SONY

CAMERA ADAPTOR

CA-570/570P

MAINTENANCE MANUAL Part 2
Volume 1 1st Edition (Revised 2)
Serial No. 10001 and Higher (UC)
Serial No. 30001 and Higher (J)
Serial No. 40001 and Higher (CE)

⚠警告

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

⚠WARNING

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

⚠WARNUNG

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

⚠AVERTISSEMENT

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

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Manual Structure

Purpose of this manual

This manual is the maintenance manual part 2 for Camera Adaptor CA-570/570P. This manual describes the information items necessary when the unit is supplied and installed, items on maintenance, and items that premise the service based on the components parts such as alignment, schematic diagrams, board layouts and spare parts list, assuming use of system and service engineers.

Contents

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

Maintenance Manual Part 2 Volume 1 (3-194-675-XX)

Section 1 Installation

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

Section 2 Service Overview

Describes information about board locations, circuit description, replacement of part and notes on services.

Section 3 Electrical Alignment

Describes electrical adjustment necessary for maintenance of the unit or replacement of parts.

Maintenance Manual Part 2 Volume 2 (3-200-529-XX)

Section 1 Spare Parts

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

Section 2 Semiconductor Pin Assignments

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

Section 3 Block Diagrams

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

Section 4 Schematic Diagrams

Describes schematic diagrams for every circuit board.

Section 5 Board Layouts

Describes board layouts for every circuit board.

Relative manuals

Besides this “maintenance manual part 2”, the following manuals are available for this unit.

- **Operation Manual (Supplied with this unit)**
  This manual is necessary for application and operation of this unit.

- **Maintenance Manual Part 1 (Supplied with this unit)**
  This manual is intended for use by trained system and service engineers, and provides the installation and maintenance information that is necessary at the time of primary service.

- **System Manual (Available on request)**
  This manual is necessary for connection and operation of this unit and other peripheral equipments.
  If this manual is required, contact your local Sony Sales Office.

Section 1
Installation

1-1. Checking ROM version

When the CA-570/570P is to be connected to the BVP-550/550P, be sure to check that the ROM version for IC36/AT-95 board of the camera is Ver. 4.00 or higher. If ROM replacement is required, contact your local Sony Sales Office/Service Center.
In the following cases, it is unnecessary to check.

- When connecting the unit to the BVP-950/950P
- When connecting the unit to the camera which is provided with the AT-126 board (such as the BVP-550/550P upgraded by the BKP-5090 or the BVP-570)

ROM Version
IC36/AT-95 board Ver. 4.00 or higher

Note
ROM version can be checked easily on the viewfinder screen. For details, refer to the BVP-550/550P maintenance manual, Section 3 “Setup Menu”.

1-2. Supplied Accessories

Accessory	Sony P/N	Qt’y
Shoulder Belt	A-6772-374-A	1
Cable Holders	3-692-186-01	2
Cable Holder Fixing Screws	7-682-547-09	4
Operation Manual	————	1
Maintenance Manual Part 1	————	1

1-3. Connectors and Cables

1-3-1. Connector Input/Output Signals

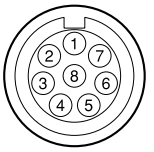
- **PROMTER** *1/**GENLOCK** *2
  BNC 75 Ω 1.0 Vp-p

  *1: In connection with CCU
  *2: In connection with VTR

- **TRIAX**
  King type (for CA-570)
  Fischer type (for CA-570P)
- **TEST OUT** *3
  BNC 75 Ω 1.0 Vp-p

  *3 : Refer to Section 1-4. “Function of Internal Switches, AU-251 Board” for details.

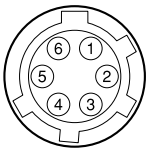
REMOTE (8P FEMALE)



(External view)

No.	Signal	Specifications
1	TX (+)	BVP SERIAL DATA
2	TX (–)	
3	RX (+)	CCU/MSU/RCP/CNU/VCS
4	RX (–)	SERIAL DATA
5	VIDEO (G)	GND for VIDEO
6	POWER (+) OUT	+12 V, 500 mA (MAX)
7	POWER (–) OUT	GND for +12 V
8	VIDEO (X) OUT	VBS 1.0 V p-p, Zo = 75 Ω
	CHASSIS GND	CHASSIS GND

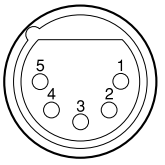
RET CONT (6P FEMALE)



(External view)

No.	Signal	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

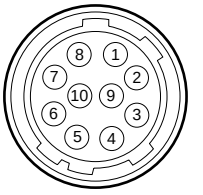
INCOM 1/2 (5P FEMALE)



(External view)

No.	Signal	Specifications
1	INCOM MIC IN (Y)	–20 dBu (CARBON MIC)
2	INCOM MIC IN (X)	–60 dBu (DYNAMIC MIC)
3	GND (PGM)	
4	INCOM RECEIVE OUT	–20 dBu (with INCOM level control set to mechanical center)
5	PGM 1/2 OUT	–20 dBu (with PGM level control set to mechanical center)

TRACKER (10P FEMALE)

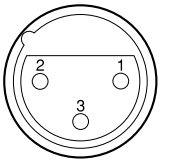


(External view)

No.	Signal	Specifications
1	TRACKER R OUT (X)	TRACKER RECEIVE 0 dBu unbalanced
2	TRACKER T IN (G)	GND for TRACKER T
3	TRACKER R OUT (G)	GND for TRACKER R
4	PGM OUT (X)	–20 dBu unbalanced
5	+12 V (T) OUT	+12 V dc. 500 mA (MAX)
6	PGM OUT (G)	GND for PGM
7	TRACKER T IN (X)	TRACKER TALK
8	TRACKER T IN (Y)	0 dBu/–20 dBu High impedance balanced
9	UP TALLY OUT (G)	GND for UP TALLY
10	UP TALLY OUT (X)	+12 V dc 200 mA (MAX)

(0 dBu = 0.775 Vrms)

AUDIO IN 1/2 (3P MALE)

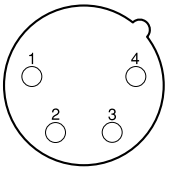


(External view)

No.	Signal	Specifications
1	MIC IN (G)	–60 dBu High impedance
2	MIC IN (X)	balanced
3	MIC IN (Y)	

(0 dBu = 0.775 Vrms)

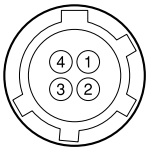
DC IN (4P MALE)



(External view)

No.	Signal	Specifications
1	GND	GND for DC (+)
2	NC	No connection
3	NC	No connection
4	DC (+) IN	DC 10.5 V to 17 V

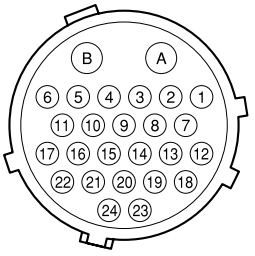
DC OUT (4P FEMALE)



(External view)

No.	Signal	Specifications
1	GND	GND for UNREG
2	NC	No connection
3	NC	No connection
4	UNREG +12 V OUT	+12 V dc, 500 mA (MAX)

VTR (26P MALE)



(External view)

No.	Signal	Specifications
A	POWER (+) IN	UNREG 10.5 V to 17 V, 3A
B	POWER (–) IN	
1	VBS OUT (X)	VBS 1.0 V p-p, Zo = 75 Ω
2	VBS OUT (G)	
3	Y VIDEO OUT (G)	VS 1.0 V p-p, Zo = 75 Ω
4	Y VIDEO OUT (X)	
5	R-Y VIDEO OUT (X)	Zo = 75 Ω
6	R-Y VIDEO OUT (G)	756 mV p-p (J)
7	B-Y VIDEO OUT (X)	700 mV p-p (UC)
8	B-Y VIDEO OUT (G)	525 mV p-p (CE)
9	MIC OUT (X)	Zo ≦ 600 Ω,
10	MIC OUT (Y)	−60 dBu balanced
11	MIC OUT (G)	
12	VTR START/$\overline{\text{STOP}}$ OUT	START: 5 ±1 Vdc, STOP: 0 $^{+0.2}_{-0.1}$ Vdc, Zo ≦ 10 kΩ
13	BATT IND IN	Zi = 300 Ω *Note 1
14	NC	No connection
15	REC ALARM IN	Zi ≧ 20 kΩ *Note 2
16	NC	No connection
17	GND (SHIELD)	Camera GND
18	PB VIDEO IN (X)	VBS 1 V p-p, Zi = 75 Ω
19	PB VIDEO IN (G)	
20	AUDIO MONITOR IN/ VTR SAVE OUT	SAVE: +4.5 ±0.5 V, STANDBY: +9.0 $^{+1.0}_{-0.5}$ V, MONITOR: Zi = 750 Ω) Zo ≦ 10 kΩ
21	NC	No connection
22	CF OUT	Color Framing
23	NC	No connection
24	NC	No connection

(0 dBu = 0.775 Vrms)

Note

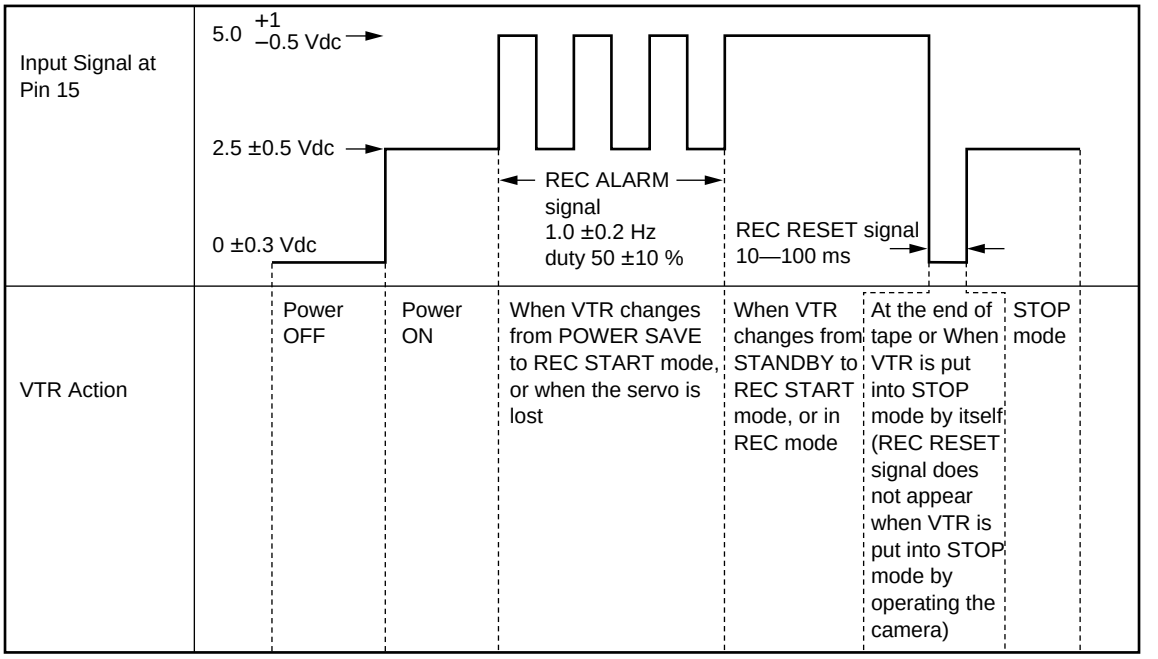
VTR connector is disabled when the CCU is connected.

Note1: Specifications of BATT IND Signal

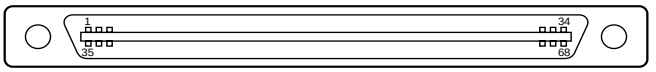
VTR has a battery voltage detection and waring signal generation circuits and it sends the signal shown below to the camera.

Battery Terminal Voltage (VTR internal battery)	17.0—11.1 Vdc	11.1—10.8 Vdc	10.8 Vdc —
Input Signal at Pin 13	0 V	1.0 ±0.2 Hz duty 50 ±10 %	2—3 Vdc across 300 Ω
LED on Viewfinder	Stays out	Blinks at 1 Hz	Lights up

Note2: Specifications of REC ALARM Signal



CAMERA (68P MALE)



(External view)

*: In connection with CCU **: In connection with VTR

No.	Signal	Specifications
1	UNREG GND	GND for UNREG
2	UNREG GND	GND for UNREG
3	VF UNREG GND	GND for VF UNREG
4	LENS UNREG GND	GND for LENS UNREG
5	UNREG OUT	10.5 V to 17 V
6	UNREG OUT	10.5 V to 17 V
7	VF UNREG OUT	10.5 V to 17 V
8	LENS UNREG OUT	10.5 V to 17 V
9	R IN (X)	700 mV p-p ±2%, DC 0 ± 200 mV, Zi ≧ 10 kΩ
10	B IN(X)	700 mV p-p ±2%, DC 0 ± 200 mV, Zi ≧ 10 kΩ
11	VBS IN (G)	GND for VBS VIDEO
12	Y IN (X)	VS 1.0 V p-p, Zi = 1 kΩ
13	B-Y IN(X)	700 m V p-p, with sample 350 mV *
		756 mV p-p (J) 700 mV p-p (UC) 525 mV p-p (CE) } ** 75 % color bars
14	NC	No connection
15	NC	No connection
16	VBS GENLOCK OUT (X)	1.0 V p-p ±6 dB, Zo = 75 Ω
17	RET VIDEO OUT (G)	GND for RET VIDEO
18	MONITOR VIDEO IN (X)	VS 1 Vp-p, Zi = 1 kΩ
19	BATTERY ALARM OUT	Zo = 300 Ω
20	NC	No connection
21	AUDIO CH1 CONT IN	0 V (0 dB) to 7 V (–50 dB or less)
22	MIC 1 IN(Y)	Zi ≧ 600 Ω, –60 dBu balanced
23	NC	No connection
24	SKIN TONE GATE IN	1.0 V p-p
25	TAPE REM OUT	No connection
26	VTR SYNC IN	+5.0 V p-p Negative pulse, Zi ≦ 100 Ω
27	RET EN IN	ENABLE; 0 V, DISABLE; +5 V or OPEN
28	PB REF OUT	PB; +4.5 V, CAM; 0 V or OPEN
29	H CONT OUT	0 V to 5 V, Analog
30	ANALOG GND	
31	DIGITAL HD IN	3.3 V p-p for Digital
32	COM CONT OUT	5 V p-p
33	IIC CLOCK IN (CA)	5 V p-p
34	IIC CLOCK IN (ST)	5 V p-p

No.	Signal	Specifications
35	UNREG GND	GND for UNREG
36	UNREG GND	GND for UNREG
37	VF UNREG GND	GND for VF UNREG
38	LENS UNREG GND	GND for LENS UNREG
39	UNREG OUT	10.5 V to 17 V
40	UNREG OUT	10.5 V to 17 V
41	VF UNREG OUT	10.5 V to 17 V
42	LENS UNREG OUT	10.5 V to 17 V
43	G IN(X)	700 mV p-p ±2%, DC 0 ± 200 mV, Zi ≧ 10 kΩ
44	R/G/B GND	GND for R/G/B VIDEO
45	VBS IN(X)	1.0 V p-p ±10%, Zi = 75 Ω
46	R-Y IN(X)	700 m V p-p, with sync 350 mV *
		756 mV p-p (J) 700 mV p-p (UC) 525 mV p-p (CE) } ** 75 % color bars
47	Y/R-Y/B-Y GND	GND for Y/R-Y/B-Y
48	NC	No connection
49	NC	No connection
50	VBS GENLOCK OUT (G)	GND for GENLOCK
51	RET VIDEO OUT(X)	1.0 V p-p, Zo = 75 Ω
52	MONITOR VIDEO IN (G)	GND for MONITOR VIDEO
53	VTR START/STOP IN	Zi ≦ 10 kΩ
54	NC	No connection
55	MIC 1 IN(G)	GND for CAM MIC
56	MIC 1 IN(X)	Zi ≧ 600 Ω, –60 dBu balanced
57	NC	No connection
58	NC	No connection
59	AUDIO LEVEL OUT	No connection
60	NC	No connection
61	V RESET OUT/CF IN	V Reset; 0 V to +5 V, CF; 0 V to –5 V
62	REC TALLY OUT	ON; +5 V, OFF; +2.5 V or 0 V, Zo ≧ 20 kΩ
63	VTR SAVE IN	SAVE; +4.5 V, STANDBY; 0 V, Zi ≦ 10 kΩ
64	GND	
65	SD IN/OUT	Serial data for camera control
66	COM DATA IN	5 V p-p
67	IIC DATA IN/OUT(CA)	5 V p-p, 4700 Ω, Pull up
68	IIC DATA IN/OUT(ST)	5 V p-p, 4700 Ω, Pull up

(0 dBu = 0.775 Vrms)

1-3-2. Connection Connector

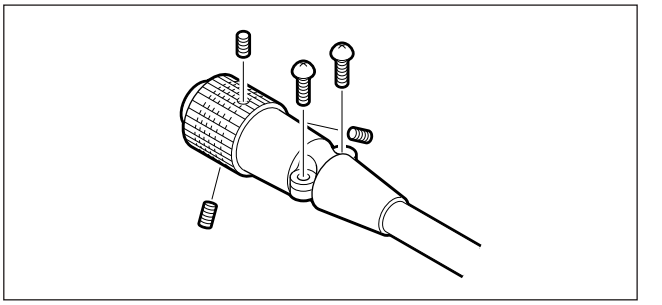
Connection made with the connector panels during installation or service, should be made with the connectors/ complete cable assemblies specified in the following list, or equivalent parts.

Connector Name	Connection Connectors/Cables
PROMPTER/GENLOCK TEST OUT (BNC)	1-569-370-12 Plug, BNC
RET CONT (6P FEMALE)	1-560-078-00 Plug, 6P Male or HIROSE HR10-7PA-6P equivalent
REMOTE (8P FEMALE)	1-766-848-11 Plug, 8P Male or CCA-5 cable assembly (option) ∗2 CCA-5-10 (10 m)/CCA-5-3 (3 m) or REMOTE cable 1-783-372-11 (supplied with RM-B150, 10 m) ∗1 ∗2
INCOM 1/2 (5P FEMALE)	1-508-370-11 XLR, 5P Male or CANNON XLR-5-12C equivalent
AUDIO IN 1/2 (3P MALE)	1-508-084-00 XLR, 3P Female or CANNON XLR-3-11C equivalent
DC IN (4P MALE)	1-508-362-00 XLR, 4P Female or CANNON XLR-4-11C equivalent or Cable assembly (supplied with AC-550) 1-551-577-00
DC OUT (4P FEMALE)	1-566-425-11 Plug, 4P Male or HIROSE HR10A-7P-4P equivalent
VTR (26P MALE)	1-564-184-00 Plug, 26P Female or CCZ cable assembly (option) or CCZ-2 (2m)/CCZ-10 (10m)
TRACKER (10P FEMALE)	1-506-522-11 Plug, 10P Male or HIROSE HR10R-10P-10P equivalent

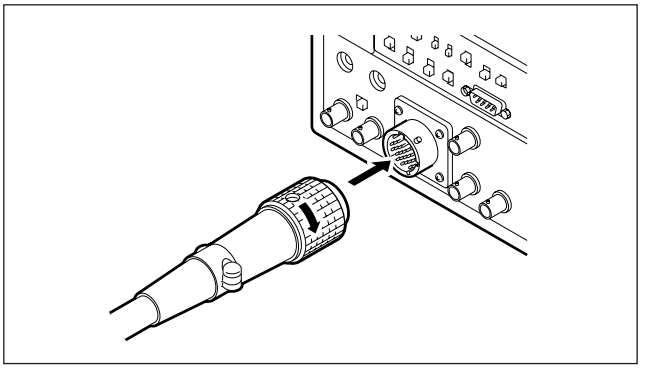
∗1: Use of REMOTE cable enables to monitor video signals.
∗2: If using a cable of length different from a standard product, consult your Sony organization.

1-3-3. Removal of CCZ Connector

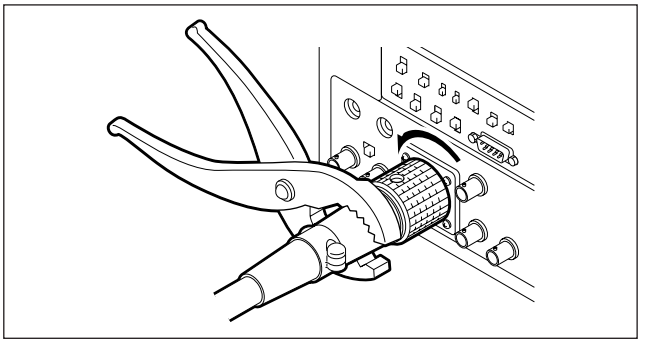
1. Remove the two screws and three setscrews.



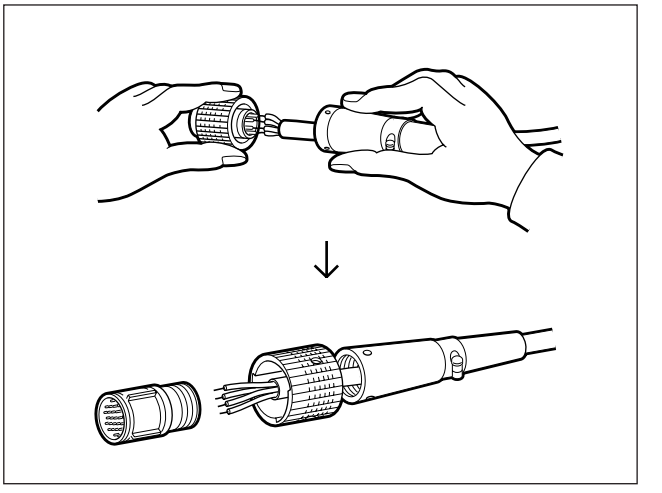
2. Connect the plug to the VTR or camera.



3. Loosen the plug counterclockwise by pliers.

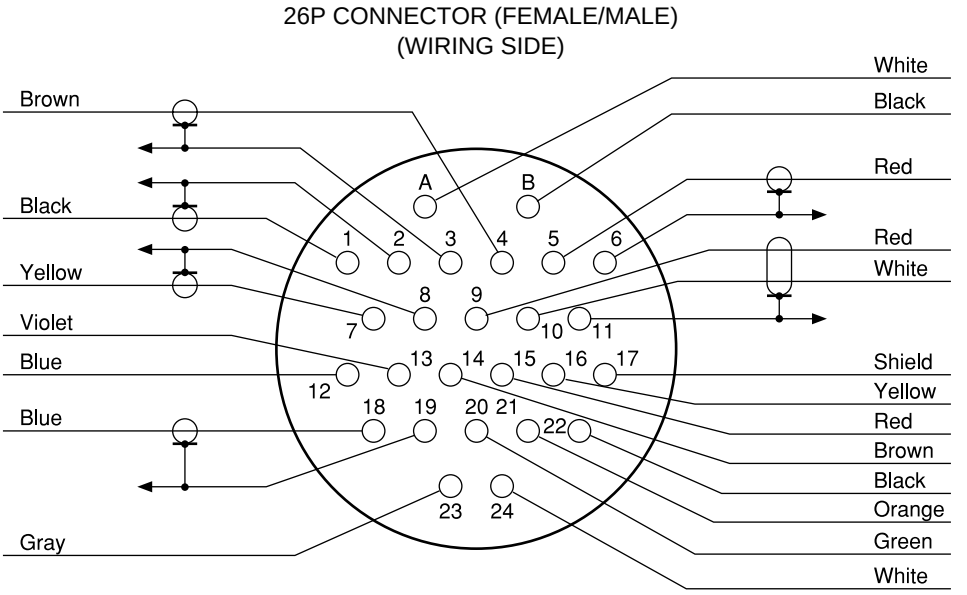


4. Disassemble as illustrated and unsolder.

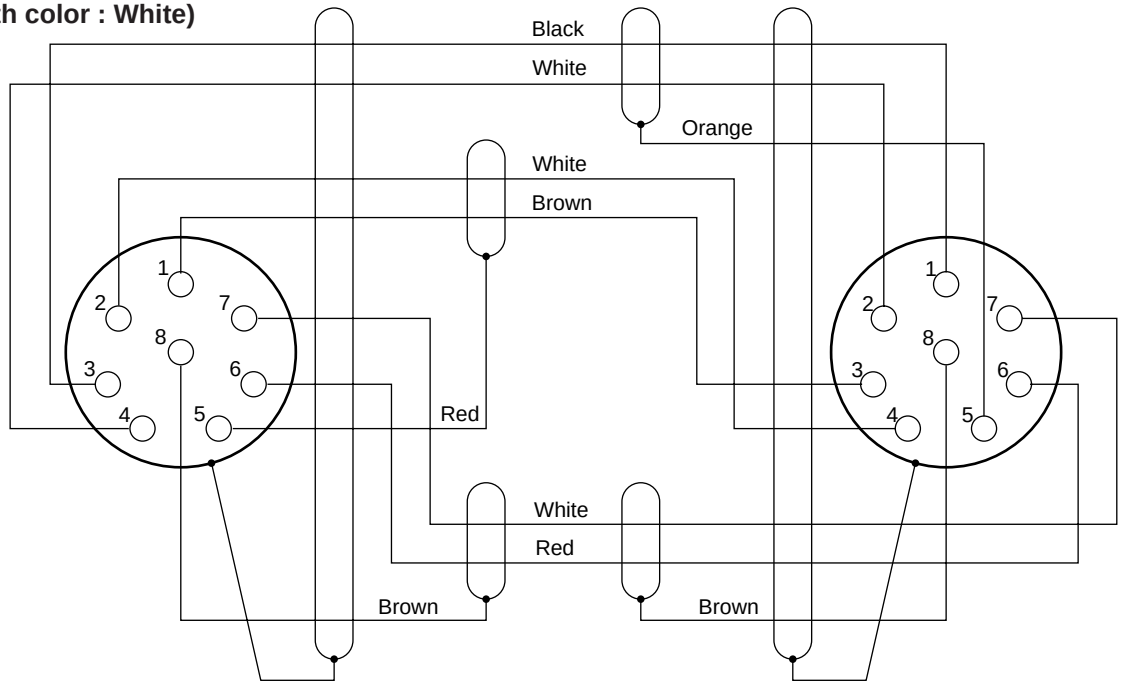


1-3-4. Wiring Diagrams for Cables

CCZ Cable



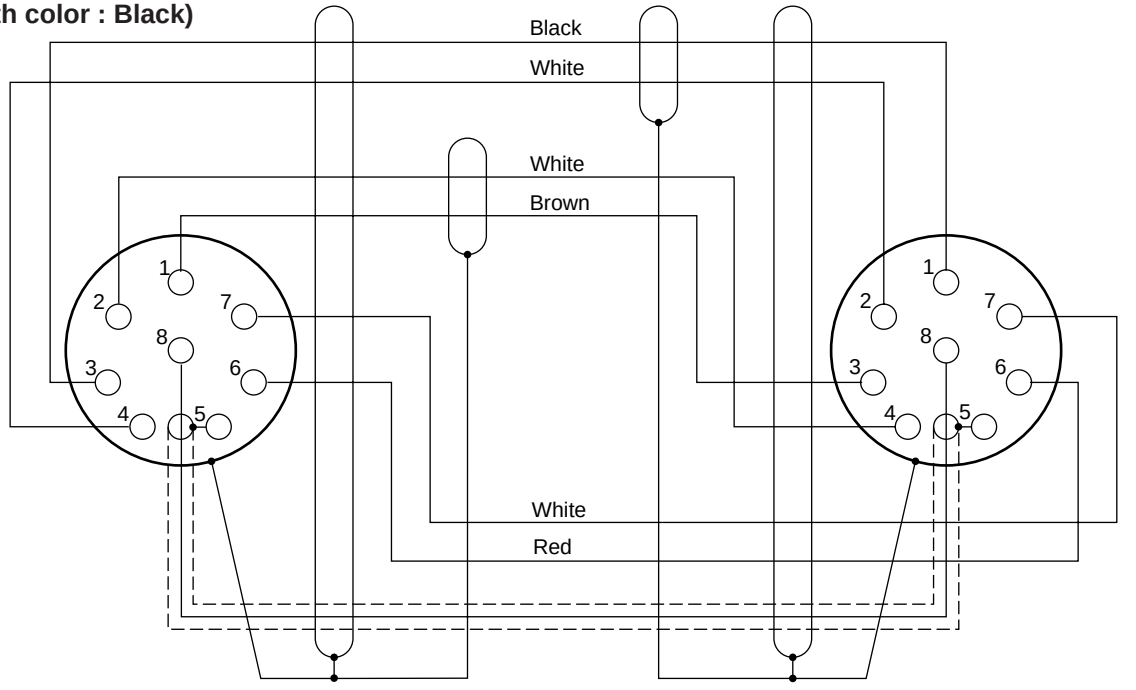
CCA-5 Cable
(Outer sheath color : White)



8P CONNECTOR(MALE)
(WIRING SIDE)

8P CONNECTOR(MALE)
(WIRING SIDE)

REMOTE Cable (supplied with RM-B150)
(Outer sheath color : Black)

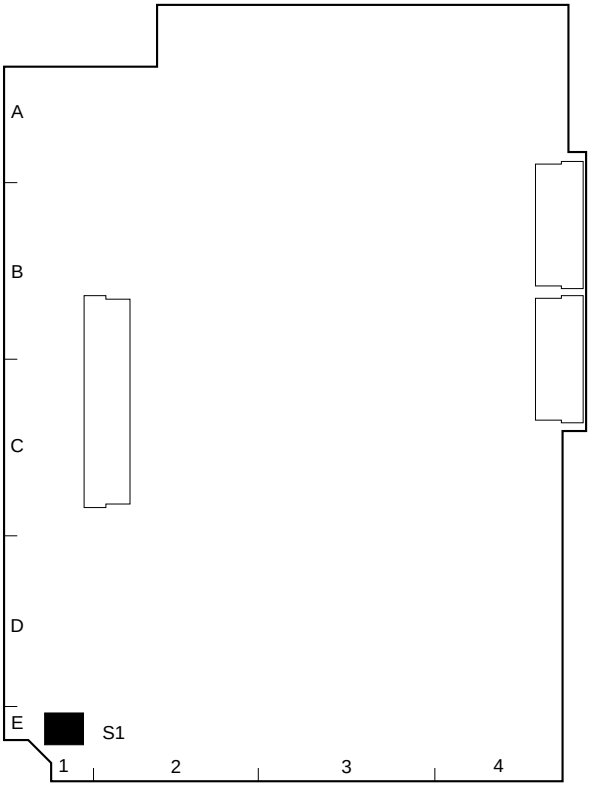


8P CONNECTOR(MALE)
(WIRING SIDE)

