SONY

COLOR CAMERA

HDC4800

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.
HDC4800 (SY)	10001 and Higher
HDC4800 (CED)	40001 and Higher
HDC4800 (J)	30001 and Higher
HDC4800 (CN)	50001 and Higher

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

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

CAUTION

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

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

This HD Color Camera is classified as a CLASS 1 LASER PRODUCT.

注意

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

CAUTION

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

ATTENTION

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

VORSICHT

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

FÖRSIKTIGHET!

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

PAS PÅ

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

HUOMIO

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

FORSIKTIG

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

注意

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

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Revision History

Manual Structure

Purpose of this manual

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

Related manuals

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

- Operating Instructions CD-ROM (supplied with the unit)
  This manual contains information required to operate and use the unit.
- Factory Service Manual (available on request)
  This manual provides the limited information for component service and the information related to maintenance of the unit.

Trademarks

Trademarks and registered trademarks described in this manual are as follows.

- FRAM is a registered trademark of Ramtron International Corporation.

Other system names and product names written in this manual are usually registered trademarks or trademarks of respective development manufacturers.

Non-disclosed boards

Following boards cannot be replaced on the board-level service or part-level service.

If parts become defective, replace the entire OHB assembly.

- BI-337 board
- DR-685 board

Section 1
Service Overview

1-1. Checking before Installation

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

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

ROM

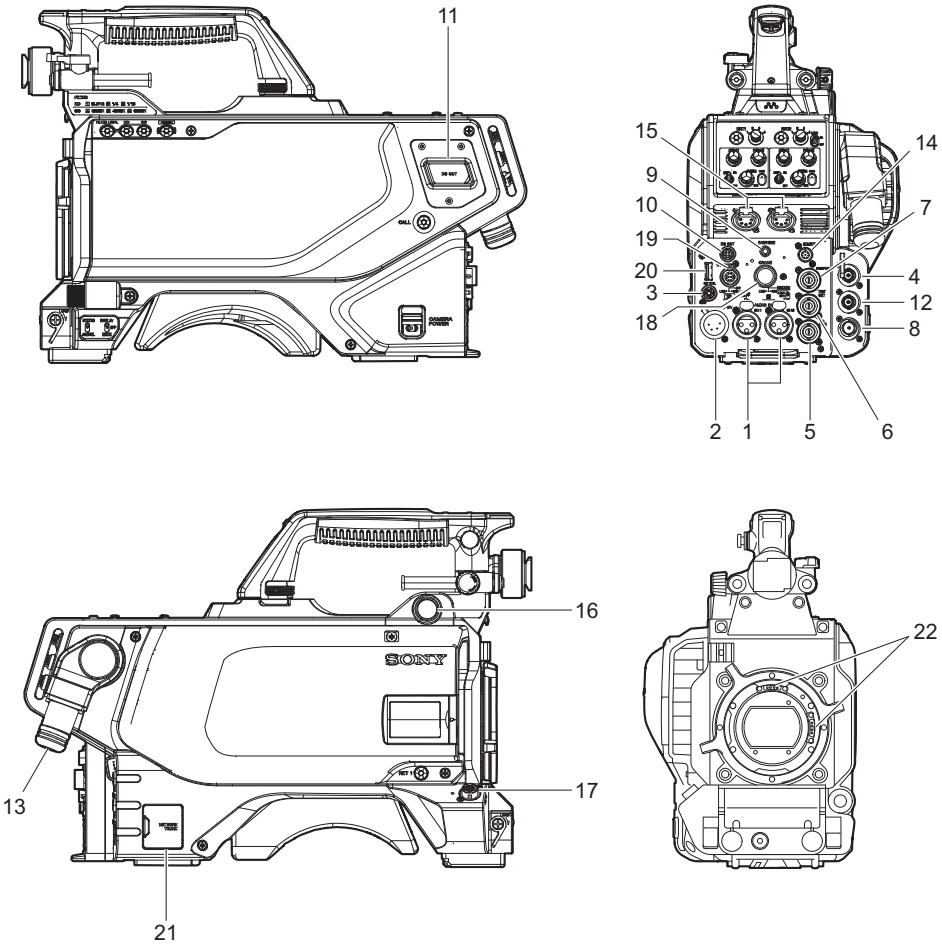
Peripheral Equipment	Board Name	Ref. No.	ROM Version
CNU-700	AT-89 board or AT-89A board	IC4, IC5	Ver. 3.43 and higher

Software

Peripheral Equipment	Board Name	Software Version
RCP-1000/1001	MPU-152 board	Ver.2.70 and higher
RCP-1500/1501/1530	MPU-153 board	Ver.2.70 and higher
HDCU2000/2500	AT-167A board	Ver.2.51 and higher
MSU-1000	MPU-150 board	Ver.2.70 and higher
MSU-1500	MPU-151 board	Ver.2.70 and higher
BPU4800	AT-189L board	Ver.1.00 and higher

1-2. Connectors and Cables

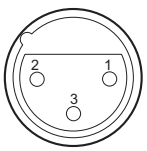
1-2-1. Input and Output Signals of the Connectors



Input Connectors

1. AUDIO IN CH1/CH2

XLR 3-pin, Female



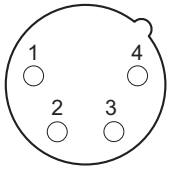
- External View -

(0 dBu = 0.775 V rms)

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

2. DC IN

XLR 4-pin, Male

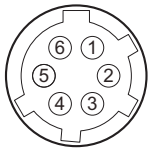


- External View -

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

3. 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

Output Connectors

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. PROMPTER

BNC type, 75 Ω, 1.0 V p-p

8. PROMPTER2

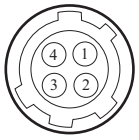
BNC type, 75 Ω, 1.0 V p-p

9. EARPHONE

Stereo minijack

10. DC OUT

4-pin, Female

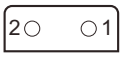


- External View -

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

11. 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

Input and Output Connectors

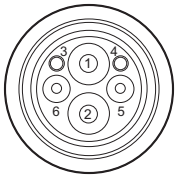
12. SDI 2

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

13. BPU

Optical fiber connector manufactured by LEMO

6-pin

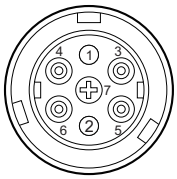


- External View -

No.	Signal	I/O	Specifications
1	OPTICAL OUT	OUT	Optical output
2	OPTICAL IN	IN	Optical input
3	STANDBY INCOM	IN	Standby intercom
4	CCU SENSE	OUT	CCU detect
5	DC IN	IN	Power input
6	GND	—	GND for DC IN
CHASSIS GND		—	Chassis GND

Optical fiber connector manufactured by Tajimi Electronics Co., Ltd.

7-pin, Male



- External View -

No.	Signal	I/O	Specifications
1	OPTICAL OUT	OUT	Optical output
2	OPTICAL IN	IN	Optical input
3	DC IN	IN	Power input
4	GND	—	GND for DC IN
5	CCU SENSE	OUT	CCU detect
6	STANDBY INCOM	IN	Standby intercom
7	GND	—	GND

14. REMOTE

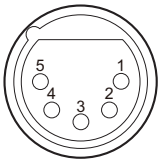
8-pin, Female

- External View -

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

15. INTERCOM 1, 2

XLR 5-pin, Female



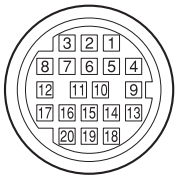
- External View -

(0 dBu = 0.775 V rms)

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

16. VF

20-pin, Female



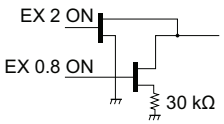
- External View -

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

17. LENS

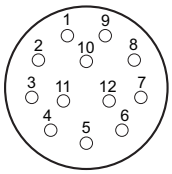
12-pin, Female

- 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 POSI-TION	OUT	+3.4 V (F16) to +6.2 V (F2.8)
6	UNREG	OUT	+10.5 V to +17 V
7	IRIS POSI-TION	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	—

18. CRANE

12-pin, Female



- External View -

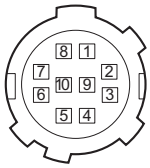
No.	Signal	I/O	Specifications
1	Pr VIDEO (X)	OUT	±0.35 V p-p, Zo = 75Ω
2	Pb VIDEO (X)	OUT	±0.35 V p-p, Zo = 75Ω
3	NC	—	No connection

Continued

No.	Signal	I/O	Specifications
4	TX0 (+): for RS-422A TX1: for RS-232C	OUT	TRUNK data out
5	TX0 (–): for RS-422A TX0: for RS-232C	OUT	
6	RX0 (–): for RS-422A RX0: for RS-232C	IN	TRUNK data in
7	RX0 (+): for RS-422A RX1: for RS-232C	IN	
8	GND (VIDEO)	—	GND for VIDEO
9	Y VIDEO (X)	OUT	1.0 V p-p, Zo = 75Ω
10	GND	—	GND for SCL/SDA
11	SCL EXT-VF	OUT	TTL level
12	SDA EXT-VF	IN/ OUT	TTL level

19. TRACKER

10-pin, Female



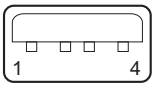
- External View -

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

Continued

20. USB

USB 2.0 (Type A)

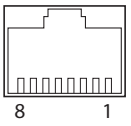


- External View -

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

21. NETWORK TRUNK

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

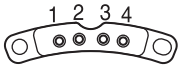


- External View -

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

22. Lens mount hot shoe

4-pin

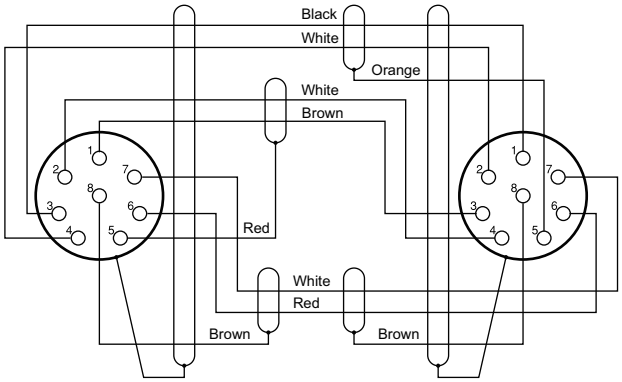


- External View -

No.	Signal	I/O	Specifications
1	RX	IN	SERIAL DATA in
2	TX	OUT	SERIAL DATA out
3	GND	—	GND for UNREG
4	UNREG	OUT	UNREG, 350 mA (MAX)

1-2-2. Wiring Diagrams for Cables

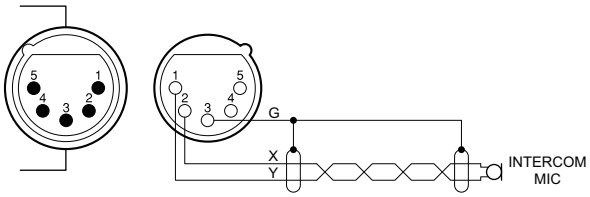
CCA-5 Cable (for REMOTE connector)



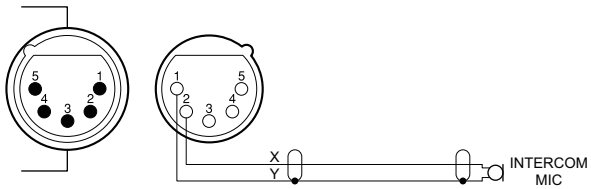
— 8P CONNECTOR (MALE) —
(WIRING SIDE)

INTERCOM MIC Cable

1. Balance (HEAD SET menu UNBAL: OFF)



2. Unbalance (HEAD SET menu UNBAL: ON)



1-2-3. Connectors and Cables

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

Connector Name	Connectors and Cables
BPU (manufactured by LEMO)	FUW.3K.93C.TLMC96 manufactured by LEMO
BPU (manufactured by Tajimi Electronics Co., Ltd.)	OPS2401-P manufactured by Tajimi Electronics Co., Ltd.
TEST OUT PROMPTER PROMPTER2 (BNC type)	Plug, BNC (Part No.: 1-794-166-41) or B-B Cable assembly (1.5 m optional)
SDI 1/2 SDI-MONI (BNC type)	Plug, BNC (Part No.: 1-794-166-51) or 5C-FB coaxial cable/ Recommendation manufactured by Fujikura
AUDIO IN CH1/CH2 (XLR 3-pin, Female)	XLR 3-pin, Male (Part No.: 1-508-084-00) or ITT Cannon XLR-3-12C equivalent
INTERCOM 1/2 (XLR 5-pin, Female)	XLR 5-pin, Male (Part No.: 1-508-370-11) or ITT Cannon XLR-5-12C equivalent
DC IN (XLR 4-pin, Male)	XLR 4-pin, Female (Part No.: 1-508-362-00) or ITT Cannon XLR-4-11C equivalent or DC cable CCDD-X2 (2 m)
DC OUT (4-pin, Female)	Plug 4-pin, Male (Part No.: 1-566-425-11) or HIROSE HR10A-7P-4P equivalent
DC OUT (2-pin, Female)	Power tap (OE) ANTONBAUER 33710 or equivalent
EARPHONE	Plug, Mini, Stereo
LENS (12-pin, Female)	Connector 12-pin, Male (Part No.: 1-691-190-13) or HIROSE HR10A-10P-12P equivalent
RET CTRL (6-pin, Female)	Plug, 6-Pin Male (Part No.: 1-566-365-21) or HIROSE HR10A-7P-6P equivalent

Continued

Connector Name	Connectors and Cables
REMOTE (8-pin, Female)	• Plug 8-pin, Male (Part No.: 1-766-848-11) or CCA-5 cable assembly (CCA-5-3 (3 m)/CCA-5-10 (10 m)) (optional)*1*2 • REMOTE cable (Part No.: 1-783-372-11) (Supplied with RM-B170/B750, 10 m)*1*3*4
CRANE (12-pin, Female)	Round Type 12-pin, Male (Part No.: 1-819-261-11)
TRACKER (10-pin, Female)	Round Type 10-pin, Male (Part No.: 1-506-522-12)
VF (Round, 20P)	Connect the cable of the optional viewfinder (HDVF series).

1-2-4. Note in Connecting BPU Connector

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

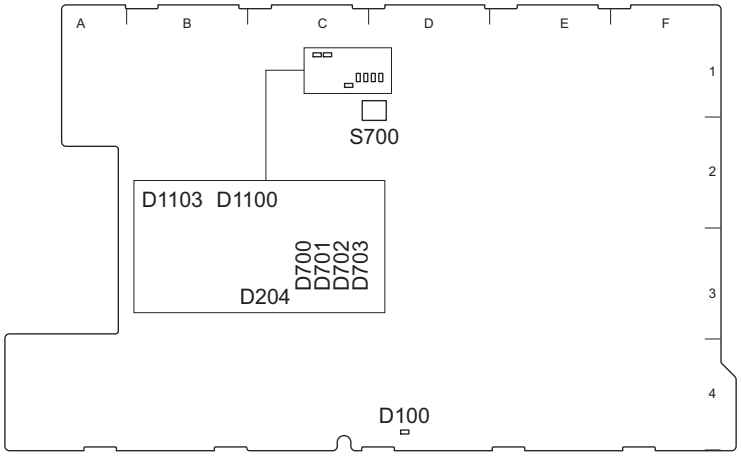
- BPU connector of this unit
- Camera connector of the baseband processor unit
- Optical/Electrical cable

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

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

1-3. Functions of Onboard Switches and LED Indicators

1-3-1. DPR-377 Board



DPR-377 BOARD (A side)

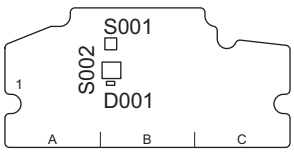
Ref. No.	Address	Name	Color	Description	Normal State
D100	D4 (side A)	Conf-Done	Green	On when FPGA (IC500) normally completed configuration.	Lit
D204	C1 (side A)	POWER	Green	Lights when the power supply regulators (+3.2 V, +5 V) on the board are normal.	Lit
D700	C1 (side A)	—	Green	For debugging	Off
D701	C1 (side A)	—	Green	For debugging	Off
D702	D1 (side A)	—	Green	For debugging	Off
D703	D1 (side A)	—	Green	For debugging	Off
D1100	C1 (side A)	EXT	Green	Lights when receiving the external reference signal.	Off
D1103	C1 (side A)	PLL-NG	Red	Lights when the PLL is abnormal.	Off

Note

Do not touch the unused switches.

Ref. No.	Address	Name	Bit	Description	Factory Setting
S700	D1 (side A)	—	1	Not used	OFF
		—	2	Not used	OFF
		—	3	Not used	OFF
		—	4	Not used	OFF

1-3-2. DR-685 Board



DR-685 BOARD (A side)

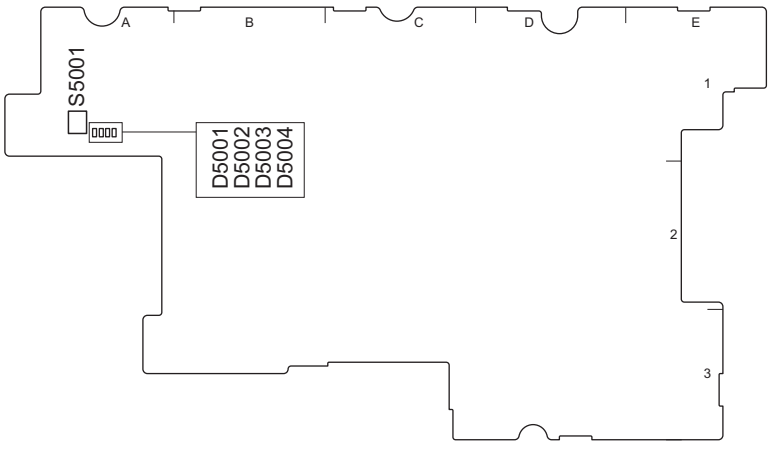
Ref. No.	Address	Name	Color	Description	Normal State
D001	B1 (side A)	—	Green	Blinks while adjusting the filter position.	Off

Note

Do not touch the unused switches.

Ref. No.	Address	Name	Bit	Description	Factory Setting
S001	B1 (side A)	—	—	Filter position adjustment	—
S002	B1 (side A)	—	1	Not used	OFF
		—	2	Not used	OFF

1-3-3. PS-913 Board



PS-913 BOARD (A side)

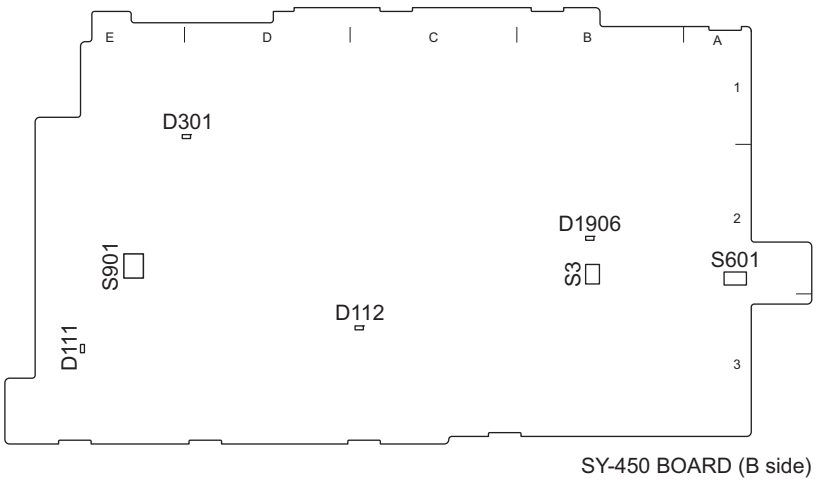
Ref. No.	Address	Name	Color	Description	Normal State
D5001	A1 (side A)	—	Red	Lights when an error occurs in the error detection (VF-OCP).	Off
D5002	A1 (side A)	—	Green	Always lit.	Lit
D5003	A1 (side A)	—	Red	Lights when an error occurs in the error detection (5V, –5V, 11A, LPS, 14V-OVP.	Off
D5004	A1 (side A)	—	Red	Lights when an error occurs in the error detection (Standby 13.5V-OVP, 14V-UVP).	Off

Note

Do not touch the unused switches.

Ref. No.	Address	Name	Bit	Description	Factory Setting
S5001	A1 (side A)	—	1	Not used	OFF
		—	2	Not used	OFF

1-3-4. SY-450 Board



SY-450 BOARD (B side)

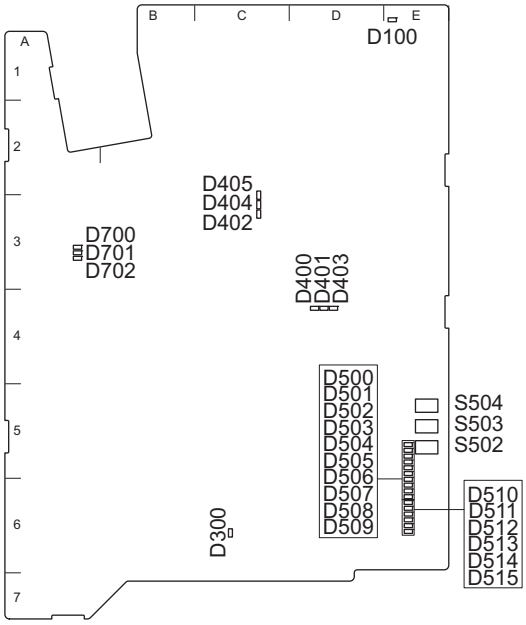
Ref. No.	Address	Name	Color	Description	Normal State
D111	E3 (side B)	CAM-PW	Green	Lights when the main power is supplied	when connected to BPU ON: Lit Standby: Off
D112	C3 (side B)	STANDBY	Red	Lights when the standby power is supplied	Lit
D301	D1 (side B)	STATUS	Green	For debugging	Lit
D1906	B2 (side B)	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.	Address	Name	Bit	Description	Factory Setting
S3	B2 (side B)	—	1	Normal: Normal operation RTS: Intercom setup (Refer to 8-2-1.“INTERCOM”.)	Normal
S601	A2 (side B)	CALL	—	Not used	—
S901	E2 (side B)	MODE	1	Display and Hide the TOP MENU screen	OFF
			2	OFF: Normal operation ON: FRAM clear	OFF
			3	Not used	OFF
			4	Not used	OFF

1-3-5. TX-154 Board



TX-154 BOARD (A side)

Ref. No.	Address	Name	Color	Description	Normal State
D100	E1 (side A)	Power NG	Red	Lights when the power supply regulators on the board is abnormal.	Off
D300	C6 (side A)	CONF DONE	Red	Off when FPGA (IC200) normally completed configuration.	Off
D400	D4 (side A)	LOCK1	Red	Lights when the clock synthesizer (IC404) is not locked.	Off
D401	D4 (side A)	REF1	Red	Lights when the reference clock is not input to the clock synthesizer (IC404).	Off
D402	C3 (side A)	LOCK2	Red	Lights when the clock synthesizer (IC405) is not locked.	Off
D403	D4 (side A)	VCXO1	Red	Lights when the VCXO clock is not input to the clock synthesizer (IC404).	Off
D404	C3 (side A)	REF2	Red	Lights when the reference clock is not input to the clock synthesizer (IC405).	Off
D405	C3 (side A)	VCXO2	Red	Lights when the VCXO clock is not input to the clock synthesizer (IC405).	Off
D500	E5 (side A)	—	Red	Factory use	Inconstant
D501	E5 (side A)	—	Red	Factory use	Inconstant
D502	E5 (side A)	—	Red	Factory use	Inconstant
D503	E5 (side A)	—	Red	Factory use	Inconstant
D504	E5 (side A)	—	Red	Factory use	Inconstant
D505	E5 (side A)	—	Red	Factory use	Inconstant
D506	E6 (side A)	—	Red	Factory use	Inconstant
D507	E6 (side A)	—	Red	Factory use	Inconstant
D508	E6 (side A)	—	Green	Factory use	Inconstant
D509	E6 (side A)	—	Green	Factory use	Inconstant
D510	E6 (side A)	—	Green	Factory use	Inconstant

Continued

Ref. No.	Address	Name	Color	Description	Normal State
D511	E6 (side A)	—	Green	Factory use	Inconstant
D512	E6 (side A)	—	Green	Factory use	Inconstant
D513	E6 (side A)	—	Green	Factory use	Inconstant
D514	E6 (side A)	—	Green	Factory use	Inconstant
D515	E6 (side A)	—	Green	Factory use	Inconstant
D700	A3 (side A)	LPMODE	Red	Lights when setting the optical module to low power mode.	Off
D701	A3 (side A)	FAULT	Red	Used for indicating the optical output status of the optical module for connection to the BPU. Lights when optical output of the optical module is stopped or the optical fiber cable is disconnected.	Inconstant
D702	A3 (side A)	MOD ABS	Red	Lights when the optical module is not connected to the connector (CN700).	Off

Note

Do not touch the unused switches.

Ref. No.	Address	Name	Bit	Description	Factory Setting
S502	E5 (side A)	—	—	Not used	—
S503	E5 (side A)	—	—	Not used	—
S504	E5 (side A)	—	—	Not used	—

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.

Procedure

1. Open the OPTION 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.

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.

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

General dynamic microphone

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

Other microphones

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

Receive (Headphone) Settings

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

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

1. Set INTERCOM1 RECEIVE SELECT (or INTERCOM2 RECEIVE SELECT) on the INTERCOM1 (or INTERCOM2) page of the OPERATION menu to “MIX”.
   The same sound is output from right and left.

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

1. Set INTERCOM1 RECEIVE SELECT (or INTERCOM2 RECEIVE SELECT) on the INTERCOM1 (or INTERCOM2) page of the OPERATION menu to “SEPARATE”.
2. Set channels (left, right, and both) of items INTERCOM (or ENG, PROD)[*1], PGM1, PGM2, and TRACKER.

To adjust the volume of your voice

1. Set volume in SIDE TONE on the INTERCOM1 (or INTERCOM2) page of the OPERATION menu.

*1: INTERCOM is appeared when ENG/PROD setting is set to “SEPARATE”, ENG and PROD are appeared when ENG/PROD setting is set to “MIX”.

1-5. Flexible Flat Cable and Coaxial Cable

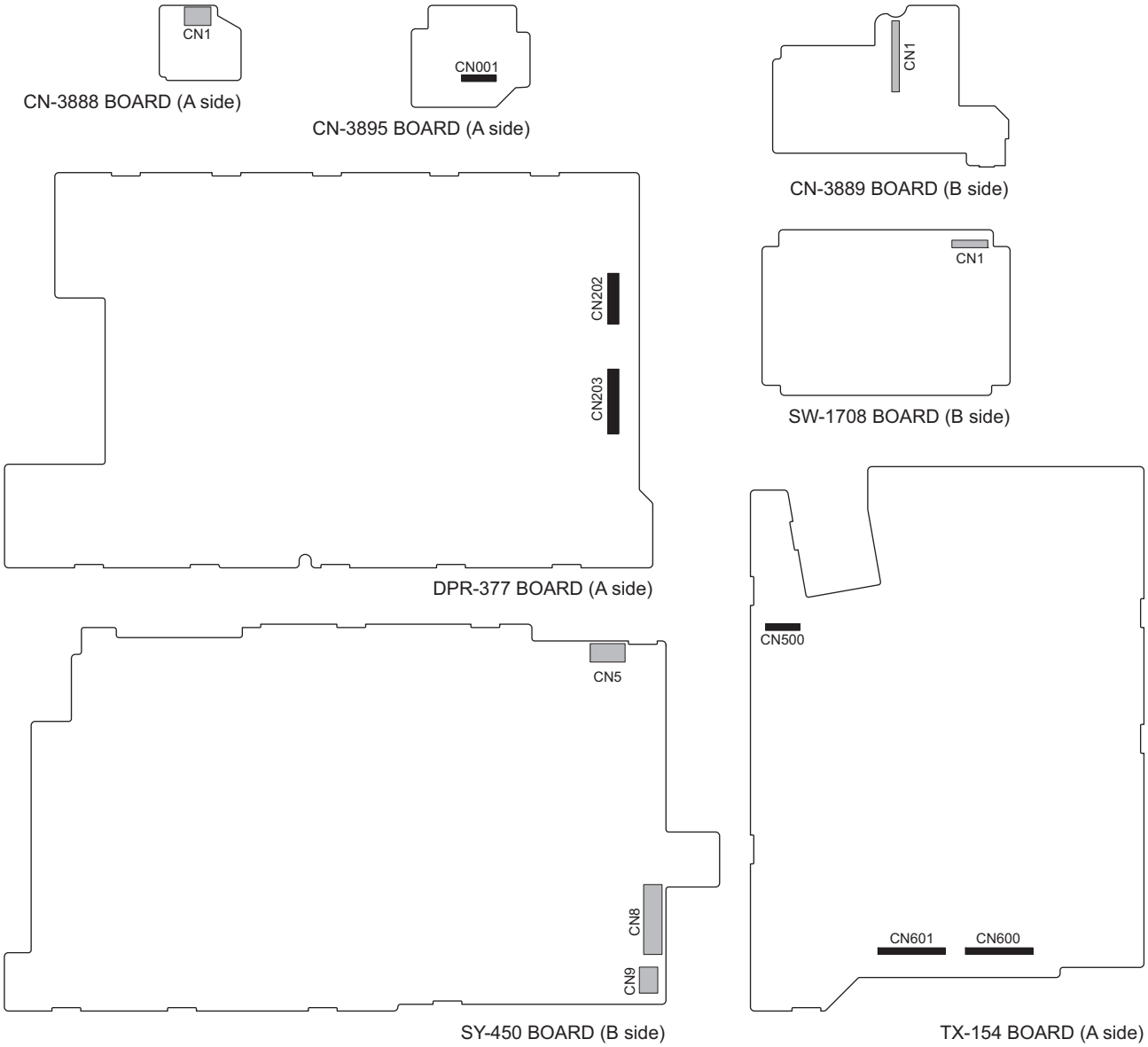
1-5-1. Connector for Flexible Flat Cable and Fine-Wire Coaxial Cable

Refer to the installing location and type of connector for connecting the flexible flat cable and fine-wire coaxial cable.

Note

Be careful when disconnecting and connecting the connector as its handling differs depending on the shape of connector.

Location of Connectors



Type of Connectors

Board	Ref. No.	Connector for Flexible Flat Cable	Connector for Fine-Wire Coaxial Cable
CN-3888	CN1	Type B	—
CN-3889	CN1	Type A	—
CN-3895	CN001	—	Type A
DPR-377	CN202	—	Type C
	CN203	—	Type C
SW-1708	CN1	Type A	—
SY-450	CN5	Type B	—
	CN8	Type B	
	CN9	Type B	—
TX-154	CN500	—	Type A
	CN600	—	Type B
	CN601	—	Type B

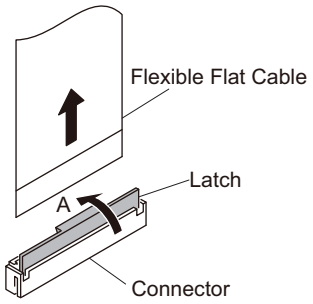
1-5-2. Disconnecting and Connecting Flexible Flat Cable

Note

- Be very careful not to fold flexible flat cables. Life of flexible card wire will be significantly shortened if it is folded.
- Each flexible card wire has conductive side and insulated side. If the flexible flat cable is connected in the wrong orientation of the conductive side and the insulated side, the circuit will not function.
- Insert the flexible flat cable straight.
- Check that the conductive side of the flexible flat cable is not contaminated.

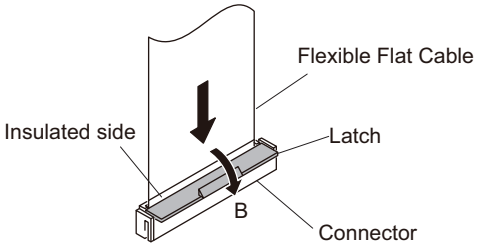
Type

Disconnecting



1. Open the latch of the connector in the direction of arrow A to unlock.
2. Disconnect the flexible flat cable.

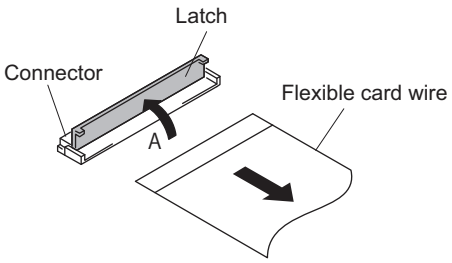
Connecting



1. Insert the flexible flat cable firmly as far as it will go with the insulating surface facing front.
2. Close the latch of the connector in the direction of arrow B to lock the flexible card wire.

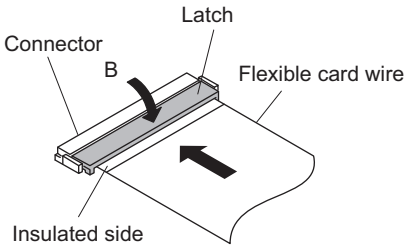
Type B

Disconnecting



1. Open the latch of the connector in the direction of arrow A to unlock.
2. Disconnect the flexible card wire.

Connecting



1. Insert the flexible card wire firmly as far as it will go with the insulated side up.
2. Close the latch of the connector in the direction of arrow B to lock the flexible card wire.

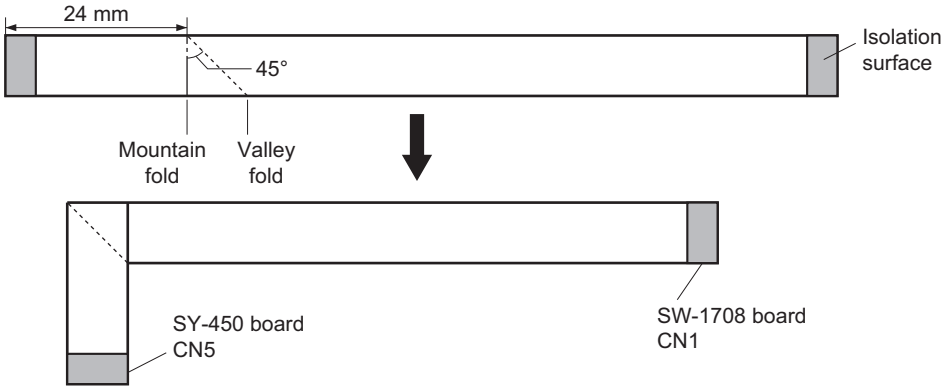
1-5-3. Forming Flexible Card Wire

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

Note

Never fold it back after being formed once.

- SY-450 board CN5 ↔ SW-1708 board CN1



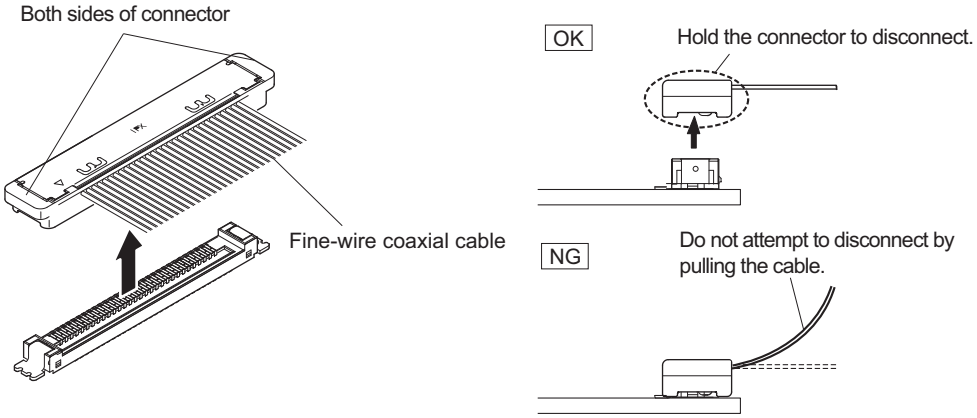
1-5-4. Disconnecting/Connecting Fine-Wire Coaxial Cable

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 not contaminated.

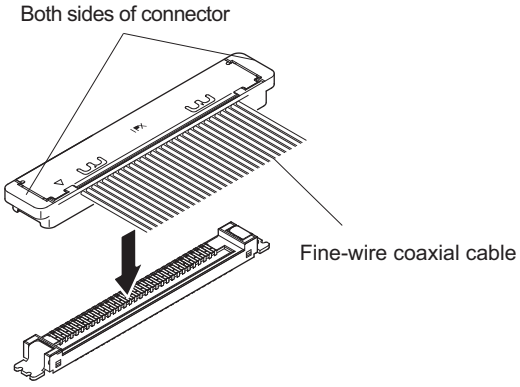
Type A

Disconnecting



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

Connecting



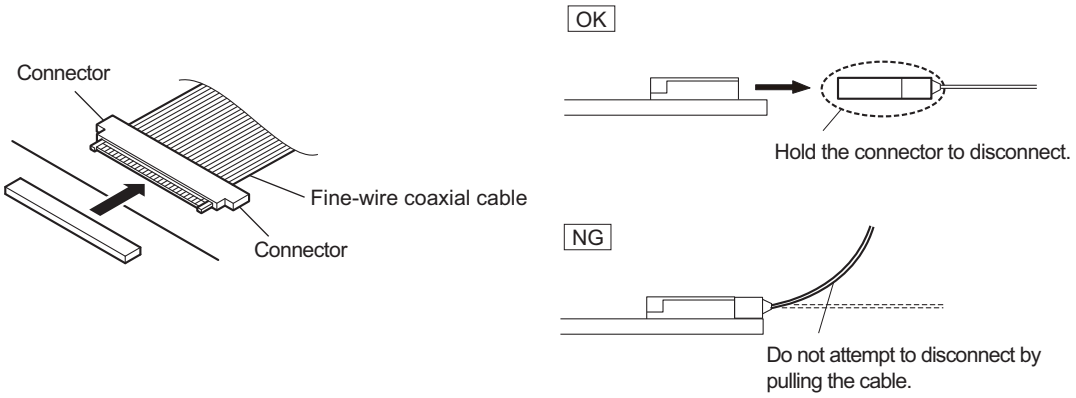
1. Insert the connector of fine-wire coaxial cable in the arrow direction to connect it.

Note

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

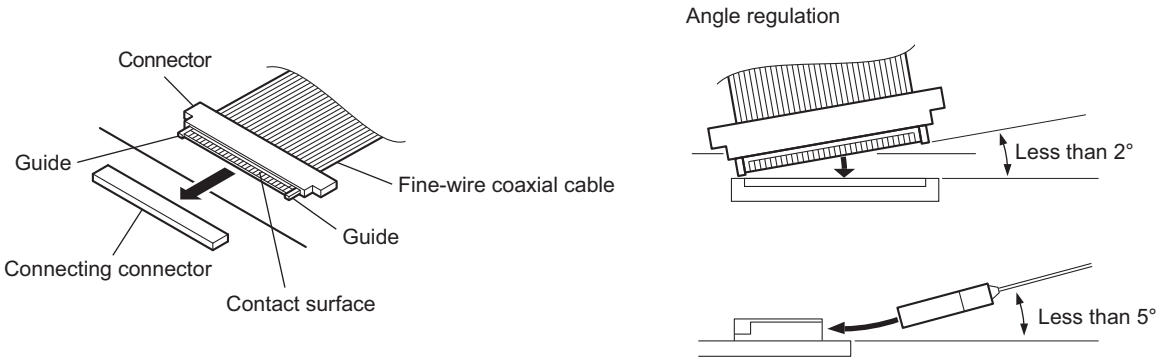
Type B

Disconnecting



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

Connecting



Note

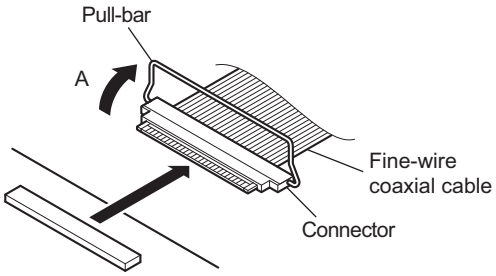
Insert the connector carefully so that the connector guides are not caught by the edge of the mating connector.

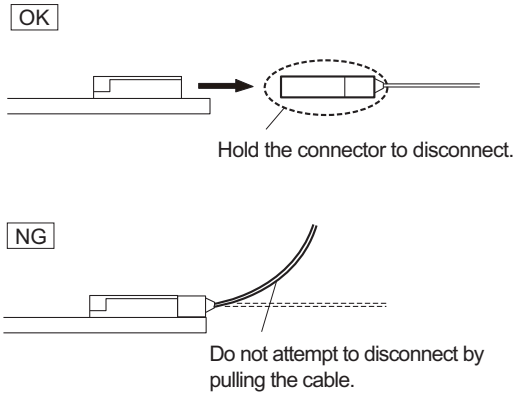
1. Hold both sides of the fine-wire coaxial cable connector with the contact surface facing up.

2. Insert the connector straight to meet the angle specified.

Type C

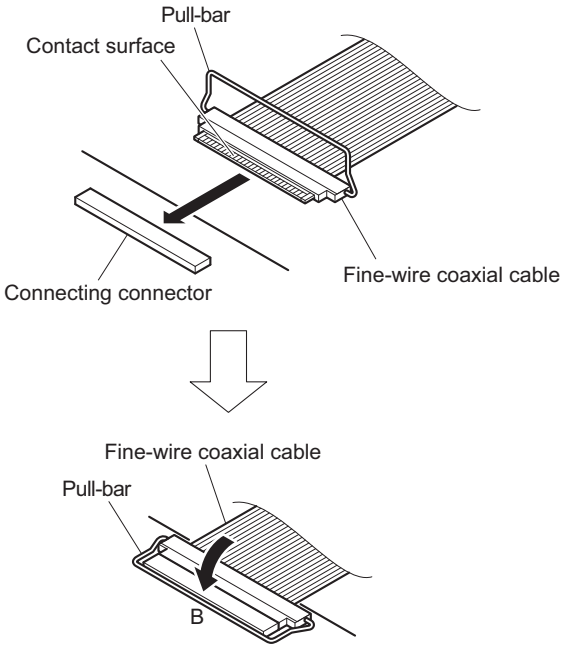
Disconnecting

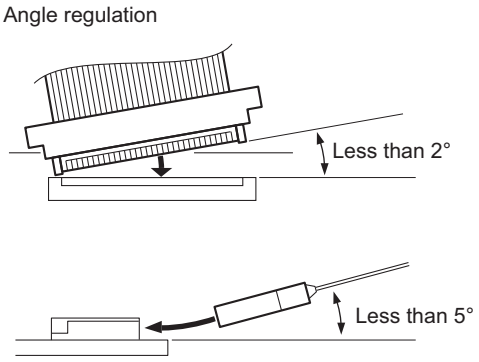




1. Raise the pull-bar in the direction of arrow A to unlock it.
2. Hold both sides of the fine-wire coaxial cable connector, and pull the connector straight to disconnect it.

Connecting





Note

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

1. Hold both sides of the fine-wire coaxial cable connector with the contact surface facing up.
2. Insert the connector straight to meet the angle specified.
3. Turn the pull-bar in the direction of arrow B and lock it.

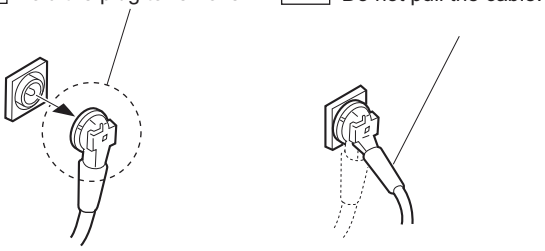
1-5-5. Disconnecting/Connecting Coaxial Cable

Note

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

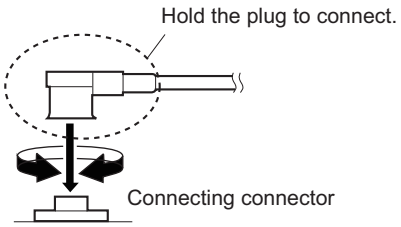
Disconnecting

OK Hold the plug to remove. NG Do not pull the cable.



1. Hold the plug of the coaxial cable.
2. Pull the plug straight in the arrow direction to disconnect the coaxial cable.

Connecting



1. Hold the plug of the coaxial cable.
2. Push the plug perpendicularly to the connector while slightly turning the plug 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 cable from the DC IN connector, and the cable from the optoelectric composite cable 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	Ref. No.	Address	Part No.	Part Name and Rating
PS-913	F101	E1 (side A)	⚠ 1-523-179-11	Fuse (SMD) 6.3 A/250 V
	F102	E2 (side A)	⚠ 1-523-179-11	Fuse (SMD) 6.3 A/250 V
	F4001	D3 (side A)	⚠ 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	Ref. No.	Address	Part No.	Holding Current
CN-3889	THP1	C2 (side A)	⚠ 1-802-108-11	1.50 A/20 °C
	THP2	C1 (side A)	⚠ 1-811-201-11	2.60 A/20 °C
RE-338	TH1001	B1 (side A)	⚠ 1-802-108-11	1.50 A/20 °C
	TH2001	D1 (side A)	⚠ 1-803-615-21	0.50 A/20 °C
SY-450	THP1	B3 (side A)	⚠ 1-802-063-21	1.10 A/20 °C
	THP101	D2 (side A)	⚠ 1-803-615-21	0.50 A/20 °C
	THP102	C1 (side A)	⚠ 1-803-615-21	0.50 A/20 °C
	THP103	C1 (side A)	⚠ 1-803-615-21	0.50 A/20 °C

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-6252-540-B	Bit set for torque screwdriver (size 2, 2.5, 3 nut driver, +2 mm, +2.6 mm, +3 mm bit)	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-6394-080-A	Grayscale chart	Transparent type (16:9), Camera adjustment
J-6480-010-A	Alignment sleeve remover HC-001	For Female connector, DCC.91.312.5LA manufactured by LEMO or equivalent
J-7120-950-A	Chart adaptor	Adaptor that installs ITE test chart (16:9) 310 X200 in PTB-500 (pattern box)
J-7120-970-A	ITE STANDARD TEST CHART	ITE grayscale chart (γ=0.45) (16:9)
Commercially available	Hexagonal wrench (size : 2.5 mm)	Screw tightening
Commercially available	Hexagon box bit (size: 11mm, 24mm)	Nut tightening
Commercially available	Loctite (408)	Instant adhesives
Commercially available	Grayscale chart	Reflective type (16:9), Camera adjustment
Commercially available	USB memory	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
4K waveform monitor	Leader Electronics LV5490 (multi waveform monitor) or equivalent
4K color monitor	Sony BVM-X300 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-2125-632-A
Mount assembly number (8-digit): A0000001 and higher

1-9. Lead-free Solder

All boards mounted in this unit use lead-free solder. Be sure to use lead-free solder when repairing the boards of this unit. A lead free mark (LF) indicating that the solder contains no lead is printed on each board. (Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

 : LEAD FREE MARK

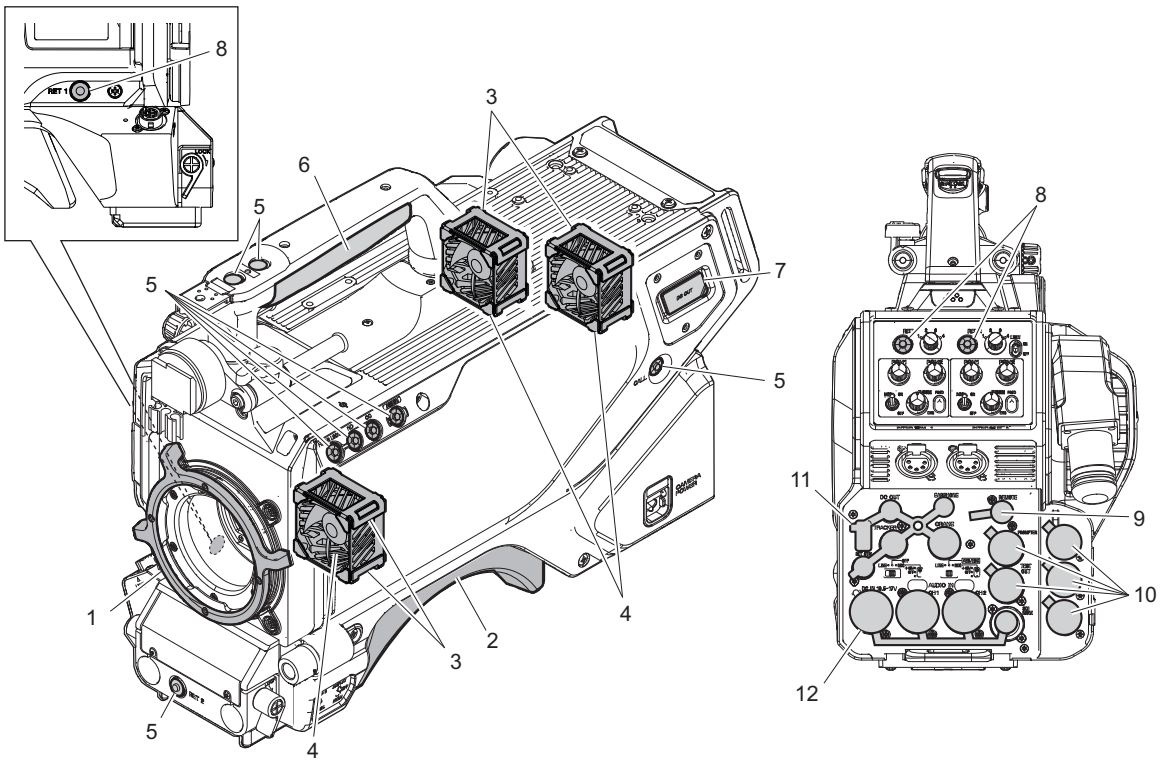
Note

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

Section 2
Periodic Maintenance and Inspection

2-1. Recommended Replacement Parts

This section describes the recommended replacement parts and recommended replacement time.
The replacement period of each part is changed according to the environment and condition. The parts made of rubber used for this unit may become cracked and split with the lapse of time, therefore also replace it if necessary.



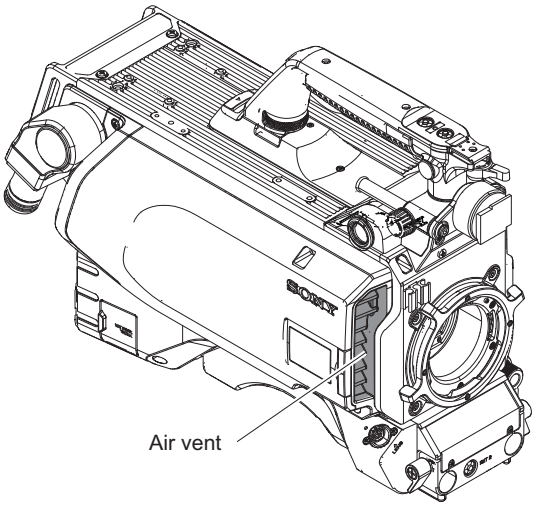
No.	Part name	Part No.	Recommended replacement timing
1	Lever ring	4-598-154-01	Replace every 5 years.
2	Shoulder pad assembly	A-8286-163-D	Check for deformation and deterioration (abraded or damaged or lost) from time to time. Replace it as necessary.
	Shoulder pad assembly (optional)	A-8286-346-A	
3	Cushion (FAN)	4-546-928-01	
4	DC fan	⚠ 1-855-374-11	
5	SW cover	3-676-244-04	
6	Grip	4-138-676-01	
7	DC OUT connector cap	4-415-079-01	
8	SW cover	4-138-682-01	
9	BNC cap	3-868-657-03	
10	BNC cap	3-872-935-01	
11	Rear connector cap 1	4-414-617-01	
12	Rear connector cap 2	4-414-618-01	

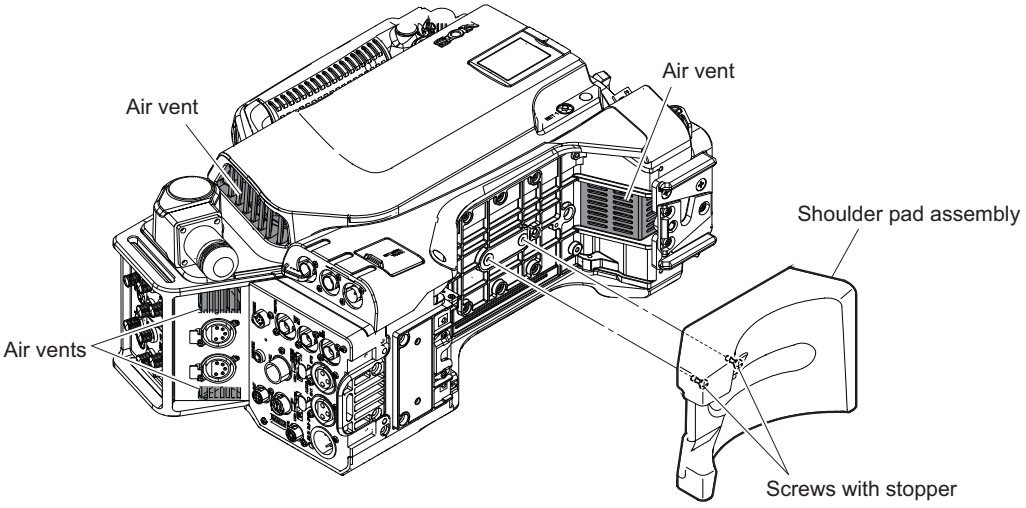
2-2. Cleaning the Air Vents

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.

Procedure

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





2-3. Replacing Lithium Battery

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

A lithium battery is mounted on the SY-450 board to back up the real time clock (RTC).
If this unit is not energized, the backup period is about two years. When the RTC is reset without using this unit for long time, charge the lithium battery by energizing this unit all day long.
When the backup period is shortened even if the lithium battery is charged, the lithium battery must be replaced.

- Replacement part: Lithium secondary battery (ML621 (U))
- Part number: ⚠ 1-756-134-16

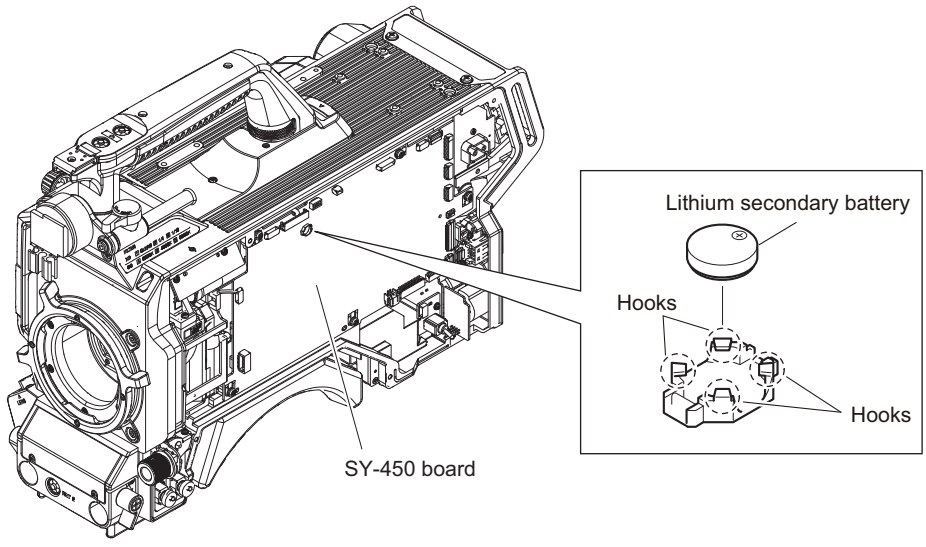
Note on Replacement of Lithium Battery

CAUTION

When replacing the lithium 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 Battery

1. Remove the four screws and remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly".)
2. Remove the Lithium secondary battery (ML621 (U)) from the four hooks of the battery holder on the SY-450 board, and replace it.



Note

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

3. Install the removed parts by reversing the steps of removal.
4. Set the date and time in the internal clock by DATE/TIME on the DATE page of the MAINTENANCE menu.

2-4. Cleaning of Connector/Cable

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

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

When lit in red, be sure to clean the optical contact portions.

When lit in yellow, cleaning is recommended.

The attenuation of the photo-receptive level may cause transmission error. Clean optical contact portions proceeding as follows.

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

2-4-1. Cleaning Connectors/Cables of LEMO

When the Optical Connector Cleaner (Commercially Available) is Available

Tool and Fixtures

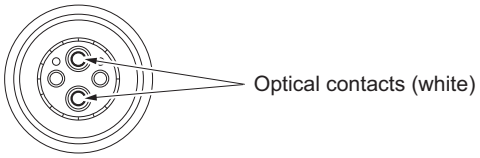
- Optical connector cleaner (commercially available)
  - Product name: CLETOP ®
  - 14100402 or 14100403 (stick type) or equivalent
  - 14100402: 2.0 mm
  - 14100403: 2.0/2.5 mm double ended

Tip

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

Cleaning of Male Connector

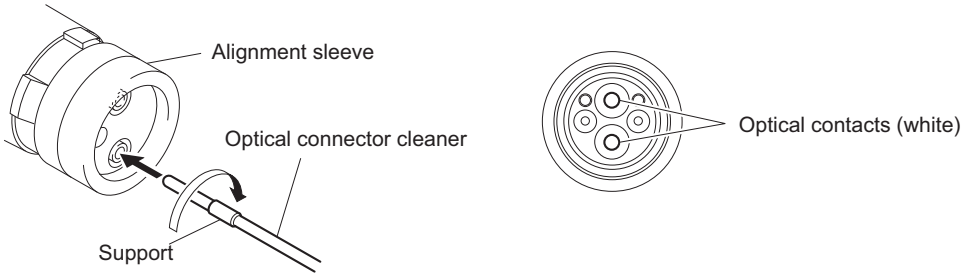
Clean the tip of the white optical contacts using the optical connector cleaner.



Cleaning of Female Connector

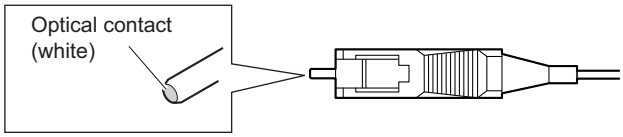
1. Insert the optical connector cleaner straight. Ensure that it is held straight when inserting.
2. Apply sufficient pressure to ensure that the optical contact is a little depressed.
   (approximately 600 g to 700 g)

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.



Cleaning of Connector

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



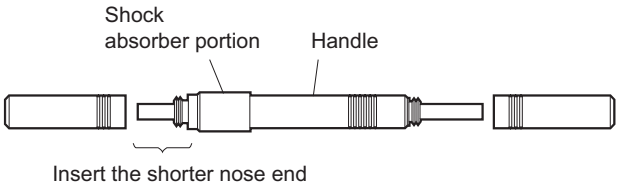
When the Optical Connector Cleaner (Commercially Available) is not Available

Tool and Fixtures

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

  Note

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



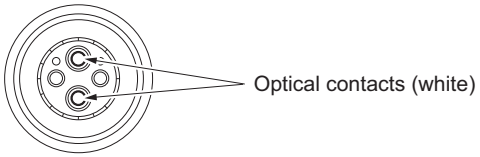
- Alcohol (commercially available)
- Cotton swabs (commercially available)

  Note

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

Cleaning of Male Connector

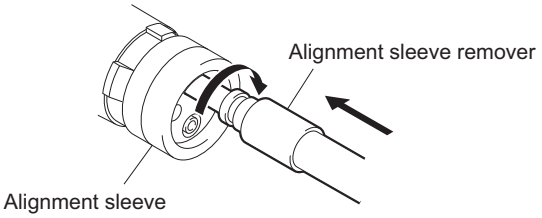
Clean the tip of the white optical contacts with a cotton swab moistened with alcohol.



