SONY

FIBER COLOR CAMERA

HDC3100

TRIAX COLOR CAMERA

HDC3170

SERVICE MANUAL
1st Edition

⚠ 警告

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

⚠ WARNING

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

⚠ WARNUNG

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

⚠ AVERTISSEMENT

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

Model Name	**Serial No.**
HDC3100 (SY): LEMO Optical Fiber Connector	10001 and higher
HDC3100 (SY): Tajimi Optical Fiber Connector	30001 and higher
HDC3170 (SY): King Triax Connector	100001 and higher
HDC3170 (SY): Fischer Triax Connector	400001 and higher

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

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

CAUTION

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

CAUTION

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

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

This HD COLOR CAMERA is classified as a CLASS 1 LASER PRODUCT.

注意

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

CAUTION

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

ATTENTION

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

VORSICHT

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

FÖRSIKTIGHET!

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

PAS PÅ

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

HUOMIO

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

FORSIKTIG

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

注意

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

Table of Contents

Section 1
Service Overview

1-1. Checking before Installation

1-1-1. Checking before Installation

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

ROM

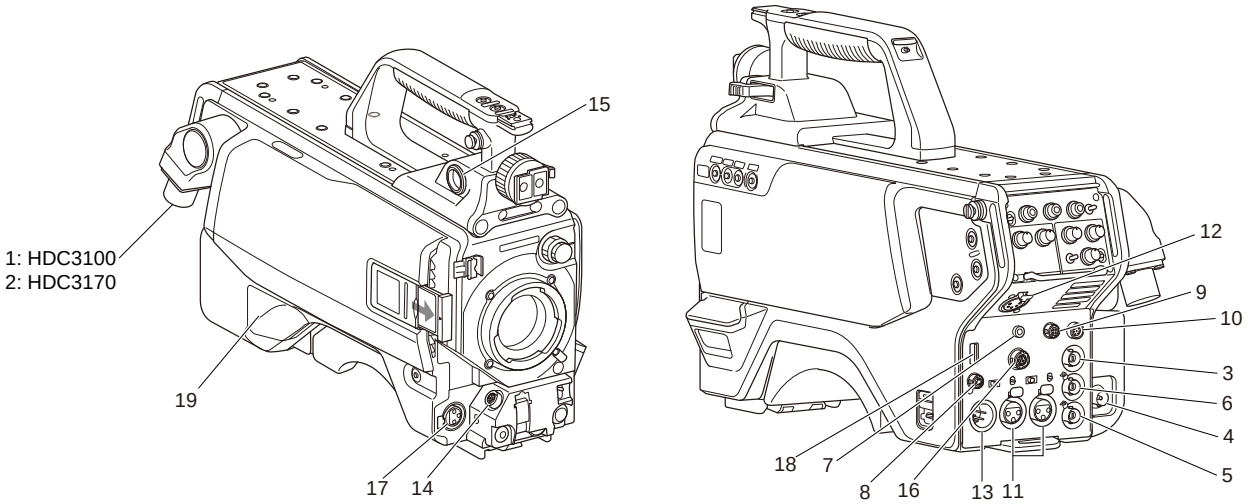
Peripheral Equipment	Board Name	Ref. No.	ROM Version
CNU-700	AT-89 board or AT-89A board	IC4, IC5	Ver. 3.43 and higher

Software

Peripheral Equipment	Board Name	Software Version
RCP-1000/1001	MPU-152 board	Ver. 2.50 and higher
RCP-1500/1501/1530	MPU-153 board	Ver. 3.20 and higher
HDCU2000/2500	AT-167A board	Ver. 3.30 and higher
MSU-1000	MPU-150 board	Ver. 3.20 and higher
MSU-1500	MPU-151 board	Ver. 3.20 and higher
HDCU3100/3170	AT-195 board	Ver. 2.05 and higher

1-2. Connectors and Cables

1-2-1. Connector Input/Output Signals



1. CCU

3.7125 Gbps/3.70889 Gbps/1.485 Gbps/
1.4835 Gbps Serial

2. CCU

UK: King Triax connector
UF: Fischer Triax connector

3. PROMPTER/GENLOCK

BNC type (1)
1 Vp-p 75 Ω

4. SDI 1

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

5. SDI-MONI

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

6. TEST OUT

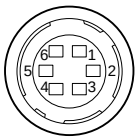
BNC type 75 Ω, 1.0 V p-p

7. EARPHONE

4 pole stereo mini jack

8. RET CTRL

6-pin, Female

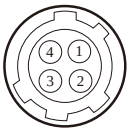


- External View -

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

9. DC OUT

4-pin, Female



- External View -

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

10. REMOTE

8-pin, Female

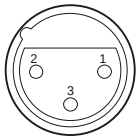
- External View -

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

TX0(+)
TX0(-)
RX0(+)
RX0(-)
UNREG-GND
VIDEO
OUT
—
75Ω,1.0Vp-p
GND for UNREG OUT

11. AUDIO IN CH1/CH2

XLR 3-pin, Female



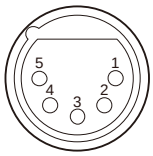
- External View -

(0 dBu = 0.775 Vrms)

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

12. INTERCOM

XLR 5-pin, Female



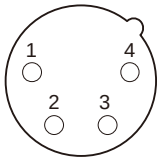
- External View -

(0 dBu = 0.775 V rms)

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

13. DC IN

XLR 4-pin, Male



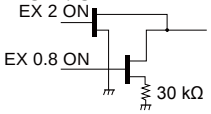
- External View -

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

14. LENS

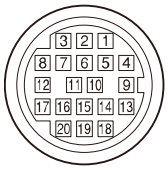
12-pin, Female

- External View -

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

15. VF

20-pin, Female



- External View -

No.	Signal	I/O	Specifications
1	S-DATA	IN/ OUT	TTL level
2	~~NC~~	-	~~No connection~~
3	~~NC~~	-	~~No connection~~
4	SCK	OUT	TTL level
5	NC	-	No connection
6	NC	-	No connection
7	NC	-	No connection
8	G TALLY	OUT	ON: 5 V, OFF: GND
9	NC	-	No connection
10	NC	-	No connection
11	NC	-	No connection
12	Y VIDEO	OUT	1.0 V p-p, Zo = 75 Ω
13	VIDEO GND	-	GND for VIDEO
14	Pb VIDEO	OUT	±0.35 V p-p, Zo = 75 Ω
15	Pr VIDEO	OUT	±0.35 V p-p, Zo = 75 Ω
16	~~NC~~	-	~~No connection~~
17	R TALLY	OUT	ON: 5 V, OFF: GND
18	NC	-	No connection
19	UNREG GND	-	GND for UNREG
20	UNREG	OUT	+10.5 V to +17 V

Y TALLY
POWER
OUT
OUT
ON: 5 V OFF:GND
ON:OPEN OFF:GND
Reserve (REC (L))
OUT
—

16. TRACKER

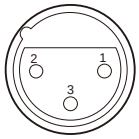
12-pin, Female

- External View -

No.	Signal	I/O	Specifications
1	TRACKER LEFT	OUT	TRACKER RECEIVE/PGM -20 dBu unbalanced
2	GND (TALK)	-	GND for TRACKER TALK
3	GND (RECEIVE/PGM /TL)	-	GND for RECEIVE/PGM/TL
4	TRACKER RIGHT	OUT	TRACKER RECEIVE/PGM -20 dBu unbalanced
5	UNREG	OUT	+12 V (+10.5 to +17.0 V)
6	GND (UNREG)	-	GND for UNREG
7	TRACKER TALK (X)	IN	TRACKER TALK 0 dBu/–20 dBu, High impedancebalanced
8	TRACKER TALK (Y)	IN	
9	G TALLY	OUT	ON: GND, OFF: High impedance (Open collector)
10	R TALLY	OUT	ON: GND, OFF: High impedance (Open collector)
11	TRACKER2	OUT	TRACKER RECEIVE/PGM –20 dBu unbalanced
12	Y TALLY	OUT	ON: GND, OFF: High impedance (Open collector)

17. MIC 1 IN

XLR 3-pin, Female



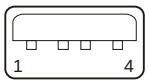
- External View -

(0 dBu = 0.775 Vrms)

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

18. USB

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

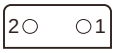


- External View -

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

19. DC OUT

2-pin, Female

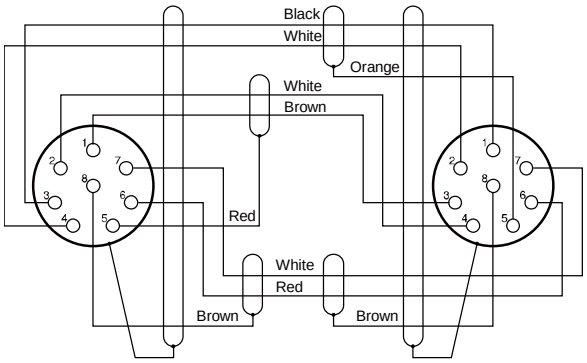


- External View -

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

1-2-2. Wiring Diagrams for Cables

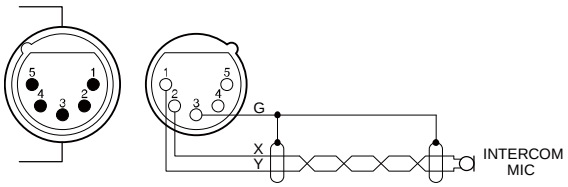
CCA-5 Cable (for REMOTE connector)



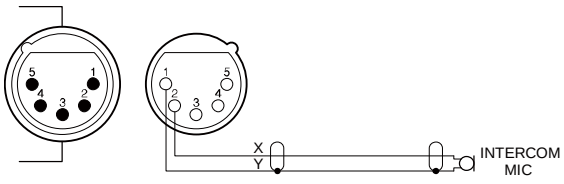
— 8P CONNECTOR (MALE) —
(WIRING SIDE)

INTERCOM MIC Cable

1. Balance (HEAD SET menu UNBAL: OFF)



2. Unbalance (HEAD SET menu UNBAL: ON)



1-2-3. Connection Connectors/Cables

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

Connector Name	Connector/Cable
• SDI 1 • SDI-MONI • TEST OUT	Plug, BNC (Part No.: 1-569-370-12) or 5C-FB coaxial cable/ Recommendation made by Fujikura
• AUDIO IN CH1/CH2 • MIC 1 IN (XLR type 3-pin, Female)	XLR, 3-Pin Male (Part No.: 1-508-084-00) or ITT Cannon XLR-3-12C or equivalent
RET CTRL (6-pin, Female)	Plug, 6-Pin Male (Part No.: 1-560-078-00) or HIROSE HR10-7PA-6P or equivalent
DC OUT (4-pin, Female)	Plug, 4-Pin Male (Part No.: 1-566-425-11) or HIROSE HR10A-7P-4P or equivalent
INTERCOM (XLR type 5-pin, Female)	XLR, 5-Pin Male (Part No.: 1-508-370-11) or ITT Cannon XLR-5-12C or equivalent
DC OUT (2-pin, Female)	Power tap (OE) ANTONBAUER 33710 or equivalent
DC IN (XLR type 4-pin, Male)	XLR, 4-Pin Female (Part No.: 1-508-362-00) or ITT Cannon XLR-4-11C or equivalent, or Cable assembly (Part No.: 1-551-577-00) (Supplied with AC-550)
REMOTE (8-pin, Female)	• Plug, 8-Pin Male (Part No.: 1-766-848-11) or CCA-5 cable assembly (CCA-5-10 (10 m) /CCA-5-3 (3m)) (optional)*1*2 • REMOTE cable (Part No.: 1-783-372-11) (supplied with RM-B150 , 10 m)*1*2*3
TRACKER (12-pin, Female)	Connector, Round Type 12P (Part No.: 1-691-190-13)

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

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

*3: Use of REMOTE cable enables to monitor video signals. (The pin 8 is available for the video signal line.) The down-converted SD signal is output.

1-2-4. Note in Connecting CCU Connector

Tip

This section is required for the following models.

- HDC3100

This section is not required for HDC3170.

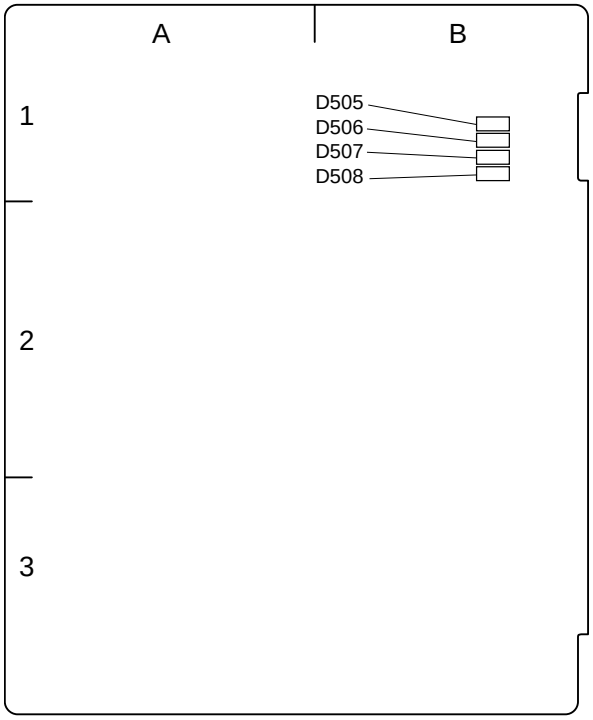
It is recommendable to clean the optical contact portions mentioned below before connecting this unit to the camera control unit.

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

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

1-3. Functions of Onboard Switches and LED Indicators

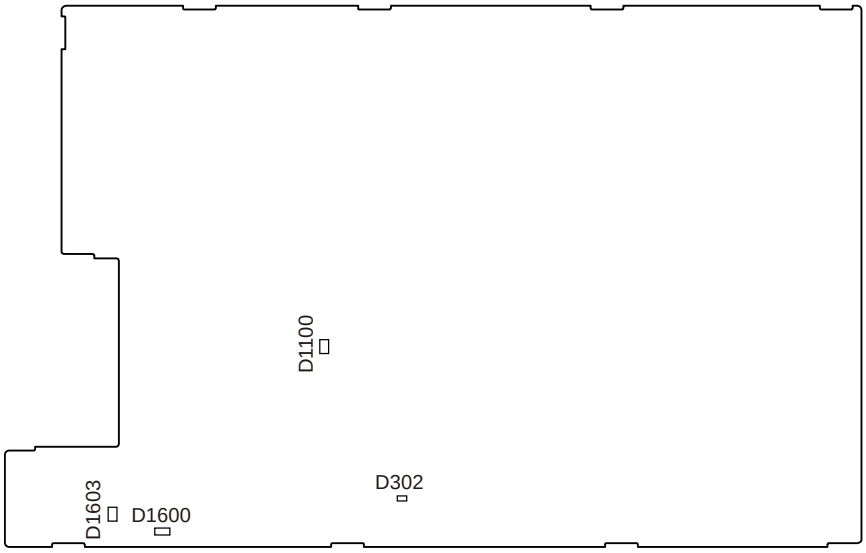
1-3-1. AT-195 Board



AT-195 BOARD (A side)

Ref. No.	Name	Color	Description	Normal State
D505	Debug LED 4	ORG	Core 0 access lamp of the CPU	flashing
D506	Debug LED 3	ORG	Core 1 access lamp of the CPU	flashing
D507	Debug LED 2	ORG	Access lamp of eMMC	flashing
D508	Debug LED 1	ORG	S Access lamp of SD Card (ROM30)	OFF

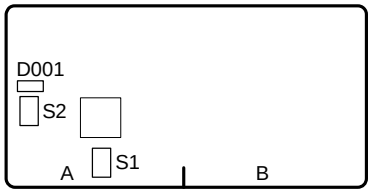
1-3-2. DPR-390 Board



DPR-390 BOARD (B side)

Ref. No.	Name	Color	Description	Normal State
D302	POWER	Green	Lights when the power supply regulators on the board are normal.	Lit
D1600	EXT	Green	Lights when receiving the external reference signal.	OFF
D1100	PRO-DONE	Red	Off when FPGA normally completed configuration.	OFF
D1603	PLL-NG	Red	Lights when the PLL is abnormal.	OFF

1-3-3. DR-699 Board



DR-699 BOARD (A side)

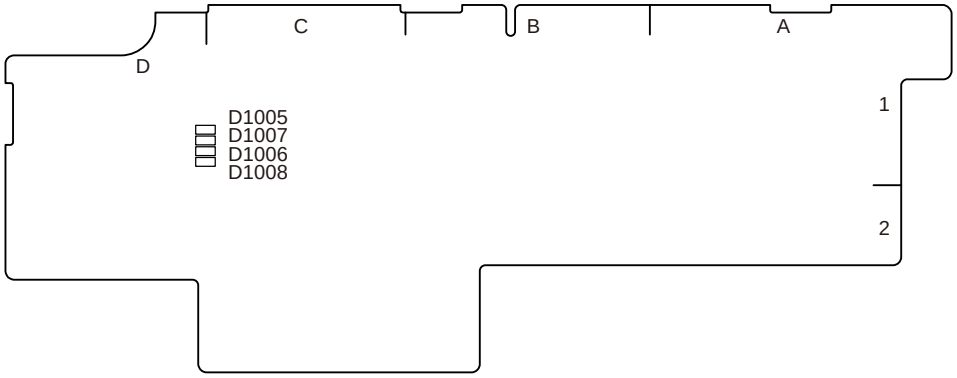
Ref. No.	Name	Color	Description	Normal State
D001	-	Green	Blinks while adjusting the filter position.	OFF

Note

Do not touch the unused switches.

Ref. No.	Name	Bit	Description	Factory Setting
S1	-	1	Not used	OFF
		2	Not used	OFF
S2	-	-	Filter position adjustment	-

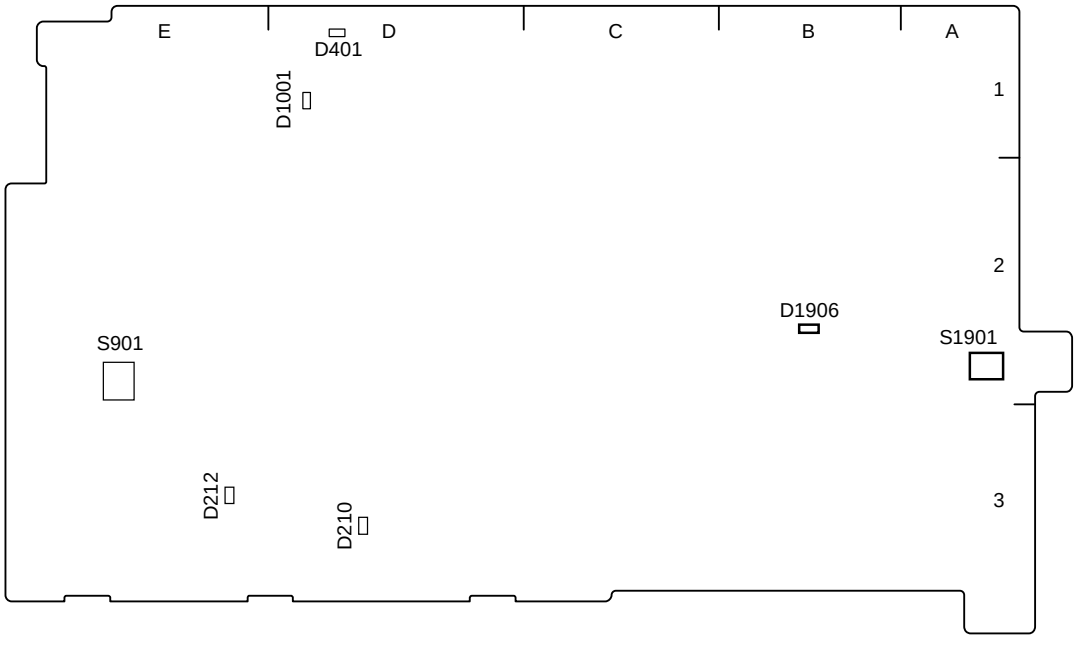
1-3-4. RE-347 Board



RE-347 BOARD (B side)

Ref. No.	Name	Color	Description	Normal State
D1005	VF_OCP	RED	Lights when an error occurs in the error detection (VF-OCP).	OFF
D1006	POWER_IN	GRN	Normal operation	Lit
D1007	14V_OVP/14V_OCP DDCON_ERR	RED	Lights when an error occurs in the error detection (14V-OVP, 14V-OCP, +5V,-5V).	OFF
D1008	14V_UVP STANDBY_OVP	RED	Lights when an error occurs in the error detection (14V-UVP, Standby 13.5V-OVP).	OFF

1-3-5. SY-463 Board



SY-463 BOARD (B side)

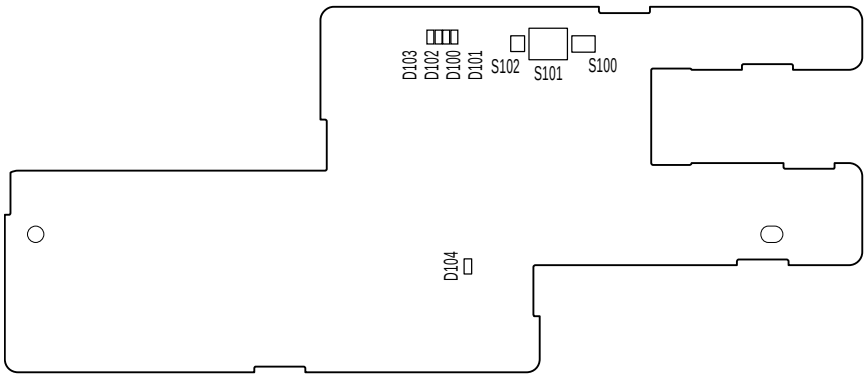
Ref. No.	Name	Color	Description	Normal State
D210	CAM-PW	GREEN	Lights when the main power is supplied.	Lit
D212	STANDBY	ORG	Lights when the standby power is supplied.	Lit
D401	STATUS	GREEN	For debugging	Lit
D1001	Conf Done	RED	Lights when FPGA (IC1001) cannot normally complete configuration.	OFF
D1906	RTS PW	RED	Lights when the RTS PW (+26 V) is supplied to the INTERCOM connector.	OFF

Note

Do not touch the unused switches.

Ref. No.	Name	Bit	Description	Factory Setting
S901	MODE	1	Not used	-
		2	Not used	-
		3	Not used	-
		4	Not used	-
S1901	RTS/NORMAL	-	Normal: Normal operation RTS: Intercom setup (Refer to [7-2-2. Description of SERVICE Menu] "INTERCOM".)	NORMAL

1-3-6. TX-166 Board (HDC3100)



TX-166 BOARD (A side)

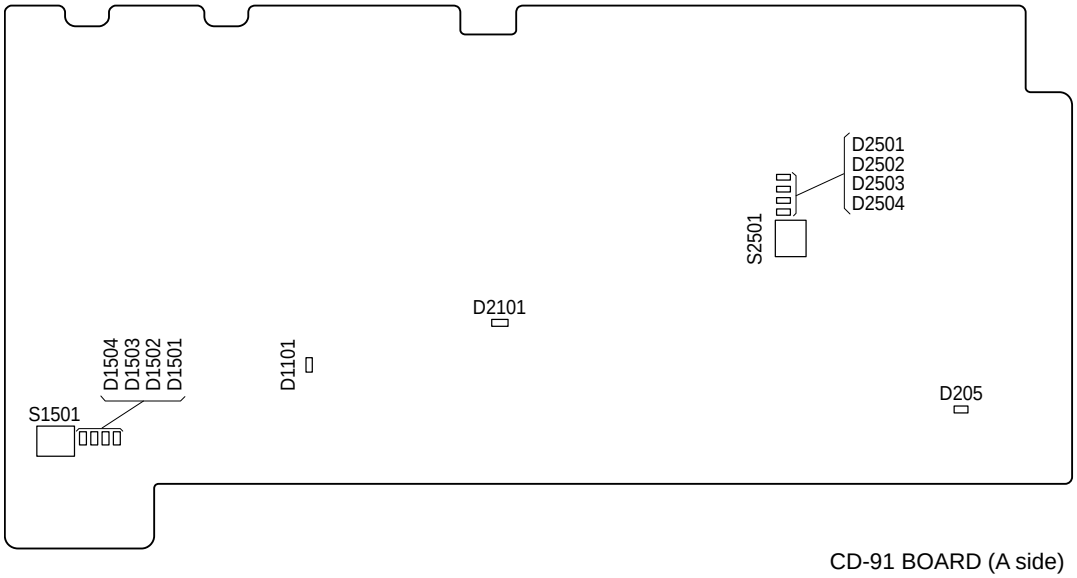
Ref. No.	Name	Color	Description	Normal State
D100	TDIS	RED	Lights when controlling and stopping the transmitter of the optical module.	OFF
D101	TFAULT	RED	Lights when the transmitter of the optical module has a problem.	OFF
D102	MOD ABS	RED	Lights when there is no optical module.	OFF
D103	RX_LOS	RED	Lights when the reception power of the optical module is lower than the default value.	OFF
D104	LOCK_N	RED	Off when the reclocker of SDI2 is locked.	OFF

Note

Do not touch the unused switches.

Ref. No.	Name	Bit	Description	Factory Setting
S100	-	1	Sets SDI2 to EQ.	OFF
		2	Sets the EQ operation mode of the SDI2.	OFF
S101	-	1	Runs the EQ and the reclocker of the SDI2.	OFF
		2	Sets the amplitude of the SDI2	OFF
		3	Sets the amplitude of the SDI2	OFF
		4	Sets the amplitude of the SDI2	OFF
S102	-	-	Not used	OFF

1-3-7. CD-91 Board (HDC3170)



CD-91 BOARD (A side)

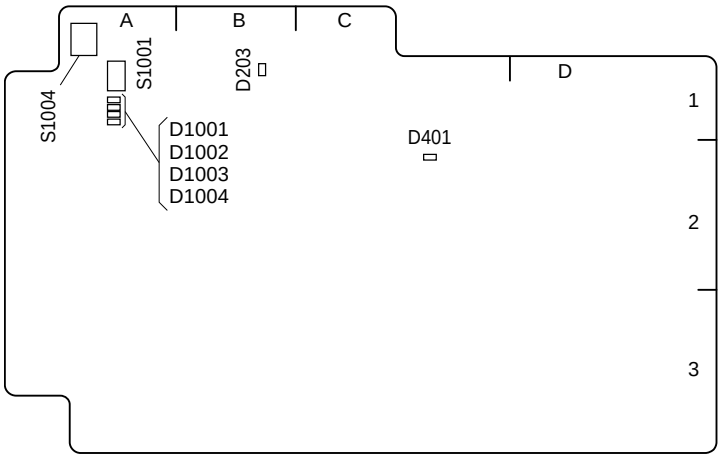
Ref. No.	Name	Color	Description	Normal State
D205	POWER	Green	Lights when the power supply regulators on the board are normal.	Lit
D1501	LED3	Green	Factory use	-
D1502	LED2	Green	Factory use	-
D1503	LED1	Green	Factory use	-
D1504	LED0	Green	Factory use	-
D2501	LED7	Green	Factory use	-
D2502	LED6	Green	Factory use	-
D2503	LED5	Green	Factory use	-
D2504	LED4	Green	Factory use	-
D1101	CV CONF DONE	Red	Off when FPGA (IC1001) normally completed configuration.	OFF
D2101	KU CONF DONE	Red	Off when FPGA (IC2001) normally completed configuration.	OFF

Note

Do not touch the unused switches.

Ref. No.	Name	Bit	Description	Factory Setting
S1501	-	1	Not used	OFF
		2	Not used	OFF
		3	Not used	OFF
		4	Not used	OFF
S2501	-	1	Not used	OFF
		2	Not used	OFF
		3	Not used	OFF
		4	Not used	OFF

1-3-8. TR-170 Board (HDC3170)



TR-170 BOARD (A side)

Ref. No.	Name	Color	Description	Normal State
D203	PWR	BLUE	Lights when the power supply regulators on the board is normal.	Lit
D401	RB DETECT	YELLOWISH GREEN	Lights when the RET RF signal is detected.	Turn on only at the time of CCU connection
D1001	-	YELLOWISH GREEN	For debugging	-
D1002	-	YELLOWISH GREEN	For debugging	-
D1003	-	YELLOWISH GREEN	For debugging	-
D1004	-	YELLOWISH GREEN	For debugging	-

Note

Do not touch the unused switches.

Ref. No.	Name	Bit	Description	Factory Setting
S1004	MOD-SW	1	Not used	OFF
		2	Not used	OFF
		3	Not used	OFF
		4	Not used	OFF
S1001	RESET	-	Not used	OFF

1-4. Microphone Power and Intercom Settings

1-4-1. Outputting Microphone Power Voltage +12 V (AB-Power)

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

1. Open the OPTION [S12] page of the SERVICE menu.
2. Set MIC AB POWER to “ENABLE”.
3. Set the microphone power switch on the connector panel at the rear of the unit to “•”.

Power voltage +12 V (AB-Power) is supplied to the microphone connected to the AUDIO IN connector.

1-4-2. Intercom Settings

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

Talk (Microphone) Settings

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

General carbon microphone

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

General dynamic microphone

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

Other microphones

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

Receive (Headphone) Settings

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

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

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

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

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

To adjust the volume of your voice

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

1-4-3. Earphone Settings

Talk (Microphone) Settings

Set microphone sensitivity according to characteristics of the microphone in EARPHONE on the HEADSET MIC page of the OPERATION menu.

Note

Be sure to set the EARPHONE on the HEADSET MIC page of the OPERATION menu to OFF when the microphone is not used, or the earphone is plugged in or unplugged.

Receive Settings

In the case of dual-type earphone to listen to the same sound with both ears

Set EARPHONE RECEIVE SELECT on the EARPHONE page of the OPERATION menu to “MIX”.

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

Set EARPHONE RECEIVE SELECT on the EARPHONE page of the OPERATION menu to “SEPARATE”.

To adjust the volume of your voice

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

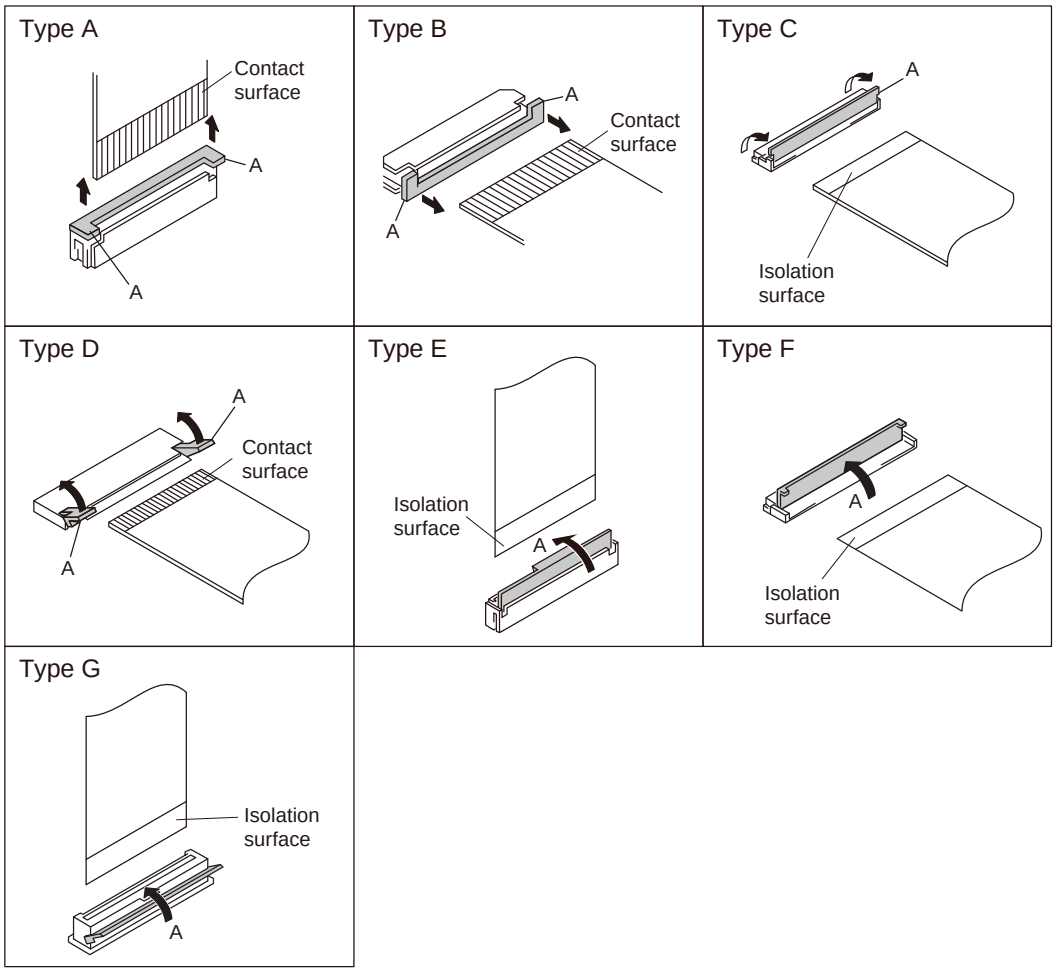
1-5. Flexible Card Wire and Fine-Wire Coaxial Cable

1-5-1. Disconnecting and Connecting Flexible Flat Cable and Flexible Board

Note

- Be very careful not to fold flexible flat cable or flexible board. Life of flexible flat cable and flexible board will be significantly shortened if they are folded.
- Each flexible flat cable and flexible board have conductor side and insulated side. If the flexible flat cable and flexible board are connected in the wrong orientation of the conductor side and the insulated side, the circuit will not function.
- Check that the conductive surface of the flexible flat cable and flexible board wire are not contaminated.
- Insert the flexible flat cable and flexible board straight and firmly in the interior of the connector.

Type A to G



Disconnecting

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

Connecting

1. Slide or lift up the portion A in the direction of the arrow and insert the flexible card wire firmly in the interior of the connector.
2. Slide or push down the portion A in the opposite direction of the arrow to lock the flexible card wire.

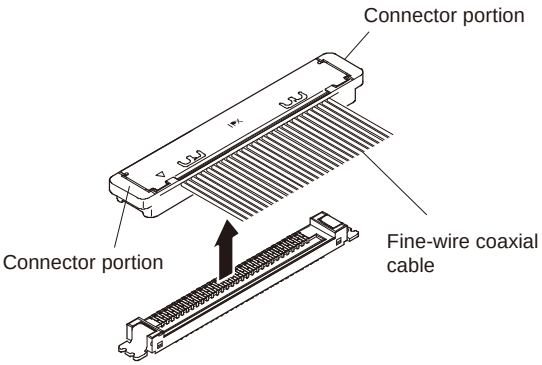
1-5-2. Disconnecting/Connecting Fine-Wire Coaxial Cable

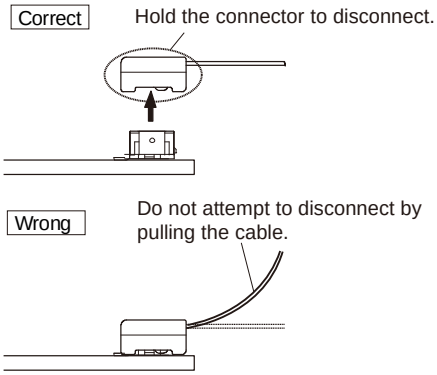
Note

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

Type A

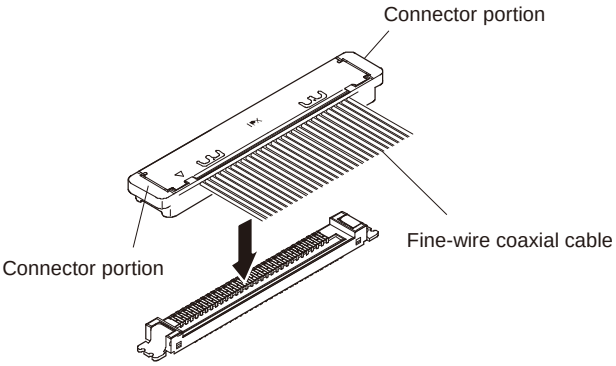
Disconnecting





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

Connecting



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

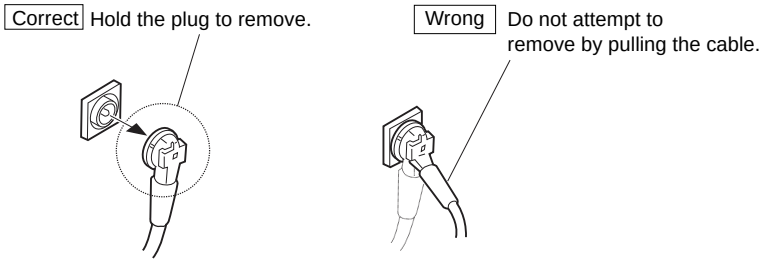
   Note

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

1-5-3. Connecting/Disconnecting Coaxial Cable

Type A

Disconnecting

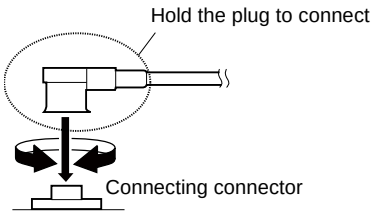


1. Hold the plug of coaxial cable.
2. Pull out the coaxial cable in the direction of the arrow.

Note

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

Connecting



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

1-5-4. Connecting/Disconnecting Coaxial Cable for SDI 1

Coaxial Cable

SDI 1: COAXIAL CABLE (D.FL75) (SDI1) (Part No.: 1-912-828-11)

Required Tool

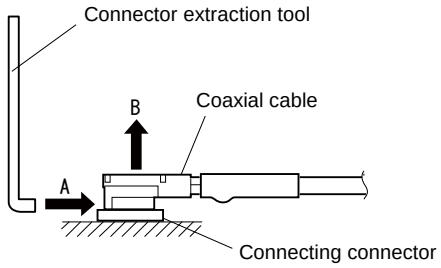
D.FL75-LP-N75 Connector extraction tool: Part No.: J-7121-700-A

Disconnecting

1. Insert the tip of the connector extraction tool into the connector area of the coaxial cable in the direction of the arrow A.
2. Pull up the connector extraction tool upwards in the direction of the arrow B to disconnect the connector.

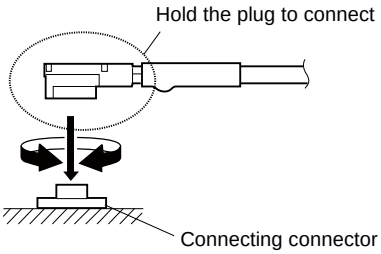
Note

Do not pull the cable of the coaxial cable.



Connecting

1. Hold the plug of the coaxial cable.
2. Push the plug vertical to the connecting connector turning it clockwise and counterclockwise.



1-6. Circuit Protection Parts

1-6-1. Fuses

WARNING

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

CAUTION

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

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

Board Name	Ref. No.	Part No.	Part Name/Rating
PS-943	F101	⚠ 1-523-190-11	Fuse (SMD) 6.3 A/250 V
	F102	⚠ 1-523-190-11	Fuse (SMD) 6.3 A/250 V
	F3001	⚠ 1-576-566-21	Fuse (SMD) 15 A/65 V

1-6-2. Circuit Protection Element

This unit is equipped with positive-characteristic thermistors (power thermistors) as circuit protection elements.

The positive-characteristic thermistor limits the electric current flowing through the circuit as the internal resistance increases when an excessive current flows or when the ambient temperature increases. If the positive-characteristic thermistor works, turn off the main power of the unit and inspect the internal circuit of the unit.

After the cause of the fault is eliminated and the positive-characteristic thermistor is cooled down, turn on the main power again. The unit works normally. It takes about one minute to cool down the positive-characteristic thermistor after the main power is turned off.

Board Name	Ref. No.	Part No.	Hold Current
CN-3995	TH1	⚠ 1-802-108-11	1.50 A/20 ℃
	TH2	⚠ 1-802-108-11	1.50 A/20 ℃
IF-1331	TH001	⚠ 1-771-845-21	200 mA/20 ℃
MB-1248	TH001	⚠ 1-802-063-21	1.10 A/20 ℃
SY-463	TH111	⚠ 1-802-063-21	1.10 A/20 ℃
	TH201	⚠ 1-803-615-21	500 mA/25 ℃
	TH202	⚠ 1-805-726-11	0.20 A/25 ℃
	TH203	⚠ 1-802-063-21	1.10 A/20 ℃

1-7. Fixtures/Measuring Equipments List

1-7-1. Service Tools

Part No.	Name	Usage/Note
J-6029-140-B	Pattern box PTB-500	Camera adjustment
J-6323-430-A	Torque driver bit (M3)	Screw tightening
J-6325-110-A	Torque driver bit (M1.4)	Screw tightening
J-6325-380-A	Torque driver bit (M2)	Screw tightening
J-6325-400-A	Torque screwdriver (3 kg•cm) (0.3 N•m)	Screw tightening
J-6252-510-A	Torque screwdriver (6 kg•cm) (0.6 N•m)	Screw tightening
J-6252-520-A	Torque screwdriver (12 kg•cm) (1.2 N•m)	Screw tightening
J-6326-120-A	Hexagon bit (for torque driver) (size 1.5 mm))	Screw tightening
J-7121-700-A	D.FL75-LP-N75 connector extraction tool	Extracting coaxial plug for HIROSE D.FL series
J-6394-080-A	Grayscale chart	Transparent type (16:9), Camera adjustment
J-6480-010-A	Alignment sleeve remover HC-001	For Female connector, DCC.91.312.5LA manufactured by LEMO or equivalent
J-7120-950-A	Chart adapter	Adapter that installs ITE test chart (16:9) 310 X200 in PTB-500 (pattern box)
J-7120-960-A	ITE STANDARD TEST CHART	ITE resolution chart (16 : 9)
J-7120-970-A	ITE STANDARD TEST CHART	ITE grayscale chart (γ=0.45) (16:9)
J-7120-980-A	ITE STANDARD TEST CHART	ITE in megacycle chart (16 : 9)
7-600-002-52	Three Bond (TB1401B)	For preventing screws from being loosened
Commercially available	Loctite (408)	Instant adhesives
Commercially available	Grayscale chart	Reflective type (16:9), Camera adjustment
Commercially available	Star chart	Reflective type, Camera adjustment
Commercially available	USB drive	Upgrading software, writing and rewriting the PLD internal data

1-7-2. Measuring Equipment

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

Equipment	Model name
HD waveform monitor	Leader Electronics LV5150DA, LV5152DA or equivalent
HD color monitor	Sony BVM-D20F1J/D14H5J or equivalent
Luminance meter	Konica Minolta LS-110 or equivalent

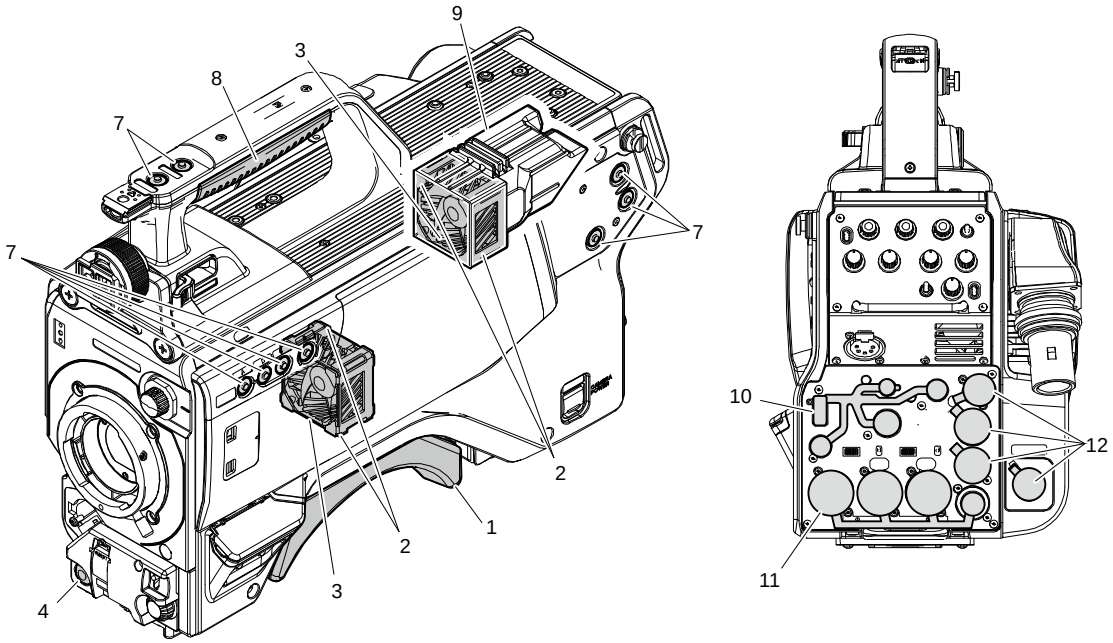
1-8. Explanation of Adhering Number

The CMOS imager adhering is managed by following mount assembly number.
Optical block assembly: A-2126-567-A
Mount assembly number (8-digit): A0000001 and higher

Section 2
Periodic Maintenance and Inspection

2-1. Recommended Replacement Parts

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

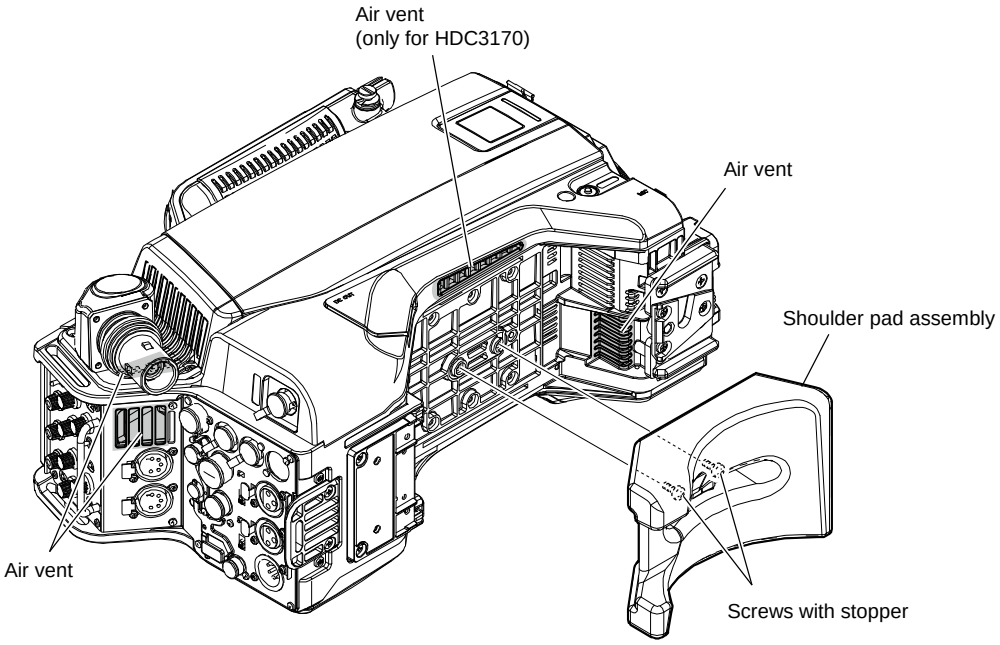


No.	Name	Part No.	Recommended Replacement Timing
1	Shoulder Pad Assembly	A-8286-163-D	Check for deformation and deterioration (abraded or damaged or lost) from time to time. Replace it as necessary.
	Shoulder Pad Assembly (Optional)	A-8286-346-A	
2	Cushion (fan)	4-546-928-01	
3	DC Fan	⚠1-855-374-11	
4	VTR Start button	3-679-668-01	
7	SW Cover	3-676-244-03	Check for deformation and deterioration (abraded or damaged or lost) from time to time. Replace it as necessary.
8	Grip	4-740-601-01	
9	Fan Duct	4-742-319-01	
10	Rear Connector Cap	4-742-359-01	
11	Rear Connector Cap 2	4-414-618-01	
12	BNC Cap	3-872-935-01	

2-2. Cleaning the Air Vents

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

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



2-3. Replacing Lithium Secondary Battery

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

A lithium secondary battery is mounted on the SY-463 board to back up the real time clock (RTC). RTC stops operating when the battery life expires. In that case, replace the battery.

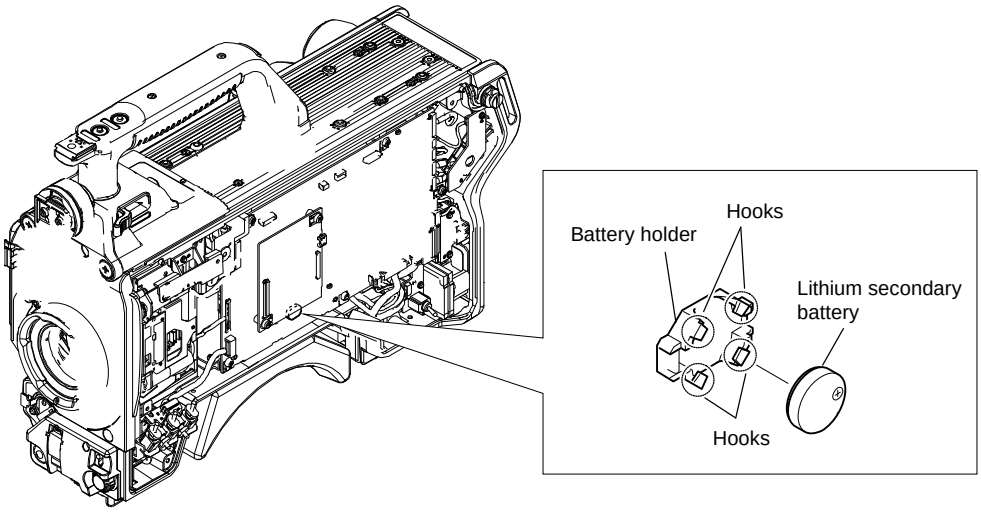
- SY-463 board / Lithium secondary battery
  Replace one of the following parts.
  - ML621 (U): Sony Part No. : 1-756-134-18
  - ML-621S/ZT: Sony Part No. : 1-528-900-52
  - MS-621FE: Sony Part No.: 1-756-135-34

CAUTION

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

2-3-2. Replacing Lithium Secondary Battery

1. Remove the four screws and remove the inside panel assembly. (Refer to "3-4. Inside Panel Assembly".)
2. Replace the lithium secondary battery on the SY-463 board.



Note

Be sure to use an insulated stick when removing the lithium secondary battery.

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

2-4. Cleaning of Connector/Cable

Tip

This section is required for the following models.

- HDC3100

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

- When lit in green: Normal (-16 dBm and higher)
- When lit in yellow: Normal (-16 to -19 dBm)
- When lit in red: Abnormal (Less than -19 dBm)

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

2-4-1. When the Optical Connector Cleaner (Commercially Available) is Available

Fixtures

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

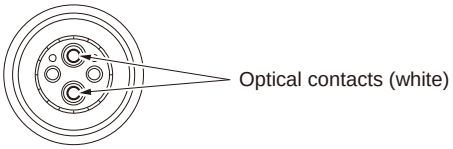
Tip

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

Cleaning Procedure

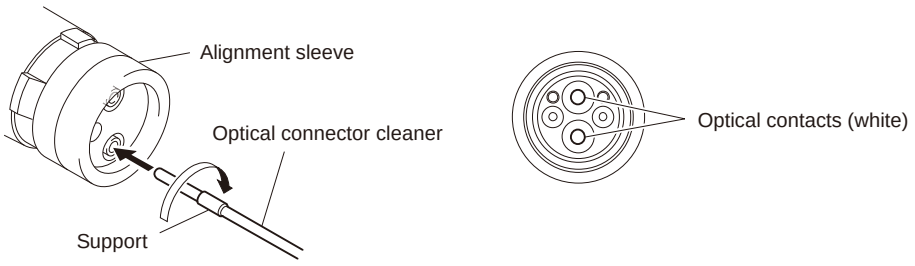
Male connector

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



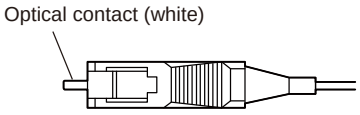
Female connector

1. Insert the optical connector cleaner straight.
2. Apply sufficient pressure (approximately 600 g to 700 g) to ensure that the optical contact is a little depressed.
3. While pressing the optical connector cleaner against the tip of the optical contact, rotate the optical connector cleaner by 4 to 5 turns clockwise. Holding the optical connector cleaner at around its support facilitates to apply the pressure.



Connector

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



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

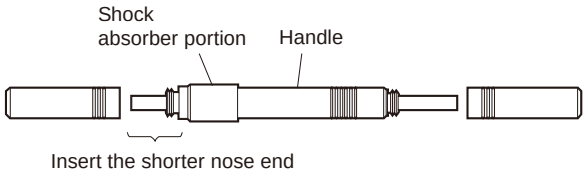
Clean the LEMO connectors and cables using the following procedure.

Fixtures

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

  Note

  Insert the shorter nose end when removing/installing the alignment sleeve. This fixture contains shock absorber portion. Do not hold the shock absorber portion of the remover but grasp the handle in use.



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

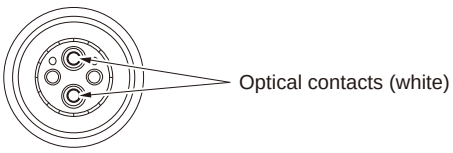
  Note

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

Cleaning Procedure

Male connector

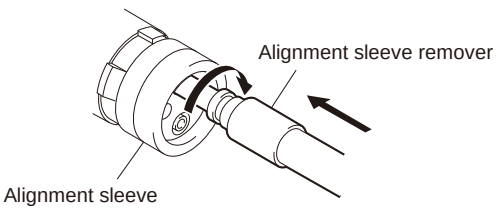
Clean the tip of the optical contacts (white) with a cotton swab moistened with alcohol.



Female connector

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

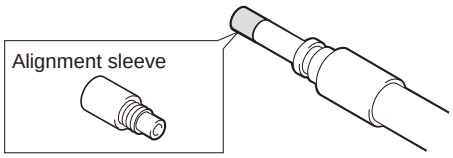
1. Insert the alignment sleeve remover into the alignment sleeve in the straight line and turn it clockwise.



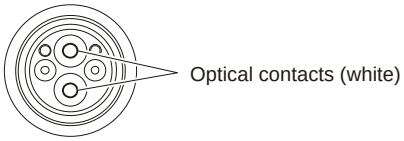
2. When the turn stops, pull out the remover in the straight line forcedly.

