DCR-HC94E/HC96/HC96E

RMT-831

Ver 1.0 2006.01

Revision History

SECTION 6
ADJUSTMENTS

ADJ

Link

- Precaution on Replacing the VC-419 Board

SONY

DCR-HC94E/HC96/HC96E_ADJ

9-876-932-51

Sony EMCS Co.

2006A0500-1

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* The camera color reproduction frame is shown on page 6-76.

SECTION 6
ADJUSTMENTS

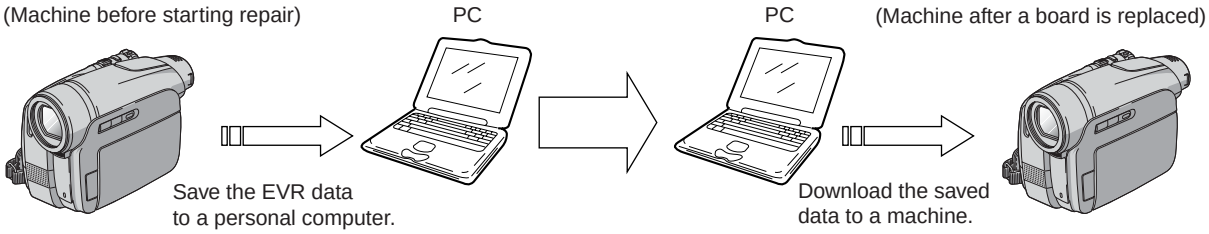
1. Before starting adjustments

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

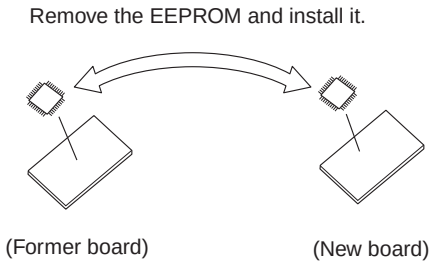
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



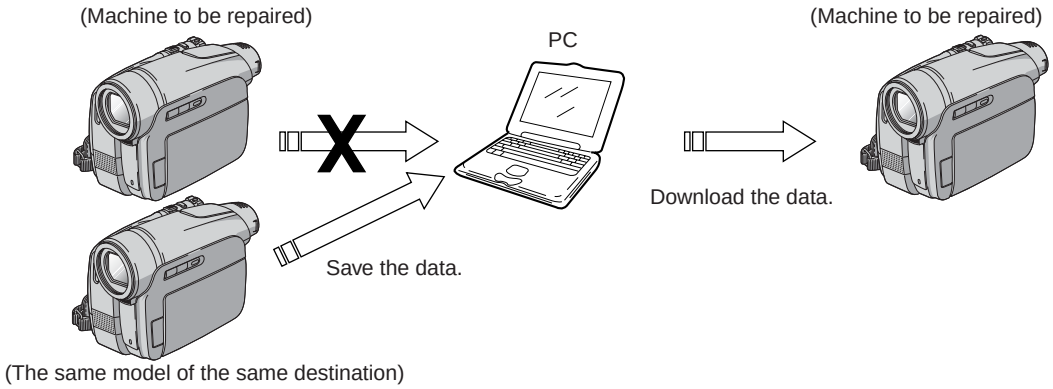
Procedure 2

Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.



Procedure 3

When the data cannot be saved due to defective EEPROM, or when the EEPROM cannot be removed or installed, save the data from the same model of the same destination, and download it.



After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 6-3 for the items to be checked)

Precaution on Replacing the VC-419 Board

- Perform “Exif Model Data Check” mentioned below, and also the adjustment items necessary after VC Board replacement.

Exif Model Data Check

When you replace to the repairing board, the written data of repairing board also might be changed to original setting. When the data has changed because of board replaceing etc, check the data setting (Exif Model Data) is right. If not, rewrite to the right value.

Exif Model Data

Page	Address	Data		
		DCR-HC94E	DCR-HC96	DCR-HC96E
C	D2	39	39	39
C	D3	34	36	36
C	D4	45	00	45

Writing Method:

1) Select page: 0, address: 01 and set data: 01.
2) Select page: C, address: D2 to D4, and set the Exif Model Data.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE (Write) button each time to set the data.

3) Select page: 0, address: 01, and set data: 00.

1-1. Adjusting items when replacing main parts and boards

• Adjusting items when replacing main parts

When replacing main parts, adjust the items indicated by ● in the following table.

Note 1: When replacing the drum assy or the mechanism deck, reset the data of page: 7, address: A8 to AB to "00". (Refer to "Record of Use check" of "6-4. SERVICE MODE")

Adjustment Section	Adjustment	Replaced part: Block replacement: Lens device	LCD block LCD901 (LCD panel, Touch panel)	EVF block LCD902 (LCD panel)	Flash unit	Mechanism deck (Note 1)	Mechanism deck M901 (Drum assembly) (Note 1)	Mechanism deck MD block	Mounted part replacement: CD-634 board IC3601 (CCD imager)	CD-634 board IC3602, X3601 (Timing generator)	CD-634 board IC3603 (S/H)	LB-124 board D302 (Back light (EVF))	PD-284 board D9602, 9603, 9605 (Back lihgt (LCD))	PD-284 board IC9601 (LCD drive)	PD-284 board Q9601, 9602 (PANEL I/F)	SI-054 board SE401, 402 (PITCH, YAW sensor)	VC-419 board IC3501 (A/D converter)	VC-419 board IC4001 (Video/Audio DSP)	VC-419 board IC4201 (DV signal process)	VC-419 board IC4301 (REC/PB AMP)	VC-419 board IC4401 (Video audio IN/OUT)	VC-419 board IC4701 (Aspect ratio converter)	VC-419 board IC7001 (EVF drive)
Initialization of 8, A, B, C, D, E, F, 14, 18, 19, 1A, 1B, 1C, 1E, 1F page data	Initialization of A, B, D, 1A, 1B page data																						
	Initialization of 8, C, 18, 1C page data																						
	Initialization of E, F, 14, 19, 1E, 1F page data																						
Camera	67.5MHz/54MHz origin oscillation check									●													
	HALL adj.	●																					
	MR adj.	●																					
	CCD output 2ch matching adj.								●		●						●						
	Flange back and zoom lever center adj.	●							●														
	Mixed color compensation adj.								●		●						●						
	F No.& ND light quality standard data input	●							●														
	Auto white balance standard data input								●		●						●						
	LV standard data input								●		●						●						
	Auto white balance adj.								●		●						●						
	Color reproduction adj.								●		●						●						
	MAX GAIN adj.								●		●						●						
	Mechanical shutter adj.	●																					
	Strobe light level adj.				●																		
	Strobe white balance adj.				●																		
	Steadyshot check															●							
EVF	EVF automatic adj.																	●					●
	White balance adj.			●								●											●
LCD	LCD automatic adj.													●				●				●	
	V-COM adj.		●											●									
	Transmissive mode white balance adj.		●										●	●									
	Touch panel adj.		●												●								
Mechanism	Tape path adj.					●	●	●															
System control	Node uniqe ID No. input																						
Servo, RF	CAP FG duty adj.					●		●															
	Switching position adj.					●	●	●															
	Error rate check					●	●	●												●	●		
Video	IC4701 LINE OUT Y level adj.																					●	●
	IC4701 LINE OUT chroma level adj.																					●	●
	S VIDEO OUT Y level adj.																	●				●	
	S VIDEO OUT chroma level adj.																	●				●	
	IC4701 automatic adj.																	●				●	●

Table 6-1-1 (1)

• Adjusting items when replacing a board or EEPROM

When replacing a board or EEPROM, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced part						
		CD-634 board (COMPLETE)	LB-124 board (COMPLETE)	PD-284 board (COMPLETE)	SI-054 board (COMPLETE)	VC-419 board (COMPLETE) (Note 4)	VC-419 board IC5302 (EEP ROM)	Supporting RadarW
Initialization of 8, A, B, C, D, E, F, 14, 18, 19, 1A, 1B, 1C, 1E, 1F page data	Initialization of A, B, D, 1A, 1B page data					●		
	Initialization of 8, C, 18, 1C page data					●	●	
	Initialization of E, F, 14, 19, 1E, 1F page data					●	●	
Camera	67.5MHz/54MHz origin oscillation check	●				●	●	
	HALL adj.					●	●	●
	MR adj.					●	●	●
	CCD output 2ch matching adj.	●				●	●	●
	Flange back and zoom lever center adj.	●				●	●	●
	Mixed color compensation adj.	●				●	●	●
	F No.& ND light quality standard data input	●				●	●	●
	Auto white balance standard data input	●				●	●	●
	LV standard data input	●				●	●	●
	Auto white balance adj.	●				●	●	●
	Color reproduction adj.	●				●	●	●
	MAX GAIN adj.	●				●	●	●
	Mechanical shutter adj.					●	●	●
	Strobe light level adj.				●	●	●	●
	Strobe white balance adj.				●	●	●	●
	Steadyshot check				●	●	●	●
EVF	EVF automatic adj.					●	●	●
	White balance adj.		●			●	●	
LCD	LCD automatic adj.			●		●	●	●
	V-COM adj.			●		●	●	
	Transmissive mode white balance adj.			●		●	●	
	Touch panel adj.					●		
Mechanism	Tape path adj.							
System control	Node unige ID No. input					●	●	
Servo, RF	CAP FG duty adj.					●	●	●
	Switching position adj.					●	●	●
	Error rate check					●	●	●
Video	IC4701 LINE OUT Y level adj.					●	●	
	IC4701 LINE OUT chroma level adj.					●	●	
	S VIDEO OUT Y level adj.					●	●	
	S VIDEO OUT chroma level adj.					●	●	
	IC4701 automatic sdj.					●	●	

Table 6-1-1 (2)

Note 2: When the repair is finished, confirm the following items.

1. Shoot the all black subject, and confirm that a vertical line is not displayed in the center of the screen, and that there is no difference in left-right brightness level of the screen.
2. Shoot a subject of low light, and confirm that a vertical line is not displayed in the center of the screen, and that there is no difference in left-right brightness level of the screen.
3. Shoot a subject of normal light, and confirm that a vertical line is not displayed in the center of the screen, and that there is no difference in left-right brightness level of the screen.

   When the above symptom occurs, perform the whole process of "CCD Output 2ch Matching Adjustment".

Note 3: IC5202 (Flash memory) on the VC-419 board cannot be replaced.

Note 4: When replacing the VC-419 board, perform "Exif Model Data check" after replacement.

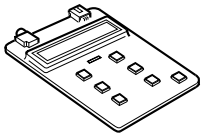
1-2. List of service tools

- Oscilloscope
- Digital voltmeter
- Audio generator
- Color monitor
- Frequency counter
- Audio attenuator
- Vectorscope
- Audio level meter
- Audio distortion meter

J-1

Adjustment remote commander
(RM-95)
J-6082-053-B

J-2

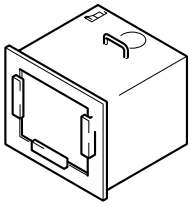


Adjustment remote commander
(NEW LANC JIG)
J-6082-565-A

J-3

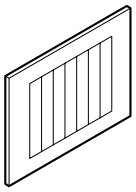
LANC cable
J-6082-442-A

J-4



Pattern box PTB-450
J-6082-200-A
or
Small pattern box
PTB-1450
J-6082-557-A

J-5

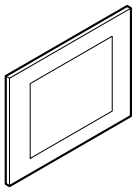


Color bar chart

For PTB-450:
J-6020-250-A

For PTB-1450:
J-6082-559-A

J-6

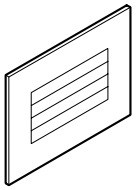


Clear chart

For PTB-450:
J-6080-621-A

For PTB-1450:
J-6082-560-A

J-7

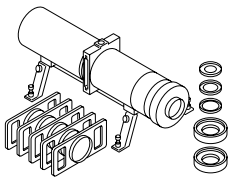


Mixed color compensation chart

For PTB-450:
J-6082-558-A

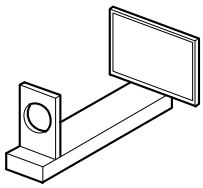
For PTB-1450:
J-6082-561-A

J-8



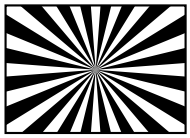
Minipattern box
J-6082-353-B

J-9



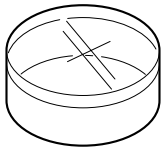
Flange back adjustment jig
J-6082-563-A

J-10



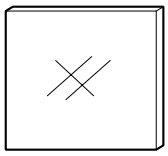
Siemens star chart
J-6080-875-A

J-11



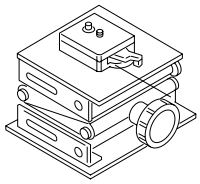
Filter for color temperature correction
(C14)
J-6080-058-A

J-12



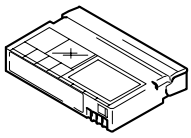
ND filter 1.0
J-6080-808-A
ND filter 0.4
J-6080-806-A
ND filter 0.1
J-6080-807-A

J-13



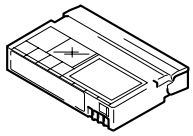
Camera table
J-6082-384-A

J-14



Tracking standard
(XH2-1)
8-967-997-01

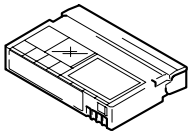
J-15



SW/OL standard
(XH2-3)
8-967-997-11

J-16

Audio operation check

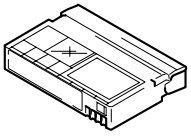


for NTSC (XH5-3)
8-967-997-51

for PAL (XH5-3P)
8-967-997-55

J-17

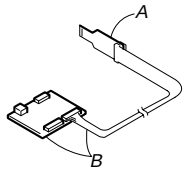
System operation check



for NTSC (XH5-5)
8-967-997-61

for PAL (XH5-5P)
8-967-997-66

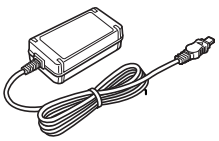
J-18



A: CPC-15
J-6082-564-A

B: I/F unit for LANC control
J-6082-521-A

J-19



AC power adaptor
(AC-L25A/L25B)
1-479-288-13

Fig. 6-1-1

6-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENTS (CAMERA SECTION)

1-1-1. Preparations

Note: Before perform the adjustment, check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set data “00”.

1) Connect the equipment for adjustments according to Fig. 6-1-3.

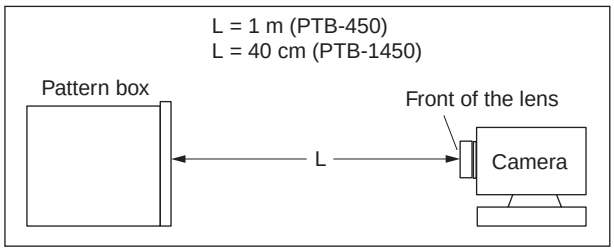


Fig. 6-1-2

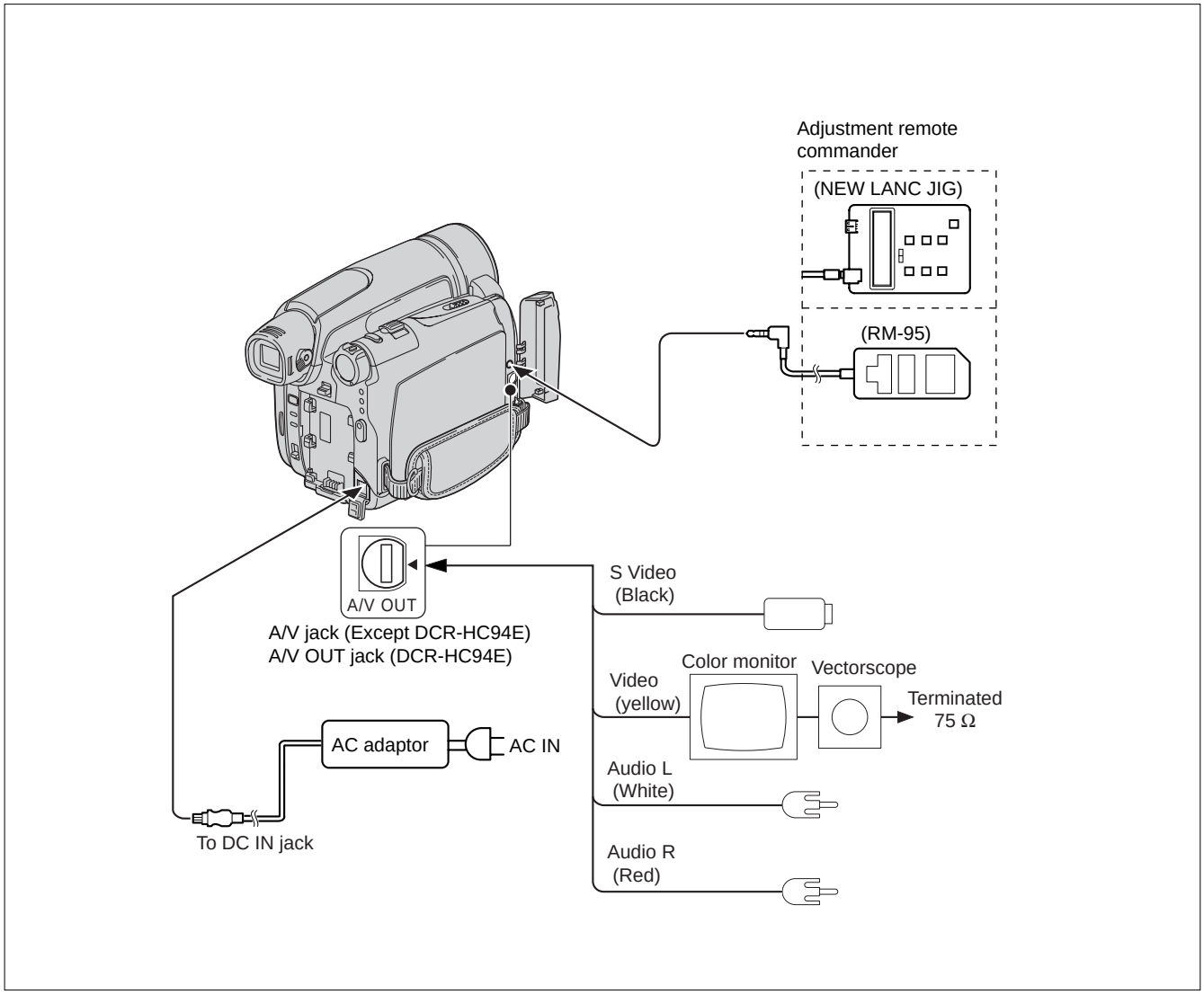


Fig. 6-1-3

1-1-2. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. POWER switch (SS17000 block) ..... CAMERA-TAPE
2. NIGHTSHOT switch (Lens block) ..... OFF
3. WIDE SELECT (Panel block) 4: 3
4. BACK LIGHT (CF17000 block) ..... OFF
5. PROGRAM AE (MENU setting) ..... AUTO
6. EXPOSURE (MENU setting) ..... AUTO
7. WHITE BAL. (MENU setting) ..... AUTO
8. AE SHIFT 0
9. FOCUS (MENU setting) ..... MANUAL
10. TELE MACRO ..... OFF
11. COLOR SLOW S (MENU setting) ..... OFF
12. ZEBRA ..... OFF
13. DIGITAL ZOOM (MENU setting) ..... OFF
14. STEADY SHOT (MENU setting) ..... OFF
15. D. EFFECT (MENU setting) ..... OFF
16. PICT. EFFECT (MENU setting) ..... OFF
17. DEMO MODE (MENU setting) ..... OFF

2. Order of Adjustments

Basically carry out adjustments in the order given.

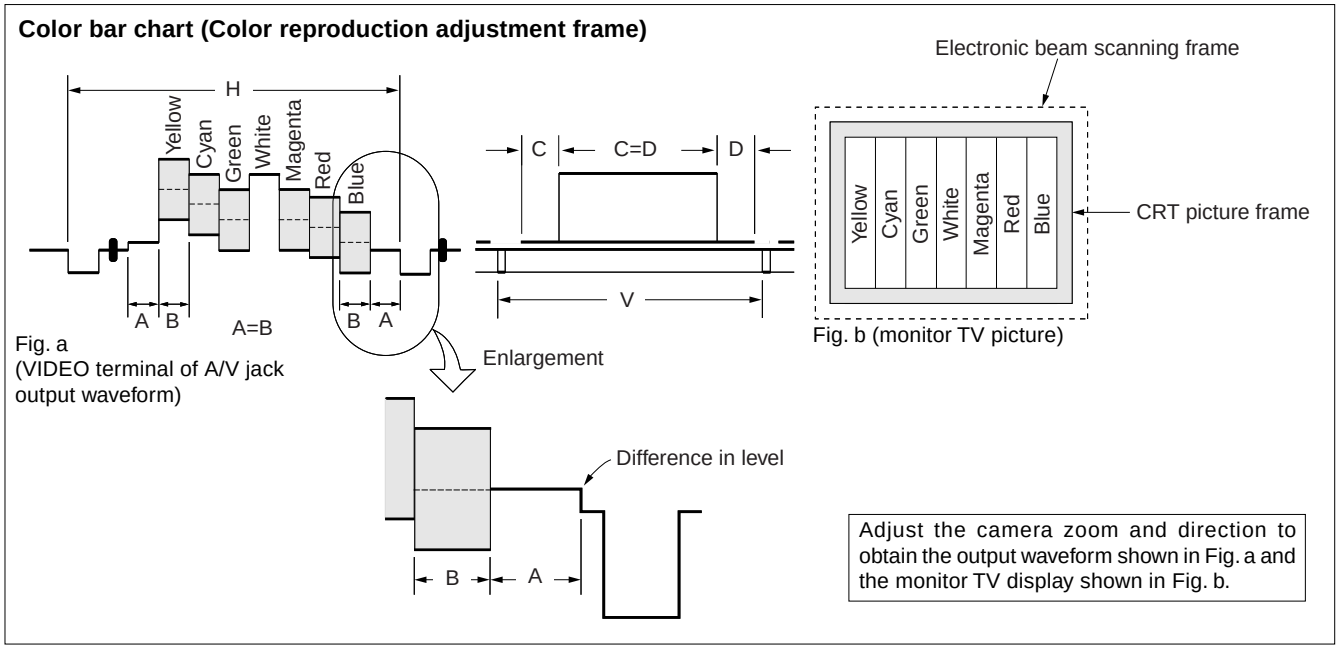


Fig. 6-1-4

3. Subjects

1) Color bar chart (Color reproduction adjustment frame)
   When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 6-1-4. (Color reproduction adjustment frame)
2) Mixed color compensation chart (Color reproduction adjustment frame)
   Remove the color bar chart from the pattern box and insert a mixed color compensation chart in its place. (Do not perform zoom operations during this time)
3) Clear chart (AWB adjustment frame)
   Shoot the color bar chart. Then adjust the zoom to TELE side from WIDE side, and stop it when the black frame of the chart disappears. Remove the color bar chart from pattern box and insert a clear chart in its place.
4) Chart for flange back adjustment
   Join together a piece of white A0 size paper (1189mm × 841 mm) and a piece of black paper to make the chart shown in Fig. 6-1-5.

