Turns on and off the function to light up the back tally lamp when the R tally singal is input |
| | | G Tally | [On], Off | Turns on and off the function to light up the back tally lamp when the G tally singal is input |
| | | Up Tally Level | 0 to 10 ([5]) | Sets the intensity of the up tally lamp<br>(Does not function in this unit ) |
| | | Filter CTRL | [Lock], Unlock | Lock: ND/CC filter cannot be selected when the R tally signal is input<br>Unlock: ND/CC filter can be selected even though the R tally signal is input |
| Pixel | | Auto | Press MENU SEL switch to execute | Starts to automatically correct RPN (Activates APR function) |
| | | REF DC | 00 to FF ([80]) | Sets the APR detection level |
| | | Manual R | Press MENU SEL switch to execute | Enters a manual correction mode for RPN |
| | | Manual G | | |
| | | Manual B | | |
| | | APR at ABB | On, [Off] | Turns on and off the function to activate the APR each time the black balance is automatically performed |

h) Rear tally lamp refers to back tally lamp (of HDCA-750A) and VF tally lamp (of HDVF-20 or HKCA-700).
k) Front tally lamp refers to up tally lamp (of HKCA-700).

| Page | Ver. | Item | Settings | Contents |
|---|---|---|---|---|
| Others | | CHU Color Bars | On, [Off] | Turns the camera color-bar signal output on and off |
| | | Filter WHT MEM | [On], Off | On: Four white balance values can be stored in white balance memory A or B corresponding to the setting of the CC filter, for a total of 8 settings<br>Off: One white balance value can be stored in white balance memory A or B, for a total of 2 settings (CC filter positions can be stored) |
| | | Rotation | [STD], RVS | Selects the mode of MENU SEL switch (as turned counter-clockwise when viewed from the front)<br>STD: Cursor moves downwards and a numeric value increases<br>RVS: Cursor moves upwards and a numeric value decreases |
| | | ID On Bars | On, [Off] | Selects whether the camera ID is mixed with a camera output signal in the color-bar mode, or not (This setting is valid only when the VF DISP switch is set to ON or OFF) |
| | | Date On Bars | On, [Off] | Selects whether the date characters are mixed with a camera output signal in the color-bar mode, or not (This setting is valid only when the VF DISP switch is set to ON or OFF) |
| | | Time On Bars | On, [Off] | Selects whetehr the time characters are mixed with a camera output signal in the color-bar mode, or not (This setting is valid only when the VF DISP switch is set to ON or OFF) |
| | | Zoom Disp | Left, [Right] | Changes the indication location of the zoom position status displayed on the VF<br>Left: Zoom position is located on the left<br>Right: Zoom position is located on the right |

# Section 4
# Electrical Alignment

This section is comprised of the following two adjustment items;

- Items required when repairing or replacing a circuit board. (Described in Sections 4-2 to 4-6.)
- Items required at installation. (Described in Sections 4-7 and 4-8.)

## 4-1. Preparation

### 4-1-1. Equipment Required

#### Measuring Equipment

- Oscilloscope (Band width 300 MHz or more)
  Tektronix 2465B or equivalent
- HDTV analog waveform monitor
  Tektronix 1735HD/1730HD or equivalent

#### Peripheral Equipment

- HDVS camera system
  HDC-750A
  HDCU-700A
  MSU-700 (with HKCF-700 installed)

#### Fixtures

- Extension board EX-512
  Sony P/N: A-8273-247-A
- Pattern box PTB-500
  Sony P/N: J-6029-140-B
- Grayscale chart (16:9)
  Sony P/N: J-6394-080-A
- Camera cable CCZRGB-3 * (3m)
  (Used when monitoring video outputs)

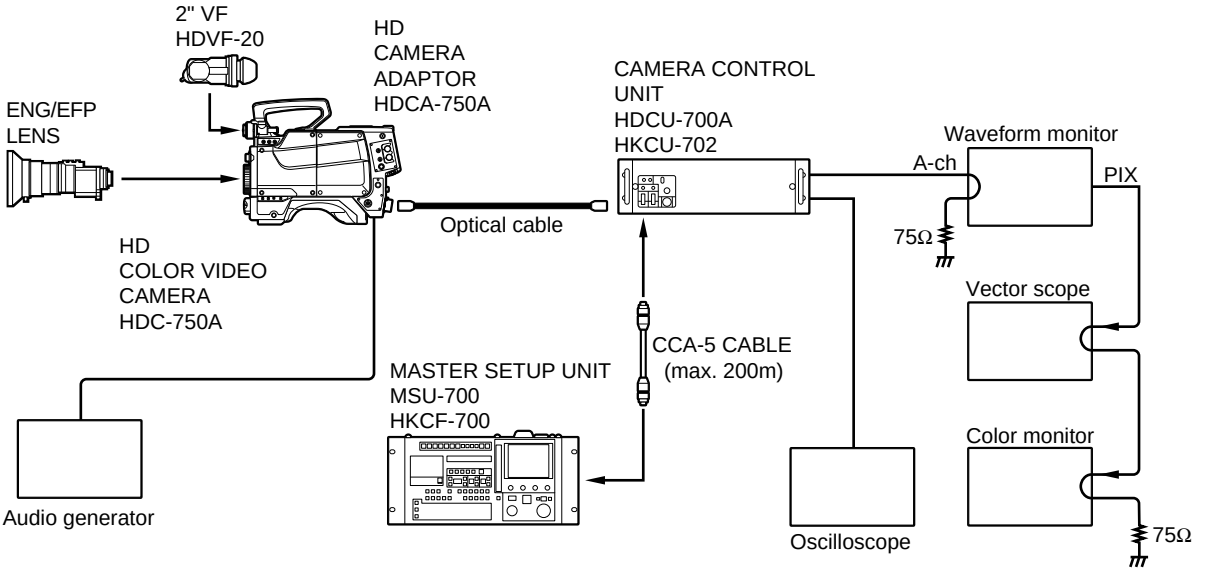
* Please order through the sales channel.

### 4-1-2. Notes on Adjustment

- All measuring equipment shall be completely calibrated.
- As for initial settings before beginning adjustment, refer to Section 4-1-4.
- Alignment for HDCA-750A, HDCU-700A and MSU-700 shall be completed.

## 4-1-3. Connection

### For general adjustments



### 4-1-4. Initial Settings

**HDC-750A**

- Side panel (upper side)
  Y/RGB switch → Y
- Make the following settings using the setup menu.
  MENU: Maintenance
  PAGE: SDI/VTR Setup
  ITEM: Cable COMP → Off

**MSU-700 Operation Panel**

- CAM POWER/Signal output select buttons
  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)
- CAM/CCU Function ON/OFF buttons
  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 button → 0 (0 dB)
  FILTER button (ND) → 1 (lit)
  FILTER button (CC) → B (lit)
  ECS/SHUTTER ON button → OFF (dark)

## 4-2. Filter Drive Board Adjustment

### 4-2-1. Filter Positioning Adjustment

**Note**

- This adjustment is required only when replacing the CCD unit or the filter drive board.

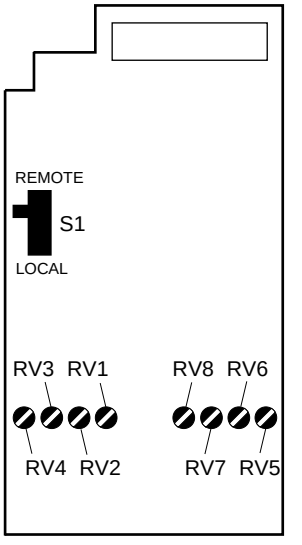
**Preparation**

- S1/Filter drive board → REMOTE (upper side)

**Adjustment Procedures**

1. ND 1 button/MSU-700 → ON
2. Adjust ⊘RV1 so that the ND 1 filter stops at a proper click position (on the optical axis of the lens) observing from the lens mount.
3. Adjust positions for other filters in the same manner.

| Filter | Adjustment Point |
|---|---|
| ND1 (clear) | ⊘RV1 |
| ND2 (1/4 ND) | ⊘RV2 |
| ND3 (1/16 ND) | ⊘RV3 |
| ND4 (1/64 ND) | ⊘RV4 |
| CC1 (cross) | ⊘RV5 |
| CC2 (clear) | ⊘RV6 |
| CC3 (4300 K) | ⊘RV7 |
| CC4 (5600 K) | ⊘RV8 |



DRIVER BOARD (A SIDE)

# 4-3. VA-158 Board Adjustment

## 4-3-1. TEST SAW Level Adjustment

Equipment: Oscilloscope

### Preparations

- Open the left side board.
- Extend the VA-158 board.
- Setting for MSU-700
  TEST 1 button → ON
- Clear the reference file.
  Set the setup menu as follows.
  MENU: Maintenance
  PAGE: Reference File
  ITEM: 10 sec Clear → On

  MENU: Paint
  PAGE: Video Level
  ITEM: White R/G/B
  (Move the cursor to each item and press the MENU SEL switch for ten seconds while "?" is blinking. Then, message "REF Clear" will be displayed.)