Cleaning of Female Connector

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

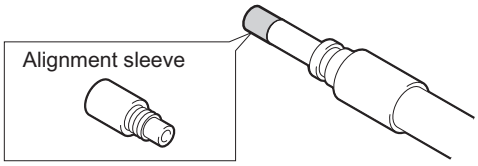
1. Insert the alignment sleeve remover into the alignment sleeve in the straight line and turn it clockwise.



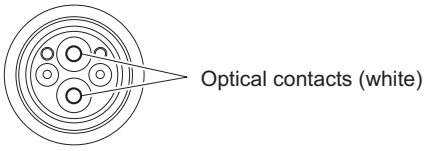
2. When the turn stops, pull out the remover in the straight line forcedly.

Note

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



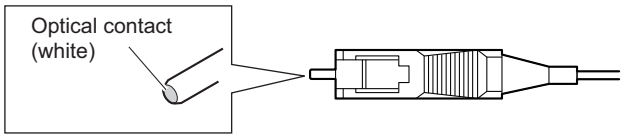
3. Clean the tip of the white optical contacts with a cotton swab moistened with alcohol.



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

Cleaning of Connector

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



2-4-2. Cleaning Connectors/Cables of Tajimi Electronics Co., Ltd.

When the Optical Connector Cleaner (Commercially Available) is not Available

Tool and Fixtures

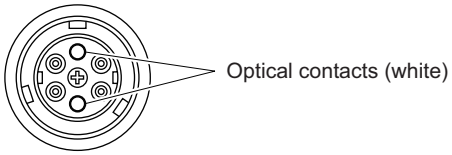
- Alcohol (commercially available)
- Cotton swabs (commercially available)

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 of Male Connector

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



Cleaning of Female Connector

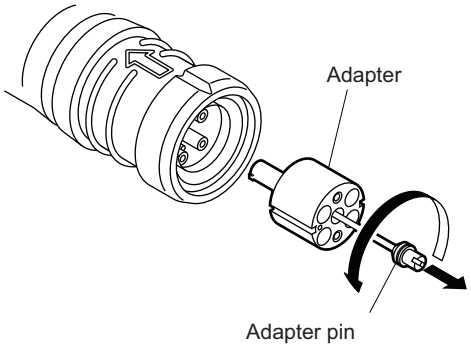
The optical contacts for female connector are in an unexposed state. In cleaning, it is necessary to be exposed by removing the adapter in the connector in advance. Proceed as follows.

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

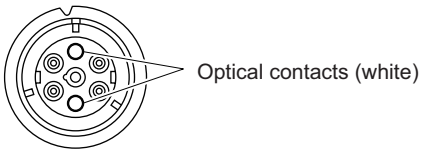
   Tip

   If there is no screwdriver, use the plate attached to the connector cap.

2. Pull the adapter pin out of the connector in the arrow direction.



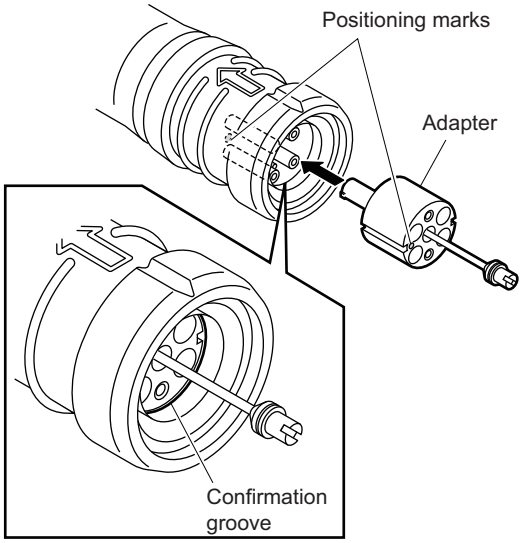
3. Clean the tip of the white optical contacts with a cotton swab moistened with alcohol.



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

Note

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



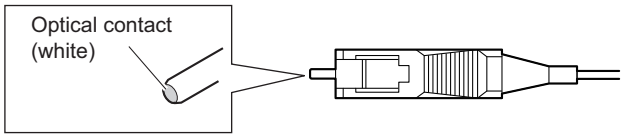
5. Tighten the adapter pin clockwise until being lightly fixed.

Note

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

Cleaning of Connector

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



Section 3
Diagnostics

3-1. Device Check

This unit is provided with a self-diagnosis function for checking the communication function of each device.
Diagnosis result can be monitored on the BOARD STATUS page of the DIAGNOSIS menu.

3-1-1. BOARD STATUS (DIAGNOSIS menu)

When “NG” is displayed on this page, there may be a problem with the relevant device or its connection.

```
<BOARD STATUS>   D02 TOP

 OHB  : OK
 DPR  : OK
 SY   : OK
 PS   : OK
 TX   : OK

 HOURS METER : xxxx H
```

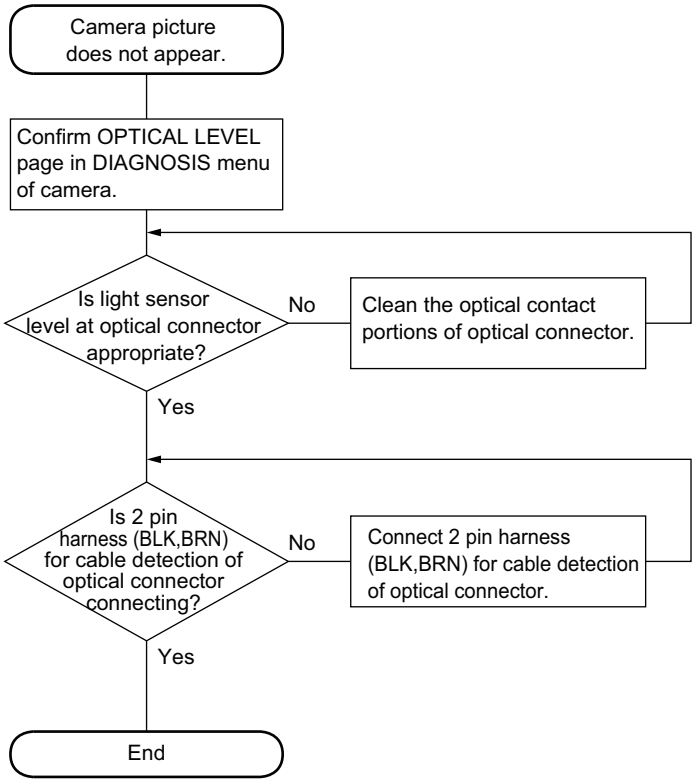
Item	Setting	Function
OHB	Display only	Indicates the status of the LSI (IC201) on the BI-337 board.
DPR	Display only	Indicates the status of the LSI (IC500) on the DPR-377 board.
SY	Display only	Indicates the status of the LSI (IC1001) on the SY-450 board.
PS	Display only	Indicates the status of the LSI (IC5003) on the PS-913 board.
TX	Display only	Indicates the status of the LSI (IC200) on the TX-154 board.
HOURS METER	Display only	Displays the total working time.

3-1-2. Displaying

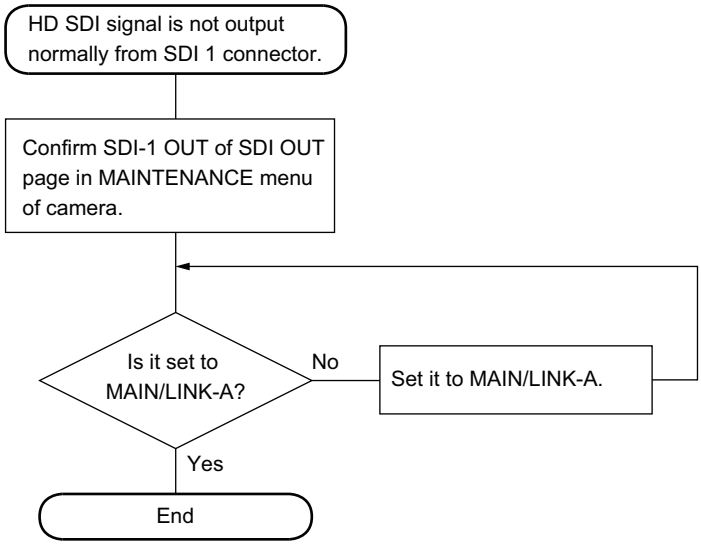
1. Turn the DISPLAY switch to the MENU side while pressing the MENU SEL knob/ENTER button.
   [TOP] appears at the upper right of the screen of viewfinder.
2. Set the cursor at [TOP] and press the MENU SEL knob/ENTER button.
   The TOP MENU screen showing the entire configuration of menu items appears.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

3-2. Troubleshooting

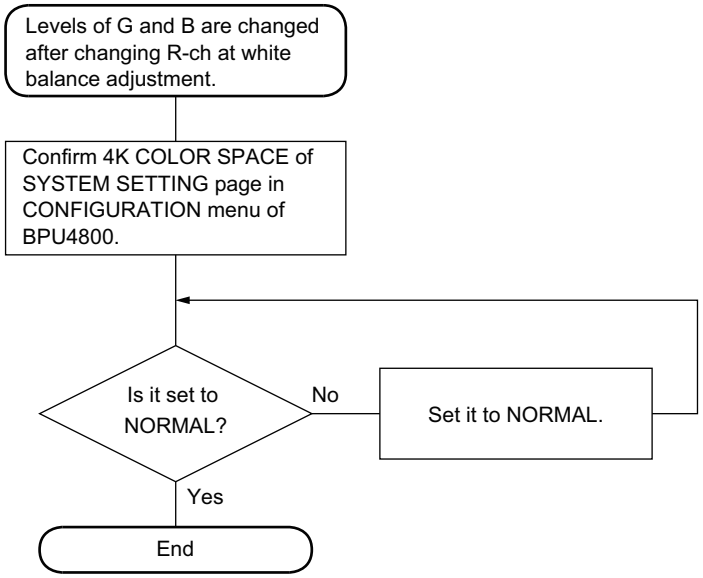
3-2-1. Camera picture does not appear



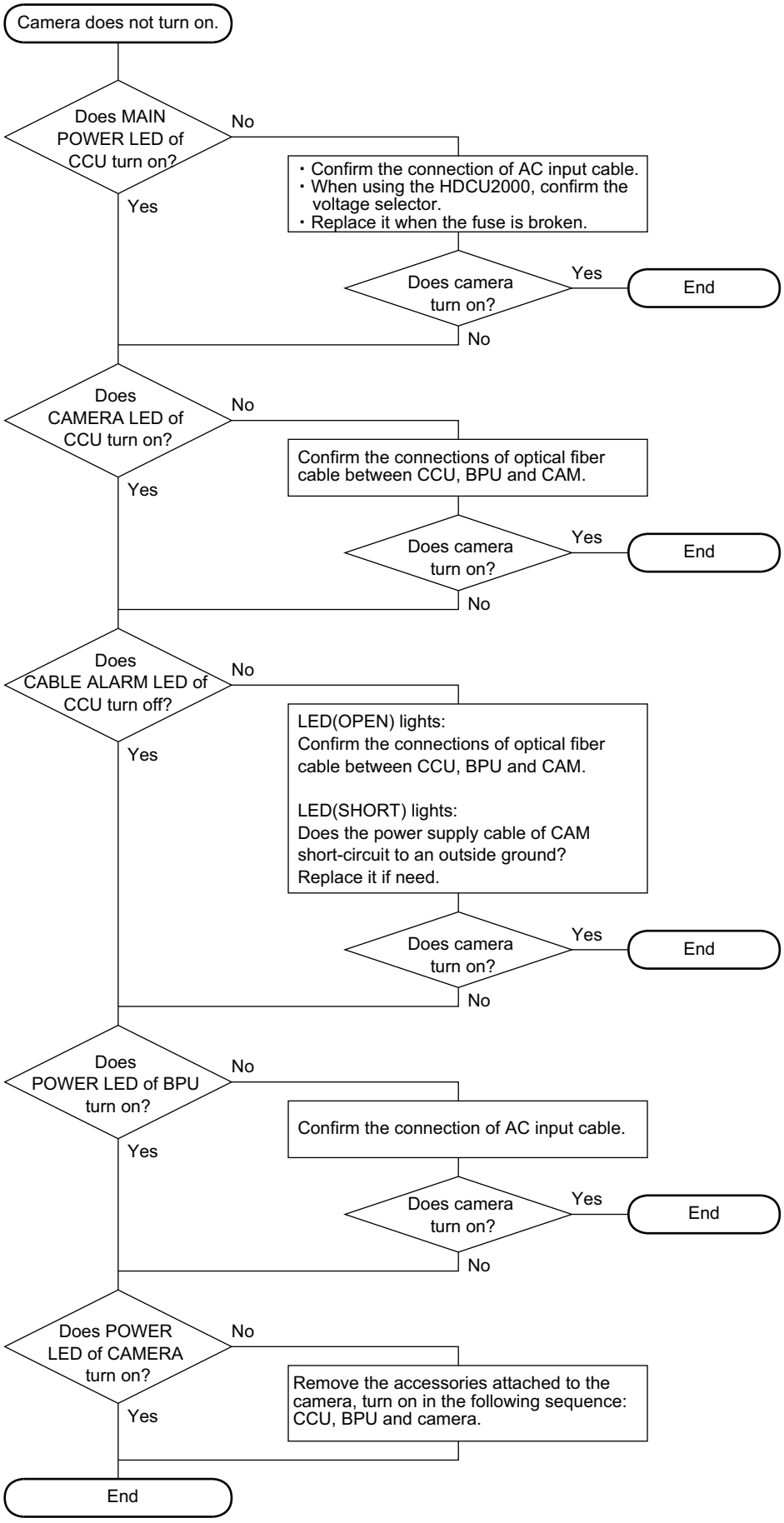
3-2-2. HD SDI signal is not output normally from SDI 1 connector



3-2-3. The levels of G and B are changed after changing R-ch at white balance adjustment



3-2-4. Camera does not turn on



Section 4
Replacement of Main Parts

4-1. Precautions before Work

4-1-1. Tightening Torque

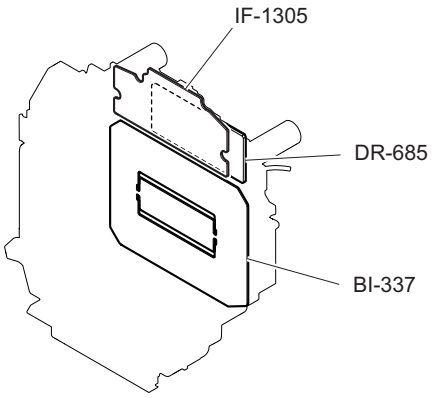
When tightening screws used in this unit, be sure to use a torque driver and tighten screws to the specified tightening torque.
If the specified tightening torque is described in the figure in this section, tighten screws to the specified tightening torque in the figure.

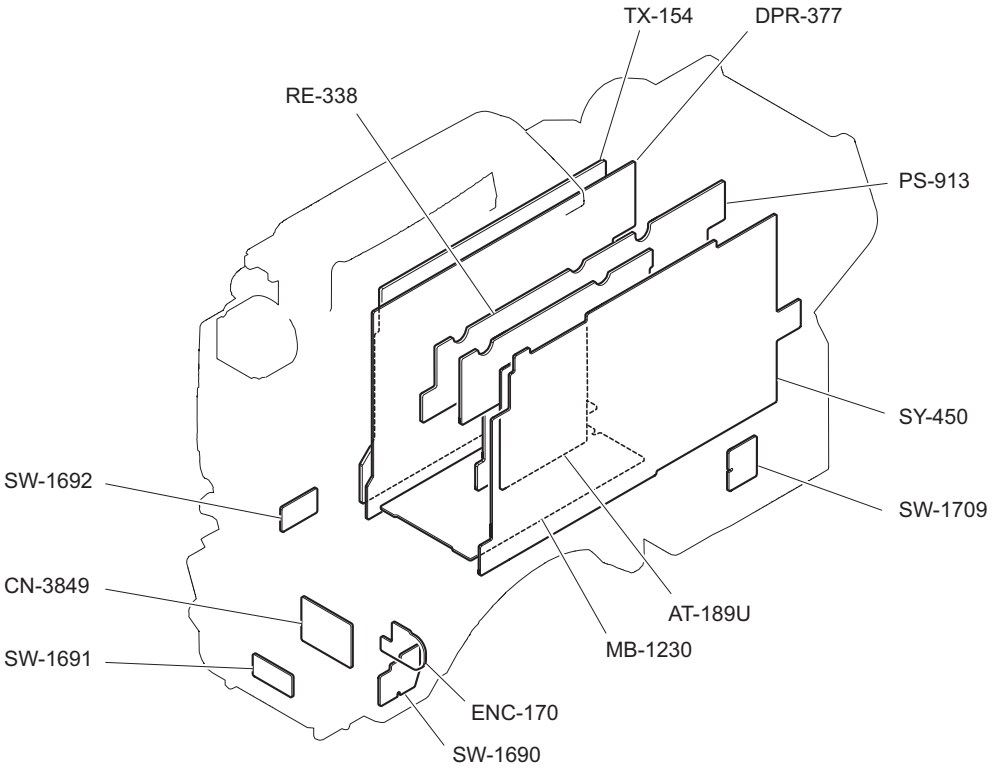
Tightening torque
M2 : 0.30 ±0.03 N·m
M2.6 : 0.53 ±0.07 N·m
M3: 0.80 ±0.12 N·m

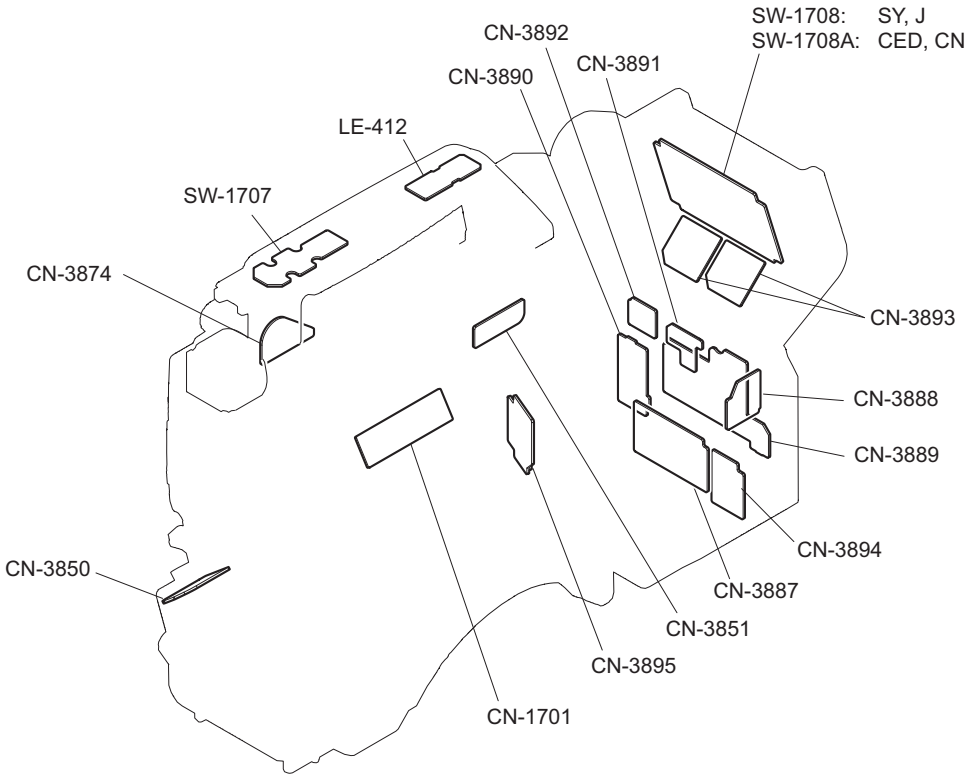
Tip

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

4-2. Location of Printed Wiring Boards






SW-1708: SY, J
SW-1708A: CED, CN
CN-3892
CN-3891
CN-3890
LE-412
SW-1707
CN-3874
CN-3893
CN-3888
CN-3889
CN-3894
CN-3850
CN-3887
CN-3851
CN-3895
CN-1701

4-3. Actions to be Taken during Board Replacement and after Board Replacement or after Board Repair

4-3-1. 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 "Spare Parts" is for IC which is not programmed. If replacement is needed, contact your local Sony Sales Office/Service Center.

Board	Ref. No. (Type)	Stored Data	Replacement and Actions
AT-189U	IC401 (eMMC)	Software program	Replacement of the board (not replacing IC) Necessary (refer to "6-1. Upgrading Software Programs".)
BI-337	IC105 (Flash)	CMOS adjustment data, RPN compensation data	Replacement of OHB assembly (not replacing IC) Necessary (refer to "4-3-2. Alignment and Setting Required when Replacing Prism Block Assembly".)
DPR-377	IC501 (Flash)	PLD data	Replacement of the board (not replacing IC) Necessary (refer to "6-2. PLD".)
MB-1230	IC2 (EEPROM)	Model information data	Replacement of the board Remove the IC attached to the former board and replace it to the new board.
SY-450	IC404, IC405 (FRAM)	Paint data, etc	Replacement of the board (not replacing IC) Necessary (refer to "4-3-3. Alignment and Setting Required when Replacing SY-450 Board".)
	IC1102 (Flash)	PLD data	Replacement the IC or board Necessary (refer to "6-2. PLD".)
TX-154	IC355, IC356 (Flash)	PLD data	Replacement of the board (not replacing IC) Necessary (refer to "6-2. PLD".)

4-3-2. Alignment and Setting Required when Replacing Prism Block Assembly

1. Replace the OHB assembly.
   (Refer to "4-6-2. OHB Assembly".)
2. Compensate the RPN.
   (Refer to "5-6. RPN Compensation".)
3. Make electrical adjustment as needed.
   (Refer to "5. Electrical Alignment".)

4-3-3. Alignment and Setting Required when Replacing SY-450 Board

Camera setting status and files are stored in the SY-450 board. When the SY-450 board is replaced, contents of the reference file, scene file, lens file, and operator file are lost. Store these files in a USB drive and then replace the SY-450 board.
The content of the OHB file stored in the OHB assembly is not lost.

Procedure

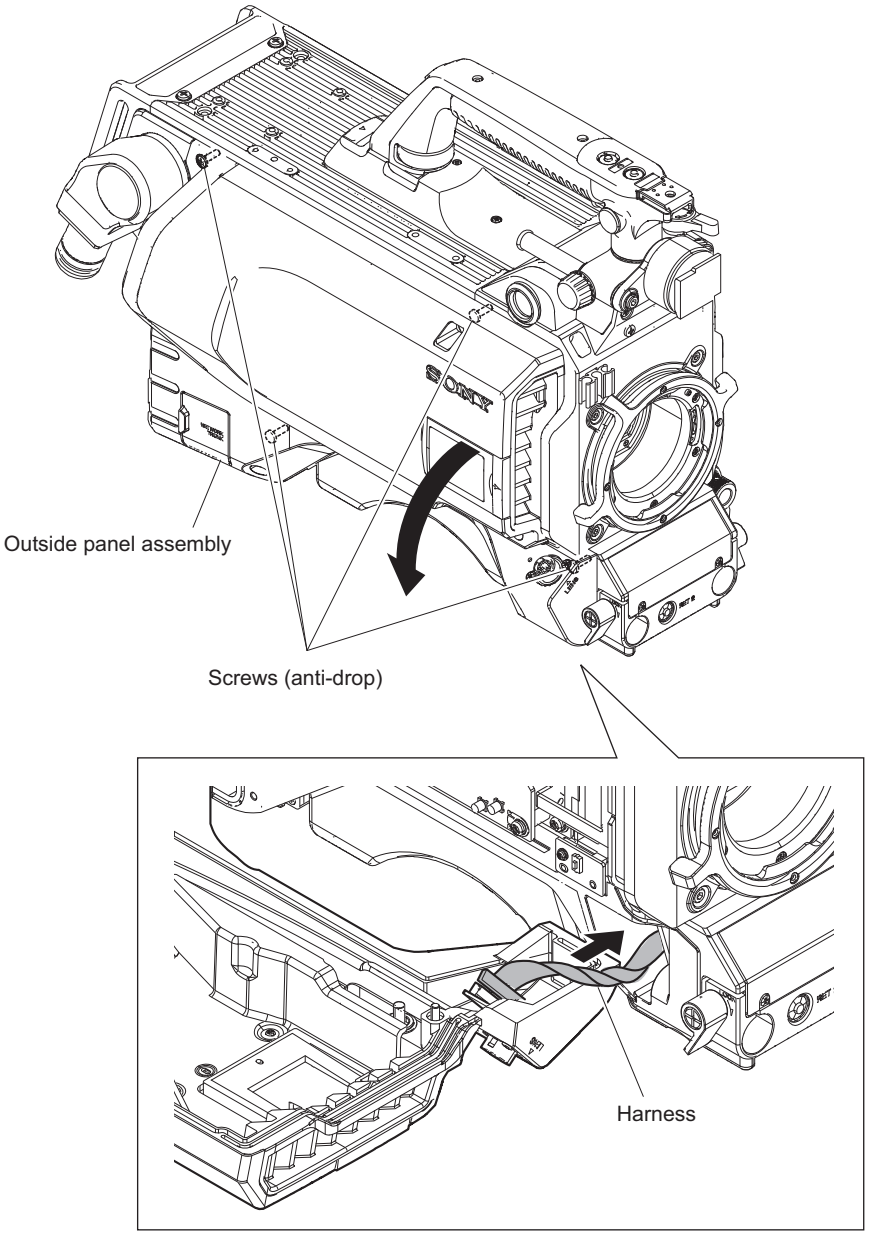
1. Store the operator file, scene file, and reference file in a USB drive.
   - Operator file (Refer to “7-2. Operator File”.)
   - Scene file (Refer to “7-4. Scene File”.)
   - Reference file (Refer to “7-5. Reference File”.)
2. Replace the SY-450 board.
   (Refer to “4-8-4. SY-450 Board, AT-189U Board”.)
3. Upgrade the PLD data.
   (Refer to “6-2. PLD”.)
4. Execute REFERENCE (ALL) on the FILE CLEAR page of the FILE menu.
   (Refer to “7-5. Reference File”.)
5. Execute STORE FILE on the REFERENCE page of the FILE menu.
   (Refer to “7-5. Reference File”.)
6. Execute the automatic adjustment.
   (Refer to “5-2. Automatic Adjustment”.)
7. Load the operator file, scene file, and reference file stored in the USB drive in step 1.
   - Operator file (Refer to “7-2. Operator File”.)
   - Scene file (Refer to “7-4. Scene File”.)
   - Reference file (Refer to “7-5. Reference File”.)
8. Readjust the lens and OHB.
   (Refer to “7-6. Lens File”, “7-7. OHB File”.)

4-4. Outside Block

4-4-1. Outside Panel Assembly

Procedure

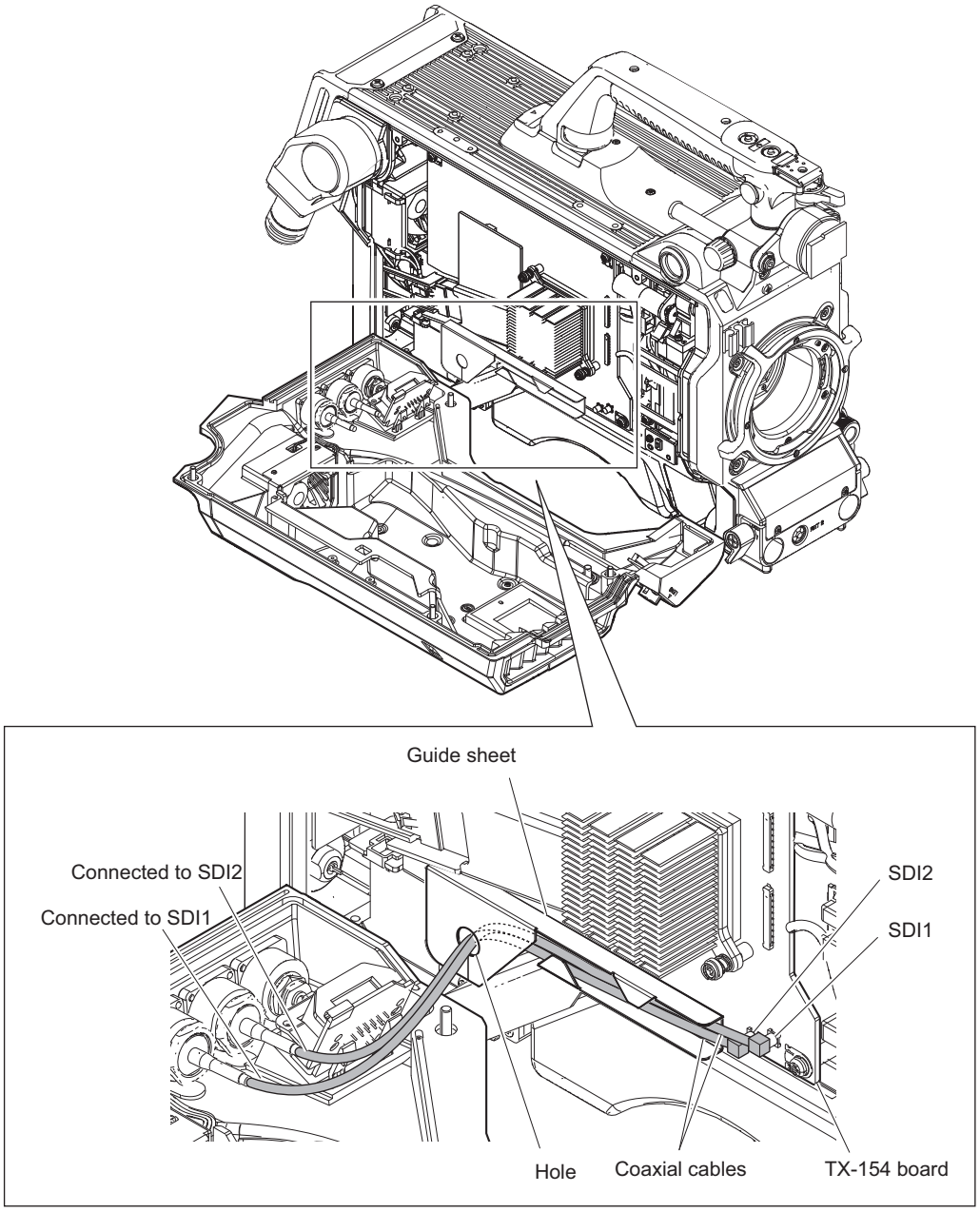
1. Loosen the four screws (anti-drop), and open the outside panel assembly in the direction of the arrow.



Note

When closing the outside panel assembly, push the harnesses to the inside of the unit not to pinch the harness.

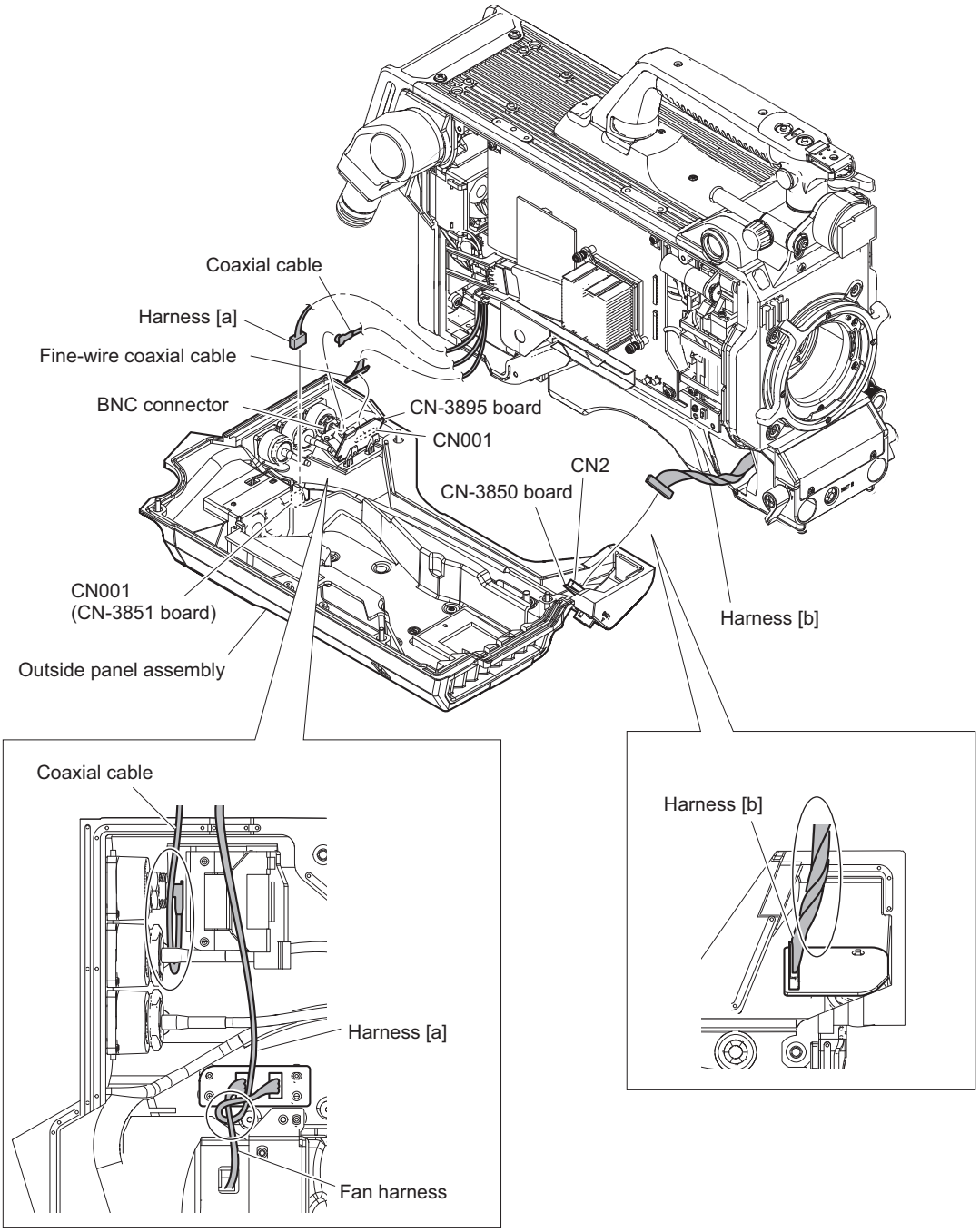
2. Disconnect the coaxial cables.
   (1) Remove the two coaxial cables from the hole of the guide sheet.
   (2) Disconnect the two coaxial cables from the two connectors (SDI1, SDI2) on the TX-154 board.



Note

When connecting the coaxial cables, arrange the coaxial cables as shown in the figure.

3. Disconnect the coaxial cable, fine-wire coaxial cable, and the harnesses.
   (1) Disconnect the fine-wire coaxial cable from the connector (CN001) on the CN-3895 board.
   (2) Disconnect the coaxial cable from the BNC connector.
   (3) Disconnect the harness [a] from the connector (CN001) on the CN-3851 board.
   (4) Disconnect the harness [b] from the connector (CN2) on the CN-3850 board.



Note

When connecting the coaxial cable and the harnesses, observe the following instructions.

- Arrange the coaxial cables as shown in the figure.
- Wind the harness [a] around the fan harness (one turn).
- Twist the harness [b] three times.

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

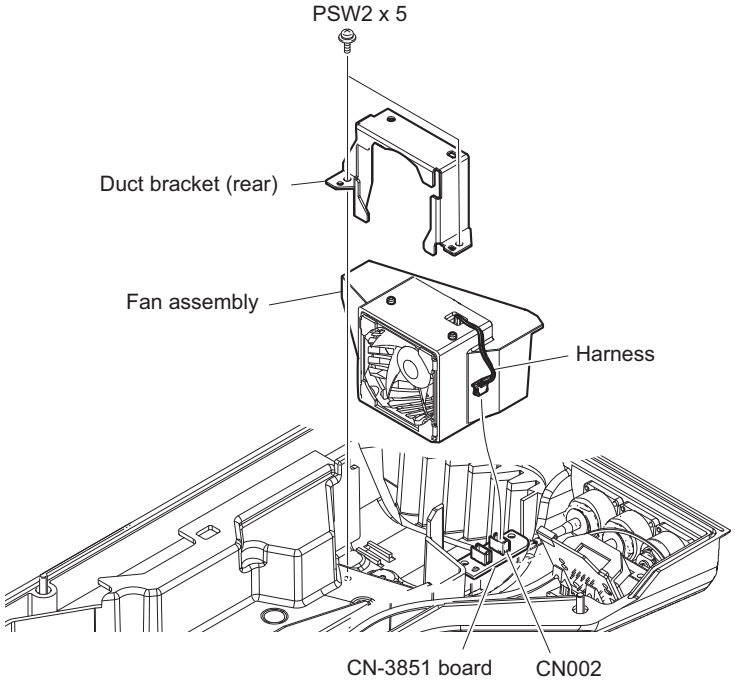
4-4-2. DC Fan (Outside Panel)

Preparation

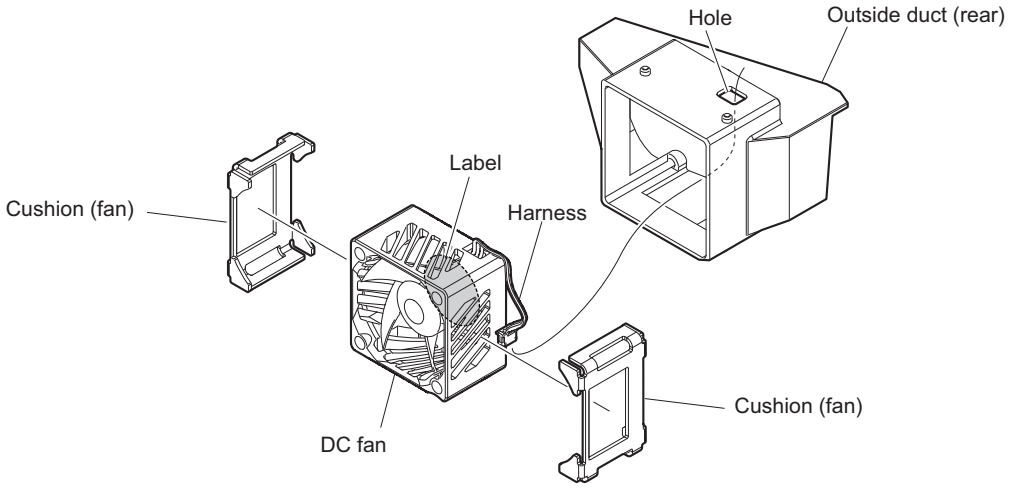
1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")

Procedure

1. Remove the fan assembly.
   (1) Disconnect the harness from the connector (CN002) on the CN-3851 board.
   (2) Remove the two screws, then remove the duct bracket (rear) and the fan assembly.



2. Remove the DC fan.
   (1) Remove the outside duct (rear) and pull out the harness from the hole.
   (2) Remove the two cushions (fan) from the DC fan.



Note

Install the DC fan carefully paying attention to the label side and the harness position.

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

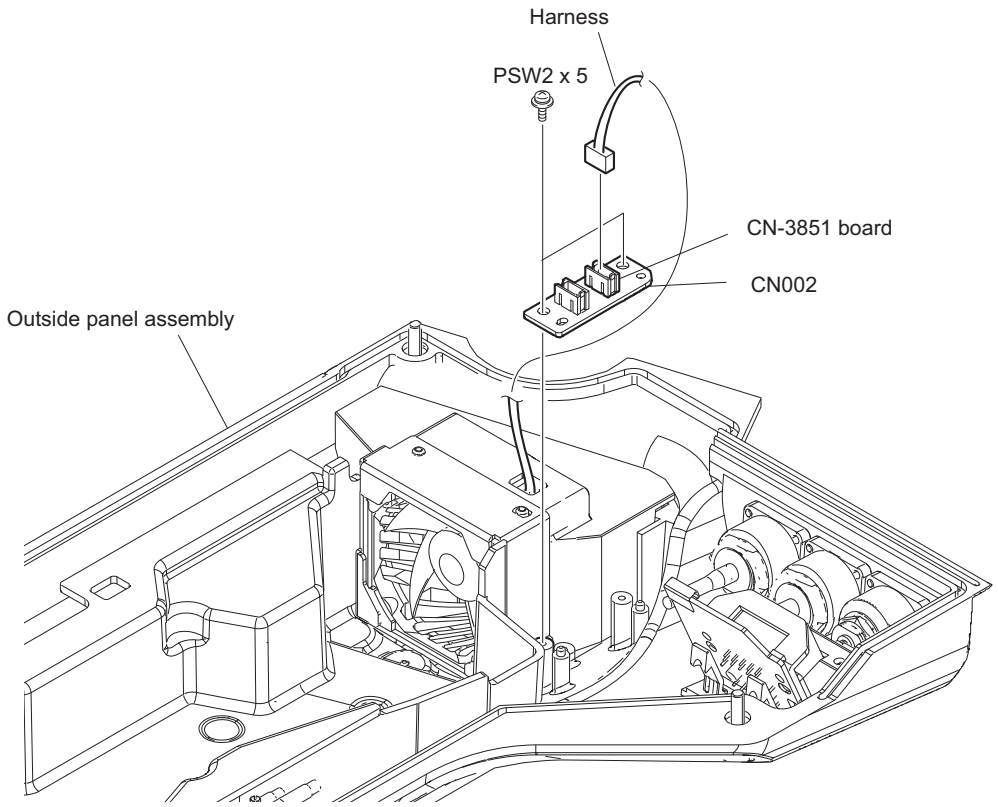
4-4-3. CN-3851 Board

Preparation

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

Procedure

1. Disconnect the harness from the connector (CN002) on the CN-3851 board.
2. Remove the two screws, then remove the CN-3851 board.



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

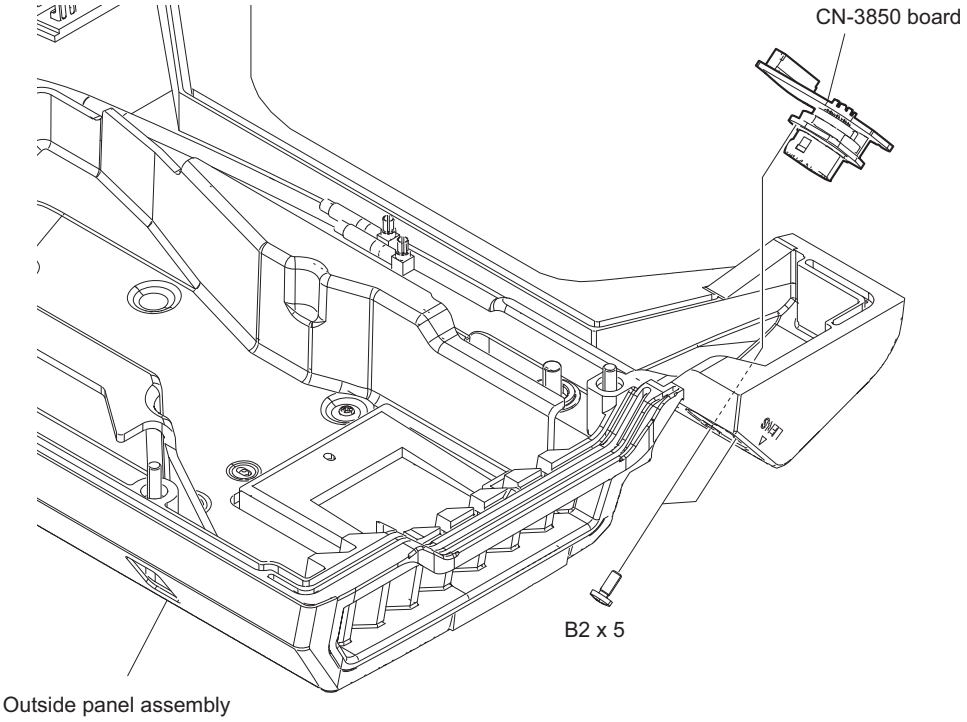
4-4-4. CN-3850 Board

Preparation

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

Procedure

1. Remove the two screws, then remove the CN-3850 board.



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

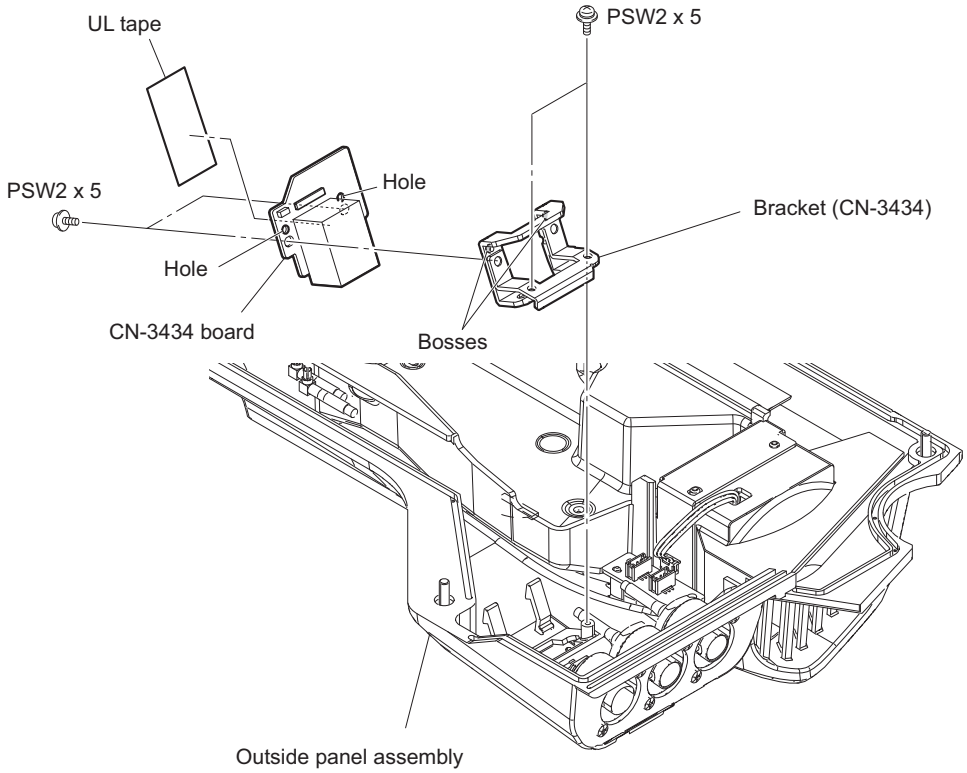
4-4-5. CN-3434 Board

Preparation

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

Procedure

1. Remove the two screws, then remove the bracket (CN-3434) and the CN-3434 board.
2. Remove the two screws, then remove the CN-3434 board from bracket (CN-3434).
3. Peel off the UL tape from the CN-3434 board.



Note

When attaching the CN-3434 board to the bracket (CN-3434), align the two holes with the two bosses.

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

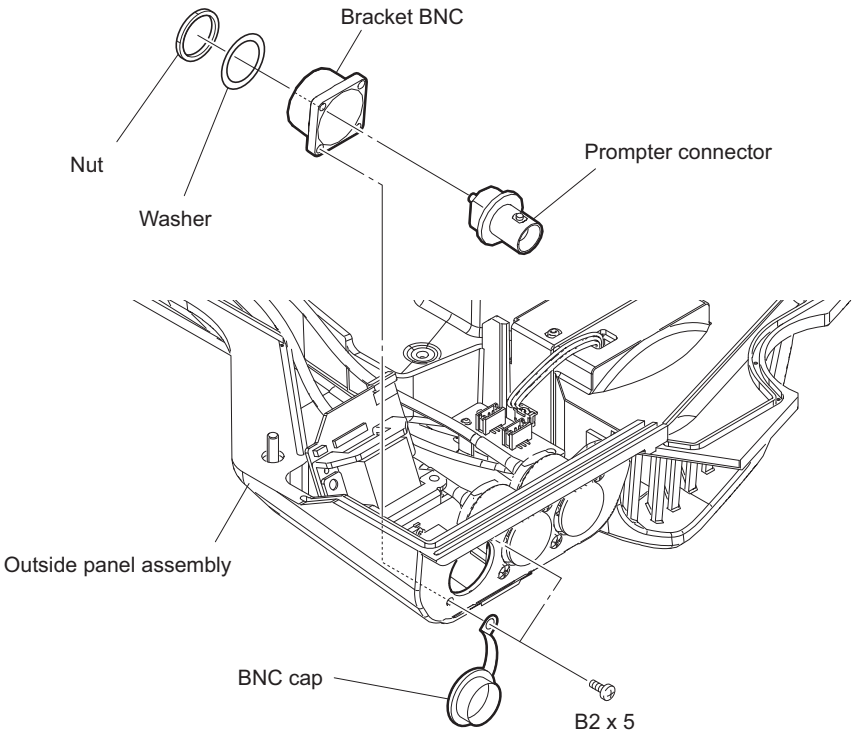
4-4-6. Prompter Connector

Preparation

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

Procedure

1. Remove the two screws, then remove the BNC cap and bracket BNC.
2. Remove the nut and washer, then remove the prompter connector.



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

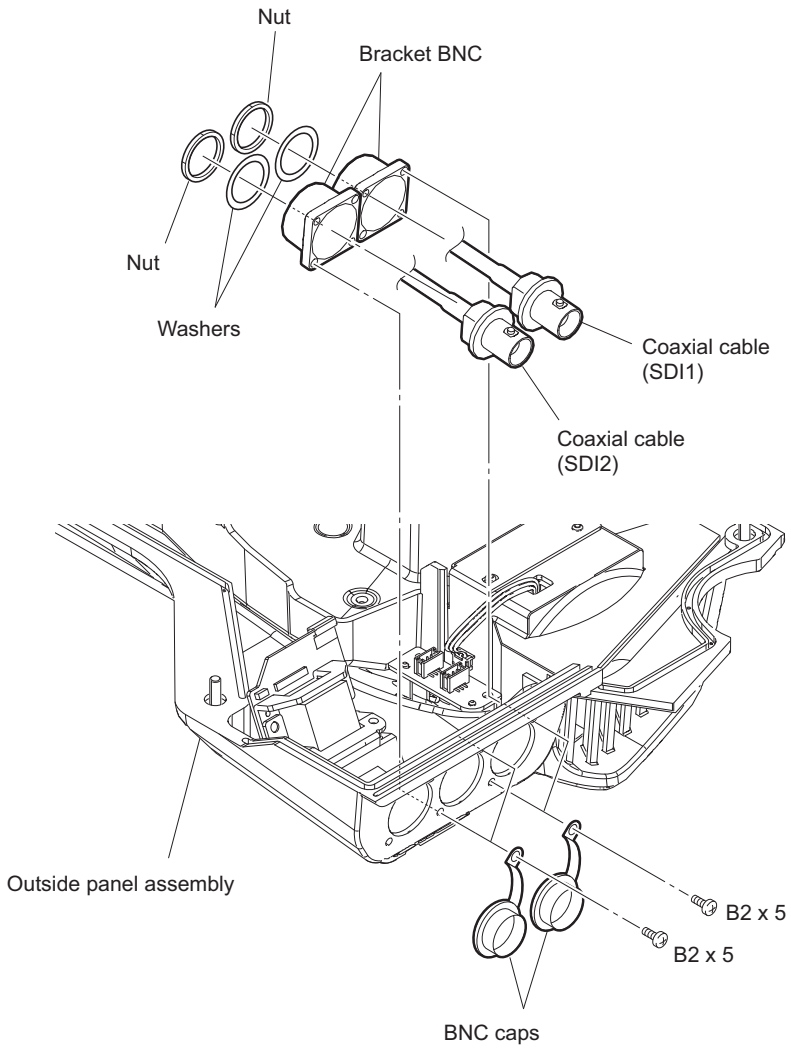
4-4-7. Coaxial Cable

Preparation

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

Procedure

1. Remove the four screws, then remove the two BNC caps and the two brackets BNC.
2. Remove the two nuts and the two washers, then remove the two coaxial cables (SDI1, 2).

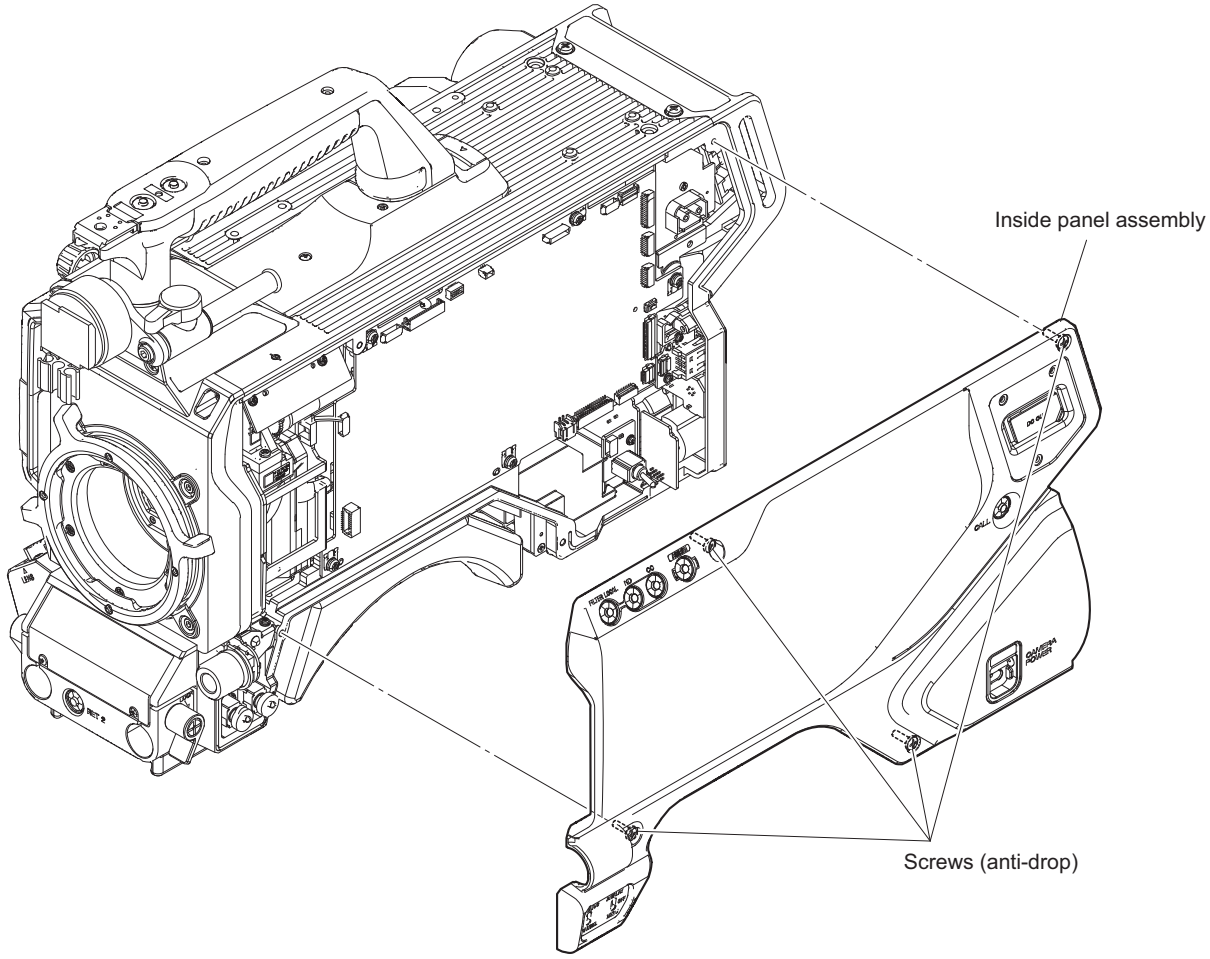


3. Install the removed parts by reversing the steps of removal.

4-5. Inside Panel Assembly

Procedure

1. Loosen the four screws (anti-drop), and remove the inside panel assembly.



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

4-6. Front Block

4-6-1. Front Assembly

Preparation

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

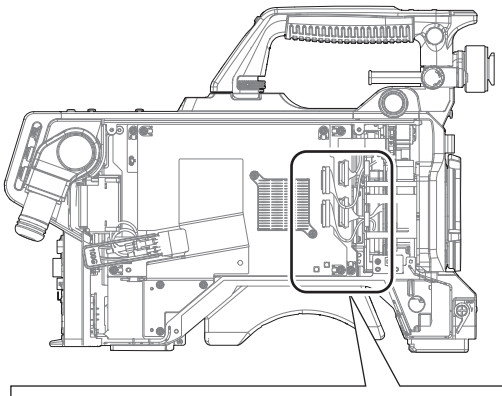
Procedure

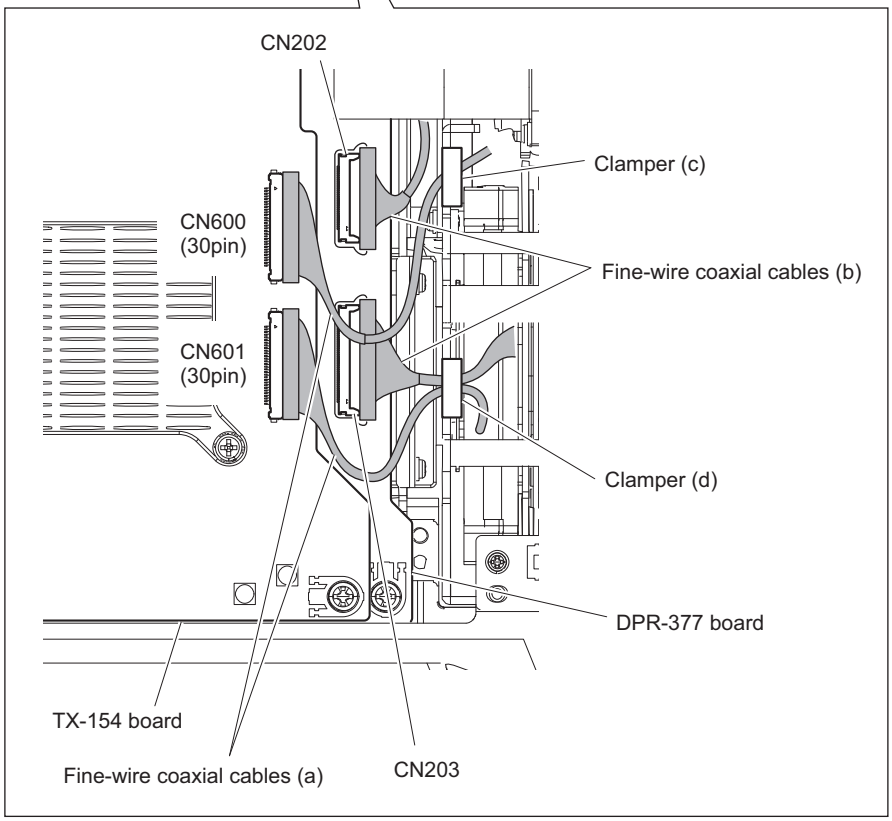
1. Disconnect the fine-wire coaxial cables.
   (1) Disconnect the two fine-wire coaxial cables (a) from the two connectors (CN600, CN601) on the TX-154 board.

