

**Ver 1.0 2002.11**  
Revision History

## SECTION 6 ADJUSTMENTS

**ADJ**

### Link

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  - Adjusting items when replacing main parts and boards

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\* The optical axis frame is shown on page 6-50  
 The color reproduction frame is shown on page 6-51



## SECTION 6 ADJUSTMENTS

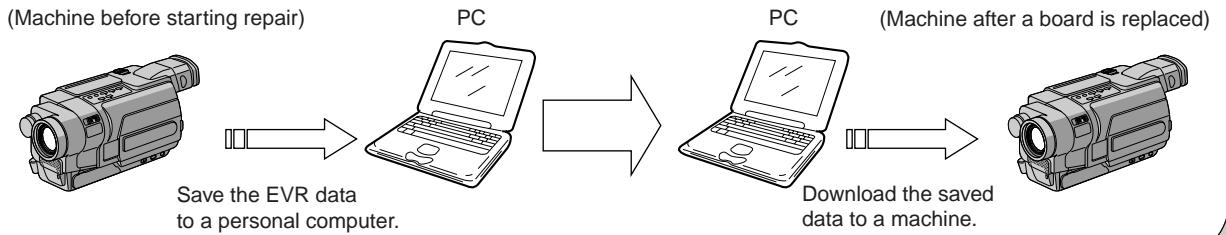
### 1. Before starting adjustments

#### 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

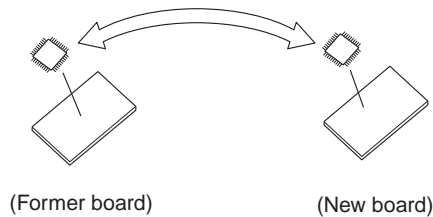
Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



##### Procedure 2

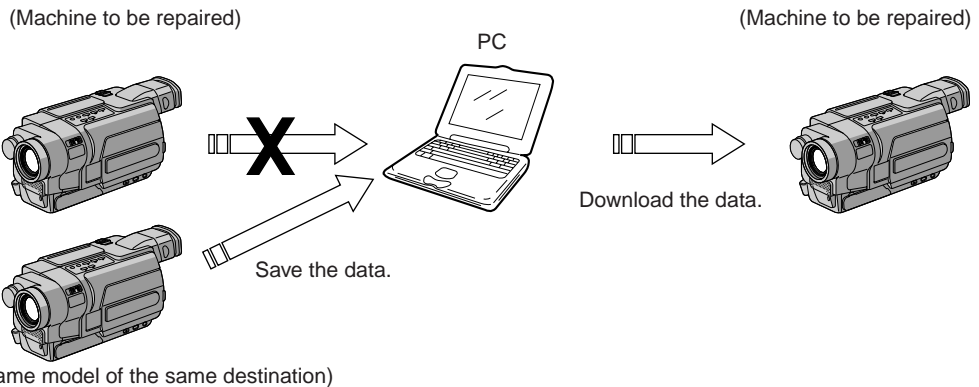
Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.

Remove the EEPROM and install it.



##### 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)



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.

Adjustment Section	Adjustment	Replaced part																	
		Block replacement						Mounted part replacement											
		Lens device	Video light (Note 2)	LCD block LCD901 (LCD panel)	LCD block ND901 (Fluorescent tube)	Mechanism deck (Note 1)	Mechanism deck M901 (Drum assembly) (Note 1)	Mechanism deck M902 (Capstan motor)	CD-409 board IC951 (CCD imager)	SI-035 board SE751/752 (YAW, PITCH sensor) (Note 3)	VC-303 board IC271, X271 (Timing generator)	VC-303 board IC272 (S/H, AGC, A/D CONV.)	VC-303 board IC151 (Camera/VTR process)	VC-303 board IC101 (REC/PB AMP)	VC-303 board IC651 (Y/C MIX, Buffer)	VC-303 board IC601 (EVR)	VC-303 board IC351 (Audio process)	PD-180 board IC5501 (LCD drive)	PD-180 board IC5502 (Timing generator)
Initialization of D, E, F, 7 page data	Initializing of D, E, F, 7 page data																		
Camera	HALL adj.	●																	
	Flange back adj.	●						●											
	Optical axis adj.	●						●											
	Color reproduction adj.							●			●								
	AWB & LV standard data input							●			●								
	Auto white balance adj.							●			●								
	Angular velocity sensor output check and steadyspot check (Note 3)								●										
LCD	VCO adj.																●	●	
	RGB AMP adj.																●	●	
	Contrast adj.																●	●	
	COM AMP adj.																●	●	
	V-COM adj.			●													●	●	
	White balance adj.			●	●												●	●	
Servo	CAP FG offset adj.					●		●											
	Switching position adj.					●	●												
Video	28 MHz origin oscillation adj.									●						●			
	AFC f <sub>0</sub> adj.																		
	S VIDEO OUT Y level adj.											●							
	S VIDEO OUT C level adj.											●							
	REC Y current adj.											●			●				
	REC C/AFM current adj.											●	●						
Audio	BPF f <sub>0</sub> adj.																●		
	1.5 MHz deviation adj.																●		
Mechanism	Tape path adj.					●	●	●											

Table 6-1-1 (1)

**Note 1:** When replacing the drum assy or mechanism deck, reset the data of page: 2, address: A2 to A4.

(Refer to "Record of Use Check" of "6-4. SERVICE MODE")

**Note 2:** When replacing the video light, reset the data of page: 2, address: E0 to E2.

(Refer to "Record of Use Check" of "6-4. SERVICE MODE")

**Note 3:** CCD-TRV318/TRV418/TRV418E only

• **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			Supporting <b>RadarW</b>
		PD-180 board (COMPLETE)	VC-303 board (COMPLETE)	VC-303 board IC401 (EEPROM)	
Initialization of D, E, F, 7 page data	Initializing of D, E, F, 7 page data		●	●	
Camera	HALL adj.		●	●	●
	Flange back adj.		●	●	●
	Optical axis adj.		●	●	
	Color reproduction adj.		●	●	
	AWB & LV standard data input		●	●	●
	Auto white balance adj.		●	●	●
	Angular velocity sensor output check and steadyspot check (Note 3)		●	●	●
LCD	VCO adj.	●	●	●	
	RGB AMP adj.	●	●	●	
	Contrast adj.	●	●	●	
	COM AMP adj.	●	●	●	
	V-COM adj.	●	●	●	
	White balance adj.	●	●	●	
Servo	CAP FG offset adj.		●	●	●
	Switching position adj.		●	●	
Video	28 MHz origin oscillation adj.		●	●	
	AFC f <sub>0</sub> adj.		●	●	●
	S VIDEO OUT Y level adj.		●	●	
	S VIDEO OUT C level adj.		●	●	
	REC Y current adj.		●	●	
	REC C/AFM current adj.		●	●	
Audio	BPF f <sub>0</sub> adj.		●	●	
	1.5 MHz deviation adj.		●	●	
Mechanism	Tape path adj.				

Table 6-1-1 (2)



**6-1. CAMERA SECTION ADJUSTMENTS**

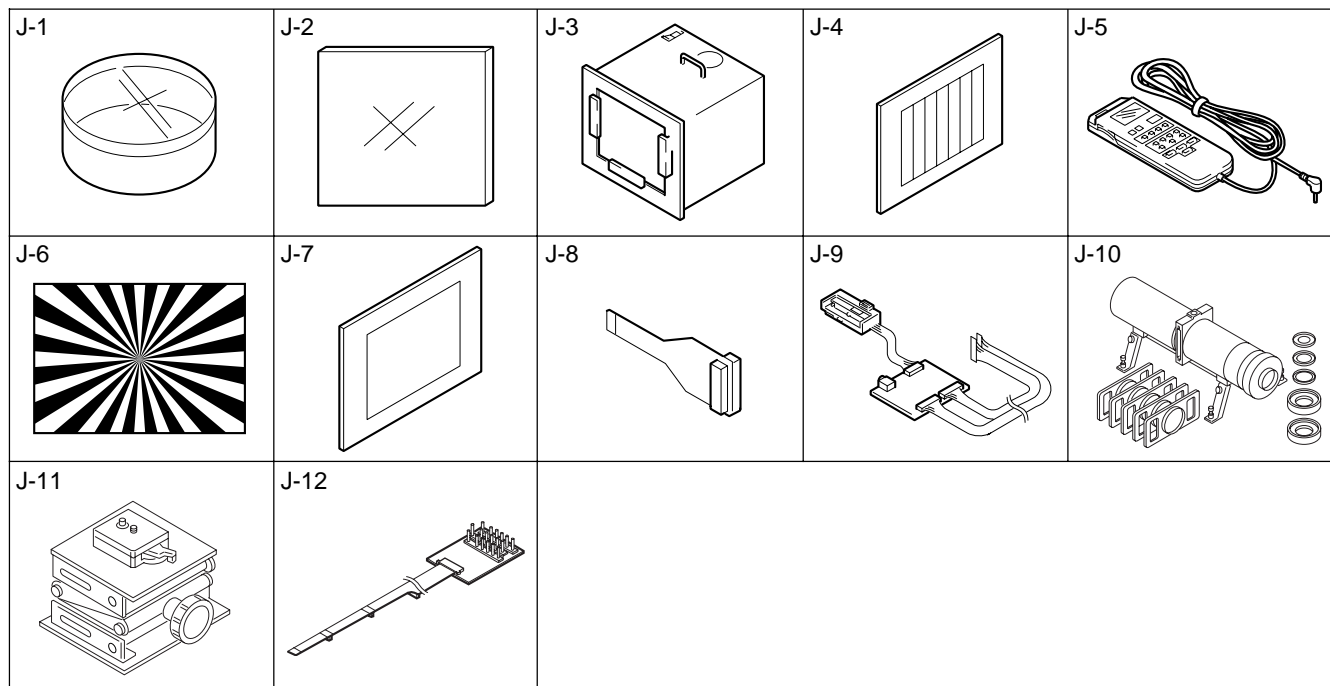
**1-1. PREPARATIONS BEFORE ADJUSTMENTS (CAMERA SECTION)**

**1-1-1. List of Service Tools**

- Oscilloscope
- Regulated power supply
- Color monitor
- Digital voltmeter
- Vectorscope
- Frequency counter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.4	J-6080-806-A	White balance check
	ND filter 0.1	J-6080-807-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjustment remote commander (RM-95 upgraded). (Note)	J-6082-053-B	
J-6	Siemens star chart	J-6080-875-A	For checking the flange back
J-7	Clear chart for pattern box	J-6080-621-A	
J-8	CPC jig connector	J-6082-539-A	For connecting the adjustment remote commander
J-9	I/F unit for LANC control	J-6082-521-A	For connecting the adjustment remote commander
J-10	Mini pattern box	J-6082-353-B	For adjusting the flange back
J-11	Camera table	J-6082-384-A	For adjusting the flange back
J-12	Multi CPC jig	J-6082-311-A	For adjusting the LCD system

**Note:** If the micro processor IC in the adjustment remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).



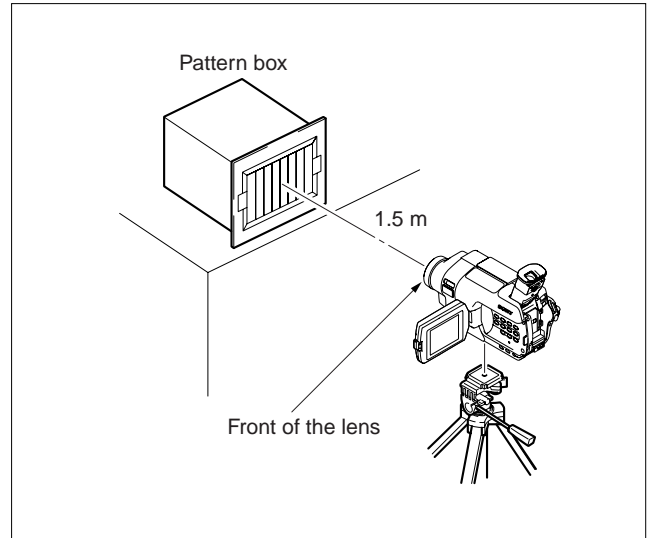
**Fig. 6-1-1**

**1-1-2. Preparations**

**Note 1:** For details of how remove the cabinet and boards, refer to “2. DISASSEMBLY”.

**Note 2:** When performing only the adjustments, the lens block and boards need not be disassembled.

- 1) Connect the equipment for adjustments according to Fig. 6-1-4.
- 2) Connect the adjustment remote commander to VC-303 board CN712 via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A). (Fig. 6-1-3)  
To operate the adjustment remote commander, connect the AC power adaptor to the DC IN jack of I/F unit for LANC control, or connect the L series Info-LITHIUM battery to the battery terminal of I/F unit for LANC control.
- 3) The front panel block (SI-035 board, video light, microphone unit) need not be assembled except during the steadyshot operation check.



**Fig. 6-1-2**

**Note 3:** As removing the cabinet (R) (removing the VC-303 board CN713) means removing the lithium 3V power supply (CF-3000 block BT001), data such as date, time, user-set menu will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time, etc. ) will be lost. Before removing, note down the self-diagnosis data (data of page: 2, address: B0 to C6) and data on history use (data of page: 2, address: A2 to AA and E0 to E2). (Refer to “SELF-DIAGNOSIS FUNCTION” for the self-diagnosis data, and to “6-4. Service Mode” for the data on the history use)

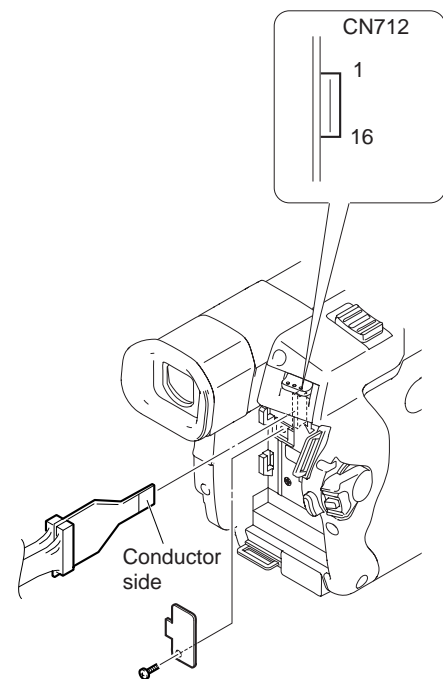
**Note 4:** Setting the “Forced Camera Power ON” Mode

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjustment remote commander.

The above procedure will enable the camera power to be turned on with the power switch (SS-3000 block) removed. After completing adjustments, be sure to exit the “Forced Camera Power ON Mode”.

**Note 5:** Exiting the “Forced Camera Power ON” Mode

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 0, address: 01, and set data: 00.