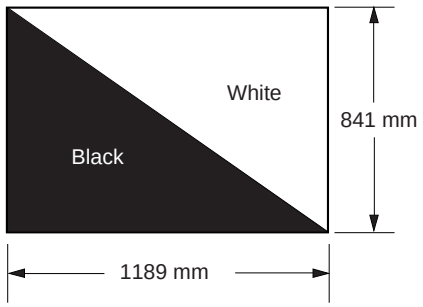


Fig. 6-1-5

Note: Use a non-reflecting and non-glazing vellum paper. The size must be A0 or larger and the joint between the white and black paper must not have any undulations.

4. Preparing the Flash Adjustment Box

A dark room is required to provide an accurate flash adjustment. If it is not available, prepare the flash adjustment box as given below;

1) Provide woody board A, B and C of 15 mm thickness.

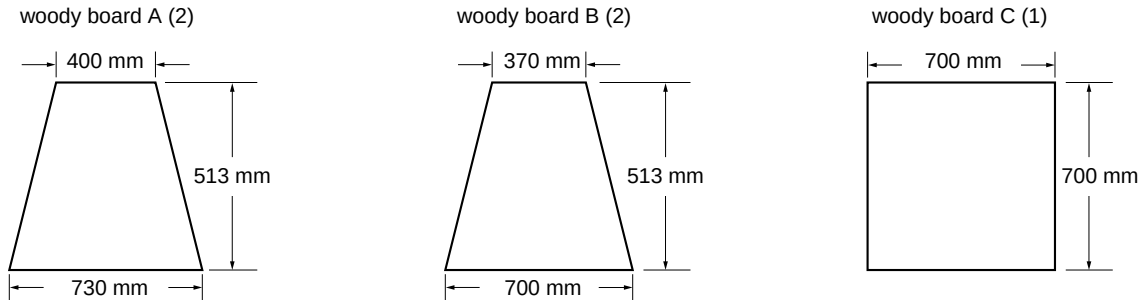


Fig. 6-1-6

2) Apply black mat paint to one side of woody board A and B.
3) Attach background paper (J-2501-130-A) to woody board C.
4) Assemble so that the black sides and the background paper side of woody board A, B and C are internal. (Fig. 6-1-7)

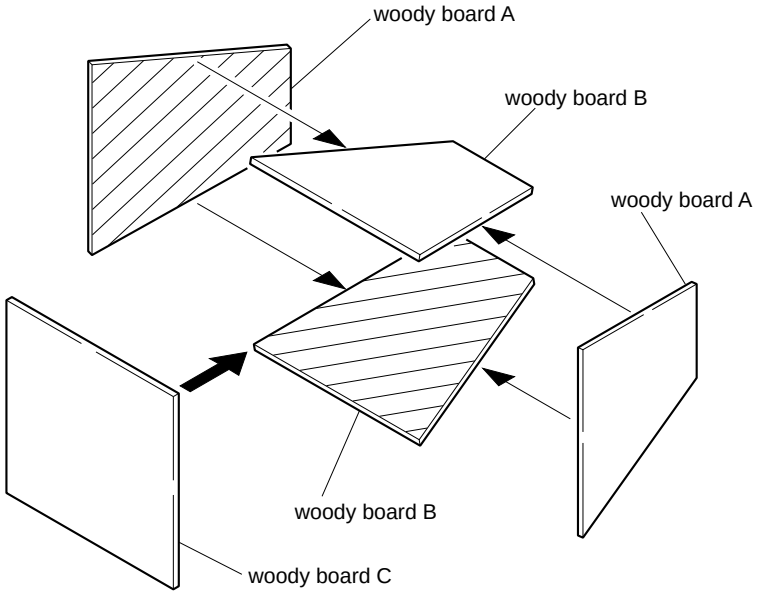


Fig. 6-1-7

1-2. INITIALIZATION OF 8, A, B, C, D, E, F, 14, 18, 19, 1A, 1B, 1C, 1E, 1F PAGE DATA

Note: If reading/writing data on pages 14, 18, 19, 1A, 1B, 1C, 1E, 1F, set data: 01 to page: 0, address: 10, and then select pages: 4, 8, 9, A, B, C, E, F.
By this data setting, the pages 14, 18, 19, 1A, 1B, 1C, 1E, 1F, can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

1-2-1. Initialization of A, B, D, 1A, 1B Page Data

Note: Check that the data of page: 0, address: 10 is "00".

1. Initializing of A, B, D, 1A, 1B Page Data

Note 1: If the A, B, D, 1A, 1B page data has been initialized, the following adjustments need to be performed again.
1) Modification of A, B, D, 1A, 1B page data
2) Touch panel adjustment

Adjustment Page	A
Adjustment Address	10 to FF
Adjustment Page	B
Adjustment Address	00 to FF
Adjustment Page	D
Adjustment Address	10 to 7F
Adjustment Page	1A
Adjustment Address	00 to FF
Adjustment Page	1B
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	7	04		Set the following data 40: NTSC model 41: PAL model
4	7	01		Set the following data 20: Initializing A page 21: Initializing B page 22: Initializing D page 23: Initializing 1A page 24: Initializing 1B page 25: Initializing A and 1A page 26: Initializing B and 1B page 28: Initializing A, B, D, 1A and 1B page
5	7	00	01	Press PAUSE (Write) button.
6	7	02		Check the data changes to "01".
7				Perform "Modification of A, B, D, 1A, 1B Page Data"

Note 2: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E

2. Modification of A, B, D, 1A, 1B Page Data

If the A, B, D, 1A, 1B page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If modification of data on pages A, B, D, set data: 00 to page: 0, address: 10, and then select pages A, B, D.
3) If modification of data on pages 1A, 1B, set data: 01 to page: 0, address: 10, and then select pages A, B.
After the modification of data finished, return the data on page: 0, address: 10 to "00".
4) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
Note 1: If copy the data built in the different model, the camcorder may not operate.
5) When changing the data, press the PAUSE (Write) button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
6) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification A, B, D, 1A, 1B page data:

Order	Page	Address	Data	Procedure
1	0	10	00	
2	2	00	29	
3	2	01	29	Press PAUSE (Write) button.

Note 2: If following symptoms occur after completing of the "Modification A, B, D, 1A, 1B page data", check that the data of the "Fixed data-2" address of A, B, D, 1A, 1B page are same as those of same model of same destination.
1) The power is shut off so that unit cannot operate.

3. A Page table

Note 1: Check that the data of page: 0, address: 10 is“00”.

Note 2: Fixed data-1: Initialized data. (Refer to“1. Initializing the A, B, D, 1A, 1B Page Data”)
Fixed data-2: Modified data. (Refer to“2. Modification of A, B, D, 1A, 1B Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10	00	00	Test mode
11 to 16	Fixed data-1 (Initialized data)		
17	Fixed data-2		
18			
19	Fixed data-1 (Initialized data)		
1A	Fixed data-2		
1B to 2E	Fixed data-1 (Initialized data)		
2F	Fixed data-2		
30	Fixed data-1 (Initialized data)		
31	Fixed data-2		
32			
33 to 4F	Fixed data-1 (Initialized data)		
50	Fixed data-2		
51 to 5F	Fixed data-1 (Initialized data)		
60	Fixed data-2		
61			
62			
63			
64 to 8F	Fixed data-1 (Initialized data)		
90	E6	E8	Touch panel adj.
91	10	0E	
92	D5	CB	
93	23	31	
94 to CF	Fixed data-1 (Initialized data)		
D0	Fixed data-2		
D1			
D2			
D3, D4	Fixed data-1 (Initialized data)		
D5	Fixed data-2		
D6	Fixed data-1 (Initialized data)		
D7	Fixed data-2		
D8	Fixed data-1 (Initialized data)		
D9	Fixed data-2		
DA to EF	Fixed data-1 (Initialized data)		
F0	Fixed data-2		
F1			
F2			
F3 to FF	Fixed data-1 (Initialized data)		

4. B Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the A, B, D, 1A, 1B Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of A, B, D, 1A, 1B Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

5. D Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the A, B, D, 1A, 1B Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of A, B, D, 1A, 1B Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10 to 13	Fixed data-1 (Initialized data)		
14	Fixed data-2		
15	Fixed data-1 (Initialized data)		
16	Fixed data-2		
17 to 27	Fixed data-1 (Initialized data)		
28	Fixed data-2		
29			
2A			
2B			
2C			
2D			
2E			
2F			
30			
31 to 33	Fixed data-1 (Initialized data)		
34	Fixed data-2		
35 to 48	Fixed data-1 (Initialized data)		
49	Fixed data-2		
4A, 4B	Fixed data-1 (Initialized data)		
4C	Fixed data-2		
4D	Fixed data-1 (Initialized data)		
4E	Fixed data-2		
4F to 56	Fixed data-1 (Initialized data)		
57	Fixed data-2		
58 to 79	Fixed data-1 (Initialized data)		
7A	Fixed data-2		
7B to 7F	Fixed data-1 (Initialized data)		

6. 1A Page table

Note 1: If reading/writing data on pages 1A, set data: 01 to page: 0, address: 10, and then select pages: A. By this data setting, the pages 1A can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the A, B, D, 1A, 1B Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of A, B, D, 1A, 1B Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

7. 1B Page table

Note 1: If reading/writing data on pages 1B, set data: 01 to page: 0, address: 10, and then select pages: B. By this data setting, the pages 1B can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the A, B, D, 1A, 1B Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of A, B, D, 1A, 1B Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to FA	Fixed data-1 (Initialized data)		
FB	Fixed data-2		
FC	Fixed data-1 (Initialized data)		
FD	Fixed data-2		
FE, FF	Fixed data-1 (Initialized data)		

1-2-2. Initialization of 8, C, 18, 1C Page Data

1. Initializing of 8, C, 18, 1C Page Data

Note1 : If "Initialization of Pages 8, C, 18, 1C" is executed, all data on pages 8, C, 18, 1C are initialized. (Only an individual page cannot be initialized)

Note2 : If the 8, C, 18, 1C page data has been initialized, the following adjustments need to be performed again.

1) Modification of 8, C, 18, 1C page data
2) Electronic viewfinder system adjustments
3) LCD system adjustments
4) Node unique ID No. input
5) Servo, RF system adjustments
6) Video system adjustments
7) Exif model data check

Adjustment Page	8
Adjustment Address	00 to FF
Adjustment Page	C
Adjustment Address	10 to FF
Adjustment Page	18
Adjustment Address	00 to FF
Adjustment Page	1C
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	3	81		Check that the data is "00"
4	3	80	0C	Press PAUSE (Write) button.
5	3	80		Check the data changes to "1C".
6				Perform "Modification of 8, C, 18, 1C Page Data"

2. Modification of 8, C, 18, 1C Page Data

If the 8, C, 18, 1C page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If modification of data on pages 8, C, set data: 00 to page: 0, address: 10, and then select pages 8, C.
3) If modification of data on pages 18, 1C, set data: 01 to page: 0, address: 10, and then select pages 8, C.
   After the modification of data finished, return the data on page: 0, address: 10 to "00".
4) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
5) When changing the data, press the PAUSE (Write) button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
6) If all areas were initialized, check that the data at the addresses for adjustment are initial values (adjustment initial values) listed in the table.
   If different, change them to the adjustment initial values.

Processing after Completing Modification 8, C, 18, 1C page data:

Order	Page	Address	Data	Procedure
1	0	10	00	
2	2	00	29	
3	2	01	29	Press PAUSE (Write) button.

3. 8 Page table

Note 1: Check that the data of page: 0, address: 10 is“00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, C, 18, 1C Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, C, 18, 1C Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to 29			Fixed data-1 (Initialized data)
2A			Fixed data-2
2B to 3F			Fixed data-1 (Initialized data)
40			Fixed data-2
41			
42, 43			Fixed data-1 (Initialized data)
44			Fixed data-2
45 to 79			Fixed data-1 (Initialized data)
7A			Fixed data-2
7B to 81			Fixed data-1 (Initialized data)
82			Fixed data-2
83 to 8D			Fixed data-1 (Initialized data)
8E			Fixed data-2
8F to BE			Fixed data-1 (Initialized data)
BF			Fixed data-2
C0 to C3			Fixed data-1 (Initialized data)
C4			Fixed data-2
C5			
C6			
C7			Fixed data-1 (Initialized data)
C8			Fixed data-2
C9			Fixed data-1 (Initialized data)
CA			Fixed data-2
CB			Fixed data-1 (Initialized data)
CC			Fixed data-2
CD to D6			Fixed data-1 (Initialized data)
D7			Fixed data-2
D8 to E2			Fixed data-1 (Initialized data)
E3			Fixed data-2
E4			
E5, E6			Fixed data-1 (Initialized data)
E7			Fixed data-2
E8 to F1			Fixed data-1 (Initialized data)
F2			Fixed data-2
F3 to F9			Fixed data-1 (Initialized data)
FA			Fixed data-2
FB			
FC to FF			Fixed data-1 (Initialized data)

4. C Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, C, 18, 1C Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, C, 18, 1C Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10	EE	EE	Switching position adj.
11	00	00	
12	00	00	
13	00	00	
14, 15			Fixed data-1 (Initialized data)
16	20	20	CAP FG duty adj.
17 to 24			Fixed data-1 (Initialized data)
25	53	53	S VIDEO OUT Y level adj.
26	67	67	S VIDEO OUT chroma level adj.
27	49	49	
28 to 3B			Fixed data-1 (Initialized data)
3C			Fixed data-2
3D, 3E			Fixed data-1 (Initialized data)
3F	6C	6C	EVF automatic adj. (VCO adj.)
40	90	90	
41 to 44			Fixed data-1 (Initialized data)
45	7E	7E	White balance adj. (EVF)
46	7B	7B	
47	29	29	EVF automatic adj. (Contrast adj.)
48 to 4A			Fixed data-1 (Initialized data)
4B			Fixed data-2
4C			Fixed data-1 (Initialized data)
4D			Fixed data-2
4E			
4F			Fixed data-1 (Initialized data)
50	80	80	LCD automatic adj. (VCO adj.)
51	97	97	
52	C0	C0	V-COM adj. (LCD)
53			Fixed data-2
54			Fixed data-1 (Initialized data)
55			Fixed data-2
56	7D	7D	Transmissive mode white balans
57	73	73	adj. (LCD)
58	80	80	LCD automatic adj. (Contrast adj.)
59			Fixed data-2
5A, 5B			Fixed data-1 (Initialized data)
5C			Fixed data-2
5D			
5E to 65			Fixed data-1 (Initialized data)
66			Fixed data-2
67			
68 to 74			Fixed data-1 (Initialized data)
75			Fixed data-2

C Page table

Address	Initial value		Remark
	NTSC	PAL	
76 to 78			Fixed data-1 (Initialized data)
79			Fixed data-2
7A			
7B			
7C			
7D to 7F			Fixed data-1 (Initialized data)
80	91	91	IC4701 LINE OUT Y level adj.
81	BA	BA	IC4701 LINE OUT chroma level adj.
82	85	85	
83	00	00	IC4701 Automatic adj.
84	00	00	
85	00	00	
86	00	00	
87	33	33	
88	D2	D2	
89	A8	A8	
8A	23	23	
8B to 90			Fixed data-1 (Initialized data)
91			Fixed data-2
92			
93			
94			
95			
96			
97, 98			Fixed data-1 (Initialized data)
99	80	80	IC4701 Automatic adj.
9A to A0			Fixed data-1 (Initialized data)
A1	20	20	IC4701 Automatic adj.
A2	20	20	
A3	20	20	
A4 to A8			Fixed data-1 (Initialized data)
A9			Fixed data-2
AA			
AB			
AC			
AD to B1			Fixed data-1 (Initialized data)
B2			Fixed data-2
B3			
B4			
B5			
B6			
B7			
B8			
B9			
BA			
BB to CB			Fixed data-1 (Initialized data)

Address	Initial value		Remark
	NTSC	PAL	
CC			Fixed data-2
CD			
CE			
CF			
D0			
D1			
D2			
D3			
D4			
D5 to DD			Fixed data-1 (Initialized data)
DE			Fixed data-2
DF			
E0	08	08	Node unique ID No. Input
E1	00	00	
E2	46	46	
E3	01	01	
E4	02	02	
E5	00	00	
E6	00	00	
E7	00	00	
E8 to F3			Fixed data-1 (Initialized data)
F4	00	00	Emergency memory (Mechanism section)
F5	00	00	
F6	00	00	
F7	00	00	
F8	00	00	
F9	00	00	
FA	00	00	
FB	00	00	
FC	00	00	
FD	00	00	
FE	00	00	
FF	00	00	

5. 18 Page table

Note 1: If reading/writing data on pages 18, set data: 01 to page: 0, address: 10, and then select pages: 8. By this data setting, the pages 18 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to"00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, C, 18, 1C Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, C, 18, 1C Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00			Fixed data-1 (Initialized data)
01			Fixed data-2
02 to D7			Fixed data-1 (Initialized data)
D8			Fixed data-2
D9 to DC			Fixed data-1 (Initialized data)
DD			Fixed data-2
DE			Fixed data-1 (Initialized data)
DF			Fixed data-2
E0			
E1 to E3			Fixed data-1 (Initialized data)
E4			Fixed data-2
E5 to F1			Fixed data-1 (Initialized data)
F2			Fixed data-2
F3 to F6			Fixed data-1 (Initialized data)
F7			Fixed data-2
F8 to FF			Fixed data-1 (Initialized data)

6. 1C Page table

Note 1: If reading/writing data on pages 1C, set data: 01 to page: 0, address: 10, and then select pages: C. By this data setting, the pages 1C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to"00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, C, 18, 1C Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, C, 18, 1C Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 77			Fixed data-1 (Initialized data)
78			Fixed data-2
79 to B2			Fixed data-1 (Initialized data)
B3	00	00	SD error rate check (LP)
B4	00	00	
B5	00	00	
B6	00	00	
B7	00	00	
B8	80	80	
B9	00	00	
BA	00	00	
BB	00	00	
BC	00	00	
BD	00	00	
BE	00	00	
BF	00	00	
C0	00	00	
C1	00	00	
C2	00	00	
C3	80	80	
C4	00	00	
C5	00	00	
C6	00	00	
C7	00	00	
C8	00	00	
C9 to D4			Fixed data-1 (Initialized data)
D5			Fixed data-2
D6 to EB			Fixed data-1 (Initialized data)
EC			Fixed data-2
ED to EF			Fixed data-1 (Initialized data)
F0			Fixed data-2
F1 to F3			Fixed data-1 (Initialized data)
F4			Fixed data-2
F5			Fixed data-1 (Initialized data)
F6			Fixed data-2
F7 to FF			Fixed data-1 (Initialized data)

1-2-3. Initialization of E, F, 14, 19, 1E, 1F Page Data

1. Initializing of E, F, 14, 19, 1E, 1F Page Data

Note 1: If "Initialization of Pages E, F, 14, 19, 1E, 1F" is executed, all data on pages E, F, 14, 19, 1E, 1F are initialized. (Only an individual page cannot be initialized)

Note 2: If the E, F, 14, 19, 1E, 1F page data has been initialized, the following adjustments need to be performed again.
1) Modification of E, F, 14, 19, 1E, 1F page data
2) Camera system adjustment (if all areas were initialized)

Adjustment Page	E
Adjustment Address	00 to FF
Adjustment Page	F
Adjustment Address	10 to FF
Adjustment Page	14
Adjustment Address	00 to FF
Adjustment Page	19
Adjustment Address	00 to FF
Adjustment Page	1E
Adjustment Address	00 to FF
Adjustment Page	1F
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	6	01		Set the following data, and press PAUSE button. 2D: NTSC model 2F: PAL model
4	6	03	03	Press PAUSE (Write) button.
5	6	02		Check the data changes to "01".
6	6	01	00	Press PAUSE (Write) button.
7				Perform "Modification of E, F, 14, 19, 1E, 1F Page Data"

Note 3: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E

2. Modification of E, F, 14, 19, 1E, 1F Page Data

If the E, F, 14, 19, 1E, 1F page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If modification of data on pages E, F, set data: 00 to page: 0, address: 10, and then select pages E, F.
3) If modification of data on pages 14, 19, 1E, 1F, set data: 01 to page: 0, address: 10, and then select pages 4, 9, E, F.
   After the modification of data finished, return the data on page: 0, address: 10 to "00".
4) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
5) When changing the data, press the PAUSE (Write) button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
6) If all areas were initialized, check that the data at the addresses for adjustment are initial values (adjustment initial values) listed in the table.
   If different, change them to the adjustment initial values.

Processing after Completing Modification E, F, 14, 19, 1E, 1F page data:

Order	Page	Address	Data	Procedure
1	0	10	00	
2	2	00	29	
3	2	01	29	Press PAUSE (Write) button.

