SONY®

HD COLOR CAMERA

HDC-700A
HDC-700A/L

HDVS

MAINTENANCE MANUAL
Volume 1   1st Edition (Revised 1)
Serial No. 10001 and Higher: HDC-700A
Serial No. 13001 and Higher: HDC-700A/L

⚠ 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.

Laser Diode Properties
      Material   : InGaAsP
      Wave Length   : 1310 nm
      Emission duration : Pulse modulatuin
      Laser output power : 10 mW (Max)
      Beam divergence   : 10° (Max)

CAUTION

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

Table of Contents

Manual Structure

1. Installation (E)

2. Service Overview

3. Setup Menu

4. Electrical Alignment

Manual Structure

Purpose of this manual

This manual is the maintenance manual for HD Color Camera HDC-700A and HDC-700A/L.

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

Maintenance Manual Volume 1

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

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
Angle adjustment brackets	2-280-511-02	2
Number plate (For rear panel)	3-167-517-01	1
Number plates (For side panel)	3-185-945-01	2
Clamp bands	3-186-502-01	2
Number plate (For UP TALLY)	4-027-937-02	1
Operation manual	———	1
Maintenance manuals Vol.1, Vol.2	———	1 each

1-2. Connectors and Cables

1-2-1. Connector Input/Output Signals

Input/Output Signals

· **Optical connector**
Based upon BTA S-004A/005A/006A 1.485 Gbps serial
VIDEO $Y/P_B/P_R$
RET $Y/P_B/P_R$
INCOM   2ch
MIC 2ch/DIGITAL AUDIO (AES/EBU)
PROMPTER
CAMERA COMMAND

Output Signals

· **TEST OUT**
BNC type 75 Ω, 1.0 Vp-p

· **PROMPTER**
BNC type 75 Ω, 1.0 Vp-p

· **SERIAL OUT**
Based upon BTA-S004A
BNC type 75 Ω, 0.8 Vp-p 1.485 Gbps

TRACKER (10P FEMALE)
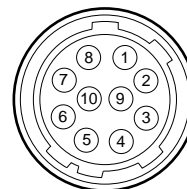
(EXTERNAL VIEW)

No.	Signal	I/O	Specifications
1	TRACKER (X)	OUT	TRACKER RECEIVE 0 dBu unbalanced
2	TRACKER T (G)	——	GND for TRACKER T
3	TRACKER R (G)	——	GND for TRACKER R
4	PGM (X)	OUT	−20 dBu unbalanced
5	+12 V (T)	OUT	+12 Vdc 100 mA (max)
6	PGM (G)	——	GND for PGM
7	TRACKER T (X)	IN	TRACKER TALK
8	TRACKER T (Y)	IN	0 dBu/−20 dBu High impedance balanced
9	UP TALLY (G)	——	GND for UP TALLY
10	UP TALLY (X)	OUT	+12 Vdc 200 mA (max)

(0 dBu = 0.775 Vrms)

RET CONTROL (6P FEMALE)
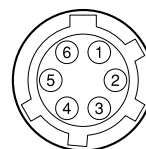
(EXTERNAL VIEW)

No.	Signal	I/O	Specifications
1	INCOM 1 MIC ON/OFF	IN	$Z_i \geqq 10\ k\Omega$ ON : GND OFF : OPEN
2	INCOM 2 MIC ON/OFF	IN	$Z_i \geqq 10\ k\Omega$ ON : GND OFF : OPEN
3	GND	——	
4	RET 3 ON/OFF	IN	$Z_i \geqq 10\ k\Omega$ ON : GND OFF : OPEN
5	RET 1 ON/OFF	IN	$Z_i \geqq 10\ k\Omega$ ON : GND OFF : OPEN
6	RET 2 ON/OFF	IN	$Z_i \geqq 10\ k\Omega$ ON : GND OFF : OPEN

SCRIPT (4P FEMALE)
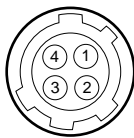
(EXTERNAL VIEW)

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

REMOTE (8P FEMALE)

(EXTERNAL VIEW)

No.	Signal	I/O	Specifications
1	TX (+)		HDC SERIAL DATA
2	TX (−)		
3	RX (+)		HDCU/MSU/RCP/CNU/VCS
4	RX (−)		SERIAL DATA
5	TX GND	——	GND for TX
6	POWER (+)	OUT	+12 V, 500 mA (max)
7	POWER (−)	——	GND for +12 V
8	NC		No connection
	CHASSIS GND	——	CHASSIS GND

MIC IN CH1/CH2 (3P MALE)
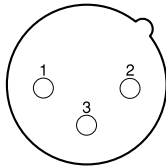
(EXTERNAL VIEW)

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

(0 dBu = 0.775 Vrms)

INTERCOM 1/2 (5P FEMALE)
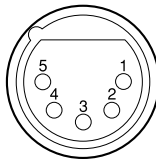
(EXTERNAL VIEW)

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

(0 dBu = 0.775 Vrms)

TRUNK LINE (9P FEMALE)
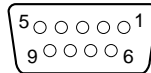
(EXTERNAL VIEW)

No.	Signal	I/O	Specifications
1	NC		No connection
2	RXD	IN	RECEIVE DATA
3	TXD	OUT	TRANSMIT DATA
4	NC		No connection
5	NC		No connection
6	NC		No connection
7	RTS	OUT	REQUEST TO SEND
8	CTS	IN	CLEAR TO SEND
9	NC		No connection

VTR (26P MALE)
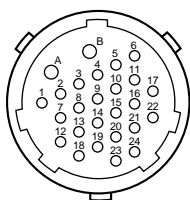
(EXTERNAL VIEW)

No.	Signal	I/O	Specifications
A	NC	——	No connection
B	VTR CMD GND	——	GND for VTR CMD
1	GENLOCK	IN	Sync 0.6 Vp-p, 0 Vdc, Zi = 75 Ω
2	GENLOCK GND	——	GND for GENLOCK
3	G/Y GND	——	GND for G/Y
4	G/Y	OUT	0.7 V, 0 Vdc, Zo = 75 Ω
5	R/P_R	OUT	0.7 V/±0.35 V, 0 Vdc, Zo = 75 Ω
6	R/P_R GND	——	GND for R/P_R
7	B/P_B	OUT	0.7 V/±0.35 V, 0 Vdc, Zo = 75 Ω
8	B/P_B GND	——	GND for B/P_B
9	CH1 MIC (X)	OUT	−20 dBu, Low impedance,
10	CH1 MIC (Y)	OUT	Balanced
11	CH1/CH2 MIC GND	——	GND for CH1/CH2 MIC
12	NC		No connection
13	NC		No connection
14	INCOM LINE	IN/OUT	0.5 Vp-p
15	CH2 MIC (X)	OUT	−20 dBu, Low impedance,
16	CH2 MIC (Y)	OUT	Balanced
17	NC		No connection
18	RET VIDEO	IN	1.0 Vp-p, 0 Vdc, Zi = 75 Ω
19	RET VIDEO GND	——	GND for RET VIDEO
20	AUDIO	IN	−6 dBu, 750 Ω/1 kHz
21	RX COMMAND (X)	IN	RS-422
22	RX COMMAND (Y)	IN	
23	TX COMMAND (X)	OUT	RS-422
24	TX COMMAND (Y)	OUT	

(0 dBu = 0.775 Vrms)

AC OUT
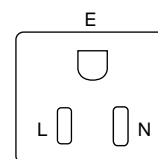
(EXTERNAL VIEW)

No.	Signal	I/O	Specifications
E	GND	——	CHASSIS GND
N	UTL (C)	OUT	AC 100 V, 100 V or below
L	UTL (H)	OUT	

DC IN (4P MALE)
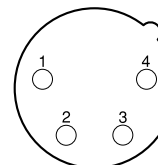
(EXTERNAL VIEW)

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

LENS (36P FEMALE)
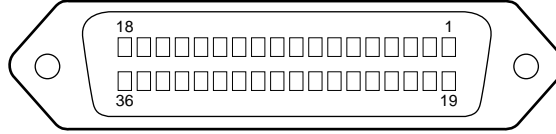
(EXTERNAL VIEW)

No.	Signal	I/O	Specifications
1	NC		No connection
2	COMMON 5 V	IN	No connection
3	NC		No connection
4	+12 V (LENS)	OUT	+12 V (at 2 A)
5	LENS DC GND	——	GND for +12 V (LENS)
6	GND (SIG)	——	GND
7	NC		No connection
8	LENS EXT-1	IN	*2
9	LENS EXT-2	IN	*2
10	LENS EXT-3	IN	*2
11	NC LENS AUX	OUT	ON : GND OFF : High impedance
12	IRIS POSI	IN	$Zi \geqq 10\ k\Omega$ 2 to 7 V "3.4 ± 0.1 V (F16)" "6.2 ± 0.1 V (F2.8)"
13	ZOOM POSI	IN	$Zi \geqq 10\ k\Omega$ 2 to 7 V "2 V (WIDE), 7 V (TELE)"
14	RET 1 $\overline{ON}$	IN	$Zi \geqq 10\ k\Omega$ ON : GND OFF : High impedance
15	RET 2 $\overline{ON}$	IN	$Zi \geqq 10\ k\Omega$ ON : GND OFF : High impedance
16	FOCUS POSI	IN	$Zi \geqq 10\ k\Omega$ 2 to 7 V "2 V (MIN), 7 V (∞)"
17	IRIS CONT SIG	OUT	2 to 7 V "3.4 ± 0.1 V (F16)" "6.2 ± 0.1 V (F2.8)" $Zo \leqq 1\ k\Omega$
18	IRIS $\overline{AUTO}$ /MANU	OUT	AUTO : GND MANU : High impedance $Zo \leqq 1\ k\Omega$

No.	Signal	I/O	Specifications
19	NC		No connection
20	NC		No connection
21	LENS R TALLY	OUT	ON : GND OFF : High impedance $Zo \leqq 1\ k\Omega$
22	EXP POSITION	IN	$Zi \geqq 10\ k\Omega$ 1 to 4 V 1 V : −7.5° 4 V : +7.5°
23	RET 3 $\overline{ON}$	IN	$Zi \geqq 10\ k\Omega$ ON : GND OFF : High impedance
24	LENS ADRS 0	IN	*1
25	LENS ADRS 1	IN	*1
26	LENS ADRS 2	IN	*1
27	LENS ADRS 3	IN	*1
28	EXTENDER 1 $\overline{ON}$	OUT	ON : GND OFF : High impedance
29	EXTENDER 2 $\overline{ON}$	OUT	ON : GND OFF : High impedance
30	F DEM (FAR)	IN	No connection
31	INCOM 1 $\overline{ENG/PRD}$	IN	$Zi \geqq 10\ k\Omega$ ENG : GND PRD : High impedance
32	INCOM 2 $\overline{ENG/PROD}$	IN	$Zi \geqq 10\ k\Omega$ ENG : GND PRD : High impedance
33	INCOM MIC 1 $\overline{ON}$	IN	$Zi \geqq 10\ k\Omega$ ON : GND OFF : High impedance
34	INCOM MIC 2 $\overline{ON}$	IN	$Zi \geqq 10\ k\Omega$ ON : GND OFF : High impedance
35	F CONT SIG	OUT	No connection
36	F DEM (NEAR)	IN	No connection

*1 $Z_i \geq 10 \text{ k}\Omega$
      1 : High impedance
      $0 : 0 \, ^{+0.5}_{-0} \text{ V}$

      LENS ADRS 0 (low-order bit)
      LENS ADRS 3 (high-order bit)

*2 $Z_i \geq 10 \text{ k}\Omega$
      1 : High impedance
      $0 : 0 \pm 0.5 \text{ V}$

EX1	EX2	EX3	MODE
1	1	1	EXTENDER OFF
1	0	1	EXT-1 (× 1.5) ON
0	1	1	EXT-2 (× 2) ON
0	0	1	EXT-3 (× 2.5) ON

VF (25P FEMALE)
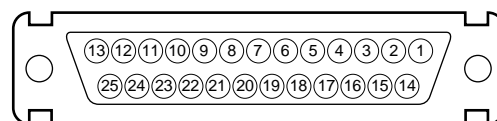
(EXTERNAL VIEW)

No.	Signal	I/O	Specifications
1	Y VIDEO (X)	OUT	1.0 Vp-p, Zo = 75 Ω
2	P_R VIDEO GND	——	GND for P_R VIDEO
3	P_R VIDEO (X)	OUT	0.7 Vp-p, Zo = 75 Ω
4	P_B VIDEO GND	——	GND for P_B VIDEO
5	P_B VIDEO (X)	OUT	0.7 Vp-p, Zo = 75 Ω
6	PEAKING LEVEL	IN	0 to 5 Vdc
7	+12 V	OUT	+10.5 to +20 V
8	+12 V		
9	NC		No connection
10	S-DATA	IN/OUT	TTL level
11	R TALLY	OUT	ON : +5 V OFF : 0 V
12	EFFECT	OUT	ON : +5 V OFF : 0 V
13	NC		No connection
14	Y VIDEO GND	——	GND for Y VIDEO
15	S-CK	OUT	TTL level
16	BATT IND	OUT	ON : +5 V OFF : 0 V
17	CHASSIS GND	——	
18	G TALLY	OUT	ON : +5 V OFF : 0 V
19	GND (+12 V)	——	GND for +12 V
20	GND (+12 V)		
21	VF-SEL	IN	BW : 0 V COLOR : +5 V
22	H EXPAND	OUT	ON : GND OFF : +5 V
23	NC		No connection
24	NC		No connection
25	V EXPAND	OUT	ON : GND OFF : +5 V

1-2-2. Connection Connectors

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

Indication	Connection connector/cable
MONITOR PROMPTER SERIAL OUT (BNC)	1-569-370-12 Plug, BNC or B-B Cable assembly (1.5 m, option)
MIC IN (3P MALE)	1-508-083-00 XLR, 3P Female or ITT Cannon XLR-3-11C equivalent
TRACKER (10P FEMALE)	1-506-522-11 Plug, 10P Male or HIROSE HR10R-10P-10P equivalent
RET CONTROL (6P FEMALE)	1-560-078-00 Plug, 6P Male or HIROSE HR10-7PA-6P equivalent
SCRIPT (4P FEMALE)	1-566-425-11 Plug, 4P Male or HIROSE HR10A-7P-4P equivalent
REMOTE (8P FEMALE)	1-766-848-11 Plug, 8P Male or CCA cable assembly (option) CCA-5-10 (10m)/CCA-5-3 (3m)
INTERCOM (5P FEMALE)	1-508-370-11 XLR, 5P Male or ITT Cannon XLR-5-12C equivalent
TRUNK LINE (9P FEMALE)	1-560-651-00 D-sub, 9P Male
VTR (26P MALE)	1-564-184-00 Plug, 26P Female or Cable assembly (option) HDCZ-10 (10m)/HDCZ-25 (25m)
DC IN (4P MALE)	1-508-362-00 XLR, 4P Female or ITT Cannon XLR-4-11C equivalent, or Cable assembly 1-551-577-00 (Supplied with AC-550/550CE)

1-2-3. Disassembly of HDCZ Connector

1. Remove the two screws and three setscrews.
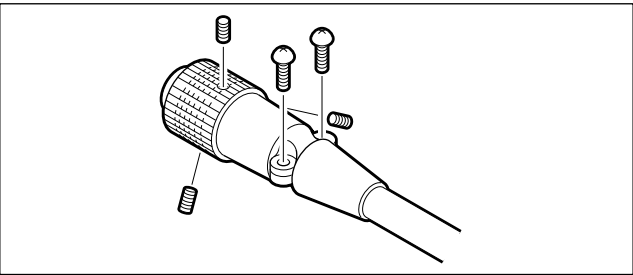
2. Connect the plug to the VTR or camera.
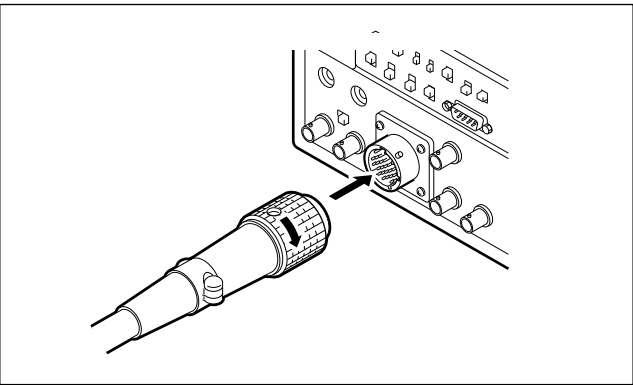
3. Loosen the plug counterclockwise by pliers.
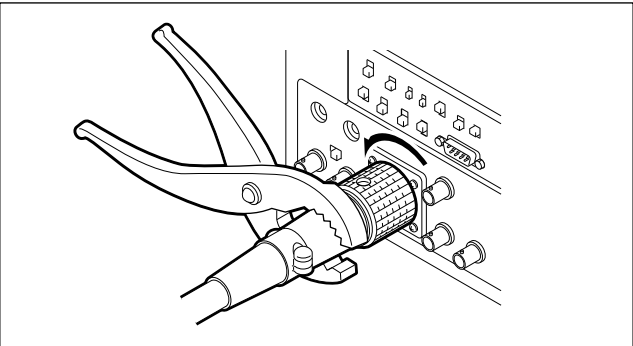
4. Disassemble as illustrated and unsolder.
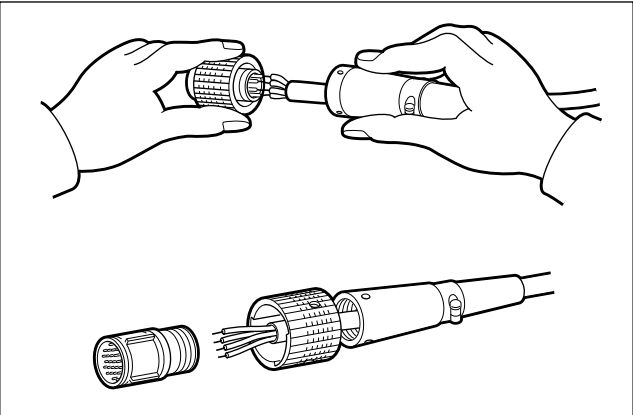
1-2-4. Wiring Diagrams for Cables

CCA-5 Cable

8P Connector (Male)
(Wiring Side)

8P Connector (Male)
(Wiring Side)

HDCZ Cable

26P Connector (female/male)
(wiring side)

1-3. Outer Dimensions

HDC-700A
(Serial No. 10001-13000)

LENS MOUNT PLANE
OPTICAL AXIS
OPTICAL CENTER
2-M4

F.B.69 (IN AIR)

SONY

CENTER OF GRAVITY
WITH HDVF-700 (26.0Kg)

CAMERA MOUNT PLANE

MB

4-M4

9-3/8"-16UNC
THREAD LENGTH MAX 12 mm

8×25.4=203.2

(unit : mm)

HDC-700A/L
(Serial No. 13001-)
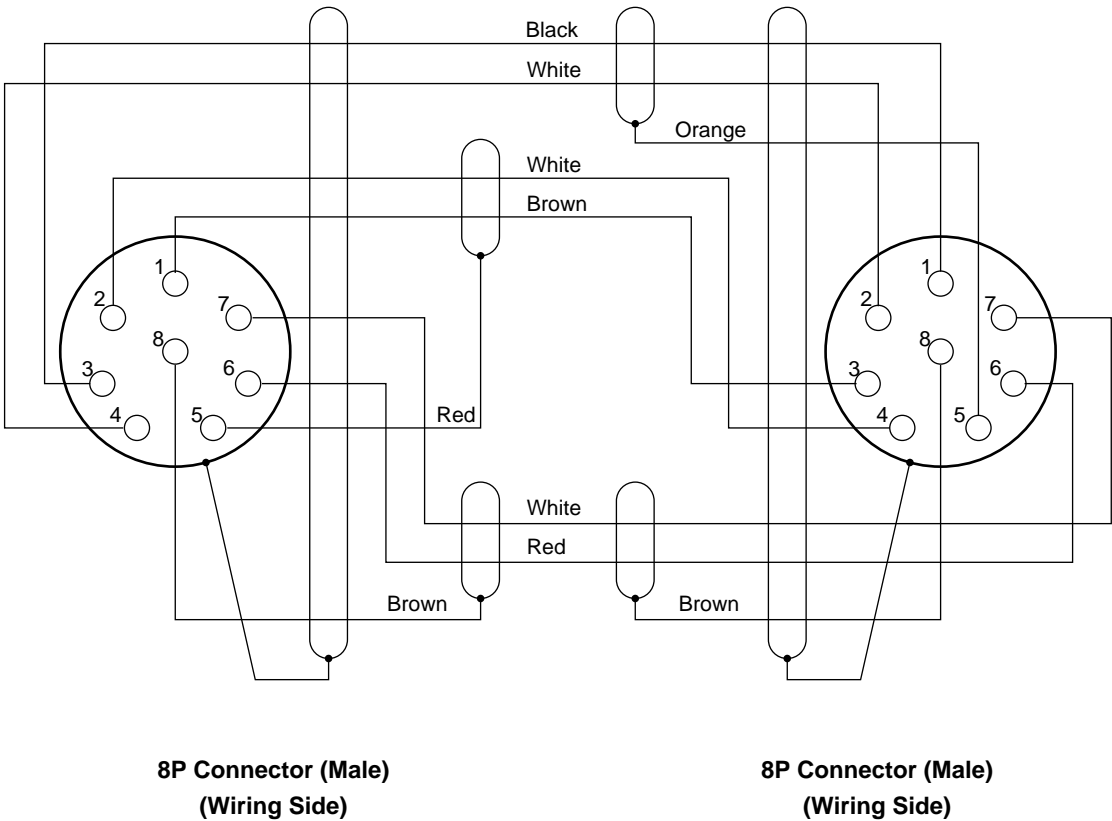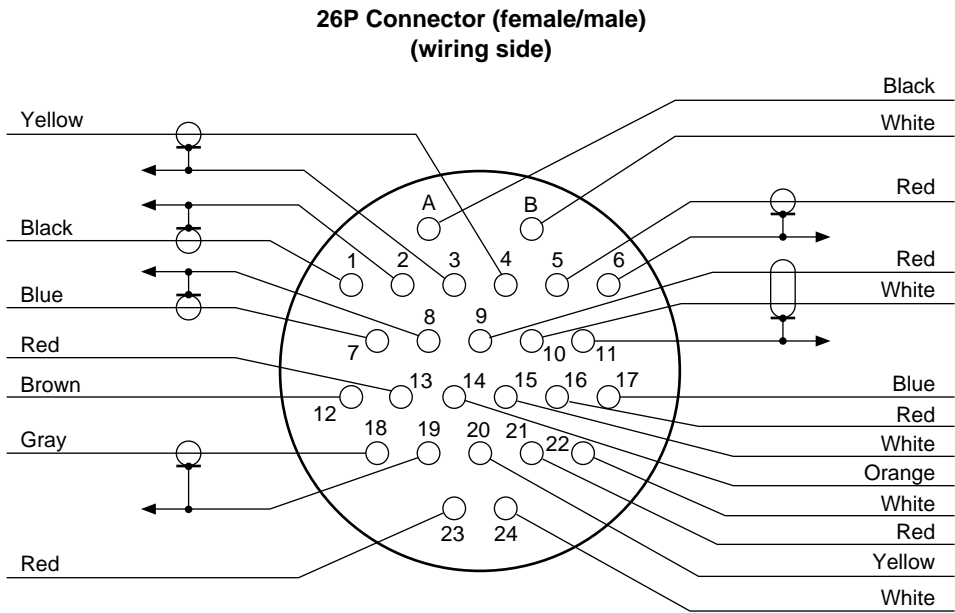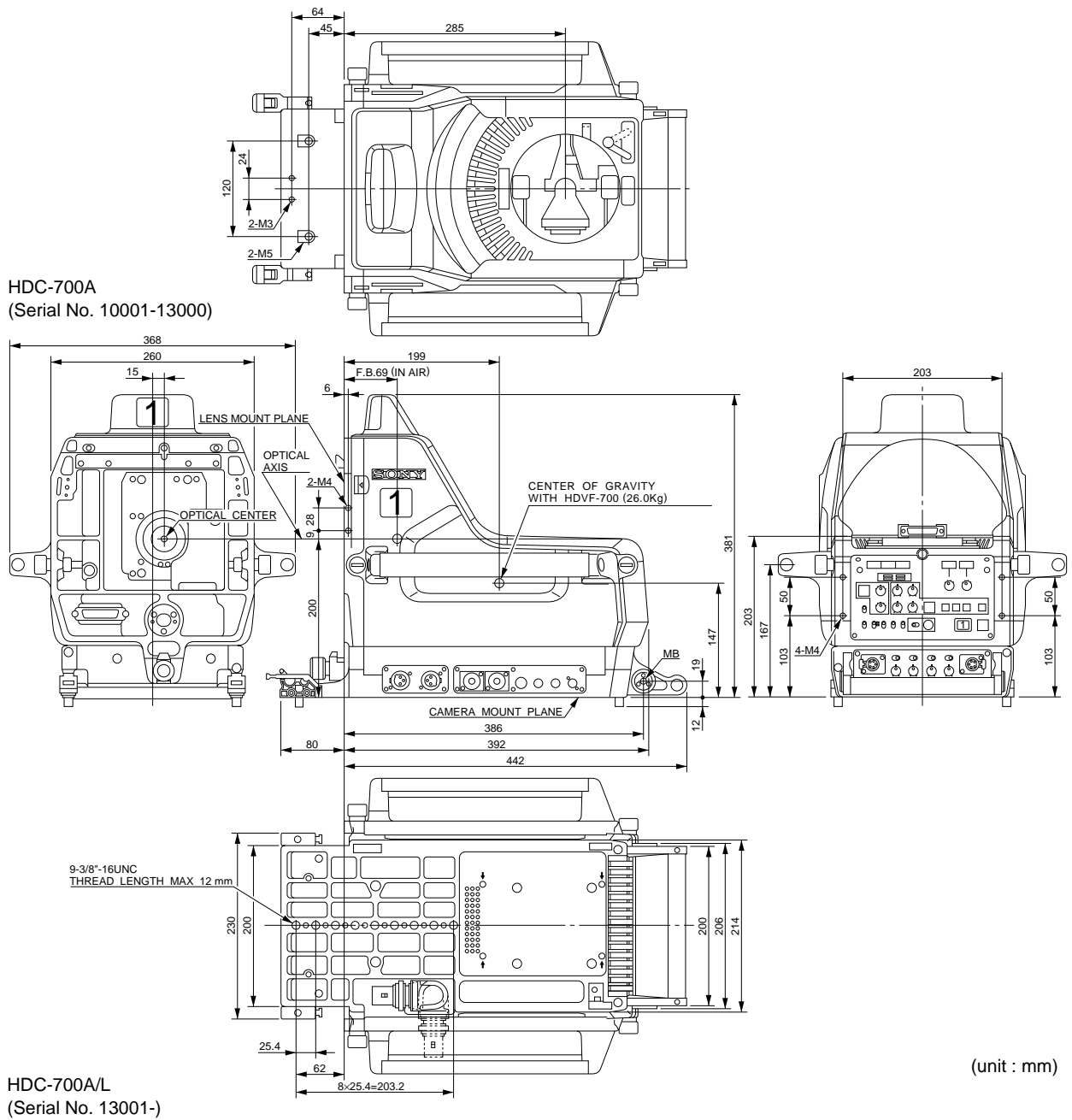
With HDVF-700 attached
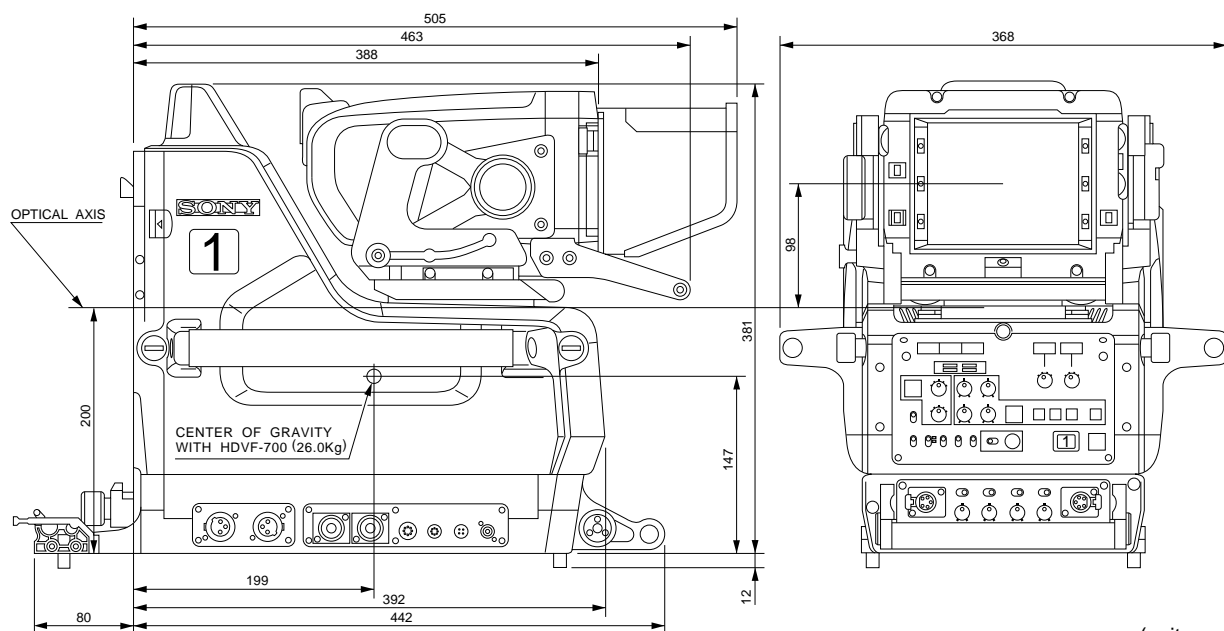
(unit : mm)