**Fig. 6-1-3**

**Note:** Use either the AC power adaptor or the InfoLITHIUM battery as the power supply of I/F unit for LANC control.

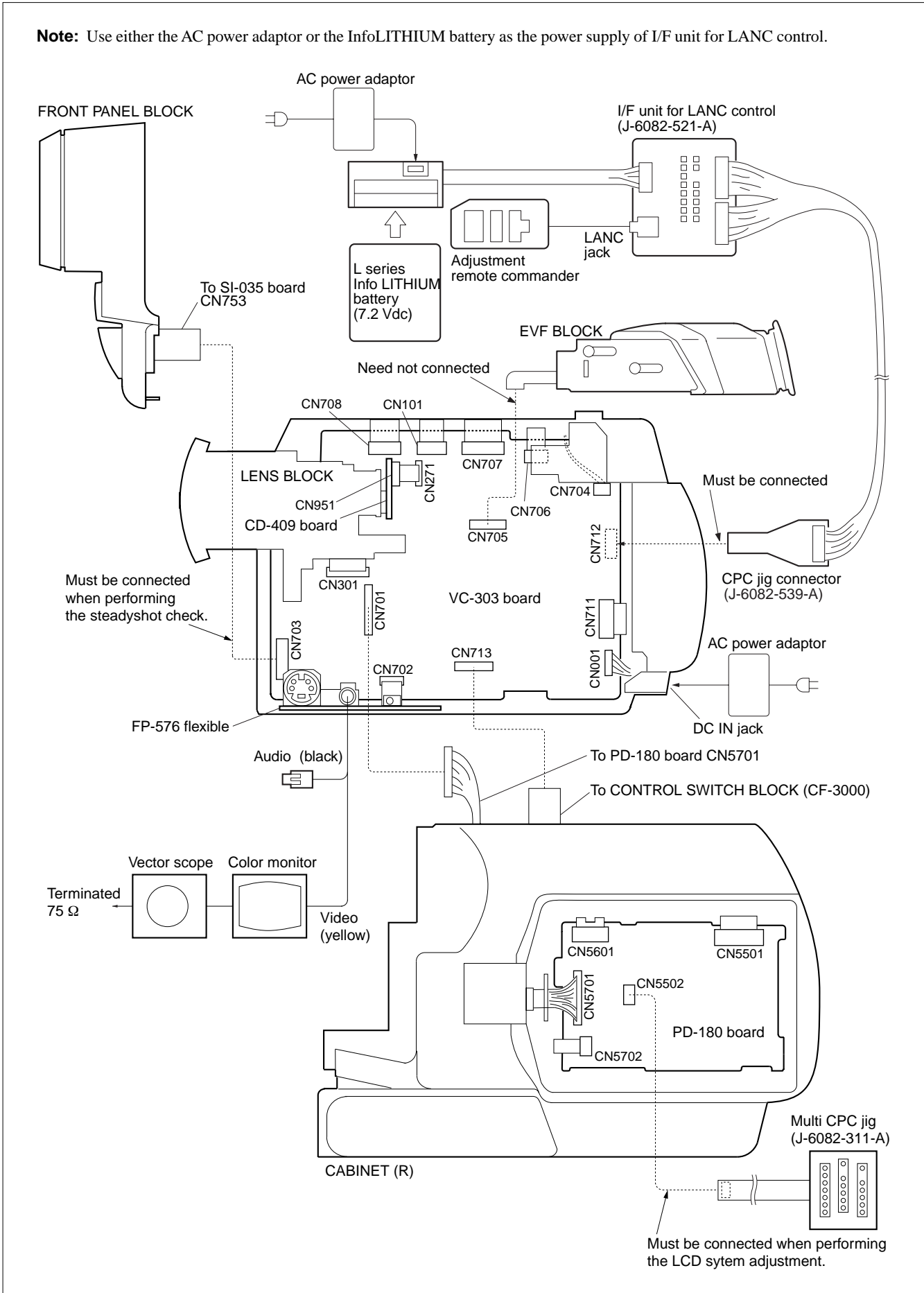


Fig. 6-1-4



**1-1-3. Precaution**

**1. Setting the Switch**

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

- |   |        |                                      |      |
|---|--------|--------------------------------------|------|
| 1. POWER switch (SS-3000 block) .....   | CAMERA | 6. EXPOSURE (CF-3000 block) .....    | AUTO |
| 2. FOCUS (CF-3000 block) .....          | MANUAL | 7. P EFFECT (MENU setting) .....     | OFF  |
| 3. BACK LIGHT (CF-3000 block) .....     | OFF    | 8. D ZOOM (MENU setting) .....       | OFF  |
| 4. PROGRAM AE (MENU setting) .....      | OFF    | 9. DEMO MODE (MENU setting) .....    | OFF  |
| 5. NIGHT SHOT switch (Lens block) ..... | OFF    | 10. 16 : 9 WIDE (MENU setting) ..... | OFF  |

**2. Order of Adjustments**

Basically carry out adjustments in the order given.

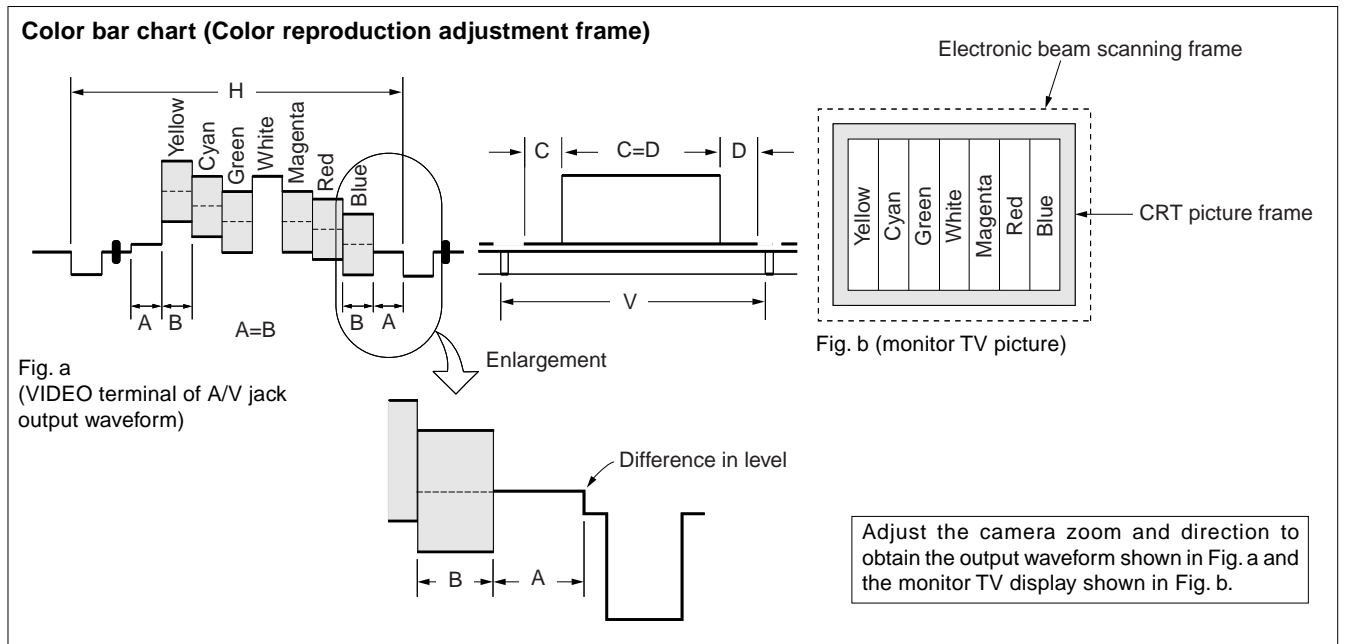


Fig. 6-1-5

**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. 6-1-5. (Color reproduction adjustment frame)
- 2) Clear chart (Color reproduction adjustment frame)  
Remove the color bar chart from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time)
- 3) 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. 6-1-6.

**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.

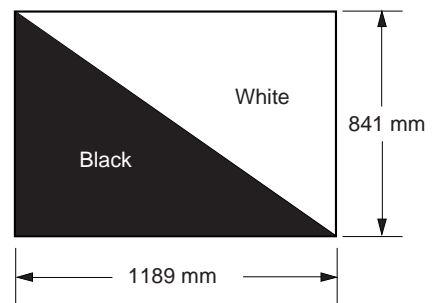


Fig. 6-1-6



**1-2. INITIALIZATION OF D, E, F, 7 PAGE DATA**

**1. Initializing the D, E, F, 7 Page Data**

**Note 1:** If “Initialization of Pages D, E, F, 7” is executed, all data on pages D, E, F, 7 are initialized. (Only an individual page cannot be initialized)

**Note 2:** If the D, E, F, 7 page data has been initialized, “Modification of D, E, F, 7 Page Data” and all adjustments need to be performed again.

**Note 3:** NTSC model: CCD-TRV118/TRV318/TRV418  
PAL model: CCD-TRV218E/TRV418E

Adjusting Page	D
Adjusting Address	10 to 87
Adjusting Page	E
Adjusting Address	00 to FF
Adjusting Page	F
Adjusting Address	10 to FF
Adjusting Page	7
Adjusting Address	00 to 63

**Initializing method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	00		Set the following data. 55: NTSC model 51: PAL model
3	6	01		Set the following data, and press PAUSE button. 55: NTSC model 51: PAL model
4	6	02		Check the data changes to “01”.
5	2	00	29	
6	2	01	29	Press PAUSE button.
7				Perform “Modification of D, E, F, 7 Page Data”

**2. Modification of D, E, F, 7 Page Data**

If the D, E, F, 7 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) 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.
- 3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
- 4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

**Processing after Completing Modification of D, E, F, 7 Page data**

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

**Note:** If the following symptoms occur after completing of the “Modification of D, E, F, 7 page data”, check that the data of the “Fixed data-2” addresses of D, E, F, 7 page are same as those of the same model of the same destination.

- 1) The power is shut off so that unit cannot operate.

**3. D Page Table**

**Note 1:** Fixed data-1: Initialized data. (Refer to “1. Initializing the D, E, F, 7 Page Data”)

**Note 2:** Fixed data-2: Modified data. (Refer to “2. Modification of D, E, F, 7 Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10	00	00	Test mode
11, 12			Fixed data-1 (Initialized data)
13			Fixed data-2
14 to 19			Fixed data-1 (Initialized data)
1A			Fixed data-2
1B to 21			Fixed data-1 (Initialized data)
22			Fixed data-2
23			Fixed data-2
24 to 26			Fixed data-1 (Initialized data)
27			Fixed data-2
28 to 33			Fixed data-1 (Initialized data)
34			Fixed data-2
35			Fixed data-2
36, 37			Fixed data-1 (Initialized data)
38			Fixed data-2
39			Fixed data-2
3A to 40			Fixed data-1 (Initialized data)
41			Fixed data-2
42 to 44			Fixed data-1 (Initialized data)
45			Fixed data-2
46			Fixed data-2
47			Fixed data-2
48			Fixed data-2
49 to 4C			Fixed data-1 (Initialized data)
4D			Fixed data-2
4E, 4F			Fixed data-1 (Initialized data)
50			Fixed data-2
51 to 5A			Fixed data-1 (Initialized data)
5B			Fixed data-2
5C to 72			Fixed data-1 (Initialized data)
73			Fixed data-2
74 to 7B			Fixed data-1 (Initialized data)
7C			Fixed data-2
7D to 84			Fixed data-1 (Initialized data)
85			Fixed data-2
86, 87			Fixed data-1 (Initialized data)

**4. E Page Table**

**Note 1:** Fixed data-1: Initialized data. (Refer to “1. Initializing the D, E, F, 7 Page Data”)

**Note 2:** Fixed data-2: Modified data. (Refer to “2. Modification of D, E, F, 7 Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to 09			Fixed data-1 (Initialized data)
0A			Fixed data-2
0B			Fixed data-1 (Initialized data)
0C			Fixed data-2
0D			Fixed data-2
0E			Fixed data-1 (Initialized data)
0F			Fixed data-2
10 to 15			Fixed data-1 (Initialized data)
16			Fixed data-2
17			Fixed data-1 (Initialized data)
18			Fixed data-2
19 to 28			Fixed data-1 (Initialized data)
29			Fixed data-2
2A			Fixed data-2
2B			Fixed data-1 (Initialized data)
2C			Fixed data-2
2D			Fixed data-1 (Initialized data)
2E			Fixed data-2
2F			Fixed data-2
30			Fixed data-2
31			Fixed data-2
32			Fixed data-2
33			Fixed data-2
34			Fixed data-2
35 to 51			Fixed data-1 (Initialized data)
52			Fixed data-2
53 to 58			Fixed data-1 (Initialized data)
59	FF	FF	Optical axis adj.
5A to FF			Fixed data-1 (Initialized data)

**5. F Page Table**

**Note 1:** Fixed data-1: Initialized data. (Refer to “1. Initializing the D, E, F, 7 Page Data”)

**Note 2:** Fixed data-2: Modified data. (Refer to “2. Modification of D, E, F, 7 Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10	00	00	Emergency memory
11	00	00	
12	00	00	
13	00	00	
14	00	00	
15	00	00	
16	00	00	
17	00	00	
18	00	00	
19	00	00	
1A	00	00	
1B	00	00	
1C to 1F	Fixed data-1 (Initialized data)		
20	00	00	Test mode
21 to 23	Fixed data-1 (Initialized data)		
24	Fixed data-2		
25 to 27	Fixed data-1 (Initialized data)		
28	Fixed data-2		
29	Fixed data-1 (Initialized data)		
2A	Fixed data-2		
2B, 2C	Fixed data-1 (Initialized data)		
2D	Fixed data-2		
2E, 2F	Fixed data-1 (Initialized data)		
30	52	68	HALL adj.
31	89	80	
32	88	8D	
33	Fixed data-2		
34	80	80	AWB & LV standard data input
35	7A	7A	
36	2B	2B	
37	80	80	
38	65	65	
39	80	80	
3A	8D	8D	Auto white balance adj.
3B	87	87	
3C to 3E	Fixed data-1 (Initialized data)		
3F	33	33	Color reproduction adj.
40	Fixed data-1 (Initialized data)		
41	34	34	Color reproduction adj.
42 to 44	Fixed data-1 (Initialized data)		
45	8C	8C	28 MHz origin osillation adj.
46	28	28	Flange back adj.
47	EC	EC	
48	35	35	

Address	Initial value		Remark
	NTSC	PAL	
49	8F	8F	Flange back adj.
4A	13	13	
4B	B8	B8	
4C	2B	2B	
4D	00	00	
4E	19	19	
4F	00	00	
50	32	32	
51	00	00	
52	00	00	
53	04	04	
54	00	00	
55	00	00	
56, 57	Fixed data-1 (Initialized data)		
58	00	00	
59	83	83	CAP FG offset adj.
5A	0B	0A	Switching position adj.
5B	00	00	
5C	Fixed data-1 (Initialized data)		
5D	50	50	AFC f <sub>0</sub> adj.
5E	68	62	S VIDEO OUT Y level adj.
5F	62	62	S VIDEO OUT C level adj.
60, 61	Fixed data-1 (Initialized data)		
62	B4	D7	REC Y current adj.
63	B4	D7	
64 to 68	Fixed data-1 (Initialized data)		
69	A0	A0	REC C/AFM current adj.
6A to 72	Fixed data-1 (Initialized data)		
73	A6	A6	1.5 MHz deviation adj.
74	80	80	BPF f <sub>0</sub> adj.
75, 76	Fixed data-1 (Initialized data)		
77	Fixed data-2		
78 to 81	Fixed data-1 (Initialized data)		
82	Fixed data-2		
83 to 8E	Fixed data-1 (Initialized data)		
8F	Fixed data-2		
90	2B	2B	Auto white balance adj.
91	D0	E0	
92	57	58	
93	80	70	
94	Fixed data-1 (Initialized data)		
95	Fixed data-2		
96	Fixed data-2		
97, 98	Fixed data-1 (Initialized data)		
99	Fixed data-2		
9A to 9F	Fixed data-1 (Initialized data)		
A0	Fixed data-2		
A1	Fixed data-1 (Initialized data)		

Address	Initial value		Remark
	NTSC	PAL	
A2	Fixed data-2		
A3 to A7	Fixed data-1 (Initialized data)		
A8	Fixed data-2		
A9			
AA			
AB			
AC to AE	Fixed data-1 (Initialized data)		
AF	FD	FC	Color reproduction adj.
B0	F4	F2	
B1 to B4	Fixed data-1 (Initialized data)		
B5	Fixed data-2		
B6			
B7			
B8			
B9 to D0	Fixed data-1 (Initialized data)		
D1	Fixed data-2		
D2 to E8	Fixed data-1 (Initialized data)		
E9	Fixed data-2		
EA			
EB			
EC			
ED			
EE			
EF			
F0			
F1			
F2			
F3			
F4 to F6	Fixed data-1 (Initialized data)		
F7	Fixed data-2		
F8 to FF	Fixed data-1 (Initialized data)		

**6. 7 Page Table**

**Note 1:** Fixed data-1: Initialized data. (Refer to “1. Initializing the D, E, F, 7 Page Data”)

**Note 2:** Fixed data-2: Modified data. (Refer to “2. Modification of D, E, F, 7 Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to 0B	Fixed data-1 (Initialized data)		
0C	Fixed data-2		
0D to 2C	Fixed data-1 (Initialized data)		
2D	Fixed data-2		
2E to 40	Fixed data-1 (Initialized data)		
41	Fixed data-2		
42			
43	78	5B	VCO adj.
44	68	63	VCO adj. (PAL)
45	89	89	V-COM adj.
46	2C	2B	RGB AMP adj.
47	Fixed data-1 (Initialized data)		
48	86	B2	COM AMP adj.
49	74	5D	White balance adj.
4A	67	57	
4B	53	53	Contrast adj.
4C to 63	Fixed data-1 (Initialized data)		



**1-3. CAMERA SYSTEM ADJUSTMENTS**

Before perform the camera system adjustments, check that the specified values of “28 MHz Origin Oscillation Adjustment”, “S VIDEO OUT Y level Adjustment” and “S VIDEO OUT C level Adjustment” of “VIDEO SYSTEM ADJUSTMENT” are satisfied.