   Note

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



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



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

2-4-3. When the Optical Connector Cleaner (Commercially Available) is not Available (Connector of Tajimi Electronics Co., Ltd./Cable)

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

Fixtures

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

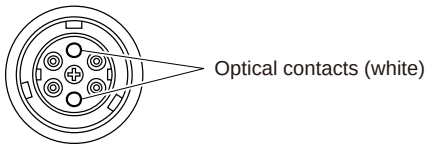
  Note

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

Cleaning Procedure

Male connector

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



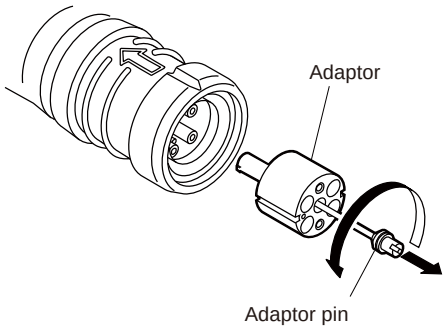
Female connector

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

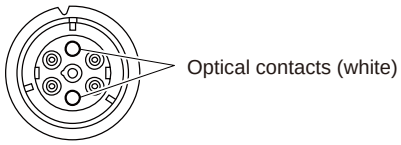
1. Loosen the adaptor pin at the center of the connector counterclockwise with a screwdriver.

   Tip

   If there is no screwdriver, use the plate attached to the connector cap.
2. Pull the adaptor pin out of the connector in the arrow direction. Remove the adaptor from the connector.



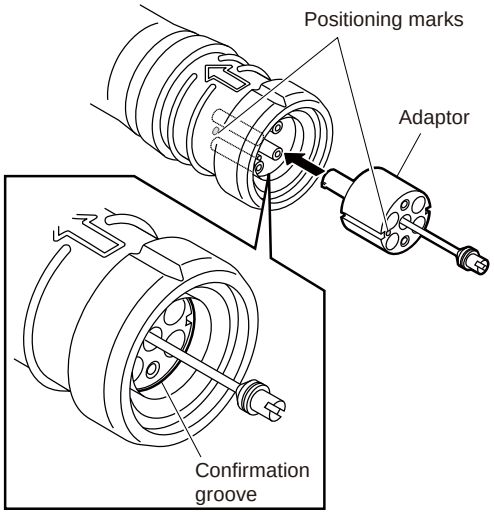
3. Clean the optical contacts (white) with a cotton swab moistened with alcohol.



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

   Note

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



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

   Note

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

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

Fixtures

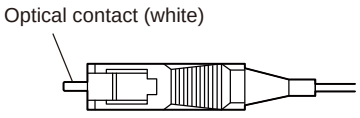
- Alcohol (commercially available)
- Cotton swabs (commercially available)

  Note

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

Cleaning Procedure

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



Section 3
Replacement of Main Parts

3-1. Precautions before Work

3-1-1. Tightening Torque

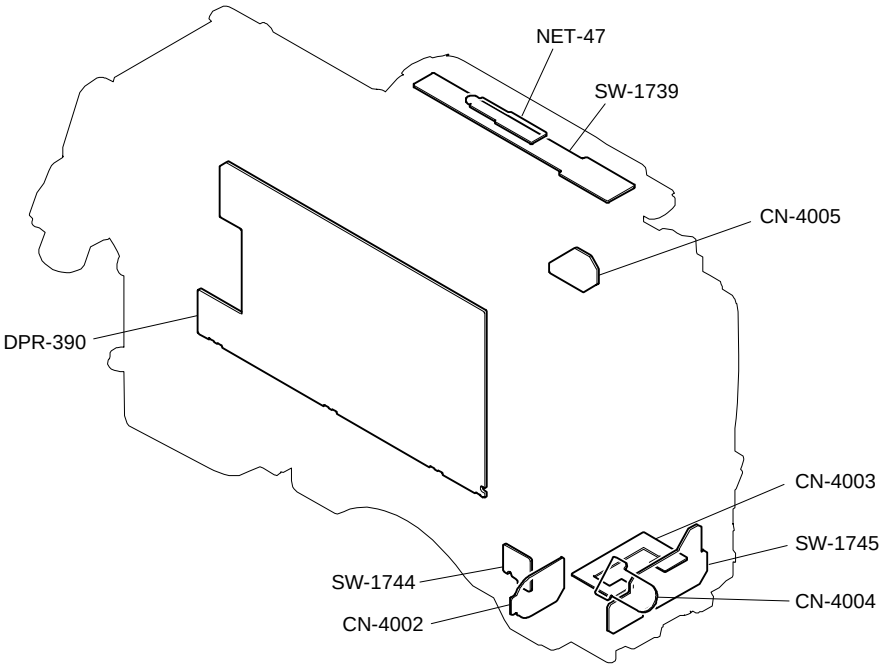
When tightening screws used in this unit, be sure to use a torque driver and tighten screws to the specified tightening torque.
If the specified tightening torque is described in the figure in this section, tighten screws to the specified tightening torque in the figure.

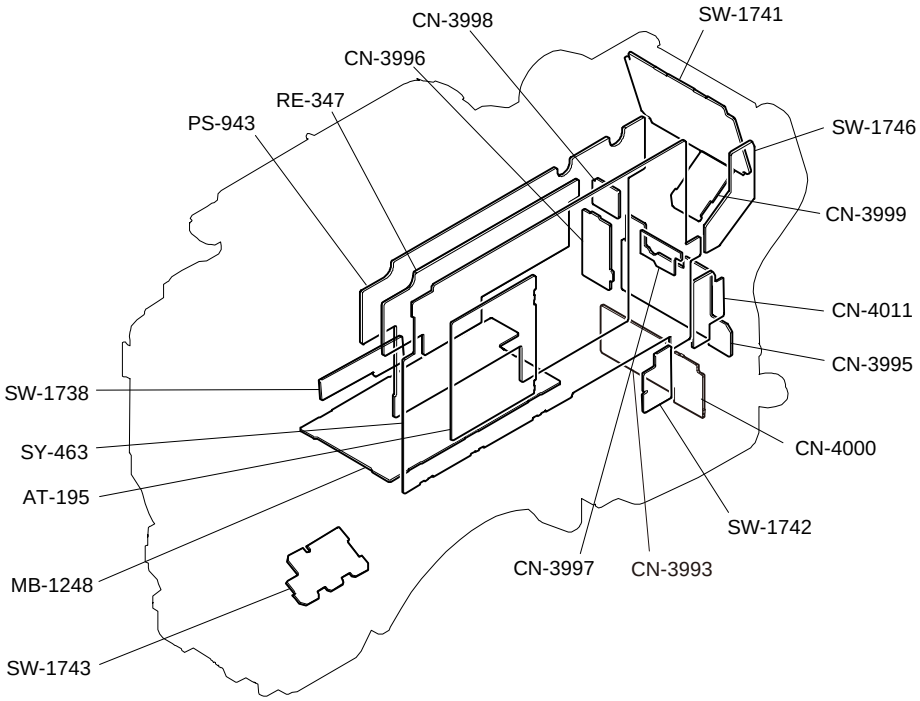
Tightening torque
M2: 0.19 ±0.02 N·m
M2.6: 0.53 ±0.07 N·m
M3.0: 0.80 ±0.12 N·m

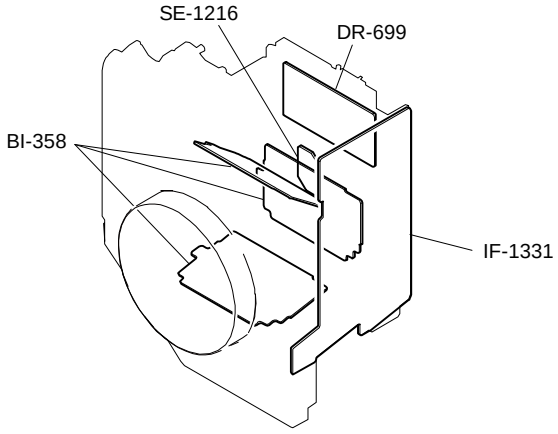
Tip

When using the torque driver with the notation of cN•m, interpret it as follows.
Example: 0.8 N·m = 80 cN·m

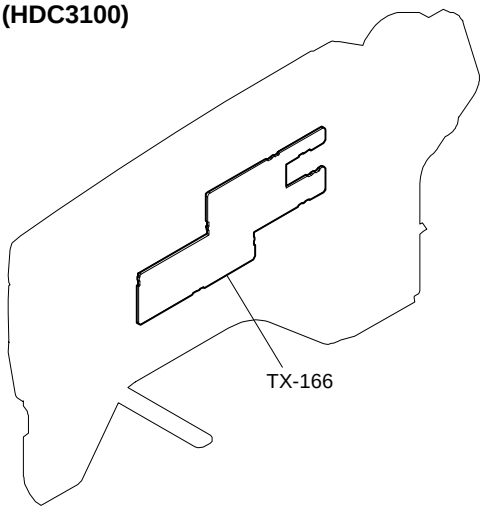
3-2. Location of Printed Wiring Boards



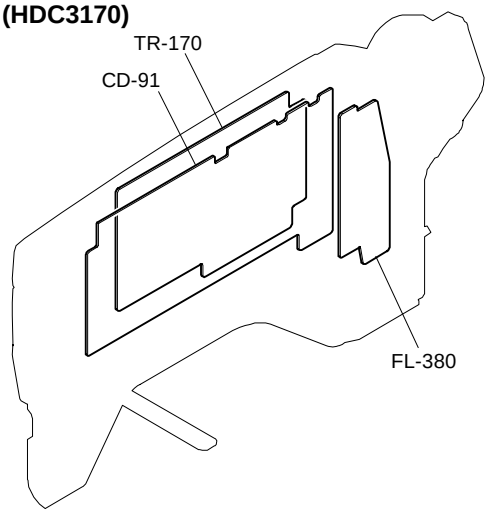




Outside Panel (HDC3100)



Outside Panel (HDC3170)



3-3. Actions to be Taken during Board Replacement and after Board Replacement or after Board Repair

3-3-1. Stored Data of ICs

The table below lists data retained in the IC on the following boards.
When any of the following boards or ICs is replaced, deal with action to be taken in replacing parts.

Note

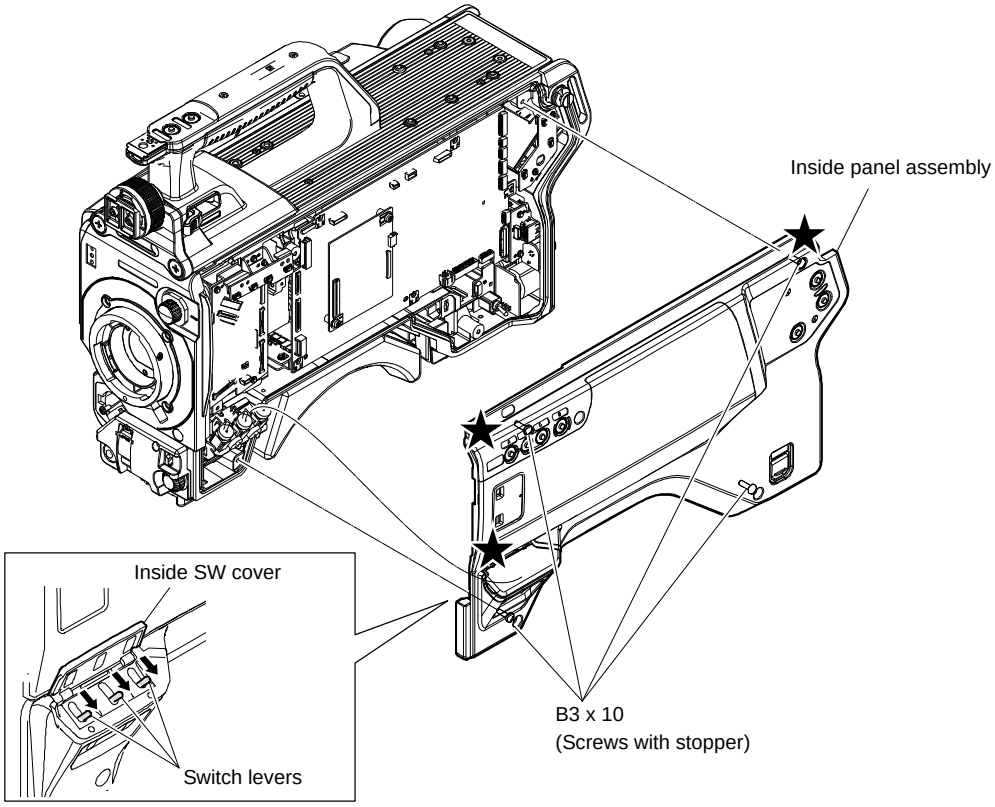
- The part number listed in "9. Spare Parts" is for IC which is not programmed. If replacement is needed, contact your local Sony Sales Office/Service Center.
- When replacing the ICs on the AT-195/NET-47 board, update the model information data on the REFRESH SERIAL NO. page of the SERVICE menu. As for how to update the data, contact your local Sony Sales Office/Service Center.

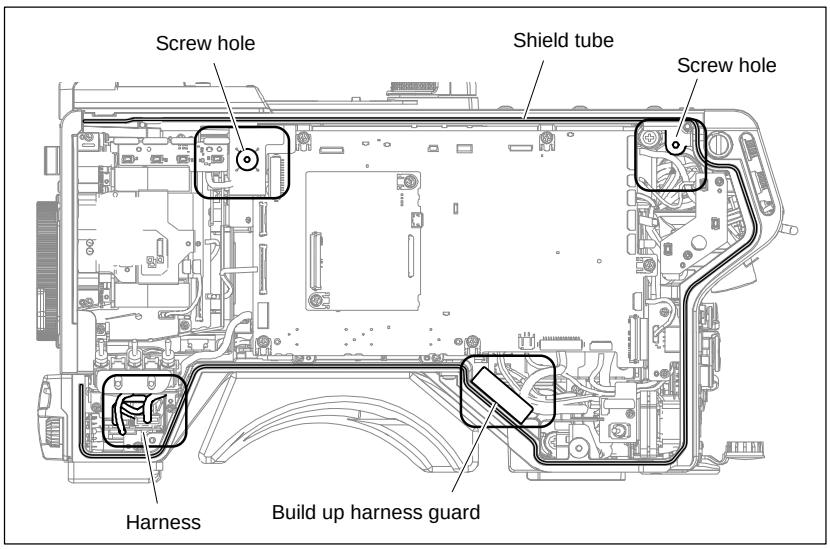
Board	Ref. No.	Stored Data
IF-1331	IC010	CMOS adjustment data, RPN compensation data
AT-195	IC401	Model information data, APR compensation data, File system
MB-1248	IC009	Paint data, etc.
NET-47	IC1	Model information data
TR-170	IC101	TRIAX cable length compensation data

3-4. Inside Panel Assembly

Procedure

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





Note

Install the inside panel assembly as follows.

- Turn the switch levers in the arrow direction, and then install the inside panel assembly.
- To prevent the harness from being pinched, make sure that the harness does not overlap the positions of the holes of the screws, the build-up harness guard, and the harness itself shown in the figure.
- After tightening the four screws, push the three star-shaped marks.

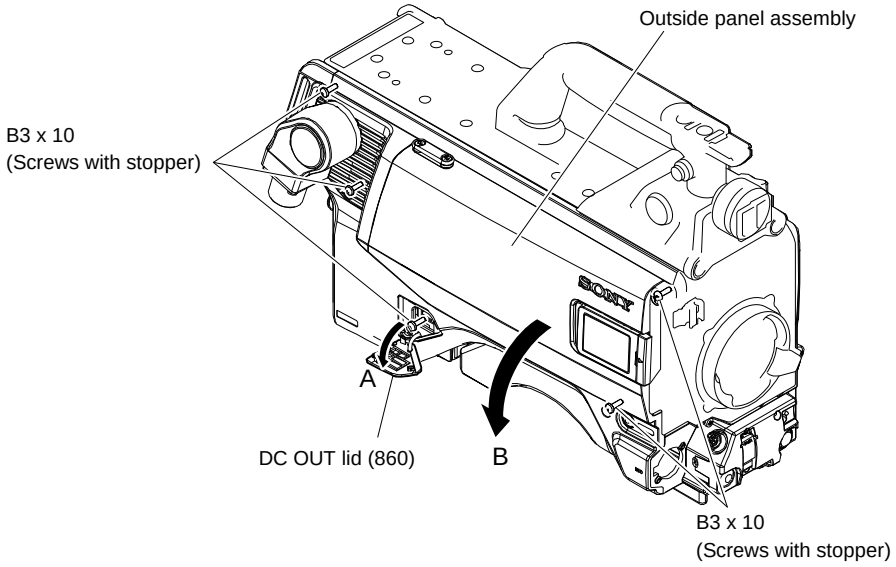
3. Install the removed parts by reversing the steps of removal.

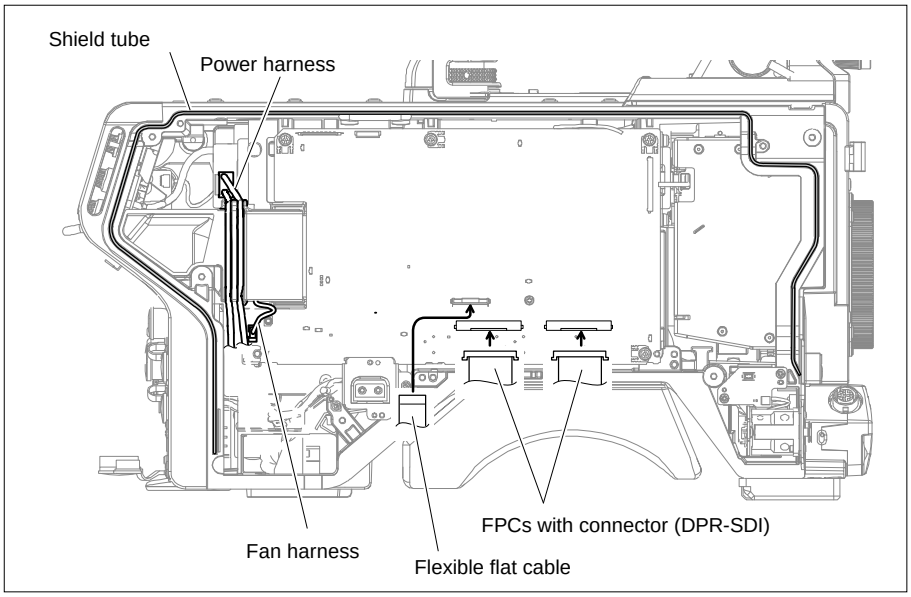
3-5. Outside Panel (HDC3100)

3-5-1. Outside Panel Assembly

Procedure

1. Open the DC OUT cover (860) in the direction of the arrow A.
2. Loosen the five screws with stopper to open the outside panel assembly in the direction of arrow B.



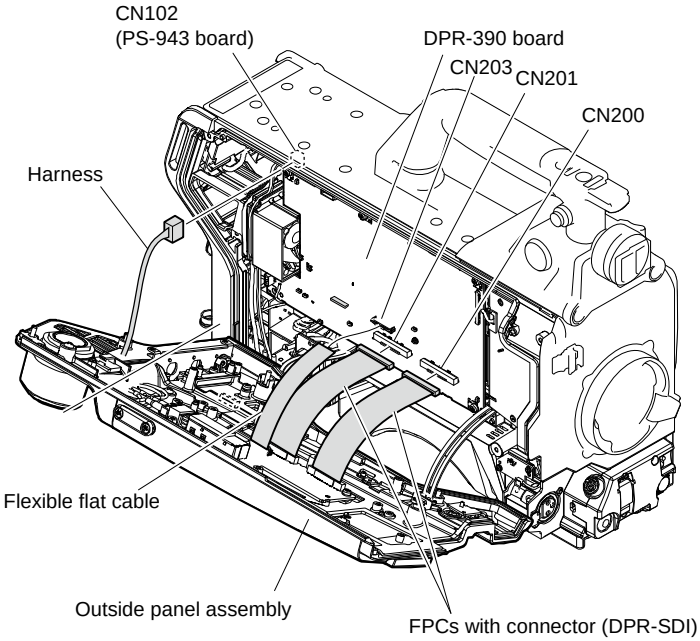


Note

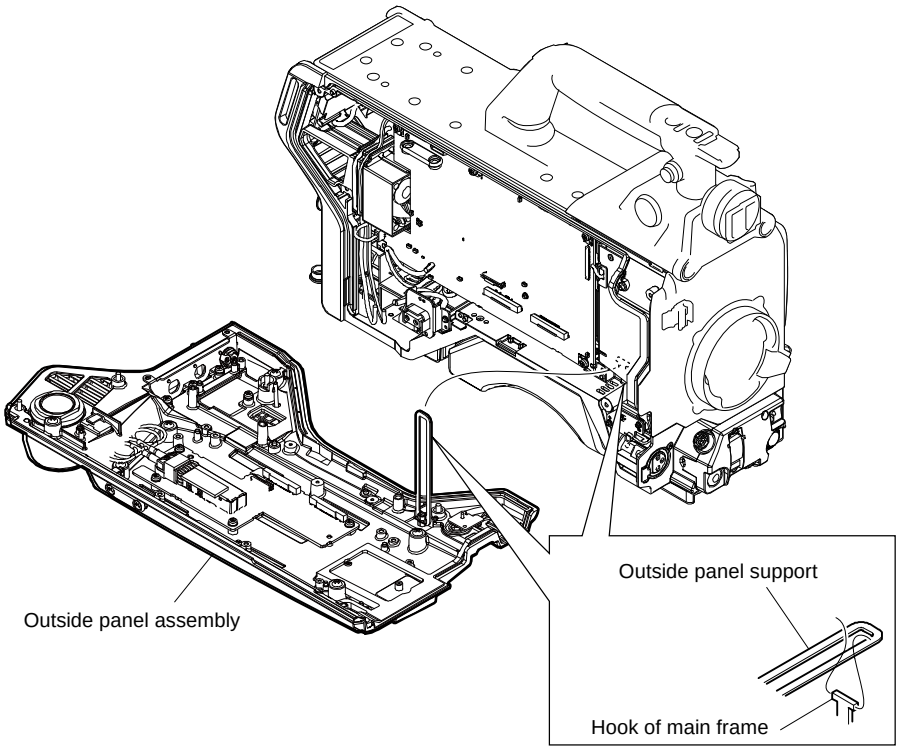
Install the outside panel assembly as follows.

- When the shield tube protrudes from the groove on the main chassis, push it into the groove.
- When closing the outside panel assembly, avoid pinching the harness, flexible flat cable and the FPC shown in the figure.

3. Disconnect the harness from the connector (CN102) on the PS-943 board.
4. Disconnect the two FPCs with connector (DPR-SDI) from the two connectors (CN200, CN201) on the DPR-390 board.
5. Disconnect the flexible flat cable from the connector (CN203) on the DPR-390 board.



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



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

3-5-2. TX-166 Board

Preparation

1. Remove the outside panel assembly. (Refer to “3-5-1. Outside Panel Assembly”.)

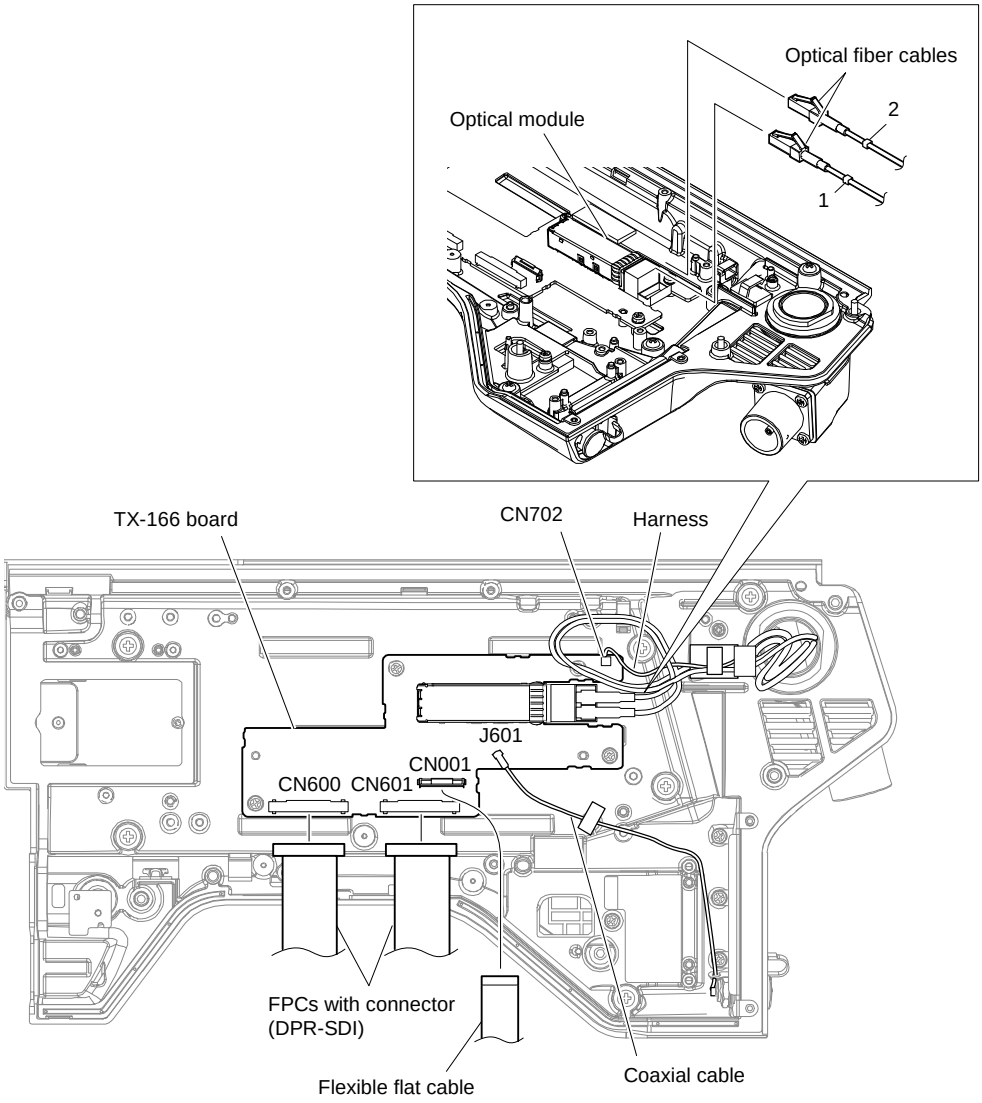
Procedure

1. Disconnect the two FPCs with connector (DPR-SDI) from the two connectors (CN600, CN601) on the TX-166 board.
2. Disconnect the flexible flat cable from the connector (CN001) on the TX-166 board.
3. Disconnect the coaxial cable from the connector (J601) on the TX-166 board.
4. Disconnect two optical multi cables from the optical module.

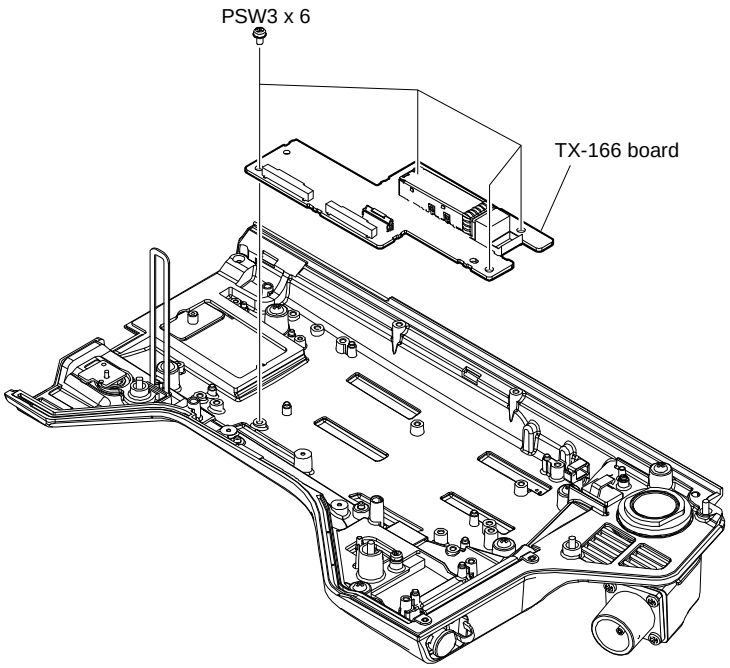
   Note

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

5. Disconnect the harness from the connector (CN702) on the TX-166 board.



6. Remove the four screws to detach the TX-166 board.



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

3-5-3. Optical Multi Cable Assembly

Preparation

1. Remove the outside panel assembly. (Refer to “3-5-1. Outside Panel Assembly”.)

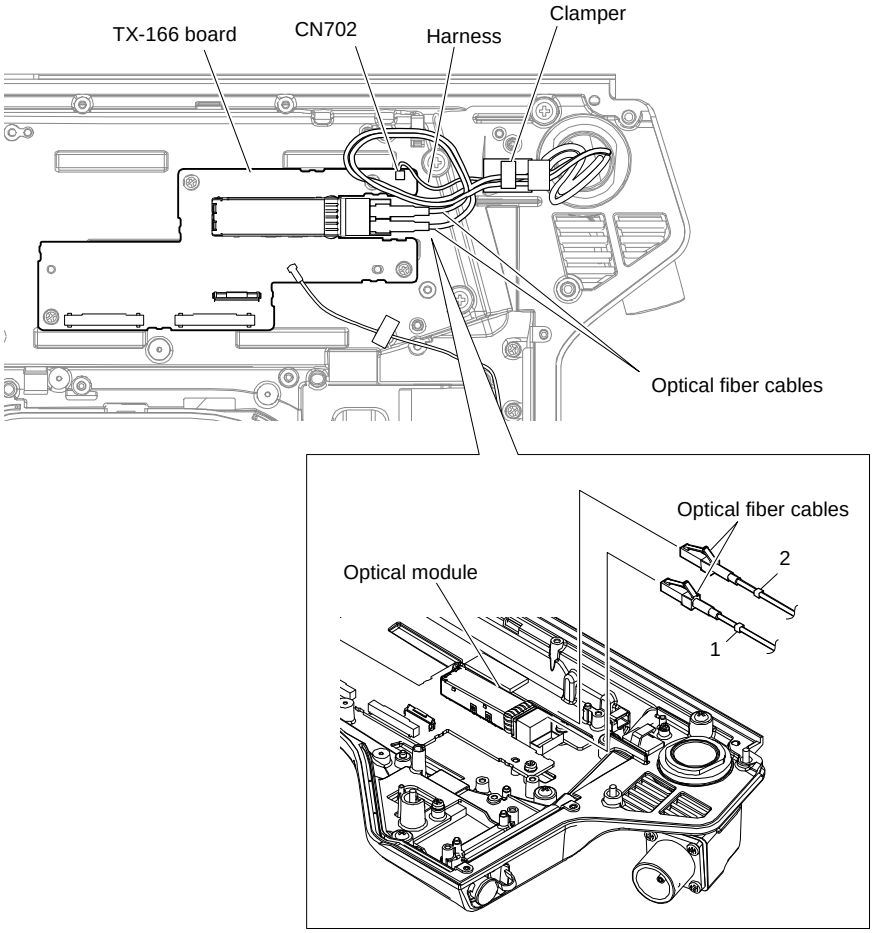
Procedure

1. Disconnect two optical multi cables from the optical module.

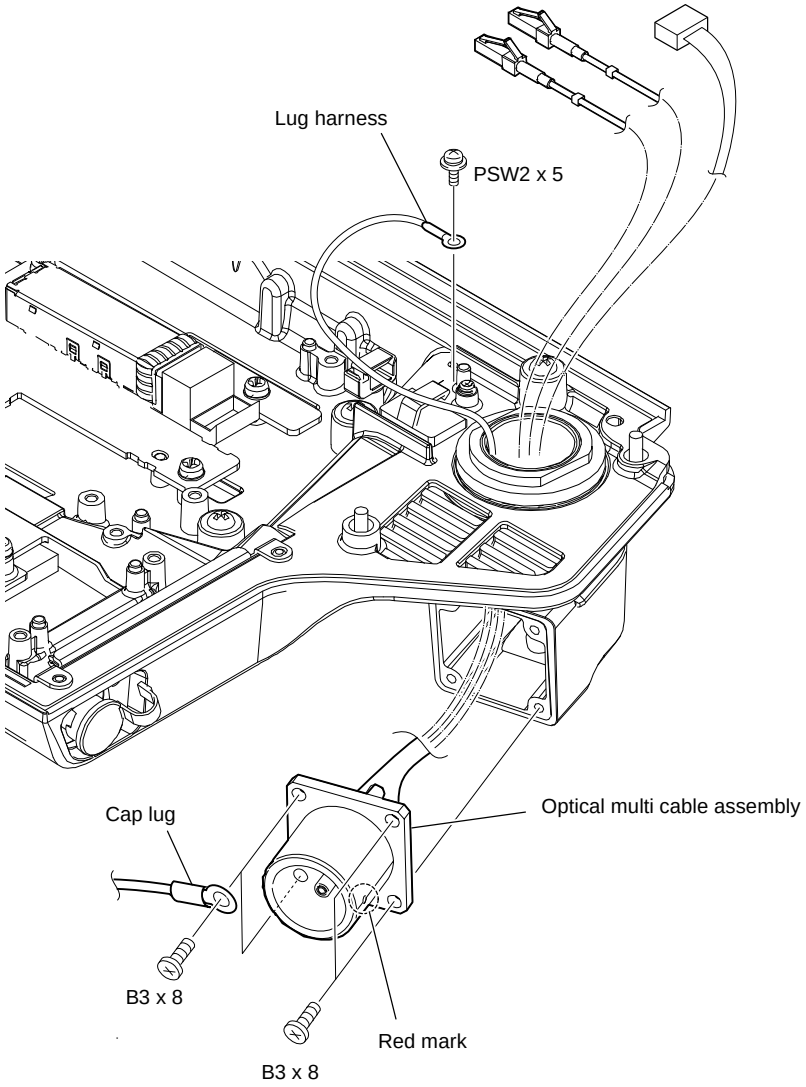
   Note

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

2. Disconnect the harness from the connector (CN702) on the TX-166 board.
3. Release the optical multi cables and the harness from the clamper.



4. Remove the screw (PSW2 x 5) and remove the lug harness.
5. Remove the four screws (B3 x 8) and remove the cap lug and optical multi cable assembly.



Note

When installing the optical multi cable assembly, carefully install it paying attention to the red mark shown in the figure.

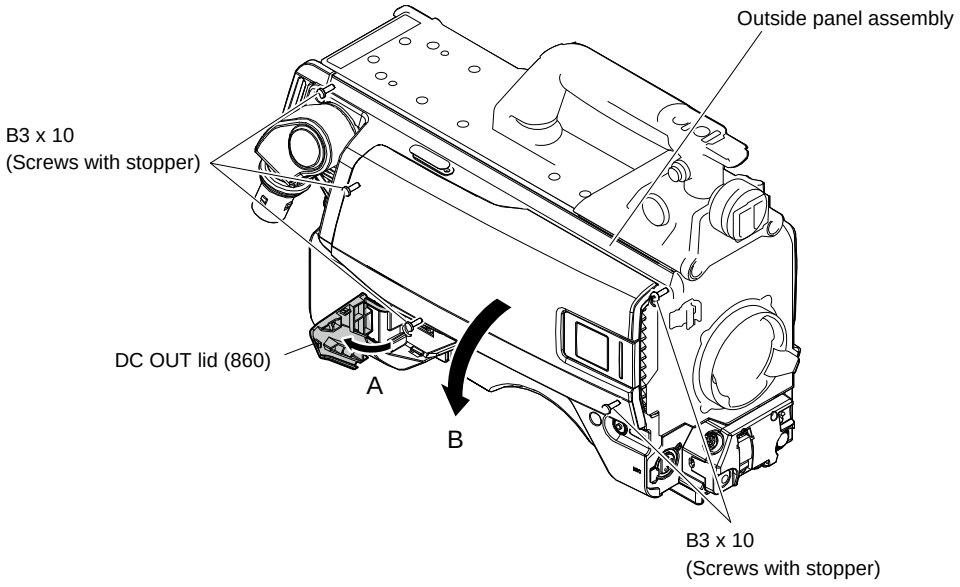
6. Install the removed parts by reversing the steps of removal.

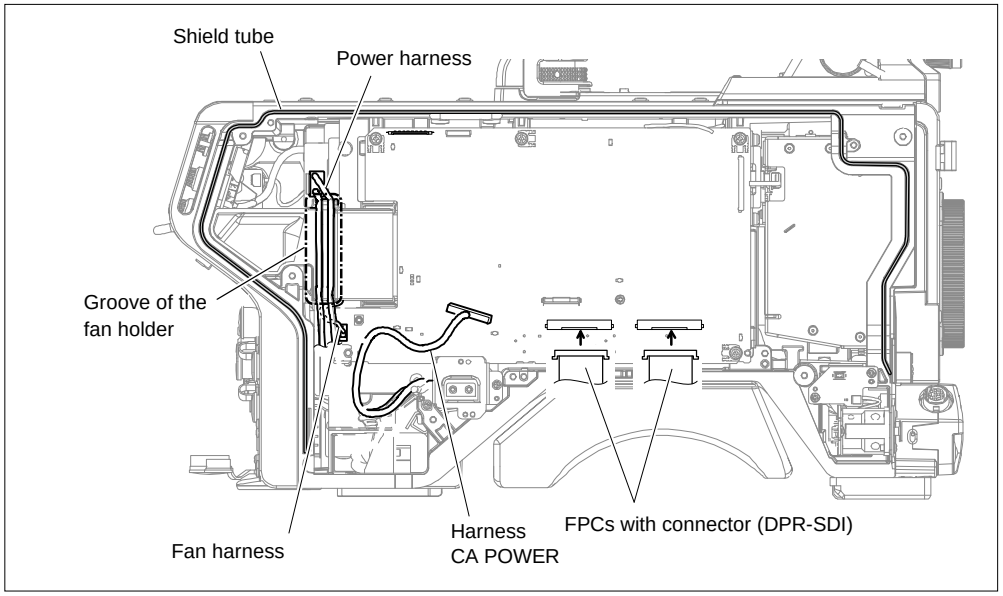
3-6. Outside Panel (HDC3170)

3-6-1. Outside Pane Assembly

Procedure

1. Open the DC OUT lid (860) in the direction of the arrow A.
2. Loosen the five screws to open the outside panel assembly in the direction of arrow B.



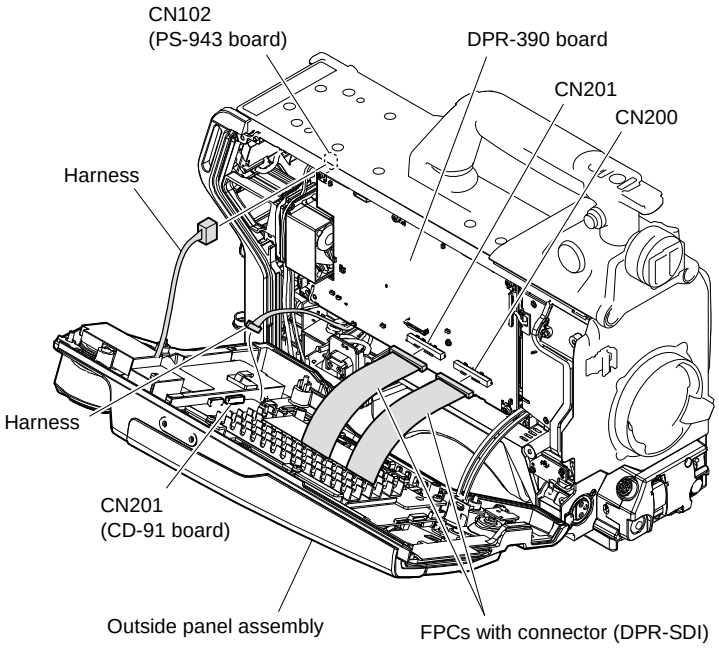


Note

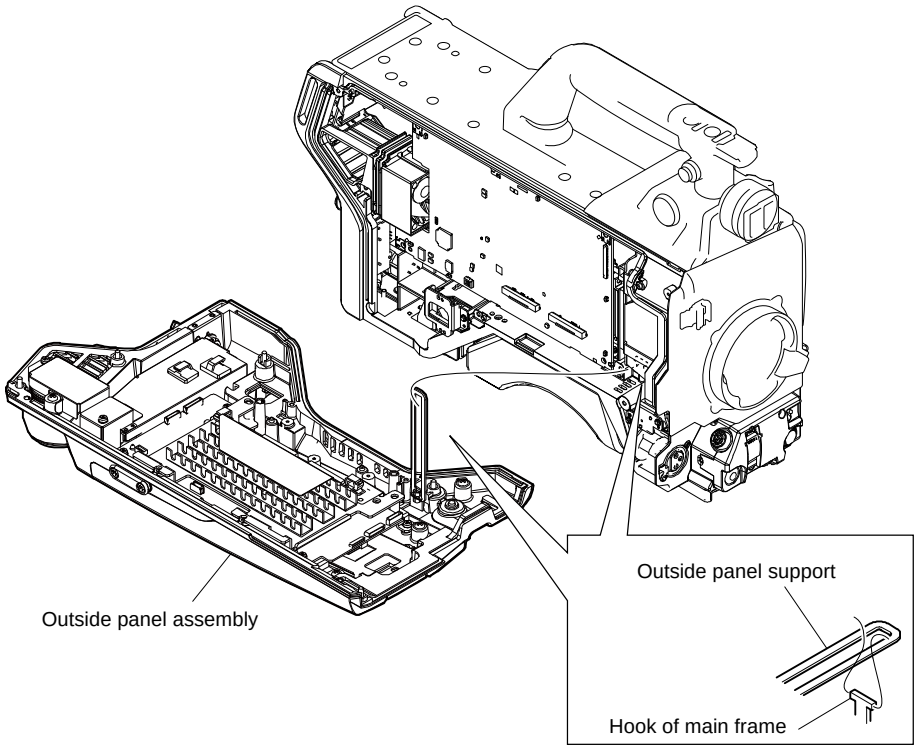
Install the outside panel assembly as follows.

- When the shield tube protrudes from the groove on the main chassis, push it into the groove.
- Align the power harness along the groove on the fan holder shown in the figure.
- When closing the outside panel assembly, avoid pinching the harness and the FPC shown in the figure.

3. Disconnect the harness from the connector (CN102) on the PS-943 board.
4. Disconnect the two FPCs with connector (DPR-SDI) from the two connectors (CN200, CN201) on the DPR-390 board.
5. Disconnect the harness from the connector (CN201) on the CD-91 board.



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



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

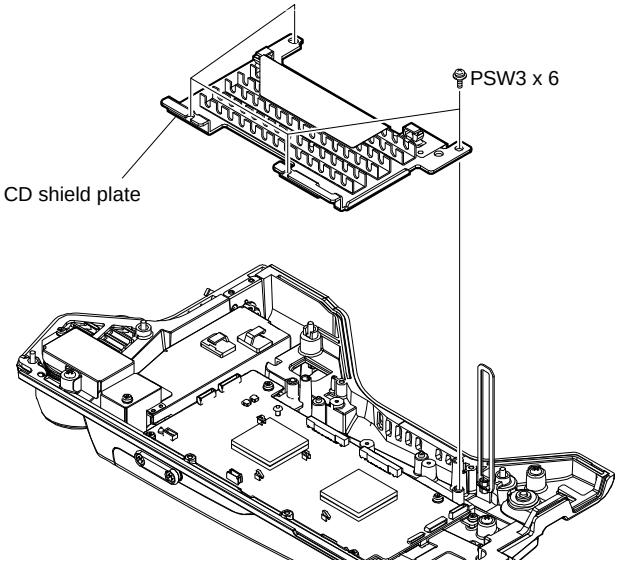
3-6-2. CD-91 Board

Preparation

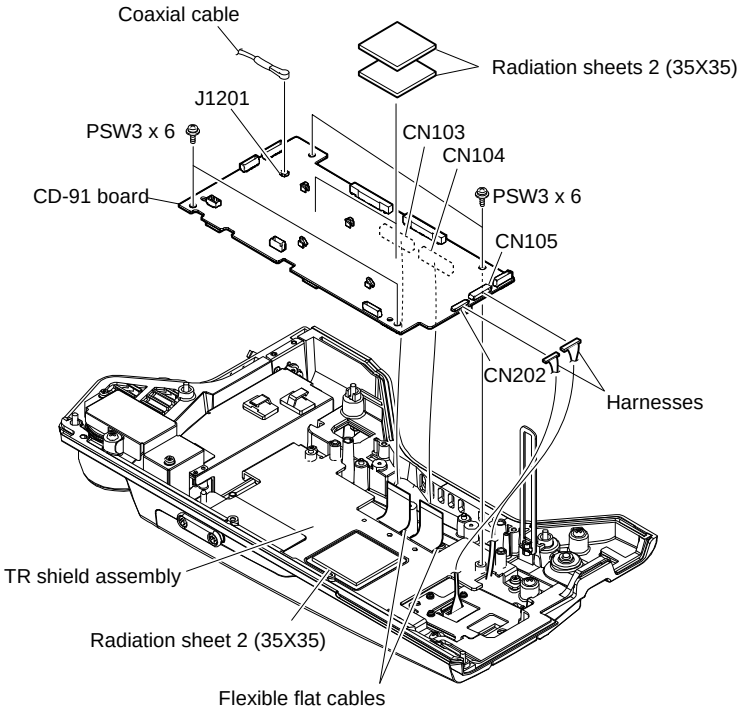
1. Remove the outside panel assembly. (Refer to “3-6-1. Outside Panel Assembly”.)

Procedure

1. Remove the four screws to detach the CD shield plate.



2. Detach the four radiation sheets 2 (35X35).
3. Remove the coaxial cable and the two harnesses from the three connectors (J1201, CN105, CN203) on the CD-91 board.
4. Remove the four screws, and then remove the CD-91 board.
5. Disconnect the two flexible flat cables from the two connectors (CN103, CN104) on the CD-91 board.



Note

If the radiation sheet 2 (35X35) peels off the TR shield assembly, stick it to the position shown in the figure.

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

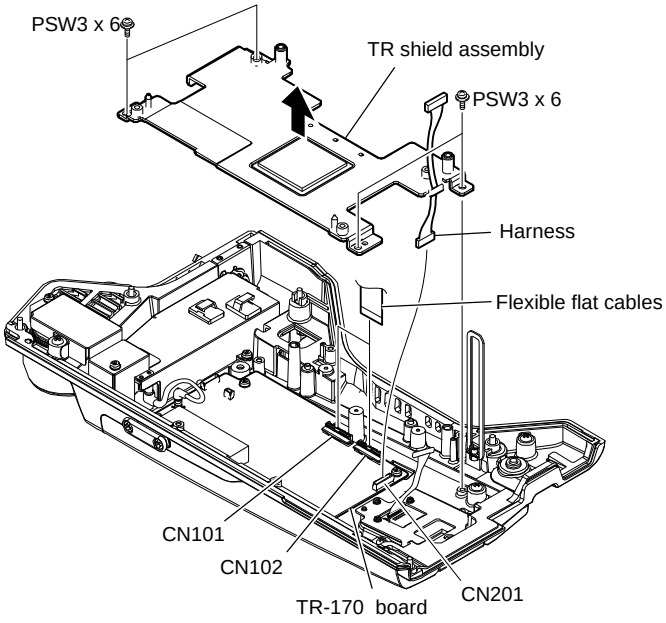
3-6-3. TR-170 Board

Preparation

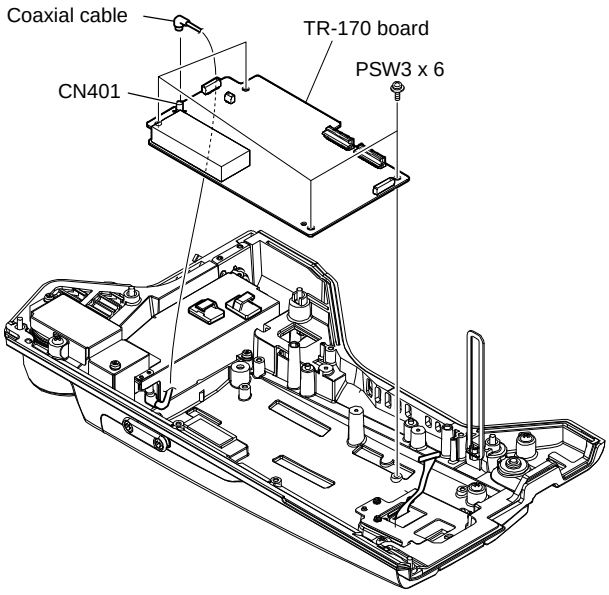
1. Remove the outside panel assembly. (Refer to “3-6-1. Outside Panel Assembly”.)
2. Remove the CD-91 board. (Refer to “3-6-2. CD-91 Board”.)

Procedure

1. Remove the four screws and lift up the TR shield assembly in the direction of the arrow.
2. Disconnect the harness from the connector (CN201) on the TR-170 board.
3. Disconnect the two flexible flat cables from the two connectors (CN101, CN102) on the TR-170 board.



4. Disconnect the coaxial cable from the connector (CN401) on the TR-170 board.
5. Remove the four screws, and then remove the TR-170 board.



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

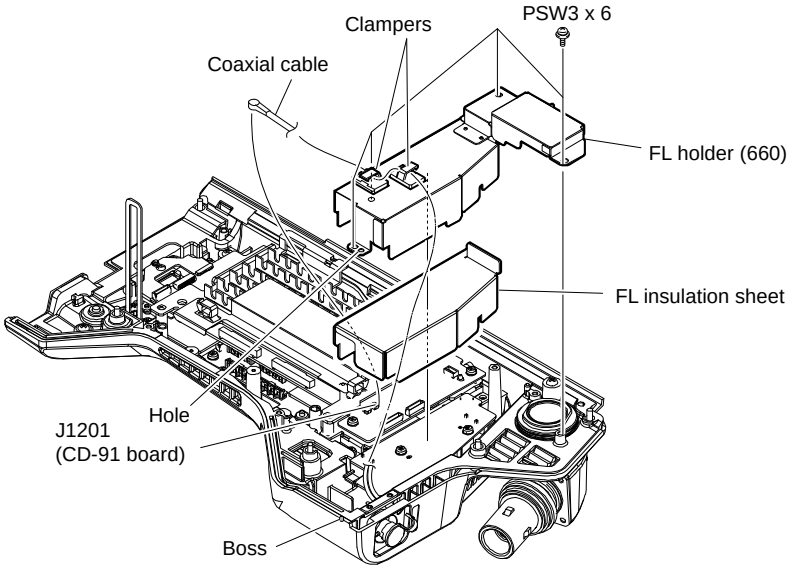
3-6-4. FL-380 Board

Preparation

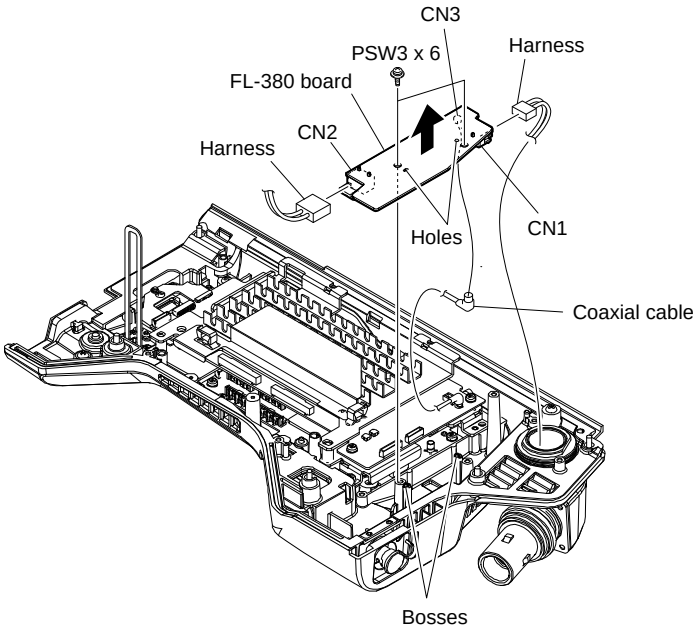
1. Remove the outside panel assembly. (Refer to “3-6-1. Outside Panel Assembly”.)

Procedure

1. Disconnect the coaxial cable from the connector (J1201) on the CD-91 board.
2. Remove the coaxial cable from the clampers.
3. Remove the four screws to detach the FL holder (660) and the FL insulation sheet.



4. Remove the two screws and lift up the FL-380 board in the direction of the arrow.
5. Disconnect the two harnesses and the coaxial cable from the three connectors (CN1 to CN3) on the FL-380 board.



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

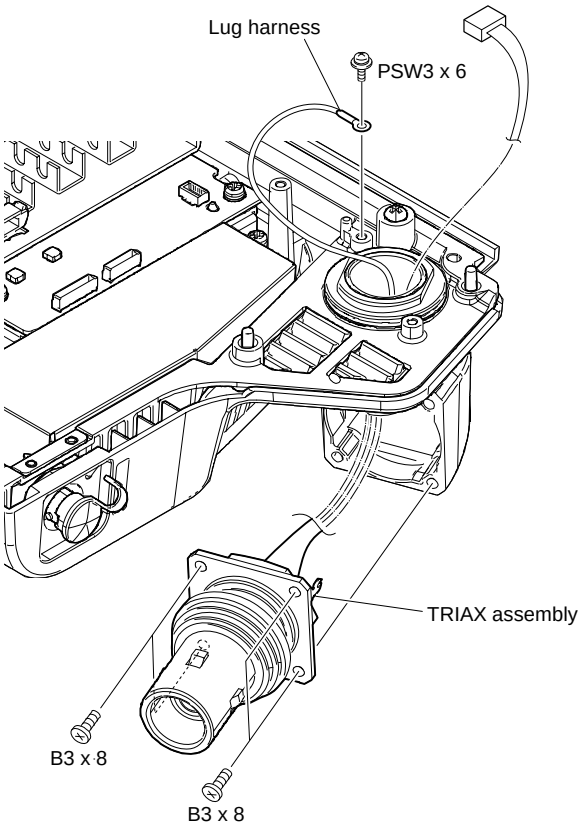
3-6-5. TRIAX Assembly

Preparation

1. Remove the outside panel assembly. (Refer to “3-6-1. Outside Panel Assembly”.)
2. Remove the FL-380 board. (Refer to “3-6-4. FL-380 Board”.)