3. E Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to“1. Initializing the E, F, 14, 19, 1E, 1F Page Data”)
Fixed data-2: Modified data. (Refer to“2. Modification of E, F, 14, 19, 1E, 1F Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to 3B			Fixed data-1 (Initialized data)
3C			Fixed data-2
3D			
3E			
3F			
40 to 5B			Fixed data-1 (Initialized data)
5C			Fixed data-2
5D			
5E			
5F			
60			
61			
62			
63			
64 to E0			Fixed data-1 (Initialized data)
E1			Fixed data-2
E2			
E3			
E4			
E5 to FF			Fixed data-1 (Initialized data)

4. F Page table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to“1. Initializing the E, F, 14, 19, 1E, 1F Page Data”)
Fixed data-2: Modified data. (Refer to“2. Modification of E, F, 14, 19, 1E, 1F Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10			Fixed data-1 (Initialized data)
11	80	80	Flange back and zoom lever center adj.
12			Fixed data-1 (Initialized data)
13	28	28	Hall adj.
14	70	70	
15	40	40	
16	80	80	
17	19	19	
18	28	28	
19	D8	D8	
1A	28	28	
1B	D8	D8	
1C	00	00	F No. & ND light quality standard data input
1D	00	00	
1E	00	00	
1F	00	00	
20	00	00	
21	00	00	
22	00	00	
23	00	00	
24	E0	E0	
25	D0	D0	
26	C5	C5	
27	63	63	
28	00	00	
29	00	00	
2A	35	35	LV standard data input
2B	00	00	
2C	68	78	MAX GAIN adj.
2D			Fixed data-1 (Initialized data)
2E	1A	1A	Auto white balance standard data input
2F	00	00	
30	07	07	
31	00	00	
32	11	11	Auto white balance adj.
33	00	00	
34	0A	0A	
35	00	00	
36			Fixed data-1 (Initialized data)
37	41	41	Color reproduction adj.
38			Fixed data-1 (Initialized data)

F Page table

Address	Initial value		Remark
	NTSC	PAL	
39	2D	2D	Color reproduction adj.
3A to 3D			Fixed data-1 (Initialized data)
3E	2D	2D	Strobe white balance adj.
3F	64	64	
40	02	02	Color reproduction adj.
41	DE	DE	
42, 43			Fixed data-1 (Initialized data)
44	2C	2C	Auto white balance adj.
45	F8	B8	
46	5A	5A	
47	20	20	
48	11	11	Flange back and zoom lever center adj.
49	C9	C9	
4A	4C	4C	
4B	52	52	
4C	23	23	
4D	92	92	
4E	00	00	
4F	00	00	
50	00	00	
51	00	00	
52	69	69	
53	19	19	
54	19	19	
55	26	26	
56	00	00	
57	06	06	
58	00	00	MR adj./Flange back and zoom lever center adj.
59			Fixed data-1 (Initialized data)
5A	80	80	MR adj.
5B	80	80	
5C	80	80	
5D	80	80	
5E	40	40	
5F	C0	C0	
60	40	40	
61	C0	C0	
62	40	40	
63	C0	C0	
64	40	40	
65	C0	C0	
66 to 6C			Fixed data-1 (Initialized data)
6D	00	00	Flange back and zoom lever center adj.
6E to 71			Fixed data-1 (Initialized data)

Address	Initial value		Remark
	NTSC	PAL	
72			Fixed data-2
73			
74, 75			Fixed data-1 (Initialized data)
76	C6	A4	Mechanical shutter adj.
77	00	00	
78	86	70	
79	00	00	
7A	66	56	
7B	00	00	
7C	50	43	
7D	00	00	
7E	40	35	
7F	00	00	
80	50	50	
81	5D	5D	
82	58	58	
83	4E	4B	
84	3E	3A	
85	20	20	
86	80	80	
87	80	80	
88	80	80	
89	80	80	
8A	80	80	
8B	80	80	
8C	04	04	Strobe light level adj.
8D	80	80	
8E	80	80	
8F	80	80	
90	80	80	
91	20	20	
92 to AF			Fixed data-1 (Initialized data)
B0			Fixed data-2
B1 to CF			Fixed data-1 (Initialized data)
D0			Fixed data-2
D1 to F7			Fixed data-1 (Initialized data)
F8			Fixed data-2
F9			
FA			Fixed data-1 (Initialized data)
FB			Fixed data-2
FC to FF			Fixed data-1 (Initialized data)

5. 14 Page table

Note 1: If reading/writing data on pages 14, set data: 01 to page: 0, address: 10, and then select pages: 4. By this data setting, the pages 14 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to"1. Initializing the E, F, 14, 19, 1E, 1F Page Data")
Fixed data-2: Modified data. (Refer to"2. Modification of E, F, 14, 19, 1E, 1F Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 3F			Fixed data-1 (Initialized data)
40			Fixed data-2
41			
42			
43			
44 to 50			Fixed data-1 (Initialized data)
51			Fixed data-2
52			
53			
54			
55			
56			
57			
58			
59 to 97			Fixed data-1 (Initialized data)
98	00	00	Mixed color compensation adj.
99	00	00	
9A	00	00	
9B	00	00	
9C	00	00	
9D	00	00	
9E	00	00	
9F	00	00	
A0	F5	F5	Color reproduction adj.
A1	EE	EE	
A2	3A	3A	
A3	2C	2C	
A4	03	03	
A5	FE	FE	
A6	35	35	
A7	38	38	
A8	00	00	Mixed color compensation adj.
A9	00	00	
AA	00	00	
AB	00	00	
AC	00	00	
AD	00	00	
AE	00	00	
AF	00	00	
B0	00	00	
B1	00	00	Mixed color compensation adj.
B2	00	00	
B3	00	00	
B4	00	00	
B5	00	00	
B6	00	00	
B7	00	00	
B8 to CA			Fixed data-1 (Initialized data)
CB			Fixed data-2
CC			
CD			
CE to E7			Fixed data-1 (Initialized data)
E8	1A	1A	Auto white balance standard data input
E9	00	00	
EA	07	07	
EB	00	00	
EC	1A	1A	
ED	00	00	
EE	07	07	
EF	00	00	
F0	1A	1A	
F1	00	00	
F2	07	07	
F3	00	00	
F4	11	11	Auto white balance adj.
F5	00	00	
F6	0A	0A	
F7	00	00	
F8	11	11	
F9	00	00	
FA	0A	0A	
FB	00	00	
FC	11	11	
FD	00	00	
FE	0A	0A	
FF	00	00	

6. 19 Page table

Note 1: If reading/writing data on pages 19, set data: 01 to page: 0, address: 10, and then select pages: 9. By this data setting, the pages 19 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to"1. Initializing the E, F, 14, 19, 1E, 1F Page Data")
Fixed data-2: Modified data. (Refer to"2. Modification of E, F, 14, 19, 1E, 1F Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00	00	00	CCD output 2ch matching adj. (2)
01	00	00	
02	00	00	
03	00	00	
04	00	00	
05	00	00	
06	00	00	
07	00	00	
08	00	00	
09	00	00	
0A	00	00	
0B	00	00	
0C	00	00	
0D	00	00	
0E	00	00	
0F	00	00	
10	00	00	
11	00	00	
12, 13	Fixed data-1 (Initialized data)		
14	00	00	CCD output 2ch matching adj. (1)
15	00	00	
16	00	00	
17	00	00	
18	00	00	
19	00	00	
1A	00	00	
1B	00	00	
1C	00	00	
1D	00	00	
1E	00	00	
1F	00	00	
20 to 47	Fixed data-1 (Initialized data)		
48	Fixed data-2		
49	Fixed data-1 (Initialized data)		
4A	Fixed data-2		
4B			
4C			
4D			
4E			
4F			
50 to 53	Fixed data-1 (Initialized data)		
54	Fixed data-2		
55			
56			
57			
58			
59			
5A			
5B			
5C			
5D			
5E			
5F			
60			
61			
62			
63			
64, 65	Fixed data-1 (Initialized data)		
66	Fixed data-2		
67			
68			
69			
6A			
6B			
6C to 76	Fixed data-1 (Initialized data)		
77	Fixed data-2		
78 to 7E	Fixed data-1 (Initialized data)		
7F	Fixed data-2		
80 to 86	Fixed data-1 (Initialized data)		
87	00	00	Emergency memory address (Camera section)
88	00	00	
89	00	00	
8A	00	00	
8B to BD	Fixed data-1 (Initialized data)		
BE	Fixed data-2		
BF	Fixed data-1 (Initialized data)		
C0	Fixed data-2		
C1	Fixed data-1 (Initialized data)		
C2	Fixed data-2		
C3			
C4, C5	Fixed data-1 (Initialized data)		
C6	Fixed data-2		
C7			
C8			
C9			
CA to F3	Fixed data-1 (Initialized data)		
F4	Fixed data-2		
F5 to FF	Fixed data-1 (Initialized data)		

7. 1E Page table

Note 1: If reading/writing data on pages 1E, set data: 01 to page: 0, address: 10, and then select pages: E. By this data setting, the pages 1E can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to“1. Initializing the E, F, 14, 19, 1E, 1F Page Data”)
Fixed data-2: Modified data. (Refer to“2. Modification of E, F, 14, 19, 1E, 1F Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to 07	Fixed data-1 (Initialized data)		
08	Fixed data-2		
09 to 9F	Fixed data-1 (Initialized data)		
A0	Fixed data-2		
A1 to DA	Fixed data-1 (Initialized data)		
DB	Fixed data-2		
DC			
DD to FF	Fixed data-1 (Initialized data)		

8. 1F Page table

Note 1: If reading/writing data on pages 1F, set data: 01 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 1F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (“Refer to 1. Initializing the E, F, 14, 19, 1E, 1F Page Data”)
Fixed data-2: Modified data. (“Refer to 2. Modification of E, F, 14, 19, 1E, 1F Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to 6F	Fixed data-1 (Initialized data)		
70	Fixed data-2		
71			
72 to 8D	Fixed data-1 (Initialized data)		
8E	Fixed data-2		
8F to 95	Fixed data-1 (Initialized data)		
96	Fixed data-2		
97 to AF	Fixed data-1 (Initialized data)		
B0	Fixed data-2		
B1			
B2 to E5	Fixed data-1 (Initialized data)		
E6	Fixed data-2		
E7			
E8 to FF	Fixed data-1 (Initialized data)		

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, check that the specified values of "VIDEO SYSTEM ADJUSTMENTS" are satisfied. (Except "67.5MHz/54MHz Origin Oscillation Check")
Check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".

1. 67.5MHz/54MHz Origin Oscillation Check (CD-634 board) (67.5MHz: NTSC/54MHz: PAL)

Check the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Subject	Not required
Measurement Point	Pin ㉚ of CN3501 on VC-419 board
Measuring Instrument	Frequency counter
Specified value	f = 33750000 ± 675 Hz (NTSC) f = 27000000 ± 540 Hz (PAL)

Note: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E

Switch setting

1) POWER ..... CAMERA-TAPE mode

Checking method:

1) Check that the frequency (f) satisfies the specified value.

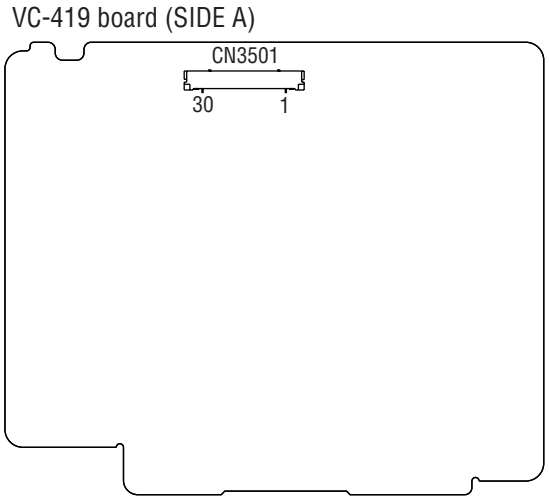


Fig. 6-1-8

2. HALL Adjustment RadarW

For detecting the position of lens iris and ND filter, adjust the hall AMP gain and offset.

Subject	Not required
Measurement Point	Displayed data of page: 1 (Note 1)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	13 to 1B
Specified value	Data of page: 6, address: 0C is "00"

Note 1: Check that the data of page: 0, address: 10 is "00"
Note 2: Check that the data of page: 6, address: 02 is "00"
If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA-TAPE mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	01	6D	Press PAUSE (Write) button. (Note 3)
3	6	02		Check the data changes to "01".
4	6	0C		Check the data is "00".

Note 3: The adjustment data will be automatically input to page: F, address: 13 to 1B.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

3. MR Adjustment RadarW

The inner focus lens MR adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	F
Adjustment Address	58, 5A to 65
Specified value	Data of page: 6, address: 0C is “00”.

Note 1: Perform the adjustment with the lens in horizontal state.
Note 2: Perform “Flange Back Adjustment” after this adjustment.
Note 3: Check that the data of page: 0, address: 10 is “00”.
Note 4: Check that the data of page: 6, address: 02 is “00”.
If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Switch setting

1) POWER CAMERA-TAPE mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	01	BD	Press PAUSE (Write) button. (Note 5)
3	6	02		Check the data changes to “01”.
4	6	0C		Check the data is “00”.

Note 5: The adjustment data will be automatically input to page: F, address: 58, 5A to 65.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	01	25	Press PAUSE (Write) button.
3	6	02		Check the data changes to “01”.
4	6	01	00	Press PAUSE (Write) button.
5	0	01	00	

4. CCD Output 2ch Matching Adjustmenr (1)

RadarW

Correct the dispersion of black level between the left-right channels of CCD imager.

Subject	Not required
Adjustment Page	19 (Note 3)
Adjustment Address	14 to 1F

Note 1: Perform “HALL Adjustment” before this adjustment.

Note 2: Perform “CCD Output 2ch Matching Adjustment (2)”, “Flange Back Adjustment” and “Color Reproduction Adjustment” after this adjustment.

Note 3: If reading/writing data on pages 19, set data: 01 to page: 0, address: 10, and then select pages: 9. By this data setting, the pages 19 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 4: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	01	F3	Press PAUSE (Write) button. (Note 5)
3	6	02		Check the data changes to “01” .

Note 5: The adjustment data will be automatically input to page: 19, address: 14 to 1F.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

5. CCD Output 2ch Matching Adjustmenr (2)

RadarW

Correct the dispersion of between the left-right channels of CCD imager.

Subject	Clear chart (All white) (Note 1)
Adjustment Page	19 (Note 3)
Adjustment Address	00 to 11

Note 1: Shoot the clear chart with the zoom TELE end.

Note 2: Peform “CCD Output 2ch Matching Adjustment (1)” before this adjustment.

Note 3: If reading/writing data on pages 19, set data: 01 to page: 0, address: 10, and then select pages: 9. By this data setting, the pages 19 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 4: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) ZOOM ..... TELE end
4) STEADY SHOT (Menu setting) ..... OFF
5) Focus (Menu setting) ..... MANUAL

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	01	F5	Press PAUSE (Write) button. (Note 5)
3	6	02		Check the data changes to “01” .

Note 5: The adjustment data will be automatically input to page: 19, address: 00 to 11.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

6. Flange Back and Zoom Lever Center Adjustment

RadarW (Using the minipattern box or flange back adjustment jig)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Siemens star chart with ND filter for minipattern box (Note 1) or flange back adjustment jig
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	F
Adjustment Address	11, 48 to 58, 6D
Specified value	Data of pege: 6, address: 0C is "00"

Note 1: Dark Siemens star chart.
Note 2: Perform "HALL Adjustment","MR Adjustment" and "CCD Output 2ch Matching Adjustment"before this adjustment.
Note 3: Perform the adjustment with the lens in horizontal state.
Note 4: Check that the data of page: 0, address: 10 is "00".
Note 5: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.
Note 6: Don't touch the zoom lever during adjustment.

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) COLOR SLOW S (Menu setting) ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	E	FD		Set the bit value of bit4 is "1", and press PAUSE (Write) button. (Note 7)
3	6	01	13	Press PAUSE (Write) button.
4	6	01	27	Press PAUSE (Write) button. (Note 8)
5	6	02		Check the data changes to "01".
6	6	0C		Check the data is "00".

Note 7: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".
Note 8: The adjustment data will be automatically input to page: F, address: 11, 48 to 58 and 6D.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	01	25	Press PAUSE (Write) button.
3	6	02		Check the data changes to "01".
4	6	01	00	Press PAUSE (Write) button.
5	E	FD		Set the bit value of bit4 is "0", and press PAUSE (Write) button. (Note 7)
6	0	01	00	
7				Perform "Flange Back Check".

Preparation (Using the minipattern box)

1) The minipattern box is installed as shown in the following figure.
   Note 9: The attachment lenses are not used.
2) Install the minipattern box so that the distance between it and the front of lens of camera is less than 3 cm.
3) Make the height of minipattern box and the camera equal.
4) Check the output voltage of the regulated power supply is the specified voltage ± 0.01 Vdc.
5) Check that the center of Siemens star chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Specified voltage: The specified voltage varies according to the minipattern box, so adjustment the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

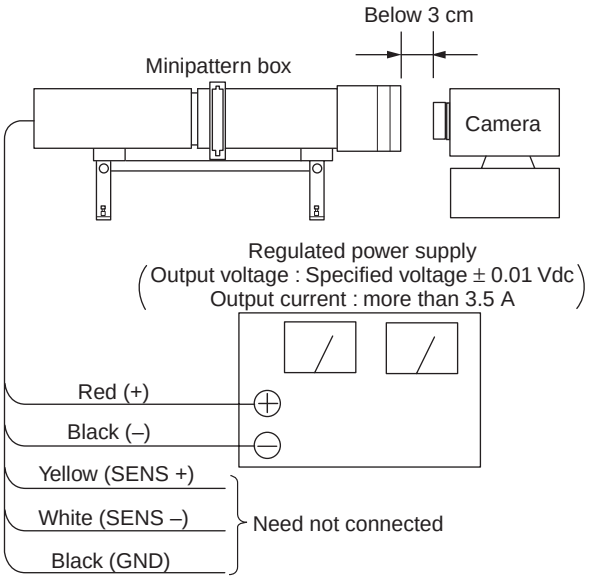


Fig. 6-1-9

Preparation (Using the flange back adjustment jig) (Luminance: about 300 lux)

1) Install the flange back adjustment jig so that the distance between it and the front of lens of camera is less than 3 cm.
2) Make the height of flange back adjustment jig and the camera equal.
3) Check that the center of chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

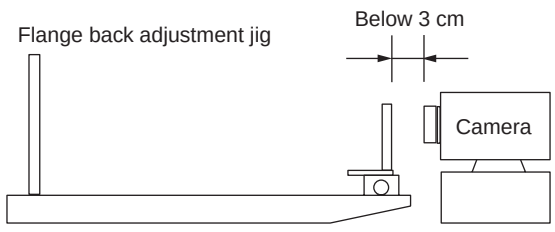


Fig. 6-1-10

7. Flange Back and Zoom Lever Center Adjustment (Using the flange back adjustment chart and subject more than 500 m away)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

7-1. Flange Back Adjustment (1) RadarW

Subject	Flange back adjustment chart (2.0 m from the front of lens) (Luminance: 300 to 400 lux)
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	F
Adjustment Address	11, 48 to 58, 6D
Specified value	Data of page: 6, address: 0C is“00”

Note 1: Perform “HALL Adjustment”,“MR Adjustment” and “CCD Output 2ch Matching Adjustment”before this adjustment.

Note 2: Perform the adjustment with the lens in horizontal state.

Note 3: Check that the data of page: 0, address: 10 is “00”.

Note 4: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Note 5: Don't touch the zoom lever during adjustment.

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) COLOR SLOW S (Menu setting) ..... OFF

Preparations before adjustments:

1) Check that the center of Flange back adjustment chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	E	FD		Set the bit value of bit4 is “1”, and press PAUSE (Write) button. (Note 6)
3	6	01	13	Press PAUSE (Write) button.
4	6	01	15	Press PAUSE (Write) button. (Note 7)
5	6	02		Check the data changes to “01”.
6	6	0C		Check the data is “00”.

Note 6: For the bit values, refer to “6-4. SERVICE MODE”, “4-4.3. Bit value discrimination”.

Note 7: The adjustment data will be automatically input to page: F, address: 11, 48 to 58 and 6D.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	01	25	Press PAUSE (Write) button.
3	6	02		Check the data changes to “01”.
4	6	01	00	Press PAUSE (Write) button.
5	E	FD		Set the bit value of bit4 is “0”, and press PAUSE (Write) button. (Note 6)
6	0	01	00	
7				Perform “Flange Back Adjustment (2)”.

7-2. Flange Back Adjustment (2) RadarW

Perform this adjustment after performing “Flange Back Adjustment (1)”.

Subject	Subject more than 500 m away (Subject wite clear contrast such as buildings, etc.)
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	F
Adjustment Address	11, 48 to 58, 6D
Specified Value	Data of page: 6, address: 0C is “00”

Note 1: Perform the adjustment with the lens in horizontal state.
Note 2: Check that the data of page: 0, address: 10 is “00”.
Note 3: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.
Note 4: Don't touch the zoom lever during adjustment.

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) COLOR SLOW S (Menu setting) ..... OFF

Preparations before adjustments:

1) Set the zoom lens to the TELE end and expose a rsubject that is more than 500 m away.
   (subjects with clear contrast such as building, etc.)
   (Nearby subjects less than 500 m away should not be in the screen)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	01	13	Press PAUSE (Write) button.
3				Place ND filter on the lens so that the optimum image is obtain.
4	6	01	29	Press PAUSE (Write) button. (Note 5)
5	6	02		Check the data changes to “01”.
6	6	0C		Check the data is “00”.

Note 5: The adjustment data will be automatically input to page: F, adress: 11, 48 to 58 nd 6D.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	01	25	Press PAUSE (Write) button.
3	6	02		Check the data changes to “01”.
4	6	01	00	Press PAUSE (Write) button.
5	6	01	00	
6				Perform “Flange Back Check”.

8. Flange Back Check

8-1. Flange Back Check (Using the flange back adjustment jig)

Subject	Flange back adjustment jig (Luminance: approx. 200 lux)
Measurement Point	Check operation on monitor
Measuring Instrument	
Specified Value	Focused at the TELE end and WIDE end

Note: Check that the data of page: 0, address: 10 is “00”.

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3

Preparations before adjustments:

1) Install the flange back adjustment jig so that the distance between it and the front of lens of camra is less than 3 cm.
2) To open the IRIS, decrease the liminous intensity to the chart of the flange back adjustment jig up to a point before noise appesr on the image. (approx. 200 lux)
3) Check that the center of chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Checking method:

Order	Page	Address	Data	Procedure
1	6	40	01	
2	6	41	01	
3				Shoot the chart with the zoom TELE end.
4	6	2C	02	
5				Check that the lens is focused.
6				Shoot the chart with the zoom WIDE end.
7				Check that the lens is focused.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	2C	00	
2	6	40	00	
3	6	41	00	

8-2. Flange Back Check (Using the Siemens star)

Subject	Siemens star (2.0 m from the front of the lens) (Luminance: approx. 200 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is “00”.

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHSHOT ..... OFF
3) WIDE SELECT 4: 3

Note 2: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on the page: 1 of the adjusting remote commander.

1 : 00 : XX
- Odd: Focused
- Even: Unfocused

Preparations before adjustments:

1) Place the Siemens star 2.0 m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.

Checking method:

Order	Page	Address	Data	Procedure
1	6	40	01	
2	6	41	01	
3				Shoot the Siemens star with the zoom TELE end.
4				Turn on the auto focus.
5	0	03	0F	
6	1			Check that the lens is focused. (Note 2)
7	6	21	10	
8				Shoot the Siemens star with the zoom WIDE end.
9				Observe the TV monitor and check that the lens is focused.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	21	00	
2	6	40	00	
3	6	41	00	
4	0	03	00	

9. Picture Frame Setting (Color reproduction adjustment frame)

Subject	Color bar chart (Color reproduction adjustment frame) (1 m (PTB-450) or 40 cm (PTB-1450) from the front of lens)
Measurement Point	Video terminal of A/V jack (or A/V OUT jack) (75 Ω terminated)
Measuring Instrument	Oscilloscope and monitor TV
Specified Value	A=B, C=D, E=F

Note 1: Perform "Hall Adjustment" and "Flange Back Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) DIGITAL ZOOM (Menu setting) ..... OFF
5) STEADY SHOT (Menu setting) ..... OFF
6) FOCUS (Menu Setting) ..... MANUAL

Setting method:

Order	Procedure
1	Adjust the zoom and the camera direction, and set the specified position.
2	Mark the position of the picture frame on the monitor TV, and adjust the picture frame to the this position in following adjustment using "Color reproduction adjustment frame".