   Note

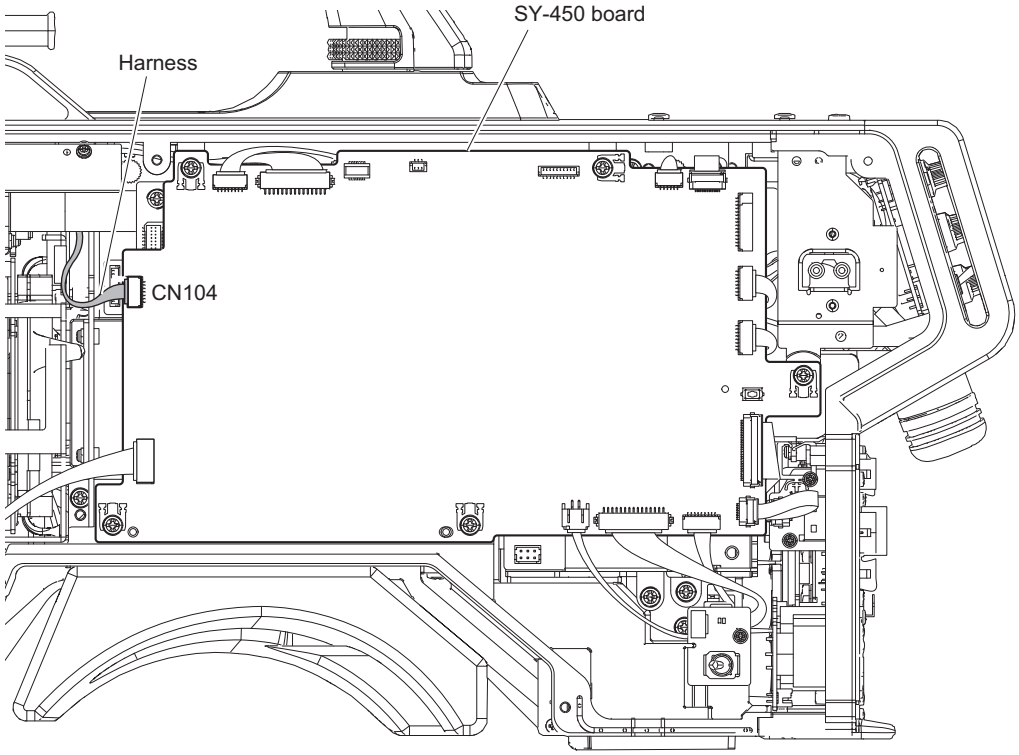
   Connect the fine-wire coaxial cable from the clamper (c) to CN600 and connect the fine-wire coaxial cable from the clamper (d) to CN601 as shown below.

   (2) Disconnect the two fine-wire coaxial cables (b) from the two connectors (CN202, CN203) on the DPR-377 board.

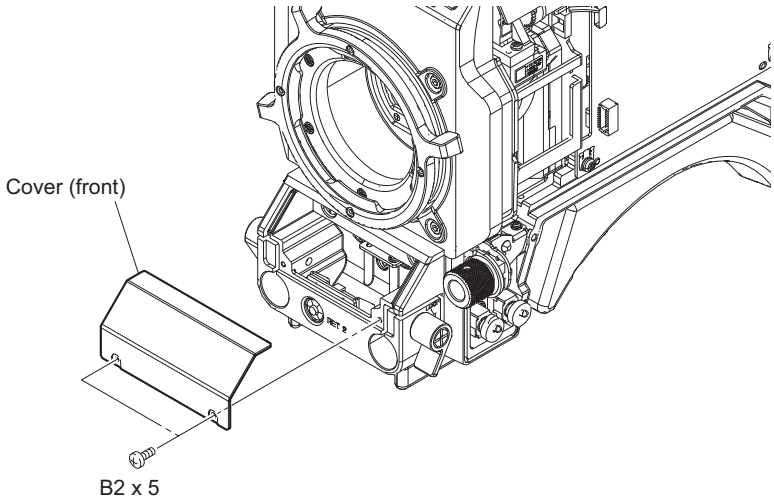




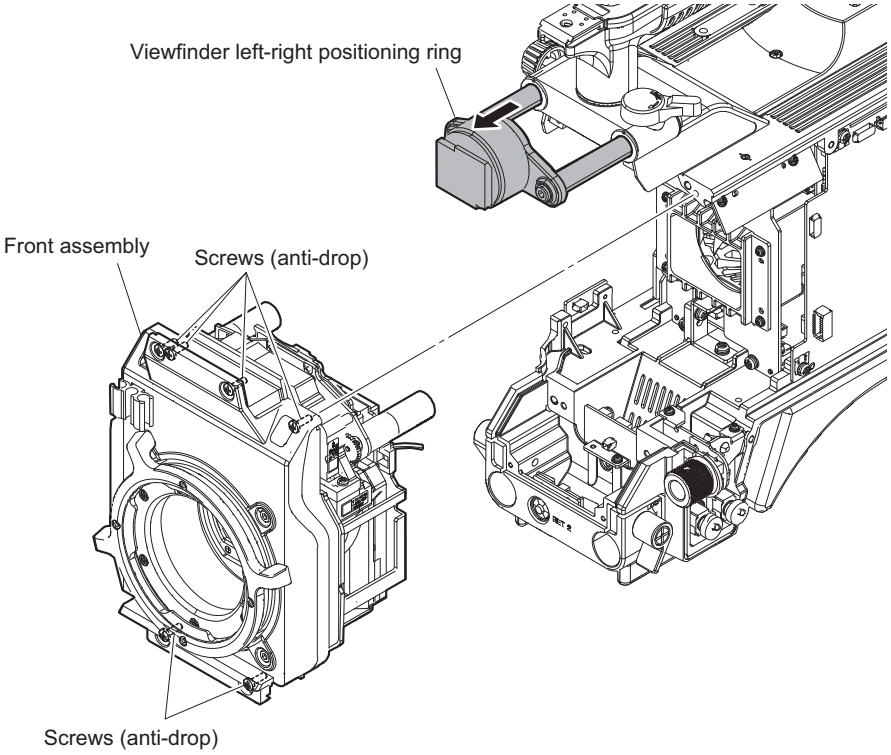
2. Disconnect the harness from the connector (CN104) on the SY-450 board.



3. Remove the two screws, then remove the cover (front).



4. Remove the front assembly.
   (1) Slide the viewfinder left-right positioning ring in the direction of the arrow.
   (2) Loosen the six screws (anti-drop) and remove the front assembly avoiding the the viewfinder left-right positioning ring. .



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

4-6-2. OHB Assembly

Tip

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

Preparation

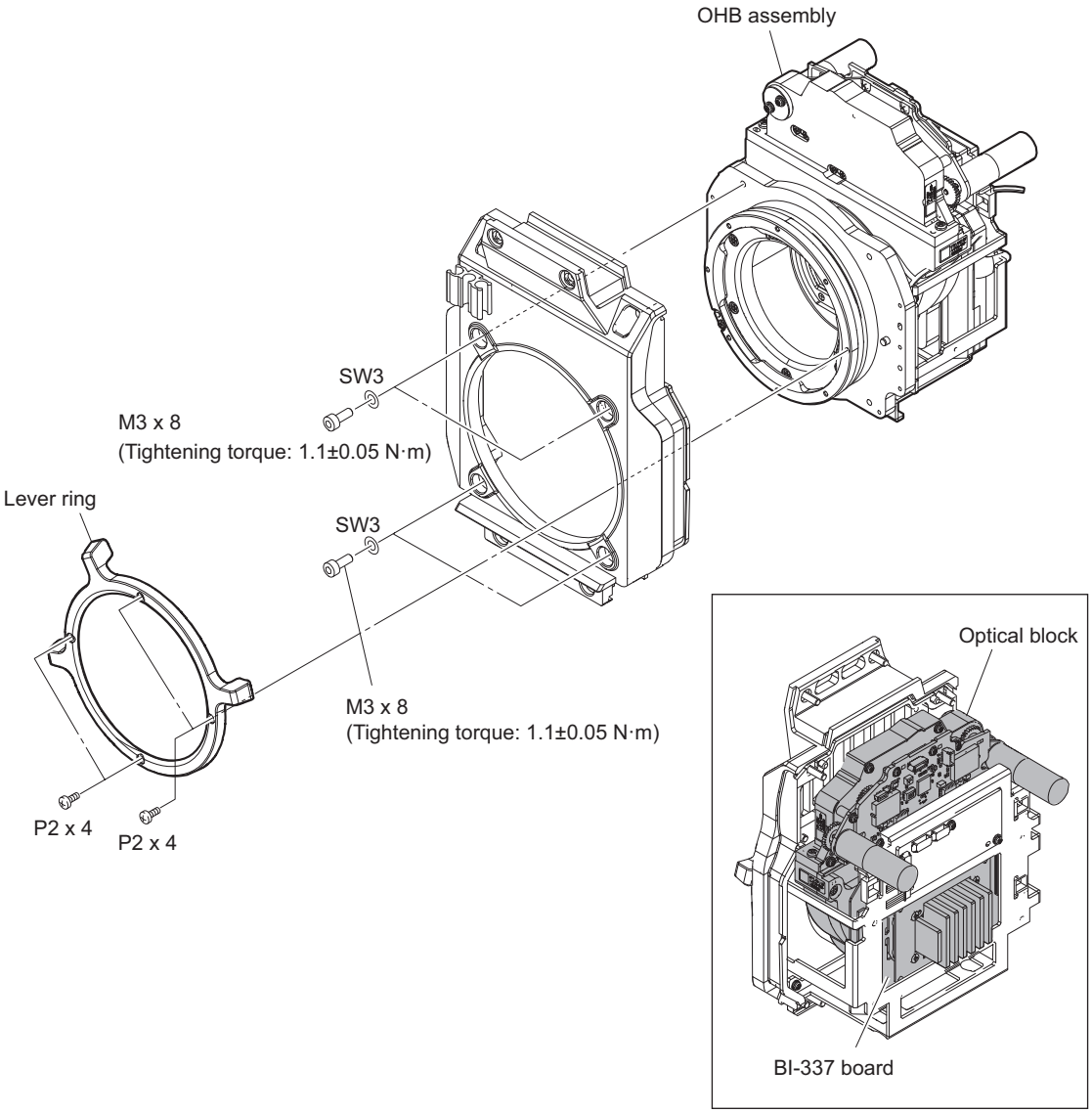
1. Remove the outside panel assembly. (Refer to “4-4-1. Outside Panel Assembly”)
2. Remove the inside panel assembly. (Refer to “4-5. Inside Panel Assembly”)
3. Remove the front assembly. (Refer to “4-6-1. Front Assembly”)

Procedure

1. Remove the four screws (P2 x 4), then remove the lever ring.
2. Remove the four hexagon socket bolts (M3 x 8) and four spring washers, then remove the OHB assembly.

   Note

   Do not touch the optical block and the BI-337 board.



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

4-6-3. IF-1305 Board

Preparation

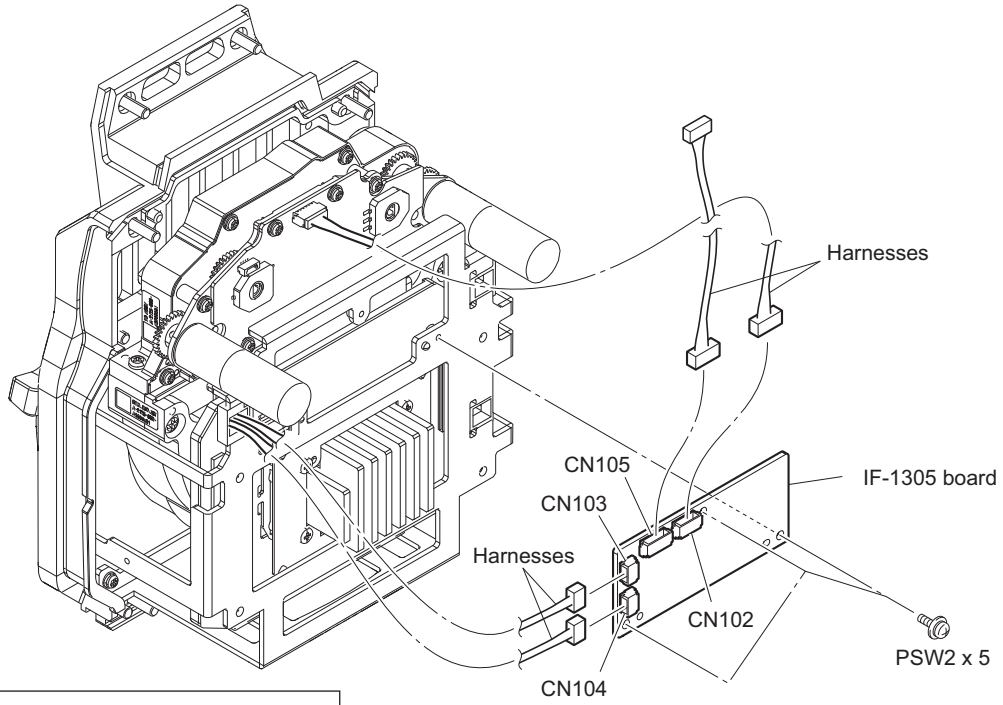
1. Remove the outside panel assembly. (Refer to “4-4-1. Outside Panel Assembly”)
2. Remove the inside panel assembly. (Refer to “4-5. Inside Panel Assembly”)
3. Remove the front assembly. (Refer to “4-6-1. Front Assembly”)

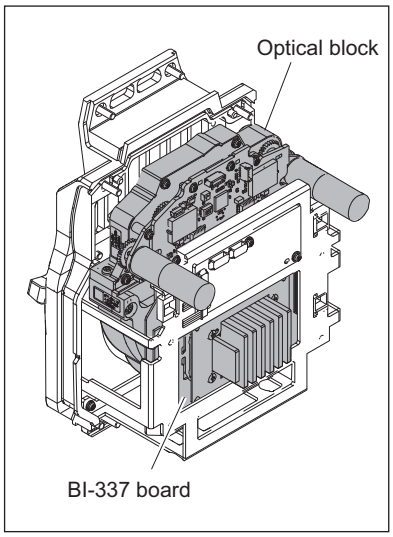
Procedure

1. Disconnect the four harnesses from the four connectors (CN102, CN103, CN104, CN105) on the IF-1305 board.
2. Remove the three screws, then remove the IF-1305 board.

Note

Do not touch the optical block and the BI-337 board.





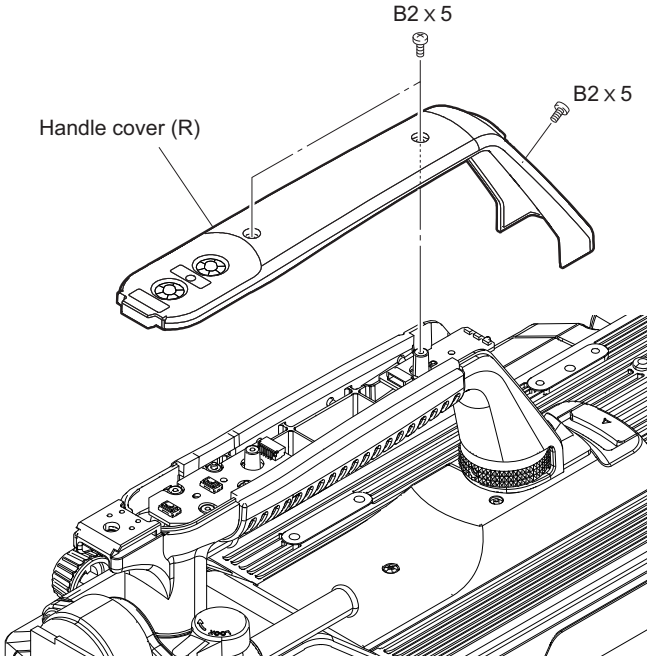
3. Install the removed parts by reversing the steps of removal.

4-7. Handle Block

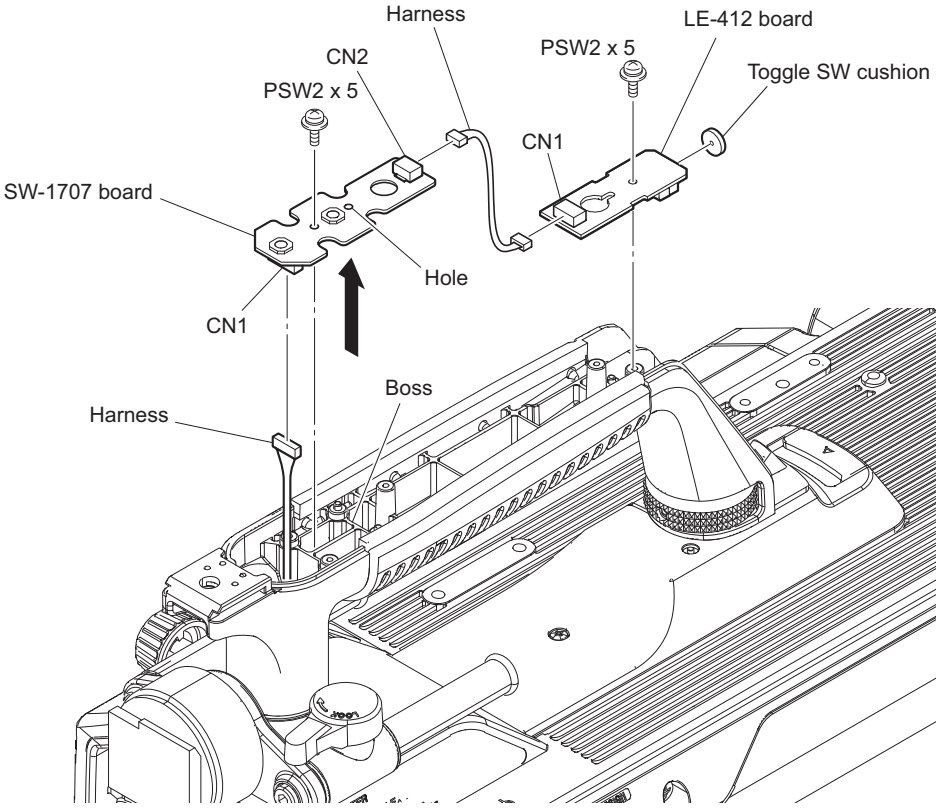
4-7-1. LE-412 Board, SW-1707 Board

Procedure

1. Remove the three screws, then remove the handle cover (R).



2. Remove the LE-412 board and the SW-1707 board.
   (1) Disconnect the harness from the connector (CN1) on the LE-412 board.
   (2) Remove the screw, then remove the LE-412 board.
   (3) Remove the toggle SW cushion.
   (4) Disconnect the harness from the connector (CN2) on the SW-1707 board.
   (5) Remove the screw, then pull up the SW-1707 board in the direction of the arrow.
   (6) Disconnect the harness from the connector (CN1) on the SW-1707 board, and remove the SW-1707 board.



Note

When attaching the SW-1707 board, align the hole with the boss.

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

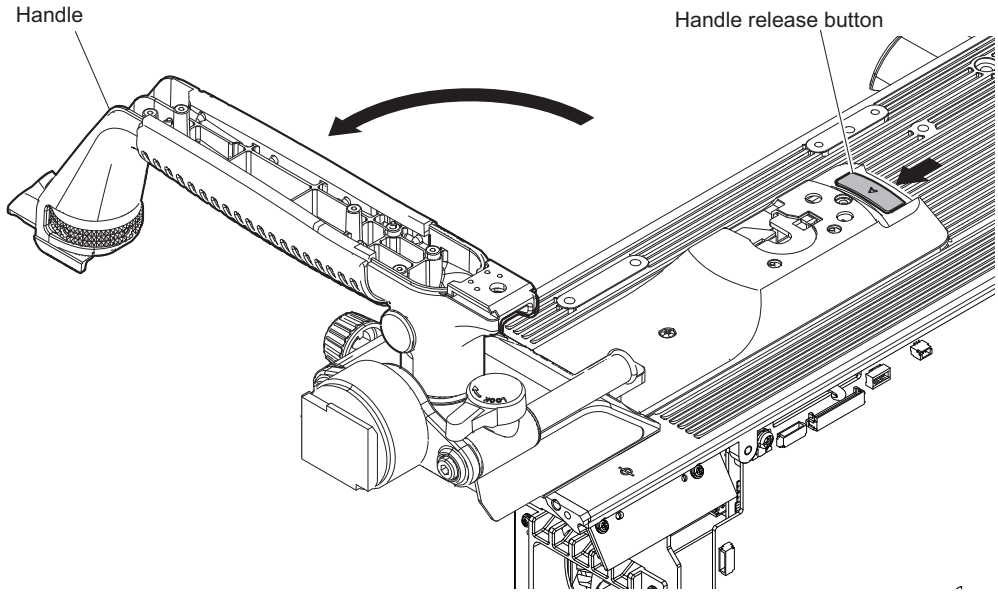
4-7-2. CN-3874 Board

Preparation

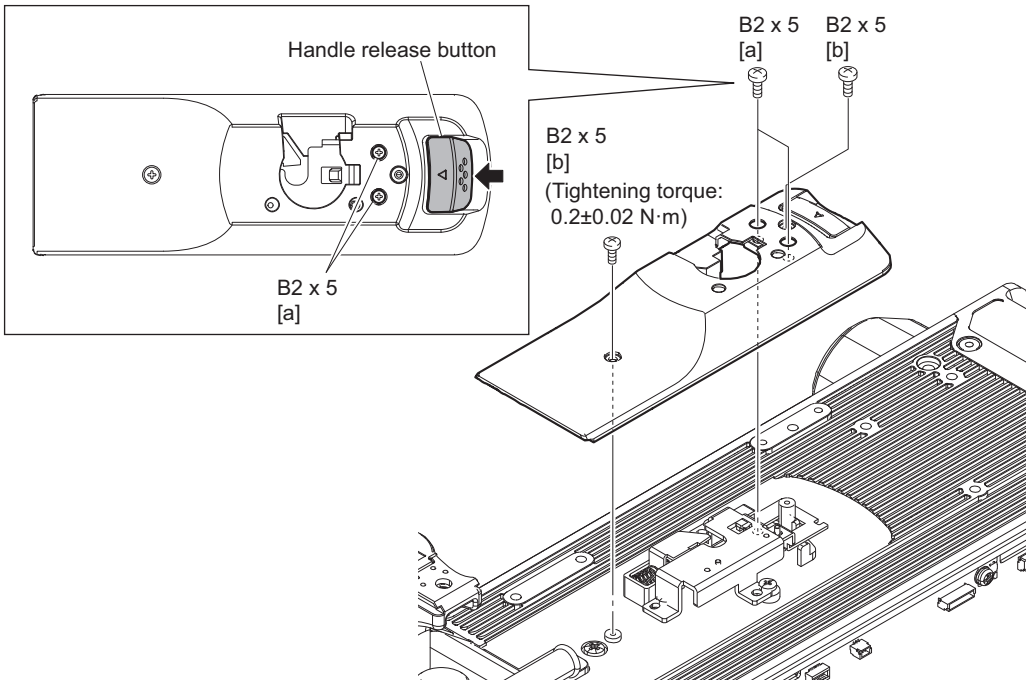
1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")
2. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")
3. Remove the front assembly. (Refer to "4-6-1. Front Assembly")
4. Remove the SW-1707 board. (Refer to "4-7-1. LE-412 Board, SW-1707 Board")

Procedure

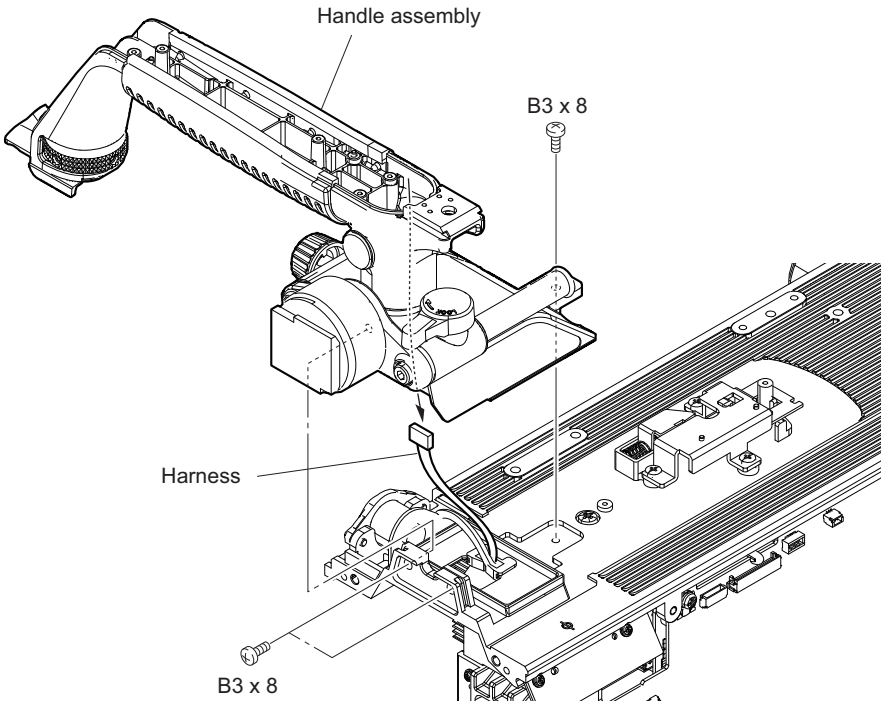
1. Press the handle release button and turn the handle in the direction of the arrow.



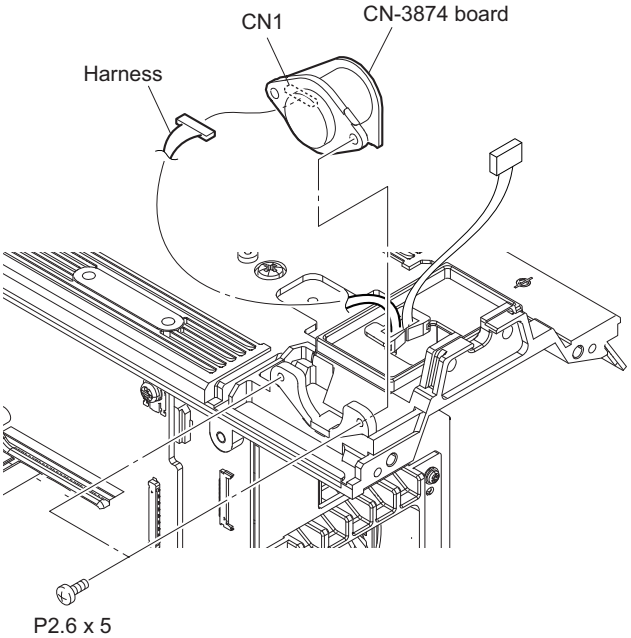
2. Remove the screws.
   (1) Press the handle release button and remove the two screws [a].
   (2) Remove the two screws [b].



3. Remove the handle assembly.
   (1) Remove the three screws.
   (2) Pull up the handle assembly and pull out the harness.



4. Remove the CN-3874 board.
   (1) Disconnect the harness from the connector (CN1) on the CN-3874 board.
   (2) Remove the two screws, then remove the CN-3874 board.



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

4-8. Main Chassis Block

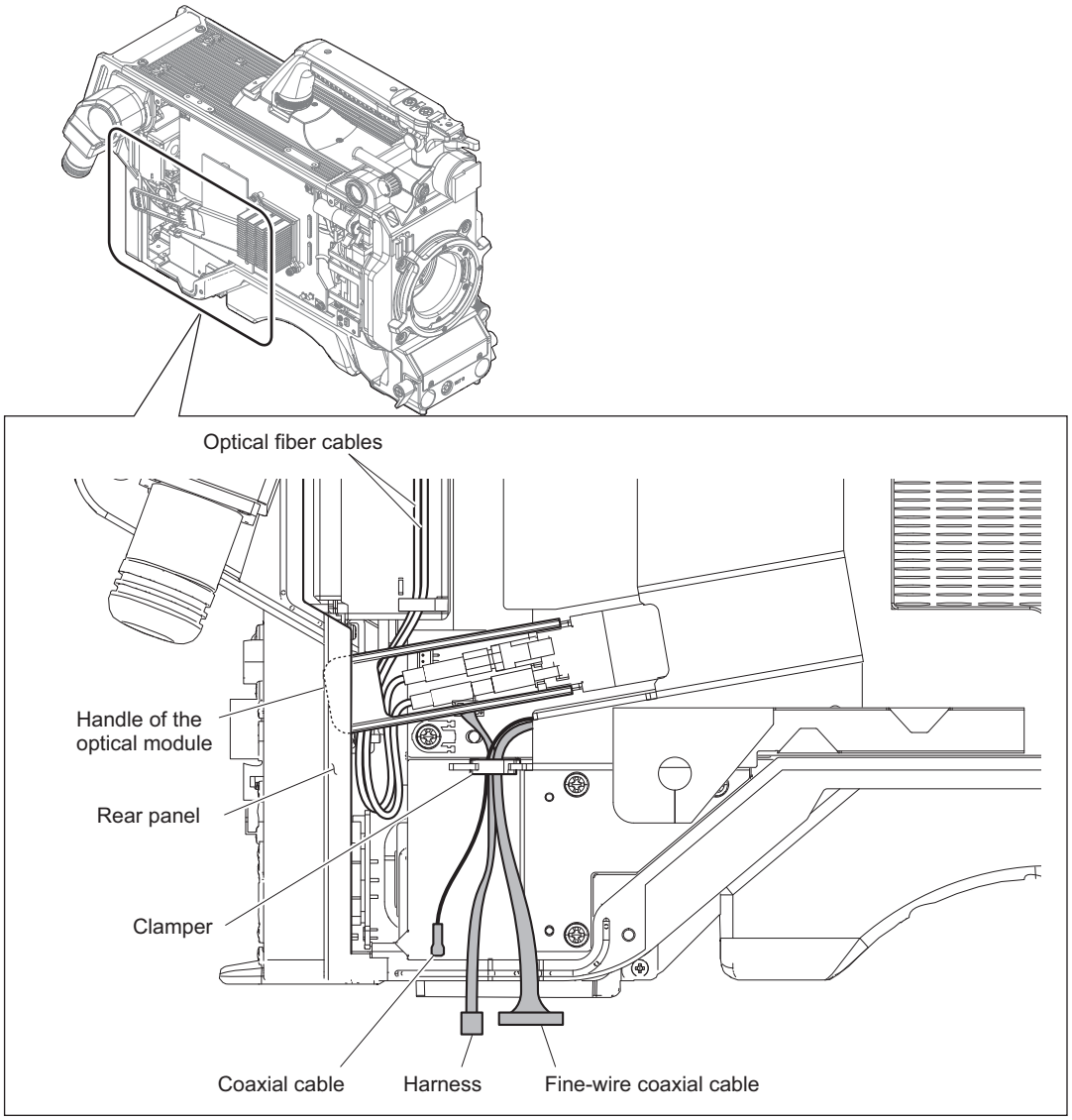
4-8-1. Optical Module

Preparation

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

Procedure

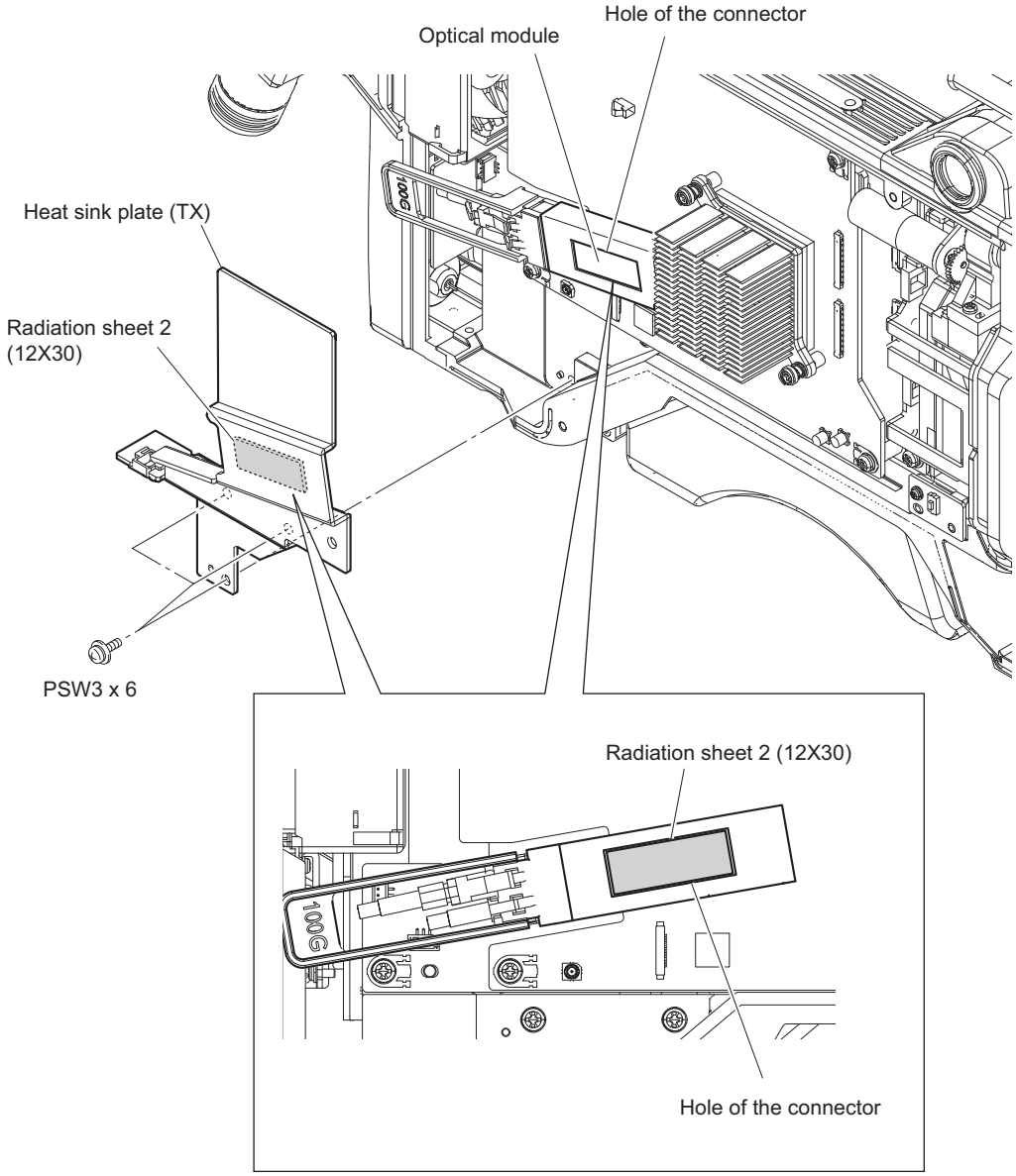
1. Disconnect the cables.
   (1) Pull the handle of the optical module out of the rear panel.
   (2) Release the harness, coaxial cable, and the fine-wire coaxial cable from the clamper.



Note

When inserting the optical module handle into the inside of the rear panel, push the two optical fiber cables to the inside of the unit and hold them with the optical module handle.

2. Remove the three screws, then remove the heat sink plate (TX).



Note

When attaching the heatsink plate (TX), remove the radiation sheet 2 (12X30) from the heat sink plate (TX) and stick it to the optical module through the connector hole.

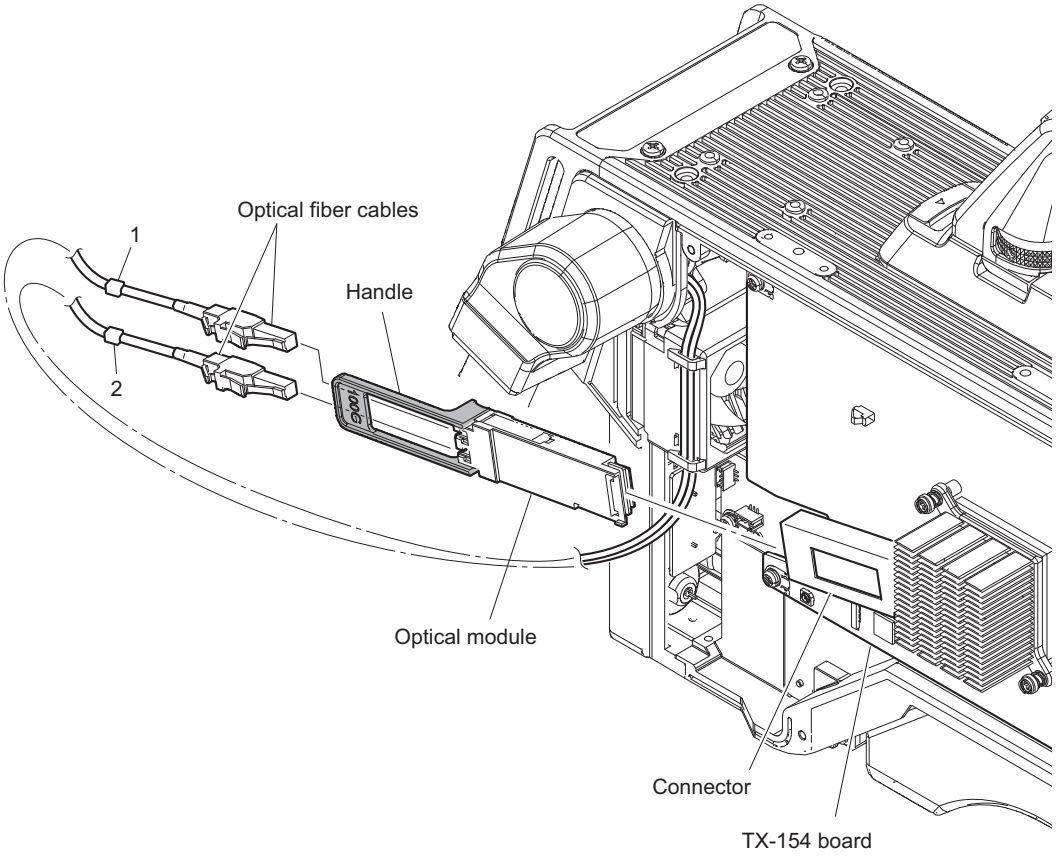
3. Remove the optical module.
   - If optical fiber cable is bent or pulled strongly, it may be disconnected. Handle optical fiber cables carefully.
   - Do not touch the tip of optical fiber cable connector. This may result in deterioration of signals.

   (1) Disconnect the two optical fiber cables from the optical module.

   Note

   When connecting the optical fiber cables, check their numbers and connect them correctly and securely insert them to the end of respective connectors.

   (2) Pull the handle of the optical module to disconnect the optical module from the connector on the TX-154 board.



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

4-8-2. TX-154 Board

Preparation

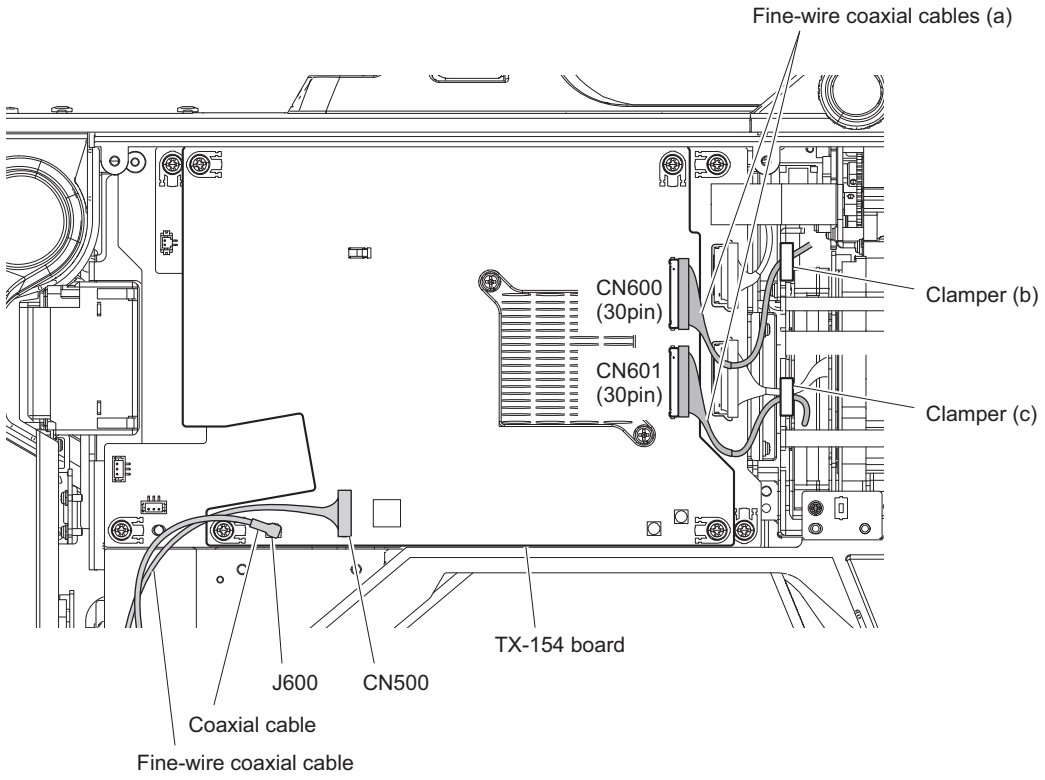
1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")
2. Remove the optical module. (Refer to "4-8-1. Optical Module")

Procedure

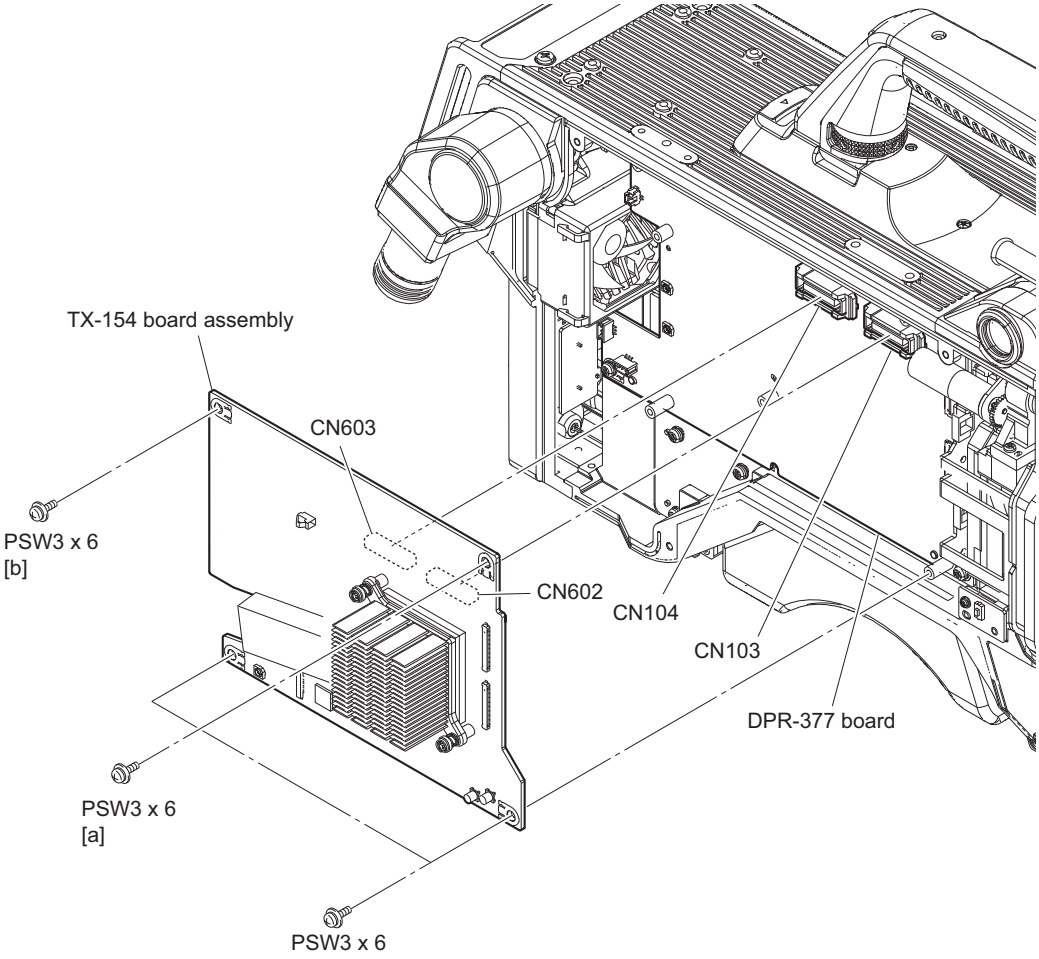
1. Disconnect the coaxial cables, and the fine-wire coaxial cables.
   (1) Disconnect the coaxial cable and the fine-wire coaxial cable from the two connectors (J600, CN500) on the TX-154 board.
   (2) Disconnect the two fine-wire coaxial cables from the two connectors (CN600, CN601) on the TX-154 board.

   Note

   Connect the fine-wire coaxial cable from the clamper (b) to CN600 and connect the fine-wire coaxial cable from the clamper (c) to CN601 as shown below.



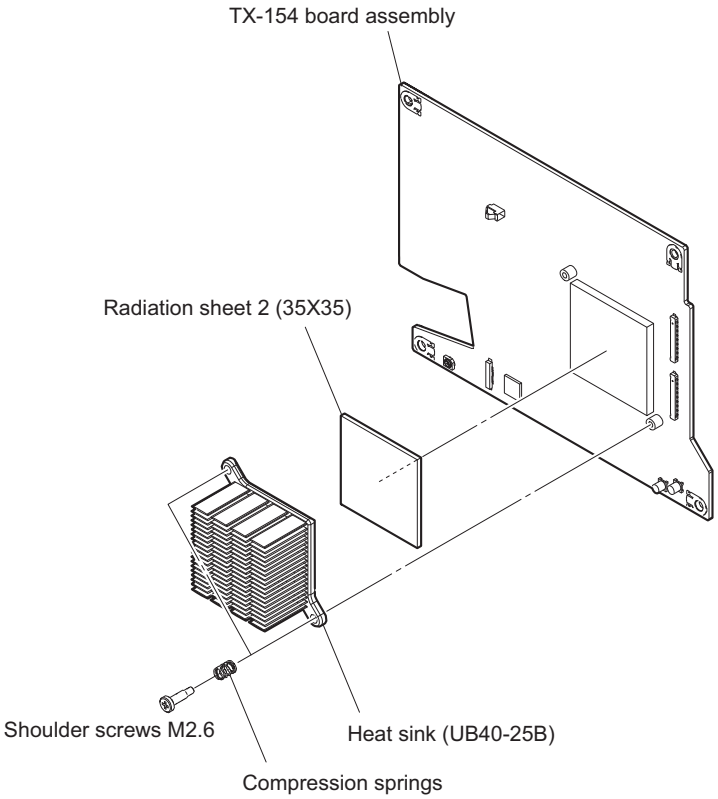
2. Remove the four screws, then remove the TX-154 board assembly from the two connectors (CN103, CN104) on the DPR-377 board.



Note

When installing the TX-154 board assembly, tighten the screws in the following sequence: (a), (b) and others.

3. Remove the two shoulder screws (M2.6), then remove the two compression springs, the heat sink(UBL40-25B) and the radiation sheet 2(35x35).



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

4-8-3. DPR-377 Board

Preparation

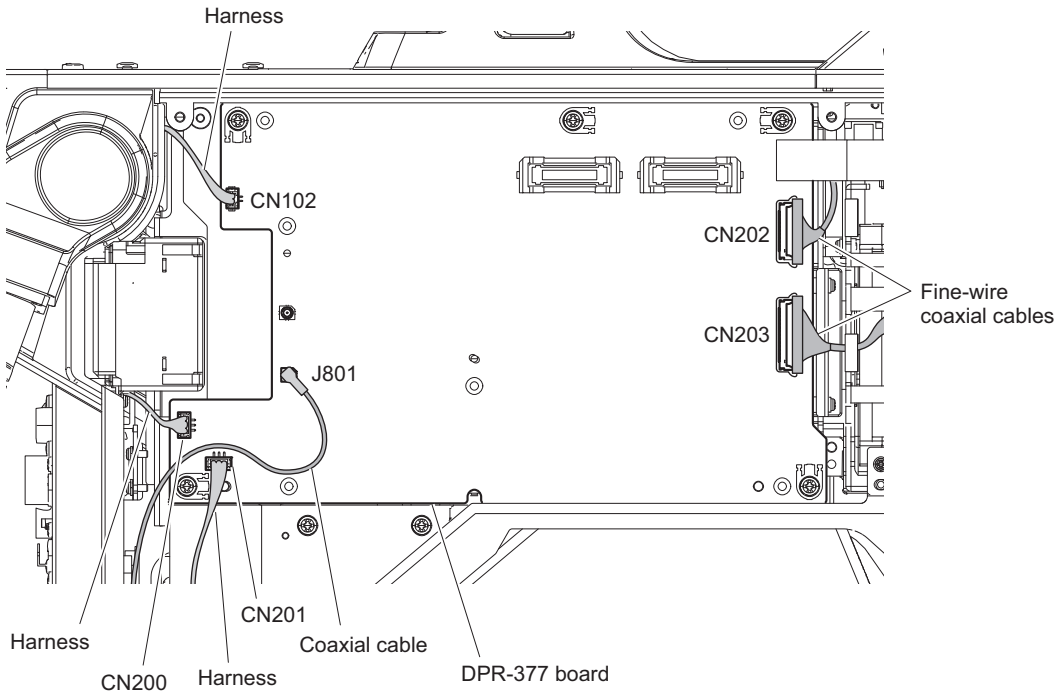
1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")
2. Remove the optical module. (Refer to "4-8-1. Optical Module")
3. Remove the TX-154 board. (Refer to "4-8-2. TX-154 Board")

Procedure

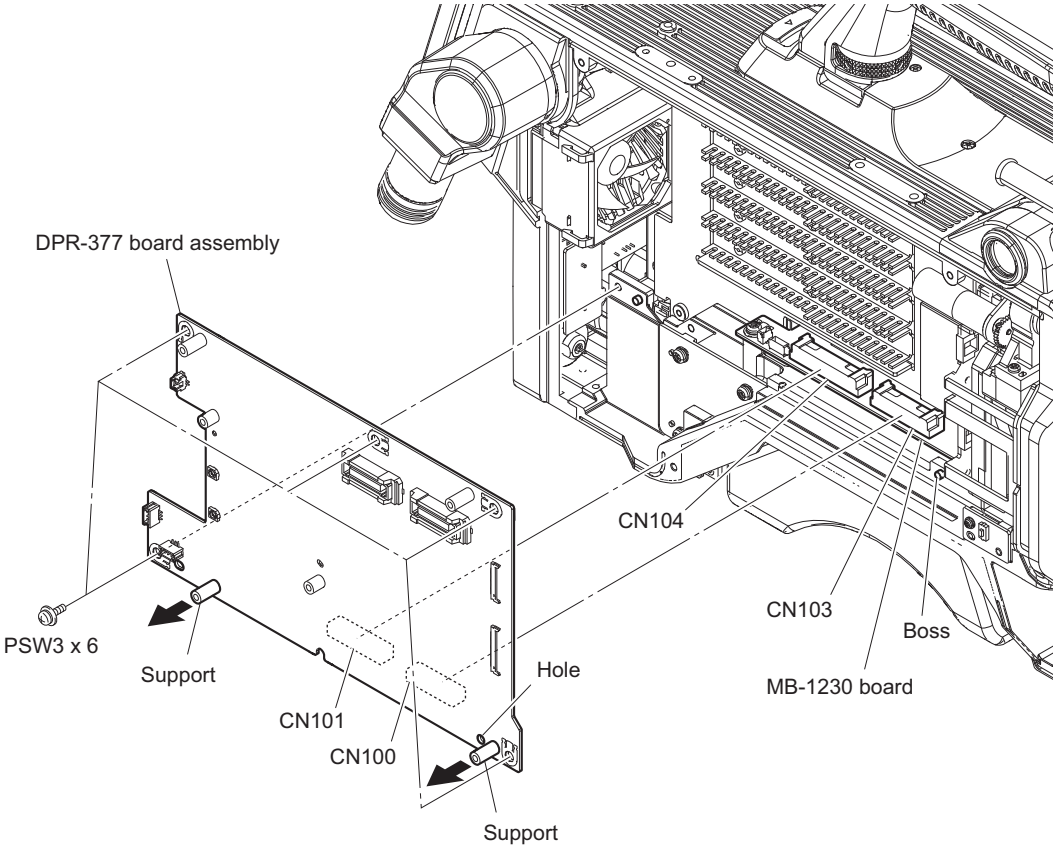
1. Disconnect the harnesses, coaxial cables, fine-wire coaxial cables.
   (1) Disconnect the two fine-wire coaxial cables from the two connectors (CN202, CN203) on the DPR-377 board.
   (2) Disconnect the three harnesses and the coaxial cable from the four connectors (CN102, CN200, CN201, J801) on the DPR-377 board.

   Note

   When connecting the coaxial cable, arrange the coaxial cable as shown in the figure.



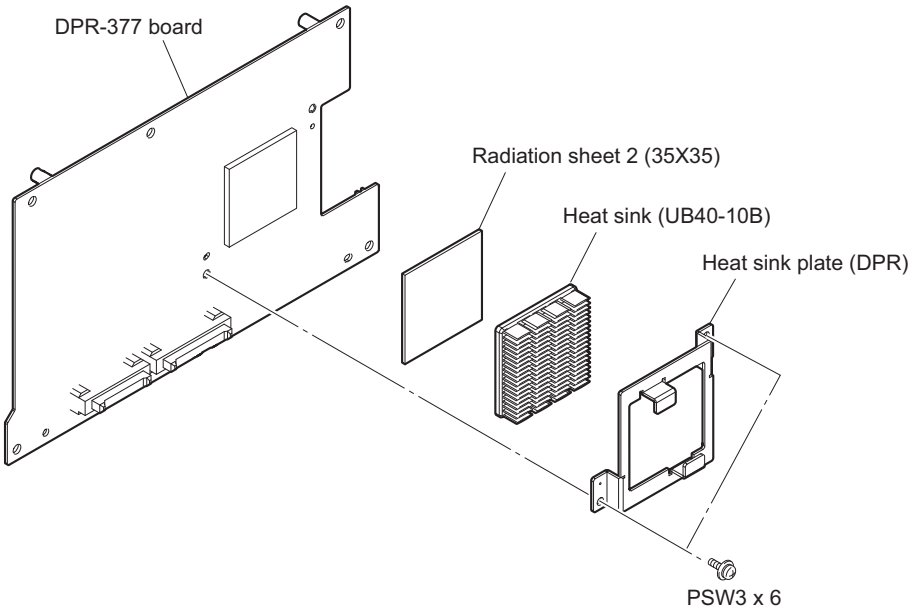
2. Remove the DPR-377 board assembly.
   (1) Remove the five screws.
   (2) Pull the two supports and remove the DPR-377 board assembly from the two connectors (CN103, CN104) on the MB-1230 board.



Note

When attaching the DPR-377 board, align the hole with the boss.

3. Remove the two screws, the heat sink plate (DPR), the heat sink (UBL40-10B) and the radiation sheet 2 (35X35).



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

4-8-4. SY-450 Board, AT-189U Board

Preparation

1. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")

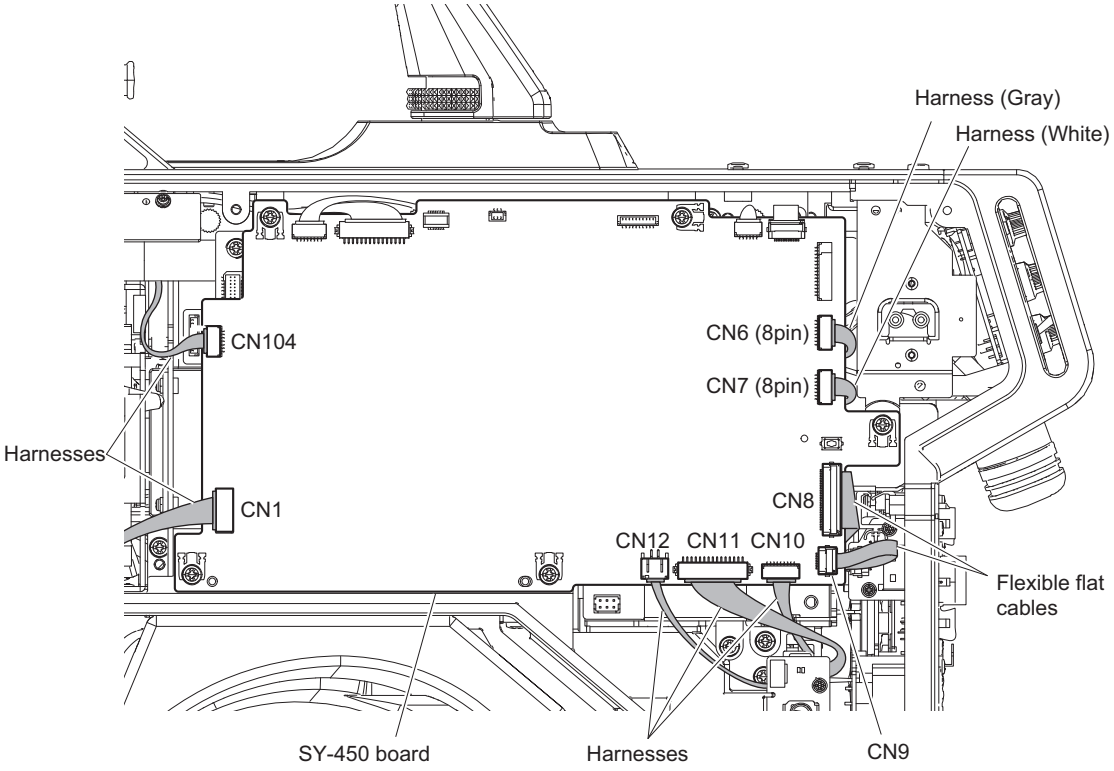
Procedure

1. Disconnect the harnesses and the flexible flat cables.
   (1) Disconnect the seven harnesses from the seven connectors (CN1, CN6, CN7, CN10, CN11, CN12, CN104) on the SY-450 board.