Procedure

1. Remove the screw (PSW3 x 6) and disconnect the lug harness.
2. Remove the four screws (B3 x 8) and remove the TRIAX assembly.



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

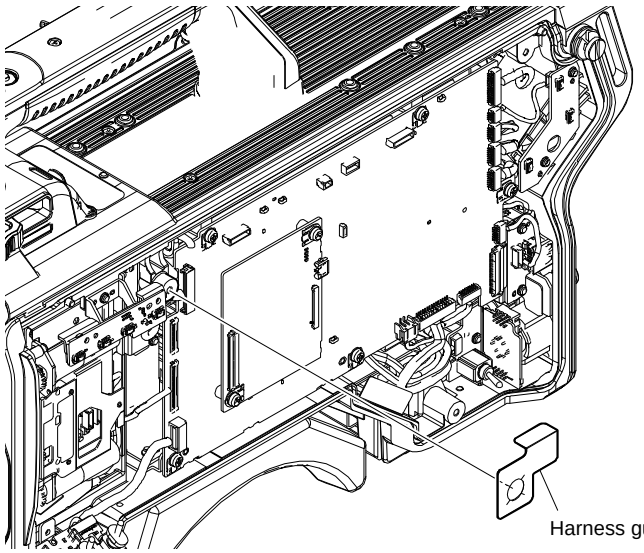
3-7. SY-463 Board

Preparation

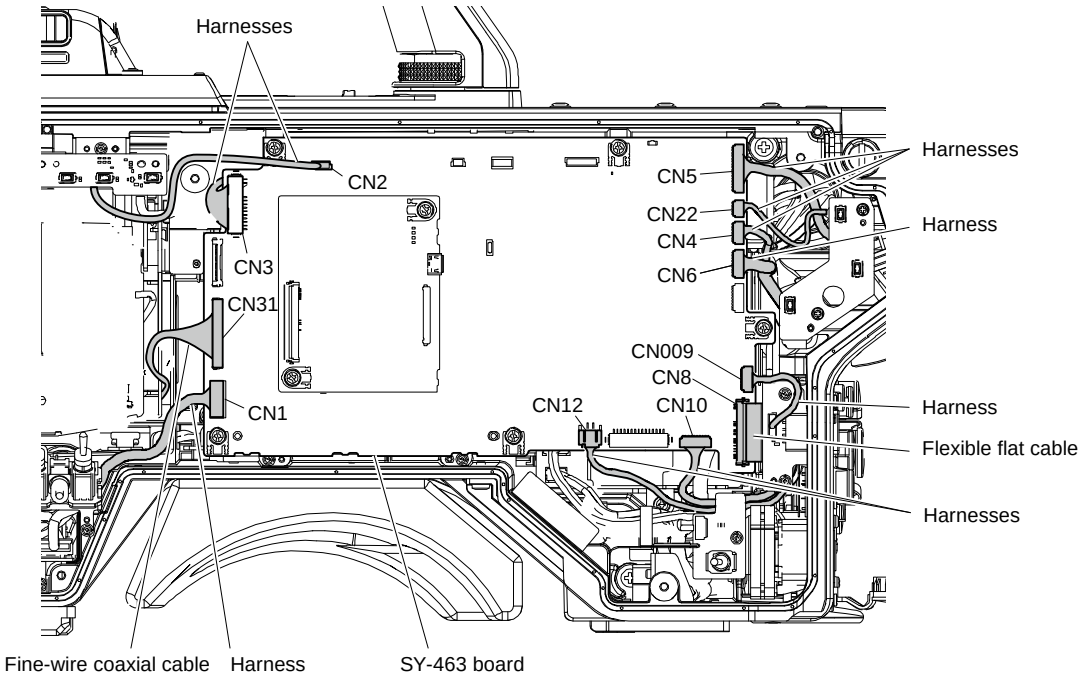
1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)

Procedure

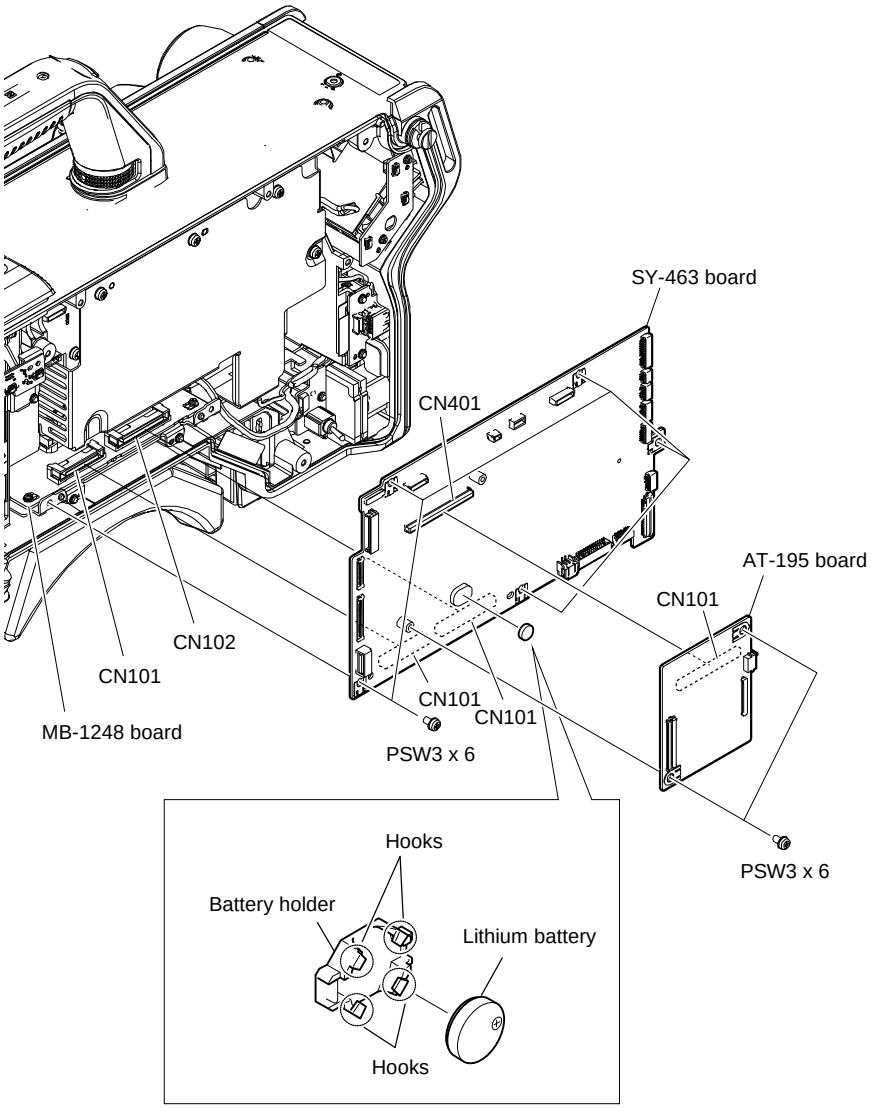
1. Remove the harness guard (SW-1738).



2. Disconnect the 10 harnesses from the 10 connectors (CN009, CN1 to CN6, CN10, CN12 and CN22) on the SY-463 board.
3. Disconnect the fine-wire coaxial cable from the connector (CN31) on the SY-463 board.
4. Disconnect the flexible flat cable from the connector (CN8) on the SY-463 board.



5. Remove the five screws.
6. Remove the SY-463 board from the connectors (CN101, CN102) on the MB-1248 board.
7. Remove the two screws and AT-195 board from the connector (CN401) on the SY-463 board.
8. Remove the lithium battery with an non-conductive stick.



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

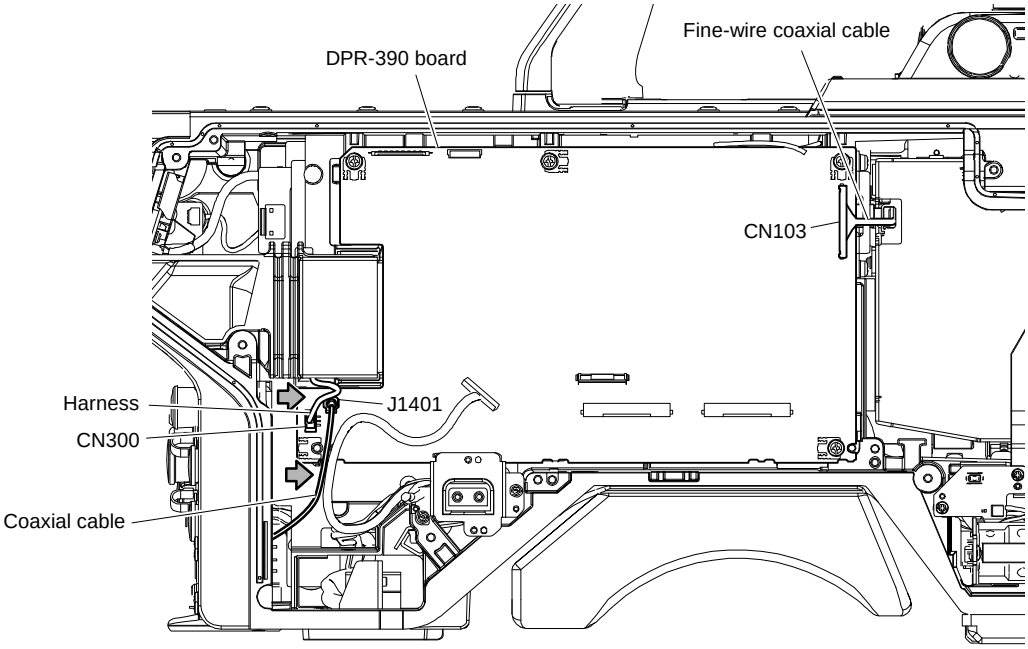
3-8. DPR-390 Board

Preparation

1. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)

Procedure

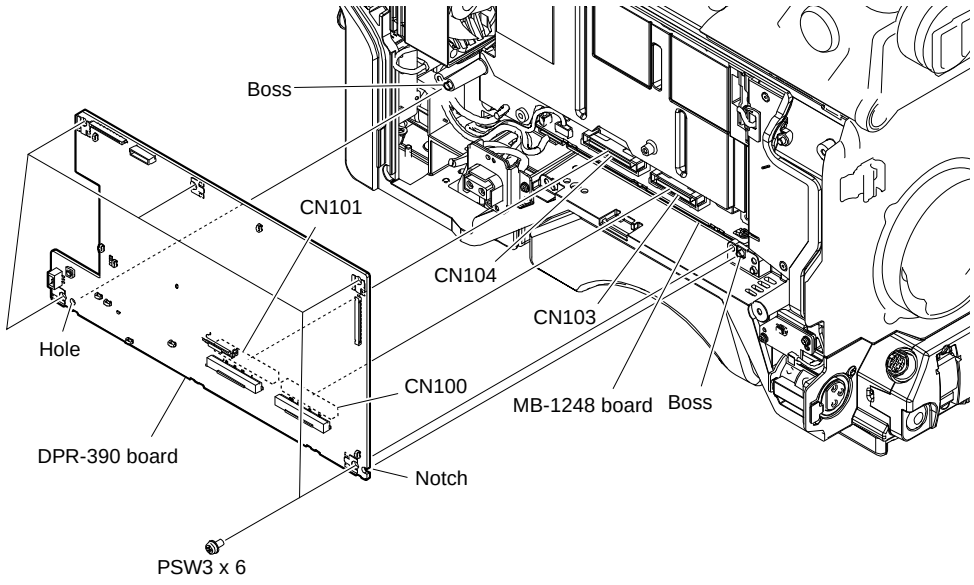
1. Disconnect the fine-wire coaxial cable, the harness, and the coaxial cable from the connectors (CN103, CN300, J1401) on the DPR-390 board.



Note

When connecting the harness and the coaxial cable, arrange them in the direction of the arrow.

2. Remove the five screws.
3. Remove the DPR-390 board from the two connectors (CN103, CN104) on the MB-1248 board.



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

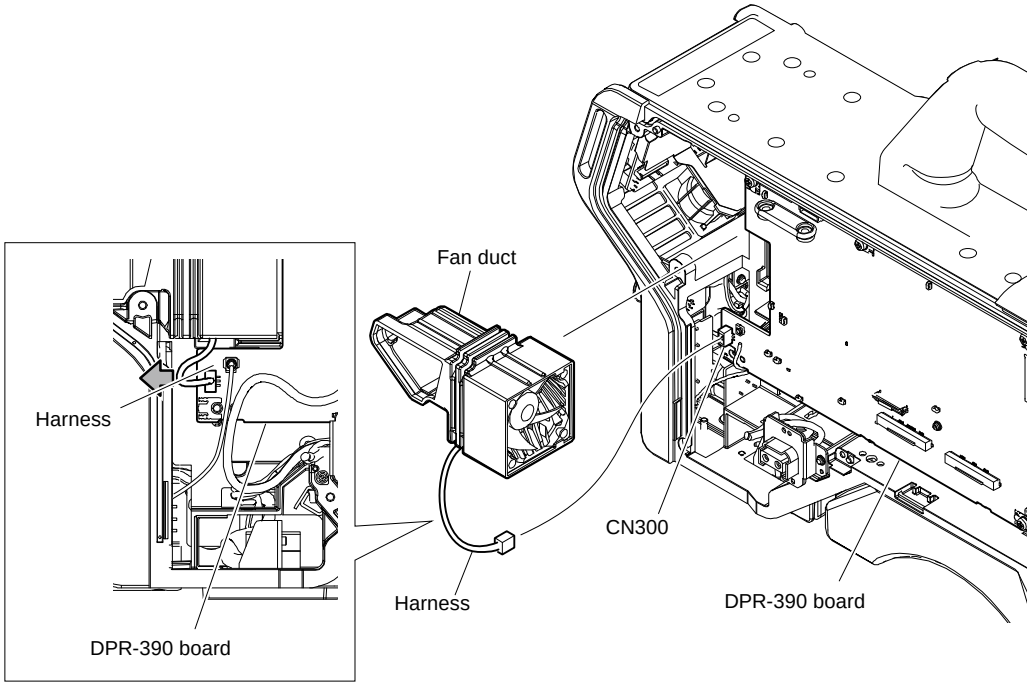
3-9. DC Fan (Rear)

Preparation

1. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)

Procedure

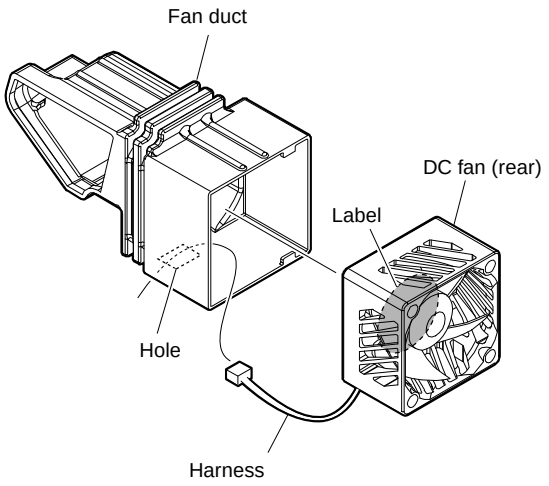
1. Disconnect the harness from the connector (CN300) on the DPR-390 board.
2. Remove the fan duct.



Note

When installing the fan duct, arrange the harness in the direction of the arrow.

3. Remove the DC fan (rear) from the fan duct.
4. Release the harness from the hole of the fan duct.



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

3-10. Front

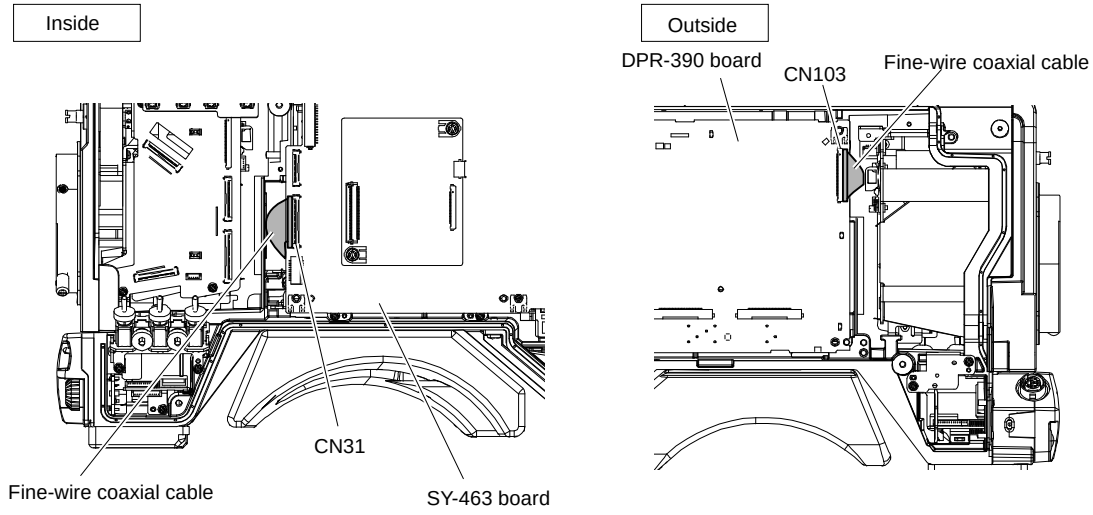
3-10-1. Front Assembly

Preparation

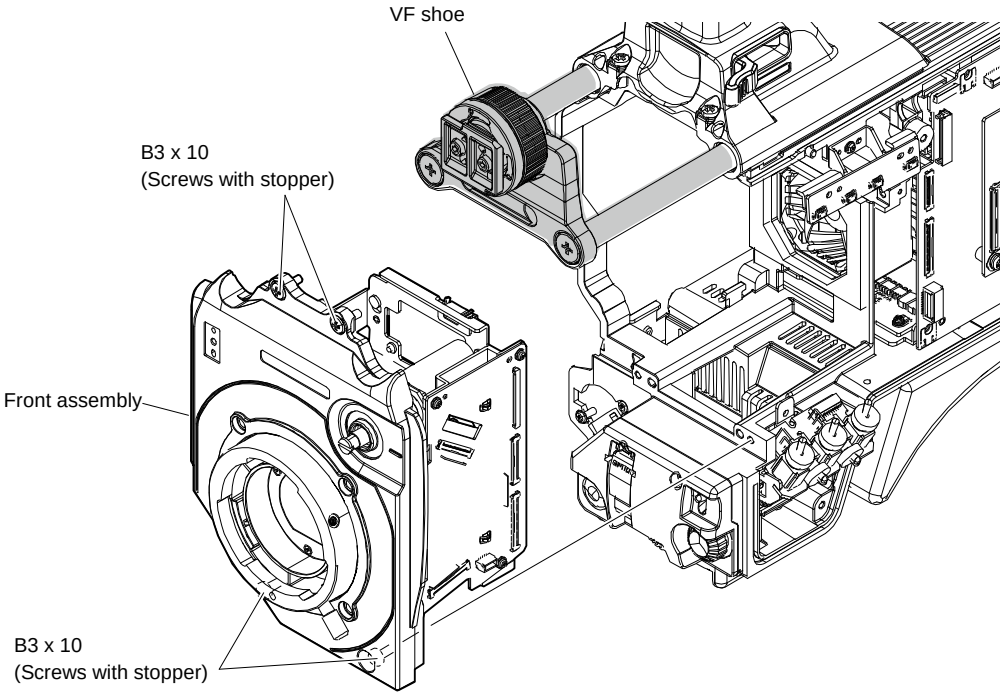
1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)

Procedure

1. Disconnect the fine-wire coaxial cable from the connector (CN103) on the DPR-390 board.
2. Disconnect the fine-wire coaxial cable from the connector (CN31) on the SY-463 board.



3. Pull out the VF shoe.
4. Loosen the four screws with stopper and remove the front assembly.



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

3-10-2. OHB Assembly

Tip

Hexagonal wrench (Width across : 1.5 mm, 2.5 mm) are necessary as tools.

Preparation

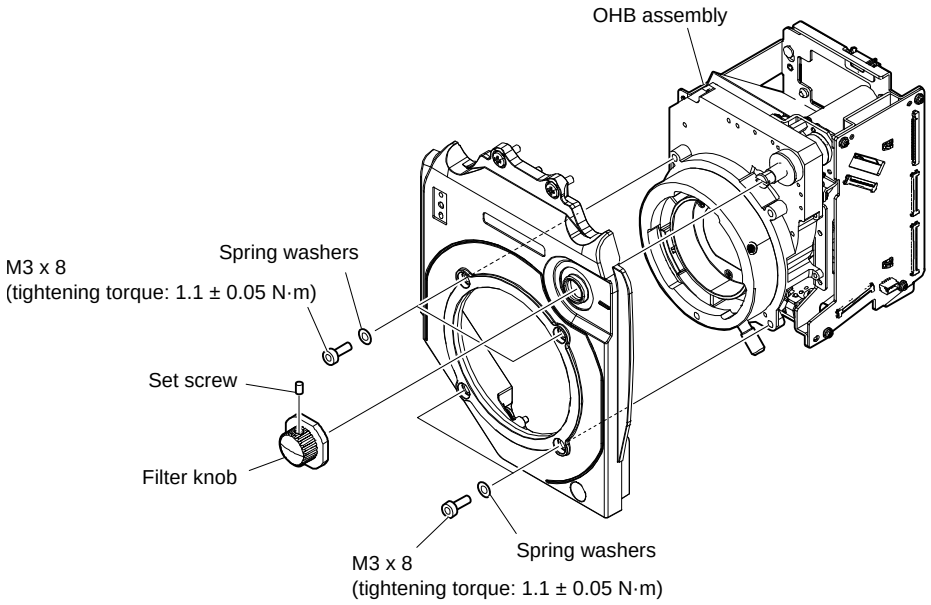
1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)
3. Remove the front assembly. (Refer to “3-10-1. Front Assembly”)

Procedure

1. Remove the set screw to detach the filter knob.
2. Remove the four bolts (M3 x 8) and the four spring washers, and then remove the OHB assembly.

Note

Do not touch the optical part and BI boards.



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

3-10-3. IF-1331 Board

Preparation

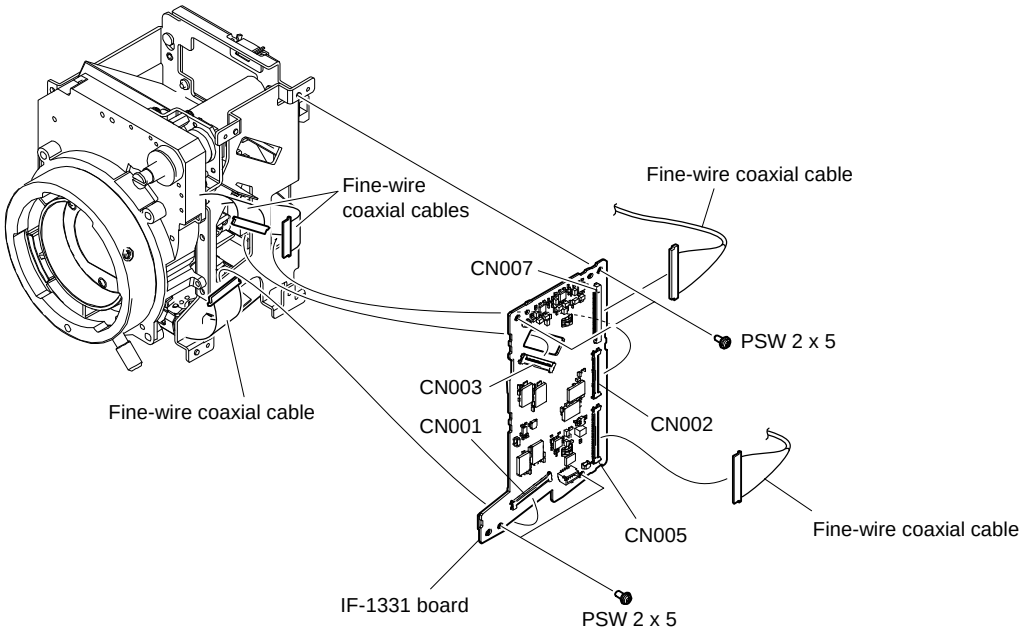
1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)
3. Remove the front assembly. (Refer to “3-10-1. Front Assembly”)
4. Remove the OHB assembly. (Refer to “3-10-2. OHB Assembly”)

Procedure

1. Disconnect the five fine-wire coaxial cables from the five connectors (CN001 to CN003, CN005, CN007) on the IF-1331 board.
2. Remove the four screws to detach the IF-1331 board.

Note

Do not touch the optical part and BI boards.



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

3-10-4. DR-699 Board

Preparation

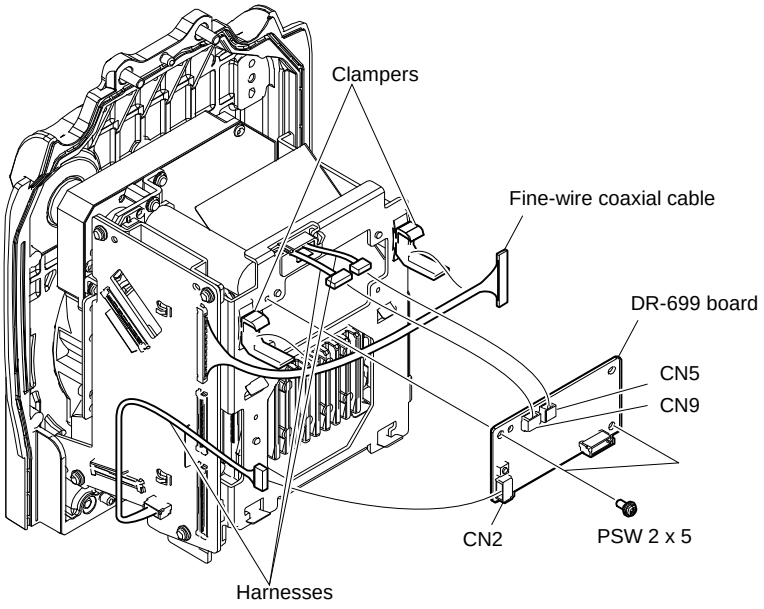
1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)
3. Remove the front assembly. (Refer to “3-10-1. Front Assembly”)

Procedure

1. Release the fine-wire coaxial cable from the two clampers.
2. Disconnect the three harnesses from the three connectors (CN2, CN5, CN9) on the DR-699 board.
3. Remove the two screws to detach the DR-699 board.

Note

Do not touch the optical part and BI boards.



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

3-10-5. SE-1216 Board

Note

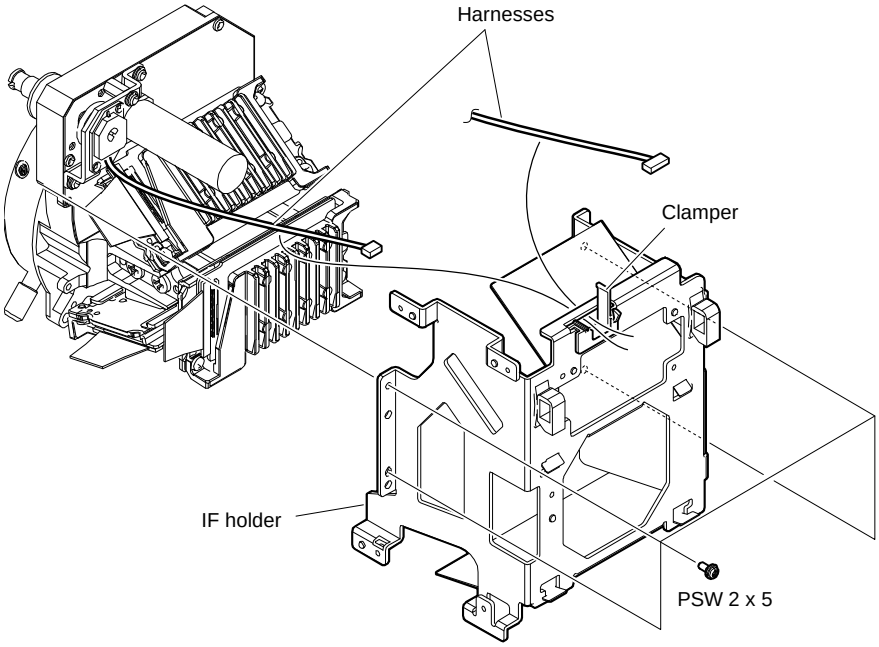
Do not touch the optical part and BI boards.

Preparation

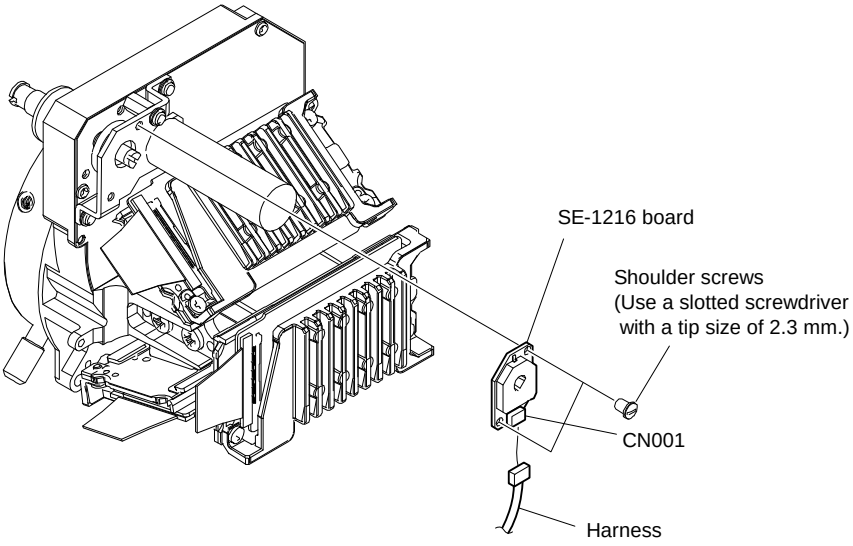
1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)
3. Remove the front assembly. (Refer to “3-10-1. Front Assembly”)
4. Remove the OHB assembly. (Refer to “3-10-2. OHB Assembly”)

Procedure

1. Release the two harnesses from the clamper.
2. Remove the four screws to detach the IF holder.



3. Disconnect the harness from the connector (CN001) on the SE-1216 board.
4. Remove the two shoulder screws to detach the SE-1216 board.



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

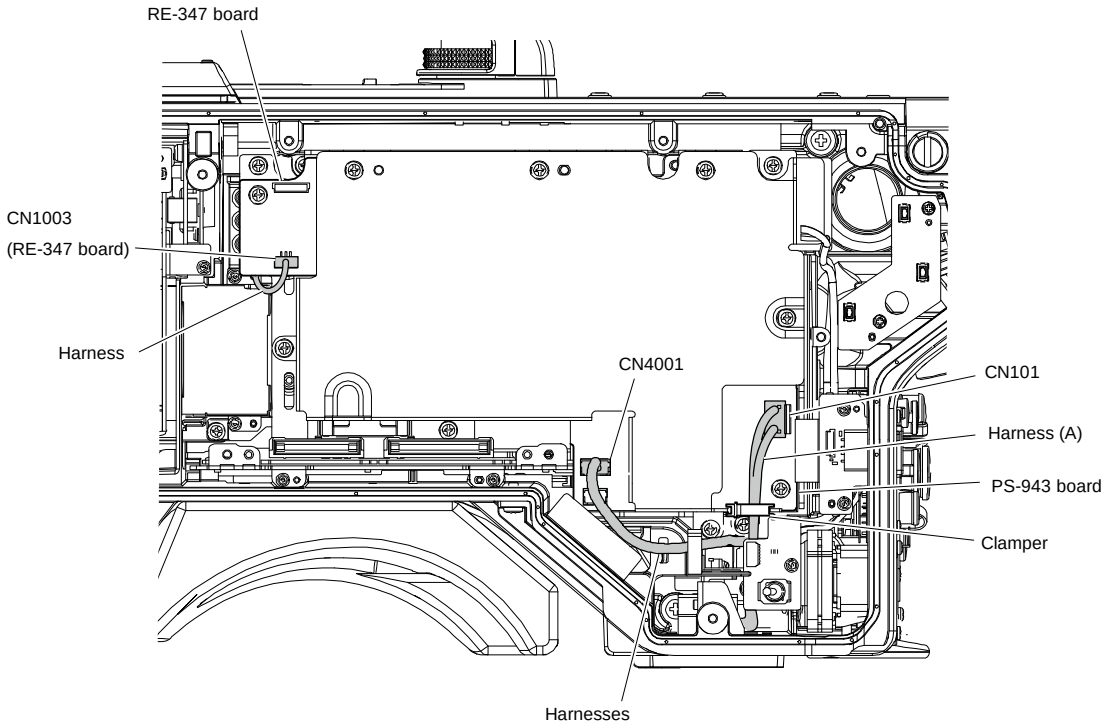
3-11. Power Block Assembly (PS-943 Board, RE-347 Board)

Preparation

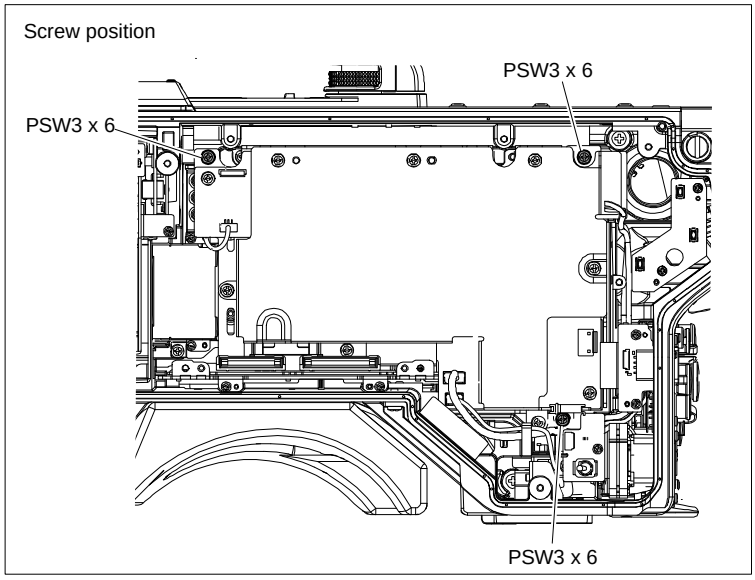
1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the SY-463 board. (Refer to “3-5. SY-463 Board”.)
3. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)

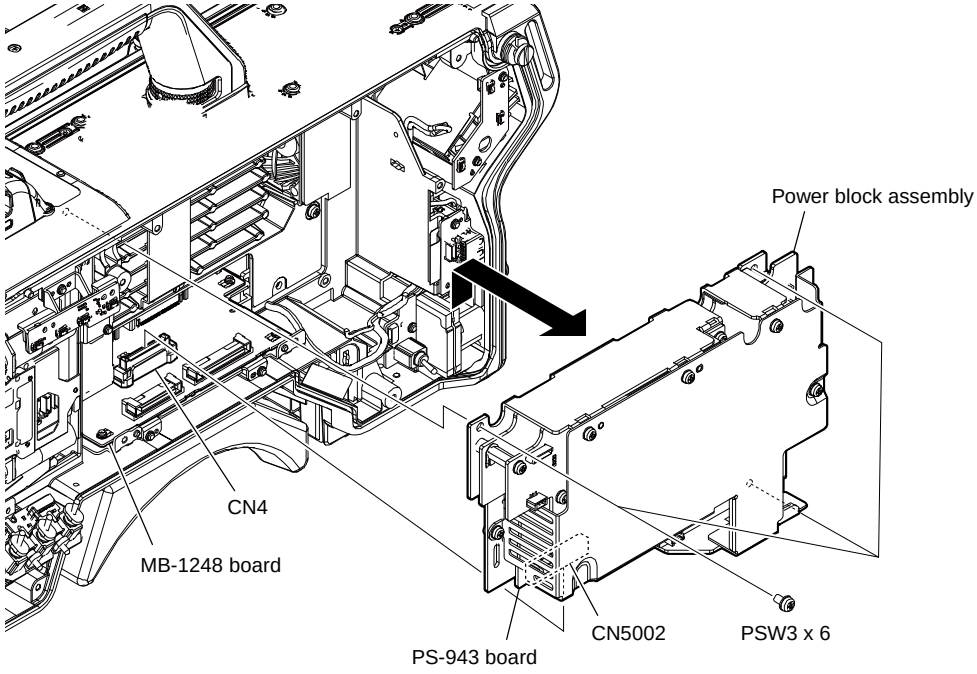
Procedure

1. Disconnect the harness from the connector (CN1003) on the RE-347 board.
2. Disconnect the two harnesses from the two connectors (CN101, CN4001) on the PS-943 board.
3. Open the clamper to remove the harness (A).

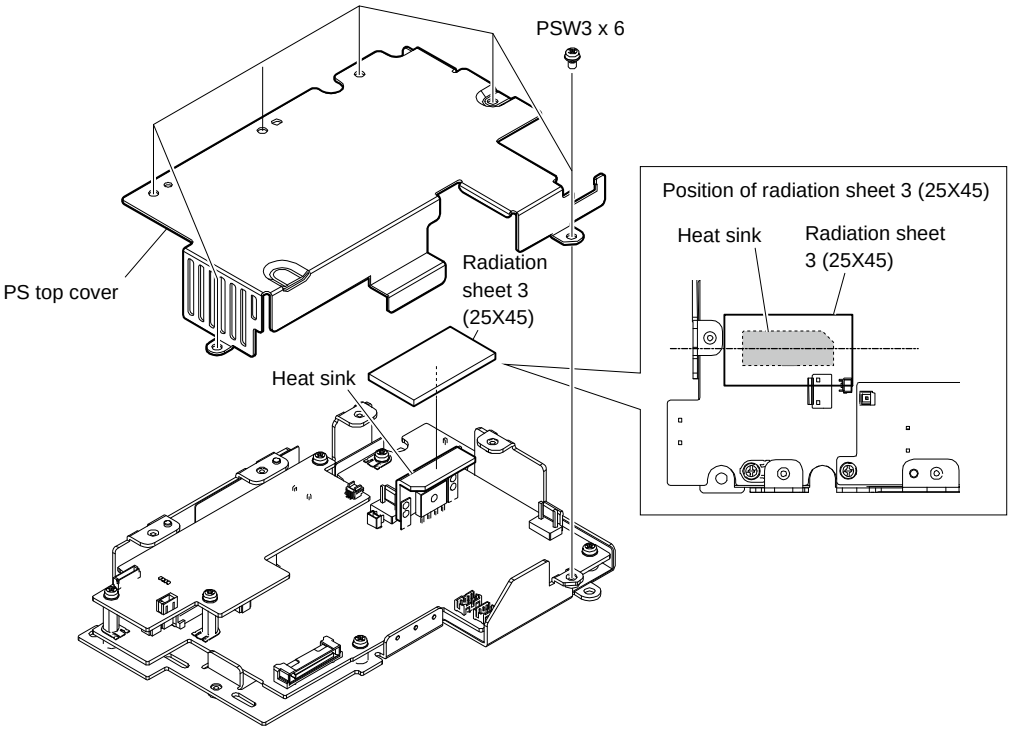


4. Remove the three screws.
5. Remove the power block assembly from the connector (CN4) on the MB-1248 board in the direction of the arrow.

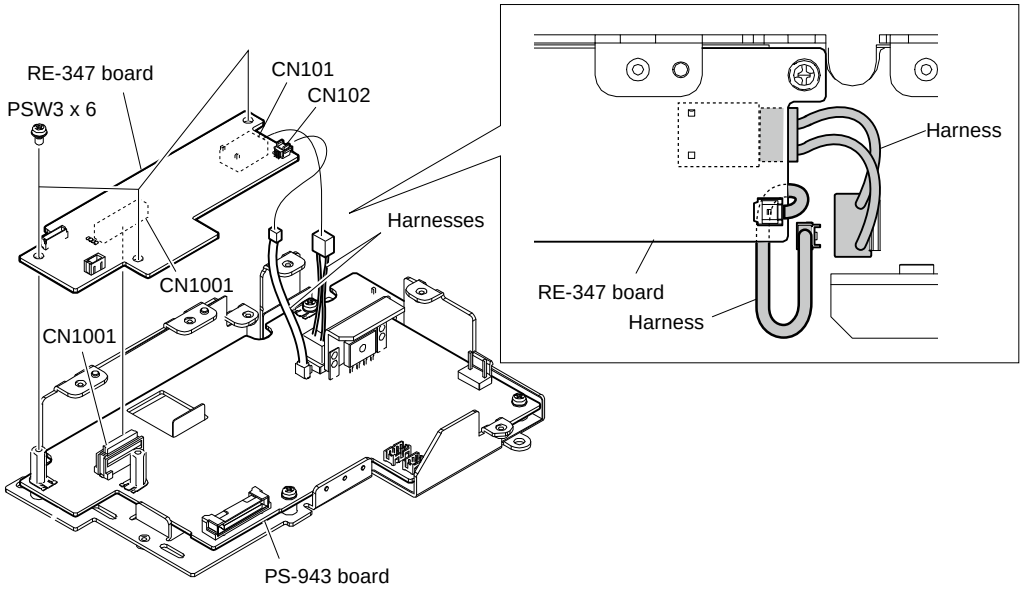




6. Remove the six screws and the PS top cover.
7. Detach the radiation sheet 3 (25X45).



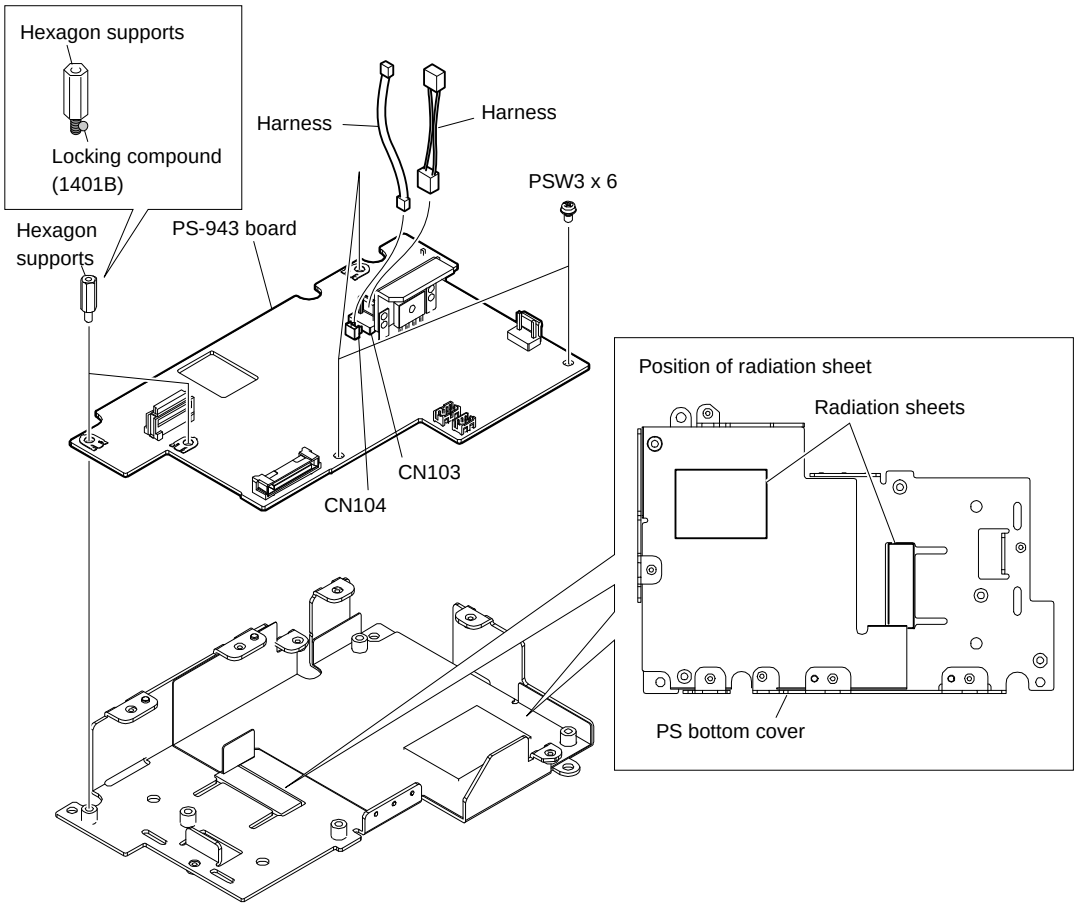
8. Disconnect the harnesses from the two connectors (CN101, CN102) on the RE-347 board.
9. Remove the three screws and the RE-347 board from the connector (CN1001) on the PS-943 board.



Note

When installing, arrange the harnesses as shown figure.

10. Disconnect the harnesses from the two connectors (CN103, CN104) on the PS-943 board.
11. Remove the two hexagon supports and the three screws, and then remove the PS-943 board.



Note

Be sure to install as follows.

- If the radiation sheet peels off the PS bottom cover, stick it to the position as shown in the figure.
- Apply locking compound (1401B) to the side of the hexagon support.

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

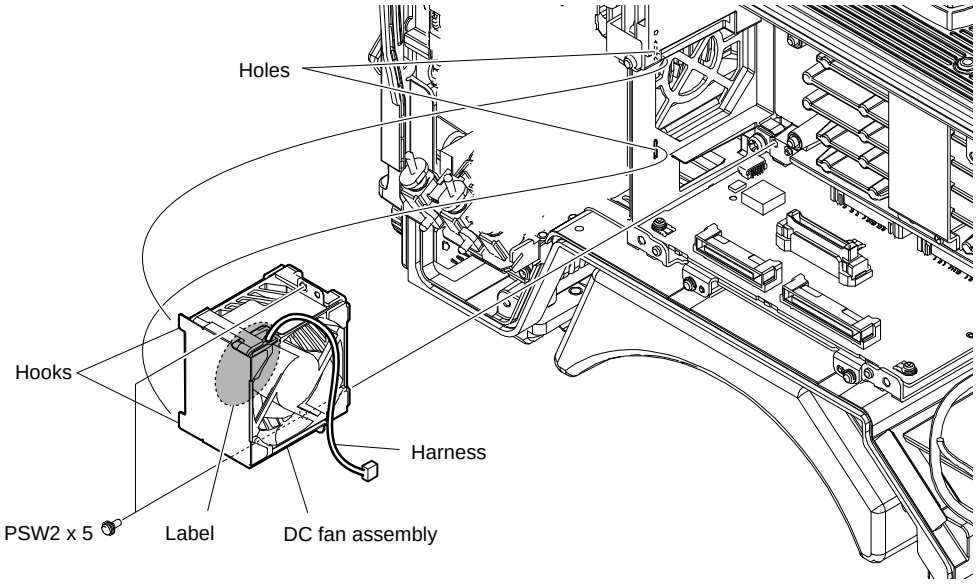
3-12.DC Fan (Front)

Preparation

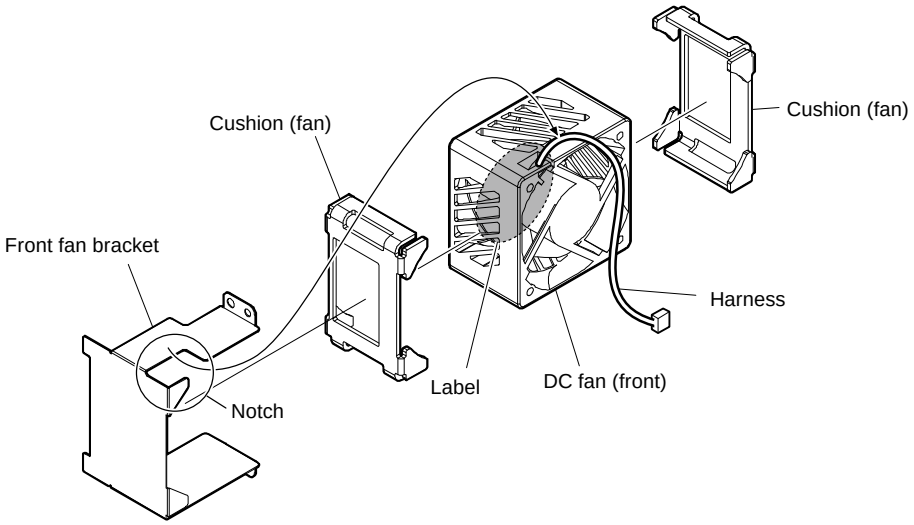
1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)
3. Remove the SY-463 board. (Refer to “3-7. SY-463 Board”.)

Procedure

1. Remove the two screws.
2. Release the two hooks to remove the DC fan assembly.



3. Remove the front fan bracket.
4. Detach the two cushions (fans) from the DC fan (front).



Note

When installing the DC fan (front) assembly, pass the harness through the notches of the front fan bracket.

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

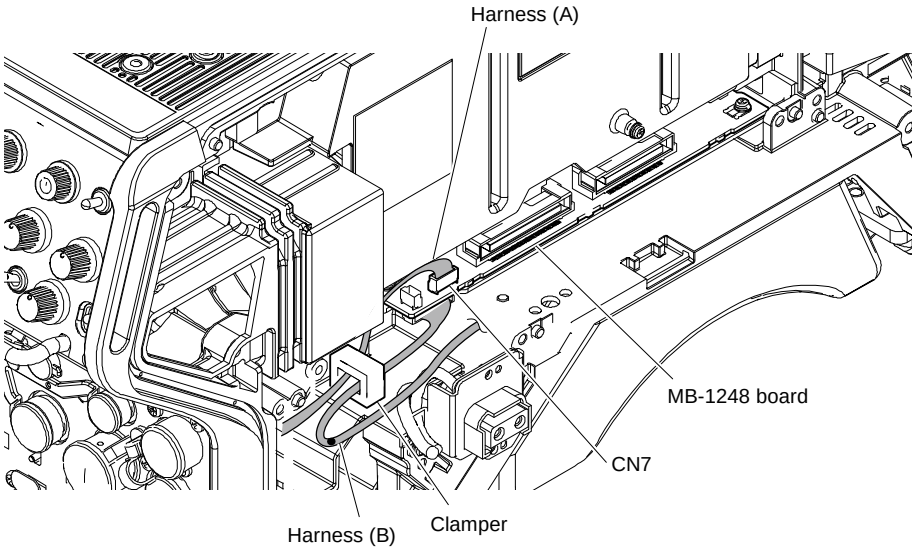
3-13. MB-1248 Board

Preparation

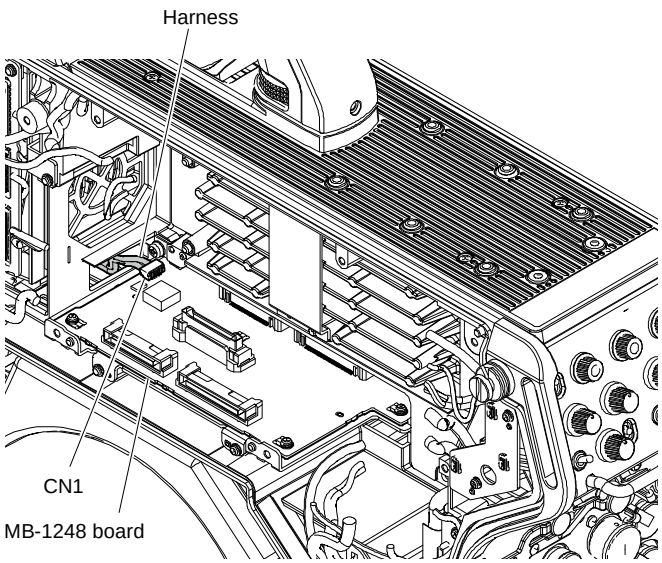
1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)
3. Remove the SY-463 board. (Refer to “3-7. SY-463 Board”.)
4. Remove the power block assembly. (Refer to “3-11. Power Block Assembly (PS-943 Board, RE-347 Board)”.)
5. Remove the DPR-390 board. (Refer to “3-8. DPR-390 Board”.)

Procedure

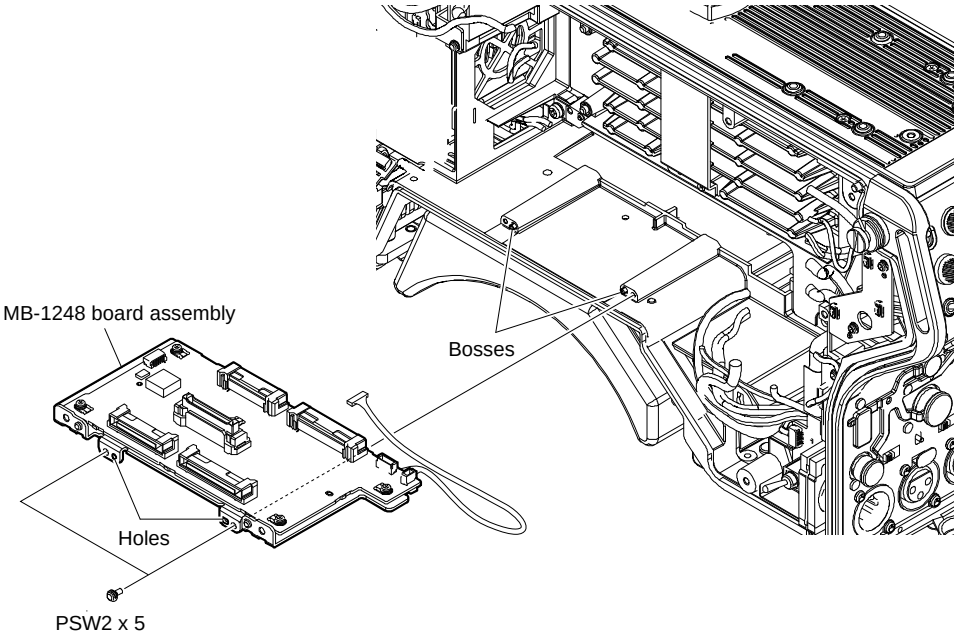
1. Disconnect the harness A from the connector (CN7) on the MB-1248 board.
2. Disconnect the harness B from the clamper.