How to read the XH, XL, YH and YL data:

Order	Page	Address	Data	Procedure
1	0	03	18	
2	1			Read XH data and XL data. (Note 3)
3	0	03	22	
4	1			Read YH data and YL data. (Note 3)

Note 3: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX : XX
XL or YL data
XH or YH data

How to reset the zoom and focus when they deviated:

If the zoom and focus deviated due to some reason, reset them in the following method.

Order	Page	Address	Data	Procedure
1	6	90	XL	
2	6	91	XH	
3	6	92	YL	
4	6	93	YH	
5	6	01	79	Press PAUSE (Write) button.

How to release the picture frame setting:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	90	00	
3	6	91	00	
4	6	92	00	
5	6	93	00	

Check on the oscilloscope

1. Horizontal period

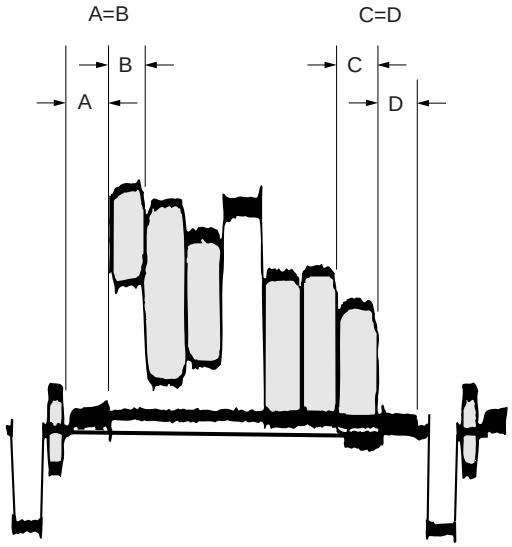


Fig. 6-1-11

2. Vertical period

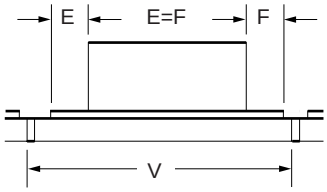


Fig. 6-1-12

Check on the monitor TV (Underscanned mode)

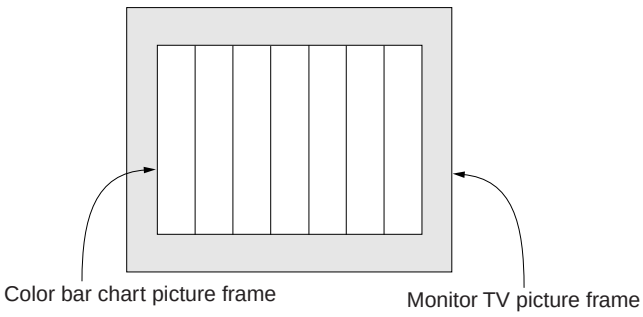


Fig. 6-1-13

10. Mixed Color Compensation Adjustment RadarW

Compensate the mixed colors of the CCD color filters so that proper color reproduction is produced.

Subject	Mixed color compensation chart (Color reproduction adjustment frame)
Measurement Point	Displayed data of page: 1 (Note 4)
Measuring Instrument	Adjusting remote commander
Adjustment Page	14 (Note 2)
Adjustment Address	98 to 9F, A8 to B7
Specified value	bit15 is "1"

Note 1: Perform "CCD Output 2ch Matching Adjustment" before this adjustment.

Note 2: If reading/writing data on pages 14, set data: 01 to page: 0, address: 10, and then select pages: 4. By this data setting, the pages 14 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Note 4: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
└──── Displayed data

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) DIGITAL ZOOM (Menu setting) ..... OFF
5) STEADY SHOT (Menu setting) ..... OFF
6) FOCUS (Menu setting) ..... MANUAL

Picture frame setting

1) Perform "9. Picture Frame Setting (Color reproduction adjustment frame)".
2) Remove the color bar chart form the pattern box and insert the mixed color compensation chart in its place.

Note 5: Insert the mixed color compensation chart to direction of the following figure.

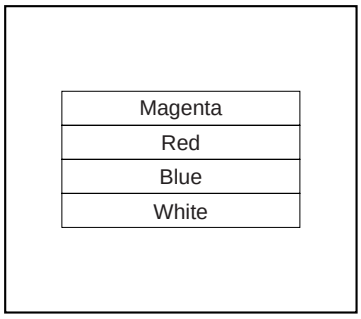


Fig. 6-1-14

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	01	D5	Press PAUSE (Write) button.
3	6	01	D7	Press PAUSE (Write) button. (Note 6)
4	0	03	33	
5	6	02		Check the data changes to "01".
6	1			Check that bit15 of the display data (Note 4) is "1". (Note 7)

Note 6: The adjustment data will be automatically input to page: 14, address: 98 to 9F, A8 to B7.

Note 7: When bit15 of the display data is "1", the display data is "8000" to "FFFF".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	03	00	
3	6	01	00	

11. Picture Frame Setting (Center frame)

Subject	Clear chart (Center frame) (1 m (PTB-450) or 40 cm (PTB-1450) from the front of lens)
Measurement Point	Video terminal of A/V jack (or A/V OUT jack) (75 Ω terminated)
Measuring Instrument	Monitor TV
Specified Value	A clear chart must be shot in larger size than nine grids in the center of frame shown on the screen. (Fig. 6-1-14)

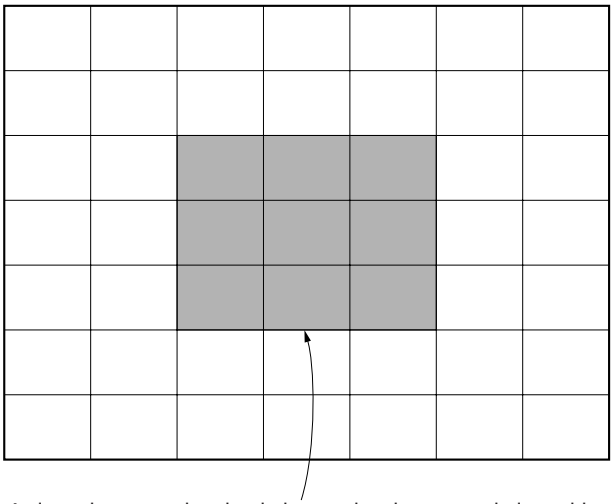
Note: Check that the data of page: 0, address: 10 is "00".

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) ZOOM ..... WIDE end
5) DIGITAL ZOOM (Menu setting) ..... OFF
6) STEADY SHOT (Menu setting) ..... OFF
7) FOCUS (Menu Setting) ..... MANUAL

Setting method:

Order	Page	Address	Data	Procedure
1				Shoot a clear chart in the center of screen with the zoom at WIDE end.
2	0	01	01	
3	E	EF	91	Press PAUSE (Write) button.
4				Check that a clear chart is shot in larger size than nine grids in the center of frame shown on the screen.
5	E	EF	00	Press PAUSE (Write) button.
6	0	01	00	
7				In the following adjustment, if the "Center frame" is used, adjust the clear chart to this position.



A clear chart must be shot in larger size than central nine grids.

Fig.6-1-15

12. F No. & ND Light Quality Standard Data Input

RadarW

Correct the lens iris and dispersion of the ND filter light quantity.

Adjustment Page	F
Adjustment Address	1C to 29

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Input the following data to page: F, address: 1C to 29.

Note 2: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

Address	Data
1C	F9
1D	0B
1E	0D
1F	EC
20	E8
21	1A
22	02
23	07
24	D0
25	C8
26	E0
27	28
28	F1
29	F3

3) Select page: 0, address: 01, and set data: 00.

13. Picture Frame Setting (AWB Adjustment frame)

Subject	Clear chart (AWB Adjustment frame) (1 m (PTB-450) or 40 cm (PTB-1450) from the front of lens)
Measurement Point	Video terminal of A/V jack (or A/V OUT jack) (75 Ω terminated)
Measuring Instrument	Monitor TV
Specified Value	Only the clear chart must be shot (entire screen is white).

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX : XX
- XL or YL data
- XH or YH data

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) DIGITAL ZOOM (Menu setting) ..... OFF
5) STEADY SHOT (Menu setting) ..... OFF
6) FOCUS ..... MANUAL

Setting method:

Order	Page	Address	Data	Procedure
1				Perform "9. Picture Frame Setting (Color reproduction adjustment frame)".
2				By zooming in the color reproduction adjustment picture frame, set up the picture frame in which the color bar is shot on full screen. (Refer to Fig. 6-1-16)
3				Remove the Color bar chart from the pattern box.
4				Check that whole of the screen is white.
5	0	03	18	
6	1			Read XH data and XL data. (Note 2)
7	0	03	22	
8	1			Read YH data and YL data. (Note 2)
9	0	03	00	
10				In the following adjustment, if the "AWB Adjustment frame" is used, adjust the clear chart to this position.

How to reset the zoom and focus when they deviated:
If the zoom and focus deviated due to some reason, reset them in the following method.

Order	Page	Address	Data	Procedure
1	6	90	XL	
2	6	91	XH	
3	6	92	YL	
4	6	93	YH	
5	6	01	79	Press PAUSE (Write) button

Processing after Completing Adjustment:
Reset the data setting after the adjustment finished.

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	90	00	
3	6	91	00	
4	6	92	00	
5	6	93	00	

Check on the monitor TV (Underscanned mode)

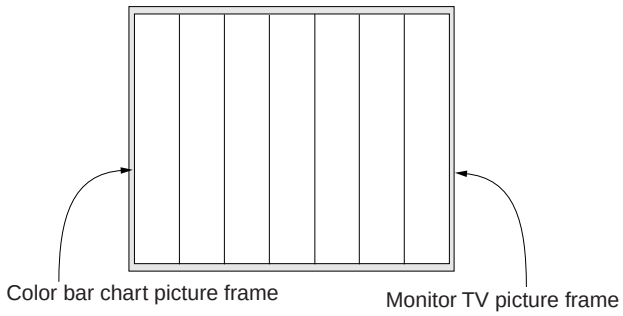


Fig.6-1-16

14. Auto White Balance Standard Data Input RadarW

Adjust the white balance reference at 3200K, and adjust the normal coefficient of the light value.

Subject	Clear chart (AWB Adjustment Frame)	
Adjustment Page	F	14 (Note 2)
Adjustment Address	2E to 31	E8 to F3

Note 1: Perform "F No.& ND Light Quality Standard Date Input" before this adjustment.

Note 2: If reading/writing data on pages 14, set data: 01 to page: 0, address: 10, and then select pages: 4. By this data setting, the pages 14 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) DIGITAL ZOOM (Menu setting) ..... OFF
5) STEADY SHOT (Menu setting) ..... OFF
6) FOCUS (Menu setting) ..... MANUAL

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is "AWB Adjustment Frame". If not, perform "13. Picture Frame Setting (AWB Adjustment Frame)"
2	0	01	01	
3				Wait for 2 seconds.
4	6	01	43	Press PAUSE (Write) button.
5	6	01	41	Press PAUSE (Write) button. (Note 4)
6	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: F, address: 2E to 31 and page: 14, address: E8 to F3.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

15. LV Standard Data Input RadarW

Adjust the normal coefficient of the light value at 3200K.

Subject	Clear chart (AWB Adjustment Frame)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	2A, 2B

Note 1: Perform "F No. & ND Light Quality Standard Data Input" and "Auto White Balance Standard Data Input" before this adjustment.

Note 2: Check that the data of page: 0, address: 10 is "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) DIGITAL ZOOM (Menu setting) ..... OFF
5) STEADY SHOT (Menu setting) ..... OFF
6) FOCUS (Menu setting) ..... MANUAL

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is "AWB Adjustment Frame". If not, perform "13. Picture Frame Setting (AWB Adjustment Frame)"
2	0	01	01	
3	6	01	0D	Press PAUSE (Write) button. (Note 4)
4	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: F, address: 2A, 2B.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	01	00	

16. Auto White Balance Adjustment RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (AWB Adjustment Frame)	
Filter	Filter C14 for color temperature correction	
Adjustment Page	F	14 (Note)
Adjustment Address	32 to 35, 44 to 47	F4 to FF

Note 1: Perform "F No. & ND Light Quality Standard Data Input" and "Auto White Balance Standard Data Input" before this adjustment.

Note 2: If reading/writing data on pages 14, set data: 01 to page: 0, address: 10, and then select pages: 4. By this data setting, the pages 14 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Note 4: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) DIGITAL ZOOM (Menu setting) ..... OFF
5) STEADY SHOT (Menu setting) ..... OFF
6) FOCUS (Menu setting) ..... MANUAL

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is "AWB Adjustment Frame". If not, perform "13. Picture Frame Setting (AWB Adjustment Frame)"
2				Place the C14 filter on the lens.
3	0	01	01	
4	F	44	2C	Press PAUSE (Write) button.
5	F	45		Set the following data, and Press PAUSE (Write) button. F8: NTSC model B8: PAL model
6	F	46	5A	Press PAUSE (Write) button.
7	F	47	20	Press PAUSE (Write) button.
8	6	01	47	Press PAUSE (Write) button.
9	6	01	45	Press PAUSE (Write) button. (Note 5)
10	6	02		Check the data changes to "01".

Note 5: The adjustment data will be automatically input to page: F, address: 32 to 35, 44 to 47 and page: 14, address: F4 to FF.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	
3				Remove the C14 filter on the lens.

17. Color Reproduction Adjustment RadarW

Adjust the color separation matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart (Color reproduction adjustment frame)
Adjustment Page	14 (Note 1)
Adjustment Address	A0 to A7

Note 1: If reading/writing data on pages 14, set data: 01 to page: 0, address: 10, and then select pages: 4. By this data setting, the pages 14 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting:

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) DIGITAL ZOOM (Menu setting) ..... OFF
5) STEADYSHOT (Menu setting) ..... OFF
6) FOCUS (Menu setting) ..... MANUAL

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is "Color Reproduction Adjustment Frame". If not, perform "9. Picture Frame Setting (Color Reproduction Adjustment Frame)"
2	0	01	01	
3	6	1F	10	
4	6	C9	10	
5	6	9E	00	
6	6	D0	40	
7	6	01	61	Press PAUSE (Write) button. (Note 3)
8	6	02		Check the data changes to "01".

Note 3: The adjustment data will be automatically input to page:14, address: A0 to A7.

Processing after Completing adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	1F	00	
3	6	C9	00	
4	0	01	00	
5				Peform "Color Reproduction Check".

18. Color Reproduction Check RadarW

Subject	Color bar chart (Color reproduction adjustment frame)	
Measurement Point	Video terminal of A/V jack (or A/V OUT jack) (75 Ω terminated)	Displayed data of page: 1 (Note 4)
Measuring Instrument	Vectorscope	Adjusting remote commander
Specified Value	All color luminance points should settle within each color reproduction frame.	bit15 is “1”

Note 1: Perform “Color Reproduction Adjustment” before this adjustment.
Note 2: Perform this along with the “Color Reproduction Adjustment” successively.
Note 3: Check that the data of page: 0, address: 10 is “00”.
Note 4: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.
Note 5: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E
Note 6: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
└── Displayed data

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) DIGITAL ZOOM (Menu setting) ..... OFF
5) STEADY SHOT (Menu setting) ..... OFF
6) FOCUS (Menu setting) ..... MANUAL

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is “Color Reproduction Adjustment Frame”. If not, perform “9. Picture Frame Setting (Color Reproduction Adjustment Frame)”
2	0	01	01	
3	6	1F	10	
4	6	C9	10	
5	6	9E	00	
6	6	D0	40	
7	0	03	33	
8	6	01	4D	Press PAUSE (Write) button. (Note 7)
9	6	02		Check the data changes to “01”.
10	1			Check that bit15 of the display data (Note 6) is “1”. (Note 8)
11				Adjust the GAIN and PHASE of the vectorscope, and set to the burst luminance point to the burst position of color reproduction frame.
12				Check that the each color luminance point is in each color reproduction frame.

Note 7: Confirm that the Y signal level (A) is 90 IRE.
(Refer to Fig 6-1-17)
90 IRE = 642.6 mV (NTSC)
90 IRE = 630 mV (PAL)
Note 8: When bit15 of the display data is “1”, the display data is“8000” to “FFFF”.

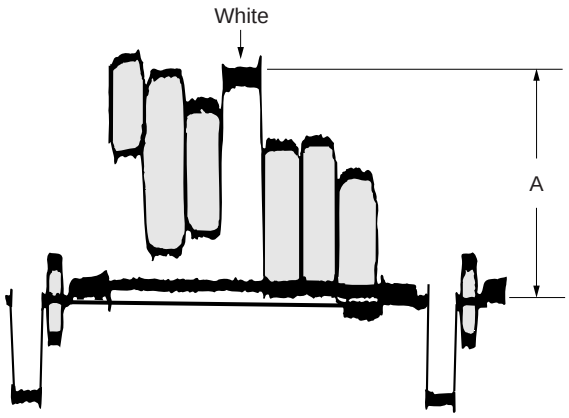
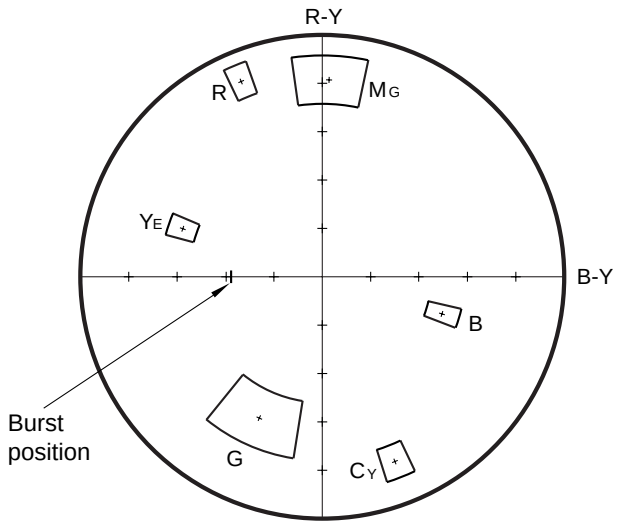


Fig.6-1-17

NTSC model



PAL model

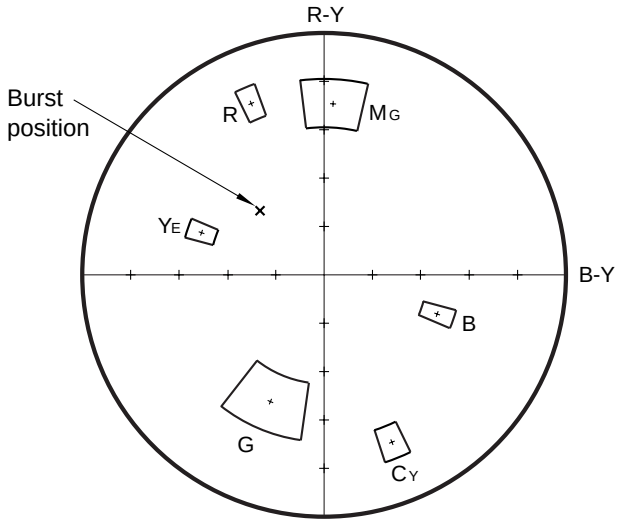


Fig.6-1-18

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	1F	00	
3	6	C9	00	
4	0	03	00	
5	0	01	00	

19. Auto White Balance Check RadarW

Subject	Clear chart (AWB Adjustment Frame)
Filter	ND filter 1.0, 0.4 and 0.1
Measurement Point	Displayed data of page: 1 (Note 3)
Measuring Instrument	Adjusting remote commander
Specified Value	8000 to 8BC0

Note 1: Perform "Auto White Balance Adjustment" and "Color Reproduction Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
└── Displayed data

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) DIGITAL ZOOM (Menu setting) ..... OFF
5) STEADY SHOT (Menu setting) ..... OFF
6) FOCUS (Menu setting) ..... MANUAL

Checking method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is "AWB Adjustment Frame". If not, perform "13. Picture Frame Setting (AWB Adjustment Frame)"
2	6	C9	10	
3	6	CA		Set the bit value of bit 0 is "1"(Note 4)
OUTDOOR white balance check				
4	6	01	4F	Press PAUSE (Write) button.
5	0	03	33	
6	1			Check that bit15 of the display data (Note 3) is "1". (Note 5)
7	6	01	00	Press PAUSE (Write) button.
INDOOR white balance check				
8	6	01	0F	Press PAUSE (Write) button.
9	0	03	33	
10	1			Check that bit15 of the display data (Note 3) is "1". (Note 5)
11	6	01	00	Press PAUSE (Write) button.
InOut data check				
12				Place the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.
13	6	C9	11	
14	6	30	07	
15	0	03	06	
16	1			Check that the displayed data (Note 3) satisfied the specified value.
17	6	30	00	
18	6	C9	00	
19				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.

Note 4: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".
Note 5: When bit15 of the display data is "1", the display data is "8000" to "FFFF".
If the specified value is not satisfied. Contents of the error are displayed at the lower digit (bit0 to bit3) of the display data.
bit0=1: B-Y data exceeded an upper limit
bit1=1: B-Y data exceeded a lower limit
bit2=1: R-Y data exceeded an upper limit
bit3=1: R-Y data exceeded a lower limit

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	03	00	
2	6	CA		Set the bit value of bit 0 is "0". (Note 4)

20. MAX GAIN Adjustment RadarW

Setting the minimum illumination.
If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	Clear chart (Center frame)
Adjustment Page	F
Adjustment Address	2C

Note 1: Perform "Flange Back and Zoom Lever Center Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.
Note 4: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) NIGHTSHOT ..... OFF
3) WIDE SELECT 4: 3
4) ZOOM ..... WIDE end
5) DIGITAL ZOOM (Menu setting) ..... OFF
6) STEADY SHOT (Menu setting) ..... OFF
7) FOCUS (Menu setting) ..... MANUAL

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "8. Picture Frame Setting (Center Frame)"
2	0	01	01	
3	6	D0		Set the following data. 29: NTSC model 14: PAL model
4	6	D1	00	
5	6	01	6F	Press PAUSE (Write) button. (Note 5)
6	6	02		Check the data changes to "01".

Note 5: The adjustment data will be automatically input to page: F, address: 2C.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	D0	00	
2	6	D1	00	
3	6	01	00	Press PAUSE (Write) button.
4	0	01	00	

21. Mechanical Shutter Adjustment RadarW

Adjust the close time and loss time every F number of the mechanical shutter and the high-speed shutter correction value to correct the luminous exposure.

Adjustment Page	F
Adjustment Address	76 to 8B

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Input the following data to page: F, address: 76 to 8B.