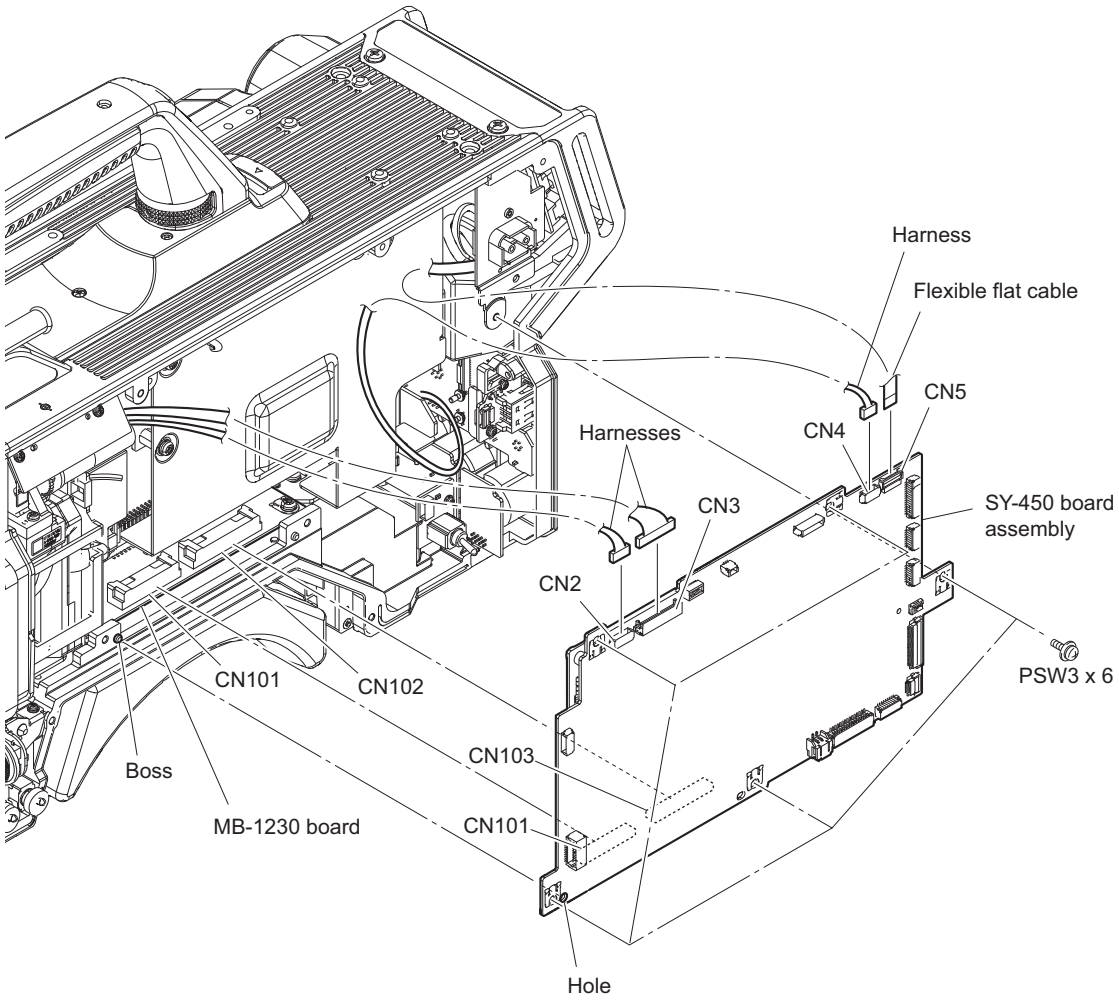
   Note

   When connecting the two harnesses (gray, white), connect the harness (gray) to CN6 and connect the harness (white) to CN7 as shown below.

   (2) Disconnect the two flexible flat cables from the two connectors (CN8, CN9) on the SY-450 board.



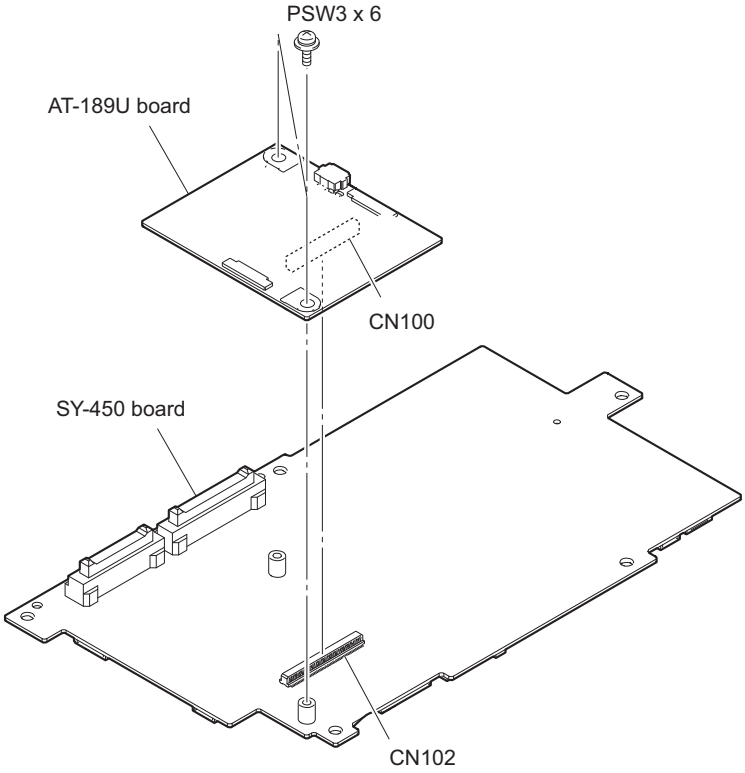
2. Remove the SY-450 board assembly.
   (1) Remove the five screws.
   (2) Disconnect the two connectors (CN101, CN103) on the SY-450 board from the two connectors (CN101, CN102) on the MB-1230 board, and draw the SY-450 board assembly.
   (3) Disconnect the three harnesses and the flexible flat cable from the four connectors (CN2, CN3, CN4, CN5) on the SY-450 board.



Note

When attaching the SY-450 board assembly, align the boss with the hole.

3. Remove the two screws, then remove the AT-189U board from the connector (CN102) on the SY-450 board.



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

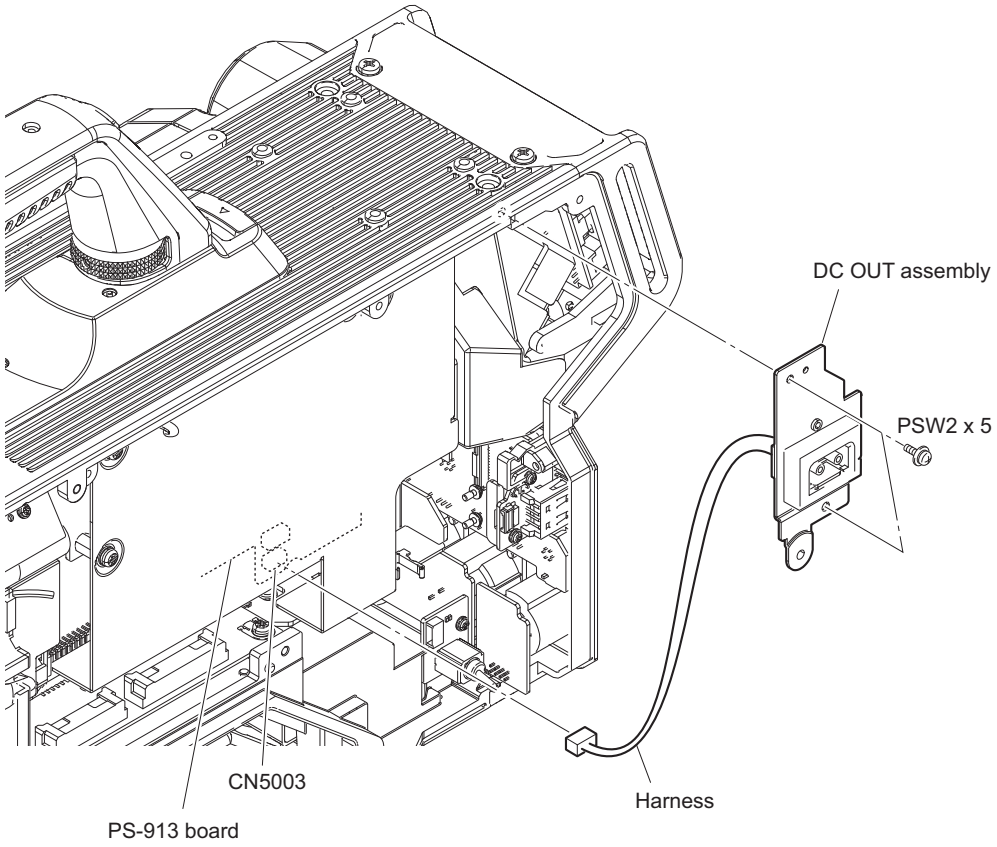
4-8-5. Power Block, PS-913 Board, RE-338 Board

Preparation

1. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")
2. Remove the SY-450 board assembly. (Refer to "4-8-4. SY-450 Board, AT-189U Board")

Procedure

1. Remove the DC OUT assembly.
   (1) Disconnect the harness from the connector (CN5003) on the PS-913 board.
   (2) Remove the two screws, then remove the DC OUT assembly.

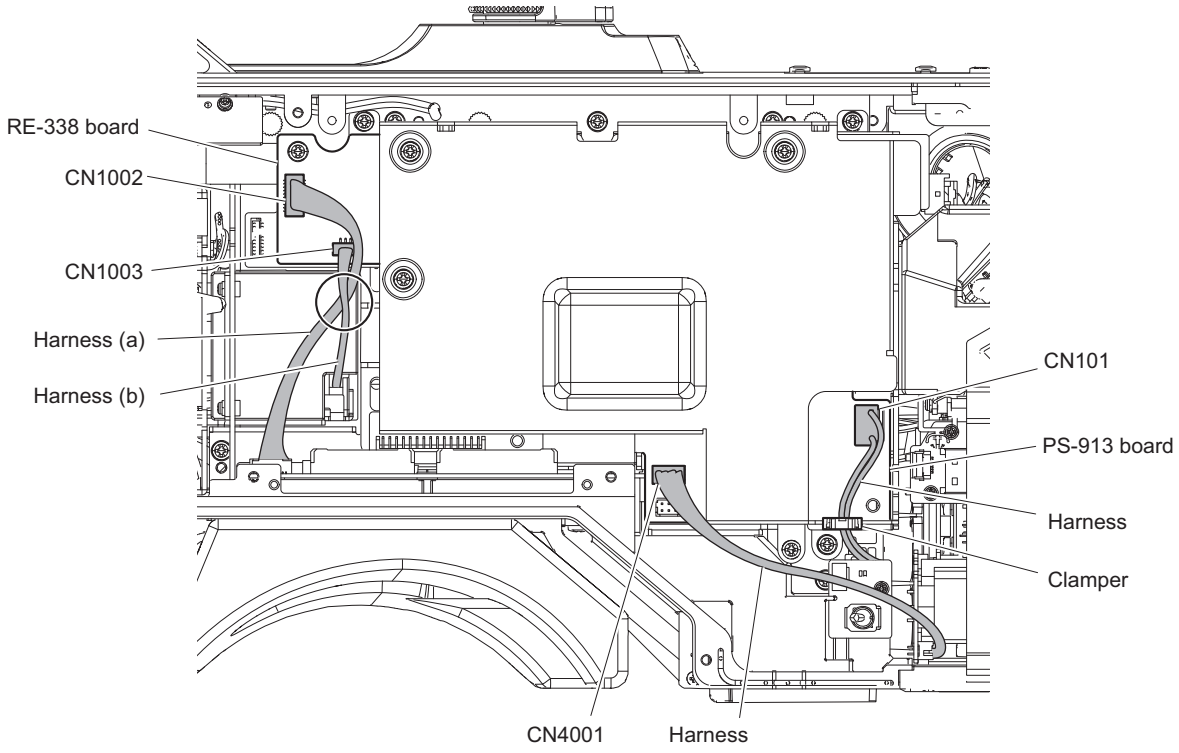


2. Disconnect the harnesses.
   (1) Disconnect the harnesses (a) and (b) from the two connectors (CN1002, CN1003) on the RE-338 board.

   Note

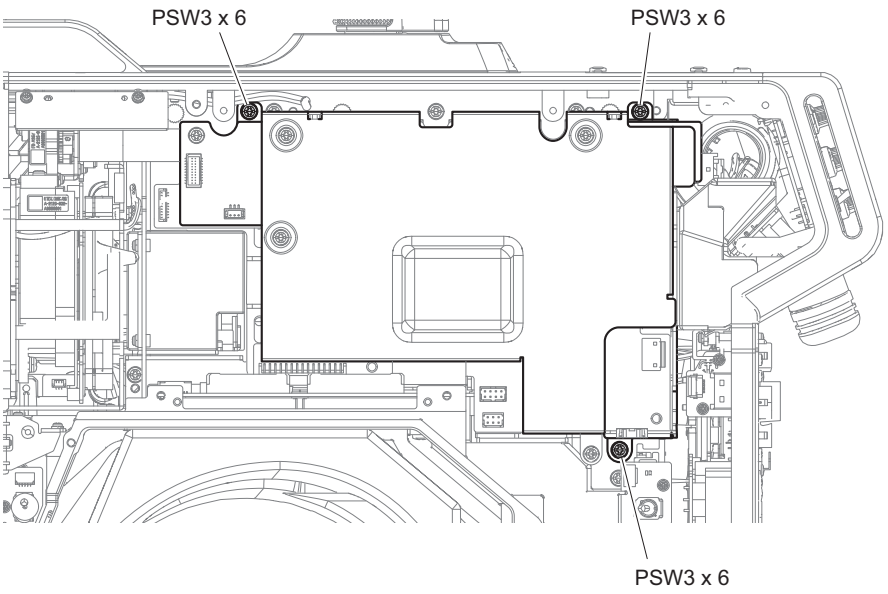
   When connecting the harnesses (a) and (b), arrange the harnesses as shown in the figure.

   (2) Disconnect the harness from the connector (CN4001) on the PS-913 board.
   (3) Disconnect the harness from the connector (CN101) on the PS-913 board, and release harness from the clamper.

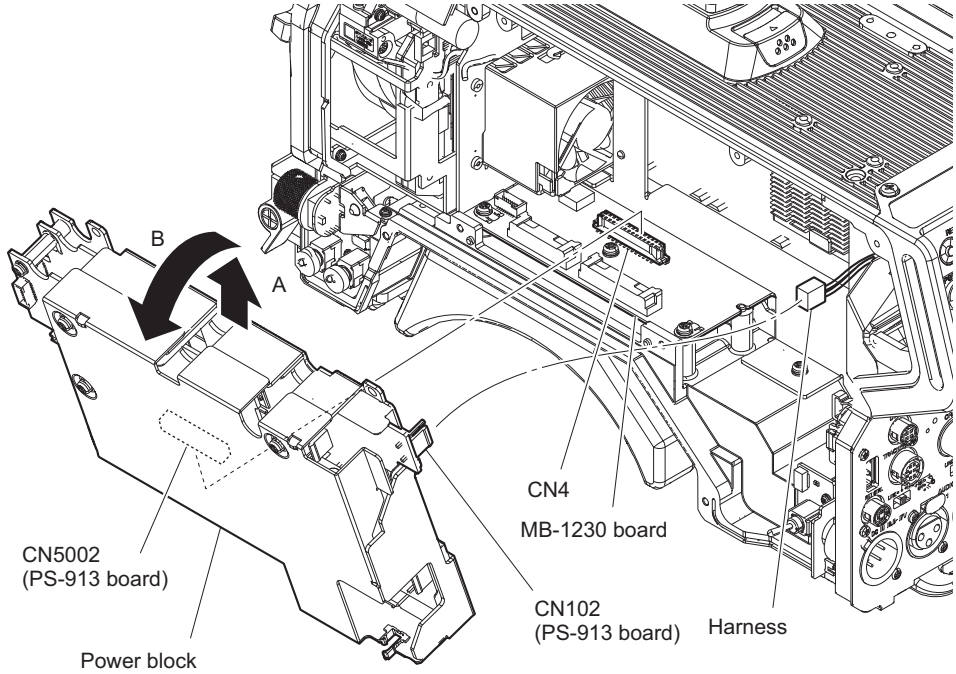


3. Remove the power block.
   (1) Remove the three screws.

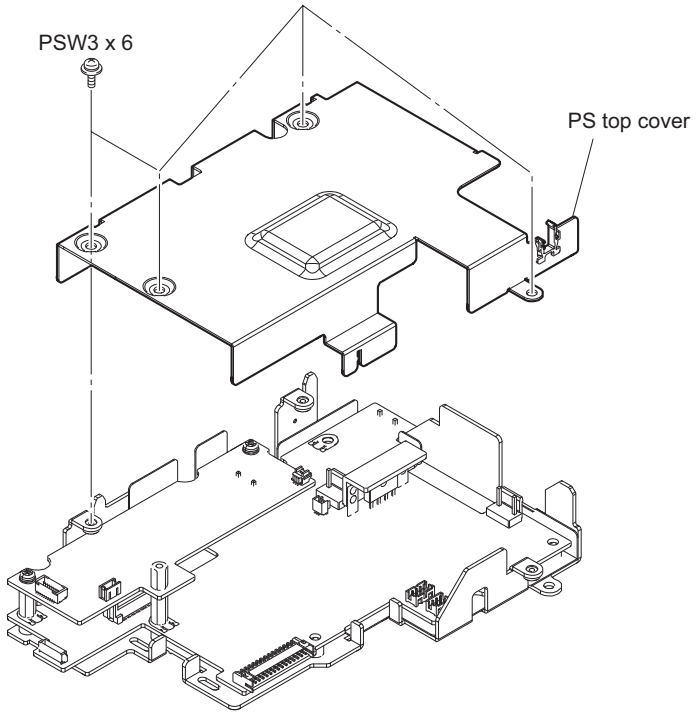
Position of screws



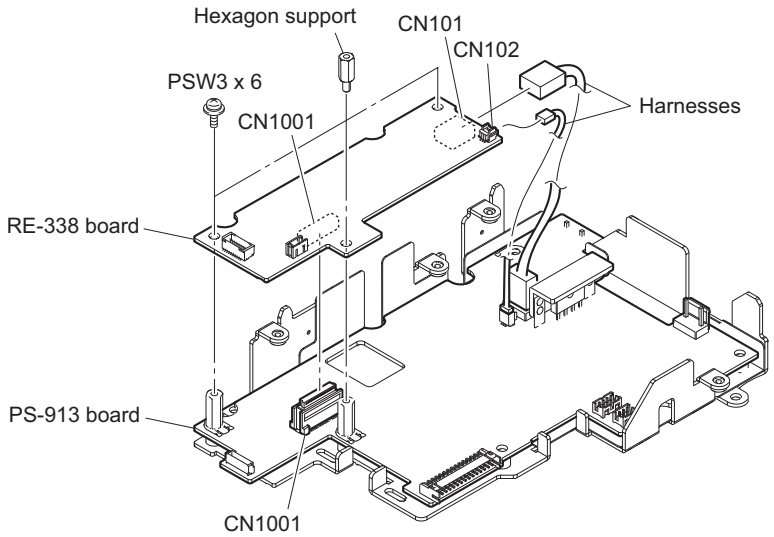
   (2) Pull up the power block in the direction of the arrow A to disconnect the connector (CN5002) on the PS-913 board from the connector (CN4) on the MB-1230 board.
   (3) Tilt the power block in the direction of the arrow B and disconnect the harness from the connector CN102 on the PS-913 board.



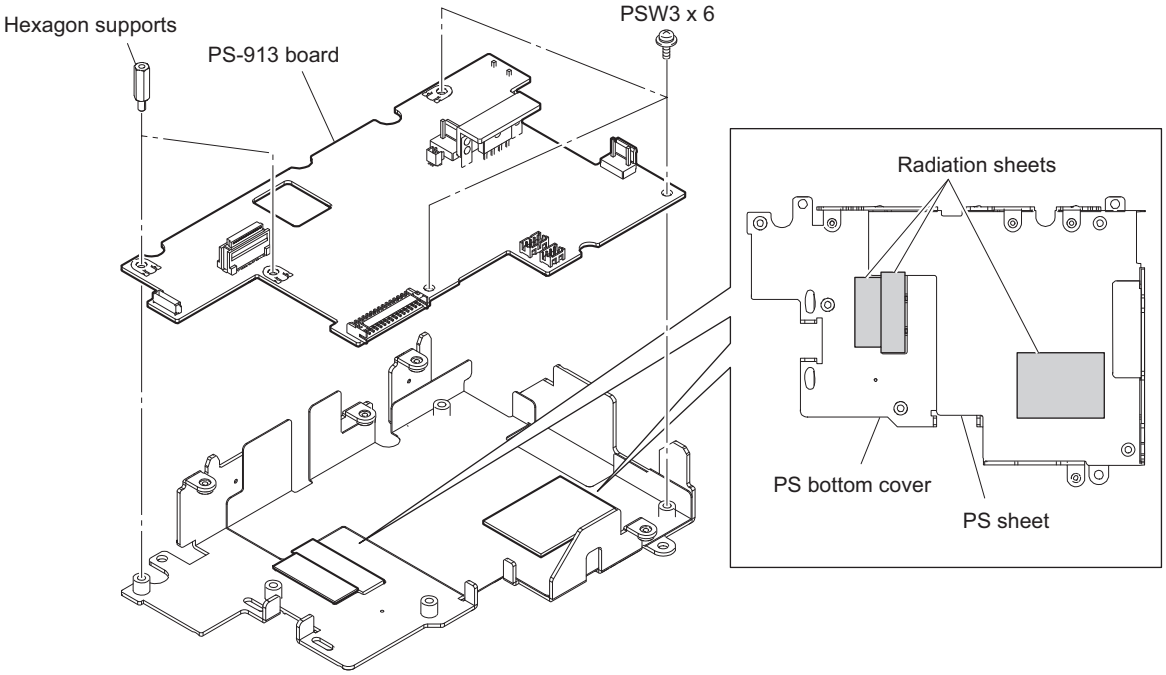
4. Remove the four screws, then remove the PS top cover.



5. Remove the RE-338 board.
   (1) Disconnect the two harnesses from the two connectors (CN101, CN102) on the RE-338 board.
   (2) Remove the hexagon support and two screws (PSW3 x 6), then remove the RE-338 board from the connector (CN1001) on the PS-913 board.



6. Remove the two hexagon supports and the three screws (PSW3 x 6), then remove the PS-913 board.



Note

If any radiation sheet peels off the PS bottom cover or the PS sheet, stick it to the position as shown in the figure.

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

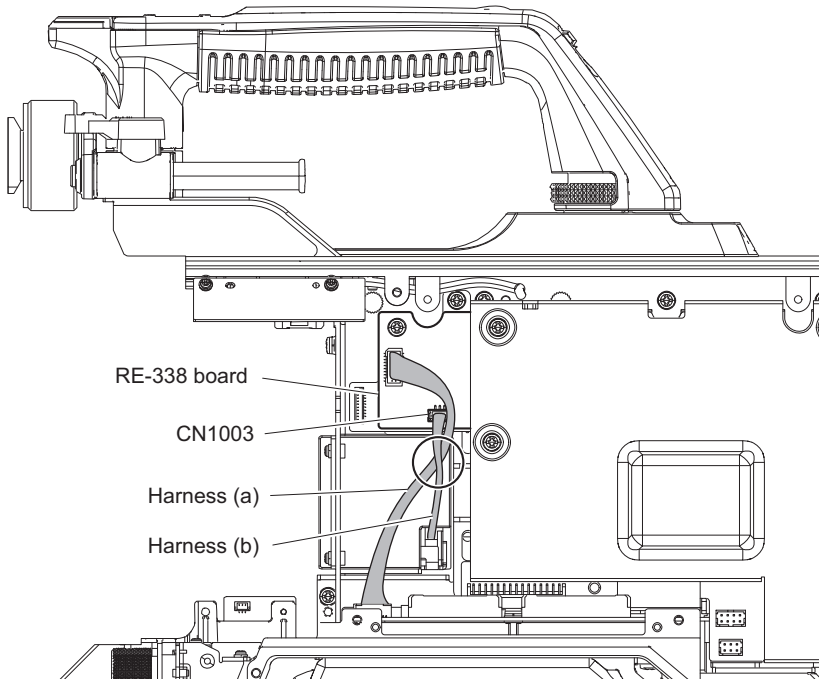
4-8-6. DC Fan (Front)

Preparation

1. Remove the outside panel assembly. (Refer to “4-4-1. Outside Panel Assembly”)
2. Remove the inside panel assembly. (Refer to “4-5. Inside Panel Assembly”)
3. Remove the front assembly. (Refer to “4-6-1. Front Assembly”)
4. Remove the SY-450 board assembly. (Refer to “4-8-4. SY-450 Board, AT-189U Board”)

Procedure

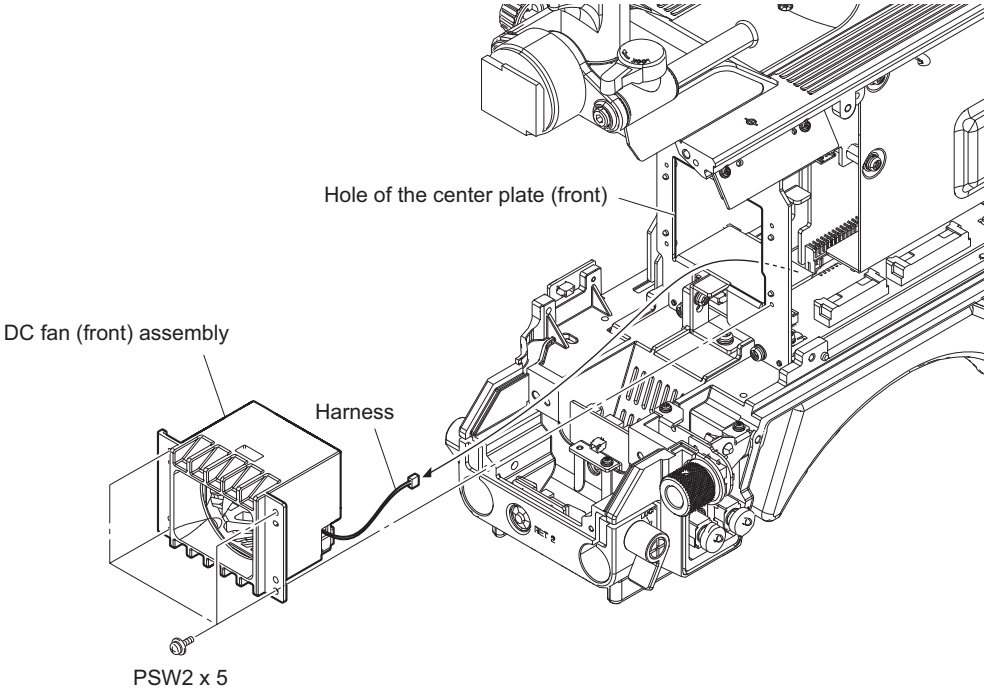
1. Disconnect the harness (b) from the connector (CN1003) on the RE-338 board.



Note

When connecting the harness (b), arrange the harness (b) as shown in the figure.

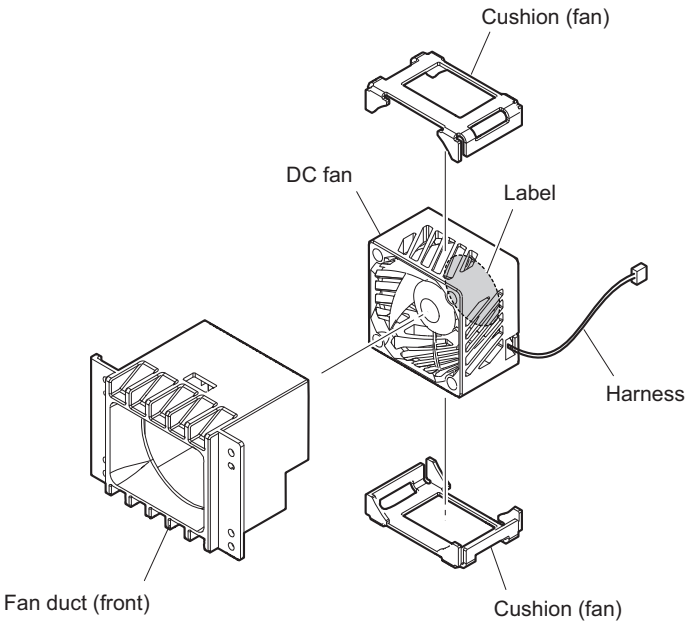
2. Remove the four screws, then remove the DC fan (front) assembly.



Note

When installing the DC fan (front) assembly, pass the harness through the hole of the center plate (front) as shown above.

3. Remove the fan duct (front), and remove the two cushions (fan) from the DC fan.



Note

Install the DC fan carefully paying attention to the label side and the harness position.

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

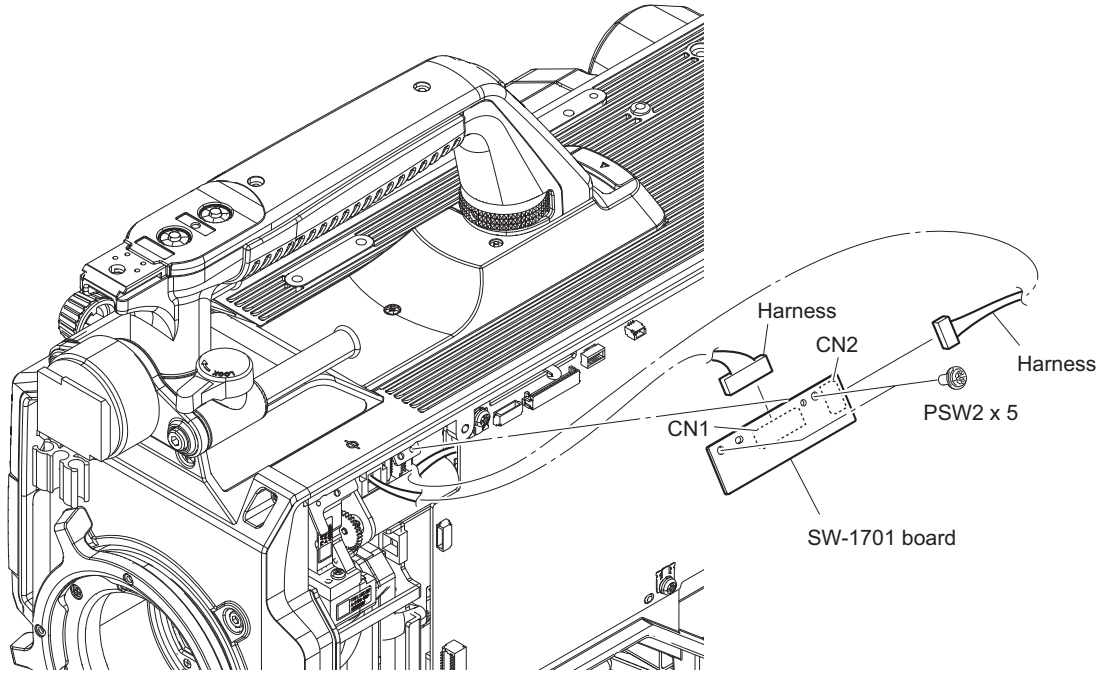
4-8-7. SW-1701 Board

Preparation

1. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")

Procedure

1. Remove the two screws, then pull up the SW-1701 board.
2. Disconnect the two harnesses from the two connectors (CN1, CN2) on the SW-1701 board.



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

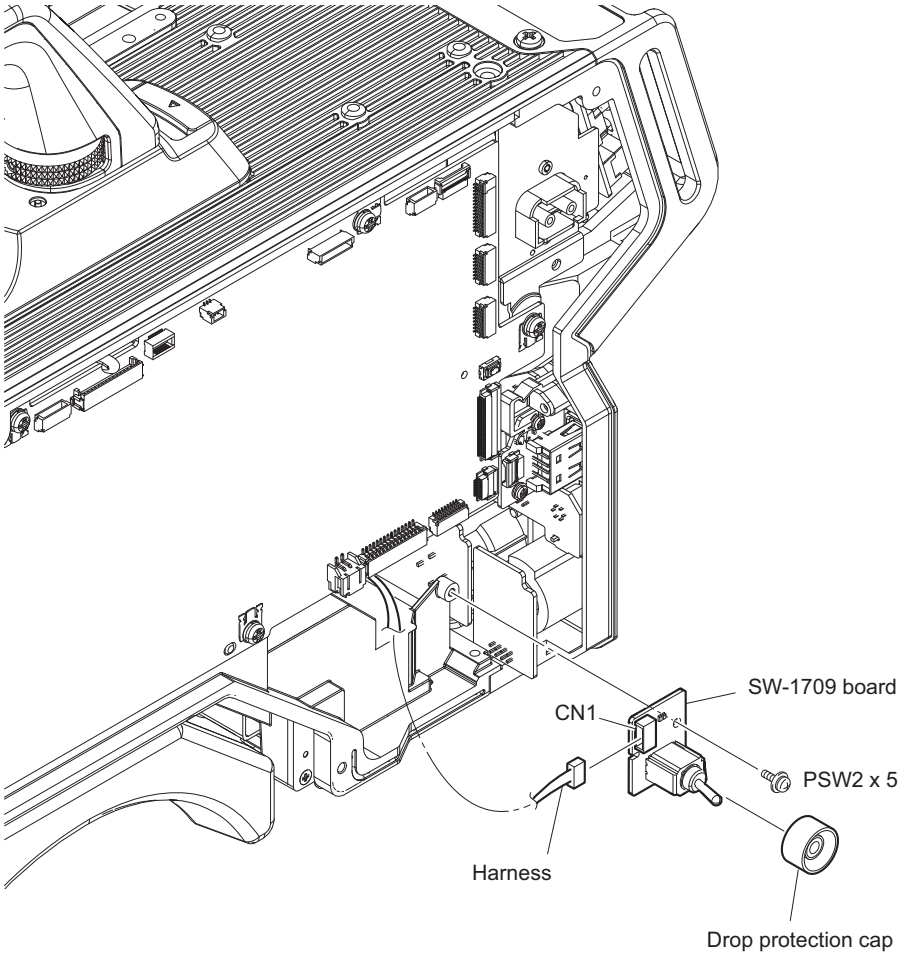
4-8-8. SW-1709 Board

Preparation

1. Remove the inside panel assembly. (Refer to “4-5. Inside Panel Assembly”)

Procedure

1. Remove the drop protection cap.
2. Disconnect the harness from the connector (CN1) on the SW-1709 board.
3. Remove the screw, then remove the SW-1709 board.



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

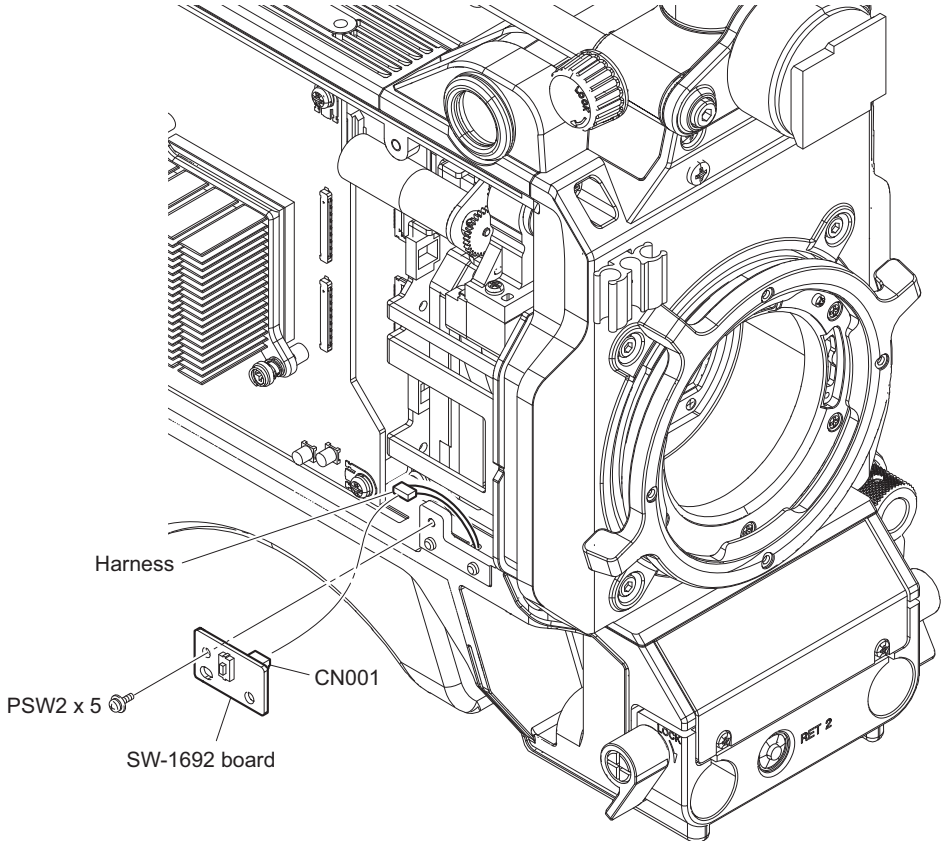
4-8-9. SW-1692 Board

Preparation

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

Procedure

1. Disconnect the harness from the connector (CN001) on the SW-1692 board.
2. Remove the screw, then remove the SW-1692 board.



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

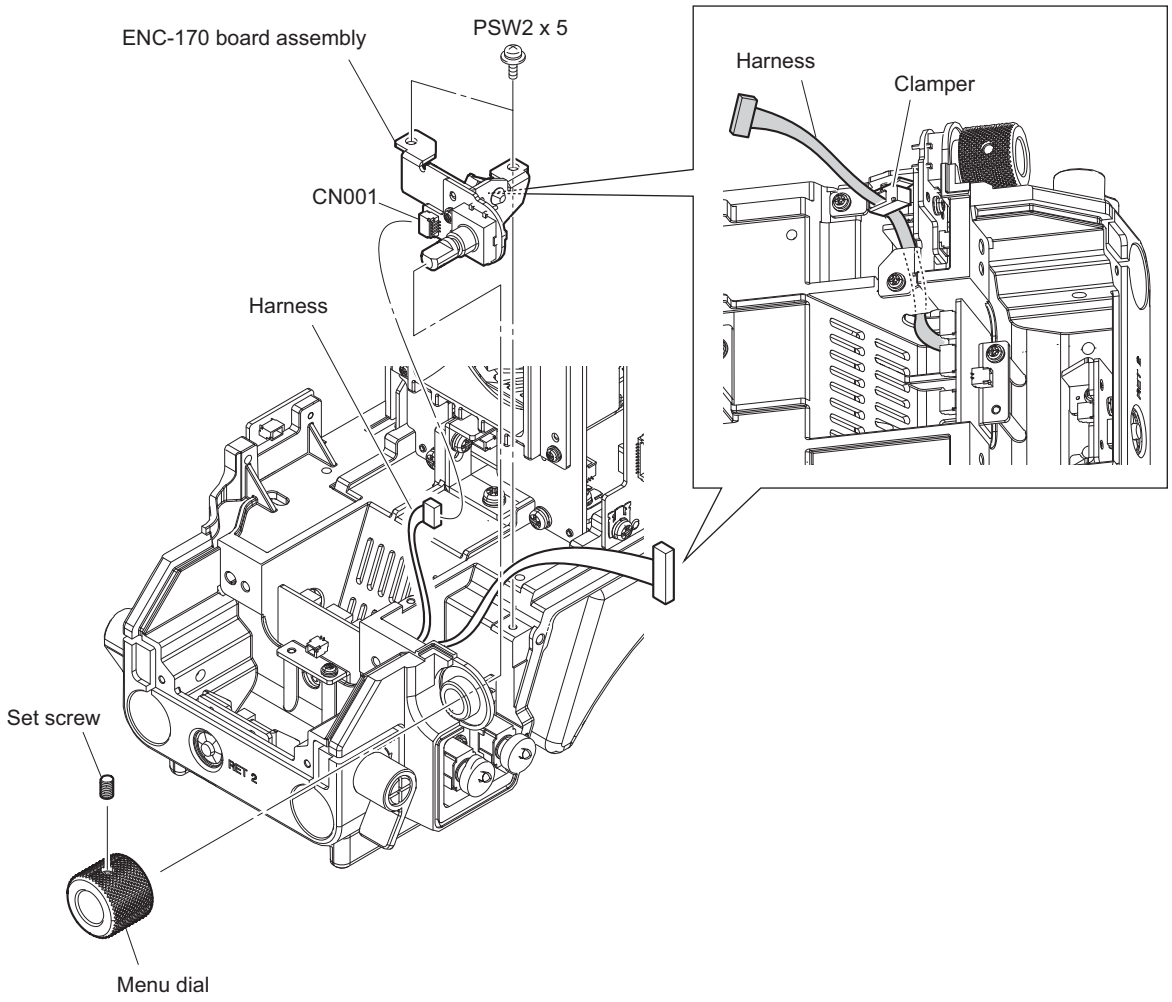
4-8-10. ENC-170 Board

Preparation

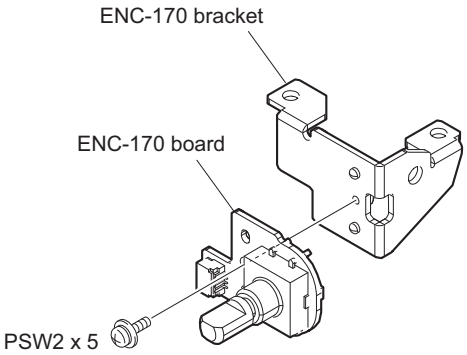
1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")
2. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")
3. Remove the front assembly. (Refer to "4-6-1. Front Assembly")

Procedure

1. Remove the ENC-170 board assembly.
   (1) Remove the set screw, then remove the menu dial.
   (2) Release the harness from the clamper.
   (3) Remove the two screws, then draw the ENC-170 board assembly.
   (4) Disconnect the harness from the connector (CN001) on the ENC-170 board.



2. Remove the screw, then remove the ENC-170 board from the ENC-170 bracket.



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

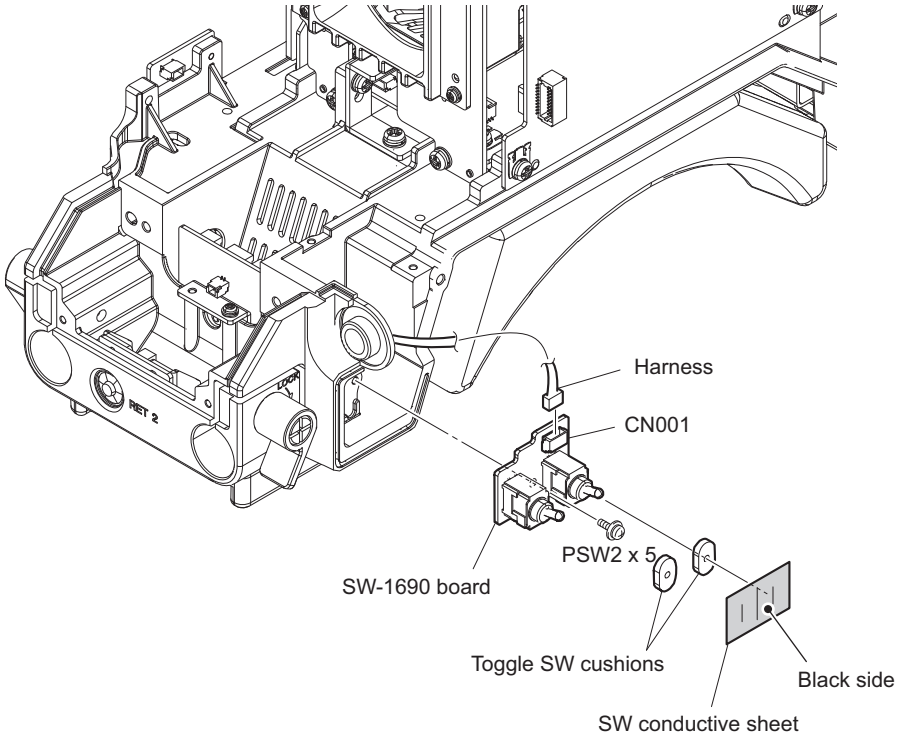
4-8-11. SW-1690 Board

Preparation

1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")
2. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")
3. Remove the front assembly. (Refer to "4-6-1. Front Assembly")
4. Remove the ENC-170 board assembly. (Refer to "4-8-10. ENC-170 Board")

Procedure

1. Remove the SW conductive sheet and the two toggle SW cushions.
2. Disconnect the harness from the connector (CN001) on the SW-1690 board.
3. Remove the screw, then remove the SW-1690 board.



Note

When attaching the SW conductive sheet, attach it with the black side coming outside.

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

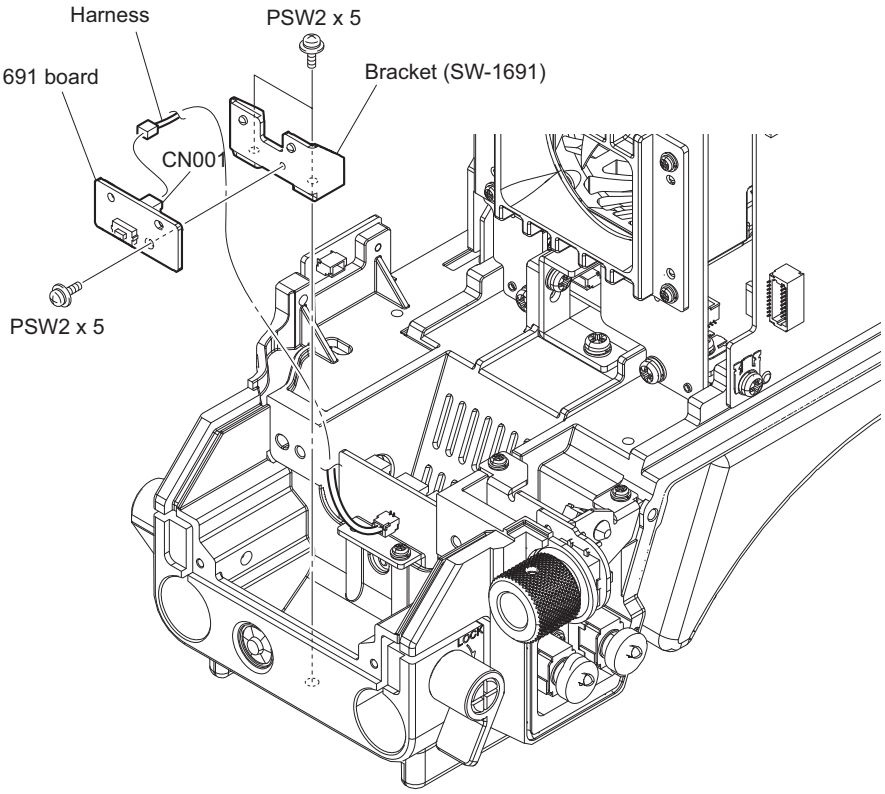
4-8-12. SW-1691 Board

Preparation

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

Procedure

1. Disconnect the harness from the connector (CN001) on the SW-1691 board.
2. Remove the two screws, then remove the SW-1691 board and the bracket (SW-1691).
3. Remove the screw, then remove the SW-1691 board from the bracket (SW-1691).



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

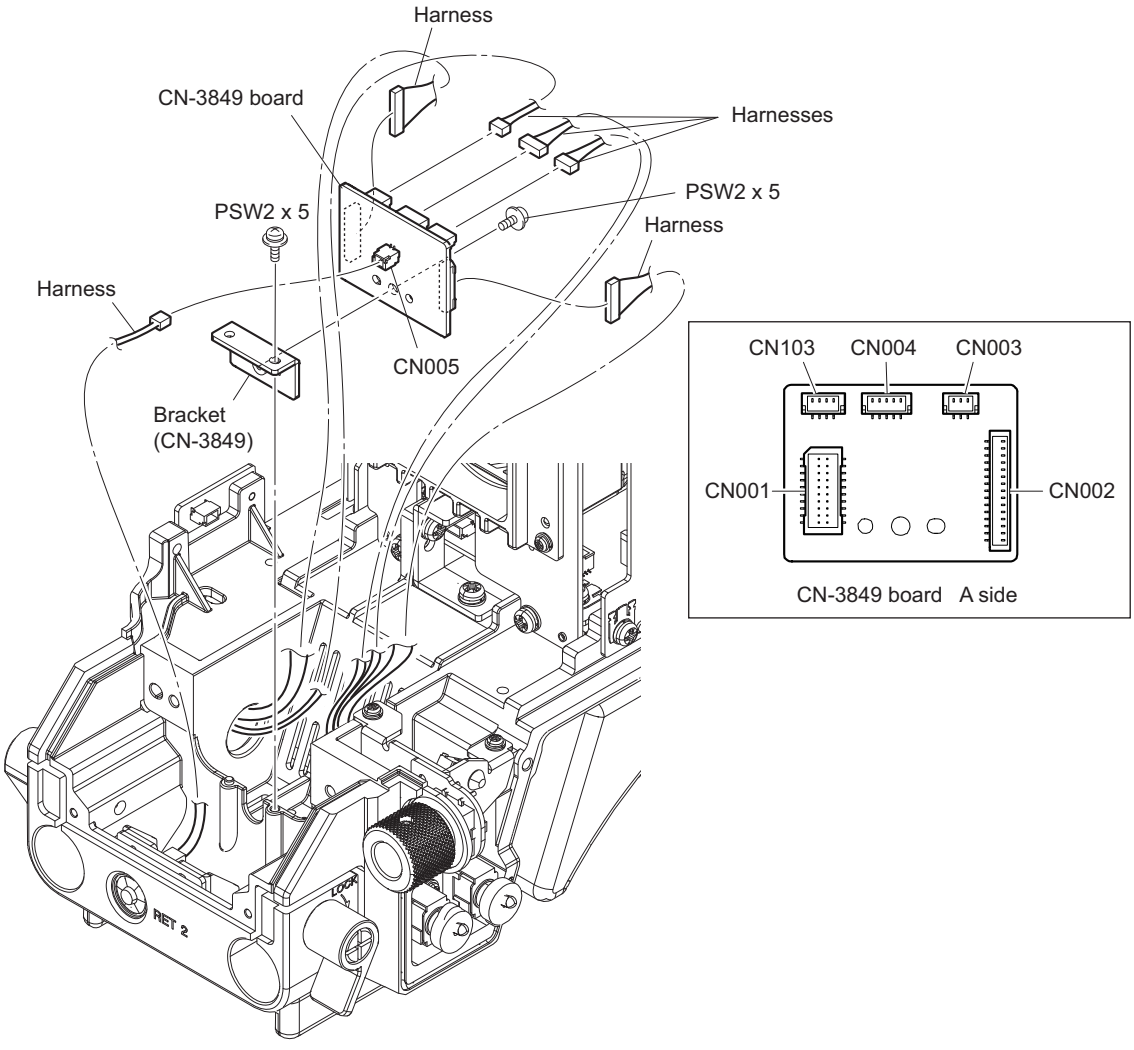
4-8-13. CN-3849 Board

Preparation

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

Procedure

1. Disconnect the harness from the connector (CN005) on the CN-3849 board.
2. Remove the screw, then draw the CN-3849 board and the bracket (CN-3849).
3. Disconnect the five harnesses from the five connectors (CN001, CN002, CN003, CN004, CN103) on the CN-3849 board.
4. Remove the screw, then remove the CN-3849 board from the bracket (CN-3849).



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

4-9. Rear Panel Block

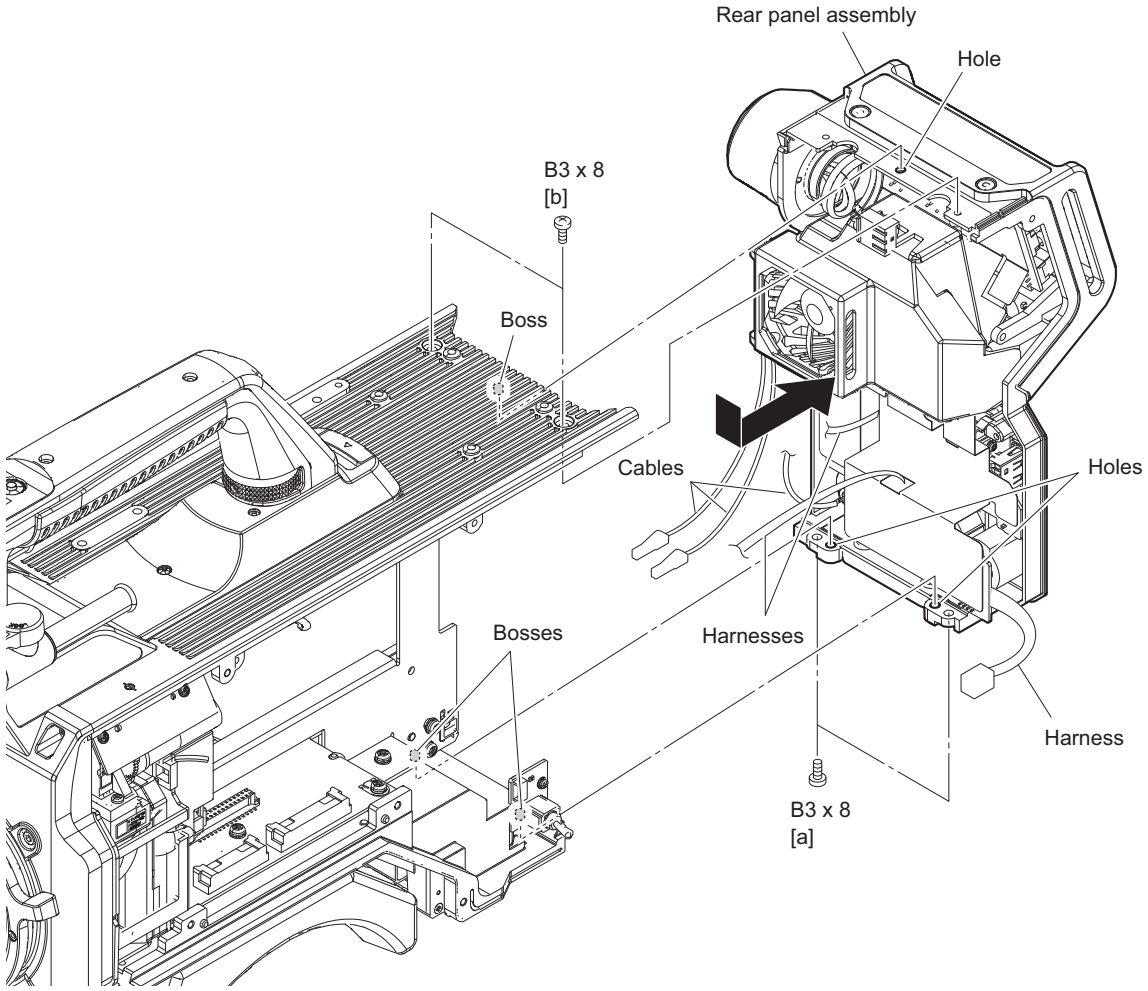
4-9-1. Rear Panel Assembly

Preparation

1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")
2. Remove the TX-154 board assembly. (Refer to "4-8-2. TX-154 Board")
3. Remove the DPR-377 board assembly. (Refer to "4-8-3. DPR-377 Board")
4. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")
5. Remove the SY-450 board assembly. (Refer to "4-8-4. SY-450 Board, AT-189U Board")
6. Remove the power block. (Refer to "4-8-5. Power Block, PS-913 Board, RE-338 Board")

Procedure

1. Remove the four screws, then remove the rear panel assembly in the direction of the arrow.



Note

When installing the rear panel assembly, observe the following instructions.

- Be careful so that the cables and the harnesses will not be caught.
- Align the three holes with three bosses.
- Tighten the screws in the following sequence: [a], [b].

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

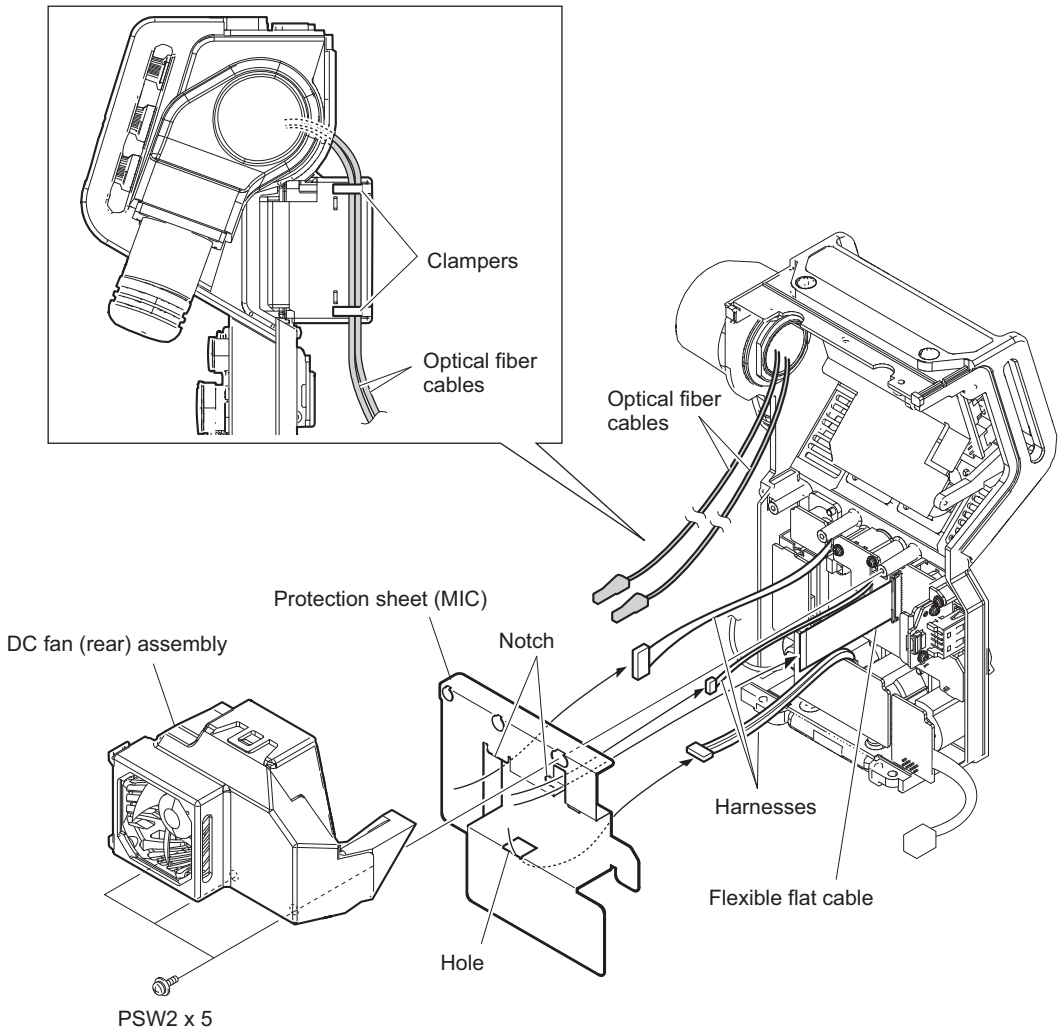
4-9-2. DC Fan (Rear)

Preparation

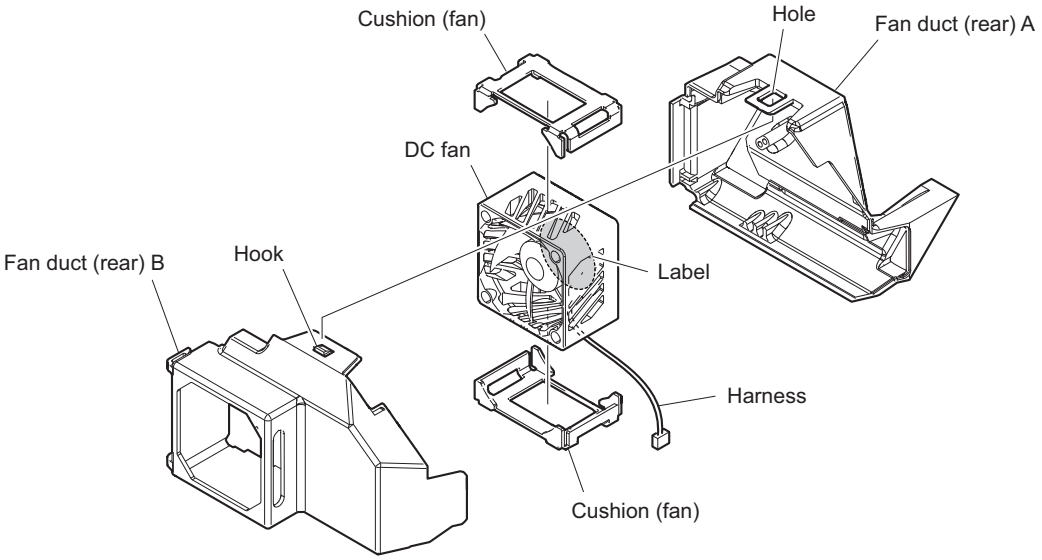
1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")
2. Remove the TX-154 board assembly. (Refer to "4-8-2. TX-154 Board")
3. Remove the DPR-377 board assembly. (Refer to "4-8-3. DPR-377 Board")
4. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")
5. Remove the SY-450 board assembly. (Refer to "4-8-4. SY-450 Board, AT-189U Board")
6. Remove the power block. (Refer to "4-8-5. Power Block, PS-913 Board, RE-338 Board")
7. Remove the rear panel assembly. (Refer to "4-9-1. Rear Panel Assembly")

Procedure

1. Remove the DC fan (rear) assembly.
   (1) Release the two optical fiber cables from the two clampers.
   (2) Remove the three screws, then remove the DC fan (rear) assembly.
   (3) Remove the three harnesses and flexible flat cable from the notches and hole of the protection sheet (MIC).