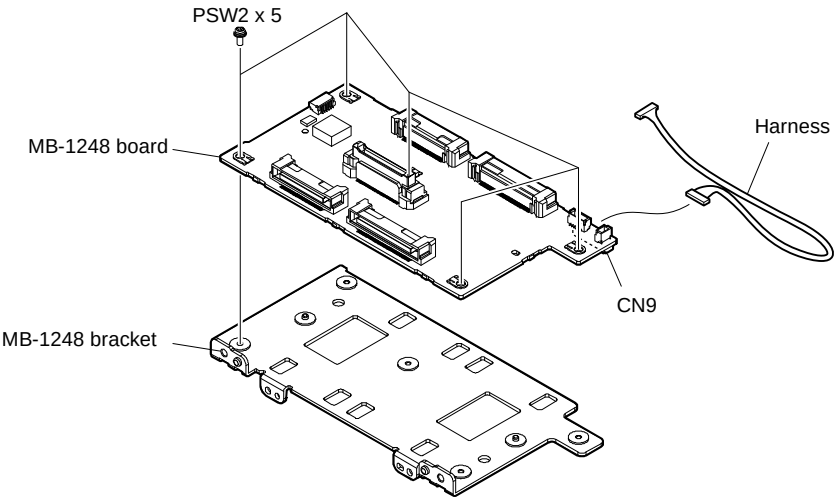
3. Disconnect the harness from the connector (CN1) on the MB-1248 board.



4. Remove the two screws, and then remove the MB-1248 board assembly.



5. Disconnect the harness from the connector (CN9) on the MB-1248 board.
6. Remove the five screws, and then remove the MB-1248 board.



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

3-14. MIC Panel

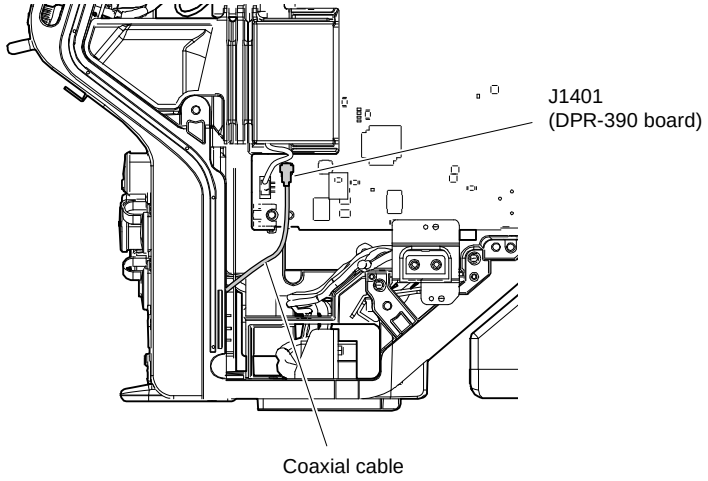
3-14-1. CN-3997 Board, CN-3995 Board

Preparation

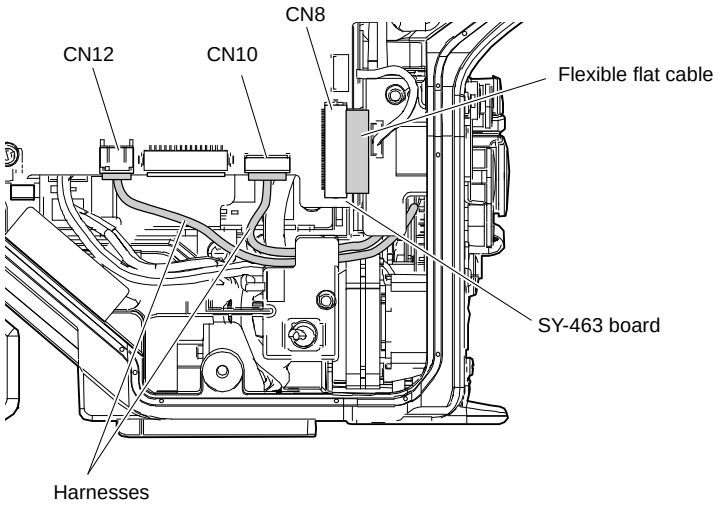
1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)

Procedure

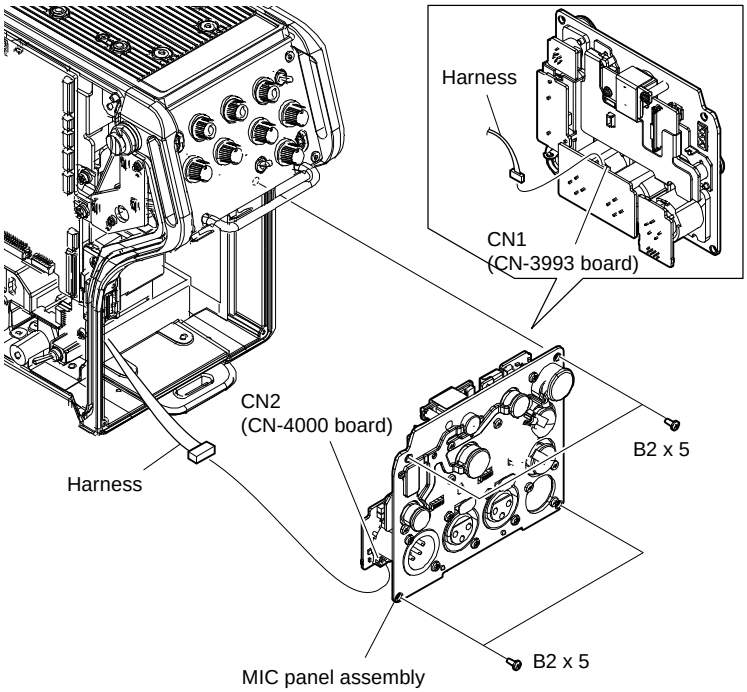
1. Disconnect the coaxial cable from the connector (J1401) on the DPR-390 board.



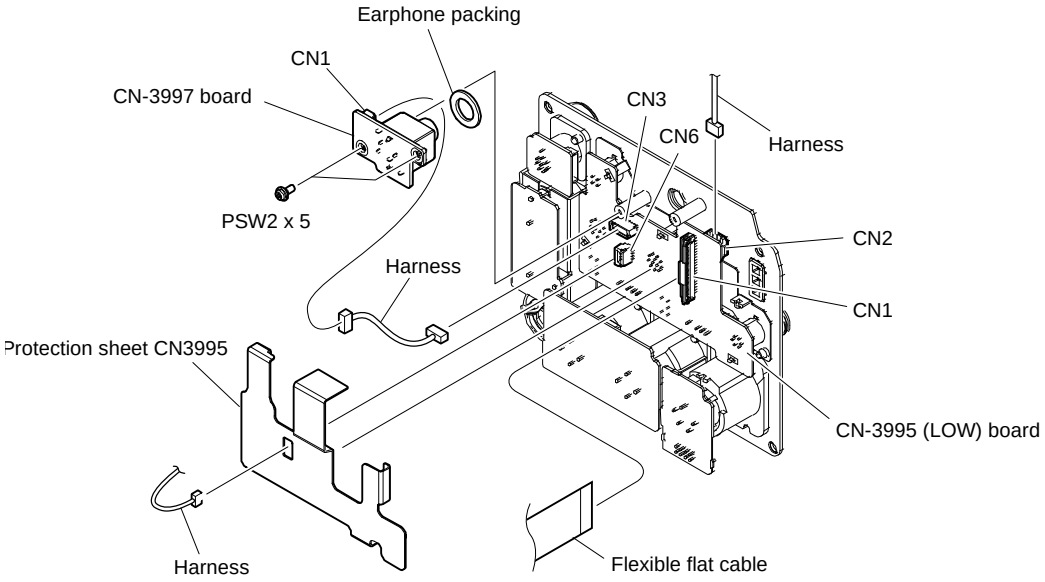
2. Disconnect the flexible flat cable from the connector (CN8) on the SY-463 board.
3. Disconnect the two harnesses from the two connectors (CN10, CN12) on the SY-463 board.



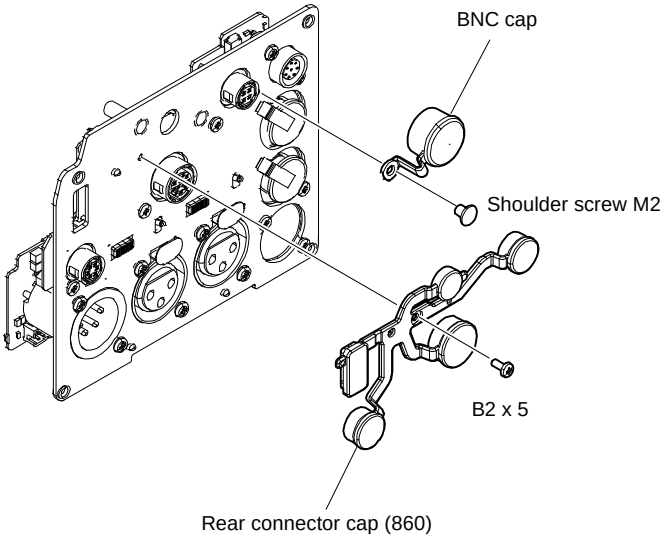
4. Remove the four screws and pull out the MIC panel assembly.
5. Disconnect the harness from the connector (CN2) on the CN-4000 board.
6. Disconnect the harness from the connector (CN1) on the CN-3993 board.



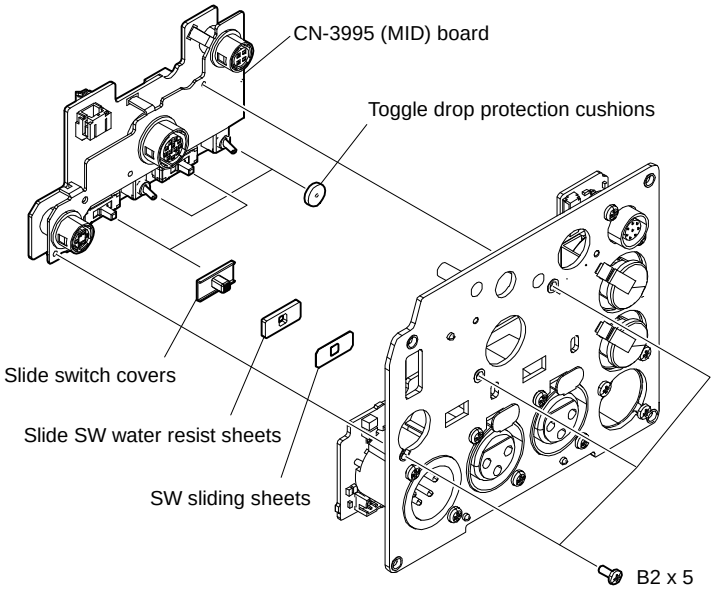
7. Disconnect the harness from the connector (CN6) on the CN-3995 (LOW) board and detach the CN3995 protection sheet.
8. Remove the two screws and remove the CN-3997 board.
9. Disconnect the harness from the connector (CN1) on the CN-3997 board, and then remove the earphone packing from the CN-3997 board.
10. Disconnect the flexible flat cable from the connector (CN1) on the CN-3995 (LOW) board.
11. Disconnect the two harnesses from the two connectors (CN2, CN3) on the CN-3995 (LOW) board.



12. Remove the shoulder screw M2 to detach the BNC cap.
13. Remove the screw (B2 x 5) and the rear connector cap (860).



14. Remove the three screws, then remove the CN-3995 (MID) board, two toggle drop protection cushions, two SW sliding sheets, two slide SW water resist sheets, and two slide switch covers.



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

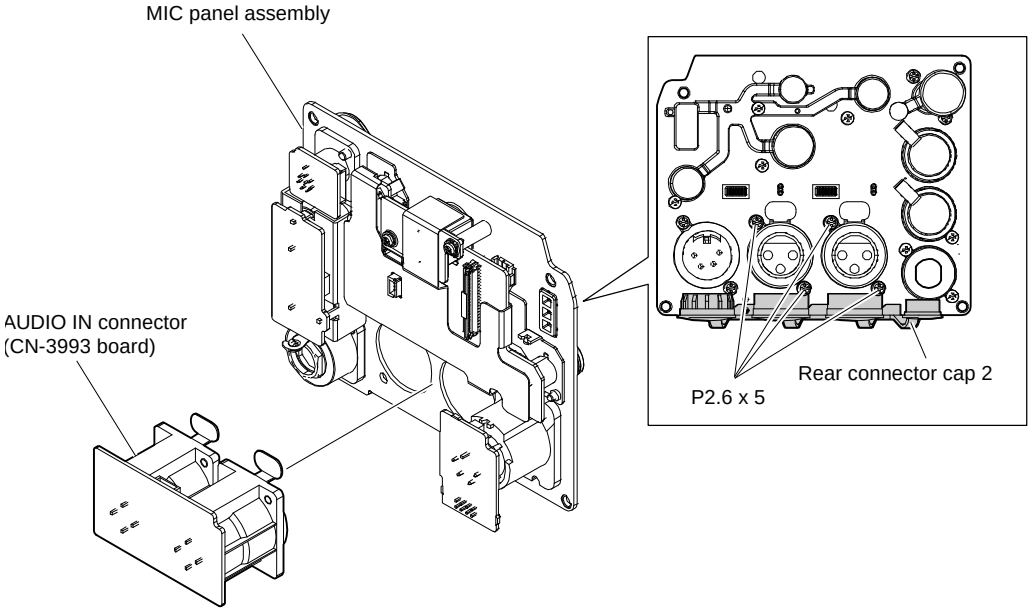
3-14-2. AUDIO IN Connector (CN-3993 Board)

Preparation

1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)
3. Remove the MIC panel assembly. (Refer to "3-14-1. CN-3997 Board, CN-3995 Board".)

Procedure

1. Open the rear connector cap 2.
2. Remove the four screws to detach the AUDIO IN connector (CN-3993 board) from the MIC panel assembly.



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

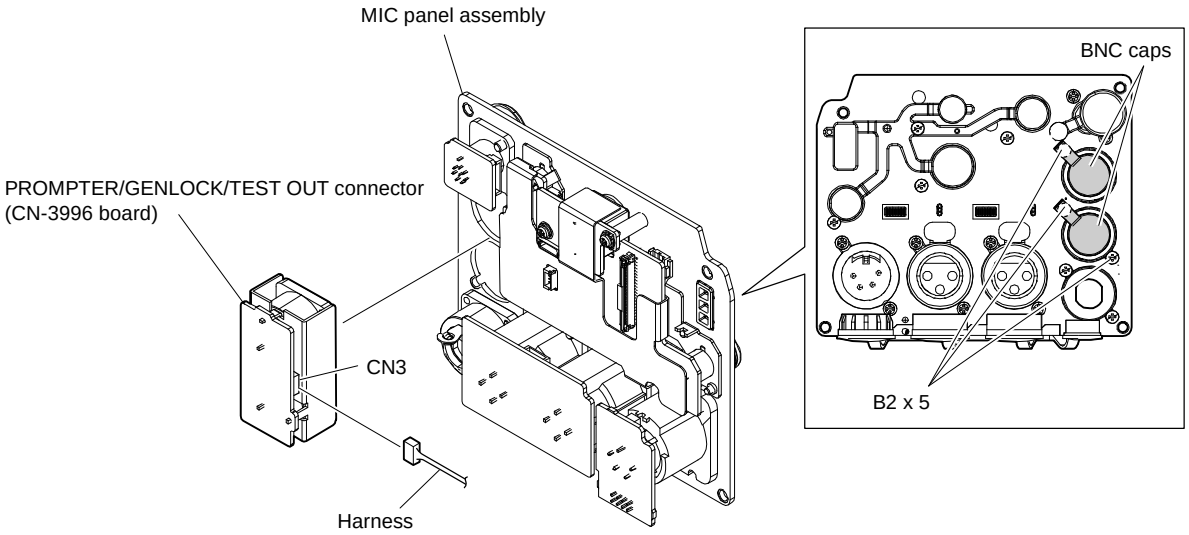
3-14-3. PROMPTER/GENLOCK/TEST OUT Connector (CN-3996 Board)

Preparation

1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)
3. Remove the MIC panel assembly. (Refer to "3-14-1. CN-3997 Board, CN-3995 Board".)

Procedure

1. Remove the three screws to detach the two BNC caps and PROMPTER/GENLOCK/TEST OUT connector (CN-3996 board) from the MIC panel assembly.
2. Disconnect the harness from the connector (CN3) on the PROMPTER/GENLOCK/TEST OUT connector (CN-3996 board).



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

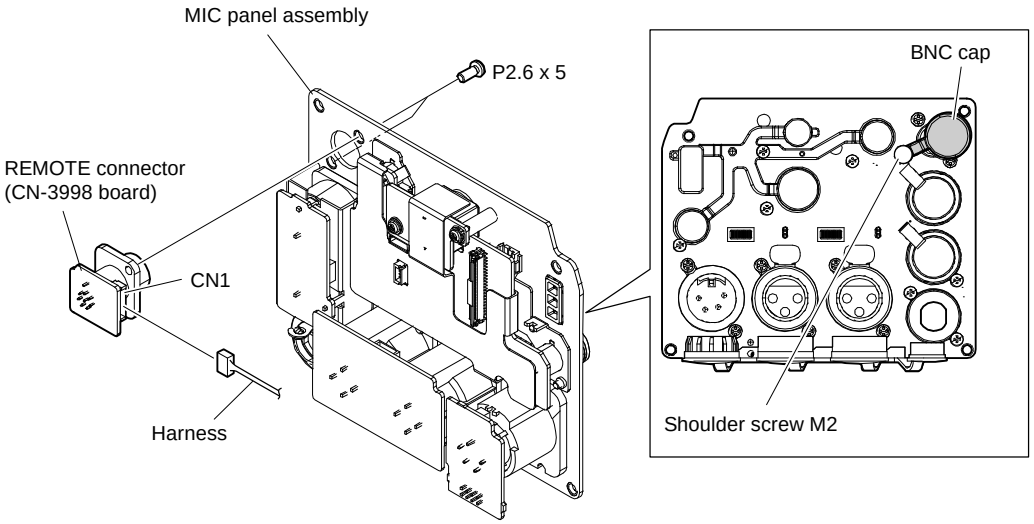
3-14-4. REMOTE Connector (CN-3998 Board)

Preparation

1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)
3. Remove the MIC panel assembly. (Refer to "3-14-1. CN-3997 Board, CN-3995 Board".)

Procedure

1. Remove the special head screw M2 and the tracker cap.
2. Remove the two screws (P2.6 X 5) and disconnect the REMOTE connector (CN-3998 board) from the MIC panel assembly.
3. Disconnect the harness from the connector (CN1) on the REMOTE connector (CN-3998 board).



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

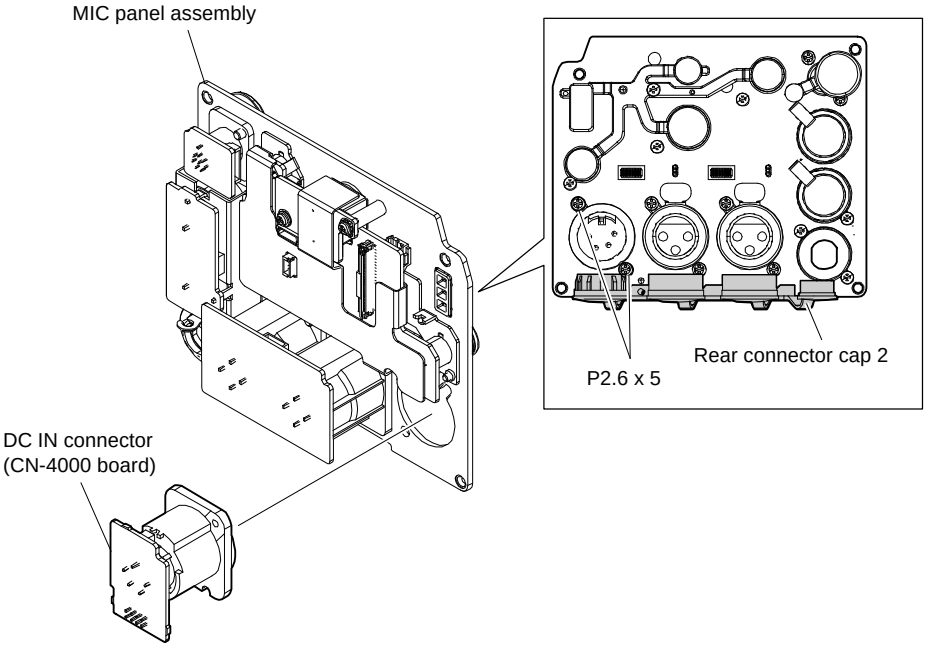
3-14-5. DC IN Connector (CN-4000 Board)

Preparation

1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)
3. Remove the MIC panel assembly. (Refer to "3-14-1. CN-3997 Board, CN-3995 Board".)

Procedure

1. Open the rear connector cap 2.
2. Remove the two screws, and then remove the DC IN connector (CN-4000 board) from the MIC panel assembly.



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

3-15. INCOM Panel

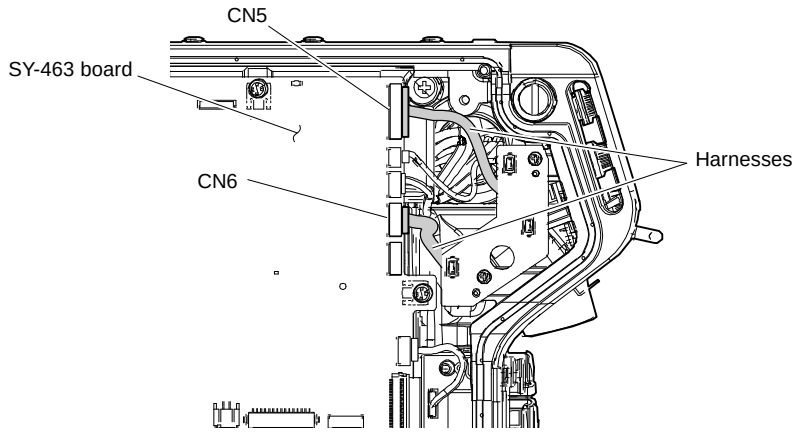
3-15-1. INTERCOM Connector (CN-3999 Board)

Preparation

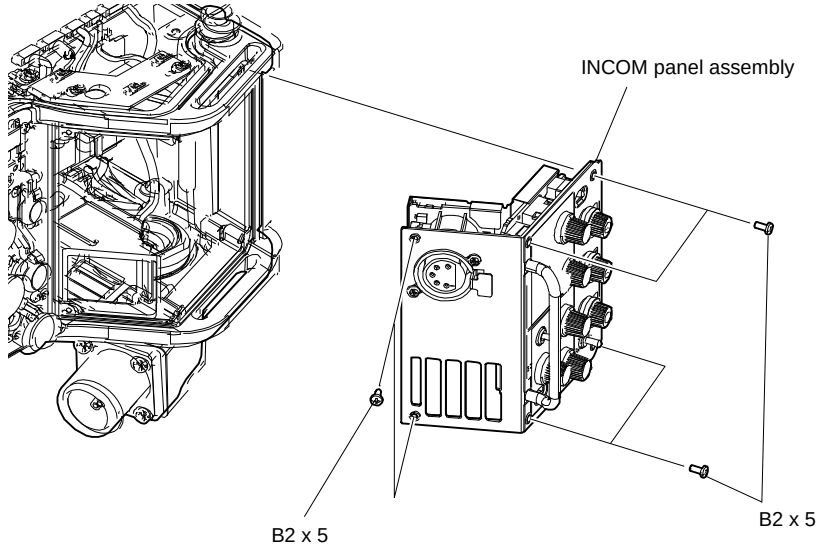
1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)

Procedure

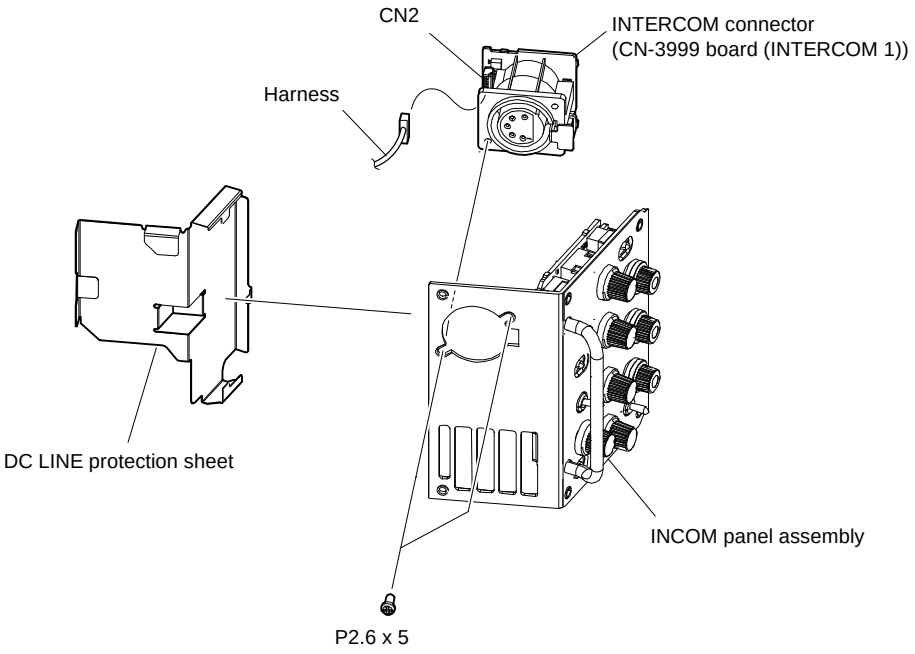
1. Remove the two harnesses from the two connectors (CN5, CN6) on the SY-463 board.



2. Remove the six screws, and then remove the INCOM panel assembly.



3. Detach the DC LINE protection sheet.
4. Remove the two screws and disconnect the INTERCOM connector (CN-3999 board).
5. Disconnect the harness from the connector (CN2) on the INTERCOM connector (CN-3999).



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

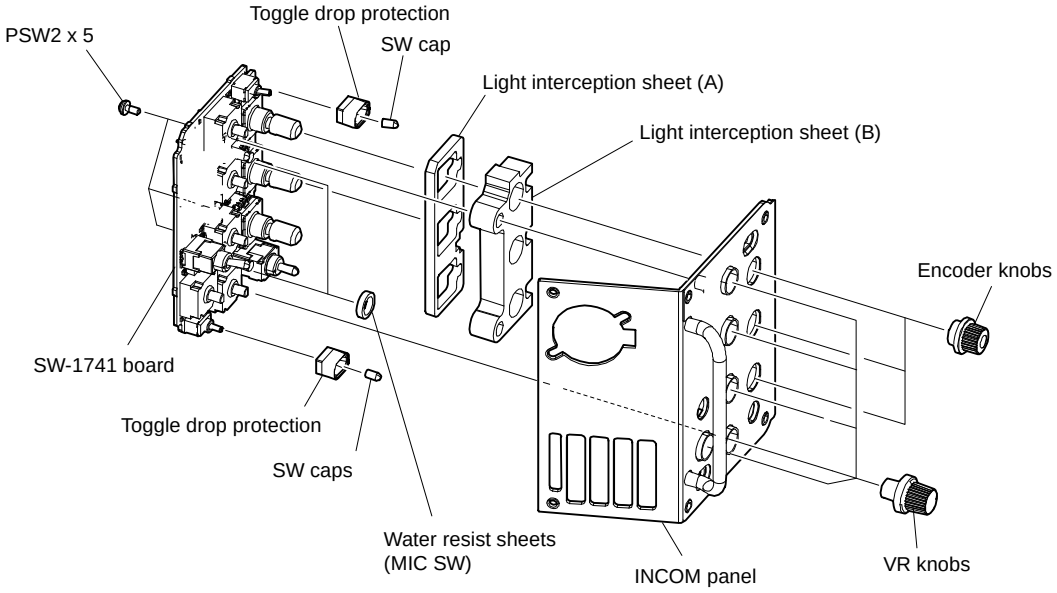
3-15-2. SW-1741 Board

Preparation

1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the INTERCOM connector (CN-3999). (Refer to "3-15-1. INTERCOM Connector (CN-3999 Board)".)

Procedure

1. Remove the three encoder knobs.
2. Remove the five VR knobs.
3. Remove the three screws, and then remove the SW-1741 board.
4. Remove the two SW caps, two toggle drop protections, two water resist sheets (MIC SW), light interception sheet (A), and light interception sheet (B) from the SW-1741 board.



Note

When installing the encoder knobs and the VR knobs, apply a bit of locking compound inside the knobs.
Attach the light interception sheet (B) so that the glossy side of the sheet is placed toward the surface.

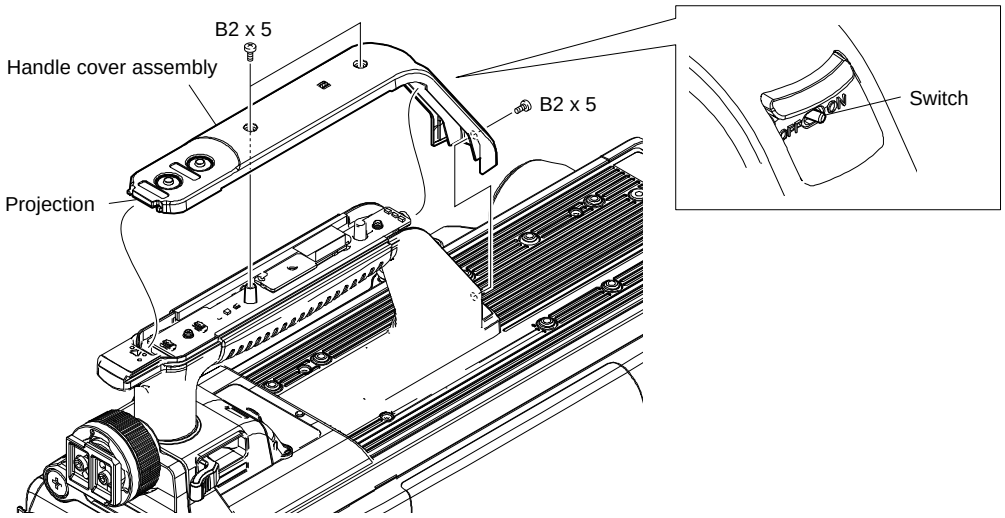
5. Install the removed parts by reversing the steps of removal.

3-16. Handle

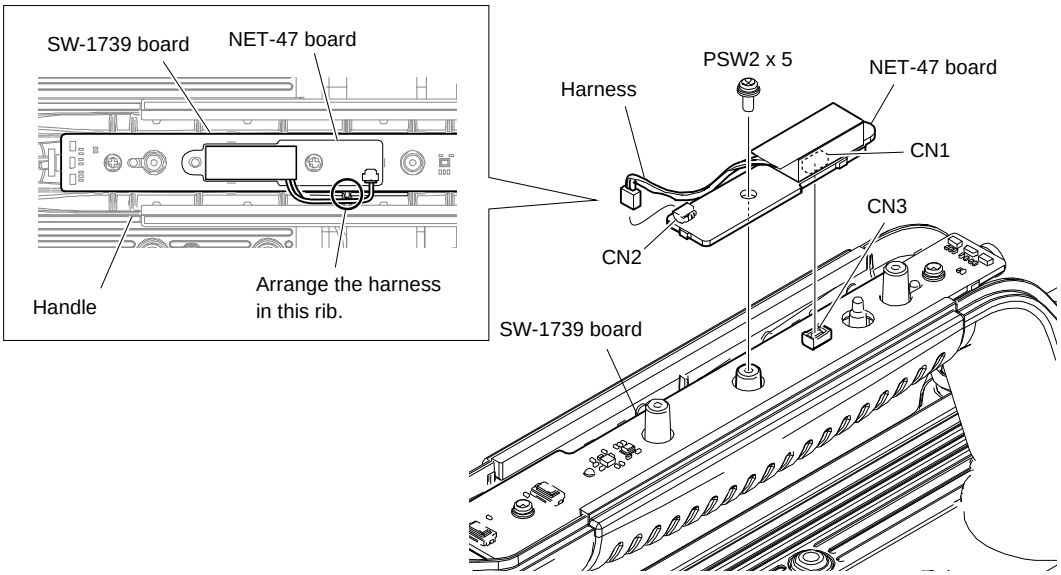
3-16-1. NFC Antenna, NET-47 Board, SW-1739 Board

Procedure

1. Remove the three screws.
2. Remove the switch through the hole of the handle cover, and then detach the projection of the handle cover.



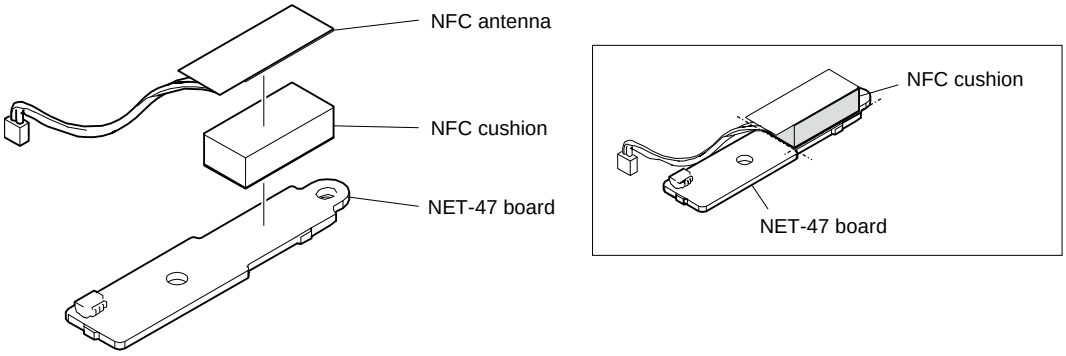
3. Disconnect the harness from the connector (CN2) on the NET-47 board.
4. Remove the screw, and then remove the NET-47 board from the connector (CN3) on the SW-1739 board.



Note

When installing the NET-47 board, arrange the harness as shown in the figure.

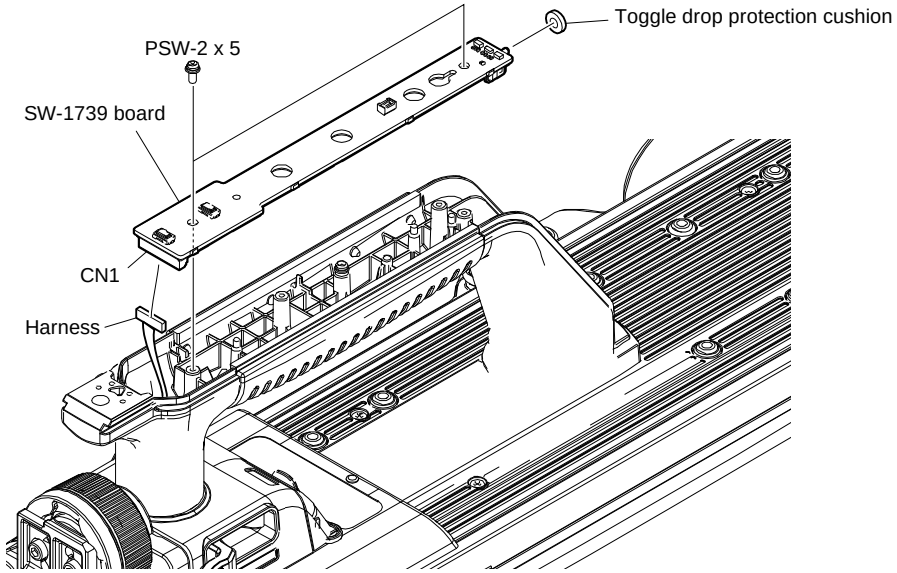
5. Detach the NFC cushion from the NET-47 board.
6. Detach the NFC antenna from the NFC cushion.



Note

Attach the NFC cushion to the NET-47 board aligning the side of with the board as shown in the figure.

7. Remove the toggle drop protection cushion.
8. Remove the two screws.
9. Lift up the SW-1739 board to disconnect the harness from the connector (CN1).



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

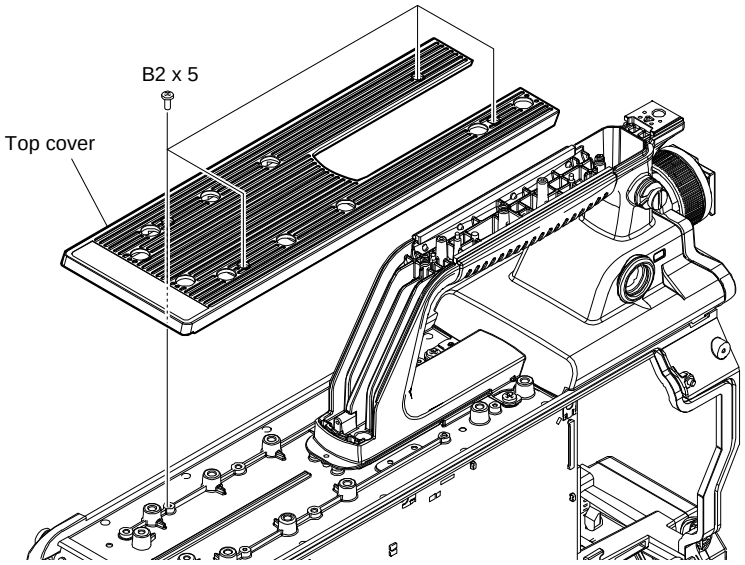
3-16-2. CN-4005 Board

Preparation

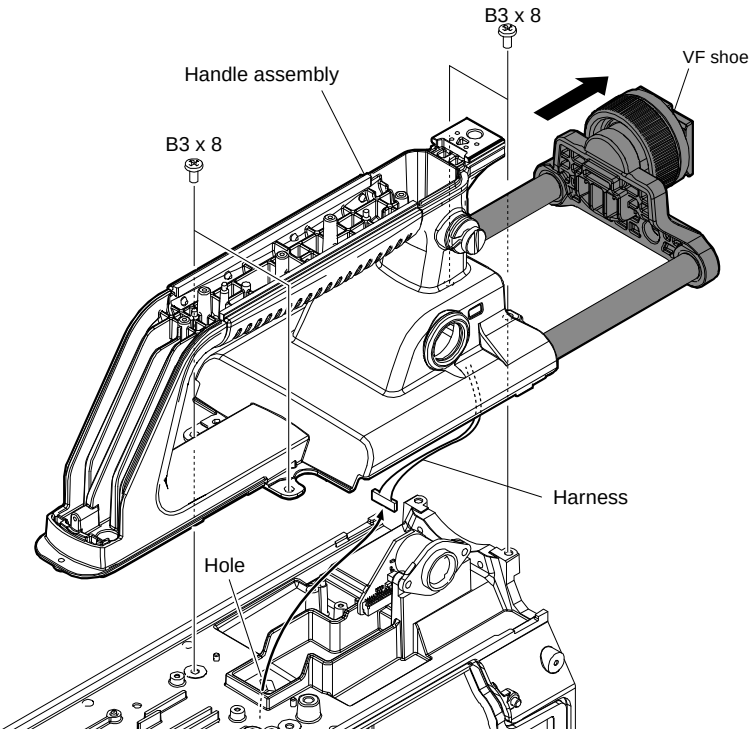
1. Remove the inside panel assembly. (Refer to “3-4. Inside Panel Assembly”.)
2. Remove the outside panel assembly. [HDC3100] (Refer to “3-5-1. Outside Panel Assembly”.)
   Remove the outside panel assembly. [HDC3170] (Refer to “3-6-1. Outside Panel Assembly”.)
3. Remove the front assembly. (Refer to "3-10-1. Front Assembly".)
4. Remove the SW-1739 board. (Refer to "3-16-1. NFC Antenna, NET-47 Board, SW-1739 Board".)

Procedure

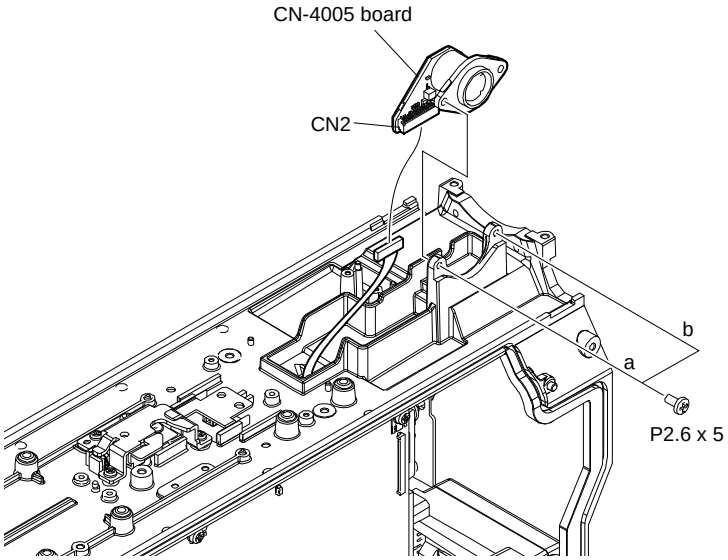
1. Remove the four screws and the top cover.



2. Pull out the VF shoe in the direction of the arrow.
3. Remove the four screws, and then remove the handle assembly.
4. Pull out the harness through the hole of the main chassis.



5. Remove the two screws, and then remove the CN-4005 board.
6. Disconnect the harness from the connector (CN2) on the CN-4005 board.



Note

When installing the CN-4005 board, tighten the screws in the following sequence: a, b.

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

Section 4
Electrical Alignment

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

Note

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

4-1. Preparations

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

4-1-1. Required Equipment, Tool

Note

Use calibrated equipment and tools.

Equipment Required

Name	Equipment
HD waveform monitor	Leader Electronics LV5152DA (multi waveform monitor) or equivalent
HD color monitor	Sony BVM-E171 or equivalent
Master setup unit	Sony MSU-1000/1500
HD viewfinder	Sony HDVF-EL20/EL30
Lens	Canon HJ18 or equivalent

Tool

Part Name	Sony Part No.	Remarks
Grayscale chart (16 : 9 reflective type)	-	Commercially available Since time degradation is appeared, replace for every two years. (The exchange time, change by the safekeeping situation.)
Grayscale chart (16 : 9 transparent type)	J-6394-080-A	Use when the grayscale chart (16 : 9 reflective type) is not available.
Pattern box PTB-500	J-6029-140-B	
Chart adaptor	J-7120-950-A	Adaptor that installs ITE test chart (16:9) 310 X200 in PTB-500 (pattern box)
ITE STANDARD TEST CHART	J-7120-970-A	ITE grayscale chart (γ=0.45) (16:9)

4-1-2. File Data at Adjustment

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

For detail of adjustment data, refer to “6. File System”.

Reference File

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

Lens File

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

OHB File

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

4-1-3. Handling the Grayscale Chart

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

Information on the Reflective Grayscale Chart (16:9)

Recommended chart

The reflective grayscale chart (16:9) is commercially available.
- Product name: Reflective grayscale chart
- Supplier: MURAKAMI COLOR RESEARCH LABORATORY

Handling precaution

- Do not touch the chart's surface with bare hands.
- Do not subject the surface to dirt or scratches.
- Do not prolonged exposure to sunlight.
- Protect the chart from excessive moisture or harmful gas.
- Avoid resting articles against the case.
- When the chart is not used for a long period and is stored, open the case and dry the chart for about 30 miniutes to an hour once or twice a month.

Setting Illumination

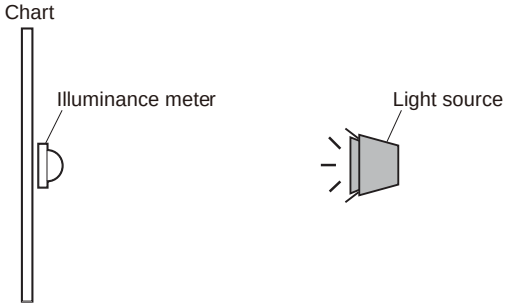
Measuring equipment: Illuminance meter (Calibrated)

Procedure

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

Note

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



Transparent grayscale chart (16:9)

Recommended chart

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

Handling precaution

Use calibrated pattern box.

Setting Illumination

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

Preparation

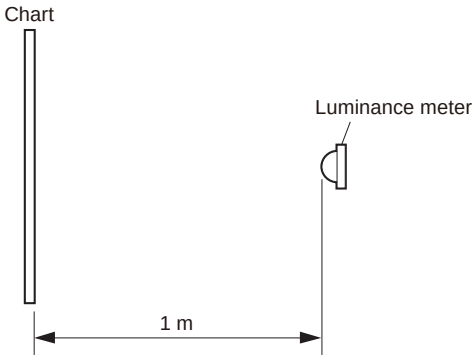
1. Place the pattern box where the chart is not exposed to light.
   (Such as a darkroom, or cover the pattern box with a cover whose inside is painted in black.)
2. Light the pattern box.
3. Warm up the pattern box for about 30 minutes.

Procedure

1. Fix the luminance meter facing straight to the chart at a distance of 1 m from it.
2. Adjust the luminance control of the pattern box so that the white portion in the center of the chart is 573 ±6 cd/m^2.

   Tip

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



4-1-4. Setup Menu

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

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

  Note

  As for how to display the SERVICE menu, refer to “Displaying the SERVICE menu”.

The setup menu operation is described as follows.
Example: AUTO SETUP in the MAINTENANCE menu of TOP MENU screen is selected and AUTO LEVEL is performed.
MENU: MAINTENANCE

PAGE: AUTO SETUP
ITEM: AUTO LEVEL

Displaying TOP MENU screen

1. Turn the DISPLAY switch to the MENU side while pressing the MENU SEL knob/ENTER button.
   [TOP] appears at the upper right of the screen of viewfinder.
2. Set the cursor at [TOP] and press the MENU SEL knob/ENTER button.
   The TOP MENU screen showing the entire configuration of menu items appears.

Displaying the SERVICE menu

1. Set the DISPLAY switch to MENU while pressing the assignable switch on the side of the camera and MENU SEL knob/ENTER button.
   The SERVICE menu is displayed on the TOP MENU screen.

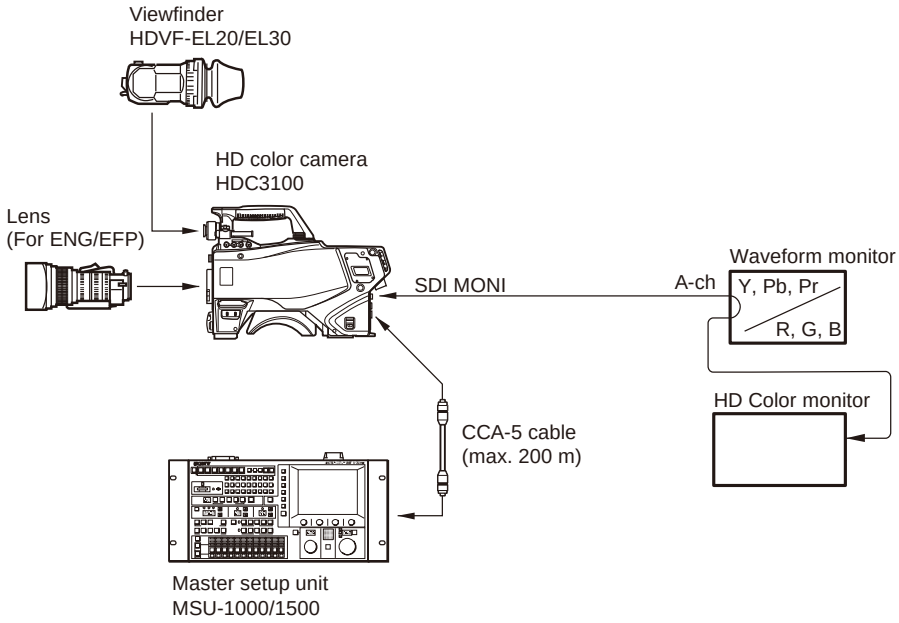
Changing Setting Values

- Select a menu item by turning the MENU SEL knob/ENTER button and it is entered by pressing the MENU SEL knob/ENTER button.
- For items whose values can be modified by turning the MENU SEL knob/ENTER button, set values can be entered, canceled or suspended by the following operations.
  To enter:
  Press the MENU SEL knob/ENTER button.
  To cancel:
  Before confirming, turn the STATUS/CANCEL switch to the CANCEL side.
  To suspend:
  Set the DISPLAY switch to OFF.
  To restart the setting operation, turn the DISPLAY switch to the MENU side again.

Exiting menu

Set the DISPLAY switch to OFF.

4-1-5. Connection of Equipment



4-1-6. Initial Settings

There are following Initial Settings.

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

Before starting “4-2. Automatic Adjustment” or later, perform the initial setting.

When Adjusting with the MSU

Set each button on the MSU as follows.

- Power supply and signal switching block
  - ALL button → OFF (unlit)
  - CAM PW button → ON (lit)
  - VF PW button → OFF (unlit)
  - TEST 1 button → OFF (unlit)
  - TEST 2 button → OFF (unlit)
  - BARS button → OFF (unlit)
  - CLOSE button → ON (lit)
- Camera/CCU circuit ON/OFF block
  - KNEE OFF button → OFF (lit)
  - DETAIL OFF button → OFF (lit)
  - MATRIX OFF button → OFF (lit)
  - AUTO KNEE button → OFF (unlit)
  - SKIN DETAIL button → OFF (unlit)
- Others
  - GAMMA OFF button → ON (unlit)
  - MASTER GAIN → 0 (0 dB)
  - FILTER button (ND) → 1 (CLEAR)
  - FILTER button (CC) → B (3200 K)
  - ON button (shutter control block) → OFF (unlit)

When Adjusting with the Camera Setup Menu

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

- PAINT Menu

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

- MAINTENANCE Menu

Page	Setting Item	Initial Setting
BLACK SHADING	MASTER GAIN	0

Camera setting

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

4-1-7. Setup Menu Correspondence List

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

PAINT Menu

- MSU:
  [PAINT] button → ON (lit)
- Camera setup menu:
  Select the [PAINT] menu.

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

FILE Menu

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

Menu item of MSU		**Menu item of camera**		
Menu	Sub Menu	Menu	Page	Item
Reference	Reference Store	FILE	REFERENCE	STORE FILE
Lens	Lens Store		LENS FILE	STORE FILE
OHB	OHB Store		OHB FILE	STORE FILE

MAINTENANCE Menu

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

Menu item of MSU				**Menu item of camera**		
Menu	Secondary Menu	Sub Menu	Adjustment	Menu	Page	Item
Camera	White Shading	R/G/B	H SAW	MAINTENANCE	WHITE SHADING	H SAW [R/G/B]
			H PARA			H PARA [R/G/B]
			V SAW			V SAW [R/G/B]
			V PARA			V PARA [R/G/B]
Lens	Auto Iris Settings		Level		AUTO IRIS	IRIS LEVEL
			APL Ratio			APL RATIO

4-2. Automatic Adjustment

4-2-1. Execute the Automatic Level Setup

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

Tip

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

4-3. Camera System Adjustment

4-3-1. Sensitivity Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector
Subject: ITE grayscale chart (γ=0.45) (16 : 9)

Note

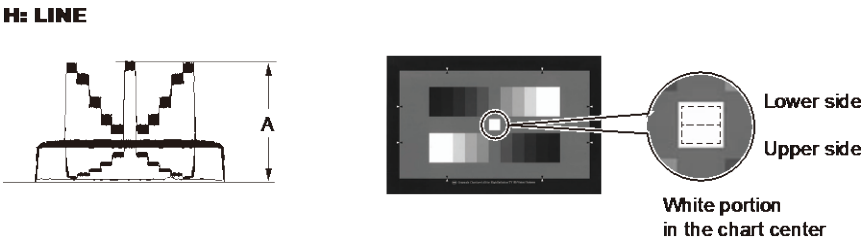
Adjust the luminance control of the pattern box so that the white portion in the center of the chart is 573 ± 10 cd/m².

Preparation

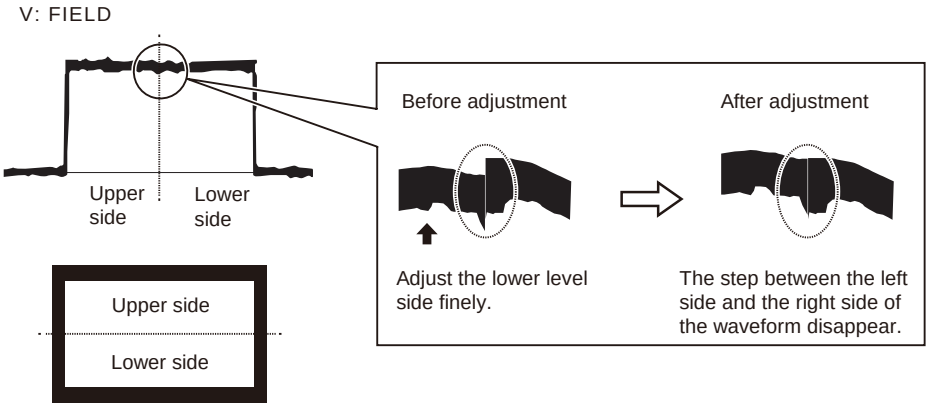
- Setting for the MSU
  CLOSE button → OFF (unlit)
  GAMMA OFF button → OFF (lit)
  MASTER GAIN → 0 (0 dB)
  DETAIL OFF button → OFF (lit)
  KNEE OFF button → OFF (lit)
- Shoot the ITE grayscale chart so that it is aligned with the under scanned monitor frame.

Procedure

1. Set as follows on the camera setup menu.
   MENU: MAINTENANCE
   PAGE: OUTPUT FORMAT
   ITEM: CURRENT 1080/59.94P
2. Open the following page on the camera setup menu.
   MENU: SERVICE
   PAGE: OHB-ADJ1
3. Adjust the level of G channel roughly, so that the level of portion A on the waveform becomes the specification.
   ITEM: GAIN CONT [G1], [G2]
   Specification: A = 700 mV
   (1) Adjust the [G1] so that the waveform level of the lower side of the white portion in the chart center becomes the specification.
   (2) Adjust the [G2] so that the waveform level of the upper side of the white portion in the chart center becomes the specification.