Note: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

Address	Data	
	NTSC	PAL
76	B7	97
77	1E	15
78	83	6B
79	60	5C
7A	67	54
7B	39	4F
7C	52	43
7D	91	34
7E	42	35
7F	5B	D1
80	58	56
81	62	61
82	60	5E
83	58	56
84	4D	4A
85	20	1F
86	7E	80
87	80	80
88	80	80
89	80	80
8A	80	80
8B	7F	80

3) Select page: 0, address: 01, and set data: 00.

22. Strobe Light Level Adjustment RadarW

Adjustment the strobe light level.

Subject	Flash adjustment box (Note 3) (50 cm from the front of the lens)
Measurement Point	Display data of page: 1 (Note 6)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	8C to 91
Specified Value 1	Data of page: 6, address: 0C is “00” or “01”
Specified value 2	1000 or less

Note 1: Perform “Hall Adjustment”, “Flange Back Adjustment” and “F No. & ND Light Quantity Standard Date Input” before this adjustment.

Note 2: Restrict external light to enter the Flash adjustment box as less as possible.

Note 3: Refor to “4. Preparing the Flash adjustment box”. (See page: 6-7)

Note 4: Check that the data of page: 0, address: 10 is “00”.

Note 5: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Note 6: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
Displayed data

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) FLASH ..... Forced flash
(Press the FLASH button and set to the forced flash mode.)
3) NIGHTSHOT ..... OFF

How to reset the flash error flag

When the flash error code (E:91: **) is displayed. After repair, clear the error flag in the following method.

Order	Page	Address	Data	Procedure
1	7	01	75	
2	7	00	01	Press PAUSE (Write) button.
3	7	02		Check the data is “01”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	01	7E	
3	7	04	01	
4	7	00	01	Press PAUSE (Write) button.
5	6	01	67	Press PAUSE (Write) button. (Note 7)
6				Check the flashing.
7	6	02		Check the data changes to “00”.
8	6	0C		Check the data is “00” or “01”.
9	E	01	06	Press PAUSE (Write) button.
10	6	B6	0C	
11	1			Check that the display data (Note 6) satisfies the specified value 2.

Note 7: The adjustment data will be automatically input to page: F, address: 8C to 91.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	B6	00	
3	E	01	00	Press PAUSE (Write) button.
4	7	01	7E	
5	7	04	00	
6	7	00	01	Press PAUSE (Write) button.
7	0	01	00	

23. Strobe White Balance Adjustment & Check

RadarW

Adjust and check the white balance when the strobe light flashed.

Subject	Flash adjustment box (Note 3) (50 cm from the front of the lens)
Measurement Point	Displayed data of page: 1 (Note 7)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	3E, 3F
Specified Value	bit15 is "1"

Note 1: Perform "Hall Adjustment", "Flange Back Adjustment", "AWB Adjustment" and "Strobe Light Level Adjustment" before this adjustment.

Note 2: Restrict external light to enter the Flash adjustment box as less as possible.

Note 3: Refer to "4. Preparing the Flash adjustment box". (See page 6-7)

Note 4: "Strobe White Balance Adjustment" is available only once after the power is turned on. Turn the power off, then on again if the adjustment is retried.

Note 5: Check that the data of page: 0, address: 10 is "00".

Note 6: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Note 7: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
└── Displayed data

Switch setting

1) POWER ..... CAMERA-TAPE mode
2) FLASH ..... Forced flash
(Press the FLASH button and set to the forced flash mode.)
3) NIGHTSHOT ..... OFF

How to reset the flash error flag

When the flash error code (E:91: **) is displayed. After repair, clear the error flag in the following method.

Order	Page	Address	Data	Procedure
1	7	01	75	
2	7	00	01	Press PAUSE (Write) button.
3	7	02		Check the data is "01"

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	01	7E	
3	7	04	01	
4	7	00	01	Press PAUSE (Write) button.
5	6	01	B9	Press PAUSE (Write) button. (Note 8)
6				Check the flashing.
7	6	02		Check the data changes to "01".
8	6	01	00	Press PAUSE (Write) button.
9				Waie for 3 seconds.
10	6	01	E7	Press PAUSE (Write) button.
11				Check the flashing.
12	0	03	33	
13	1			Check that bit15 of the display data (Note 7) is "01". (Note 9)

Note 8: The adjustment data will be automatically input to page: F, address: 3E, 3F.

Note 9: When bit15 of the display data is "1", the display data is "8000" to "FFFF".
If the specified value is not satisfied. Contents of the error are displayed at the lower digit (bit0 to bit3) of the display data. (For the bit values, refer to "6-4. SERVICE MODE","4-4. 3. Bit value disrimination".)

bit0=1: The white balance is deviated in the blue direction
bit1=1: The white balance is deviated in the yellow direction
bit2=1: The white balance is deviated in the red direction
bit3=1: The white balance is deviated in the cyan direction

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	7	01	7E	
3	7	04	00	
4	7	00	01	Press PAUSE (Write) button.
5	0	03	00	
6	0	01	00	

24. Steady Shot Check RadarW

Precautions on the Parts Replacement

There are two types of repair parts.

Type A ENC03RA
Type B ENC03RB

Replace the broken sensor with a same type sensor. If replace with other type parts, the image will vibrate up and down or left and right during hand-shake correction operations.

Precautions on Angular Velocity Sensor

The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

Subject	Not required
Measurement Point	Displayed data of page: 1 (Note 1)
Measuring Instrument	Adjusting remote commander
Specified value	PITCH data: 2680 to 5080 YAW data: 2680 to 5080

Note 1: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1 : XX : XX
└──── Displayed data

Note 2: Check that the data of page: 0, address: 10 is "00".

Switch setting

1) ZOOM ..... TELE end
2) STEADY SHOT (Menu setting) ..... ON

Checking method:

Order	Page	Address	Data	Procedure
PITCH sensor output check (SE401 of SI-054 board)				
1	0	03	11	
2	1			With the set in still state, check that the displayed data (Note 1) satisfies the PITCH data specified value.
YAW sensor output check (SE402 of SI-054 board)				
3	0	03	12	
4	1			With the set in still state, check that the displayed data (Note 1) satisfies the YAW data specified value.
5	0	03	00	
Steady shot operation check				
6				Shake the set vertically and horizontally to check that the steady shot function operates normally.

1-4. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

Before perform the electronic viewfinder system adjustments, check that the data of page: 0, address: 10 is "00". If not, select page: 0, address: 10, and set the data "00".

Note 1: Taken an extreme care not to destroy the liquid crystal display module by static electricity when replacing it.

Note 2: Perform the following data setting before the viewfinder system adjustments.
1) Select page: 3, address: C4, and set data: 67.
2) Select page: 3, address: C5, and set data: 01.

Reset the data after completing adjustment.
1) Select page: 3, address: C4, and set data: 00.
2) Select page: 3, address: C5, and set data: 00.

1. EVF Automatic Adjustment (VC-419 board)

RadarW

This adjustment does the following items automatically.
VCO Adjustment
Contrast Adjustment

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Adjustment Page	C
Adjustment Address	3F, 40 (VCO Adjustment) 47 (Contrast Adjustment)

Note 1: Perform this adjustments after perfoming "IC4701 Automatic adjustment".

Note 2: Check that the data of page: 0, address: 10 is "00".

Note 3: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E

Switch setting

WIDE SELECT 4: 3

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	71	00	Press PAUSE (Write) button.
3	3	03	FF	Press PAUSE (Write) button.
4	3	01	5A	Press PAUSE (Write) button. (Note 4)
5	3	02		Check the data changes to "00".
6	3	03		Check the data is "00". (Note 5)
7	C	3F		Read the data and this data is named D_{3F}.
8				Convert D_{3F} to decimal notation, and obtain D_{3F}'. (Note 6)
9				Calculate D_{40}' using following equations. (decimal calculation) $D_{40}' = D_{3F}' + 10$ (NTSC model) $D_{40}' = D_{3F}' - 10$ (PAL model)
10				Convert D_{40}' to a hexadecimal number, and obtain D_{40}. (Note 6)
11	C	40	D_{40}	Press PAUSE (Write) button.
12	C	71	41	Press PAUSE (Write) button.
13	0	01	00	

Note 4: The adjustment data will be automatically input to page: C, address: 3F and 47.

Note 5: If the data change to "01", adjustment has error. Contents of error is written into page: 3, address: C6. See the following table.

Note 6: Refer to table 6-4-1. "Hexadecimal-decimal conversion table".

Data of page: 3, address: C6	Contents of error
5E	VCO adjustment error
61	Contrast adjustment error

2. White Balance Adjustment (VC-419 board)

Correct the white balance.
If deviated, the EVF screen color cannot be reproduced.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Check on EVF screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	45, 46
Specified Value	EVF screen must not be colored

Note 1: Check that the data of page: 0, address: 10 is “00”.
Note 2: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD panel
2. Light induction plate
3. IC7001

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	45	7E	Press PAUSE (Write) button.
3	C	46	7B	Press PAUSE (Write) button.
4				Check that the EVF screen is not colored. If not colored, proceed to step 6.
5	C	45 46		Change the data so that the EVF screen is not colored. (Note 3)
6	0	01	00	

Note 3: To write in the non-volatile memory (EEPROM), press the PAUSE (Write) button each time to set the data.

1-5. LCD SYSTEM ADJUSTMENTS

Before perform the LCD system adjustments, check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set the data “00”.

Note 1: Taken an extreme care not to destroy the liquid crystal display module by static electricity when replacing it.
Note 2: Set the “LCD BRIGHT”, “LCD COLOR” to the center with the menu settings of the touch panel.
Note 3: Open the LCD panel during the LCD system adjustment.

1. LCD Automatic Adjustment (PD-284 board)

RadarW

This adjustment does the following items automatically.
VCO Adjustment
Contrast Adjustment

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Adjustment Page	C
Adjustment Address	50, 51 (VCO Adjustment) 58 (Contrast Adjustment)

Note 1: Perform this adjustment after performing “IC4701 Automatic Adjustment”.
Note 2: Check that the data of page: 0, address: 10 is “00”.
Note 3: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E

Switch setting
WIDE SELECT 16: 9

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	70	00	Press PAUSE (Write) button.
3	3	03	FF	Press PAUSE (Write) button.
4	3	01	5A	Press PAUSE (Write) button. (Note 4)
5	3	02		Check the data changs to “00”.
6	3	03		Check the data is“00”. (Note 5)
7	C	50		Read the data and this data is named D_{50}.
8				Convert D_{50} to decimal notation, and obtain D_{50}’. (Note 6)
9				Calculate D_{51}’ using following equations. (decimal calculation) $D_{51}' = D_{50}' + 10$ (NTSC model) $D_{51}' = D_{50}' - 10$ (PAL model)
10				Convert D_{51}’ to a hexadecimal number, and obtain D_{51}. (Note 6)
11	C	51	D_{51}	Press PAUSE (Write) button.
12	C	70	41	Press PAUSE (Write) button.
13	0	01	00	

Note 4: The adjustment data will be automatically input to page: C, address: 50 and 58.
Note 5: If the data change to “01”, adjustment has error. Contents of error is written into page: 3, address: C6. See the following table.
Note 6: Refer to table 6-4-1. “Hexadecimal-decimal conversion table”.

Data of page: 3, address: C6	Contents of error
58	VCO adjustment error
60	Contrast adjustment error

2. V-COM Adjustment (PD-284 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will be move, producing flicker and conspicuous vertical lines.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	52
Specified Value	The brightness difference between the section-A and section-B is minimum

Note 1: Perform "LCD Automatic Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".

Switch setting
LCD BACKLIGHT ..... ON

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	61	CD	Press PAUSE (Write) button.
3	C	52		Change the data so that brightness of the section A and section B is equal.
4	C	52		Subtract 7 from the data.
5	C	52		Press PAUSE (Write) button.
6	C	61	05	Press PAUSE (Write) button.
7	0	01	00	

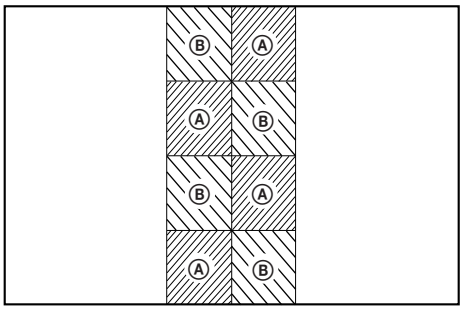


Fig. 6-1-19

3. Transmissive Mode White Balance Adjustment (PD-284 board)

Correct the white balance at transmissive mode.
If deviated, the LCD screen color cannot be reproduced.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	56, 57
Specified Value	LCD screen must not be colored

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD block
2. Light induction plate
3. IC9601

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	56	7D	Press PAUSE (Write) button.
3	C	57	73	Press PAUSE (Write) button.
4				Check that the LCD screen is not colored. If not colored, proceed to step 6.
5	C	56 57		Change the data so that the LCD screen is not colored. (Note 3)
6	0	01	00	

Note 3: To write in the non-volatile memory (EEPROM), press the PAUSE (Write) button each time to set the data.

4. Touch Panel Adjustment

Adjust the calibration of touch panel.

Mode	VTR stop (PLAY/EDIT mode)
Signal	Arbitrary
Adjustment Page	A
Adjustment Address	90 to 93

Note 1: This adjustment should be carried out upon completetion of "1. LCD Automatic Adjustment".
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that a Memory Stick Duo is not insteted.
Note 4: Check that the LCD panel is not reverse mode.
Note 5: Adjustment must be performed while observing the LCD screen from the front.

Preparation:

Order	Page	Address	Data	Procedure
1	7	01	C9	
2	7	00	01	Press PAUSE (Write) button.
3				Check that the touch panel adjustment screen is displayed.
4				Perform "Adjusting method".

Adjusting method:

1) Using a ball-point pen etc., push the center of "×" indicated in the part A.
2) Using a ball-point pen etc., push the center of "×" indicated in the part B.
3) Using a ball-point pen etc., push the center of "×" indicated in the part C.

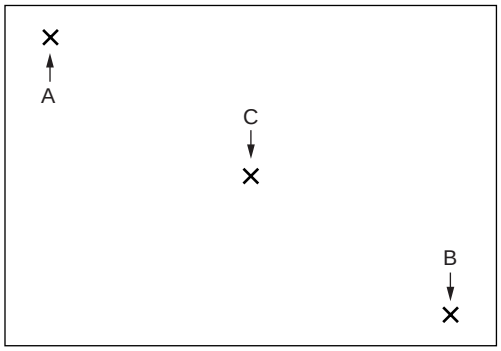


Fig. 6-1-20

6-2. MECHANISM SECTION ADJUSTMENTS

On the mechanism section adjustment

For details of mechanism section adjustments, checks, and replacement of mechanism parts, refer to the separate volume "DV MECHANICAL ADJUSTMENT MANUAL IX N Mechanism".

Note: Before performing the adjustments, check the data of page: 0, address: 10 is "00". If not, set data: 00 to this address.

2-1. HOW TO ENTER RECORD MODE WITHOUT CASSETTE

1) Connect the adjustment remote commander to the LANC jack.
2) Set the HOLD switch to ON. (Set the slide switch to SERVICE).
3) Close the cassette compartment without the cassette.
4) Select page: 3, address: 01, set data: 0C, and press the PAUSE (Write) button of the adjustment remote commander.
   (The mechanism enters the record mode automatically.)
   Note: The function buttons become inoperable.
5) To quit the record mode, select page: 3, address: 01, set data: 00, and press the PAUSE (Write) button of the adjustment remote commander. (Whenever you want to quit the record mode, be sure to quit following this procedure.)

2-2. HOW TO ENTER PLAYBACK MODE WITHOUT CASSETTE

1) Connect the adjustment remote commander to the LANC jack.
2) Set the HOLD switch to ON. (Set the slide switch to SERVICE).
3) Close the cassette compartment without the cassette.
4) Select page: 3, address: 01, set data: 0B, and press the PAUSE (Write) button of the adjustment remote commander.
   (The mechanism enters the playback mode automatically.)
   Note: The function buttons become inoperable.
5) To quit the playback mode, select page: 3, address: 01, set data: 00, and press the PAUSE (Write) button of the adjustment remote commander. (Whenever you want to quit the playback mode, be sure to quit following this procedure.)

2-3. TAPE PATH ADJUSTMENT

1. Preparation for Adjustment

1) Clean the tape running side (tape guide, drum, capstan shaft, pinch roller, etc.).
2) Connect the adjustment remote commander to the LANC jack.
3) Set the HOLD switch to ON. (Set the slide switch to SERVICE).
4) Connect an oscilloscope to VC-419 board CN1014 via the CPC Connecting jigs. (J-6082-521-A, J-6082-564-A)
   Channel 1: VC-419 board, CN1014 Pin ① (Note)
   External trigger: VC-419 board, CN1014 Pin ②
   Note: Connect a 75 Ω resistor between pins ① of CN1014 and ③ (GND).
   75 Ω resistor (Parts code: 1-247-804-11)
5) Playback the alignment tape for tracking. (XH2-1)
6) Select page: 3, address: 33, and set data: 08.
7) Select page: 3, address: 26, set data: 31, and press the PAUSE (Write) button.
8) Check that the oscilloscope RF waveform is normal at the entrance and exit.
   If not normal, adjust according to the separate volume "DV MECHANICAL ADJUSTMENT MANUAL IX N Mechanism".

CN1014 of VC-419 board

Pin No.	Signal Name
1	RF MON
2	SWP
3	GND
4	XCS EEP
5	EEP SCK
6	EEP SO
7	EEP SI
8	GND

2. Procedure after operations

1) Connect the adjustment remote commander to the LANC jack. Set the HOLD switch to ON. (Set the slide switch to SERVICE).
2) Select page: 3, address: 26, set data: 00, and press the PAUSE (Write) button.
3) Select page: 3, address: 33, and set data: 00.

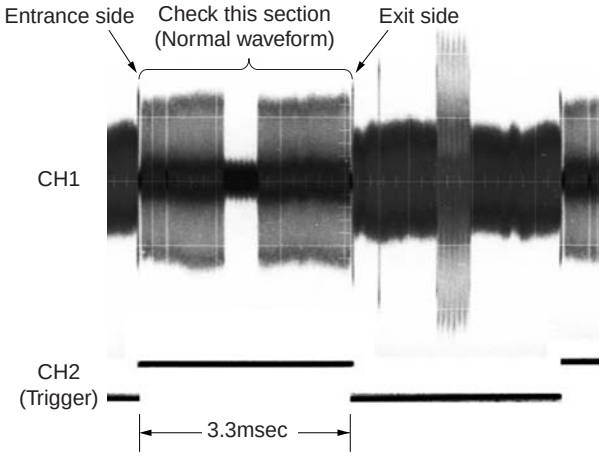


Fig. 6-2-1

6-3. VIDEO SECTION ADJUSTMENTS

3-1. PREPARATIONS BEFORE ADJUSTMENTS

Use the following measuring instruments for video section adjustments.

3-1-1. Precautions on Adjusting

Note: Before performing the adjustment, check the data of page: 0, address: 10 is "00". If not, select page: 0, address: 00, and set data "00".

1) The adjustments of this unit are performed in the VTR mode (PLAY/EDIT mode) or camera mode (CAMERA-TAPE mode).

3-1-2. Adjusting Connectors

The measuring point of the playback RF signal is CN1014 of VC-419 board. Connect the measuring instruments via the CPC connecting jigs (J-6082-521-A, J-6082-564-A). Refer to "MECHANISM SECTION ADJUSTMENT" for the measuring method. The following table lists the pin numbers and signal names of CN1014.

Pin No.	Signal Name
1	RF_MON
2	SWP
3	GND
4	XCS EEP
5	EEP SCK
6	EEP SO
7	EEP SI
8	GND

Table 6-3-1

3-1-3. Connecting the Equipment

Connect the measuring instruments as shown in Fig. 6-3-1, and perform the adjustments.

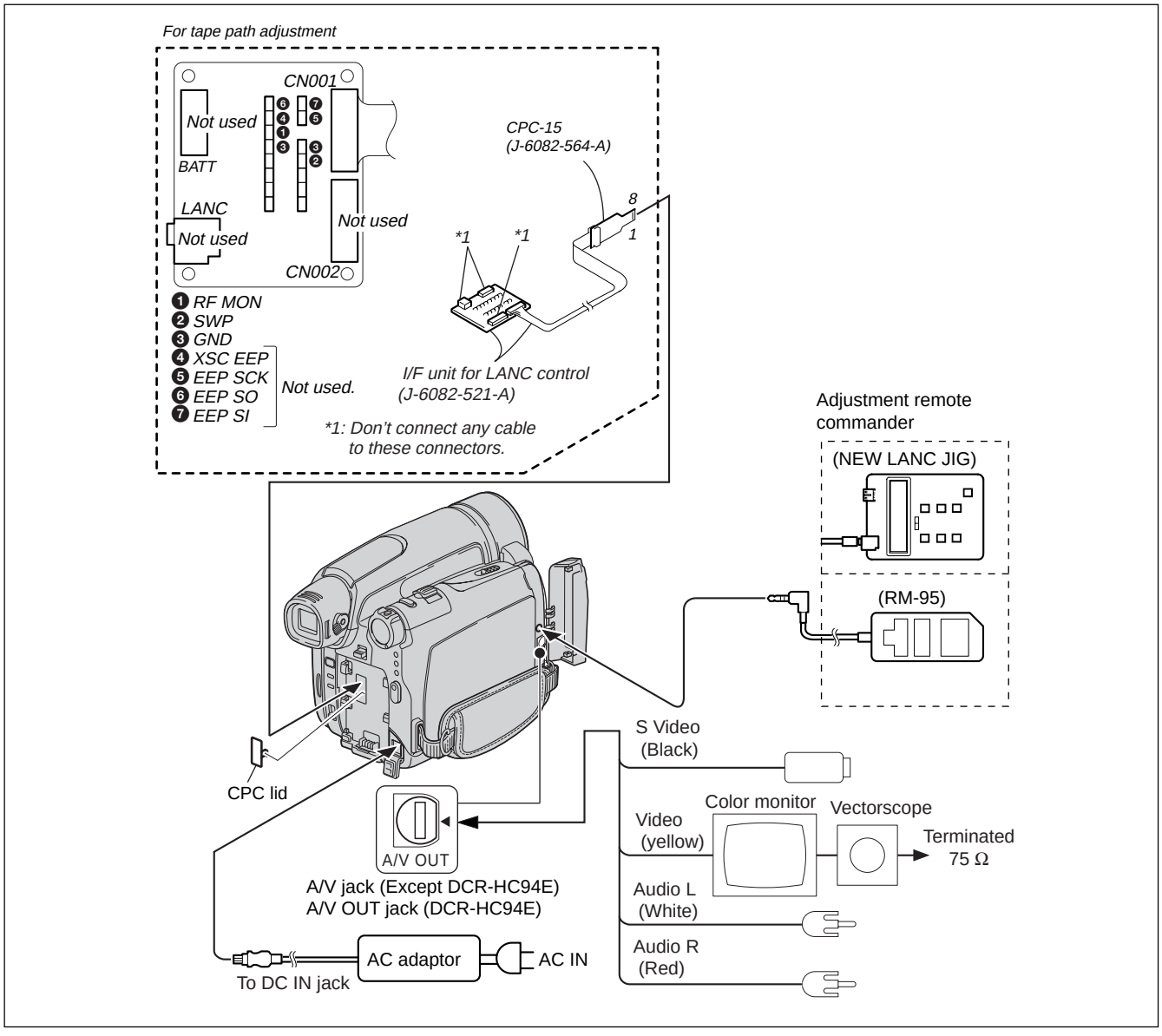


Fig. 6-3-1

3-1-4. Alignment Tapes

Use the alignment tapes shown in the following table.
Use tapes specified in the signal column of each adjustment.