**1. HALL Adjustment *RadarW***

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

Mode	CAMERA
Subject	Not required
Measurement Point	Displayed data of page: 1 (Note 2)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	30 to 32
Specified value	85 to 89 during IRIS OPEN 15 to 19 during IRIS CLOSE

**Note 1:** Check that the data of page: 6, address: 02 is “00”.  
If not, turn the power of unit OFF/ON.

**Note 2:** The right two digits of the page: 1 displayed data of the adjusting remote commander.

1:00:XX

└─── Displayed data

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	94	87	
3	6	95	17	
4	6	01	6D	Press PAUSE button. (Note 3)
5	6	02		Check the data changes to “01”.
6	6	01	00	Press PAUSE button.

**Note 3:** The adjustment data will be automatically input to page: F, address: 30 to 32.

**Checking method:**

Order	Page	Address	Data	Procedure
1	0	03	03	
2	6	01	01	Press PAUSE button.
3	1			Check that the displayed data (Note 2) during IRIS OPEN satisfied the specified value.
4	6	01	03	Press PAUSE button.
5	1			Check that the displayed data (Note 2) during IRIS CLOSE satisfied the specified value.

**Processing after Completing Adjustment:**

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	94	00	
3	6	95	00	
4	0	03	00	
5	0	01	00	

**2. Flange Back Adjustment *RadarW***  
**(Using the minipattern box)**

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

Mode	CAMERA
Subject	Siemens star chart with ND filter for minipattern box (Note 1)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	46 to 55, 58

- Note 1:** Dark Siemens star chart.
- Note 2:** Check that the data of page: 6, address: 02 is "00".  
If not, turn the power of unit OFF/ON.
- Note 3:** Perform the adjustment with the camcorder in horizontal state.
- Note 4:** Perform "HALL Adjustment" before this adjustment.

**Switch setting:**

- 1) NIGHT SHOT ..... OFF

**Preparations before adjustments:**

- 1) The minipattern box is installed as shown in the following figure.  
**Note 5:** The attachment lenses are not used.
- 2) Install the minipattern box so that the distance between it and the front of lens of camcorder 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  $\pm 0.01$  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 adjust the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

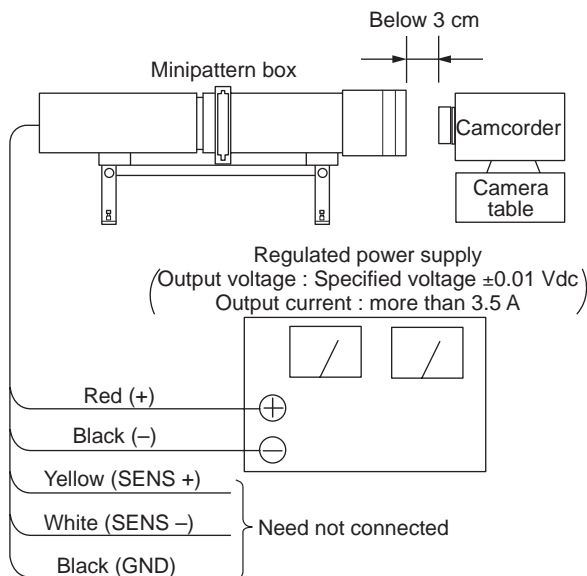


Fig. 6-1-7

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	82	01	
3	6	01	13	Press PAUSE button.
4	6	01	27	Press PAUSE button. (Note 6)
5	6	02		Check the data changes to "01".

**Note 6:** The adjustment data will be automatically input to page: F, address: 46 to 55 and 58.

**Processing after Completing Adjustment:**

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	82	00	
3	0	01	00	
4				Turn OFF the main power supply.
5				Perform "Flange Back Check".

**3. Flange Back 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.

**3-1. Flange Back Adjustment (1) *RadarW***

Mode	CAMERA
Subject	Flange back adjustment chart (2.0 m from the front of lens) (Luminance: 300 to 400 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	46 to 55, 58

**Note 1:** Check that the data of page: 6, address: 02 is "00".  
 If not, turn the power of unit OFF/ON.

**Note 2:** Perform the adjustment with the camcorder in horizontal state.

**Note 3:** Perform "HALL Adjustment" before this adjustment.

**Switch setting:**

1) NIGHT SHOT ..... OFF

**Preparations before adjustments:**

- 1) Place the Flange back adjustment chart 2.0 m from the front of the lens.
- 2) 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	6	82	01	
3	6	01	13	Press PAUSE button.
4	6	01	15	Press PAUSE button. (Note 4)
5	6	02		Check the data changes to "01".

**Note 4:** The adjustment data will be automatically input to page: F, address: 46 to 55 and 58.

**Processing after Completing Adjustment:**

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	82	00	
3	0	01	00	
4				Turn OFF the main power supply.
5				Perform "Flange Back Adjustment (2)".

**3-2. Flange Back Adjustment (2) *RadarW***

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

Mode	CAMERA
Subject	Subject more than 500 m away (Subject with clear contrast such as buildings, etc.)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	46 to 55, 58

**Note 1:** Check that the data of page: 6, address: 02 is "00".  
 If not, turn the power of unit OFF/ON.

**Switch setting:**

1) NIGHT SHOT ..... OFF

**Preparations before adjustments:**

- 1) Set the zoom lens to the TELE end and expose a subject 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	82	01	
3	6	01	13	Press PAUSE button.
4				Place ND filter on the lens so that the optimum image is obtain.
5	6	01	29	Press PAUSE button. (Note 2)
6	6	02		Check the data changes to "01".

**Note 2:** The adjustment data will be automatically input to page: F, address: 46 to 55 and 58.

**Processing after Completing Adjustment:**

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	82	00	
3	0	01	00	
4				Turn OFF the main power supply.
5				Perform "Flange Back Check".



**4. Flange Back Check**

Mode	CAMERA
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

**Switch setting:**

1) NIGHT SHOT ..... OFF

**Note:** 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

**Checking method:**

Order	Page	Address	Data	Procedure
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.
3	6	40	02	
4	6	41	01	
5				Shoot the Siemens star with the zoom TELE end.
6				Turn on the auto focus.
7	0	03	0F	
8	1			Check that the lens is focused. (Note)
9	6	21	10	
10				Shoot the Siemens star with the zoom WIDE end.
11				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	

**5. Optical Axis Adjustment**

Correct a deviation of optical axis between the lens and the CCD imager.

If deviated, the screen center will be shifted when the lens is zoomed from TELE end to WIDE end.

Subject	Siemens Star
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Adjustment Page	E
Adjustment Address	59

**Note:** "Flange Back Adjustment" must be already finished.

**Switch setting:**

- 1) DIGITAL ZOOM (Menu display) ..... OFF
- 2) STEADY SHOT (Menu display)  
(CCD-TRV318/TRV418/TRV418E only) ..... OFF

**Preparation for adjustment:**

- 1) Play a monoscope portion of the System Check tape (WR5-5NSP (NTSC) or WR5-5CSP (PAL)).
- 2) Stick the optical axis deviation specification frame to the monitor screen so that the center of monoscope coincides with the center of specification frame.
- 3) Select the CAMERA mode.

**Adjusting method:**

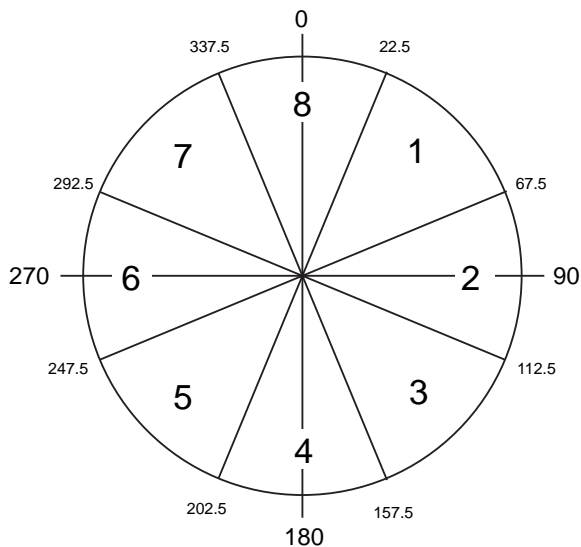
- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: E, address: 59, and set data: 00, then press the PAUSE button on the adjusting remote commander.
- 3) Place the Siemens Star at 2 m position away from the lens.
- 4) Shoot the Siemens Star with the zoom at TELE end.
- 5) Change the lens direction so that the center of Siemens Star coincides with the center of optical axis deviation specification frame.
- 6) Shoot the Siemens Star with the zoom at WIDE end.
- 7) Check on the monitor TV which area the center of Siemens Star exists of the optical axis deviation specification frame. At this time, measure the amount of deviation "L1" (distance from the center of Siemens Star to the center of optical axis deviation specification frame).
- 8) From the following table, read correction data according to the area.

Area	Deviation Phase	Correction Data
1	22.6° to 67.5°	01
2	67.6° to 112.5°	02
3	112.6° to 157.5°	03
4	157.6° to 202.5°	04
5	202.6° to 247.5°	05
6	247.6° to 292.5°	06
7	292.6° to 337.5°	07
8	337.6° to 22.5°	08

- 9) Select page: E, address: 59, and set correction data, then press the PAUSE button on the adjusting remote commander.
- 10) Shoot the Siemens Star with the zoom at TELE end.
- 11) Change the lens direction so that the center of Siemens Star coincides with the center of optical axis deviation specification frame.
- 12) Shoot the Siemens Star with the zoom at WIDE end.
- 13) Measure the amount of deviation "L2" (distance from the center of Siemens Star to the center of optical axis deviation specification frame).
- 14) Compare L1 and L2, and make sure that the L2 is smaller than L1.  
If large, select page: E, address: 59, and set data: 00, then press the PAUSE button on the adjusting remote commander.

**Processing after completion of adjustment:**

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



**Fig. 6-1-8**

**6. Picture Frame Setting**

Mode	CAMERA
Subject	Color bar chart (Color reproduction adjustment frame) (1.5 m from the front of lens)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope and monitor TV
Specified Value	A=B, C=D, E=F

**Note:** Perform “Flange Back Adjustment” before this adjustment.

**Switch setting:**

- 1) DIGITAL ZOOM (Menu setting) ..... OFF
- 2) STEADY SHOT (Menu setting)  
(CCD-TRV318/TRV418/TRV418E only) ..... OFF

**Setting method:**

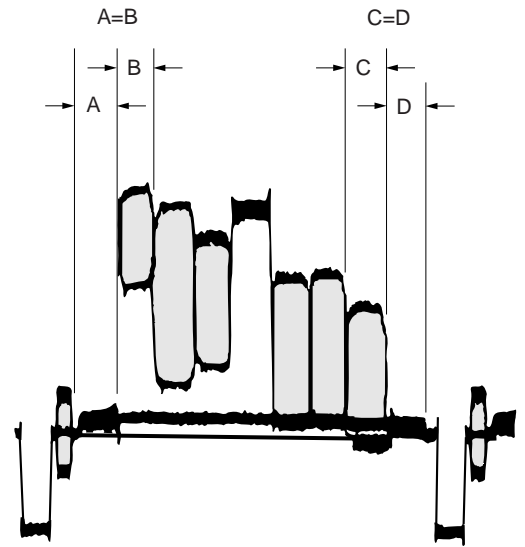
- 1) Select page: 6, address: 82, and set data: 01.
- 2) Adjust the zoom and the camera direction, and set to the specified position.
- 3) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using “Color reproduction adjustment frame”.

**Processing after Completing Camera System Adjustments:**

- 1) Select page: 6, address: 82, and set data: 00.

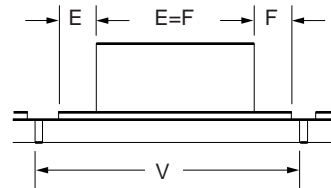
**Check on the oscilloscope**

**1. Horizontal period**



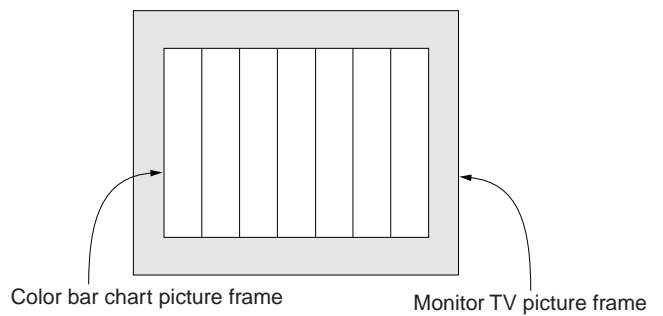
**Fig. 6-1-9**

**2. Vertical period**



**Fig. 6-1-10**

**Check on the monitor TV (Underscanned mode)**



**Fig. 6-1-11**

**7. Color Reproduction Adjustment**

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

Mode	CAMERA
Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	3F, 41, AF, B0
Specified Value	All color luminance points should settle within each color reproduction frame.

**Note 1:** NTSC model: CCD-TRV118/TRV318/TRV418  
PAL model: CCD-TRV218E/TRV418E

**Switch setting:**

- 1) NIGHT SHOT ..... OFF
- 2) DIGITAL ZOOM (Menu setting) ..... OFF
- 3) STEADY SHOT (Menu setting)  
(CCD-TRV318/TRV418/TRV418E only) ..... OFF

**Adjusting method:**

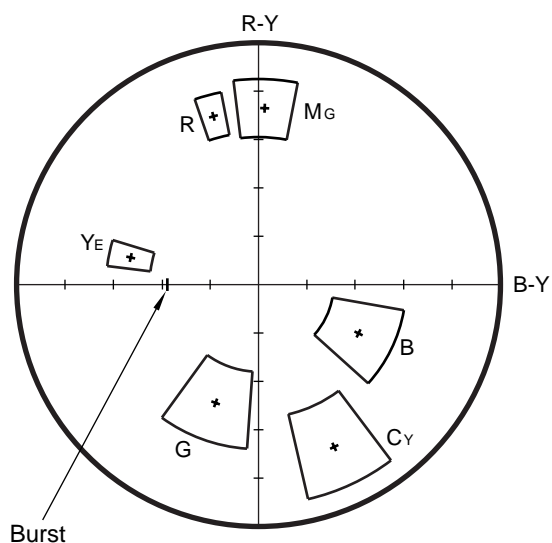
Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	82	01	
3	F	77		Note down the data.
4	F	77	29	Press PAUSE button.
5	6	01	3D	Press PAUSE button.
6	F	2B		Note down the data.
7	F	2B		Set the following data, and press PAUSE button. 17: NTSC model 97: PAL model
8				Adjust the GAIN and PHASE of the vectorscope, and set to the burst luminance point to the burst position of color reproduction frame.
9	F	3F 41 AF B0		Change the data and settle each color luminance point in each color reproduction frame. (Note 2)

**Note 2:** Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses. If not, the new data will not be written to the memory.