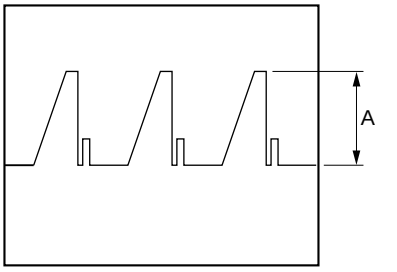
### Adjustment Procedures

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

2. R-ch Adjustment
   Test Point: TP17/extension board
   Adjustment Item: R
   Specification: A = 400 ±4 mVp-p

3. G-ch Adjustment
   Test Point: TP11/extension board
   Adjustment Item: G
   Specification: A = 400 ±4 mVp-p

4. B-ch Adjustment
   Test Point: TP5/extension board
   Adjustment Item: B
   Specification: A = 400 ±4 mVp-p




### Triming File Store

1. S1-5/IF-569 board → ON
2. AUTO button (Iris control block)/MSU-700
   → ON (lit)
3. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → White → Clear → White
     Message "Triming file stored" will be displayed three seconds.

### Resetting after Adjustment

- S1-5/IF-569 board → OFF

## 4-3-2. VA Gain Adjustment

Equipment: Oscilloscope
Object: Grayscale chart

### Preparations

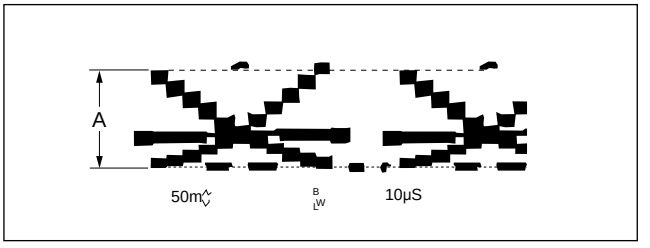
- Extend the VA-158 board.
- Shoot the grayscale chart which is well-maintained (reflectance of 89.9%) so that the chart frame is aligned with the underscanned monitor frame.
  (F8, 2000 lx, 3200 K)
- Settings for MSU-700
  CLOSE button → OFF (dark)
  ECS/SHUTTER ON button → OFF (dark)

### Adjustment Procedures

1. VA OUT R level adjustment
   Test Point: TP17/extension board
   Adjustment Point: ⊘RV300/VA-158
   Specification: A = 400 ±4 mV

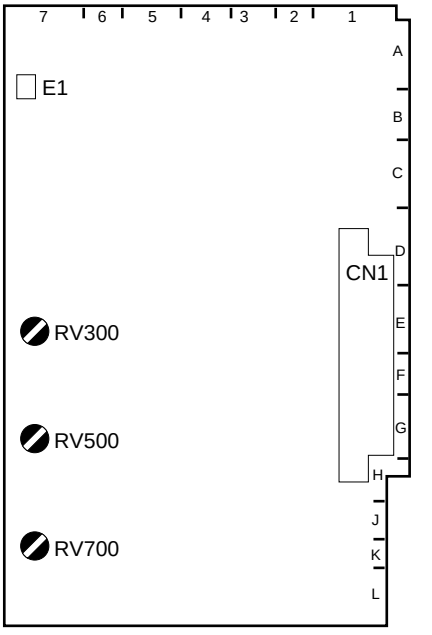
2. VA OUT G level adjustment
   Test Point: TP11/extension board
   Adjustment Point: ⊘RV500/VA-158
   Specification: A = 400 ±4 mV

3. VA OUT B level adjustment
   Test Point: TP5/extension board
   Adjustment Point: ⊘RV700/VA-158
   Specification: A = 400 ±4 mV




### Resetting after Adjustment

- Return the switches to their previous positions.




VA-158 BOARD (A SIDE)

## 4-4. MX-59 Board Adjustment

### Preparations

- Settings for MSU-700
  MASTER GAIN → 0 dB
  BARS button → OFF (dark)
  TEST1 button → OFF (dark)
  TEST2 button → OFF (dark)
  KNEE OFF button → OFF (lit)
- Extend the MX-59 board.
- ⊘RV401/MX-59 → Mechanical center

## 4-4-1. FLARE PRESET Adjustment

Equipment: Analog waveform monitor

### Preparations

- Close the lens iris.
- Connect the VTR connector of the camera adaptor to the waveform monitor.
- Setting for MSU-700
  GAMMA OFF button → ON (dark)
- Set the setup menu as follows.
  MENU: Maintenance
  PAGE: SDI/VTR Setup
  ITEM: Output Signal → RGB

### Adjustment Procedures

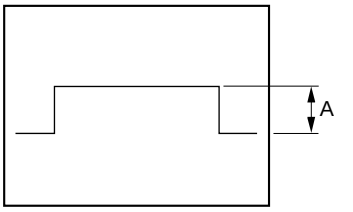
1. Adjustment Point: MASTER BLACK control/ MSU-700
   Specification: A = 70 ± 7 mV

2. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → Flare
   - Set R, G and B to +99 respectively.

3. Adjust levels for R-ch, G-ch and B-ch as follows.

| | Test Point/VTR connector | Adjustment Point |
|---|---|---|
| R-ch | R/$P_R$ OUT (pin 5)<br>R/$P_R$ GND (pin 6) | ⊘RV201/MX-59 |
| G-ch | G/Y OUT (pin 4)<br>G/Y GND (pin 3) | ⊘RV101/MX-59 |
| B-ch | B/$P_B$ OUT (pin 7)<br>B/$P_B$ GND (pin 8) | ⊘RV301/MX-59 |

Specification: Adjust each control so that the level A does not change even if the flare is turned on and off using Flare Off button on the MSU menu operation block.




### Resetting after Adjustment

- **MSU menu operation:**
  - PAINT button → ON (lit)
  - Touch panel operation
    (Page 1/3) → Flare
  - Return R, G and B to 0 respectively.
- Setup menu operation:
  MENU: Maintenance
  PAGE: SDI/VTR Setup
  ITEM: Output Signal → YPbPr

## 4-4-2. RGB Level Adjustment

Equipment: Oscilloscope

### Preparation

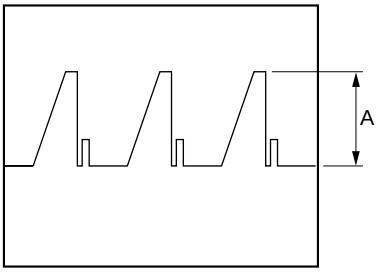
- Setting for MSU-700
  MATRIX OFF button → OFF (lit)
  BARS button → OFF (dark)
  TEST1 button → ON (lit)

### Adjustment Procedure

- Adjust levels for R-ch, G-ch and B-ch as follows.

| | Test Point | Adjustment Point |
|---|---|---|
| R-ch | TP17/extension board | ⊘RV103/MX-59 |
| G-ch | TP11/extension board | ⊘RV203/MX-59 |
| B-ch | TP5/extension board | ⊘RV303/MX-59 |

Specification: A = 700 ±7 mVp-p




## 4-4-3. Knee Aperture Crispening Adjustment

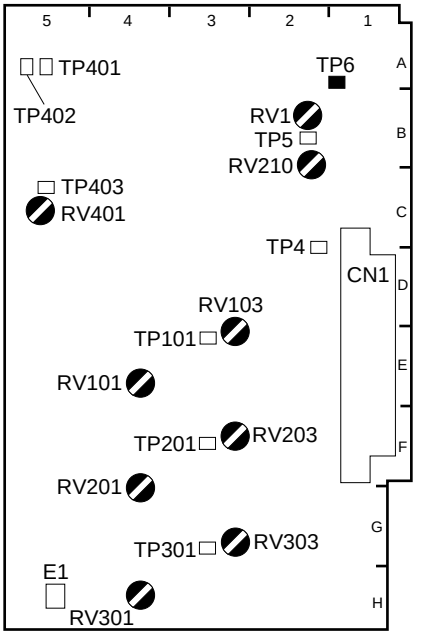
Equipment: Oscilloscope
Object: Grayscale chart

### Preparations

- Settings for MSU-700
  BARS button → OFF (dark)
  TEST1 button → OFF (dark)
  KNEE OFF button → ON (dark)
- Iris of the lens: A = 700 ± 7 mV

### Adjustment Procedure

Test Point: TP6/MX-59
Adjustment Point: ⊘RV1/MX-59
Specification: Adjust for preferred level.