2. Remove the DC fan.
   (1) Release the hook to detach the fan duct (rear) A from the fan duct (rear) B.
   (2) Remove the two cushions (fan) from the DC fan.



Note

Install the DC fan carefully paying attention to the label side and the harness position.

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

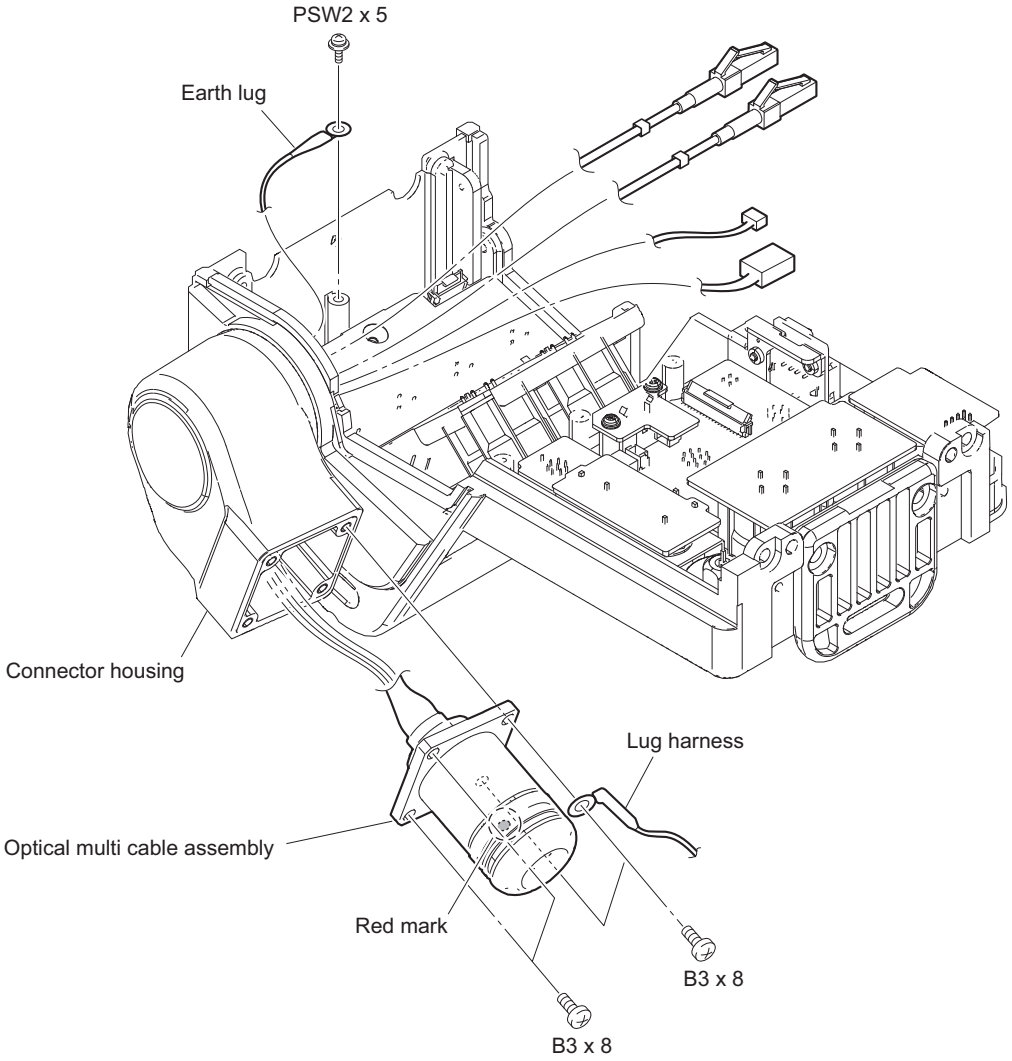
4-9-3. Optical Multi Cable Assembly

Preparation

1. Remove the outside panel assembly. (Refer to “4-4-1. Outside Panel Assembly”)
2. Remove the TX-154 board assembly. (Refer to “4-8-2. TX-154 Board”)
3. Remove the DPR-377 board assembly. (Refer to “4-8-3. DPR-377 Board”)
4. Remove the inside panel assembly. (Refer to “4-5. Inside Panel Assembly”)
5. Remove the SY-450 board assembly. (Refer to “4-8-4. SY-450 Board, AT-189U Board”)
6. Remove the power block. (Refer to “4-8-5. Power Block, PS-913 Board, RE-338 Board”)
7. Remove the rear panel assembly. (Refer to “4-9-1. Rear Panel Assembly”)
8. Remove the DC fan (rear) assembly. (Refer to “4-9-2. DC Fan (Rear)”)

Procedure

1. Remove the screw (PSW2 x 5), then remove the earth lug.
2. Remove the four screws (B3 x 8), then remove the lug harness and optical multi cable assembly.



Note

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

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

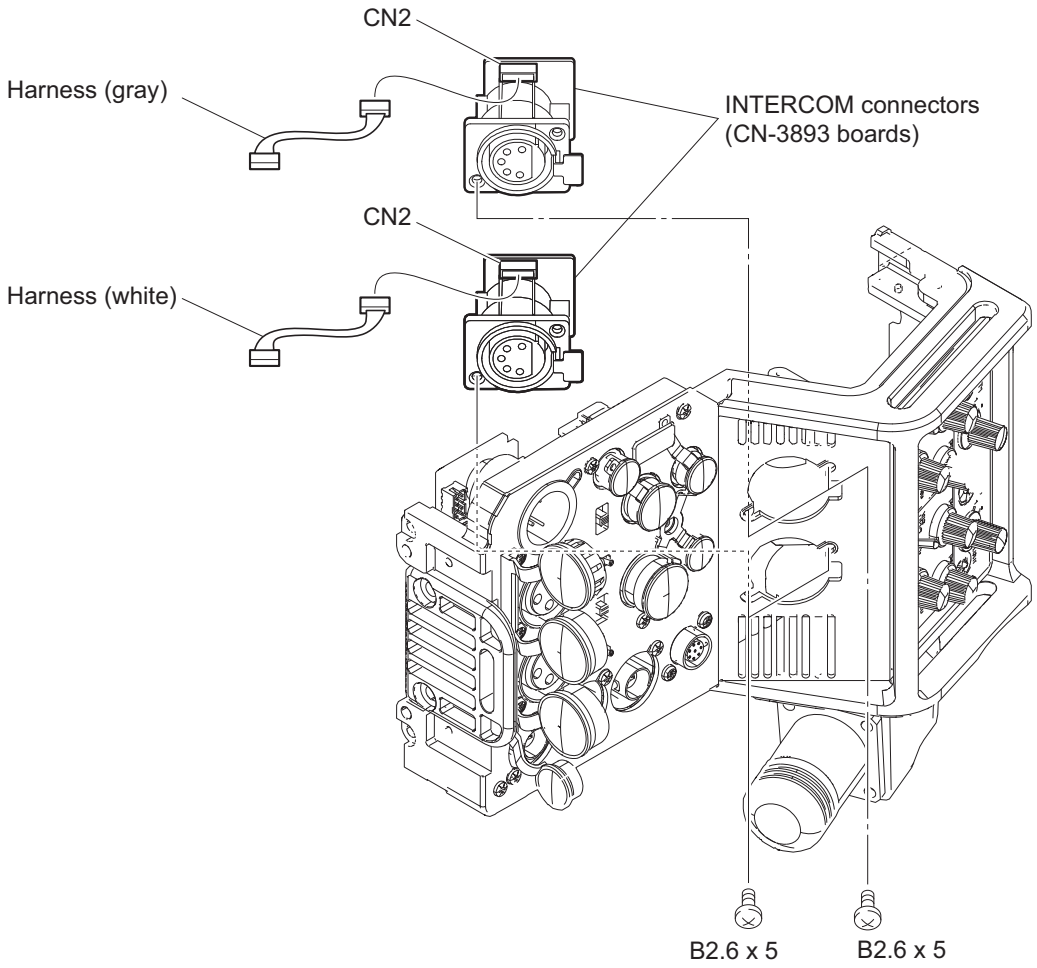
4-9-4. INTERCOM Connector (CN-3893 Board)

Preparation

1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")
2. Remove the TX-154 board assembly. (Refer to "4-8-2. TX-154 Board")
3. Remove the DPR-377 board assembly. (Refer to "4-8-3. DPR-377 Board")
4. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")
5. Remove the SY-450 board assembly. (Refer to "4-8-4. SY-450 Board, AT-189U Board")
6. Remove the power block. (Refer to "4-8-5. Power Block, PS-913 Board, RE-338 Board")
7. Remove the rear panel assembly. (Refer to "4-9-1. Rear Panel Assembly")
8. Remove the DC fan (rear) assembly. (Refer to "4-9-2. DC Fan (Rear)")

Procedure

1. Remove the four screws, then remove the two INTERCOM connectors (CN-3893 board).
2. Disconnect the two harnesses from the connectors (CN2) on the INTERCOM connectors (CN-3893 boards).



Note

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

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

4-9-5. SW-1708 Board/SW-1708A Board

Note

SW-1708 board is used for the SY/JN model or SW-1708A board is used for the CE/E3 model of this unit. The following shows how to remove the SW-1708 board as an example.

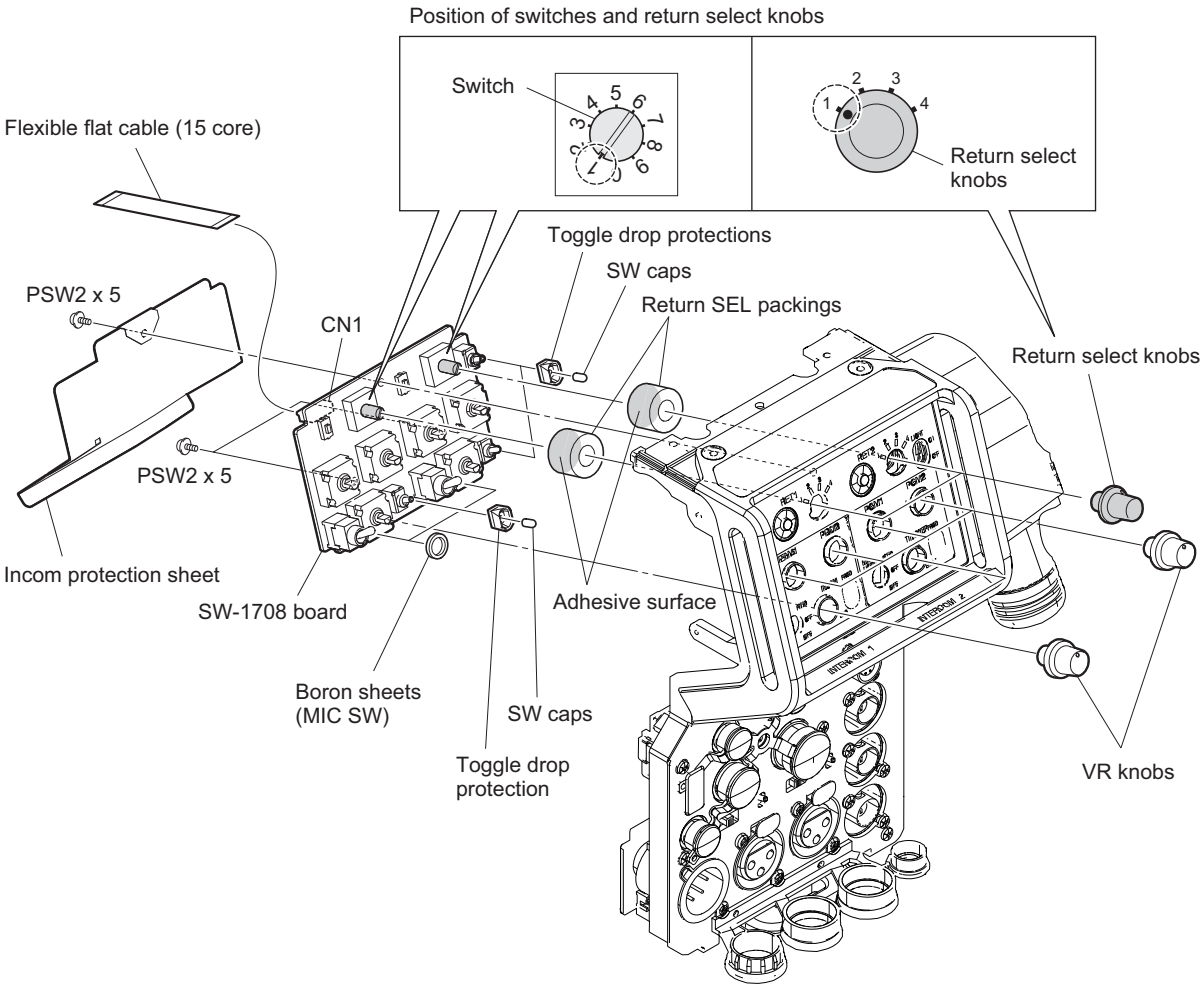
Preparation

1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")
2. Remove the TX-154 board assembly. (Refer to "4-8-2. TX-154 Board")
3. Remove the DPR-377 board assembly. (Refer to "4-8-3. DPR-377 Board")
4. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")
5. Remove the SY-450 board assembly. (Refer to "4-8-4. SY-450 Board, AT-189U Board")
6. Remove the power block. (Refer to "4-8-5. Power Block, PS-913 Board, RE-338 Board")
7. Remove the rear panel assembly. (Refer to "4-9-1. Rear Panel Assembly")
8. Remove the DC fan (rear) assembly. (Refer to "4-9-2. DC Fan (Rear)")
9. Remove the INTERCOM connector (CN-3893 board). (Refer to "4-9-4. INTERCOM Connector (CN-3893 Board)")

Procedure

1. Remove the two return select knobs.
2. Remove the six VR knobs.
3. Remove the screw, then remove the incom protection sheet.
4. Remove the two screws, then remove the SW-1708 board.
5. Disconnect the flexible flat cable from the connector (CN1) on the SW-1708 board.

6. Remove the three SW caps, three toggle drop protections, two boron sheets (MIC SW), and the two return SEL packings from the SW-1708 board.



Note

- When installing the return select knob and VR knob, apply locking compound to the inside of the knobs.
- When installing the return select knob, set the marks of the switch and the return select knob on the SW-1708 board to the positions shown in the figure.
- When installing the return SEL packing, stick the adhesive surface to the board side.

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

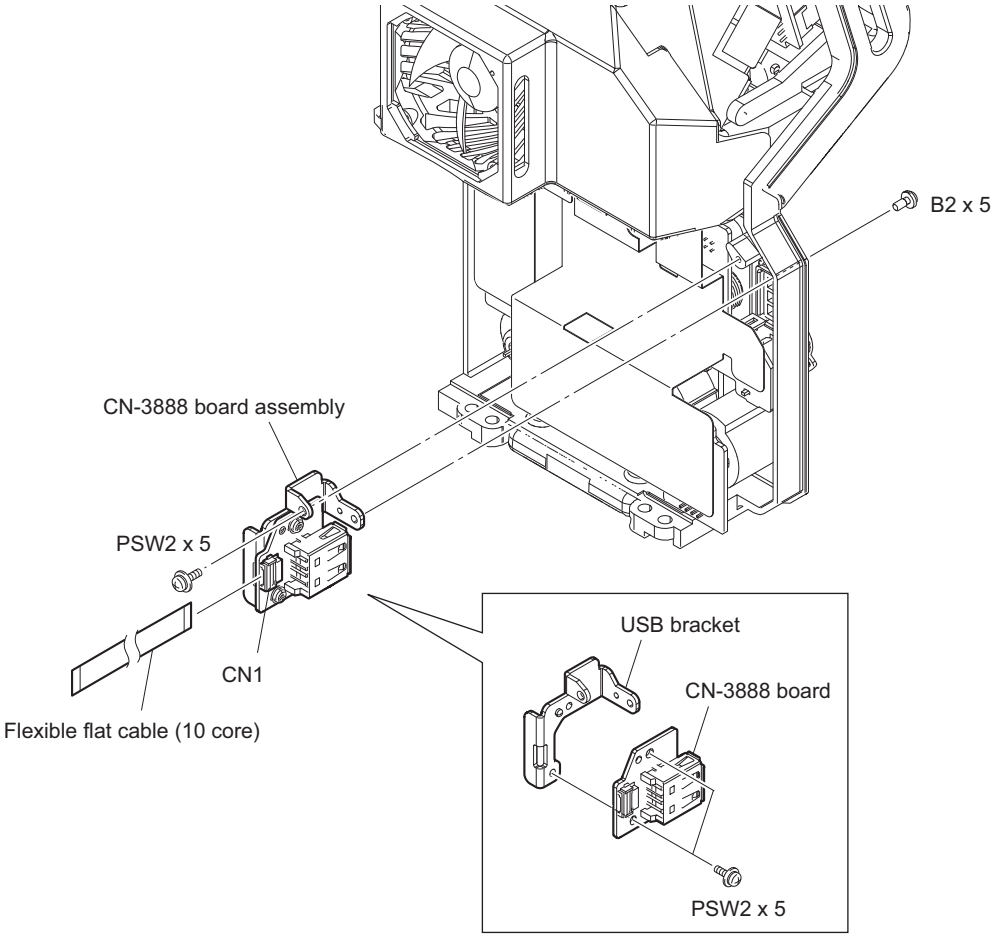
4-9-6. CN-3888 Board

Preparation

1. Remove the outside panel assembly. (Refer to “4-4-1. Outside Panel Assembly”)
2. Remove the TX-154 board assembly. (Refer to “4-8-2. TX-154 Board”)
3. Remove the DPR-377 board assembly. (Refer to “4-8-3. DPR-377 Board”)
4. Remove the inside panel assembly. (Refer to “4-5. Inside Panel Assembly”)
5. Remove the SY-450 board assembly. (Refer to “4-8-4. SY-450 Board, AT-189U Board”)
6. Remove the power block. (Refer to “4-8-5. Power Block, PS-913 Board, RE-338 Board”)
7. Remove the rear panel assembly. (Refer to “4-9-1. Rear Panel Assembly”)

Procedure

1. Disconnect the flexible flat cable (10 core) from the connector (CN1) on the CN-3888 board.
2. Remove the screw (PSW2 x 5) and screw (B2 x 5), then remove the CN-3888 board assembly.
3. Remove the two screws, then remove the CN-3888 board from the USB bracket.



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

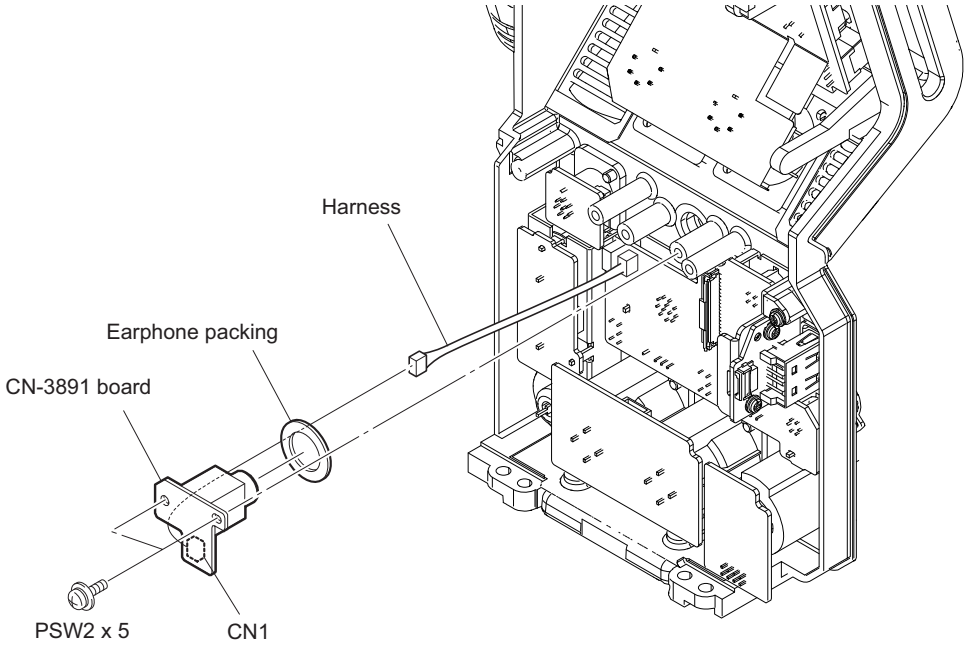
4-9-7. CN-3891 Board/CN-3889 Board

Preparation

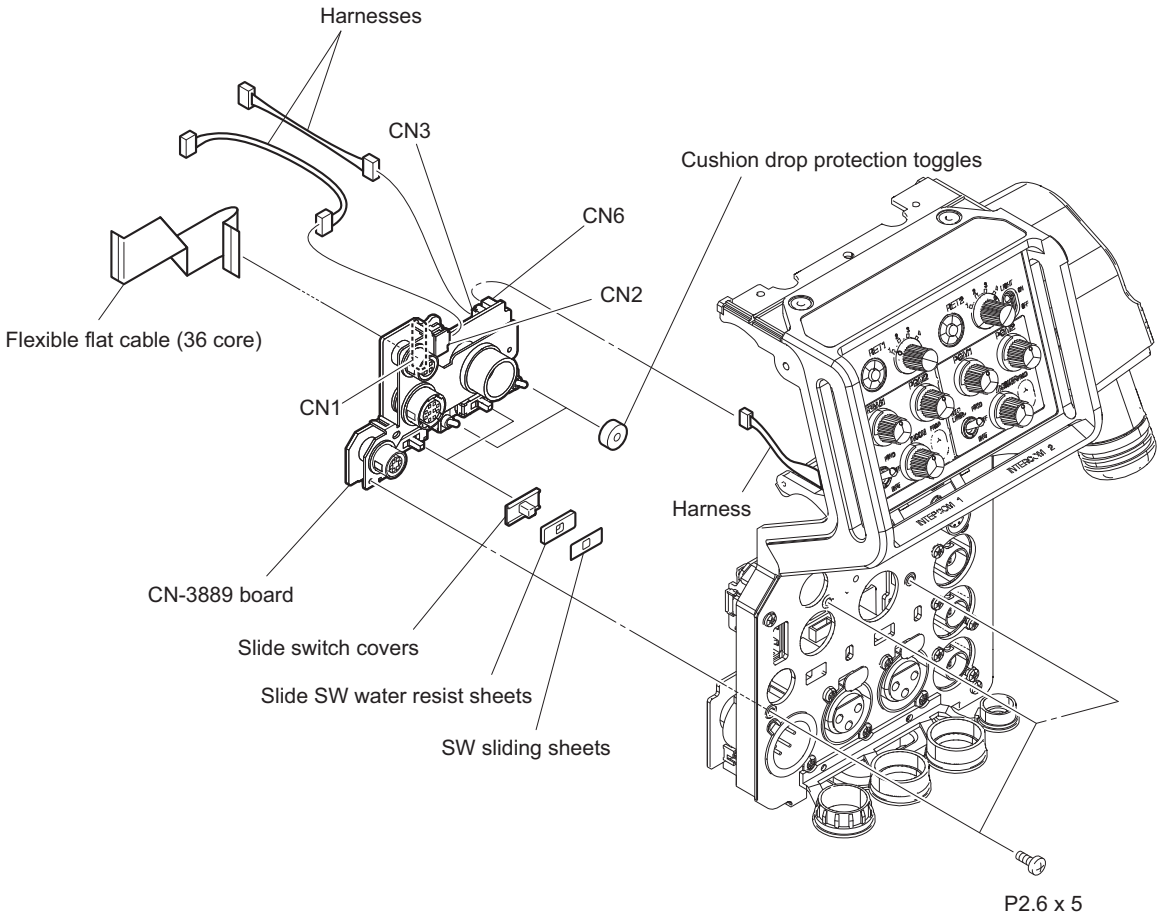
1. Remove the outside panel assembly. (Refer to “4-4-1. Outside Panel Assembly”)
2. Remove the TX-154 board assembly. (Refer to “4-8-2. TX-154 Board”)
3. Remove the DPR-377 board assembly. (Refer to “4-8-3. DPR-377 Board”)
4. Remove the inside panel assembly. (Refer to “4-5. Inside Panel Assembly”)
5. Remove the SY-450 board assembly. (Refer to “4-8-4. SY-450 Board, AT-189U Board”)
6. Remove the power block. (Refer to “4-8-5. Power Block, PS-913 Board, RE-338 Board”)
7. Remove the rear panel assembly. (Refer to “4-9-1. Rear Panel Assembly”)
8. Remove the protection sheet (MIC). (Refer to “4-9-2. DC Fan (Rear)”)

Procedure

1. Remove the CN-3891 board.
   (1) Remove the two screws, then draw the CN-3891 board.
   (2) Disconnect the harness from the connector (CN1) on the CN-3891 board and remove the earphone packing.



2. Remove the CN-3889 board.
   (1) Disconnect the flexible flat cable from the connector (CN1) on the CN-3889 board.
   (2) Disconnect the three harnesses from the three connectors (CN2 CN3 and CN6) on the CN-3889 board.
   (3) Remove the three screws, and detach the CN-3889 board, two cushion drop protection toggles, two SW sliding sheets, two slide SW water resist sheets, and two slide switch covers.



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

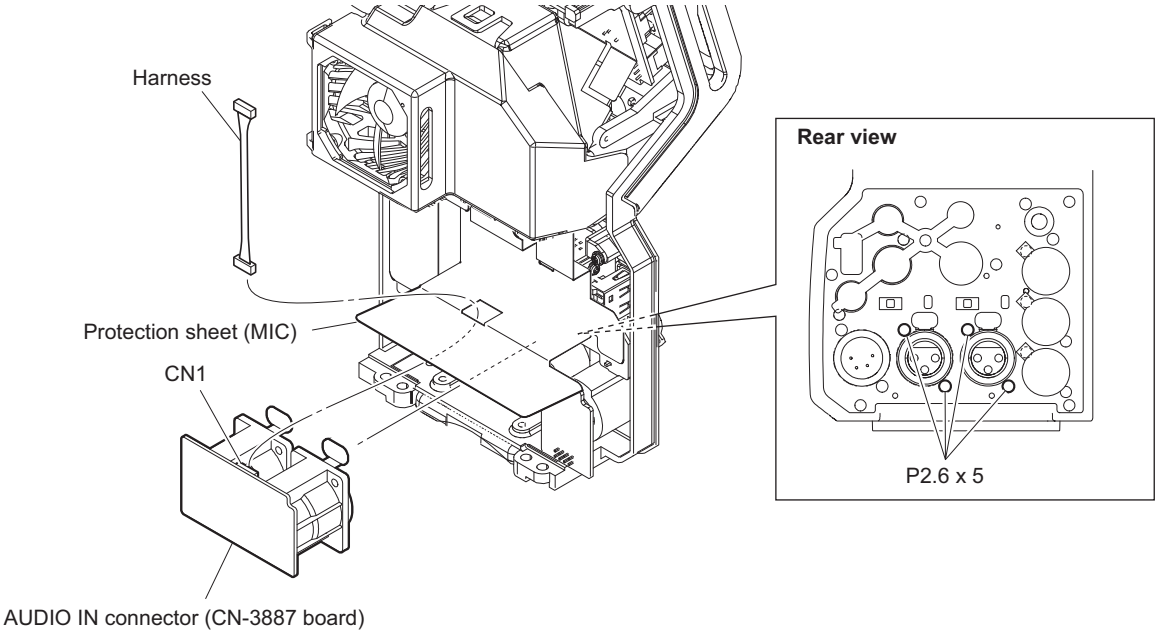
4-9-8. AUDIO IN Connector (CN-3887 Board)

Preparation

1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")
2. Remove the TX-154 board assembly. (Refer to "4-8-2. TX-154 Board")
3. Remove the DPR-377 board assembly. (Refer to "4-8-3. DPR-377 Board")
4. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")
5. Remove the SY-450 board assembly. (Refer to "4-8-4. SY-450 Board, AT-189U Board")
6. Remove the power block. (Refer to "4-8-5. Power Block, PS-913 Board, RE-338 Board")
7. Remove the rear panel assembly. (Refer to "4-9-1. Rear Panel Assembly")

Procedure

1. Remove the four screws, and detach the CN-3887 board.
2. Disconnect the harness from the connector (CN1) on the CN-3887 board.



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

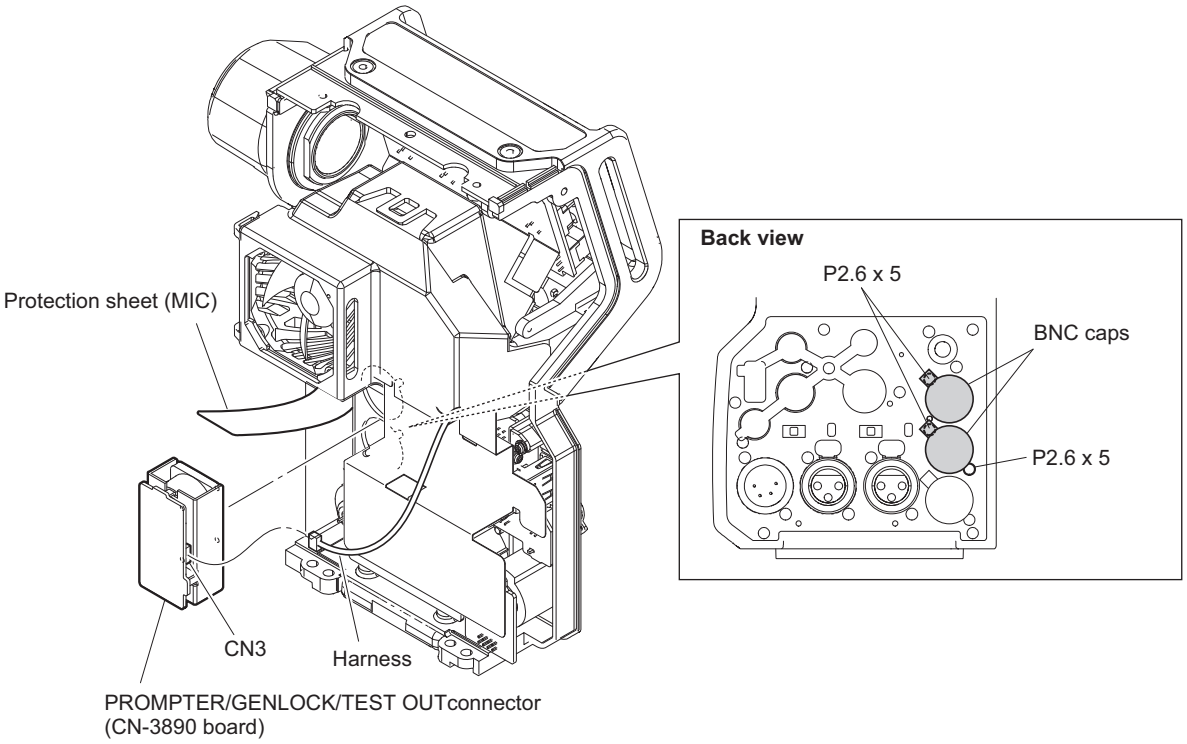
4-9-9. PROMPTER/GENLOCK/TEST OUT Connector (CN-3890 Board)

Preparation

1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")
2. Remove the TX-154 board assembly. (Refer to "4-8-2. TX-154 Board")
3. Remove the DPR-377 board assembly. (Refer to "4-8-3. DPR-377 Board")
4. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")
5. Remove the SY-450 board assembly. (Refer to "4-8-4. SY-450 Board, AT-189U Board")
6. Remove the power block. (Refer to "4-8-5. Power Block, PS-913 Board, RE-338 Board")
7. Remove the rear panel assembly. (Refer to "4-9-1. Rear Panel Assembly")

Procedure

1. Remove the three screws, then remove the two BNC caps and the PROMPTER/GENLOCK/TEST OUT connector (CN-3890 board).
2. Disconnect the harness from the connector (CN3) on the PROMPTER/GENLOCK/TEST OUT connector (CN-3890 board).



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

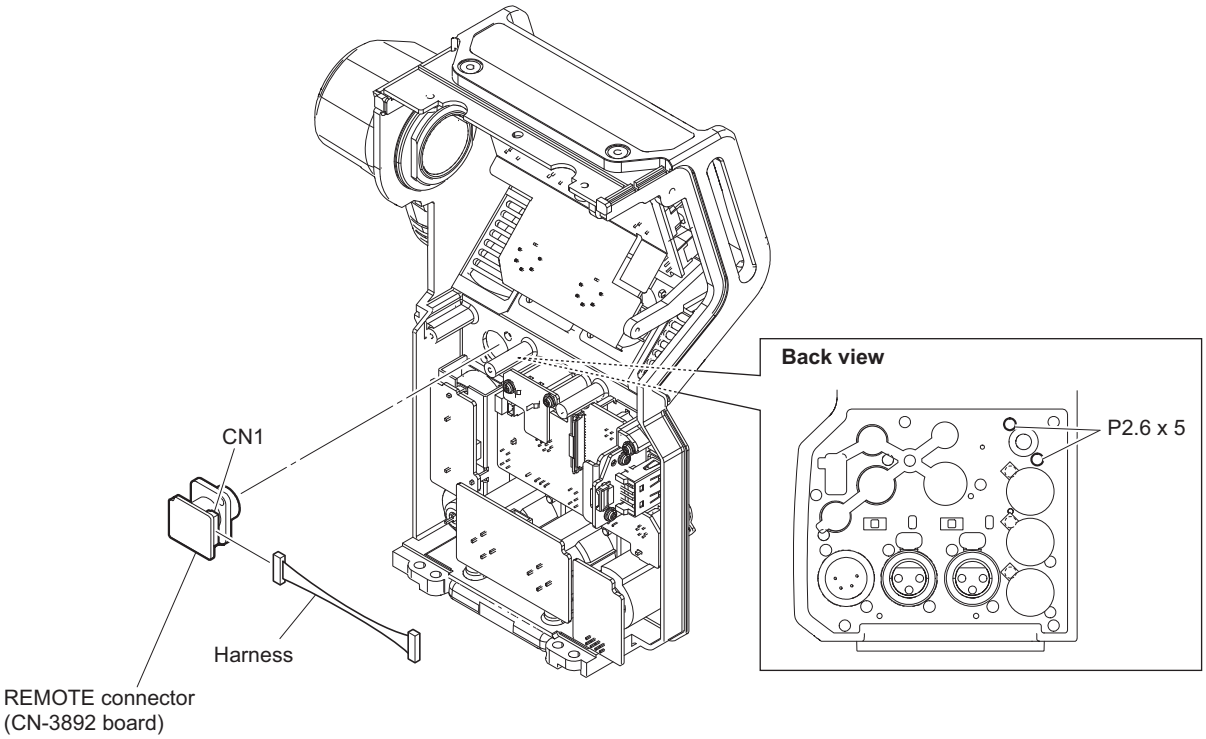
4-9-10. REMOTE Connector (CN-3892 Board)

Preparation

1. Remove the outside panel assembly. (Refer to “4-4-1. Outside Panel Assembly”)
2. Remove the TX-154 board assembly. (Refer to “4-8-2. TX-154 Board”)
3. Remove the DPR-377 board assembly. (Refer to “4-8-3. DPR-377 Board”)
4. Remove the inside panel assembly. (Refer to “4-5. Inside Panel Assembly”)
5. Remove the SY-450 board assembly. (Refer to “4-8-4. SY-450 Board, AT-189U Board”)
6. Remove the power block. (Refer to “4-8-5. Power Block, PS-913 Board, RE-338 Board”)
7. Remove the rear panel assembly. (Refer to “4-9-1. Rear Panel Assembly”)
8. Remove the protection sheet (MIC). (Refer to “4-9-2. DC Fan (Rear)”)

Procedure

1. Remove the two screws, then remove the REMOTE connector (CN-3892 board).
2. Disconnect the harness from the connector (CN1) on the REMOTE connector (CN-3892 board).



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

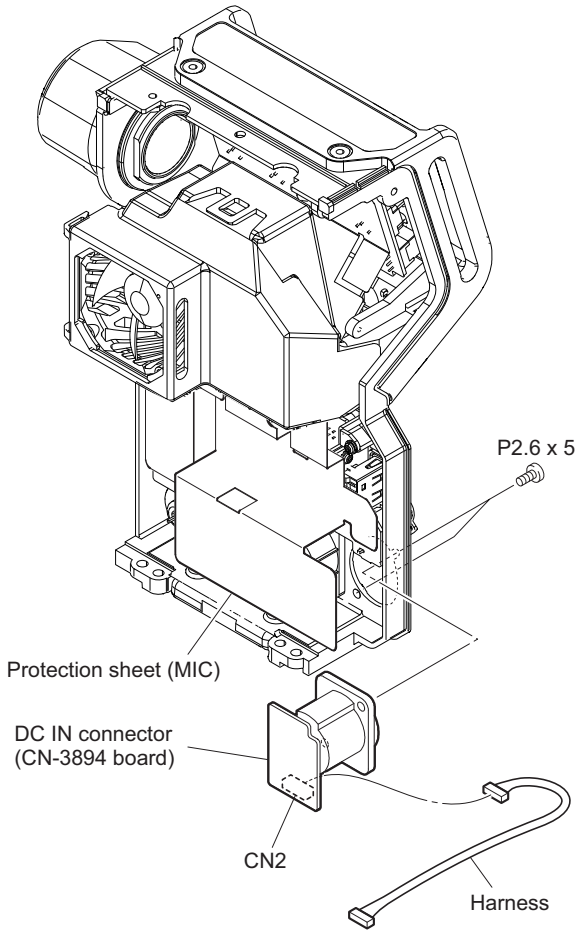
4-9-11. DC IN Connector (CN-3894 Board)

Preparation

1. Remove the outside panel assembly. (Refer to “4-4-1. Outside Panel Assembly”)
2. Remove the TX-154 board assembly. (Refer to “4-8-2. TX-154 Board”)
3. Remove the DPR-377 board assembly. (Refer to “4-8-3. DPR-377 Board”)
4. Remove the inside panel assembly. (Refer to “4-5. Inside Panel Assembly”)
5. Remove the SY-450 board assembly. (Refer to “4-8-4. SY-450 Board, AT-189U Board”)
6. Remove the power block. (Refer to “4-8-5. Power Block, PS-913 Board, RE-338 Board”)
7. Remove the rear panel assembly. (Refer to “4-9-1. Rear Panel Assembly”)

Procedure

1. Remove the two screws, then remove the DC IN connector (CN-3894 board).
2. Disconnect the harness from the connector (CN2) on the DC IN connector (CN-3894 board).



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

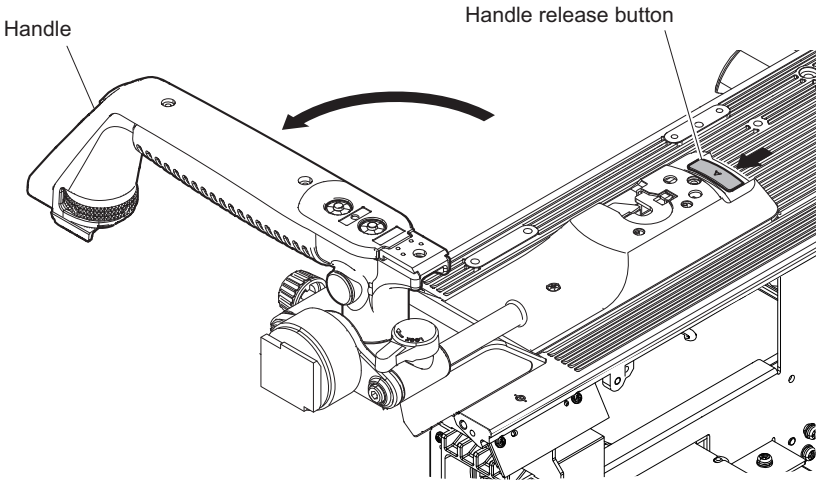
4-10. MB-1230 Board

Preparation

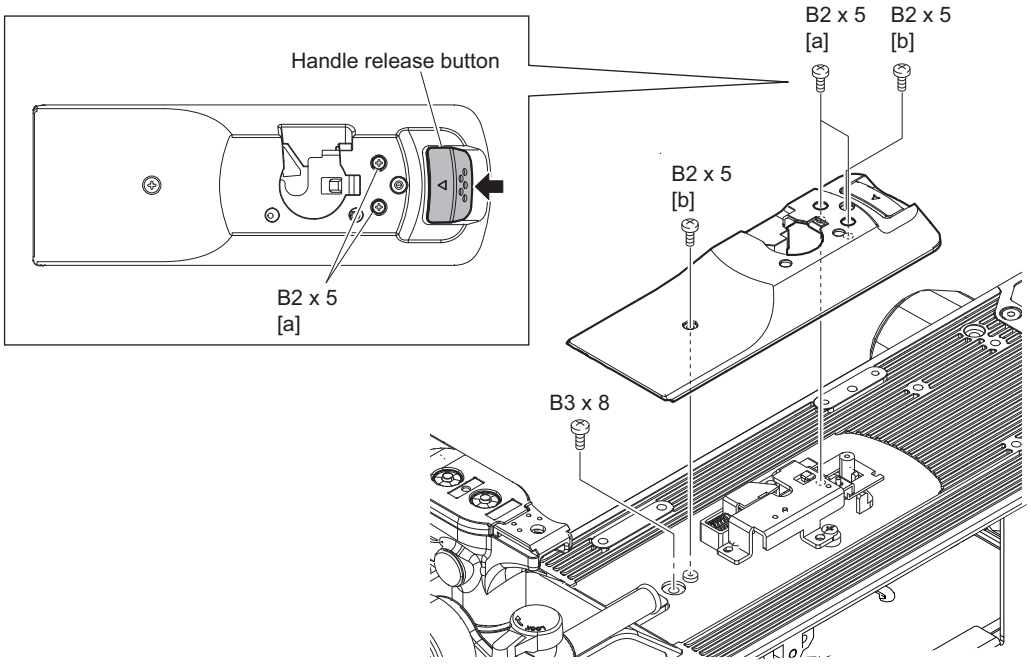
1. Remove the outside panel assembly. (Refer to "4-4-1. Outside Panel Assembly")
2. Remove the TX-154 board assembly. (Refer to "4-8-2. TX-154 Board")
3. Remove the DPR-377 board assembly. (Refer to "4-8-3. DPR-377 Board")
4. Remove the inside panel assembly. (Refer to "4-5. Inside Panel Assembly")
5. Remove the SY-450 board assembly. (Refer to "4-8-4. SY-450 Board, AT-189U Board")
6. Remove the power block. (Refer to "4-8-5. Power Block, PS-913 Board, RE-338 Board")
7. Remove the front assembly. (Refer to "4-6-1. Front Assembly")
8. Remove the rear panel assembly. (Refer to "4-9-1. Rear Panel Assembly")

Procedure

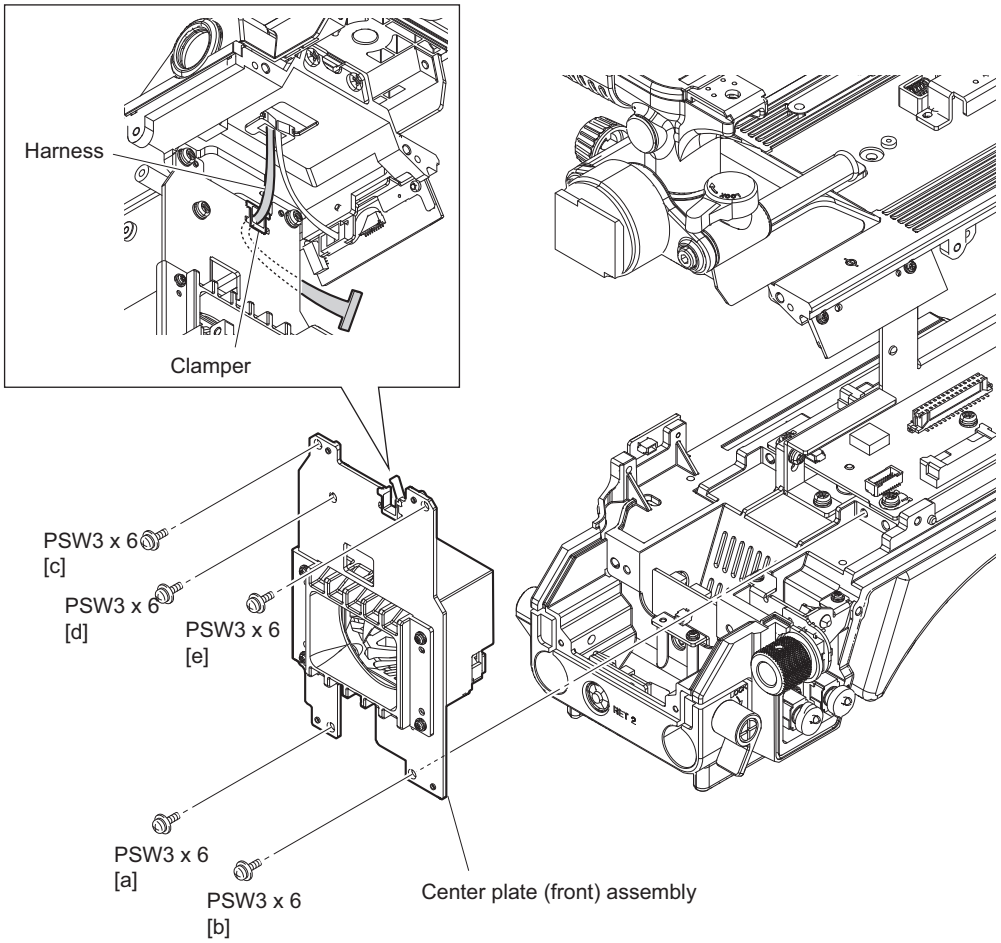
1. Press the handle release button and turn the handle in the direction of the arrow.



2. Remove the screws.
   (1) Press the handle release button and remove the two screws (B2 x 5) [a].
   (2) Remove the two screws (B2 x 5) [b].
   (3) Remove the screw (B3 x 8).



3. Remove the center plate (front) assembly.
   (1) Release the harness from the clamper.
   (2) Remove the five screws, then remove the center plate (front) assembly.

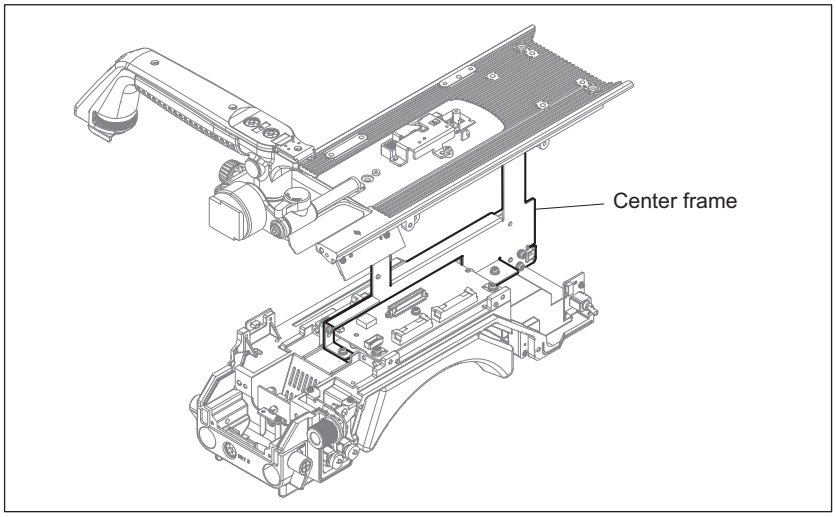


Note

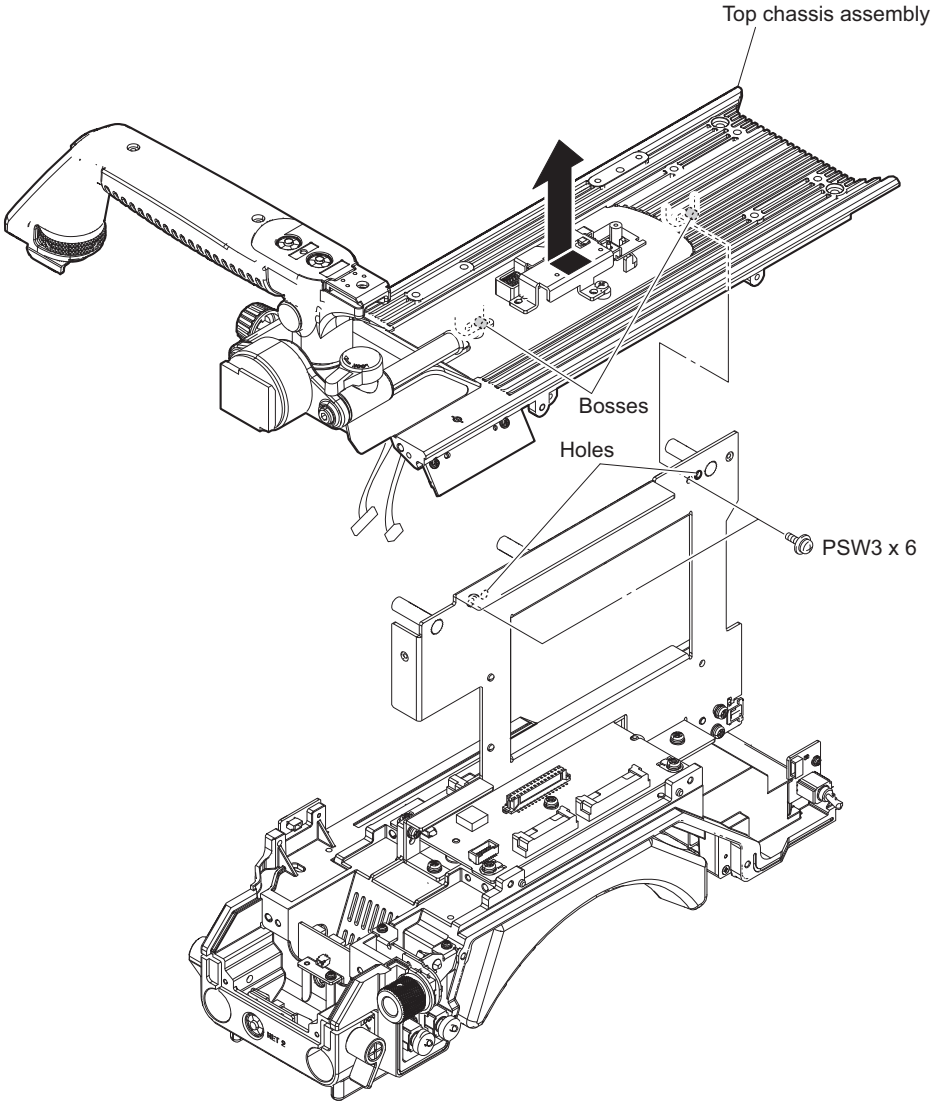
When installing the center plate (front) assembly, tighten the screws in the following sequence: (a), (b), (c), (d), (e).

Note

Do not apply excessive load to the center frame to prevent it from being distorted.



4. Remove the top chassis assembly.
   (1) Remove the two screws, then remove the top chassis assembly in the direction of the arrow.



Note

When attaching the top chassis assembly, align the two bosses with the two holes.

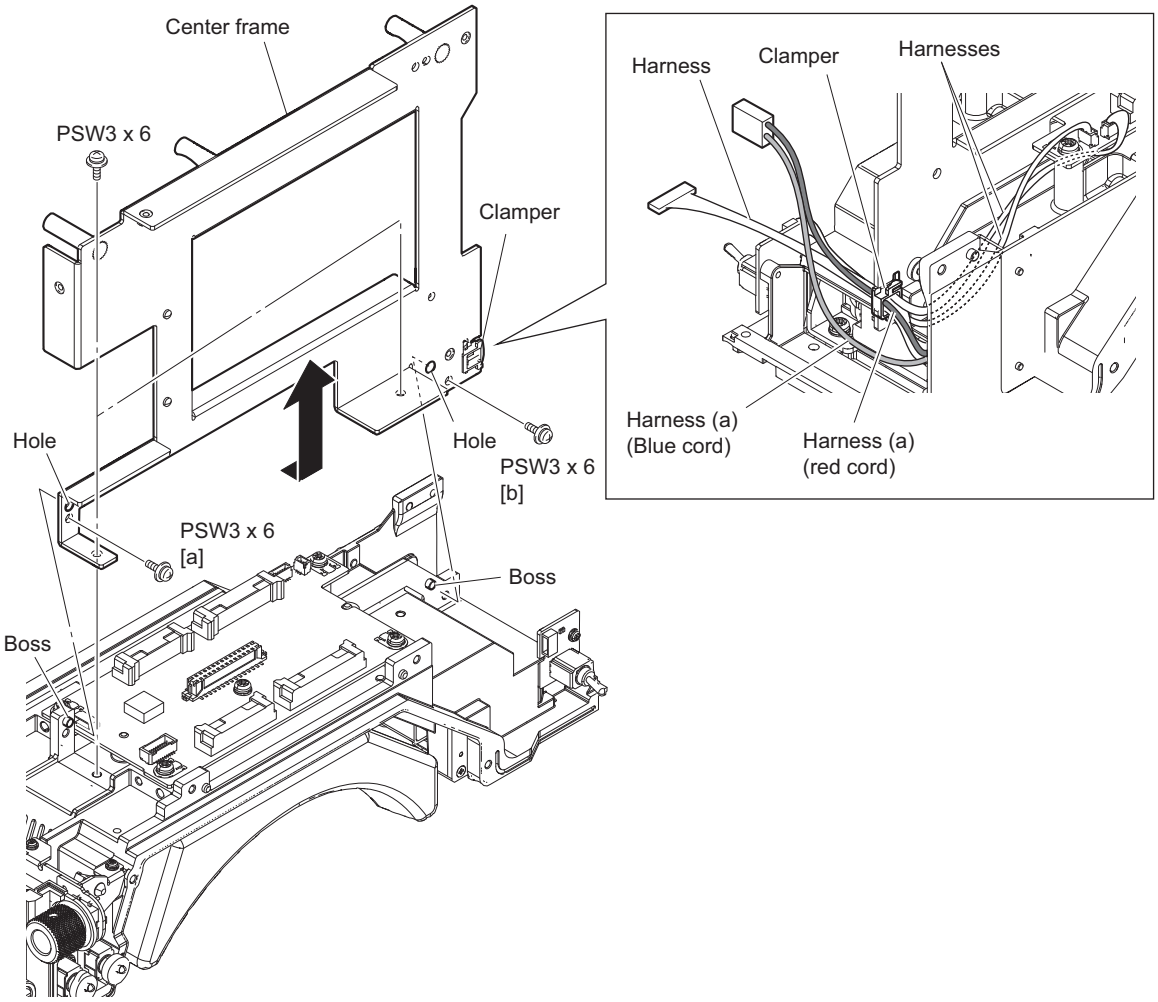
5. Remove the center frame.

(1) Release the four harnesses from the clamper.

Note

When clamping the harnesses to the clamper, do not clamp the blue cord of the harness (a) as shown below.

(2) Remove the four screws, then remove the center frame in the direction of the arrow.

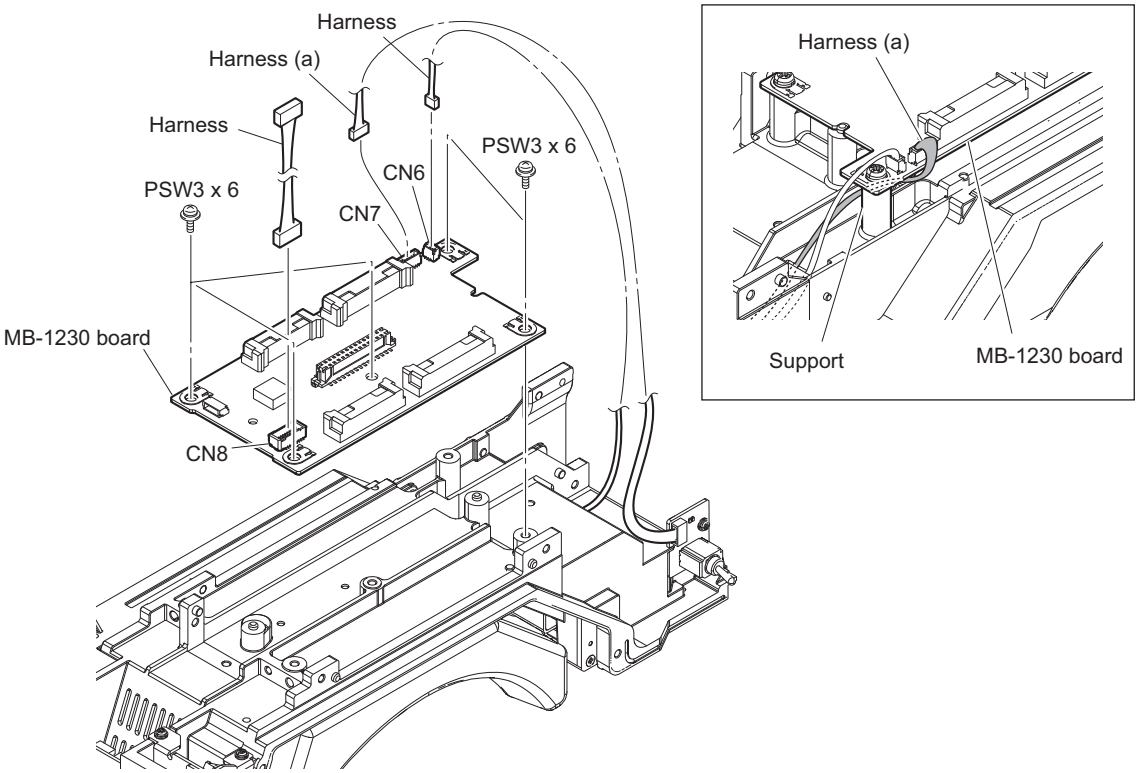


Note

When installing the center frame, observe the following instructions.