**Processing after Completing Adjustment:**

Order	Page	Address	Data	Procedure
1	F	77		Set data noted down at step 3, and press PAUSE button.
2	F	2B		Set data noted down at step 6, and press PAUSE button.
3	6	01	00	Press PAUSE button.
4	6	82	00	
5	0	01	00	

**NTSC model**



**PAL model**

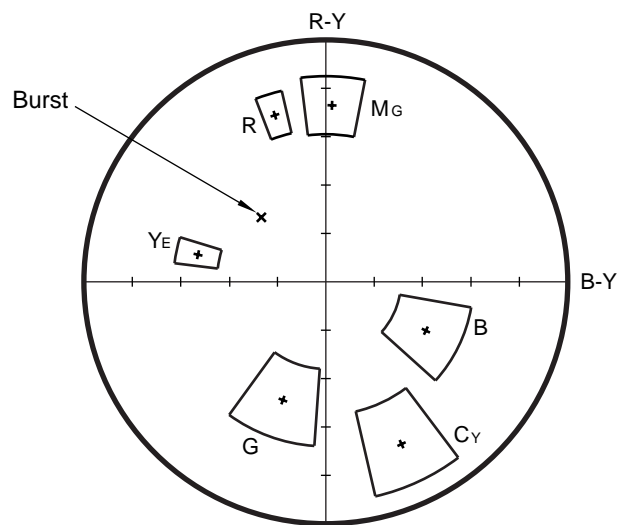


Fig. 6-1-12

**8. AWB & LV Standard Data Input *RadarW***

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

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Displayed data of page: 1 (Note 4)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	34 to 39
Specified Value	0FF0 to 1010

**Note 1:** Perform “Color Reproduction Adjustment” before this adjustment.

**Note 2:** Check that the data of page: 6, address: 02 is “00”.  
If not, turn the power of unit OFF/ON.

**Note 3:** “AWB & LV Standard Data Input” is available only once after the power is turned on. Turn the power off, then on again if the adjustment is retried.

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

1:XX:XX



**Switch setting:**

- 1) NIGHT SHOT ..... OFF
- 2) DIGITAL ZOOM (Menu setting) ..... OFF
- 3) STEADY SHOT (Menu setting)  
(CCD-TRV318/TRV418/TRV418E only) ..... OFF

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	82	01	
3				Wait for 2 second.
4	6	01	11	Press PAUSE button.
5	6	01	0D	Press PAUSE button. (Note 5)
6	6	02		Check the data changes to “01”.
7	0	03	06	
8	1			Check that the displayed data (Note 4) satisfied specified value.

**Note 5:** The adjustment data will be automatically input to page: F, address: 34 to 39.

**Processing after Completing Adjustment:**

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	82	00	
3	0	03	00	
4	0	01	00	

**9. Auto White Balance Adjustment **

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

Mode	CAMERA
Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Displayed data of page: 1 (Note 4)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	3A, 3B, 90 to 93
Specified value	NTSC model R ratio: 2BA0 to 2CA0 B ratio: 5790 to 5890 PAL model R ratio: 2AD0 to 2BD0 B ratio: 58A0 to 59A0

**Note 1:** Perform “AWB & LV Standard Data Input” before this adjustment.

**Note 2:** Check that the data of page: 6, address: 02 is “00”. If not, turn the power of unit OFF/ON.

**Note 3:** “Auto 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 4:** The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX

└─── Displayed data

**Switch setting:**

- 1) NIGHT SHOT ..... OFF
- 2) DIGITAL ZOOM (Menu setting) ..... OFF
- 3) STEADY SHOT (Menu setting)  
(CCD-TRV318/TRV418/TRV418E only) ..... OFF

**Adjusting method:**

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	82	01	
4	F	90	2C/2B	Press PAUSE button. (Note 5)
5	F	91	20/50	Press PAUSE button. (Note 5)
6	F	92	58/59	Press PAUSE button. (Note 5)
7	F	93	10/20	Press PAUSE button. (Note 5)
8	6	01	A7	Press PAUSE button.
9	6	01	A5	Press PAUSE button. (Note 6)
10	6	02		Check the data changes to “01”.
11	6	01	3F	Press PAUSE button.
12	0	03	04	
13	1			Check that the displayed data (Note 4) satisfied the R ratio specified value.
14	0	03	05	
15	1			Check that the displayed data (Note 4) satisfied the B ratio specified value.

**Note 5:** NTSC model / PAL model

**Note 6:** The adjustment data will be automatically input to page: F, address: 3A and 3B.

**Processing after Completing Adjustment:**

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	82	00	
3	0	03	00	
4	0	01	00	
5				Remove the C14 filter on the lens.

**10. Auto White Balance Check *RadarW***

Mode	CAMERA	
Subject	Clear chart (Color reproduction adjustment frame)	
Filter	Filter C14 for color temperature correction ND filter 1.0, 0.4 and 0.1	
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)	Displayed data of page: 1 (Note 2)
Measuring Instrument	Vectorscope	Adjusting remote commander
Specified Value	Fig. 6-1-13 (A) and (B)	LV data: less than OBC0

**Note 1:** Perform “Auto White Balance Adjustment” before this adjustment.

**Note 2:** The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX

└─── Displayed data

**Switch setting:**

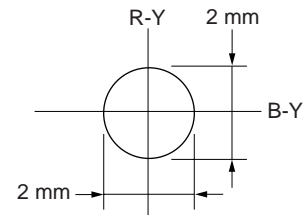
- 1) NIGHT SHOT ..... OFF
- 2) DIGITAL ZOOM (Menu setting) ..... OFF
- 3) STEADY SHOT (Menu setting)  
(CCD-TRV318/TRV418/TRV418E only) ..... OFF

**Checking method:**

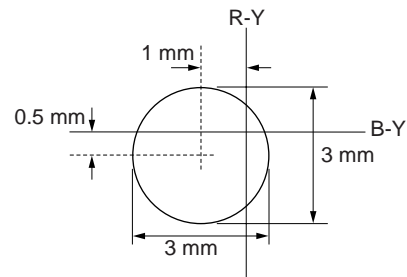
Order	Page	Address	Data	Procedure
1				Check that the lens is not covered with either filter.
2	6	82	01	
<b>INDOOR luminance point check</b>				
3	6	01	0F	Press PAUSE button.
4				Check that the center of the white luminance point within the circle shown Fig. 6-1-13 (A).
5	6	01	00	Press PAUSE button.
<b>OUTDOOR luminance point check</b>				
6	6	01	3F	Press PAUSE button.
7				Place the C14 filter on the lens.
8				Check that the center of the white luminance point within the circle shown Fig. 6-1-13 (B).
9	6	01	00	Press PAUSE button.
<b>LV data check</b>				
10				Remove the C14 filter, and place the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.
11	6	01	0F	Press PAUSE button.
12				Wait for 2 second.
13	0	03	06	
14	1			Check that the displayed data (Note 2) satisfied the LV data specified value.

**Processing after Completing Adjustment:**

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE button.
2	6	82	00	
3	0	03	00	
4				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.



**Fig. 6-1-13 (A)**



**Fig. 6-1-13 (B)**

**11. Angular Velocity Sensor Output Check and Steadyshot Check (CCD-TRV318/TRV418/TRV418E)**



Check the angular velocity sensor output.

**Precautions on the Parts Replacement**

There are two types of repair parts.

Type A ENC03JA

Type B ENC03JB

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.

Mode	CAMERA
Subject	Not required
Measurement Point	Displayed data of page: 1 (Note)
Measuring Instrument	Adjusting remote commander
Specified value	PITCH data: 2700 to 5100 YAW data: 2700 to 5100

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

1:XX:XX



**Switch setting:**

- 1) ZOOM ..... TELE end
- 2) STEADYSHOT (Menu setting) ..... ON

**Checking method:**

Order	Page	Address	Data	Procedure
<b>PITCH sensor output check (SE751 of SI-035 board)</b>				
1	0	03	11	
2	1			With the set in still state, check that the displayed data (Note) satisfies the PITCH data specified value.
<b>YAW sensor output check (SE752 of SI-035 board)</b>				
3	0	03	12	
4	1			With the set in still state, check that the displayed data (Note) satisfies the YAW data specified value.
5	0	03	00	
<b>Steady shot operation check</b>				
6				Shake the set vertically and horizontally to check that the steady shot function operates normally.





**1-4. LCD SYSTEM ADJUSTMENTS**

**Note 1:** The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

**Note 2:** When replacing the LCD unit, be careful to prevent damages caused by static electricity.

**Note 3:** Set the LCD BRIGHT (Menu setting) to the center.  
Set the LCD B.L. (Menu setting) to the BRT NORMAL.  
Set the LCD COLOR (Menu setting) to the center.

**[Adjusting connector]**

Most of the measuring points for adjusting the LCD display are concentrated in the following connector.

CN5502 of the PD-180 board

Connect the Measuring Instruments via the multi CPC jig (J-6082-311-A).

The following table shows the Pin No. and signal name of the connector.

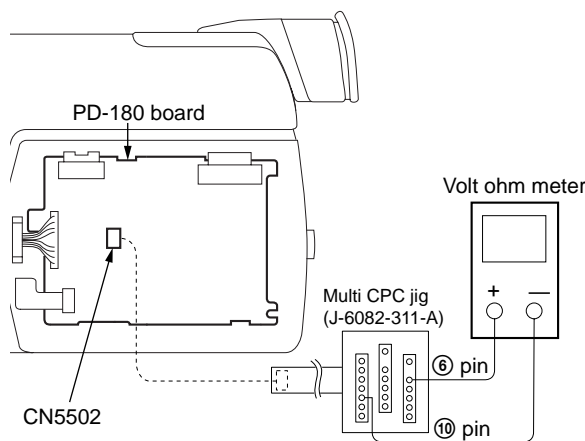
Pin No.	Signal Name	Pin No.	Signal Name
1	VB	2	XVD OUT
3	VG	4	PANEL COM
5	VR	6	PANEL_ID
7	C-SYNC/XHD	8	XHD OUT
9	GND	10	GND

**[LCD type check]**

By measuring the resistor value between Pin ⑥ of CN5502 and Pin ⑩ of CN5502, the type of LCD can be discriminated.

**PD-180 board CN5502**

Resistor value	LCD type
1 kΩ	TYPE S
1.5 kΩ	TYPE C



**Fig. 6-1-14**

**1. VCO Adjustment (PD-180 board)**

Set the VCO free-run frequency. If deviated, the LCD screen will be blurred.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Pin ⑧ of CN5502 (XHD OUT)
Measuring Instrument	Frequency counter
Adjustment Page	7
Adjustment Address	43 (NTSC model) 43, 44 (PAL model)
Specified Value	f=15734 ± 30 Hz (NTSC model) f=15625 ± 30 Hz (PAL model)

**Note 1:** NTSC model: CCD-TRV118/TRV318/TRV418  
PAL model: CCD-TRV218E/TRV418E

**Adjusting method (NTSC model)**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	43		Change the data and set the frequency (f) to the specified value.
3	7	43		Press PAUSE button.
4	0	01	00	

**Adjusting method (PAL model)**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	43		Change the data and set the frequency (f) to the specified value.
3	7	43		Press PAUSE button.
4	7	43		Read the data and this data is named D <sub>43</sub> .
5				Convert D <sub>43</sub> to decimal notation, and obtain D <sub>43</sub> ' . (Note 2)
6				Calculate D <sub>44</sub> ' using following equations. (decimal calculation) $D_{44}' = D_{43}' - 17$
7				Convert D <sub>44</sub> ' to a hexadecimal number, and obtain D <sub>44</sub> . (Note 2, 3)
8	7	44	D <sub>44</sub>	Press PAUSE button.
9	0	01	00	

**Note 2:** Refer to table 6-4-1. "Hexadecimal-decimal conversion table"

**Note 3:** If D<sub>44</sub>' < 0, then D<sub>44</sub> = 00

**2. RGB AMP Adjustment (PD-180 board)**

Set the D range of the RGB driver used to drive the LCD to the specified value. If deviated, the LCD screen will become blackish or saturated (whitish).

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Pin ③ of CN5502 (VG) External trigger : Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	46
Specified Value	A=3.64 ± 0.05 Vp-p (TYPE S model) A=3.35 ± 0.05 Vp-p (TYPE C model)

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	46		Change the data and set the voltage (A) to the specified value. (The data of address: A5, should be "00" to "3F")
3	7	46		Press PAUSE button
4	0	01	00	

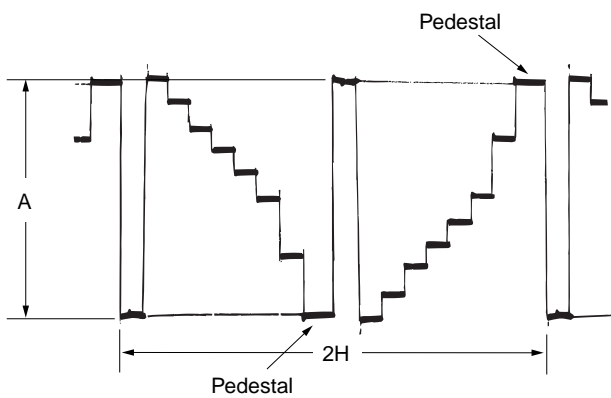
**3. Contrast Adjustment (PD-180 board)**

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Pin ③ of CN5502 (VG) External trigger : Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	4B
Specified Value	A=3.52 ± 0.07 Vp-p (TYPE S model) A=3.35 ± 0.07 Vp-p (TYPE C model)

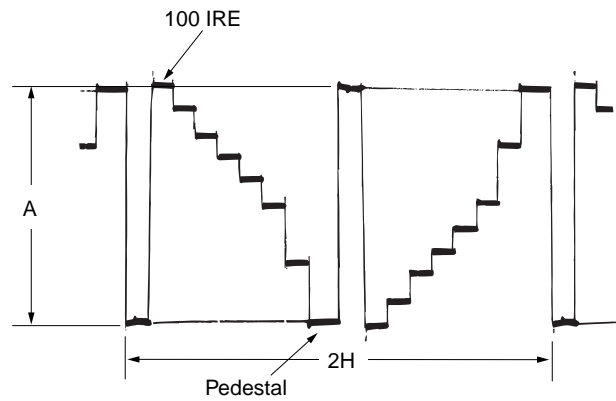
**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	4B		Change the data and set the voltage (A) to the specified value. (The data of address: AA, should be "00" to "7F")
3	7	4B		Press PAUSE button.
4	0	01	00	



A: Between the reversed waveform pedestal and non-reversed waveform pedestal

**Fig. 6-1-15**



A: Between the pedestal (0 IRE) and 100 IRE

**Fig. 6-1-16**

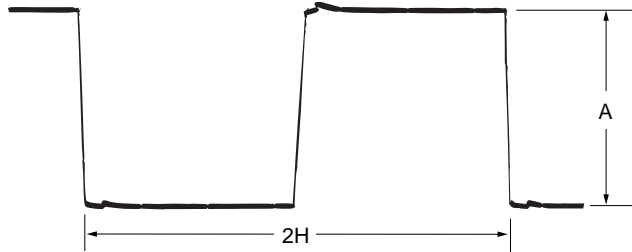
**4. COM AMP Adjustment (PD-180 board)**

Set the common electrode drive signal level of LCD to the specified value.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	48
Specified Value	A=6.14 ± 0.05 Vp-p (TYPE S model) A=5.50 ± 0.05 Vp-p (TYPE C model)

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	48		Change the data and set the voltage (A) to the specified value.
3	7	48		Press PAUSE button.
4	0	01	00	



A: PANEL COM signal level

**Fig. 6-1-17**

**5. V-COM Adjustment (PD-180 board)**

Set the DC bias of the common electrode drive signal of LCD to the specified value.