MX-59 BOARD (A SIDE)

## 4-4-4. Knee Aperture Balance Adjustment

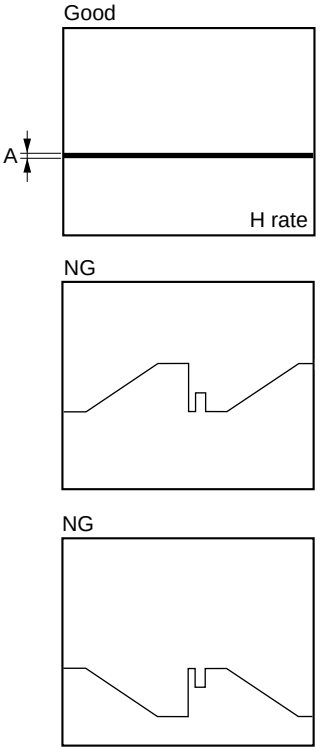
Equipment: Oscilloscope

### Preparation

- Setting for MSU-700
  TEST1 button → ON (lit)

### Adjustment Procedure

Test Point: TP5/MX-59
Adjustment Point: ⊘RV210/MX-59
Specification: A = 0 ±5 mVp-p
There shall be no level difference in the waveform.




## 4-4-5. Pedestal Level Adjustment

Equipment: Oscilloscope

### Preparations

- Open the left side panel.
- Settings for MSU-700
  MASTER GAIN → 0 dB
  BARS button → OFF (dark)
  TEST1 button → ON (lit)
  KNEE OFF button → OFF (lit)
  MATRIX OFF button → OFF (lit)
  GAMMA OFF button → OFF (lit)
- Clear the reference file.
  Set the setup menu as follows.
  MENU: File
  PAGE: Reference File
  ITEM: 10 sec Clear → On

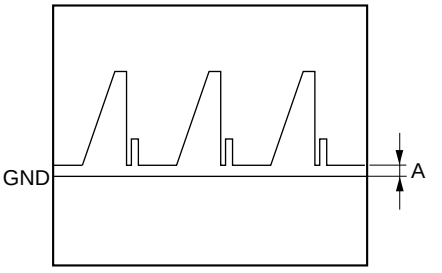
  MENU: Paint
  PAGE: Video Level
  ITEM: Black R/G/B/M
  (Move the cursor to each item and press the MENU SEL switch for ten seconds while "?" is blinking. Then, message "REF Clear" will be displayed.)

### Adjustment Procedures

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

| | Test Point | Adjustment Item/MSU-700 |
|---|---|---|
| G-ch | TP11/extension board | Master |
| R-ch | TP17/extension board | R |
| B-ch | TP5/extension board | B |

Specification: A = 5.0 ±0.5 mV



## Triming File Store

1. S1-5/IF-569 board → ON
2. AUTO button (Iris control block)/MSU-700 → ON (lit)
3. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → [Black] → [Clear] → [Black]
     Message “Triming File Stored” will be displayed three seconds.

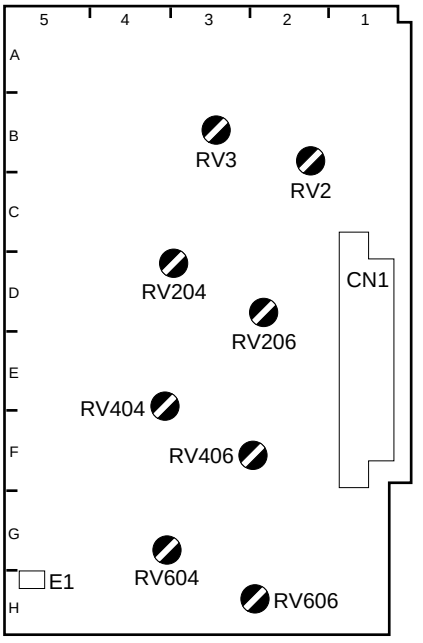
## Resetting after Adjustment

- S1-5/IF-569 board → OFF

# 4-5. PR-200 Board Adjustment

## Preparations

- Setting for MSU-700
  MASTER GAIN → 0 dB
  BARS button → OFF (dark)
  TEST1 button → ON (lit)
  KNEE OFF button → OFF (lit)
  MATRIX OFF button → OFF (lit)
  GAMMA OFF button → OFF (lit)
- Extend the PR-200 board.
- ⊘RV2/PR-200 → Mechanical center
- ⊘RV3/PR-200 → Mechanical center




PR-200 BOARD (A SIDE)

## 4-5-1. Settings of Input Level

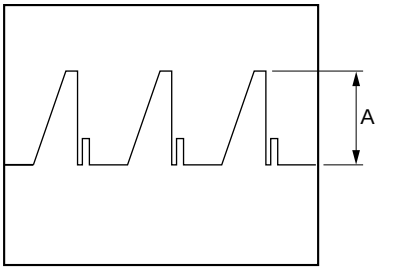
Equipment: Oscilloscope

### Adjustment Procedures

1. Setting the input level (WHITE)
   **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → White

| | Test Point | Adjustment Item/MSU-700 |
|---|---|---|
| R-ch | TP20/extension board | R |
| G-ch | TP14/extension board | G |
| B-ch | TP8/extension board | B |

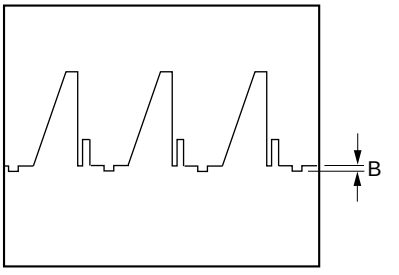
Specification: A = 700 ± 7 mVp-p




2. Setting the input level (BLACK)
   **MSU menu operation:**
   - Touch panel operation
     (Page 1/3) → Black

| | Test Point | Adjustment Item/MSU-700 |
|---|---|---|
| R-ch | TP20/extension board | R |
| G-ch | TP14/extension board | G |
| B-ch | TP8/extension board | B |

Specification: B = 5.0 ± 0.5 mV




3. Repeat procedures 1 and 2 until specifications A and B are satisfied.

### 4-5-2. Gamma Balance Adjustment

Equipment: Oscilloscope

#### Preparation

- Be sure to complete Section 4-5-1 “Settings of Input Level”.

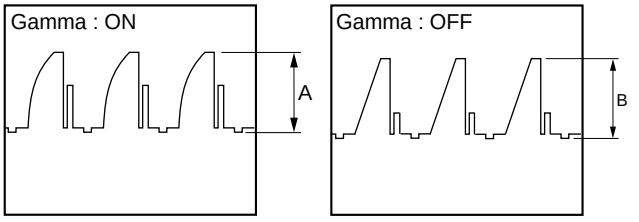
#### Adjustment Procedures

1. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     [△] → (Page 2/3) → [Gamma]
   - Set Master to 0.