4. Also adjust R and B channels roughly in the same way as above step.
   ITEM: GAIN CONT [R1], [R2]
   ITEM: GAIN CONT [B1], [B2]
5. Remove the ITE grayscale chart, and shoot the full-white pattern so that it is aligned with the under scanned monitor frame.
   If waveform is saturated, adjust the light amount with the shutter.
6. Confirm the waveform of G channel in the verticalness direction, and adjust the lower level side finely, so that the step between the left side and the right side of the waveform disappear.
   ITEM: MONITOR SEL → G
   - Right side of waveform (waveform of lower side in full-white pattern)
     ITEM: GAIN CONT [G1]
   - Left side of waveform (waveform of upper side in full-white pattern)
     ITEM: GAIN CONT [G2]



7. Also adjust R and B channels finely in the same way as above step.
   ITEM: GAIN CONT [R1], [R2]
   ITEM: GAIN CONT [B1], [B2]
8. Repeat steps 2 to 7 to adjust sensitivity of G, R and B channels.
9. Store the file.
   MENU: SERVICE
   PAGE: OHB-ADJ1
   ITEM: STORE FILE

4-3-2. Black Shading Adjustment

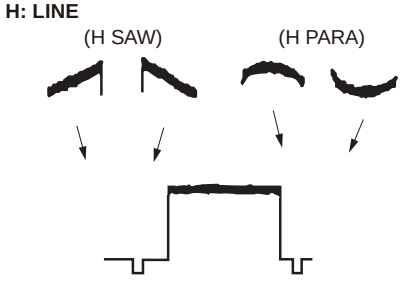
Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector

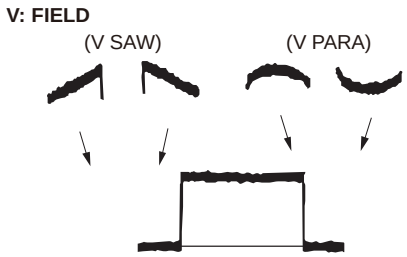
Preparation

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

Procedure

1. Set as follows on the camera setup menu.
   MENU: MAINTENANCE
   PAGE: OUTPUT FORMAT
   ITEM: CURRENT 1080/59.94P
2. Open the following page on the camera setup menu.
   MENU: SERVICE
   PAGE: BLACK SHADING
3. Adjust R channel waveform on the monitor so that it becomes as flat as possible.
   ITEM: H SAW [R]
   ITEM: H PARA [R]
   ITEM: V SAW [R]
   ITEM: V PARA [R]





4. Also adjust G and B channel waveforms in the same way as above step.
   ITEM: H SAW [G], H PARA [G], V SAW [G], V PARA [G]
   ITEM: H SAW [B], H PARA [B], V SAW [B], V PARA [B]
5. Store the file.
   MENU: SERVICE
   PAGE: BLACK SHADING
   ITEM: STORE FILE

4-3-3. White Shading Adjustment

Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector
Subject: Full-white pattern

Note

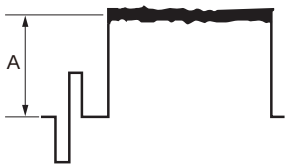
In the case of any of the following case is applicable, white shading is not adjusted correctly.

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

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

Preparation

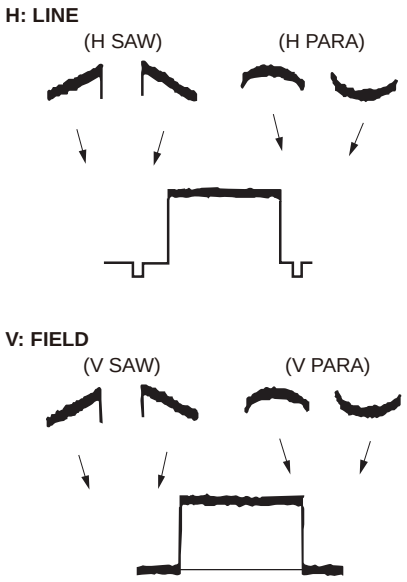
- Setting for the MSU
  KNEE OFF button→ OFF (lit)
  MASTER GAIN → 0 (0 dB)
- Shoot the full-white pattern so that it is aligned with the under scanned monitor frame.
- Lens iris: F4 to F5.6
- A = 600 ± 20 mV
  If the lens aperture is greater than F5.6, adjust the light amount with the shutter.



- Lens focus: ∞
- Set the lens extender or the lens shrinker to the following settings.
  Lens extender (×2) → OFF
  Lens shrinker (×0.8) → OFF
- Set as follows on the camera setup menu.
  MENU: OPERATION
  PAGE: LENS FILE
  ITEM: FILE
  1. Select the file in accordance with the lens attached. If there is no appropriate file, select NO OFFSET.
  2. Change the name of lens with MSU.

Procedure

1. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB: OK” is displayed.
2. Open the following items using the MSU.
   (1) MAINTENANCE button → ON (lit)
   (2) Touch panel operation: [Camera] → [White Shading] → [R]
3. Adjust the waveform on the monitor so that it becomes as flat as possible.
   Adjustment item : H SAW
   Adjustment item : H PARA
   Adjustment item : V SAW
   Adjustment item : V PARA



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

Storing the OHB file in the MSU menu

Store the OHB file in the MSU menu.

Procedure

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

Adjustment for Lens Extender or Shrinker

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

Procedure

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

- Lens extender (x2) → ON
- Lens shrinker (x0.8) → ON

5. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB: OK” is displayed.
6. Operate the control panel of MSU, and store the lens file.
   (1) [FILE] button → ON (lit)
   (2) Touch panel operation: [Lens File] → [Lens Store] → [Store]
7. Return the setting of lens extender and lens shrinker.
   - Lens extender (x2) → OFF
   - Lens shrinker (x0.8) → OFF

4-4. Video System Level Adjustment

Note

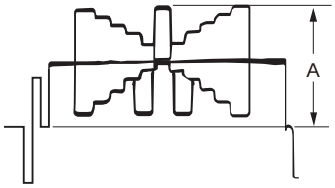
Perform the video system level adjustment according to the system that the customer uses.

4-4-1. H/V Ratio Adjustment

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

Preparation

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



Procedure

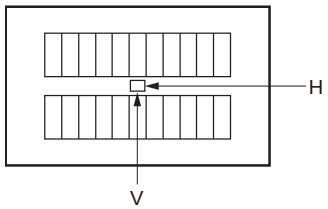
1. Operate the control panel of MSU, and set as follows.

Note

Customers' settings must be restored after the adjustment. Write down the customers' settings.

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

2. Operate the [PAINT] menu of MSU, and set as follows.
   Touch panel operation: (Page 1) → [Detail] → [2/3]
3. Adjust the H/V Ratio adjustment, a ratio between H and V detail amounts (white) to be added shall be equal.
   - Adjustment item : [H/V Ratio] (Reference value: 20 to 40)



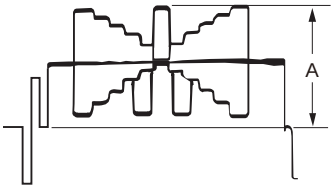
4. Change the settings to the recorded customers' settings.
5. Store the reference file. (Refer to “4-4-12. File Store”.)

4-4-2. Detail Level Adjustment

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

Preparation

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



Procedure

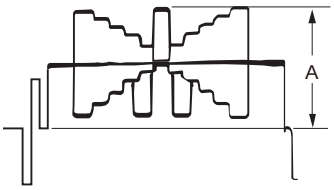
1. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Detail] → [1/3]
2. Adjust the detail level to be added to each step of the grayscale to the desired level.
   - Adjustment item: [Level]
3. Store the reference file. (Refer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

4-4-3. Crispening Adjustment

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

Preparation

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



Procedure

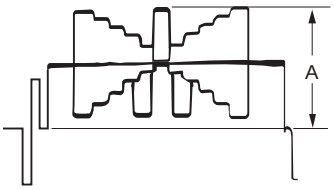
1. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB: OK” is displayed.
2. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: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

4-4-4. Level Dependent Adjustment

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

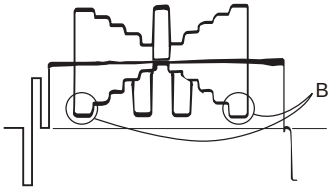
Preparation

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



Procedure

1. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Detail] → [1/3]
   Setting:
   • Level Dep OFF → OFF
   (3) Set adjustment item [Level Dep] to “-99”.
2. Adjust the level dependent.
   • Adjustment item: [Level Dep]
   (1) Turn the adjustment knob of MSU to plus direction slowly.
   (2) Stop the adjustment knob of MSU at the point where the edge of B portion on the waveform just decreases. Or adjust to the desired level.



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

Note

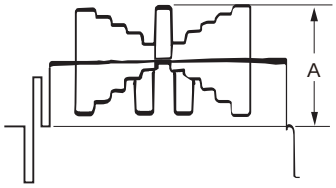
After adjustment is completed, be sure to perform “4-4-1. H/V Ratio Adjustment”.

4-4-5. Detail Clip Adjustment

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

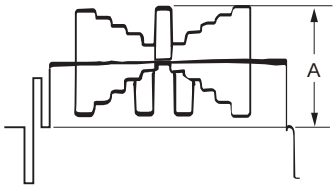
Preparation

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

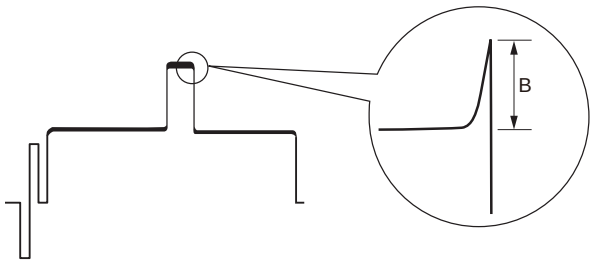


Procedure

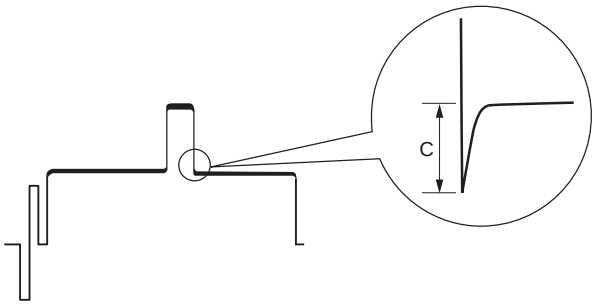
1. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB: OK” is displayed.
2. Make a line selection at the center white portion of the grayscale chart.



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



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



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

4-4-6. Auto-iris Adjustment

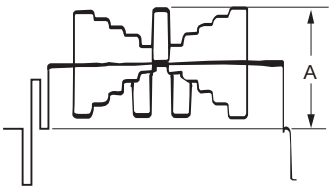
Equipment: Waveform monitor (R, G, B)
Test Point: SDI 1 connector
Object: Grayscale chart

Preparation

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

Procedure

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



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

4-4-7. Pedestal Level Adjustment

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

Preparation

- Setting for the MSU
  CLOSE button → ON (lit)

Procedure

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

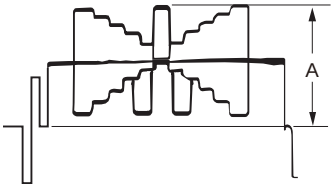
3. Store the reference file. (Refer to “4-4-12. File Store”.)

4-4-8. Flare Adjustment

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

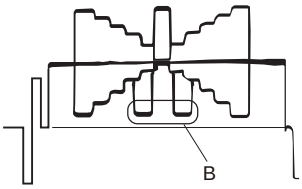
Preparation

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



Procedure

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



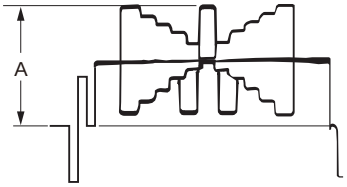
3. Store the reference file. (Refer to “4-4-12. File Store”.)

4-4-9. Gamma Correction Adjustment

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

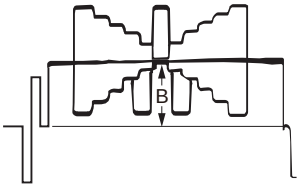
Preparation

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



Procedure

1. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB: OK” is displayed.
2. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Gamma]
3. Adjust the levels B to desired level for R, G and B respectively.
   To adjust all levels for R, G and B simultaneously, adjust them using [Master].
   • Adjustment item : [R], [G], [B], [Master]



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

4-4-10. Knee Point and Knee Slope Adjustments

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

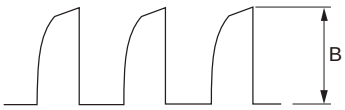
Preparation

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

Procedure

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

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



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

Setting after Adjustment

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

4-4-11. White Clip Level Adjustment

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

Preparation

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

Procedure

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

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

Setting after Adjustment

- Setting for the MSU
  MASTER GAIN → 0 (0 dB)
  TEST 1 button → OFF (unlit)

4-4-12. File Store

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

Reference File Store

Operate the control panel of MSU, and store file.

Procedure

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

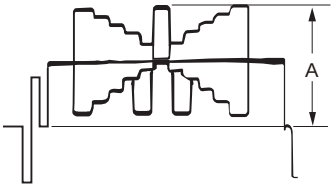
4-5. ND Offset Adjustment

4-5-1. White Balance Correction

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

Preparation

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



Procedure

1. Set each button on the MSU as follows.
   - FILTER CONTROL button → ON (lit)
   - ND1 button → ON (lit)
2. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB: OK” is displayed.
3. Set each button on the MSU as follows.
   - ND2 button → ON (lit)
   - MASTER GAIN → 0 (0 dB)
4. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB: OK” is displayed.
5. Set each button on the MSU as follows.
   - ND3 button → ON (lit)
   - MASTER GAIN → 0 (0 dB)
6. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB: OK” is displayed.
7. Set each button on the MSU as follows.
   - ND4 button → ON (lit)
   - MASTER GAIN → 6 (6 dB)
8. Operate the control panel of MSU, and perform the automatic white balance adjustment.
9. Set each button on the MSU as follows.
   - ND5 button → ON (lit)
   - MASTER GAIN → 12 (12 dB)
10. Operate the control panel of MSU, and perform the automatic white balance adjustment.
    WHITE button → ON (lit)
    After the adjustment is completed, the message “AWB: OK” is displayed.

Storing the OHB file in the MSU menu

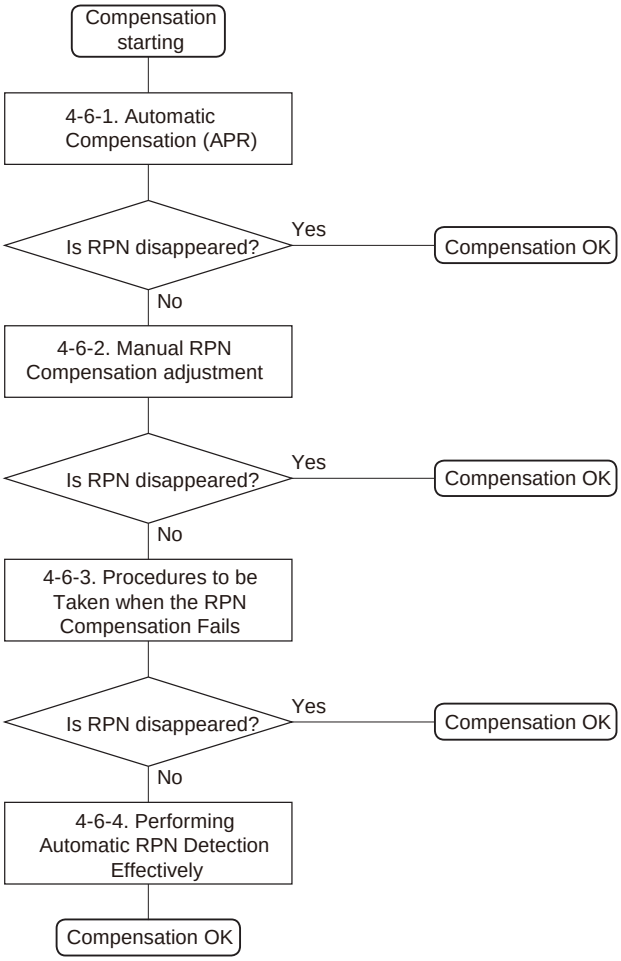
1. Operate the control panel of MSU, and set as follows.
   (1) [FILE] button → ON (lit)
   (2) Touch panel operation: [OHB File] → [OHB Store] → [Store]
   After the store operation is completed, the message “OHB File Store” is displayed.

Setting after Adjustment

- Setting for the MSU
  MASTER GAIN → 0 (0 dB)

4-6. RPN Compensation

- To compensate the RPN, age the camera for more than 30 minutes.
- When executing the automatic compensation (APR) from MSU or setting menu, the residual point noise (RPN) of the CMOS image sensor is compensated.
- To compensate the RPN, compensate according to the following chart.



4-6-1. Automatic Compensation (APR)

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

Automatic RPN Compensation (APR)

Note

- Manual RPN compensation adjustment data is not affected by executing the automatic RPN compensation (APR).
- Automatic RPN compensation (APR) take several minutes.

Preparation

- Lens iris → CLOSE
  Or remove the lens and attach the lens mount cap to the lens mount.
- Setting for the MSU
  BARS button → OFF (unlit)
  SHUTTER button → OFF (unlit)

Procedure

1. Execute automatic RPN compensation (APR) from MSU or camera.
   - Execute automatic RPN compensation (APR) from MSU.
     [MAINTENANCE] button → ON (lit)
     Touch panel operation: [Auto Setup] → [APR]

     Note

     Confirm that the operation of the Auto Setup menu is enabled in the Item Permission of the MSU. (Refer to Operation manual of MSU.)
   - Execute automatic black balance adjustment (ABB) from camera to automatic RPN compensation (APR).
     MENU: SERVICE
     PAGE: RPN MANAGE
     ITEM: AUTO CONCEAL

4-6-2. Manual RPN Compensation Adjustment

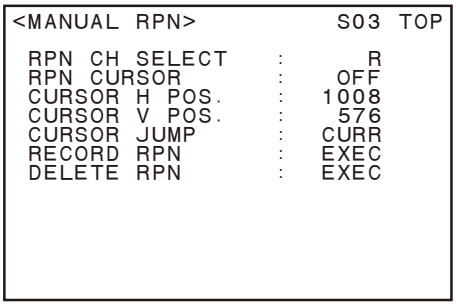
When RPN is not compensated after RPN automatic compensation was performed, execute the manual RPN compensation adjustment.

Preparation

1. Execute RPN automatic compensation (APR).
   (Refer to “4-6-1. Automatic Compensation (APR)”.)

Procedure

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



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

   Note

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

   Tip

   If a compensation pixel has been wrongly recorded, delete the RPN data.
   ITEM: DELETE RPN → EXEC
7. Repeat steps 4 to 6 to compensate other RPNs.

Tip

If adjust using the MSU, enter the engineer mode and operate in the following page. (Refer to Operation manual of MSU.)
[MAINTENANCE] button → ON (lit)
Touch panel operation: [RPN]

Setting after adjustment

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

4-6-3. Procedures to be Taken when the RPN Compensation Fails

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

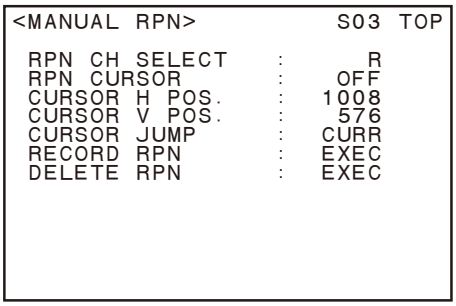
- An adjacent wrong position was compensated.
- The compensation failed due to the influence of other RPNs.

Note

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

Procedure

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



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

   Tip

   To compensate effectively RPN, perform as follows.
   - After placing the cursor in advance close to the pixel to be compensated by using CURSOR H POS. and CURSOR V POS., execute the CURSOR JUMP function.
4. When the cursor stopped at a position near the target pixel, delete the compensation data at stop position of cursor.
   (1) Delete the compensation data.
   ITEM: DELETE RPN → EXEC
   A message “DELETE DATA OK? YES → NO” appears.
   (2) Select (turn the knob) “YES” by rotary encoder and confirm (press the button).
5. When the cursor is not moved by executing the CURSOR JUMP, move the cursor in the direction of horizontal or vertical, and execute it again.
   ITEM: CURSOR H POS.
   ITEM: CURSOR V POS.
6. Record the RPN compensation adjustment data.
   ITEM: RECORD RPN → EXEC
   A message “RECORD DATA OK? YES → NO” is displayed.
7. After confirming that RPN disappears, select (turn the knob) “YES” by rotary encoder and confirm (press the button).
   A message “COMPLETE” is displayed, the compensation data is recorded.

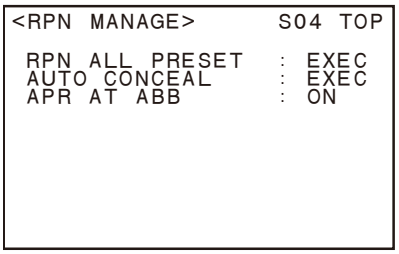
4-6-4. Performing Automatic RPN Detection Effectively

Preparation

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

Procedure

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



2. Perform the APR of RPNs.
   ITEM: AUTO CONCEAL → EXEC

Section 5
Software Upgrade

5-1. Upgrading Software Programs

Software programs stored in the ROM (IC401) on the AT-195 board are upgraded by using a USB drive.
The software programs include camera application and operating system (OS), which is independently upgraded.
Use the following procedures to upgrade the software programs.

5-1-1. Upgrading Camera Application

Equipment Required

USB drive (commercially available)

Tip

For recommended USB drive, refer to “Using a USB Drive” on the operating instructions.

Preparation

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

Note

As for how to obtain the data file for update (hdc3000_app.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   ¥MSSONY¥PRO¥CAMERA¥HDC3000
2. Copy the data file for update “hdc3000_app.pkg” to the directory created.

Procedure

1. Connect the USB drive that contains the program for update to the USB connector of this unit.
2. Turn on the power of the unit.
3. Display the ROM VERSION page of the DIAGNOSIS menu.
4. Confirm that the cursor “?” is displayed to the left of D03, and then press ENTER button long.
5. Updatable items become selectable. Select “CAMERA APP” and then press ENTER button.
6. A message “VERSION UP OK?” appears. Select “YES”.
7. The unit restarts automatically and the version update starts.
   Upon completion of the version update, a message “UPDATE SUCCEEDED” appears.
8. Turn off and on the power of the unit and confirm that the version has been updated on the ROM VERSION page of the DIAGNOSIS menu.

5-1-2. Upgrading OS

Equipment Required

USB drive (commercially available)

Tip

For recommended USB drive, refer to “Using a USB Drive” on the operating instructions.

Preparation

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

Note

As for how to obtain the data file for update (hdc3000_os.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   ¥MSSONY¥PRO¥CAMERA¥HDC3000
2. Copy the data file for update “hdc3000_os.pkg” to the directory created.

Procedure

1. Connect the USB drive that contains the program for update to the USB connector of this unit.
2. Turn on the power of the unit.
3. Display the ROM VERSION page of the DIAGNOSIS menu.
4. Confirm that the cursor “?” is displayed to the left of D03, and then press ENTER button long.
5. Updatable items become selectable. Select “OS” and then press ENTER button.
6. A message “VERSION UP OK?” appears. Select “YES”.
7. The unit restarts automatically and the version update starts.
   Upon completion of the version update, a message “UPDATE SUCCEEDED” appears.
8. Turn off and on the power of the unit and confirm that the version has been updated on the ROM VERSION page of the DIAGNOSIS menu.

5-2. PLD

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

Note

The part numbers of PLD (or ROM for PLD) shown in “9. Spare Parts” are the ones in which data is not written yet.
Therefore, if part replacement is required, write the data by the following procedure.
In the case of the PLD type that runs on the program stored in external ROM, not a data writing but instead parts replacement is needed only if the specific PLD is defective.

5-2-1. Corresponding PLD

PLD (Ref. No./Board Name)	File Name
IC1001/SY-463 IC1002/SY-463*1	hdc3000_sy.pkg
IC1100/DPR-390 IC1101/DPR-390*2	hdc3000_dpr.pkg
IC1001/CD-91 IC1101/CD-91*3	hdc3000_cd1.pkg
IC2001/CD-91 IC2101/CD-91*4	hdc3000_cd2.pkg

*1: IC1102/SY-463 is the ROM for IC1001/SY-463.

*2: IC1101/DPR-390 is the ROM for IC1100/DPR-390.

*3: IC1101/CD-91 is the ROM for IC1001/CD-91.

*4: IC2101/CD-91 is the ROM for IC2001/CD-91.

5-2-2. Upgrading PLD Data

Equipment Required

USB drive (commercially available)

Tip

For recommended USB drive, refer to “Using a USB Drive” on the operating instructions.

Preparation

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

Note

As for how to obtain the data file for update (hdc3000_sy.pkg, hdc3000_dpr.pkg, hdc3000_txm.pkg, hdc3000_cd1.pkg, hdc3000_cd2.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   ¥MSSONY¥PRO¥CAMERA¥HDC3000
2. Copy the data files for PLD update to be updated to the directory created.

Procedure

1. Connect the USB drive that contains the program for update to the USB connector of this unit.
2. Turn on the power of the unit.
3. Display the “ROM VERSION” page of the DIAGNOSIS menu.
4. Confirm that the cursor “?” is displayed to the left of D03, and then press ENTER button long.
5. Updatable items become selectable. Select the PLD to be updated and then press ENTER button.
6. A message “VERSION UP OK?” appears. Select “YES”.
7. The unit restarts automatically and the version update starts.
   Upon completion of the version update, a message “UPDATE SUCCEEDED” appears.
8. Turn off and on the power of the unit and confirm that the version has been updated on the “ROM VERSION” page of the DIAGNOSIS menu.

5-3. Forced Version Update

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

5-3-1. Forced Version Upgrade of Software or PLD Data

Equipment Required

USB drive (commercially available)

Tip

For recommended USB drive, refer to “Using a USB Drive” on the operating instructions.

Preparation

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

Note

As for how to obtain the data files for update, contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   ¥MSSONY¥PRO¥CAMERA¥HDC3000
2. Copy the data file for update to be updated to the directory created.

   Note

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

Procedure

1. Connect the USB drive that contains the program for update to the USB connector of this unit.
2. While pressing the RET 2 button and rotary encoder on the front panel, turn on the power of the unit.
   Each data file for update copied in the USB drive is updated.

   Tip

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

Section 6
File System

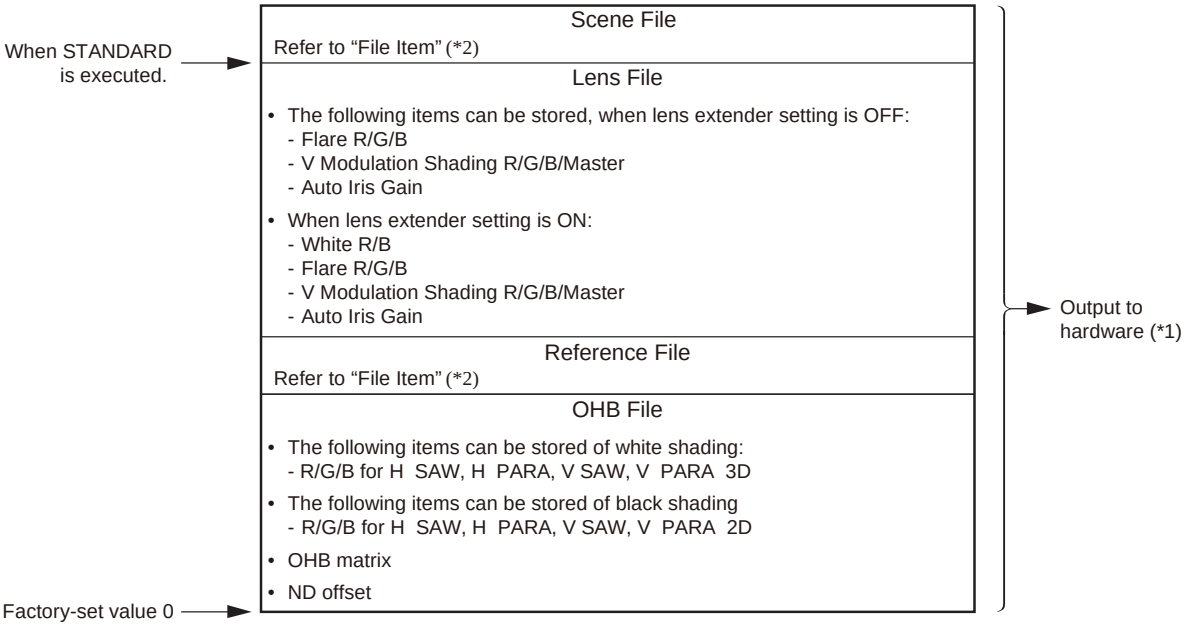
This unit is equipped with the file systems for managing data.
In this section, the menu operations are described as follows.
Example: When executing WRITE (CAM → USB) on the OPERATOR FILE page of the OPERATION menu
[OPERATION] → [OPERATOR FILE] → [WRITE (CAM → USB)]
For the details on the setup menu, refer to “7. Setup Menu”.

6-1. File Structure

The following six types of files are available. As for the items to be stored in each file, refer to “6-8. File Items” .

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

6-1-1. Structure of Paint Related Files



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

*2: For items that can be stored in the scene file and the reference file, refer to “6-8. File Items”.

6-2. Operator File

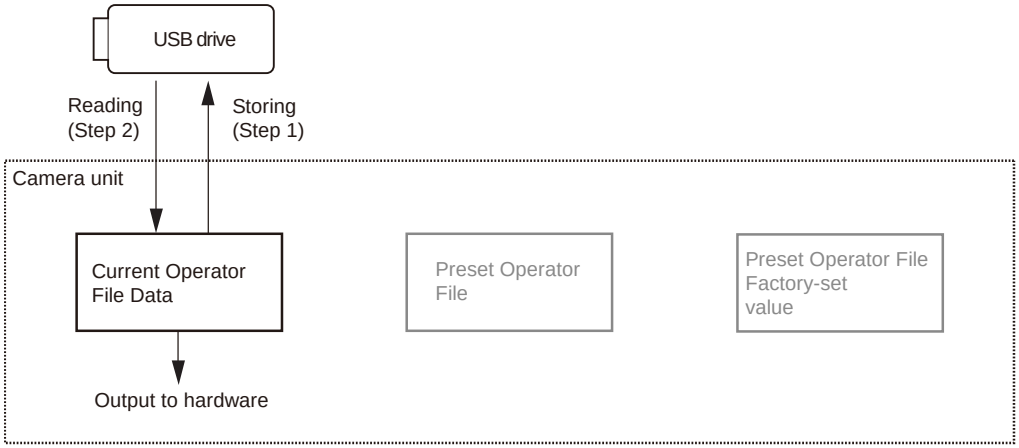
The operator file can be stored and read in the camera.
Use the setup menu to store the operator file in and read the operator file from the USB drive.

Note

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

6-2-1. Operator File Operation

Outline Figure of Operation



Storing

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

Using OPERATION Menu of This Unit

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

Reading

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

Using OPERATION Menu of This Unit

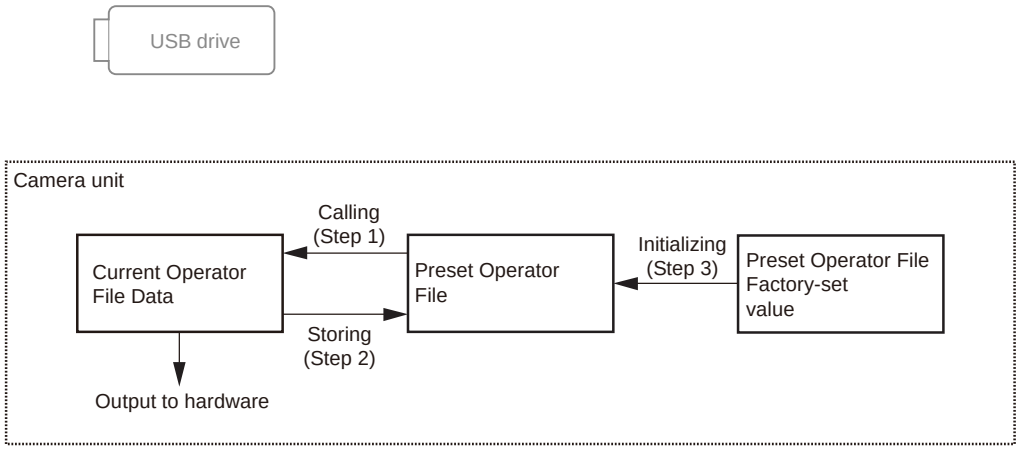
Read the operator file stored in the USB drive to the camera.
[OPERATION] → [OPERATOR FILE] → [READ (USB → CAM)]

6-3. Preset Operator File

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

6-3-1. Preset Operator File Operation

Outline Figure of Operation



Calling

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

Using OPERATION Menu of This Unit

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

Storing

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

Using FILE Menu of This Unit

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

Initializing

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

Using FILE Menu of This Unit

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

6-4. Scene File

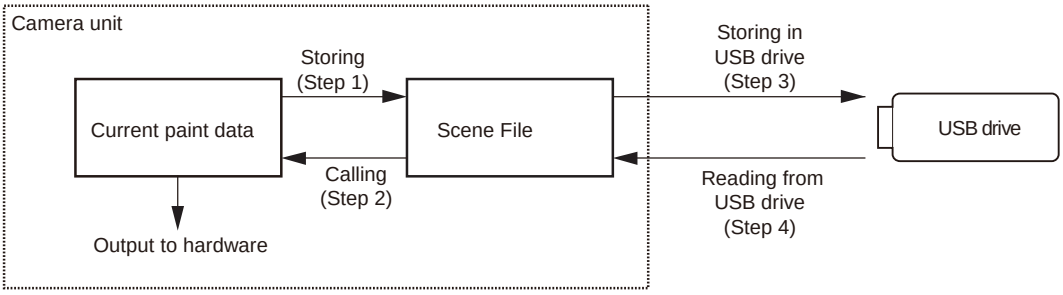
Scene files can be stored in the camera and USB drive.
Scene files can also be stored in the USB drive if the master setup unit (MSU) is used. For details, refer to the MSU operation manual.
Data is stored and called using the setup menu or MSU.
Scene files can be copied between cameras using the USB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

Note

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

6-4-1. Scene File Operation

Outline Figure of Operation



Storing

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

Using PAINT Menu of This Unit

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

With MSU (Master Setup Unit)

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

Calling and Clearing the Call

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

Using PAINT Menu of This Unit

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

With MSU (Master Setup Unit)

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

Storing the Scene File to the USB Drive

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

Using PAINT Menu of This Unit

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

Reading the Scene File from the USB Drive

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

Using PAINT Menu of This Unit

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

Note

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

6-5. Reference File

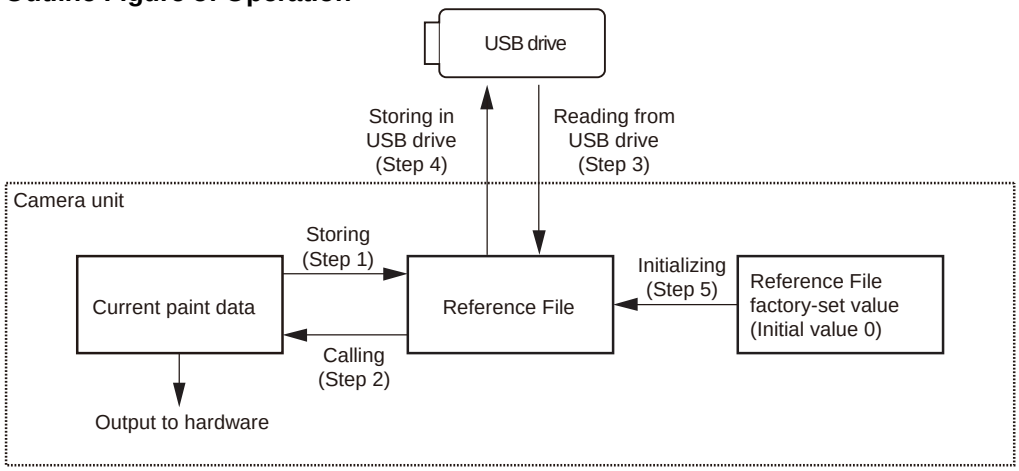
Reference files can be stored in the camera and USB drive.
Reference files can also be stored in the memory stick if the master setup unit (MSU) is used. For details, refer to the MSU operation manual.
Data is stored and called using the setup menu or MSU.
Reference files can be copied between cameras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

Note

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

6-5-1. Reference File Operation

Outline Figure of Operation



Storing

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

Using FILE Menu of This Unit

Reference file is stored in the camera and the numerical data is displayed as 0. (Excluding some items. Refer to “6-8. File Items”.)
[FILE] → [REFERENCE] → [STORE FILE]

With MSU (Master Setup Unit)

1. Press the FILE button in the functional operation area on the operation panel.
2. Select [Reference] → [Reference Store] by the menu operation.
   Reference file is stored in the camera and the numerical data is displayed as 0. (Excluding some items. Refer to “6-8. File Items”.)

Calling

Reference: Refer to step 2 of “Outline Figure of Operation”. Refer to “6-1-1. Structure of Paint Related Files”.

Using PAINT Menu of This Unit

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

With MSU (Master Setup Unit)

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

Reading the Reference File from the USB Drive

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

Using FILE Menu of This Unit

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

Note

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

Storing the Reference File in the USB Drive

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

Using FILE Menu of This Unit

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

Initializing All File Items

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

Using FILE Menu of This Unit

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

6-6. Lens File

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

Note

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

6-6-1. Lens File Operation

Adjusting the Lens File Data

Using a lens that is not compatible with serial communication

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

   Note

   The center marker position is stored in the Lens File immediately after the position is aligned.
   Note that the center marker position is not stored when Lens File is stored.
7. Store the Lens File.
   [FILE] → [LENS FILE] → [STORE FILE]
8. Set the lens extender to ON and repeat steps 4 to 7.

For lens compatible with serial communication

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

   Note

   If using the lens compatible with serial communication with the dynamic shading turned on, you do not require the V modulation adjustment. Adjust the white shading or V modulation only when the deviation occurs. In this case, the data will not be stored in the Lens File.
   - Automatic white shading adjustment:
     Shoot the white pattern so that the video level is around 80% (560 mV).
     [MAINTENANCE] → [WHITE SHADING] → [AUTO WHITE SHADING]
     Or adjust the R/G/B/ white shading V SAW, V PARA, H SAW, and H PARA.
     [MAINTENANCE] → [WHITE SHADING] → [V SAW R/G/B], [V PARA R/G/B], [H SAW R/G/B], [H PARA R/G/B]
   - V modulation adjustment:
     Shoot the white pattern, and fine-adjust it with V modulation R/G/B/Master so that the video level is around 80% (560 mV) with the lens iris set around F4 and the zoom control in the center of the ring.
     [PAINT] → [VIDEO LEVEL] → [V MOD R/G/B/M]
4. Set the lens extender to OFF.
5. Adjust the white balance and flare balance with the grayscale chart.
6. Zoom the lens and adjust the center marker to a position at which the object does not deviate.

   Note

The center marker position is stored in the Lens File immediately after the position is aligned, and is not stored when Lens File is stored.

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

Calling

Using OPERATION Menu of This Unit

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

6-7. OHB File

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

Note

Store the OHB file after all items have been adjusted. Before adjusting and storing only specific items, be sure to execute STANDARD in Step 1 below.

6-7-1. OHB File Operation

Adjusting and Storing

Using FILE and MAINTENANCE Menu of This Unit

1. Load the reference file stored in the camera.
   [FILE] → [REFERENCE] → [STANDARD]
2. Perform the automatic black balance adjustment.
   [MAINTENANCE] → [AUTO SETUP] → [AUTO BLACK]
3. Adjust the ND offset for all of ND filter 1 to ND filter 5.

   Tip

   To change ND filters, press the ND filter switching button while pressing the FILTER LOCAL button.
   (1) Select 5 with the ND filter knob, and shoot the white pattern so that the video level is 50% (350 mV) or more.
   (2) Select 1 with the ND filter knob, and adjust the lens iris so that the video level is 80 to 50% (560 to 350 mV), and then perform the automatic white balance adjustment.
   (3) Select 2 with the ND filter knob, and adjust in the same manner as step (2).
   (4) Select 3 with the ND filter knob, and adjust in the same manner as step (2).
   (5) Select 4 with the ND filter knob, and adjust in the same manner as step (2).
   (6) Select 5 with the ND filter knob, and adjust in the same manner as step (2).
4. Store the OHB File.
   [FILE] → [OHB FILE] → [STORE FILE]

With MSU (Master Setup Unit)

1. Press the STANDARD button in the camera/panel control area on the operation panel (ON: lit).
2. Press the FILE button in the menu operation area on the operation panel (ON: lit).
3. Perform the automatic black balance adjustment.
   Press the BLACK button in the camera/panel control area on the operation panel (ON: lit).
   Or select [OHB] → [Auto Black] by the menu operation.
4. Adjust the ND offset for all of ND filter 1 to ND filter 5.

   Tip

   To change ND filters, press the ND filter switching button while pressing the FILTER LOCAL button.
   (1) Select 5 with the ND filter knob, and shoot the white pattern so that the video level is 50% (350 mV) or more.
   (2) Select 1 with the ND filter knob, and adjust the lens iris so that the video level is 80 to 50% (560 to 350 mV), and then perform the automatic white balance adjustment.
   (3) Perform the automatic white shading adjustment.
   Press the WHITE button in the camera/panel control area on the operation panel (ON: lit).
   Or select [OHB] → [Auto White] by the menu operation.
   (4) Select 2 with the ND filter knob, and adjust in the same manner as step (2) to (3).
   (5) Select 3 with the ND filter knob, and adjust in the same manner as step (2) to (3).
   (6) Select 4 with the ND filter knob, and adjust in the same manner as step (2) to (3).
   (7) Select 5 with the ND filter knob, and adjust in the same manner as step (2) to (3).
5. Store the OHB File.
   [OHB] → [OHB Store] → [Store]

6-8. File Items

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

Description on symbols

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

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
GAIN	Master Gain Select		○	○	×	×	×	-6 dB to +12 dB
Iris		IRIS	×	×	×	×	×	
	Auto Iris on		○	○	×	×	×	
		Level	○	○	×	×	×	
		APL	○	○	×	×	×	
		Gain	○	○	○	×	×	
		Over ride	×	×	×	×	×	
	Detect Pattern		○	○	○	×	×	
	Close		×	OFF	×	×	×	
Shutter	Shutter ON		○	OFF	×	×	×	
	Shutter Select		○	×	×	×	×	
ECS	ECS ON		○	OFF	×	×	×	
		ECS Frequency	○	×	×	×	×	
Black Shading		Black Shading H Saw-R	×	×	×	×	○	
		Black Shading H Saw-G	×	×	×	×	○	
		Black Shading H Saw-B	×	×	×	×	○	
		Black Shading V Saw-R	×	×	×	×	○	
		Black Shading V Saw-G	×	×	×	×	○	
		Black Shading V Saw-B	×	×	×	×	○	
		Black Shading H Para-R	×	×	×	×	○	
		Black Shading H Para-G	×	×	×	×	○	
		Black Shading H Para-B	×	×	×	×	○	
		Black Shading V Para-R	×	×	×	×	○	
		Black Shading V Para-G	×	×	×	×	○	
		Black Shading V Para-B	×	×	×	×	○	
	Auto Black Shading		×	×	×	×	×	
Black set		Black Set-R	×	×	×	×	○	
		Black Set-G	×	×	×	×	○	
		Black Set-B	×	×	×	×	○	
Test	Test1 on (TEST SAW)		×	×	×	×	×	
	Test2 ON		×	×	×	×	×	
Optical filter	Filter1 (ND)		○	×	×	×	×	
	Filter Remote/Local		×	×	×	×	×	
5600k	5600K ON		○	OFF	×	×	×	

Continued

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
White Shading		White Shading H Saw-R	×	×	×	×	○	
		White Shading H Saw-G	×	×	×	×	○	
		White Shading H Saw-B	×	×	×	×	○	
		White Shading V Saw-R	×	×	×	×	○	
		White Shading V Saw-G	×	×	×	×	○	
		White Shading V Saw-B	×	×	×	×	○	
		White Shading H Para-R	×	×	×	×	○	
		White Shading H Para-G	×	×	×	×	○	
		White Shading H Para-B	×	×	×	×	○	
		White Shading V Para-R	×	×	×	×	○	
		White Shading V Para-G	×	×	×	×	○	
		White Shading V Para-B	×	×	×	×	○	
V Modulation	V Mod Shading OFF		×	ON	×	×	×	
		Mod Shading V Saw-R	×	×	○	×	×	
		Mod Shading V Saw-G	×	×	○	×	×	
		Mod Shading V Saw-B	×	×	○	×	×	
		Master V Mod Saw	×	×	○	×	×	
White		White-R	○	○	OFF SET	×	×	
		White-G	○	○	×	×	×	
		White-B	○	○	OFF SET	×	×	
		color temp	—	—	—	—	—	
		balance	—	—	—	—	—	
		Master White Gain	×	×	×	×	×	
	Auto White Balance		×	×	×	×	×	
Flare	Flare OFF		○	ON	×	×	×	
		Flare-R	○	○	○	×	×	
		Flare-G	○	○	○	×	×	
		Flare-B	○	○	○	×	×	
Black		Master Black	○	○	×	×	×	
		Black-R	○	○	×	×	×	
		Black-G	○	○	×	×	×	
		Black-B	○	○	×	×	×	
	Auto Black Balance		×	×	×	×	×	

Continued

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
Detail	Detail Off		○	ON	×	×	×	
		Detail Level	○	○	×	×	×	
		Detail Limiter	○	○	×	×	×	
		Detail White Limiter	○	○	×	×	×	
		Detail Black Limiter	○	○	×	×	×	
		Detail Crispening	○	○	×	×	×	
		H Detail Frequency	○	○	×	×	×	
		Mix Ratio	○	○	×	×	×	
		HD Detail Level	○	○	×	×	×	
		HD Detail Limiter	○	×	×	×	×	
		HD Detail Crispening	○	○	×	×	×	
		HD Detail H Detail Frequency	○	○	×	×	×	
		HD Detail Mix Ratio	○	○	×	×	×	
		HD Detail White Limiter	○	○	×	×	×	
		HD Detail Black Limiter	○	○	×	×	×	
		4K Detail Level	○	○	×	×	×	
		4K Detail Limiter	○	×	×	×	×	
		4K Detail Crispening	○	○	×	×	×	
		4K Detail Frequency	○	○	×	×	×	
		4K Detail Mix Ratio	○	○	×	×	×	
		4K Detail White Limiter	○	○	×	×	×	
		4K Detail Black Limiter	○	○	×	×	×	
	V DTL control mode		×	○	×	×	×	
		Detail H/V Ratio	○	○	×	×	×	
		HD Detail H/V Ratio	○	○	×	×	×	
		4K Detail H/V Ratio	○	○	×	×	×	
	Level Dep. Off		○	○	×	×	×	
		Detail Level Depend	○	○	×	×	×	
		HD Detail Level Depend	○	○	×	×	×	
		4K Detail Level Depend	○	○	×	×	×	
	Knee Aparture On		○	○	×	×	×	
		Knee Aparture	○	○	×	×	×	
		HD Detail Knee Aperture	○	○	×	×	×	
		4K Detail Knee Aperture	○	○	×	×	×	
HDR Operation	Live HDR		×	×	×	×	×	
		SDR Gain	×	×	×	×	×	
		HDR Black Offset	×	×	×	×	×	
	HDR Knee ON		×	×	×	×	×	
		Knee Point	×	×	×	×	×	
		Knee Slope	×	×	×	×	×	
	HDR White Clip ON		×	×	×	×	×	
		HDR White Clip	×	×	×	×	×	

Continued

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
Skin Detail	Skin DTL On		○	○	×	×	×	
	Natural Skin Detail ON		○	○	×	×	×	
	Skin gate ON		×	×	×	×	×	
	Skin gate (CCU)		×	×	×	×	×	
	Skin Detail Auto Hue (ch1)		×	×	×	×	×	
	Skin Detail Auto Hue (ch2)		×	×	×	×	×	
	Skin Detail Auto Hue (ch3)		×	×	×	×	×	
	Skin 1 On		ON	ON	×	×	×	
	Skin 1 Gate On		×	×	×	×	×	
		Skin 1 Level	○	○	×	×	×	
		Skin 1 Phase	○	○	×	×	×	
		Skin 1 Width	○	○	×	×	×	
		Skin 1 Sat	○	○	×	×	×	
		Skin 1 Limit	○	○	×	×	×	
	Skin 2 On		○	○	×	×	×	
	Skin 2 Gate On		×	×	×	×	×	
		Skin 2 Level	○	○	×	×	×	
		Skin 2 Phase	○	○	×	×	×	
		Skin 2 Width	○	○	×	×	×	
		Skin 2 Sat	○	○	×	×	×	
		Skin 2 Limit	○	○	×	×	×	
	Skin 3 On		○	○	×	×	×	
	Skin 3 Gate On		×	×	×	×	×	
		Skin 3 Level	○	○	×	×	×	
		Skin 3 Phase	○	○	×	×	×	
		Skin 3 Width	○	○	×	×	×	
		Skin 3 Sat	○	○	×	×	×	
		Skin 3 Limit	○	○	×	×	×	
Matrix	Matrix Off		○	○	×	×	×	
	Preset Matrix on		○	○	×	×	×	
	Preset Matrix Sel		×	×	×	×	×	
	User Matrix on		○	○	×	×	×	
		R-G	○	○	×	×	×	
		R-B	○	○	×	×	×	
		G-R	○	○	×	×	×	
		G-B	○	○	×	×	×	
		B-R	○	○	×	×	×	
		B-G	○	○	×	×	×	
	Multi Matrix On		○	○	×	×	×	
		gate	×	×	×	×	×	
		Phase select	×	×	×	×	×	
		Hue	○	○	×	×	×	
		Saturation	○	○	×	×	×	
	Adaptive Matrix On		○	○	×	×	×	
	Adaptive Matrix Level		○	○	×	×	×	
Digital liner saturation	saturation on		○	○	×	×	×	
		saturation	○	○	×	×	×	
OHB matrix	OHB Matrix On		×	○	×	×	×	
Black Gamma	Black Gamma On		○	○	×	×	×	
		R Black Gamma	○	○	×	×	×	
		G Black Gamma	○	○	×	×	×	
		B Black Gamma	○	○	×	×	×	
		M Black Gamma	○	○	×	×	×	
	Black Gamma (RGB) Range		○	○	×	×	×	

Continued

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

Continued

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

Continued

Function	Switch Item	Analog Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
SD Matrix		Hue	○	○	-	-	-	Connected with CCU only
		Saturation	○	○	-	-	-	Connected with CCU only
SD Gamma	SD Gamma Off		○	ON	-	-	-	Connected with CCU only
		SD M Gamma	○	○	-	-	-	Connected with CCU only
Digital extender	digital extender on		×	×	×	×	×	

Menu	Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
USER MENU customize		-	-	-	○	-	
VF DISPLAY	EX	-	-	-	○	-	
	ZOOM	-	-	-	○	-	
	DISP	-	-	-	○	-	
	FOCUS	-	-	-	○	-	
	ND	-	-	-	○	-	
	5600K	-	-	-	○	-	
	IRIS	-	-	-	○	-	
	WHITE	-	-	-	○	-	
	D.EXT	-	-	-	○	-	
	GAIN	-	-	-	○	-	
	SHUTTER	-	-	-	○	-	
	BATT	-	-	-	○	-	
	RETURN	-	-	-	○	-	
	TALK	-	-	-	○	-	
	MESSAGE	-	-	-	○	-	
	FOLLOW F	-	-	-	○	-	
	FORCUS NAME	-	-	-	○	-	
	FOCUS FORM	-	-	-	○	-	
! IND	ND	-	-	-	○	-	
	WHITE	-	-	-	○	-	
	5600K	-	-	-	○	-	
	GAIN	-	-	-	○	-	
	SHUTTER	-	-	-	○	-	
	FAN	-	-	-	○	-	
	EXT	-	-	-	○	-	
	Y TALLY	-	-	-	○	-	
VF MARKER	MARKER	-	-	-	○	-	
	LEVEL	-	-	-	○	-	
	CENTER	-	-	-	○	-	
	SAFETY ZONE	-	-	-	○	-	
	EFFECT	-	-	-	○	-	
	ASPECT	-	-	-	○	-	
	MASK	-	-	-	○	-	
	SAFETY	-	-	-	○	-	
VF DETAIL	VF DETAIL	-	-	-	○	-	
	CRISP	-	-	-	○	-	
	FREQUENCY	-	-	-	○	-	
	FLICKER	-	-	-	○	-	
	AREA	-	-	-	○	-	
	ZOOM LINK	-	-	-	○	-	
	COLOR DETAIL	-	-	-	○	-	
	PEAK COLOR	-	-	-	○	-	
	CHROMA LEVEL	-	-	-	○	-	
	RETURN DISABLE	-	-	-	○	-	
FOCUS POSITION METER1	FOCUS POSITION METER	-	-	-	○	-	
	NEAR LIMIT	-	-	-	○	-	
	FAR LIMIT	-	-	-	○	-	
	DIRECTION	-	-	-	○	-	
	SIZE	-	-	-	○	-	
	RULED LINE	-	-	-	○	-	
	INDEX COLOR	-	-	-	○	-	
	INDEX WIDTH	-	-	-	○	-	
	MARKER WIDTH	-	-	-	○	-	
FOCUS POSITION METER2	ADJUSTED SIGN	-	-	-	○	-	
	SENSE	-	-	-	○	-	
	NAME DISP	-	-	-	○	-	
	FRAME DISP	-	-	-	○	-	
	FRAME WIDTH	-	-	-	○	-	
	MARKER CONFIG	-	-	-	-	-	

Continued

Menu	Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
FOCUS ASSIST	INDICATOR	-	-	-	○	-	
	MODE	-	-	-	○	-	
	LEVEL	-	-	-	○	-	
	GAIN	-	-	-	○	-	
	OFFSET	-	-	-	○	-	
	AREA MAKER	-	-	-	○	-	
	SIZE	-	-	-	○	-	
	POSITION	-	-	-	○	-	
	POSITION H	-	-	-	○	-	
	POSITION V	-	-	-	○	-	
ZEBRA	ZEBRA	-	-	-	○	-	
	ZEBRA1	-	-	-	○	-	
	LEVEL	-	-	-	○	-	
	WIDTH	-	-	-	○	-	
	ZEBRA2	-	-	-	○	-	
CURSOR	CURSOR	-	-	-	○	-	
	LEVEL	-	-	-	○	-	
	BOX/CROSS	-	-	-	○	-	
	H POSITION	-	-	-	○	-	
	V POSITION	-	-	-	○	-	
	WIDTH	-	-	-	○	-	
	HEIGHT	-	-	-	○	-	
	BOX MEMORY	-	-	-	○	-	
	H POSI	-	-	-	○	-	
	V POSI	-	-	-	○	-	
	WIDTH	-	-	-	○	-	
	HEIGHT	-	-	-	○	-	
SPIRIT LEVEL	INDICATOR	-	-	-	○	-	
	MODE	-	-	-	○	-	
	REVERSE	-	-	-	○	-	
	SCALE	-	-	-	○	-	
	H POSITION	-	-	-	○	-	
	V POSITION	-	-	-	○	-	
	OFFSET	-	-	-	○	-	
VF OUT	VF OUT	-	-	-	○	-	
	CHARACTER LEVEL	-	-	-	○	-	
	PinP	-	-	-	○	-	
	POSITION	-	-	-	○	-	
	SIZE	-	-	-	○	-	
	MODE	-	-	-	○	-	
SWITCH ASSIGN1	GAIN	-	-	-	○	-	
	ASSIGNABLE	-	-	-	○	-	
	VF ASSIGN	-	-	-	○	-	
	VF OUT SW	-	-	-	○	-	
SWITCH ASSIGN2	LENS VTR S/S	-	-	-	○	-	
	FRONT RET1	-	-	-	○	-	
	FRONT RET2	-	-	-	○	-	
	HANDLE SW1	-	-	-	○	-	
	HANDLE SW2	-	-	-	○	-	
	ZOOM SPEED	-	-	-	○	-	
REAR FUNCTION SWITCH	A PUSH	-	-	-	○	-	
	B PUSH	-	-	-	○	-	
	C PUSH	-	-	-	○	-	
	A ROT	-	-	-	○	-	
	B ROT	-	-	-	○	-	
	C ROT	-	-	-	○	-	
EXT SWITCH	RET CTRL CONNECTOR	-	-	-	○	-	
	RET1 Pin5:	-	-	-	○	-	
	RET2 Pin6:	-	-	-	○	-	
	RET3 Pin4:	-	-	-	○	-	
	INCOM1 Pin1:	-	-	-	○	-	
	INCOM2 Pin2:	-	-	-	○	-	

Continued

Menu	Item	SCENE File	REFERENCE File	LENS File	OPERATOR File	OHB File	Note
RETURN	RET1 SW SEL	-	-	-	○	-	
	RET2 SW SEL	-	-	-	○	-	
	RET3 SW SEL	-	-	-	○	-	
	RET1 SW+RET2 SW	-	-	-	○	-	
HEADSET MIC	INTERCOM	-	-	-	○	-	
	LEVEL	-	-	-	○	-	
	POWER	-	-	-	○	-	
	UNBAL	-	-	-	○	-	
	EARPHONE	-	-	-	○	-	
	LEVEL	-	-	-	○	-	
INTERCOM	INTERCOM1 RECEIVE SELECT	-	-	-	○	-	
	INTERCOM	-	-	-	○	-	
	PGM1	-	-	-	○	-	
	PGM2	-	-	-	○	-	
	PGM3	-	-	-	○	-	
	TRACKER	-	-	-	○	-	
	SIDE TONE	-	-	-	○	-	
	INTERCOM1/2	-	-	-	○	-	
	MIX TALK	-	-	-	○	-	
TRACKER	TRACKER RECEIVE SELECT	-	-	-	○	-	
	INTERCOM	-	-	-	○	-	
	PGM1	-	-	-	○	-	
	PGM2	-	-	-	○	-	
	PGM3	-	-	-	○	-	
	INPUT LEVEL	-	-	-	○	-	
	OUTPUT LEVEL L-CH	-	-	-	○	-	
	OUTPUT LEVEL R-CH	-	-	-	○	-	
	OUTPUT LEVEL 2	-	-	-	○	-	
EARPHONE	EARPHONE RECEIVE SELECT	-	-	-	○	-	
	INTERCOM	-	-	-	○	-	
	PGM1	-	-	-	○	-	
	PGM2	-	-	-	○	-	
	PGM3	-	-	-	○	-	
	TRACKER	-	-	-	○	-	
	SIDE TONE	-	-	-	○	-	
	MIX TALK	-	-	-	○	-	

Section 7
Setup Menu

7-1. Overview of Setup Menu

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

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

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

7-1-1. How to Display the SERVICE Menu/ How to Change the Setting Values

How to Display the SERVICE Menu

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

How to Change the Setting Values

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

7-1-2. Settable Special Functions

The following functions are made available by settings in the SERVICE menu. Note that they are limited functions.
In addition, settings of the number of scene files and setting of the resume of filter position are available.
Refer to the description in “7-2. SERVICE Menu”.

