

Ver. 1.3 2008.05

Revision History

SECTION 6 ADJUSTMENTS

Auto-ADJ

Link

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- Adjusting items when replacing main parts and boards (Non MEGA model)
- Adjusting items when replacing main parts and boards (MEGA model)
- List of service tools

• CAMERA SECTION ADJUSTMENTS

- PREPARATIONS BEFORE ADJUSTMENTS
- ADJUSTMENT PROGRAM
- DESTINATION DATA WRITE
- USB SERIAL No. INPUT
- VIDEO SYSTEM ADJUSTMENTS
- CAMERA SYSTEM ADJUSTMENTS (Non MEGA model)
- CAMERA SYSTEM ADJUSTMENTS (MEGA model)
- LCD/EVF SYSTEM ADJUSTMENTS
- AUDIO SYSTEM ADJUSTMENTS
- ERROR

• DRIVE SECTION ADJUSTMENTS

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- AUDIT (Drive Adjustment Program)
- DIAGNOSIS
- POWER ADJUSTMENT
- SERVO ADJUSTMENT
- TROUBLESHOOTING

• SERVICE MODE

- APPLICATION FOR ADJUSTMENT (SeusEX)
- SERVICE MODE
- DATA BACKUP

- Use this Service Manual together with the Automatic Adjustment Program (DCR-DVD610 Series Auto-Adj Ver_1.3r04.exe or DCR-DVD710 Series Auto-Adj Ver_1.3r04.exe) and the AUDIT (Drive Adjustment Program).

Non MEGA model: DCR-DVD110E/DVD115E/DVD610/DVD610E

- Automatic Adjustment Program: DCR-DVD610 Series Auto-Adj Ver_1.3r04.exe

MEGA model: DCR-DVD310E/DVD410E/DVD710/DVD710E/DVD810/DVD810E

- Automatic Adjustment Program: DCR-DVD710 Series Auto-Adj Ver_1.3r04.exe

SONY®

CAUTION :

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

CLASS 1 LASER PRODUCT
LASER KLASSE 1
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

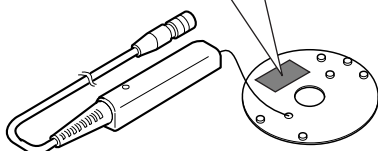
The use of optical instrument with this product will increase eye hazard.

CAUTION

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

**CAUTION**

In the process of adjusting optical power, CLASS1M laser optical radiates. so do not remove this sensor disk.



Optical sensor disc (J-6082-570-A)

6. ADJUSTMENTS

Before starting adjustments

1-1. Adjusting items when replacing main parts and boards (Non MEGA model)

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

Note 1: The Automatic Adjustment Program does not support.

Note 2: DCR-DVD115E only.

Note 3: DCR-DVD110E/DVD610/DVD610E only.

Note 4: IC2101 (Flash memory) on the VC-520 board and IC4302 (Flash memory) on the VC-520 board cannot be replaced.

Adjusting item	Adjustment	Replaced parts																				
		Block replacement					Parts replacement													Board replacement		
		Lens device	Drive block	LCD block LCD901 (LCD panel)	EVF block LCD902 (LCD panel)	Microphone unit MIC901	CD-731 board IC7101 (CCD imager)	BL-021 board D5702 (EVF backlight)	PD-351 board D6203 - 6205 (LCD backlight)	VC-520 board IC1701, X1701 (CPU, Oscillator)	VC-520 board IC1201 (A/D converter, Timing generator)	VC-520 board IC2401 (D/A converter)	VC-520 board IC2801 (Video out, Audio I/O) (Note 2)	VC-520 board IC2901 (Video out, Audio I/O) (Note 3)	VC-520 board IC3101 (LCD/EVF driver)	VC-520 board IC4101 (RF process)	VC-520 board IC4201 (DVD DSP)	VC-520 board IC4401 (DVD mecha drive)	CD-731 board (COMPLETE)	BL-021 board (COMPLETE)	PD-351 board (COMPLETE)	VC-520 board (COMPLETE)
Destination Data Write	Destination data write																					●
USB Serial No. Input	USB serial No. input																					●
(Note 1)	Origin oscillation check								●													●
VIDEO adjustment	S VIDEO OUT Y level adj.																					
	S VIDEO OUT chroma level adj.										●	●	●									●
	VIDEO OUT level check																					●
CAMERA adjustment 1	HALL adj.	●																				●
CAMERA adjustment 2	Flange back adj.	●					●			●									●			●
CAMERA adjustment 3	Flange back check	●					●			●									●			●
CAMERA adjustment 4	F No. standard data input	●					●			●									●			●
	MAX GAIN adj.	●					●			●									●			●
CAMERA adjustment 5	Color reproduction adj.																					
	Color reproduction check																					
	AWB & LV standard data input	●					●			●									●			●
	AWB adj.																					
	AWB check																					
CAMERA adjustment 6	Black Defect adj.						●												●			●
LCD adjustment	LCD automatic adj. (VCO adj, Contrast adj.)																					
	V-COM adj.			●					●			●			●						●	●
	Transmissive moed white balance adj.																				●	●
EVF adjustment	EVF automatic adj. (VCO adj, Contrast adj.)				●			●			●			●						●		●
	White balance adj.																					
Touch panel adjustment	Touch panel adj.			●																		●
AUDIO adjustment	Internal 3ch microphone sensitivity adj. (Note 2)					●						●										●
AUDIT	POWER adj.		●													●	●	●				●
	SERVO adj.		●													●	●	●				●