Name	Use
Tracking standard (XH2-1)	Tape path adjustment
SW/OL standard (XH2-3)	Switching position adjustment
Audio operation check (XH5-3(NTSC), XH5-3P(PAL))	Audio system adjustment
System operation check (XH5-5(NTSC), XH5-5P(PAL))	Operation check

Fig. 6-3-2 shows the 75% color bar signals recorded on the alignment tape for Audio Operation Check.

Note: Measure with video terminal (Terminated at 75 W)

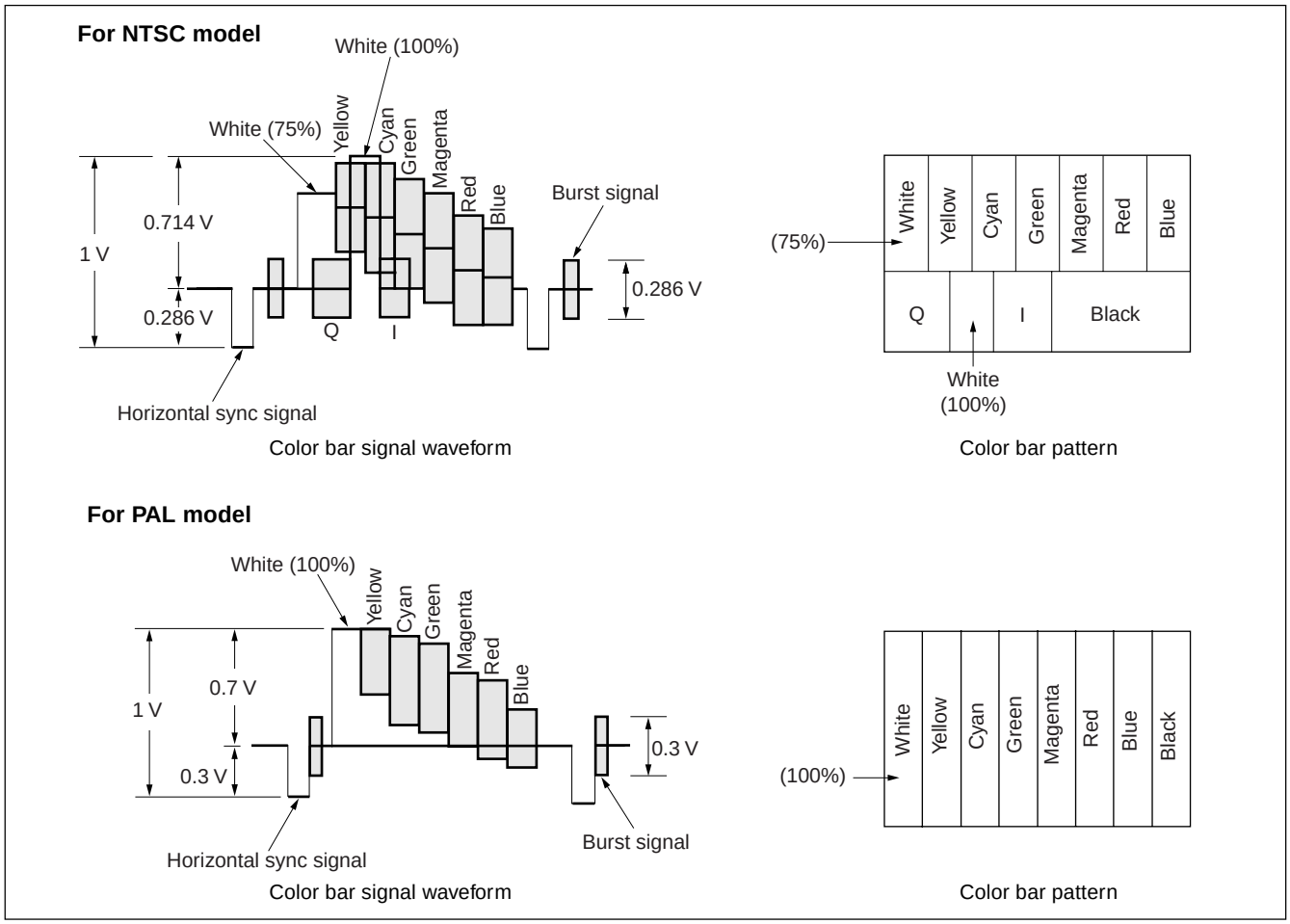


Fig. 6-3-2. Color bar signal of alignment tapes

3-1-5. Input/Output Level and Impedance

Video input/output
A/V jack
Video signal: 1 Vp-p, 75 Ω unbalanced, sync negative

S video input/output
A/V jack
Luminance signal: 1 Vp-p, 75 Ω unbalanced, sync negative
Chrominance signal: 0.286 Vp-p, 75Ω unbalanced (NTSC)
: 0.300 Vp-p, 75Ω unbalanced (PAL)

Audio input/output
A/V jack
Input level: 327mV
Input impedance: More than 47 kΩ
Output level: 327mV (at load impedance 47 kΩ)
Output impedance: Below 2.2 kΩ

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Initialization of 8, A, B, C, D, E, F, 14, 18, 19, 1A, 1B, 1C, 1E, 1F Page Data

If the 8, A, B, C, D, E, F, 14, 18, 19, 1A, 1B, 1C, 1E, 1F page data is erased due to some reason, perform "1-2. INITIALIZATION OF 8, A, B, C, D, E, F, 14, 18, 19, 1A, 1B, 1C, 1E, 1F PAGE DATA" of "6-1. CAMERA SYSTEM ADJUSTMENT".

2. Node Unique ID No. Input

Note 1: Perform "2-2. Input of Serial No." if the data on page C has been cleared nd original node unique ID No. is uncertain.
Usually, read the date on page C before repair, and write it after repair.

Note 2: Check that the data of page: 0, address:10 is "00".

2-1. Input of Compny ID

Write the company ID to the EEPROM (nonvolatile memory).

Page	C
Address	E0, E1, E2, E3, E4

Input method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: C, and enter the following data.

Note 3: Each time the data is set, press the PAUSE (Write) button on the adjusting remote commander.

Address	Data
E0	08
E1	00
E2	46
E3	01
E4	02

1) Select page: 0, address: 01, and set data: 01.

2-2. Input of Serial ID

Write the serial No. and model code to the EEPROM (nonvolatile memory).
In writing the serial No., a decimal number should be converted into a hexadecimal number.

Page	C
Address	E5, E6, E7

1) Select page: 0, address: 01, and set data: 01.
2) Read the serial No. from the model name label, and it is assumed to be D_1.
   Example: If serial No. is "77881",
   $D_1 = 77881$
3) From Table 6-3-2, obtain D_2 and H_1 that correspond to D_1.
   Example: If $D_1 = 77881$,
   $D_2 = D_1 - 65536 = 12345$
   $H_1 = FE$

D_1 (decimal)	D_2 (decimal)	H_1 (hexadecimal) (Service model code)
00001 to 65535	D_1	FE
65536 to 131071	$D_1 - 65536$	FE
131072 to196607	$D_1 - 131072$	FE
196608 to 262143	$D_1 - 196608$	FE
262144 to 327679	$D_1 - 262144$	FE
327680 to 393215	$D_1 - 327680$	FE
393216 to 458751	$D_1 - 393216$	FE
458752 to 524287	$D_1 - 458752$	FE
524288 to 589823	$D_1 - 524288$	FE
589824 to 655359	$D_1 - 589824$	FE
655360 to 720895	$D_1 - 655360$	FE
720896 to 786431	$D_1 - 720896$	FE
786432 to 851967	$D_1 - 786432$	FE
851968 to 917503	$D_1 - 851968$	FE
917504 to 983039	$D_1 - 917504$	FE
983040 to 999999	$D_1 - 983040$	FE

Table 6-3-2

4) Enter H_1 to address: E5 on page: C.
   Example: If $H_1 = FE$,
   select page: C, address: E5, and set data: FE, then press the PAUSE (Write) button.
5) From Table 6-3-3, obtain the maximum decimal number less than D_2, and it is assumed to be D_3.
   Example: If $D_2 = 12345$.
   $D_3 = 12288$
6) From Table 6-3-3, obtain a hexadecimal number that corresponds to D_3, and it is assumed to be H_3.
   Example: If $D_3 = 12288$,
   $H_3 = 3000$
7) Caluculate D_4 using following equations (decimal caluculation). ($0 \leqq D_4 \leqq 225$)
   $D_4 = D_2 - D_3$
   Example: If $D_2 = 12345$ and $D_3 = 12288$,
   $D_4 = 12345 - 12288 = 57$
8) Convert D_4 into a hexadecimal number to obtain H_4. (See Table 6-4-1 "Hexadecimal - decimal conversion table" in 6-4. Service Mode)
   Example: If $D_4 = 57$,
   $H_4 = 39$
9) Enter higher two digits of H_3 to address: E6 on page: C.
   Example: If $H_3 = 3000$,
   select page: C, address: E6, and set data: 30, then press the PAUSE (Write) button.
10) Enter H_4 to address: E7 on page: C.
    Example: If $H_4 = 39$,
    select page: C, address: E7, and set data: 39, then press the PAUSE (Write) button.
11) Select page: 0, address: 01, and set data: 00.

D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3
0	0000	8192	2000	16384	4000	24576	6000	32768	8000	40960	A000	49152	C000	57344	E000
256	0100	8448	2100	16640	4100	24832	6100	33024	8100	41216	A100	49408	C100	57600	E100
512	0200	8704	2200	16896	4200	25088	6200	33280	8200	41472	A200	49664	C200	57856	E200
768	0300	8960	2300	17152	4300	25344	6300	33536	8300	41728	A300	49920	C300	58112	E300
1024	0400	9216	2400	17408	4400	25600	6400	33792	8400	41984	A400	50176	C400	58368	E400
1280	0500	9472	2500	17664	4500	25856	6500	34048	8500	42240	A500	50432	C500	58624	E500
1536	0600	9728	2600	17920	4600	26112	6600	34304	8600	42496	A600	50688	C600	58880	E600
1792	0700	9984	2700	18176	4700	26368	6700	34560	8700	42752	A700	50944	C700	59136	E700
2048	0800	10240	2800	18432	4800	26624	6800	34816	8800	43008	A800	51200	C800	59392	E800
2304	0900	10496	2900	18688	4900	26880	6900	35072	8900	43264	A900	51456	C900	59648	E900
2560	0A00	10752	2A00	18944	4A00	27136	6A00	35328	8A00	43520	AA00	51712	CA00	59904	EA00
2816	0B00	11008	2B00	19200	4B00	27392	6B00	35584	8B00	43776	AB00	51968	CB00	60160	EB00
3072	0C00	11264	2C00	19456	4C00	27648	6C00	35840	8C00	44032	AC00	52224	CC00	60416	EC00
3328	0D00	11520	2D00	19712	4D00	27904	6D00	36096	8D00	44288	AD00	52480	CD00	60672	ED00
3584	0E00	11776	2E00	19968	4E00	28160	6E00	36352	8E00	44544	AE00	52736	CE00	60928	EE00
3840	0F00	12032	2F00	20224	4F00	28416	6F00	36608	8F00	44800	AF00	52992	CF00	61184	EF00
4096	1000	12288	3000	20480	5000	28672	7000	36864	9000	45056	B000	53248	D000	61440	F000
4352	1100	12544	3100	20736	5100	28928	7100	37120	9100	45312	B100	53504	D100	61696	F100
4608	1200	12800	3200	20992	5200	29184	7200	37376	9200	45568	B200	53760	D200	61952	F200
4864	1300	13056	3300	21248	5300	29440	7300	37632	9300	45824	B300	54016	D300	62208	F300
5120	1400	13312	3400	21504	5400	29696	7400	37888	9400	46080	B400	54272	D400	62464	F400
5376	1500	13568	3500	21760	5500	29952	7500	38144	9500	46336	B500	54528	D500	62720	F500
5632	1600	13824	3600	22016	5600	30208	7600	38400	9600	46592	B600	54784	D600	62976	F600
5888	1700	14080	3700	22272	5700	30464	7700	38656	9700	46848	B700	55040	D700	63232	F700
6144	1800	14336	3800	22528	5800	30720	7800	38912	9800	47104	B800	55296	D800	63488	F800
6400	1900	14592	3900	22784	5900	30976	7900	39168	9900	47360	B900	55552	D900	63744	F900
6656	1A00	14848	3A00	23040	5A00	31232	7A00	39424	9A00	47616	BA00	55808	DA00	64000	FA00
6912	1B00	15104	3B00	23296	5B00	31488	7B00	39680	9B00	47872	BB00	56064	DB00	64256	FB00
7168	1C00	15360	3C00	23552	5C00	31744	7C00	39936	9C00	48128	BC00	56320	DC00	64512	FC00
7424	1D00	15616	3D00	23808	5D00	32000	7D00	40192	9D00	48384	BD00	56576	DD00	64768	FD00
7680	1E00	15872	3E00	24064	5E00	32256	7E00	40448	9E00	48640	BE00	56832	DE00	65024	FE00
7936	1F00	16128	3F00	24320	5F00	32512	7F00	40704	9F00	48896	BF00	57088	DF00	65280	FF00

Note: D_3: Decimal
H_3: Hexadecimal

Table 6-3-3

3-3. SERVO AND RF SYSTEM ADJUSTMENTS

Before perform the servo and RF system adjustments, check that the specified values of "67.5MHz/54MHz Origin Oscillation check" of "1-3. CAMERA SYSTEM ADJUSTMENTS" is satisfied.
Check that the data of page: 0, address: 10 is "00". If not, select page: 0, address: 10, and set the data "00".

Adjusting Procedure:
1. CAP FG duty adjustment
2. Switching position adjustment
3. Error rate check

1. CAP FG Duty Adjustment (VC-419 board)

RadarW

Set the CAP FG signal duty cycle to 50% to establish an appropriate capstan servo. If deviated, the uneven rotation of capstan and noise can occur in the LP mode.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	16
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2	0	01	01	
3	C	16	20	Press PAUSE (Write) button.
4	3	03	FF	Press PAUSE (Write) button.
5	3	01	1B	Press PAUSE (Write) button.
6	3	02		Check the data changes in the following order "1B" → "2B" → "00"
7	3	03		Check the data is "00". (Note 2)
8	0	01	00	

Note 2: If the data is "01" or "01", adjustment has errors or the mechanism deck is defective.
Also, if the data is "80", the mechanism deck is in emergency state or the tape reached its end.

2. Switching Position Adjustment (VC-419 board)

RadarW

Mode	VTR playback (PLAY/EDIT mode)
Signal	SW/OL standard (XH2-3)
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	10, 11, 12, 13
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Insert the SW/OL standard tape and enter the VTR stop mode.
2	0	01	01	
3	C	10	EE	Press PAUSE (Write) button.
4	3	21		Check the data is "02". (Note 2)
5	3	03	FF	Press PAUSE (Write) button.
6	3	01	0D	Press PAUSE (Write) button.
7	3	02		Check the data changes to "00".
8	3	03		Check the data is "00". (Note 3)
9	0	01	00	

Note 2: If the data is "72", the tape top being played. After playing the tape for 1 to 2 seconds, stop it, perform step 5 and higher.
If the data is "62", the tape end being played. After rewind the tape, perform step 5 and higher.

Note 3: If bit0 of the data is "1", the EVEN channel is defective.
If bit1 of the data is "1", the ODD channel is defective.
Contents of the defect is see written into page: C, address: 10 and 12. See following table.
(For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".)
If bit3 of the data is "1", the tape end being played, so rewind the tape and perform the adjustment again.

When the EVEN channel is defective

Data of page: C, address: 10	Contents of defect
EE	Writing into EEPROM (IC5302) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC4201

When the ODD channel is defective

Data of page: C, address: 12	Contents of defect
EE	Writing into EEPROM (IC5302) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC4201

3. Error Rate Check (VC-419 board) RadarW

Note: Check that the data of page: 0, address: 10 is “00”.

3-1. Preparations before adjustments

Mode	Camera recording (CAMERA-TAPE mode)
Subject	Arbitrary

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	01	
3	C	0D	C8	Press PAUSE (Wrirte) button.
4	0	10	00	
5				Record the camera signal for 2 minutes.

3-2. Error Rate Check

Mode	VTR playback (PLAY/EDIT mode)
Subject	Recorded signal at “Preparations before adjustments”
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	1C (Note 1)
Adjustment Address	B3 to C8
Specified value	The data of page: 3, address: 03 is “00”

Note 1: If reading/writing data on pages 1C, set data: 01 to page: 0, address: 10, and then select pages: C. By this data setting, the pages 1C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Initial Value of Page 1C: Address: B3 to C8

Address	Initial value	Address	Initial value	Address	Initial value
B3	00	BB	00	C3	80
B4	00	BC	00	C4	00
B5	00	BD	00	C5	00
B6	00	BE	00	C6	00
B7	00	BF	00	C7	00
B8	80	C0	00	C8	00
B9	00	C1	00		
BA	00	C2	00		

Table 6-3-4

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2				Check that the data of page: 1C, address: B3 to C8 is the initial value. (See Table 6-3-4)
3				Playback the recorded signal at “Preparations before adjustments”.
4	3	03	FF	Press PAUSE (Write) button.
5	3	01	40	Press PAUSE (Write) button.
6	3	02		Check the data changes to “00”.
7	3	03		Check the data is “00”. (Note 2)
8				Perform “Processing after Completing Adjustments”.

Note 2: If the data is other than “00”, Error rate is abnormal. For the contents of the abnormality, see the following table.

Data of page: 3, address: 03	Contents of defect
01	EVEN channel is abnormal.
02	ODD channel is abnormal.
03	EVEN channel and ODD channel are abnormal.

Note 3: If Error rate is abnormal, Check the use tape, clean the tape running surface. And after inputting initial values to page 1C: address: B3 to C8, perform re-adjustment. (See Table 6-3-4)

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	01	
3	C	0D	00	Press PAUSE (Write) button.
4	0	10	00	
5	0	01	00	

3-4. VIDEO SYSTEM ADJUSTMENTS

Before perform the video system adjustments, check that the specified values of "67.5MHz/54MHz Origin Oscillation check" of "1-3. CAMERA SYSTEM ADJUSTMENTS" is satisfied.
Check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".

Adjusting Procedure:

1. IC4701 LINE OUT Y level adjustment
2. IC4701 LINE OUT chroma level adjustment
3. S VIDEO OUT Y lebel adjustment
4. S VIDEO OUT chroma adjustment
5. IC4701 Automatic adjustment
6. VIDEO OUT level check

1. IC4701 LINE OUT Y Level Adjustment (VC-419 board)

Mode	CAMERA-TAPE
Subject	Arbitrary
Measurement Point	Y signal terminal of S VIDEO plug of A/V jack (or A/V OUT jack) (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	80
Specified value	Y level: A = 1000 ± 14 mVp-p Sync level: B = 286 ± 6 mVp-p (NTSC) B = 300 ± 6 mVp-p (PAL)

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E

Switch setting

1) DEMO MODE (Menu setting) ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	01	70	Press PAUSE (Write) button.
3	C	80		Change the data and set the Y signal level (A) to the specified value.
4	C	80		Press PAUSE (Write) button.
5				Check the sync signal level (B) to the specified value.
6	3	01	00	Press PAUSE (Write) button.
7	0	01	00	

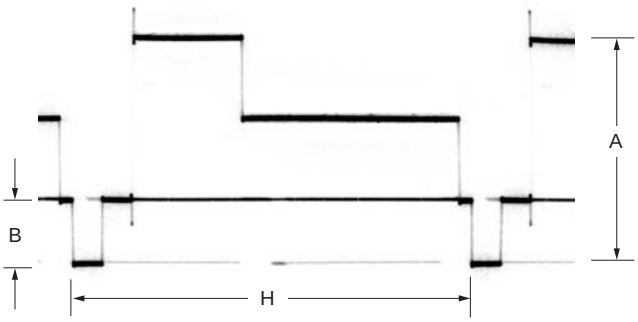


Fig. 6-3-3

2. IC4701 LINE OUT Chroma Level Adjustment (VC-419 board)

Mode	CAMERA-TAPE
Subject	Arbitrary
Measurement Point	Chroma signal terminal of S VIDEO plug of A/V jack (or A/V OUT jack) (75 Ω terminated) External trigger: Y signal terminal of S VIDEO plug of A/V jack (or A/V OUT jack) (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	81, 82
Specified value	Cr level: A = 714 ± 14 mVp-p (NTSC) A = 715 ± 14 mVp-p (PAL) Cb level: B = 714 ± 14 mVp-p (NTSC) B = 715 ± 14 mVp-p (PAL) Burst level: C = 286 ± 6 mVp-p (NTSC) C = 300 ± 6 mVp-p (PAL)

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E

Switch setting

1) DEMO MODE (Menu setting) ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	01	70	Press PAUSE (Write) button.
3	C	81		Change the data and set the Cr signal level (A) to the specified value.
4	C	81		Press PAUSE (Write) button.
5	C	82		Change the data and set the Cb signal level (B) to the specified value.
6	C	82		Press PAUSE (Write) button.
7				Check the burst signal (C) to the specified value.
8	3	01	00	
9	0	01	00	

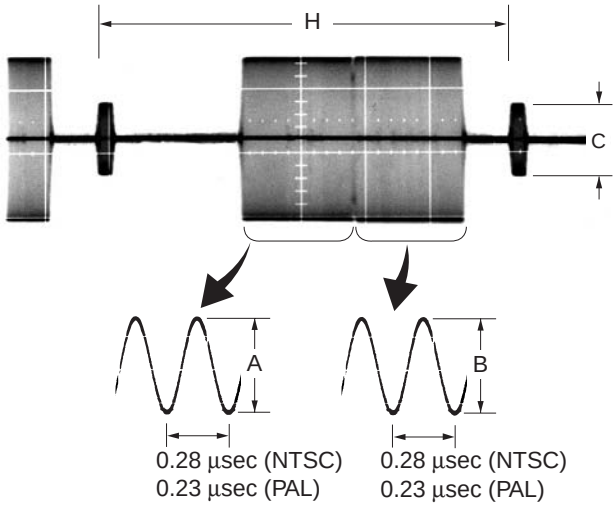


Fig. 6-3-4

3. S VIDEO OUT Y Level Adjustment (VC-419 board)

Mode	CAMERA-TAPE
Subject	Arbitrary
Measurement Point	Y signal terminal of S VIDEO plug of A/V jack (or A/V OUT jack) (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	25
Specified value	A = 1000 ± 14 mVp-p

Note 1: This adjustment should be carried out upon completion of the following adjustments.
"IC4701 LINE OUT Y Level Adjustment", "IC4701 LINE OUT Chroma Level Adjustment".