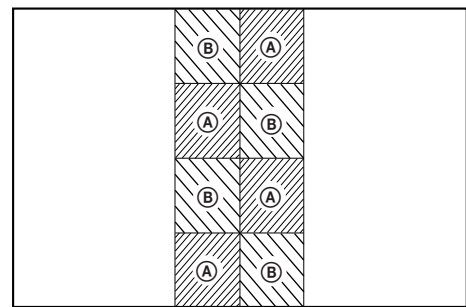
If deviated, the LCD display will move, producing flicker and conspicuous vertical lines.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	7
Adjustment Address	45

**Note:** Perform “RGB AMP Adjustment”, ”Contrast Adjustment” and “COM AMP Adjustment” before this Adjustment.

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	45		Change the data so that brightness of the section A and section B is equal.
3	7	45		Subtract 8 from the data.
4	7	45		Press PAUSE button.
5	0	01	00	



**Fig. 6-1-18**

**6. White Balance Adjustment (PD-180 board)**

Correct the white balance.

If deviated, the LCD screen color cannot be reproduced.

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	7
Adjustment Address	49, 4A
Specified Value	The LCD screen should not be colored.

**Note 1:** Check the white balance only when replacing the following parts. If necessary, adjust them.

1. LCD panel
2. Light induction plate
3. IC5501

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	49	74/5D	Press PAUSE button. (Note 2)
3	7	4A	67/57	Press PAUSE button. (Note 2)
4				Check that the LCD screen is not colored. If not colored, proceed to step 6.
5	7	49 4A		Change the data so that the LCD screen is not colored. (Note 3)
6	0	01	00	

**Note 2:** NTSC model/PAL model

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



**6-2. MECHANISM SECTION ADJUSTMENTS**

Mechanism Section adjustments, checks, and replacement of mechanism parts, refer to the separate volume “8mm Video Mechanism Adjustment Manual IX [M2000 Mechanism]”.

**2-1. ADJUSTMENT REMOTE COMMANDER**

Connect the adjustment remote commander to CN712 of VC-303 board via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A). To operate the adjustment remote commander, connect the AC power adapter (8.4Vdc) to the DC IN jack of I/F unit for LANC control, or connect the L series Info-LITHIUM battery to the battery terminal of I/F unit for LANC control.

**2-2. OPERATING WITHOUT CASSETTE**

- 1) Refer to “Section 2. DISASSEMBLY” and supply the power with the cabinet assembly removed. (So that the mechanical deck can be operated.)
- 2) Connect the adjustment remote commander.
- 3) Turn on the HOLD switch of the adjustment remote commander.
- 4) Close the cassette compartment without loading a cassette and complete loading.
- 5) Select page: 0, address: 01, and set data: 01.
- 6) Select page: F, address: 20, set data: 01, and press the PAUSE button of the adjustment remote commander.
- 7) Select page: D, address: 10, set data: 10, and press the PAUSE button of the adjustment remote commander.
- 8) Disconnect the power supply of the unit.

By carrying out the above procedure, the unit can be operated without loading a cassette.

Be sure to carry out “Processing after Operations” after checking the operations.

Set the data of page: D, address: 10 to the following if the sensor ineffective mode, forced VTR power supply On mode or forced camera power supply ON mode are to be used together.

- Forced VTR power ON mode ..... 12
- Forced camera power ON mode ..... 11

**[Procedure after checking operations]**

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: F, address: 20, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 00.
- 5) Disconnect the power supply of the unit.

**2-3. TAPE PATH ADJUSTMENT**

**1. Preparations for Adjustment**

- 1) Clean the tape path face (tape guide, capstan shaft, pinch roller).
  - 2) Connect the adjustment remote commander.
  - 3) Turn on the HOLD switch of the adjustment remote commander.
  - 4) Select page: 0, address: 01, and set data: 01.
  - 5) Select page: F, address: 20, set data: 08, and press the PAUSE button of the adjustment remote commander. (Be sure to perform “Processing after operation” after completing adjustments.)
  - 6) Connect the oscilloscope to I/F unit for LANC control.
    - Channel 1: PB RF (Pin ⑨ of CN712)
    - Channel 2 (Trigger): SWP (Pin ⑤ of CN712)
  - 7) Playback the alignment tape for tracking. (WR5-1NP (NTSC), WR5-1CP (PAL))
  - 8) Check that the oscilloscope RF waveform is normal at the entrance and exit.
- If not normal, adjust according to the separate volume “8mm Video Mechanical Adjustment Manual IX [M2000 Mechanism]”.
- 9) Perform “Processing after operations”, after completing adjustment.

**Test point of I/F unit for LANC control**

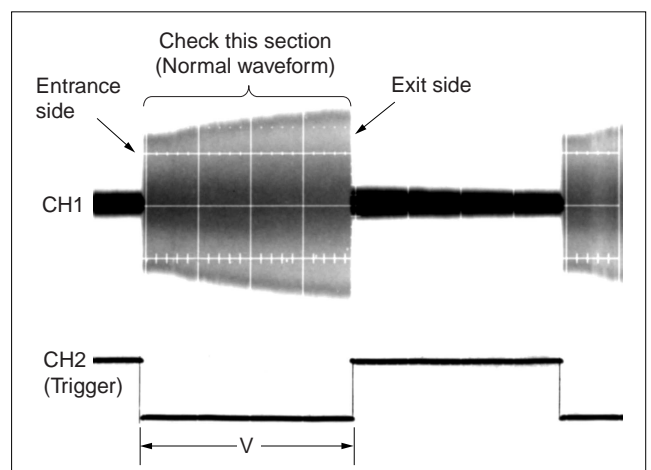
Pin No.	Signal Name	Pin No.	Signal Name
	BL	15	EVF VCO
14	EVF VG		BL 4.75
9	PB RF (MON)		
3	BPF MONI	6, 8, 10	GND
	TMS	7	REC RF (RF IN)
	TDI		TDO
5	SWP		TCK
4	CAP FG	2	IR VIDEO

**Note:** Pin No. are those of CN712.

**Table 6-2-1.**

**[Procedure after operations]**

- 1) Connect the adjustment remote commander, and turn on the HOLD switch.
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Select page: F, address: 20, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 00.
- 5) Remove the power supply from the unit.



**Fig. 6-2-1.**



### 6-3. VIDEO SECTION ADJUSTMENTS

#### 3-1. PREPARATIONS BEFORE ADJUSTMENTS

Use the following measuring instruments for video section adjustments.

**Note:** NTSC model: CCD-TRV118/TRV318/TRV418  
 PAL model: CCD-TRV218E/TRV418E

##### 3-1-1. Equipment to Required

- 1) TV monitor
- 2) Oscilloscope (dual-phenomenon, band width above 30 MHz with delay mode) (Unless specified otherwise, use a 10 : 1 probe)
- 3) Frequency counter
- 4) Digital voltmeter
- 5) Audio level meter
- 6) Audio distortion meter
- 7) Regulated power supply
- 8) NTSC alignment tapes
  - For tracking adjustment (WR5-1NP)  
 Parts code: 8-967-995-02
  - For video frequency characteristics adjustment (WR5-7NE)  
 Parts code: 8-967-995-13
  - For checking Standard 8 mode operations  
 For LP (WR5-4NL)  
 Parts code: 8-967-995-51  
 For SP (WR5-5NSP)  
 Parts code: 8-967-995-42
  - Note:** The following alignment tapes can also be used.  
 WR5-4NSP (8-967-995-41)
  - For checking Hi8 mode operations  
 For LP (WR5-8NLE)  
 Parts code: 8-967-995-52  
 For SP (WR5-8NSE)  
 Parts code: 8-967-995-43
  - For BPF adjustment (WR5-11NS)  
 Parts code: 8-967-995-71
- 9) PAL alignment tapes
  - For tracking adjustment (WR5-1CP)  
 Parts code: 8-967-995-07
  - For video frequency characteristics adjustment (WR5-7CE)  
 Parts code: 8-967-995-18
  - For checking Standard 8 mode operations  
 For LP (WR5-4CL)  
 Parts code: 8-967-995-56  
 For SP (WR5-5CSP)  
 Parts code: 8-967-995-47
  - Note:** The following alignment tapes can also be used.  
 1) WR5-3CL (8-967-995-36)  
 2) WR5-4CSP (8-967-995-46)
  - For checking Hi8 mode operations  
 For LP (WR5-8CLE)  
 Parts code: 8-967-995-57  
 For SP (WR5-8CSE)  
 Parts code: 8-967-995-48
  - For BPF adjustment (WR5-11CS)  
 Parts code: 8-967-995-76
- 10) Adjustment remote commander (J-6082-053-B)
- 11) CPC jig connector (J-6082-539-A)
- 12) I/F unit for LANC control (J-6082-521-A)

### 3-1-2. Precautions on Adjusting

- 1) Connect the adjustment remote commander to CN712 of VC-303 board via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A). To operate the adjustment remote commander, connect the AC power adapter to the DC IN jack of I/F unit for LANC control, or connect the L series Info-LITHIUM battery to the battery terminal of I/F unit for LANC control.
- 2) The adjustments of this unit are performed in the VTR mode or camera mode.  
 To set to the VTR mode, set the power switch to "PLAYER" or set the "Forced VTR Power ON mode" using the adjustment remote commander (Note 1).  
 To set to the camera mode, set the power switch to "CAMERA" or set the "Forced Camera Power ON mode" using the adjustment remote commander (Note 2).  
 After completing adjustments, be sure to exit the "Forced VTR Power ON Mode" or "Forced Camera Power ON Mode". (Note 3).
- 3) The front panel block (SI-035 board, microphone unit, video light) need not be connected. To remove, disconnect the following connector.  
 VC-303 board CN703 (22P, 0.5 mm)
- 4) As removing the cabinet (R) assembly (removing CN713 of the VC-303 board) means removing the lithium 3 V power supply (CF-3000 block BT001), data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) assembly has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data (data of page: 2, address: B0 to C6) and the data on history use (data of page: 2, address: A2 to AA and E0 to E2). (Refer to "6-4.Service Mode".)
- 5) The cabinet (R) assembly (CF-3000 block, FK-3000 block, PD-180 board, LCD block) need not be connected to operate the VTR block. (Note 4) When removing the cabinet (R) assembly, disconnect the following connectors.
  1. VC-303 board CN713 (18P, 0.5 mm)
  2. VC-303 board CN701 (20P, 0.8 mm)
- 6) The lens block (CD-409 board) need not be connected. To remove, disconnect the following connectors.
  1. VC-303 board CN271 (14P, 0.5 mm)
  2. VC-303 board CN301 (24P, 0.5 mm)
- 7) The EVF block need not be connected. To remove, disconnect the following connectors.  
 VC-303 board CN705 (20P, 0.5 mm)
- 8) By setting the "Forced VTR Power ON mode" or "Forced Camera Power ON mode", the video section can be operate even if the control switch block (SS-3000) has been removed. When removing the control switch block (SS-3000), disconnect the following connector.  
 VC-303 board CN711 (12P, 0.8 mm)

**Note 1:** Setting the "Forced VTR Power ON" mode (VTR mode)  
 1) Select page: 0, address: 01, and set data: 01.

- 2) Select page: D, address: 10, set data: 02, and press the PAUSE button.

The above procedure will enable the VTR power to be turned on with the control switch block (SS-3000) removed.

After completing adjustments, be sure to exit the "Forced VTR Power ON mode".

**Note 2:** Setting the "Forced Camera Power ON" mode (Camera mode)

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 01, and press the PAUSE button.

The above procedure will enable the camera power to be turned on with the control switch block (SS-3000) removed.

After completing adjustments, be sure to exit the "Forced Camera Power ON mode".

**Note 3:** Exiting the "Forced Power ON" mode

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 00, and press the PAUSE button.
- 3) Select page: 0, address: 01, and set data: 00.

**Note 4:** When the FK-3000 block or the CF-3000 block is removed, the VTR does an unusual movement for one after the power is turned on.

**3-1-3. Adjusting Connectors**

Some of the adjusting points of the video section are concentrated at VC-303 board CN712. Connect the measuring instruments via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A).

The following table shows the pin No. and signal name of CN712.

Pin No.	Signal Name	Pin No.	Signal Name
1	N. C.	9	PB RF
2	PB RF	10	REG GND
3	BPF MONI	11	LANC OUT
4	CAP FG	12	LANC IN
5	RF SWP	13	XLANCPowerON
6	REG GND	14	EVF VG
7	REC RF	15	VCO
8	REG GND	16	N. C.

**Table 6-3-1**

The following table lists the test point of I/F unit of for LANC control.

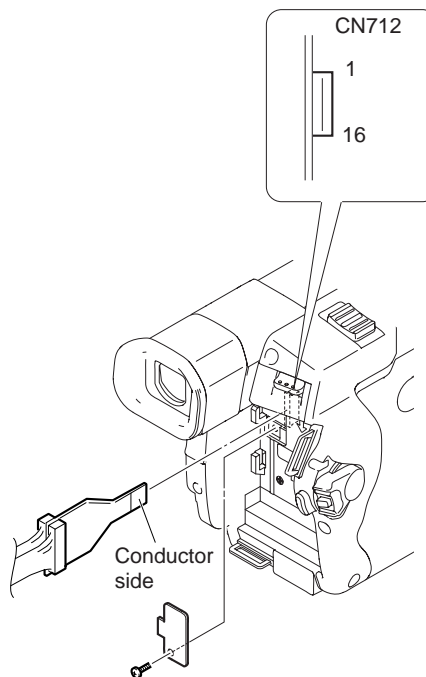
Pin No.	Signal Name	Pin No.	Signal Name
	BL	15	EVF VCO
14	EVF VG		BL 4.75
9	PB RF (MON)		
3	BPF MONI	6, 8, 10	GND
	TMS	7	REC RF (RF IN)
	TDI		TDO
5	SWP		TCK
4	CAP FG	2	IR VIDEO

**Note:** Pin No. are those of CN712.

**Table 6-3-2**

**3-1-4. Connecting the Equipment**

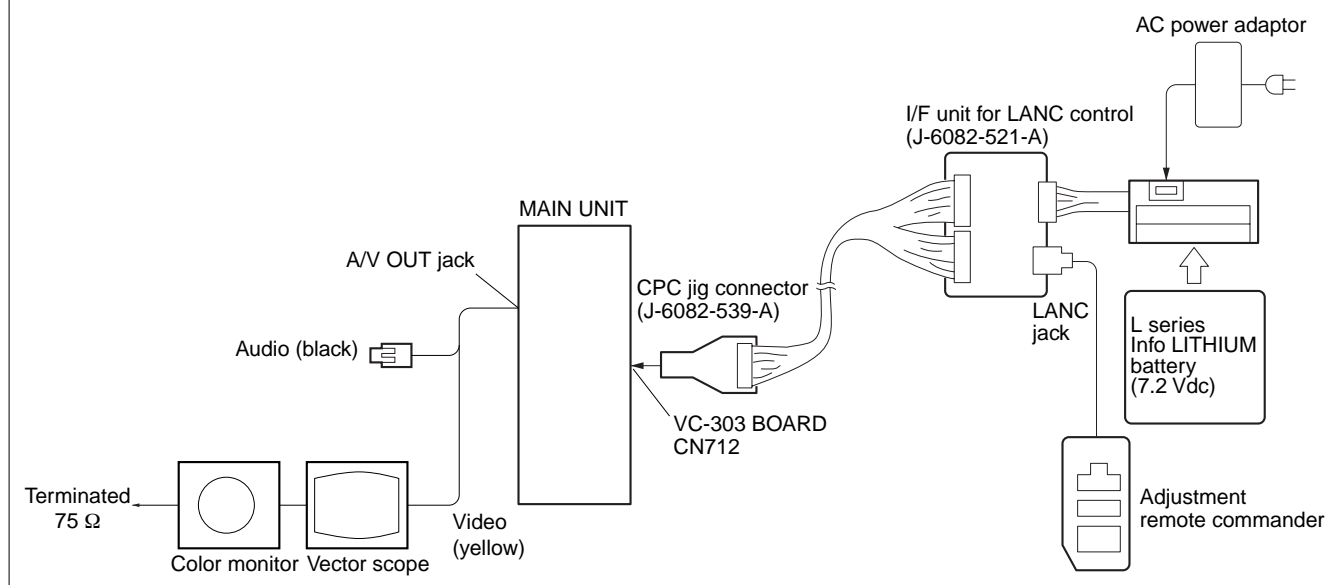
Connect the measuring instruments as shown in Fig. 6-3-2 and perform the adjustments.