1-4. 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

1-5. Function of Internal Switches

AT-104 Board
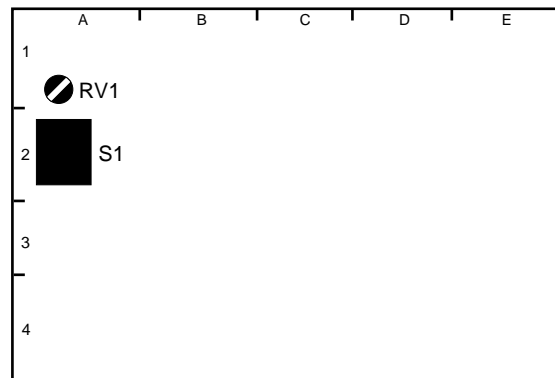
AT-104 BOARD (A SIDE)

RV1: TALLY DIMMER
Adjust the intensity of the REAR TALLY lamp for preferred level.

S1

S1-1: Selection of HDC-700A and HKCA-700
ON: HDC-700A
OFF (Open): HKCA-700
Factory-set position: ON

Note

In replacing the AT-104 board, be sure to set the switch S1-1 to the proper position according to the type of the camera.

S1-2, S1-3, S1-4: Not used

AU-203 Board
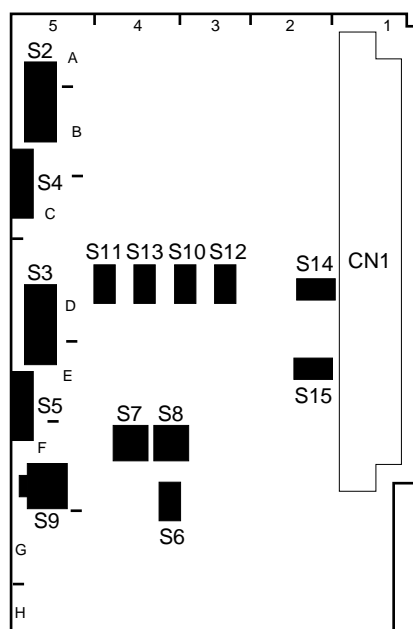
AU-203 BOARD (A SIDE)

S2:   INCOM1 CM/DYN
S3:   INCOM2 CM/DYN
Select according to the type of headset microphone to be connected to the INTERCOM1/2 connector.
CM: Carbon microphone
DYN: Dynamic microphone
Factory-set position: CM

S4 :   MIC GAIN 1 +/0/−
S5 :   MIC GAIN 2 +/0/−
Selects the INTERCOM 1/2 audio level to be sent to the HD CCU. (0 dBu = 0.775 Vrms)
+:   +6 V dBu
0:    0 dBu
−:   −6 dBu
Factory-set position: 0

S6 :   TRACKER (T) 0/−20
Selects the input level for the TRACKER connector.
(0 dBu = 0.775 Vrms)
0:        0 dBu
−20:   −20 dBu
Factory-set position: 0

S7

| Note |

Normally set the switches S7-1, S7-2 and S7-3 to the same mode.

S7-1: TRACKER INCOM1 ON/OFF
Turn ON to add the TRACKER TALK signal for the TRACKER connector to the INCOM RECEIVE output of the INTERCOM1 connector of the camera.
Factory-set position: OFF

S7-2: TRACKER INCOM1 ON/OFF
Turn ON to add the TALK signal for the camera and HD CCU to the TRACKER output.
Factory-set position : OFF

S7-3: TRACKER INCOM1 ON/OFF
Turn ON to add the TRACKER TALK signal for the TRACKER connector to the INCOM1 RECEIVE output for the HD CCU.
Factory-set position: OFF

S7-4: VTR INCOM ON/OFF
Turns ON and OFF the intercom function with the VTR.
Factory-set position: ON

S8

S8-1: TRACKER PGM ON/OFF

Turn ON to add the PGM (program audio) to the TRACK-
ER RECEIVE output of the TRACKER connector.

Factory-set position: OFF

S8-2: TRACKER INCOM2 ON/OFF

Turn ON to add the TRACKER TALK signal for the
TRACKER connector to the INCOM RECEIVE output of
the INTERCOM2 connector of the camera.

Factory-set position: OFF

S8-3: TRACKER INCOM2 ON/OFF

Turn ON to add the TALK signal for the camera and HD
CCU to the TRACKER output.

Factory-set position : OFF

S8-4: TRACKER INCOM2 ON/OFF

Turn ON to add the TRACKER TALK signal for the
TRACKER connector to the INCOM2 RECEIVE output
for the HD CCU.

Factory-set position: OFF

S9: MIC MONITOR ON/OFF

Set to monitor the microphone input using the INTER-
COM connector of the camera. By turning on the switch,
the microphone input is added to the INCOM output of the
INTERCOM connector.

Factory-set position: OFF

S10: INCOM2 PGM MIX

S11: INCOM1 PGM MIX

S11 and S10 select the output method the INCOM OUT
and PGM OUT for the INTERCOM 1/2 connector respec-
tively.

Up: The INCOM OUT and PGM OUT are mixed and
        mixed signal is output as the INCOM OUT and
        PGM OUT respectively.

Down: The INCOM OUT and PGM OUT are output
        separately.

Factory-set position: Up side each

S12: INCOM2 MODE

S13: INCOM1 MODE

S13 and S12 determine the mode of the INTERCOM and
PGM volumes for INTERCOM 1/2 connector respectively.
These settings are valid only when the S10 (for INTER-
COM2) or S11 (for INTERCOM1) is set to up side.

Up: The PGM volume adjusts a mixed ratio of the
        INTERCOM and PGM outputs. INTERCOM
        volume adjusts a sound level of tne mixed signal.

Down: The INTERCOM and PGM volumes adjust each
        sound level independently.

Factory-set position: Up side each

S14, S15

| Note |

Settings of S14 and S15 are valid only when the optinal
RTS kit is connected to the INTERCOM2 connector.

S14: RTS1 RTS/NORM

When set to RTS, the RTS CH1 of the RTS kit is activated
as a INTERCOM1 connector.

Factory-set position: NORM

S15: RTS2 RTS/NORM

When set to RTS, the RTS CH2 of the RTS kit is activated
as a INTERCOM2 connector.

Factory-set position: NORM

IF-569 Board
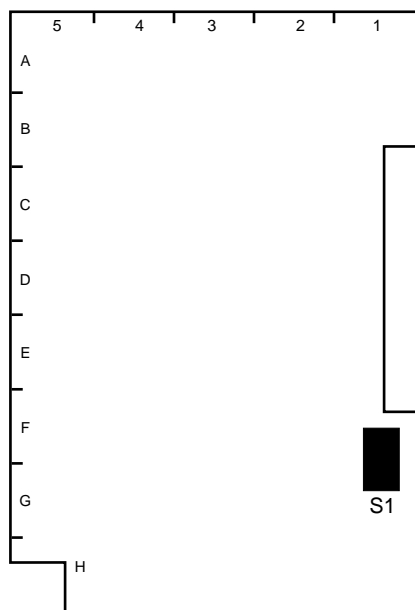
IF-569 BOARD (A SIDE)

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: ON
☐ **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

SG-226 Board

```
        A         B         C
   ┌────┴────┬────┴────┬────┴──┐─┐
   │                       ┌──┐ │ │
 1 ┤                       │  │ │ │
   │                       │  │ │ │
   │                       │  │   │
 2 ┤                       │CN1   │
   │                       │  │   │
   │                       │  │ │ │
 3 ┤                       │  │ │ │
   │                       │  │ │ │
   │              S2       │  │ │ │
 4 ┤            ███████     └──┘─┘ │
   │            ███████            │
   │  ██                           │
   │  ██ S1                        │
 5 │                               │
   └───────────────────────────────┘
```

SG-226 BOARD (A SIDE)

S1: Reset switch for microcomputer

S2

S2-1, S2-2, S2-3: Setup menu select switches
Setup menu to be displayed on the viewfinder can be selected in the combination of S2-1, S2-2 and S2-3.
( ) in parentheses: Factory-set position

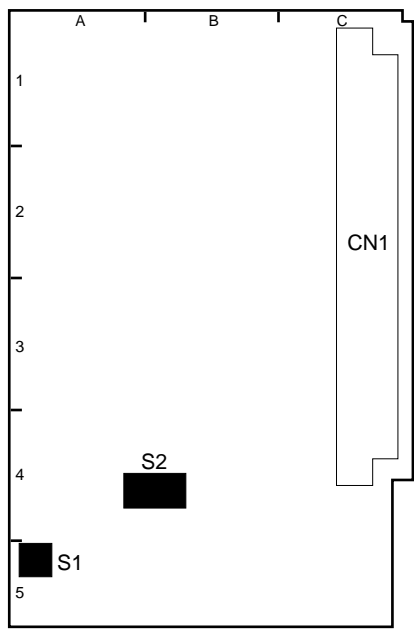|			Setup menu					
S2-1	S2-2	S2-3	Operation	Paint	Maintenance	File	Diag Disp	SYS Config
OFF	OFF	OFF	Yes	No	No	No	No	No
ON	OFF	OFF	Yes	Yes	No	No	No	No
OFF	ON	OFF	Yes	Yes	Yes	No	No	No
ON	ON	OFF	Yes	Yes	Yes	Yes	No	No
OFF	OFF	ON	Yes	Yes	Yes	Yes	Yes	No
(ON)	(OFF)	(ON)	Yes	Yes	Yes	Yes	Yes	Yes

S2-4, S2-5: Not used

S2-6: Factory-use switch
Always set to ON.
Factory-set position: ON

S2-7: Fan ON/OFF switch
Use to forcefully turn on the fan cooling the SDI board. In normal mode, the fan is activated when the HDCU is connected to the camera, or when "Serial Output" item of the Operation menu (of the Setup menu) is set to ON.
ON: Fan is forcefully activated
OFF: Normal mode
Factory-set position: OFF

S2-8: Not used
Always set to OFF.
Factory-set position: OFF

Driver Board
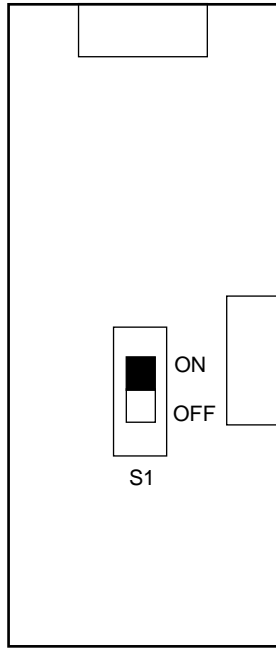
DRIVER BOARD (B SIDE)

S1:   Motor ON/OFF switch
ON: Filter (CC or ND) can be selected by using the
        HDCU, MSU and RCP and so on.
OFF: Filter (CC or ND) can be selected with the knob
        on the side of the filter disk unit.
Factory-set position: ON

1-6. Installation of MIC Connector (Female)

This unit has been equipped with the male MIC connectors at the factory. The male connectors can replace female connectors supplied with the unit according to use. To replace proceed as follows.

1. Loosen the four screws securing the MIC connector panel to the unit.
    Disconnect the connector shown in the illustration.
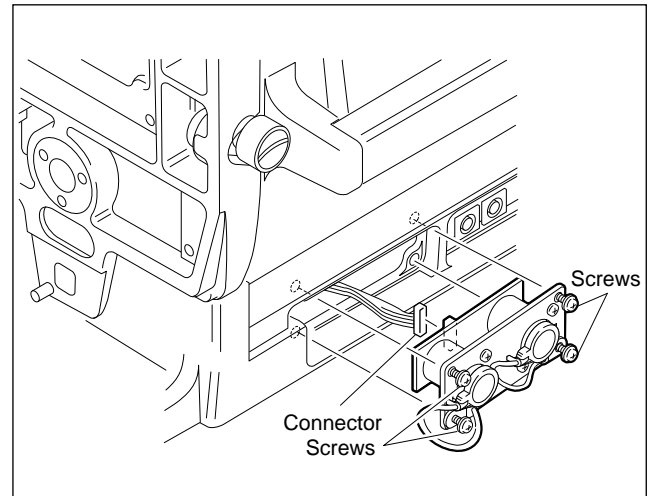
2. Install the female MIC connector assembly (supplied) in the reverse order of removal.

1-7.   Example of System Configuration

HD ELECTRONIC
VIEWFINDER
HDVF-700

HD ZOOM LENS
STUDIO ZOOM LENS

OPTICAL FIBER CABLE
FC2-PD250/PD50

HD COLOR CAMERA
HDC-700A

HD ELECTRONIC VIEWFINDER
HDVF-20

HD ELECTRONIC
VIEWFINDER
HDVF-500

HD CAMERA ADAPTOR
HDCA-750A

HD LENS
ENG/EFP LENS

OPTICAL FIBER CABLE
FC2-PD250/PD50

HD COLOR CAMERA
HDC-750A

HD ELECTRONIC
VIEWFINDER
HDVF-700

HD ZOOM LENS
STUDIO ZOOM LENS

HD BUILD-UP UNIT
HKCA-700
HD COLOR CAMERA
HDC-750A
HD CAMERA ADAPTOR
HDCA-750A

HD LENS
ENG/EFP LENS

REMOTE CONTROL PANEL
RCP-720 RCP-721 RCP-740 RCP-741

REMOTE CONTROL
PANEL
RCP-700 RCP-701

CCA-5 CABLE
(∗1)

CCA-5 CABLE
(∗1)

CCA-5 CABLE
(∗1)

CAMERA CONTROL UNIT
HDCU-700A

CCA-5 CABLE
(∗1)

CAMERA COMMAND
NETWORK UNIT
CNU-700/500 (∗2)

HD-SDI

HD DIGITAL
VIDEO SELECTOR

D-sub 9-pin
CABLE

HD-SDI

MONITOR

HD-SDI

MASTER SETUP UNIT
MSU-700 (∗2)

CCA-5 CABLE
(max. 200m)

HD-SDI

CAMERA CONTROL UNIT
HDCU-700A

CCA-5 CABLE
(∗1)

∗1: CCA-5 cable length

| RCP-700/701 | CCA-5 | (RCP) | CCA-5 | CNU | CCA-5 | HDCU-700A |

200 m or below in total 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

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 MX-59 PR-200 DL-65 IE-44 CN-1296 (IF-569) VDA-31A AU-203 DAP-5 SG-226
EX-637	A-8316-134-A	PS-400

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

2-1-3. Note on Optical Connector Cable

Optical connector cables used in the unit are very fragile.
So do not bend or yank in handling. This causes a break in
the cable.
When installing the optical connector cable in the unit,
place the cables around the cable holder gently so that they
are not under stress and clamp them with the cable clamps.
Winding too tightly also causes a break.
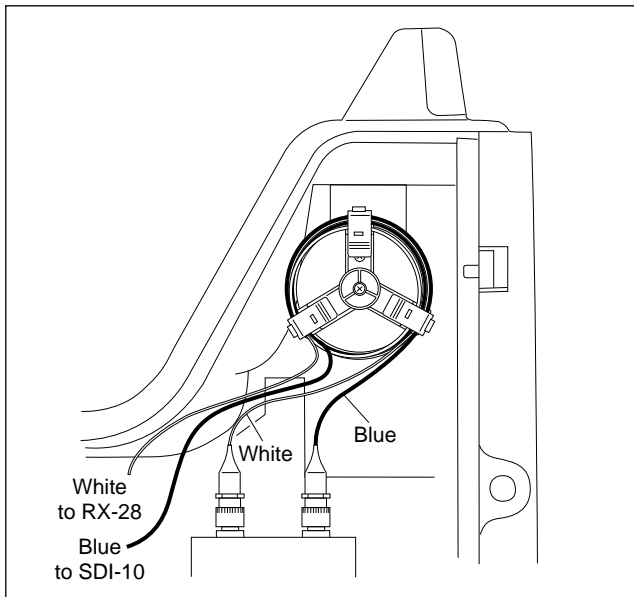
2-1-4. Reset of Breaker

Excessive current in the internal circuitry will trip the
internal circuit breaker regardless of causes. If the circuit
breaker trips once, check the circuit or block concerned,
and then press the appropriate breaker release button. If
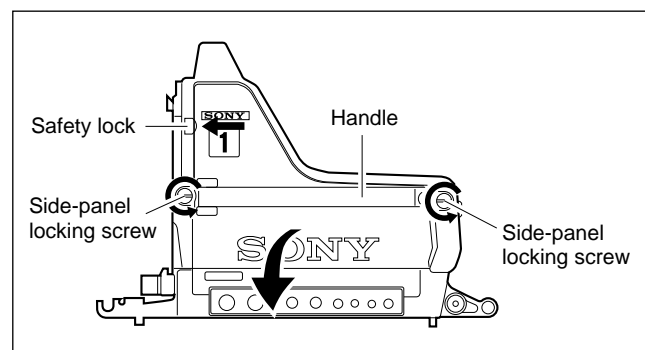there is no trouble, the power to the unit will be turned on.
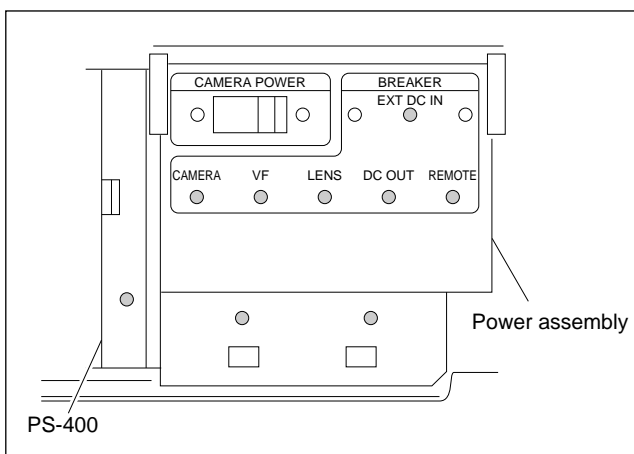
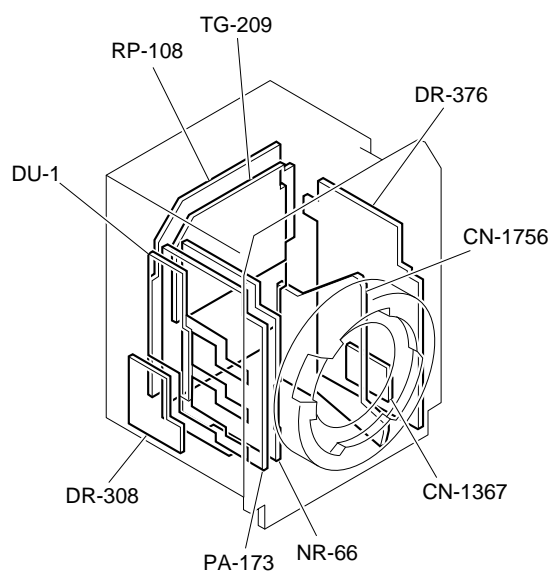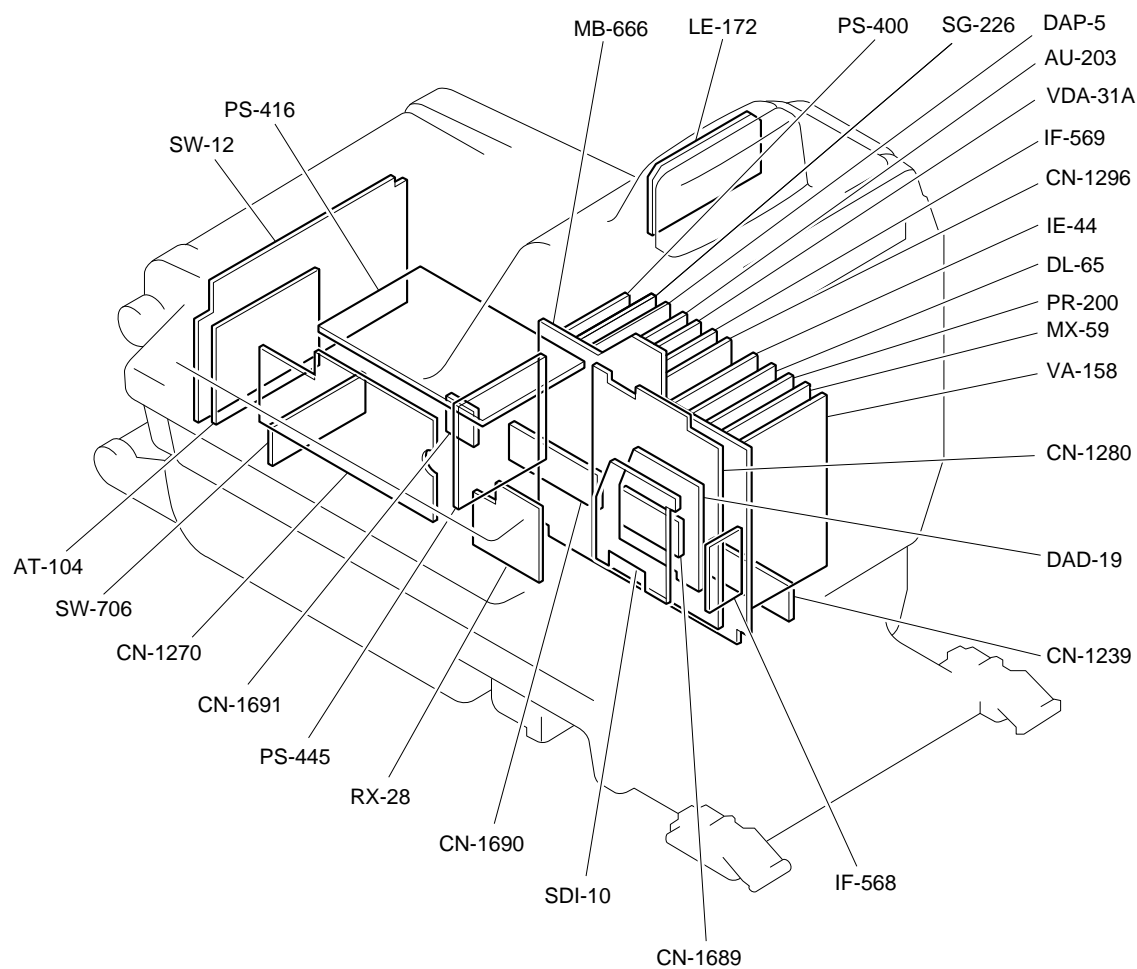## 2-2. Opening/Closing the Side Panel

Opening

Loosen the two side-panel locking screws, and while
sliding the safety lock toward the lens, open the side panel
by holding the handle.

Closing

When you close the side panel, the safety lock is automati-
cally locked. Fasten the side-panel locking screws secure-
ly.