8P CONNECTOR(MALE)
(WIRING SIDE)

1-4. Function of Internal Switches

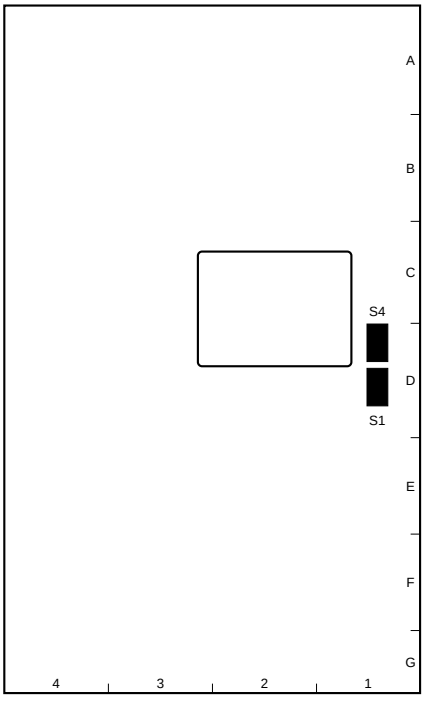
MB-783 board



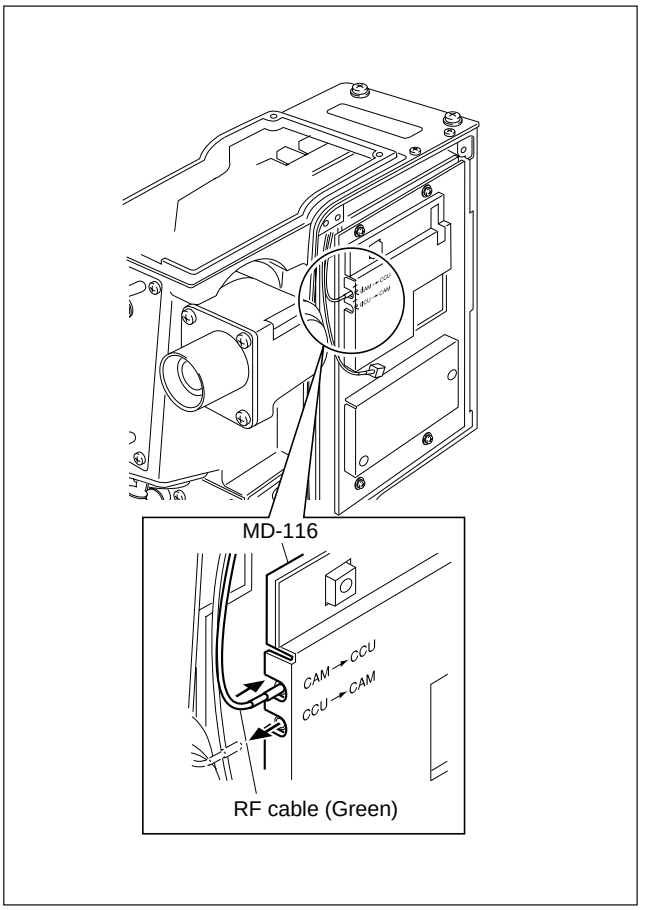
MB-783 BOARD (B SIDE)

Ref.No.	Name	Description	Factory setting
S1-1	PGM	Turns on and off the function to monitor the PGM (program audio) by the earphone ON: Monitoring is enabled OFF: Monitoring is disabled	ON
S1-2	INCOM 2	Turns on and off the function to monitor the NCOM 2 intercom audio by the earphone ON: Monitoring is enabled OFF: Monitoring is disabled	OFF
S1-3	INCOM 1	Turns on and off the function to monitor the INCOM 1 intercom audio by the earphone ON: Monitoring is enabled OFF: Monitoring is disabled	OFF
S1-4	VTR	Turns on and off the function to monitor the VTR playback audio by the earphone while the VTR is playing back ON: Monitoring is enabled OFF: Monitoring is disabled	OFF

DM-116 board



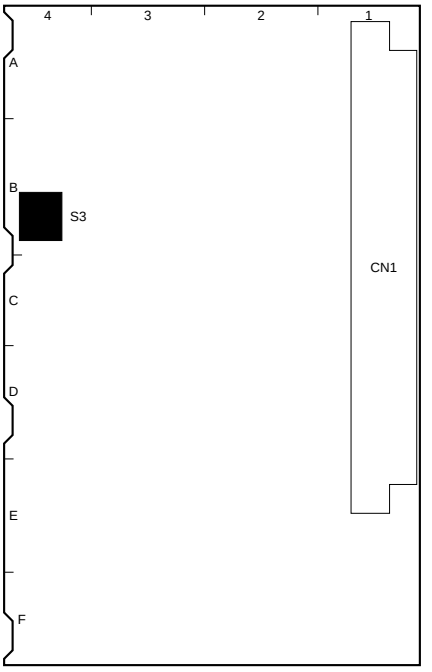
DM-116 BOARD (A SIDE)



RF cable connection

Ref.No.	Name	Description	Factory setting
S1	PROMPT/GEN	Factory use **Note** Do not change this switch from its factory setting	PROMPT
S4	CCU⇨CAM /CAM⇨CCU	Selects the direction to transmit the PROMPTER signal as follows. (This switch is activated only when the unit is connected with the CCU-700A/700AP) CCU⇨CAM: PROMPTER signal is transmitted from the CCU to the unit and is then output at the PROMPTER/GENLOCK connector of the unit CAM⇨CCU: PROMPTER signal is input at the PROMPTER/GENLOCK connector of the unit and is then transmitted to the CCU **Note** When this switch is changed to “CAM⇨CCU” side, be sure to disconnect the RF cable (green) and connect it to a proper connector on the DM-116 board as shown in the figure above In addition, be sure to change the setting of S5 and S6 switches on the DM board of the CCU from TX to RX	CCU⇨CAM

MD-119 board

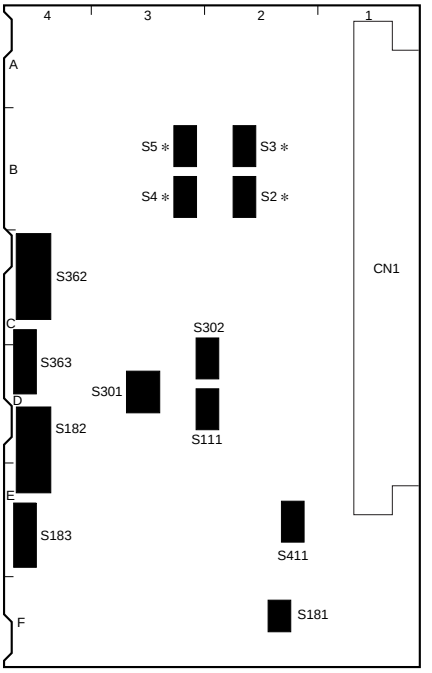


MD-119 BOARD (A SIDE)

Ref.No.	Name	Description	Factory setting
S3	PROMPTER/ GENLOCK (Panel)	Selects input or output signal at the PROMPTER/GENLOCK connector (BNC) PROMPTER: Select to input or to output a PROMPTER signal when the CCU is connected to the unit S4/DM-116 board selects whether the PROMPTER signal is input (CCU⇨CAM) or is output (CAM⇨CCU) GENLOCK: Select to input a VBS or a GENLOCK signal **Note** Check that the S1/DM-116 board is set to PROMPT side	PROMPTER

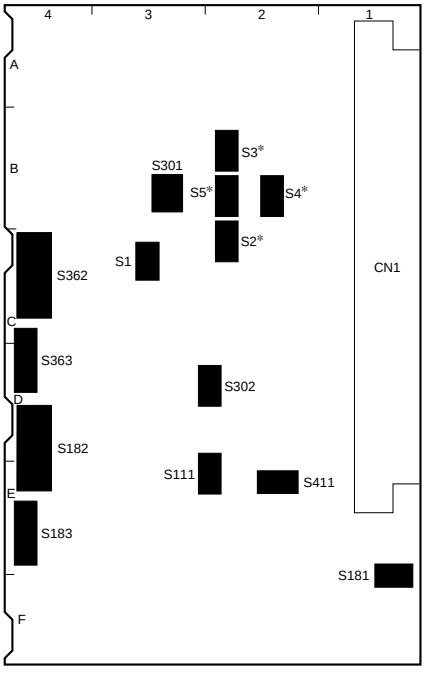
AU-237/237P board

CA-570 (UC) : S/N 18001 and Higher
CA-570 P (CE) : S/N 48001 and Higher



AU-237 BOARD (A SIDE)

CA-570 (UC) : S/N 10001 through 18000
CA-570 P (CE) : S/N 40001 through 48000

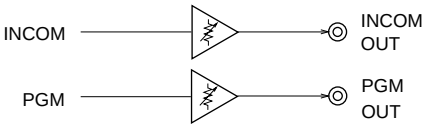
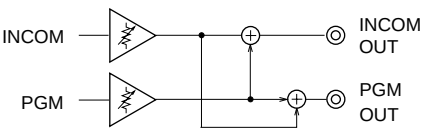
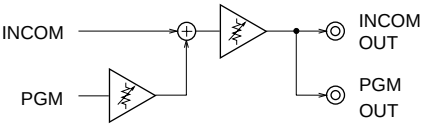


AU-237 BOARD (A SIDE)

Ref.No.	Name	Description	Factory setting
S1	MIX/IND	Not used (Always set to OFF)	OFF
S2*, S4*	INCOM1 PGM MIX	Selects how the INCOM and PGM of the INCOM 1 connector are output (See the table below)	
S3*, S5*	INCOM2 PGM MIX	Selects how the INCOM and PGM of the INCOM 2 connector are output (See the table below)	

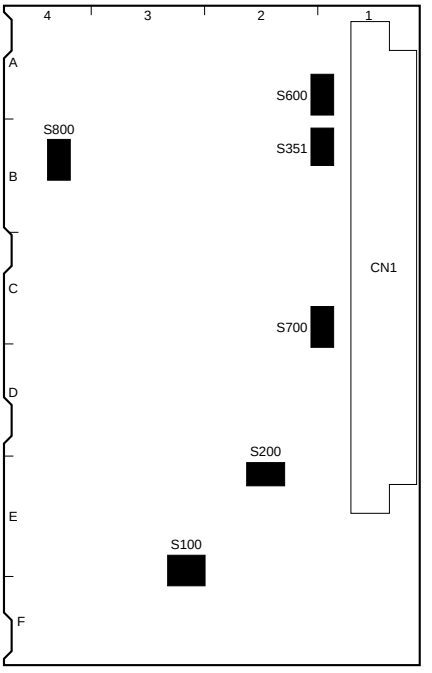
* : AU-237 board only. (The AU-237P board is not equipped with these switches.)

INCOM/PGM MIX mode select switches (AU-237 board only)

INCOM1 / INCOM2	S2 / S3	S4 / S5	Description	
	IND	IND		INCOM and PGM are output independently
	(Factory setting)			
	MIX	IND		Mixed signal of INCOM and PGM is output as INCOM and PGM outputs INCOM level control knob adjusts INCOM audio level and PGM level control knob adjusts the PGM audio level
	MIX	MIX		Mixed signal of INCOM and PGM is output as INCOM and PGM outputs INCOM level control knob adjusts mixed signal level of the INCOM and PGM, and PGM level control knob adjusts the balance between them

Ref.No.	Name	Description	Factory setting
S111	RTS1	Select when connecting an RTS kit to the INCOM 1 connector. RTS: RTS CH1 is activated as INCOM 1 connector NORM: Normal mode	NORM
S302	RTS2	Select when connecting an RTS kit to the INCOM 2 connector. RTS: RTS CH2 is activated as INCOM 2 connector NORM: Normal mode	NORM
S181-1	UNBAL/BAL	Turns on and off the function to ground the MIC (Y) signal when a headset with dynamic microphone is connected to the INCOM 1 connector and the connection is unbalanced BAL: Normal mode UNBAL: MIC(Y) signal is grounded (This reduces hum)	UNBAL
S181-2	UNBAL/BAL	Turns on and off the function to ground the MIC (Y) signal when a headset with dynamic microphone is connected to the INCOM 2 connector and the connection is unbalanced BAL: Normal mode UNBAL: MIC(Y) signal is grounded (This reduces hum)	UNBAL
S182	INTERCAM1 CB/DYN (Panel)	Select according to a microphone of the headset to be connected to INCOM 1 connector CB: Carbon microphone DYN: Dyanmic microphone	CB (Carbon)
S362	INTERCAM2 CB/DYN (Panel)	Select according to a microphone of the headset to be connected to INCOM 2 connector CB: Carbon microphone DYN: Dyanmic microphone	CB (Carbon)
S183	GAIN (Panel)	Sets the level of INCOM 1 intercom audio to be sent to the CCU +: The gain is increased by about 6 dB againt standard level 0: Standard level −: The gain is decreased by about 6 dB againt standard level	0 (0 dB)
S363	GAIN (Panel)	Sets the level of INCOM 2 intercom audio to be sent to the CCU +: The gain is increased by about 6 dB againt standard level 0: Standard level −: The gain is decreased by about 6 dB againt standard level	0 (0 dB)
S301	TRACKER/INCOM2 mode select switches		
S301-1	TRACKER/PGM (PGM/R)	Turns on and off the function to add PGM (program audio) to the TRACKER RECEIVE OUT ON: The PGM is added to the TRACKER RECEIVE OUT OFF: Normal mode	ON
S301-2	TRACKER/INCOM2 (IN2R/R)	Turns on and off the function to add the INCOM 2 audio (TALK/RECEIVE) to the TRACKER RECEIVE OUT ON: The INCOM 2 audio is added to the TRACKER RECEIVE OUT OFF: Normal mode	OFF
S301-3	TRACKER/INCOM2 (T/IN2R)	Turns on and off the function to add the TRACKER TALK to the INCOM 2 audio (TALK) to be sent to the CCU ON: The TRACKER TALK is added to the INCOM 2 audio (TALK) OFF: Normal mode	OFF
S301-4	TRACKER/INCOM2 (T/IN2R)	Turns on and off the function to add the TRACKER TALK to the INCOM 2 audio (RECEIVE) sent from the CCU ON: The TRACKER TALK is added to the INCOM 2 audio (RECEIVE) OFF: Normal mode	OFF
S411	TRACKER (T) 0/−20	Selects the TRACKER TALK level at the TRACKER connector 0: 0 dBu (Standard level) −20: −20 dBu (Select when input level is too high) (0 dBu = 0.775 Vrms)	0 (0 dBu)

AU-251 board



AU-251 BOARD (A SIDE)

Ref.No.	Name	Description	Factory setting
S600	MIC1 CHU/CA	Selects a MIC signal which is sent to the CCU as MIC 1 input CHU: Camera MIC connector input CA: Camera adaptor MIC 1 connector input	CA
S700	MIC +48V	MIC POWER +48 V ON/OFF switch Turn on when using a PHANTOM +48 V microphone	OFF
S800	MIC +12V	MIC POWER +12 V ON/OFF switch Turn on when using an AB POWERING +12 V microphone **Note** When the MIC POWER switch on the rear panel to OFF or +48V, this switch is not activated even if set to ON	OFF
S200-1	RCP POWER SAVE	Turns on and off the power saving function for RCP drive circuit when the CCU is connected to the unit ON: Power for the RCP drive circuit is turned off when the CCU is connected (Turned on when the camera is used alone) OFF: Always turned on	ON
S200-2	BATTERY ALARM	Turns on and off the function to light the back tally lamp of the unit when the battery signal circuit is detected ON: Back tally lamp is lit OFF: Back tally lamp is unlit	OFF
S351	MIC MONITOR	Turn on and off the function to monitor the MIC input by the headset connected to the INCOM connector ON: Monitoring is enabled OFF: Monitoring is disabled	OFF

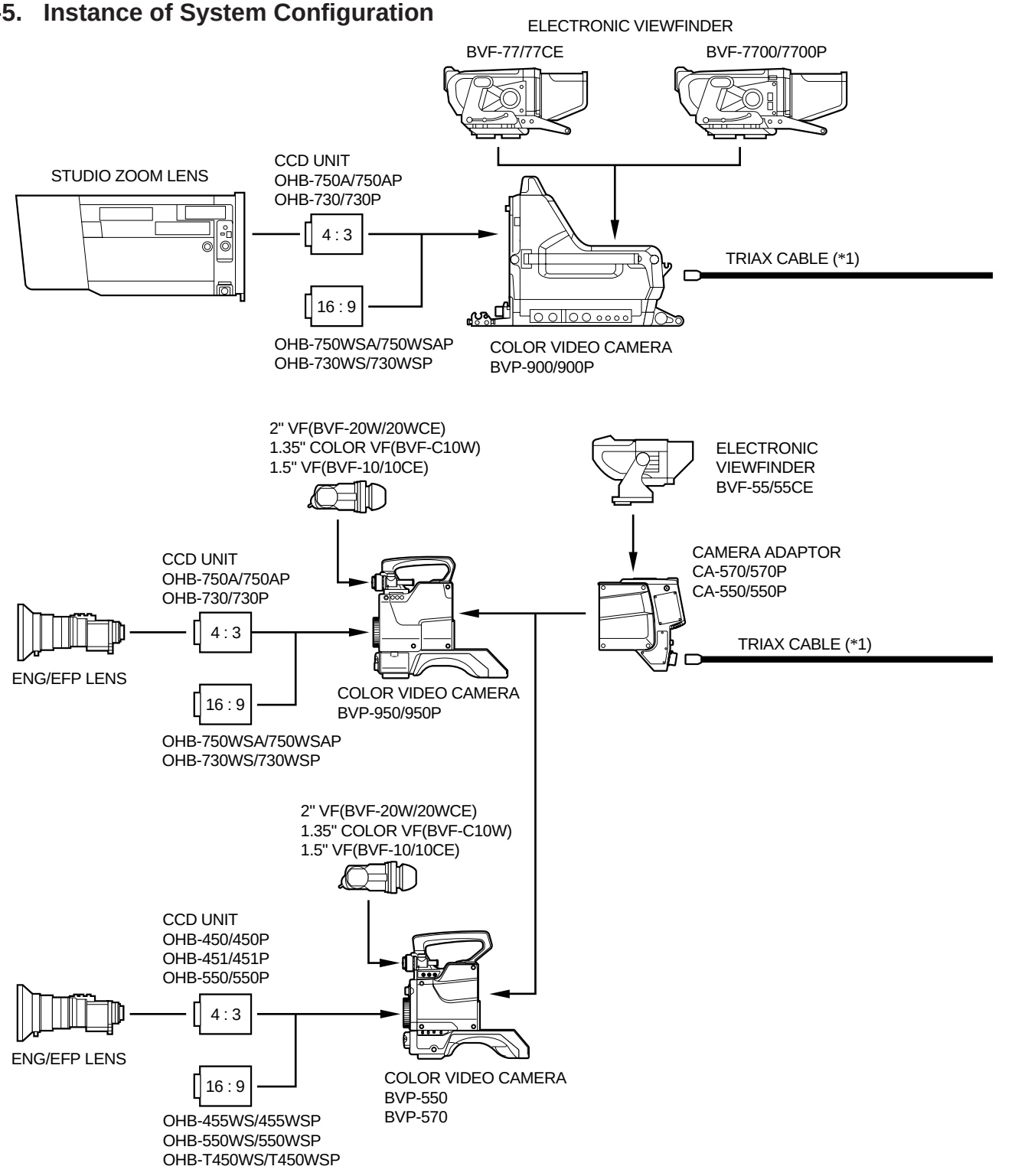
Ref.No.	Name	Description	Factory setting
S100	TEST OUT signal select switch **Note** The table below shows selectable output signals in combination with S100-1 through S100-4 and depending on whether the RET CONT signal is low or high		
S100-1	PB VIDEO/RET	Disables automatically switching between PB VIDEO and RET VIDEO signals when S100-1 is set to ON	OFF
S100-2	VBS/RET	Disables automatically switching between VBS/MONITOR and PB/RET VIDEO signals when S100-2 is set to ON	OFF
S100-3	MONITOR/VBS	Selects MONITOR or VBS signal	OFF
S100-4	RET CONT	Inhibits the RET CONT signal when S100-4 is set to OFF	ON

Selecting TEST OUT signal

S100-1	S100-2	S100-3	S100-4	RET CONT	Output signal at TEST OUT connector
OFF	OFF	X	X	X	RET VIDEO OUT (in connection with CCU)
					PB VIDEO OUT (in connection with VTR)
ON	OFF	X	X	X	PB VIDEO OUT
X	ON	OFF	OFF	X	VBS OUT
X	ON	ON	OFF	X	MONITOR OUT
OFF	ON	OFF	ON	Low	RET VIDEO OUT (in connection with CCU)
				Low	PB VIDEO OUT (in connection with VTR)
				High	VBS OUT
OFF	ON	ON	ON	Low	RET VIDEO OUT (in connection with CCU)
				Low	PB VIDEO OUT (in connection with VTR)
				High	MONITOR OUT

X: Don’t care.

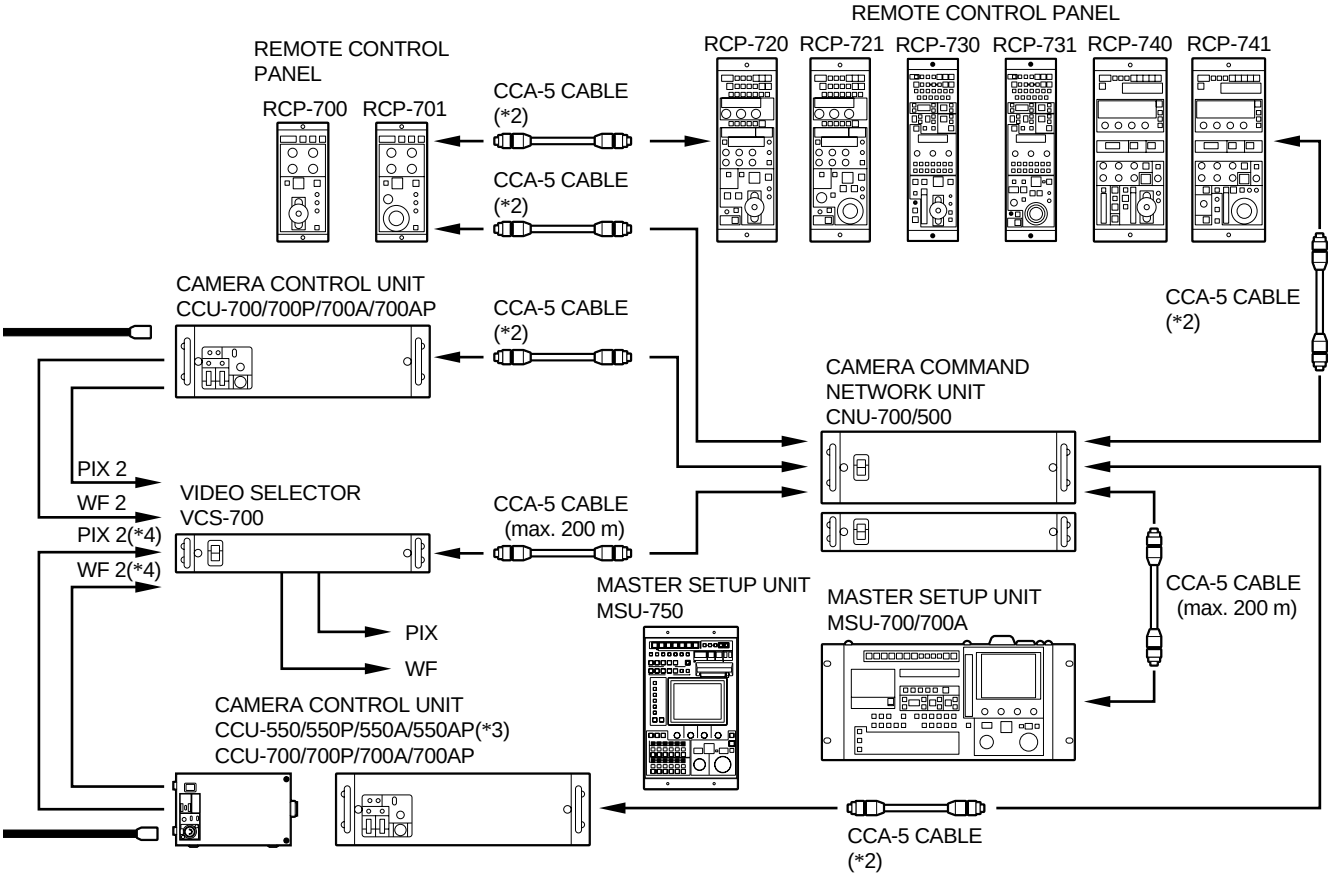
1-5. Instance of System Configuration



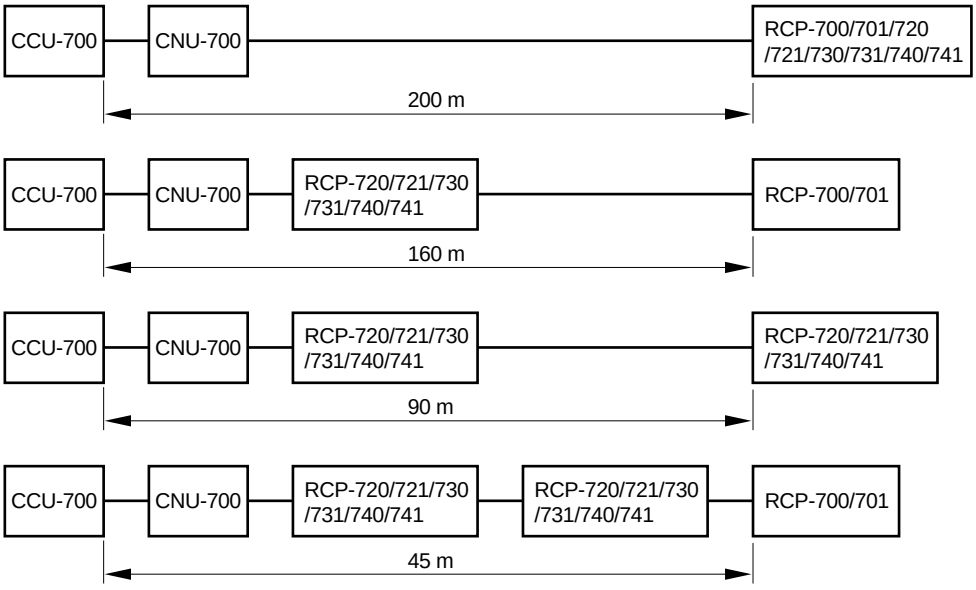
∗1: TRIAX Cable length

Diameter	Maximum length	
	CCU-700	CCU-550
8.5 mm	1000 m	700 m
14.5 mm	2000 m	1400 m

Diameter	Cable-lenght limitation for prompter signal transmission	
	CCU → CAM	CAM → CCU
8.5 mm	500 m	400 m
14.5 mm	1000 m	800 m