2. Adjust levels for R-ch, G-ch and B-ch respectively while turning on/off the GAMMA OFF button to drive levels A and B into specifications.

| | Test Point | Adjustment Point Turning on Gamma | Turning off Gamma |
|---|---|---|---|
| R-ch | TP17/extension board | ⊘RV206/PR-200 | ⊘RV204/PR-200 |
| G-ch | TP11/extension board | ⊘RV406/PR-200 | ⊘RV404/PR-200 |
| B-ch | TP5/extension board | ⊘RV606/PR-200 | ⊘RV604/PR-200 |

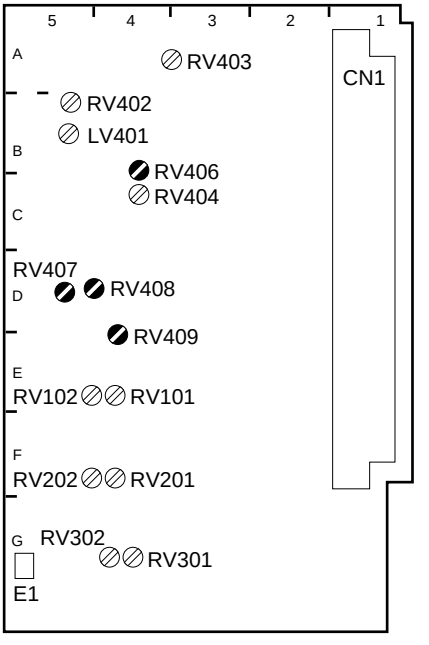
Specifications: A = B = 700 ±7 mVp-p




## 4-6. IE-44 Board Adjustment

#### Preparations

- Setting for MSU-700
  MASTER GAIN → 0 dB
  BARS button → OFF (dark)
  TEST1 button → ON (lit)
  KNEE OFF button → OFF (lit)
  GAMMA OFF button → ON (dark)
- Extend the IE-44 board.
- ⊘RV406/IE-44 → Mechanical center
- ⊘RV408/IE-44 → Mechanical center
- ⊘RV409/IE-44 → Mechanical center
- ⊘RV407/IE-44 → Fully clockwise ↻




IE-44 BOARD (A SIDE)

## 4-6-1. Settings of Input Level

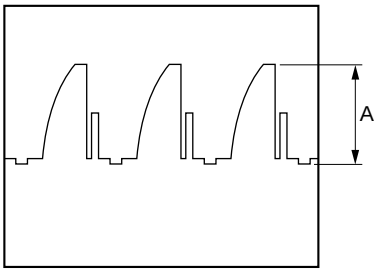
Equipment: Oscilloscope

### Adjustment Procedures

1. Setting the input level (WHITE)
   **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → White

| | Test Point | Adjustment Item/MSU-700 |
|---|---|---|
| R-ch | TP20/extension board | R |
| G-ch | TP14/extension board | G |
| B-ch | TP8/extension board | B |

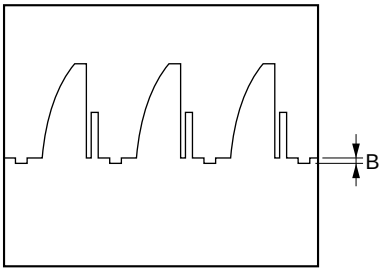
Specification: A = 700 ± 7 mVp-p




2. Setting the input level (BLACK)
   **MSU menu operation:**
   - Touch panel operation
     (Page 1/3) → Black

| | Test Point | Adjustment Item/MSU-700 |
|---|---|---|
| R-ch | TP20/extension board | R |
| G-ch | TP14/extension board | G |
| B-ch | TP8/extension board | B |

Specification: B = 21 ± 3 mV




## 4-6-2. Video Level Adjustment

Equipment: Oscilloscope

### Preparation

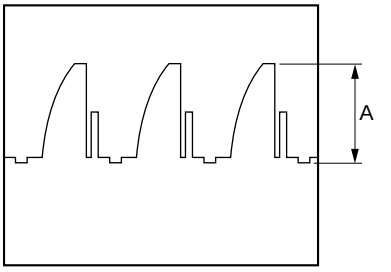
- Be sure to complete Section 4-6-1 “Settings of Input Level”.

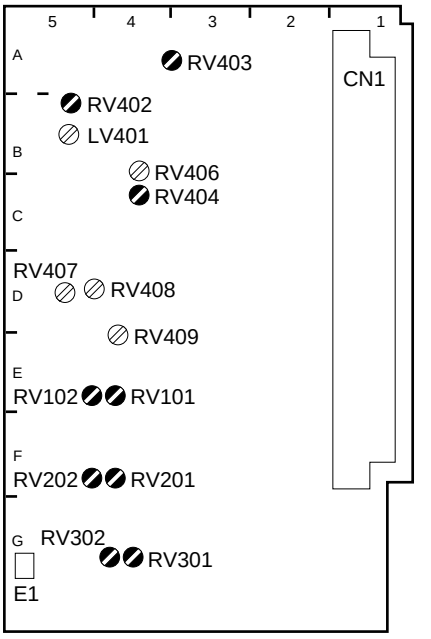
### Adjustment Procedure

- Adjust levels for R-ch, G-ch and B-ch as follows.

| | Test Point | Adjustment Point |
|---|---|---|
| R-ch | TP17/extension board | RV101/IE-44 |
| G-ch | TP11/extension board | RV201/IE-44 |
| B-ch | TP5/extension board | RV301/IE-44 |

Specification: A = 700 ± 7 mVp-p




IE-44 BOARD (A SIDE)

## 4-6-3. Color-bar Level Adjustment

Equipment: Oscilloscope

### Preparation

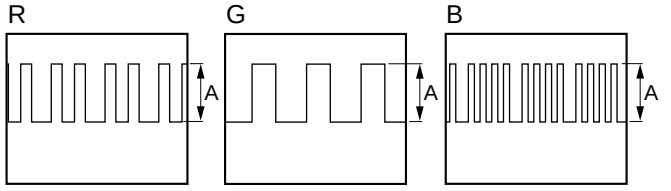
- Set the setup menu as follows.
  MENU: SYS Config
  PAGE: Others
  ITEM: CHU Color Bars → On

### Adjustment Procedure

- Adjust levels for R-ch, G-ch and B-ch as follows.

| | Test Point | Adjustment Point |
|---|---|---|
| R-ch | TP17/extension board | ⊘RV102/IE-44 |
| G-ch | TP11/extension board | ⊘RV202/IE-44 |
| B-ch | TP5/extension board | ⊘RV302/IE-44 |

Specification: A = 700 ±7 mVp-p




### Resetting after Adjustment

- Reset the setup menu as follows.
  MENU: SYS Config
  PAGE: Others
  ITEM: CHU Color Bars → Off

## 4-6-4. DTL Balance Adjustment

Equipment: Oscilloscope

### Preparation

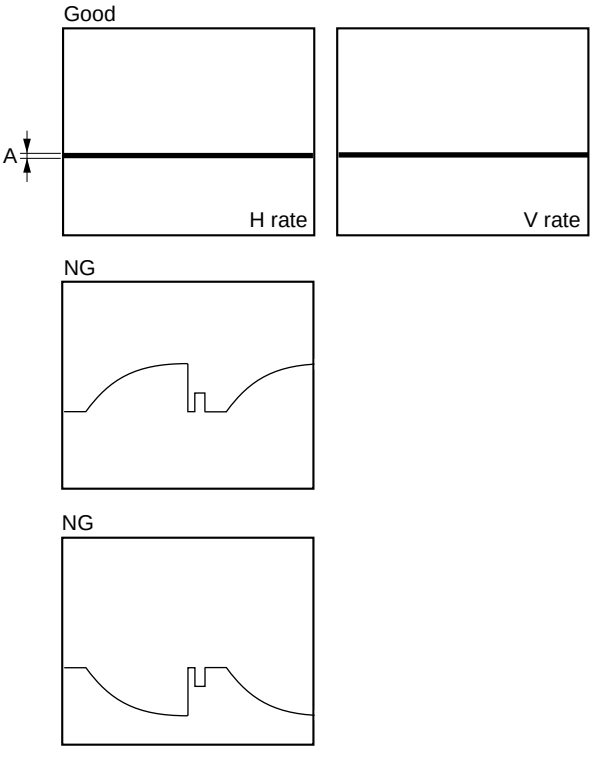
- Setting for MSU-700
  TEST1 button → ON (lit)

### Adjustment Procedure

- Adjust H-DTL1, H-DTL2 and V-DTL to drive them into specifications.

| | Test Point/IE-44 | Adjustment Point |
|---|---|---|
| H-DTL1 | Pin 6/IC403 | ⊘RV402/IE-44 |
| H-DTL2 | Pin 6/IC405 | ⊘RV403/IE-44 |
| V-DTL | Pin 6/IC409 | ⊘RV404/IE-44 |

Specification: A = 0 ±5 mVp-p
There shall be no level difference in the waveform.