2-3. Location of Printed Circuit Boards

MB-666 LE-172 PS-400 SG-226 DAP-5
AU-203
VDA-31A
IF-569
CN-1296
IE-44
DL-65
PR-200
MX-59
VA-158
CN-1280
DAD-19
CN-1239

PS-416
SW-12

AT-104
SW-706
CN-1270
CN-1691
PS-445
RX-28
CN-1690
SDI-10
CN-1689
IF-568

TG-209
RP-108
DR-376
DU-1
CN-1756
DR-308
CN-1367
PA-173 NR-66

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-1756 board

CN-1756 board is the relay board that supplies each CCD driving pulse generated on the DR-376 board to the BI-132 board. The CN-1756 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 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.

VDA-31A board

The R, G and B video signals, for which camera processing is complete, are sent from the IE-44 board. They are passed through the LPF and sent to the matrix circuit to create the $Y/P_B/P_R$ signals. Either of R/G/B signals, $Y/P_B/P_R$ signals or RET ($Y/P_B/P_R$) signals is selected as a VTR output. Selected signal is passed through the cable compensation circuit (cable length of 25 m or 50 m selectable), to which the SYNC is added and is then output via the 75-ohm driver to the VTR connector. Either of camera R/G/B/Y signals or RET (Y) signal is selected for monitoring. Two kinds of zebra signals, character signal, various cursor signals and VF detail signals are mixed with the selected signal. The resultant signal is passed through the 4-to-3 modulation circuit, to which the SYNC is added, and is then output via the 75-ohm driver to the viewfinder or the MONITOR OUT connector on the camera.

When the camera is used alone, the camera signal or VTR playback signal is selected by the VTR RET ON signal. And selected signal is output through the above driver. The VDA-31A board has the diagnosis circuit, too.

DAD-19 board

The DAD-19 board performs analog-to-digital and digital-to-analog conversions and transmitting/receiving of the parallel digital signal for communication in digital form. Parallel-to-serial conversion is performed by the SDI-10 board.

Transmitting system:
- The Y signal is split into two paths and each signal is analog-to-digital converted by IC5 and IC15 using 37-MHz clock and its inverted clock signals respectively. Then the two digital Y signals are multiplexed at 74-MHz rate by IC11.
- The P_B/P_R signals are analog-to-digital converted at 37-MHz rate by IC25 and IC39 respectively and are then multiplexed by IC22.
- After that the $Y/P_B/P_R$ signals are formatted for communication in digital form by IC21 and are then sent to the SDI-10 board.
- The intercom audio and microphone audio signals are multiplexed by IC21 format IC.
- The camera command signal is multiplexed by IC21 format IC.

Receiving system:
- IC27 separates the following signals from the parallel-to-digital signal sent from the SDI-10 board.
  Y/P$_B$/P$_R$ video signals (CCU RET)
  Intercom audio and program audio signals
  CCU command
  Synchronizing signal
- The Y signal is digital-to-analog converted at 74-MHz rate and the P$_B$ and P$_R$ signals are separated each other by IC20 and are then digital-to-analog converted at 37-MHz rate by IC19 and IC33 respectively.
- The prompter signal sent from the HD CCU is decoded by IC51 and IC52, and is digital-to-analog converted by IC47.

SDI-10 board

The SDI-10 board converts the parallel Y/P$_B$/P$_R$ signal multiplexed by the DAD-19 board to a serial digital signal and outputs it from the SERIAL OUT connector. And SDI-10 board also converts the serial digital signal to an optical signal and outputs it to the HD CCU.
The serial digital signal input from the RX-28 board is separated from clocks and is converted to a parallel digital signal. The converted signal is then output to the DAD-19 board.

RX-28 board

The optical signal transmitted from the HD CCU is converted to an electric signal by the RX-28 board and is output to the SDI-10 board. And the photo-reception level is detected by the RX-28 board and the detection value is output to the SDI-10 board.

AU-203 board

The AU-203 board consists of the following circuits:
- Two intercom input amplifiers
- Two microphone input amplifiers
- Power supply for the above input amplifiers
- Two intercom receiving output amplifiers
- Two PGM output circuits
- TRACKER input/output circuit
- VTR intercom circuit
- Buffer circuit for AES/EBU
- Earphone output circuit
- Diagnosis circuit

The input signal at the INCOM connector is converted to −20 dBu in level and is output to the DAP-5 board, after the microphone selection (carbon or dynamic microphone) is made and the microphone level +6 dB, 0 dB or −6 dB is selected.

The input signal at the MIC connector is also converted to −20 dBu in level and is output to the DAP-5 board, after the microphone level −20 dB, −30 dB, −40 dB, −50 dB, or −60 dB is selected. The same signal is output to the VTR connector in parallel. The microphone connected to the MIC connector is selectable from the microphone without power, AB powering or phantom microphone. The intercom receiving signal is adjusted in level by EVR, with which the PGM and TRACKER signals are mixed, and is then output through the buffer. By setting the internal switch, the intercom receiving signal can be interfaced with the optional RTS kit.
The PGM signal is adjusted in level by EVR, with which the intercom signal is mixed, and is then output through the output amplifier.

DAP-5 board

The intercom signals and microphone signals in two channels each, which are sent from the AU-203 board, are analog-to-digital converted by the DAP-5 board and are output via the DAD-19 board to the HD CCU.
The digital audio signals sent from the DAD-19 board is converted to analog intercom signals and analog program signals in two channels each and are output to the AU-203 board.
The DAP-5 board is equipped with the PLL circuit to synchronize the video signal with clocks as reference during analog-to-digital or digital-to-analog conversion. In addition, the DAP-5 board has the detection circuit to detect the connection status with the HD CCU, standby intercom circuit, interface circuit with the viewfinder and diagnosis circuit.

SG-226 board

The SG-226 board consists of the control system circuit including the microcomputer which is the heart of control system and pulse generators.

Control system circuit:
· Outputs various control signals to each circuit board.
· Outputs the status signal or diagnosis data as a character data from the character generator.
· Interfaces various control data with a remote control unit such as RCP or MSU, and camera control unit HDCU-700A.

Pulse generator:
· Generates various pulses as the reference of the VCO (74.25 MHz or 74.175 MHz) on the circuit boards. This pulse generator synchronizes the HD CCU or external sync signal input.
· Generates various marker signals.
· Stores the oscillation frequency, its adjustment data and phase adjustment data in the EEPROM on the SG-226 board.

2-5. Disconnecting/Connecting Flexible Card Wire

The two flexible card wires are used between the AT-104 board and CN-1270 board, MB-666 board and DR-264 board. Take care not to break 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.
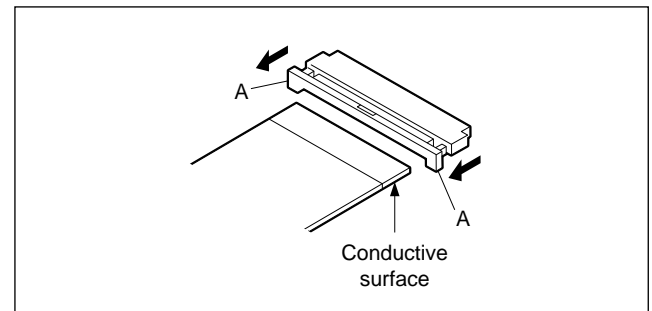
2-6. Replacement of Filter Disk Unit

2-6-1. Filter Disk Unit

1. Open the right side panel referring to Section 2-2.
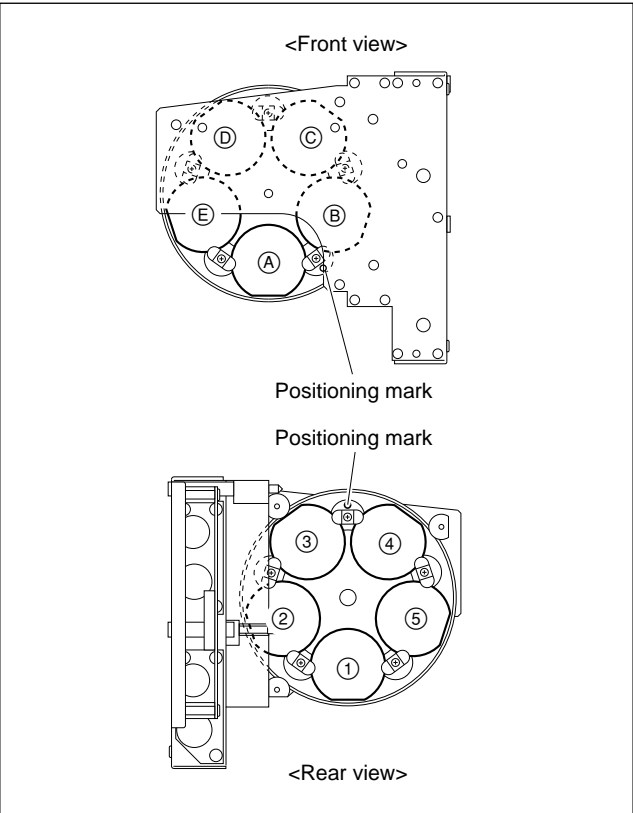2. Loosen the two screws and disconnect the connector.
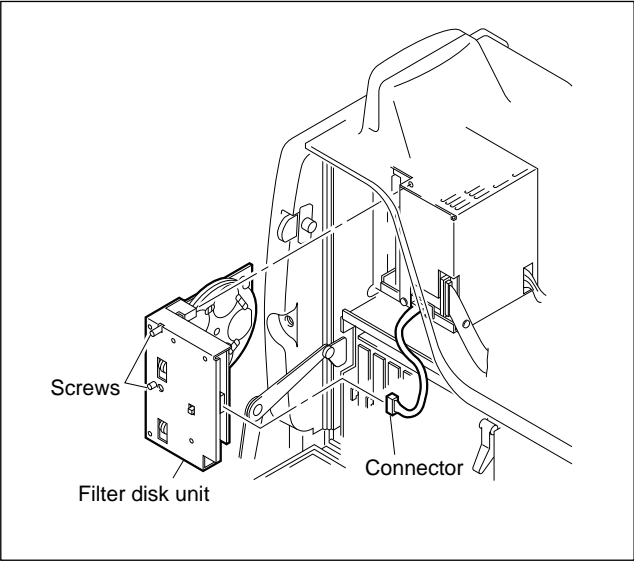
3. Install a new filter disk unit in the reverse order of removal.
4. After replacement, white balance adjustment is required. Refer to Section 4-11 for details on adjustment.

2-6-2. ND/CC Filters

Five 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	9-939-648-01	No orientation
	Ⓔ	8000K (dark brown)	9-939-649-01	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	1/8 ND	9-939-642-01	
	④	1/16 ND	9-939-643-01	
	⑤	1/64 ND (dark gray)	9-939-644-01	No orientation

Replacement

Note

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

1. Remove the filter disk unit referring to the Section 2-6-1.
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.

    Note

   When installing a CC cross filter or ND filter, take care that it is established to the correct orientation.

Filter disk unit
Filter
Retainers
Precision P2 × 2
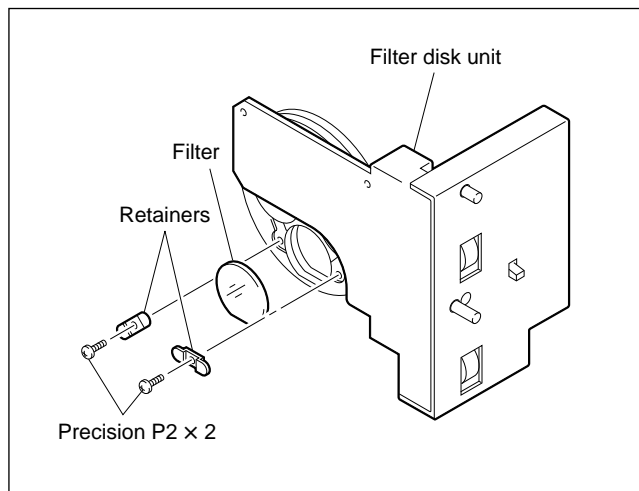
4. Install the filter disk unit in the camera referring to Section 2-6-1.

Adjustment

After replacement of ND filter, white balance adjustment is required. Refer to Section 4-11 for details on adjustment.

2-6-3. Driver board

1. Remove the filter disk unit referring to Section 2-6-1.
2. Remove the three screws and disconnect the connector.

Connector
Precision P2.6 × 4
Driver board
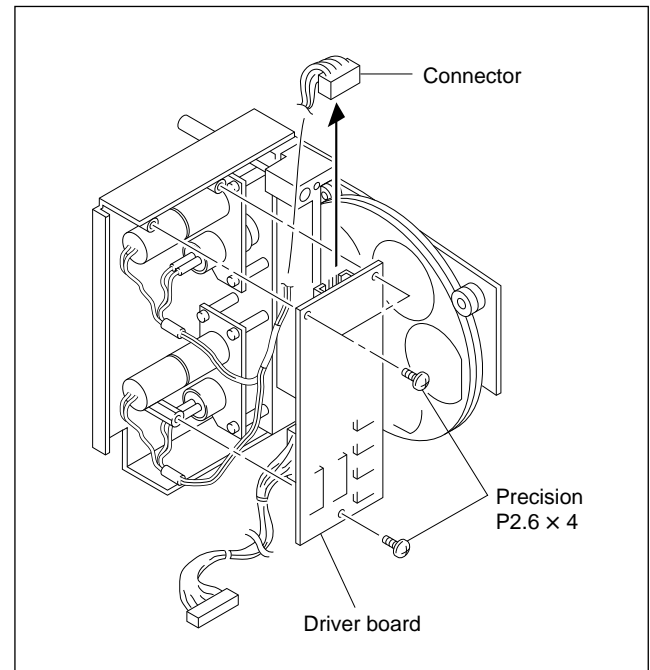
3. Install a new board in the reverse order of removal.
4. After replacement, be sure to perform the board adjustment referring to Section 2-11-3 and Section 4.

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.) AGAxxxxx
                    └───── 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-C700A through the sales channel.

1. Open the right and left side panels referring to the Section 2-2.
2. Remove the filter disk unit referring to the Section 2-6-1.
3. Disconnect the flexible card wire.
   | Note |
   Refer to Section 2-5 before disconnecting or connecting the flexible card wire.

Flexible card wire
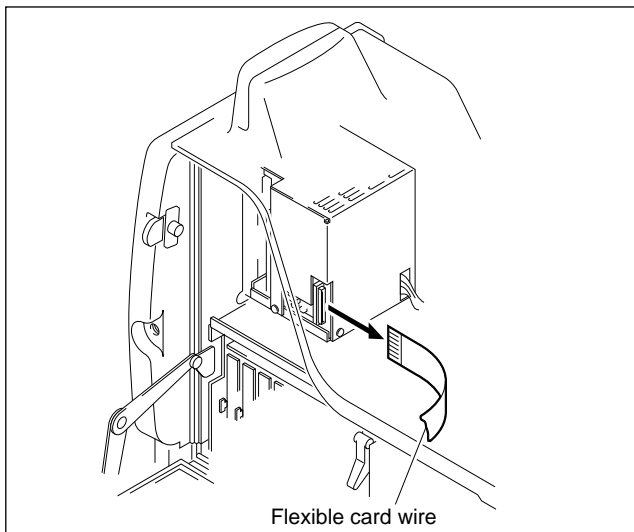
4. Disconnect the connector CN12 from the MB-666 board.

CN12/MB-666
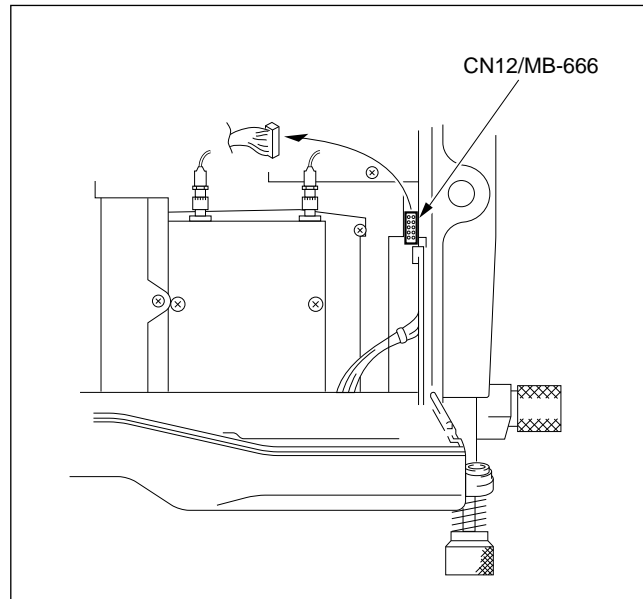
5. Loosen the four screws and pull out the CCD unit.

CCD unit

Airflow plate

PWH4 × 8

PWH4 × 8
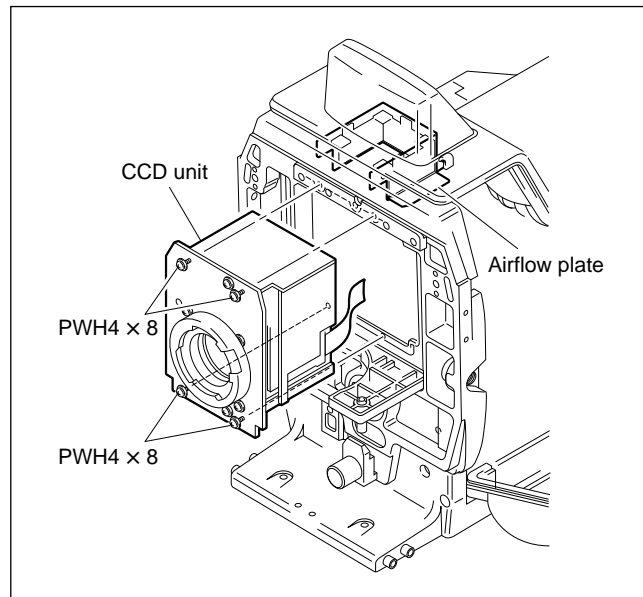
6. Install a new CCD unit in the reverse order of removal.
   | Note |
   When installing the CCD unit, extreme caution must be taken to see that the CCD unit does not collide with the airflow plate.
7. After replacement, be sure to perform adjustment referring to Section 2-11-3 and Section 4.

## 2-8. Removal of Top Panel Assembly

Note

Optical connector cables used in the unit are very fragile.
So do not bend or yank in handling. This causes a break in
the cable.

When installing the optical connector cable in the unit,
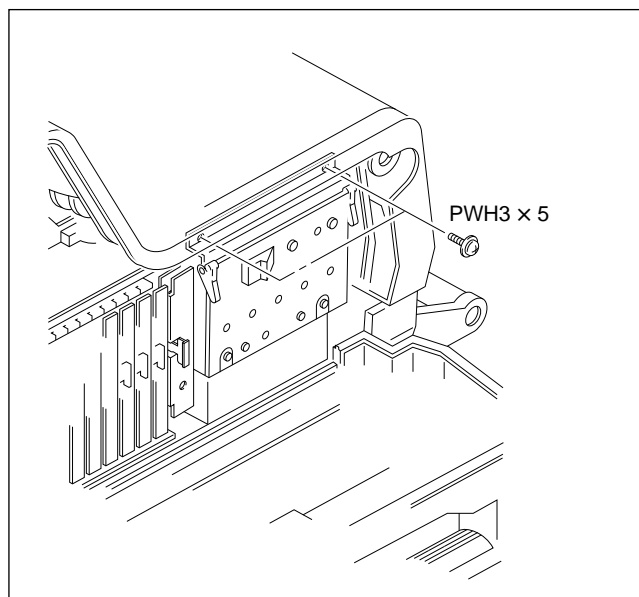refer to Section 2-1-3.

1. Remove the CCD unit referring to Section 2-7-2.
2. Disconnect the flexible card wire and the two connectors (CN6/CN-1270 board, CN15/MB-666 board) shown in the figure. Loosen the four screws and remove the rear panel assembly.
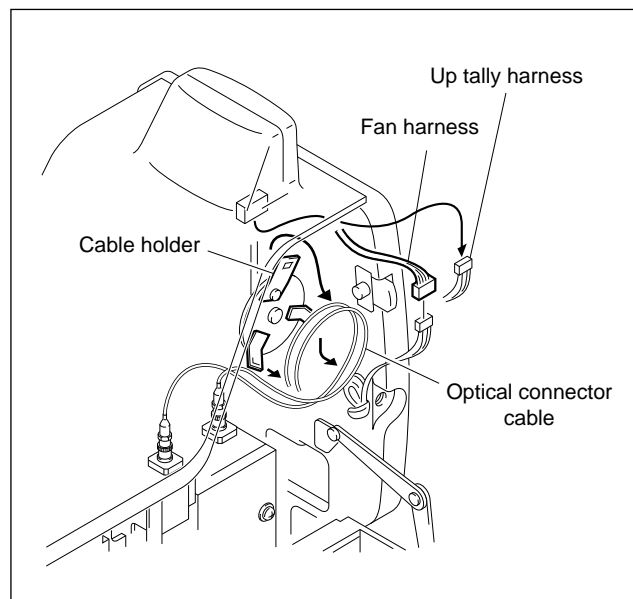
   Note

   Refer to Section 2-5 before disconnecting or connecting the flexible card wire.
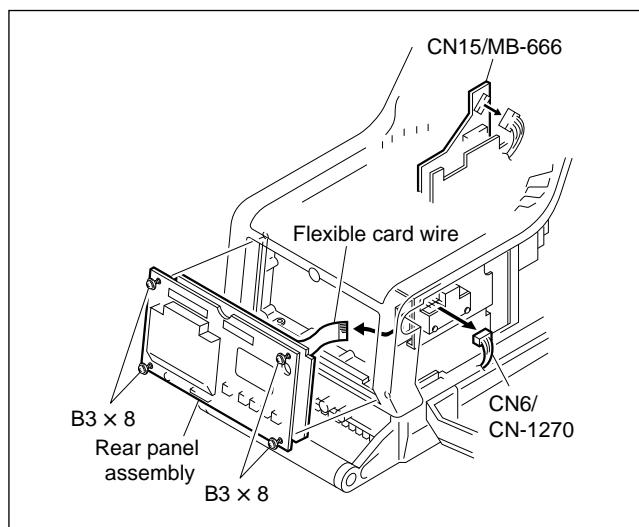
3. Remove the two screws.

4. Remove the fan harness and up tally harness. Unfasten the optical connector cable from the cable holder.

5. Remove the four hexagon-socket bolts by an allen wrench (width across flat = 4 mm).
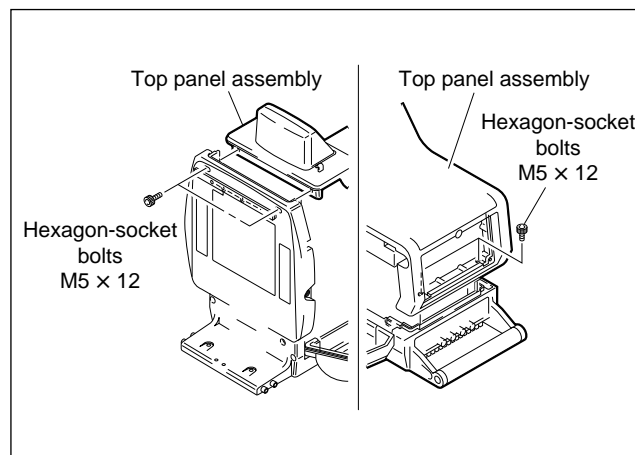
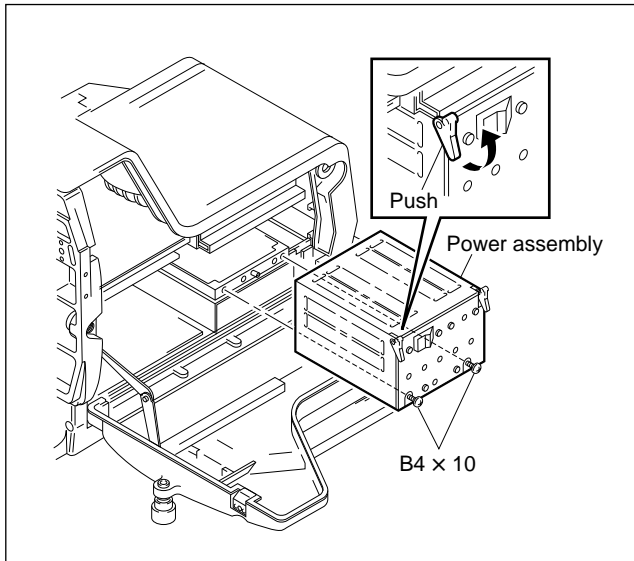6. Install in the reverse order of removal.

Note at installation

• Tighten the hexagon-socket bolts on the lens mount side first.

2-9. Replacement of Power Assembly

| CAUTION |

· To avoid electric hazards when disconnecting the power assembly, allow at least three minutes after powering off. To turn off the power, disconnect the optical cable or the cable connected at the DC IN connector in addition to turning off the power switch.

· The power assembly will go very hot during operation. If you touch the power assembly, there is some danger to get burned. When you repair power supply and peripheral equipment, allow a few minute after powering off until the inside cools off.