Table 6-1-1

1-2. Adjusting items when replacing main parts and boards (MEGA model)

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

Note 1: The Automatic Adjustment Program does not support.

Note 2: When replacing the Flash Memory block, erase the data in internal memory of the board before replacement.

Note 3: DCR-DVD410E/DVD810/DVD810E only.

Note 4: CD-672 complete board is supplied instead of CD-687 complete board, because CD-672 complete board and CD-687 complete board are compatible.

Note 5: IC2101 (Flash memory) on the VC-520 board and IC4302 (Flash memory) on the VC-520 board cannot be replaced.

Adjusting item	Adjustment	Replaced parts																							
		Block replacement						Parts replacement																Board replacement	
		Lens device	Drive block	LCD block LCD901 (LCD panel)	EVF block LCD902 (LCD panel)	Microphone unit MIC901	Flash Memory block (Note 2, 3)	CD-672/687 board IC7002 (CCD imager) (Note 4)	CD-672/687 board SE7001, 7002 (YAW, PITCH sensor) (Note 4)	BL-022 board D5701 (EVF backlight)	PD-352 board D6203 - 6205 (LCD backlight)	VC-520 board IC1701, X1701 (CPU, Oscillator)	VC-520 board IC1201 (A/D converter, Timing generator)	VC-520 board IC2401 (D/A converter)	VC-520 board IC2801 (Video, Audio I/O)	VC-520 board IC3101 (LCD/EVF driver)	VC-520 board IC4101 (RF process)	VC-520 board IC4201 (DVD DSP)	VC-520 board IC4401 (DVD mecha drive)	CD-672/687 board (COMPLETE) (Note 4)	BL-022 board (COMPLETE)	PD-352 board (COMPLETE)	VC-520 board (COMPLETE)		
Destination Data Write	Destination data write																							●	
USB Serial No. Input	USB serial No. input																							●	
(Note 1)	Origin oscillation check											●												●	
VIDEO adjustment	S VIDEO OUT Y level adj.																							●	
	S VIDEO OUT chroma level adj.												●	●										●	
	VIDEO OUT level check																							●	
CAMERA adjustment 1	HALL adj.	●																						●	
CAMERA adjustment 2	Flange back adj.	●						●				●								●				●	
CAMERA adjustment 3	Flange back check	●						●				●								●				●	
CAMERA adjustment 4	F No. standard data input																								
	MAX GAIN adj.	●						●				●	●							●				●	
	Mechanical shutter adj																								
CAMERA adjustment 5	Color reproduction adj.																								
	Color reproduction check																								
	AWB & LV standard data input	●						●				●	●							●				●	
	AWB adj.																								
	AWB check																								
CAMERA adjustment 6	Black Defec adj.							●												●					
CAMERA adjustment 7	Steady shot check								●											●	●			●	
LCD adjustment	LCD automatic adj. (VCO adj, Contrast adj.)																								
	V-COM adj.			●																					
	Transmissive moed white balance adj.									●			●		●							●	●		
	Reflective mode white balance adj.																								
EVF adjustment	EVF automatic adj. (VCO adj, Contrast adj.)				●				●				●		●									●	
	White balance adj.																								
Touch panel adjustment	Touch panel adj.			●																				●	
AUDIO adjustment	Internal 3ch microphone sensitivity adj.					●									●									●	
AUDIT	POWER adj.		●															●	●	●				●	
	SERVO adj.		●															●	●	●				●	