**Fig. 6-3-1**

**Connecting the TV Monitor and Adjustment Remote Commander**

**Note:** Use either the AC power adaptor or the InfoLITHIUM battery as the power supply of I/F unit for LANC control.



**Fig. 6-3-2**



**3-1-5. Alignment Tapes**

The following table lists alignment tapes which are available.

Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

**Alignment tape**

Name	Recording mode	Tape type	Tape speed	Usage
Tracking (WR5-1NP(NTSC), WR5-1CP(PAL))	Standard 8	MP	SP	Tape path adjustment, Switching position adjustment
Video frequency characteristics (WR5-7NE(NTSC), WR5-7CE(PAL))	Hi8	ME	SP (NTSC) LP (PAL)	Frequency characteristics adjustment
Operation check (WR5-5NSP(NTSC), WR5-5CSP(PAL))	Standard 8	MP	SP	Operation check
Operation check (WR5-8NSE(NTSC), WR5-8CSE(PAL))	Hi8	ME	SP	
Operation check (WR5-4NL(NTSC), WR5-4CL(PAL))	Standard 8	MP	LP	
Operation check (WR5-8NLE(NTSC), WR5-8CLE(PAL))	Hi8	ME	LP	
BPF adjustment (WR5-11NS(NTSC), WR5-11CS(PAL))	Standard 8	MP	SP	BPF adjustment

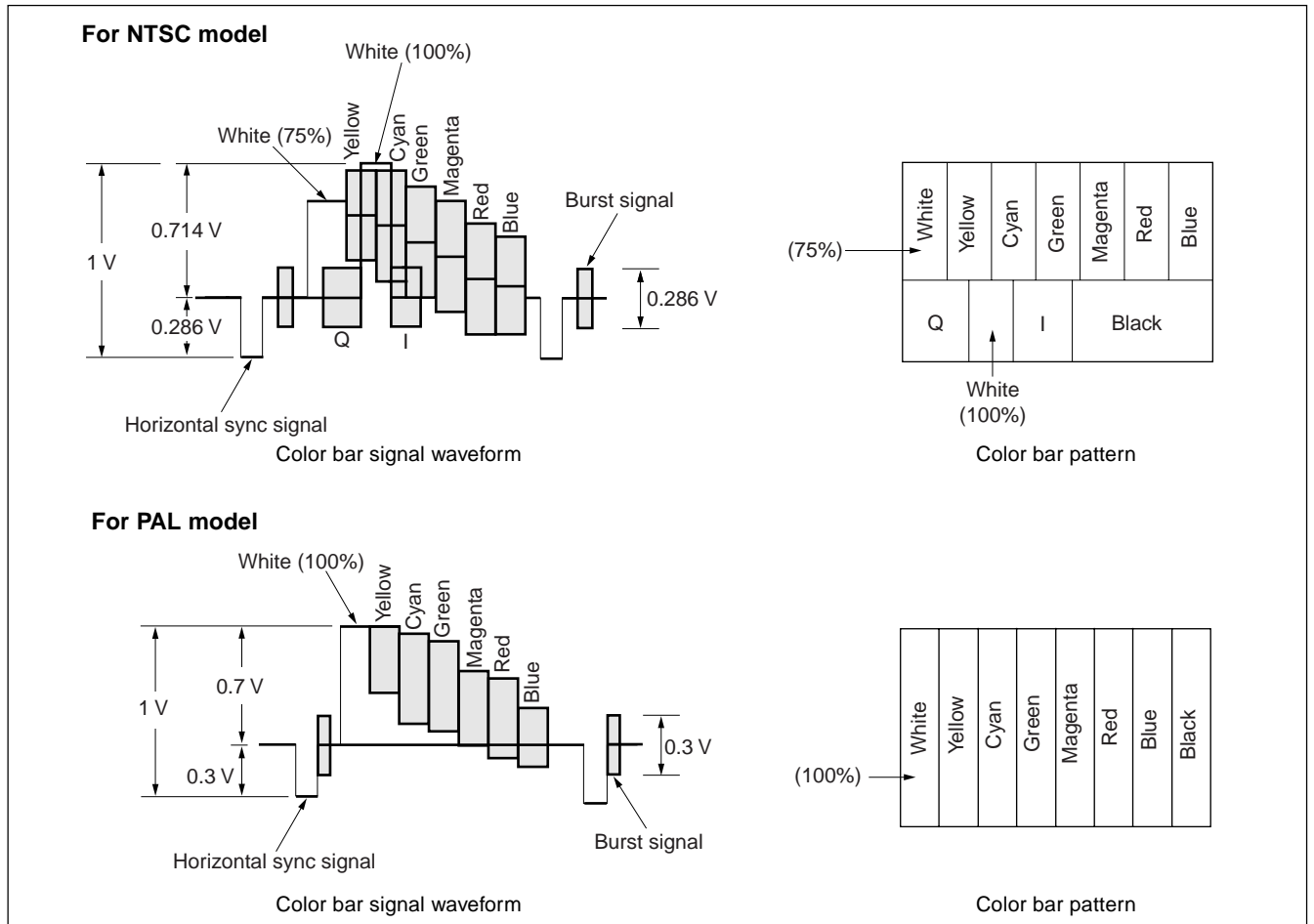
Tape type:

- ME ..... Particle type metal tape
- MP ..... Evaporated type metal tape

**Table 6-3-3**

Fig. 6-3-3. shows the 75% color bar signals recorded on the alignment tape.

**Note:** Measure using the VIDEO terminal (Terminated at 75 Ω).



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

### 3-1-6. Output Level and Impedance

S video output

4-pin mini DIN

Luminance signal:

1 Vp-p, 75  $\Omega$ , unbalanced

Chrominance signal:

CCD-TRV118/TRV318/TRV418:

0.286 Vp-p, 75  $\Omega$ , unbalanced

CCD-TRV218E/TRV418E:

0.3 Vp-p, 75  $\Omega$ , unbalanced

Audio/Video output

AV MINIJACK:

VIDEO: 1 Vp-p, 75  $\Omega$ , unbalanced, sync negative

AUDIO: 327 mV (at output impedance more than 47 k $\Omega$ )

Output impedance with less than 2.2 k $\Omega$

### 3-1-7. Recording Mode (Standard 8/Hi8) switching

The record mode (Standard 8/Hi8) of this unit switches as shown in the following table. The playback mode (Standard 8/Hi8) switches automatically according to the recording mode of the tape played back.

Tape Used	Recording Mode
ME	Hi8
Hi8 MP	
MP	Standard 8



**3-2. SYSTEM CONTROL SYSTEM ADJUSTMENTS**

**1. Initialization of D, E, F, 7 Page Data**

If the D, E, F, 7 page data is erased due to some reason, perform “1-2. INITIALIZATION OF D, E, F, 7 PAGE DATA” of “6-1. CAMERA SYSTEM ADJUSTMENTS”.

**3-3. SERVO SYSTEM ADJUSTMENTS**

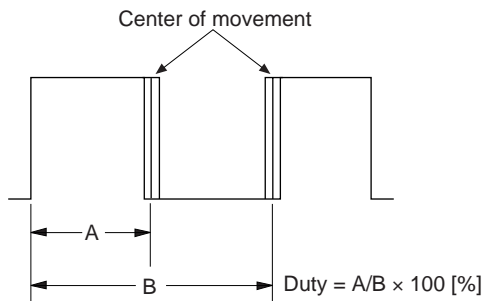
**1. CAP FG Offset Adjustment (VC-303 board) *RadarW***

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 playback mode.

Mode	VTR playback (SP mode)
Signal	Arbitrary
Measurement Point	CAP FG (Pin ④ of CN712)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	59
Specified value	Duty = 50 ± 1 %

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	01	81	Press PAUSE button.
3	6	02		Check the data changes to “01”.
4	6	01	00	Press PAUSE button.
5				Check that Duty of CAP FG signal satisfies the specified value. If not, repeat steps 2 to 5.
6	0	01	00	



**Fig. 6-3-4**

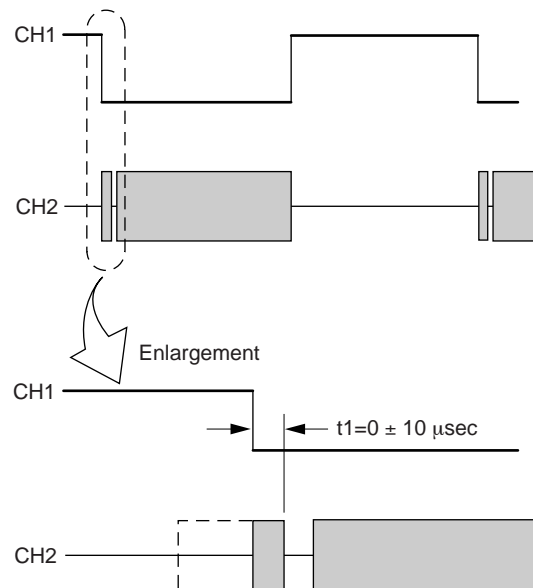
**2. Switching Position Adjustment (VC-303 board)**

If deviated in this case cause switching noise or jitter on the played back screen.

Mode	VTR playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP(NTSC)) (WR5-1CP(PAL))
Measurement Point	CH1: SWP (Pin ⑤ of CN712) CH2: PB RF (Pin ⑨ of CN712)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	5A, 5B
Specified value	t1 = 0 ± 10 μsec

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	F	20	40	Press PAUSE button.
3	F	5A		Change the data and minimize “t1”. (Coarse adjustment)
4	F	5A		Press PAUSE button.
5	F	5B		Change the data and adjust so that the switching position (t1) becomes specified value. (Fine adjustment)
6	F	5B		Press PAUSE button.
7	F	20	00	Press PAUSE button.
8	0	01	00	



**Fig. 6-3-5**



**3-4. VIDEO SYSTEM ADJUSTMENTS**

Video system adjustments must be performed in the following order.

**Adjusting Procedure:**

1. 28 MHz origin oscillation adjustment
2. AFC f<sub>0</sub> adjustment
3. S VIDEO OUT Y level adjustment
4. S VIDEO OUT chroma level adjustment
5. VIDEO OUT level check
6. REC Y current adjustment
7. REC AFM current adjustment

**1. 28 MHz Origin Oscillation Adjustment (VC-303 board)**

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

Mode	VTR stop
Signal	No signal
Measurement Point	C202 (Pin ⑧ of IC151)
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	45
Specified value	f = 14318181 ± 68 Hz (NTSC model) f = 14187500 ± 54 Hz (PAL model)

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	F	45		Change the data and set the frequency (f) to the specified value.
3	F	45		Press PAUSE button.
4	0	01	00	

**2. AFC f<sub>0</sub> Adjustment (VC-303 board) RadarW**

Adjust the pull-in range of A/D converted clock generator during playback.

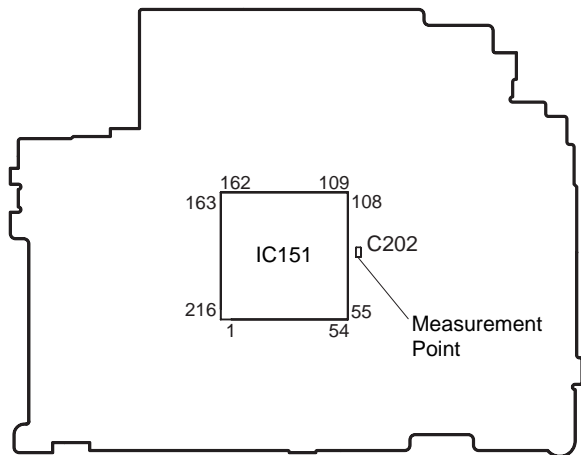
Mode	VTR stop
Signal	No signal
Adjustment Page	F
Adjustment Address	5D

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	F	5D	50	Press PAUSE button.
3	2	01	4D	Press PAUSE button.
4				Wait for 0.5 second.
5	6	01	C5	Press PAUSE button. (Note)
6	6	02		Check the data changes to "01".
7	2	01	00	Press PAUSE button.
8	6	01	00	Press PAUSE button.
9	0	01	00	

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

VC-303 BOARD



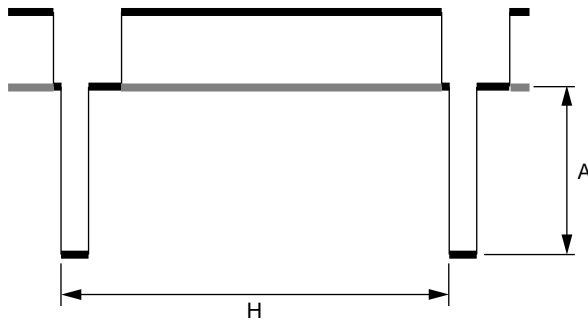
**Fig. 6-3-6**

**3. S VIDEO OUT Y Level Adjustment (VC-303 board)**

Mode	VTR stop
Signal	No signal
Measurement Point	Y signal terminal of S VIDEO jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	5E
Specified value	A = 286 ± 5 mVp-p (NTSC model) A = 300 ± 5 mVp-p (PAL model)

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	F	5E		Change the data and set the SYNC level (A) to the specified value.
3	F	5E		Press PAUSE button.
4	0	01	00	



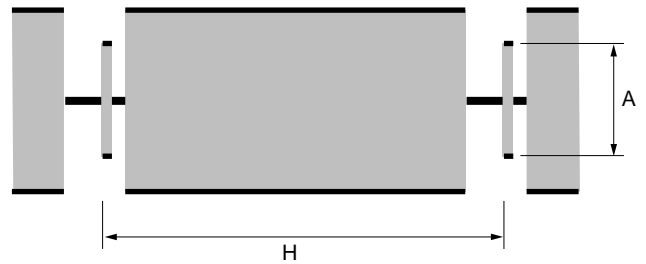
**Fig. 6-3-7**

**4. S VIDEO OUT C Level Adjustment (VC-303 board)**

Mode	VTR stop
Signal	No signal
Measurement Point	Chroma signal terminal of S VIDEO jack (75 Ω terminated) External trigger: Y signal terminal of S VIDEO jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	5F
Specified value	A = 286 ± 5 mVp-p (NTSC model) A = 300 ± 5 mVp-p (PAL model)

**Adjusting method:**

Order	Page	Address	Data	Procedure
1	0	01	01	
2	F	5F		Change the data and set the burst level (A) to the specified value.
3	F	5F		Press PAUSE button.
4	0	01	00	



**Fig. 6-3-8**

5. VIDEO OUT Level Check (VC-303 board)

Mode	VTR stop
Signal	No signal
Measurement Point	Video terminal of A/V jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Specified value	Sync level: A = 286 ± 20 mVp-p (NTSC) A = 300 ± 20 mVp-p (PAL) Burst level: B = 286 ± 20 mVp-p (NTSC) B = 300 ± 20 mVp-p (PAL)

Checking method:

Order	Page	Address	Data	Procedure
1				Check that the SYNC level (A) satisfies the specified value.
2				Check that the burst level (B) satisfies the specified value.