# 4-7. Overall Video Adjustment

## 4-7-1. VA Gain Adjustment

Equipment: Oscilloscope
Object: Grayscale chart

### Preparations

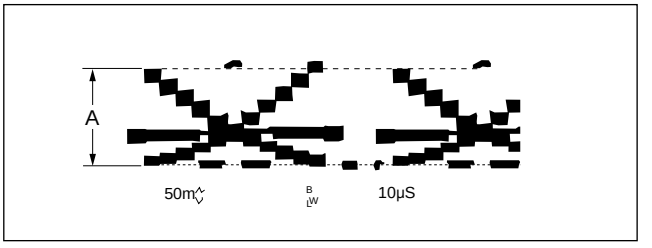
- Extend the VA-158 board.
- Shoot the grayscale chart which is well-maintained (reflectance of 89.9%) so that the chart frame is aligned with the underscanned monitor frame.
  (F8, 2000 lx, 3200 K)
- Settings for MSU-700
  CLOSE button → OFF (dark)
  ECS/SHUTTER ON button → OFF (dark)

### Adjustment Procedures

1. VA OUT R level adjustment
   Test Point: TP17/extension board
   Adjustment Point: ⊘RV300/VA-158
   Specification: A = 400 ± 4 mV

2. VA OUT G level adjustment
   Test Point: TP11/extension board
   Adjustment Point: ⊘RV500/VA-158
   Specification: A = 400 ± 4 mV

3. VA OUT B level adjustment
   Test Point: TP5/extension board
   Adjustment Point: ⊘RV700/VA-158
   Specification: A = 400 ± 4 mV




### Resetting after Adjustment

- Return the switches to their previous positions.

## 4-7-2. White Shading Adjustment

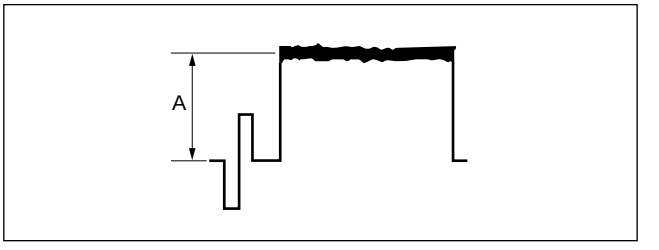
Equipment: Analog waveform monitor
Test Point: TEST OUT connector
Object: Full white pattern

### Note

When performing the white shading adjustment, make sure the following conditions are proper. If not, adjustment can not be complete.
- White pattern is not uneven.
- Luminance is correctly adjusted.
- Iris and zoom control of the lens are correctly adjusted.

### Preparations

- Connect the waveform monitor to the TEST OUT connector of the unit.
- Y/RGB switch (at the top of the side panel) → Y
- Setting for MSU-700
  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 F5.6 to F8)
  (If a lens aperture is greater than F8, adjust the light amounts with shutter.)
- Lens Focus: ∞
- Lens Extender/Shrinker: ×2, ×0.8 → OFF
- Set the setup menu as follows.
  MENU: Operation
  PAGE: Battery/D56
  ITEM: Lens 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.)

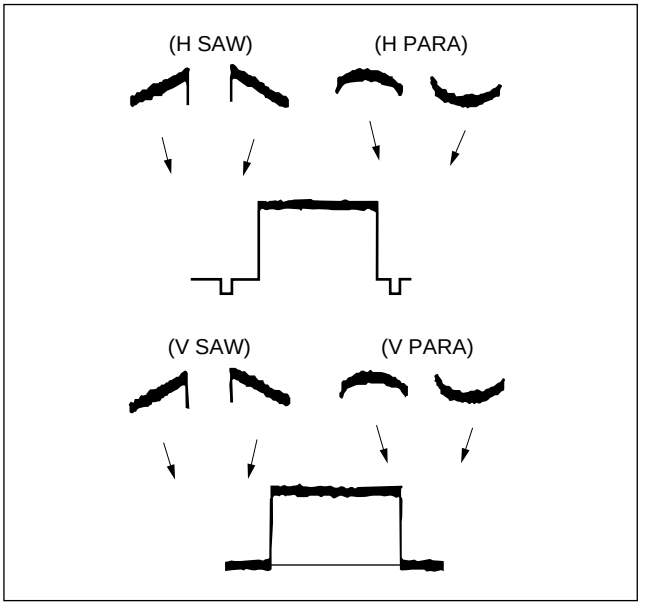


## Adjustment Procedures

1. Adjust the white balance.
   WHITE button/MSU-700 → ON (lit)

2. Set the waveform monitor as follows.
   - LUM mode
   - VOLTFULL SCALE range → 0.5

3. Y/RGB switch (at the top of the side panel) → RGB
   R/G/B switch (at the top of the side panel) → R
4. 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




5. R/G/B switch (at the top of the side panel) → G
   Adjust for G-ch in the same manner.
6. R/G/B switch (at the top of the side panel) → B
   Adjust for B-ch in the same manner.
7. Adjust the white balance.
   WHITE button/MSU-700 → ON (lit)

## Lens File Store

**MSU menu operation:**

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

## Adjustment for Lens Extender/Shrinker

When using the lens extender or lens shrinker, perform the following adjustments after the completion of lens file store.

8. (Using the lens extender)
   Set the setup menu as follows.
   MENU: Operation
   PAGE: Battery/D56
   ITEM: Lens 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.)
9. Lens extender (×2) → ON
10. Repeat procedures 3 to 7, then perform the lens file store again.
11. Lens extender (×2) → OFF
12. (Using the lens shrinker)
    Set the setup menu as follows.
    MENU: Operation
    PAGE: Battery/D56
    ITEM: Lens 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.)
13. Lens shrinker (×0.8) → ON
14. Repeat procedures 3 to 7, then perform the lens file store again.
15. Lens shrinker (×0.8) → OFF

## 4-7-3. Black Shading Adjustment

Equipment: Analog waveform monitor
Test Point: TEST OUT connector

### Preparations

- Connect the waveform monitor to the TEST OUT connector of the unit.
- Y/RGB switch (at the top of the side panel) → RGB
- Close the lens iris.

### Adjustment Procedures

1. R/G/B switch (at the top of the side panel) → R

2. **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. R/G/B switch (at the top of the side panel) → G
   Adjust for G-ch in the same manner.

4. R/G/B switch (at the top of the side panel) → B
   Adjust for B-ch in the same manner.

### OHB File Store

**MSU menu operation:**

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

## 4-7-4. Flare Adjustment

Equipment: Analog waveform monitor
Test Point: TEST OUT connector

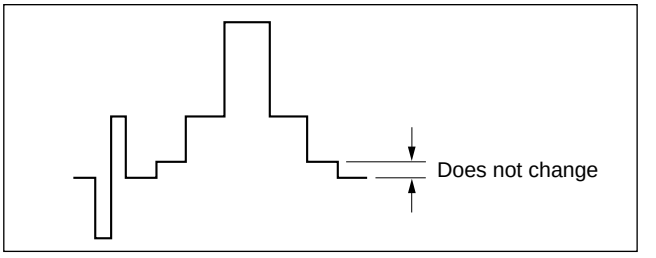
### Preparations

- Open the left side board.
- Connect the waveform monitor to the TEST OUT connector of the unit.
- Y/RGB switch (at the top of the side panel) → RGB
- Setting for MSU-700
  KNEE OFF button → OFF (lit)
  MATRIX OFF button → OFF (lit)
  DETAIL OFF button → OFF (lit)
  TEST2 button → ON (lit)
- Clear the reference file.
  Set the setup menu as follows.
  MENU: File
  PAGE: Reference File
  ITEM: 10 sec Clear → On

  MENU: Paint
  PAGE: Video Level
  ITEM: Flare R/G/B
  (Move the cursor to each item and press the MENU SEL switch for ten seconds while "?" is blinking. Then, message "REF Clear" will be displayed.)