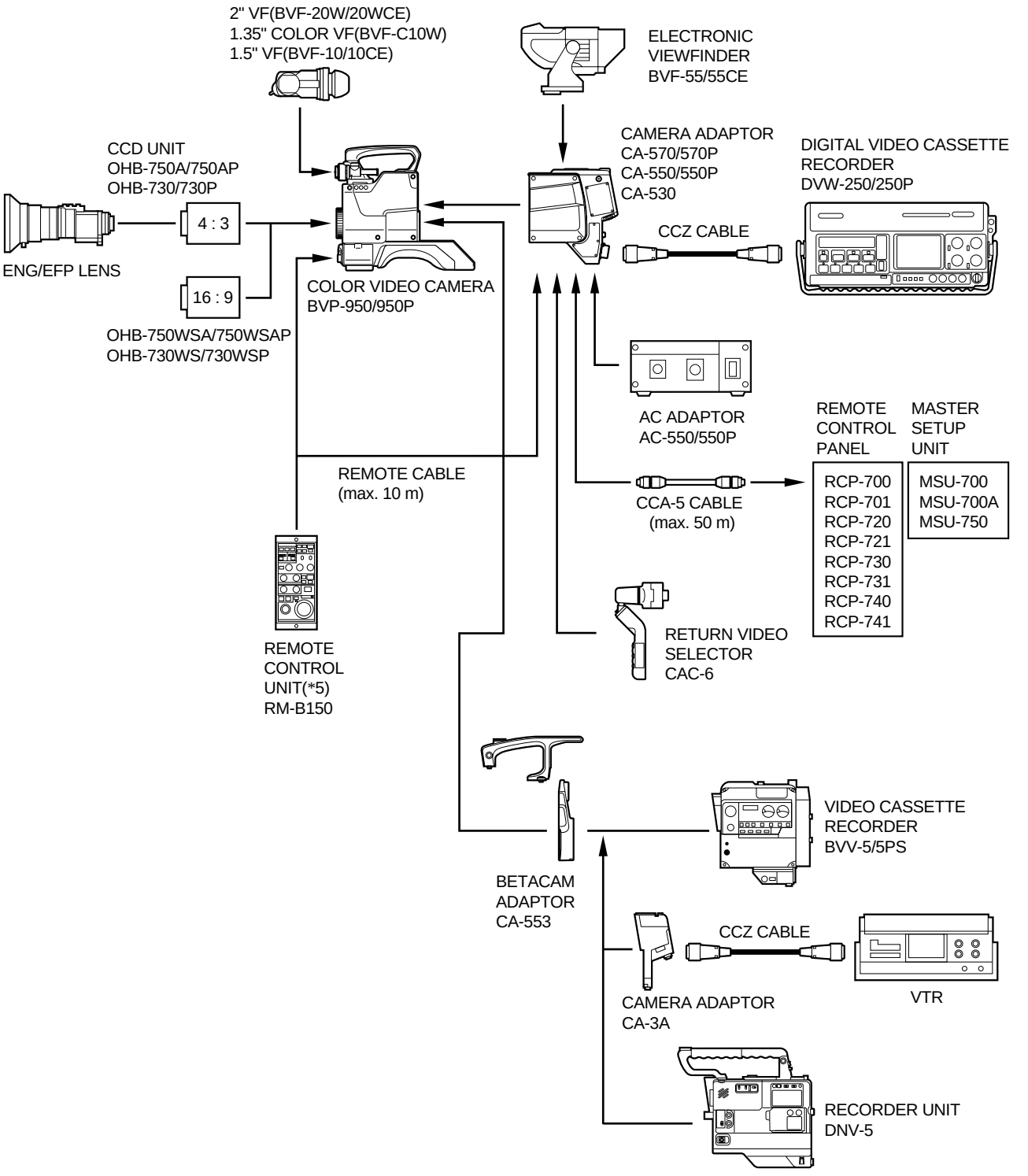


*2: CCA-5 Cable length

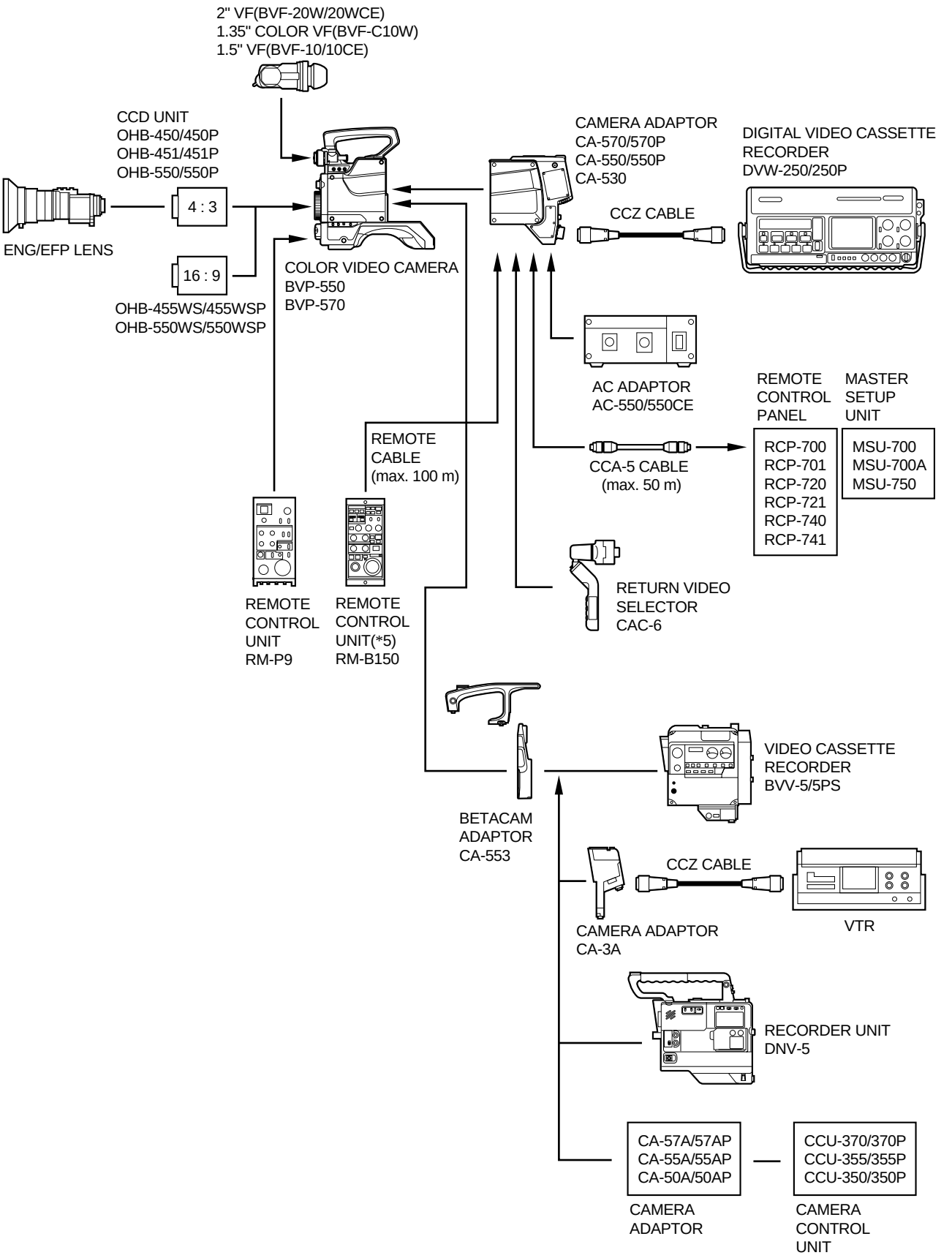


∗3: When the CA-570/570P is connected with the CCU-550/550P/550A/550AP, use of intercom transmission channel is limited to only one channel.
In this case, use the INCOM 1 connector for the CA-570.
For the CA-570P, both INCOM 1 and INCOM 2 connectors can be used.

∗4: When the CCU is connected with the VCS-700, the PIX 2 and WF 2 connectors of the CCU are normally used. When the CCU-550/550P/550A/550AP is connected, use of PIX and WF transmission channels are limited to only one channel respectively.
In this case, use the PIX and WF connectors for the CCU-550/550P/550A/550AP.

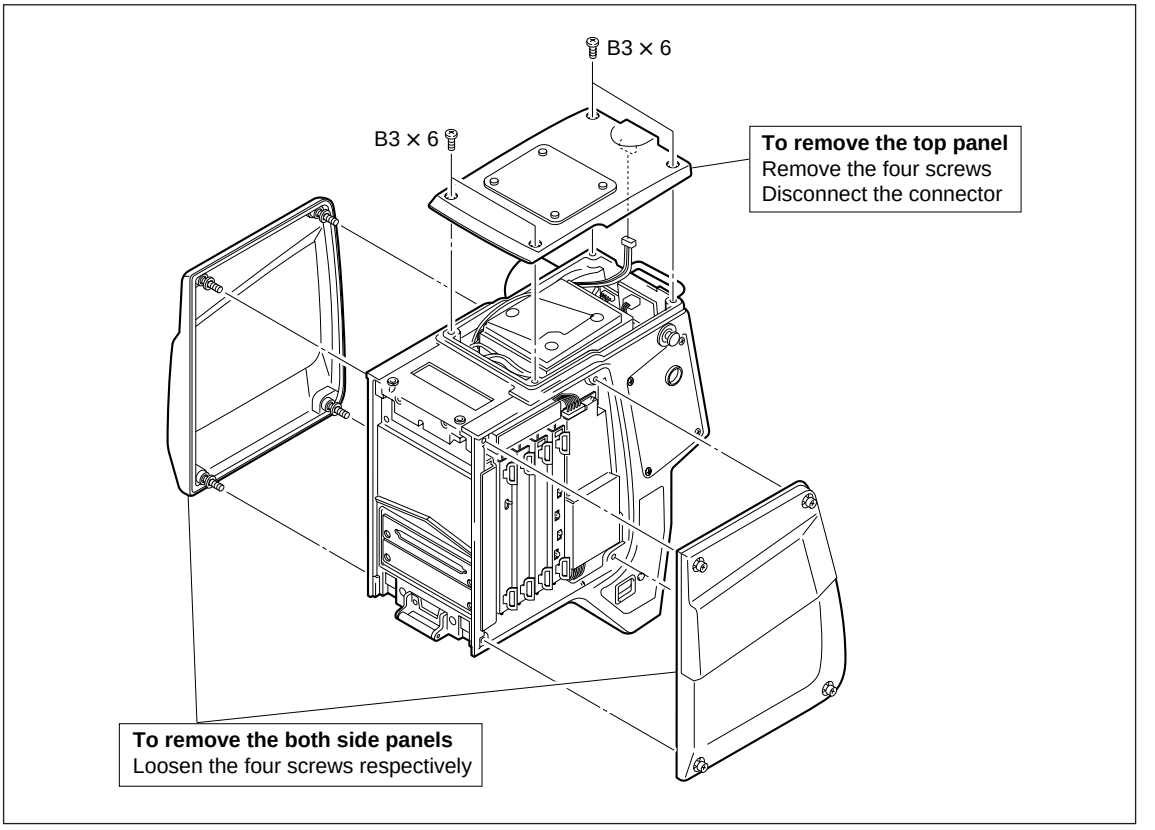


∗5: When the CA-550/550P is connected to the RM-B150, video signals cannot be output from the MONITOR connector of the RM-B150.

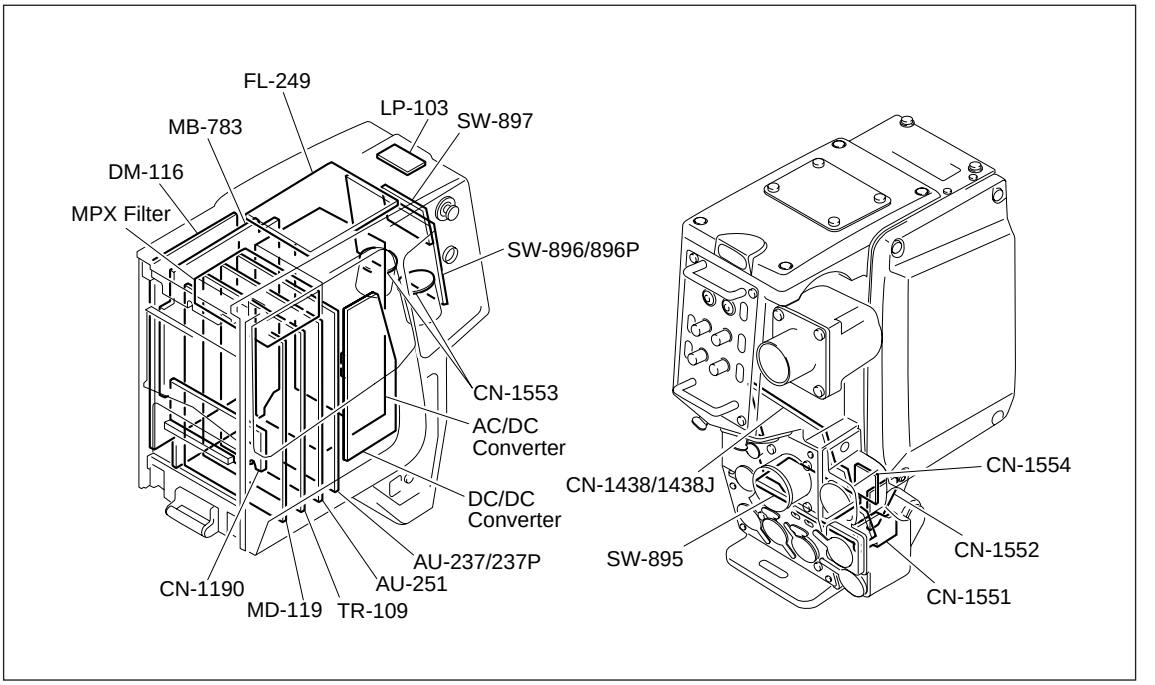

2" VF(BVF-20W/20WCE)
1.35" COLOR VF(BVF-C10W)
1.5" VF(BVF-10/10CE)
CCD UNIT
OHB-450/450P
OHB-451/451P
OHB-550/550P
4 : 3
16 : 9
ENG/EFP LENS
OHB-455WS/455WSP
OHB-550WS/550WSP
COLOR VIDEO CAMERA
BVP-550
BVP-570
CAMERA ADAPTOR
CA-570/570P
CA-550/550P
CA-530
CCZ CABLE
DIGITAL VIDEO CASSETTE
RECORDER
DVW-250/250P
AC ADAPTOR
AC-550/550CE
REMOTE
CONTROL
PANEL
MASTER
SETUP
UNIT
RCP-700
RCP-701
RCP-720
RCP-721
RCP-740
RCP-741
MSU-700
MSU-700A
MSU-750
CCA-5 CABLE
(max. 50 m)
REMOTE
CABLE
(max. 100 m)
REMOTE
CONTROL
UNIT
RM-P9
REMOTE
CONTROL
UNIT(*5)
RM-B150
RETURN VIDEO
SELECTOR
CAC-6
BETACAM
ADAPTOR
CA-553
VIDEO CASSETTE
RECORDER
BVV-5/5PS
CCZ CABLE
VTR
CAMERA ADAPTOR
CA-3A
RECORDER UNIT
DNV-5
CA-57A/57AP
CA-55A/55AP
CA-50A/50AP
CAMERA
ADAPTOR
CCU-370/370P
CCU-355/355P
CCU-350/350P
CAMERA
CONTROL
UNIT

Section 2
Service Overview

2-1. Removing the Cabinet



2-2. Location of Printed Wiring Boards



2-3. Circuit Description

MD-119 board

The MD-119 board consists of the modulation circuits for the Y/R-Y/B-Y signals and skin tone gate signal, and 75-ohm output driver for the Y/R-Y/B-Y signals output at the CCZ connector.
The Y/R-Y/B-Y and skin tone gate signals are quadrature-modulated by the modulation circuit and are then sent to the CCU. The MD-116 board diagnoses itself by detecting the level of the RF signal to be output to the CCU.
The sub-regulator for power on this board is used to save power when the unit is connected to the VTR.

TR-109 board

The TR-109 board consists of modulation and demodulation circuits for various signals.
The modulation circuit modulates the INCOM 1, INCOM 2, MIC 1, MIC 2, DATA and TONE signals. Two kinds of TONE signals are generated in this board, one for CCU-550/550P, and the other for CCU-700A/700AP.
The demodulation circuits demodulates PGM, INCOM 1, INCOM 2, H CONT and DATA signals. The TR-109 board diagnoses itself by detecting the level of the RF signal to be output to the CCU.
The sub-regulator for power on this board is used to improve a signal-to-noise ratio and to save power when the unit is connected to the VTR.

AU-237/237P board

The AU-237/237P board mainly processes the INCOM and PGM signals at the base band. This board consists of the INCOM microphone selector, INCOM/PGM mix mode selector, headset drive amplifier and EVR circuit. The EVR circuit controls the output levels of the INCOM and PGM signals. The AU-237/237P board diagnoses itself by detecting the serial data for IC452.
The sub-regulator for power on this board is used to improve a signal-to-noise ratio and to save power when the unit is connected to the VTR.

AU-251 board

The AU-251 board processes the MIC signal which has not been modulated, MONITOR OUT signal and DATA signal for the REMOTE connector. The MIC 1 selector on this board selects a camera MIC input signal or camera adaptor MIC 1 input signal. The selected signal is sent to the CCU as MIC 1 input.
In addition, the AU-251 board has the MIC POWER MIX ON/OFF circuit, AB POWERING +12 V generator and diagnosis circuit which diagnoses itself by detecting the power voltage.
The sub-regulator for power on this board is used to improve a signal-to-noise ratio.

DM-116 board

The DM-116 board demodulates the return video signal and modulates/demodulates the prompter video signals. The prompter direction selector on this board can select the direction to send the prompter video signals, from the CCU to the camera, (CCU⇨CAM) or from the camera to the CCU (CAM⇨CCU).
The selection is made by switching over S4 on this board and switching the RF cable of the MPX filter.
The sub-regulator for power is used to improve a signal-to-noise ratio and to save power when the unit is connected to the VTR.

MB-783 board

The MB-783 board consists of the serial interface circuit for various controls, RM video driver, TRACKER tally driver, over voltage protection circuit, earphone drive amplifier and earphone out selector.
The MB-783 board is provided with positive thermistors for power line CB1 and CB2 to protect peripheral equipment connected to the REMOTE or TRACKER connector of the unit from overcurrent.

2-4. Notes on Service

2-4-1. Circuit Protection Device

The CN-1438/1552 and MB-783 boards are provided with positive thermistors for power line to protect circuits. This device limits a current by steeply increasing the inner resistance when the device rises to a certain temperature due to overcurrent or high ambient temperature. If the device is activates once, turn off the power and check an equipment concerned; camera adaptor or other equipment connected to the DC OUT, TRACKER or REMOTE connector of the camera adaptor. After the cause is eliminated and the device cools off, turn on the power again. If there is no trouble, the unit will operate normally. It takes about a minute for the device to cool off after powering off the unit.

Board	Ref No.	Address	Equipment protected
CN-1438	CB1	B3	Circuits in the camera adaptor
CN-1552	CB1	—	Equipment connected to DC OUT connector
MB-783	CB1	D2	Equipment connected to TRACKER connector
	CB2	D2	Equipment connected to REMOTE connector

2-4-2. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

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

2. Standardization of Parts

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

3. Stock of Parts

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

4. Units Representation

The following represented units are changed or omitted in writing.

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

5. Destination Representation

The part indicated “For UC/J/CE” in the spare parts list is used in the unit written below.
For J : The part is used in a unit for Japan.
For UC : The part is used in a unit for U.S.A. and Canada.
For CE : The part is used in a unit for regions except the above countries.

2-4-3. Note on Replacement of Electrical Parts on the FL-249 Board

Every electrical part mounted on in the FL-249 board cannot be replaced. If there is any defective part on the FL-249 board, replace the board itself.

2-4-4. Notes on Replacement of Electrical Parts on the PS-543/544 Boards

To replace the parts below, proceed as follows.
(When removing/installing the PS-543/544 boards, refer to Section 2-10-2.)
When bonding the parts, be sure to use the specified Sony Bond.

Note

Apply enough bond to the parts not to move with a finger-touch.

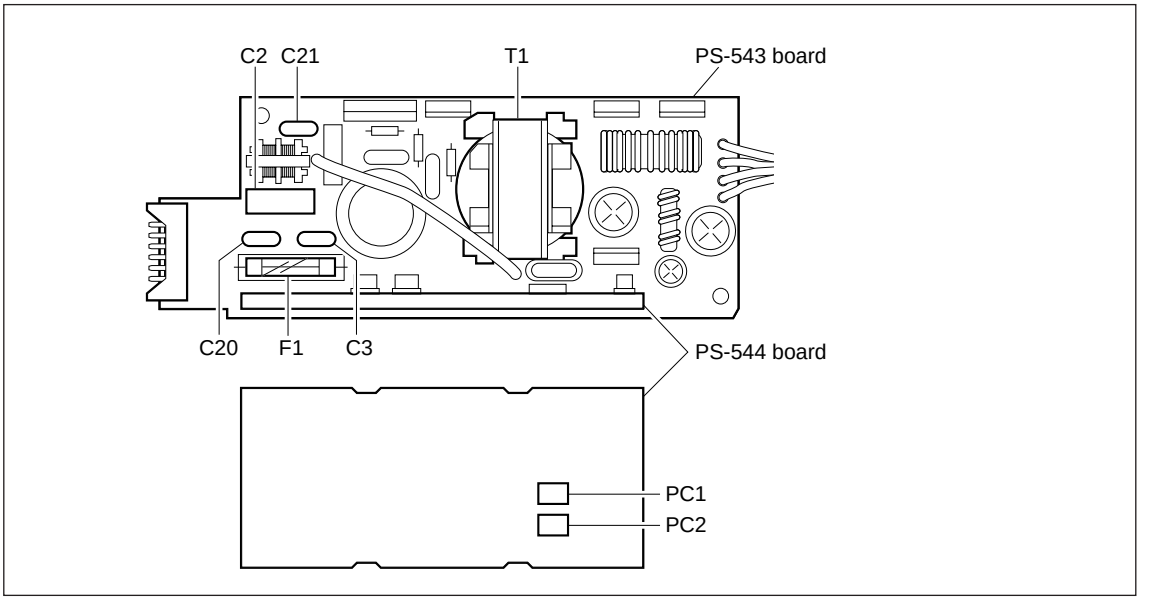
Sony Bond SC608LV : Sony P/N 7-432-912-52

Safety Related Components Warning:

WARNING

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

Ref.No./board	Sony P/N	Description
C2 /PS-543 board	⚠ 1-104-705-11	FILM (POWER) 0.1µF
C3 /PS-543 board	⚠ 1-113-920-11	CERAMIC 2200pF
C20/PS-543 board	⚠ 1-113-920-11	CERAMIC 2200pF
C21/PS-543 board	⚠ 1-113-920-11	CERAMIC 2200pF
F1/PS-543 board	⚠ 1-576-277-11	FUSE T2.5AH 250V
T1/PS-543 board	⚠ 1-433-496-11	CONVERTER TRANSFORMER
PC1/PS-544 board	⚠ 8-749-010-64	PHOTO COUPLER PC123F2
PC2/PS-544 boar	⚠ 8-749-010-64	PHOTO COUPLER PC123F2



C5, TH1 (PS-543 board) :

Bond the part to the periphery of C4. Make sure that C5 and TH1 do not move with a touch.

C16, C19, C103, L3, L4 (PS-543 board) :

Bond the part to the board surface. Make sure that each part does not move with a touch as shown in the figure.

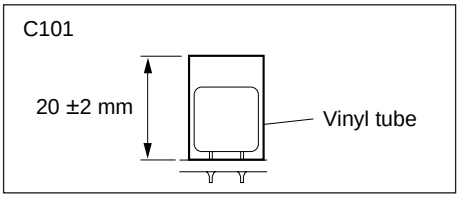
C21 (PS-543 board) :

Move closer C21 to L2 and bond it to the periphery of L2. Make sure that C21 does not move with a touch.

C101 (PS-543 board) :

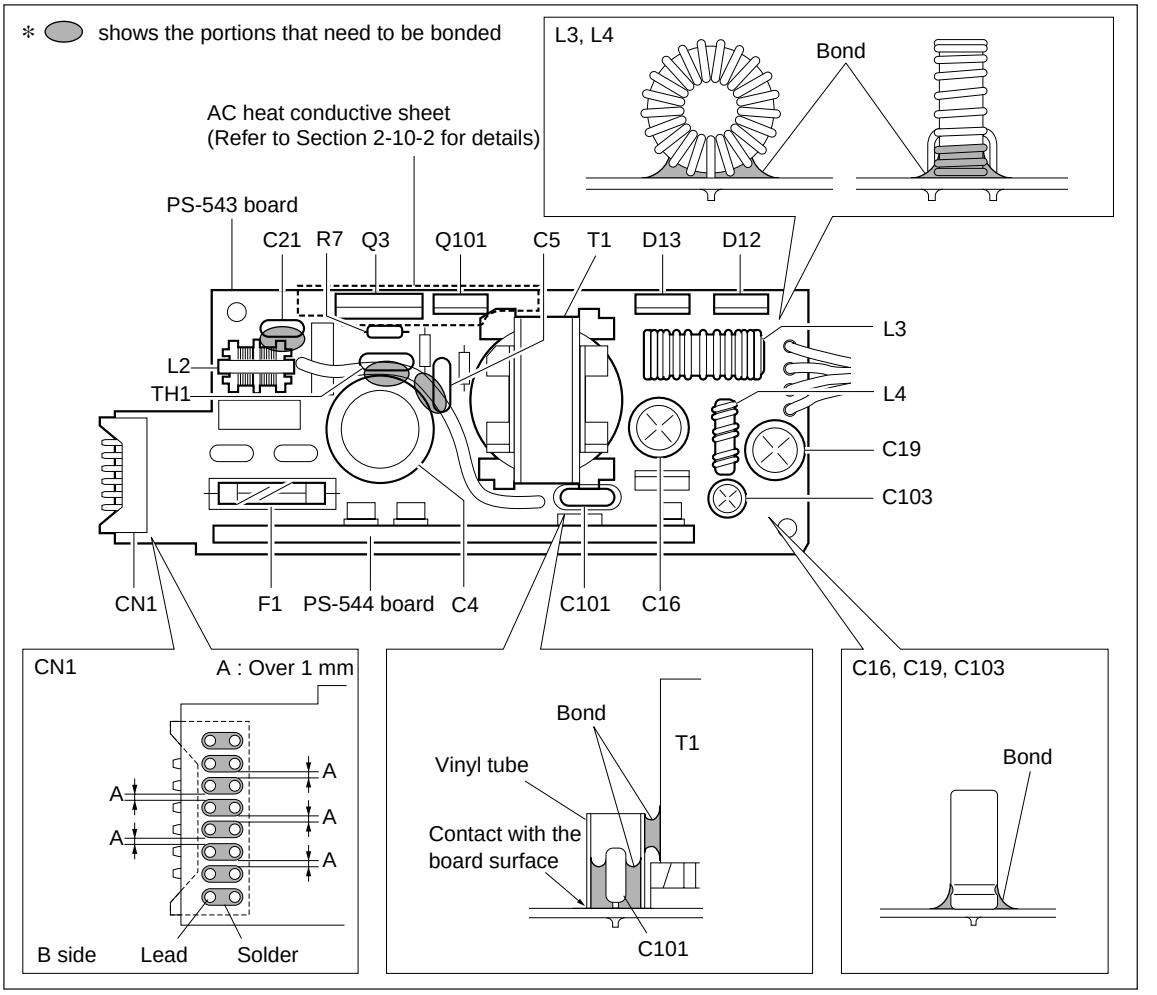
(1) Cut the vinyl tube (ø11.1 mm) to the specified length and cover C101 with it before mounting.
Vinyl Tube : Sony P/N 7-635-003-59

(2) Move closer C101 to T1. Fix to pour the bond between T1 and C101, and inside the vinyl tube as shown in the figure. The vinyl tube shall come into contact with the board surface at that time.



CN1 (PS-543 board) :

After mounting, leave over 1 mm of spaces A between the soldered portions respectively as shown in the figure.



D12, D13, Q3, Q101 (PS-543 board) :

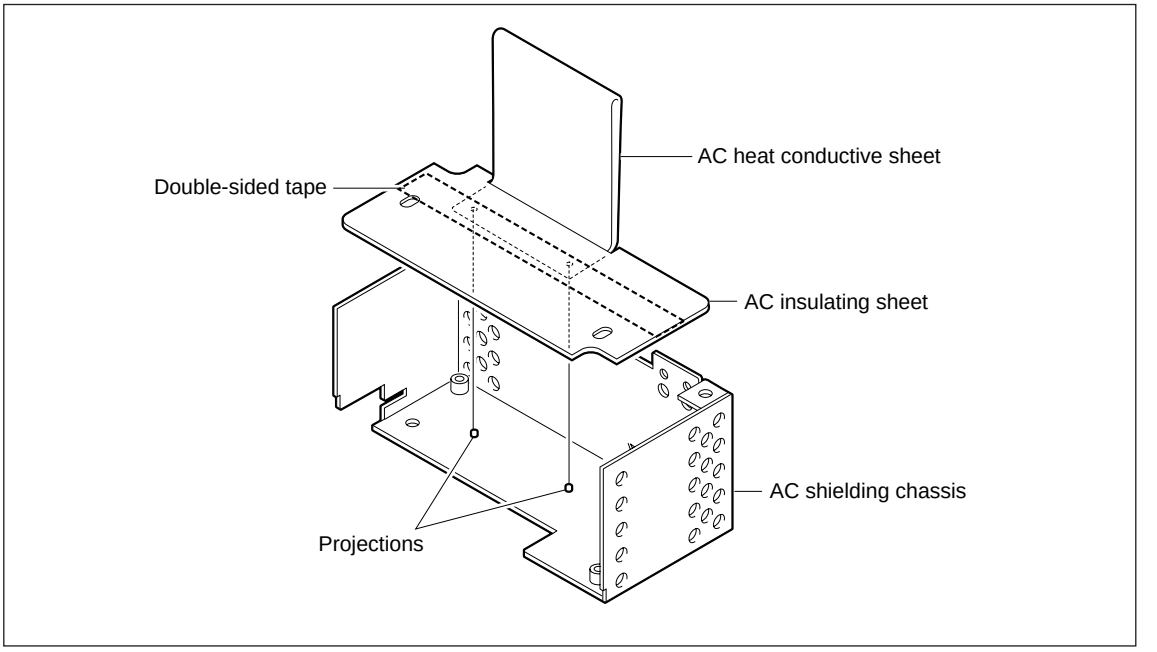
Mount the part so as to be perpendicular to the board surface.
Cover Q3 and Q101 with the AC heat conductive sheet. Refer to Section 2-10-2 “Removing/Installing the PS-543/544 Boards” for details.

Note

If the sheet has breaks or cracks, be sure to replace it with a new one.
AC heat conductive sheet : Sony P/N 3-615-731-0X

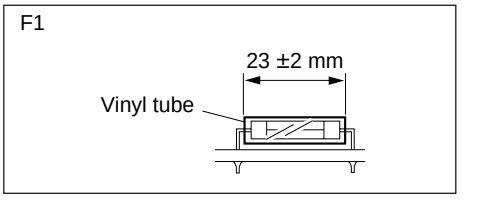
Installing AC heat conductive sheet

(1) Fold the AC heat conductive sheet into half. Fit the two projections on the AC shield chassis into the holes on the AC heat conductive sheet.
(2) Affix the AC insulating sheet to the AC shield chassis with a new double-sided tape.



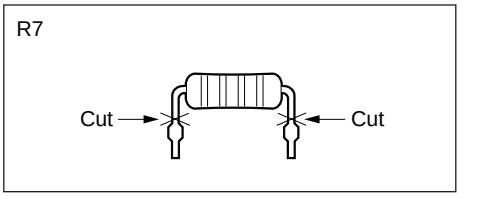
F1 (PS-543 board) :

Cut the vinyl tube (ø7.3 mm) to the specified length and cover F1 with it before mounting.
Vinyl tube : Sony P/N 7-635-003-19



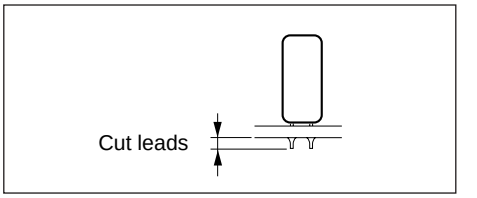
R7 (PS-543 board) :

Cut the leads of R7 as shown in the figure before mounting.



Cutting leads :

Cut the leads of mounted parts protruding from the B side of the board to the specified length.
PS-543 board : 2.5 mm or less
PS-544 board : 1 mm or less



2-4-5. Notes on Replacement of Electrical Parts on the PS-545 Board

When replacing the parts below, proceed as follows. Moreover, when bonding the parts, be sure to use the specified Sony Bond.

Note

Apply enough bond to the parts not to move with a finger-touch.

Sony Bond SC608LV : Sony P/N 7-432-912-52

IC5, Q12 :

Attach IC5 and Q12 to the DC heatsink as shown in the figure before mounting.