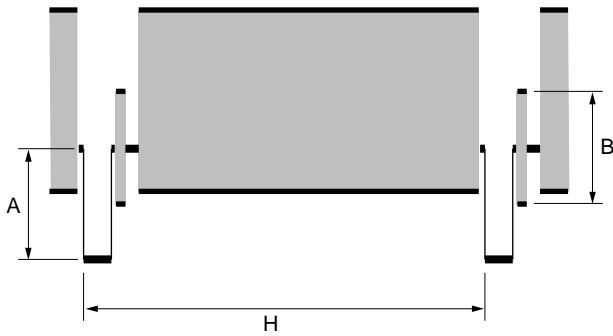


Fig. 6-3-9

**6. REC Y Current Adjustment (VC-303 board)**

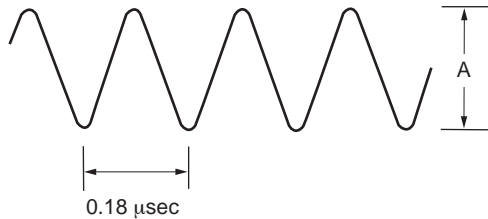
Adjust the Y FM signal recording current.

Mode	VTR recording
Signal	No signal
Measurement Point	REC RF (Pin ⑦ of CN712)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	62, 63
Specified value	A = 235 ± 5 mVp-p (NTSC) A = 280 ± 5 mVp-p (PAL)

**Note 1:** Don't disconnect the DC power supply of camcorder during the following adjustments.

When the following symptom occurs, reset the data of D page to the values note down.

- 1) The power is shut off so that unit can not operate.



**Fig. 6-3-10**

**Adjusting method:**

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2				Set to the VTR stop mode.
3	0	01	01	
4	F	20	01	Press PAUSE button.
5	D	10	12	Press PAUSE button.
6	D	14		Note down the data.
7	D	14		Set the following data, and press PAUSE button. 06: NTSC model 26: PAL model
8	D	15		Note down the data.
9	D	15		Set the following data, and press PAUSE button. 6D: NTSC model 6F: PAL model
10				Set to the VTR recording mode. (Note 2)
11	E	9F		Note down the data.
12	E	9F	06	Press PAUSE button.
13	F	69		Note down the data.
14	F	69	00	Press PAUSE button.
15	2	01	41	Press PAUSE button.
16	6	63	01	
17	F	63		Change the data and set the REC Y signal level (A) to the specified value.
18	F	63		Press PAUSE button.
19	F	63		Read the data, and this data is named D <sub>63</sub> .
20	F	62	D <sub>63</sub>	Press PAUSE button.
21	6	63	00	
22	2	01	00	Press PAUSE button.
23	F	69		Set data noted down at step 13, and press PAUSE button.
24	E	9F		Set data noted down at step 11, and press PAUSE button.
25				Set to the VTR stop mode.
26	D	14		Set data noted down at step 6, and press PAUSE button.
27	D	15		Set data noted down at step 8, and press PAUSE button.
28	D	10	00	Press PAUSE button.
29	F	20	00	Press PAUSE button.
30	0	01	00	

**Note 2:** Use the REC buttons of the adjustment remote commander (with HOLD switch set in the OFF position).

7. REC C/AFM Current Adjustment

7-1. Preparations

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2				Set to the VTR stop mode.
3	0	01	01	
4	F	20	01	Press PAUSE button.
5	D	10	12	Press PAUSE button.
6	D	14		Note down the data.
7	D	14		Set the following data, and press PAUSE button. 06: NTSC model 26: PAL model
8	D	15		Note down the data.
9	D	15		Set the following data, and press PAUSE button. 6D: NTSC model 6F: PAL model

**Note:** Don't disconnect the DC power supply of camcorder during the following adjustments.

When the following symptom occurs, reset the data of D page to the values note down.

- 1) The power is shut off so that unit can not operate.

7-2. REC C Current Check (VC-303 board)

Check the recording current level of the REC chroma signal. If it is too low, chroma signal noise in playback picture will be increased. If too high, Y signal noises will increase and white modulation noises will be produced.

Mode	VTR recording
Signal	No signal
Measurement Point	REC RF (Pin ⑦ of CN712)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Specified value	A = $50.8 \pm 3.0$ mVp-p (NTSC) A = $54.0 \pm 3.0$ mVp-p (PAL)

Checking method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2				Set to the VTR recording mode. (Note)
3	0	01	01	
4	E	9F		Note down the data.
5	E	9F	05	Press PAUSE button.
6	F	69		Note down the data.
7	F	69	00	Press PAUSE button.
8	2	01	41	Press PAUSE button.
9	6	61	30	
10				Check that the REC chroma signal level (A) satisfies the specified value, and note down the signal level.
11	6	61	10	
12	2	01	00	Press PAUSE button.
13	F	69		Set data noted down at step 6, and press PAUSE button.
14	E	9F		Set data noted down at step 4, and press PAUSE button.
15	0	01	00	
16				Perform "REC AFM Current Adjustment" and "Processing after Completed Adjustment".

**Note:** Use the REC buttons of the adjustment remote commander (with HOLD switch set in the OFF position).

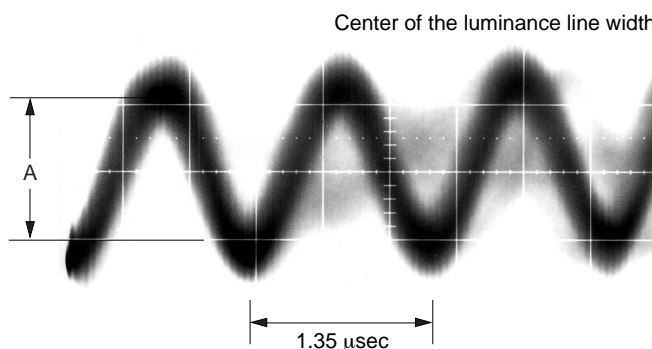


Fig. 6-3-11



**7-3. REC AFM Current Adjustment (VC-303 board)**

Check the recording current level of the REC AFM signal. If it is too low, the audio S/N will be deteriorated. If too high, color beets will be produced on self recording/playback image.

Mode	VTR recording
Signal	No signal
Measurement Point	REC RF (Pin ⑦ of CN712)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	69
Specified value	NTSC model $A = (\text{REC chroma signal level}) \times 0.292 \pm 0.9 \text{ mVp-p (Note 1)}$ PAL model $A = (\text{REC chroma signal level}) \times 0.309 \pm 0.9 \text{ mVp-p (Note 1)}$

**Note 1:** REC chroma signal level is noted down at step 10 of “REC C Current Check”

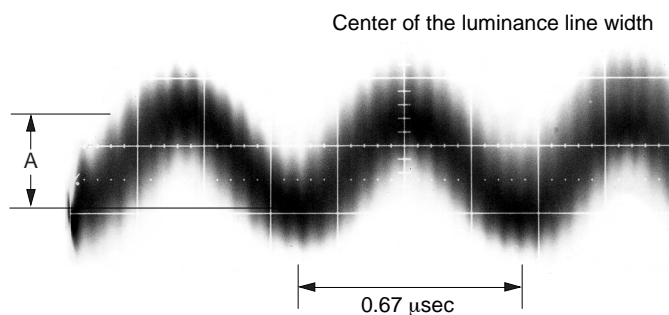
**Adjusting method:**

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2				Set to the VTR recording mode. (Note 2)
3	0	01	01	
4	E	9F		Note down the data.
5	E	9F	07	Press PAUSE button.
6	2	01	41	Press PAUSE button.
7	F	69		Change the data and set the REC AFM signal level (A) to the specified value.
8	F	69		Press PAUSE button.
9	2	01	00	Press PAUSE button.
10	E	9F		Set data noted down at step 4, and press PAUSE button.
11	0	01	00	
12				Perform “Processing after Completed Adjustment”.

**Note 2:** Use the REC buttons of the adjustment remote commander (with HOLD switch set in the OFF position).

**7-4. Processing after Completed Adjustment**

Order	Page	Address	Data	Procedure
1				Set to the VTR stop mode.
2	0	01	01	
3	D	14		Set data noted down at step 6 of “7-1. Preparations”, and press PAUSE button.
4	D	15		Set data noted down at step 8 of “7-1. Preparations”, and press PAUSE button.
5	D	10	00	Press PAUSE button.
6	F	20	00	Press PAUSE button.
7	0	01	00	



**Fig. 6-3-12**



### 3-5. AUDIO SYSTEM ADJUSTMENTS

#### [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. 6-3-13.

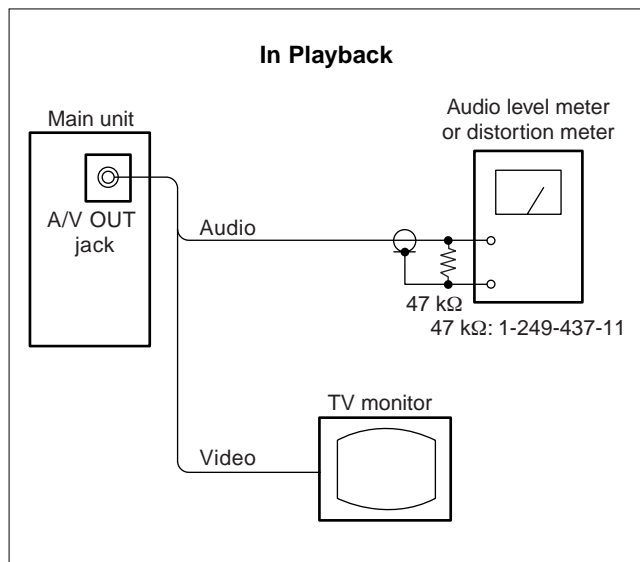


Fig. 6-3-13

#### 1. BPF $f_0$ Adjustment (VC-303 board)

Set the BPF passing frequency of IC351 so that the AFM signal can separate from the playback RF signal properly. If deviated, the noises and distortions will increase during high volume playback.

Mode	VTR playback
Signal	Alignment tape For BPF adjustment (WR5-11NS (NTSC)) (WR5-11CS (PAL))
Measurement Point	Audio terminal of A/V OUT jack
Measuring Instrument	Distortion meter
Adjustment Page	F
Adjustment Address	74
Specified value	The distortion rate should be minimum.

#### Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	F	74		Change the data and minimize the distortion rate.
3	F	74		Press PAUSE button.
4	0	01	00	

#### 2. 1.5 MHz Deviation Adjustment (VC-303 board)

Adjust to the optimum 1.5 MHz audio FM signal deviation.

If the adjustment is not correct, its playback level will differ from that other units.

Mode	VTR playback
Signal	Alignment tape For checking operation (WR5-5NSP (NTSC)) (WR5-5CSP (PAL))
Measurement Point	Audio terminal of A/V OUT jack
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	73
Specified value	$-7.5 \pm 2.0$ dBs

**Note:** Perform “BPF  $f_0$  Adjustment” before this adjustment.

#### Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	F	73		Change the data and set the 400 Hz audio signal level to the specified value.
3	F	73		Press PAUSE button.
4	0	01	00	



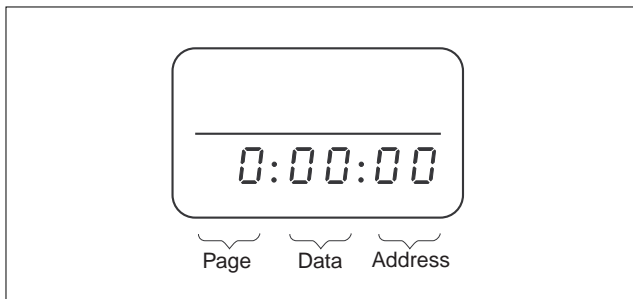
**6-4. SERVICE MODE**

**4-1. ADJUSTMENT REMOTE COMMANDER**

The adjustment remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander 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**

- 1) Connect the adjustment remote commander to CN712 of VC-303 board via I/F unit for LANC control (J-6082-521-A) and CPC jig connector (J-6082-539-A).
- 2) Set the HOLD switch of the adjustment remote commander to "HOLD" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander will display as shown in Fig. 6-4-1.



**Fig. 6-4-1**

- 3) Operate the adjustment remote commander 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**

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. 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 <span style="float: right;">②</span>																
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

**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 (B D);  
 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



**4-3. SERVICE MODE**

**Additional note on adjustment**

**Note:** After the completion of the all adjustments, cancel the service mode by either of the following ways.

- 1) After data on page: D and F is restored, press the RESET button and unplug the main power supply. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting)
- 2) After data on page: D and F is restored, select page: 0, address: 01, and return the data to 00. And when data on page: 2 are changed, return data to the original condition.

**1. Setting the Test Mode**

Page F	Address 20
--------	------------

Data	Function
00	Normal
01	Test mode Various emergency prohibitions and releases Drum emergency, capstan emergency, loading motor emergency, reel emergency, tape top and end, DEW detection

Page D	Address 10
--------	------------

Data	Function
00	Normal
01	Forced camera power ON
02	Forced VTR power ON
03	Forced camera + VTR power ON

- Before setting the data , select page: 0, address: 01, and set data: 01.
- For page D and F, the data set will be recorded in the non-volatile memory by pressing the PAUSE 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 button of the adjustment remote commander. And select page: 0, address: 01, and set data: 00.

**2. Emergency Memory Address**

Page F	Address 10 to 1B
--------	------------------

Address	Contents
10	1st EMG code
12	Upper: MSW code when the mechanism starts shifting the 1st time Lower: MSW code when the 1st emergency occurs
13	Lower: Target MSW code of the 1st emergency occurs
14	2nd EMG code
16	Upper: MSW code when the mechanism starts shifting the 2nd time Lower: MSW code when the 2nd emergency occurs
17	Lower: Target MSW code of the 2nd emergency occurs
18	Last EMG code
1A	Upper: MSW code when the mechanism starts shifting the last time Lower: MSW code when the last emergency occurs
1B	Lower: Target MSW code of the last emergency occurs

When there are no emergency, data 00 will be written in the above addresses (10 to 1B). When the first emergency occurs, the data corresponding to the emergency will be written in the address (10 to 13) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (14 to 17) for this second emergency. The data corresponding to the emergency occurring the last will be written in the address (18 to 1B) for this last emergency. Therefore the data of addresses 18 to 1B are renewed each time an emergency occurs.

**Note:** After completing adjustments, be sure to initialize the data of address 10 to 1B to “00”.

**Initializing method:**

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	00	9F	Set the data.
3	6	01	9F	Set the data, and press PAUSE button.
4	0	01	00	Set the data.