- Align the two bosses with the two holes.
- Tighten the screws in the following sequence: (a), (b), and others.

6. Remove the MB-1230 board.
   (1) Disconnect the three harnesses from the three three connectors (CN6, CN7, CN8) on the MB-1230 board.
   (2) Remove the five screws, then remove the MB-1230 board.



Note

When installing the MB-1230 board, arrange the harness (a) as shown in the figure.

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

Section 5
Electrical Alignment

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

Note

- Perform the "5-4. Video System Level Adjustment" according to the system that the customer uses.
- Master setup unit MSU-1000/1500 is used for electrical 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 "5-1-7. Setup Menu Correspondence List" for detail of setup menu.
- Baseband processor unit BPU4800 is used for electrical adjustments of the unit.

5-1. Preparations

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

5-1-1. Required Equipment, Tool

Note

Use calibrated equipment and tools.

Equipment Required

Name	Equipment
4K waveform monitor	Leader Electronics LV5490 (multi waveform monitor) or equivalent
4K color monitor	Sony BVM-X300 or equivalent
Master setup unit	Sony MSU-1000/1500
Baseband processor unit	Sony BPU4800
HD viewfinder	Sony HDVF-EL20/EL30
Lens	Fujinon ZK4.7×19 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)

5-1-2. File Data at Adjustment

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

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

Reference File

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

Lens File

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

OHB File

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

5-1-3. Handling the Grayscale Chart

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

Information on the Reflective Grayscale Chart (16:9)

Recommended chart

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

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

Handling precautions

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

Setting Illumination

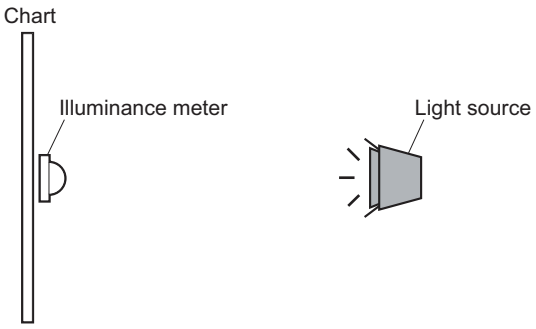
Measuring equipment : Illuminance meter (Calibrated)

Procedure

1. Turn on the light source.
2. 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 precautions

Use calibrated pattern box.

Setting Illumination

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

Preparation

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

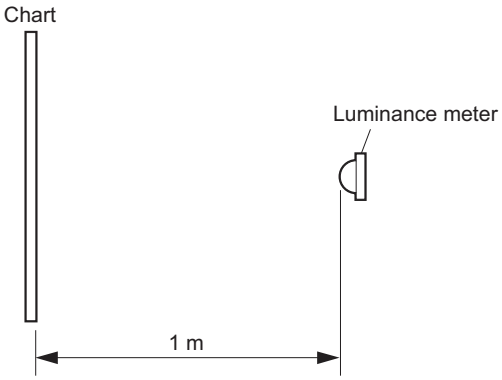
Procedure

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

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

Tip

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



5-1-4. Setup Menu

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

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

Note

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

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

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:

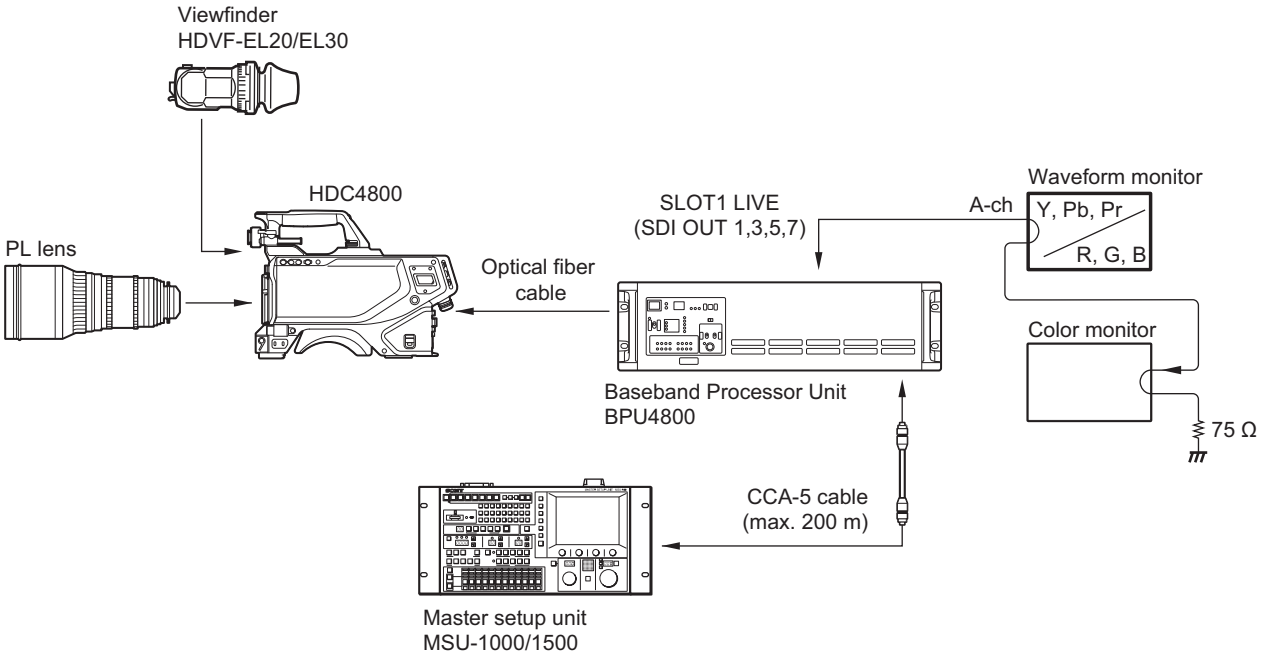
  Set the DISPLAY switch to OFF.

  To restart the setting operation, turn the DISPLAY switch to the MENU side again.

Exiting menu

Set the DISPLAY switch to OFF.

5-1-5. Connection of Equipment



5-1-6. Initial Settings

There are following Initial Settings.

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

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

When Adjusting 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 → ON (lit)
  - 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 (lit)
  - SKIN DETAIL button → OFF (lit)
- Others
  - GAMMA OFF button → ON (unlit)
  - MASTER GAIN → 0 (0 dB)
  - FILTER button (ND) → 1 (CLEAR)
  - FILTER button (CC) → A (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

- Filter position
  - ND filter → 1 (CLEAR)
  - CC filter → A (3200K)

5-1-7. Setup Menu Correspondence List

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

PAINT Menu

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

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.
  Select the [PAINT] men.

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

5-2. Automatic Adjustment

5-2-1. Execute the Automatic Level Setup

1. Press the LEVEL button (AUTO SETUP block) on MSU.
   LEVEL button lights. (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 using the camera setup menu, set as follows.
MENU: MAINTENANCE
PAGE: AUTO SETUP
ITEM: AUTO LEVEL

5-3. Camera System Adjustment

5-3-1. Black Set Adjustment

Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800

Preparations

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

Procedure

1. Operate the setup menu of MSU, and set the format to “4K/59.94P (8×)”.
   [CONFIG] button → ON (lit)
   Touch panel operation: [BPU Multi Format] → [Shooting Transmit] → “3840x2160/59.94P(x8)”
2. Open following page by camera setup menu.
   MENU: SERVICE
   PAGE: BLACK SHADING
3. Adjust this using the waveform monitor so that the pedestal level of R channel becomes equal within a range of –6 to +12 dB.
   ITEM: BLK SET [R]
4. Also adjust G and B channels in the same way as above step.
   ITEM: BLK SET [G]
   ITEM: BLK SET [B]
5. Store the file.
   MENU: SERVICE
   PAGE: BLACK SHADING
   ITEM: STORE FILE
6. Make setting to the values adjusted in step 3 and step 4, store the file every following format.

   Format

   MSU:
   [CONFIG] button → ON (lit)
   Touch panel operation: [BPU Multi Format] → [Shooting Transmit]
   - 4K/59.94P (4×):
     → “3840x2160/59.94P(x4)”
   - HD/59.94P (16×):
     → “1920x1080/59.94P(x16)”
   - HD/59.94P (8×):
     → “1920x1080/59.94P(x8)”

   File store

   MENU: SERVICE
   PAGE: BLACK SHADING
   ITEM: STORE FILE

5-3-2. Sensitivity Adjustment

Equipment: Waveform monitor (R, G, B)

Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800
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.

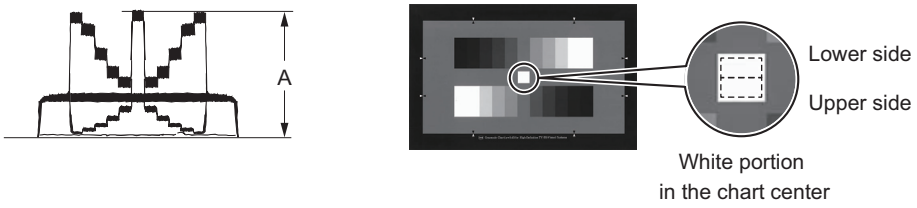
Preparations

- Setting for the MSU
  CLOSE button → OFF (dark)
  GAMMA OFF button → OFF (lit)
  MASTER GAIN → 0 (0 dB)
  DETAIL OFF button → OFF (lit)
  Touch panel operation: (Page 1) → [Detail] → [1/3] → Level Dep OFF → OFF
- Shoot the ITE grayscale chart so that it is aligned with the under scanned monitor frame.
- Lens iris:
  T5.6 (4K/59.94P (8×))

Procedure

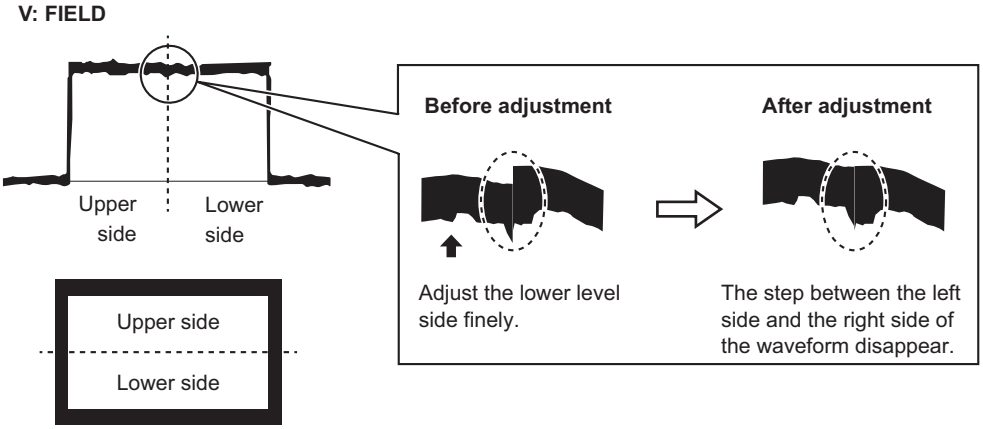
1. Operate the setup menu of MSU, and set the format to "4K/59.94P (8×)".
   [CONFIG] button → ON (lit)
   Touch panel operation: [BPU Multi Format] → [Shooting Transmit] → "3840x2160/59.94P(x8)"
2. Open following page by camera setup menu.
   MENU: SERVICE
   PAGE: OHB-ADJ1
3. Adjust the level of G 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.

   H: LINE



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 each sensitivity of G, R and B channels.
9. Store the file.
   MENU: SERVICE
   PAGE: OHB-ADJ1
   ITEM: STORE FILE
10. Make setting to the values adjusted in above steps, store the file every following format.

Format

MSU:
[CONFIG] button → ON (lit)
Touch panel operation: [BPU Multi Format] → [Shooting Transmit]

- 4K/59.94P (4×):
  → "3840x2160/59.94P(x4)"
- HD/59.94P (16×):
  → "1920x1080/59.94P(x16)"
- HD/59.94P (8×):
  → "1920x1080/59.94P(x8)"

File store

MENU: SERVICE
PAGE: OHB-ADJ1
ITEM: STORE FILE

5-3-3. Black Shading Adjustment

Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800

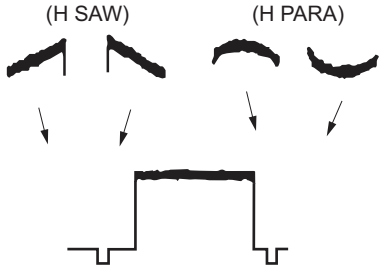
Preparations

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

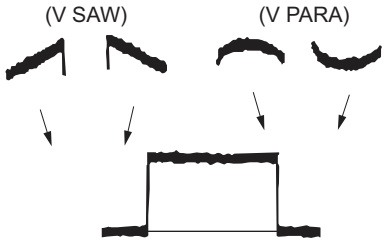
Procedure

1. Operate the setup menu of MSU, and set the format to “4K/59.94P (8×)”.
   [CONFIG] button → ON (lit)
   Touch panel operation: [BPU Multi Format] → [Shooting Transmit] → “3840x2160/59.94P(x8)”
2. Open following page by camera setup menu.
   MENU: SERVICE
   PAGE: BLACK SHADING
3. Adjust this using the waveform monitor so that R channel waveform becomes as flat as possible.
   ITEM: H SAW [R]
   ITEM: H PARA [R]
   ITEM: V SAW [R]
   ITEM: V PARA [R]

   H: LINE



   V: FIELD



4. Also adjust G and B channels in the same way as 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

6. Make setting to the values adjusted in step 3 and step 4, store the file every following format.

Format

MSU:

[CONFIG] button → ON (lit)

Touch panel operation: [BPU Multi Format] → [Shooting Transmit]

- 4K/59.94P (4×):
  → "3840x2160/59.94P(x4)"
- HD/59.94P (16×):
  → "1920x1080/59.94P(x16)"
- HD/59.94P (8×):
  → "1920x1080/59.94P(x8)"

File store

MENU: SERVICE

PAGE: BLACK SHADING

ITEM: STORE FILE

5-3-4. White Shading Adjustment

Equipment: Waveform monitor (R, G, B)

Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800

Subject: Full-white pattern

Note

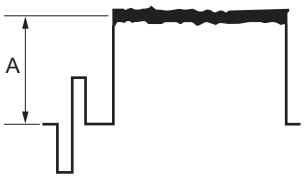
When the next condition corresponds to even one, white shading is not adjusted correctly.

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

Preparations

- 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: T4 to T5.6
- A = 600 ± 20 mV
  If the lens aperture is greater than T5.6, adjust the light amount with the shutter.



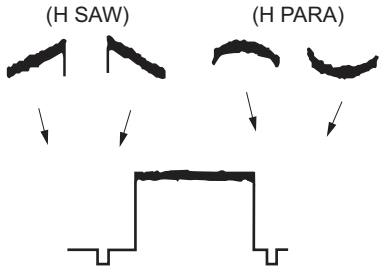
- Lens focus:: ∞
- If use the lens with built-in extender, set the lens extender as follows.
  Lens extender (x2) → OFF

- Set as follows by camera setup menu.
  MENU: OPERATION
  PAGE: LENS FILE
  ITEM: FILE
  1. Select the file in accordance with the lens attached. If there is no appropriate file, select NO OFFSET.
  2. Change the name of lens with MSU.

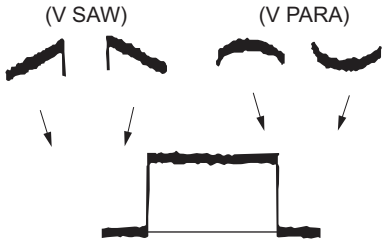
Procedure

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

H: LINE



V: FIELD



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

Store 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 with the Built-in Extender

When the WHITE or shading of V is out of alignment by using the lens extender, 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
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.
   - Lens extender (x2) → OFF

5-4. Video System Level Adjustment

Note

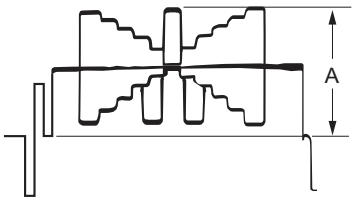
Perform the video system level adjustment according to the system that the customer uses.

5-4-1. H/V Ratio Adjustment

Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800
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: T4 to T5.6
- A = 600 ±20 mV
  If the lens aperture is greater than T5.6, adjust the light amount with the shutter.



Procedure

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

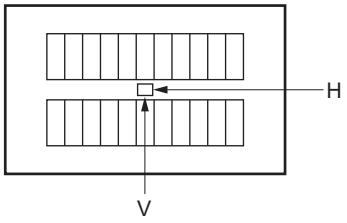
   Note

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

   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Detail] → [1/3]
   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)



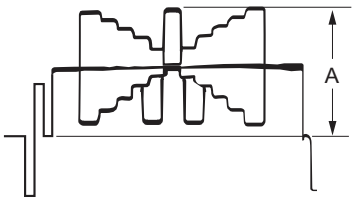
4. Change the settings to the recorded customer's settings.
5. Store the reference file.
   (Refer to "5-4-12. File Store".)

5-4-2. Detail Level Adjustment

Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800
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: T4 to T5.6
- A = 600 ±20 mV
  If the lens aperture is greater than T5.6, adjust the light amount with the shutter.



Procedure

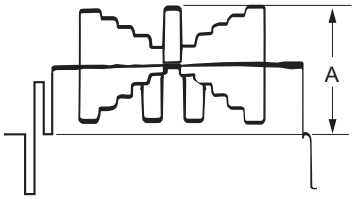
1. Operate the control panel of MSU, and set as follows.
   (1) PAINT button → ON (lit)
   (2) Touch panel operation: (Page 1) → [Detail] → [1/3]
2. Adjust the detail level to be added to each step of the grayscale to the desired level.
   - Adjustment item: [Level]
3. Store the reference file.
   (Refer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

5-4-3. Crispening Adjustment

Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800
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: T4 to T5.6
- A = 600 ± 20 mV
  If the lens aperture is greater than T5.6, adjust the light amount with the shutter.



Procedure

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

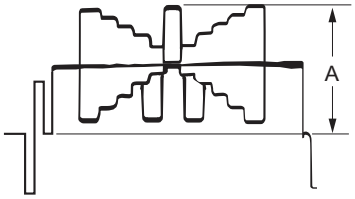
5-4-4. Level Dependent Adjustment

Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800
Subject: 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: T4 to T5.6
- A = 600 ±20 mV
  If the lens aperture is greater than T5.6, adjust the light amount with the shutter.

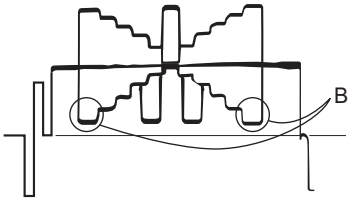


Procedure

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 where the edge of B portion on the waveform just decreases. Or adjust for the desired level.



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

Note

After adjustment is completed, be sure to perform "5-4-1. H/V Ratio Adjustment".

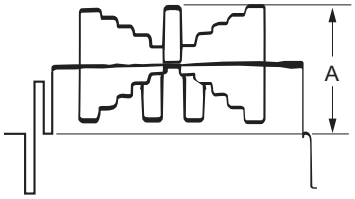
5-4-5. Detail Clip Adjustment

Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800
Subject: Grayscale chart

Preparation

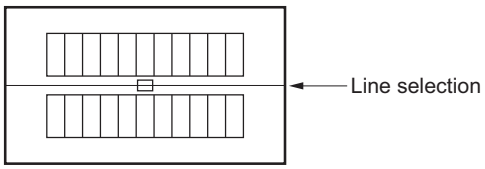
- Setting for the MSU
  DETAIL OFF button → ON (unlit)
  KNEE OFF button → OFF (lit)
- Shoot the grayscale chart so that it is aligned with the under scanned monitor frame.
- Lens iris: T4 to T5.6

- A = 600 ±20 mV
  If the lens aperture is greater than T5.6, adjust the light amount with the shutter.

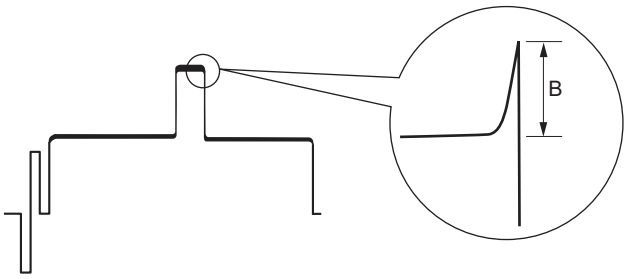


Procedure

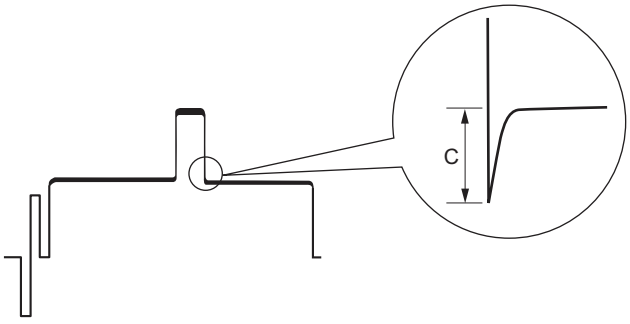
1. Operate the control panel of MSU, and perform the automatic white balance adjustment.
   WHITE button → ON (lit)
   After the adjustment is completed, the message “AWB: OK” is displayed.
2. Make a line selection at the center white portion of the grayscale chart.



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 “5-4-12. File Store”.)

5-4-6. Auto-iris Adjustment

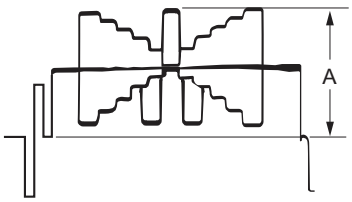
Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800
Subject: Grayscale chart

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 "5-4-12. File Store".)

5-4-7. Pedestal Level Adjustment

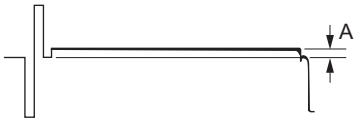
Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800

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



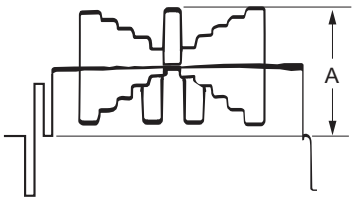
3. Store the reference file.
   (Refer to "5-4-12. File Store".)

5-4-8. Flare Adjustment

Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800
Subject: Grayscale chart

Preparation

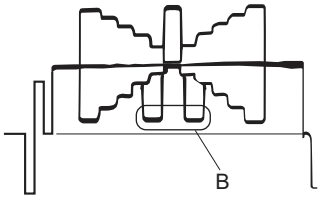
- Setting for the MSU
  DETAIL OFF button → ON (unlit)
  KNEE OFF button → OFF (lit)
  MATRIX OFF button → OFF (lit)
- Shoot the grayscale chart so that it is aligned with the under scanned monitor frame.
- Lens iris: T4 to T5.6
- A = 600 ±20 mV
  If the lens aperture is greater than T5.6, adjust the 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]



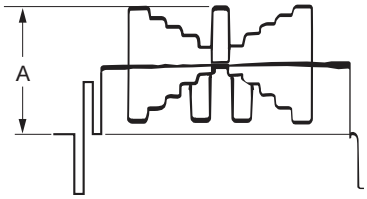
3. Store the reference file.
   (Refer to "5-4-12. File Store".)

5-4-9. Gamma Correction Adjustment

Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800
Subject: Grayscale chart

Preparation

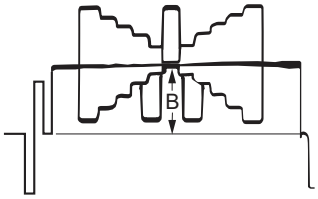
- Setting for the MSU
  KNEE OFF button → OFF (lit)
  GAMMA OFF button → ON (unlit)
- Shoot the grayscale chart so that it is aligned with the under scanned monitor frame.
- Lens iris: A = 700 ±20 mV



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 "5-4-12. File Store".)

5-4-10. Knee Point and Knee Slope Adjustments

Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800

Preparation

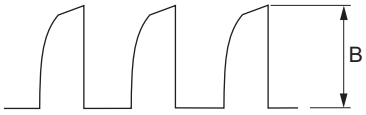
- Setting for the MSU
  MASTER GAIN → 6 (6 dB)
  TEST 1 button → ON (lit)
  KNEE OFF button → ON (unlit)

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 "5-4-12. File Store".)

Setting after Adjustment

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

5-4-11. White Clip Level Adjustment

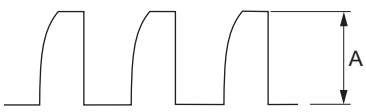
Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800

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 "5-4-12. File Store".)

Setting after Adjustment

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

5-4-12. File Store

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

Reference File Store

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

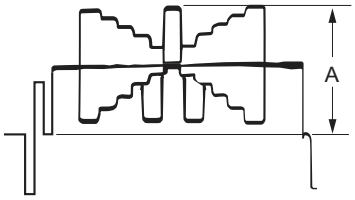
5-5. ND Offset Adjustment

5-5-1. White Balance Correction

Equipment: Waveform monitor (R, G, B)
Test point: SLOT1 LIVE (SDI OUT 1/3/5/7) connectors on the BPU4800
Subject: Grayscale chart

Preparations

- 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: T4 to T5.6
- A = 600 ±20 mV
  If the lens aperture is greater than T5.6, 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 → 12 (12 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.

Store the OHB file in the MSU menu.

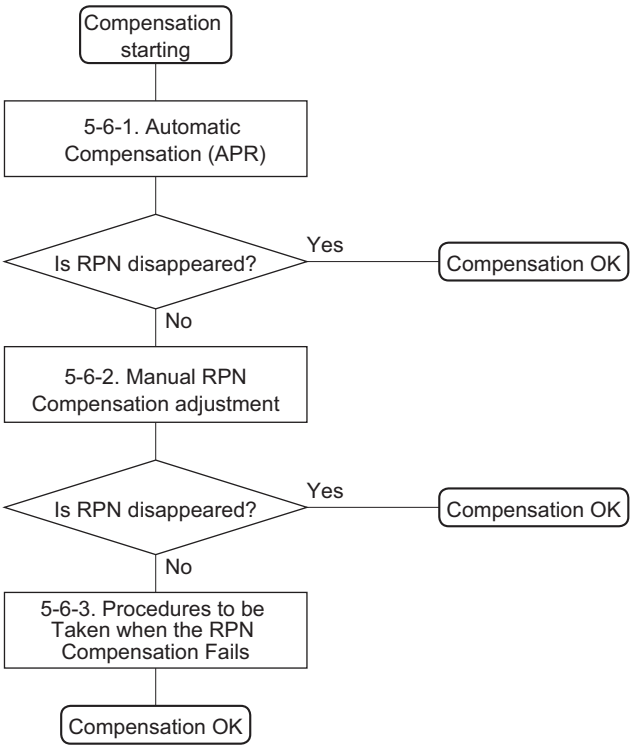
1. Operate the control panel of MSU, and set as follows.
   (1) [FILE] button → ON (lit)
   (2) Touch panel operation: [OHB File] → [OHB Store] → [Store]
   After the store operation is completed, the message “OHB File Store” is displayed.

Setting after Adjustment

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

5-6. 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.



5-6-1. 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.

Preparations

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

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

   Note

   The history information of the address data of detected RPN is updated each time APR is performed. If no RPN is detected in consecutive five APRs, RPN is excluded from the correction target (by deleting data).

5-6-2. Manual RPN Compensation Adjustment

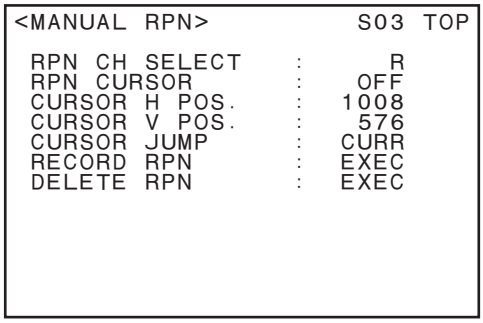
When RPN is not compensated after RPN automatic compensation was performed, execute the manual RPN compensation adjustment.

Preparation

1. Execute RPN automatic compensation(APR).
   (Refer to "5-6-1. Automatic Compensation (APR)".)

Procedure

1. Open following page by 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 cross cursor by one line or one pixel and move to position of RPN.
   (3) Perform step 5.

6. Select (turn the knob) “YES” by rotary encoder and confirm (press the button).
   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

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

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

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

Note

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

Procedure

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

```
<MANUAL RPN>          S03 TOP

 RPN CH SELECT   :      R
 RPN CURSOR      :    OFF
 CURSOR H POS.   :   1008
 CURSOR V POS.   :    576
 CURSOR JUMP     :   CURR
 RECORD RPN      :   EXEC
 DELETE RPN      :   EXEC
```

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.

Section 6
Software Upgrade

6-1. Upgrading Software Programs

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

6-1-1. Upgrading Camera Application

Equipment Required

- USB drive (commercially available)

  Tip

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

Preparations

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

Note

For how to obtain the data file for update (hdc4800_app.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   \MSSONY\PRO\CAMERA\HDC4800
2. Copy the data file for update “hdc4800_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 page number, and then press the MENU SEL knob/ENTER button long.
5. Updatable items become selectable. Select “CAMERA APP” and then press the MENU SEL knob/ENTER button.
6. A message “VERSION UP OK?” appears. Select “YES”.
   The unit restarts automatically and the version update starts.
   Upon completion of the version update, a message “UPDATE SUCCEEDED” appears.
7. 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.

6-1-2. Upgrading OS

Equipment Required

- USB drive (commercially available)

  Tip

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

Preparations

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

Note

For how to obtain the data file for update (hdc4800_os.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   \MSSONY\PRO\CAMERA\HDC4800
2. Copy the data file for update “hdc4800_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 page number, and then press the MENU SEL knob/ENTER button long.
5. Updatable items become selectable. Select “OS” and then press the MENU SEL knob/ENTER button.
6. A message “VERSION UP OK?” appears. Select “YES”.
   The unit restarts automatically and the version update starts.
   Upon completion of the version update, a message “UPDATE SUCCEEDED” appears.
7. 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.

6-2. PLD

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

Note

The part number of PLD (or ROM for PLD) in which data is not written yet, is shown in “Spare Parts”.
Therefore, if part replacement is required, write the data by the following procedure.
In the case of the PLD type that runs on the program stored in external ROM, data needs not to be written only by replacing the part if the specific PLD only is defective.

6-2-1. Corresponding PLD

Item	File	Board	Ref. No.
DPR	hdc4800_dpr.pkg	DPR-377	IC500
SY	hdc4800_sy.pkg	SY-450	IC1001
TX	hdc4800_tx.pkg	TX-154	IC200
TX2	hdc4800_tx2.pkg		

6-2-2. Upgrading PLD Data

Equipment Required

- USB drive (commercially available)

  Tip

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

Preparations

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

Note

For how to obtain the data file for update (hdc4800_dpr.pkg, hdc4800_sy.pkg, hdc4800_tx.pkg, hdc4800_tx2.pkg), contact your local Sony Sales Office/Service Center.

1. Create the following directory in the USB drive.
   \MSSONY\PRO\CAMERA\HDC4800
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 page number, and then press the MENU SEL knob/ENTER button long.
5. Updatable items become selectable. Select the PLD to be upgraded and then press the MENU SEL knob/ENTER button.

6. A message “VERSION UP OK?” appears. Select “YES”.
   The unit restarts automatically and the version update starts.
   Upon completion of the version update, a message “UPDATE SUCCEEDED” appears.
7. 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.

Note

After performing the automatic compensation (APR) and turning off and on the power of the unit, the display of TX2 version will be applied.

6-3. Forced Version Update

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

6-3-1. Forced Version 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.

Preparations

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

Note

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\HDC4800
2. Copy the data file for update to be updated to the directory created.

   Note

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

Procedure

1. Connect the USB drive that contains the program for update to the USB connector of this unit.
2. While press the MENU SEL knob/ENTER button and RET 2 button on the front panel, turn on the power of the unit.
   Each data file for update copied in the USB drive is updated.
   Upon completion of the version update, a message “UPDATE SUCCEEDED” appears.

   Tip

   The version update progress status is displayed on the viewfinder.
3. 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 7
File System

This unit is equipped with the file systems for managing data.

In this section, the menu operations are described as follows.
Example: When executing WRITE (CAM → USB) on the OPERATOR FILE page of the OPERATION menu
[OPERATION] → [OPERATOR FILE] → [WRITE (CAM → USB)]
As for the details on the setup menu, refer to "8. Setup Menu".

7-1. File Structure

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

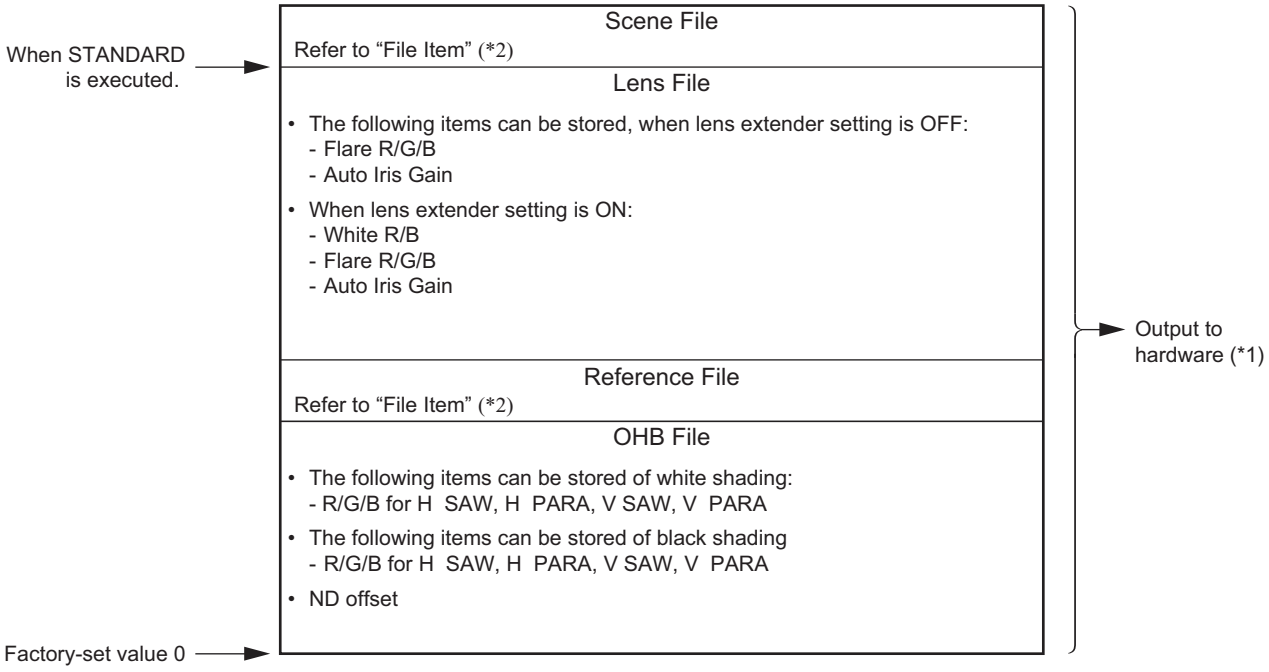
1. Operator File (Refer to "7-2. Operator File".)
   Stores the items displayed on the viewfinder and switch settings for camera operator.
   This file can be stored in a USB drive, yet video data (paint data) cannot be stored.

   Tip

   When any PAINT menu item is added to USER menu on USER MENU CUSTOMIZE menu, corresponding paint data is stored in the operator file.

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

7-1-1. Structure of Paint Related Files



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

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

7-2. Operator File

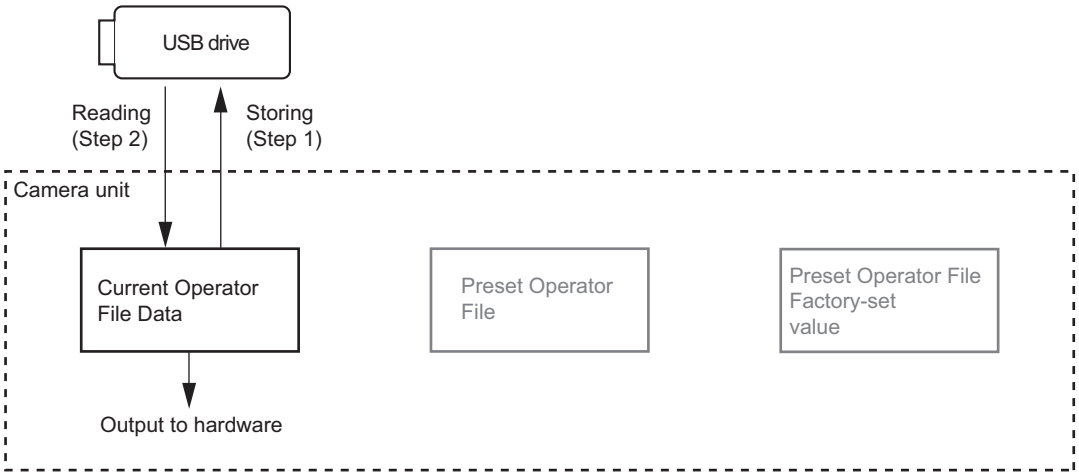
The operator file can be stored and read in the camera.
Use the setup menu to store the operator file in and read the operator file from the USB drive.

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.

7-2-1. Operator File Operation

Outline Figure of Operation



Storing

Reference: Refer to step 1 of 7-2-1."Outline Figure of Operation".

Using OPERATION menu of this unit

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

Reading

Reference: Refer to step 2 of 7-2-1."Outline Figure of Operation".

Using OPERATION menu of this unit

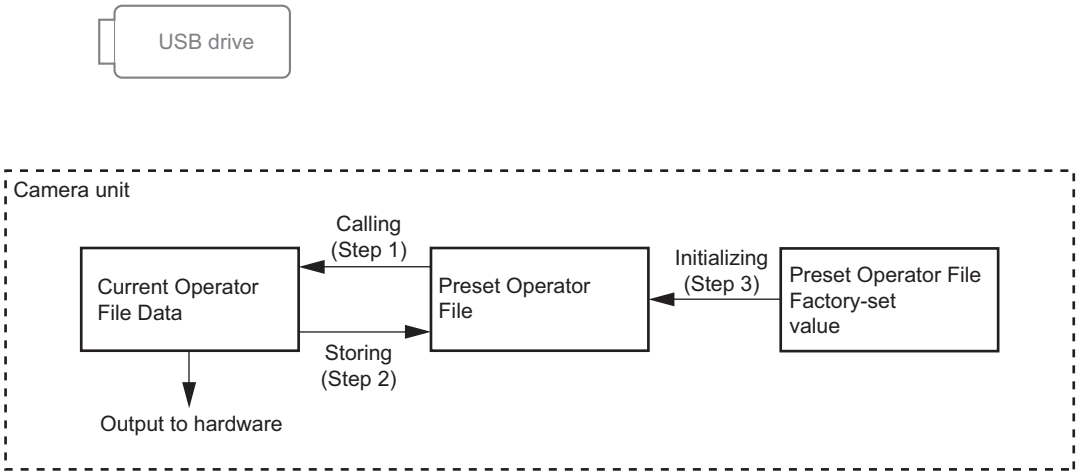
1. Reads the operator file stored in the USB drive to the camera.
   [OPERATION] → [OPERATOR FILE] → [READ (USB → CAM)]

7-3. Preset Operator File

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

7-3-1. Preset Operator File Operation

Outline Figure of Operation



Calling

Reference: Refer to step 1 of 7-3-1.“Outline Figure of Operation”.

Using OPERATION menu of this unit

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

Storing

Reference: Refer to step 2 of 7-3-1.“Outline Figure of Operation”.

Using FILE menu of this unit

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

Initializing

Reference: Refer to step 3 of 7-3-1.“Outline Figure of Operation”.

Using FILE menu of this unit

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

7-4. Scene File

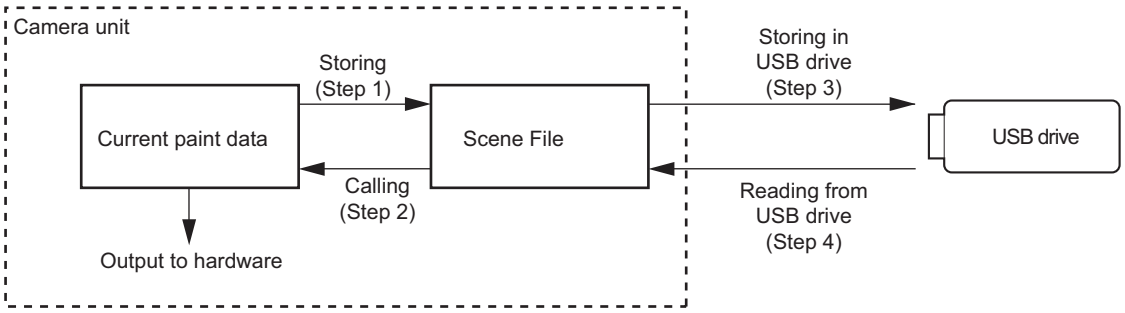
Scene files can be stored in the camera and USB drive.
Scene files can also be stored in the memory stick if the master setup unit (here after MSU) is used. For details, refer to the MSU operation manual.
Data is stored and called using the setup menu or MSU.
Scene files can be copied between cameras 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.
- Scene File data stored in the USB drive cannot be read when the power is just turned on.

7-4-1. Scene File Operation

Outline Figure of Operation



Storing

Reference: Refer to step 1 of 7-4-1.“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

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 7-4-1.“Outline Figure of Operation”.

Using PAINT menu of this unit

1. Select the scene file number to be called.
   [PAINT] →[SCENE FILE] → [1] to [5]
   A file currently being called is indicated with its file number highlighted.

2. Select the number again.
   Calling the scene file is canceled and it is resumed in the previous status.

With MSU

1. Press the number button of the scene file you want to call while the STORE button on the operation panel is not lit to lit button.
   The scene file of the number is called.
2. Repress the number button.
   Calling the scene file is canceled and it is resumed in the previous status.

Storing the Scene File to the USB Drive

Reference: Refer to step 3 of 7-4-1.“Outline Figure of Operation”.

Using PAINT menu of this unit

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

Reading the Scene File from the USB Drive

Reference: Refer to step 4 of 7-4-1.“Outline Figure of Operation”.

Using PAINT menu of this unit

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

   Note

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

7-5. Reference File

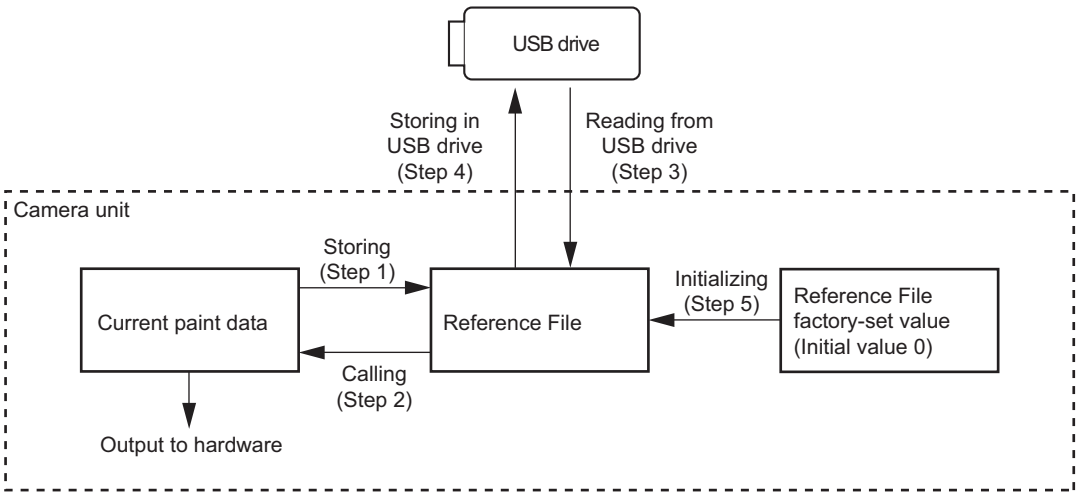
Reference files can be stored in the camera and USB drive.
Scene files can also be stored in the memory stick if the master setup unit (here after MSU) is used. For details, refer to the MSU operation manual.
Data is stored and called using the setup menu or MSU.
Reference files can be copied between 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.
- Reference File data stored in the USB drive cannot be read when the power is just turned on.

7-5-1. Reference File Operation

Outline Figure of Operation



Storing

Reference: Refer to step 1 of 7-5-1.“Outline Figure of Operation”.

Using FILE menu of this unit

1. Store the current status of the reference file.
   [FILE] → [REFERENCE] → [STORE FILE]
   Reference file data is stored in the camera and numerical data is indicated as 0.
   (Except for some data. Refer to “7-8. File Items”.)

With MSU

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

Calling

Reference: Refer to step 2 of 7-5-1.“Outline Figure of Operation”. Refer to “7-1-1. Structure of Paint Related Files”.

Using PAINT menu of this unit

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

With MSU

1. Pressing the STANDARD button in the camera/panel control area on the operation panel.
   Reference file is restored at the time when it was stored.

Reading the Reference File from the USB Drive

Reference: Refer to step 3 of 7-5-1.“Outline Figure of Operation”.

Using FILE menu of this unit

1. Reads the reference file stored in the USB drive to the camera.
   [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 7-5-1.“Outline Figure of Operation”.

Using FILE menu of this unit

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

Initializing All File Items

Reference: Refer to step 5 of 7-5-1.“Outline Figure of Operation”.

Using FILE menu of this unit

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

7-6. Lens File

The Lens File stores the differential data from the Reference File.
The lens file is stored white shading generated when the extender is turned on, flare balance, white balance, T value at the lens open end, lens name, and other data. 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.
The adjustment data can be called by selecting a Lens File.

Note

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

7-6-1. Lens File Operation

Adjusting Lens and Setting Lens File

For lens non-compatible with serial communication

1. Attach a lens and select a file with the same name as the lens name from the setup menu.
   [FILE] → [LENS FILE] → Select a lens number.
   If there is no file with the same name as the lens name, select “NO OFFSET.”
2. Set the lens name and the T value at the lens open end.
   [FILE] → [LENS FILE] → [NAME] , [F NO]
3. Turn OFF the lens extender.
4. Adjust the white balance and flare balance with the grayscale chart.
   (1) White balance adjustment
   [MAINTENANCE] → [AUTO SETUP] → [AUTO WHITE]
   (2) Flare Balance Adjustment
   [PAINT] → [VIDEO LEVEL] → [FLARE] → [R/G/B]
5. Display a center marker.
   [OPERATION] → [VF MARKER] → [CENTER] → Set to “ON”.
6. Move the lens zoom to set the center marker at a position where the subject does not move.
   [FILE] → [LENS FILE] → [CENTER MARKER] → [H POS] , [V POS] , [STORE]

   Note

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

7. Writing data to lens file.
   [FILE] → [LENS FILE] → [STORE FILE]
8. Turn ON the lens extender and repeat steps 4 to 8.

For lens compatible with serial communication

1. Confirm that the lens number is 17.
   [FILE] → [LENS FILE] → Confirm lens number 17.
2. Check the automatically set lens name and the T value at the lens open end.
   [FILE] → [LENS FILE] → [NAME] , [F NO]

3. Check the shading.

   Note

   Only when deviation is generated, adjust the white shading. In this case, no data is stored in the lens file.

   - White Shading Adjustment
     Shoot a full-white pattern so that the video level becomes approx. 80 % (560 mV), and then perform the automatic white shading adjustment or adjust white shading V SAW, V PARA, H SAW, and H PARA for R, G, and B.
     - Automatic white shading adjustment
       [MAINTENANCE] → [WHITE SHADING] → [AUTO WHITE SHADING]
     - White shading correction
       [MAINTENANCE] → [WHITE SHADING] → [V SAW] , [V PARA] , [H SAW] , [H PARA] → [R/G/B]
4. Turn OFF the lens extender.
5. Adjust the white balance and flare balance with the grayscale chart.
   (1) White balance adjustment
   [MAINTENANCE] → [AUTO SETUP] → [AUTO WHITE]
   (2) Flare Balance Adjustment
   [PAINT] → [VIDEO LEVEL] → [FLARE] → [R/G/B]
6. Display a center marker.
   [OPERATION] → [VF MARKER] → [CENTER] → Set to “ON”.
7. Move the lens zoom to set the center marker at a position where the subject does not move.
   [FILE] → [LENS FILE] → [CENTER MARKER] → [H POS] , [V POS] , [STORE]

   Note

   The center marker is not stored by the lens file store, but is stored immediately after adjustment. Note that if the center marker is changed, it is stored in the lens file even in the normal use.

8. Writing data to lens file.
   [FILE] → [LENS FILE] → [STORE FILE]
9. Turn ON the lens extender and repeat steps 5 to 8.

Calling

Using OPERATION menu of this unit

Loads the lens file stored in the camera.

1. Select the set lens file.
   [FILE] → [LENS FILE] → Select a lens number.

7-7. OHB File

OHB file is used to store the adjustment values specific to the CMOS block.
OHB file data is stored in the camera.
OHB file data can be adjusted and stored by using the setup menu or the master setup unit (here after MSU).

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.

7-7-1. OHB File Operation

Adjusting and Storing

Using FILE and MAINTENANCE Menu of This Unit

1. Loads the reference file stored in the camera.
   [FILE] → [REFERENCE] → [STANDARD]
2. Repeat the automatic black shading adjustment 3 times or more.
   [MAINTENANCE] → [BLACK SHADING] → [AUTO BLACK SHADING]
   (1) When adjustment is not completed correctly, adjust the black shading V SAW, V PARA, H SAW, and H PARA for R, G and B
   [MAINTENANCE] → [BLACK SHADING] → [V SAW] , [V PARA] , [H SAW] , [H PARA] → [R/G/B]
3. Perform the automatic black balance adjustment.
   [MAINTENANCE] → [AUTO SETUP] → [AUTO BLACK]
4. Shoot a full-white pattern so that the video level becomes approx. 80 % (560 mV).
5. Repeat the automatic white shading adjustment 3 times or more.
   [MAINTENANCE] → [WHITE SHADING] → [AUTO WHITE SHADING]
   (1) When adjustment is not completed correctly, adjust the white shading V SAW, V PARA, H SAW, and H PARA for R, G and B.
   [MAINTENANCE] → [WHITE SHADING] → [V SAW] , [V PARA] , [H SAW] , [H PARA] → [R/G/B]
6. Adjust the ND offset.

   Note

   - Adjust the ND offset for all of ND filter 1 to ND filter 3.
   - To change ND filters, press the ND filter switching button while pressing the FILTER LOCAL button.

   (1) Select the ND filter 3, and shoot a full-white pattern so that the video level becomes approx. 50 % (350 mV).
   (2) Select the ND filter 1, and adjust the lens iris so that the video level becomes approx. 80 to 50 % (560 to 350 mV)
   (3) Perform the automatic white balance adjustment.
   [MAINTENANCE] → [AUTO SETUP] → [AUTO WHITE]
   (4) Select the ND filter 2, and adjust in the same procedures as step (2) to (3).
   (5) Select the ND filter 3, and adjust in the same procedures as step (2) to (3).
7. Store the OHB File.
   [FILE] → [OHB FILE] → [STORE FILE]

With MSU

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

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

   Note

   - Adjust the ND offset for all of ND filter 1 to ND filter 3.
   - To change ND filters, press the ND filter switching button while pressing the FILTER LOCAL button.

   (1) Select the ND filter 3, and shoot a full-white pattern so that the video level becomes approx. 50 % (350 mV).
   (2) Select the ND filter 1, and adjust the lens iris so that the video level becomes approx. 80 to 50 % (560 to 350 mV)
   (3) Select the ND filter 2, and adjust in the same procedures as step (2) to (3).
   (4) Select the ND filter 3, and adjust in the same procedures as step (2) to (3).
8. Store the OHB File.
   [FILE] → [OHB FILE] → [STORE FILE]

7-8. File Items

Data that is set by the setup menu can be stored in a file.
This section lists files in which each piece of set data is to be stored on a function basis.

Description on symbols

- ○: Shows that the item is stored in the file when the file store menu for the file is performed.
  (However, ON (OFF) means that the item is set to ON (OFF) in the file.)
- ×: Shows that the item is not stored in the file.
- —: Shows that the item is not stored in the file by temporary operation, etc.

Function	Switch item	Analog item	Scene file	Reference file	Lens file	Operator file	OHB file
GAIN	Master Gain Select *1		○	○	×	×	×
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	×	×	×	×	○

Continued

*1: –6 dB to +12 dB

Function	Switch item	Analog item	Scene file	Reference file	Lens file	Operator file	OHB file
	Auto Black Shading		×	×	×	×	×
Black set		Black Set-R	×	×	×	×	○
		Black Set-G	×	×	×	×	○
		Black Set-B	×	×	×	×	○
Test	Test1 on (TEST SAW)		×	×	×	×	×
	Test2 ON		×	×	×	×	×
	Test2 Mode 3step/10step		×	×	×	×	×
Optical filter	Filter1 (ND)		○	×	×	×	×
	Filter2 (CC)		○	×	×	×	×
	Filter Remote/ Local		×	×	×	×	×
5600k	5600K ON		○	OFF	×	×	×
White Shading		White Shading H Saw-R	×	×	×	×	○
		White Shading H Saw-G	×	×	×	×	○
		White Shading H Saw-B	×	×	×	×	○
		White Shading V Saw-R	×	×	×	×	○
		White Shading V Saw-G	×	×	×	×	○
		White Shading V Saw-B	×	×	×	×	○
		White Shading H Para-R	×	×	×	×	○
		White Shading H Para-G	×	×	×	×	○
		White Shading H Para-B	×	×	×	×	○
		White Shading V Para-R	×	×	×	×	○
		White Shading V Para-G	×	×	×	×	○
		White Shading V Para-B	×	×	×	×	○
	Auto White Shading		×	×	×	×	×
White		White-R	○	○	OFFSET	×	×
		White-G	○	○	×	×	×
		White-B	○	○	OFFSET	×	×
		color temp	—	—	—	—	—
		balance	—	—	—	—	—
		Master White Gain	×	×	×	×	×
	Auto White Balance		×	×	×	×	×
Flare	Flare OFF		○	ON	×	×	×
		Flare-R	○	○	○	×	×
		Flare-G	○	○	○	×	×

Continued

Function	Switch item	Analog item	Scene file	Reference file	Lens file	Operator file	OHB file
		Flare-B	○	○	○	×	×
Black		Master Black	○	○	×	×	×
		Black-R	○	○	×	×	×
		Black-G	○	○	×	×	×
		Black-B	○	○	×	×	×
	Auto Black Balance		×	×	×	×	×
Detail	Detail Off		○	ON	×	×	×
		Detail Level	○	○	×	×	×
		Detail Limiter	○	×	×	×	×
		Detail White Limiter	○	○	×	×	×
		Detail Black Limiter	○	○	×	×	×
		Detail Crispening	○	○	×	×	×
		H Detail Frequency	○	○	×	×	×
		Mix Ratio	○	○	×	×	×
	V DTL control mode		×	○	×	×	×
		Detail H/V Ratio	○	○	×	×	×
	Level Dep. Off		○	○	×	×	×
		Detail Level Depend	○	○	×	×	×
	Knee Aperture On		○	○	×	×	×
		Knee Aperture	○	○	×	×	×
HD Detail	Detail Off		○	ON	×	×	×
		Detail Level	○	○	×	×	×
		Detail Limiter	○	×	×	×	×
		Detail White Limiter	○	○	×	×	×
		Detail Black Limiter	○	○	×	×	×
		Detail Crispening	○	○	×	×	×
		H Detail Frequency	○	○	×	×	×
		Detail H/V Ratio	○	○	×	×	×
	Level Dep. Off		○	○	×	×	×
		Detail Level Depend	○	○	×	×	×
Skin Detail	Skin DTL On		○	○	×	×	×
	Natural Skin Detail ON		○	○	×	×	×
	Skin gate ON		×	×	×	×	×
	Skin gate (CCU)		×	×	×	×	×
	Skin Detail Auto Hue (ch1)		×	×	×	×	×
	Skin Detail Auto Hue (ch2)		×	×	×	×	×

Continued

Function	Switch item	Analog item	Scene file	Reference file	Lens file	Operator file	OHB file
	Skin Detail Auto Hue (ch3)		×	×	×	×	×
	Skin 1 On		○	○	×	×	×
	Skin 1 Gate On		×	×	×	×	×
		Skin 1 Level	○	○	×	×	×
		Skin 1 Phase	○	○	×	×	×
		Skin 1 Width	○	○	×	×	×
		Skin 1 Sat	○	○	×	×	×
		Skin 1 Y Limit	○	○	×	×	×
	Skin 2 On		○	○	×	×	×
	Skin 2 Gate On		×	×	×	×	×
		Skin 2 Level	○	○	×	×	×
		Skin 2 Phase	○	○	×	×	×
		Skin 2 Width	○	○	×	×	×
		Skin 2 Sat	○	○	×	×	×
		Skin 2 Y Limit	○	○	×	×	×
	Skin 3 On		○	○	×	×	×
	Skin 3 Gate On		×	×	×	×	×
		Skin 3 Level	○	○	×	×	×
		Skin 3 Phase	○	○	×	×	×
		Skin 3 Width	○	○	×	×	×
		Skin 3 Sat	○	○	×	×	×
		Skin 3 Y Limit	○	○	×	×	×
Matrix	Matrix Off		○	○	×	×	×
	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	○	○	×	×	×

Continued

Function	Switch item	Analog item	Scene file	Reference file	Lens file	Operator file	OHB file
OHB matrix	OHB Matrix On		×	○	×	×	×
		Phase select	×	×	×	×	×
		Hue	×	×	×	×	○
		Saturation	×	×	×	×	○
Black Gamma	Black Gamma On		○	○	×	×	×
		R Black Gamma	○	○	×	×	×
		G Black Gamma	○	○	×	×	×
		B Black Gamma	○	○	×	×	×
		M Black Gamma	○	○	×	×	×
	Black Gamma (RGB) Range		○	○	×	×	×
Low key saturation	Low Key Saturation ON		○	○	×	×	×
	Range		○	○	×	×	×
		Low Key Saturation level	○	○	×	×	×
Gamma	Gamma Off		○	ON	×	×	×
	Gamma Category Select		○	○	×	×	×
	STANDARD Gamma Table Select		○	○	×	×	×
	HYPER Gamma Table Select		○	○	×	×	×
	Cine Gamma Table Select		○	○	×	×	×
	User Gamma Table Select		○	○	×	×	×
	Step Gamma (0.90 to 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	×	×	×

Continued

Function	Switch item	Analog item	Scene file	Reference file	Lens file	Operator file	OHB file
	Knee Saturation on		○	○	×	×	×
		Knee saturation	○	○	×	×	×
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 *1		○	OFF	_	_	_
		Mono Color Saturation *1	○	○	_	_	_
		Mono Color Hue *1	○	○	_	_	_
SD Detail	SD Detail Off *1		○	○	_	_	_
		SD Detail Level *1	○	○	_	_	_
		SD Detail Limiter *1	○	○	_	_	_
		SD Detail White Limiter *1	○	○	_	_	_
		SD Detail Black Limiter *1	○	○	_	_	_
		SD Detail Crispening *1	○	○	_	_	_
		SD H Detail Frequency *1	○	○	_	_	_
		SD Detail H/V Ratio *1	○	○	_	_	_
		SD Detail Level Depend *1	○	○	_	_	_
		SD Detail Comb *1	○	○	_	_	_
Cross Color Reduce	Cross Color Reduce Off *1		○	○	_	_	_
		Cross Color Reduce Level *1	○	○	_	_	_
		Cross Color Reduce Coring *1	○	○	_	_	_
SD Matrix	SD Matrix Off *1		○	○	_	_	_
	SD Preset Matrix On *1		○	○	_	_	_
	SD User Matrix On *1		○	○	_	_	_
		R-G *1	○	○	_	_	_
		R-B *1	○	○	_	_	_
		G-R *1	○	○	_	_	_

Continued

*1: Connected with CCU only

Function	Switch item	Analog item	Scene file	Reference file	Lens file	Operator file	OHB file
		G-B *1	○	○	_	_	_
		B-R *1	○	○	_	_	_
		B-G *1	○	○	_	_	_
	SD Multi Matrix On *1		○	○	_	_	_
		Phase select *1	×	×	_	_	_
		Hue *1	○	○	_	_	_
		Saturation *1	○	○	_	_	_
SD Gamma	SD Gamma Off *1		○	ON	_	_	_
		SD M Gamma *1	○	○	_	_	_
Level auto set up	level auto set up		×	×	×	×	×
	White Setup Mode		×	×	×	×	×
Digital extender	digital extender on		×	×	×	×	×

Menu	Item	Scene file	Reference file	Lens file	Operator file	OHB file
USER MENU customize		—	—	—	○	—
VF DISPLAY	EX	—	—	—	○	—
	ZOOM	—	—	—	○	—
	DISP	—	—	—	○	—
	FOCUS	—	—	—	○	—
	ND	—	—	—	○	—
	CC	—	—	—	○	—
	5600K	—	—	—	○	—
	IRIS	—	—	—	○	—
	GAIN	—	—	—	○	—
	SHUTTER	—	—	—	○	—
	BATT	—	—	—	○	—
	RETURN	—	—	—	○	—
	TALK	—	—	—	○	—
	AF *2	—	—	—	○	—
	MESSAG	—	—	—	○	—
	FOLLOW F	—	—	—	○	—
	FOCUS NAME	—	—	—	○	—
	FOCUS FORM	—	—	—	○	—
! IND	ND	—	—	—	○	—
	CC	—	—	—	○	—
	FAN	—	—	—	○	—
	EXT	—	—	—	○	—
	Y TALLY	—	—	—	○	—

Continued

*1: Connected with CCU only
*2: Displayed when [MAINTENANCE] → [LENS] → [AF DISPLAY] is “ON”.