Note at installation

- DC heat conductive sheets (1) and (2), and DC heatsink permit reuse.
- Form their leads as follows in advance.

C1, C45 :

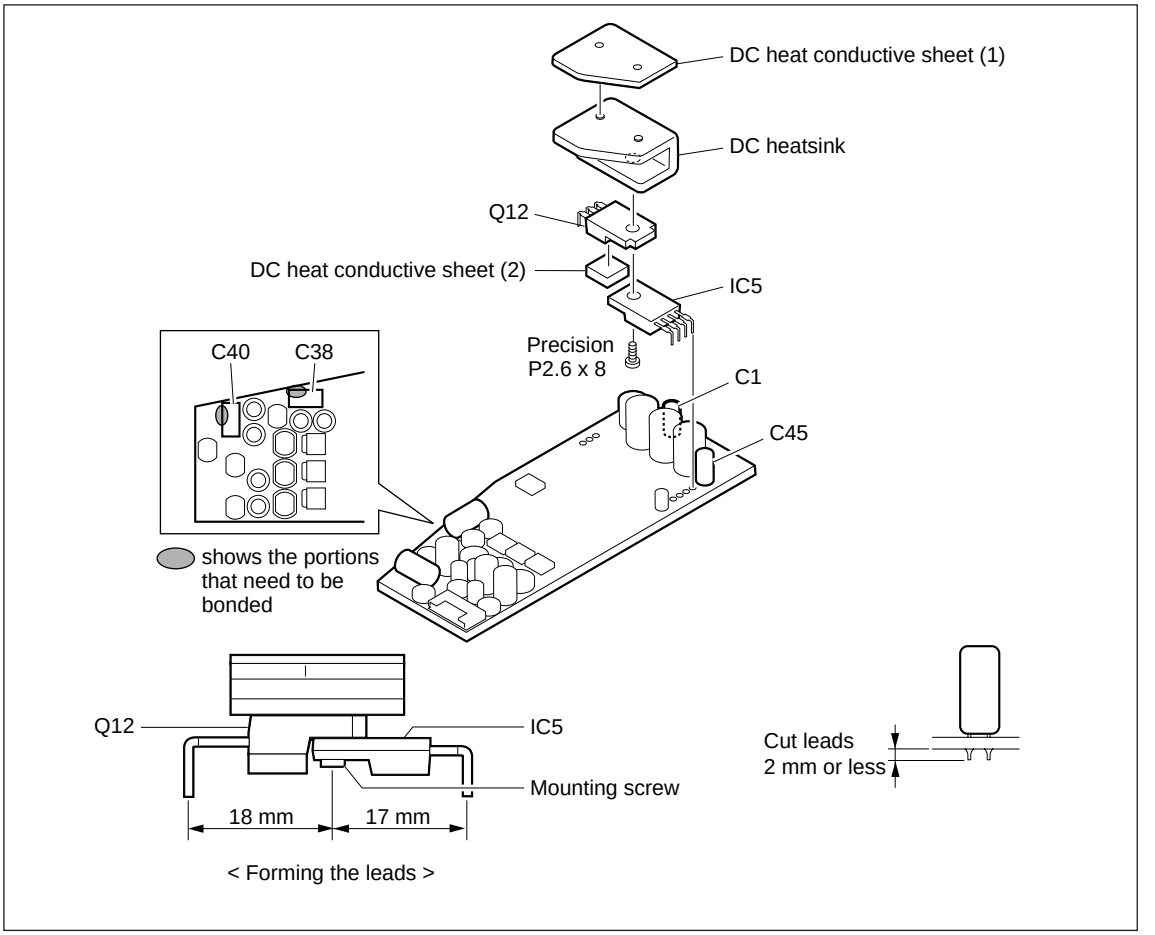
Mount the part in contact with the board surface.

C38, C40 :

Bond the part to the board surface with the bond. Make sure that each part does not move with a touch.

Cutting leads :

Cut the leads of mounted parts protruding from the B side of the board to the specified length as shown in the figure.



2-4-6. Standard Tightening Torque for Screws

The standard tightening torque for the screws used in CA-570/CA-570P are as follows.

Screw type	Tightening torque
M2	19×10^{-2} N•m (1.9 kgf•cm)
M2.6	53×10^{-2} N•m (5.3 kgf•cm)
M3	80×10^{-2} N•m (8.0 kgf•cm)
M4	140×10^{-2} N•m (14.0 kgf•cm)

2-4-7. Optional Fixtures

Description	P/N	Remarks
Extension board EX-692	A-8320-029-A	To extend DM-116 and MB-783 boards
Extension board EX-464	A-8318-864-A	To extend a plug-in board
Extension harness (1)	J-6470-460-A	To extend DC/DC converter
Extension harness (2)	J-6470-470-A	
Sony Bond SC608LVZ	7-432-912-52	—

2-5. Cares After Using at Special Environment

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

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

2-6. Self-Diagnosis

The Diagnosis page of the Operation menu is used for self-diagnosis of every plug-in board.
The Operation menu appears on the viewfinder screen.

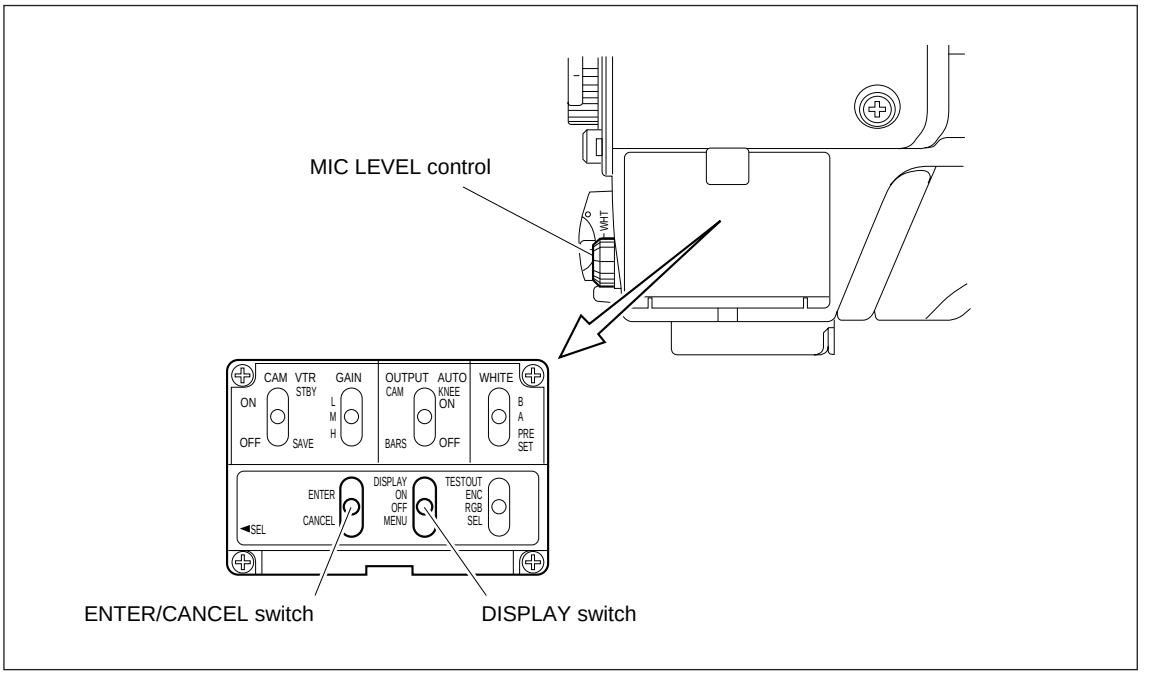
When using the camera adaptor together with the BVP-950/950P

Equipment required

Color video camera	BVP-950/950P
CCD unit	OHB-730/750A series
Viewfinder	BVF-10/C10W/20W series

Supply power from a camera control unit CCU-550/700/700A series, AC adaptor AC-550/550CE or VTR.

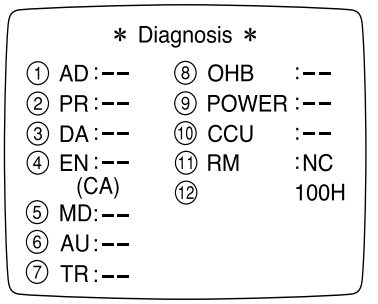
Switches and control knob



Operational procedures

1. Change the DISPLAY switch from OFF to MENU. The Operation menu is displayed.
2. Turn the MIC LEVEL control to display the Diagnosis page.
3. Press the MIC LEVEL control or set the ENTER/CANCEL switch to ENTER.
4. The menu page is returned to the previous page every time the ENTER/CANCEL switch is set to CANCEL.
5. To cancel the menu operation, set the DISPLAY switch to OFF.

Display descriptions



Marks	Board	Judging Point	Suspected Abnormality (when NG is displayed)
⑤	MD-119	Y RF output Color-difference RF output	• RF carrier levels for Y and R-Y/B-Y are out of specs.∗ • Improper connection of the board
⑥	AU-251 AU-237/237P	+7.8 V (AU-251) IC452 (AU-237/237P)	• Power voltage for the AU-251 board is out of specs. • The serial data is correctly received/transmitted from IC452 on the AU-237/237P board • Improper connection of the board (AU-251 or AU-237/237P)
⑦	TR-109	RF output (TP4)	• Carrier level for AUDIO RF is out of specs. • Improper connection of the board

∗ : Only when no video signal is input to the camera adaptor.

Notes

- When the camera adaptor is not connected to the CCU, the columns ⑤, ⑥ and ⑦ will not appear.
- Refer to the BVP-950/950P maintenance manual for details on descriptions other than columns ⑤, ⑥ and ⑦.

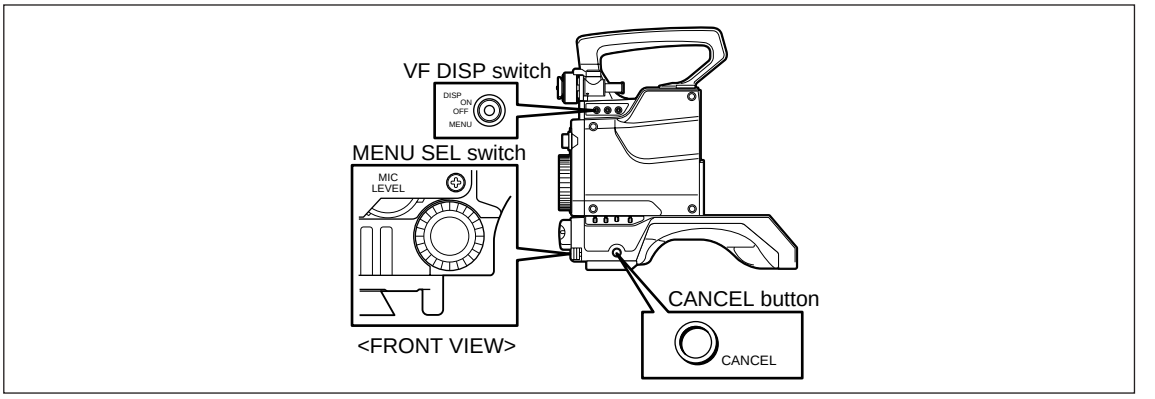
When using the camera adaptor together with the BVP-550/550P

Equipment required

Color Video Camera	BVP-550/550P/570
CCD Unit	OHB-450/550 series
Viewfinder	BVF-10/C10W/20W series

Supply power from a camera control unit CCU-550/700/700A series, AC adaptor AC-550/550CE or VTR.

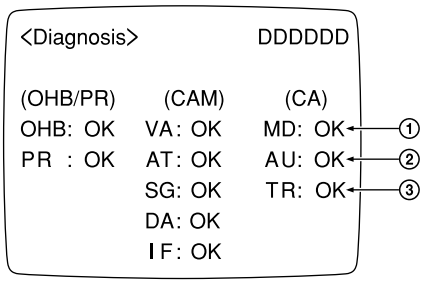
Switches and Button



Operational procedures

1. Set the DISP switch to MENU. The operation menu will be displayed.
3. Rotate the MENU SEL switch to display the Diagnosis page and then press the MENU SEL switch.
4. The menu page is returned to the previous page every time CANCEL button is pressed.
5. To exit from the menu, set the DISP switch to OFF.

Display descriptions



Marks	Board	Judging Point	Suspected Abnormality (when NG is displayed)
①	MD-119	Y RF output Color-difference RF output	• RF carrier levels for Y and R-Y/B-Y are out of specs.* • Improper connection of the board
②	AU-251 AU-237/237P	+7.8 V (AU-251) IC452 (AU-237/237P)	• Power voltage for the AU-251 board is out of specs. • The serial data is correctly received/transmitted from IC452 on the AU-237/237P board • Improper connection of the board (AU-251 or AU-237/237P)
③	TR-109	RF output (TP4)	• Carrier level for AUDIO RF is out of specs. • Improper connection of the board

* : Only when no video signal is input to the camera adaptor.

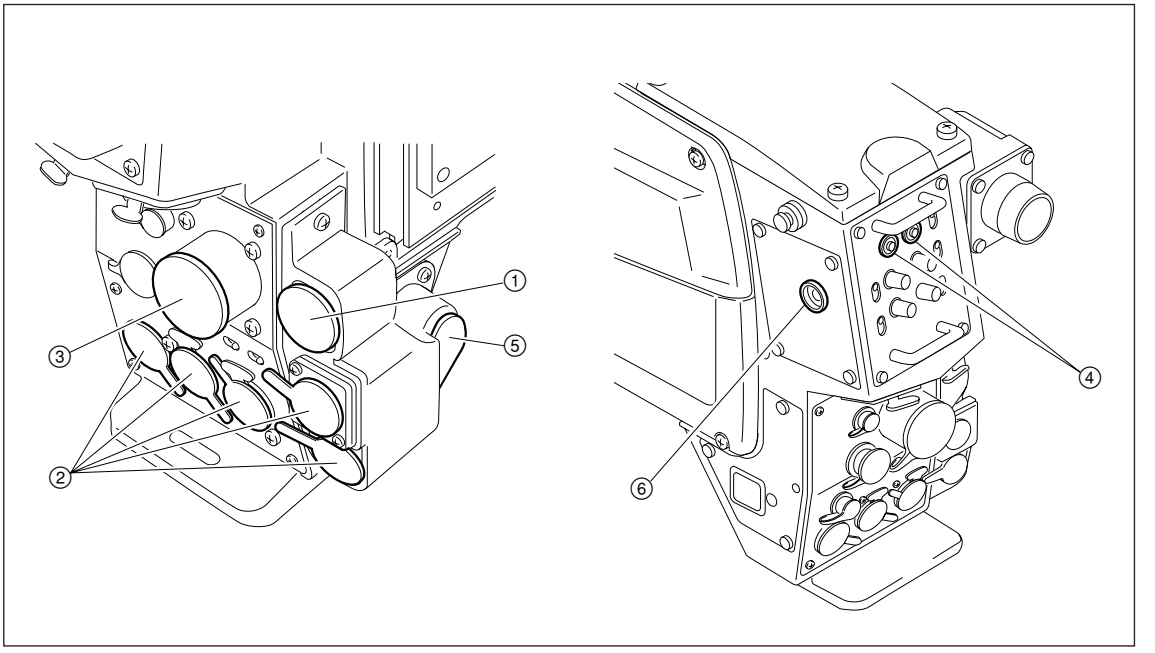
Notes

- When the camera adaptor is not connected to the CCU, the columns ① through ③ will display "– –".
- Refer to BVP-550/550P/570 maintenance manual for details on descriptions on columns of "OHB/PR" and "CAM".

2-7. Recommended Replacement Parts

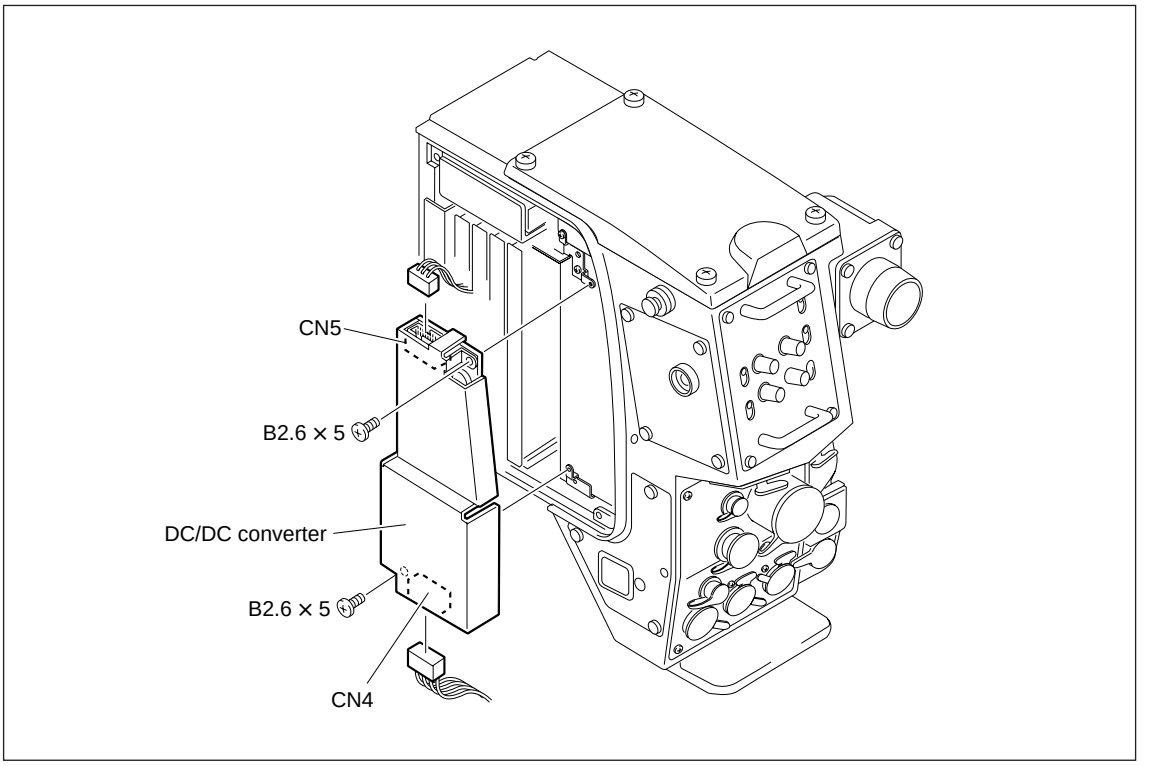
Parts listed below are recommended replacement parts. They are subject to cracks with the lapse of time. Check sometimes by visual, and replace as necessary.

Name	Sony Part No.	Remarks
①	COVER, CONNECTOR	3-187-015-0X
②	CAP, CONNECTOR	3-605-338-0X
③	CAP, CONNECTOR	3-612-791-0X
④	COVER, SW	3-676-244-1X
⑤	RUBBER (EA), DROP PROTECTION	3-724-730-0X
⑥	COVER (LARGE), SW	3-731-742-0X



2-8. Replacing the DC/DC Converter

1. Remove the right side panel referring to Section 2-1.
2. Remove the two screws. Disconnect CN4 and CN5 to remove the DC/DC converter.
3. Install a new DC/DC converter in the reverse order of removal.



2-9. Removing/Installing the FL-249 Board

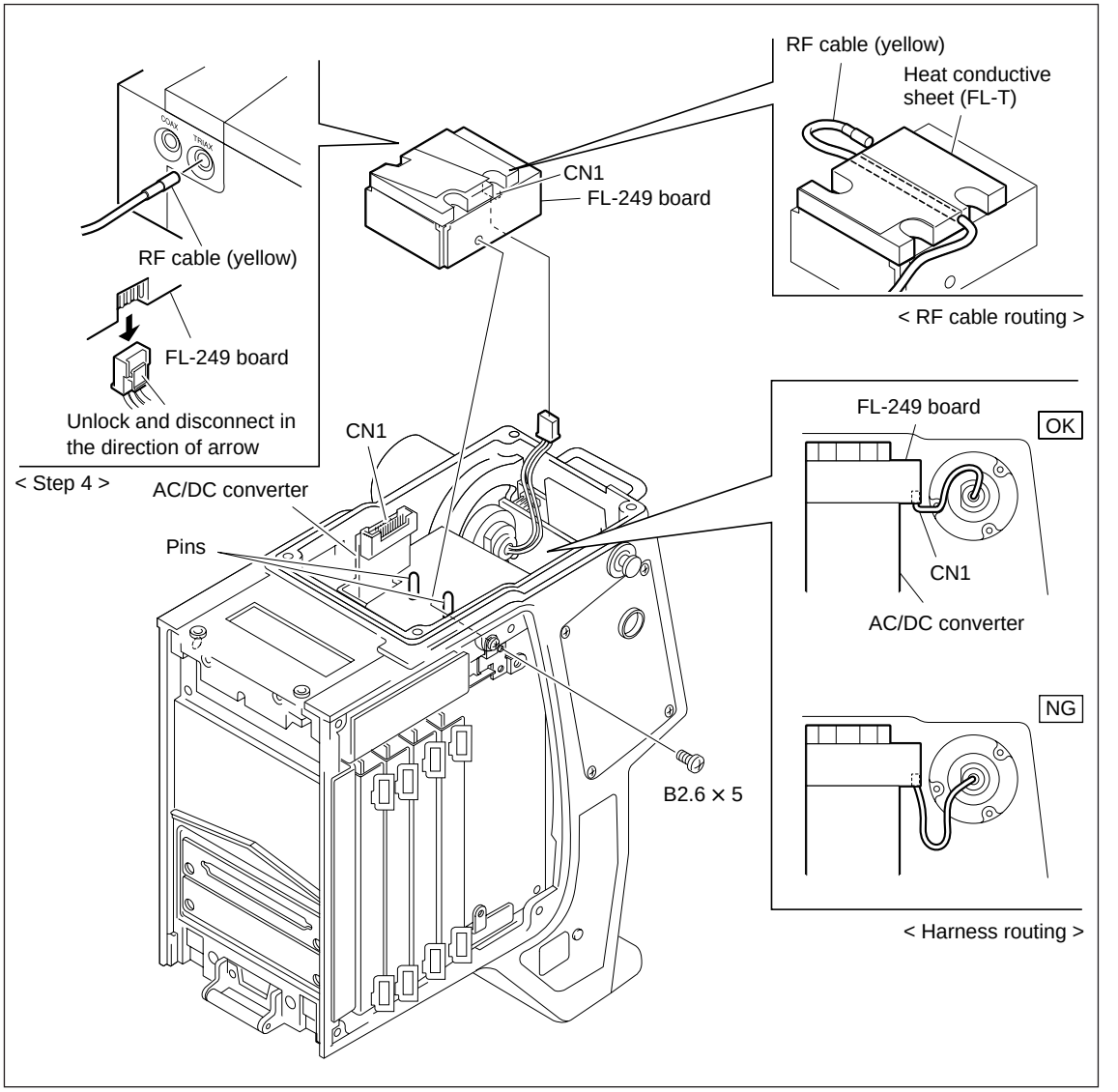
1. Remove the right side panel and top panel referring to Section 2-1.
2. Remove the DC/DC converter referring to Section 2-8.
3. Remove the screw (B2.6 × 5) and pull out the FL-249 board in an upward direction.
4. Disconnect the RF cable (yellow) from the TRIAX side. Disconnect CN1 on the FL-249 board.

   Note

   When disconnecting the RF cable, do not pull the cable itself. Hold the connector plug portion.
5. Install in the reverse order of removal.

   Notes at installation

   - When installing, carefully connect the FL-249 board to CN1 on the AC/DC converter, ensuring that pins on the AC/DC converter is aligned with guides of the FL-249 board.
   - After connecting the harness extending from the TRIAX connector to CN1 on the FL-249 board, route the harness as shown in the figure.
   - When connecting the RF cable (yellow), put the RF cable (yellow) between the heat conductive sheets (FL-T) as shown in the figure.



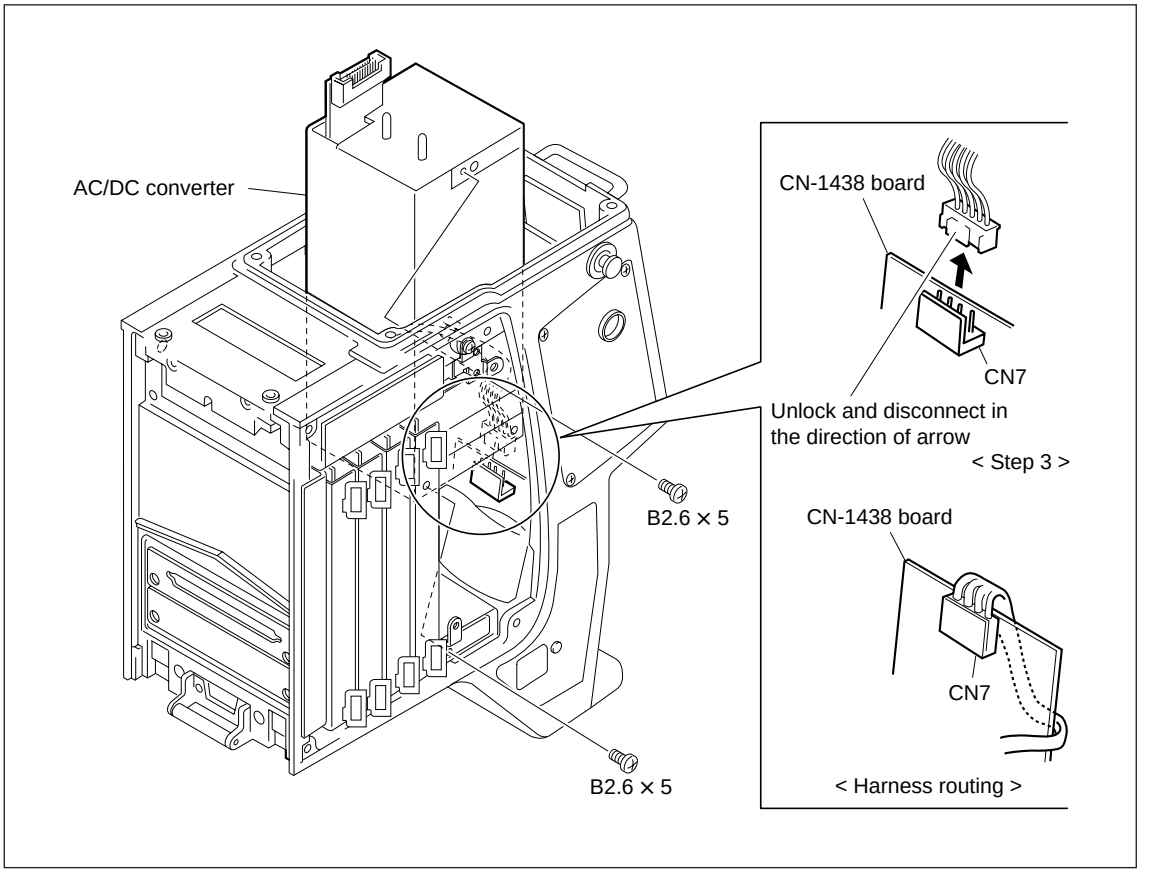
2-10. Replacing the AC/DC Converter

2-10-1. Replacing the AC/DC Converter

1. Remove the FL-249 board referring to Section 2-9.
2. Remove the two screws (B2.6 × 5) securing the AC/DC converter.
3. Disconnect CN7 on the CN-1438 board while lifting the AC/DC converter.
4. Install a new AC/DC converter in the reverse order of removal.

   Note at installation

   After connecting the harness extending from the AC/DC converter to CN7 on the CN-1438 board, route the harness as shown in the figure.



2-10-2. Removing/Installing the PS-543/544 Boards

Removing

1. Remove the AC/DC converter referring to Section 2-10-1.
2. Remove the four screws (Precision P2.6 × 5) and remove the AC shielding cover.
3. Remove the four screws (K3 × 10) to remove the four AC heat brackets.
4. Remove the two screws (PSW3 × 6) and remove the PS-543/544 boards from the AC shielding chassis.

Installing

5. Loosely attach the PS-543/544 boards to the AC shielding chassis with the two screws (PSW3 × 6).
6. Cover Q3 and Q101 with the AC heat conductive sheet and push it in between D1 and Q3, and between Q101 and T1 as shown in the figure.

   Notes

   - Be sure to entirely cover Q3 and Q101 with the sheet so that its end comes into contact with the board surface.
   - When pushing in the sheet, do not use tweezers or similar item which is sharp-pointed because they may damage the sheet.
     Cracked or broken sheet needs replacing.
   - When replacing the AC heat conductive sheet, refer to Section 2-4-4 “Notes on Replacement of Electrical Parts on the PS-543/544 Boards”.