Note 2: Check that the data of page: 0, address: 10 is "00".

Switch setting

1) DEMO MODE (Menu setting) ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	8	4C		Set the bit value of bit1 is "0", and press PAUSE (Write) button. (Note 3)
3	3	01	71	Press PAUSE (Write) button.
4	C	25		Change the data and set the Y signal level (A) to the specified value.
5	C	25		Press PAUSE (Write) button.
6	3	01	00	Press PAUSE (Write) button.
7	8	4C		Set the bit value of bit1 is "1", and press PAUSE (Write) button. (Note 3)
8	0	01	00	

Note 3: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".

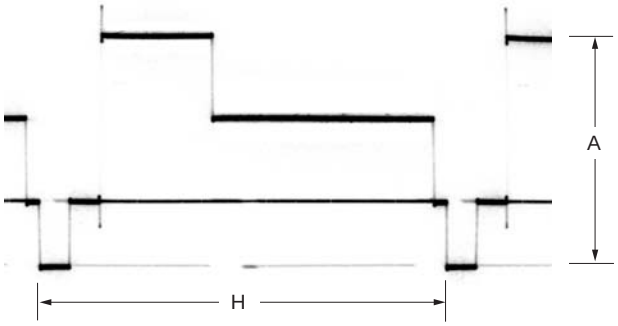


Fig. 6-3-5

4. S VIDEO OUT Chroma Level Adjustment (VC-419 board)

Mode	CAMERA-TAPE
Subject	Arbitrary
Measurement Point	Chroma signal terminal of S VIDEO plug of A/V jack (or A/V OUT jack) (75 Ω terminated) External trigger: Y signal terminal of S VIDEO plug of A/V jack (or A/V OUT jack) (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	26, 27
Specified value	Cr level: A = 714 ± 14 mVp-p (NTSC) A = 700 ± 14 mVp-p (PAL) Cb level: B = 714 ± 14 mVp-p (NTSC) B = 700 ± 14 mVp-p (PAL) Burst level: C = 286 ± 6 mVp-p (NTSC) C = 300 ± 6 mVp-p (PAL)

Note 1: This adjustment should be carried out upon completion of the following adjustments.
"IC4701 LINE OUT Y Level Adjustment", "IC4701 LINE OUT Chroma Level Adjustment".

Note 2: Check that the data of page: 0, address: 10 is "00".

Note 3: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E

Switch setting

1) DEMO MODE (Menu setting) ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	8	4C		Set the bit value of bit1 is "0", and press PAUSE (Write) button. (Note 4)
3	3	01	71	Press PAUSE (Write) button.
4	C	26		Change the data and set the Cr signal level (A) to the specified value.
5	C	26		Press PAUSE (Write) button.
6	C	27		Change the data and set the Cb signal level (B) to the specified value.
7	C	27		Press PAUSE (Write) button.
8				Check the burst signal (C) to the specified value.
9	3	01	00	
10	8	4C		Set the bit value of bit1 is "1", and press PAUSE (Write) button. (Note 4)
11	0	01	00	

Note 4: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".

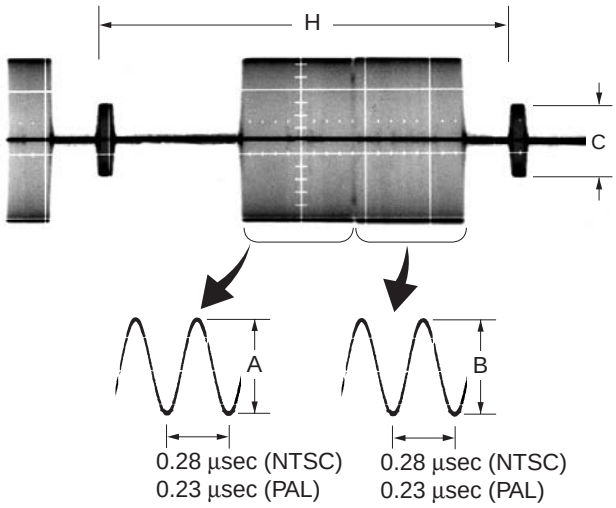


Fig. 6-3-6

5. IC4701 Automatic Adjustment (VC-419 board)

Adjust the IC4001 Y output level (IC4701 input Y level) when letting the IC4701 line system pass. And adjust the clamp level and output level of the IC4701 panel (LCD) system and output level of the IC4001.

Mode	CAMERA-TAPE
Subject	Arbitrary
Measurement Point	Display data of page: 3, address: 04, 05
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	83 to 8A, 99, A1 to A3
Specified Value	Data of page: 3, address: 04 is "78" Data of page: 3, address: 05 is "78"

Note 1: This adjustment should be carried out upon completion of the following adjustments.
"IC4701 LINE OUT Y Level Adjustment", "IC4701 LINE OUT Chroma Level Adjustment", "S VIDEO OUT Y Level Adjustment", "S VIDEO OUT Chroma Level Adjustment".

Note 2: Check that the data of page: 0, address: 10 is "00".

Note 3: Connect the multi-cable and make a check with the panel lighting.

Switch setting

LCD panel ..... OPEN

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	03	FF	Press PAUSE (Write) button.
3	3	01	78	Press PAUSE (Write) button. (Note 4)
4	3	04		Check the data is "78". (Note 5)
5	3	05		Check the data is "78". (Note 5)
6	3	03		Check the data is "00".
7	3	01	00	Press PAUSE (Write) button.
8	0	01	00	

Note 4: The adjustment data will be automatically input to page: C, address: 83 to 8A, 99, A1 to A3.

Note 5: If the data is other than "78", adjustment has errors. Contents of error is written into Page: 3, address: 03. See the following Table.

Data of page:3, address: 03	Contents fo error
72	S VIDEO OUT Y level adjustment (IC4701 line on) error
74	IC4701 Panel (LCD) Clamp level adjustment error
75	IC4001 Panel (LCD) Output Gain adjustment error
76	IC4701 Panel (LCD) Output Gain adjustment error

6. VIDEO OUT Level Check (VC-419 board)

Mode	CAMERA-TAPE
Subject	Arbitrary
Measurement Point	Video terminal of A/V jack (or A/V OUT jack) (75 Ω terminated)
Measuring Instrument	Oscilloscope
Specified value	Sync level: A = 286 ± 18 mVp-p (NTSC) A = 300 ± 18 mVp-p (PAL) Burst level: B = 286 ± 18 mVp-p (NTSC) B = 300 ± 18 mVp-p (PAL)

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: NTSC model: DCR-HC96
PAL model: DCR-HC94E/HC96E

Switch setting

1) DEMO MODE (Menu setting) ..... OFF

Checking method:

Order	Page	Address	Data	Procedure
1	3	01	71	Press PAUSE (Write) button.
2				Check the sync signal level (A) to the specified value.
3				Check the burst signal level (B) to the specified value.
4	3	01	00	Press PAUSE (Write) button.

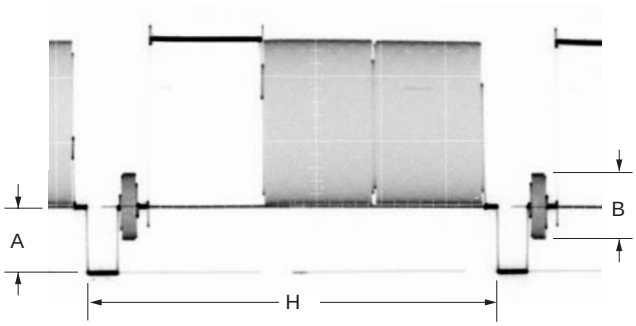


Fig. 6-3-7

3-5. AUDIO SYSTEM ADJUSTMENTS (DCR-HC94E)

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 6-3-8.

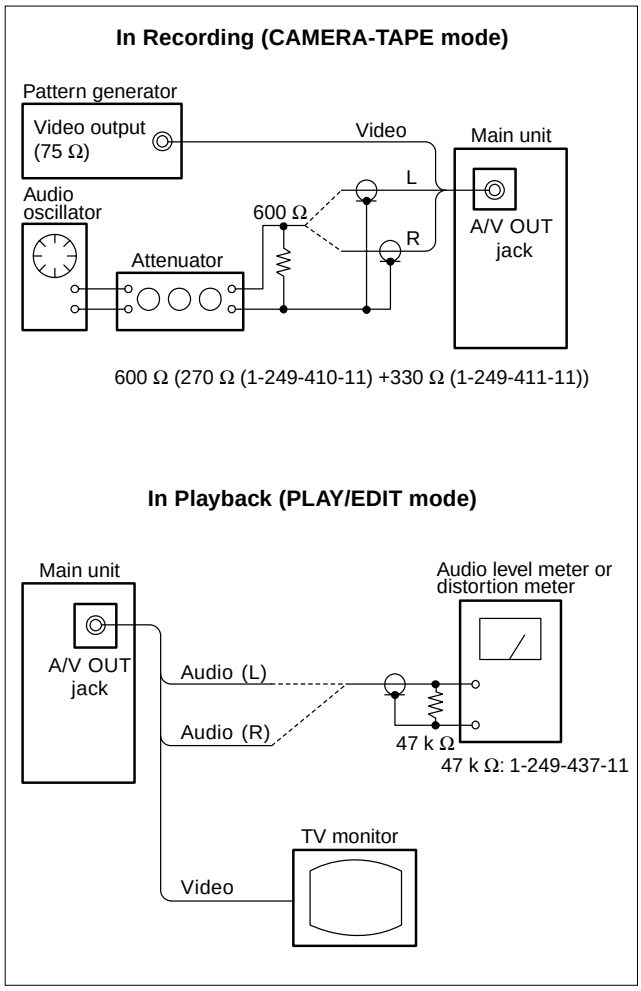


Fig. 6-3-8

1. Playback Level Check

Mode	Playback (PLAY/EDIT mode)
Signal	Alignment tape: For audio operation check (XH5-3P)
Measurement Point	Audio left or right terminal of A/V OUT jack
Measuring Instrument	Audio level meter and frequency counter
Specified Value	32 kHz mode: 1 kHz, + 3.0 ± 2.0 dBs 48 kHz mode: 1 kHz, + 3.0 ± 2.0 dBs 44.1 kHz mode: The 7.35 kHz signal level during EMP OFF is +2.0 ± 2.0 dBs. The 7.35 kHz signal level during EMP ON is –6 ± 2 dB from the signal level during EMP OFF.

Checking Method:
1) Check that the playback signal level is the specified value.

2. Overall Level Characteristics Check

Mode	Recording (CAMERA-TAPE) and playback (PLAY/EDIT mode)
Signal	400 Hz, –7.5 dBs signal: Audio left and right terminal of A/V OUT jack
Measurement Point	Audio left or right terminal of A/V OUT jack
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 3.0 dBs

Checking Method:
1) Select page: 7, address: 01, and set data: 94.
2) Select page: 7, address: 04, and set data: 0E.
3) Select page: 7, address: 00, set data: 01, and press the PAUSE (Write) button.
4) Select page: 7, address: 02, and check that the changes to “01”.
5) Input the 400 Hz, –7.5 dBs signal in the audio left and right terminal of A/V OUT jack.
6) Record the signal.
7) Remove the input signal.
8) Playback the recorded section.
9) Check that the 400 Hz signal level is the specified value.
10) Select page: 7, address: 01, and set data: 94.
11) Select page: 7, address: 04, and set data: 0F
12) Select page: 7, address: 00, set data: 01, and press the PAUSE (Write) button.
13) Select page: 7, address: 02, and check that the changes to “01”.

3. Overall Distortion Check

Mode	Recording (CAMERA-TAPE) and playback (PLAY/EDIT mode)
Signal	400 Hz, –7.5 dBs signal: Audio left and right terminal of A/V OUT jack
Measurement Point	Audio left or right terminal of A/V OUT jack
Measuring Instrument	Audio distortion meter
Specified Value	Below 0.4% (200 Hz to 6 kHz BPF ON)

Checking Method:

1) Select page: 7, address: 01, and set data: 94.
2) Select page: 7, address: 04, and set data: 0E.
3) Select page: 7, address: 00, set data: 01, and press the PAUSE (Write) button.
4) Select page: 7, address: 02, and check that the changes to “01”.
5) Input the 400 Hz, –7.5 dBs signal in the audio left and right terminal of A/V OUT jack.
6) Record the signal.
7) Remove the input signal.
8) Playback the recorded section.
9) Check that the distortion is the specified value.
10) Select page: 7, address: 01, and set data: 94.
11) Select page: 7, address: 04, and set data: 0F
12) Select page: 7, address: 00, set data: 01, and press the PAUSE (Write) button.
13) Select page: 7, address: 02, and check that the changes to “01”.

4. Overall Noise Level Check

Mode	Recording (CAMERA-TAPE) and playback (PLAY/EDIT mode)
Signal	No signal: Audio left and right teminal of A/V OUT jack
Measurement Point	Audio left or right terminal of A/V OUT jack
Measuring Instrument	Audio level meter
Specified Value	Below –45 dBs (IHF-A filter ON, 20 kHz LPF ON)

Checking Method:

1) Select page: 7, address: 01, and set data: 94.
2) Select page: 7, address: 04, and set data: 0E.
3) Select page: 7, address: 00, set data: 01, and press the PAUSE (Write) button.
4) Select page: 7, address: 02, and check that the changes to “01”.
5) Connect the audio left terminal of A/V OUT jack to GND using a jumper wire.
   Connect the audio right teminal of A/V OUT jack to GND using a jumper wire.
6) Record the signal.
7) Remove the jumper wires.
8) Playback the recorded section.
9) Check that the noise level is the specified value.
10) Select page: 7, address: 01, and set data: 94.
11) Select page: 7, address: 04, and set data: 0F
12) Select page: 7, address: 00, set data: 01, and press the PAUSE (Write) button.
13) Select page: 7, address: 02, and check that the changes to “01”.

5. Overall Separation Check

Mode	Recording (CAMERA-TAPE) and playback (PLAY/EDIT mode)
Signal	400 Hz, –7.5 dBs signal: Audio <right> [left] terminal of A/V OUT jack No signal: Audio <left> [right] terminal of A/V OUT jack
Measurement Point	Audio <left> [right] terminal of A/V OUT jack
Measuring Instrument	Audio level meter
Specified Value	Below –40 dBs

< > : Left channel check
[ ] : Right channel check

Checking Method:

1) Select page: 7, address: 01, and set data: 94.
2) Select page: 7, address: 04, and set data: 0E.
3) Select page: 7, address: 00, set data: 01, and press the PAUSE (Write) button.
4) Select page: 7, address: 02, and check that the changes to “01”.
5) Input the 400 Hz, –7.5 dBs signal in the audio <right> [left] terminal of A/V OUT jack.
   Connect the audio <left> [right] terminal of A/V OUT jack to GND using a jumper wire.
6) Record the signal.
7) Remove the input signal, and remove the jumper wire.
8) Playback the recorded section.
9) Check that the signal level of the audio <left> [right] terminal is the specified value.
10) Select page: 7, address: 01, and set data: 94.
11) Select page: 7, address: 04, and set data: 0F
12) Select page: 7, address: 00, set data: 01, and press the PAUSE (Write) button.
13) Select page: 7, address: 02, and check that the changes to “01”.

3-6. AUDIO SYSTEM ADJUSTMENTS (Expect DCR-HC94E)

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 6-3-9.

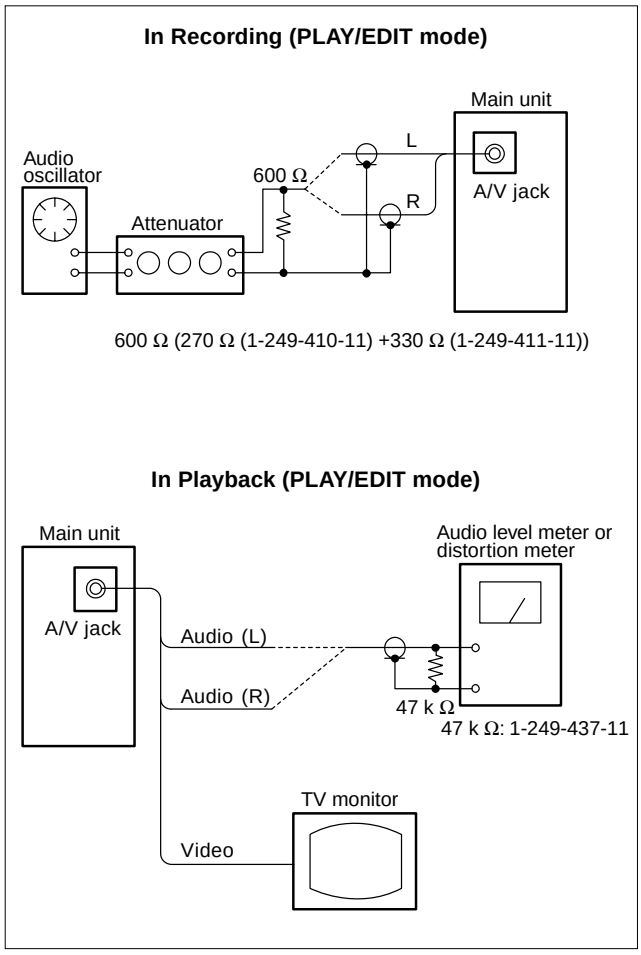


Fig. 6-3-9

How to enter the recording:
1) Slide the POWER switch down repeatedly to PLAY/EDIT mode.
2) Touch the LCD screen P-MENU → [REC CTRL].

1. Playback Level Check

Mode	Playback (PLAY/EDIT mode)
Signal	Alignment tape: For audio operation check (XH5-3 (NTSC)) (XH5-3P (PAL)))
Measurement Point	Audio left or right terminal of A/V jack
Measuring Instrument	Audio level meter and frequency counter
Specified Value	32 kHz mode: 1 kHz, + 3.0 ± 2.0 dBs 48 kHz mode: 1 kHz, + 3.0 ± 2.0 dBs 44.1 kHz mode: The 7.35 kHz signal level during EMP OFF is +2.0 ± 2.0 dBs. The 7.35 kHz signal level during EMP ON is –6 ± 2 dB from the signal level during EMP OFF.

Note: NTSC model: DCR-HC96
PAL model: DCR-HC96E

Checking Method:
1) Check that the playback signal level is the specified value.

2. Overall Level Characteristics Check

Mode	Recording and playback (PLAY/EDIT mode)
Signal	400 Hz, –7.5 dBs signal: Audio left and right terminal of A/V jack
Measurement Point	Audio left or right terminal of A/V jack
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 3.0 dBs

Checking Method:
1) Input the 400 Hz, –7.5 dBs signal in the audio left and right terminal of A/V jack.
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level is the specified value.

3. Overall Distortion Check

Mode	Recording and playback (PLAY/ EDIT mode)
Signal	400 Hz, –7.5 dBs signal: Audio left and right terminal of A/V OUT jack
Measurement Point	Audio left or right terminal of A/V jack
Measuring Instrument	Audio distortion meter
Specified Value	Below 0.4% (200 Hz to 6 kHz BPF ON)

Checking Method:

1) Input the 400 Hz, –7.5 dBs signal in the audio left and right terminal of A/V jack.
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the distortion is the specified value.

4. Overall Noise Level Check

Mode	Recording and playback (PLAY/ EDIT mode)
Signal	No signal: Audio left and right teminal of A/V jack
Measurement Point	Audio left or right terminal of A/V OUT jack
Measuring Instrument	Audio level meter
Specified Value	Below –45 dBs (IHF-A filter ON, 20 kHz LPF ON)

Checking Method:

1) Connect the audio left terminal of A/V jack to GND using a jumper wire.
   Connect the audio right teminal of A/V jack to GND using a jumper wire.
2) Record the signal.
3) Remove the jumper wires.
4) Playback the recorded section.
5) Check that the noise level is the specified value.

5. Overall Separation Check

Mode	Recording and playback (PLAY/ EDIT mode)
Signal	400 Hz, –7.5 dBs signal: Audio <right> [left] terminal of A/V jack No signal: Audio <left> [right] terminal of A/V jack
Measurement Point	Audio <left> [right] terminal of A/V jack
Measuring Instrument	Audio level meter
Specified Value	Below –40 dBs

< > : Left channel check
[ ] : Right channel check

Checking Method:

1) Input the 400 Hz, –7.5 dBs signal in the audio <right> [left] terminal of A/V jack.
   Connect the audio <left> [right] terminal of A/V jack to GND using a jumper wire.
2) Record the signal.
3) Remove the input signal, and remove the jumper wire.
4) Playback the recorded section.
5) Check that the signal level of the audio <left> [right] terminal is the specified value.

6-4. SERVICE MODE

4-1. ADJUSTMENT REMOTE COMMANDER (RM-95)

The adjustment remote commander (RM-95) is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander (RM-95) performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander (RM-95)

1) Connect the adjustment remote commander to the LANC terminal.
2) Set the HOLD switch of the adjustment remote commander (RM-95) to "HOLD" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander (RM-95) will display as shown in Fig. 6-4-1.

Fig. 6-4-1

3) Operate the adjustment remote commander (RM-95) as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0 1 2 3 4 5 6 7 8 9 A B C D E F
LCD Display	0 1 2 3 4 5 6 7 8 9 A b c d E F
Decimal notation conversion value	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

   - Changing the address
     The address increases when the FF (►►) button is pressed, and decreases when the REW (◄◄) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (►) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed)
4) After completing all adjustments, turn off the main power supply (8.4 V) once.

2. Precautions Upon Using the Adjustment Remote Commander (RM-95)

Mishandling of the adjustment remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-2. ADJUSTMENT REMOTE COMMANDER (NEW LANC JIG)

The adjustment remote commander (New LANC Jig) is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander (New LANC Jig) performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander (New LANC Jig))

1) Connect the adjustment remote commander (New LANC Jig) to the LANC terminal via the LANC cable (J-6082-442-A).
2) Set the slide switch of the adjustment remote commander (New LANC Jig) to "SERVICE" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander (New LANC Jig) will display as shown in Fig. 6-4-2.