Menu	Item	Scene file	Reference file	Lens file	Operator file	OHB file
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 ASSIST	INDICATOR	—	—	—	○	—
	MODE	—	—	—	○	—
	LEVEL	—	—	—	○	—
	GAIN	—	—	—	○	—
	OFFSET	—	—	—	○	—
	AREA MAKER	—	—	—	○	—
	SIZE	—	—	—	○	—
	POSITION	—	—	—	○	—
	POSITION H	—	—	—	○	—
	POSITION V	—	—	—	○	—
ZEBRA	ZEBRA	—	—	—	○	—
	ZEBRA1 LEVEL	—	—	—	○	—
	ZEBRA1 WIDTH	—	—	—	○	—
	ZEBRA2 LEVEL	—	—	—	○	—
CURSOR	CURSOR	—	—	—	○	—
	LEVEL	—	—	—	○	—
	BOX/CROSS	—	—	—	○	—
	H POSITION	—	—	—	○	—
	V POSITION	—	—	—	○	—
	WIDTH	—	—	—	○	—
	HEIGHT	—	—	—	○	—
	BOX MEMORY	—	—	—	○	—
	H POSI	—	—	—	○	—
	V POSI	—	—	—	○	—
	WIDTH	—	—	—	○	—
	HEIGHT	—	—	—	○	—

Continued

Menu	Item	Scene file	Reference file	Lens file	Operator file	OHB file
SPIRIT LEVEL	INDICATOR	—	—	—	○	—
	MODE	—	—	—	○	—
	REVERSE	—	—	—	○	—
	SCALE	—	—	—	○	—
	H POSITION	—	—	—	○	—
	V POSITION	—	—	—	○	—
	OFFSET	—	—	—	○	—
VF OUT	VF OUT	—	—	—	○	—
	RET MIX VF	—	—	—	○	—
	MIX DIRECTION	—	—	—	○	—
	MIX VF MODE	—	—	—	○	—
	MIX VF LEVEL	—	—	—	○	—
	CHARACTER LEVEL	—	—	—	○	—
	PinP	—	—	—	○	—
	POSITION	—	—	—	○	—
	SIZE	—	—	—	○	—
	MODE	—	—	—	○	—
SWITCH ASSIGN1	ASSIGNABLE	—	—	—	○	—
SWITCH ASSIGN2	LENS VTR S/S	—	—	—	○	—
	FRONT RET1	—	—	—	○	—
	FRONT RET2	—	—	—	○	—
	HANDLE SW1	—	—	—	○	—
	HANDLE SW2	—	—	—	○	—
	ZOOM SPEED	—	—	—	○	—
EXT SWITCH	RET CTRL CONNECTOR	—	—	—	○	—
	RET1 Pin5:	—	—	—	○	—
	RET2 Pin6:	—	—	—	○	—
	RET3 Pin4:	—	—	—	○	—
	INCOM1 Pin1:	—	—	—	○	—
	INCOM2 Pin2:	—	—	—	○	—
RETURN	RET1 SW SEL	—	—	—	○	—
	RET2 SW SEL	—	—	—	○	—
	RET3 SW SEL	—	—	—	○	—
	RET1 SW+RET2 SW	—	—	—	○	—
HEADSET MIC	INTERCOM1	—	—	—	○	—
	LEVEL	—	—	—	○	—
	POWER	—	—	—	○	—
	UNBAL	—	—	—	○	—
	INTERCOM2	—	—	—	○	—
	LEVEL	—	—	—	○	—
	POWER	—	—	—	○	—
	UNBAL	—	—	—	○	—

Continued

Menu	Item	Scene file	Refer-ence file	Lens file	Operator file	OHB file
INTERCOM 1	INTERCOM1 RECEIVE SELECT	—	—	—	○	—
	INTERCOM	—	—	—	○	—
	PGM1	—	—	—	○	—
	PGM2	—	—	—	○	—
	TRACKER	—	—	—	○	—
	SIDE TONE	—	—	—	○	—
	INTERCOM1/2	—	—	—	○	—
INTERCOM 2	INTERCOM2 RECEIVE SELECT	—	—	—	○	—
	INTERCOM	—	—	—	○	—
	PGM1	—	—	—	○	—
	PGM2	—	—	—	○	—
	TRACKER	—	—	—	○	—
	SIDE TONE	—	—	—	○	—
	INTERCOM1/2	—	—	—	○	—
TRACKER	TRACKER RECEIVE SELECT	—	—	—	○	—
	INTERCOM	—	—	—	○	—
	PGM1	—	—	—	○	—
	PGM2	—	—	—	○	—
	INPUT LEVEL	—	—	—	○	—
	OUTPUT LEVEL L-CH	—	—	—	○	—
	OUTPUT LEVEL R-CH	—	—	—	○	—
EARPHONE	EARPHONE RECEIVE SELECT	—	—	—	○	—
	INTERCOM	—	—	—	○	—
	PGM1	—	—	—	○	—
	PGM2	—	—	—	○	—
	TRACKER	—	—	—	○	—
	LEVEL	—	—	—	○	—

Section 8
Setup Menu

8-1. Overview of Setup Menu

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

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

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

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.

8-1-2. Settable Special Function

The following function is made available by setting it by the SERVICE menu.
Not that this function is limited.

- Settings of the number of scene files, setting of the resume of filter position, etc. (Refer to “8-2. SERVICE Menu” SET UP.)

- Settings of intercom for RTS company and Clear-Com, an HME company, etc. (Refer to “8-2. SERVICE Menu” INTERCOM.)
- Enhancing of master gain, outputting microphone power voltage of +12 V, etc. (Refer to “8-2. SERVICE Menu” OPTION.)

8-2. SERVICE Menu

8-2-1. Description of SERVICE Menu

SET UP

```
<SET UP>                S01 TOP
 SCENE FILE TYPE :    5
 FILTER RESUME    : OFF
 LENS IF MODE     : AUTO

 RET TRANSITION TIME : 12
```

ITEM	Description	Factory Setting
SCENE FILE TYPE	Setting for the number of scene files that the camera can have. 5: Five scene files can be set. 32: 32 scene files can be set. **Note** When the setting is changed from 32 to 5 scene files, data of the sixth and subsequent scene files is deleted.	5
FILTER RESUME	When the FILTER LOCAL button is set to ON and OFF, the filter position of camera is decided by this setting. ON: Filter position before the FILTER LOCAL button is set to ON. OFF: Filter position is not changed.	OFF
LENS IF MODE	This item can forcibly change the interface to parallel interface when a lens that allows serial communication with the camera is in use. AUTO: Automatic interface setting PARA: Forcible setting to parallel interface	AUTO
RET TRANSITION TIME	Set the muting time to be inserted when using the RET2 switch after using RET1 switch. If the muting time is short, the noise may be appeared at the time of changing from RET1 to RET2.	12

CC FILTER

```
<CC FILTER>             S02 TOP

 A: 3200
 B: 4300
 C: 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.    :    1008
 CURSOR V POS.    :     576
 CURSOR JUMP      :    CURR
 RECORD RPN       :    EXEC
 DELETE RPN       :    EXEC
```

This menu is used for manual RPN compensation. For details, refer to "5-6-2. Manual RPN Compensation Adjustment".

RPN MANAGE

```
<RPN MANAGE>              S04 TOP

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

This menu is used for RPN compensation setting and management. For details, refer to "5-6-1. Automatic Compensation (APR)".

OHB-ADJ1

```
<OHB-ADJ1>                S05 TOP

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

 FILTER    :   ON
 STORE FILE:     EXEC
```

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

BLACK SHADING

```
<BLACK SHADING>          S06 TOP

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

This menu is used for adjustment of the black shading. For details, refer to the following sections.

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

WHITE SHADING

```
<WHITE SHADING>          S07 TOP

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

 STORE FILE:    EXEC
 COLOR TEMP SEL: 3200K
```

This menu is used for adjustment of the white shading. For detail, refer to "5-3-2. Sensitivity Adjustment".

INTERCOM

```
<INTERCOM>               S08 TOP

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

ITEM	Description
INTERCOM2 INTERFACE	Specifies the interface (level) of microphone that connect the INTERCOM2 connector. RTS: Intercom level of RTS company CLEARCOM: Intercom level of Clear-Com, an HME company **Note** The setting is valid when S3 switch is set to RTS side on the SY-450 board.

Continued

ITEM	Description
INTERCOM2 VR	When using intercom of RTS company or Clear-Com, an HME company, set the INTERCOM2 volume on the rear panel to valid or invalid. (default : invalid) **Note** The setting is valid when S3 switch is set to RTS side on the SY-450 board.
DISP INTERCOM1 ONLY	When selecting INTERCOM2 switch on the rear panel to MIC ON, set indication/ non-indication of “TALK” in the viewfinder. ON: non-indication OFF: indication **Note** When switching the microphone ON/OFF by a belt pack etc., “TALK” in the viewfinder can be hidden.

SERIAL NO.

```
<SERIAL NO.>              S09 TOP

 MODEL: HDC4800
 NO   : 10001

 OHB TYPE : IT ALL
```

This menu is used displaying the current model name, serial number and the OHB type.

OPTION

```
<OPTION>                  S10 TOP

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

ITEM	Description
GAIN EXTEND	Master gain is enhanced. ON: –3, 0, 3, 6, 9, 12, 18, 24, 30, 36 dB OFF: –3, 0, 3, 6, 9, 12 dB
CHROMA FILTER	This menu is used for setting the chroma filter.
MIC AB POWER	It is used in the microphone power setting. (Refer to “1-4-1. Outputting Microphone Power Voltage +12 V (AB-Power)”.)
VR OVERFLOW	Switch the IRIS knob on the control panel of the RCP-1000/1500 series so that the relative value mode turns to OFF and the absolute value mode turns to ON.
FRONT MIC STEREO	Change the front microphone to stereo. (The repair of hardware is necessary.)

CUSTOMIZE

For the function expansion in the future.

Section 9
Circuit Description

9-1. Optical System (OHB Block)

9-1-1. BI-337 Board

This board contains Super-35mm 4K CMOS image sensor (IC201).
This board also contains the flash memory (IC105) to store the data for RPN automatic compensation (APR) and for sensor adjustment, and the power circuit for CMOS image sensor.

9-1-2. IF-1305 Board

This board contains the UNREG power relay circuit for outputting to 4-pin lens mount interface, output short-circuit protection circuit and the circuit that detect whether the corresponding lens is attached to lens hot shoe.

9-2. Signal Processing/Transmission System

9-2-1. TX-154 Board

In TX-154 board, the signal sent from BI-337 board is adjusted the black shading, the RPN compensation (automatic compensation [APR]), the master white and the master gain at FPGA (IC200). The main line signal and the command signal sent via DPR-377 board are multiplexed, it is converted to serial electric signal. This serial electric signal is converted electric to optic and it is sent to BPU4800.
Serial optic signal from BPU4800 is converted optic to electric, it separates return and command signals and is sent to DPR-377 board.

9-2-2. DPR-377 Board

This board supplies the power to BI-337 board, and control the CMOS image sensor.
Moni signal, analog VF signal and embedded audio, except picture process on the main line signal are performed at FPGA (IC500).

9-3. System Control System

9-3-1. SY-450 Board

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

9-3-2. AT-189U Board

This board consists of a system control microcomputer (IC200) and a peripheral circuit necessary for the operation of IC200.
The main program is written in the flash memory (IC401) on the AT-189U board.

9-3-3. MB-1230 Board

This board is the motherboard of the unit. This board contains interface connectors to be connected to other boards, and inductors and capacitors for power filters on each board.

Section 10
Spare Parts

10-1. Note on Repair Parts

1. Safety Related Components Warning

WARNING

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

2. Standardization of Parts

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

3. Stock of Parts

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

4. Harness

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

1. 安全重要部品

⚠警告

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

2. 部品の共通化

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

3. 部品の在庫

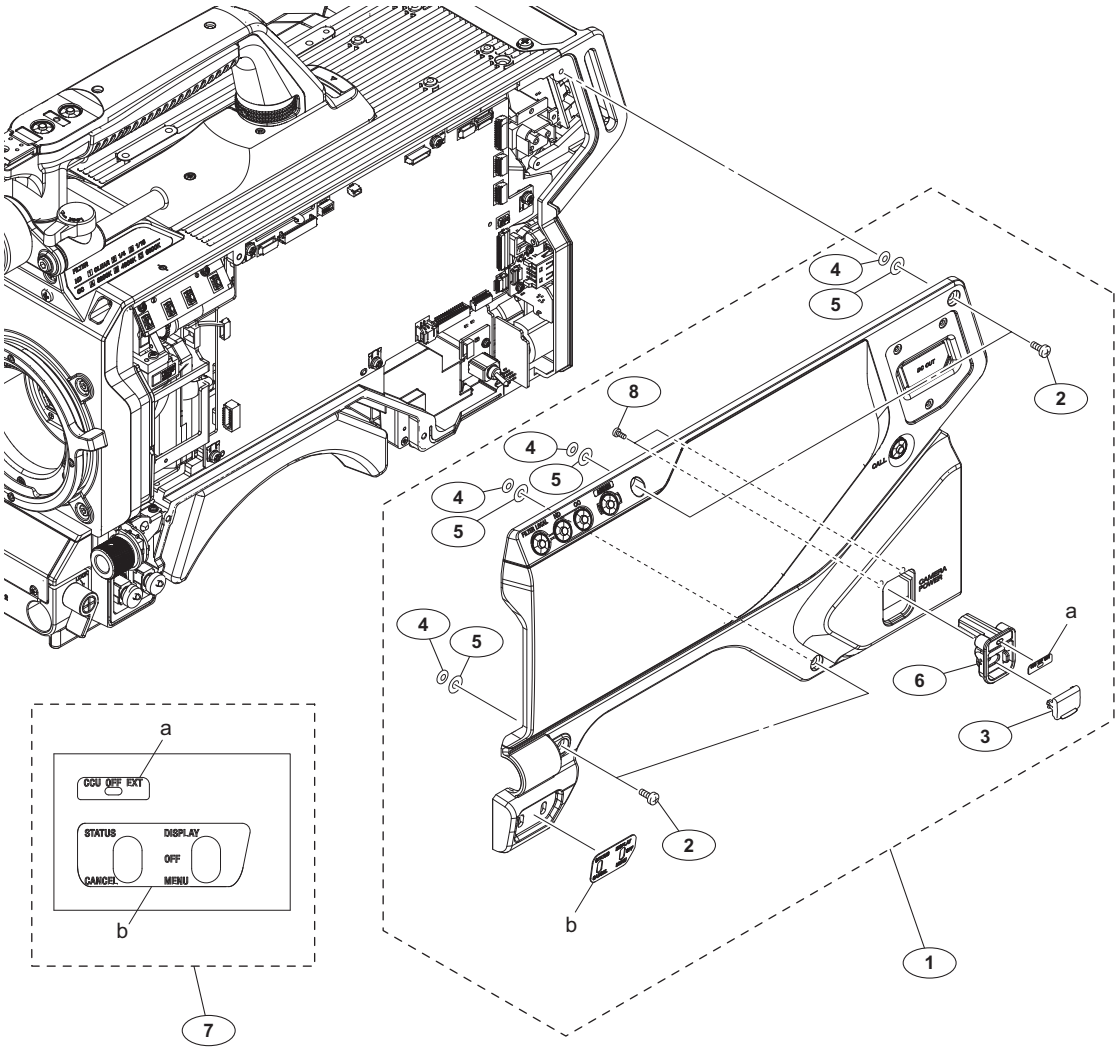
部品表の SP（Supply code）欄に "o" で示される部品は在庫していないことがあり，納期が長くなることがあります。

4. ハーネス

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

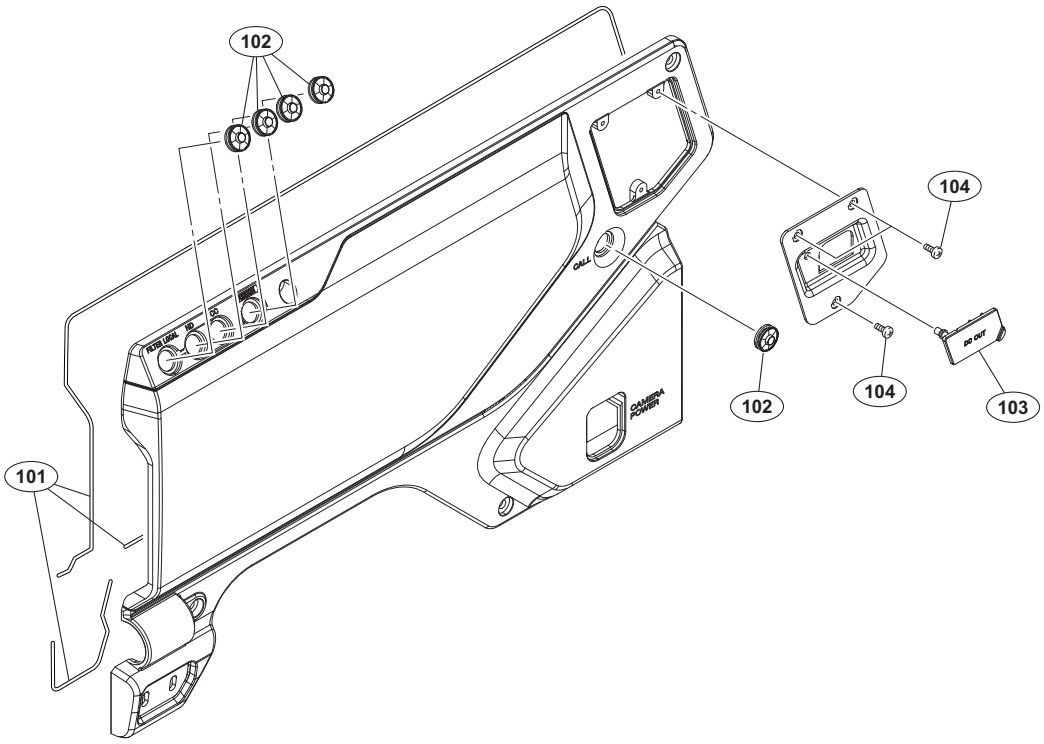
10-2. Exploded Views

Inside-1



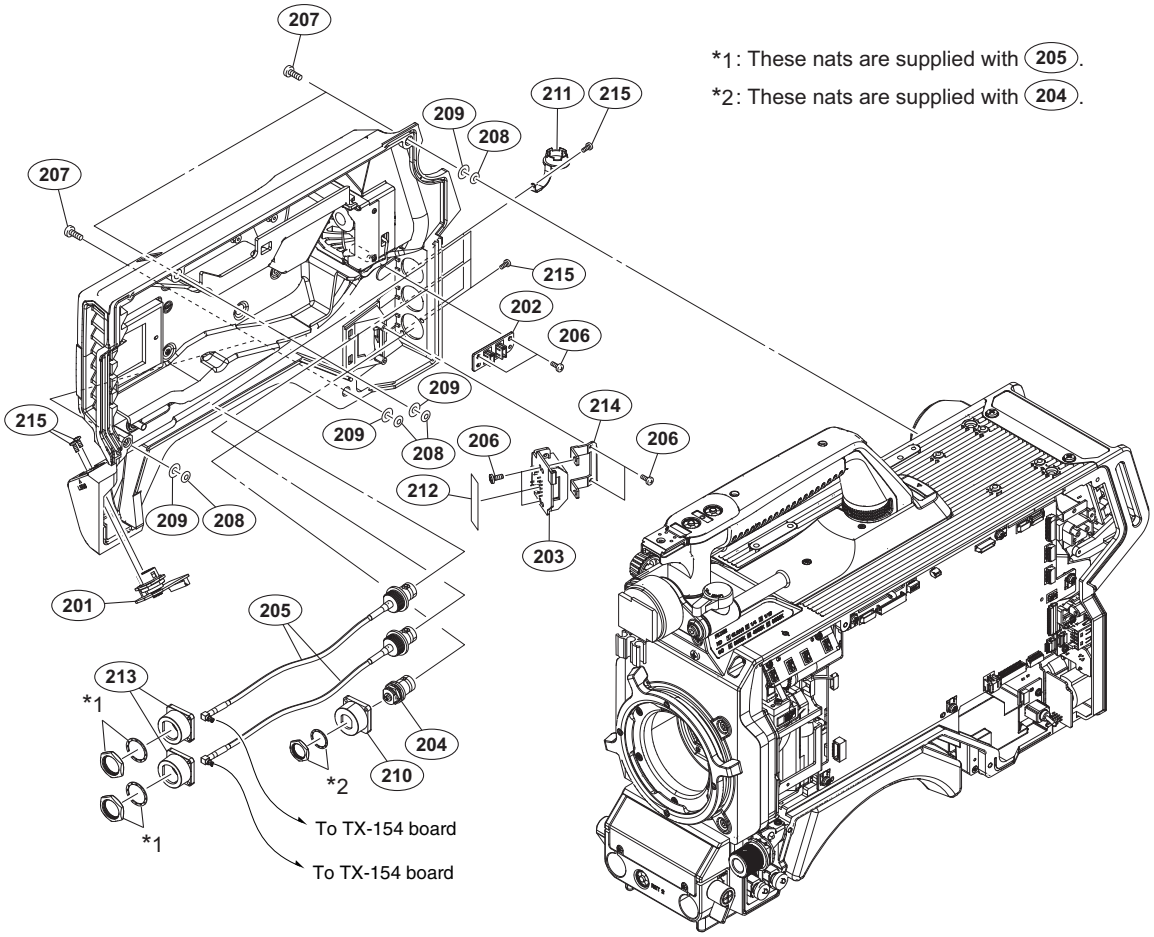
No.	Part No.	SP	Description
1	A-2129-300-A	s	INSIDE PANEL ASSY
2	3-603-679-02	s	STAINLESS SCREW +B3X10
3	3-612-669-01	o	LID,POWER SW
4	3-672-250-01	s	RING (M2.6), O
5	3-701-439-11	s	WASHER
6	4-400-101-01	s	POWER SW HOUSING
7	4-410-956-01	s	SHEET, INSIDE(MULTI)
8	4-654-273-03	s	SCREW, NEW TRUSTER(M2) [B2x5]

Inside-2



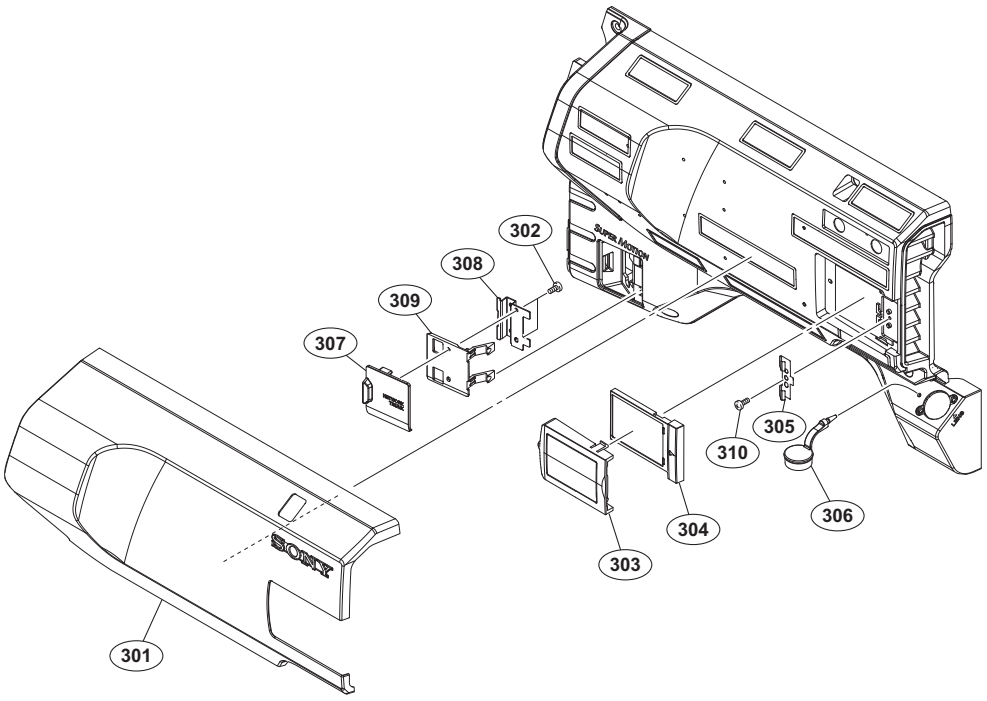
No.	Part No.	SP	Description
101	3-624-455-01	s	TUBE,SHIELD
102	3-676-244-04	s	COVER, SWITCH
103	4-415-079-01	s	CAP, CONNECTOR(DC OUT)
104	4-654-273-03	s	SCREW, NEW TRUSTER(M2) [B2x5]

Outside-1



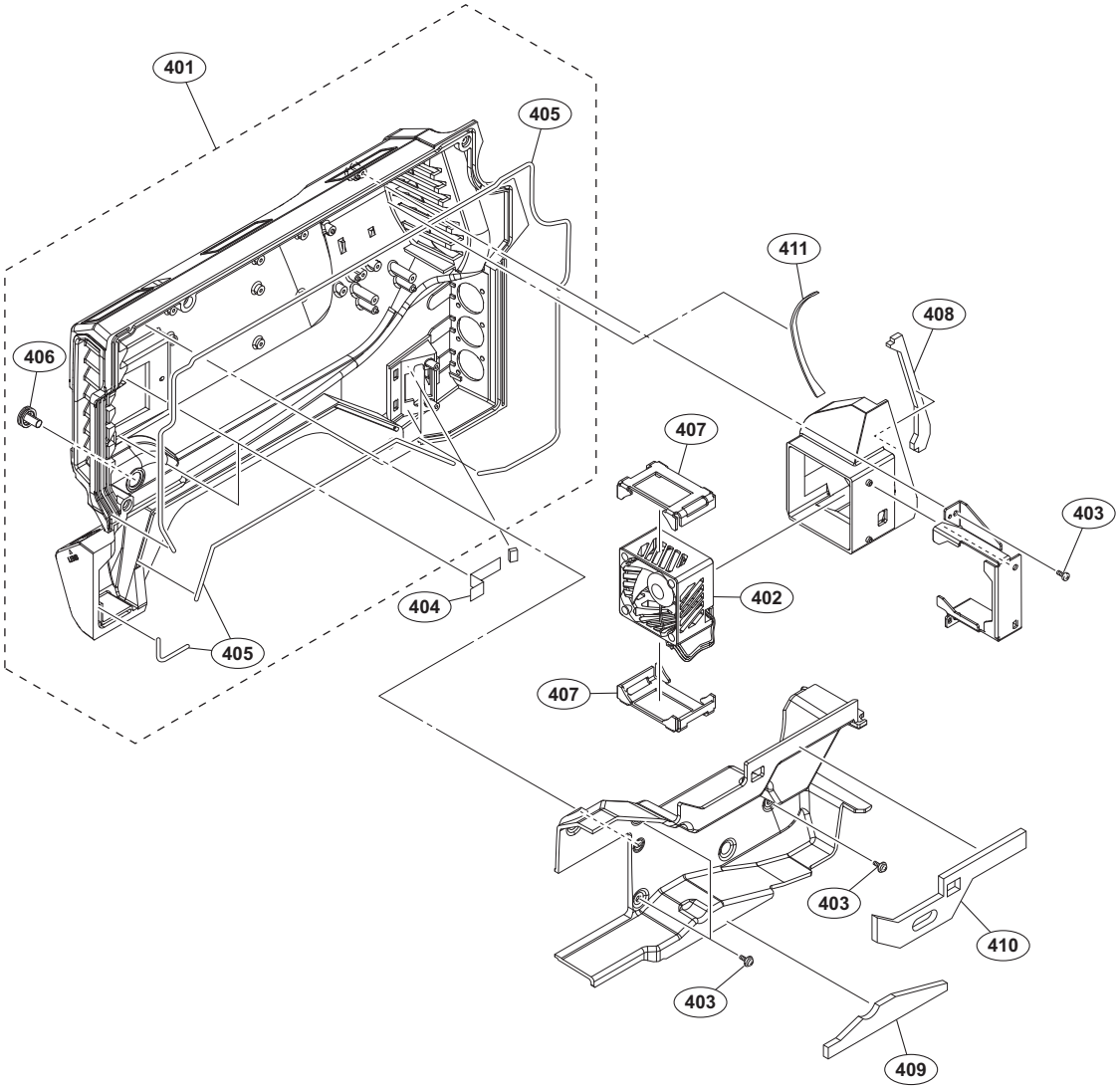
No.	Part No.	SP	Description
201	A-2128-137-A	s	CN-3850 MOUNT
202	A-2128-138-A	s	CN-3851 MOUNT
203	A-2128-151-A	s	CN-3895 MOUNT
204	1-784-240-11	s	CONVERTER, COAXIAL CONNECTOR
205	1-849-535-11	s	COAXIAL CABLE WITH CONNECTOR
206	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
207	3-603-679-02	s	STAINLESS SCREW +B3X10
208	3-672-250-01	s	RING (M2.6), O
209	3-701-439-01	s	WASHER
210	3-863-319-01	s	BRACKET BNC
211	3-872-935-01	s	CAP,BNC
212	3-878-657-01	s	TAPE 50
213	4-184-884-01	s	BRACKET BNC
214	4-598-168-01	s	BRACKET CN-3434
215	4-654-273-03	s	SCREW, NEW TRUSTER(M2) [B2x5]

Outside-2



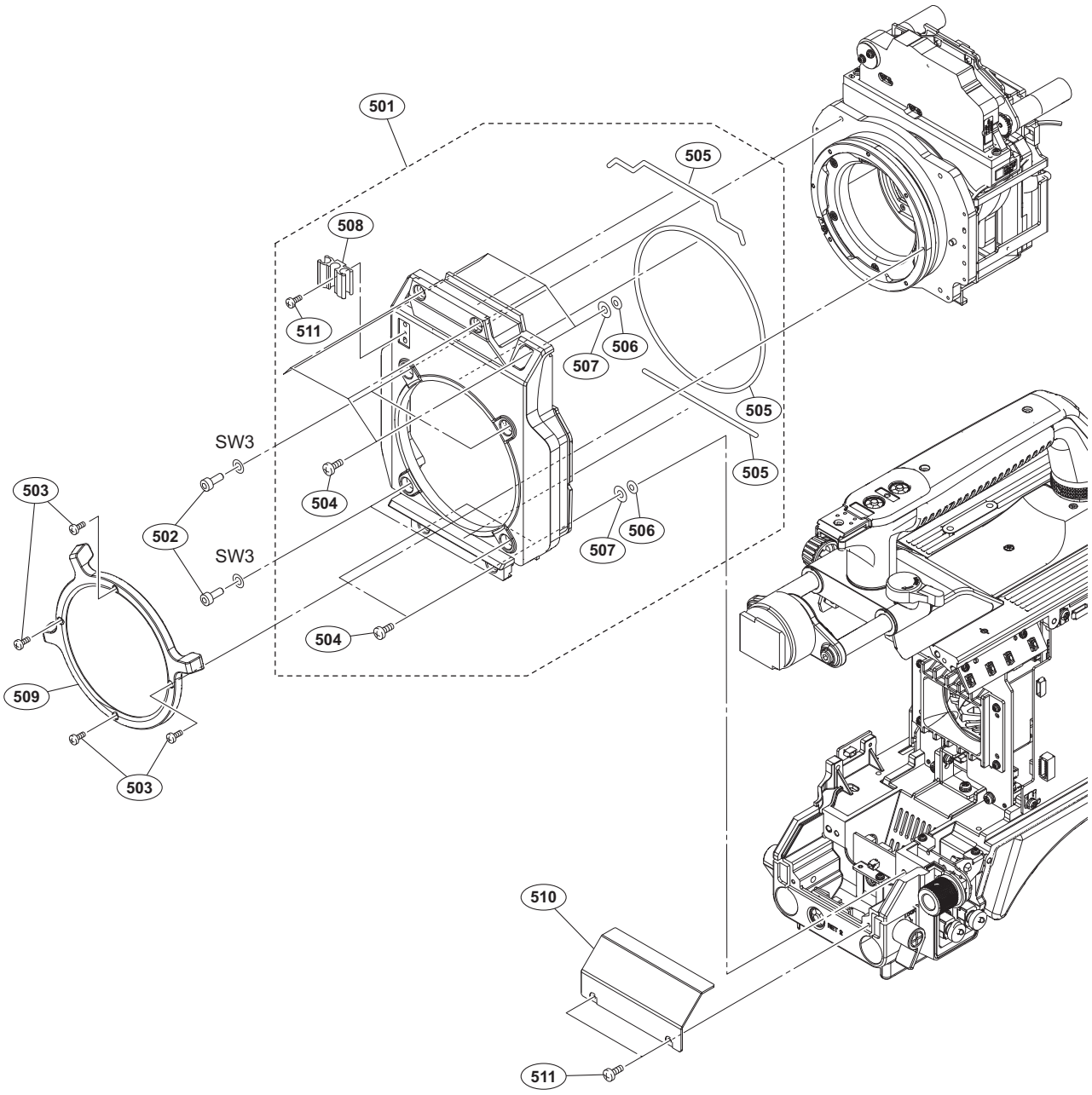
No.	Part No.	SP	Description
301	A-2144-986-A	s	OUTSIDE PAD ASSY (RP)
302	3-948-339-02	s	SCREW, TAPPING
303	4-293-514-01	s	NUMBER FRAME
304	4-293-515-01	s	NUMBER FRAME BASE
305	4-298-877-01	s	SPRING, NUMBER FRAME
306	4-488-737-01	s	CAP, CONNECTOR (1)
307	4-598-163-01	s	LID, ETHER
308	4-598-164-01	s	BRACKET, ETHER
309	4-598-165-01	s	CAP, ETHER
310	4-654-273-03	s	SCREW, NEW TRUSTER(M2) [B2x5]

Outside-3



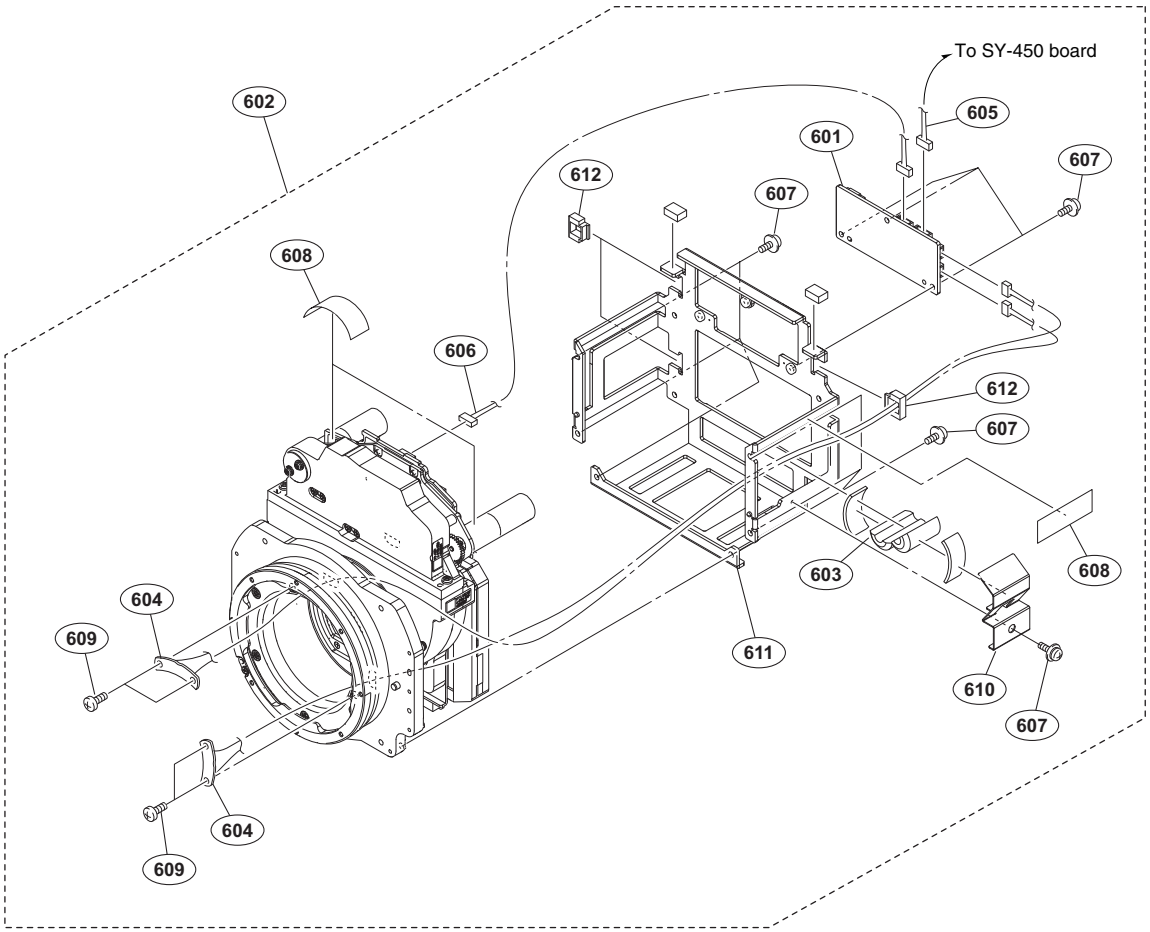
No.	Part No.	SP	Description
401	A-2129-310-A	s	OUT SIDE PANEL SUB ASSY
402	⚠ 1-855-374-11	s	DC FAN
403	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
404	3-079-115-01	s	TAPE AS
405	3-624-455-01	s	TUBE,SHIELD
406	4-138-682-01	s	SW COVER
407	4-546-928-01	s	CUSHION (FAN)
408	4-598-157-01	s	CUSHION (REAR), DUCT
409	4-598-158-01	s	CUSHION, AFD, B
410	4-598-159-01	s	CUSHION, AFD, A
411	4-598-160-01	s	CUSHION REAR

Front Block



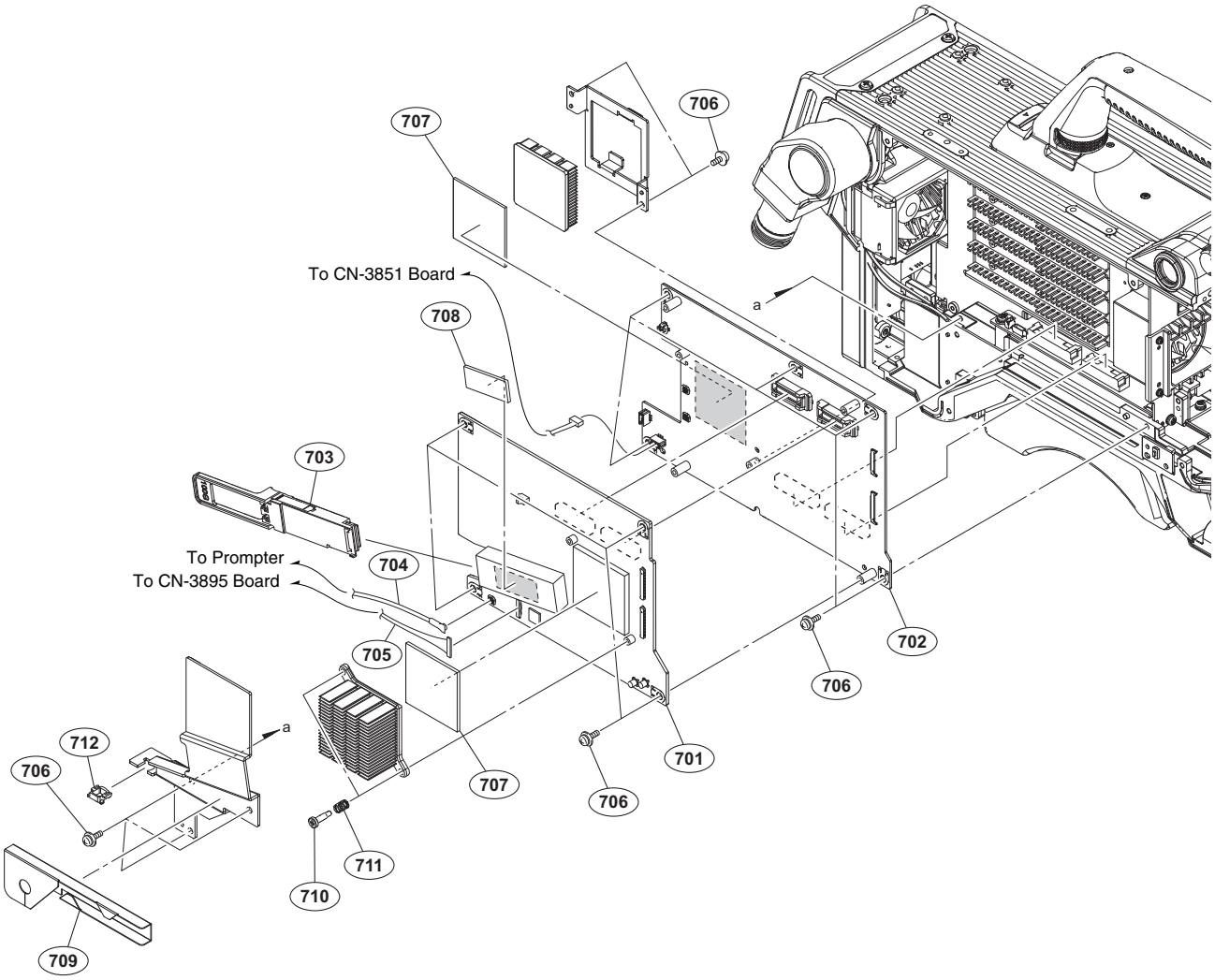
No.	Part No.	SP	Description
501	A-2129-299-A	s	FRONT PANEL ASSY
502	2-623-773-11	s	BOLT (M3X8), STAINLESS
503	3-080-203-02	s	SCREW (M2), NEW TRUSTER, P2
504	3-603-679-02	s	STAINLESS SCREW +B3X10
505	3-624-455-01	s	TUBE,SHIELD
506	3-672-250-01	s	RING (M2.6), O
507	3-701-439-11	s	WASHER
508	3-870-272-02	s	CLAMP, CABLE
509	4-598-154-01	s	RING, LEVER
510	4-598-176-01	s	COVER (FRONT)
511	4-654-273-03	s	SCREW, NEW TRUSTER(M2) [B2x5]
	7-623-208-22	s	SW 3,TYPE 2

OHB Block



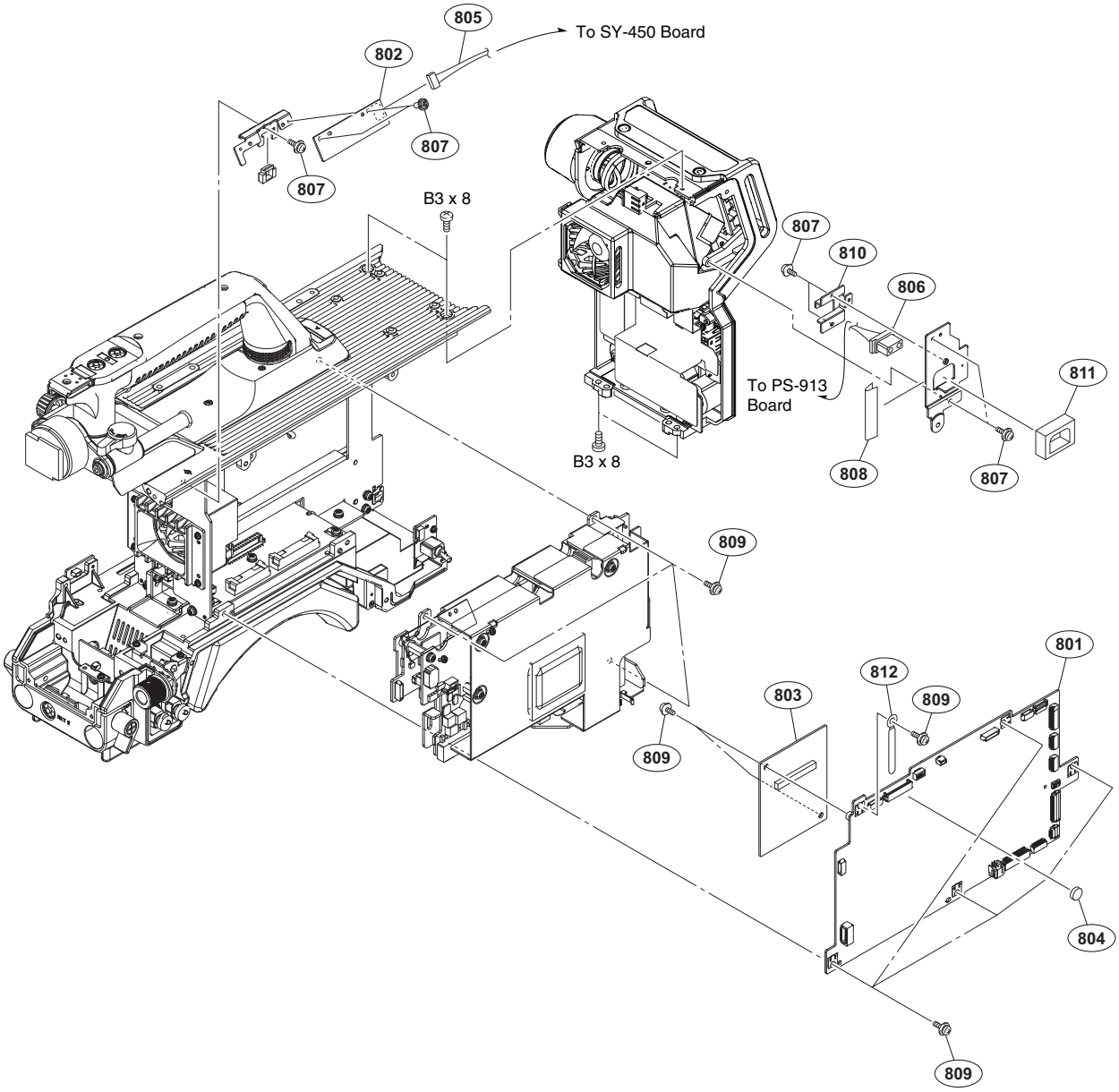
No.	Part No.	SP	Description
601	A-2128-991-A	s	IF-1305 MOUNT
602	A-2144-985-A	s	CMOS BLOCK ASSY(RP)
603	1-482-025-11	s	BEADS, FERRITE (CASE)
604	1-966-905-13	s	HARNESS, SUB (AR)
605	1-971-170-11	s	HARNESS, SUB (REAR)
606	1-971-174-11	s	HARNESS, SUB (FILTER)
607	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
608	3-079-115-01	s	TAPE AS
609	3-080-203-32	s	SCREW (M2), NEW TRUSTER, P2 [P2x4]
610	4-598-090-01	s	PLATE (FERRITE CORE), FIXED
611	4-598-155-01	s	BRACKET, OHB
612	4-641-552-01	o	SADDLE, LOCK EDGE

DPR Block



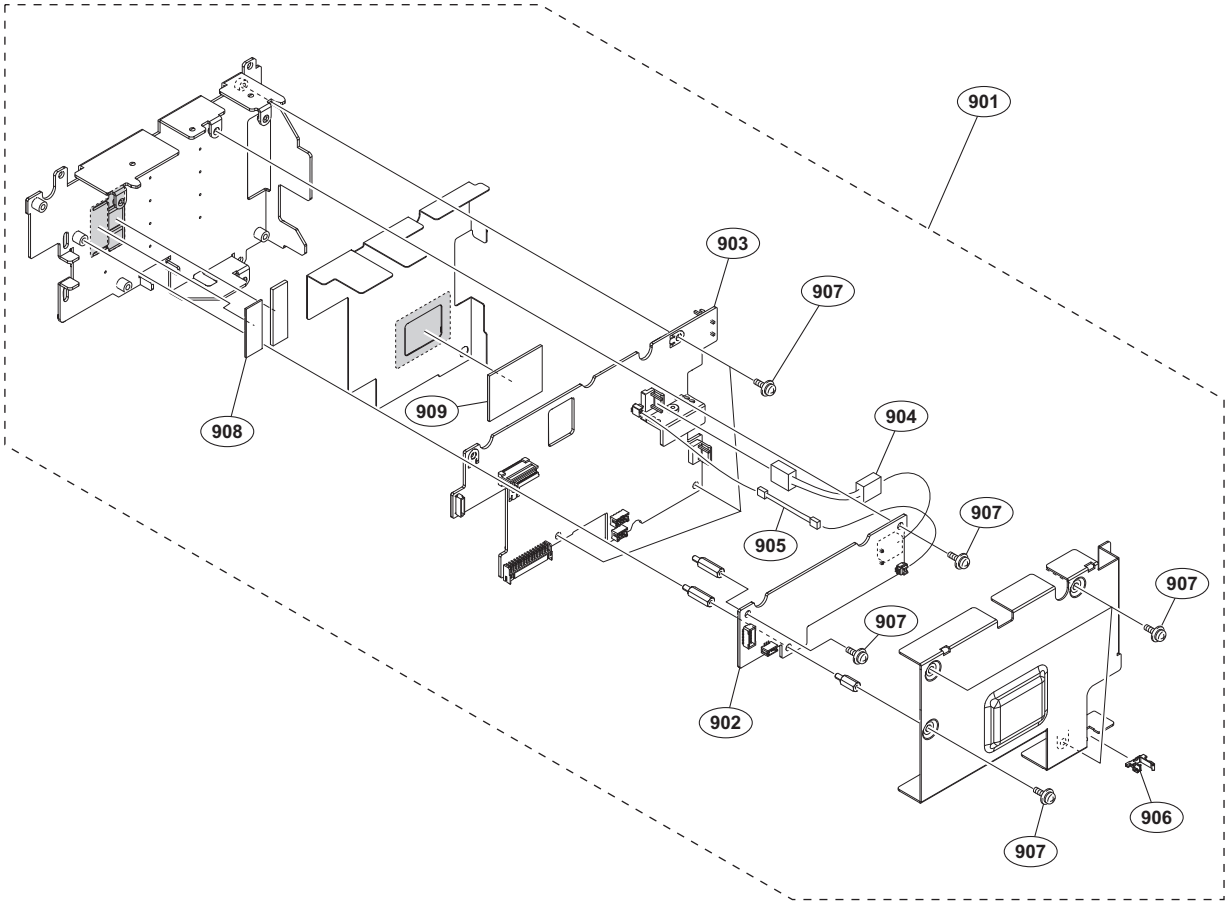
No.	Part No.	SP	Description
701	A-2126-367-A	s	TX-154 COMPL
702	A-2128-119-A	s	DPR-377 COMPL
703	⚠ 1-458-947-11	s	OPTICAL MODULE (QSFP28)
704	1-839-552-11	s	CABLE ASSEMBLY, COAXIAL
705	1-839-914-11	s	CABLE, CONNECTOR WITH COAXIAL
706	4-382-854-51	s	SCREW (M3X6), P, SW (+)
707	4-587-426-01	s	SHEET (2 (35X35)), RADIATION
708	4-587-426-11	s	SHEET (2 (12X30)), RADIATION
709	4-598-094-01	s	SHEET, GUIDE
710	4-598-178-01	s	SCREW M2.6, STEP
711	4-598-179-01	s	SPRING, COMPRESSION
712	4-641-552-01	o	SADDLE, LOCK EDGE

SY Block



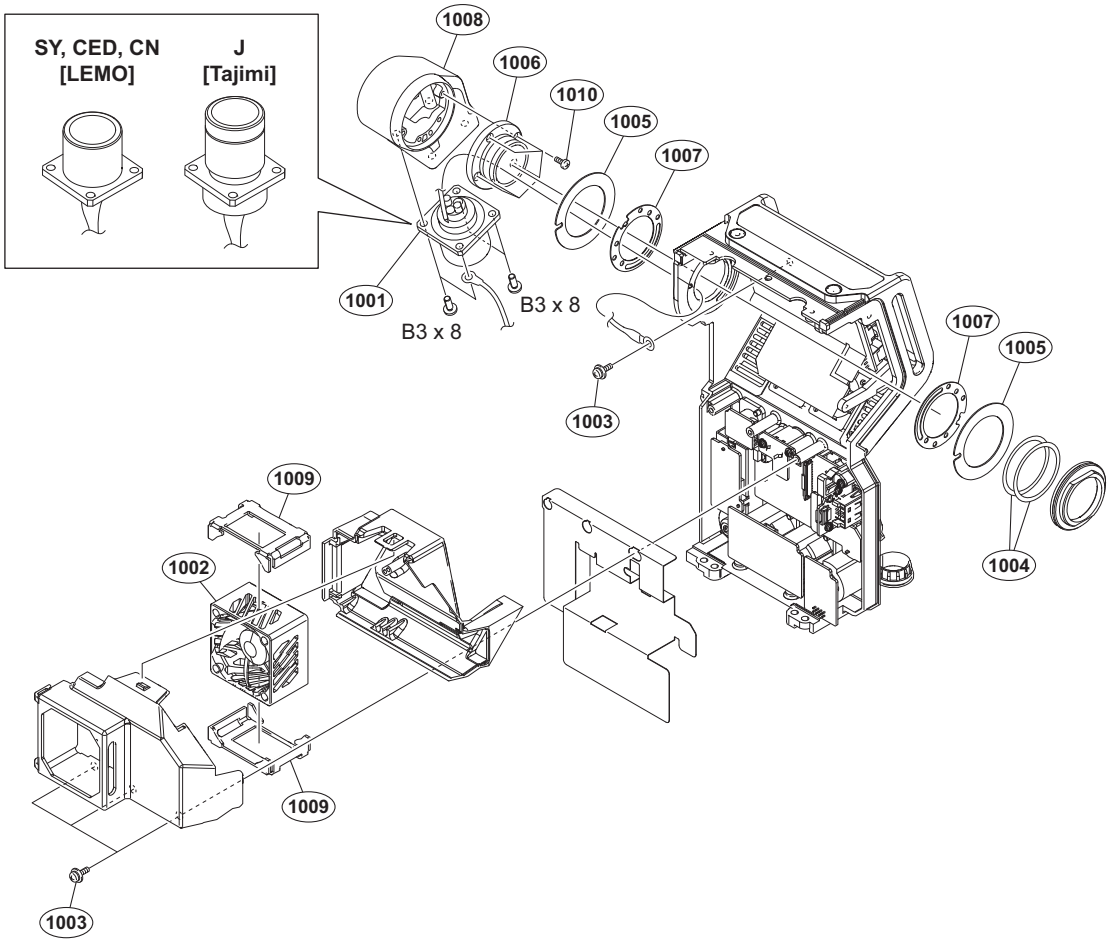
No.	Part No.	SP	Description
801	A-2128-124-A	s	SY-450 COMPL
802	A-2128-134-A	s	SW-1701 MOUNT
803	A-2144-993-A	s	AT-189U COMPL
804	⚠ 1-756-134-17	s	BATTERY, LITHIUM (SECONDARY)
805	1-968-141-11	s	HARNESS, SUB (FILTER SW)
806	1-968-160-11	s	HARNESS, SUB (DC-OUT)
807	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
808	3-079-115-01	s	TAPE AS
809	4-382-854-51	s	SCREW (M3X6), P, SW (+)
810	4-415-076-02	s	COVER, DC OUT
811	4-415-078-01	s	PACKING, DC OUT
812	3-701-822-01	s	HOLDER, WIRE
	7-682-548-09	s	SCREW +B 3X8