7. Attach the four AC heat brackets with the four screws (K3 × 10).

   Notes

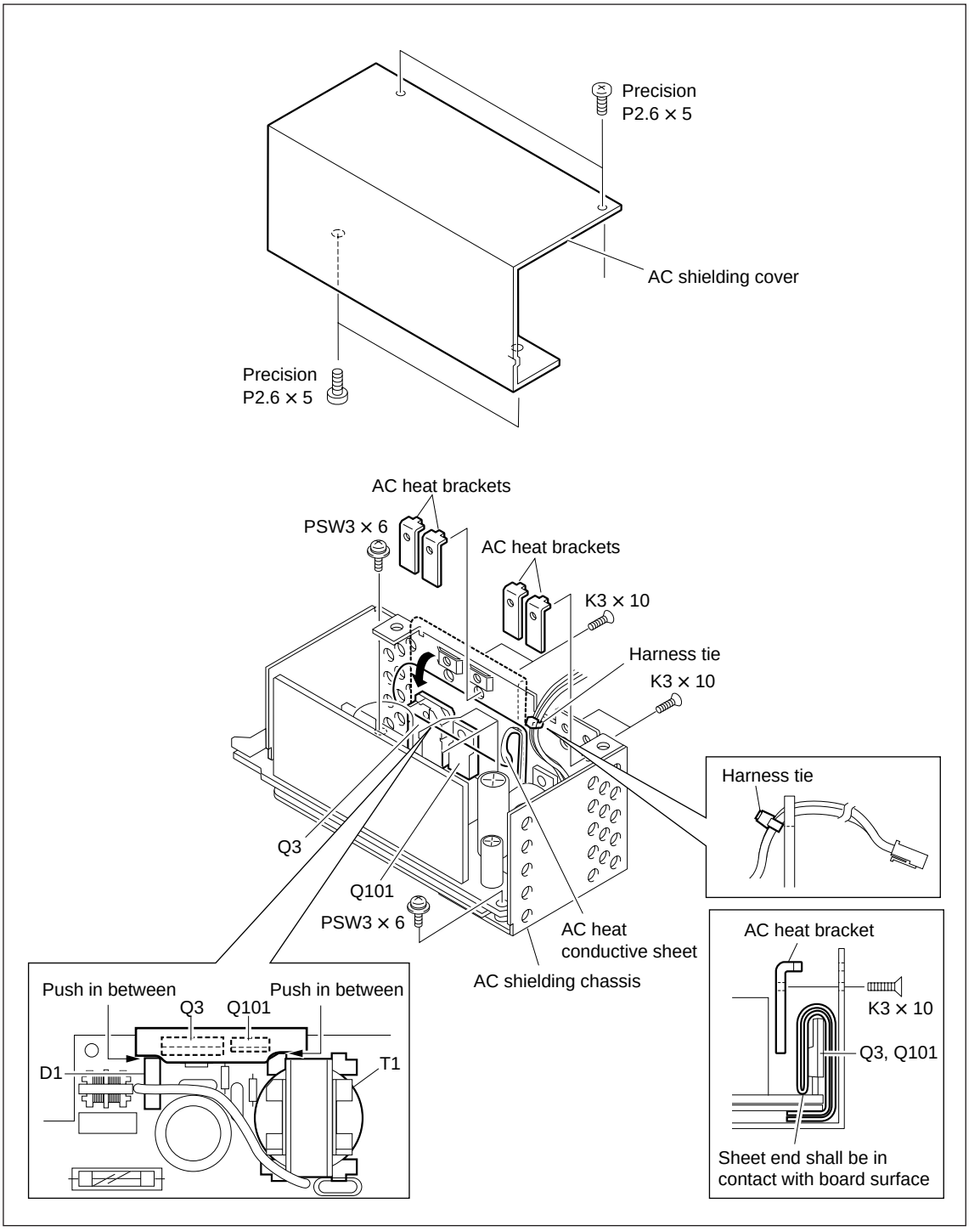
   - The screw securing the AC heat bracket should be torqued as specified.
     Tightening torque: 25×10^{-2} N•m to 30×10^{-2} N•m (2.5 kgf•cm to 3.0 kgf•cm)
   - Be sure to lock the screws with a screw locking compound after the AC heat brackets are attached.

8. Securely tighten the two screws (PSW3 × 6) attached in step 5.
9. Attach the AC shielding cover to the AC shielding chassis with the four screws (Precision P2.6 × 5).

   Note

   When attaching, make sure the harness tie is inside the AC shielding chassis.

10. Install the AC/DC converter in the unit referring to the Section 2-10-1.


Precision
P2.6 × 5
AC shielding cover
Precision
P2.6 × 5
AC heat brackets
PSW3 × 6
AC heat brackets
K3 × 10
Harness tie
K3 × 10
Harness tie
Q3
Q101
PSW3 × 6
AC heat
conductive sheet
AC shielding chassis
Push in between
Push in between
Q3
Q101
D1
T1
AC heat bracket
K3 × 10
Q3, Q101
Sheet end shall be in
contact with board surface

2-11. Replacing the MPX Filter

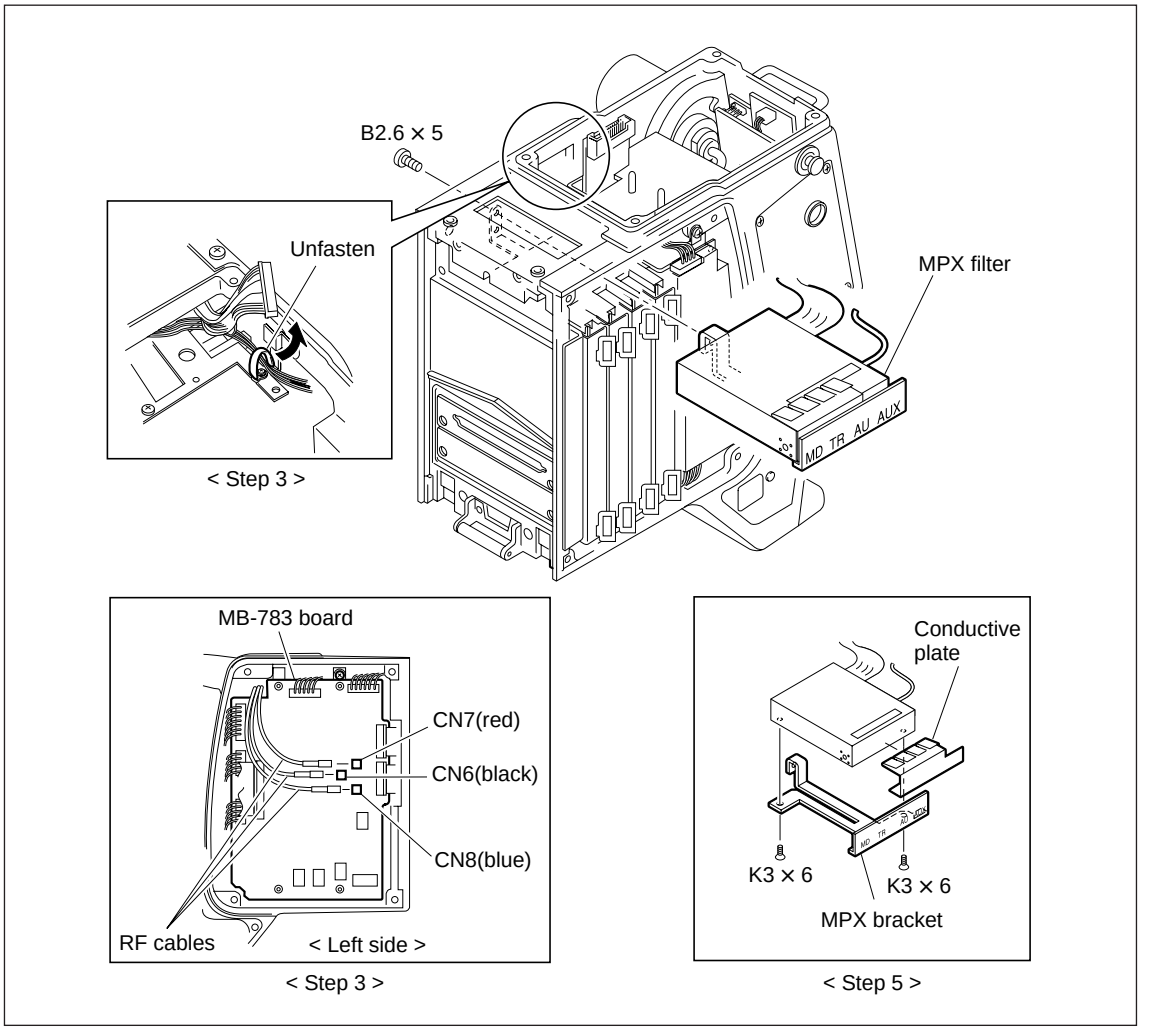
1. Remove the FL-249 board referring to Section 2-9.
2. Remove the DM-116 board referring to Section 2-13-1.
3. Disconnect the RF cables from CN6, CN7 and CN8 on the MB-783 board. Uufasten the cables from the clamp.

   Note

   When disconnecting the RF cable, do not pull the cable itself. Hold the connector plug portion.
4. Remove the screw (B2.6 × 5) and pull out the MPX filter.
5. Remove the two screws (K3 × 6). Remove the MPX bracket and the conductive plate from the MPX filter.
6. Install a new MPX filter in the reverse order of removal.

   Notes at installation

   - When connecting the RF cable, ensure that the cable color agrees with the color marking.
   - When reinstalling the FL-249 board, refer to Section 2-9 for proper connection.



2-12. Disconnecting/Connecting Flexible Card Wire

The four flexible card wires are used as follows :
Take care not to break the flexible card wire. This shorten the wire life.

- Between CN-1190 and MB-783 : Qt'y 2
- Between CN-1438 and MB-783 : Qt'y 1
- Between CN-896 and MB-783 : Qt'y 1

Disconnecting

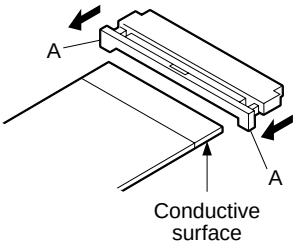
1. Turn off the power.
2. Slide portions A in the direction of the arrow to unlock and pull out the flexible card wire.

Connecting

Note

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

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



2-13. Replacing Printed Wiring Board

2-13-1. Replacing the DM-116 Board

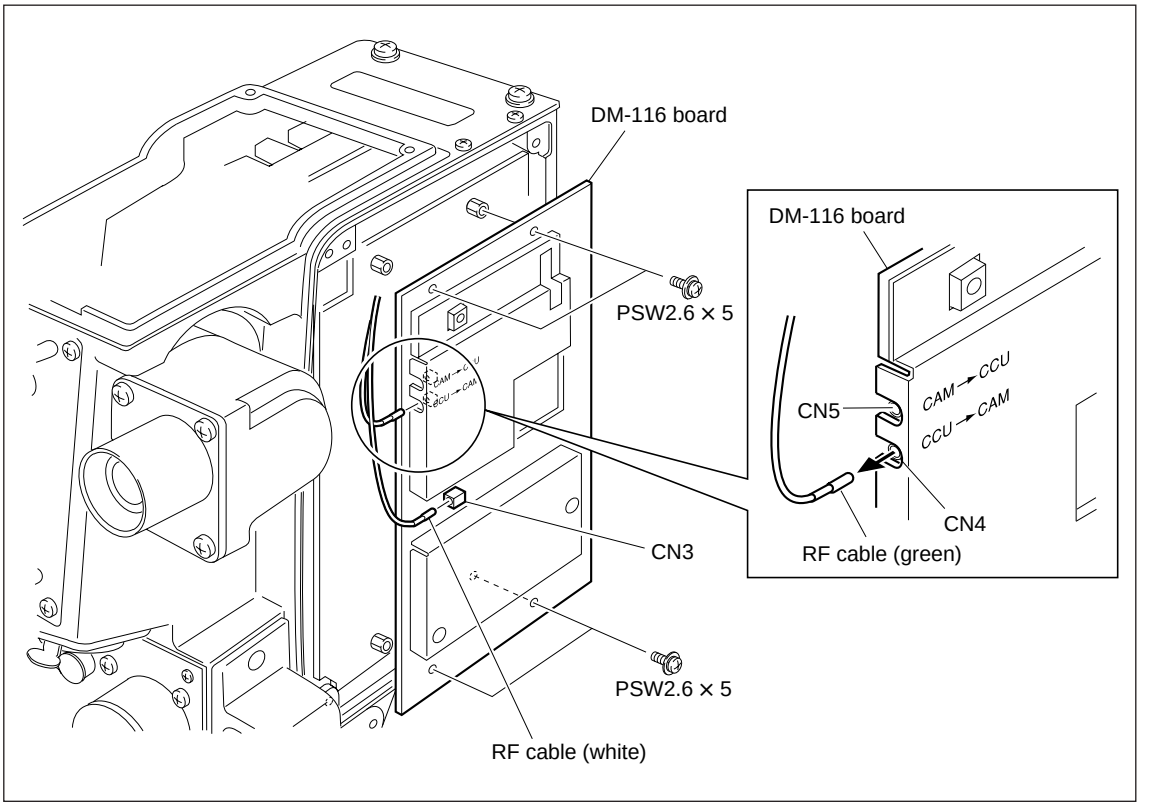
1. Remove the left side panel referring to Section 2-1.
2. Disconnect the two RF cables (white and green). Remove the four screws to remove the DM-116 board.

   Notes

   - The RF cable (green) has been connected to CN4 (CCU → CAM-side) or CN5 (CAM → CCU-side) according to customer's setting.
   - When disconnecting the RF cable, do not pull the cable itself. Hold the connector plug portion.
3. Install a new board in the reverse order of removal.

   Note at installation

   When connecting the RF cable, ensure that the cable color agrees with the color marking.



2-13-2. Replacing the MB-783 Board

Note

IC2 on the MB-783 board is the EEPROM that is holding data inherent in the unit. (Refer to Section 2-13-4 for details.) If replacement is needed, consult your local Sony Sale Office/Service Center.

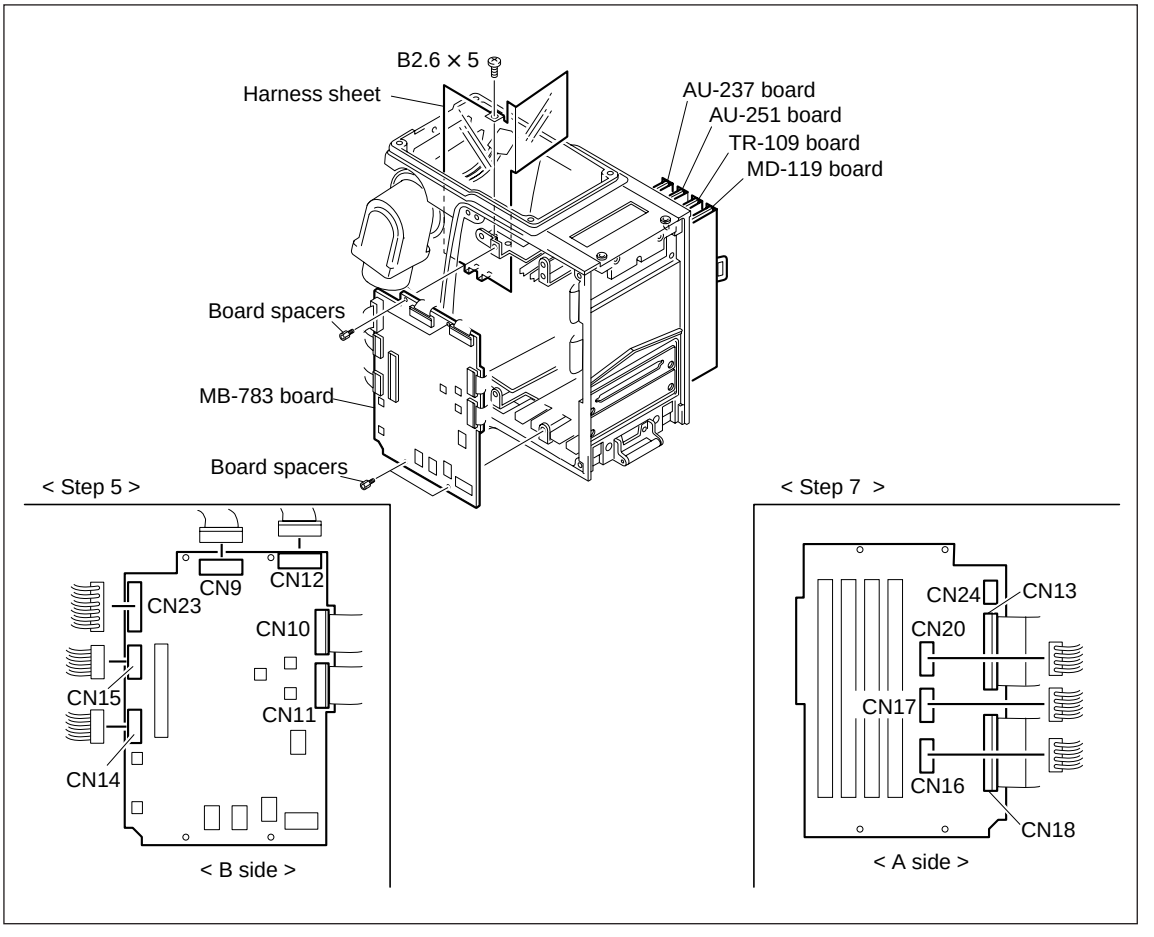
1. Remove the DC/DC converter, FL-249 board, AC/DC converter and MPX filter referring to Sections 2-8, 2-9, 2-10-1 and 2-11.
2. Remove the DM-116 board referring to Section 2-13-1.
3. Remove the four plug-in boards (AU-237, AU-251, MD-119 and TR-109).
4. Remove the screw and the harness sheet.
5. Disconnect the five connectors (CN9, CN12, CN14, CN15 and CN23) and the two flexible card wires (CN10 and CN11) from the B side of the MB-783 board.

   Note

   Refer to Section 2-12 before disconnecting or connecting the flexible card wire.
6. Remove the four board spacers.
7. Disconnect the five connectors (CN16, CN17, CN20 and CN24) and the two flexible card wires (CN13 and CN18) from the A side of the MB-783 board.
8. Install a new board in the reverse order of removal.

   Note at installation

   - The board spacers securing the MB-783 board should be torqued as specified.
     Tightening torque: 60×10^{-2} N•m (6 kgf•cm)
   - When reinstalling the FL-249 board, refer to Section 2-9 for proper connection.



2-13-3. Adjustment After Replacing Board

If no adjustment item is listed, no adjustment is required after replacement.

Board	Adjustment required
MD-119	3-4-3. Y/SKIN 90° Adjustment, 3-4-6. R-Y/B-Y 90° Adjustment
TR-109	——
AU-251	——
AU-237/237P	——
DM-116	3-5. DM-116 Board Adjustment
FL-249	——
CN-1190	——
CN-1438	——
CN-1551	——
CN-1552	——
CN-1553	——
CN-1554	——
LP-103	——
SW-895	——
SW-896/896P	——
SW-897	——
MB-783	——

2-13-4. Description on EEPROM Data

The table below shows the holding data of EEPROM IC2 on the MB-783 board.

Board	Ref. No.	Holding data
MB-783	IC2	Model name, Serial number of the unit, Power-on time (at a rough estimate)

Note

IC2 on the MB-783 board cannot be replaced because it is the EEPROM that is holding data inherent in the unit. The part number listed in Section 4 “Spare Parts” is for an EEPROM which is not programmed. If replacement is needed, contact your local Sony Sales Office/Service Center.

2-14. Replacing Connector

2-14-1. Camera Connector (68P)

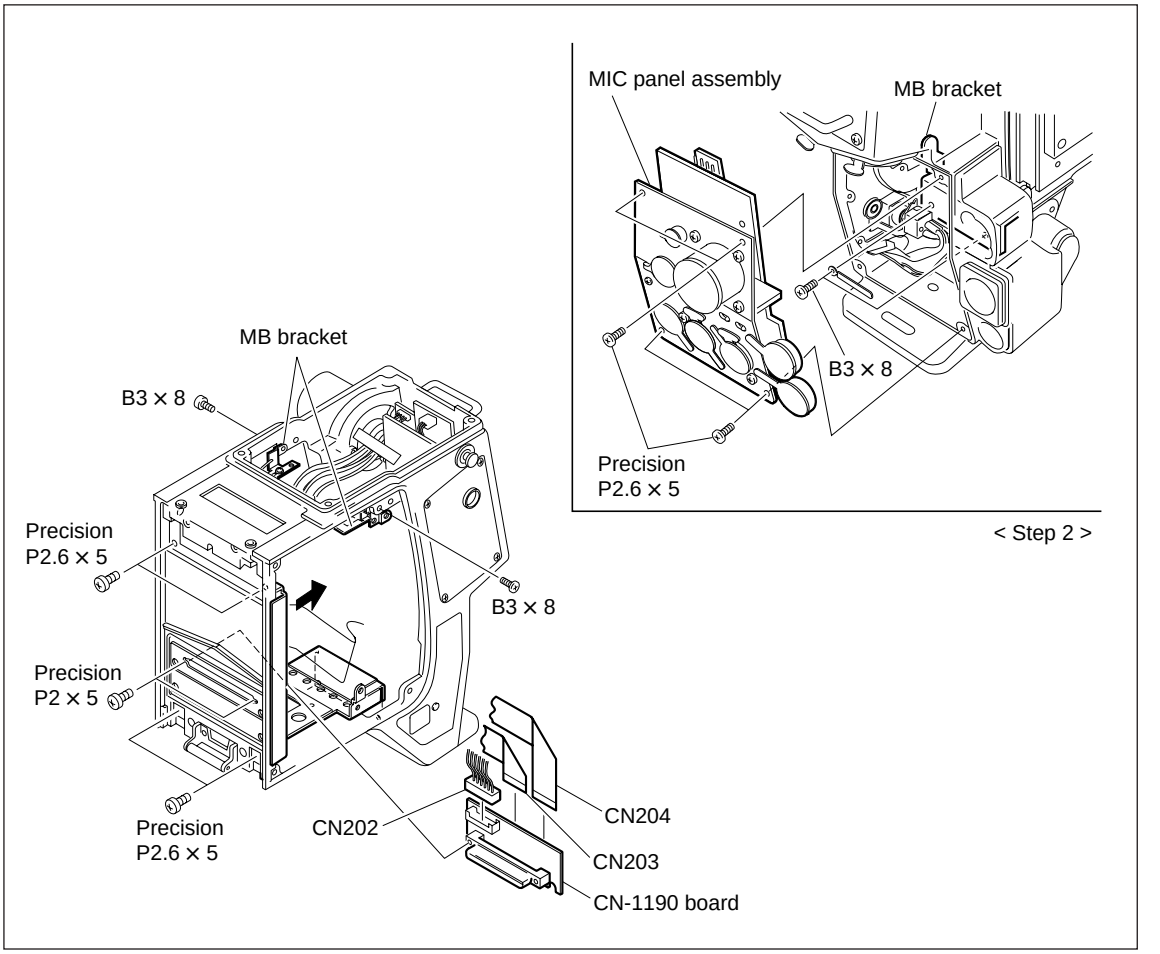
1. Remove the MB-783 board referring to Section 2-13-2.
2. Remove the four screws (precision P2.6 × 5) and pull out the MIC panel assembly. Remove the two screws (B3 × 8) securing the MB bracket to the chassis.
3. Remove the six screws (four pieces of precision P2.6 × 5, two pieces of B3 × 8) securing the MB bracket and slide the MB bracket in the direction of the arrow.
4. Remove the two screws (precision P2.6 × 5) securing the CN-1190 board. Disconnect CN202 and the two flexible card wires (CN203 and CN204) on the CN-1190 board.

   Note

   Refer to Section 2-12 before disconnecting or connecting the flexible card wire.
5. Install a new connector in the reverse order of removal.

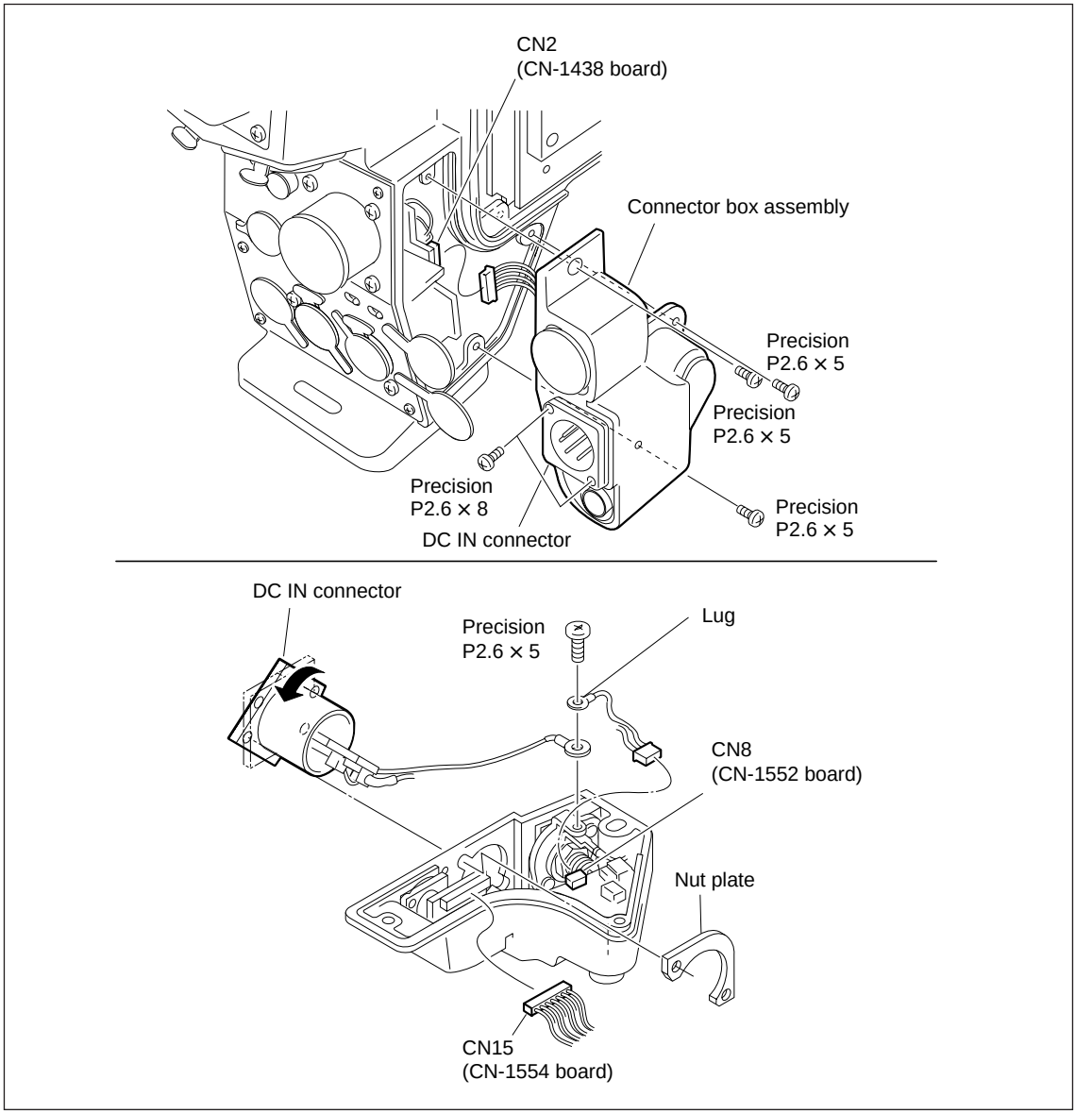
   Note at installation

   When reinstalling the FL-249 board, refer to Section 2-9 for proper connection.



2-14-2. DC IN Connector

1. Remove the three screws (precision P2.6 × 5) securing the connector box assembly.
2. Remove the two screws (precision P2.6 × 8) securing the DC IN connector. Disconnect CN2 on the CN-1438 board.
3. Disconnect CN8 on the CN-1552 board and CN15 on the CN-1554 board.
4. Remove the screw (precision P2.6 × 5) securing the lug.
5. Pull out the DC IN connector while turning it in the direction of the arrow.
6. Install a new connector in the reverse order of removal.

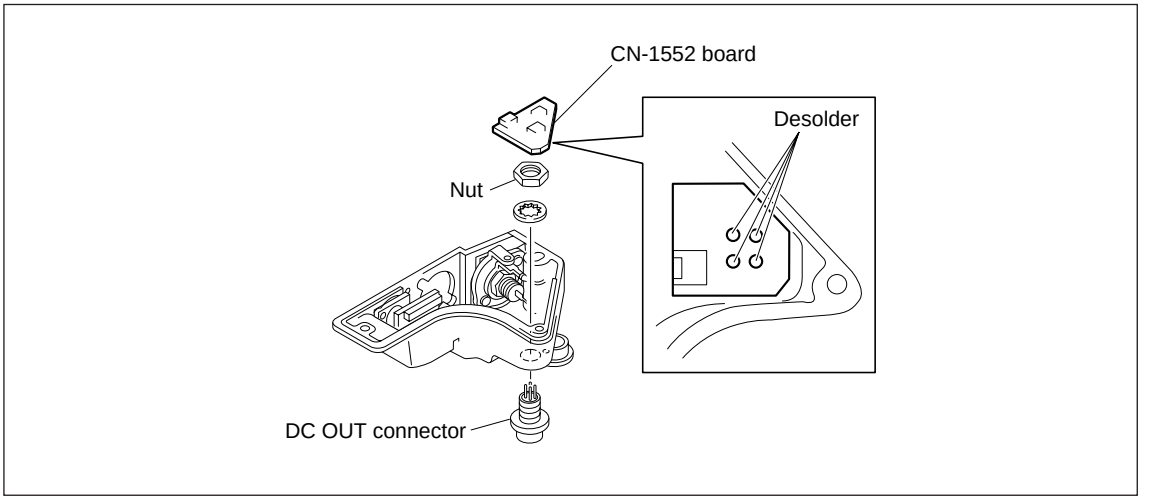


2-14-3. DC OUT Connector

1. Disconnect the DC IN connector referring to Section 2-14-2.
2. Desolder the DC OUT connector from the CN-1552 board.
3. Remove the nut to remove the DC OUT connector.
4. Install a new connector in the reverse order of removal.

Notes at installation

- The nut securing the DC OUT connector should be torqued as specified.
  Tightening torque: 180×10^{-2} N•m (18 kgf•cm)
- Be sure to lock the nut with a screw locking compound after the nut is tightened.

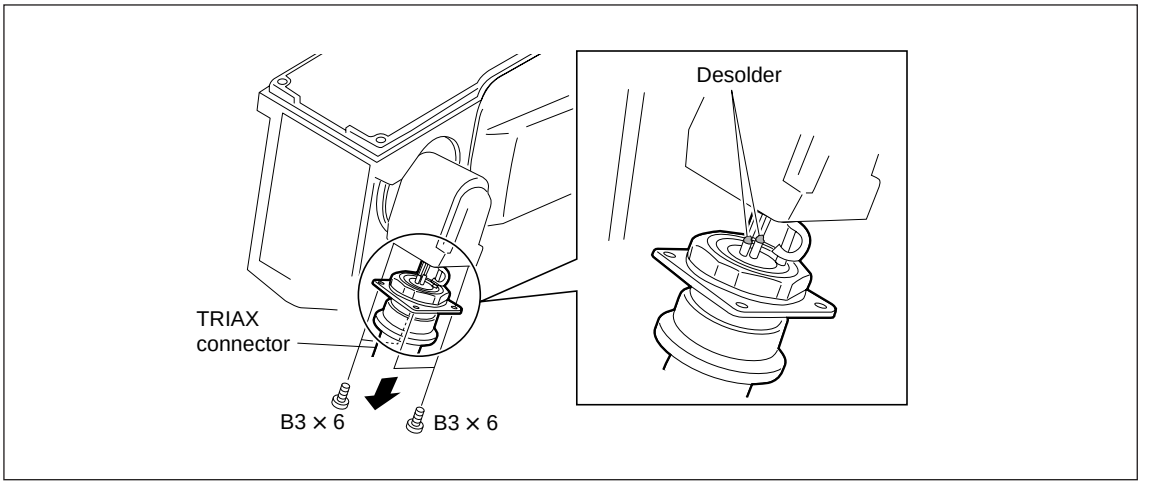


2-14-4. TRIAX Connector

1. Remove the FL-249 board referring to Section 2-9.
2. Remove the four screws and pull out the TRIAX connector.
3. Desolder the TRIAX connector.
4. Install a new connector in the reverse order of removal.