### Adjustment Procedures

1. R/G/B switch (at the top of the side panel) → R
2. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → Flare
   Adjustment Item: R
   Specification: Adjust so that the black level of the TEST2 waveform does not change even if the flare is turned on and off using Flare Off button on the MSU menu operation block.



3. R/G/B switch (at the top of the side panel) → G
   Adjust for G-ch in the same manner.
   (Adjustment Item: G)

4. R/G/B switch (at the top of the side panel) → B
   Adjust for B-ch in the same manner.
   (Adjustment Item: B)

### Triming File Store

1. S1-5/IF-569 board → ON
2. AUTO button (Iris control block)/MSU-700 → ON (lit)
3. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → [Flare] → [Clear] → [__Flare__]
     Message “Triming file stored” will be displayed three seconds.

### Resetting after Adjustment

- S1-5/IF-569 board → OFF
- Y/RGB switch (at the top of the side panel) → Y
- TEST 2 button/MSU-700 → OFF (dark)

## 4-7-5. Check of Gamma Balance

Equipment: Analog waveform monitor
Test Point: TEST OUT connector

### Preparations

- Connect the waveform monitor to the TEST OUT connector of the unit.
- Setting for MSU-700
  TEST1 button → ON (lit)

### Adjustment Procedure

- Check that the level does not change even if the gamma is turned on and off using the GAMMA OFF button on the MSU-700.
  If the level changes, readjust the gamma balance referring to Section 4-5-2.

## 4-7-6. Gamma Correction Adjustment

Equipment: Oscilloscope

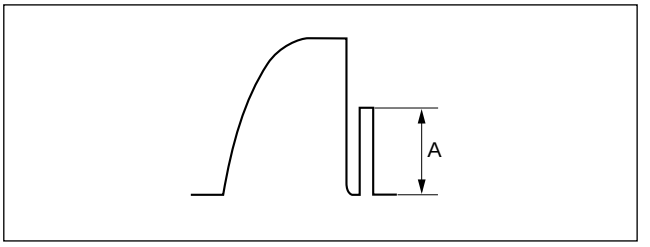
### Preparations

- Setting for MSU-700
  KNEE OFF button → OFF (lit)
  GAMMA OFF button → ON (dark)
  TEST1 button → ON (lit)
- Extend the PR-200 board.

### Adjustment Procedures

1. Adjust the master gamma.
   **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     [△] → (Page 2/3) → [Gamma]

   Adjustment Item: Master
   Test Point: TP11/extension board
   Specification: A = 350 ±4 mV




2. Adjust the white balance.
   WHITE button/MSU-700 → ON (lit)

3. Adjust the R gamma.
   **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     [△] → (Page 2/3) → [Gamma]

   Adjustment Item: R
   Test Point: TP17/extension board
   Specification: A = 350 ±4 mV

4. Adjust the B gamma.
   **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     [△] → (Page 2/3) → [Gamma]

   Adjustment Item: B
   Test Point: TP5/extension board
   Specification: A = 350 ±4 mV

## 4-7-7. Knee Point • Knee Slope Adjustment

Equipment: Oscilloscope

### Preparations

- Setting for MSU-700
  MASTER GAIN → +6 dB
  TEST1 button → ON (lit)
  KNEE OFF button → ON (dark)
- Extend the PR-200 board.

### Adjustment Procedures

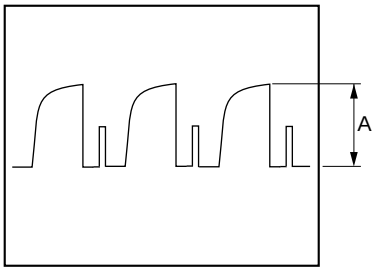
1. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     [△] → (Page 2/3) → [Knee Slope]
   - Set Master to +99.

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

3. Adjust levels for Master, R-ch and B-ch as follows.

| | Test Point | Adjustment Item/MSU-700 |
|---|---|---|
| Master | TP11/extension board | Master |
| R-ch | TP17/extension board | R |
| B-ch | TP5/extension board | B |

Specification: A = 692 ± 7 mV

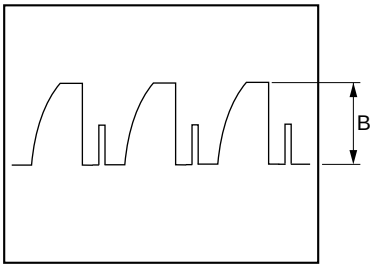



4. **MSU menu operation:**
   - Touch panel operation
     (Page 2/3) → [Knee Slope]

5. Adjust levels for R-ch, G-ch and B-ch as follows.

| | Test Point | Adjustment Item/MSU-700 |
|---|---|---|
| R-ch | TP17/extension board | R |
| G-ch | TP11/extension board | G |
| B-ch | TP5/extension board | B |

Specification: B = 756 $^{+0}_{-7}$ mVp-p




### Resetting after Adjustment

- MASTER GAIN/MSU-700 → 0 dB
- KNEE OFF button/MSU-700 → OFF (lit)

## 4-7-8. White Clip Level Adjustment

Equipment: Oscilloscope

### Preparations

- Setting for MSU-700
  MASTER GAIN → +12 dB
  TEST1 button → ON (lit)
- Extend the IE-44 board.

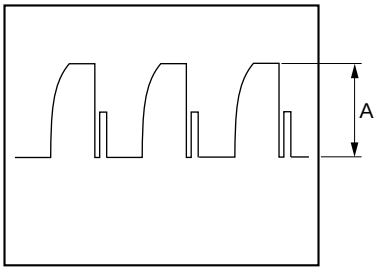
### Adjustment Procedures

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

2. Adjust levels for Master, R-ch and B-ch as follows.

| | Test Point | Adjustment Item/MSU-700 |
|---|---|---|
| Master | TP11/extension board | Master |
| R-ch | TP17/extension board | R |
| B-ch | TP5/extension board | B |

Specification: A = 756 $^{+0}_{-7}$ mVp-p




### Resetting after Adjustment

- MASTER GAIN/MSU-700 → 0 dB
- TEST1 button/MSU-700 → OFF (dark)

## 4-7-9. H/V Ratio Adjustment

Equipment: Analog waveform monitor, B/W monitor
Test Points: G/Y OUT (pin 4), G/Y GND (pin 3)
/VTR connector (camera adaptor)
Object: Grayscale chart

### Preparations

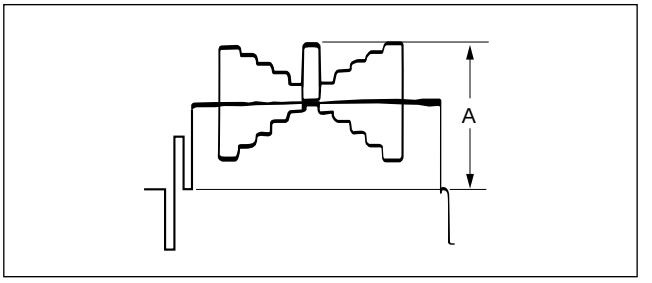
- Setting for MSU-700
  DETAIL OFF button → ON (dark)
  KNEE OFF button → OFF (lit)
- Extend the IE-44 board.
- Connect the waveform monitor to the VTR connector of the camera adaptor.
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 600 ±20 mV (terminated with 75 Ω)

### Adjustment Procedures

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

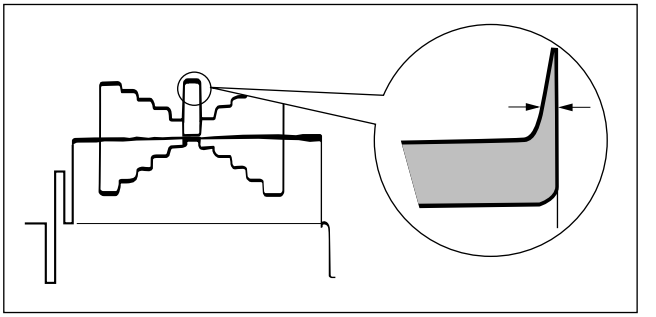
2. **MSU menu operation:**
   - Touch panel operation
     Detail 2

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




3. **MSU menu operation:**
   - Touch panel operation
     Detail 2
   - Set Frequency to 99.