1. Open the right side panel referring to Section 2-2.
2. Loosen the two screws and push the levers in the direction of the arrow to remove the power assembly.
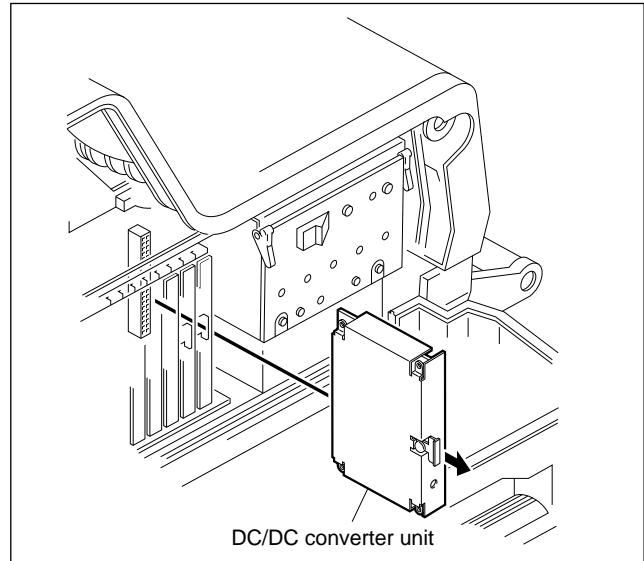

3. Install a new power assembly in the reverse order of removal.

2-10. Replacement of DC/DC Converter Unit
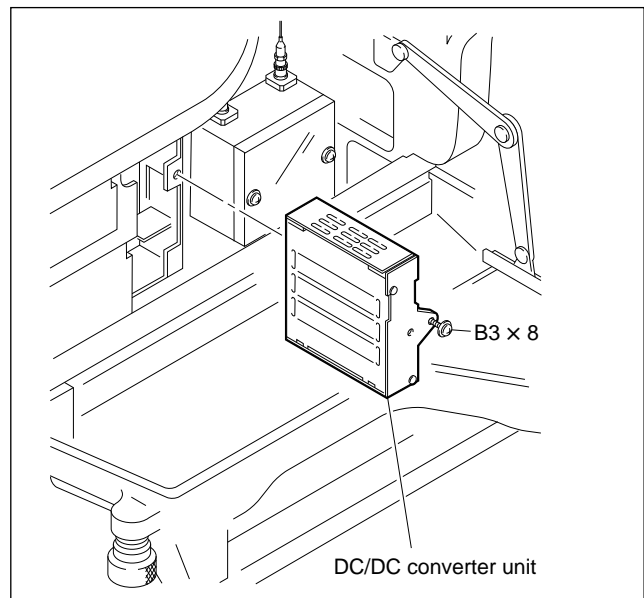
2-10-1. PS-400 Board

1. Open the right side panel referring to Section 2-2.
2. Pull out the DC/DC converter unit.

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

2-10-2. PS-445 Board

1. Open the left side panel referring to Section 2-2.
2. Loosen the screw and pull out the DC/DC converter unit.

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

2-11. Replacement of Circuit Board

2-11-1. Note on Replacement of Parts

Electrical parts mounted on the RP-108 and NR-66 boards used in the CCD unit cannot be replaced.
And every electrical part mounted on the SDI-10 and RX-28 boards cannot be replaced too. If there is any defective part, replace the mounted circuit board itself. Refer to Sections 2-11-7 and 2-11-8 for details on replacement.

2-11-2. 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
VDA-31A	IC803	Board name
DAD-19	IC59	Board name
AU-203	IC17	Board name
DAP-5	IC7	Board name
SG-226	IC19	SG-226 adjustment data, Board name
MB-666	IC4	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-700A maintenance manual, volume 2 is for EEPROM which is not programmed. If replacement is needed, consult your Sony representatives.

2-11-3. 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	4-4. VA-158 Board Adjustment	4-4-2. VA Gain Adjustment
MX-59	——	——
PR-200	——	——
DL-65	4-7. IE-44 Board Adjustment	4-7-2. Video Level Adjustment
IE-44	4-7. IE-44 Board Adjustment	4-7-2. Video Level Adjustment
IF-569	——	4-10. Overall Video Adjustment
VDA-31A (DU-24)	4-8. VDA-31A Board Adjustment	4-8-2. RGB Level Adjustment 4-8-3. Y/P$_R$/P$_B$ Adjustment
DAD-19	4-9. DAD-19 Board Adjustment	4-9-1. A/D Gain, Clamp Level Adjustment 4-9-2. RET VIDEO D/A Gain Adjustment
AU-203	4-12. Audio System Adjustment	4-12. Audio System Adjustment
DAP-5	——	——
SG-226	——	——
SDI-10	——	——
RX-28	——	——
PS-400	——	——
AT-104	——	——
IF-568	——	——
PS-416	——	——
PS-445	——	——
MB-666	——	——
Driver Board	4-2. Filter Drive Board Adjustment	4-2. Filter Drive Board Adjustment
CCD Unit	4-4. VA-158 Board Adjustment	4-4-2. VA Gain Adjustment

2-11-4. Replacement of CN-1689/1690/1691 Board

The CN-1689/1690/1691 boards are small printed circuit boards used for the camera's right side panel equipped with the REMOTE connector and so on. If you order one of these boards, a combined board of the above three will be supplied from the Sony parts center. So, please cut off a necessary board from it and use for service.

2-11-5. Replacement of AT-104 Board

After the AT-104 board is replaced, make sure that the switch S1-1 on a new AT-104 board is set to ON. For details, refer to Section 1-5.

2-11-6. Replacement of IF-569 Board

When replacing 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 2-16. And make sure that the switch S1-2 on a new IF-569 board is set to ON, too. For details on the switch, refer to Section 1-5.

2-11-7. Replacement of RX-28 Board

Notes

· Every electrical part mounted on the RX-28 board cannot be replaced. If there is any defective part, replace the board itself.
· Optical connector cables used in the unit are very fragile. So do not bend or yank in handling. This causes a break in the cable.
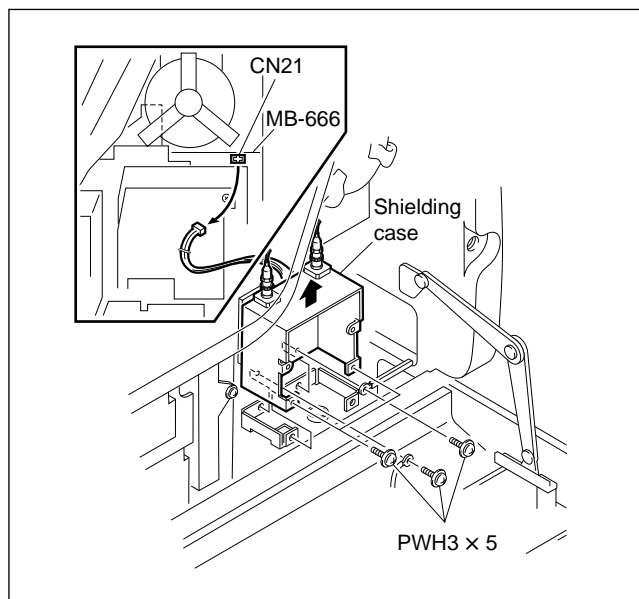 When installing the optical connector cable in the unit, refer to Section 2-1-3.

1. Open the left side panel referring to Section 2-2.
2. Loosen the two screws and remove the shielding case lid.

B3 × 8

Shielding case lid

3. Unfasten the optical connector cable from the cable holders.
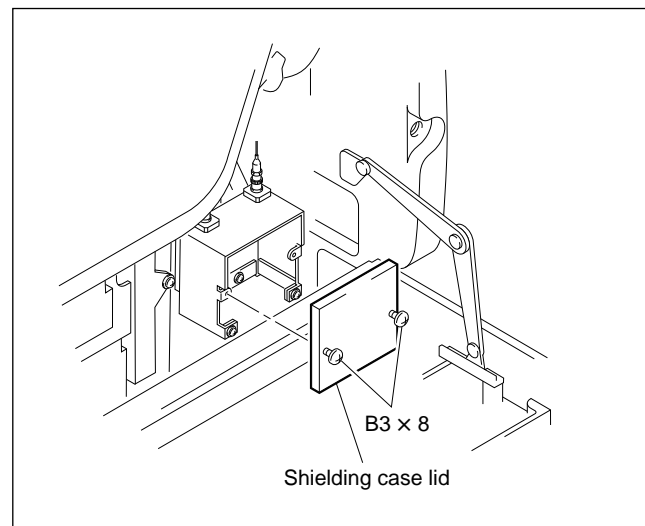
Cable holder
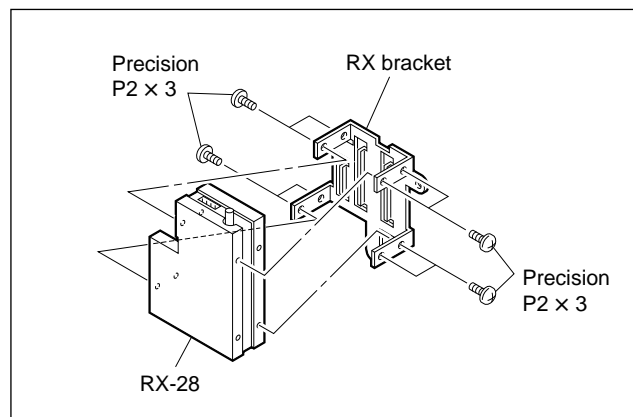
Optical connector cable
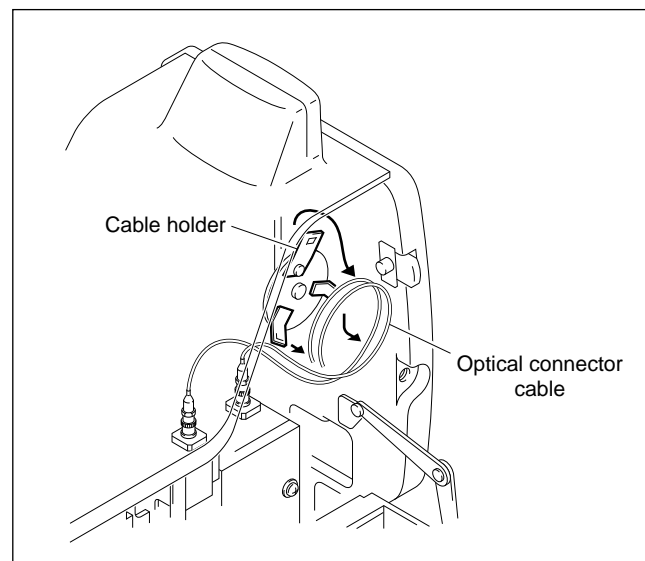
4. Remove the four screws to remove the shielding case. Disconnect the connector CN21 from the MB-666 board.

5. Disconnect the optical connector cable (white).
6. Remove the four screws to remove the RX-28 board. Disconnect the coaxial connector and CN2.
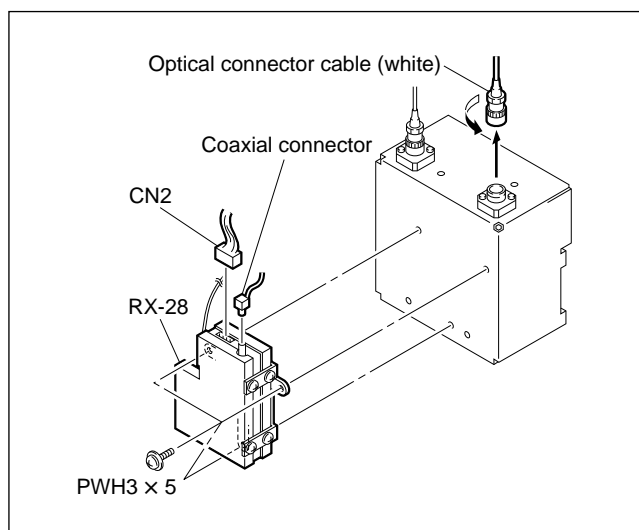
7. Remove the eight screws. Remove the RX-28 board from the RX bracket.

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

Notes at installation

・ Before connecting the optical connector, clean the white optical contact at the tip of connector with alcohol.
・ Align the projection of the connector with the notch of the interconnection connector in connecting.
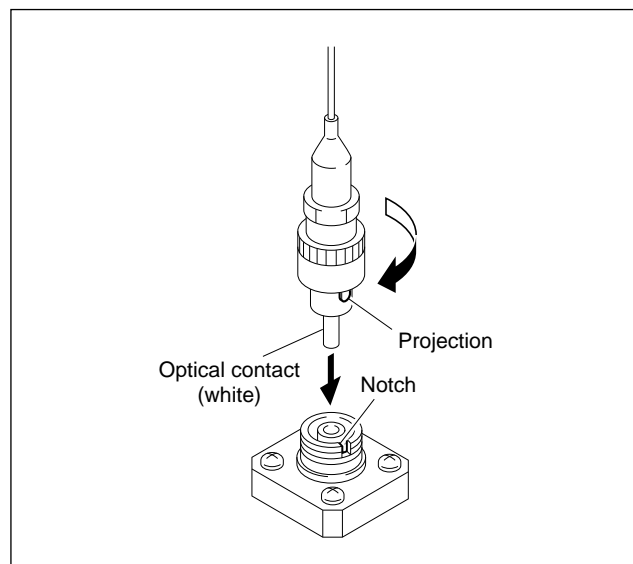
## 2-11-8. Replacement of SDI-10/DAD-19 Boards

Notes

- Every electrical part mounted on the SDI-10 board cannot be replaced. If there is any defective part, replace the board itself.
- Optical connector cables used in the unit are very fragile. So do not bend or yank in handling. This causes a break in the cable. When installing the optical connector cable in the unit, refer to Section 2-1-3.

1. Remove the top panel assembly referring to Section 2-8.
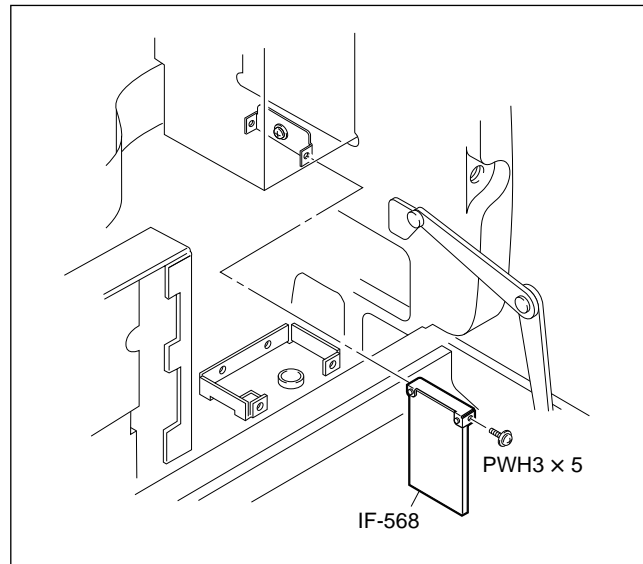2. Remove the eleven plug-in boards.
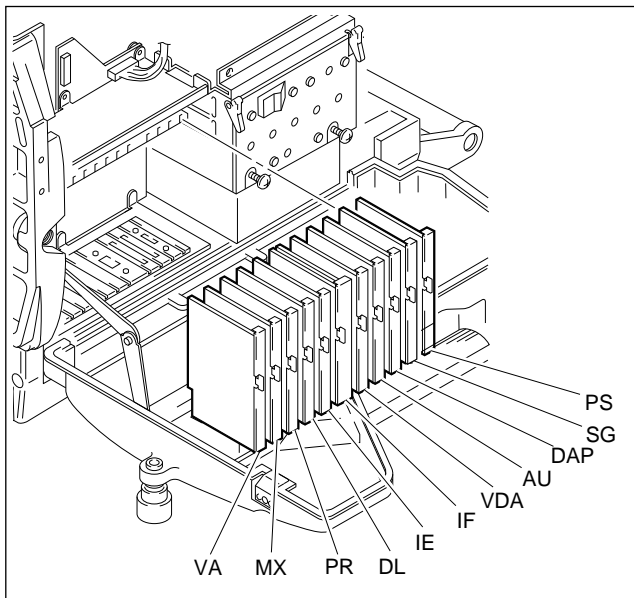
3. Remove the PS-445 board referring to Section 2-10.
4. Perform procedures 2 and 4 in Section 2-11-7 to remove the shielding case.
5. Disconnect the optical connector cable (blue) only when replacing the SDI-10 board.
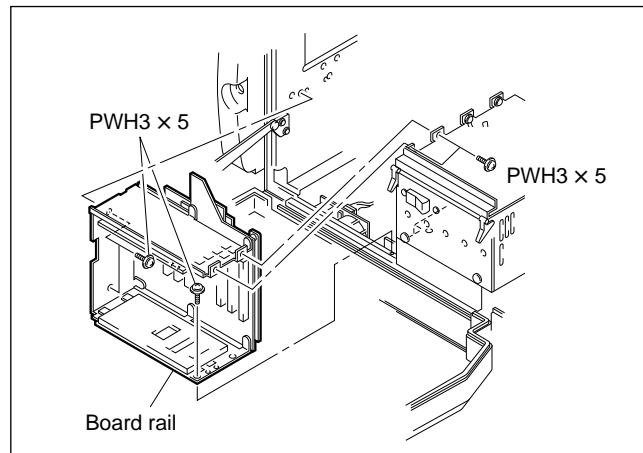
   Note

   If replacing the DAD-19 board only, this procedure can be skipped.
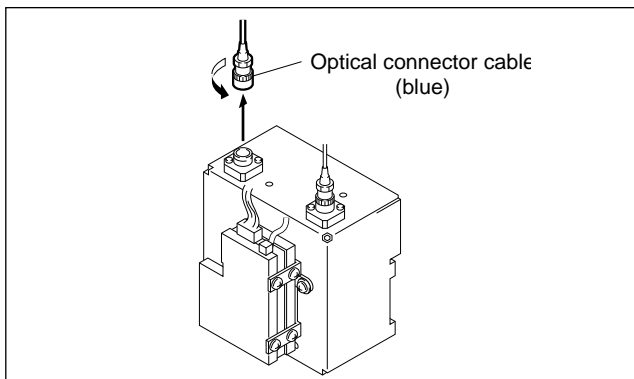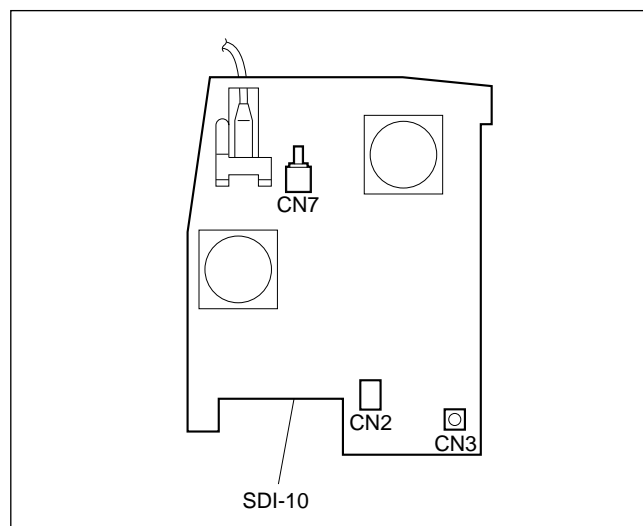

6. Remove the screw to remove the IF-568 board.

7. Remove the five screws to remove the board rail.

8. Disconnect the connectors CN3, CN7, and CN2 on the SDI-10 board.

9. Remove the three screws to remove the SDI-10 board.
10. Remove the three screws and two columns to remove the DAD-19 board.

Note

A replacement DAD-19 board supplied from the Sony parts center is provided with a part differing from the column (1) in shape. So reuse the column (1) attached to the original board in installing the new board.
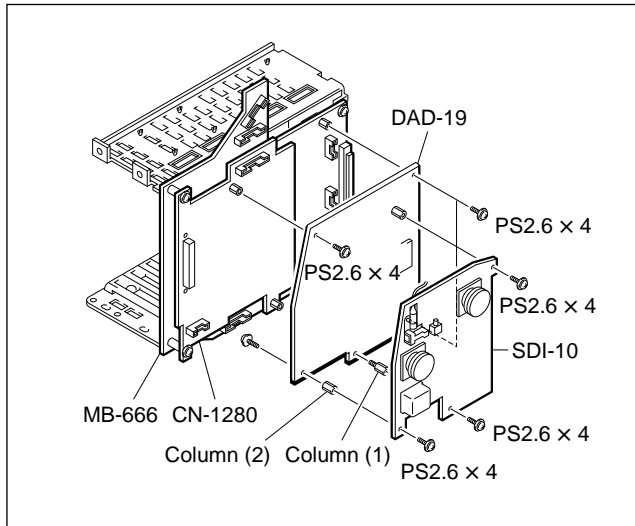
11. Install a new board in the reverse order of removal.
12. After replacing the DAD-19 board, be sure to perform adjustment referring to Section 2-11-3 and Section 4.

Notes at installation

· Before connecting the optical connector, clean the white optical contact at the tip of connector with alcohol.
· Align the projection of the connector with the notch of the interconnection connector in connecting.
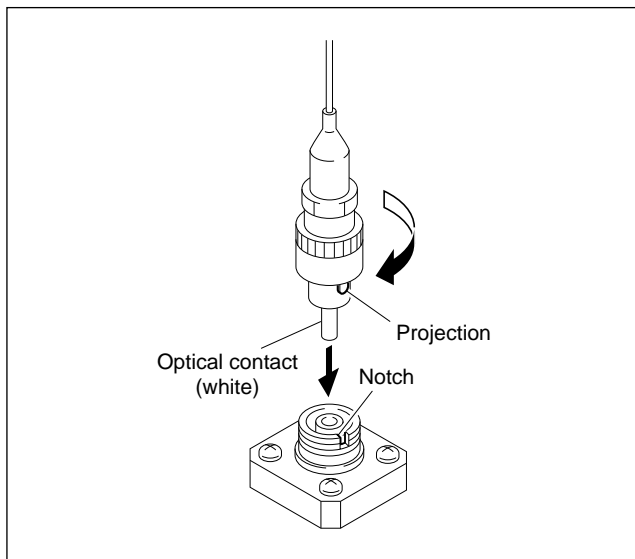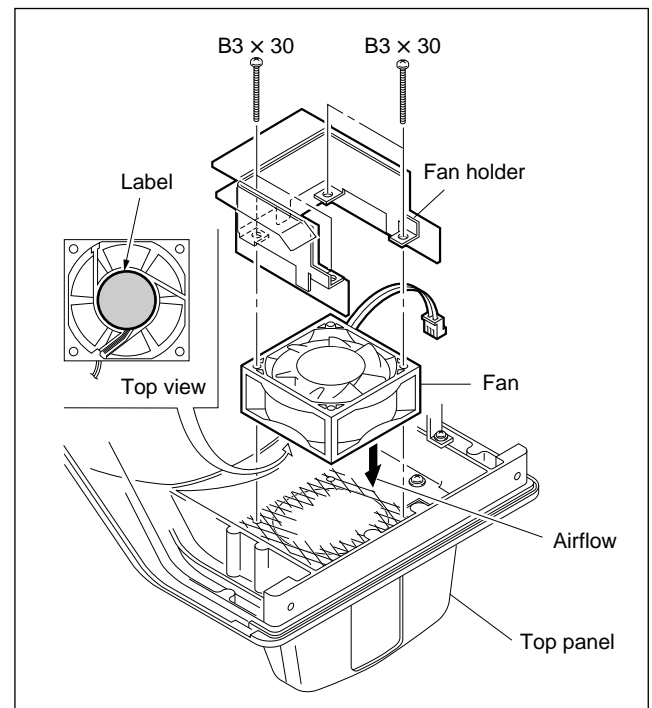

2-12. Replacement of Fan

If the fan fails, 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.

2-12-1. Top Panel Fan

1. Remove the top panel assembly referring to Section 2-8.
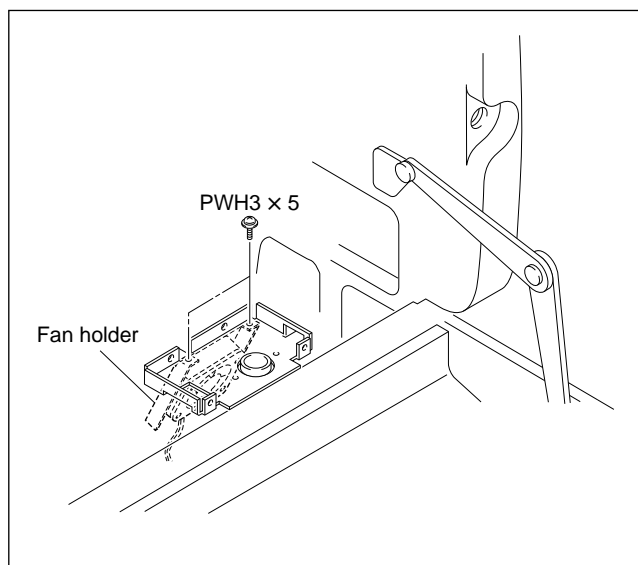2. Remove the two screws and remove the fan from the fan holder.

3. Install a new fan in the reverse order of removal.
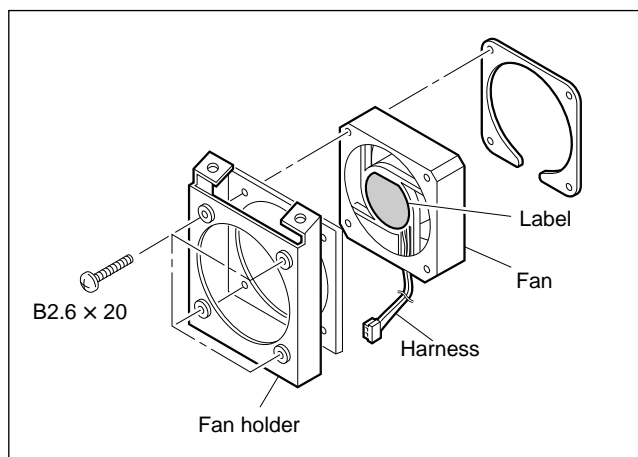
Note at installation

Install the fan to the top panel with care so that the label faces the top panel side.

2-12-2. SDI Fan

1. Perform procedures 1 to 4 in Section 2-11-7 "Replacement of RX-28 Board" to remove the shielding case.
2. Remove the two screws to remove the fan holder from the unit.

PWH3 × 5

Fan holder

3. Remove the four screws to remove the fan from the fan holder.

B2.6 × 20

Label

Fan

Harness

Fan holder

4. Install a new fan in reverse order of removal.

Note at installation

Install the fan to the fan holder with care so that the label faces the SDI-10 board and the fan harness points down.

2-13. Replacement of Optical Connector
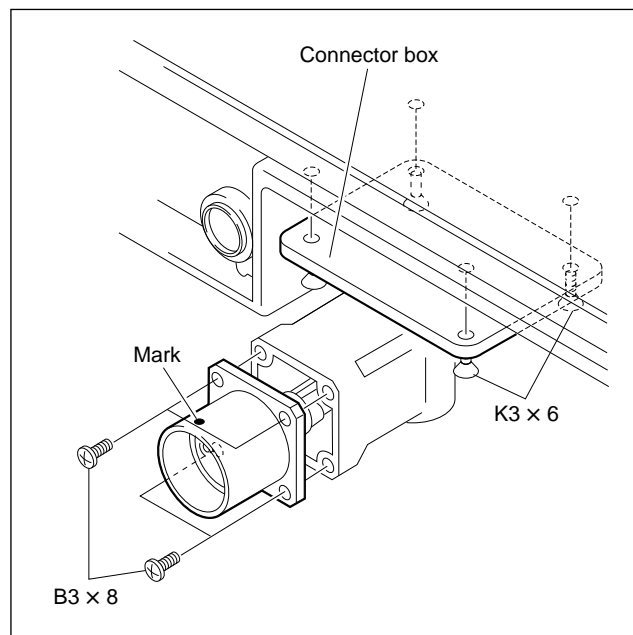
Note

Optical connector cables used in the unit are very fragile. So do not bend or yank in handling. This causes a break in the cable.