Note at installation

When reinstalling the FL-249 board, refer to Section 2-9 for proper connection.



2-14-5. Connectors on the MIC Panel

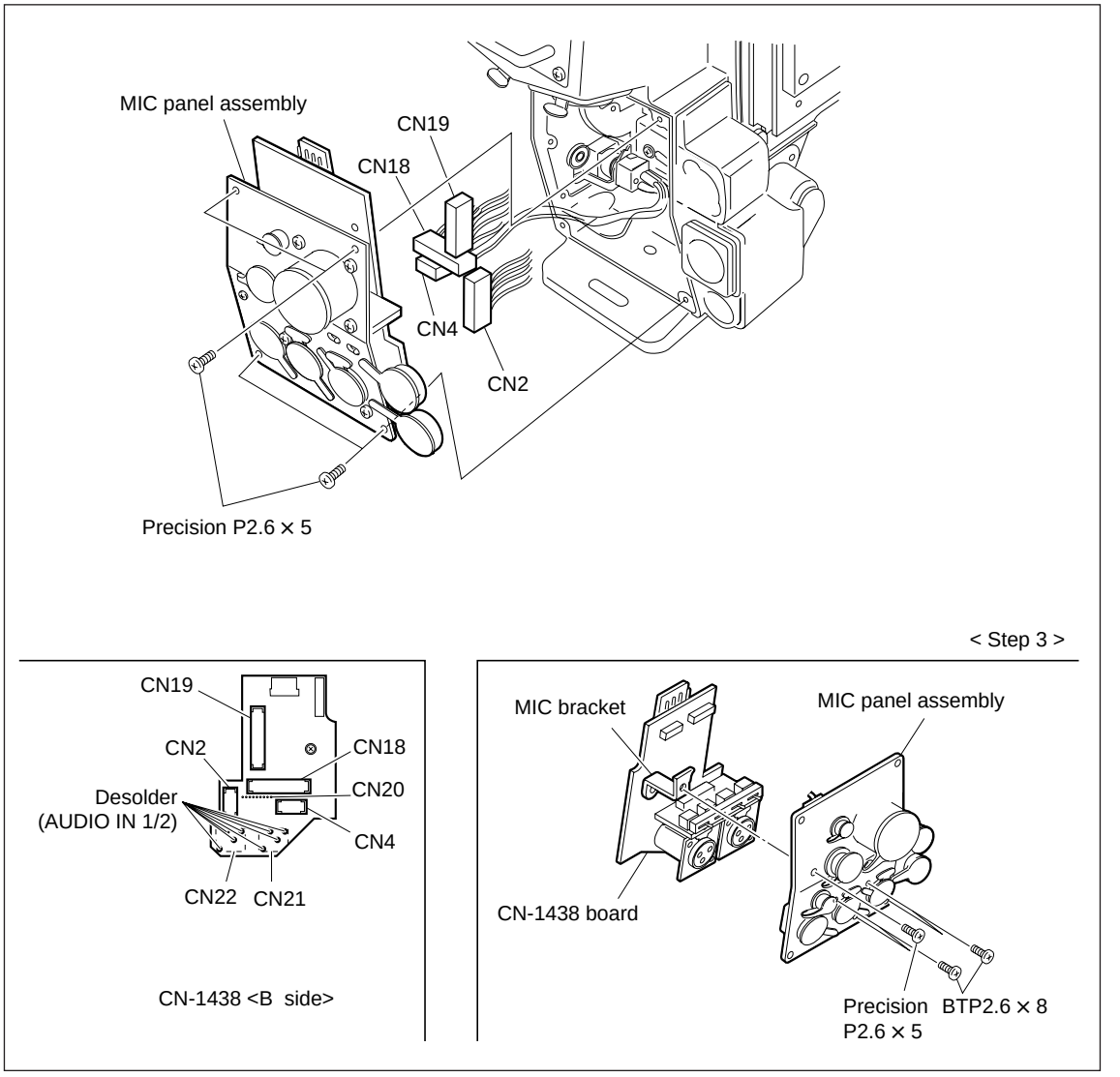
1. Remove the DC/DC converter, FL-249 board and AC/DC converter referring to Sections 2-8, 2-9 and 2-10-1.
2. Remove the four screws (precision P2.6 × 5) and open the MIC panel assembly. Disconnect the four connectors (CN2, CN4, CN18 and CN19) on the CN-1438 board.
3. Remove the five screws (one piece of precision P2.6 × 5, four pieces of BTP2.6 × 8) to remove the CN-1438 board from the MIC panel assembly.
4. Desoler the connector that needs to be replaced.

   Notes

   • When disconnecting the AUDIO IN 1/2 connector, desolder CN21 or CN22 on the CN-1438 board.
   • When replacing the VTR connector, replace the connector with harness with a new one.
5. Install a new connector in the reverse order of removal.

   Note at installation

   When reinstalling the FL-249 board, refer to Section 2-9 for proper connection.

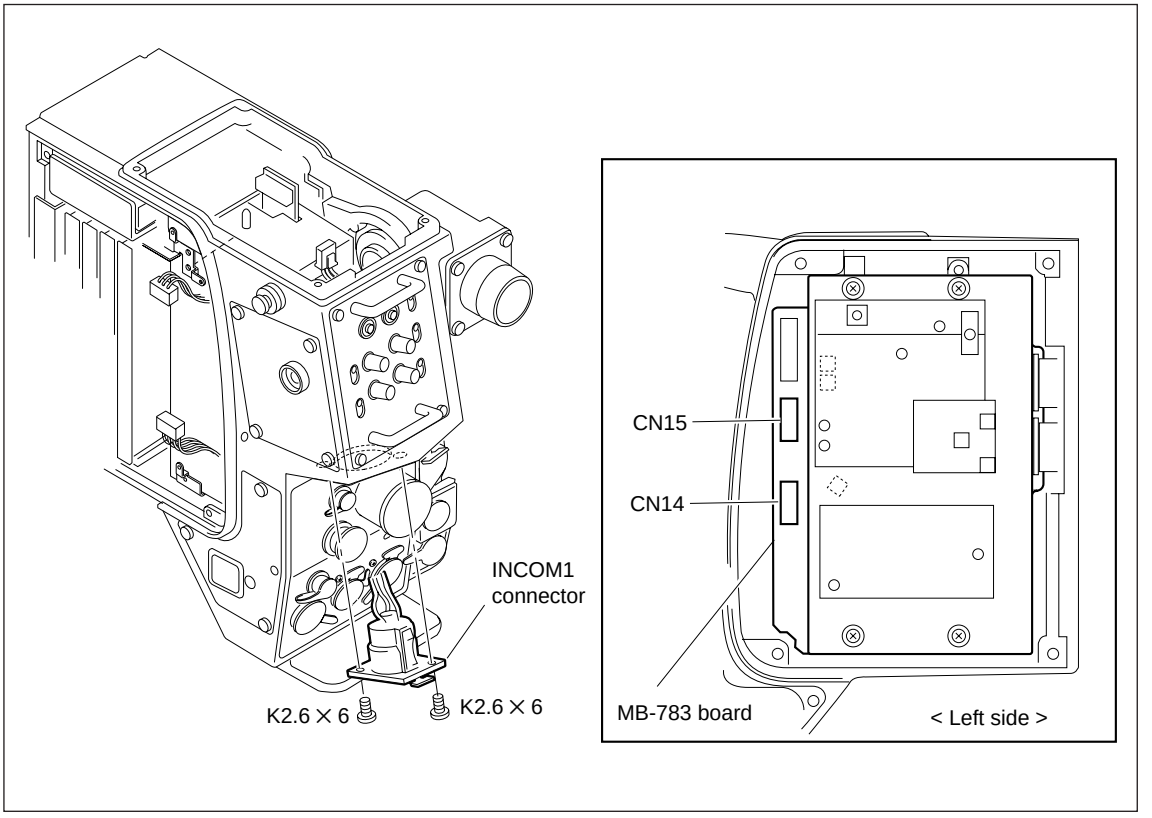


2-14-6. INCOM 1/2 the Connector

1. Remove the left side panel referring to Section 2-1.
2. Remove the DC/DC converter, FL-249 board and AC/DC converter referring to Sections 2-8, 2-9 and 2-10-1.
3. When replacing the INCOM 1 connector, disconnect CN14 on the MB-783 board. When replacing the INCOM 2 connector, disconnect CN15 on the MB-783 board.
4. Remove the two screws securing the connector that needs to be replaced and pull it out. Replace the connector with harness with a new one.
5. Install a new connector in the reverse order of removal.

Note at installation

When reinstalling the FL-249 board, refer to Section 2-9 for proper connection.



Section 3
Electrical Alignment

3-1. Preparation

3-1-1. Equipment required

Tools

- Extension board (EX-464): A-8318-864-A
- Extension board (BKP-7900)

Equipment

- DC variable voltage supply
- Frequency counter: Advantest TR5821AK or equivalent
- Spectrum analyzer: Advantest R3261A or equivalent
- Distortion meter: Tektronix SG-505 (OP.02) or equivalent
- Audio generator: Tektronix SG-5010 or equivalent
- Oscilloscope: Tektronix 2465 or equivalent
- Waveform monitor/Vectorscope: Tektronix 1750 (for NTSC)/1751 (for PAL) or equivalent
- Digital voltmeter: Advantest TR6845 or equivalent
- Video signal generator: Tektronix 1410(for NTSC)/1411 (for PAL) or equivalent
- Color monitor

Peripheral equipment

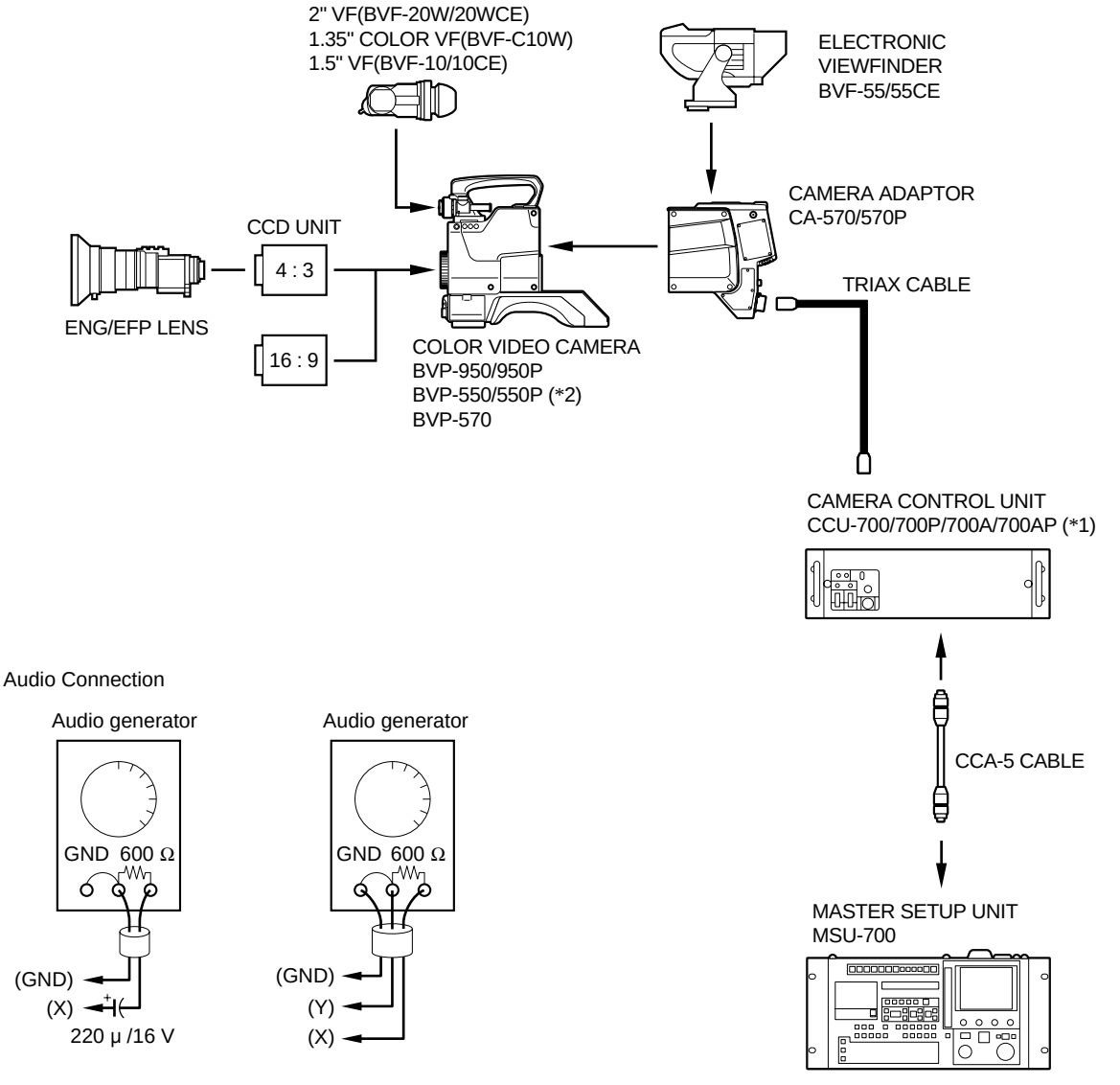
- Color video camera: BVP-950/950P/550/550P/570
- CCD unit: OHB series
- Camera control unit: CCU-700/700P/700A/700AP*1
- Master setup unit: MSU-700
- AC adapter: AC-550/550CE
- TRIAX cable (Reference:150 m)

*1: Represented as “CCU-700A” simply for convenience in writing in this section.

3-1-2. Notes on adjustment

- All measuring equipment should be calibrated.
- All the adjustment of peripheral equipment (BVP, OHB, CCU, MSU) should be completed.
- As for initial settings before beginning adjustment, refer to section 3-1-4.
- Close the camera lens during adjustment.
- Be sure to power off before disconnecting boards.
- Before adjustment, allow for more than 10 minutes warm-up time.
- When turning ⊘LV, ⊘FL and ⊘T, use a plastic (or ceramic) core driver which fits the slot of their core.

3-1-3. Connection



*1: Represented as “CCU-700A” simply for convenience in writing in this section.
*2: Check that the ROM version for IC36 on the AT-95 board of the BVP-550/550P/550WSPK is 4.0 or higher when BVP-550/550P/550WSPK is used.

3-1-4. Initial Settings

CA-570

Note

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

Board	Switch	Initial setting	Customer-set position
DM-116	S4	CCU→CAM*1	
MD-119	S3	PROMPTER	
AU-237	S111	NORM	
	S182	CM	
	S183	0 (0 dB)	
	S302	NORM	
	S362	CM	
	S363	0 (0 dB)	
	S301	All OFF	
	S411	0 (0 dB)	
AU-251	S100-1 to 3	OFF	
	S100-4	ON	
	S600	CA	

*1: AT the same time, connect the green harness of MPX filter to CN5 (PROMPT)/DM-116 board

MSU-700 Operation Panel

- Power/Signal output select buttons
  - ALL button → OFF (dark)
  - CAM PW button → ON (lit)
  - TEST 1 button → OFF (dark)
  - TEST 2 button → OFF (dark)
  - BARS button → OFF (dark)
  - CLOSE button → ON (lit)
- Camera/CCU function ON/OFF buttons
  - KNEE OFF button → OFF (lit)
  - DETAIL OFF button → OFF (lit)
  - MATRIX OFF button → OFF (lit)
  - AUTO KNEE button → OFF (dark)
- Others
  - GAMMA OFF button → ON (dark)
  - MASTER GAIN button → 0 (0 dB)

3-2. AU-251 board Adjustment

3-2-1. Battery Alarm Set Adjustment

Note

• Adjustment for ⊘RV220 is very critical. Do not turn it as far as the circuit operates normally.

Preparation

• Supply about + 13 V dc from the DC variable voltage supply to DC IN connector.
• ⊘RV220 → Turn fully clockwise
• S200-1/AU-251 board → ON
• TALLY switch/CA rear panel → ON

Adjustment procedure

1. Equipment: Digital voltmeter
   Test point: EXT DC IN connector/CA side panel
   Adj. point: Voltage adjustment control/DC variable voltage supply
   Specification: +11.20 ±0.05 V dc

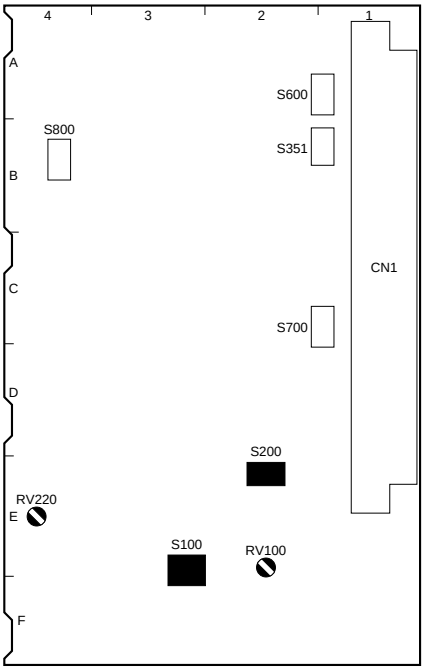
2. Test point: TALLY indicator/CA rear panel
   Adj. point: ⊘RV220/AU-251 board
   Specification: Turn ⊘RV220 counterclockwise showly and stop where the TALLY indicator starts to blink.

3. Test point: TALLY indicator/CA rear panel
   Adj. point: Voltage adjustment control/DC variable voltage supply
   Specification: Lower the voltage and stop where the TALLY indicator stays lit up.

4. Check the voltage
   Equipment: Digital voltmeter
   Test point: EXT DC IN connector/CA side panel
   Specification: +10.8 ±0.1 V dc
   If specification is not met, repeat from step 1.

Settings after adjustment

• S200-1/AU-251 board → OFF
• TALLY switch/CA rear panel → OFF



AU-251 BOARD (A SIDE)

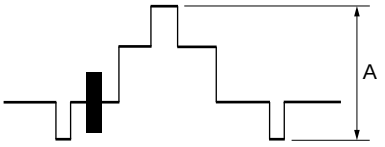
3-2-2. VBS/MONITOR Level Adjustment

Preparation

- S100-1, S100-3, S100-4/AU-251 board → OFF
- S100-2/AU-251 board → ON
- Settings of MSU-700
  TEST2 button → ON (lit)
  GAMMA OFF button → ON (dark)

Adjustment procedure

1. Equipment: Waveform monitor
   Test point: TEST OUT connector/CA-570
   Adj. point: ⊘RV100 (RET OUT) /AU-251 board
   Specification: A = 140 ± 1 IRE [NTSC]
   A = 1000 ± 5 mV [PAL]



3-3. TR-109 board Adjustment

Before adjustment, allow for more than 10 minutes warm-up time.

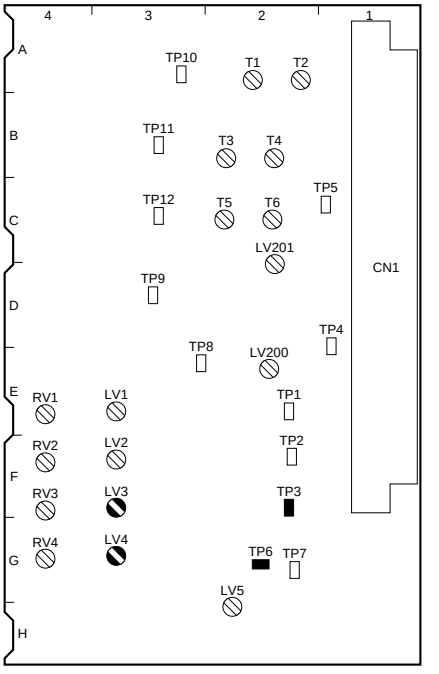
3-3-1. MIC 1 RF Adjustment

Note

• Use a plastic (or ceramic) core driver which fits the slot of their core.

Adjustment procedure

1. Equipment: Frequency counter
   Test point: TP3/TR-109 board
   Adj. point: ⊘LV3 (6.2 MHz) /TR-109 board
   Specification: 6,200 ±5 kHz



TR-109 BOARD (A SIDE)

3-3-2. MIC 2 RF Adjustment

Note

• Use a plastic (or ceramic) core driver which fits the slot of their core.

Adjustment procedure

1. Equipment: Frequency counter
   Test point: TP6/TR-109 board
   Adj. point: ⊘LV4 (6.7 MHz) /TR-109 board
   Specification: 6,700 ±5 kHz

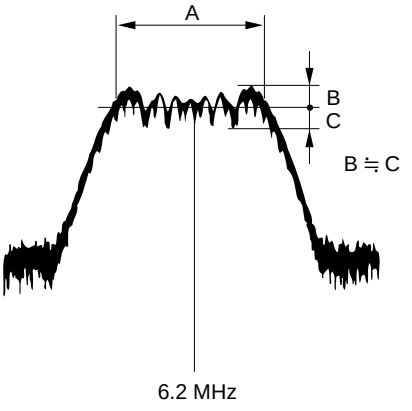
3-3-3. MIC 1 Deviation Adjustment

Preparation

- S600 (MIC 1 CHU/CA) /AU-251 board → CA
- MIC POWER switch/CA rear panel → OFF
- MIC/LINE switch/CA rear panel → MIC
- Settings of CCU-700A
  S1003 (MIC LEVEL CH1) /AT-88 board → NORM
- Feed the following signal from the audio generator to AUDIO 1 IN connector on CA.
  Signal: sine wave
  Frequency: 1 kHz
  Output level: 2.2 mV p-p (− 60 dBu)

Adjustment procedure

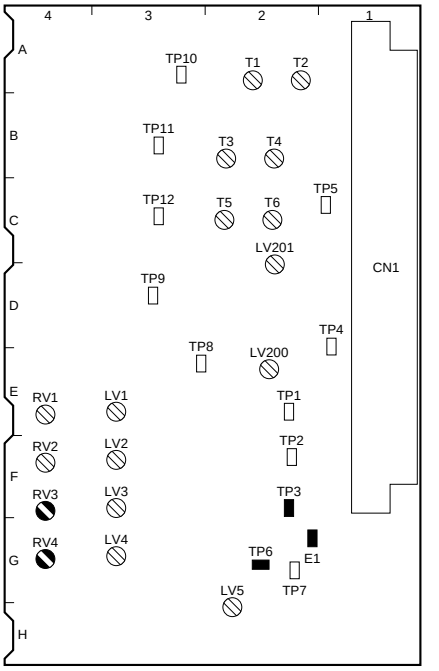
1. Equipment: Spectrum analyzer
   Test point: TP3/TR-109 board
   GND: E1/TR-109 board
   Adj. point: ◓RV3 (MIC1 DEV) /TR-109 board
   Specification: A = 16.0 ±0.8 kHz



CENTER FREQ	6.2 MHz
SPAN	50 kHz
RBW	1 kHz

Settings after adjustment

- Set switches of CCU-700A to former positions.



TR-109 BOARD (A SIDE)

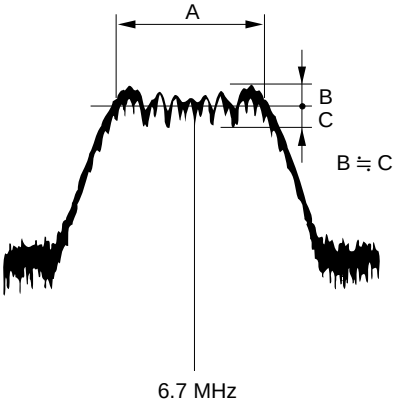
3-3-4. MIC 2 Deviation Adjustment

Preparation

- S600 (MIC 1 CHU/CA) /AU-251 board → CA
- MIC POWER switch/CA rear panel → OFF
- MIC/LINE switch/CA rear panel → MIC
- Settings of CCU-700A
  S1003 (MIC LEVEL CH1) /AT-88 board → NORM
- Feed the following signal from the audio generator to AUDIO 2 IN connector on CA.
  Signal: sine wave
  Frequency: 1 kHz
  Output level: 2.2 mV p-p (− 60 dBu)

Adjustment procedure

1. Equipment: Spectrum analyzer
   Test point: TP6/TR-109 board
   GND: E1/TR-109 board
   Adj. point: ⊘RV4 (MIC2 DEV) /TR-109 board
   Specification: A = 18.0 ± 0.8 kHz



CENTER FREQ	6.7 MHz
SPAN	50 kHz
RBW	1 kHz

Settings after adjustment

- Set switches of CCU-700A to former positions.

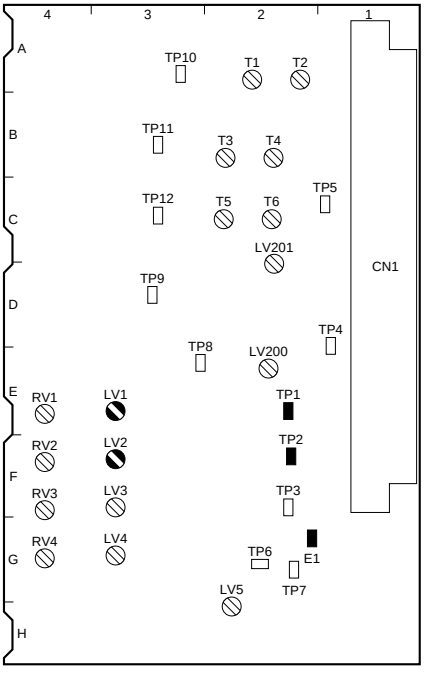
3-3-5. INCOM 1 RF Adjustment

Note

• Use a plastic (or ceramic) core driver which fits the slot of their core.

Adjustment procedure

1. Equipment: Frequency counter
   Test point: TP1/TR-109 board
   GND: E1/TR-109 board
   Adj. point: ◓LV1 (7.1 MHz) /TR-109 board
   Specification: 7,100 ±5 kHz



TR-109 BOARD (A SIDE)

3-3-6. INCOM 2 RF Adjustment

Note

• Use a plastic (or ceramic) core driver which fits the slot of their core.

Adjustment procedure

1. Equipment: Frequency counter
   Test point: TP2/TR-109 board
   GND: E1/TR-109 board
   Adj. point: ⊘LV2 (7.4 MHz) /TR-109 board
   Specification: 7,400 ±5 kHz

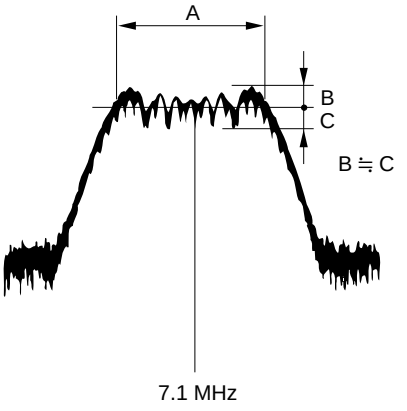
3-3-7. INCOM 1 Deviation Adjustment

Preparation

- S181-1 /AU-237 board → BAL
- S182 /AU-237 board → DYN
- S183 /AU-237 board → 0
- Feed the following signal from the audio generator to INCOM 1 connector (pin 1 (Y), pin 2 (X), pin 3 (GND)) on camera.
  Signal: sine wave
  Frequency: 1 kHz
  Output level: 2.2 mV p-p (− 60 dBu)

Adjustment procedure

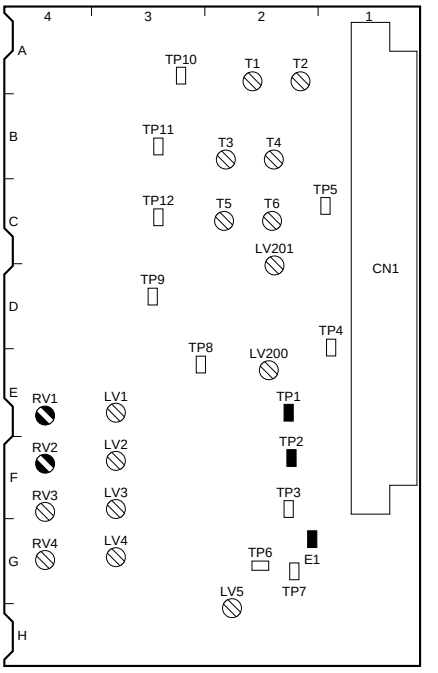
1. Equipment: Spectrum analyzer
   Test point: TP1/TR-109 board
   GND: E1/TR-109 board
   Adj. point: ◓RV1 (INCOM1 DEV) /TR-109 board
   Specification: A = 20.0 ±0.8 kHz



CENTER FREQ	7.1 MHz
SPAN	50 kHz
RBW	1 kHz

Settings after adjustment

- S181-1/AU-231 board → UNBAL
- S182/AU-231 board → CM



TR-109 BOARD (A SIDE)

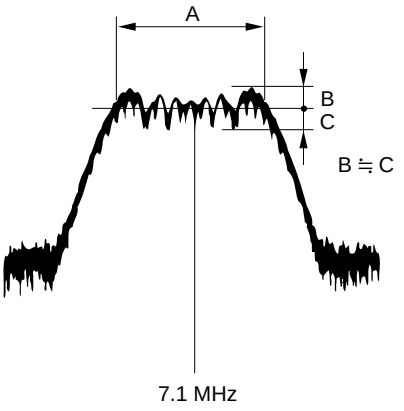
3-3-8. INCOM 2 Deviation Adjustment

Preparation

- S181-2 /AU-237 board → BAL
- S362 /AU-237 board → DYN
- S363 /AU-237 board → 0
- INCOM 2 TALK switch/ CA rear panel → ON
- Feed the following signal from the audio generator to INCOM 2 connector (pin 1 (Y), pin 2 (X), pin 3 (GND)).
  Signal: sine wave
  Frequency: 1 kHz
  Output level: 2.2 mV p-p (− 60 dBu)

Adjustment procedure

1. Equipment: Spectrum analyzer
   Test point: TP2/TR-109 board
   GND: E1/TR-109 board
   Adj. point: ⊘RV2 (INCOM2 DEV) /TR-109 board
   Specification: A = 22 ± 1 kHz



CENTER FREQ	7.1 MHz
SPAN	50 kHz
RBW	1 kHz

Settings after adjustment

- S181-2/AU-237 board → UNBAL
- S362/AU-237 board → CM

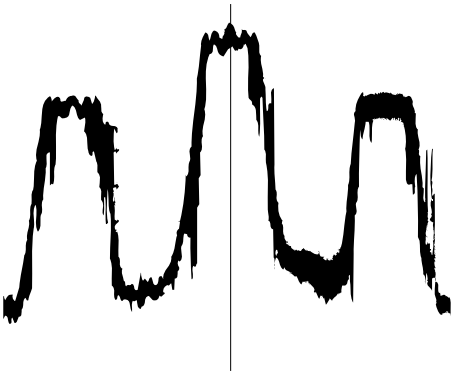
3-3-9. DATA RF Adjustment

Note

• Use a plastic (or ceramic) core driver which fits the slot of their core.