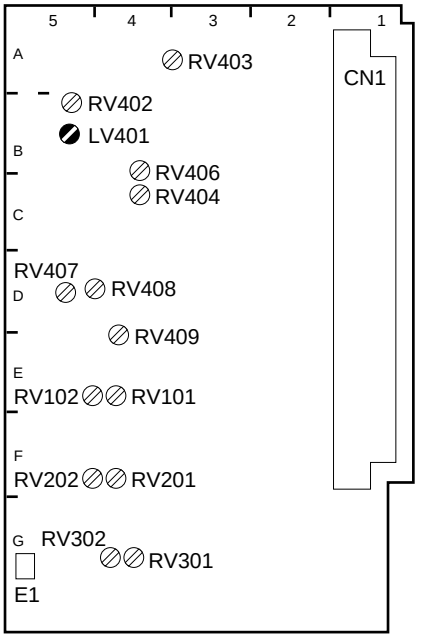
4. Adjustment Point: ⊘LV401/IE-44
   Specification: The edge width at each end of the center white portion shall be equal.



### Resetting after Adjustment

**MSU menu operation:**

- Touch panel operation
  Detail 2
  Set Frequency to 0.



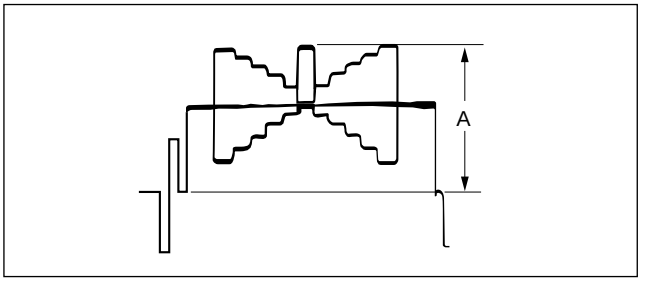

IE-44 BOARD (A SIDE)

## 4-7-10. Detail Level Adjustment

Equipment: Analog waveform monitor
Test Points: G/Y OUT (pin 4), G/Y GND (pin 3)
/VTR connector (camera adaptor)
Object: Grayscale chart

### Preparations

- Setting for MSU-700
  DETAIL OFF button → ON (dark)
  KNEE OFF button → OFF (lit)
- Connect the waveform monitor to the VTR connector of the camera adaptor.
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 600 ± 20 mV (terminated with 75 Ω)




### 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.

## 4-7-11. Crispening Adjustment

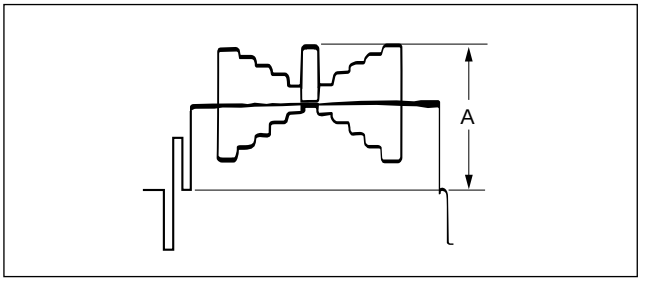
Equipment: Analog waveform monitor
Test Points: G/Y OUT (pin 4), G/Y GND (pin 3)
/VTR connector (camera adaptor)
Object: Grayscale chart

### Note

Perform this adjustment to suit the customer's preferences if required.

### Preparations

- Setting for MSU-700
  DETAIL OFF button → ON (dark)
- Connect the waveform monitor to the VTR connector of the camera adaptor.
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 600 ±20 mV (terminated with 75 Ω)




### Adjustment Procedures

1. Adjust the white balance.
   WHITE button/MSU-700 → 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 is just decreased, or until an appropriate crispening level is obtained.

## 4-7-12. Level Dependent Adjustment

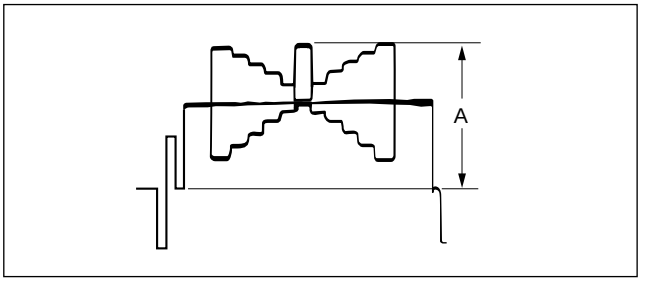
Equipment: Analog waveform monitor
Test Points: G/Y OUT (pin 4), G/Y GND (pin 3)/
VTR connector (camera adaptor)
Object: Grayscale chart

### Note

Perform this adjustment to suit the customer's preferences if required.

### Preparations

- Setting for MSU-700
  DETAIL OFF button → ON (dark)
  LEVEL DEP OFF button → ON (dark)
- Connect the waveform monitor to the VTR connector of the camera adaptor.
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 600 ±20 mV (terminated with 75 Ω)

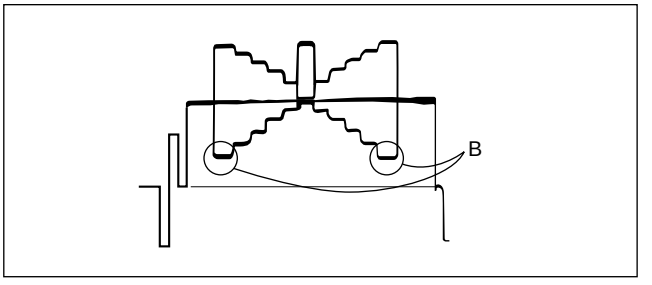



### Adjustment Procedure

**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 decreased.




### Note

After adjustment is complete, be sure to perform Section 4-7-9 "H/V Ratio Adjustment".

## 4-7-13. Detail Frequency Adjustment

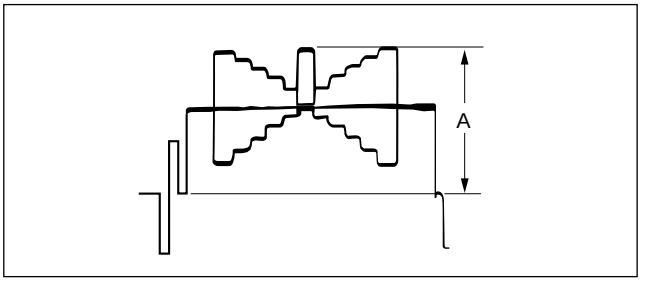
Equipment: Analog waveform monitor
Test Points: G/Y OUT (pin 4), G/Y GND (pin 3)/
VTR connector (camera adaptor)
Object: Grayscale chart

### Note

Perform this adjustment to suit the customer's preferences if required.

### Preparations

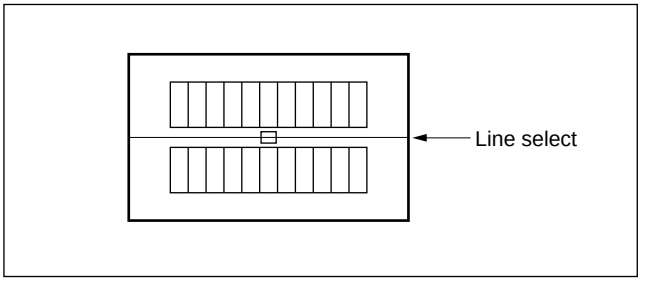
- Setting for MSU-700
  KNEE OFF button/MSU-700 → OFF (lit)
  DETAIL OFF button/MSU-700 → ON (dark)
- Connect the waveform monitor to the VTR connector of the camera adaptor.
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 600 ±20 mV (terminated with 75 Ω)



### Adjustment Procedures

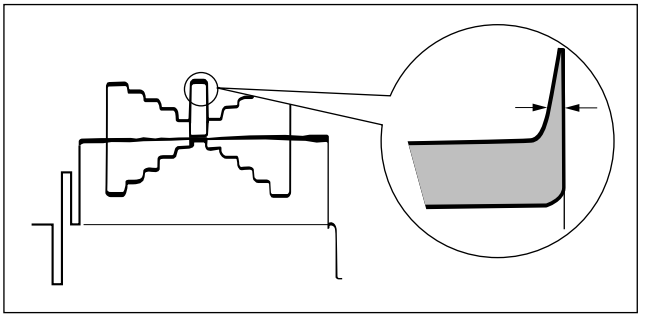
1. Adjust the white balance.
   WHITE button/MSU-700 → ON (lit)

2. Make a lines selection at the center white portion of the grayscale chart.




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

   Adjustment Item: Frequency
   Specification: The edge width at each end of the center white portion shall be equal.