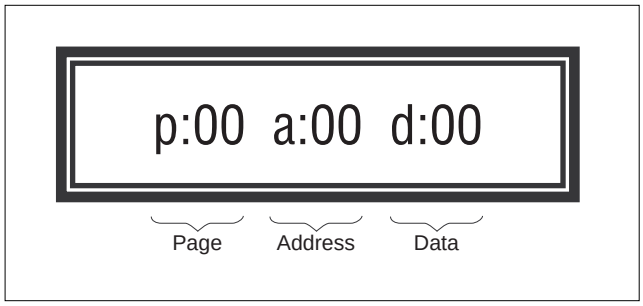


Fig. 6-4-2

3) Operate the adjustment remote commander (New LANC Jig) as follows.
   - Changing the page
     The page increases when the Page+ (▶▶) button is pressed, and decreases when the Page– (◀◀) button is pressed.
   - Changing the address
     The address increases when the ADD+ (▶) button is pressed, and decreases when the ADD– (▮▮) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the Data+ button is pressed, and decreases when the Data– button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The Write (■) button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed)
4) After completing all adjustments, turn off the main power supply (8.4 V) once.

2. Precautions Upon Using the Adjustment Remote Commander (New LANC Jig)

Mishandling of the adjustment remote commander (New LANC Jig) may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-3. DATA PROCESS

The calculation of the DDS display and the adjustment remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Indicates the hexadecimal-decimal conversion table.

Hexadecimal-decimal Conversion Table

Lower digit of hexadecimal / Upper digit of hexadecimal	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	77	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

② (above the D (d) column)

Note: The characters shown in the parenthesis ( ) shown the display on the adjustment remote commander.

(Example) If the DDS display or the adjustment remote commander shows BD (bd);
Because the upper digit of the adjustment number is B (b), and the lower digit is D (d), the meeting point "189" of ① and ② in the above table is the corresponding decimal number.

Table 6-4-1

4-4. SERVICE MODE

Note: Before performing the adjustment, check the data of page: 0, address: 10 is "00". If not, select page: 0, address: 00, and set data "00".

1. Setting the Test Mode

Page A	Address 10

Data	Function
00	Normal
01	Forced camera power ON (CAMERA-TAPE mode)
02	Forced VTR power ON (PLAY/EDIT mode)
03	Forced camera + VTR power ON
05	Forced memory power ON (CAMERA-MEMORY mode)

- Before setting the data , select page: 0, address: 01, and set data: 01.
- For page A, the data set will be recorded in the non-volatile memory by pressing the PAUSE (Write) button of the adjustment remote commander. In this case, take note that the test mode will not be exited even when the main power is turned off (8.4 Vdc).
- After completing adjustments/repairs, be sure to return the data of this address to 00, and press the PAUSE (Write) button of the adjustment remote commander. And select page: 0, address: 01, and set data: 00.

2. Emergence Memory Address

2-1. Emergency Memory Address (Camera section)

Page 19	Address 87 to 8A

Note: If reading/writing data on pages 19, set data: 01 to page: 0, address: 10, and then select pages: 9. By this data setting, the pages 19 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Address	Contents
87	EMG code when first error occurs
88	EMG code when second error occurs
89	EMG code when third error occurs
8A	EMG code when last error occurs

When no error occurs in this unit, data "00" is written in the above addresses (87 to 8A). when first error occurs in the unit, the data corresponding to the error is written in the first emergency address (87). In the same way, when the second error occurs, the data corresponding to the error is written in the second emergency address (88).
Finally, when the last error occurs, the data corresponding to the error is written in the last emergency address (8A).

Note: After completing adjustments, be sure to initialize the data of addresses 87 to 8A to "00".

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	01	FD	Press PAUSE (Write) button.
3	6	02		Check the data changes to "01".
4	6	01	00	Press PAUSE (Write) button.
5	0	01	00	

2-2. EMG Code (Emergency Code)

Codes corresponding to the errors which occur are written in 19 page, addresses 87 to 8A. The type of error indicated by the code are shown in the following table.

Code	Emergency Type
00	No error

2-3. Emergence Memory Address (Mechanism section)

Page C	Address F4 to FF

Address	Contents
F4	EMG code when first error occurs
F6	Upper: MSW code when shift starts when first error occurs Lower: MSW code when first error occurs
F7	Lower: MSW code to be moved when first error occurs
F8	EMG code when second error occurs
FA	Upper: MSW code when shift starts when second error occurs Lower: MSW code when second error occurs
FB	Lower: MSW code to be moved when second error occurs
FC	EMG code when last error occurs
FE	Upper: MSW code when shift starts when last error occurs Lower: MSW code when last error occurs
FF	Lower: MSW code to be moved when last error occurs

When no error occurs in this unit, data “00” is written in the above addresses (F4 to FF). when first error occurs in the unit, the data corresponding to the error is written in the first emergency address (F4 to F7). In the same way, when the second error occurs, the data corresponding to the error is written in the second emergency address (F8 to FB).
Finally, when the last error occurs, the data corresponding to the error is written in the last emergency address (FC to FF).

Note: After completing adjustments, be sure to initialize the data of addresses F4 to FF to “00”.

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	03	FF	Press PAUSE (Write) button.
3	3	01	37	Press PAUSE (Write) button.
4	3	02		Check the data changes to “00”.
5	3	03		Check the data changes to “00”.
6	0	01	00	

2-4. EMG Code (Emergency Code)

Codes corresponding to the errors which occur are written in C page, addresses F4, F8 and FC . The type of error indicated by the code are shown in the following table.

Code	Emergency Type
00	No error
10	Loading motor emergency during loading
11	Loading motor emergency during unloading
22	T reel emergency during normal rotation
23	S reel emergency during normal rotation
24	T reel emergency (Short circuit between S reel terminal and T reel terminal)
30	FG emergency at the start up of the capstan
40	FG emergency at the start up of the drum
42	FG emergency during normal rotation of the drum

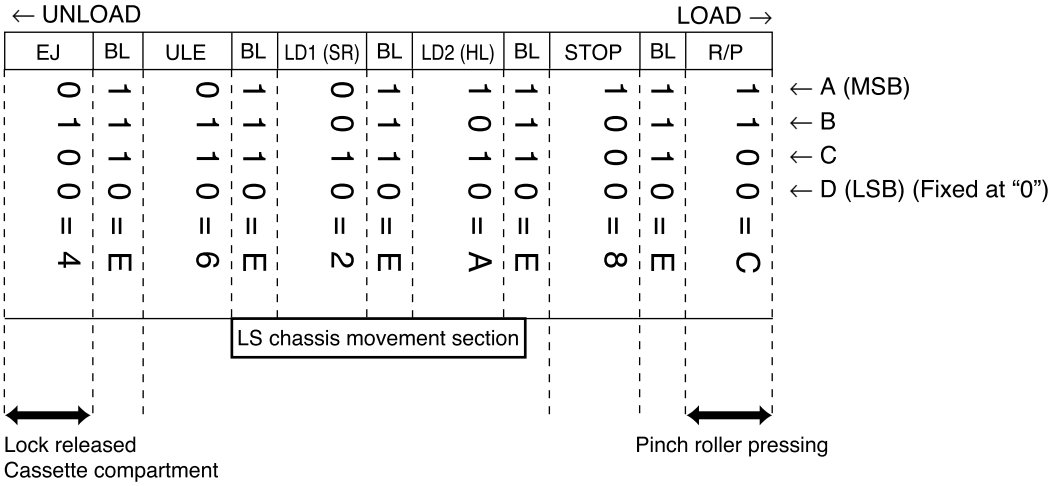
2-5. MSW Code

MSW when errors occur:
Information on MSW (mode SW) when errors occur

MSW when movement starts:
Information on MSW when movements starts when the mechanism position is moved (When the L motor is moved)

MSW of target of movement:
Information on target MSW of movement when the mechanism position is moved

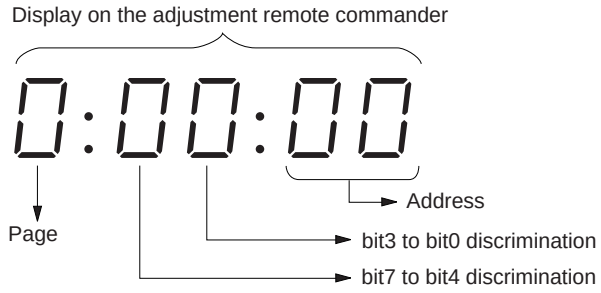
Mechanical Position



Position	Code	Contents
EJ	4	Position at which the cassette component lock is released, at the farthest unload side mechanically at which the mechanism can move no further in the UNLOAD direction.
BL	E	BLANK code, at the boundary between codes.
ULE	6	EJECT completion position. when the cassette is ejected, the mechanism will stop at this position. Cassette IN standby. The guide will start protruding out as the mechanism moves towards the LOAD position.
LD1 (SR)	2	When prepraing TOP load processing or when DEW is detected, rolling up tape by T reel is preformed at this position.
LD2 (HL)	A	When prepraing TOP load processing or when DEW is detected, rolling up tape by S reel is preformed at this position.
STOP	8	Stop position in the loading state. The pinch roller separates, the tension regulator returns, and the brake is imposed on both reels.
R/P	C	PB, REC, CUE, REVIEW, PAUSE, FF, REW positions. When pinch roller is pressed, and the tension regulator is ON, the mechanism is operating at this position in modes in which normal images are shown.
NULL	0	Code not existing in the MD. Default value.
	F	Status before finding any mechanism position.

3. Bit Value Discrimination

Bit values must be discriminated using the display data of the adjustment remote commander for the following items. Us the table below to discriminate if the bit value is “1” or “0”.



(Example) If the remote commander display is “8E”, bit value from bit 7 to bit 4 can be discriminated from the column Ⓐ, and those from bit 3 to bit 0 from column Ⓑ.

	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (R)	1	0	1	0
	B (b)	1	0	1	1
	C (C)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

4. Jack Check (1) (Handycam Station)

Page 7	Address FC

Note: Check that the data of page: 0, address: 10 is “00”.

Bit	Function	When bit value = 1	When bit value = 0
0	CRADLE MULTI jack (CR-064 board CN002)	Used	Not used

Using method:

1) Select page: 7, address: FC.
2) By discriminating the bit value of display data, the state of jack can be discriminated.

5. Jack Check (2)

Page 7	Address FB

Note: Check that the data of page: 0, address: 10 is “00”.

Bit	Function	When bit value = 1	When bit value = 0
0	A/V jack or A/V OUT jack (SI-054 board CN401)	Used	Not used

Using method:

1) Select page: 7, address: FB.
2) By discriminating the bit value of display data, the state of jack can be discriminated.

6. Switch Check (1)

Page 2	Address 81

Note: Check that the data of page: 0, address: 10 is “00”.

Bit	Function	When bit value = 1	When bit value = 0
0	POWER (SS17000 block)	ON	OFF
1	MODE CHANGE (SS17000 block)	ON	OFF
3	EJECT (SS17000 block S001)	ON	OFF
4	CC DOWN (Mechanism chassis)	ON (DOWN)	OFF (UP)
5	DISP/BATT INFO (CF17000 block S002)	ON	OFF

Using method:
1) Select page: 2, address: 81.
2) By discriminating the bit value of display data, the state of switch can be discriminated.

7. Switch Check (2)

Page 7	Address F4

Note: Check that the data of page: 0, address: 10 is “00”.

Bit	Function	When bit value = 1	When bit value = 0
4	REC PROOF SW (Mechanism chassis)	SAVE	REC

Using method:
1) Select page: 7, address: F4.
2) By discriminating the bit value of display data, the state of switch can be discriminated.

8. Switch Check (3)

Page 7	Address 65 to 6B

Note: Check that the data of page: 0, address: 10 is “00”.

Using method:

1) Select page: 7, address: 65 to 6B.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0C	0D to 26	27 to 43	44 to 63	64 to 8A	8B to B6	B7 to E6	E7 to FF
65 (KEY AD0) (IC5102 ⑬⑨)	REC START/STOP (SS17000 block) (S004)							No key input
66 (KEY AD1) (IC5102 ⑭⓪)	REC START/STOP (SB10600 block) (S001)	ZOOM W (SB10600 block) (S002)	ZOOM T (SB10600 block) (S003)	WIDE SELECT (SB10600 block) (S004)	PANEL REVERES (FP-386 flexible) (S101)			PANEL NORMAL (FP-386 flexible) (S101)
67 (KEY AD2) (IC5102 ⑭①)	PHOTO (REC) (SS17000 block) (S002)				PHOTO (FREEZE) (SS17000 block) (S003)			No key input
68 (KEY AD3) (IC5102 ⑭②)	EASY (CF17000 block) (S003)		BACK LIGHT (CF17000 block) (S004)		PANEL CLOSE (CF17000 block) (S005)			PANEL OPEN (CF17000 block) (S005)
69 (KEY AD4) (IC5102 ⑭③)								
6A (KEY AD5) (IC5102 ⑭④)	FLASH (CF17000 block) (S006)				NIGHT SHOT ON (CF17000 block) (S007)			NIGHT SHOT OFF (CF17000 block) (S007)
6B (KEY AD6) (IC5102 ⑭⑤)								

9. Lens barrier check

Page 3	Address 68
Page 6	Address 62

Note: Check that the data of page: 0, address: 10 is “00”.

Page	Address	Function	CAMERA-TAPE mode or CAMERA-MEMORY mode (Lens barrier: Open)	PLAY/EDIT mode (Lens barrier: Closed)
3	68	Lens barrier open/close switch	Bit1 = 1, Bit2 = 0	Bit1 = 0, Bit2 = 1
6	62	Error code	Data = 81	Data = 42

Using method:

1) Set up the CAMERA-TAPE mode (or CAMERA-MEMORY mode).
2) By discriminating the bit values of page: 3, address: 68, the state of the lens barrier can be discriminated.
3) Check that the data of page: 6, address: 62 is “81”. If the data is other than “81”, the opereation has errors.
4) Set up the PLAY/EDIT mode.
5) By discriminating the bit values of page: 3, address: 68, the state of the lens barrier can be discriminated.
6) Check that the data of page: 6, address 62 is “42”, If the data is other than “42”, the operation has errors.

10. LED, IR Light Check

Page 7	Address 00, 01 and 04

Note: Check that the data of page: 0, address: 10 is “00”.

Using method:

Order	Page	Address	Data	Procedure
1				Set the unit to CAMERA-TAPE mode.
2	7	01	90	
3	7	04	01	
4	7	00	01	Press PAUSE (Write) button.
5				Check that the all LED are lit, and that the IR light is lit.
6	7	01	90	
7	7	04	00	
8	7	00	01	Press PAUSE (Write) button.
9	7	00	00	
10	7	01	00	

11. Record of Use Check (1)

Page 7	Address A4 to AF

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (SI-054 board BT401) is removed.
Note 2: When the drum was replaced, initialize the drum rotation counted time.
Note 3: Check that the data of page: 0, address: 10 is "00".

Address	Function		Remarks
A4	Power supplying	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
A5	time	Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
A6		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A7	(BCD code)	Minute	
A8	Drum rotation	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
A9	counted time	Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
AA		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
AB	(BCD code)	Minute	
AC	Tape run time	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
AD		Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
AE		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
AF	(BCD code)	Minute	

Using method:
1) The record of use data is displayed at page: 7, addresses: A4 to AF.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	A4	00	Press PAUSE (Write) button.
2	7	A5	00	Press PAUSE (Write) button.
3	7	A6	00	Press PAUSE (Write) button.
4	7	A7	00	Press PAUSE (Write) button.
5	7	A8	00	Press PAUSE (Write) button.
6	7	A9	00	Press PAUSE (Write) button.
7	7	AA	00	Press PAUSE (Write) button.
8	7	AB	00	Press PAUSE (Write) button.
9	7	AC	00	Press PAUSE (Write) button.
10	7	AD	00	Press PAUSE (Write) button.
11	7	AE	00	Press PAUSE (Write) button.
12	7	AF	00	Press PAUSE (Write) button.

12. Record of Use Check (2)

Page 7	Address 90 to 95

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (SI-054 board BT401) is removed.
Note 2: When the drum was replaced, initialize the drum rotation counted time.
Note 3: Check that the data of page: 0, address: 10 is “00”.

Address	Function		Remarks
90	Eject count with tape	Count (H)	100000th place digit and 10000th place digit of Eject count (decimal digit)
91		Count (M)	1000th place digit and 100th place digit of Eject count (decimal digit)
92	(BCD code)	Count (L)	10th place digit and 1st place digit of Eject count (decimal digit)
93	Eject count without	Count (H)	100000th place digit and 10000th place digit of Eject count (decimal digit)
94	tape	Count (M)	1000th place digit and 100th place digit of Eject count (decimal digit)
95	(BCD code)	Count (L)	10th place digit and 1st place digit of Eject count (decimal digit)

Using method:
1) The record of use data is displayed at page: 7, addresses: 90 to 95.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	90	00	Press PAUSE (Write) button.
2	7	91	00	Press PAUSE (Write) button.
3	7	92	00	Press PAUSE (Write) button.
4	7	93	00	Press PAUSE (Write) button.
5	7	94	00	Press PAUSE (Write) button.
6	7	95	00	Press PAUSE (Write) button.

13. Record of Use Check (3)

Page 7	Address C8 to CD

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (SI-054 board BT401) is removed.
Note 2: Check that the data of page: 0, address 10 is “00”.

Address	Function		Remarks
C8	User initial power	Year	After setting the clock, set the date of power on next
C9	on date	Month	
CA	(BCD code)	Day	
CB	Final condensation	Year	
CC	occurrence date	Month	
CD	(BCD code)	Day	

Using method:
1) The record of use data is displayed at page: 7, addresses: C8 to CD.

14. Record of Self-diagnosis Check

Page 7	Address B0 to C6

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (SI-054 board BT401) is removed.
Note 2: Check that the data of page: 0, address 10 is “00”.

Address	Self-diagnosis code
B0	“Repaired by” code (Occurred 1st time) *1
B1	“Block function” code (Occurred 1st time)
B2	“Detailed” code (Occurred 1st time)
B4	“Repaired by” code (Occurred 2nd time) *1
B5	“Block function” code (Occurred 2nd time)
B6	“Detailed” code (Occurred 2nd time)
B8	“Repaired by” code (Occurred 3rd time) *1
B9	“Block function” code (Occurred 3rd time)
BA	“Detailed” code (Occurred 3rd time)
BC	“Repaired by” code (Occurred 4th time) *1
BD	“Block function” code (Occurred 4th time)
BE	“Detailed” code (Occurred 4th time)
C0	“Repaired by” code (Occurred 5th time) *1
C1	“Block function” code (Occurred 5th time)
C2	“Detailed” code (Occurred 5th time)
C4	“Repaired by” code (Occurred the last time) *1
C5	“Block function” code (Occurred the last time)
C6	“Detailed” code (Occurred the last time)

*1 : “01” → “C”, “03” → “E”

Using method:

1) The past self-diagnosis codes are displayed at page: 7, address: BC to C6. Refer to “1-5. SELF-DIAGNOSIS FUNCTION” of “SERVICE MANUAL, LEVEL 2” for detail of the self-diagnosis code.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	01	C0	
2	7	00	01	Press PAUSE (Write) button.
3	7	B0 to C6		Check that the data is “00”.
4	7	00	00	
5	7	01	00	

How to reset the flash error flag

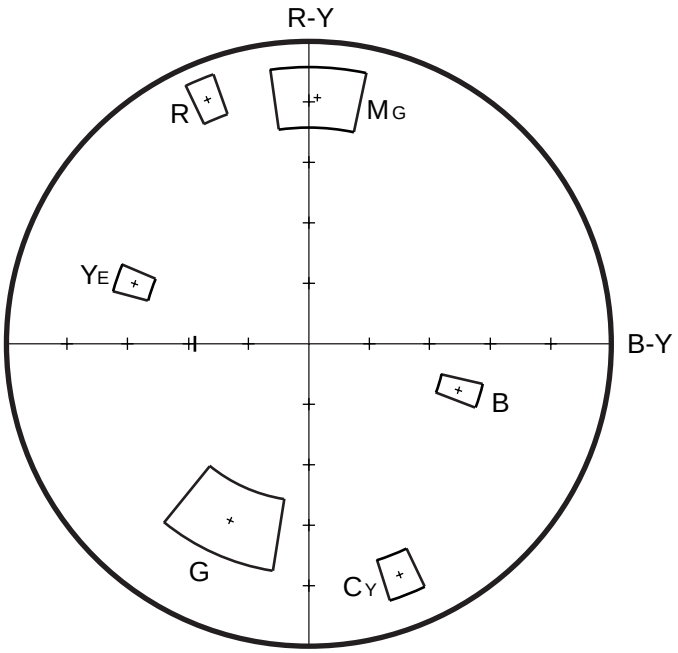
When “FLASH error” (Self-diagnosis Code E:91:**) occurs, to prevent any abnormal situation caused by high voltage, setting of the flash is changed automatically to disabling charge and flash setting.
After fixing, this setting needs to be deactivated. Connect the adjustment remote commander and perform the following process.

Order	Page	Address	Data	Procedure
1	7	01	75	
2	7	00	01	Press PAUSE button.
3	7	02		Check the data is “01”.

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

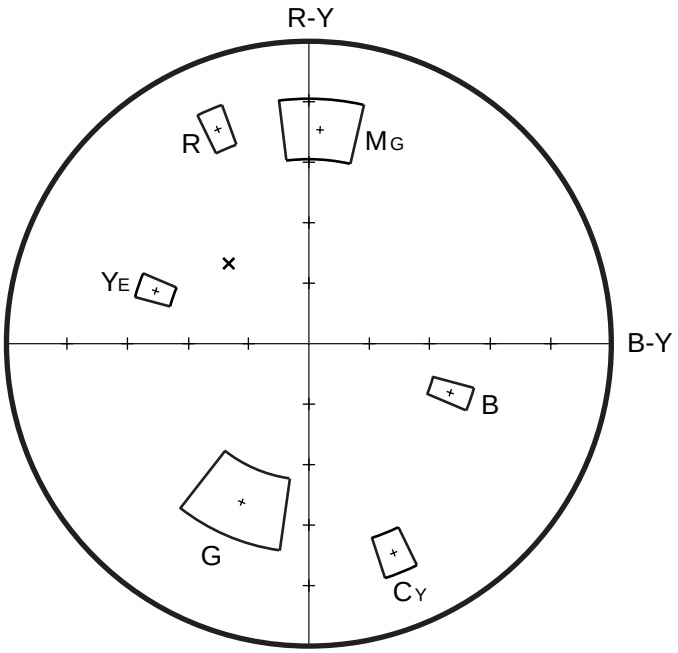
Take a copy of CAMERA COLOR REPRODUCTION FRAME with a clear sheet for use.

For NTSC model



DCR-HC96

For PAL model



DCR-HC94E/HC96E

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2006.01	Official Release	—	—