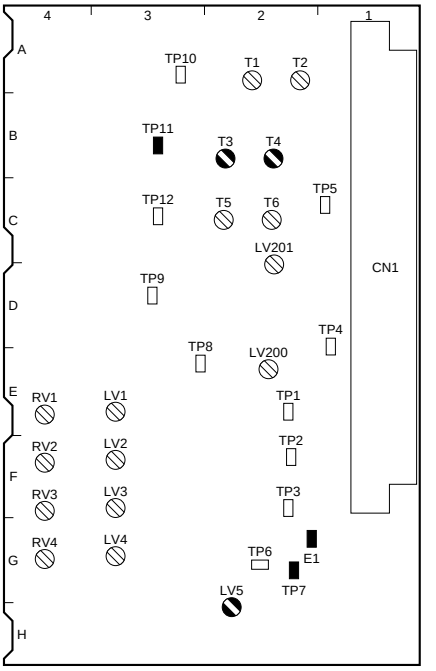
Adjustment procedure

1. Equipment: Spectrum analyzer
   Test point: TP7/TR-109 board
   GND: E1/TR-109 board
   Adj. point: ⊘LV5 (5.6 MHz) /TR-109 board
   Specification: Center frequency = 5,600 ±5 kHz



5,600 kHz

CENTER FREQ	5,600 kHz
SPAN	100 kHz
RBW	1 kHz



TR-109 BOARD (A SIDE)

3-3-10. INCOM 1 Demodulation Adjustment

Note

- Perform this adjustment only when replacing ⊘T3 and/or ⊘T4.
- Use a plastic (or ceramic) core driver which fits the slot of their core.

Preparation

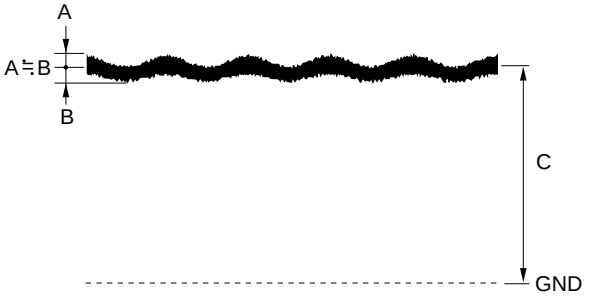
- INCOM level adjustment control/at the right-rear → Fully clockwise
- Settings of CCU-700A
  Extends the AT-88 board of CCU-700A
  - S2081 (PGM IN 0 dB/ − 20 dB) /AT-88 board → 0 dB
  - S2082 (PGM MIX ON/OFF) /AT-88 board → ON

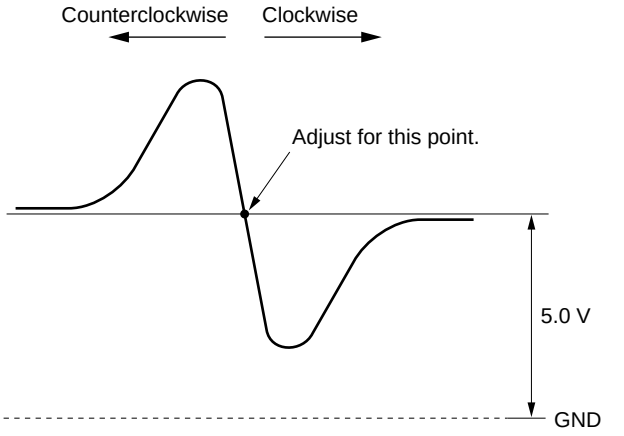
- Feed the following signal from the audio generator.
  Input points: D68 pin (X) , A69 pin (Y) , B69 pin (GND) /CCU-700A extension board
  Signal: sine wave
  Frequency: 1 kHz

Adjustment procedure

1. Equipment: Oscilloscope
   Test point: TP44 (GND:E1) /AT-88 board (CCU-700A)
   Adj. point: ⊘Output level control/audio generator
   Specification: 220 mV p-p (−20 dBu)

2. Equipment: Oscilloscope
   Test point: TP11/TR-109 board
   GND: E1/TR-109 board
   Adj. point: ⊘T3/TR-109 board
   Specification: 5.0 ±0.1 V dc
   (Slowly turn ⊘T3)





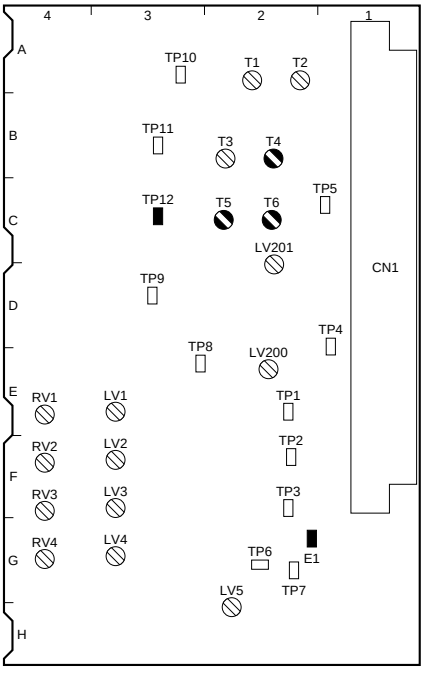
The voltage at TP11 is changed as shown above when ⊘T3 is turned.

(To be continued)

3. Equipment: Distortion meter
   Test point: INCOM 1 connector (4 pin)
   GND: INCOM 1 connector (3 pin)
   Adj. point: ◓T4/TR-109 board
   Specification: The distortion is 0.3 % or less and minimum

Settings after adjustment

• Set switches of CCU-700A to former positions.



TR-109 BOARD (A SIDE)

3-3-11. INCOM 2 Demodulation Adjustment

Note

- Perform this adjustment only when replacing ⊘T5 and/or ⊘T6.
- Use a plastic (or ceramic) core driver which fits the slot of their core.

Preparation

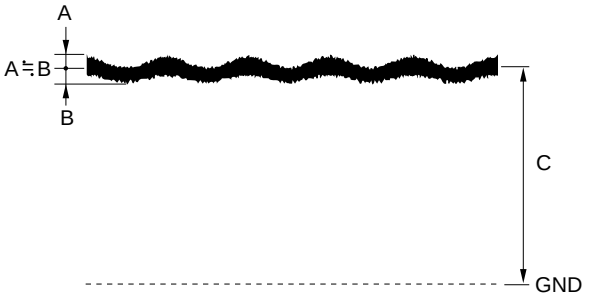
- INCOM level adjustment control/at the right-rear → Fully clockwise
- Settings of CCU-700A
  Extends the AT-88 board of CCU-700A
  - S2081 (PGM IN 0 dB/ − 20 dB) /AT-88 board → 0 dB
  - S2082 (PGM MIX ON/OFF) /AT-88 board → ON

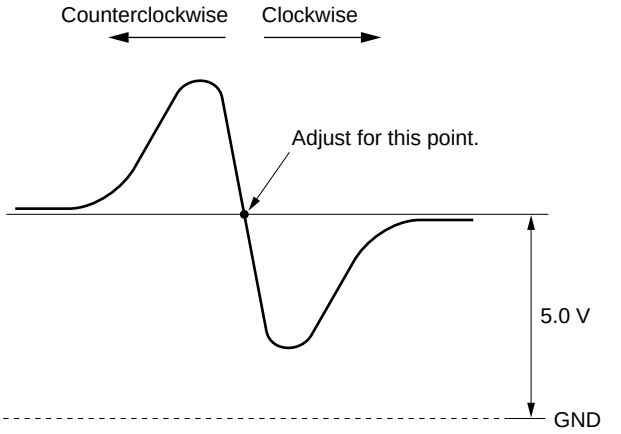
- Feed the following signal from the audio generator.
  Input points: A71 pin (X) , B71 pin (Y) , C71 pin (GND) /CCU-700A extension board
  Signal: sine wave
  Frequency: 1 kHz

Adjustment procedure

1. Equipment: Oscilloscope
   Test point: TP46 (GND:E11) /AT-88 board (CCU-700A)
   Adj. point: ⊘Output level control/audio generator
   Specification: 220 mV p-p (−20 dBu)

2. Equipment: Oscilloscope
   Test point: TP12/TR-109 board
   GND: E1/TR-109 board
   Adj. point: ⊘T5/TR-109 board
   Specification: 5.0 ±0.1 V dc
   (Slowly turn ⊘T5)





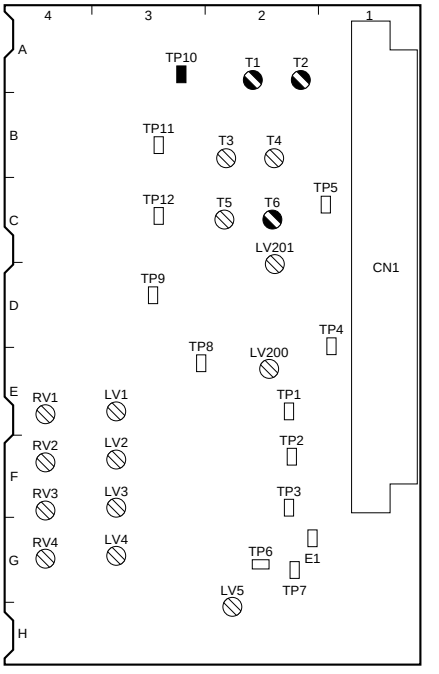
The voltage at TP12 is changed as shown above when ⊘T5 is turned.

(To be continued)

3. Equipment: Distortion meter
   Test point: INCOM 2 connector (4 pin)
   GND: INCOM 2 connector (3 pin)
   Adj. point: ◓T6/TR-109 board
   Specification: The distortion is 0.3 % or less and minimum

Settings after adjustment

• Set switches of CCU-700A to former positions.



TR-109 BOARD (A SIDE)

3-3-12. PGM Demodulation Adjustment

Note

- Perform this adjustment only when replacing ⊘T1 and/or ⊘T2.
- Use a plastic (or ceramic) core driver which fits the slot of their core.

Preparation

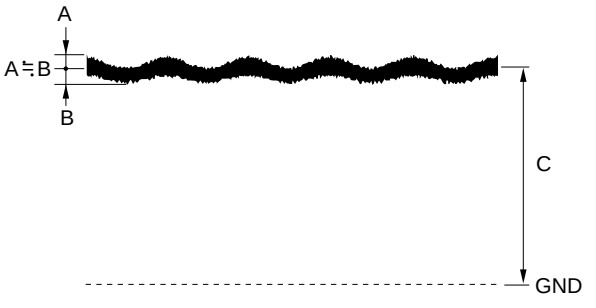
- INCOM level adjustment control/at the right-rear → Fully clockwise
- Settings of CCU-700A
  Extends the AT-88 board of CCU-700A
  - S2081 (PGM IN 0 dB/ − 20 dB) /AT-88 board → 0 dB
  - S2082 (PGM MIX ON/OFF) /AT-88 board → OFF

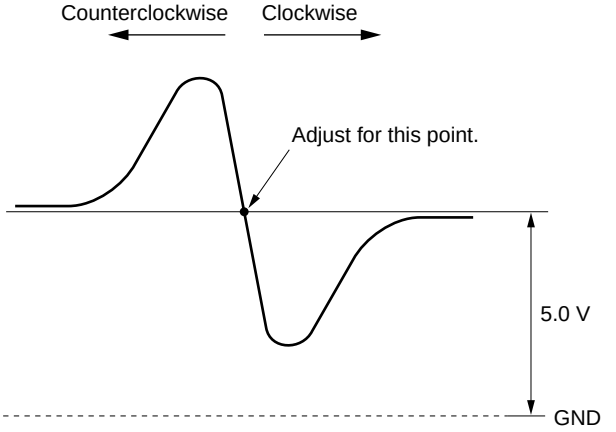
- Feed the following signal from the audio generator.
  Input points: D68 pin (X) , A69 pin (Y) , B69 pin (GND) /CCU-700A extension board
  Signal: sine wave
  Frequency: 1 kHz

Adjustment procedure

1. Equipment: Oscilloscope
   Test point: TP44 (GND:E1) /AT-88 board (CCU-700A)
   Adj. point: ⊘Output level control/audio generator
   Specification: 220 mV p-p (− 20 dBu)

2. Equipment: Oscilloscope
   Test point: TP10/TR-109 board
   Adj. point: ⊘T1/TR-109 board
   Specification: C = 5.0 ±0.1 V dc
   (Slowly turn ⊘T1)





The voltage at TP10 is changed as shown above when ⊘T1 is turned.

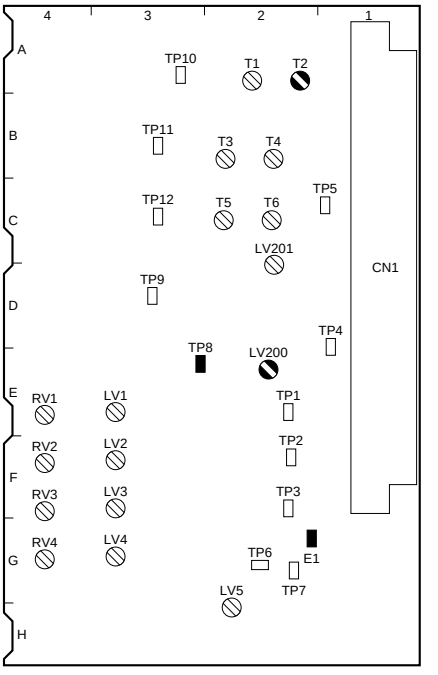
(To be continued)

3. Equipment: Distortion meter
   Test point: INCOM 1 connector (5 pin)
   GND: INCOM 1 connector (3 pin)
   Adj. point: ◓T2/TR-109 board
   Specification: The distortion is 0.3 % or less and minimum

---

Settings after adjustment

• Set switches of CCU-700A to former positions.



TR-109 BOARD (A SIDE)

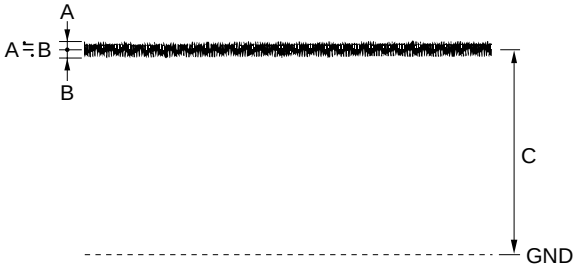
3-3-13. DATA Demodulation Circuit Adjustment

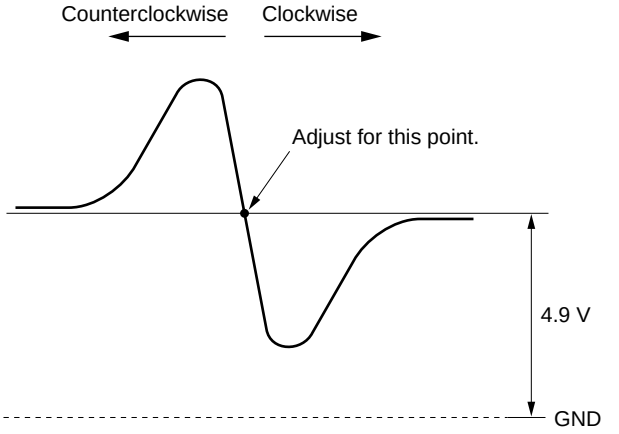
Note

• Use a plastic (or ceramic) core driver which fits the slot of their core.

Adjustment procedure

1. Equipment: Oscilloscope
   Test point: TP8/TR-109 board
   GND: E1/TR-109 board
   Adj. point: ⊘LV200/TR-109 board
   Specification: C = 4.9 ±0.1 V dc





The voltage at TP8 is changed as shown above when ⊘LV200 is turned.

3-3-14. H CONT Demodulation Circuit Adjustment

Note

- Use a plastic (or ceramic) core driver which fits the slot of their core.

Preparation

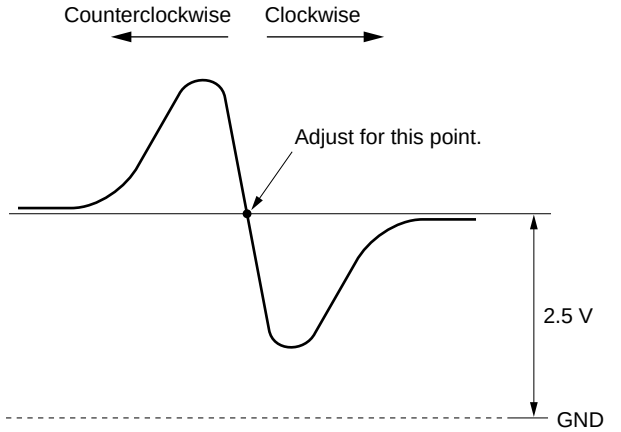
- Turn off the power of CA-570.
- Extends the AT-88 board (CCU-700A) with a extension board.
- Pull out the VA-156 board (CCU-700A).
- Inputs +2.5 V dc at pin C19/extension board (CCU-700A).

Adjustment procedure

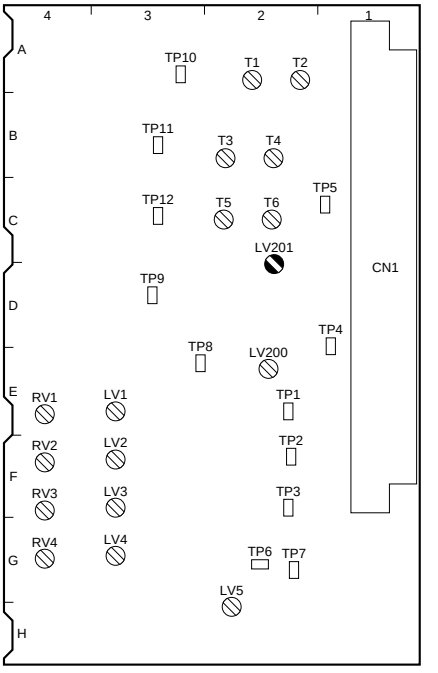
1. Equipment: Digital voltmeter
   Test point: TP1/AT-88 board (CCU-700A)
   GND : E2/AT-88 board (CCU-700A)
   Adj. point: Voltage adjustment control/DC variable voltage supply
   Specification: 2.5 ± 0.2 V dc

2. Set power switch of CA-570 to CCU.

3. Equipment: Digital voltmeter
   Test point: Pin 81/extension board (CA-570)
   Adj. point: ⊘LV201/TR-109 board
   Specification: 2.5 ±0.2 V dc



The voltage is changed as shown above when ⊘LV201 is turned.



TR-109 BOARD (A SIDE)

3-4. MD-119 board Adjustment

This adjustment requires a completely-aligned MSU-700. Refer to section 3-1-3 and 3-1-4 for connection and initial settings.
Before adjustment, make sure that the “3-4-1. VCO 45 MHz Adjustment” is completed.

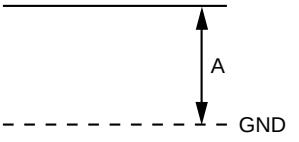
3-4-1. VCO 45 MHz Adjustment

Note

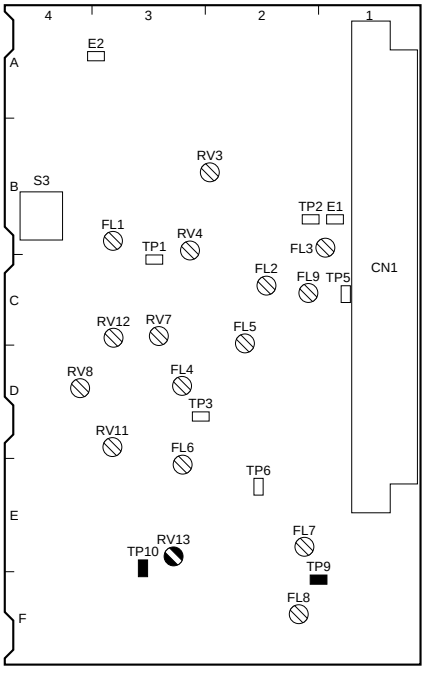
- Before adjustment, allow for more than 10 minutes warm-up time.
- Externally synchronize the CCU-700A/700AP using a VBS or Black burst (with SYNC) signal, which is precise in the frequency of H.

Adjustment procedure

1. Equipment: Digital voltmeter or Oscilloscope (DC mode)
   Test point: TP10/MD-119 board
   Adj. point: ⊘RV13/MD-119 board
   Specification: A = 2.2 $^{+0.3}_{-0.5}$ V dc



2. Equipment: Frequency counter
   Test point: TP9/MD-119 board
   Specification: 45,000,000 ±20 Hz
   Check that the specification is met.

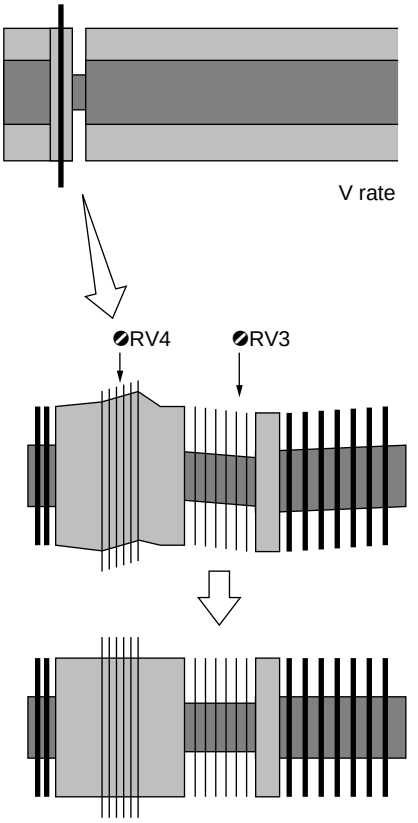


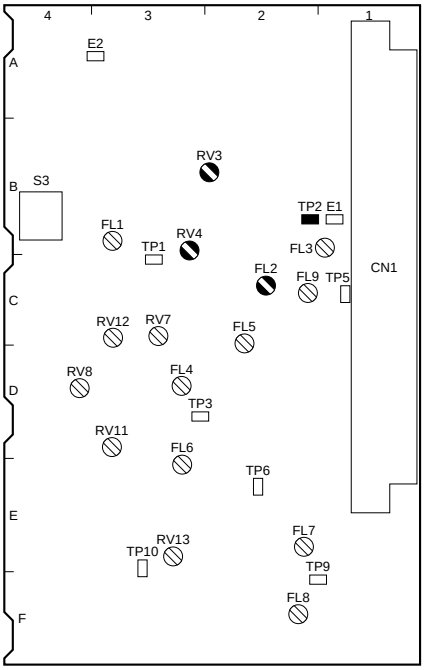
MD-119 BOARD (A SIDE)

3-4-2. Y/SKIN DC Balance Adjustment

Adjustment procedure

1. Equipment: Oscilloscope (LIMITER → OFF)
   Test point: TP2/MD-119 board
   TRIG: SYNC OUTPUT connector/CCU rear panel
   Adj. point: ⊘RV3 (Y DC BAL) /MD-119 board
   ⊘RV4 (SKIN DC BAL) /MD-119 board
   Specification: Adjust ⊘RV3 and ⊘RV4 alternately so that V SYNC portion is flat.





MD-119 BOARD (A SIDE)

3-4-3. Y/SKIN 90 ° Adjustment

Note

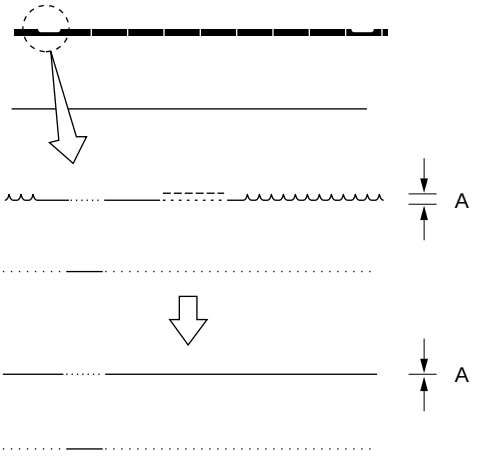
- Perform this adjustment only when replacing ⊘FL2 on the MD-119 board.
- Use a plastic (or ceramic) core driver which fits the slot of their core.

Preparation

- Extends DM-94 board (CCU-700A) with a extension board.

Adjustment procedure

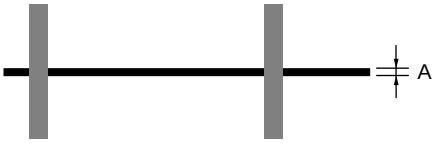
1. Equipment: Oscilloscope
   Test point: TP26 (GND:E5) /DM-94 board (CCU-700A)
   TRIG: SYNC OUT connector/CCU rear panel
   Adj. point: ⊘FL2/MD-119 board
   Specification: A = 0 ± 2 mV

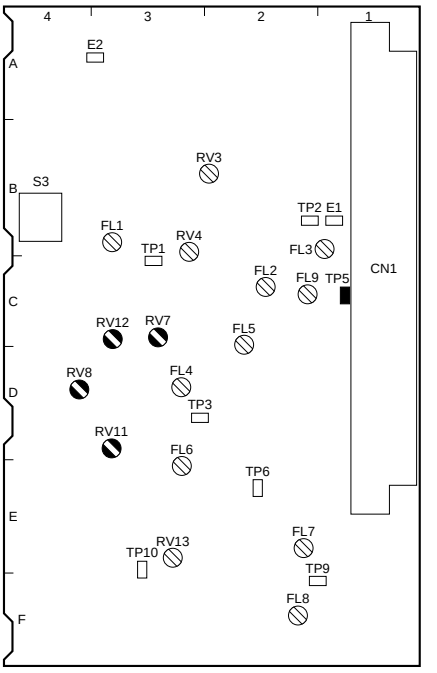


3-4-4. R-Y/B-Y Carrier Balance Adjustment

Adjustment procedure

1. Equipment: Oscilloscope (LIMITER → OFF)
   Test point: TP5/MD-119 board
   Adj. point: ⊘RV7 (R-Y CAR BAL) /MD-119 board
   ⊘RV11 (B-Y CAR BAL) /MD-119 board
   Specification: Adjust ⊘RV7 and ⊘RV11 alternately to minimize A.



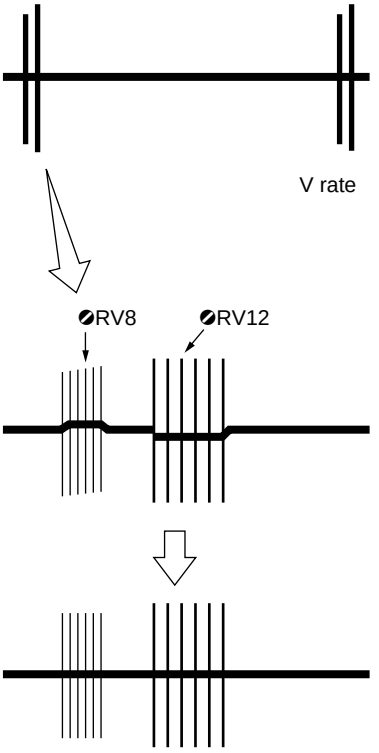


MD-119 BOARD (A SIDE)

3-4-5. R-Y/B-Y DC Balance Adjustment

Adjustment procedure

1. Equipment: Oscilloscope (LIMITER → OFF)
   Test point: TP5/MD-119 board
   Adj. point: ⊘RV8 (R-Y DC BAL) /MD-119 board
   ⊘RV12 (B-Y DC BAL) /MD-119 board
   Specification: Adjust ⊘RV8 and ⊘RV12 alternately so that V blanking portion is flat.



3-4-6. R-Y/B-Y 90 ° Adjustment

Note

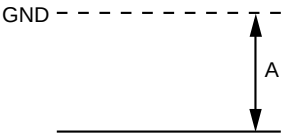
- Perform this adjustment only when replacing ⊘FL5 on the MD-119 board.
- Use a plastic (or ceramic) core driver which fits the slot of their core.
- The voltage changes slowly, therefore read the value for 2 or 3 seconds after turning ⊘FL5 on the MD-119 board.
- Scale up the measuring range to adjust because the amount of the change in voltage is small.

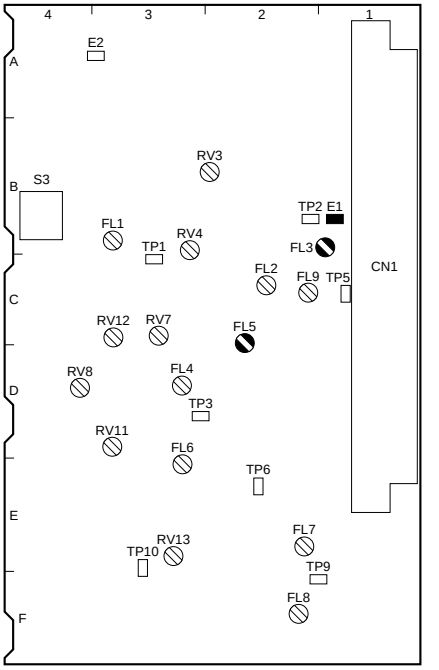
Preparation

- Extends DM-94 board (CCU-700A) with a extension board.