When installing the optical connector cable in the unit, refer to Section 2-1-3.

1. Perform procedures 1 to 2 in Section 2-11-7 "Replacement of RX-28 Board" to remove the shielding case lid.

2. Remove the two screws securing the protection cover. Disconnect the two connectors (CN17/MB-666, CN9/CN-1270) and the optical cable connectors (01, 02). Pull out the connectors through the hole of the shielding case.
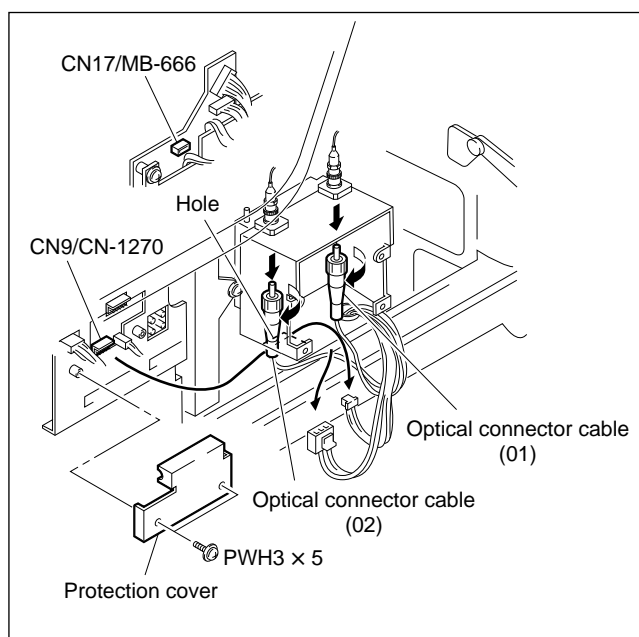

3. Loosen the four screws to remove the connector box. Remove the four screws and pull out the optical connector with harness.

4. Install a new optical connector in reverse order of removal.

Notes at installation

· Install the optical connector in the connector box with care so that the mark on the connector points up as shown in the figure of procedure 3.

· Before connecting the optical connector, clean the white optical contact at the tip of connector with alcohol.

· Align the projection of the connector with the notch of the interconnection connector in connecting.
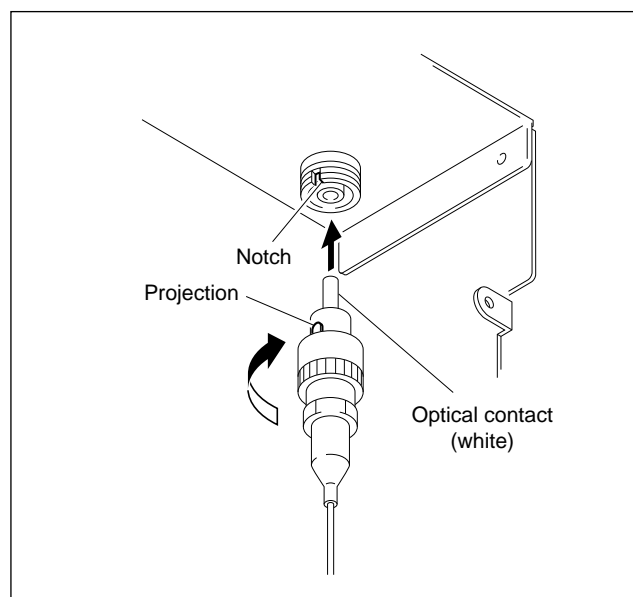
2-14. Periodic Replacement Part

The unit is equipped with two types of fan, the top panel fan (P/N 1-698-106-1X) and SDI fan (P/N 1-698-775-2X). They are periodic replacement parts. It is recommendable to replace the fans every two years. Refer to Section 2-12 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	Sony P/N
①	VOLUME KNOB DIA 3 ASSY	X-3167-563-X
②	BUSHING, RUBBER	3-175-712-0X
③	KNOB, VOLUME DIA 6	3-185-872-0X
④	KNOB, VOLUME 6	3-602-483-0X
⑤	BAND, CLAMP	3-612-712-0X
⑥	SHIELD CUSHION (C)	3-615-750-6X
⑦	BAND, CLAMP	3-697-899-0X
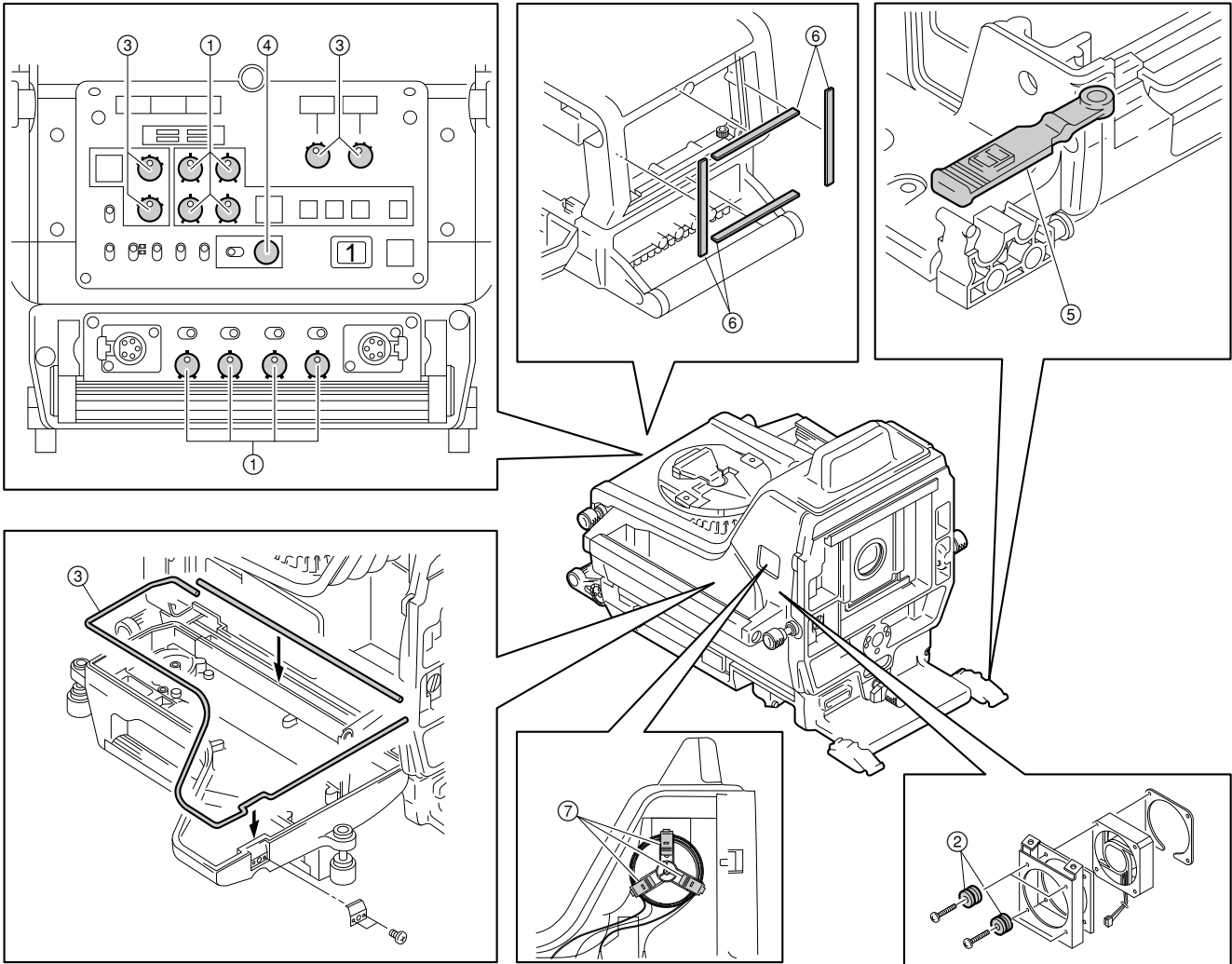
2-15. Cleaning of Optical Connector

The photo-receptive condition of optical connector is displayed on the SDI/VTR Setup page of the Maintenance menu. (Refer to Section 3-1-3 for details on the menu.) The attenuation of the photo-receptive level may cause transmission error between the camera and HDCU. In the case of attenuation, be sure to clean optical contact portions proceeding as follows. The optical contact portions exist in the optical connector on the camera or HDCU, and in the optical connector cables which are connected to the SDI or RX board.
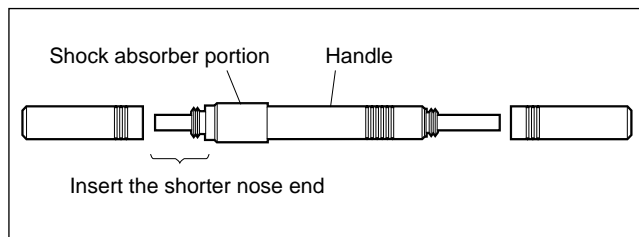
Tools Required

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

Note

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

Shock absorber portion   Handle
Insert the shorter nose end

・Cotton swabs (commercially available)

Cleaning

Male connector

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

Optical contacts (white)
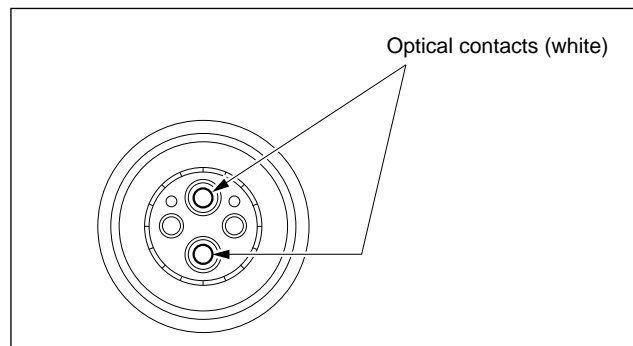
Female connector

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

1. Insert the alignment sleeve remover into the alignment sleeve in the straight line and turn it clockwise.
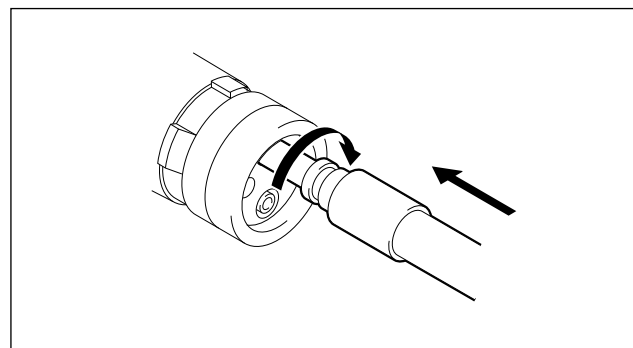
2. When the turn stops, pull out the remover in the straight line forcedly.

   Note

   The alignment sleeve can be removed/reinstalled with the sleeve itself attached to the tip of the remover. Great care should be taken so as not to lose or damage the alignment sleeve.
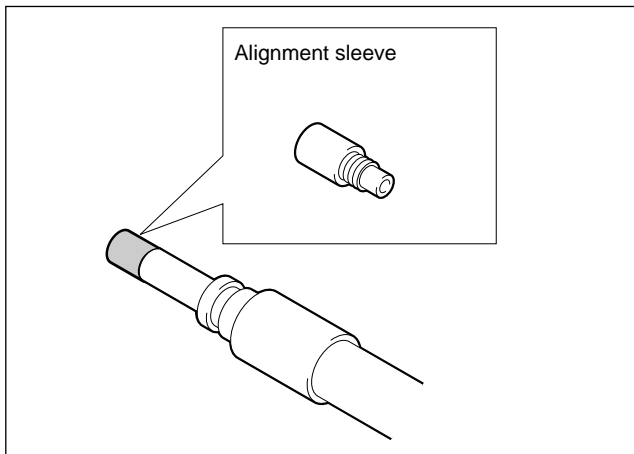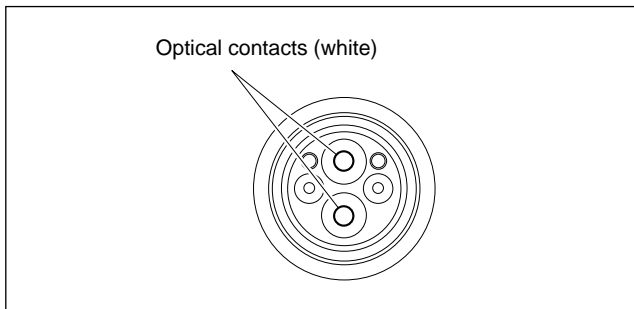   (Alignment sleeve: Sony P/N 9-980-074-01)

   Alignment sleeve

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

   Optical contacts (white)

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

Optical connector cable

After replacing the optical connector of the camera or HDCU, or replacing the SDI-10/RX-28 board, clean the tip of the white optical contact of the optical connector cable by a cotton swab moistened with alcohol.

   Optical contact (white)
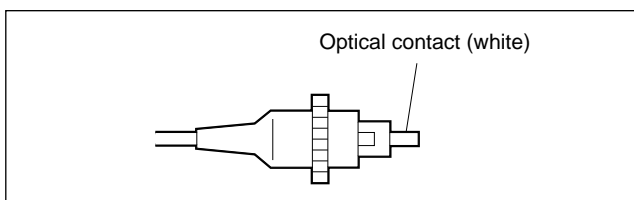
2-16. Note on Replacement of Lithium Battery

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)

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 S2-1 to S2-3 on the SG-226 board, 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.

- **Equipment required**

Camera control unit   HDCU-700A
Viewfinder   HDVF-700 (or monochrome monitor)

- **Switches and control**

MENU SELECT switch
DISPLAY switch
MENU SELECT control
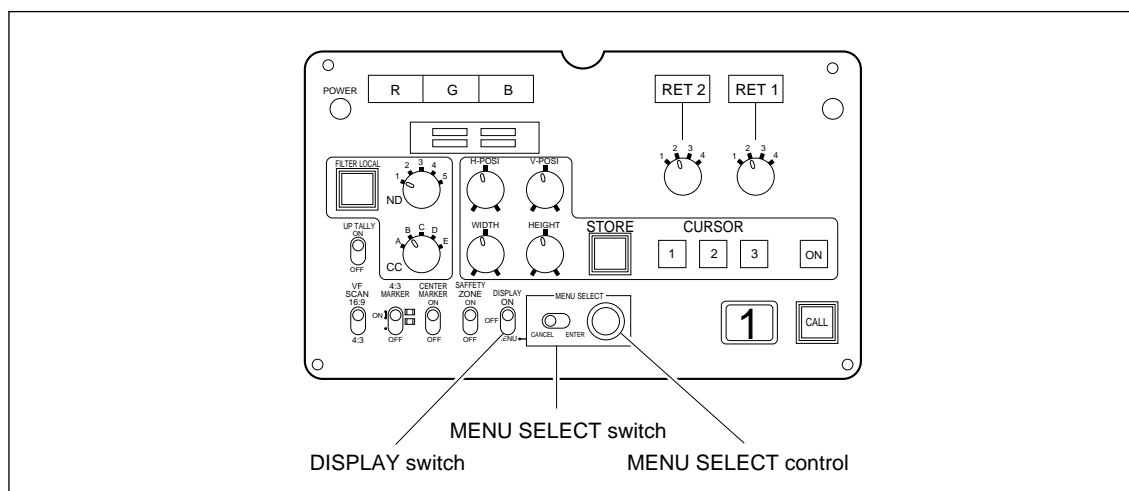
DISPLAY switch

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 SELECT control

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

MENU SELECT switch

ENTER: Enters the page/item select mode, or enters the setting values
CANCEL: 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
DISPLAY switch to MENU (from OFF) while pushing up the MENU SELECT switch to ENTER.

- **Basic operation**

1. Displaying the menu
    To display the Operation menu, set the DISPLAY 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 DISPLAY switch to MENU (from OFF) while pushing up the
    MENU SELECT switch to ENTER. Then turn the MENU SELECT control to move the → cursor to
    a menu item which you want and push up the MENU SELECT switch to ENTER.
2. To shift the page, turn the MENU SELECT control with a page scroll bar displayed at the top-right of
    the screen until the desired page is displayed and push up the MENU SELECT switch to ENTER.
    The menu enters the item select mode and the page scroll bar disappears.
3. To shift the item, turn the MENU SELECT control until the → cursor points the item to be set and
    push up the MENU SELECT switch to ENTER.
4. To change the value, turn the MENU SELECT control.
    You can change the values quickly by turning the MENU SELECT control fast. You can make very
    fine adjustments by turning the control slowly.
    By pushing up the MENU SELECT switch to ENTER, the setting is entered.
5. The menu is returned to the item select mode or page select mode every time the MENU SELECT
    switch is pushed down to CANCEL.
6. To exit from the setup menu, set the DISPLAY 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 (IC24/SG-226, IC26/IF-569).
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.
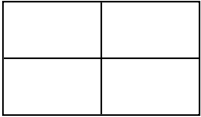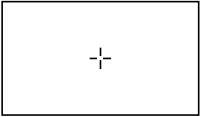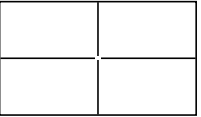
3-1-1. Operation Menu

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

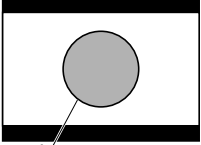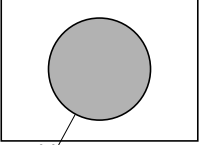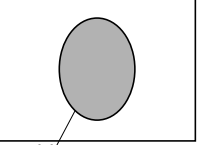(Boxed items under "Settings" indicate the factory setting.)

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	Turns the focus position indication on and off
		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 frunction on and off
		Tape	On, Off	Turns the tape-remaining indication on and off (Does not function in this unit)
		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 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 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 (Forcibly off in connection with HDCU/RCP) 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 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
				Off: Not lit under any conditions
				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: (Does not function in the unit)
		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
		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 **Note** 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
		Middle	−3, 0 , 3, 6, 12 dB	(Does not function in this unit)
		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)
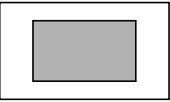
Setting	16 : 9	4 : 3	Squeeze
VF screen	object	object	object

Page	Ver.	Item	Settings	Contents
Audio		Input Mode	$\boxed{1}$, 2, 3, 4, 5	Select according to equipment to be connected to the MIC connector [c]
		Mic1 Gain	$\boxed{-60}$, −50, −40, −30, −20 dB	Selects the input gain at MIC 1 connector (This setting is invalid when LINE input is selected)
		Mic2 Gain	$\boxed{-60}$, −50, −40, −30, −20 dB	Selects the input gain at MIC 2 connector (This setting is invalid when LINE input is selected)
		Mic Power	$\boxed{Off}$, 12 V, 48 V	Select according to the type of programmable microphone to be connected to MIC 1/2 connector Off: Microphone requiring no power 12 V: AB POWERING 12 V microphone 48V: PHANTOM microphone
		Incom1/2	$\boxed{PROD}$, ENG	Selects the producer or engineer line at INTERCOM 1/2 connector
Auto Iris		Auto Iris	$\boxed{On}$, Off	Turns the auto-iris function on and off
		Window SEL	$\boxed{1}$, 2, 3, 4, 5	Selects the type of auto-iris window [d]
		Iris Close	On, $\boxed{Off}$	Turns the iris closing function on and off
Battery /D56		BATT Type	$\boxed{Lithium}$, Othres, CCU, Anton, BP-90	Select according to a battery in use This setting enables the battery alarm voltage indication corresponding to the battery characteristics
		Alarm VOLT		Indicates the battery alarm voltage indication
		D5600K	On, $\boxed{Off}$	Turns on and off the function to achieve the D5600K color temperature electrically
		Lens File	1 to $\boxed{16}$	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 CH2	MIC1 MIC2	MIC MIC
2	CH1 CH2	MIC1 MIC2	LINE LINE
3	(Unassigned)		
4	(Unassigned)		
5	CH2	MIC2	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 (This setting is valid in connection with HDCU)
		LENS VTR	Incom1, Incom2, RET1, RET2 , RET3, RET4	Selects the VTR button mode of a lens (This setting is valid in connection with HDCU) Incom1: VTR button activates to turn on and off the Incom 1 TALK Incom2: VTR button activates to turn on and off the Incom 2 TALK 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 (This setting is valid in connection with HDCU) Incom1: VTR button activates to turn on and off the Incom 1 TALK Incom2: VTR button activates to turn on and off the Incom 2 TALK RET1/RET2/RET3/RET4: VTR button activates to select the return video
Operator File		Recall	Throw MENU SELECT switch to ENTER to execute	Recalls the user's operator file
		Store	Throw MENU SELECT switch to ENTER to execute	Stores the user's operator file
		Preset	Throw MENU SELECT switch to ENTER 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 Off: No test signal is output 1: Outputs the sawtooth waveform test signal 2: Outputs the 3-step waveform test signal
		Clear	Throw MENU SELECT switch to ENTER to execute	Resets numeric settings on the Video Level page to 0 (When you throw MENU SELECT switch to ENTER, the "Clear" indication flashes. Throw MENU SELECT switch to ENTER again to execute; throw to CANCEL 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 Off: No test signal is output 1: Outputs the sawtooth waveform test signal 2: Outputs the 3-step waveform test signal
		Clear	Throw MENU SELECT switch to ENTER to execute	Resets numeric settings on the Gamma page to 0 (When you throw MENU SELECT switch to ENTER, the "Clear" indication flashes. Throw MENU SELECT switch to ENTER again to execute; throw to CANCEL to cancel)

Page	Ver.	Item	Settings	Contents
Knee 1		Point R/G/B/M	−99 to 99 ($\boxed{0}$)	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 ($\boxed{0}$)	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 ($\boxed{0}$)	Adjusts the R, G, B or master white clip level
		Knee	$\boxed{On}$, Off	Turns the knee correction circuit on and off
		Auto Knee	On, $\boxed{Off}$	Turns the auto knee function on and off
		White Clip	$\boxed{On}$, Off	Turns the white clip function on and off
		Test	$\boxed{Off}$, 1, 2	Selects the TEST signal Off: No test signal is output 1: Outputs the sawtooth waveform test signal 2: Outputs the 3-step waveform test signal
		Clear	Throw MENU SELECT switch to ENTER to execute	Resets numeric settings on the Knee 1 page to 0 (When you throw MENU SELECT switch to ENTER, the "Clear" indication flashes. Throw MENU SELECT switch to ENTER again to execute; throw to CANCEL to cancel)
Knee 2		Knee Saturation	On, $\boxed{Off}$	Turns the knee saturation function on and off
		Knee SAT Level	−99 to 99 ($\boxed{-99}$)	Adjusts the knee saturation level
		Super Skin Knee	On, $\boxed{Off}$	Turns on and off the function to improve the color reproduction of a skin color in a highlight shot scene
		Test	$\boxed{Off}$, 1, 2	Selects the TEST signal Off: No test signal is output 1: Outputs the sawtooth waveform test signal 2: Outputs the 3-step waveform test signal
		Clear	Throw MENU SELECT switch to ENTER to execute	Resets numeric settings on the Knee 2 page to 0 (When you throw MENU SELECT switch to ENTER, the "Clear" indication flashes. Throw MENU SELECT switch to ENTER again to execute; throw to CANCEL to cancel)
Detail 1		Detail	$\boxed{On}$, Off	Turns on and off the function to improve resolution by adding the detail signal
		Level	−99 to 99 ($\boxed{-60}$)	Adjusts the master level for the detail signal
		Limiter	−99 to 99 ($\boxed{0}$)	Adjusts the clipping level against the maximum detail level
		Crispening	−99 to 99 ($\boxed{-25}$)	Adjusts the level at which the detail signal is crispened
		H/V Ratio	−99 to 99 ($\boxed{0}$)	Adjusts the mix ratio of H and V detail signals
		Frequency	−99 to 99 ($\boxed{0}$)	Adjusts the boost frequency for H detail signal
		Level DEP	−99 to 99 ($\boxed{25}$)	Adjusts the level to control the detail signal used at lower signal level
		Level DEP	$\boxed{On}$, Off	Turns the level dependence function on and off
		Clear	Throw MENU SELECT switch to ENTER to execute	Resets numeric settings on the Detail 1 page to 0 (When you throw MENU SELECT switch to ENTER, the "Clear" indication flashes. Throw MENU SELECT switch to ENTER again to execute; throw to CANCEL 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	Throw MENU SELECT switch to ENTER to execute	Resets numeric settings on the Detail 2 page to 0 (When you throw MENU SELECT switch to ENTER, the "Clear" indication flashes. Throw MENU SELECT switch to ENTER again to execute; throw to CANCEL 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	Throw MENU SELECT switch to ENTER to execute	Resets numeric settings on the Skin Detail page to 0 (When you throw MENU SELECT switch to ENTER, the "Clear" indication flashes. Throw MENU SELECT switch to ENTER again to execute; throw to CANCEL to cancel)
Matrix		R-G, R-B	–99 to 99 (0)	Sets an optional value as the constant of the liner matrix for
		G-R, G-B	–99 to 99 (0)	R-G, R-B, G-R, G-B, B-R and B-G
		B-R, B-G	–99 to 99 (0)	(Compensates the user's matrix)
		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 REC-709 SMPTE-WIDE NTSC EBU	Selects the preset linear matrix (fixed constant compensation)
		Test	Off , 1, 2	Selects the TEST signal Off: No test signal is output 1: Outputs the sawtooth waveform test signal 2: Outputs the 3-step waveform test signal
		Clear	Throw MENU SELECT switch to ENTER to execute	Resets numeric settings on the Matrix page to 0 (When you throw MENU SELECT switch to ENTER, the "Clear" indication flashes. Throw MENU SELECT switch to ENTER again to execute; throw to CANCEL to cancel)

Page	Ver.	Item	Settings	Contents
Low-Key SAT		LK CLP LVL	−99 to 99 ($\boxed{0}$)	Adjusts the chroma level at a point where the luminous intensity of a object is low
		LK Saturation	On, $\boxed{\text{Off}}$	Turns the above-mentioned LK CLP LVL function on and off
		Clear	Throw MENU SELECT switch to ENTER to execute	Resets numeric settings on the Low-Key SAT page to 0 (When you throw MENU SELECT switch to ENTER, the "Clear" indication flashes. Throw MENU SELECT switch to ENTER again to execute; throw to CANCEL to cancel)
Shutter		Shutter/ECS	On, $\boxed{\text{Off}}$	Turns the shutter/ECS mode on and off
			1/100, $\boxed{1/125}$, 1/500, 1/1000, 1/2000, ECS	Selects the shutter speed
		ECS	30.0 to 7000 ($\boxed{30.0}$) Hz	Sets the ECS frequency
		S-EVS	On, $\boxed{\text{Off}}$	Turns the S-EVS mode on and off.
			0 to 100 ($\boxed{0}$) %	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 SELECT control to move the → cursor to "File Store", then throw MENU SELECT switch to ENTER "File Store" flashes on the viewfinder screen	
		4	2. Select the file number (1 to 5)	
		5	(If data is already stored at the selected file, the new data replaces the current data)	
		File Store	**Recalling a scene file** Turn MENU SELECT control to move the → cursor to the desired file number, then throw MENU SELECT switch to ENTER • Every time MENU SELECT switch is thrown to ENTER, 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.)