PS Block



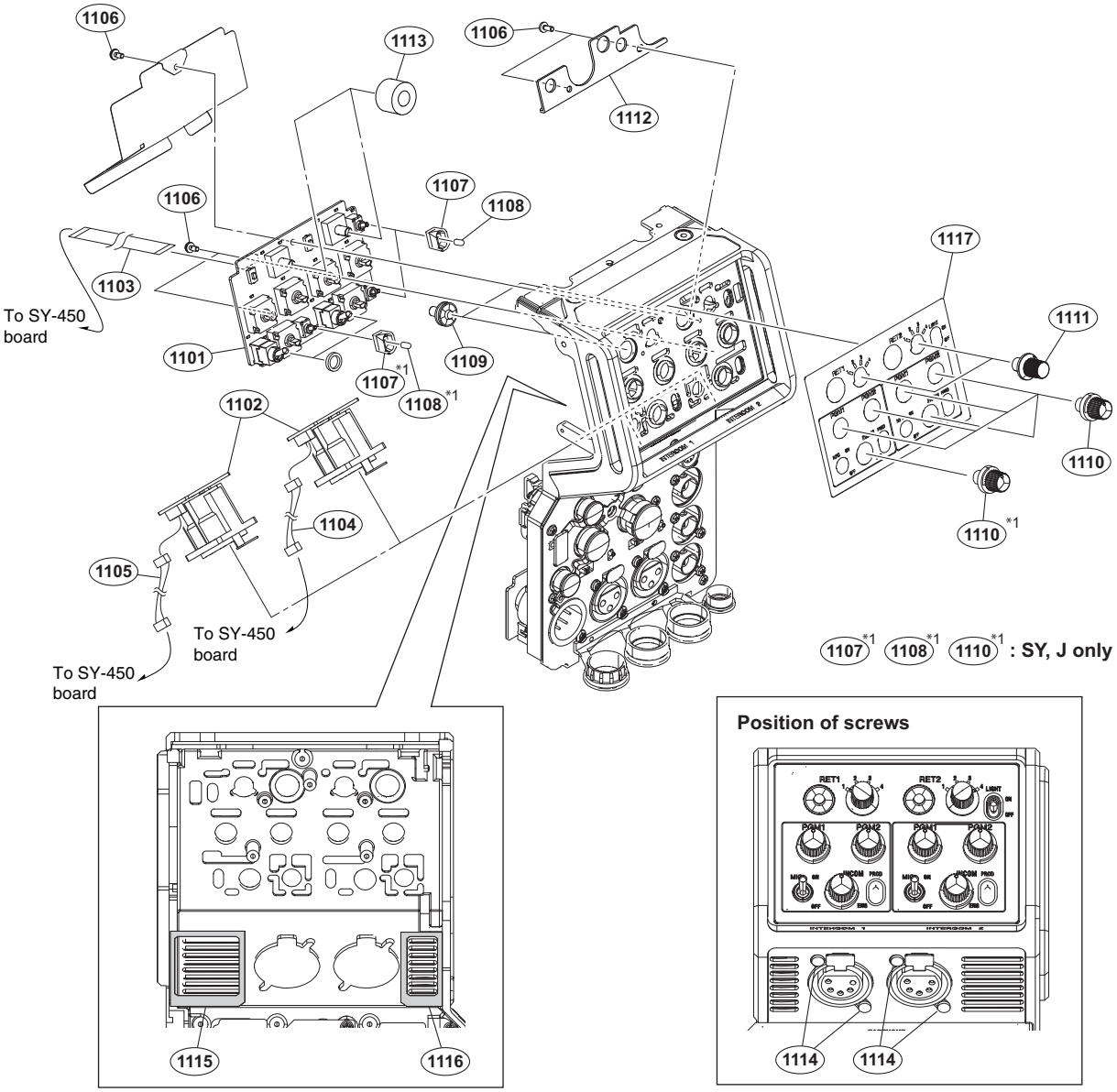
No.	Part No.	SP	Description
901	A-2124-626-A	s	POWER BLOCK ASSY
902	A-2128-990-A	s	RE-338 MOUNT
903	A-2128-992-A	s	PS-913 COMPL
904	1-971-352-11	s	HARNESS(PRI-HI)
905	1-971-353-11	s	HARNESS(PRI-LOW)
906	4-137-926-01	s	SADDLE (LES-0505), EDGE
907	4-382-854-51	s	SCREW (M3X6), P, SW (+)
908	4-415-280-01	s	SHEET (T1), THERMAL
909	4-489-125-01	s	SHEET (1), RADIATION

Rear Block-1



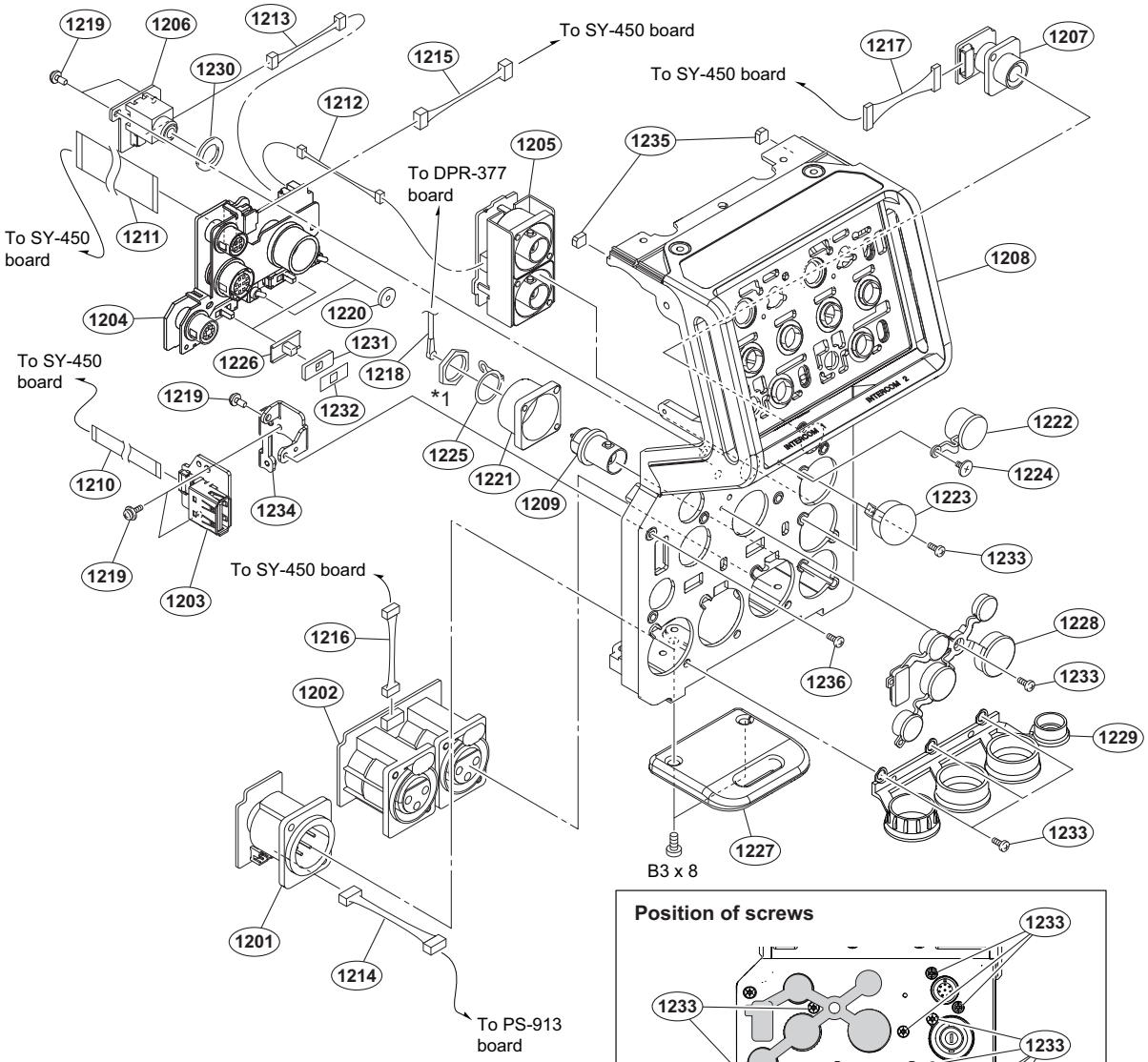
No.	Part No.	SP	Description
1001	⚠ 1-839-826-11	s	OPTICAL MULTI CABLE ASSEMBLY-M [LEMO] (SY, CED, CN)
	⚠ 1-839-827-11	s	OPTICAL MULTI CABLE ASSEMBLY [Tajimi] (J)
1002	⚠ 1-855-374-11	s	DC FAN
1003	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1004	3-176-525-01	o	WASHER, SPRING
1005	3-602-464-02	s	WASHER, CONDUCTIVE
1006	4-138-689-01	s	SHAFT, ROTARY(TRIAX)
1007	4-138-707-01	s	WASHER, TRIAX(2)
1008	4-293-502-01	s	CONNECTOR HOUSING
1009	4-546-928-01	s	CUSHION (FAN)
1010	4-559-446-02	s	SCREW, +P2.6X5 NEW TRUSTER
	7-682-548-09	s	SCREW +B 3X8

Rear Block-2



No.	Part No.	SP	Description
1101	A-2128-143-A	s	SW-1708 MOUNT (SY, J)
	A-2129-596-A	s	MOUNT, SW-1708A (CED, CN)
1102	A-2128-150-A	s	CN-3893 MOUNT
1103	1-836-443-11	s	CABLE, FLEXIBLE FLAT (15 CORE)
1104	1-968-145-12	s	HARNESS, SUB (INCOM2)
1105	1-968-151-12	s	HARNESS, SUB (INCOM1)
1106	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1107	3-903-660-01	s	DROP PROTECTION,TOGGLE
1108	3-869-842-01	s	CAP,SW
1109	4-138-682-01	s	SW COVER
1110	4-414-615-01	s	KNOB, VR
1111	4-414-616-01	s	KNOB, RETURN SELECT
1112	4-414-620-02	s	SUPPORT, INCOM PACKING
1113	4-414-623-02	s	PACKING, RETURN SEL
1114	4-559-446-02	s	SCREW, +P2.6X5 NEW TRUSTER
1115	4-598-147-01	s	SHEET VENT,A
1116	4-598-148-01	s	SHEET VENT,B
1117	4-598-151-01	s	SHEET (UC), INCOM (SY, J)
	4-598-152-01	s	SHEET (CE), INCOM (CED, CN)

Rear Block-3



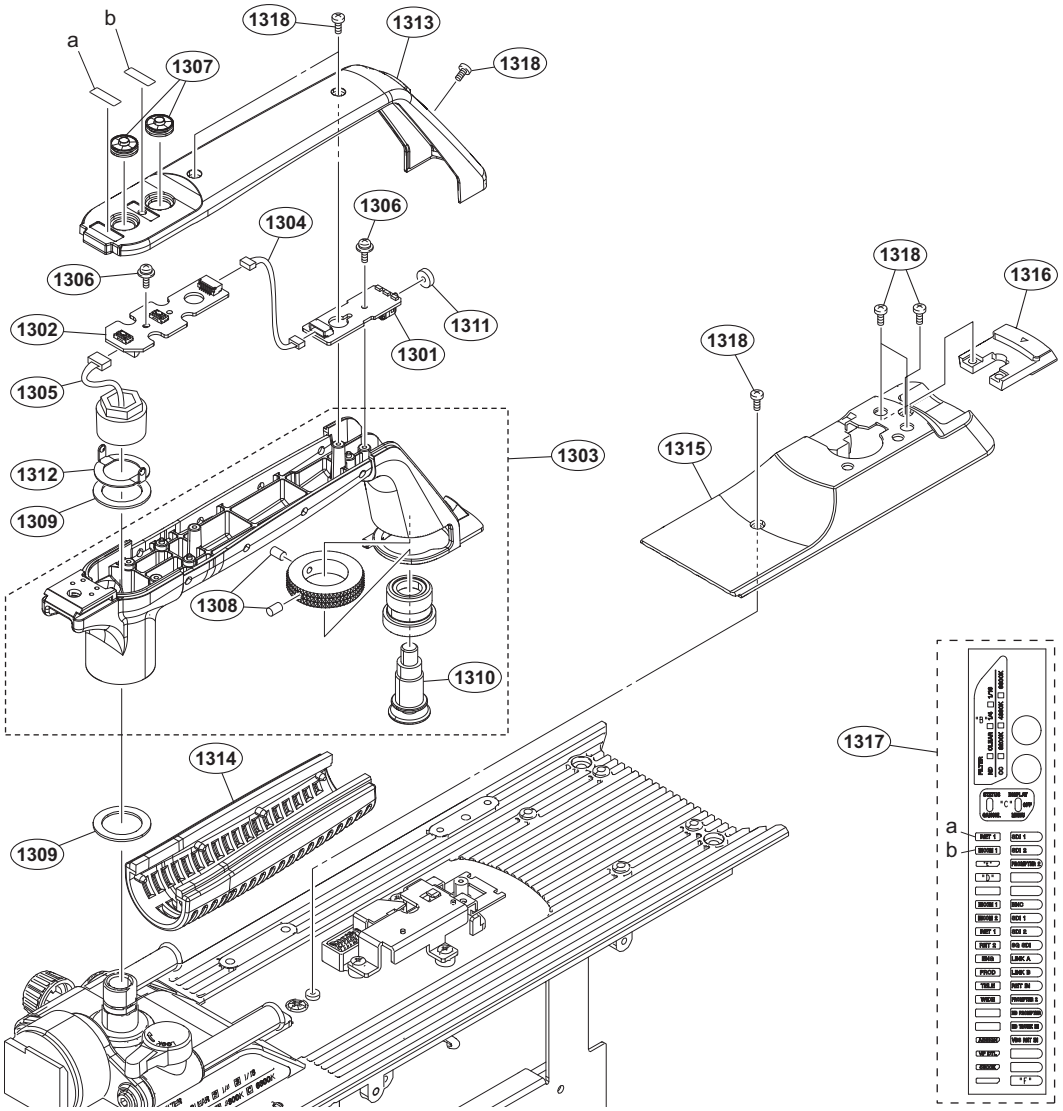
*1: This nats is supplied with (1209).

No.	Part No.	SP	Description
1201	A-2128-141-A	s	CN-3894 MOUNT
1202	A-2128-144-A	s	CN-3887 MOUNT
1203	A-2128-145-A	s	CN-3888 MOUNT
1204	A-2128-146-A	s	CN-3889 MOUNT
1205	A-2128-147-A	s	CN-3890 MOUNT
1206	A-2128-148-A	s	CN-3891 MOUNT
1207	A-2128-149-A	s	CN-3892 MOUNT
1208	A-2129-316-A	s	REAR PANEL SUB ASSY (SY, J)
	A-2144-297-A	s	REAR PANEL SUB ASSY (CE) (CED, CN)
1209	1-784-240-11	s	CONVERTER, COAXIAL CONNECTOR
1210	1-831-078-11	s	CABLE, FLEXIBLE FLAT (10 CORE)
1211	1-831-147-11	s	CABLE, FLEXIBLE FLAT (36 CORE)
1212	1-968-142-11	s	HARNESS, SUB (TEST)
1213	1-968-143-11	s	HARNESS, SUB (EARPHONE)
1214	1-968-146-11	s	HARNESS, SUB (EXT DC IN)
1215	1-968-150-11	s	HARNESS, SUB (UNREG)
1216	1-968-153-11	s	HARNESS, SUB (MIC)
1217	1-968-154-11	s	HARNESS, SUB (REMOTE)
1218	1-970-794-11	s	COAXIAL CABLE WITH CONNECTOR
1219	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1220	3-796-993-01	s	CUSION DROP PROTEICTION TOGGLE
1221	3-863-319-01	s	BRACKET BNC
1222	3-868-657-03	s	CAP,BNC
1223	3-872-935-01	s	CAP,BNC
1224	3-965-077-03	s	SCREW, SPECIAL (M2)
1225	4-136-517-01	s	WASHER, BNC COAXIAL FIXED
1226	4-138-687-01	s	COVER, SLIDE SWITCH
1227	4-293-492-01	s	GUARD, TAIL
1228	4-414-617-01	s	CAP, REAR CONNECTER 1
1229	4-414-618-01	s	CAP, REAR CONNECTER 2
1230	4-414-624-01	s	PACKING, EARPHONE
1231	4-414-625-01	s	SHEET, SLIDE SW WATER REGIST
1232	4-432-516-02	s	SLIDING SHEET, SW
1233	4-559-446-02	s	SCREW, +P2.6X5 NEW TRUSTER

Rear Block-3

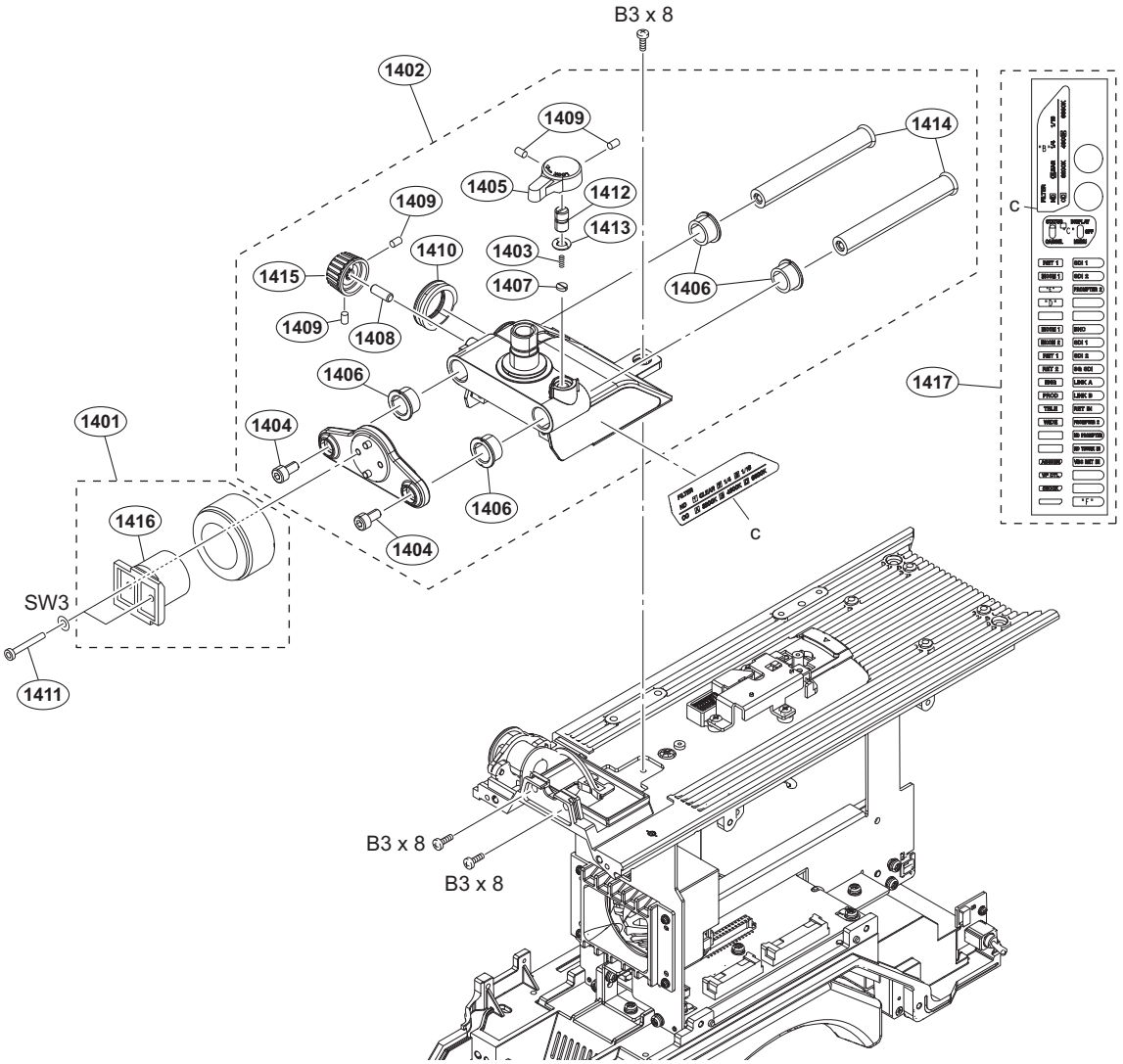
No.	Part No.	SP	Description
1234	4-598-149-01	s	BRACKET,USB
1235	4-598-150-01	s	CUSHON STOPPER
1236	4-654-273-03	s	SCREW, NEW TRUSTER(M2) [B2x5]
	7-682-548-09	s	SCREW +B 3X8

Handle-1



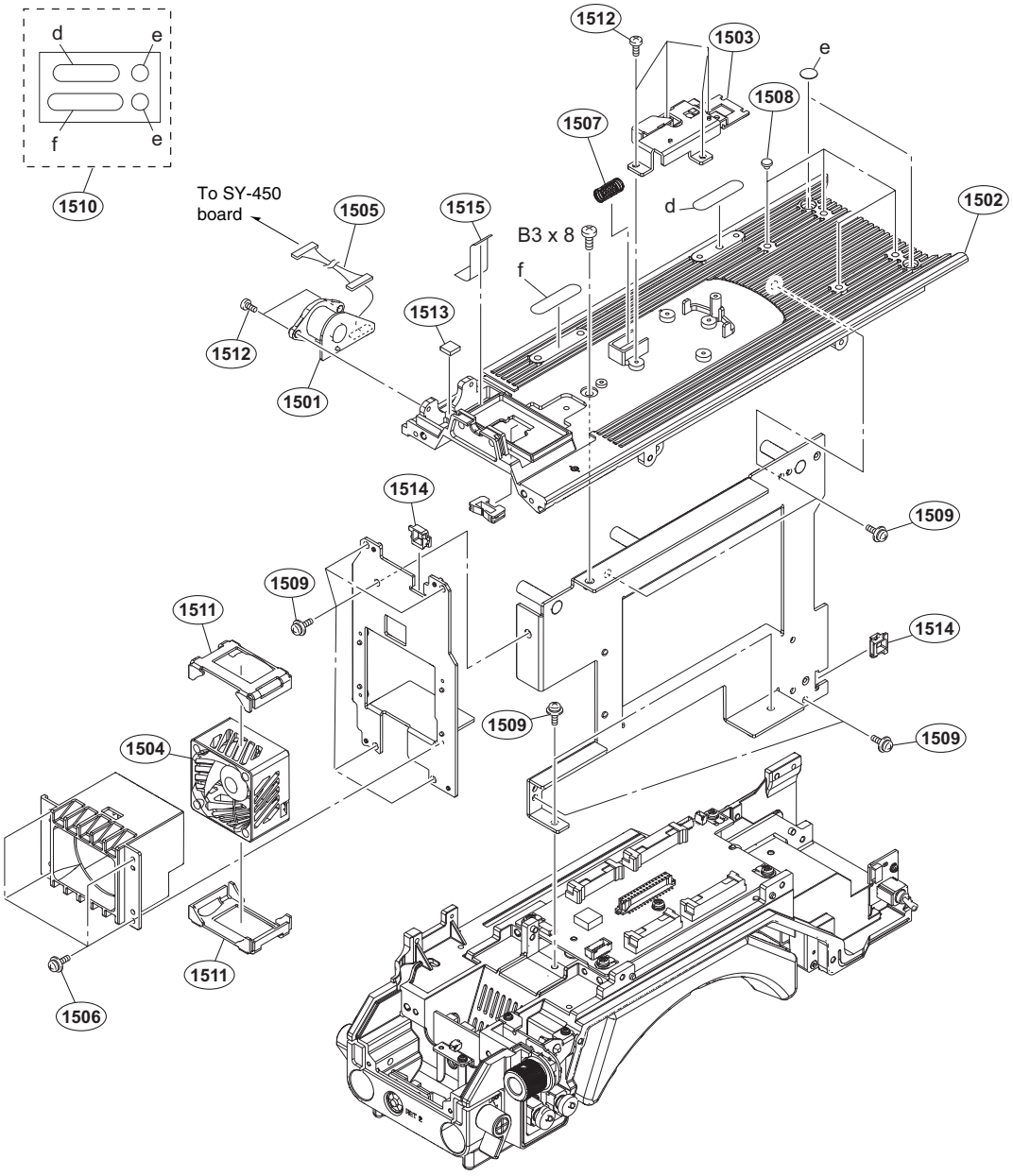
No.	Part No.	SP	Description
1301	A-2128-140-A	s	LE-412 MOUNT
1302	A-2128-142-A	s	SW-1707 MOUNT
1303	A-2129-304-A	s	HANDLE SUB ASSY
1304	1-968-155-11	s	HARNESS, SUB (HANDLE TALLY)
1305	1-970-046-11	s	HARNESS, SUB (REMOTE)
1306	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1307	3-676-244-04	s	COVER, SWITCH
1308	3-701-507-01	s	SET SCREW, DOUBLE POINT,(M3X5)
1309	3-872-534-02	s	WASHER02
1310	3-872-537-01	s	PIN,HANDLE LOCK
1311	3-872-601-01	s	TOGGLE SW CUSHION(C)
1312	3-872-609-02	s	WASHER01
1313	4-136-010-11	s	HANDLE COVER(R)
1314	4-138-676-01	s	GRIP
1315	4-598-102-01	s	BASE (REAR), HANDLE
1316	4-598-103-01	s	KNOB, RELEASE
1317	4-598-177-01	s	LABEL, MULTI
1318	4-654-273-03	s	SCREW, NEW TRUSTER(M2) [B2x5]

Handle-2



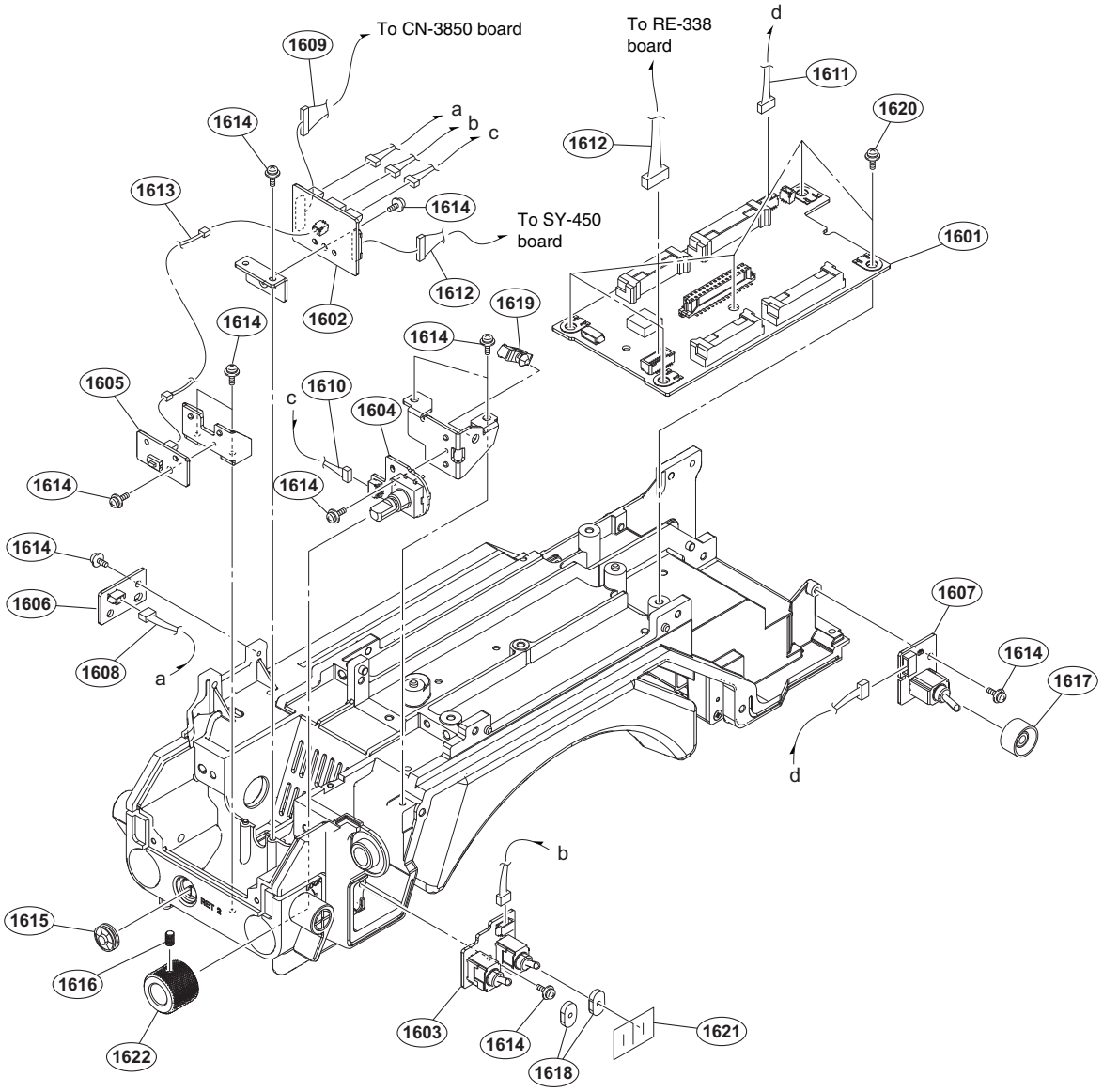
No.	Part No.	SP	Description
1401	A-2065-043-A	s	SHOE ASSY,VF
1402	X-2593-781-1	s	HANDLEHOLDER SUB ASSY
1403	3-612-822-01	s	SPRING,COMPRESSION
1404	3-657-705-91	s	BOLT (M4X8), HEXAGON HOLE
1405	3-673-046-03	s	LEVER, LOCK
1406	3-679-684-01	o	REST,ARM
1407	3-679-702-01	o	CUSION,STOPPER
1408	3-690-660-02	s	LOCK,SCREW
1409	3-701-507-01	s	SET SCREW, DOUBLE POINT,(M3X5)
1410	3-710-024-02	s	PACKING, VF
1411	3-711-765-01	s	BOLT (M3), HEXAGON SOCKET
1412	3-711-794-12	s	PIN, STOPPER
1413	3-895-622-01	s	RING (DIA. 5), O
1414	4-137-907-02	s	PIPE,VF SLIDE(LONG)
1415	4-549-633-02	s	KNOB, LOCK
1416	4-558-057-01	s	SHOE,SLIDE
1417	4-598-177-01	s	LABEL, MULTI
	7-623-208-22	s	SW 3,TYPE 2
	7-682-548-09	s	SCREW +B 3X8

Top Block



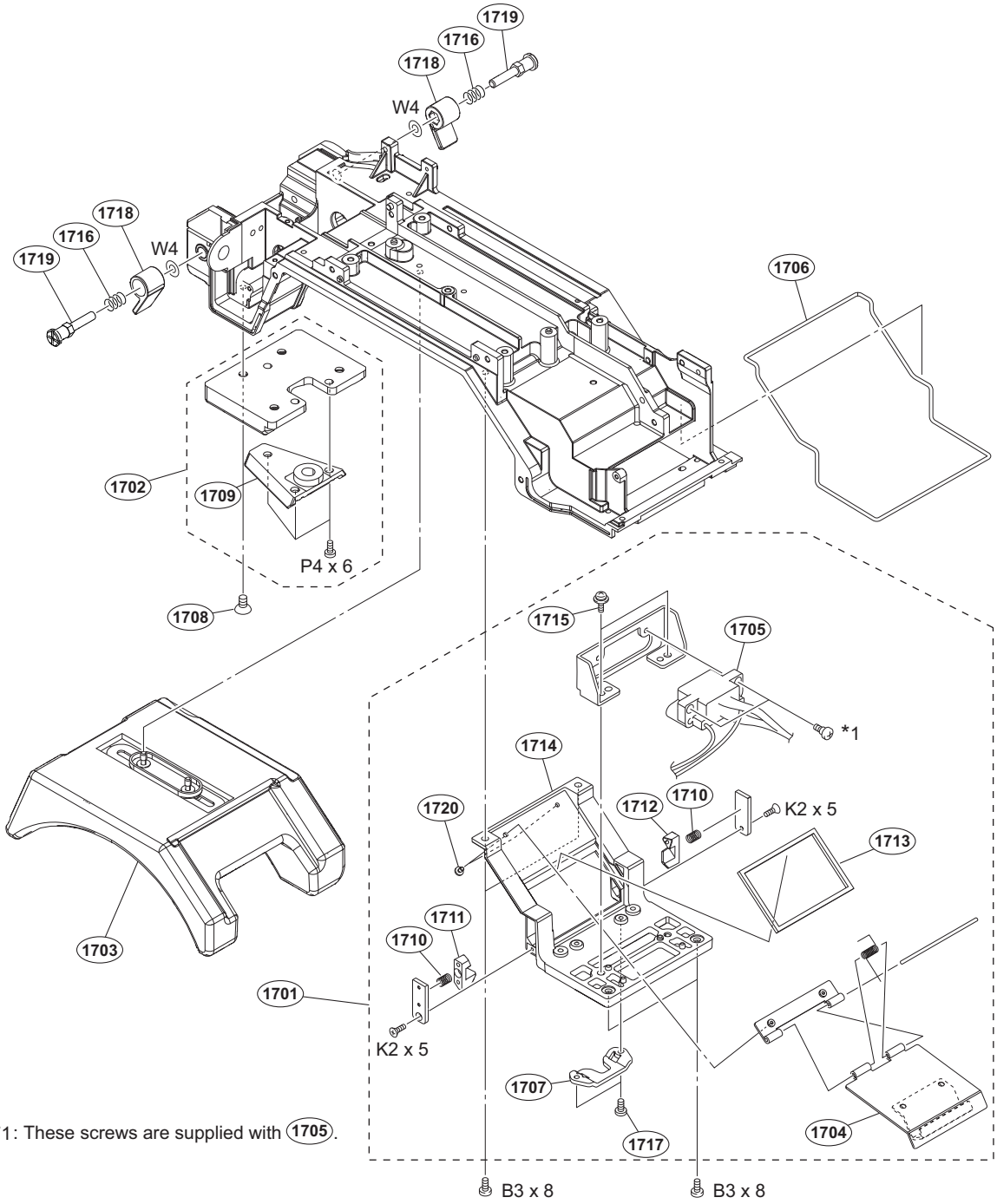
No.	Part No.	SP	Description
1501	A-2128-135-A	s	CN-3874 MOUNT
1502	A-2129-315-A	s	TOP CHASSIS SUB ASSY
1503	X-3704-669-2	s	PLATE ASSY, HANDLE AXIS HOLD
1504	⚠ 1-855-374-11	s	DC FAN
1505	1-971-390-12	s	HARNESS (VF)
1506	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1507	3-872-543-01	s	SPRING,COMPRESSION(HANDLELOCK)
1508	4-138-679-01	s	SCREW, BLIND
1509	4-382-854-51	s	SCREW (M3X6), P, SW (+)
1510	4-408-829-01	s	SHEET, TOP
1511	4-546-928-01	s	CUSHION (FAN)
1512	4-559-446-02	s	SCREW, +P2.6X5 NEW TRUSTER
1513	4-598-097-01	s	CUSHION (VF), DROP PROTECTION
1514	4-641-552-01	o	SADDLE, LOCK EDGE
1515	4-287-222-01	s	UL TAPE _W10L25
	7-682-548-09	s	SCREW +B 3X8

MB Block



No.	Part No.	SP	Description
1601	A-2125-292-A	s	MB-1230 MOUNT
1602	A-2128-130-A	s	CN-3849 MOUNT
1603	A-2128-131-A	s	SW-1690 MOUNT
1604	A-2128-132-A	s	ENC-170 MOUNT
1605	A-2128-133-A	s	SW-1691 MOUNT
1606	A-2128-136-A	s	SW-1692 MOUNT
1607	A-2128-139-A	s	SW-1709 MOUNT
1608	1-966-579-11	s	HARNESS, SUB (EARPHONE)
1609	1-967-978-11	s	HARNESS, SUB (DC OUT)
1610	1-967-994-11	s	HARNESS, SUB (SE-DPR)
1611	1-968-156-11	s	HARNESS, SUB (POWER SW)
1612	1-968-162-11	s	HARNESS, SUB (PS CONT, FRONT)
1613	1-968-706-11	s	HARNESS, SUB (PROMPTER)
1614	2-640-315-02	o	SCREW (M2X5), SMALL, +P, SW
1615	3-676-244-04	s	COVER, SWITCH
1616	3-701-507-01	s	SET SCREW, DOUBLE POINT,(M3X5)
1617	3-870-137-02	s	CAP, DROP PROTECTION
1618	3-872-587-01	s	CUSHION,TOGGLE-SW
1619	4-098-036-01	s	SADDLE WIRE (A)
1620	4-382-854-51	s	SCREW (M3X6), P, SW (+)
1621	4-588-072-01	s	SW CONDUCTIVE SHEET (30150)
1622	4-598-137-01	s	DIAL, MENU

Bottom Block



*1: These screws are supplied with (1705).

No.	Part No.	SP	Description
1701	A-1842-424-A	s	HOTSHOE ASSY(AL)
1702	A-8279-993-D	s	SHOE(D)ASSY,V
1703	A-8286-163-D	s	PAD ASSY,SHOULDER
1704	X-3704-670-2	s	HOT DOOR
1705	1-968-152-11	s	HARNESS, SUB (BUILD UP)
1706	3-624-455-01	s	TUBE,SHIELD
1707	3-626-781-03	s	STOPPER
1708	3-729-072-02	s	SCREW, +K (4X8)
1709	3-854-770-02	s	WEDGE(D),MOUNTING
1710	3-872-522-02	s	SPRING,COMPRESSION(STOPPER)
1711	3-872-550-02	s	STOPPER(R),HOT DOOR
1712	3-872-551-02	s	STOPPER(L),HOT DOOR
1713	3-872-573-02	s	WATER PROTECT(HOT DOOR)
1714	4-295-666-01	s	BASE, HOT SHOE

No.	Part No.	SP	Description
1715	4-382-854-51	s	SCREW (M3X6), P, SW (+)
1716	4-458-124-11	s	SPRING,ROD LOCK
1717	4-559-446-02	s	SCREW, +P2.6X5 NEW TRUSTER
1718	4-559-625-01	s	LEVER, INSIDE LOCK
1719	4-562-252-01	s	SCREW, ROD LOCK
1720	4-654-273-03	s	SCREW, NEW TRUSTER(M2) [B2x5]
	7-621-555-30	s	SCREW +K 2X5
	7-682-160-09	s	SCREW +P 4X6
	7-682-548-09	s	SCREW +B 3X8
	7-688-004-02	o	W 4, SMALL

10-3. Supplied Accessories

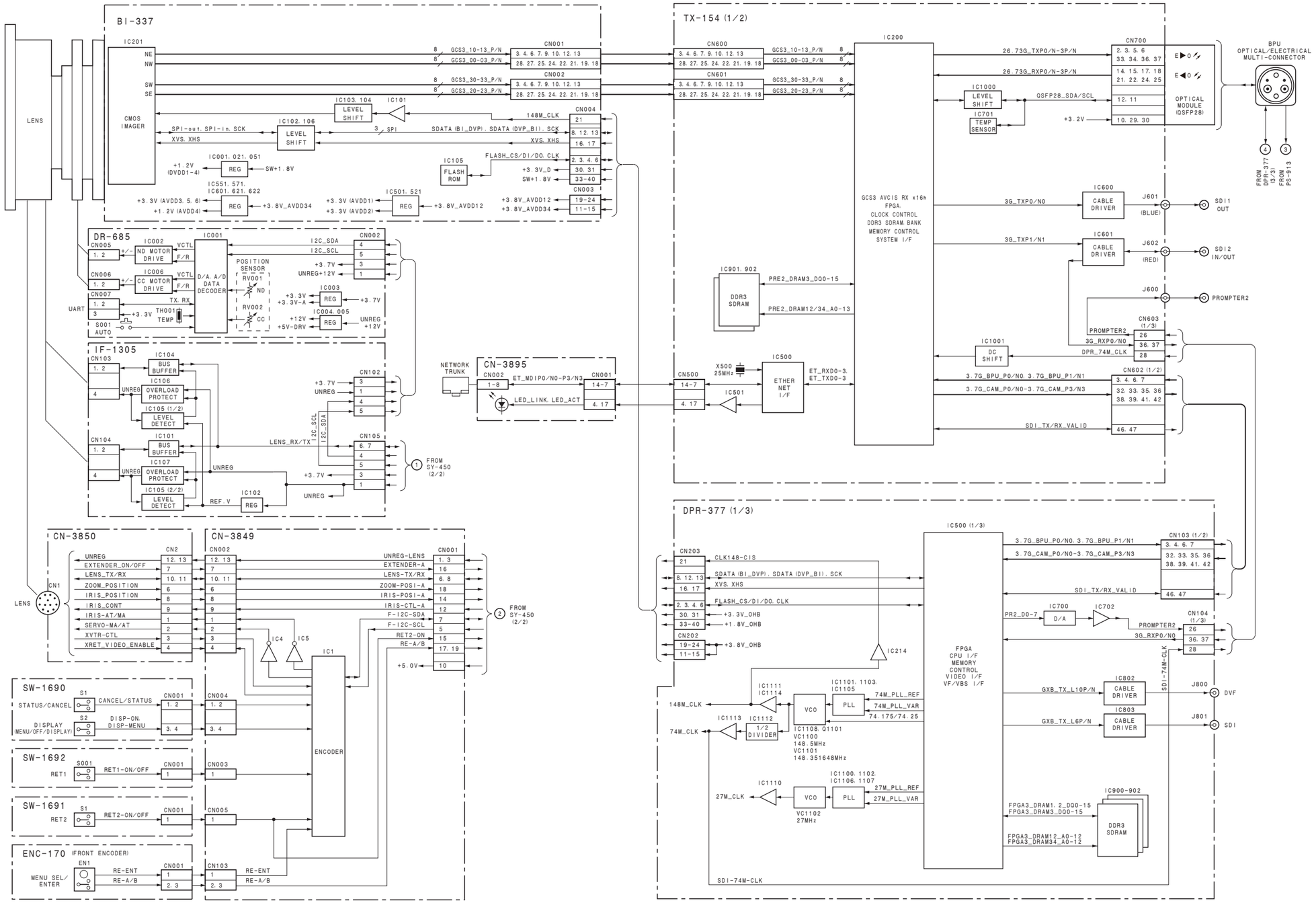
Q'ty	Part No.	SP	Description
1pc	1-856-805-11	s	B4-PL MOUNT CONVERSION ADAPTOR
1pc	4-138-677-01	s	BRACKET, BELT
1pc	4-138-758-01	s	CLAMP BELT, CABLE
1pc	4-408-856-01	s	LABEL, NUMBER
1pc	4-599-591-01	s	CD-ROM PACK
2pcs	7-682-548-09	s	SCREW +B 3X8

10-4. Optional Fixtures

Part No.	SP	Description
A-8286-346-A	s	PAD ASSY, SHOULDER

Section 11
Diagrams

Overall
Overall (1/4)



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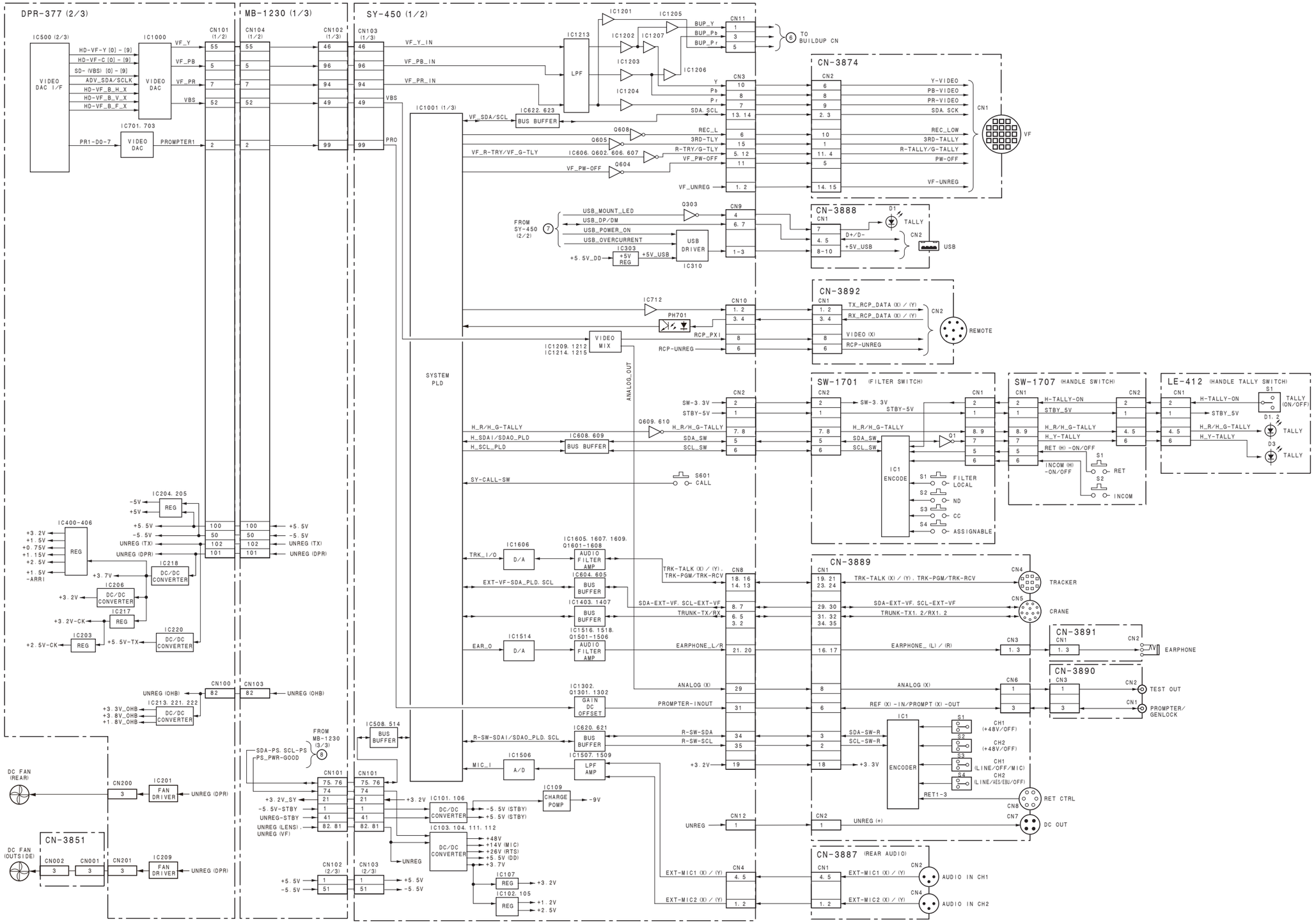
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MB-1230 (1/3)
SY-450 (1/2)
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IC1000
VIDEO DAC
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HD-VF-C [0] - [9]
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HD-VF_B_V_X
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IC1207
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BUP_Pb
BUP_Pr
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VF_R-TRY/VF_G-TLY
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USB_POWER_ON
USB_OVERCURRENT
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INCOM
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+3. 7V
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R-SW-SCL
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SDA-SW-R
SCL-SW-R
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IC201
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UNREG (DPR)
CN-3851
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CN001
CN201
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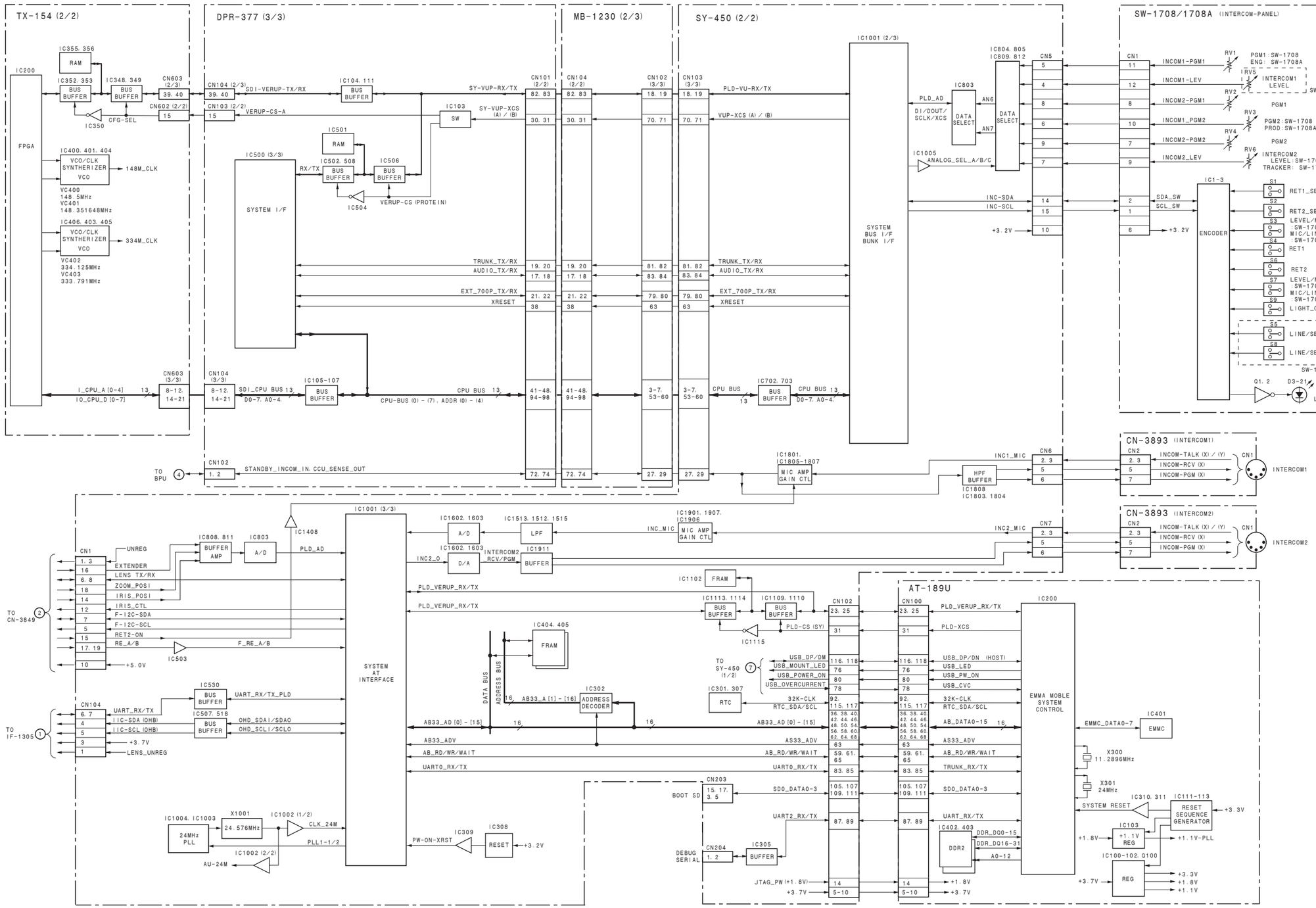
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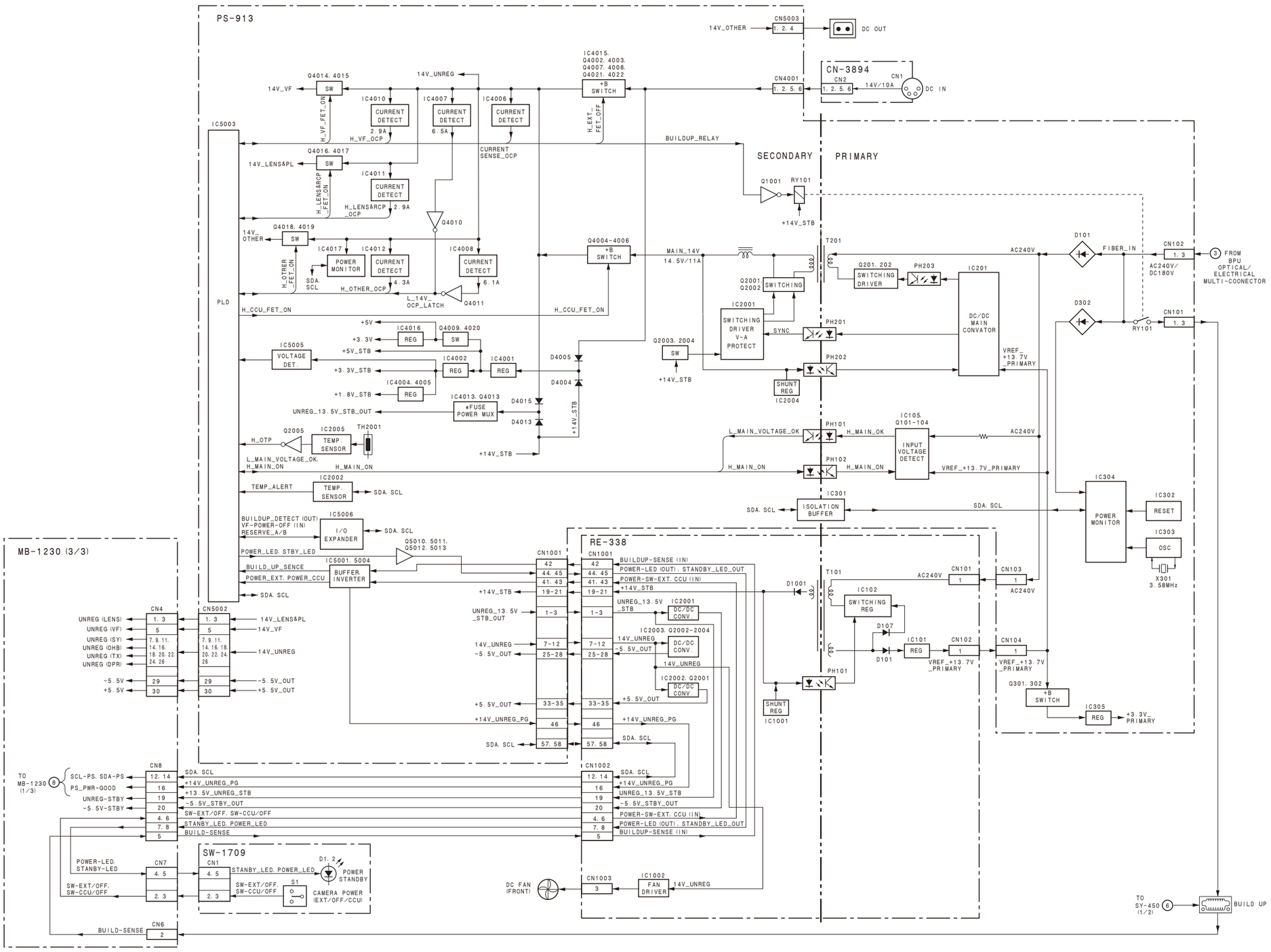
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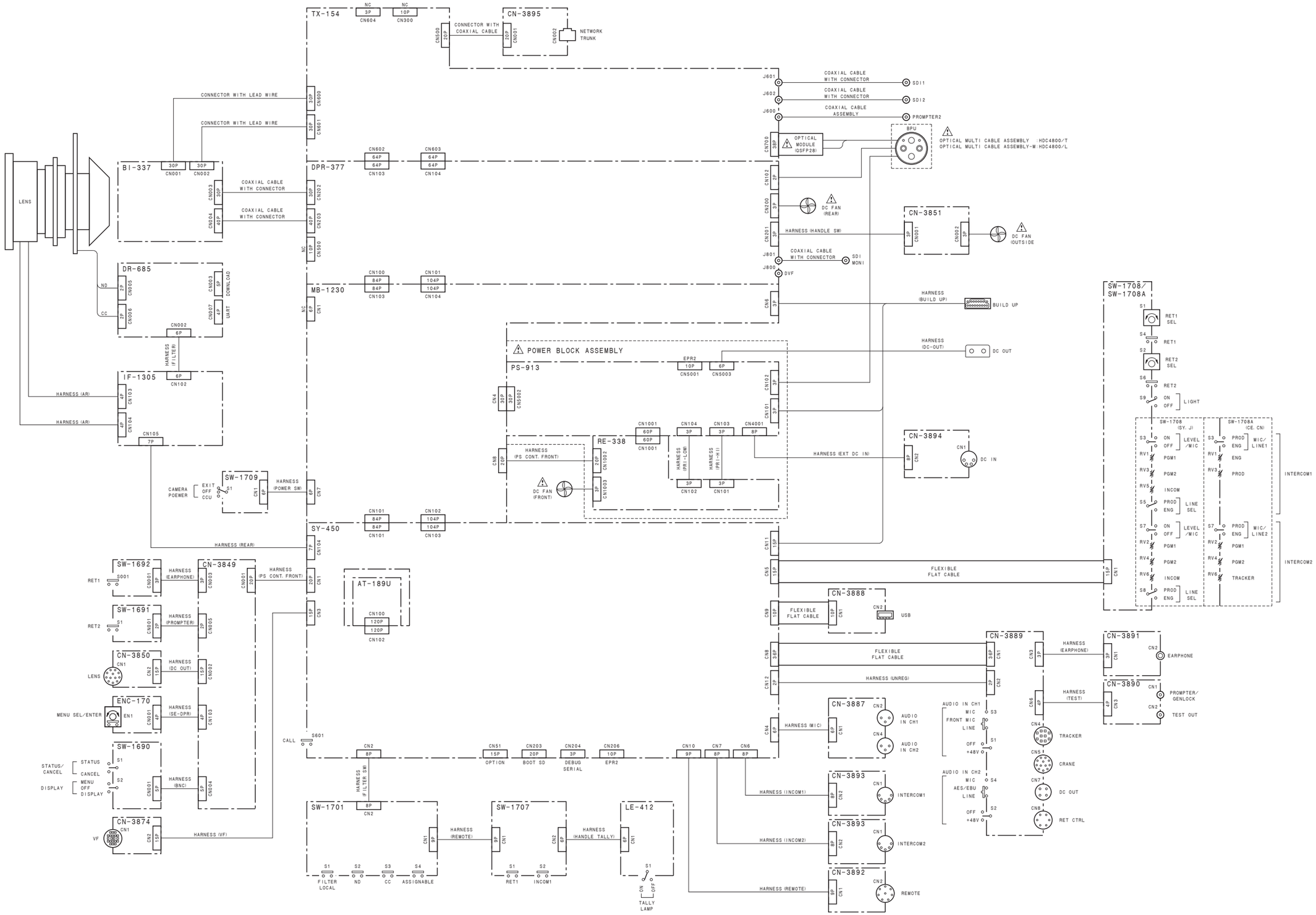
Frame Wiring



Revision History

Date	History	Contents
2016. 7	1st Edition 9-976-995-01	—

HDC4800 (SY)
HDC4800 (CED)
HDC4800 (CN)
HDC4800 (J) J, E
9-976-995-01

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