7-2. SERVICE Menu

This unit is provided with the SERVICE menu that is useful for maintenance and adjustment of the camera.
The menu content is displayed on the viewfinder.
As for how to display the SERVICE menu, refer to “7-1-1. How to Display the SERVICE Menu/ How to Change the Setting Values”.

7-2-1. SERVICE Menu List

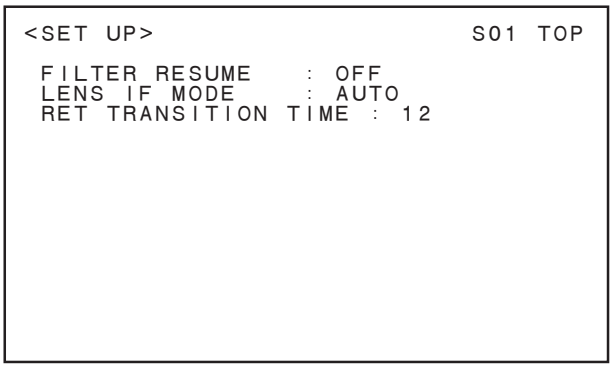
Menu No.	Menu Page Name	Remarks	Reference page
S01	SET UP	Scene files number setting, Resume setting of filter position, Lens communications setting, Return transition time setting, PsF delay time setting	page 136
S02	CC FILTER	Color temperature conversion filter setting	page 137
S03	MANUAL RPN	Manual RPN compensation	page 137
S04	RPN MANAGE	RPN automatic detection	page 138
S05	OHB-ADJ1	Sensitivity adjustment	page 138
S06	BLACK SHADING	Black shading adjustment	page 138
S07	WHITE SHADING	White shading adjustment	page 139
S08	INTERCOM	INTERCOM 2 input/output interface setting	page 139
S09	SERIAL NO.	Model name displaying, Serial number displaying	page 140
S10	OPTION	Gain extend, Chroma filter characteristic setting, Microphone AB power active setting, VR overflow setting, Stereo setting of the front microphone	page 140
S11	SCENE FILE CUSTOMIZE	This function is not used in this unit.	page 141
S12	UPDATE	This function is not used in this unit.	page 141
S13	RF MONITOR	This function is not used in this unit.	page 141
S14	CD BASEBAND MONITOR 1	This function is not used in this unit.	page 142
S15	CD BASEBAND MONITOR 2	This function is not used in this unit.	page 142
S16	REFRESH SERIAL NO.	Model name, recovery data of the serial number reading FeliCa ID displaying	page 142

7-2-2. Description of SERVICE Menu

Tip

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

SET UP



FILTER RESUME

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

LENS IF MODE

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

RET TRANSITION TIME

Sets the transition time of the RET signals.

CC FILTER

```
<CC FILTER>                    S02 TO P

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

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

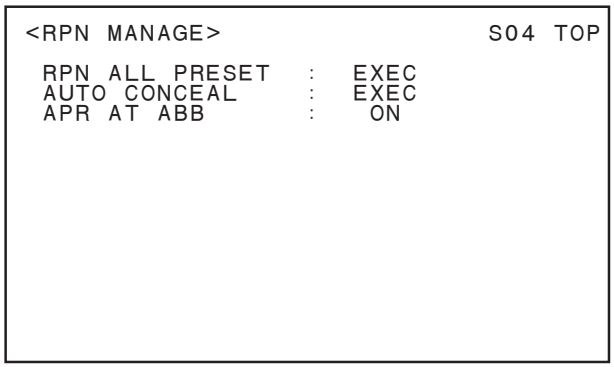
MANUAL RPN

```
<MANUAL RPN>                   S03 TOP

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

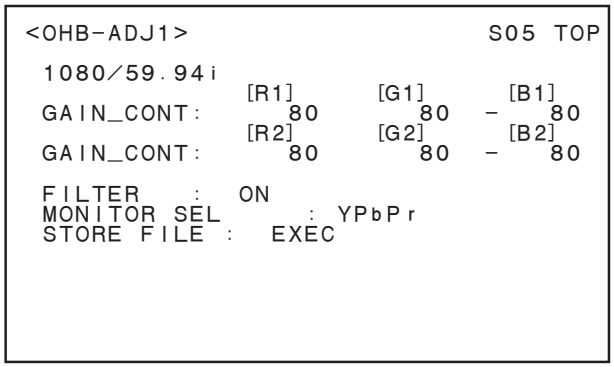
The MANUAL RPN menu is used for manual RPN compensation. For details, refer to “4-6-2. Manual RPN Compensation Adjustment Preparation”.

RPN MANAGE



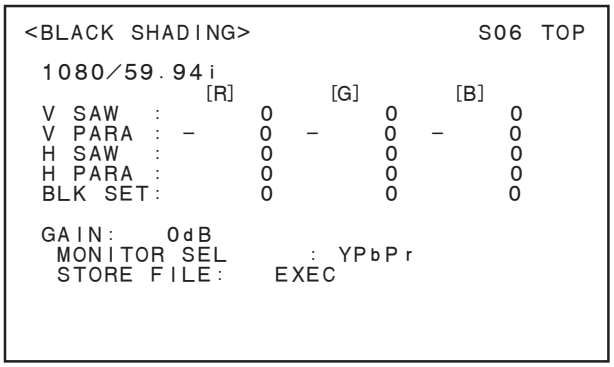
The RPN MANAGE menu is used for RPN compensation setting and management. For details, refer to “4-6-4. Performing Automatic RPN Detection Effectively”.

OHB-ADJ1



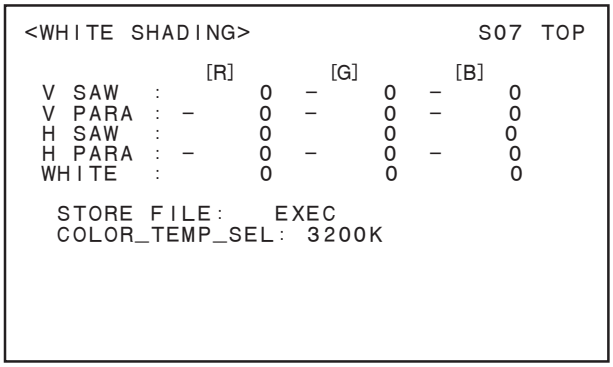
The OHB_ADJ1 menu is used for adjustment of the CMOS block. For details, refer to “4-3-1. Sensitivity Adjustment”.

BLACK SHADING



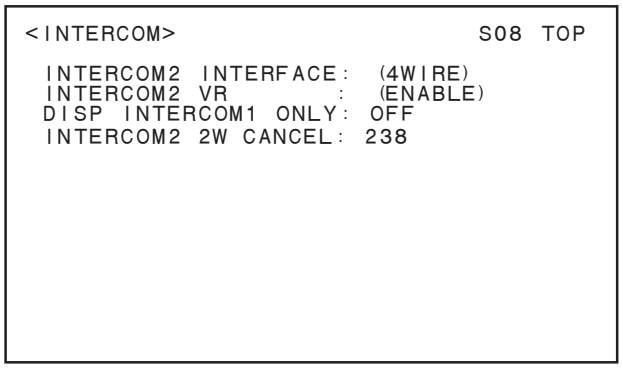
The BLACK SHADING menu is used for adjustment of the black shading. For details, refer to “4-3-2. Black Shading Adjustment”.

WHITE SHADING



The WHITE SHADING menu is used for adjustment of the white shading. For details, refer to “4-3-3. White Shading Adjustment ”.

INTERCOM



The intercom displays current settings of the input/output interface of INTERCOM 2.

DISP INTERCOM1 ONLY

When DISP INTERCOM1 ONLY is set to “ON”, only INTERCOM1 is displayed.

INTERCOM2 2W CANCEL

When INTERCOM2 is used with 2 WIRE, adjust the value.

Note

When INTERCOM2 is used with 2 WIRE, a change of hardware is required.
For more information, contact your local Sony Sales Office/Service Center.

SERIAL NO.

Tip

The display screen is the case of serial number 10001 of HDC3100.

```
<SERIAL NO.>                    S09 TOP

 MODEL: HDC3100
 NO.  : 10001

 OHB TYPE   :  OPTION BASIC
```