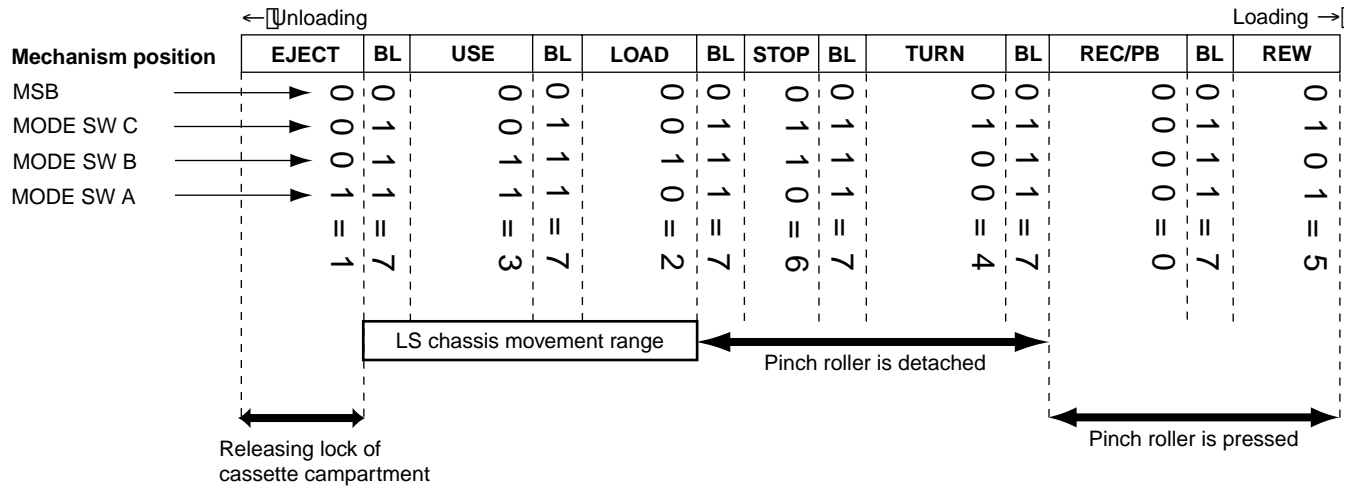
**2-1. EMG Code (Emergency Code)**

The codes shown in the following table which correspond to errors that occur are recorded in addresses 10, 14, and 18.

Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

**2-2. MSW Codes**

- The lower parts of the data of addresses 12, 16 and 1A represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The upper parts of the data of addresses 12, 16 and 1A represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses 13, 17 and 1B represent the MSW codes of the desired movement when the mechanism position is to be moved.

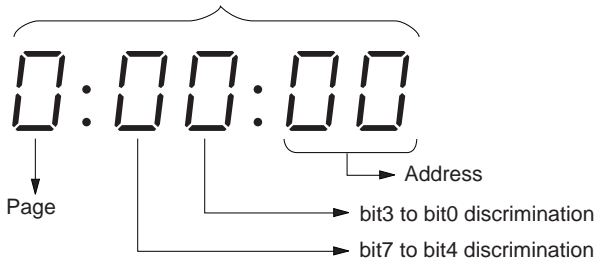


Mechanism Position	MSW Code	Contents
EJECT	1	Position at which the cassette compartment lock is released. The mechanism will not move any further in the unloading direction.
BL	7	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	3	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position.
LOAD	2	Code during loading/unloading. Code that is used while the LS chassis is moving.
STOP	6	Normal stop position. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on.
TURN	4	Position at which is used when the pendulum gear swings from S to T or from T to S.
REC/PB	0	PB, REC, CUE, REV, PAUSE, FF positions. The pinch roller is pressed and tension regulator is on.
REW	5	REW position. REW are carried at this position. The mechanism will not move any further in the loading direction.

**3. Bit Value Discrimination**

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

Display on the adjustment remote commander



(Example) If the remote commander display is "8E", bit value from bit 7 to bit 4 can be discriminated from the column ①, and those from bit 3 to bit 0 from column ②.

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
① 8	1	0	0	0
9	1	0	0	1
A (A)	1	0	1	0
B (B)	1	0	1	1
C (C)	1	1	0	0
D (D)	1	1	0	1
② E (E)	1	1	1	0
F (F)	1	1	1	1

**4. Switch Check (1)**

Page 2	Address 43
--------	------------

Bit	Function	When bit value = 1	When bit value = 0
0	POWER SW (VTR MODE SW) (SS-3000 block S001)	OFF	ON (PLAYER)
1	POWER SW (CAM MODE SW) (SS-3000 block S001)	OFF	ON (CAMERA)
2	START/STOP SW (SS-3000 block S002)	OFF	ON
3	EJECT SW (SS-3000 block S003)	OFF	ON
4	CC DOWN SW (Mechanism chassis)	OFF (UP)	ON (DOWN)
5			
6	BATT INFO SW (FK-3000 block S002)	OFF	ON
7			

**Using method:**

- 1) Select page: 2, address: 43.
- 2) By discriminating the bit value of display data, the state of the switches can be discriminated.

**5. Switch Check (2)**

Page 2	Address 49
--------	------------

Bit	Function	When bit value = 1	When bit value = 0
6	A/V OUT jack (FP-576 flexible)	Used	Not used
7	S VIDEO jack (FP-576 flexible)	Not used	Used

**Using method:**

- 1) Select page: 2, address: 49.
- 2) By discriminating the bit value of display data, the state of the switch can be discriminated.



**6. Switch Check (3)**

Page 2	Address 60 to 65
--------	------------------

**Using method:**

- 1) Select page: 2, address: 60 to 65.
- 2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0C	0D to 24	25 to 3F	40 to 5D	5E to 81	82 to AA	AB to D7	D8 to FF
60 (KEY AD0) (IC503 ㉓)		LIGHT (FK-3000 block) (S004)	STOP (FK-3000 block) (S005)	FF (FK-3000 block) (S006)	REW (FK-3000 block) (S007)	PLAY (FK-3000 block) (S008)		No key input
61 (KEY AD1) (IC503 ㉔)	FOCUS (CF-3000 block) (S007)	BACKLIGHT (CF-3000 block) (S009)	FADER (CF-3000 block) (S014)					No key input
62 (KEY AD2) (IC503 ㉕)	PAUSE (FK-3000 block) (S003)	END SEARCH (CF-3000 block) (S008)	MENU EXECUTE (CF-3000 block) (S023)	VOLUME + (CF-3000 block) (S019)	VOLUME - (CF-3000 block) (S021)			No key input
63 (KEY AD3) (IC503 ㉖)	EASY DUBBING (CF-3000 block) (S003)	EXPOSURE (CF-3000 block) (S005)	TITLE (CF-3000 block) (S010)	MENU (CF-3000 block) (S012)	DISPLAY (CF-3000 block) (S015)	PANEL CLOSE (CF-3000 block) (S001)		PANEL OPEN (CF-3000 block) (S001)
64 (KEY AD4) (IC503 ㉗)	DATE (CF-3000 block) (S004)	TIME (CF-3000 block) (S006)		COUNTER RESET (CF-3000 block) (S013)				No key input
65 (KEY AD5) (IC503 ㉘)		PANEL REVERSE (PR-3000 block) (S601)						PANEL NORMAL (PR-3000 block) (S601)

**7. LED, Video Light, IR Light Check**

Page 2	Address 05	Bit5, Bit6
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**Using method:**

- 1) Set the unit to camera mode.
- 2) Select page: 2, address: 05, and set the bit value of bit5 and bit6 to "1".
- 3) Check that all LED are lit, that the IR light is lit, and that the video light is lit.
- 4) Select page: 2, address: 05, and set the bit value of bit5 and bit6 to "0".

**8. Record of Use Check**

Page 2	Address A2 to AA, E0 to E2
--------	----------------------------

Address	Function		Remarks
A2	Drum rotation	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
A3	counted time (BCD code)	Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A4		Minute	
A5	User initial power on date (BCD code)	Year	After setting the clock, set the date of power on next
A6		Month	
A7		Day	
A8	Final condensation occurrence date (BCD code)	Year	
A9		Month	
AA		Day	
E0	Video light	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
E1	counted time (BCD code)	Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
E2		Minutes	

**Using method:**

- 1) The record of use data is displayed at page: 2, addresses: A2 to AA and E0 to E2.

**Note 1:** This data will be erased (reset) when the cabinet (R) assembly (VC-303 board CN713 (18P)) is removed.

**Note 2:** When the drum was replaced, initialize the drum rotation counted time.

**Note 3:** When replacing the video light, initialize the data of address: E0 to E2.

**Initializing method of drum rotation counted time:**

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 2, address: A2, set data: 00, and press the PAUSE button.
- 3) Select address: A3 and A4 and set data "00" into them in the same way as in address: A2.
- 4) Select page: 0, address: 01, and set data: 00.

9. Record of Self-diagnosis Check

Page 2	Address B0 to C6
--------	------------------

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:**

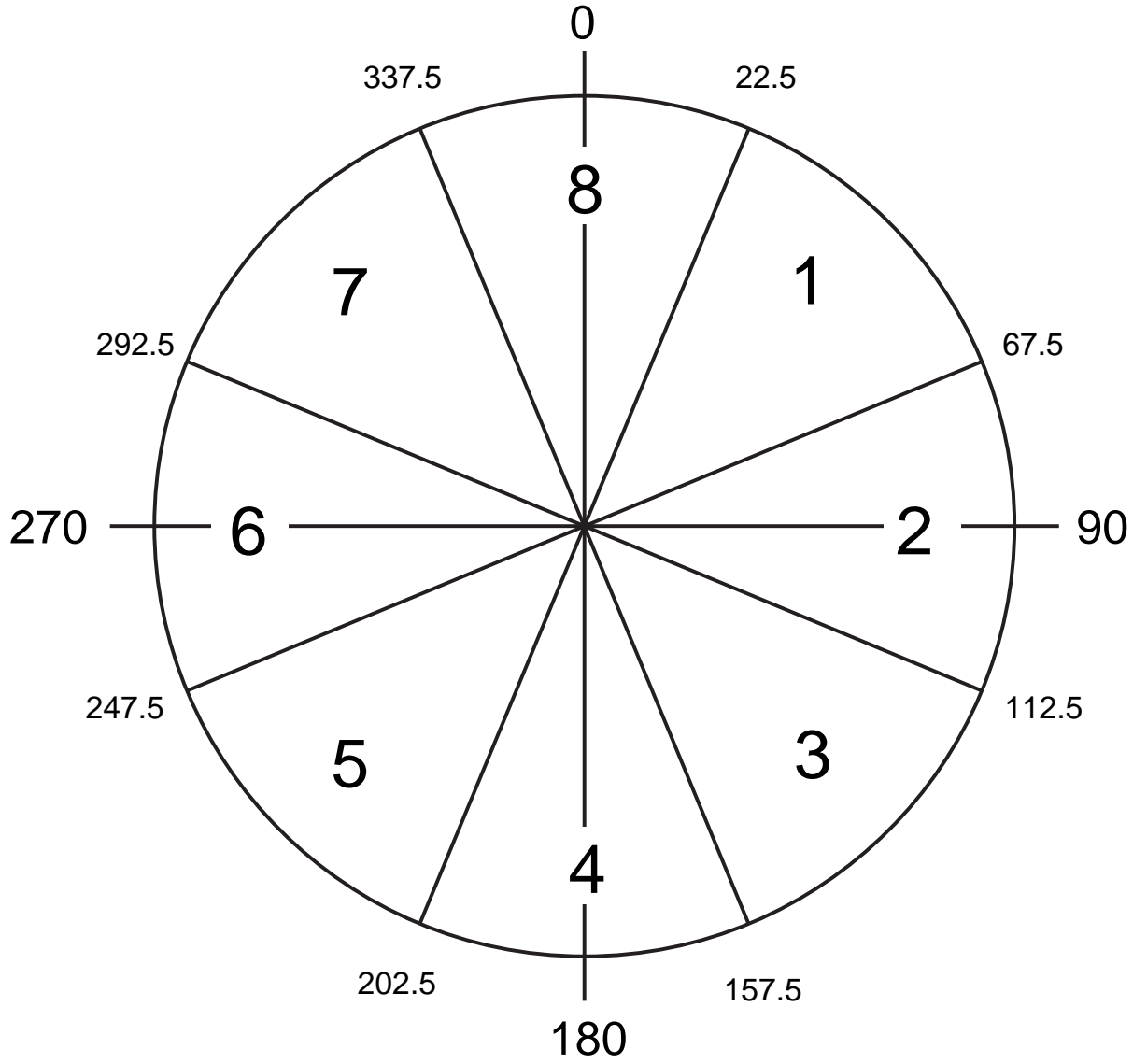
- 1) The past self-diagnosis codes are displayed at page: 2, address: BC to C6. Refer to “SELF-DIAGNOSIS FUNCTION” for detail of the self-diagnosis code.

**Note:** This data will be erased (reset) when the cabinet (R) assembly (VC-303 board CN713 (18P)) is removed.

# CCD-TRV118/TRV218E/TRV318/TRV418/TRV418E

## FOR CAMERA OPTICAL AXIS ADJUSTMENT

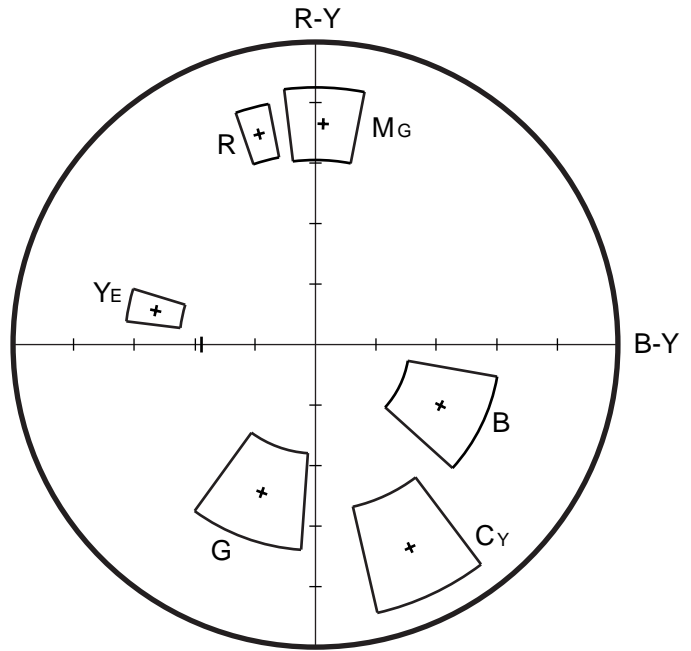
Take a copy of OPTICAL AXIS  
FRAME with a clear sheet for use.



FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

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

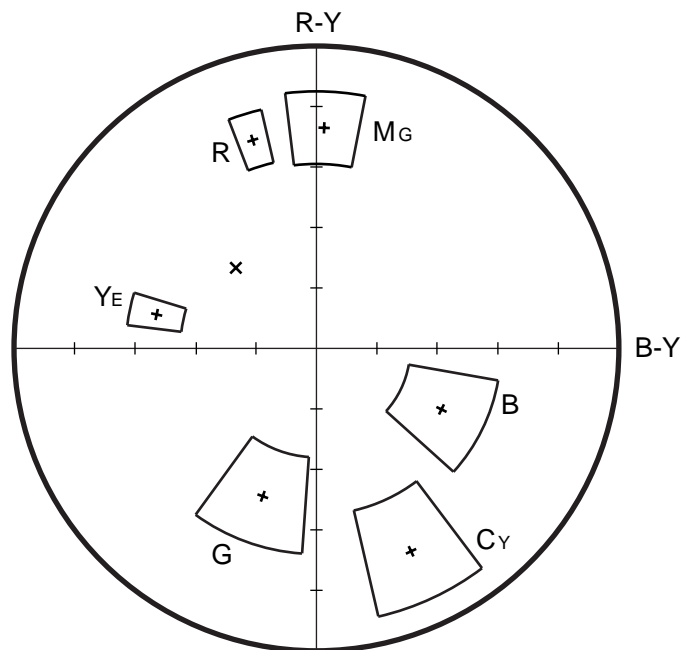
For NTSC model



CCD-TRV118/TRV318/TRV418



For PAL model



CCD-TRV218E/TRV418E



# Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2002.11	Official Release	—	—