Adjustment procedure

1. Equipment: Digital voltmeter or Oscilloscope (DC mode)
   Test point: TP14 (GND:E12) /DM-94 board (CCU-700A)
   Adj. point: ⊘FL5/MD-119 board
   Specification: A = Maximize





MD-119 BOARD (A SIDE)

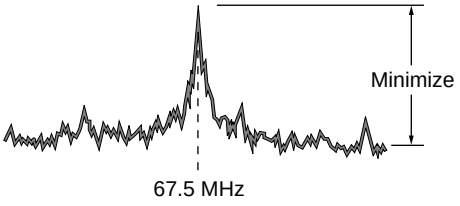
3-4-7. 67.5 MHz TRAP Adjustment

Note

- Perform this adjustment only when replacing ⊘FL3 on the MD-119 board.
- Use a plastic (or ceramic) core driver which fits the slot of their core.

Adjustment procedure

1. Equipment: Spectrum analyzer
   Test point: Pin 53/extension board (MD-119)
   GND: E1/MD-119 board
   Adj. point: ⊘FL3 (67.5 MHz TRAP) /MD-119 board
   Specification: A = Minimize



CENT FREQ 67.5 MHz
2.0 MHz

3-5. DM-116 board Adjustment

This adjustment requires a completely-aligned MSU-700. Refer to section 3-1-3 and 3-1-4 for connection and initial settings.

3-5-1. RETURN VIDEO Adjustment

Note

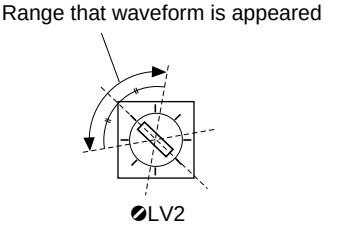
- Perform this adjustment only when replacing the ⊘LV1, ⊘LV2 on the DM-116 board or DM-116 board.
- Use a plastic (or ceramic) core driver which fits the slot of their core.
- When adjusting this item, the TRIAX cable of 300 meters long is required.

Preparation

- S100-1 to S100-4/AU-251 board → All OFF
- Inputs a 10 STEP signal to RET 1 IN connector/CCU rear panel.

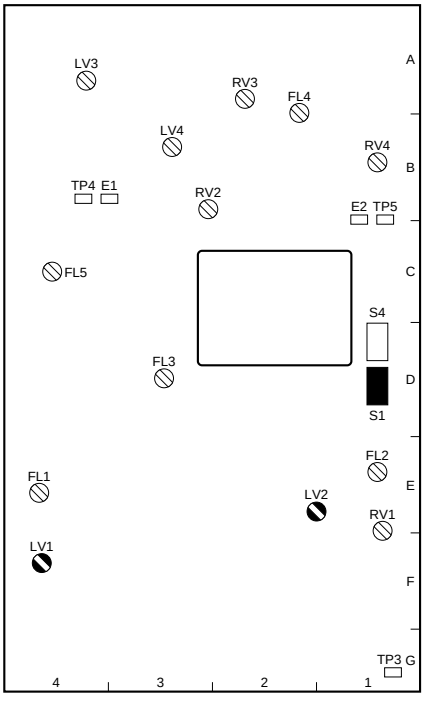
Adjustment procedure

1. Equipment: Waveform monitor
   Test point: TEST OUT connector/CA-570 (coarse adjustment)
   Adj. point: ⊘LV2 (RET TUNE) /DM-116 board
   (Set the center position of range that waveform is appeared)
   Specification: Waveform is appeared



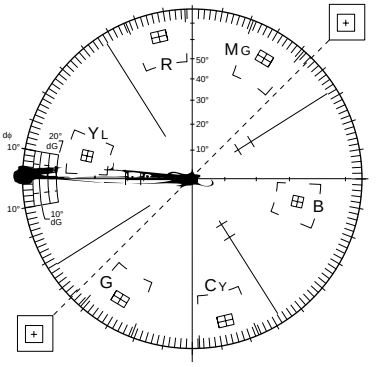
2. Equipment: Vectorscope
   Test point: TEST OUT connector/CA-570 (coarse adjustment)
   Adj. point: ⊘LV1 (RET FREQ) /DM-116 board (coarse adjustment)
   Specification: Minimize the beam spot

3. Equipment: Vectorscope
   Test point: TEST OUT connector/CA-570
   Adj. point: ⊘LV2 (RET TUNE) /DM-116 board
   Specification: Minimize the beam spot



DM-116 BOARD (A SIDE)

4. Equipment: Vectorscope
   Test point: TEST OUT connector/CA-570
   Adj. point: ⊘LV1 (RET FREQ) /DM-116 board
   ⊘LV2 (RET TUNE) /DM-116 board
   Specification: Minimize the DG and DP
   DG ≦ ±3 %
   DP ≦ ±3 °



Setting after adjustment

• S1-4/DM-116 board → ON

3-5-2. TX PROMPT VIDEO Modulation Factor Adjustment

Note

- When adjusting this item, the TRIAX cable of 100 to 300 meters long is required.
- Adjustment of CCU-700A should be completed.

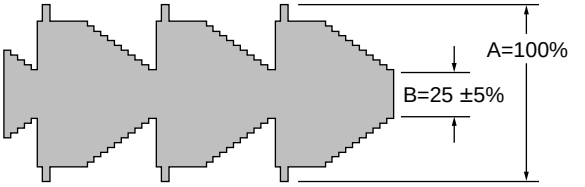
Preparation

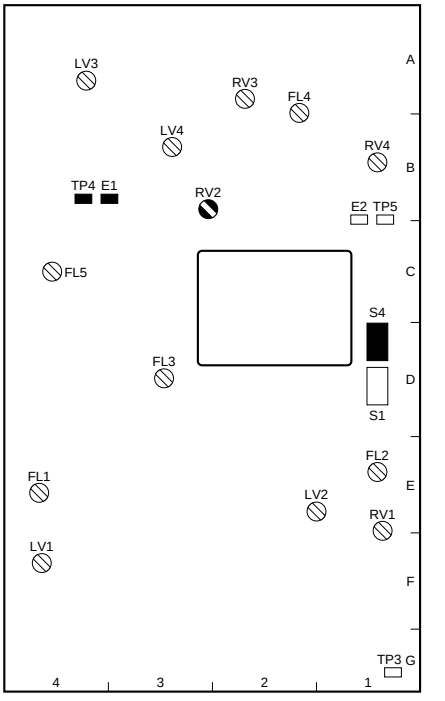
- S4 (CCU → CAM/CAM → CCU) /MD-116 board → "CAM → CCU"
- Disconnect the green harness of MPX filter from CN5 (PROMPT) /DM-116 board, and connect it to CN4 (PROMPT REVERSE) /DM-116 board.
- Inputs a 10 STEP signal from video signal generator to PROMPTER IN connector (camera side panel).

Settings of CCU-700A
- S1001-4/AT board (CCU-700A) → ON
- S5 (TX/RX) /DM-94 board (CCU-700A) → RX
- S6 (TX/RX) /DM-94 board (CCU-700A) → RX
- S1 (MODE AUTO/MAN) /DM-94 board (CCU-700A) → MANU
- S2 (CABLE LENGTH) /DM-94 board (CCU-700A) → 1

Adjustment procedure

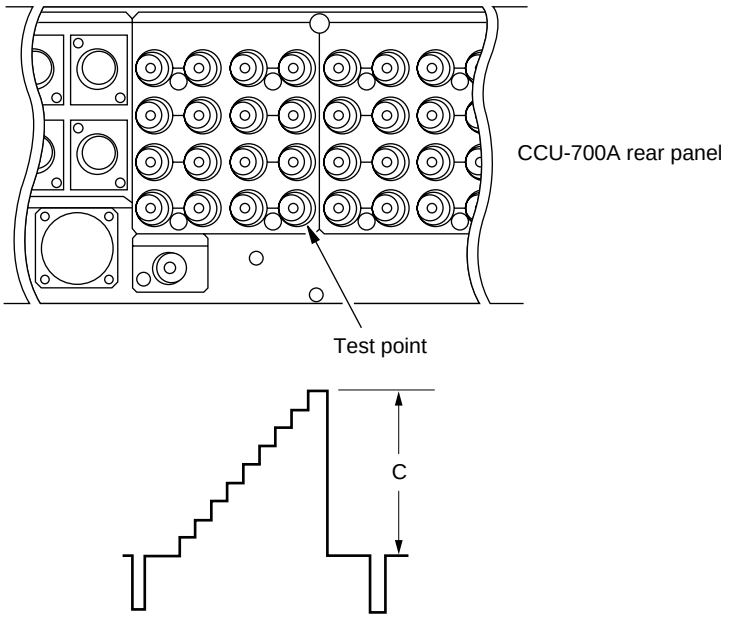
1. Equipment: Oscilloscope
   Test point: TP4/DM-116 board
   GND: E1/DM-116 board
   Adj. point: ◓RV2 (PROMPT DEV) /DM-116 board
   Specification: B/A × 100 = 25 ±5 %





DM-116 BOARD (A SIDE)

2. Equipment: Oscilloscope
   Test point: See below
   Specification: Make sure that the level C = 714 ±7 mV [NTSC]
   C = 700 ±7 mV [PAL]
   If specification is not met, perform the step 1 again.



Settings after adjustment

- S4 (CCU → CAM/CAM → CCU) /DM-116 board → “CCU → CAM”
- Connect the green harness of MPX filter to CN5 (PROMPT) /DM-116 board.
- Disconnect the cable from PROMPTER IN connector.
- Set switches of CCU-700A to former positions.

3-5-3. RX PROMPT VIDEO Demodulation Adjustment

Note

- Perform this adjustment only when replacing ⊘LV3 (PROMPT FREQ) and/or ⊘LV4 (PROMPT TUNE) on the DM-116 board.
- When adjusting this item, the triax cable of 100 to 300 meters long is required.
- Adjustment of CCU-700A should be completed.
- Use a plastic (or ceramic) core driver which fits the slot of their core.

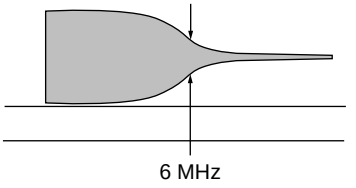
Preparation

- S4 (CCU → CAM/CAM → CCU) /DM-116 board → "CCU → CAM"
- Connect the green harness of MPX filter to CN5 (PROMPT) /DM-116 board.
- Inputs a V SWEEP signal from the video signal generator to PROMPTER IN connector (CCU rear panel).

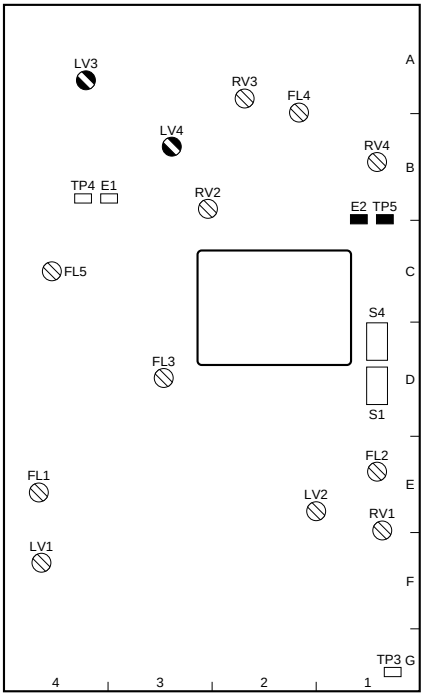
Settings of CCU-700A
- S5 (TX/RX) /DM-94 board (CCU-700A) → TX
- S6 (TX/RX) /DM-94 board (CCU-700A) → TX
- S1 (MODE AUTO/MAN) /DM-94 board (CCU-700A) → AUTO
- S2 (CABLE LENGTH) /DM-94 board (CCU-700A) → 1

Adjustment procedure

1. Equipment: Oscilloscope
   Test point: TP5/DM-116 board
   GND: E2/DM-116 board
   Adj. point: ⊘LV4 (PROMPT TUNE) /DM-116 board (coarse adjustment)
   Specification: Waveform is appeared

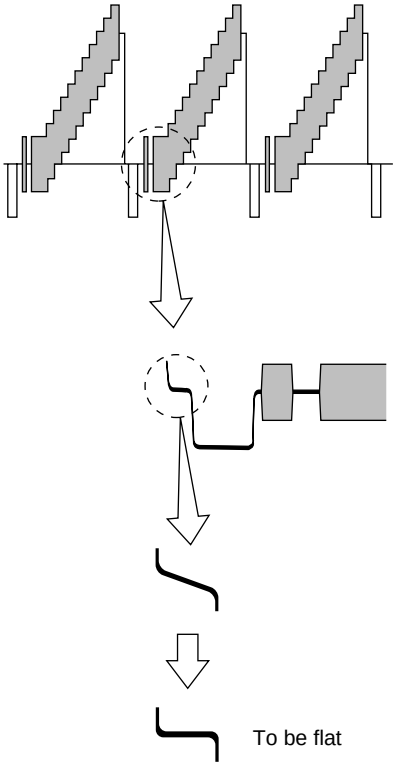


2. Equipment: Oscilloscope
   Test point: TP5/DM-116 board
   GND: E2/DM-116 board
   Adj. point: ⊘LV3 (PROMPT FREQ) /DM-116 board
   Specification: Minimize at 6 MHz portion



DM-116 BOARD (A SIDE)

3. Equipment: Oscilloscope
   Test point: TP5/DM-116 board
   GND: E2/DM-116 board
   Adj. point: ⊘LV4 (PROMPT TUNE) /DM-116 board
   Specification: Flatten the waveform
   If specification is not met, perform this adjustment again after “3-5-4. RX PROMPT VIDEO RF AGC Level Adjustment” is completed.



3-5-4. RX PROMPT VIDEO RF AGC Level Adjustment

Note

- When adjusting this item, the TRIAX cable of 50 to 150 meters long is required.
- Adjustment of CCU-700A should be completed.

Preparation

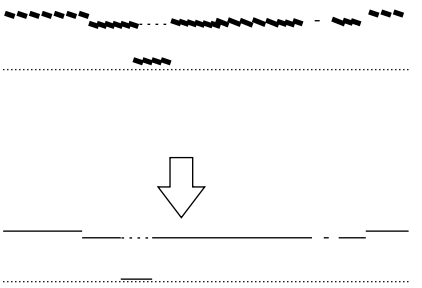
- S4 (CCU → CAM/CAM → CCU) /DM-116 board → "CCU → CAM"
- Connect the green harness of MPX filter to CN5 (PROMPT) /DM-116 board.
- Inputs a 10 STEP signal from the video signal generator to PROMPTER IN connector/CCU rear panel.(terminated with 75 Ω)

Settings of CCU-700A
- S5 (TX/RX) /DM-94 board (CCU-700A) → TX
- S6 (TX/RX) /DM-94 board (CCU-700A) → TX
- S1 (MODE AUTO/MAN) /DM-94 board (CCU-700A) → MANU
- S2 (CABLE LENGTH) /DM-94 board (CCU-700A) → 1

Adjustment procedure

1. ⊘RV3 → Turn fully clockwise

2. Equipment: Oscilloscope
   Test point: TP5/DM-116 board
   GND: E2/DM-116 board
   Adj. point: ⊘RV3 (RF AGC DLY) /DM-116 board
   Specification: Turn ⊘RV3 counterclockwise slowly and stop where SYNC level is maximum and sag is not appeared.



Setting after adjustment

- S2 (CABLE LENGTH) /DM-94 board (CCU-700A) → 0

3-5-5. RX PROMPT VIDEO Level Adjustment

Note

- When adjusting this item, the TRIAX cable of 100 to 300 meters long is required.
- Adjustment of CCU-700A should be completed.

Preparation

- S4 (CCU → CAM/CAM → CCU) /MD-83 board → "CCU → CAM"
- Connect the green harness of MPX filter to CN5 (PROMPT) /DM-116 board.
- Inputs a 10 STEP signal from the video signal generator to PROMPTER IN connector/CCU rear panel.(terminated with 75 Ω)

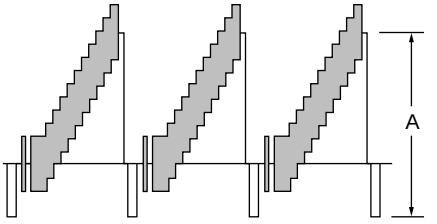
Settings of CCU-700A
- S5 (TX/RX) /DM-94 board (CCU-700A) → TX
- S6 (TX/RX) /DM-94 board (CCU-700A) → TX
- S1 (MODE AUTO/MAN) /DM-94 board (CCU-700A) → AUTO

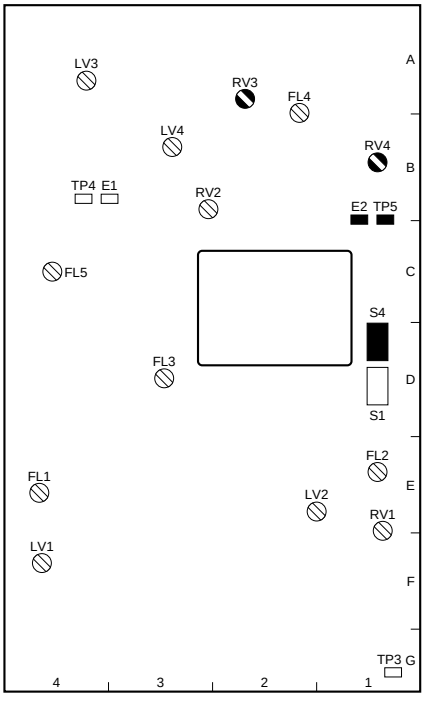
Adjustment procedure

1. Equipment: Oscilloscope
   Test point: TP5/DM-116 board
   GND: E2/DM-116 board
   Adj. point: ◓RV4 (PROMPT LEVEL) /DM-116 board
   Specification: A = 2.00 ± 0.05 V p-p

Settings after adjustment

- Set switches of CCU-700A to former positions.





DM-116 BOARD (A SIDE)

3-6. AU-237 board Adjustment

3-6-1. INCOM 1 Side Tone Adjustment

Preparation

- Extends AU-237 board (CA-570) with a extension board
- Extends AT-88 board (CCU-700A) with extension board.
- MIC 1 (ON/OFF) /BVP rear panel → ON
- S2081 (0 dB/−20 dB) /AT-88 board (CCU-700A) → 0 dB
- Inputs the following signal from audio generator.
  Input points: pin D68 (X) , pin A69 (Y) , pin B69 (GND) /CCU-700A extension board
  Signal: sine wave
  Frequency: 1 kHz
- S182 (INCOM 1) /AU-237 board → CM
- S183 (MIC1 GAIN) /AU-237 board → 0

Adjustment procedure

1. Equipment: Oscilloscope or audio level meter
   Test point: Pin 38/extension board (AU-237)
   GND: Pin 36/extension board (AU-237)
   Adj. point: ⊘Output level adjustment control/audio generator
   Specification: A = 20 mV p-p (−20 dBu)

2. Equipment: Oscilloscope or audio level meter
   Test point: Pin 57/extension board (AU-237)
   GND: Pin 58/extension board (AU-237)
   Adj. point: ⊘INCOM 1 level adjustment control/BVP rear panel
   Specification: B = 2.2 V p-p (0 dBu)

3. Disconnect the audio generator.

4. Inputs the following signal from audio generator to pin 25 (X) and pin (GND) /extension board (AU-237).
   Signal: sine wave
   Frequency: 1 kHz
   Output level: 220 mV p-p (−20 dBu)

5. Equipment: Oscilloscope or audio level meter
   Test point: Pin 57/extension board (AU-237)
   GND: Pin 58/extension board (AU-237)
   Adj. point: ⊘RV111 (SIDE 1) /AU-237 board
   Specification: C = 220 ±10 mV p-p (−20.0 ±0.4 dBu)

3-6-2. RTS 1 CANCEL Adjustment

Preparation

- Extends AU-237 board (CA-570) with a extension board.
- Extends AT-88 board (CCU-700A) with a extension board.
- S111 (RTS 1 RTS/NORM) /AU-237 board → RTS
- S2081 (0 dB/−20 dB) /AT-88 board (CCU-700A) → 0 dB
- Inputs the following signal from audio generator.
  Input points: pin D68 (X) , pin A69 (Y) , pin B69 (GND) /CCU-700A extension board
  Signal: sine wave
  Frequency: 1 kHz

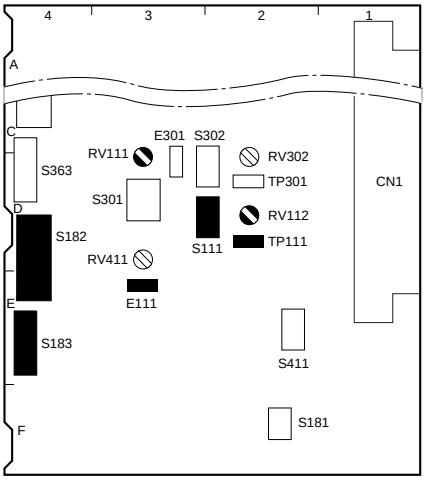
Adjustment procedure

1. Equipment: Oscilloscope or audio level meter
   Test point: Pin 38/extension board (AU-237)
   GND: Pin 36/extension board (AU-237)
   Adj. point: ⊘Output level adjustment control/audio generator
   Specification: A = 220 mV p-p (−20 dBu)

2. Equipment: Oscilloscope or audio level meter
   Test point: Pin 57/extension board (AU-237)
   GND: Pin 58/extension board (AU-237)
   Adj. point: ⊘INCOM 1 level adjustment control/BVP rear panel
   Specification: B = 2.2 V p-p (0 dBu)

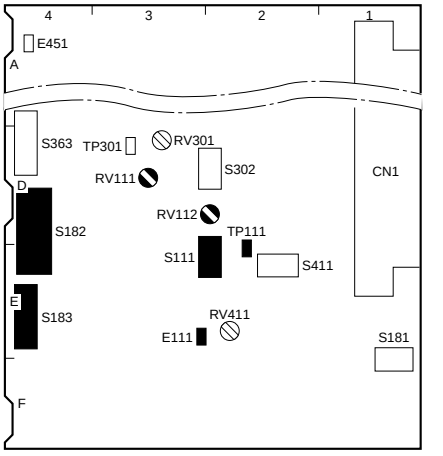
3. Equipment: Oscilloscope or audio level meter
   Test point: TP111/AU-237 board
   GND: E111/AU-237 board
   Adj. point: ⊘RV112 (RTS 1 CANCEL) /AU-237 board
   Specification: C = Minimize

CA-570 (UC) : S/N 18001 and Higher
CA-570P (CE) : S/N 48001 and Higher



AU-237 BOARD (A SIDE)

CA-570 (UC) : S/N 10001 through 18000
CA-570P (CE) : S/N 40001 through 48000



AU-237 BOARD (A SIDE)

3-6-3. INCOM 2 Side Tone Adjustment

Preparation

- Extends AU-237 board (CA-570) with a extension board.
- Extends AT-88 board (CCU-700A) with a extension board.
- MIC 2 (ON/OFF) /BVP rear panel → ON
- S2081 (0 dB/−20 dB) /AT-88 board (CCU-700A) → 0 dB
- Inputs the following signal from audio generator.
  Input points: pin A71 (X) , pin B71 (Y) , pin C71 (GND) /CCU-700A extension board
  Signal: sine wave
  Frequency: 1 kHz
- S362 (INCOM 2) /AU-237 board → CM
- S363 (MIC2 GAIN) /AU-237 board → 0

Adjustment procedure

1. Equipment: Oscilloscope or audio level meter
   Test point: Pin 42/extension board (AU-237)
   GND: Pin 40/extension board (AU-237)
   Adj. point: ◓Output level adjustment control/audio generator
   Specification: A = 220 mV p-p (−20 dBu)

2. Equipment: Oscilloscope or audio level meter
   Test point: Pin 61/extension board (AU-237)
   GND: Pin 62/extension board (AU-237)
   Adj. point: ◓INCOM 2 level adjustment control/BVP rear panel
   Specification: B = 2.2 V p-p (0 dBu)

3. Disconnect the audio generator.

4. Inputs the following signal from audio generator to pin 21 (X) and pin 22 (GND) /extension board (AU-237).
   Signal: sine wave
   Frequency: 1 kHz
   Output level: 220 mV p-p

5. Equipment: Oscilloscope or audio level meter
   Test point: Pin 61/extension board (AU-237)
   GND: Pin 62/extension board (AU-237)
   Adj. point: ◓RV301 (SIDE 2) /AU-237 board
   Specification: C = 220 ±10 mV p-p

3-6-4. RTS 2 CANCEL Adjustment

Preparation

- Extends AU-237 board (CA-570) with a extension board.
- Extends AT-88 board (CCU-700A) with a extension board.
- S302 (RTS 2 RTS/NORM) /AU-237 board → RTS
- S2081 (0 dB/−20 dB) /AT-88 board (CCU-700A) → 0 dB
- Inputs the following signal from audio generator.
  Input points: pin A71 (X) , pin B71 (Y) , pin C71 (GND) /CCU-700A extension board
  Signal: sine wave
  Frequency: 1 kHz

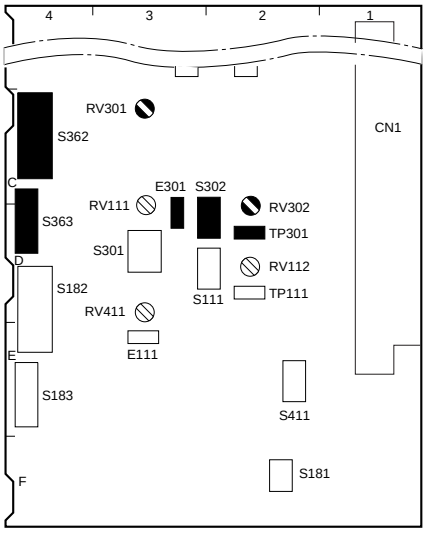
Adjustment procedure

1. Equipment: Oscilloscope or audio level meter
   Test point: Pin 42/extension board (AU-237)
   GND: Pin 40/extension board (AU-237)
   Adj. point: ⊘Output level adjustment control/audio generator
   Specification: A = 220 mV p-p (−20 dBu)

2. Equipment: Oscilloscope or audio level meter
   Test point: Pin 61/extension board (AU-237)
   GND: Pin 62/extension board (AU-237)
   Adj. point: ⊘INCOM 1 level adjustment control/BVP rear panel
   Specification: B = 2.2 V p-p (0 dBu)

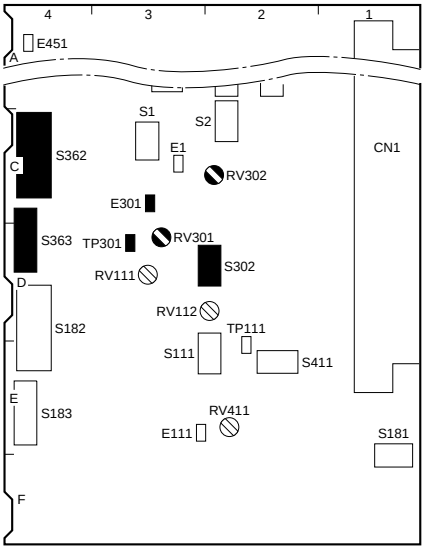
3. Equipment: Oscilloscope or audio level meter
   Test point: TP301/AU-237 board
   GND: E301/AU-237 board
   Adj. point: ⊘RV302 (RTS 2 CANCEL) /AU-237 board
   Specification: C = Minimize

CA-570 (UC) : S/N 18001 and Higher
CA-570P (CE) : S/N 48001 and Higher



AU-237 BOARD (A SIDE)

CA-570 (UC) : S/N 10001 through 18000
CA-570P (CE) : S/N 40001 through 48000



AU-237 BOARD (A SIDE)

3-6-5. TRACKER (T) Level Adjustment

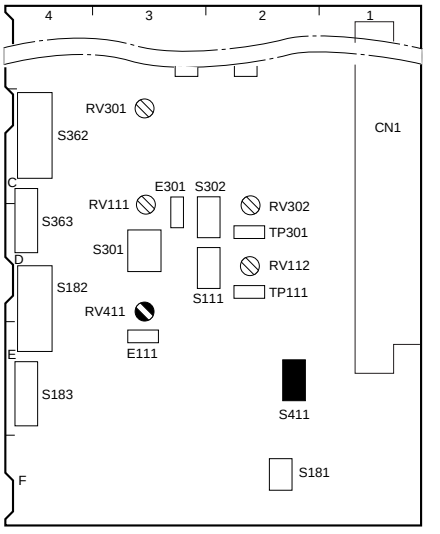
Preparation

- S411 (TRACKER (T) 0/-20) /AU-237 board → 0
- Inputs the following signal from audio generator to pin 29 (X) , pin 28 (Y) , and pin 30 (GND).
  Signal: sine wave
  Frequency: 1 kHz
  Output level: 2.2 V p-p (0 dBu)

Adjustment procedure

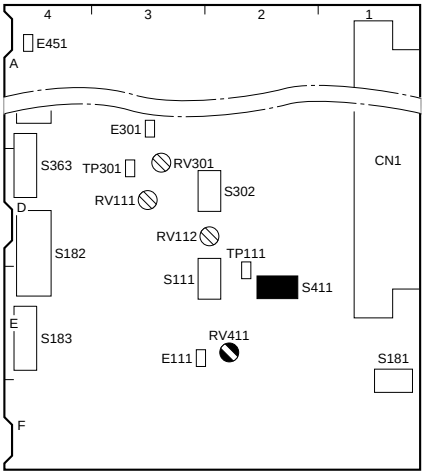
1. Equipment: Oscilloscope or audio level meter
   Test point: Pin 12/extension board (AU-237)
   GND: Pin 10/extension board (AU-237)
   Adj. point: ◓RV411 (TRACKER (T) LEVEL) /AU-237 board
   Specification: A = 220 ±10 mV p-p (−20.0 ±0.4 dBu)

CA-570 (UC) : S/N 18001 and Higher
CA-570P (CE) : S/N 48001 and Higher



AU-237 BOARD (A SIDE)

CA-570 (UC) : S/N 10001 through 18000
CA-570P (CE) : S/N 40001 through 48000



AU-237 BOARD (A SIDE)

CA-570 (J, UC)
CA-570P (CE) J, E
3-194-675-04

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