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

OPTION

```
<OPTION>                        S10 TOP

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

GAIN EXTEND

When GAIN EXTEND is set to “ON”, the master gain is extended up to + 36 dB.
When it is set to “OFF”, the master gain is extended to + 12 dB.

CHROMA FILTER

CHROMA FILTER is used for Chroma filter characteristic setting.

MIC AB POWER

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

Note

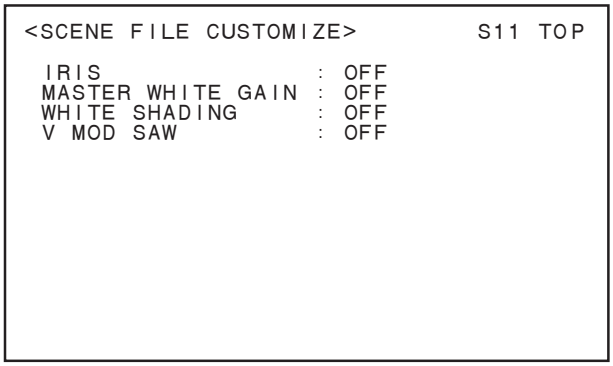
When the microphone power switch is set to “•” (down) with this function enabled, do not connect any microphone that does not support AB POWER. If such microphone is connected, it may be damaged.

FRONT MIC STEREO

Change the front microphone to the stereo. However, a change of hardware is required.
For more information, contact your local Sony Sales Office/Service Center.

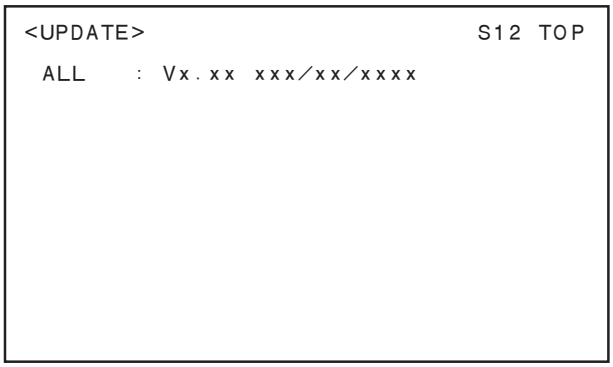
SCENE FILE CUSTOMIZE

This menu is not used in this model.



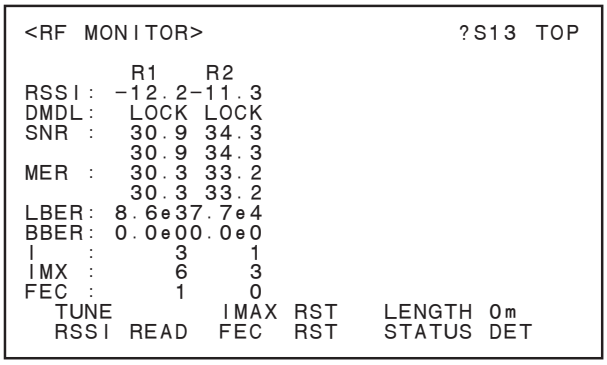
UPDATE

This menu is not used in this model.



RF MONITOR

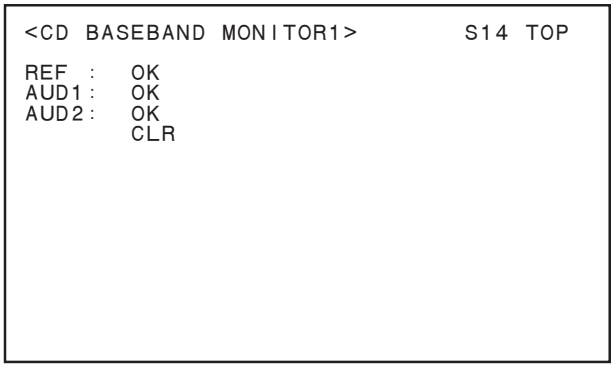
This menu is not used in this model.



The RF MONITOR menu displays the signal reception status of the Digital-Triax model.
Factory use.

CD BASEBAND MONITOR1

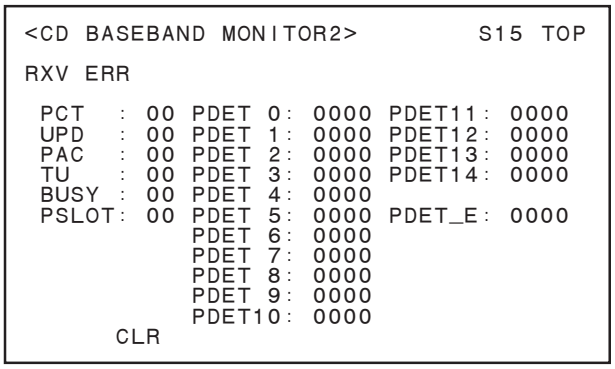
This menu is not used in this model.



Factory use.

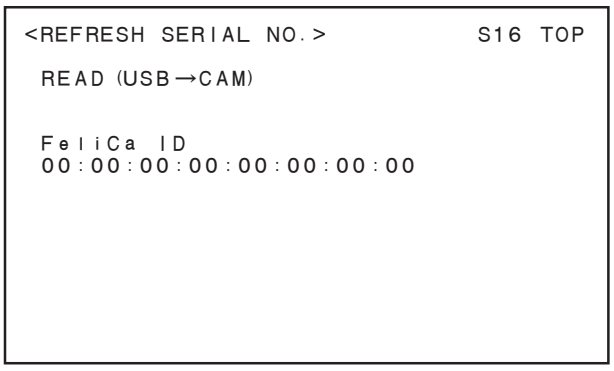
CD BASEBAND MONITOR2

This menu is not used in this model.



Factory use.

REFRESH SERIAL NO.



READ

READ is used for reading the model name stored in the USB drive and the recovery data on the serial number.
After replacement of AT board or NET board, perform this menu.

FeliCa ID

FeliCa ID displays ID of the FeliCa chip mounted on the camera.

Section 8
Circuit Description

8-1. Optical System (OHB Block)

8-1-1. BI-358 Board

The BI-358 board contains a 2/3-inch CMOS image sensor (IC001), a thermometer (IC007), and power ICs (IC003, IC005) for analog circuits.
The common BI-358 board is used for R, G, and B respectively.

8-1-2. IF-1331 Board

The IF-1331 board contains a CMOS image sensor power circuit and a flash memory IC (IC010) that stores RPN automatic compensation (APR) data and sensor adjustment data.

8-1-3. DR-699 Board

The DR-699 board contains a CPU (IC001) and Motor Drivers (IC002) that control Filter Disc Unit.

8-1-4. SE-1216 Board

The SE-1216 board contains a potentiometer that detects a position of the Filter Disc Unit.

8-2. Signal Processing/Transmission System

8-2-1. DPR-390 Board

The ASIC (IC500) performs imaging signal correction from the BI-358 board (R/G/B) and the ASIC (IC800) performs paint processing from the same board.
The FPGA (IC1100) performs baseband signal processing. The ASIC ICs and the FPGA have the following functions.

Correction processor AISC (IC500)

- Correction processing (defects, shading, etc.)

Paint processor ASIC (IC800)

- Camera process processing (Knee, Gamma, etc.) and enhanced processing

Baseband processor FPGA (IC1100)

- Generating SDI signal
- Multiplexing audio signal and command signal with the main-line signal
- Separating prompter video signal, audio signal, and command signal from the multiplexed return signal
- Generating video signal for the viewfinder
- Down-conversion to SD signal
- Outputting imaging signal for transmission to the TX-166 board

The Baseband processor FPGA (IC1100) also contains an analog video D/A converter and a reference clock signal generator.

8-2-2. TX-166 Board

The TX-164 board sends the HD-SDI signal to the CCU through the mounted optical module. The TX-164 board also recives the return signal from the CCU, and sends the main-line signal to the J601. J601 is used as a Trunk in terminal.

8-3. TRIAX Transmission System

8-3-1. CD-91 Board

The CD-91 board performs encoding and OFDM modulation processing of the serial main-line video signal (audio signal multiplexed) sent from the DPR-390 board, and then outputs the processed signal to the TR-170 board. The CD-91 board also decodes the data stream of the OFDM-demodulated return line sent from the TR-170 board into the return video signal, prompter video signal, audio signal, and command signal, and then outputs these signals to the DPR-390 board. The FPGA ICs and the codec IC have the following functions.

Serial/parallel converter FPGA (IC1001/CD-91 board)

- Converting the serial main-line video signal from the DPR-390 board to a parallel signal
- Converting the baseband-decoded parallel return video signals to a serial signal and outputting the serial signal to the DPR-390 board
- Side-panel output interface: SDI1output (J1201) (main-line video signal)

Video CODEC and OFDM modulator FPGA (IC2001/CD-91 board)

- Separating audio signal from the main-line video signal
- Encoding the main-line video signal
- OFDM-modulating the encoded main-line video/audio signals and command signal and outputting the D/A-converted RF-modulated signal to the TR-170 board
- Separating the return video data stream, prompter video data stream, audio signal, and command signal from the OFDM-demodulated data stream sent from the TR-170 board
- Decoding the separated return video data stream into a baseband signal
- Multiplexing audio signal with the decoded return video signal
- Generating a CCU synchronization signal from the TRIAX synchronization signal sent from the TR-170 board

Prompter video codec IC (IC3001/CD-91 board)

- Decoding the prompter video data stream separated in IC2001 into a baseband signal
- Converting the decoded prompter video signal to a composite signal and outputting the composite signal to the DPR-390 board

8-3-2. TR-170 Board

The TR-170 board amplifies the main-line RF-modulated signal generated on the CD-91 board according to the cable length, and then outputs the signal to the FL-380 board through the MPX filter.
The TR-170 board also separates the return-line RF-modulated signal sent from the CCU using the MPX filter through the FL-380 board, then demodulates the signal using the OFDM demodulator (IC505, IC507/TR-170 board), and then outputs the demodulated signal as a data stream to the CD-91 board.
Furthermore, the TR-170 board extracts the FM signal with the MPX filter and the bandpass filter from the RF signal sent from the CCU, then demodulates the extracted signal using the demodulator (IC603/TR-170 board), and then outputs the demodulated signal as a synchronization signal for the TRIAX to the CD-91 board.
Finally, using the CPLD (IC1001/TR-170 board), the TR-170 board modulates the camera power switch condition (CCU/EXT) and the information equivalent to the cable length detected by the camera as a STANDBY-ID, and then outputs the modulated information to the CCU through the MPX filter and the FL-380 board.

8-3-3. FL-380 Board

The FL-380 board has a function to separate the DC power voltage (+240 V) from the RF signal sent from the CCU with the TRIAX cable.
The separated RF signal is sent to the MPX filter on the TR-170 board with the coaxial cable from the FL-380 board.
The DC power voltage (+240 V) is sent to the S-943 board (power supply block) as the power voltage for the unit from the FL-380 board.

8-4. System Control System

8-4-1. AT-195

The AT-195 board consists of a system control microcomputer IC (IC001) and a peripheral circuit. The flash memory (IC401) on the board stores the main program.
The AT-195 is connected to the SY-463 board.

8-4-2. SY-463

The SY-463 board consists of an FPGA IC (IC1001) and its peripheral devices. The SY-463 board also contains an interface control circuit, a video amplifier circuit, an audio signal processing circuit, and a sync separator circuit.

Interface control circuits

The interface control circuits are equipped with the following functions.

- Parallel bus communication among the AT-195 board, the DPR-390 board, and other transmission system boards
- SPI communication with image sensors
- I^2C communication with the FDU
- 700 protocol communication between the main unit and the remote control unit (RM), and between the main unit and the camera control unit (CCU)
- Trunk communication (RS-232C)
- Serial/parallel lens control
- Fan control
- Tally control
- I^2C communication with the viewfinder and tally control
- Rotary encoder input
- Switch and potentiometer input
- Clock generation for audio PLL and A/D and D/A converters
- Power supply to NFC and sensors and communication control
- I^2C communication with the power supply unit

Video amplifier circuit

The following video amplifier circuits and synchronization signal selection control circuits are provided.

- Analog VF
- Build up
- Crane
- Prompter

Audio signal processing circuit

The following audio AD/DA ICs and analog/digital signal processing circuits are provided.

- Intercom1 : 1 input, 2 outputs (L/R)
- Intercom2 : 1 input, 2 outputs (L/R)
- Tracker : 1 input, 3 outputs (L/R/2)
- Earphone : 1 input, 2 outputs (L/R)
- Audio1, Audio2 : Audio1 is front or rear analog input and Audio2 is rear analog input or AES/EBU input

8-5. Interface Boards

8-5-1. SW-1738 Board

The SW-1738 board contains LOCAL, ND, CC, and ASSIGNABLE switches.
The SW-1738 board also contains an I/O expander (IC1) for switches.

8-5-2. SW-1739 Board

The SW-1739 board contains back tally LEDs (red/green/yellow), a back tally LED switch (ON/OFF), and switches for RET1 and INCOM MIC.

8-5-3. SW-1741 Board

Only one type of INCOM panel (SY) are provided. The SW-1741 board contains the following switches, potentiometers, and a rotary encoder.

- Rear-panel light ON/OFF switch
- Menu switch
  - PROD/MIX/ENG select switch for INCOM
- Tracker level switch
- Rotary encoder for RET/ASSIGNABLE (A/B/C)
- Potentiometers (ENG/PROD/PGM1/PGM2) for INCOM
- Potentiometer for TRACKER

In addition to these components, the SW-1741 board also contains LEDs, LED driver ICs (IC004, IC005), I/O expander ICs (IC1, IC201) for switches, and A/D converter ICs (IC2, IC3) for potentiometers.

8-5-4. SW-1746 Board

The SW-1746 board contains switches for RET1, RET2, and CALL.

8-5-5. CN-3995 Board

The CN-3995 board contains the following connectors for external interface and switches for microphone.

- TRACKER connector (CN4)
- DC-OUT connector (CN7)
- RET control connector (CN8)
- Audio input select switches (CH1, CH2)
- MIC power switches (CH1, CH2)

In addition, this board also contains an I/O expander for switches (IC1) and a 3-pole/4-pole earphone automatic detection IC (IC2).

8-5-6. CN-3997 Board

The CN-3997 board contains a 4-pole EARPHONE connector. (3-pole connector also supported.)

- ϕ 3.5 mm stereo mini-jack: J1

8-5-7. SW-1742 Board

The SW-1742 board contains a CAMERA POWER (camera power) switch.

8-5-8. SW-1743 Board

The SW-1743 board contains GAIN, OUTPUT/AUTO KNEE, WHITE BAL, DISPLAY, and STATUS/CANCEL switches.

8-5-9. SW-1744 Board

The SW-1744 board contains a RET1 switch.

8-5-10. SW-1745 Board

The SW-1745 board contains switches, a rotary encoder, and a potentiometer for the following functions.
- MIC power switch
- RET2 switch
- Shutter switch
- White balance switch
- Menu rotary encoder
- INCOME potentiometer

8-5-11. CN-3993 Board

The CN-3993 board contains audio input connectors.
- MIC1 IN/MIC2 IN connectors (3-pin XLR, CN2/CN4)

8-5-12. CN-3996 Board

The CN-3996 board contains a test output connector and a prompter signal output/external synchronization signal input connector.
- TEST OUT connector (BNC: CN2)
- PROMPTER/GENLOCK connector (BNC: CN1)

8-5-13. CN-3998 Board

The CN-3998 board contains a remote control connector.
- REMOTE connector (8-pin round type, CN2)

8-5-14. CN-3999 Board

The CN-3999 board contains an intercom connector.
- INTERCOM connector (5-pin XLR, CN1)

8-5-15. CN-4000 Board

The CN-4000 board contains a DC power input connector.
- DC IN connector (4-pin XLR, CN1)

8-5-16. CN-4002 Board

The CN-4002 board contains audio input connectors.
- AUDIO IN (CH1/CH2) connectors (3-pin XLR, CN1/CN2)

8-5-17. CN-4003 Board

The CN-4003 board contains two I^2C controllers (IC1, IC2) for signal input from and output to the SW-1744 and the SW-1745 boards on the front panel and the SW-1743 board and the CN-4004 board (for connection with the lens) on the inside front panel.

8-5-18. CN-4004 Board

The CN-4004 board contains a lens connection connector.
- LENS connector (12-pin round type, CN1)

8-5-19. CN-4005 Board

The CN-4005 board contains a connector compatible with an analog HD viewfinder.
- VF connector (20-pin round type: CN1)

8-5-20. CN-4011 Board

The CN-4011 board contains a USB connector for storing files and version update.

- USB connector (USB 2.0, type A: CN2)

This board also contains a USB hub IC (IC002).

8-5-21. NET-47 Board

The NET-47 board contains an NFC IC (IC1).

8-5-22. MB-1248 Board

The MB-1248 board contains an interface connector (for the SY board, DPR board, power unit, MIC, and BUILD_UP), an FRAM IC (IC009) for storing set values, an acceleration sensor (SE001), and ICs for monitoring power consumption of each board (IC004 to ICIC008).

8-6. Power Supply System

8-6-1. PS-943 Board

The PS-943 board contains +14V_UNREG AC/DC insulation converter ICs (IC201, IC2001) and CPLD (IC5003) for each output control.
This board also monitors input voltages (IC304) and 14V_Other power voltage (IC4017) and transmits/receives signals by means of the I^2C interface.
The following voltages are output.

CN5002

- 13.5V_Standby
- -5.5V_Standby
- +5.5V
- -5.5V
- +14V_Unreg
- +14V_VF
- +14V_LENS&PL
- 14V_OTHER
- Fan power (for rear panel)

CN101

- Output voltages for Build Up

8-6-2. RE-347 Board

- 13.5V_Standby AC/DC insulation converter (IC102)
- -5.5V_Standby DC/DC converter (IC2001)
- +5.5V DC/DC converter (IC2002)
- -5.5V DC/DC converter (IC2003)
- Fan DC/DC converter (IC1002, 1003)

Fan power (for front panel) is output from CN1003.

Section 9
Spare Parts

9-1. Note on Repair Parts

1. Safety Related Components Warning

WARNING

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

2. Standardization of Parts

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

3. Stock of Parts

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

4. Harness

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

1. 安全重要部品

⚠警告

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

2. 部品の共通化

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

3. 部品の在庫

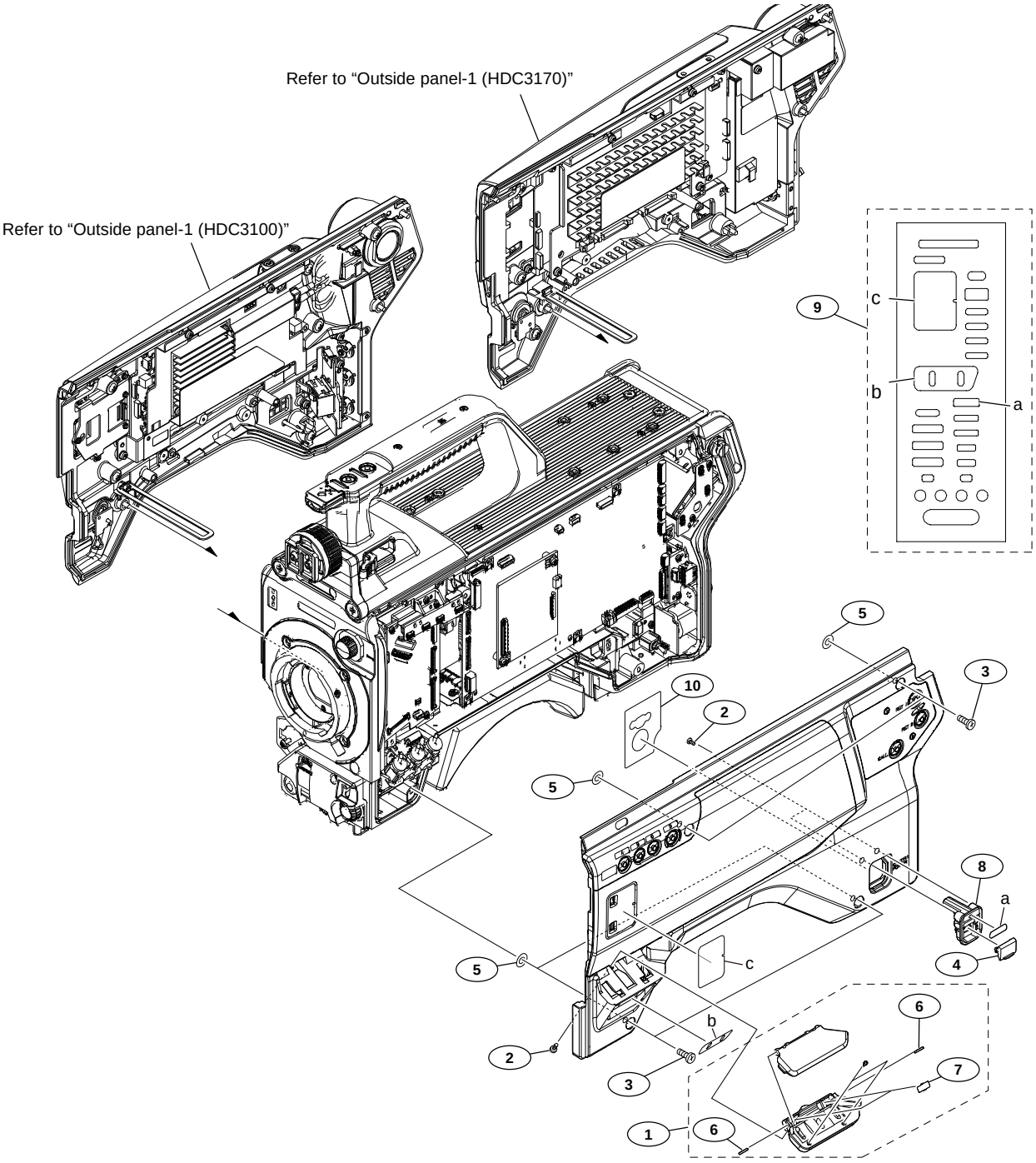
部品表のSP（Supply code）欄に “o” で示される部品は在庫していないことがあり，納期が長くなることがあります。

4. ハーネス

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

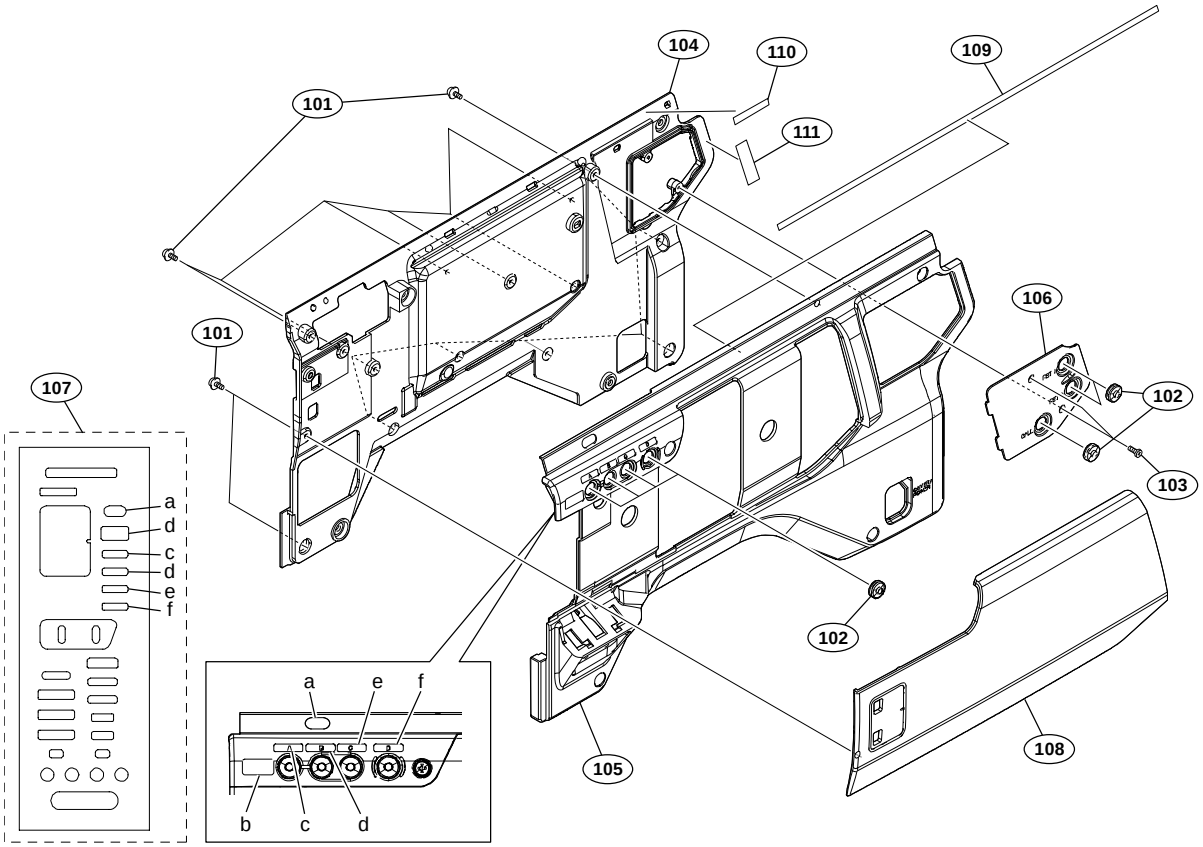
9-2. Exploded Views

Inside Panel-1



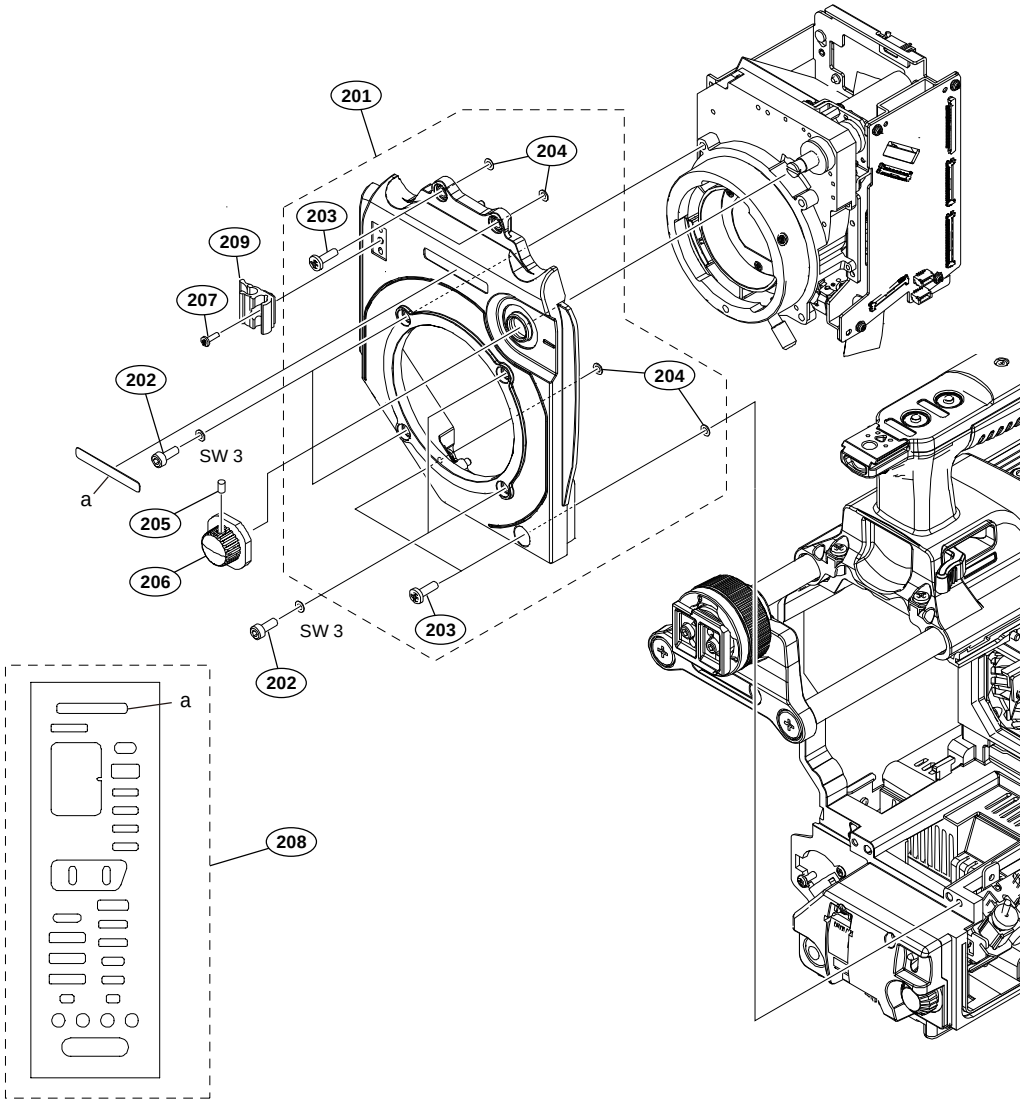
No.	Part No.	SP	Description
1	A-2227-432-A	s	INSIDE SW COVER ASSY [For HDC3100]
	A-2227-276-A	s	INSIDE SW COVER ASSY P [For HDC3170]
2	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
3	3-603-679-02	s	STAINLESS SCREW +B3X10
4	3-612-669-01	o	LID,POWER SW
5	3-701-438-11	s	WASHER, 2.5
6	3-703-575-11	s	PIN (DIA. 1.2X8), PARALLEL
7	3-742-066-11	o	SPRING, SHUTTER
8	4-400-101-01	s	POWER SW HOUSING
9	4-742-312-01	s	LABEL (850), MULTI [For HDC3100]
	4-742-313-01	s	LABEL (650), MULTI [For HDC3170]
10	4-747-172-01	s	SHEET, INSIDE DROP PROTECTION

Inside Panel-2



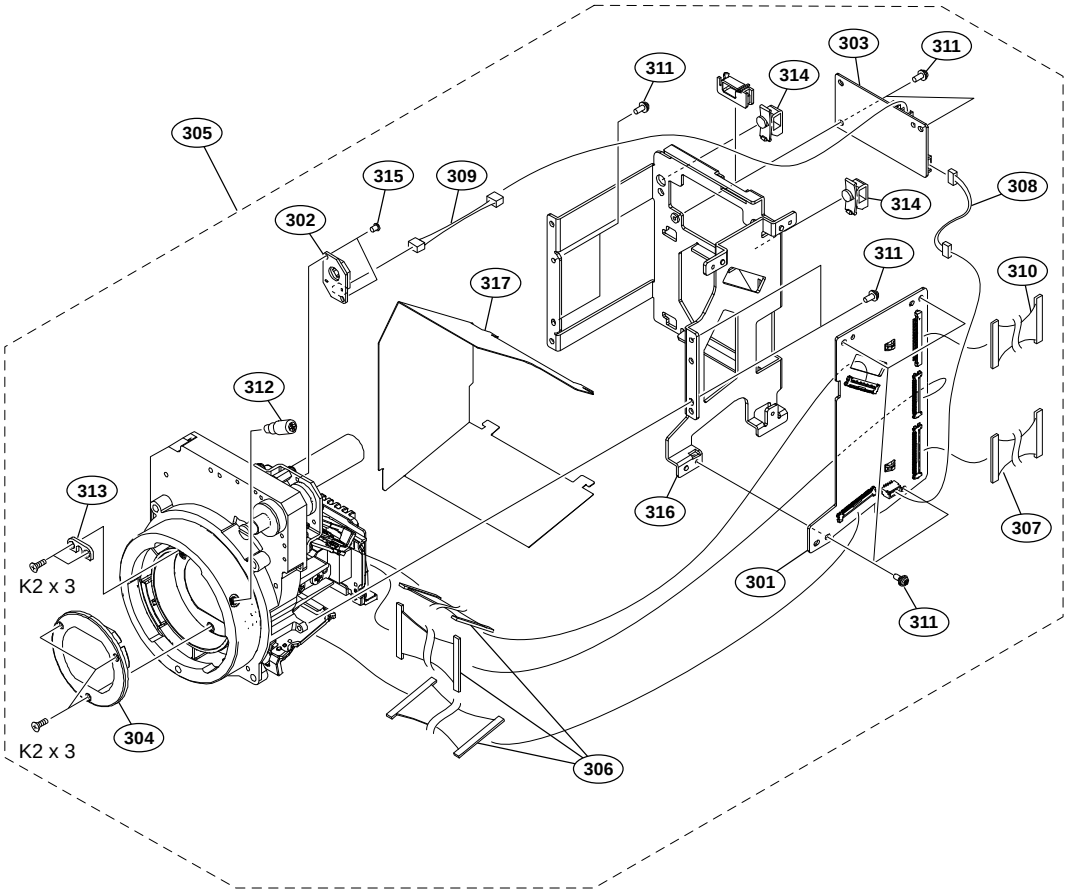
No.	Part No.	SP	Description
101	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
102	3-676-244-04	s	COVER, SWITCH
103	4-696-019-01	s	SCREW IB-LOCK(M2,BINDING HEAD)
104	4-740-577-01	s	PANEL (860), INSIDE INNER
105	4-740-578-01	s	CABINET (860), INSIDE
106	4-740-581-01	s	PANEL, INSIDE BLIND
107	4-742-312-01	s	LABEL (850), MULTI [For HDC3100]
	4-742-313-01	s	LABEL (650), MULTI [For HDC3170]
108	4-742-322-01	s	PAD (850), INSIDE
109	4-747-171-01	s	CUSHION, DROP PROTECTION
110	4-748-558-01	s	SHEET (A),SIDE COVER ADHESIVE
111	4-748-559-01	s	SHEET (B),SIDE COVER ADHESIVE

Front Panel



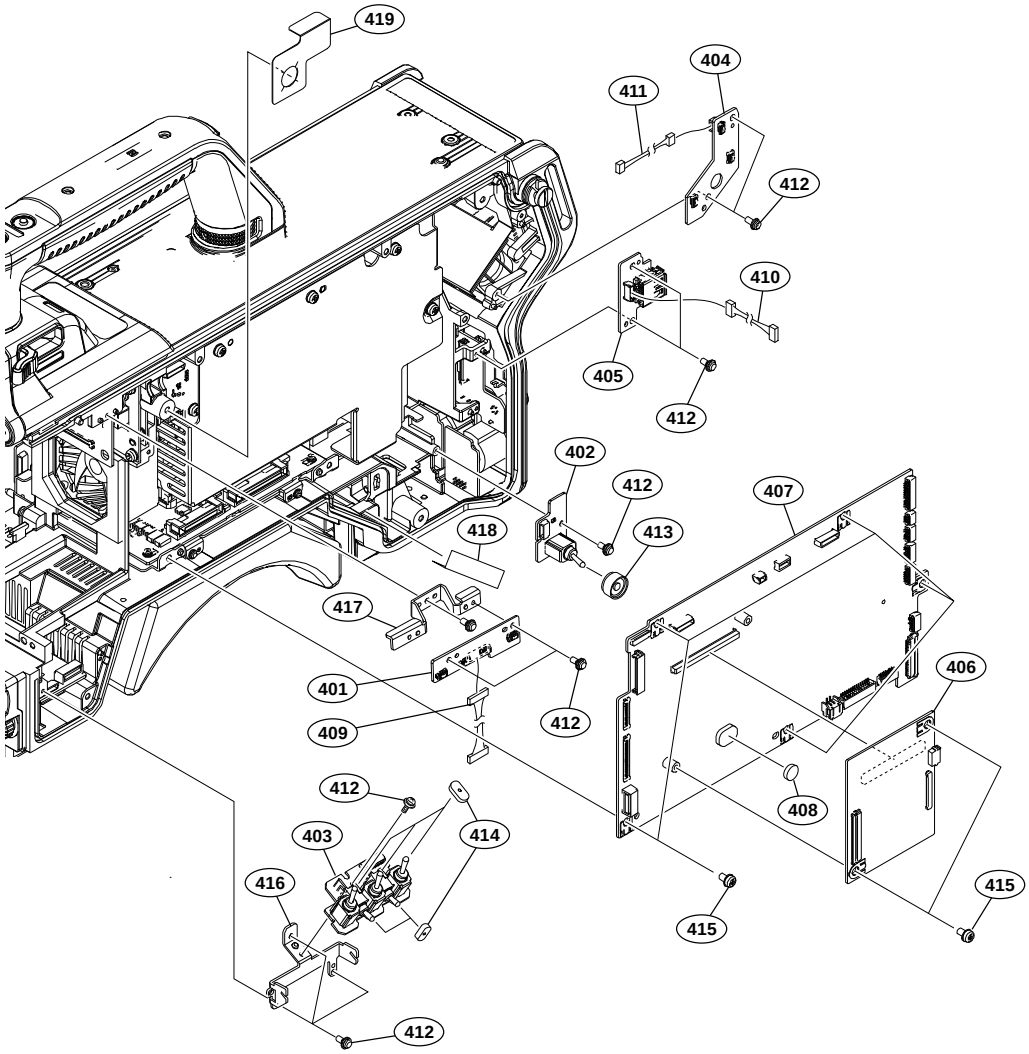
No.	Part No.	SP	Description
201	A-2226-857-A	s	PANEL ASSY (850), FRONT
202	2-623-773-11	s	BOLT (M3X8), STAINLESS
203	3-603-679-02	s	STAINLESS SCREW +B3X10
204	3-701-438-11	s	WASHER, 2.5
205	3-701-505-01	s	SET SCREW, DOUBLE POINT 3X3
206	3-710-054-01	s	KNOB, FILTER
207	4-696-019-01	s	SCREW IB-LOCK(M2,BINDING HEAD)
208	4-742-312-01	s	LABEL (850), MULTI [For HDC3100]
	4-742-313-01	s	LABEL (650), MULTI [For HDC3170]
209	4-743-115-01	s	CLAMP, CABLE
	7-623-208-22	s	SW 3,TYPE 2

OHB Block



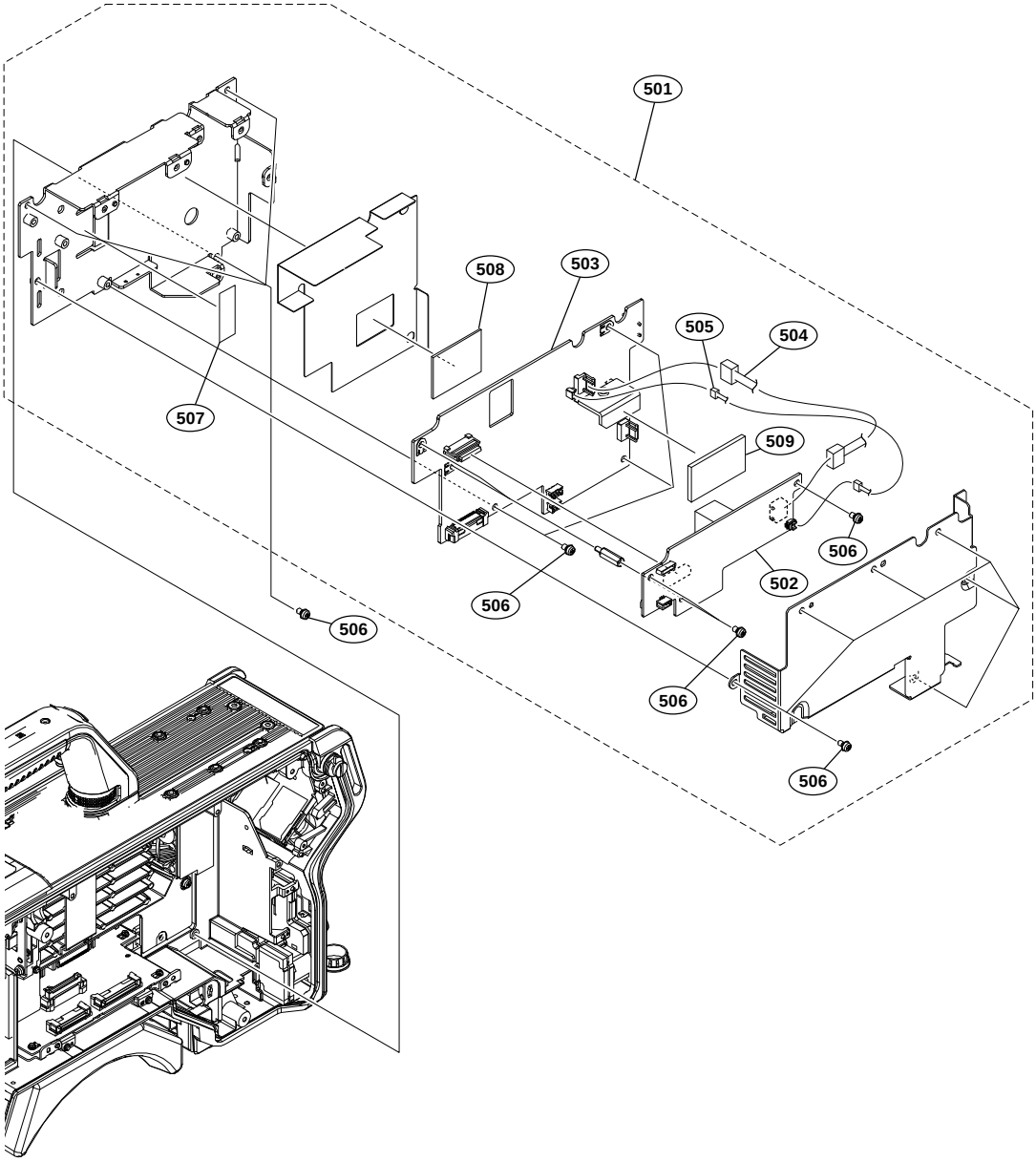
No.	Part No.	SP	Description
301	A-2197-795-A	s	IF-1331 MOUNT
302	A-2225-143-A	s	SE-1216 MOUNT
303	A-2225-144-A	s	DR-699 MOUNT
304	A-2225-693-A	s	OLPF ASSY (Z)
305	A-2231-026-A	s	CMOS BLOCK ASSY (RP)
306	1-912-824-11	s	MICRO COAXIAL CABLE (IF-BI(40))
307	1-912-825-11	s	MICRO COAXIAL CABLE (SY-IF(50))
308	1-967-833-21	s	HARNESS, SUB (FT-I2C)
309	1-971-166-11	s	HARNESS, SUB (POT)
310	1-971-973-11	s	HARNESS (DPR-SDI)
311	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
312	3-678-629-04	s	LEVER, MOUNT
313	3-776-897-02	s	GUIDE PLATE
314	3-853-802-01	s	CLAMP,REUSE
315	4-590-492-01	s	SCREW, POT STEP
316	4-742-331-01	s	HOLDER (850), IF
317	4-742-332-01	s	DUCT SHEET (850), OHB
	7-627-452-18	s	SCREW,PRECISION +K 2X3

SY Block



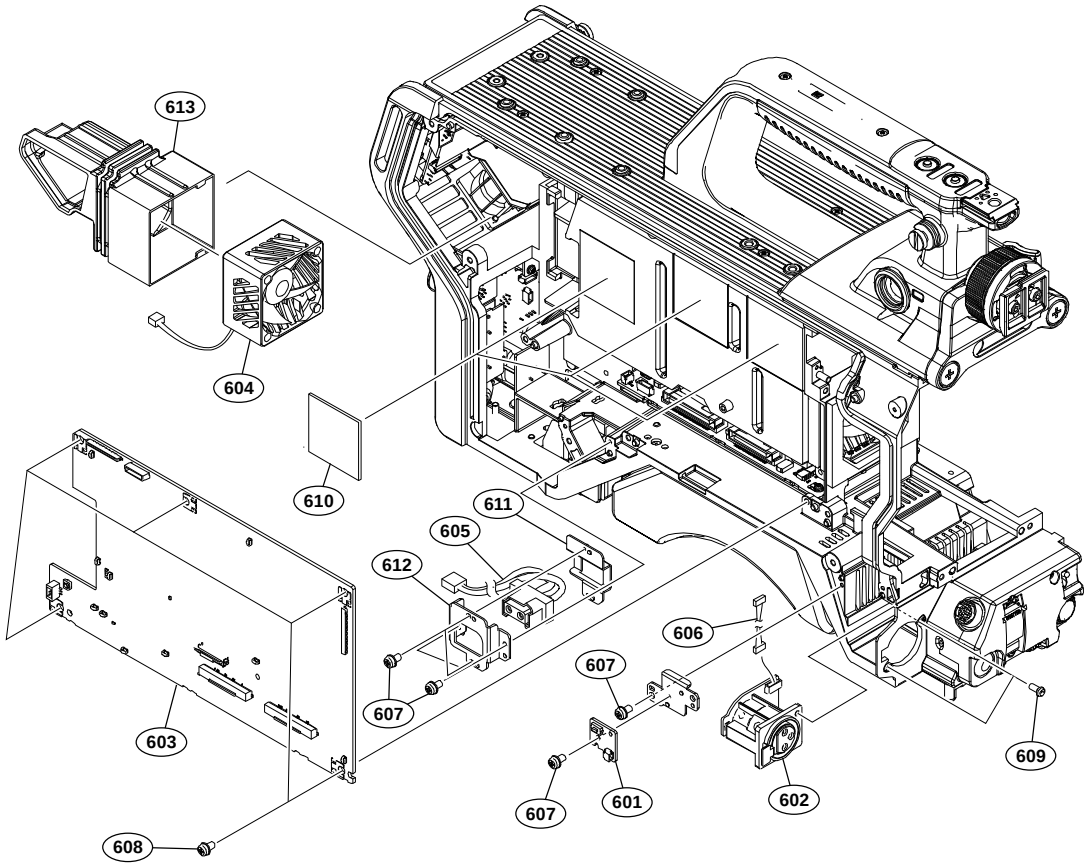
No.		Part No.	SP	Description
401		A-2197-746-A	s	SW-1738 MOUNT
402		A-2197-750-A	s	SW-1742 MOUNT
403		A-2197-751-A	s	SW-1743 MOUNT
404		A-2197-754-A	s	SW-1746 MOUNT
405		A-2197-775-A	s	CN-4011 MOUNT
406		A-2229-028-A	s	AT-195A COMPL
407		A-2229-030-A	s	SY-463 COMPL
408	⚠	1-756-134-18	s	BATTERY, LITHIUM (SECONDARY)
409		1-972-469-11	s	HARNESS, SUB (FILTER SW)
410		1-972-473-11	s	HARNESS, SUB (USB)
411		1-972-490-11	s	HARNESS, SUB (INSIDE-RET)
412		2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
413		3-870-137-02	s	CAP, DROP PROTECTION
414		3-872-587-01	s	CUSHION,TOGGLE-SW
415		4-382-854-51	s	SCREW (M3X6), P, SW (+)
416		4-740-564-01	s	BRACKET, SW1743
417		4-740-565-01	s	BRACKET, SW1738
418		4-747-541-01	s	GUARD, BUILD UP HARNESS
419		5-000-163-01	s	GUARD, HARNESS(SW-1738)

PS Block



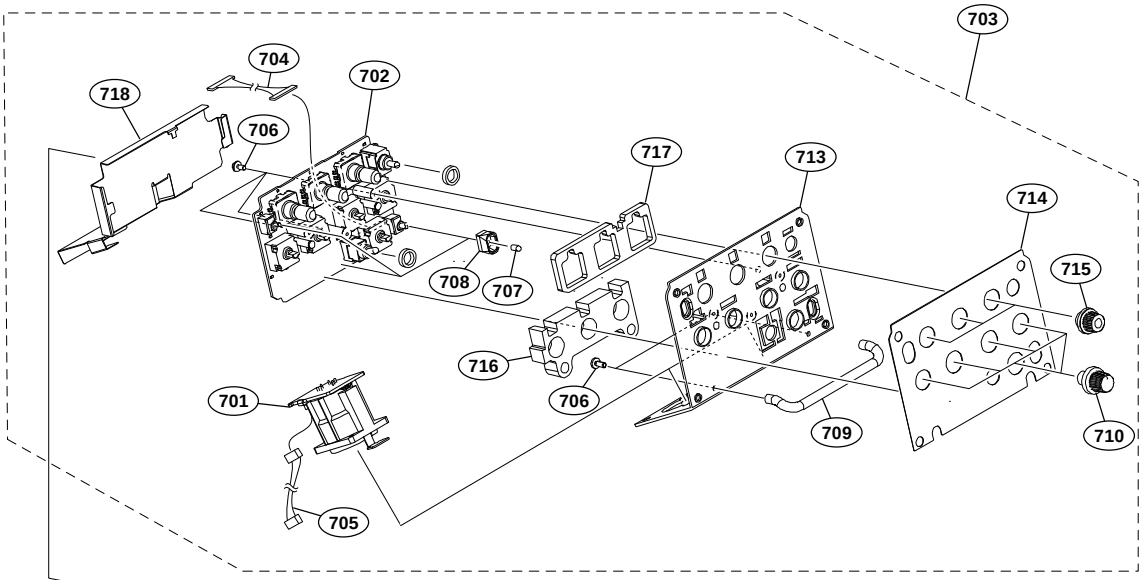
No.		Part No.	SP	Description
501	⚠	A-2226-226-A	s	POWER SUPPLY ASSY(860)
502		A-2226-283-A	s	RE-347 MOUNT
503		A-2226-284-A	s	PS-943 COMPL
504	⚠	1-971-352-11	s	HARNESS(PRI-HI)
505	⚠	1-971-353-11	s	HARNESS(PRI-LOW)
506		4-382-854-51	s	SCREW (M3X6), P, SW (+)
507		4-415-280-01	s	SHEET (T1), THERMAL
508	⚠	4-489-125-01	s	SHEET (1), RADIATION
509		4-742-796-01	s	SHEET (3 (25X45)), RADIATION

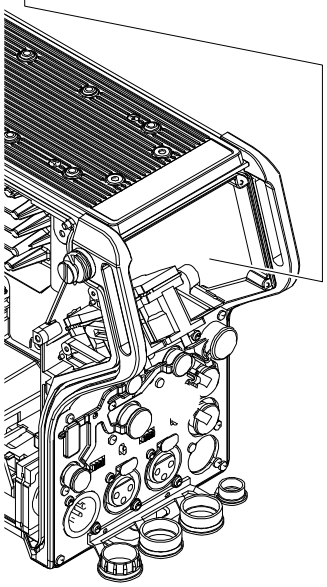
DPR Block

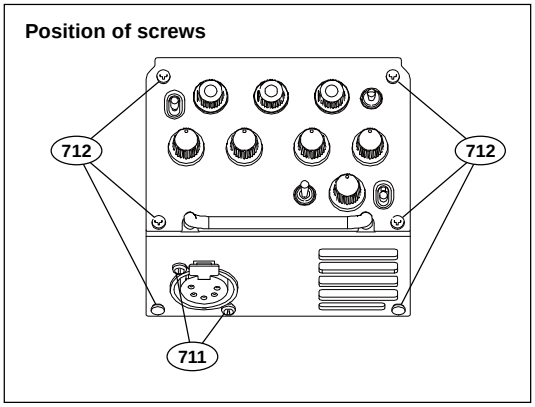


No.	Part No.	SP	Description
601	A-2197-752-A	s	SW-1744 MOUNT
602	A-2197-766-A	s	CN-4002 MOUNT
603	A-2229-031-A	s	DPR-390 (LOW) COMPL
604 ⚠	1-855-374-11	s	DC FAN
605	1-972-484-11	s	HARNESS, SUB (DC-OUT)
606	1-972-485-11	s	HARNESS, SUB (FRONT MIC)
607	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
608	4-382-854-51	s	SCREW (M3X6), P, SW (+)
609	4-559-446-02	s	SCREW, +P2.6X5 NEW TRUSTER
610	4-587-426-01	s	SHEET (2 (35X35)), RADIATION
611	4-740-559-01	s	HOLDER, DC OUT
612	4-740-560-01	s	COVER, DC OUT
613	4-742-319-01	s	DUCT, FAN

Incom Panel