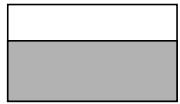| Page	Ver.	Item	Settings	Contents
Auto Setup		Auto Black	Throw MENU SELECT switch to ENTER to execute	Starts to automatically adjust the black balance (To abort a processing during execution, throw MENU SELECT switch to ENTER)
		Auto White	Throw MENU SELECT switch to ENTER to execute	Starts to automatically adjust the white balance (To abort a processing during execution, throw MENU SELECT switch to ENTER)
		Auto Level	Throw MENU SELECT switch to ENTER to execute	Starts to automatically adjust the level in the internal circuits [e] (To abort a processing during execution, throw MENU SELECT switch to ENTER)
		TEST	Off, 1, 2	Selects the TEST signal Off: No test signal is output 1: Outputs the sawtooth waveform test signal 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	Throw MENU SELECT switch to ENTER to execute	Starts to automatically adjust the white balance
		Clear	Throw MENU SELECT switch to ENTER to execute	Resets numeric settings on the White Shading page to 0 (When you throw MENU SELECT switch to ENTER, the "Clear" indication flashes. Throw MENU SELECT switch to ENTER again to execute; throw to CANCEL 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	Throw MENU SELECT switch to ENTER to execute	Resets numeric settings on the Black Shading page to 0 (When you throw the MENU SELECT switch to ENTER, the "Clear" indication flashes. Throw the MENU SEL switch again to execute; throw to CANCEL 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 Auto2: Silent mode MIN:　Minimum turn mode Off:　Forcibly turned off
		Link Tally	On, ⎢Off⎢	On: The unit enters the above-mentioned MIN mode with a tally signal input 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 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 PROMPTER connector (This setting is valid only when HDCU is connected) Off: No prompter signal is output
		Serial Output	On, ⎢Off⎢	On: SDI signal is output at SERIAL OUT connector Off: No SDI signal is output (This setting is valid only when the camera is used alone)
		Optical		Displays a photo-receptive condition of the optical connector of camera adaptor (Corresponds to the indicator on DPR-77 board of HDCU) [f] −−−−: When the camera is used alone GRN:　Normal (−17 dBm* or more) YEW:　Normal (−17 to −20 dBm *) RED:　Abnormal (less than −20 dBm *) NG:　Out of sync with HDCU * 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 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 Section 2-15.

Page	Ver.	Item	Settings	Contents
Auto Iris		Auto Iris	$\boxed{\text{On}}$, Off	Turns the auto-iris function on and off
		Window SEL	$\boxed{1}$, 2, 3, 4, 5	Selects the type of auto-iris window [d]
		Level	−99 to 99 ($\boxed{0}$)	Sets the auto-iris level
		APL Ratio	−99 to 99 ($\boxed{0}$)	Sets the volume of the effect of the auto-iris function −99 (PEAK) ↔ 99(AVERAGE)
		Iris Gain	−99 to 99 ($\boxed{0}$)	Sets the iris gain
		Iris Close	On, $\boxed{\text{Off}}$	Turns the iris closing function on and off
W/B Offset		White Offset	Throw MENU SELECT switch to ENTER 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	Throw MENU SELECT switch to ENTER 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	Throw MENU SELECT switch to ENTER 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, $\boxed{\text{Disable}}$	Enable: When the OHB file store is stored, the white offset value for ND filter is stored at the same time Disable: Even though the OHB file store is executed, the white offset value for ND filter is not stored at the same time $\boxed{\text{Note}}$ The setting is returned to Disable when the unit is powered off
		Auto White	Throw MENU SELECT switch to ENTER to execute	Starts to automatically adjust the white balance (To abort a processing during execution, throw MENU SELECT switch to ENTER)
		OHB File Store	Throw MENU SELECT switch to ENTER to execute	Stores specific data for a CCD unit to be used as the OHB files The standard values are stored at the factory
		ND OFST Clear	Throw MENU SELECT switch to ENTER 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.

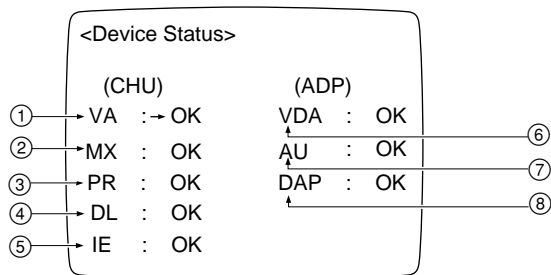| Page	Ver.	Item	Settings	Contents
Reference File		Store File	Throw MENU SELECT switch to ENTER to execute	Stores the reference values used for automatic setup adjustment and the standard settings of the switches as the reference files ⎡Notes⎤ • When executing the Store File on the Reference File page, 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 • 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	Throw MENU SELECT switch to ENTER to execute	Clears the adjustment values stored as the reference files (Temporarily clears the current reference files) ⎡Note⎤ 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 (With 10 sec Clear set at On, move the cursor to a menu item to be cleared, and push up the MENU SELECT switch to ENTER more than ten seconds while "?" is brinking. The reference item can be cleared) ⎡Note⎤ The setting is returned to Off when the unit is powered off 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	Throw MENU SELECT switch to ENTER to execute	Stores specific data for a CCD unit to be used as the OHB files The standard values are stored at the factory (Stores the white offset value for ND filter, OHB matrix data and so on)
Operator File		Store Preset File	Throw MENU SELECT switch to ENTER to execute	Stores the user's preset values of the operator file
		Clear Preset File	Throw MENU SELECT switch to ENTER 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	Throw MENU SELECT switch to ENTER to execute	Stores the adjustment value on each item (except the location of the center marker) as the lens file
		Clear Current File	Throw MENU SELECT switch to ENTER 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 20 (right) ↔ −20 (left)
		Center V POS	−20 to 20 (⎡0⎤)	Shifts vertically the location of the center marker on the screen 20 (down) ↔ −20 (up)
		Center POS Store	Throw MENU SELECT switch to ENTER 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 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
		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
		AU	OK , NG	Displays a diagnostic state of AU board
		DAP	OK , NG	Displays a diagnostic state of DAP board

g)

```
<Device Status>

   (CHU)              (ADP)
① → VA  : → OK     VDA  :  OK
②  → MX  :  OK     AU   :  OK        ⑥
③  → PR  :  OK     DAP  :  OK        ⑦
④  → DL  :  OK                       ⑧
⑤  → IE  :  OK
```

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	Check 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 rear panel is pressed (This setting is valid only when the HDCU is connected to the camera. When the camera is used alone without being connected to RCP/MSU, this setting is turned off regardless of the menu indication) R: One or two rear tally lamps [h] are lit R&F: Both rear [h] and front [k] tally lamps are lit 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 This item selects the operating mode of the tally lamps when a CALL button of MSU or RCP is pressed while lit On: Both rear [h] and front [k] tally lamps go out 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
		Filter CTRL	☐Lock☐ , Unlock	Lock: ND/CC filter cannot be selected when the R tally signal is input Unlock: ND/CC filter can be selected even though the R tally signal is input
Pixel		Auto	Throw MENU SELECT switch to ENTER to execute	Starts to automatically correct RPN (Activates APR function)
		REF DC	00 to FF (☐80☐)	Sets the APR detection level
		Manual R	Throw MENU SELECT switch to ENTER 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 and VF tally lamp (of HDVF-700).
k) Front tally lamp refers to up tally lamp and lens tally lamp.

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	(Does not function in this unit)
		Rotation	STD, RVS	Selects the mode of MENU SELECT control (as turned clockwise) STD: Cursor moves downwards and a numeric value increases 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 DISPLAY 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 DISPLAY 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 DISPLAY switch is set to ON or OFF)
		Zoom Disp	Left, Right	Changes the indication locations of the zoom and focus positions' status displayed on the VF each other Left: Zoom position is located on the left and focus position is on the right Right: Zoom position is located on the right and focus position is on the left

Section 4
Electrical Alignment

4-1 (E)

This section is comprised of the following three adjustment items;
- Items required when repairing or replacing a circuit board. (Described in Sections 4-2 to 4-9.)
- Items required at installation. (Described in Sections 4-10 and 4-11.)
- Items regarding audio adjustment. (Described in Section 4-12.)

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
- HDTV digital waveform monitor
  Tektronix WFM1125 or equivalent
- Audio Generator
  Tektronix SG-5010 or equivalent
- Audio Analyzer
  Tektronix AA501A (OP.02) or equivalent
- Digital to Analog Converter

Peripheral Equipment
- HDVS camera system
  HDCU-700A (with HKCU-702 installed)
  MSU-700 (with HKCF-700 installed)

Fixtures
- Extension board EX-512
  Sony P/N: A-8273-247-A
- Extension board BKP-7900 *
  (To extend plug-in board for HDCU-700A)
- 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.

HDC-700A

4-1 (E)

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 HDCU-700A and MSU-700 shall be
  completed.

4-1-3. Connection

For general adjustments
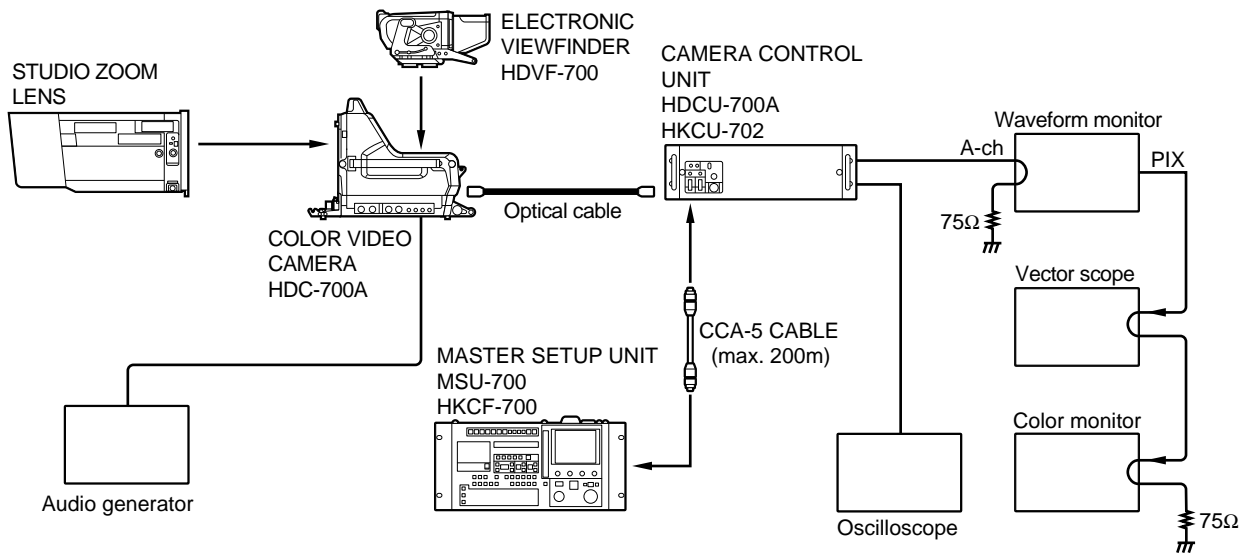
For audio adjustments
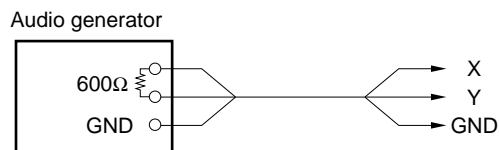
4-1-4. Initial Settings

HDC-700A

| Note |

When switching the following switches from a customer-set position, it is recommended to record the setting state of the customer in the table below. After adjustment is complete, be sure to return the switches to their customer-set position.

Board	Switch	Setting during adjustment	Customer-set position
AU-203	S2	CM (CARBON)	
	S3	CM (CARBON)	
	S4	0	
	S5	0	
	S6	0	
	S7-1	OFF	
	S7-2	OFF	
	S7-3	OFF	
	S7-4	ON	
	S8-1	OFF	
	S8-2	OFF	
	S8-3	OFF	
	S8-4	OFF	

Make the following setting using the setup menu.

MENU: Maintenance

PAGE: SDI/VTR Setup

ITEM: Cable COMP $\rightarrow$ Off

MSU-700 Operation Panel

- CAM POWER/Signal output select buttons

ALL button	$\rightarrow$ OFF (dark)
CAM PW button	$\rightarrow$ ON (lit)
VF PW button	$\rightarrow$ ON (lit)
TEST 1 button	$\rightarrow$ OFF (dark)
TEST 2 button	$\rightarrow$ OFF (dark)
BARS button	$\rightarrow$ OFF (dark)
CLOSE button	$\rightarrow$ ON (lit)

- CAM/CCU Function ON/OFF buttons

KNEE OFF button	$\rightarrow$ OFF (lit)
DETAIL OFF button	$\rightarrow$ OFF (lit)
LVL DEP OFF button	$\rightarrow$ OFF (lit)
MATRIX OFF button	$\rightarrow$ OFF (lit)
AUTO KNEE button	$\rightarrow$ OFF (dark)
SKIN DETAIL button	$\rightarrow$ OFF (dark)

- Others

GAMMA OFF button	$\rightarrow$ ON (dark)
MASTER GAIN button	$\rightarrow$ 0 (0 dB)
FILTER button (ND)	$\rightarrow$ 1 (lit)
FILTER button (CC)	$\rightarrow$ B (lit)
ECS/SHUTTER ON button	$\rightarrow$ 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 → ON (MOTOR ON)

Adjustment Procedures

1. ND 1 button/MSU-700 → ON
2. Adjust ❷RV1 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)	❷RV1
ND2 (1/4 ND)	❷RV2
ND3 (1/8 ND)	❷RV3
ND4 (1/16 ND)	❷RV4
ND5 (1/64 ND)	❷RV5
CC1 (cross)	❷RV6
CC2 (clear)	❷RV7
CC3 (4300 K)	❷RV8
CC2 (5600 K)	❷RV9
CC2 (8000 K)	❷RV10

4-3. SG-226 Board Adjustment

4-3-1. Character Indication Positioning Adjustment

Equipment: Viewfinder

Preparations

- 4:3 MARKER switch/rear panel → ON
- DISPLAY switch/rear panel → ON

Adjustment Procedures

1. VF SCAN switch/rear panel → 4:3
2. Adjustment Point: ❷CV2/SG-226
   Specification: Numeral character displayed at the top-right of the screen can be monitored completely.

```
<VF Display>      ▮▮▮▮▮▮▮▮  1◄——— Monitored
EX    : Off   CAM VOL : Off        completely
Zoom  : Off   VTR VOL : Off
SHUTT : Off
Iris  : Off   CAM ID  : Off
D56   : Off   Message : Off

Tape  : Off   Filter  : On
              White   : On
              Gain    : On
```

<VF screen>

Resetting after Adjustment

- Return the switches to their previous positions.

MOTOR
S1 ON
    OFF

RV1
RV2
RV3 RV4
RV5
RV6
RV7
RV8 RV9
RV10

FILTER DRIVER BOARD
(A SIDE)

FILTER DRIVER BOARD
(B SIDE)

4-4. VA-158 Board Adjustment

4-4-1. TEST SAW Level Adjustment

Equipment: Oscilloscope

Preparations

· 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 push up the MENU
  SELECT switch to ENTER for ten seconds while "?" is
  blinking. Then, message "REF Clear" will be displayed.)
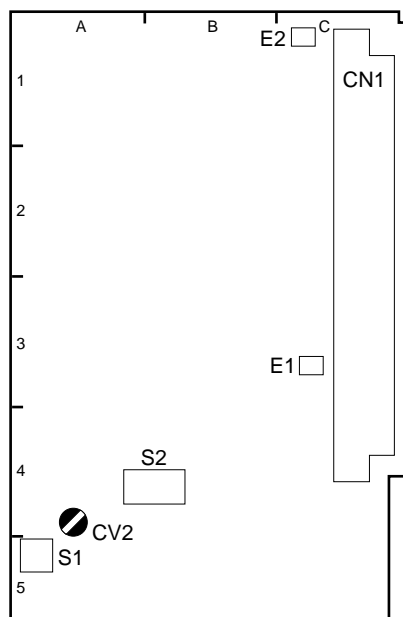
Adjustment Procedures

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

2. 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: A = 400 ±4 mVp-p
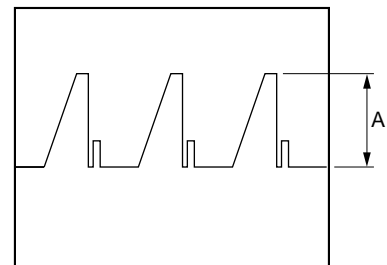
Triming File Store

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

SG-226 BOARD (A SIDE)

4-4-2. 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: ❷RV300/VA-158
   Specification: A = 400 ±4 mV
2. VA OUT G level adjustment
   Test Point: TP11/extension board
   Adjustment Point: ❷RV500/VA-158
   Specification: A = 400 ±4 mV
3. VA OUT B level adjustment
   Test Point: TP5/extension board
   Adjustment Point: ❷RV700/VA-158
   Specification: A = 400 ±4 mV

Resetting after Adjustment

- Return the switches to their previous positions.

VA-158 BOARD (A SIDE)

4-5. 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

4-5-1. FLARE PRESET Adjustment

Equipment: Analog waveform monitor

Preparations

· Close the lens iris.
· Connect the VTR connector 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
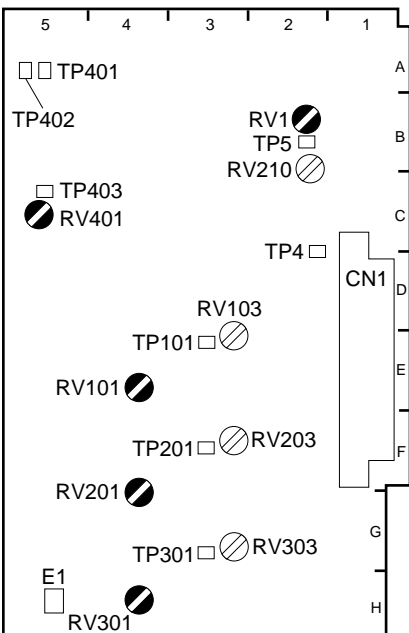
Adjustment Procedures

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) R/P$_R$ GND (pin 6)	✦RV201/MX-59
G-ch	G/Y OUT (pin 4) G/Y GND (pin 3)	✦RV101/MX-59
B-ch	B/P$_B$ OUT (pin 7) 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.
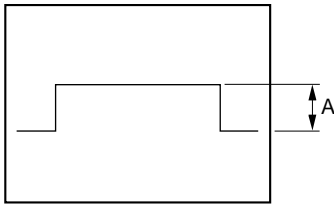
Resetting after Adjustment

· **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

MX-59 BOARD (A SIDE)

4-5-2. 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
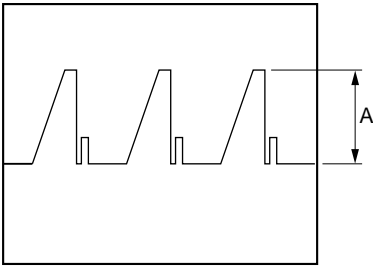
4-5-3. Knee Aperture Crispening Adjustment

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.
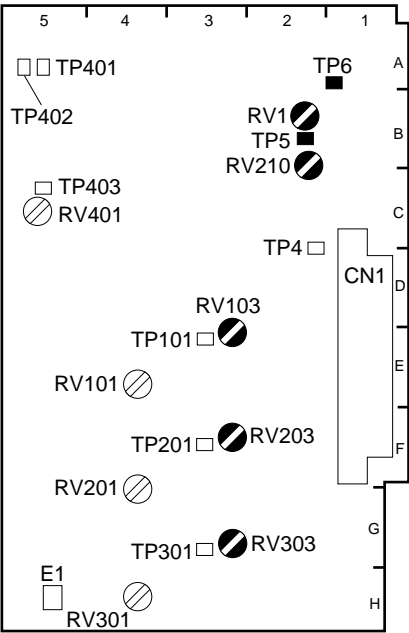
MX-59 BOARD (A SIDE)

4-5-4. 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.

Good

H rate

NG

NG
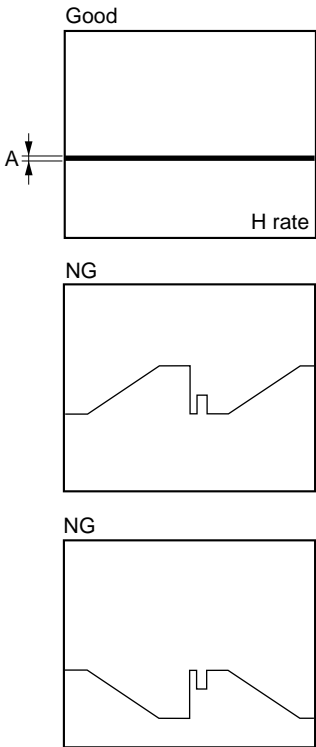
4-5-5. Pedestal Level Adjustment

Equipment: Oscilloscope

Preparations

· 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 push up the MENU
SELECT switch to ENTER 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
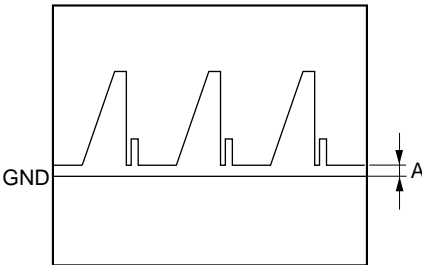
GND   A

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

4-6. 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

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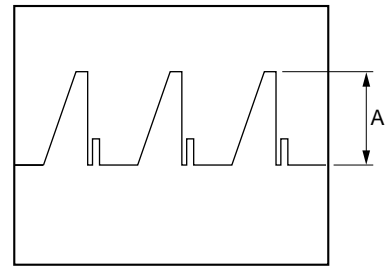
2. Setting the input level (BLACK)
   MSU menu operation:
   - Touch panel operation
     (Page 1/3) → | Black |

	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 = 5.0 ±0.5 mV
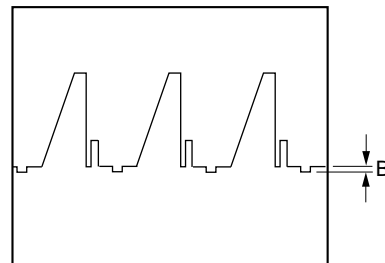
3. Repeat procedures 1 and 2 until specifications A and B
   are satisfied.
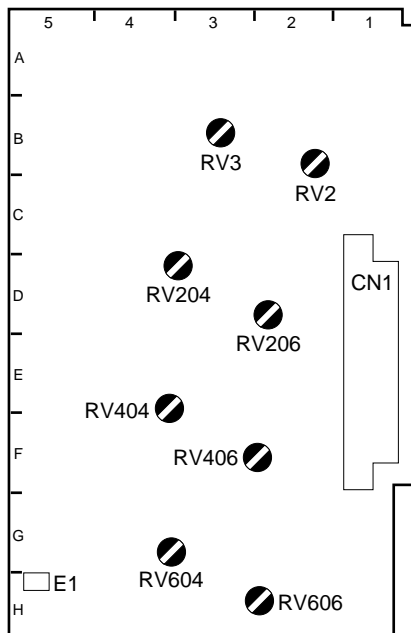
PR-200 BOARD (A SIDE)

4-6-2. Gamma Balance Adjustment

Equipment: Oscilloscope

Preparation

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

Adjustment Procedures

1. **MSU menu operation:**
   - PAINT button → ON (lit)
   - Touch panel operation
     $\triangle$ → (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: $A = B = 700 \pm 7$ mVp-p
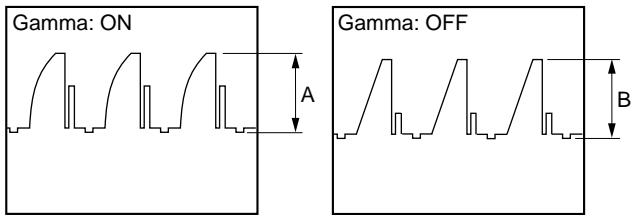
4-7. IE-44 Board Adjustment

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)
- ✪RV406/IE-44 → Mechanical center
- ✪RV408/IE-44 → Mechanical center
- ✪RV409/IE-44 → Mechanical center
- ✪RV407/IE-44 → Fully clockwise ↻

4-7-1. Settings of Input Level

Equipment: Oscilloscope

Adjustment Procedures

1. Extend the DL-65 board.
2. 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
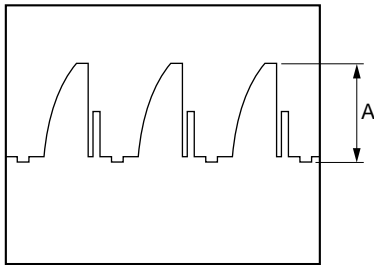
3. Setting the input level (BLACK)
   MSU menu operation:
   - Touch panel operation
     (Page 1/3) → Black

	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
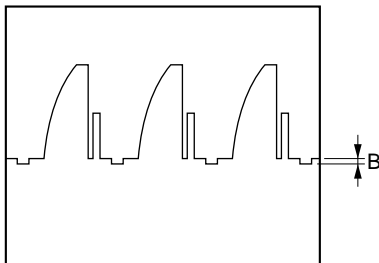
4-7-2. Video Level Adjustment

Equipment: Oscilloscope

Preparations

- Be sure to complete Section 4-7-1 "Settings of Input Level".
- Extend the IE-44 board.