### Note

After adjustments are complete, be sure to perform Section 4-7-9 “H/V Ratio Adjustment”.

## 4-7-14. Detail Clip Adjustment

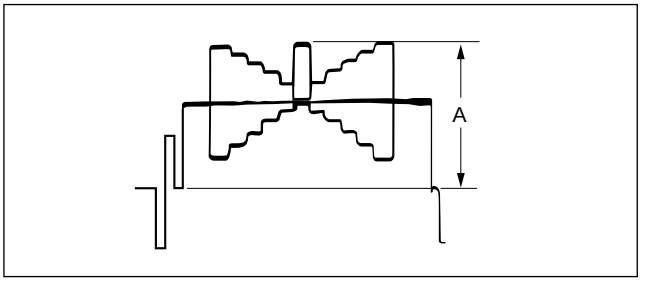
Equipment: Analog waveform monitor
Test Points: G/Y OUT (pin 4), G/Y GND (pin 3)/
VTR connector
Object: Grayscale chart

### Note

Perform this adjustment to suit the customer’s preferences if required.

### Preparations

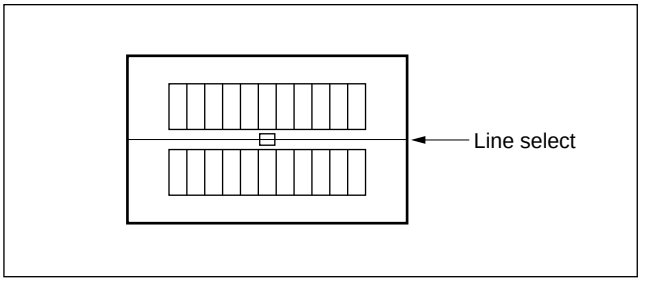
- Setting for MSU-700
  KNEE OFF button → OFF (lit)
  DETAIL OFF button → ON (dark)
- Connect the waveform monitor to the VTR connector of the camera adaptor.
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.
- Iris of the lens: A = 600 ±20 mV (terminated with 75 Ω)




### Adjustment Procedures

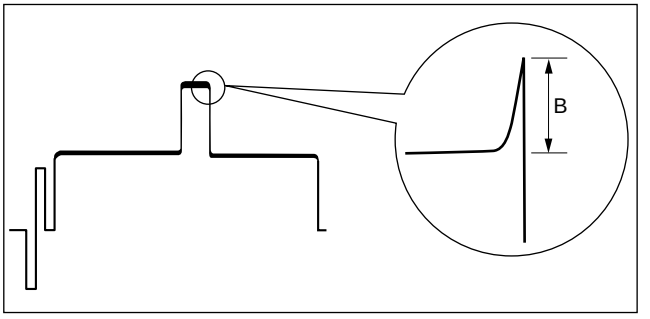
1. Adjust the white balance.
   WHITE button/MSU-700 → ON (lit)

2. Make a lines selection at the center white portion of the grayscale chart.



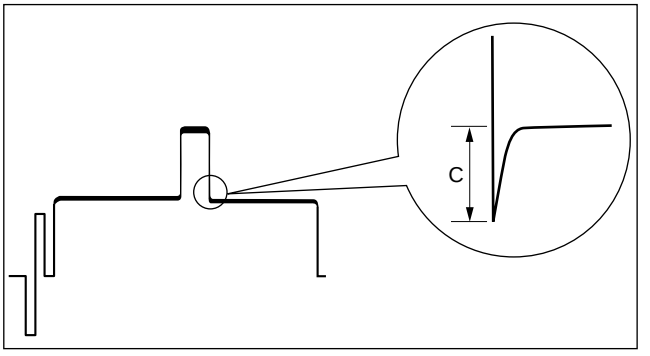
3. Adjust the white limiter.
   **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     (Page 1/3) → Detail → Detail 3

   Adjustment Item: W.Limiter
   Specification: Adjust the edges 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 edges at portion C for the desired clip level.




## 4-7-15. Auto-iris Adjustment

Equipment: Analog waveform monitor
Test Points: G/Y OUT (pin 4), G/Y GND (pin 3) /VTR connector
Object: Grayscale chart

### Note

Perform this adjustment to suit the customer's preferences if required.

### Preparations

- Setting for MSU-700
  AUTO button (Iris control block) → ON (lit)
  KNEE OFF button → OFF (lit)
- Connect the waveform monitor to the VTR connector of the camera adaptor.
- Shoot the grayscale chart so that the chart frame is aligned with the underscanned monitor frame.

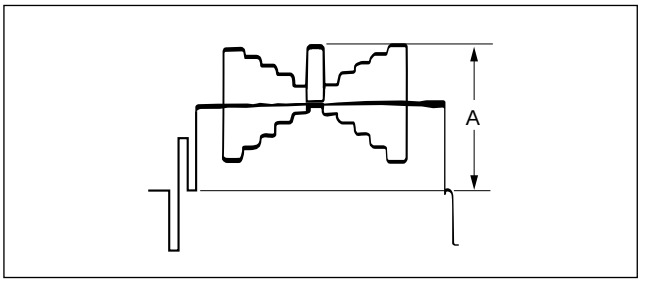
### Adjustment Procedures

1. Adjust the white balance.
   WHITE button/MSU-700 → 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: Adjust to determine if the feedback is to be applied according to the peak luminance of the object or the average luminance. The higher you set the value, the feedback depends more on the average luminance.

3. Adjust the convergence target of the auto-iris adjustment.
   **MSU menu operation:**
   Adjustment Item: Level
   Specification: A = 700 ±7 mV
   (terminated with 75 Ω)




## 4-7-16. File Store

After adjustments described in Section 4-7 are complete, 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 complete, the message "Completed" is displayed.

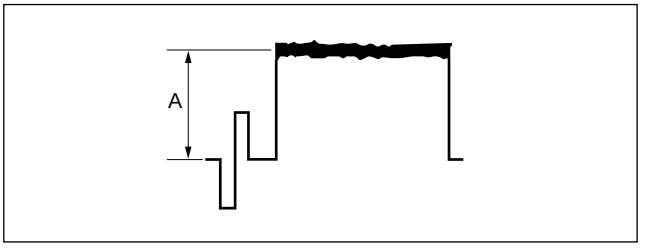
# 4-8. Adjustment After Replacement of ND Filter

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

Equipment: Analog waveform monitor
Object: Full white pattern

## Preparations

- Connect the waveform monitor the TEST OUT connector.
- Shoot the fully occupied white area of the white pattern on the underscanned monitor frame.
- Setting for MSU-700
  AUTO button (Iris control block) → ON (lit)
- Iris of the lens: A = 600 ±20 mV
- Set the setup menu as follows.
  MENU: Maintenance
  PAGE: ND Offset
  ITEM: ND OFST Store → Enable




## Adjustment Procedures

1. FILTER CTRL button/MSU-700 → ON (lit)
2. Select the ND 1 filter.
   ND 1 button/MSU-700 → ON (lit)
3. Adjust the white balance.
   WHITE button/MSU-700 → ON (lit)
4. After the white balance adjustment is complete, switch the filter to ND2, ND3 and ND4 and adjust the white balance for each.

## 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 complete, the message "OHB File Stored" is displayed.

## Resetting after Adjustment

- Set the setup menu as follows.
  MENU: Maintenance
  PAGE: ND Offset
  ITEM: ND OFST Store → Disable

**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.

HDC-750A (UCJ) J, E
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