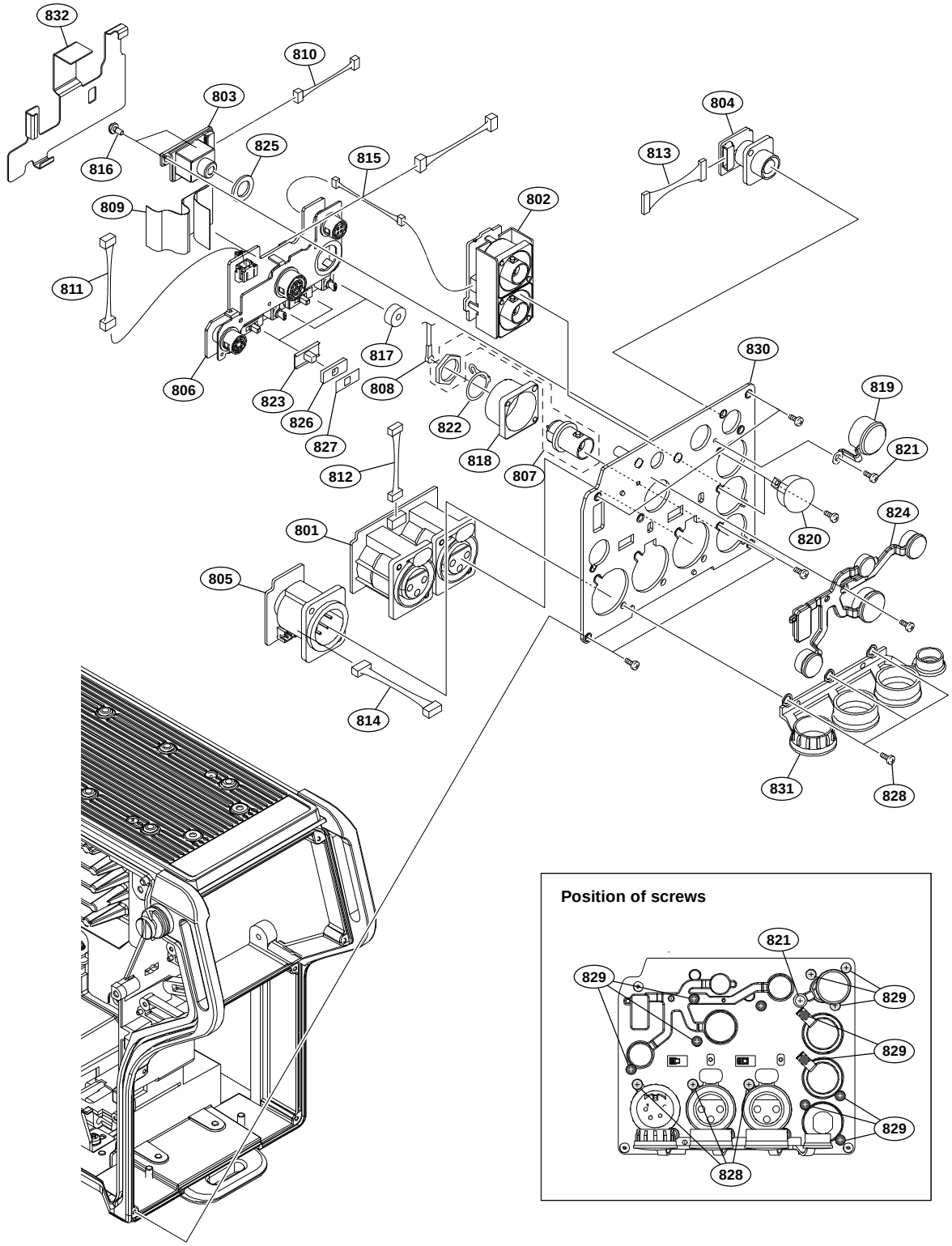






No.	Part No.	SP	Description
701	A-2197-763-A	s	CN-3999 MOUNT
702	A-2218-889-A	s	SW-1741(SY) MOUNT
703	A-2226-824-A	s	INCOM PANEL ASSY (SYM) [For HDC3100]
	A-2227-744-A	s	INCOM PANEL ASSY (SYM) P [For HDC3170]
704	1-972-472-11	s	HARNESS, SUB (SY-INCOM PANEL)
705	1-972-479-11	s	HARNESS, SUB (INCOM1)
706	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
707	3-869-842-01	s	CAP,SW
708	3-903-660-01	s	DROP PROTECTION,TOGGLE
709	3-903-661-01	s	ROD,GURAD
710	4-414-615-01	s	KNOB, VR
711	4-559-446-02	s	SCREW, +P2.6X5 NEW TRUSTER
712	4-696-019-01	s	SCREW IB-LOCK(M2,BINDING HEAD)
713	4-742-351-21	s	PANEL, INCOME
714	4-742-352-01	s	SHEET (SY), INCOME PANEL
715	4-742-807-01	s	KNOB, ENCODER
716	4-742-808-01	s	SHEET (A), LIGHT INTERCEPTION
717	4-744-319-01	s	SHEET (B), LIGHT INTERCEPTION
718	4-744-320-01	s	SHEET, DC LINE PROTECTION

Mic Panel


832
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Position of screws
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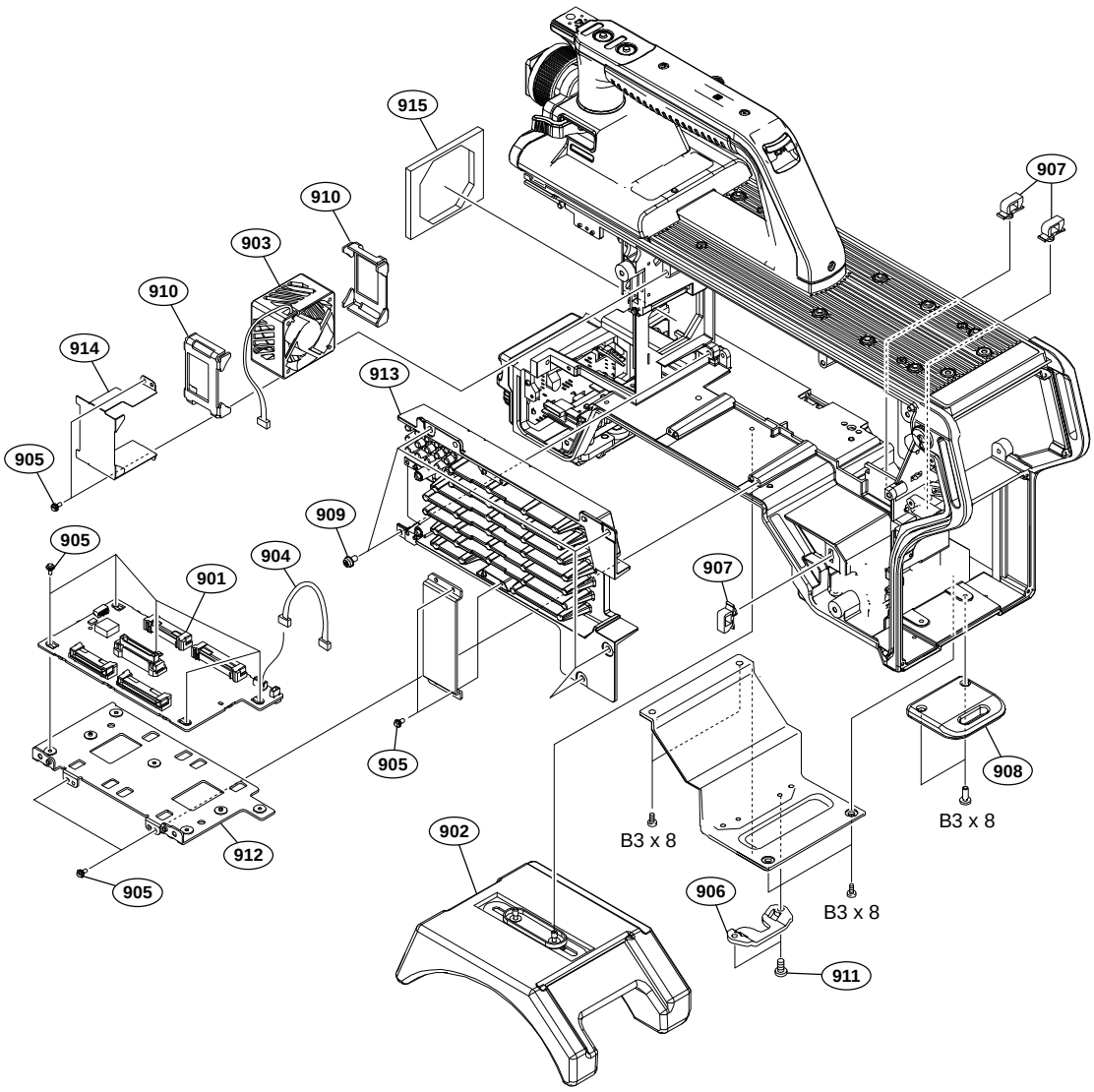
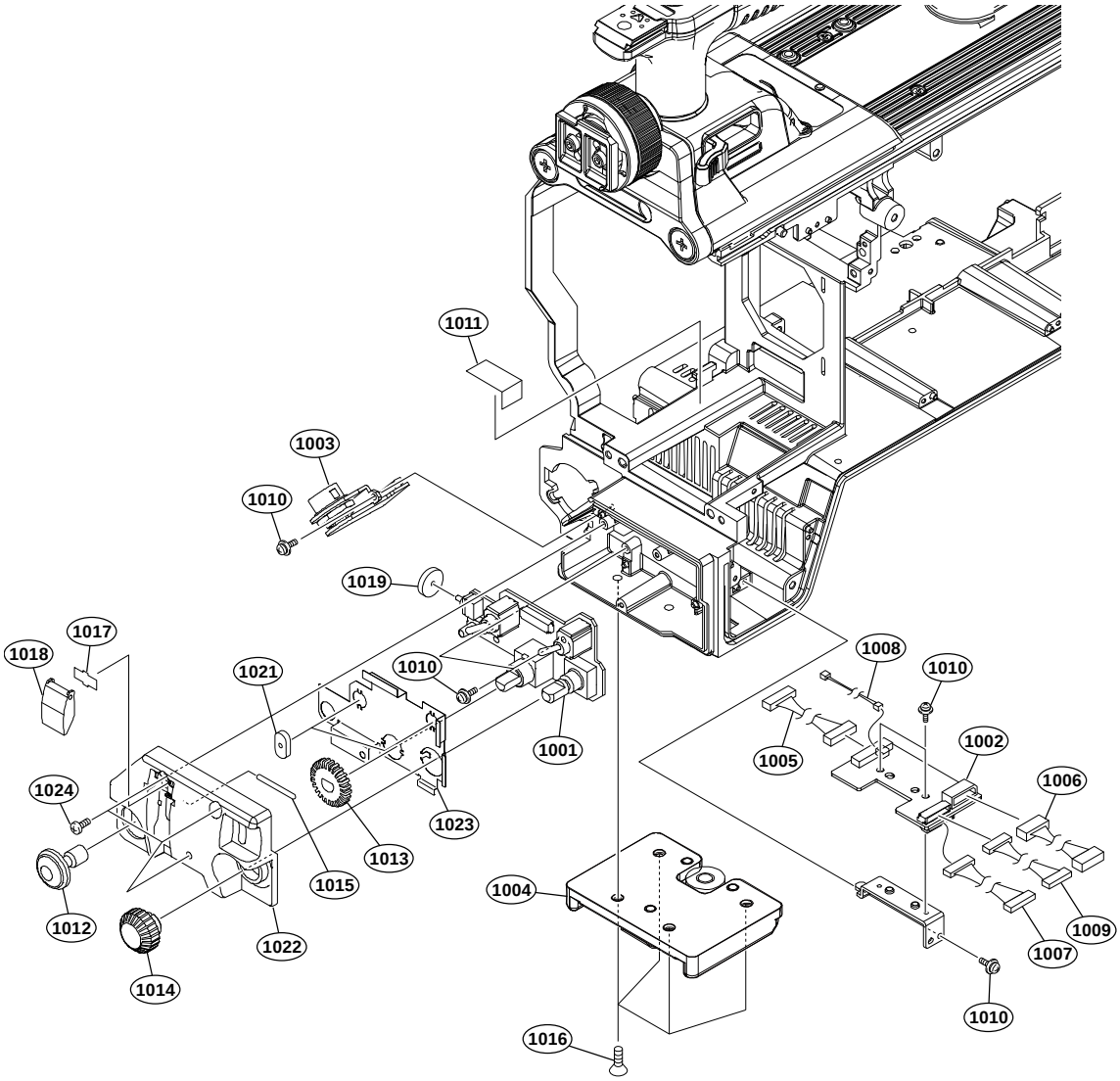
No.	Part No.	SP	Description
801	A-2197-755-A	s	CN-3993 MOUNT
802	A-2197-758-A	s	CN-3996 MOUNT
803	A-2197-759-A	s	CN-3997 MOUNT
804	A-2197-762-A	s	CN-3998 MOUNT
805	A-2197-764-A	s	CN-4000 MOUNT
806	A-2225-275-A	s	CN-3995(LOW) MOUNT
807	1-784-240-11	s	CONVERTER, COAXIAL CONNECTOR
808	1-846-805-11	s	HARNESS, COAXIAL(85MM)(GREEN)
809	1-848-735-11	s	FLEXIBLE FLAT CABLE (40 CORE)
810	1-972-471-11	s	HARNESS, SUB (EARPHONE)
811	1-972-480-11	s	HARNESS, SUB (UNREG)
812	1-972-481-11	s	HARNESS, SUB (MIC)
813	1-972-482-11	s	HARNESS, SUB (REMOTE)
814	1-972-483-11	s	HARNESS, SUB (EXT DC IN)
815	1-972-490-11	s	HARNESS, SUB (INSIDE-RET)
816	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
817	3-796-993-01	s	CUSHION DROP PROTECTION TOGGLE
818	3-863-319-01	s	BRACKET BNC
819	3-868-657-03	s	CAP,BNC
820	3-872-935-01	s	CAP,BNC
821	3-965-077-03	s	SCREW, SPECIAL (M2)
822	4-136-517-01	s	WASHER, BNC COAXIAL FIXED
823	4-138-687-01	s	COVER, SLIDE SWITCH
824	4-414-618-01	s	CAP, REAR CONNECTOR 2
825	4-414-624-01	s	PACKING, EARPHONE
826	4-414-625-01	s	SHEET, SLIDE SW WATER REGIST
827	4-432-516-02	s	SLIDING SHEET, SW
828	4-559-446-02	s	SCREW, +P2.6X5 NEW TRUSTER
829	4-696-019-01	s	SCREW IB-LOCK(M2,BINDING HEAD)
830	4-742-357-12	s	PANEL, MICROPHONE
831	4-742-359-01	s	CAP (860), REAR CONNECTOR
832	4-746-110-01	s	SHEET, CN3995 PROTECTION

MB Block



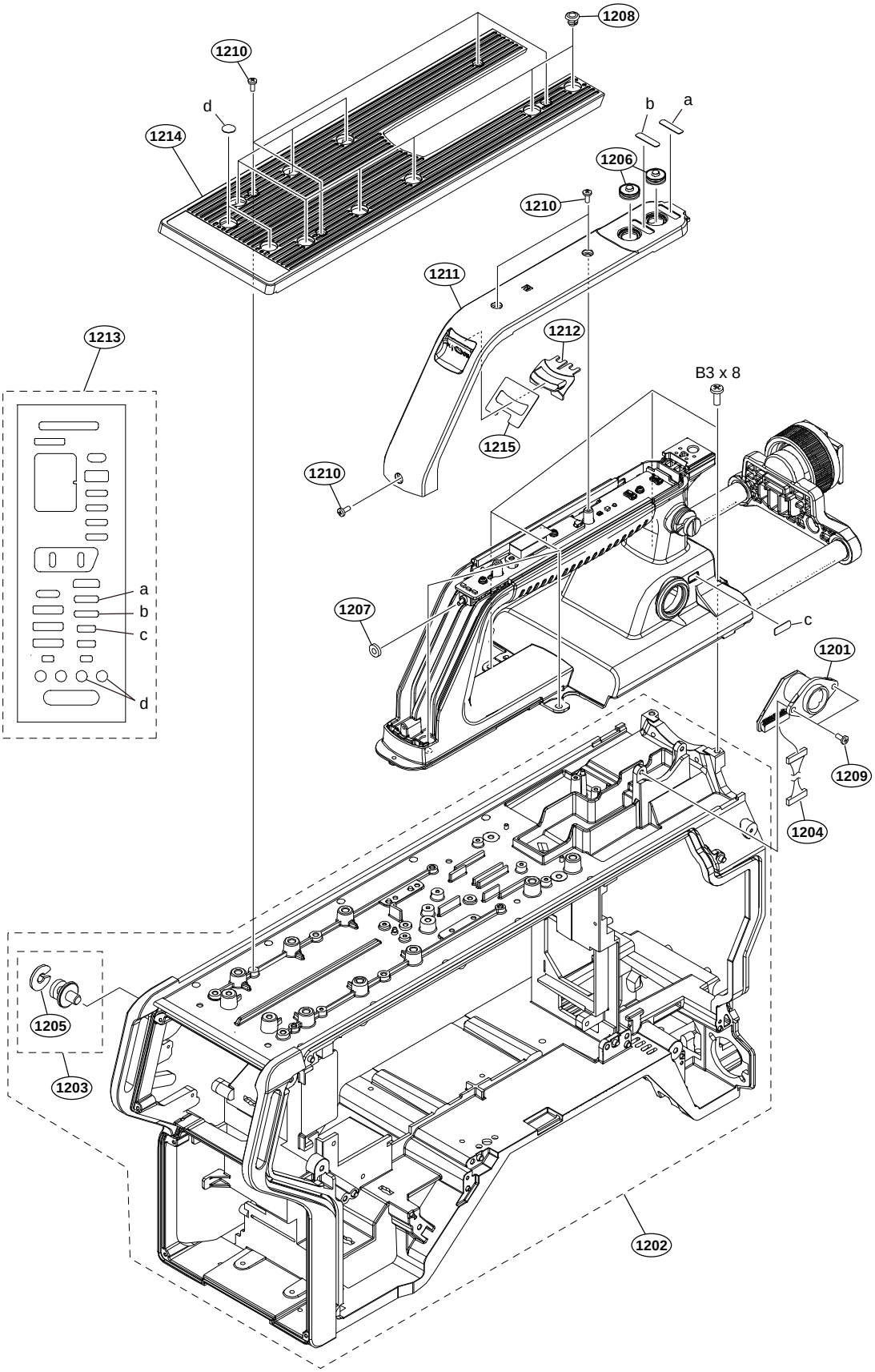
No.		Part No.	SP	Description
901		A-2197-776-A	s	MB-1248 MOUNT
902		A-8286-163-D	s	PAD ASSY,SHOULDER
903	⚠	1-855-374-11	s	DC FAN
904		1-972-475-11	s	HARNESS, SUB (POWER SW)
905		2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
906		3-626-781-03	s	STOPPER
907		4-098-147-01	s	CLAMP
908		4-293-492-01	s	GUARD, TAIL
909		4-382-854-51	s	SCREW (M3X6), P, SW (+)
910		4-546-928-01	s	CUSHION (FAN)
911		4-559-446-02	s	SCREW, +P2.6X5 NEW TRUSTER
912		4-740-566-01	s	BRACKET, MB1248
913		4-740-567-01	s	FRAME (860), CENTER
914		4-742-320-01	s	BRACKET, FRONT FAN
915		4-742-321-01	s	CUSHION, FRONT FAN
		7-682-548-09	s	SCREW +B 3X8

Front SW Block



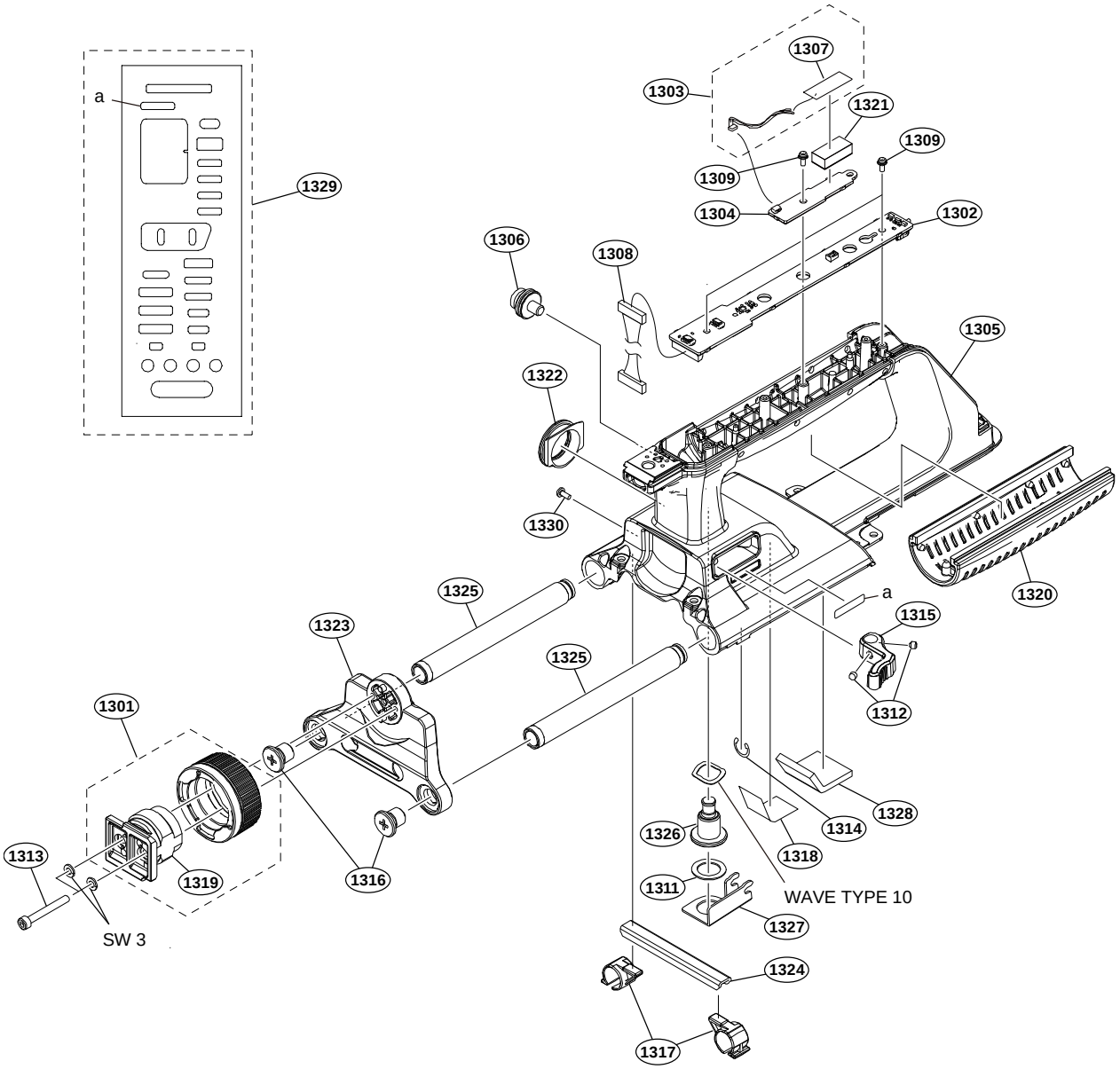
No.	Part No.	SP	Description
1001	A-2197-753-A	s	SW-1745 MOUNT
1002	A-2197-767-A	s	CN-4003 MOUNT
1003	A-2197-768-A	s	CN-4004 MOUNT
1004	A-8279-993-D	s	SHOE(D)ASSY,V
1005	1-972-476-11	s	HARNESS, SUB (LENS)
1006	1-972-477-11	s	HARNESS, SUB (FRONT)
1007	1-972-486-11	s	HARNESS, SUB (FRONT SW)
1008	1-972-487-11	s	HARNESS, SUB (RETURN SW)
1009	1-972-489-11	s	HARNESS, SUB (INSIDE-SW)
1010	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1011	3-079-115-01	s	TAPE AS
1012	3-679-668-02	s	BUTTON,VTR START
1013	3-679-679-05	s	KNOB,VR(AUDIO)
1014	3-692-111-02	s	KNOB,RE
1015	3-703-357-08	s	PIN (DIA. 1.6 SERIES)
1016	3-729-072-02	s	SCREW, +K (4X8)
1017	3-742-066-01	s	SPRING, SHUTTER
1018	3-742-067-06	s	LID, SHUTTER
1019	3-796-993-01	s	CUSION DROP PROTEICTION TOGGLE
1021	3-872-587-01	s	CUSHION,TOGGLE-SW
1022	4-293-503-01	s	FRONT SW COVER
1023	4-298-963-02	s	FRONT SHIELD PLATE
1024	4-696-019-01	s	SCREW IB-LOCK(M2,BINDING HEAD)

Handle-1


1208
1210
d
b
a
1214
1206
1210
1211
1213
1212
B3 x 8
1215
1210
a
b
c
1207
c
1201
1209
1204
1205
1203
1202

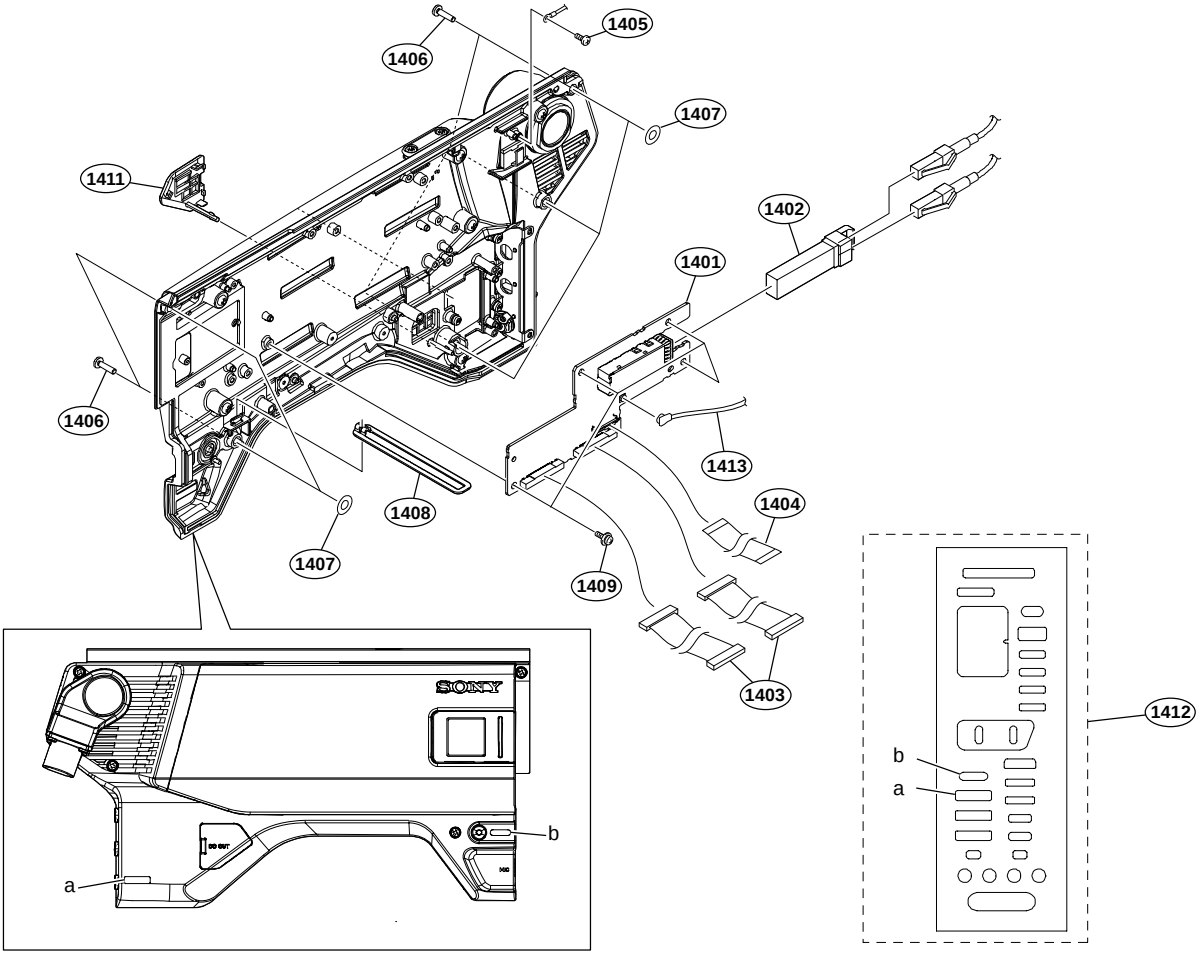
No.	Part No.	SP	Description
1201	A-2197-769-A	s	CN-4005 MOUNT
1202	A-2223-258-A	s	CHASSIS SUB ASSY, MAIN
1203	X-3710-037-1	s	SUSPENSION ASSY (C)
1204	1-972-474-11	s	HARNESS, SUB (VF)
1205	3-654-615-02	s	COLLAR, SUSPENSION
1206	3-676-244-04	s	COVER, SWITCH
1207	3-796-993-01	s	CUSHION DROP PROTECTION TOGGLE
1208	4-138-679-01	s	SCREW, BLIND
1209	4-559-446-02	s	SCREW, +P2.6X5 NEW TRUSTER
1210	4-696-019-01	s	SCREW IB-LOCK(M2,BINDING HEAD)
1211	4-740-608-01	s	COVER (860), HANDLE
1212	4-740-609-01	s	COVER (860), REAR TALLY
1213	4-742-312-01	s	LABEL (850), MULTI [For HDC3100]
	4-742-313-01	s	LABEL (650), MULTI [For HDC3170]
1214	4-742-803-01	s	COVER (M), TOP
1215	4-745-744-01	s	SHEET, REAR TALLY COVER
	7-682-548-09	s	SCREW +B 3X8

Handle-2


a
1329
1307
1303
1321
1309
1309
1304
1302
1306
1308
1305
1322
1330
1320
a
1315
1325
1323
1325
1312
1301
1328
1326
1314
1318
1313
1319
1316
1311
WAVE TYPE 10
1327
SW 3
1324
1317

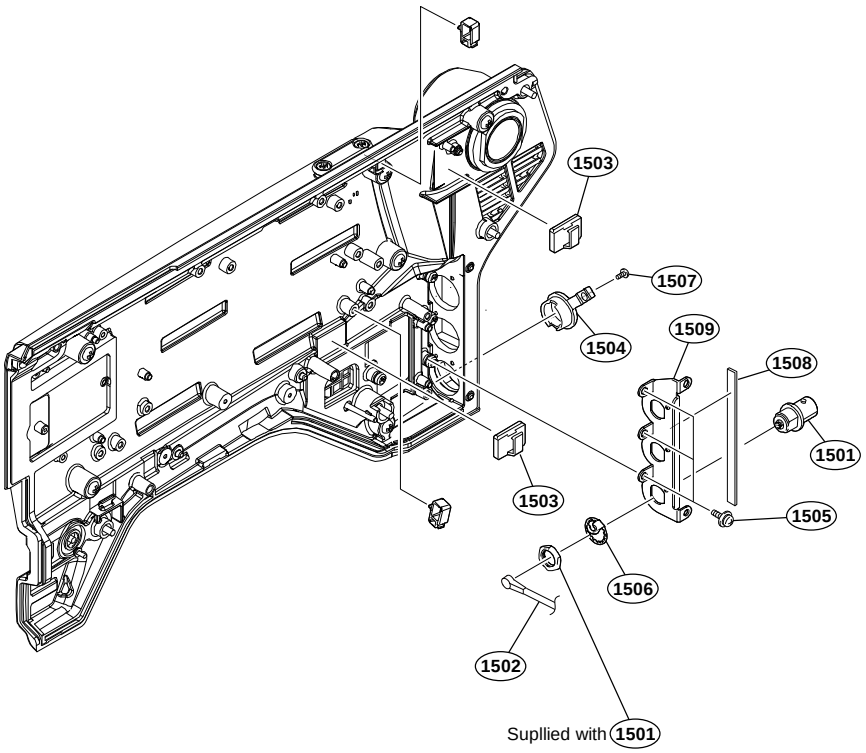
No.	Part No.	SP	Description
1301	A-2065-043-A	s	SHOE ASSY,VF
1302	A-2197-747-A	s	SW-1739 MOUNT
1303	A-2227-055-A	s	ANTENNA ASSY
1304	A-2231-024-A	s	NET-47 COMPL
1305	X-2596-983-1	s	HANDLE SUB ASSY (850)
1306	X-3710-037-1	s	SUSPENSION ASSY (C)
1307	1-754-972-12	s	NFC ANTENNA
1308	1-972-470-11	s	HARNESS, SUB (HANDLE SW)
1309	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1311	3-701-447-11	s	WASHER, 10
1312	3-701-505-01	s	SET SCREW, DOUBLE POINT 3X3
1313	3-711-765-01	s	BOLT (M3), HEXAGON SOCKET
1314	4-138-139-01	s	STOP RING 9, TYPE-CE
1315	4-138-536-01	s	LEVER, LOCK
1316	4-138-691-01	s	SCREW, PIPE CAP
1317	4-138-694-01	s	LOCK, VF SLIDE
1318	4-446-014-01	s	TAPE AS (2040)
1319	4-558-057-01	s	SHOE,SLIDE
1320	4-740-601-01	s	GRIP (860)
1321	4-740-611-01	s	CUSHION, NFC
1322	4-740-615-01	s	PACKING (860), VF
1323	4-740-616-01	s	PLATE, VF SLIDE PIPE
1324	4-740-617-01	s	SUPPORT, VF SLIDE LOCK
1325	4-740-618-01	s	PIPE (87), VF SLIDE
1326	4-740-619-01	s	SCREW, VF SLIDE LOCK
1327	4-740-620-01	s	SUPPORT (B), SLIDE LOCK
1328	4-740-621-01	s	SHEET, HANDLE HOLDER
1329	4-742-312-01	s	LABEL (850), MULTI [For HDC3100]
	4-742-313-01	s	LABEL (650), MULTI [For HDC3170]
1330	4-696-019-01	s	SCREW IB-LOCK(M2,BINDING HEAD)
	7-623-208-22	s	SW 3,TYPE 2
	7-623-710-57	s	WASHER 10, WAVE TYPE

Outside Panel-1 (HDC3100)



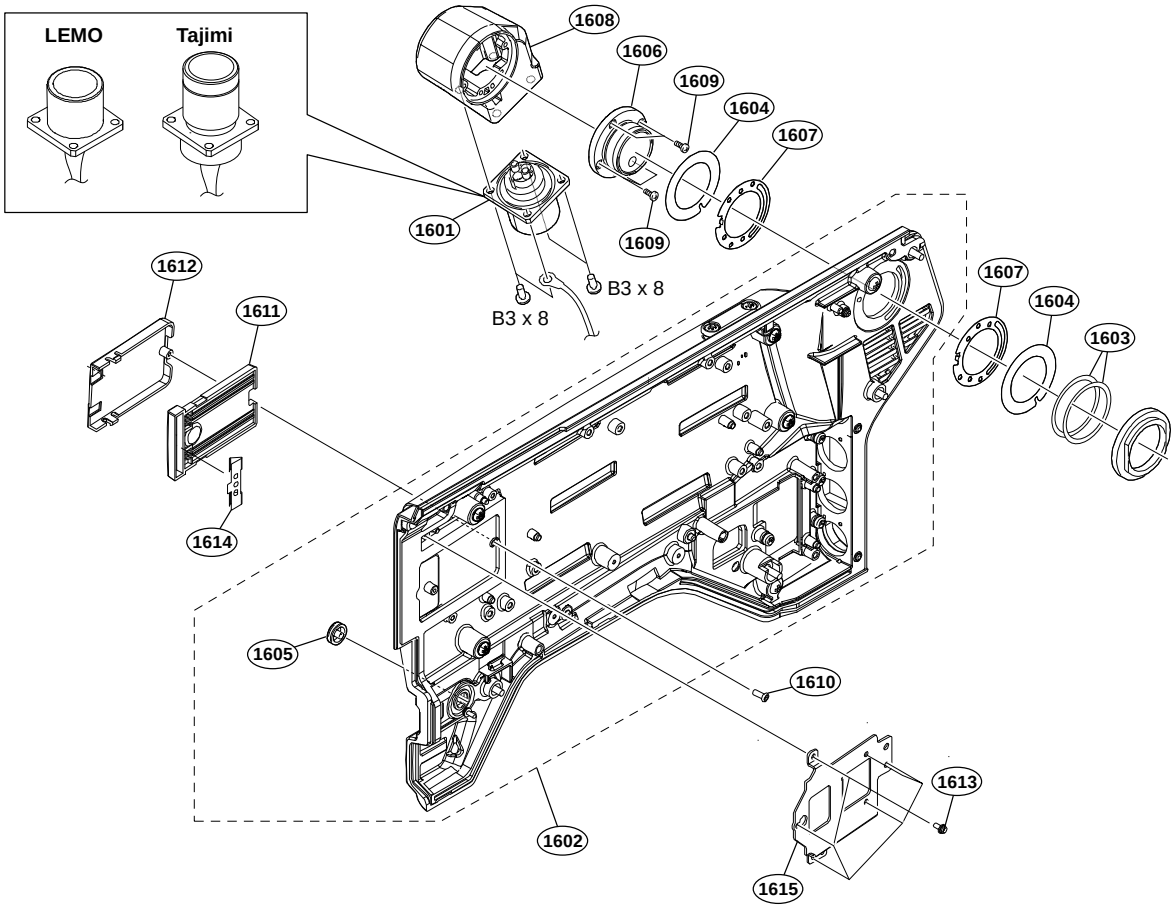
No.		Part No.	SP	Description
1401		A-2229-032-A	s	TX166 COMPL E
1402	⚠	1-510-039-11	s	OPTICAL MODULE (1.8725/3.7G)
1403		1-839-904-11	s	FPC WITH CONNECTOR (DPR-SDI)
1404		1-912-465-11	s	CABLE, FLEXIBLE FLAT2(30 CORE)
1405		2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1406		3-603-679-02	s	STAINLESS SCREW +B3X10
1407		3-701-438-11	s	WASHER, 2.5
1408		4-299-747-01	s	SUPPORT, PANEL
1409		4-382-854-51	s	SCREW (M3X6), P, SW (+)
1411		4-740-595-01	s	CAP (860), DC OUT
1412		4-742-312-01	s	LABEL (850), MULTI [For HDC3100]
1413		1-912-828-11	s	COAXIAL CABLE(SDI1)
		4-742-313-01	s	LABEL (650), MULTI [For HDC3170]

Outside Panel-2 (HDC3100)



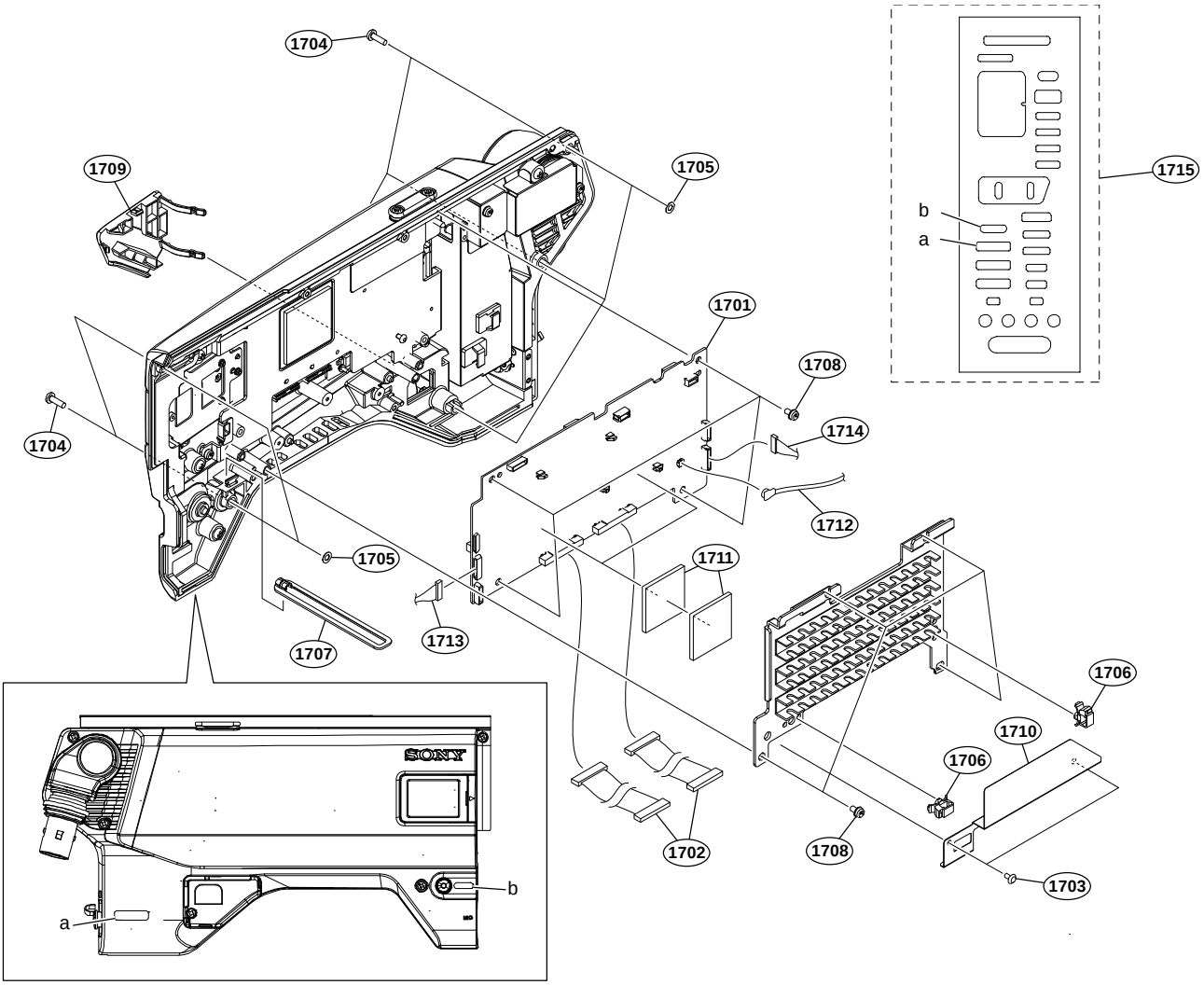
No.	Part No.	SP	Description
1501	1-844-930-11	s	CONNECTOR, COAXIAL (BNC)
1502	1-912-828-11	s	COAXIAL CABLE(SDI1)
1503	3-257-200-01	s	CLAMP, CORD
1504	3-872-935-01	s	CAP,BNC
1505	4-382-854-51	s	SCREW (M3X6), P, SW (+)
1506	4-428-368-01	s	WASHER, BNC COAXIAL FIXED
1507	4-696-019-01	s	SCREW IB-LOCK(M2,BINDING HEAD)
1508	4-732-690-01	s	GASKET L (SDI)
1509	4-740-587-01	s	PLATE, BNC HOLDER

Outside Panel-3 (HDC3100)



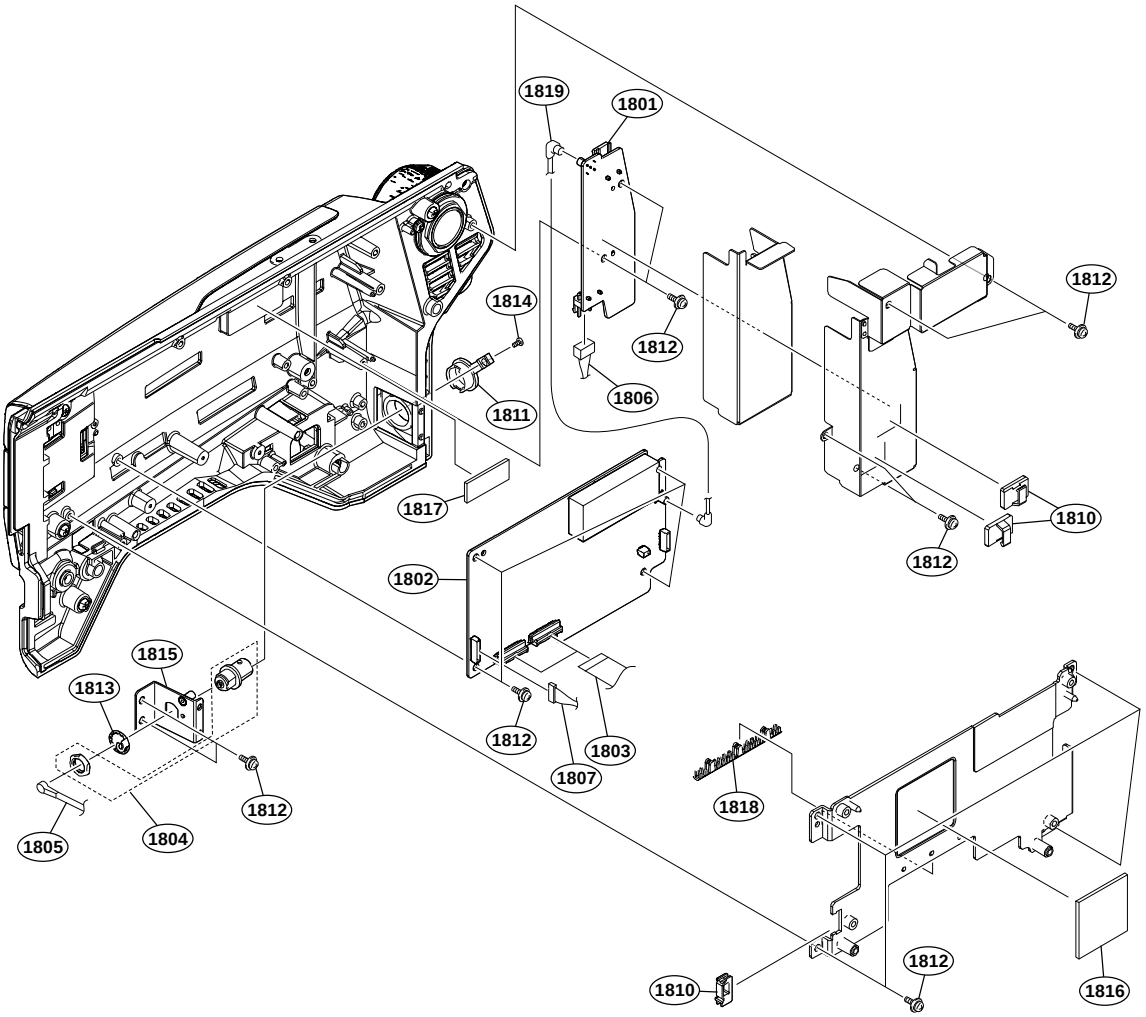
No.		Part No.	SP	Description
1601	⚠	A-2189-815-A	s	LEMO CONNECTOR ASSY-A(EDW)EXP [LEMO]
	⚠	1-839-827-11	s	OPTICAL MULTI CABLE ASSEMBLY [Tajimi]
1602		A-2227-736-A	s	PANEL SUB ASSY(850), OUTSIDE
1603		3-176-525-01	o	WASHER, SPRING
1604		3-602-464-02	s	WASHER, CONDUCTIVE
1605		3-676-244-04	s	COVER, SWITCH
1606		4-138-689-01	s	SHAFT, ROTARY(TRIAX)
1607		4-138-707-01	s	WASHER, TRIAX(2)
1608		4-293-502-01	s	CONNECTOR HOUSING
1609		4-559-446-02	s	SCREW, +P2.6X5 NEW TRUSTER
1610		4-696-019-01	s	SCREW IB-LOCK(M2,BINDING HEAD)
1611		4-742-328-02	s	CASE (850), CAMERA NUMBER
1612		4-742-329-01	s	COVER (850), CAMERA NUMBER
1613		2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1614		4-298-877-01	s	SPRING, NUMBER FRAME
1615		4-747-107-01	s	BRACKET(660), CAMEARA NUMBER
		7-682-548-09	s	SCREW +B 3X8

Outside Panel-1 (HDC3170)



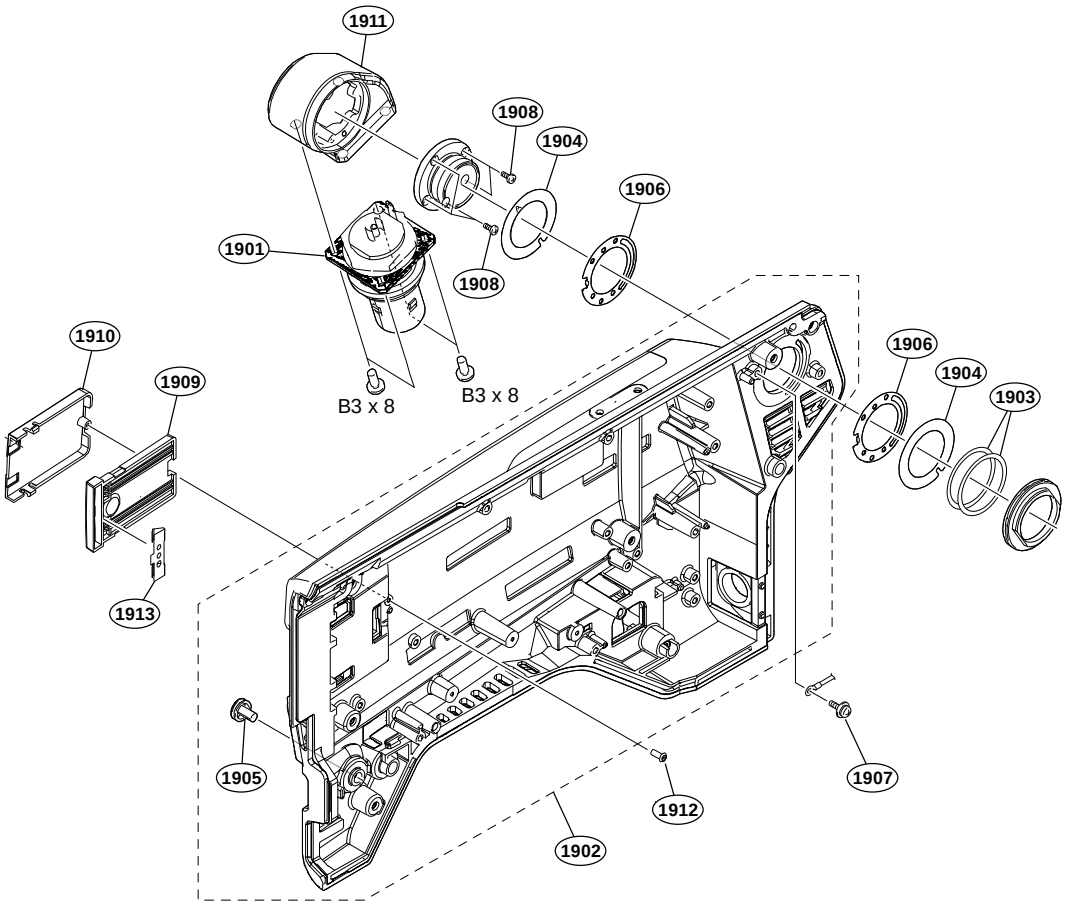
No.	Part No.	SP	Description
1701	A-2228-536-A	s	CD-91 COMPL
1702	1-839-904-11	s	FPC WITH CONNECTOR (DPR-SDI)
1703	2-279-715-21	s	RIVET, NYLON
1704	3-603-679-02	s	STAINLESS SCREW +B3X10
1705	3-701-438-11	s	WASHER, 2.5
1706	3-853-802-01	s	CLAMP,REUSE
1707	4-299-747-01	s	SUPPORT, PANEL
1708	4-382-854-51	s	SCREW (M3X6), P, SW (+)
1709	4-742-810-01	s	CAP (660), DC OUT
1710	4-745-737-01	s	GUARD, FPC
1711	4-587-426-01	s	SHEET (2 (35X35)), RADIATION
1712	1-972-488-11	s	HARNESS, SUB (CA POWER)
1713	1-972-497-11	s	HARNESS, SUB (TR-POWER)
1714	1-912-828-11	s	COAXIAL CABLE(SDI1)
1715	4-742-313-01	s	LABEL (650), MULTI [For HDC3170]

Outside Panel-2 (HDC3170)



No.	Part No.	SP	Description
1801	A-2199-819-A	s	FL-380 MOUNT
1802	A-2228-537-A	s	TR-170 COMPL
1803	1-833-470-31	s	CABLE, FLEXIBLE FLAT (33P)
1804	1-844-930-11	s	CONNECTOR, COAXIAL (BNC)
1805	1-912-828-11	s	COAXIAL CABLE(SDI1)
1806	1-969-850-21	s	HARNESS, SUB (POWER IN(PS))
1807	1-972-497-11	s	HARNESS, SUB (TR-POWER)
1810	3-210-579-01	s	LOCKING SADDLE, EDGE
1811	3-872-935-01	s	CAP,BNC
1812	4-382-854-51	s	SCREW (M3X6), P, SW (+)
1813	4-428-368-01	s	WASHER, BNC COAXIAL FIXED
1814	4-696-019-01	s	SCREW IB-LOCK(M2,BINDING HEAD)
1815	4-742-809-01	s	PLATE (660), BNC HOLDER
1816	4-587-426-01	s	SHEET (2 (35X35)), RADIATION
1817	4-587-426-11	s	SHEET (2 (12X30)), RADIATION
1818	4-747-108-01	s	GUARD 60, EDGE
1819	1-836-686-11	s	CABLE, CONNECTOR WITH COAXIAL

Outside Panel-3 (HDC3170)



No.		Part No.	SP	Description
1901	⚠	A-2227-361-A	s	TRIAX(F) CAM ASSY [Female]
	⚠	A-2227-362-A	s	TRIAX(K) CAM ASSY [LEMO]
1902		A-2227-741-A	s	PANEL SUB ASSY(650) P, OUTSIDE
1903		3-176-525-01	o	WASHER, SPRING
1904		3-602-464-02	s	WASHER, CONDUCTIVE
1905		4-138-682-01	s	SW COVER
1906		4-138-707-01	s	WASHER, TRIAX(2)
1907		4-382-854-51	s	SCREW (M3X6), P, SW (+)
1908		4-559-446-02	s	SCREW, +P2.6X5 NEW TRUSTER
1909		4-742-328-02	s	CASE (850), CAMERA NUMBER
1910		4-742-329-01	s	COVER (850), CAMERA NUMBER
1911		4-742-330-01	s	HOUSING (660), CONNECTOR
1912		3-080-206-21	s	SCREW, TAPPING, P2
1913		4-298-877-01	s	SPRING, NUMBER FRAME
		7-682-548-09	s	SCREW +B 3X8

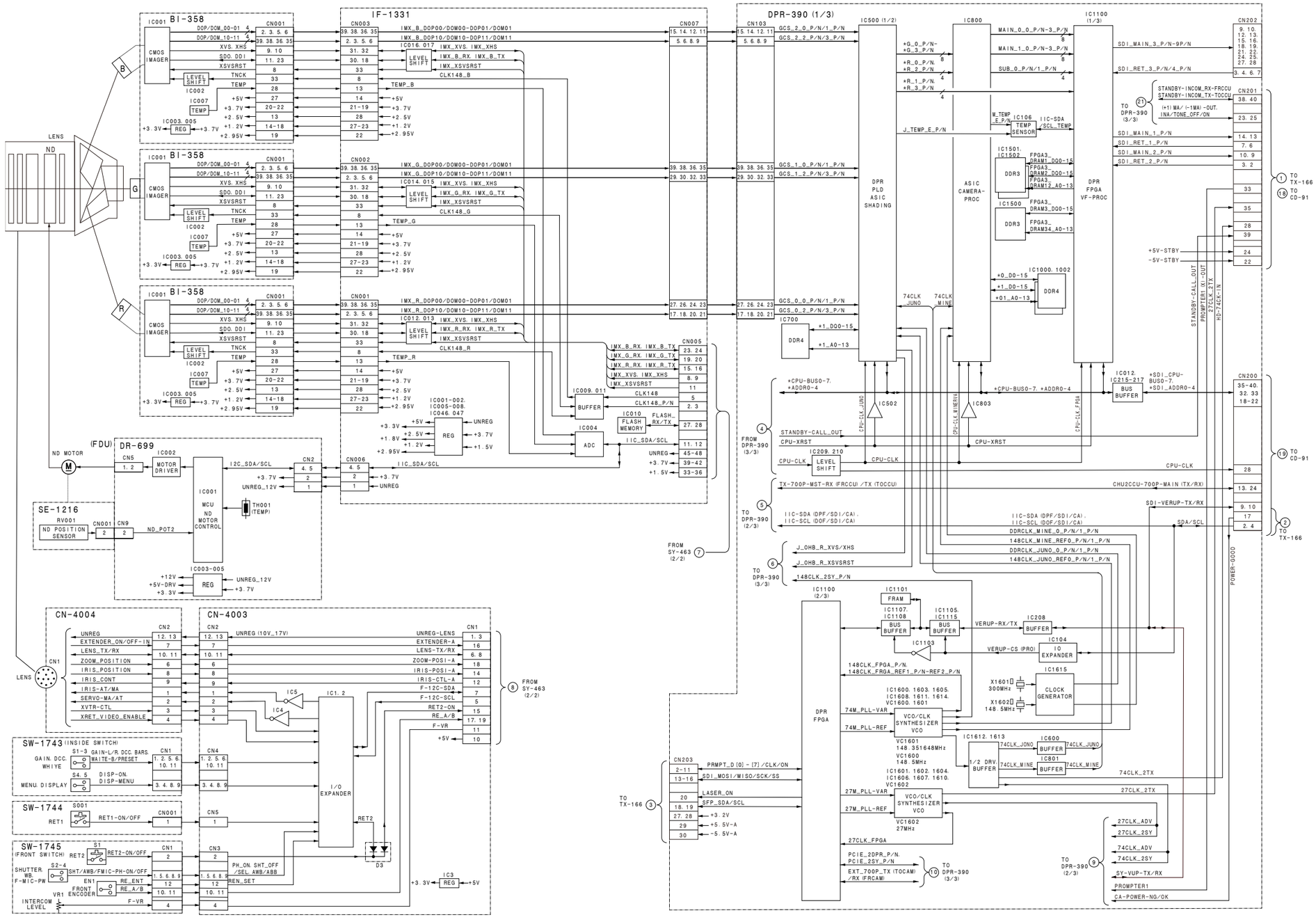
9-3. Supplied Accessories

Q'ty		Part No.	SP	Description
1pc		4-138-677-01	s	BRACKET, BELT
1pc		4-138-758-01	s	CLAMP BELT, CABLE
1pc		4-408-856-01	s	LABEL, NUMBER
1pc		4-740-557-01	s	LABEL, ACCESSORY
1pc	⚠	4-745-632-01	s	CD-ROM PACK
2pcs		7-682-548-09	s	SCREW +B 3X8

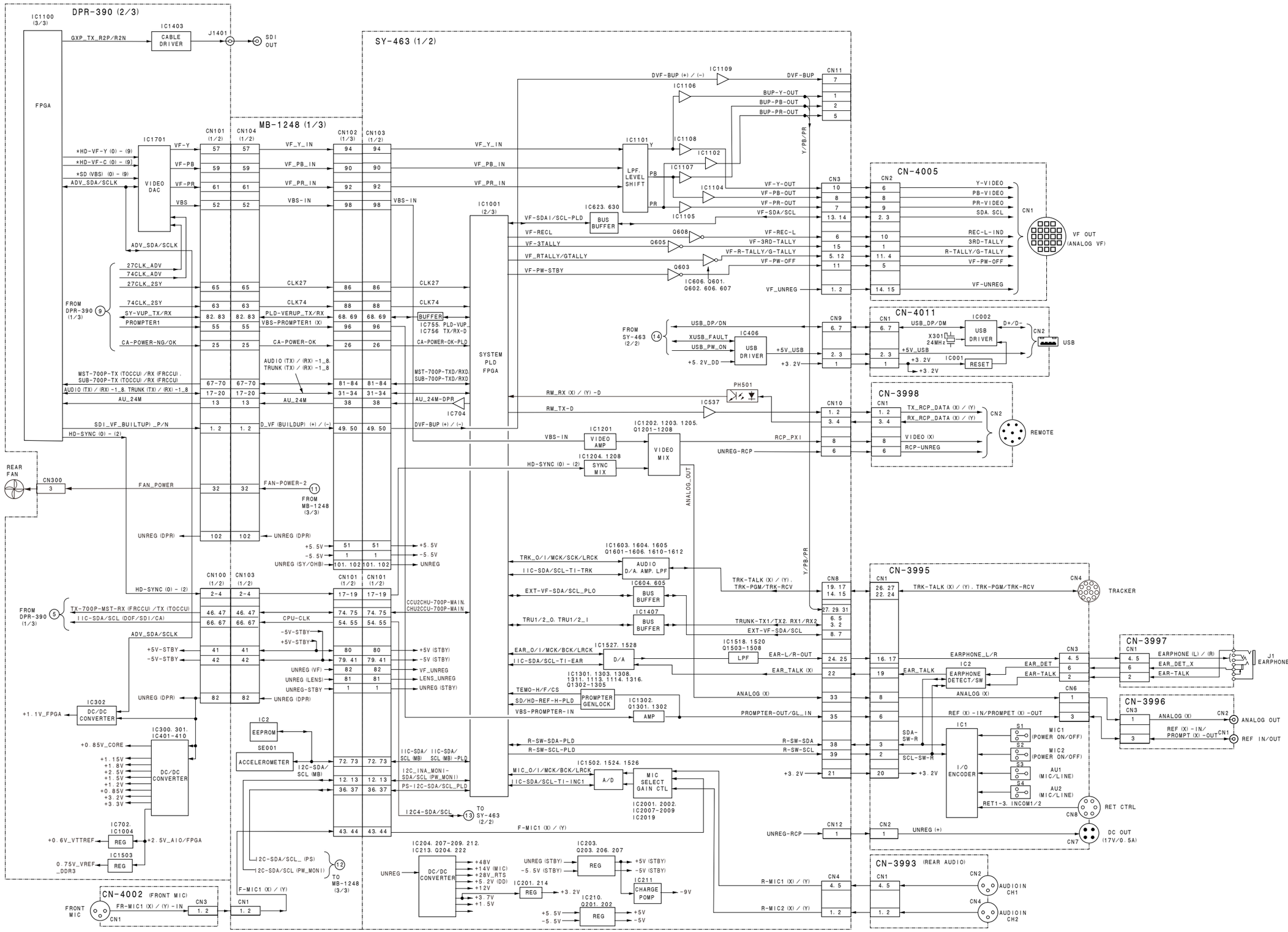
Section 10
Diagrams

Overall

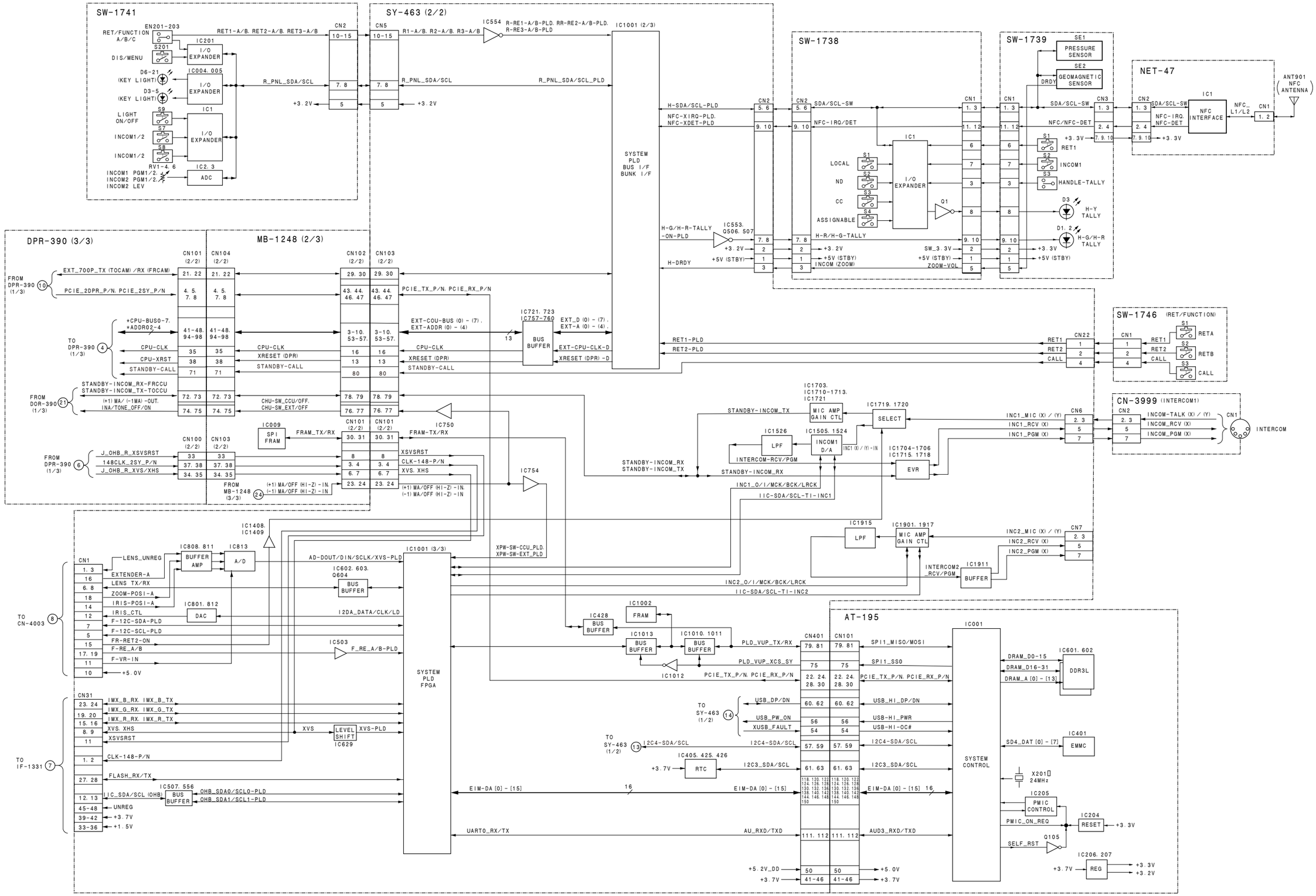
Overall (1/6)



Overall (2/6)

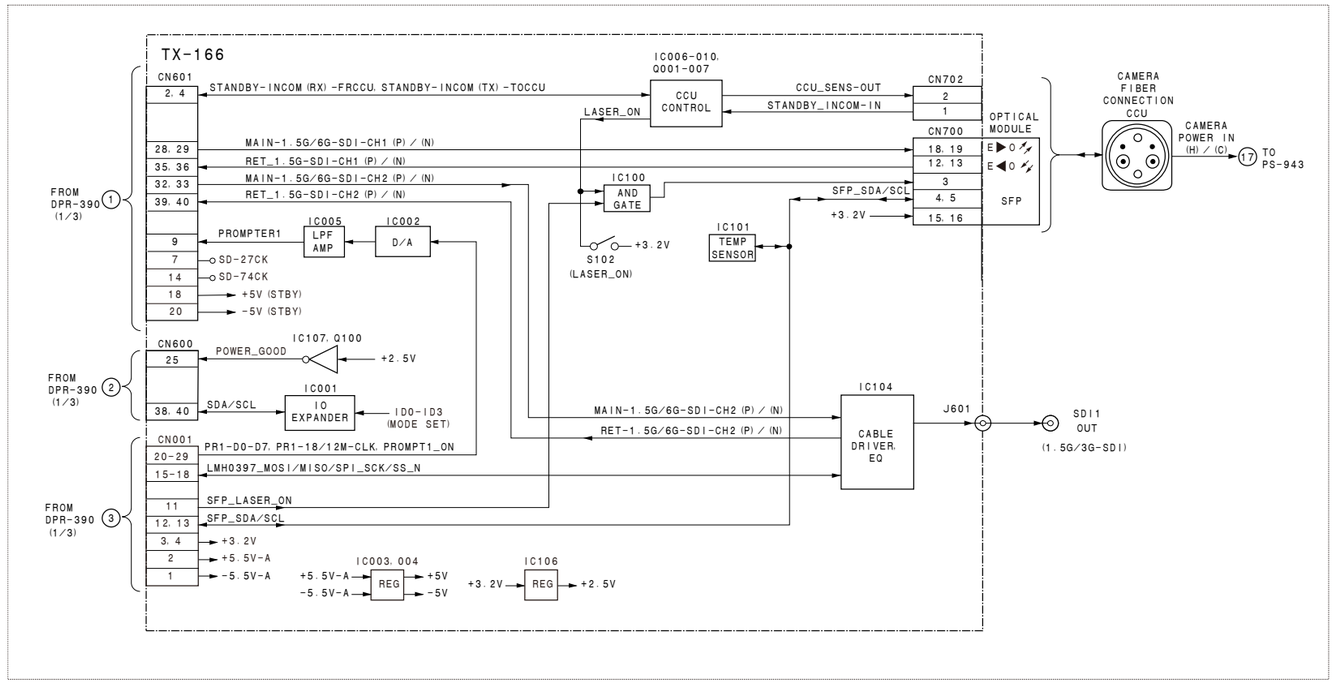

DPR-390 (2/3)
IC1100 (3/3)
FPGA
IC1403
CABLE DRIVER
J1401
SDI OUT
GXP_TX_R2P/R2N
MB-1248 (1/3)
IC1701
VIDEO DAC
CN101 (1/2)
CN104 (1/2)
CN102 (1/3)
CN103 (1/2)
*HD-VF-Y (0) - (9)
*HD-VF-C (0) - (9)
*SD (VBS) (0) - (9)
ADV_SDA/SCLK
VF-Y
VF-PB
VF-PR
VBS
VF_Y_IN
VF_PB_IN
VF_PR_IN
VBS-IN
ADV_SDA/SCLK
27CLK_ADV
74CLK_ADV
27CLK_2SY
74CLK_2SY
SY-VUP_TX/RX
PROMPTER1
CA-POWER-NG/OK
CLK27
CLK74
PLD-VERUP_TX/RX
VBS-PROMPTER1 (X)
CA-POWER-OK
FROM DPR-390 (1/3)
AUDIO (TX) / (RX) -1_8. TRUNK (TX) / (RX) -1_8
MST-700P-TX (TOCCU) /RX (FRCCU) . SUB-700P-TX (TOCCU) /RX (FRCCU)
AUDIO (TX) / (RX) -1_8. TRUNK (TX) / (RX) -1_8
AU_24M
SDI_VF_BUILTUP) _P/N
D_VF (BUILDUP) (+) / (-)
HD-SYNC (0) - (2)
SY-463 (1/2)
SYSTEM PLD FPGA
IC1001 (2/3)
BUFFER
IC755. PLD-VUP_
IC756. TX/RX-D
CA-POWER-OK-PLD
MST-700P-TXD/RXD.
SUB-700P-TXD/RXD
AU_24M-DPR
IC704
DVF-BUP (+) / (-)
VF-SDAI/SCL-PLD
VF-RECL
VF-3TALLY
VF-RTALLY/GTALLY
VF-PW-STBY
IC623. 630
BUS BUFFER
Q608
Q605
Q603
IC606. 0601. Q602. 606. 607
VF_UNREG
IC1109
IC1106
IC1108
IC1102
IC1107
IC1104
IC1105
IC1101
LPF. LEVEL SHIFT
Y
PB
PR
BUP-Y-OUT
BUP-PB-OUT
BUP-PR-OUT
Y/PB/PR
VF-Y-OUT
VF-PB-OUT
VF-PR-OUT
VF-SDA/SCL
VF-REC-L
VF-3RD-TALLY
VF-R-TALLY/G-TALLY
VF-PW-OFF
CN11
CN3
CN-4005
CN2
CN1
Y-VIDEO
PB-VIDEO
PR-VIDEO
SDA. SCL
REC-L-IND
3RD-TALLY
R-TALLY/G-TALLY
VF-PW-OFF
VF-UNREG
VF OUT (ANALOG VF)
CN-4011
IC002
USB DRIVER
USB_DP/DM
D+/D-
X301 24MHz
+5V_USB
+3.2V
IC001
RESET
USB
FROM SY-463 (2/2)
USB_DP/DN
XUSB_FAULT
USB_PW_ON
+5.2V_DD
IC406
USB DRIVER
+5V_USB
+3.2V
CN9
CN-3998
TX_RCP_DATA (X) / (Y)
RX_RCP_DATA (X) / (Y)
VIDEO (X)
RCP-UNREG
REMOTE
PH501
IC537
RM_RX (X) / (Y) -D
RM_TX-D
CN10
RCP_PXI
UNREG-RCP
IC1202. 1203. 1205. Q1201-1208
VIDEO MIX
IC1201
VIDEO AMP
VBS-IN
IC1204. 1208
SYNC MIX
HD-SYNC (0) - (2)
ANALOG_OUT
REAR FAN
CN300
FAN_POWER
FAN-POWER-2
FROM MB-1248 (3/3)
UNREG (DPR)
+5.5V
-5.5V
UNREG (SY/OHB)
+5V (STBY)
-5V (STBY)
VF_UNREG
LENS_UNREG
UNREG (STBY)
CN100 (1/2)
CN103 (1/2)
CN101 (1/2)
CN101 (1/2)
FROM DPR-390 (1/3)
TX-700P-MST-RX (FRCCU) /TX (TOCCU)
IIC-SDA/SCL (DOF/SDI/CA)
CPU-CLK
ADV_SDA/SCLK
-5V-STBY
+5V-STBY
CCU2CHU-700P-MAIN.
CHU2CCU-700P-MAIN
IC1603. 1604. 1605 Q1601-1606. 1610-1612
AUDIO D/A. AMP. LPF
TRK_O/I/MCK/SCK/LRCK
IIC-SDA/SCL-TI-TRK
IC604. 605
BUS BUFFER
EXT-VF-SDA/SCL_PLO
IC1407
BUS BUFFER
TRU1/2_O. TRU1/2_I
IC1527. 1528
D/A
EAR_O/I/MCK/BCK/LRCK
IIC-SDA/SCL-TI-EAR
IC1518. 1520 Q1503-1508
LPF
IC1301. 1303. 1308. 1311. 1113. 1114. 1316. Q1302-1305
TEMO-H/F/CS
SD/HD-REF-H-PLD
PROMPTER GENLOCK
IC1302. Q1301. 1302
AMP
VBS-PROMPTER-IN
TRK-TALK (X) / (Y). TRK-PGM/TRK-RCV
TRUNK-TX1/TX2. RX1/RX2
EXT-VF-SDA/SCL
EAR-L/R-OUT
EAR_TALK (X)
ANALOG (X)
PROMPTER-OUT/GL_IN
R-SW-SDA-PLD
R-SW-SCL-PLD
MIC_O/I/MCK/BCK/LRCK
IIC-SDA/SCL-TI-INC1
IC1502. 1524. 1526
A/D
MIC SELECT GAIN CTL
IC2001. 2002. IC2007-2009 IC2019
F-MIC1 (X) / (Y)
I2C4-SDA/SCL
TO 5Y-463 (2/2)
CN8
CN12
R-MIC1 (X) / (Y)
R-MIC2 (X) / (Y)
CN4
CN-3995
TRACKER
CN-3997
EARPHONE (L) / (R)
EAR_DET_X
EAR-TALK
J1 EARPHONE
EARPHONE_L/R
EAR_TALK
EAR_DET
EARPHONE DETECT/SW
IC2
CN-3996
ANALOG (X)
REF (X) -IN/PROMPET (X) -OUT
ANALOG OUT
REF IN/OUT
SDA-SW-R
SCL-SW-R
I/O ENCODER
IC1
S1 MIC1 (POWER ON/OFF)
S2 MIC2 (POWER ON/OFF)
S3 AU1 (MIC/LINE)
S4 AU2 (MIC/LINE)
RET1-3. INCOM1/2
RET CTRL
DC OUT (17V/0.5A)
UNREG (+)
CN-3993 (REAR AUDIO)
AUDIOIN CH1
AUDIOIN CH2
IC2
EEPROM
SE001
ACCELEROMETER
I2C-SDA/ SCL (MB)
IIC-SDA/ IIC-SDA/ SCL (MB) SCL (MB) -PLD
I2C_INA_MONI- SDA/SCL (PW_MONI)
PS-I2C-SDA/SCL_PLD
IC300. 301. IC401-410
DC/DC CONVERTER
+0.85V_CORE
+1.15V
+1.8V
+2.5V
+1.5V
+1.2V
+0.85V
+3.2V
+3.3V
IC702. IC1004
REG
+0.6V_VTTREF
+2.5V_AIO/FPGA
IC1503
REG
0.75V_VREF _DDR3
I2C-SDA/SCL_ (PS)
I2C-SDA/SCL (PW_MONI)
TO MB-1248 (3/3)
IC302
DC/DC CONVERTER
+1.1V_FPGA
UNREG (DPR)
CN-4002 (FRONT MIC)
FRONT MIC
FR-MIC1 (X) / (Y) -IN
IC204. 207-209. 212. IC213. 0204. 222
DC/DC CONVERTER
UNREG
+48V
+14V (MIC)
+28V_RTS
+5.2V (DD)
+12V
+3.7V
+1.5V
IC203. 0203. 206. 207
REG
UNREG (STBY)
-5.5V (STBY)
+5V (STBY)
-5V (STBY)
IC201. 214
REG
+3.2V
IC211
CHARGE POMP
-9V
IC210. 0201. 202
REG
+5.5V
-5.5V
+5V
-5V

Overall (3/6)


SW-1741
SY-463 (2/2)
SW-1738
SW-1739
NET-47
DPR-390 (3/3)
MB-1248 (2/3)
SW-1746 (RET/FUNCTION)
CN-3999 (INTERCOM1)
AT-195
SYSTEM PLD BUS I/F BUNK I/F
SYSTEM PLD FPGA
BUS BUFFER
I/O EXPANDER
SYSTEM CONTROL
INTERCOM

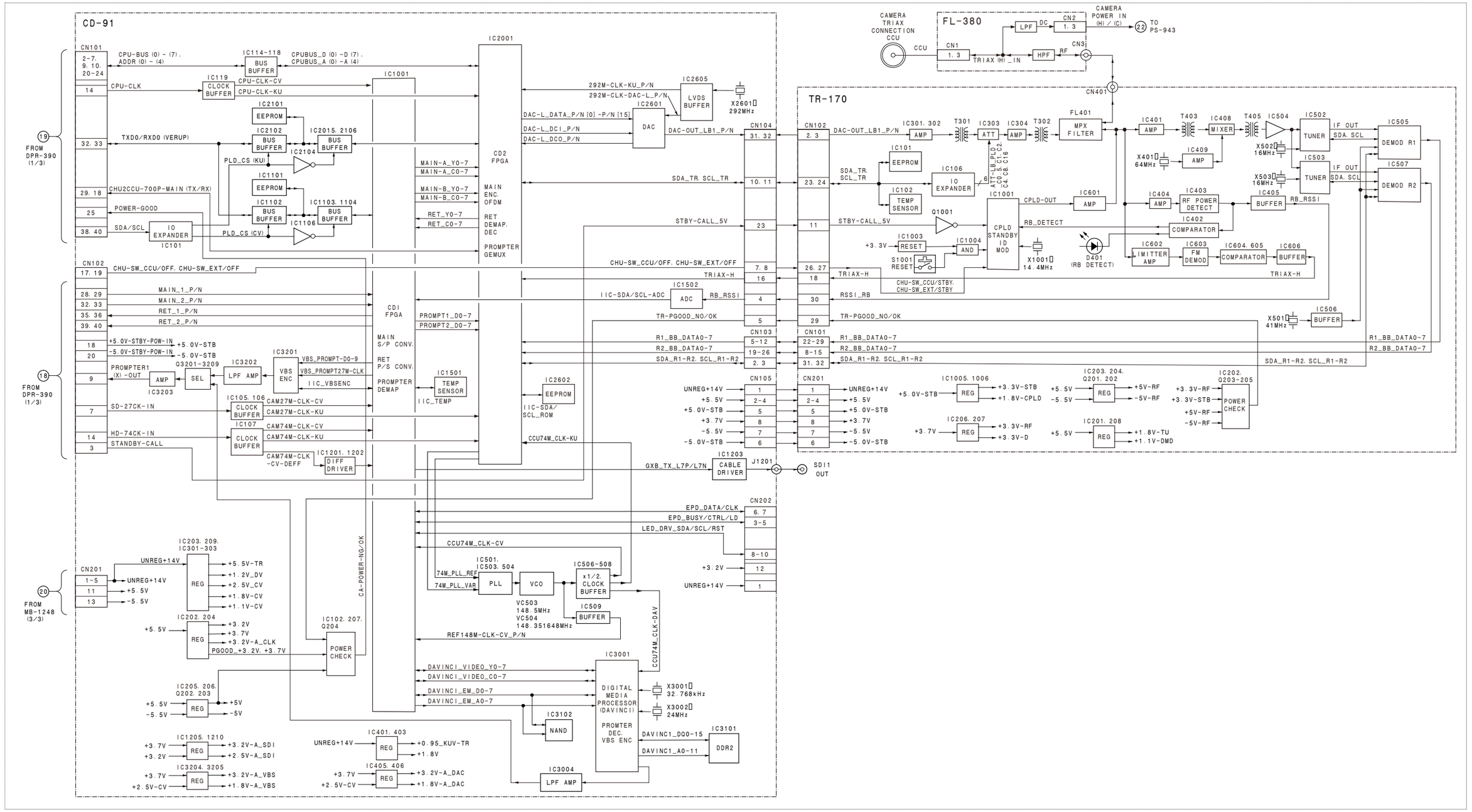
Overall (4/6)

HD FIBER COLOR MODEL

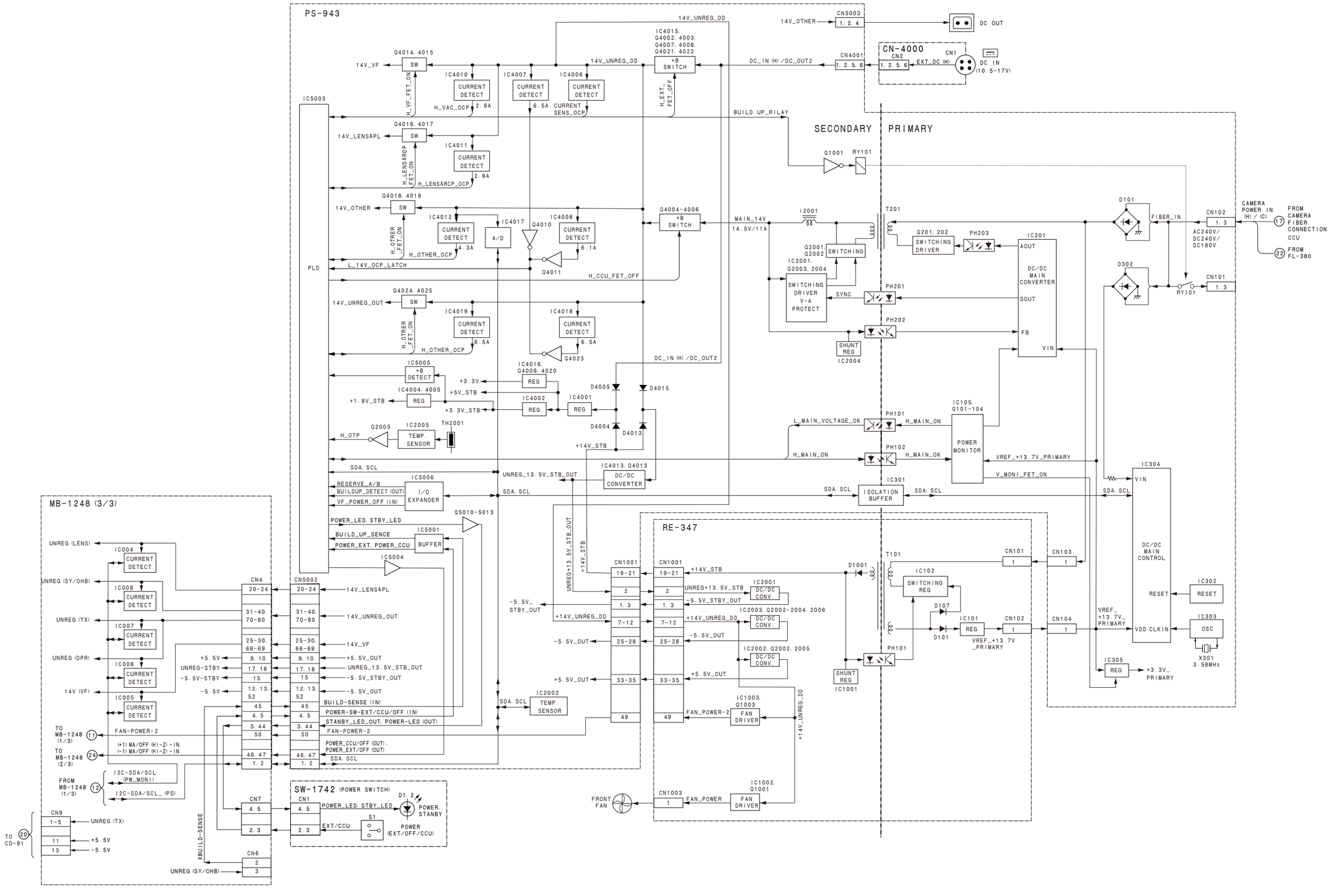


Overall (5/6)

TRIAX TRANMISSION ADAPTOR MODEL



Overall (6/6)


PS-943
14V_UNREG_DD
IC4015. Q4002. 4003. Q4007. 4008. Q4021. 4022
+B SWITCH
14V_OTHER
CN5003
1. 2. 4
DC OUT
CN-4000
CN2
1. 2. 5. 6
EXT_DC (H)
CN1
DC IN (10. 5-17V)
CN4001
1. 2. 5. 6
DC_IN (H) /DC_OUT2
Q4014. 4015
14V_VF
SW
H_VF_FET_ON
IC4010
CURRENT DETECT
H_VAC_OCP
2. 9A
IC4007
6. 5A
IC4006
CURRENT SENS_OCP
H_EXT_FET_OFF
IC5003
BUILD UP_RILAY
SECONDARY
PRIMARY
Q4016. 4017
14V_LENS&PL
H_LENS&RCP_FET_ON
IC4011
H_LENS&RCP_OCP
Q1001
RY101
Q4018. 4019
14V_OTHER
H_OTRER_FET_ON
IC4012
4. 3A
IC4017
A/D
IC4008
6. 1A
Q4004-4006
Q4010
Q4011
H_OTHER_OCP
L_14V_OCP_LATCH
H_CCU_FET_OFF
PLD
MAIN_14V
14. 5V/11A
I2001
T201
Q201. 202
SWITCHING DRIVER
PH203
IC201
AOUT
DC/DC MAIN CONVERTER
SOUT
FB
VIN
Q2001. Q2002
SWITCHING
IC2001. Q2003. 2004
SWITCHING DRIVER V-A PROTECT
SYNC
PH201
PH202
SHUNT REG
IC2004
D101
FIBER_IN
CN102
1. 3
AC240V/ DC240V/ DC180V
CAMERA POWER IN (H) / (C)
17
FROM CAMERA FIBER CONNECTION CCU
22
FROM FL-380
D302
RY101
CN101
1. 3
Q4024. 4025
14V_UNREG_OUT
H_OTRER_FET_ON
IC4019
6. 5A
IC4018
Q4023
H_OTHER_OCP
IC5005
+B DETECT
IC4016. Q4009. 4020
REG
+3. 3V
IC4004. 4005
+5V_STB
+1. 8V_STB
IC4002
+3. 3V_STB
IC4001
D4005
D4015
D4004
D4013
+14V_STB
TH2001
Q2005
H_OTP
IC2005
TEMP. SENSOR
L_MAIN_VOLTAGE_OK
PH101
H_MAIN_ON
IC105. Q101-104
POWER MONITOR
PH102
H_MAIN_OK
VREF_+13. 7V_PRIMARY
V_MONI_FET_ON
IC304
VIN
SDA. SCL
UNREG_13. 5V_STB_OUT
IC4013. Q4013
DC/DC CONVERTER
IC301
ISOLATION BUFFER
RESERVE_A/B
BUILDUP_DETECT (OUT)
VF_POWER_OFF (IN)
IC5006
I/O EXPANDER
POWER_LED. STBY_LED
BUILD_UP_SENCE
POWER_EXT. POWER_CCU
IC5001
BUFFER
Q5010-5013
IC5004
UNREG+13. 5V_STB_OUT
+14V_STB
-5. 5V_ STBY_OUT
IC2002
TEMP. SENSOR
CN1001
19-21
2
1. 3
7-12
25-28
33-35
49
+14V_STB
UNREG+13. 5V_STB
-5. 5V_STBY_OUT
IC2001
DC/DC CONV.
IC2003. Q2002-2004. 2006
+14V_UNREG_DD
-5. 5V_OUT
IC2002. Q2002. 2005
+5. 5V_OUT
D1001
SHUNT REG
IC1001
PH101
T101
IC102
SWITCHING REG
D107
IC101
REG
VREF_+13. 7V _PRIMARY
CN101
1
CN102
1
CN103
1
CN104
1
VREF_ +13. 7V_ PRIMARY
IC302
RESET
IC303
OSC
X301
3. 58MHz
IC305
REG
+3. 3V_ PRIMARY
DC/DC MAIN CONTROL
RESET
VDD CLKIN
IC1003. Q1003
FAN DRIVER
FAN_POWER-2
+14V_UNREG_DD
IC1002. Q1001
FAN DRIVER
FAN_POWER
CN1003
1
FRONT FAN
RE-347
MB-1248 (3/3)
UNREG (LENS)
IC004
CURRENT DETECT
UNREG (SY/OHB)
IC008
UNREG (TX)
IC007
UNREG (DPR)
IC006
14V (VF)
IC005
CN4
20-24
31-40. 70-80
25-30. 66-69
9. 10
17. 18
15
12. 13. 52
45
4. 5
3. 44
50
46. 47
1. 2
CN5002
14V_LENS&PL
14V_UNREG_OUT
14V_VF
+5. 5V_OUT
UNREG_13. 5V_STB_OUT
-5. 5V_STBY_OUT
-5. 5V_OUT
BUILD-SENSE (IN)
POWER-SW-EXT/CCU/OFF (IN)
STANBY_LED_OUT, POWER-LED (OUT)
FAN-POWER-2
POWER_CCU/OFF (OUT), POWER_EXT/OFF (OUT)
SDA. SCL
+5. 5V
UNREG-STBY
-5. 5V-STBY
-5. 5V
TO MB-1248 (1/3) 11
FAN-POWER-2
TO MB-1248 (2/3) 24
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FROM MB-1248 (1/3) 12
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I2C-SDA/SCL_ (PS)
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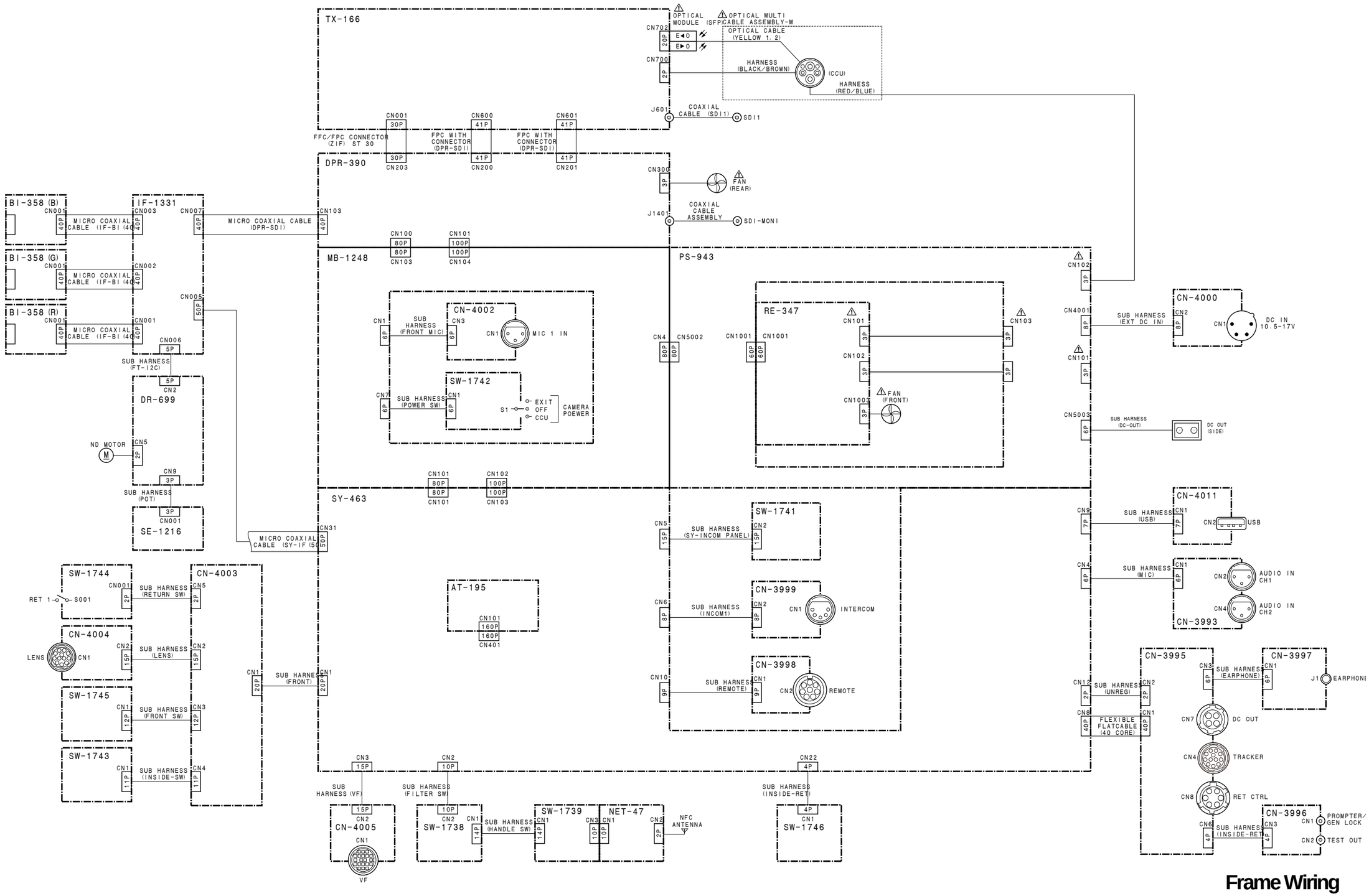
1-5
11
13
TO CD-91 20
UNREG (TX)
+5. 5V
-5. 5V
XBUILD-SENSE
CN7
4. 5
2. 3
CN6
2
3
UNREG (SY/OHB)
SW-1742 (POWER SWITCH)
CN1
POWER_LED. STBY_LED
EXT/CCU
S1
D1, 2
POWER. STANBY
POWER (EXT/OFF/CCU)

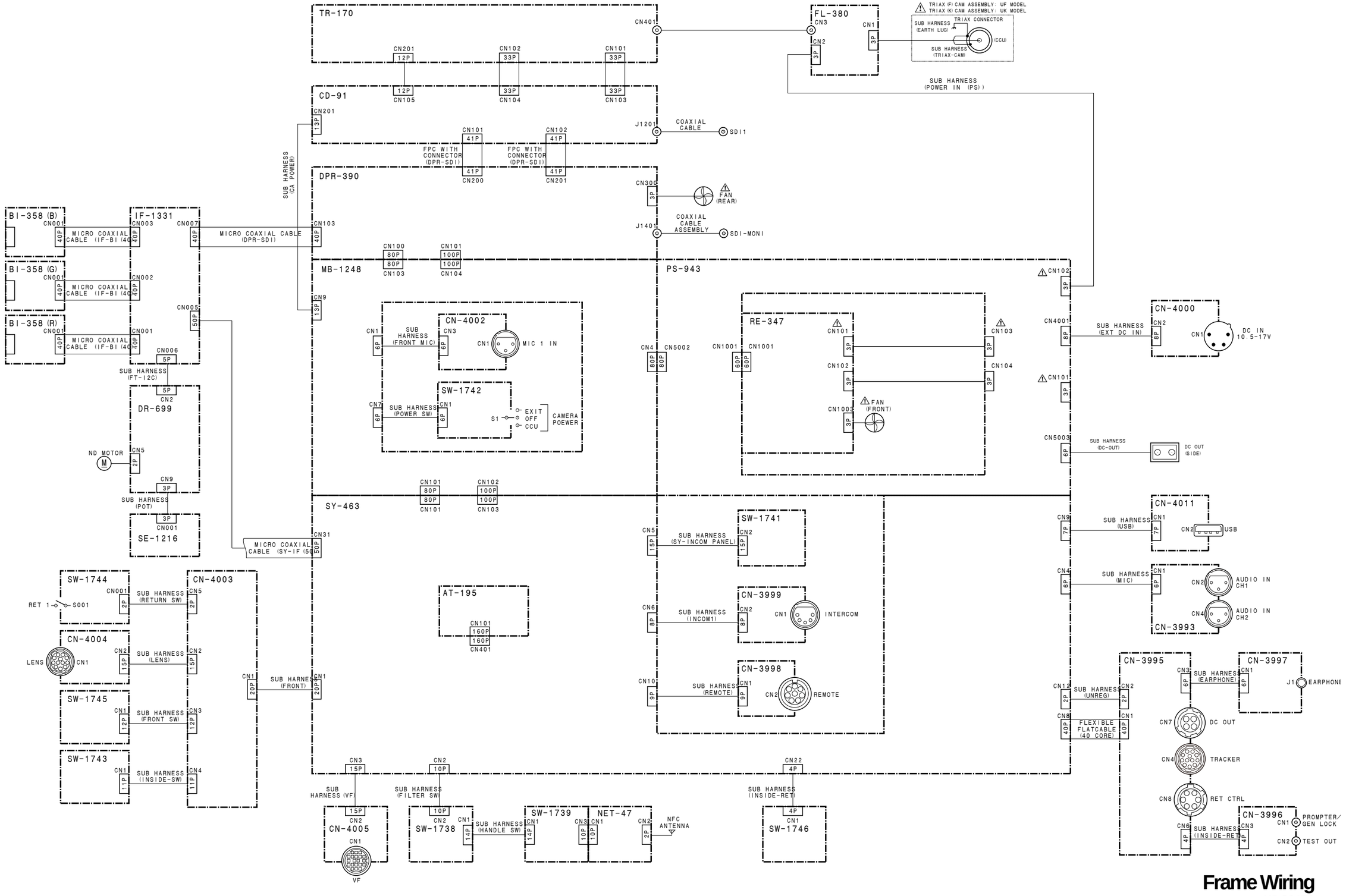
Frame Wiring

Frame Wiring (1/2) (HDC3100)



Frame Wiring
HDC3100

Frame Wiring (2/2) (HDC3170)



Frame Wiring
HDC3170

Revision History

Date	History	Contents
2018. 11	1st Edition 9-932-658-01	—

HDC3100 (SY)
HDC3170 (SY) J, E
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