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
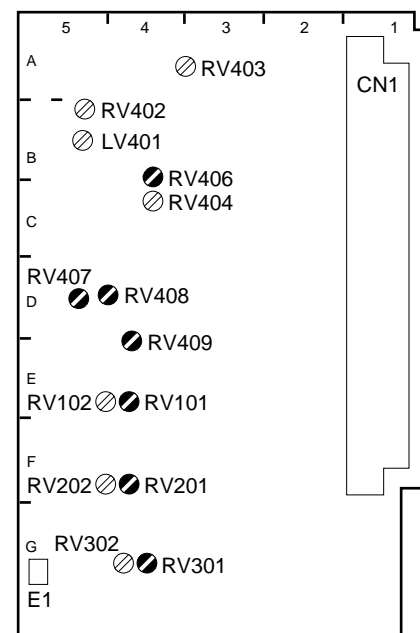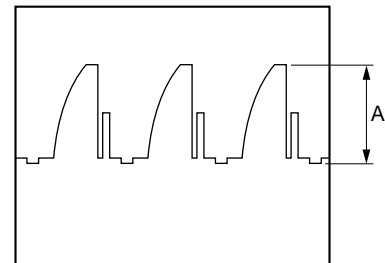
IE-44 BOARD (A SIDE)

4-7-3. 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
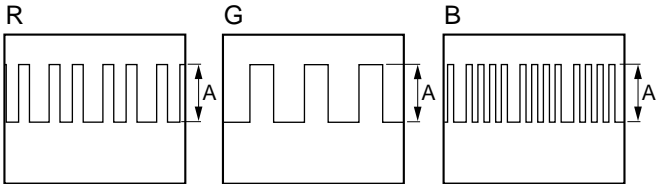
Resetting after Adjustment

・ Reset the setup menu as follows.
  MENU: SYS Config
  PAGE: Others
  ITEM: CHU Color Bars → Off
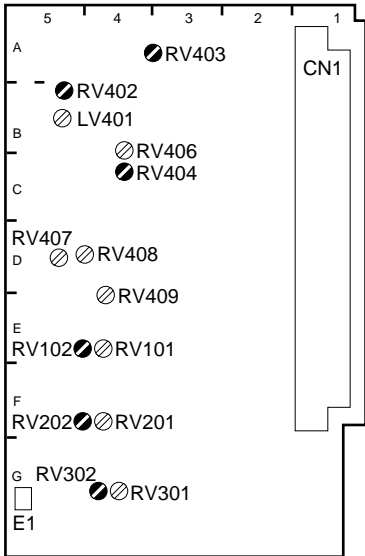
IE-44 BOARD (A SIDE)

4-7-4. 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.
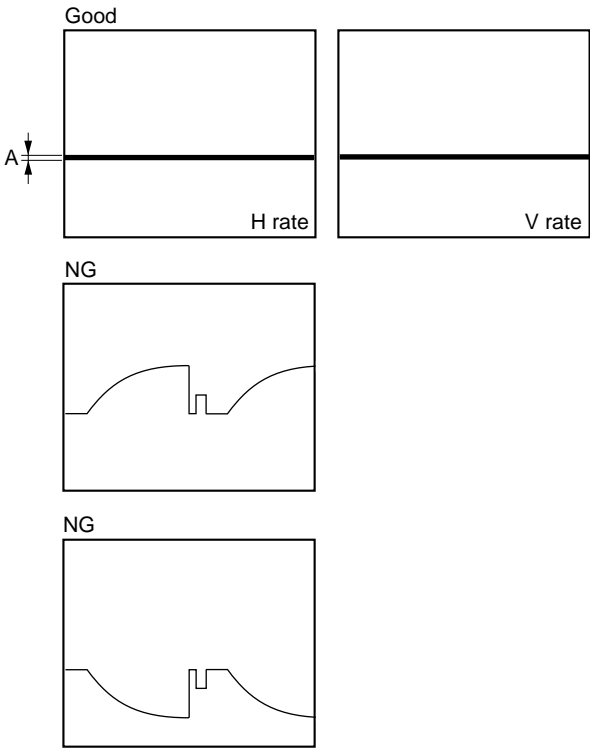
4-8. VDA-31A Board Adjustment

Preparations

- Setting for MSU-700
  MASTER GAIN → 0 dB
  KNEE OFF button → OFF (lit)
- Extend the VDA-31A board.
- Set the setup menu as follows.
  MENU: Maintenance
  PAGE: SDI/VTR Setup
  ITEM: Output Signal → RGB

  MENU: SYS Config
  PAGE: Others
  ITEM: CHU Color Bars → On

4-8-1. Input Level Check

Equipment: Oscilloscope

Adjustment Procedure

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

	Test Point
R-ch	TP18/extension board
G-ch	TP12/extension board
B-ch	TP6/extension board

Specification: $A = 700 \pm 7$ mVp-p
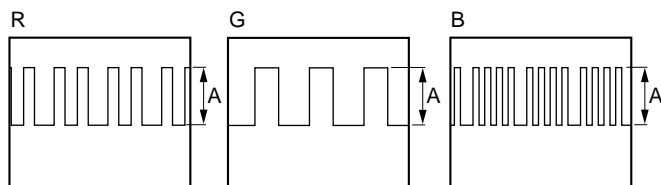
If out of specifications, be sure to readjust the IE-44 board.

4-8-2. RGB Level Adjustment

Equipment: Analog waveform monitor

Preparations

- Be sure to complete Section 4-8-1 "Input Level Check".
- Connect the waveform monitor to the VTR connector of the unit.
- Terminate the waveform monitor with 75Ω.

Adjustment Procedure

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

	Test Point/VTR connector	Adjustment Point/VDA-31A
R-ch	R/P$_R$ OUT (pin 5) R/P$_R$ GND (pin 6)	✒RV101 (on DU-24 board)
G-ch	G/Y OUT (pin 4) G/Y GND (pin 3)	✒RV201
B-ch	B/P$_B$ OUT (pin 7) B/P$_B$ GND (pin 8)	✒RV301(on DU-24 board)

Specification: $A = 700 \pm 7$ mVp-p
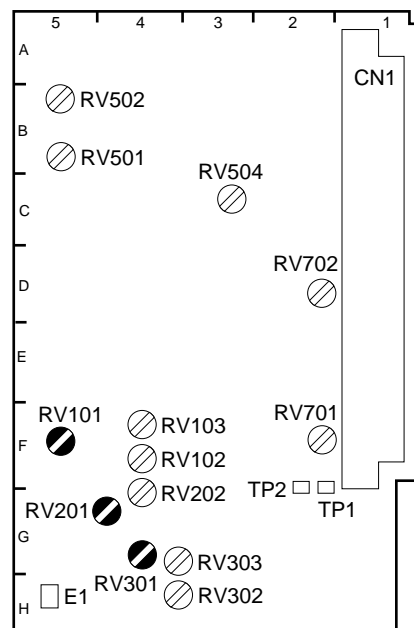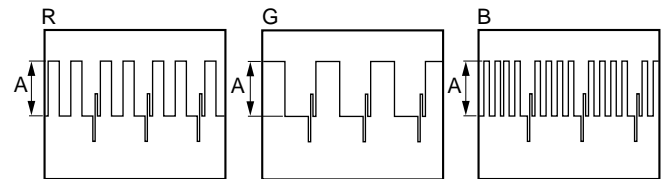
VDA-31A BOARD (A SIDE)

4-8-3. Y/P$_B$/P$_R$ Level Adjustment

Equipment: Analog waveform monitor

Preparations

· Be sure to complete Section 4-8-1 "Input Level Check".
· Set the setup menu as follows.
  MENU: Maintenance
  PAGE: SDI/VTR Setup
  ITEM: Output Signal → YPbPr
· Connect the waveform monitor to the VTR connector of the unit.
· Terminate the waveform monitor with 75Ω.

Adjustment Procedures

1. Adjust levels for Y-ch, P$_B$-ch and P/P$_R$-ch as follows.

	Test Point /VTR connector	Adj. Point /VDA-31A	Specification
Y-ch (GAIN)	G/Y OUT (pin 4) G/Y GND (pin 3)	❷RV202	A = 700 ±7 mVp-p
P$_B$-ch (GAIN)	B/P$_B$ OUT (pin 7)	❷RV303	A = 700 ±7 mVp-p
P$_B$-ch (OFFSET)	B/P$_B$ GND (pin 8)	❷RV302	B = 0 ±5 mV
P$_R$-ch (GAIN)	R/P$_R$ OUT (pin 5)	❷RV103	A = 700 ±7 mVp-p
P$_R$-ch (OFFSET)	R/P$_R$ GND (pin 6)	❷RV102	B = 0 ±5 mV
SYNC1 (GAIN)	G/Y OUT (pin 4) G/Y GND (pin 3)	❷RV701	C = 600 ±6 mV
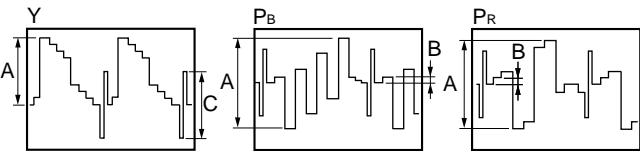
2. Set the setup menu as follows.
    MENU: Maintenance
    PAGE: SDI/VTR Setup
    ITEM: CN Output → RET
3. SYNC2 Gain Adjustment
    Test Points: G/Y OUT (pin 4) ,
                          G/Y GND (pin 3) /VTR connector
    Adjustment Point: ❷RV702/VDA-31A
    Specification: D = 600 ±6 mV
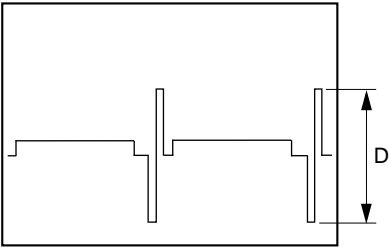
Resetting after Adjustment

· Return the menu setting to its previous state.
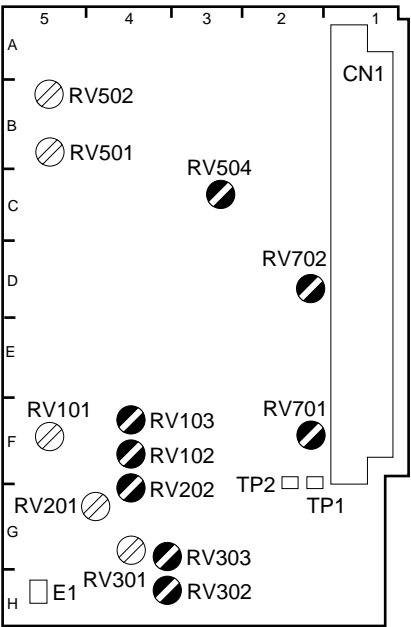
VDA-31A BOARD (A SIDE)

4-8-4. Character Offset Level Adjustment

Equipment: Analog waveform monitor
Test Point: TEST OUT connector

Preparations

· Connect the waveform monitor to the TEST OUT
  connector of the unit.
· Close the lens iris.
· DISPLAY switch/rear panel → ON
· Setting for MSU-700
  MASTER BLACK control → 0

Adjustment Procedure

Adjustment Point: ❷RV1/VDA-31A
Specification: Adjust so that no level difference
                    appears at portion A and that the
                    overshoot at portion B is minimized.
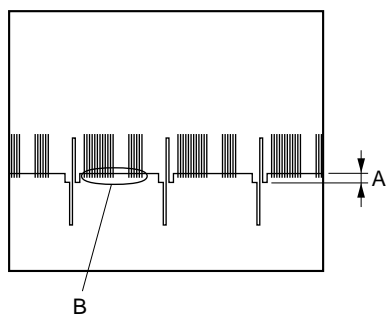
4-8-5. Character Level Adjustment

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
  CLOSE button → ON (lit)
· DISPLAY switch/rear panel → ON

Adjustment Procedure

Adjustment Point: ❷RV504/VDA-31A
Specification: A = 350 ± 10 mV
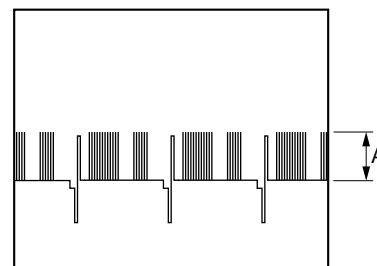
Resetting after Adjustment

· Return the switches to their previous positions.

4-9. DAD-19 Board Adjustment

4-9-1. A/D Gain, Clamp Level Adjusement

Equipment: Digital waveform monitor, or
Digital-to-Analog converter + Analog
waveform monitor

Note

This section explains adjustment through the use of a
digital waveform monitor. A digital waveform monitor
can replace an analog waveform monitor together with
digital-to-analog converter.

Preparations

1. Disconnect the optical cable from the camera.
2. Connect the AC-550/550CE to the DC IN connector of
   the unit to derive power.
3. Set the setup menu as follows.
   MENU: Maintenance
   PAGE: SDI/VTR Setup
   ITEM: Serial Output → On
4. Connect the digital waveform monitor to the SERIAL
   OUT connector of the unit.
5. Set the setup menu as follows.
   MENU: SYS Config
   PAGE: Others
   ITEM: CHU Color Bars → On

Adjustment Procedures

1. Y Clamp Level Adjustment
   Test Point: Y OUT/waveform monitor
   Adjustment Point: ❷RV3/DAD-19
   Specification: $A = 0 \pm 2$ mV
2. Y A/D Gain Adjustment
   Test Point: Y OUT/waveform monitor
   Adjustment Point: ❷RV1/DAD-19
   Specification: $B = 700 \pm 4$ mV
3. P_B Clamp Level Adjustment
   Test Point: P_B OUT/waveform monitor
   Adjustment Point: ❷RV9/DAD-19
   Specification: $C = 0 \pm 2$ mV

4. P_B A/D Gain Adjustment
   Test Point: P_B OUT/waveform monitor
   Adjustment Point: ❷RV8/DAD-19
   Specification: $D = 700 \pm 4$ mV
5. P_R Clamp Level Adjustment
   Test Point: P_R OUT/waveform monitor
   Adjustment Point: ❷RV6/DAD-19
   Specification: $E = 0 \pm 2$ mV
6. P_R A/D Gain Adjustment
   Test Point: P_R OUT/waveform monitor
   Adjustment Point: ❷RV5/DAD-19
   Specification: $F = 700 \pm 4$ mV
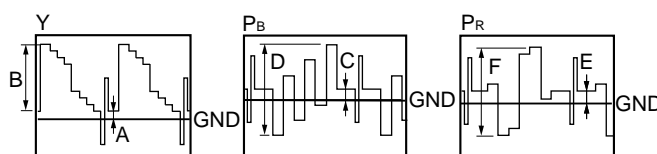
For your information
If both of the digital waveform monitor and digital-to-
analog converter are not available, proceed as follows.

Equipment: Oscilloscope
HDCU-700A with HKCU-702 installed
MSU-700 (or RCP)

Preparations

- Setting for MSU-700
  BARS button → OFF (dark)
- S1-5/ADA-50 (HKCU-702) → OFF ($Y/P_B/P_R$)
- Set the setup menu as follows.
  MENU: SYS Config
  PAGE: Others
  ITEM: CHU Color Bars → On

Adjustment Procedure

Adjust the clamp level and gain for each channel observing
the following test point.
The controls to be adjusted and specifications are the same
as when using the digital waveform monitor.

	Test Point
Y-ch	G/Y-1 connector/ADA-50 (HKCU-702)
P_B-ch	B/P_B-1 connector/ADA-50 (HKCU-702)
P_R-ch	R/P_R-1 connector/ADA-50 (HKCU-702)

Resetting after Adjustment

• Set the setup menu as follows.
  MENU: Maintenance
  PAGE: SDI/VTR Setup
  ITEM: Serial Output → Off

  MENU: SYS Config
  PAGE: Others
  ITEM: CHU Color Bars → Off

4-9-2. RET VIDEO D/A Gain Adjustment

Equipmetnt: Analog waveform monitor

Preparations

• Connect between the HD SDI OUT3 and HD SDI RET1 connectors on the SDI-11 board of the HDCU-700A.
• Setting for MSU-700
  BARS button → ON (lit)
• Set the setup menu as follows.
  MENU: Maintenance
  PAGE: SDI/VTR Setup
  ITEM: CN Output → RET
• Connect the waveform monitor to the VTR connector of the unit.

Adjustment Procedures

1. Y Level Adjustment
    Test Point: Y OUT/waveform monitor
    Adjustment Point: ❷RV2/DAD-19
    Specification: $A = 700 \pm 7$ mV
2. P_B Level Adjustment
    Test Point: P_B OUT/waveform monitor
    Adjustment Point: ❷RV7/DAD-19
    Specification: $B = 700 \pm 7$ mV
3. P_R Level Adjustment
    Test Point: P_R OUT/waveform monitor
    Adjustment Point: ❷RV4/DAD-19
    Specification: $C = 700 \pm 7$ mV
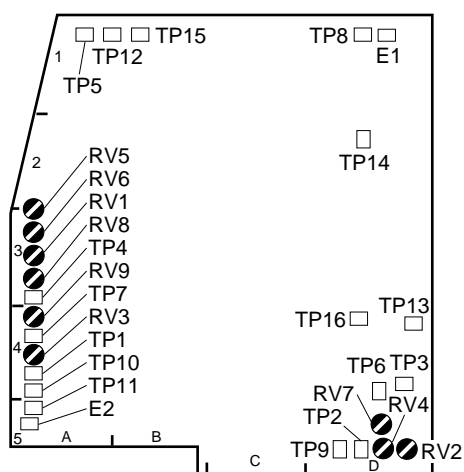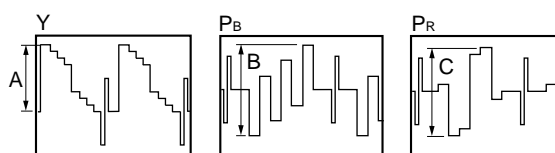
Resetting after Adjustment

• Set the setup menu as follows.
  MENU: Maintenance
  PAGE: SDI/VTR Setup
  ITEM: CN Output → Main

Note

TP2/DAD-19:RET Y (700 mV)
TP3/DAD-19:RET P_R (700 mV)
TP6/DAD-19:RET P_B (700 mV)

DAD-19 BOARD (A SIDE)

4-10. Overall Video Adjustment

Note

· Be sure to complete Section 4-8 "VDA-31A Board Adjustment".

4-10-1. 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

50m◊　　　ᴮ↓ᵂ　　10µS
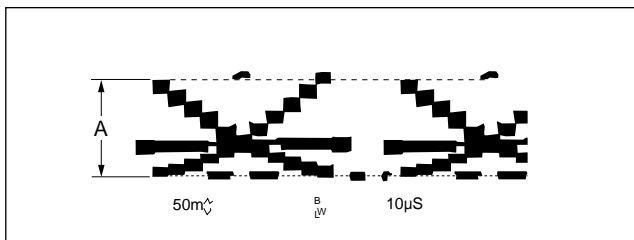
Resetting after Adjustment

· Return the switches to their previous positions.

4-10-2. 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.
· 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.)
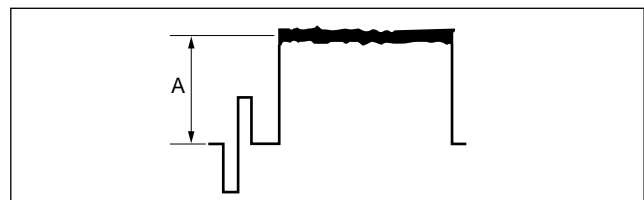
Adjustment Procedures

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. R button/rear panel → ON

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


```
(H SAW)          (H PARA)
```

```
(V SAW)          (V PARA)
```
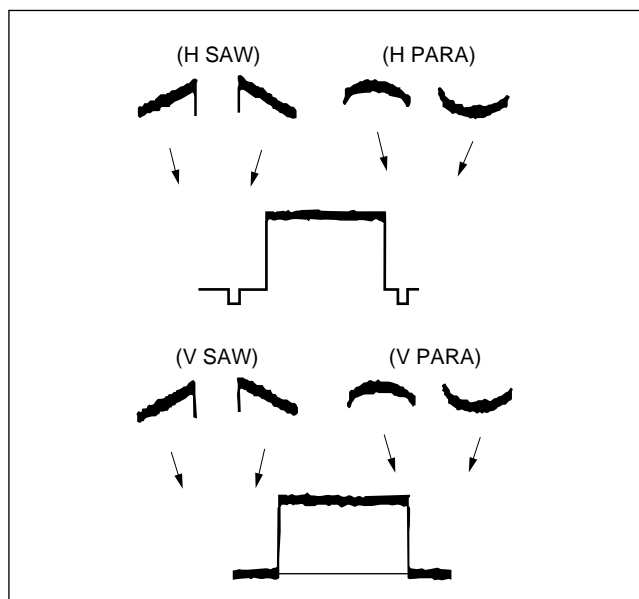
5. R button/rear panel → OFF
   G button/rear panel → ON
   Adjust for G-ch in the same manner.
6. G button/rear panel → OFF
   B button/rear panel → ON
   Adjust for B-ch in the same manner.
7. Adjust the white balance.
   WHITE button/MSU-700 → ON (lit)

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

Resetting after Adjustment

- R/G/B button/rear panel → OFF

4-10-3. 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.
・ Close the lens iris.

Adjustment Procedures

1. R button/rear panel → ON
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 button/rear panel → OFF
    G button/rear panel → ON
    Adjust for G-ch in the same manner.
4. G button/rear panel → OFF
    B button/rear panel → ON
    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

Resetting after Adjustment

・ R/G/B button/rear panel → OFF

4-10-4. Flare Adjustment

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
   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 push up the MENU
   SELECT switch to ENTER for ten seconds while "?" is
   blinking. Then, message "REF Clear" will be displayed.)

Adjustment Procedures

1. R button/rear panel → ON
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.
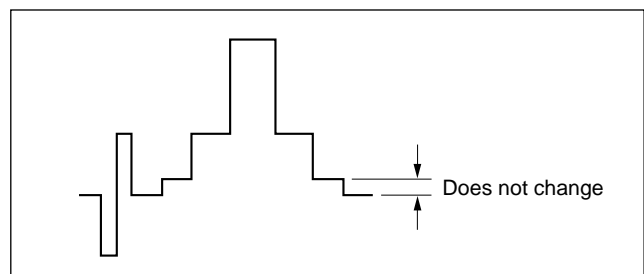
3. R button/rear panel → OFF
   G button/rear panel → ON
   Adjust for G-ch in the same manner.
   (Adjustment Item: G)
4. G button/rear panel → OFF
   B button/rear panel → ON
   Adjust for B-ch in the same manner.
   (Adjustment Item: B)

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
· R/G/B button/rear panel → OFF
· TEST 2 button/MSU-700 → OFF (dark)

4-10-5. 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 fluctuate even if the
  gamma is turned on and off using the GAMMA OFF
  button on the MSU-700.
  If the level fluctuates, readjust the gamma balance
  referring to Section 4-6-2.

4-10-6. 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
      $\triangle$ → (Page 2/3) → ⎡Gamma⎤
    Adjustment Item: Master
    Test Point: TP11/extension board
    Specification: A = 350 ±4 mV
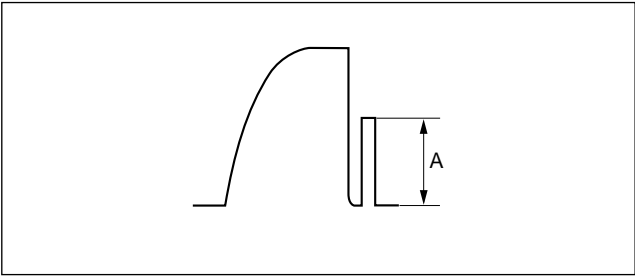
2. Adjust the white balance.
    WHITE button/MSU-700 → ON (lit)
3. Adjust the R gamma.
    MSU menu operation:
    · PAINT button → ON (lit)
    · Touch panel operation
      $\triangle$ → (Page 2/3) → ⎡Gamma⎤
    Adjustment Item: R
    Test Point: TP17/extension board
    Specification: A = 350 ±4 mV
4. Adjust the B gamma.
    MSU menu operation:
    · PAINT button → ON (lit)
    · Touch panel operation
      $\triangle$ → (Page 2/3) → ⎡Gamma⎤
    Adjustment Item: B
    Test Point: TP5/extension board
    Specification: A = 350 ±4 mV

4-10-7. 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
      $\triangle$ → (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
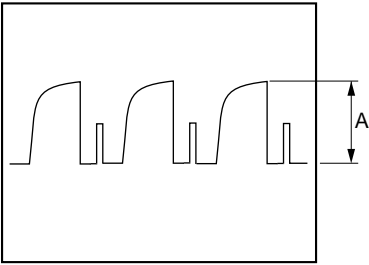
4. **MSU menu operation:**
    ·   Touch panel operation
        (Page 2/3) → ⎡Knee Slope⎤

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 = $756 \, ^{+0}_{-7}$ mV p-p
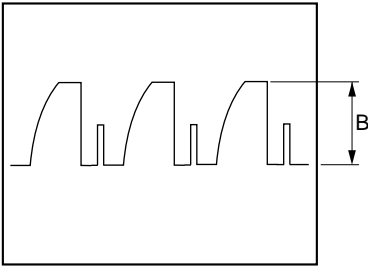
Resetting after Adjustment

- MASTER GAIN/MSU-700 → 0 dB
- KNEE OFF button/MSU-700 → OFF (lit)
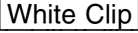
4-10-8. White Clip Level Adjustment

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
     $\boxed{\triangle}$ → (Page 2/3) → $\boxed{\text{White Clip}}$
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 = $756 \, ^{+0}_{-7}$ mV p-p
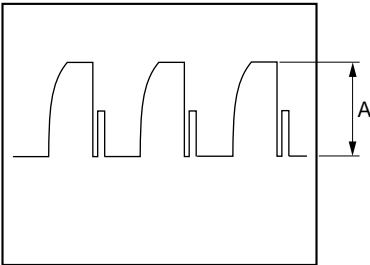
Resetting after Adjustment

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

4-10-9. 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
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.
- 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)
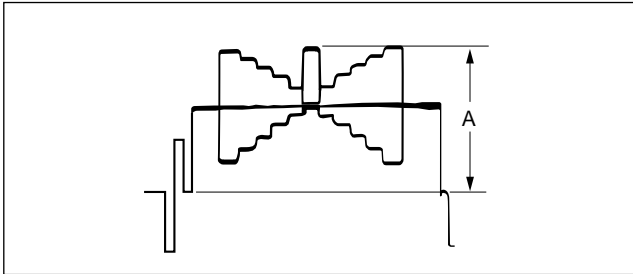
Adjustment Procedures

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 V detail
                     amounts (white) to be added shall
                     be equal. (from 20 to 40)
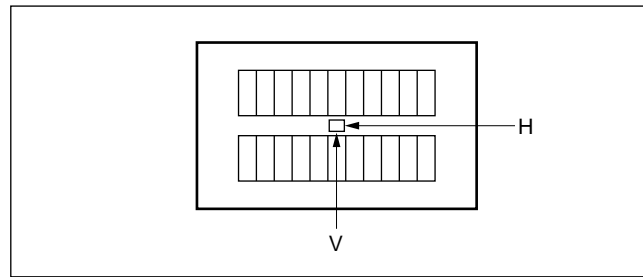
3. **MSU menu operation:**
   - Touch panel operation
     | Detail 2 |
   - Set Frequency to 99.
4. Adjustment Point: ◖LV401/IE-44
   Specification: The edge width at each end of the
                       center white portion shall be equal.
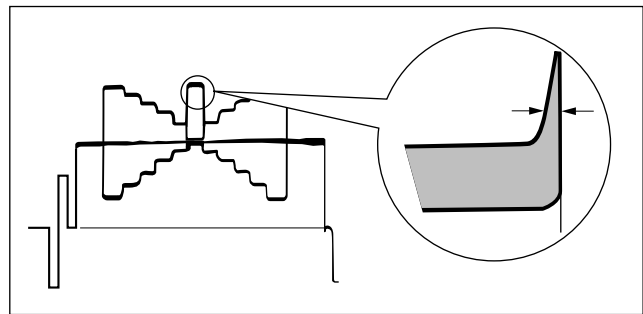
Resetting after Adjustment

MSU menu operation:
- Touch panel operation
  | Detail 2 |
  Set Frequency to 0.
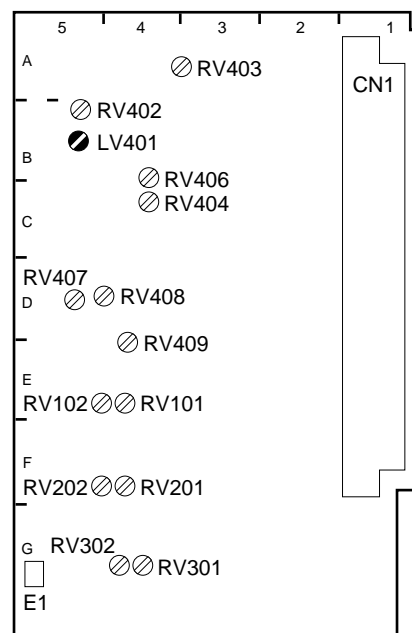
IE-44 BOARD (A SIDE)

4-10-10. Detail Level Adjustment

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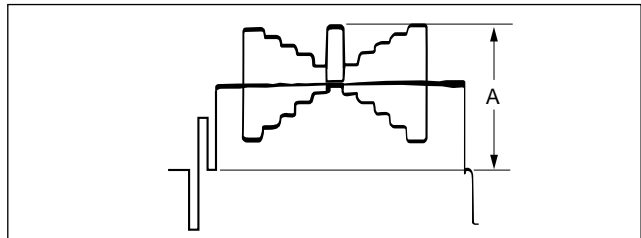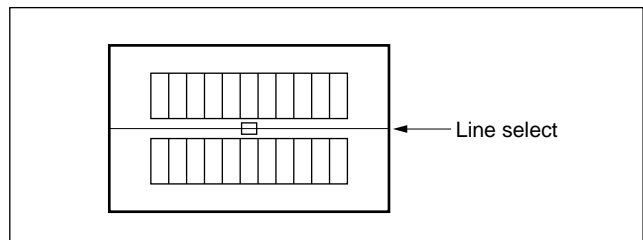
Preparations

· Setting for MSU-700
DETAIL OFF button → ON (dark)
KNEE OFF button → OFF (lit)
· Connect the waveform monitor to the VTR connector.
· 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.

4-10-11. Crispening Adjustment

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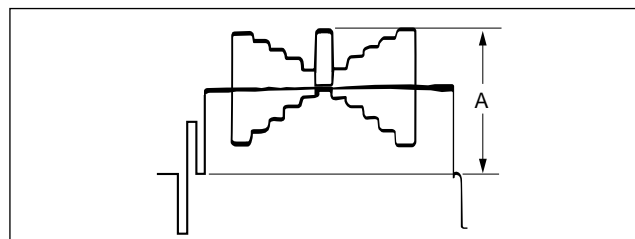Object: Grayscale Chart

Note

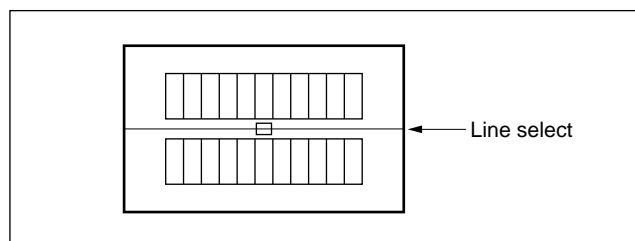Perform this adjustment to suit the customer's preferences if required.

Preparations

· Setting for MSU-700
DETAIL OFF button → ON (dark)
· Connect the waveform monitor to the VTR connector.
· 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)
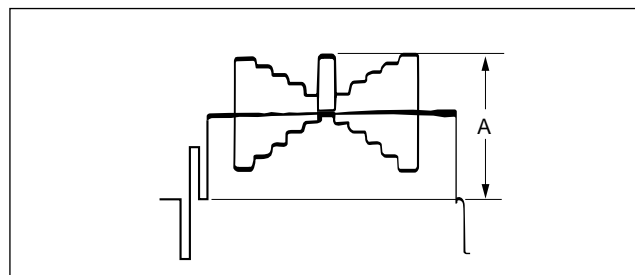
Adjustment Procedures

1. Adjust the white balance.
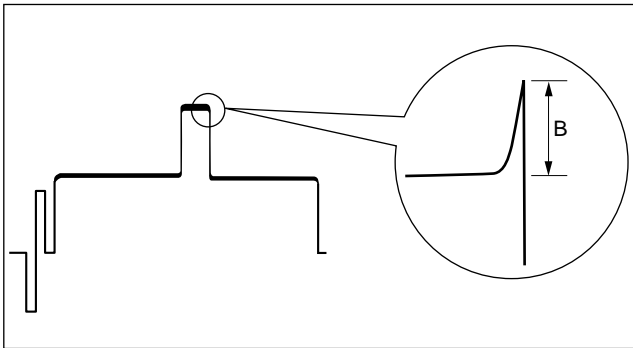   WHITE button/MSU-700 → ON (lit)
2. Adjust the crispening level.
   MSU menu operation:
   · PAINT button → ON (lit)
   · Touch panel operation
     (Page 1/3) → Detail → Detail 1
   Adjustment Item: Crispening
   Specification: Set Crispening to −99 once. And turn slowly for increment until the noise at the black level of the waveform is just decreased, or until an appropriate crispening level is obtained.

4-10-12. Level Dependent 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
  DETAIL OFF button → ON (dark)
  LEVEL DEP OFF button → ON (dark)
・ Connect the waveform monitor to the VTR connector.
・ 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)
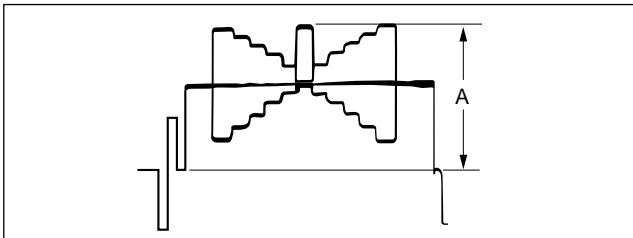
Adjustment Procedure

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.
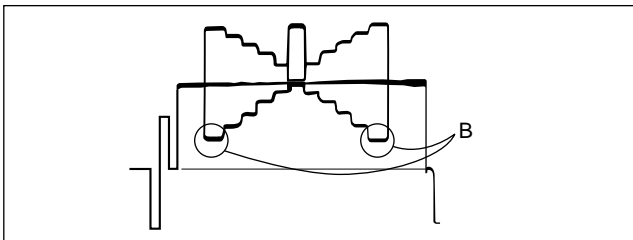
Note

After adjustment is complete, be sure to perform Section 4-10-9 "H/V Ratio Adjustment".

4-10-13. Detail Frequency 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.
・ 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.
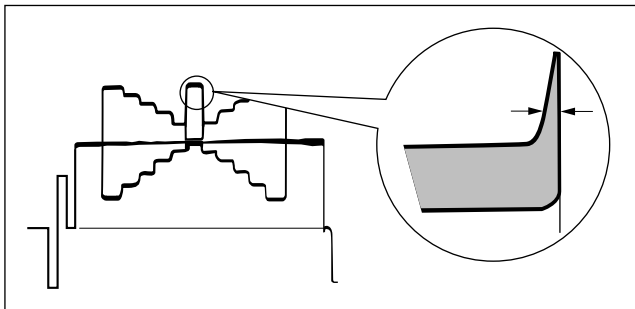
Note

After adjustments are complete, be sure to perform Section 4-10-9 "H/V Ratio Adjustment".

4-10-14. 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.
- 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 portions C for
                      the desired clip level.
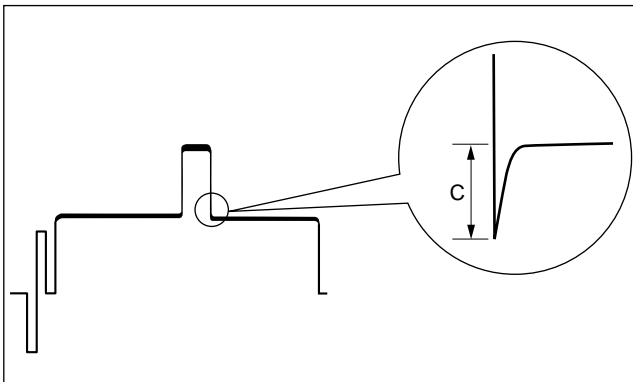
4-10-15. Auto-iris Adjustment

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.
- 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 adjust-
   ment.
   MSU menu operation:
   Adjustment Item: Level
   Specification: A = 700 ± 7 mV
                      (terminated with 75 Ω)
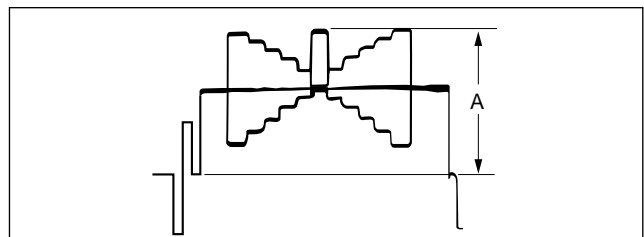
4-10-16. File Store

After adjustments described in Section 4-10 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.

4-11. 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
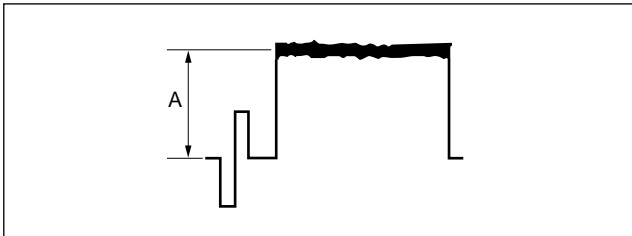
Adjustment Procedures

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 from ND 1 to ND 2 and adjust the white balance for the ND 2 filter.
5. Switch the filter from ND2 to ND3 to ND4 to ND5, 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

4-12. Audio System Adjustment

Note

Properly connect measuring equipment as shown in the figure when adjusting.

Connection example
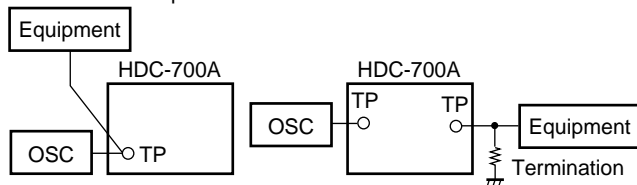
4-12-1. INCOM 1 Side Tone Adjustment

Note

This is temporary adjustment for repair. In fact, perform adjustment to suit the customer's preferences.
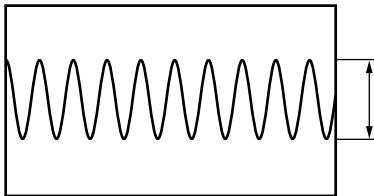
Preparations

- Extend the AU-203 board with the extension board EX-512.
- Extend the AT-103 board of the HDCU with the extension board BKP-7900.
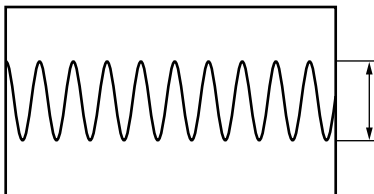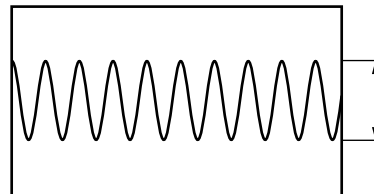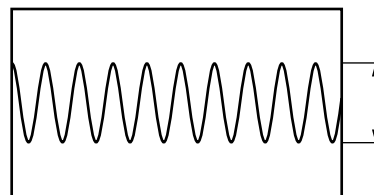- S16/AT-103 → 0 dB
- MIC 1 ON/OFF switch/camera → ON

Adjustment Procedures

1. Feed a 1 kHz sine wave signal from the audio generator to pins A57 (X), B57 (Y) and A56 (G) on the extension board BKP-7900.
2. Test Point: TP65/EX-512
   Adjustment Point: ◕Output level control/
                          audio generator
   Specification: 220 ± 10 mVp-p (-20.0 ± 0.4 dBu)
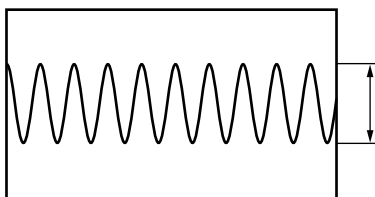
3. Test Point: TP35/EX-512
   Adjustment Point: ◕INCOM 1 level control/camera
   Specification: 2.2 ± 0.1 Vp-p (0 ± 0.4 dBu)
4. Disconnect the audio generator.

5. S2/AU-203 → CM
   S4/AU-203 → 0
6. Feed a 1 kHz, 220 mVp-p sine wave signal from the audio generator to pins 26 (X), 25 (Y) and 24 (G) on the EX-512 board.
7. Test Point: TP35/EX-512
   Adjustment Point: ◕RV2/AU-203
   Specification: 220 ± 10 mVp-p (-20 ± 0.4 dBu)
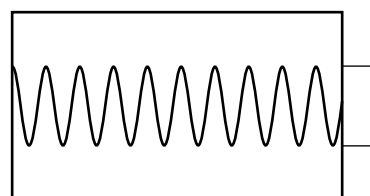
Resetting after Adjustment

- After adjustments are complete, return the switches to their previous positions.
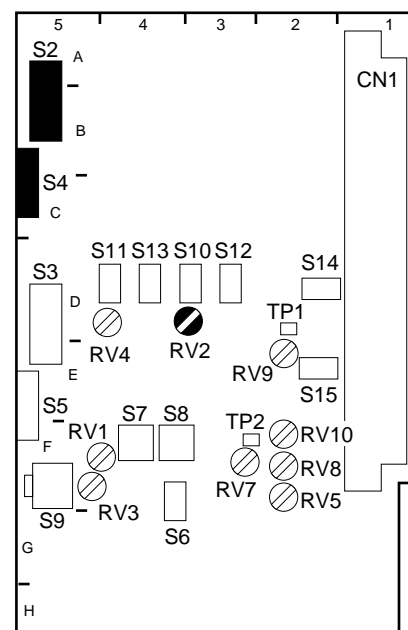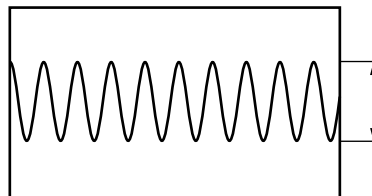

AU-203 BOARD (A SIDE)
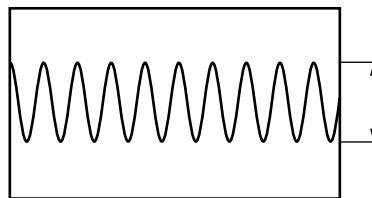
4-12-2. RTS 1 CANCEL Adjustment

Preparations

- Extend the AU-203 board with the extension board EX-512.
- Extend the AT-103 board of the HDCU with the extension board BKP-7900.
- S16/AT-103 → 0 dB
- S14/AU-203 → RTS

Adjustment Procedures

1. Feed a 1 kHz sine wave signal from the audio generator to pins A57 (X), B57 (Y) and A56 (G) on the extension board BKP-7900.
2. Test Point: TP65/EX-512
   Adjustment Point: ❷Output level control/
                     audio generator
   Specification: 220 ±10 mVp-p (−20.0 ±0.4 dBu)

3. Test Point: TP35/EX-512
   Adjustment Point: ❷INCOM 1 level control/camera
   Specification: 2.2 ±0.1 Vp-p (0 ±0.4 dBu)

4. Test Point: TP1/AU-203
   Adjustment Point: ❷RV9/AU-203
   Specification: Minimize the amplitude.
                      (20 mVp-p or below)

Resetting after Adjustment

- After adjustment is complete, return the switches to their previous positions.

4-12-3. INCOM 2 Side Tone Adjustment

Note

This is temporary adjustment for repair. In fact, perform adjustment to suit the customer's preferences.

Preparations

- Extend the AU-203 board with the extension board EX-512.
- Extend the AT-103 board of the HDCU with the extension board BKP-7900.
- S17/AT-103 → 0 dB
- MIC 2 ON/OFF switch/camera → ON

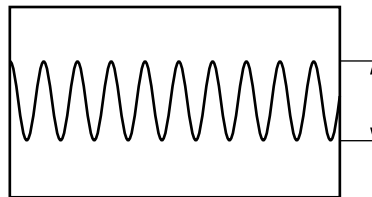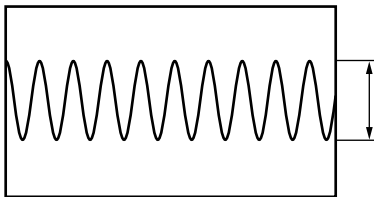### Adjustment Procedures

1. Feed a 1 kHz sine wave signal from the audio generator to pins A55 (X), B55 (Y) and A54 (G) on the extension board BKP-7900.
2. Test Point: TP63/EX-512
   Adjustment Point: ❷Output level control/
                     audio generator
   Specification: 220 ±10 mVp-p (−20.0 ±0.4 dBu)

3. Test Point: TP38/EX-512
   Adjustment Point: ❷INCOM 2 level control/camera
   Specification: 2.2 ±0.1 Vp-p (0 ±0.4 dBu)

4. Disconnect the audio generator.
5. S3/AU-203 → CM
   S5/AU-203 → 0
6. Feed a 1 kHz, 220 mVp-p sine wave signal from the audio generator to pins 27 (X), 28 (Y) and 29 (G) on the EX-512 board.

7. Test Point: TP38/EX-512
    Adjustment Point: ❂RV4/AU-203
    Specification: 220 ± 10 mVp-p (−20.0 ± 0.4 dBu)
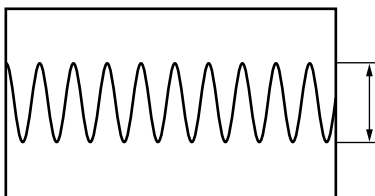
Resetting after Adjustment

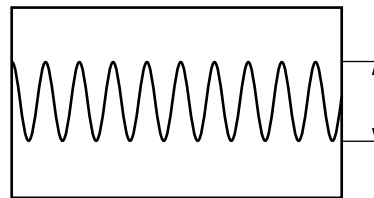· After adjustments are complete, return the switches to their previous positions.
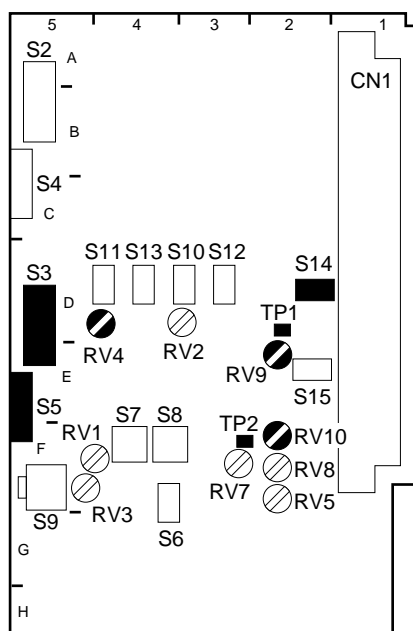
4-12-4. RTS 2 CANCEL Adjustment

Preparations

· Extend the AU-203 board with the extension board EX-512.
· Extend the AT-103 board of the HDCU with the extension board BKP-7900.
· S17/AT-103 → 0 dB
· S14/AU-203 → RTS

Adjustment Procedures

1. Feed a 1 kHz sine wave signal from the audio generator to pins A55 (X), B55 (Y) and A54 (G) on the extension board BKP-7900.
2. Test Point: TP63/EX-512
    Adjustment Point: ❂Output level control/
                            audio generator
    Specification: 220 ± 10 mVp-p (−20.0 ± 0.4 dBu)

3. Test Point: TP38/EX-512
    Adjustment Point: ❂INCOM 2 level control/camera
    Specification: 2.2 ± 0.1 Vp-p (0 ± 0.4 dBu)

4. Test Point: TP2/AU-203
    Adjustment Point: ❂RV10/AU-203
    Specification: Minimize the amplitude.
                            (20 mVp-p or below)

Resetting after Adjustment

· After adjustments are complete, return the switches to their previous positions.

AU-203 BOARD (A SIDE)
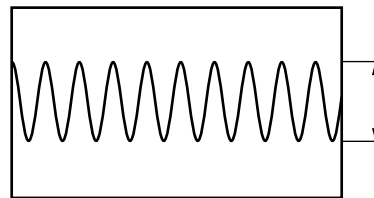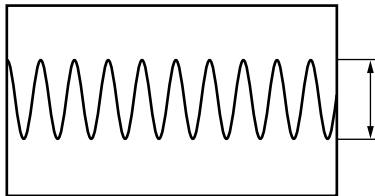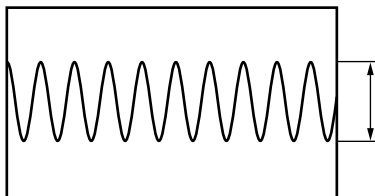
4-12-5. TRACKER (T) Level Adjustment

Preparations

· Extend the AU-203 board with the extension board
  EX-512.
· S6/AU-203 → 0

Adjustment Procedures

1. Feed a 1 kHz, 220 mVp-p (−20 dBu) sine wave signal
   from the audio generator to pins 32 (X), 31 (Y) and 30
   (G) on the EX-512 board.
2. Test Point: TP73/EX-512
   Adjustment Point: ❷RV1/AU-203
   Specification: 220 ±10 mVp-p (−20.0 ±0.4 dBu)

Resetting after Adjustment

· After adjustment is complete, return the switches to their
  previous positions.

4-12-6. VTR INCOM Level Adjustment

Preparations

· Extend the AU-203 board with the extension board
  EX-512.
· S2/AU-203 → CM
· S4/AU-203 → 0

Adjustment Procedures

1. Feed a 1 kHz, 220 mVp-p (−20 dBu) sine wave signal
   from the audio generator to pins 26 (X), 25 (Y) and 24
   (G) on the EX-512 board.
2. VTR OUT Level Adjustment
   Test Point: TP11/EX-512
   Adjustment Point: ❷RV5/AU-203
   Specification: 220 ±10 mVp-p (−20.0 ±0.4 dBu)

3. S7-4/AU-203   → ON
4. VTR BALANCE Adjustment
   Test Point: TP78/EX-512
   Adjustment Point: ❷RV8/AU-203
   Specification: Minimize the amplitude.
                        (30 mVp-p or below)

Resetting after Adjustment

· After adjustments are complete, return the switches to
  their previous positions.

4-12-7. VTR MONITOR Level Adjustment

Preparations

- Extend the AU-203 board with the extension board EX-512.
- Extend the AT-103 board of the HDCU with the extension board BKP-7900.
- S17/AT-103 → 0 dB
- MIC 2 ON/OFF switch/camera → ON
- S9/AU-203 → ON
- S8-2/AU-203 → ON

Adjustment Procedures

1. Feed a 1 kHz, sine wave signal from the audio generator to pins A55 (X), B55 (Y) and A54 (G) on the extension board BKP-7900.
2. Test Point: TP63/EX-512
   Adjustment Point: ❷Output level control/
                                   audio generator
   Specification: 220 ± 10 mVp-p (-20.0 ± 0.4 dBu)

3. Test Point: TP38/EX-512
   Adjustment Point: ❶INCOM 2 level control/camera
   Specification: 2.2 ± 0.1 Vp-p (0 ± 0.4 dBu)

4. Disconnect the audio generator.
5. S3/AU-203 → CM
   S5/AU-203 → 0
6. Feed a 1 kHz, 220 mVp-p (-20 dBu) sine wave signal from the audio generator to pins 27 (X), 28 (Y) and 29 (G) on the EX-512 board.

7. Test Point: TP38/EX-512
   Adjustment Point: ❷RV3/AU-203
   Specification: 220 ± 10 mVp-p (-20.0 ± 0.4 dBu)

Resetting after Adjustment

- After adjustments are complete, return the switches to their previous positions.

AU-203 BOARD (A SIDE)

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.