Table 6-1-2

1-3. List of service tools

- Oscilloscope
- Amplifier built-in speaker for PC
- Color monitor
- Adjustment sound source file
- Frequency counter

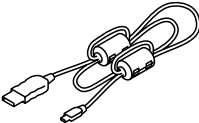
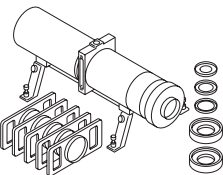
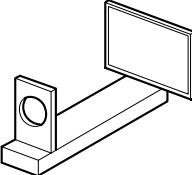
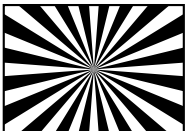
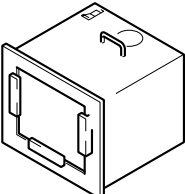
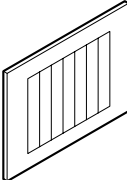
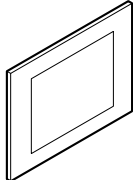
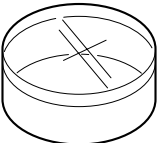
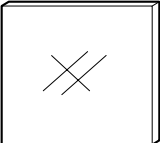
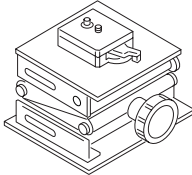
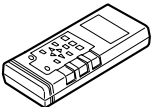
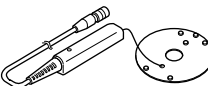
J-1  Personal computer (Note 1, 2)	J-2  HASP key and application for adjustment (SeusEX) Contact our service headquarters of each area how to get the application for adjustment (SeusEX) and HASP key.	J-3  USB cable 1-829-868-31
J-4  Minipattern box J-6082-353-B	J-5  Flange back adjustment jig J-6082-563-A	J-6  Siemens star chart J-6080-875-A
J-7  Pattern box PTB-450 J-6082-200-A or Small pattern box PTB-1450 J-6082-557-A	J-8  Color bar chart For PTB-450: J-6020-250-A For PTB-1450: J-6082-559-A	J-9  Clear chart For PTB-450: J-6080-621-A For PTB-1450: J-6082-560-A
J-10  Filter for color temperature correction (C14) J-6080-058-A	J-11  ND filter 1.0 J-6080-808-A ND filter 0.4 J-6080-806-A ND filter 0.1 J-6080-807-A	J-12  Camera table J-6082-384-A
J-13  Optical power meter J-6082-569-A	J-14  Optical sensor disc J-6082-570-A	J-15  DVD-RW (DRW3) Reference + DOW Disc 8-212-001-51

Fig. 6-1-1 (1)

Note 1: Personal computer

- OS: Windows 2000/XP (Camera Section)
- Windows 2000 SP4 or later/XP SP2 or later (Drive Section)
- RAM: 256MB or more recommended
- USB: 2.0 recommended (also compatible with 1.1)
- Three connectors are required.

Note 2: The following programs and driver must already be installed in the personal computer. (Contact our service headquarters of each area how to get the programs and driver)

- SeusEX
- Optical power meter driver
- AUDIT

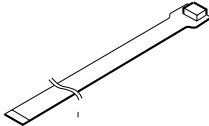
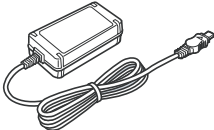
J-16  DVD-R for Self Jitter Disc 8-212-002-11	J-17  DVD+RDL for Self Disc (Manufactured by Sony Corporation)	J-18  Extension cable (10P) J-6082-572-A
J-19  AC adaptor AC-L200/L200B 1-479-285-21/41		

Fig. 6-1-1 (2)

Note 3: 1-479-285-21 (for except J model)
1-479-285-41 (for J model)

6-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENTS (CAMERA SECTION)

1-1-1. Preparations

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

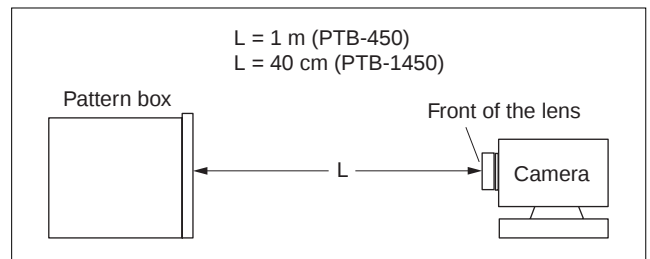


Fig. 6-1-2

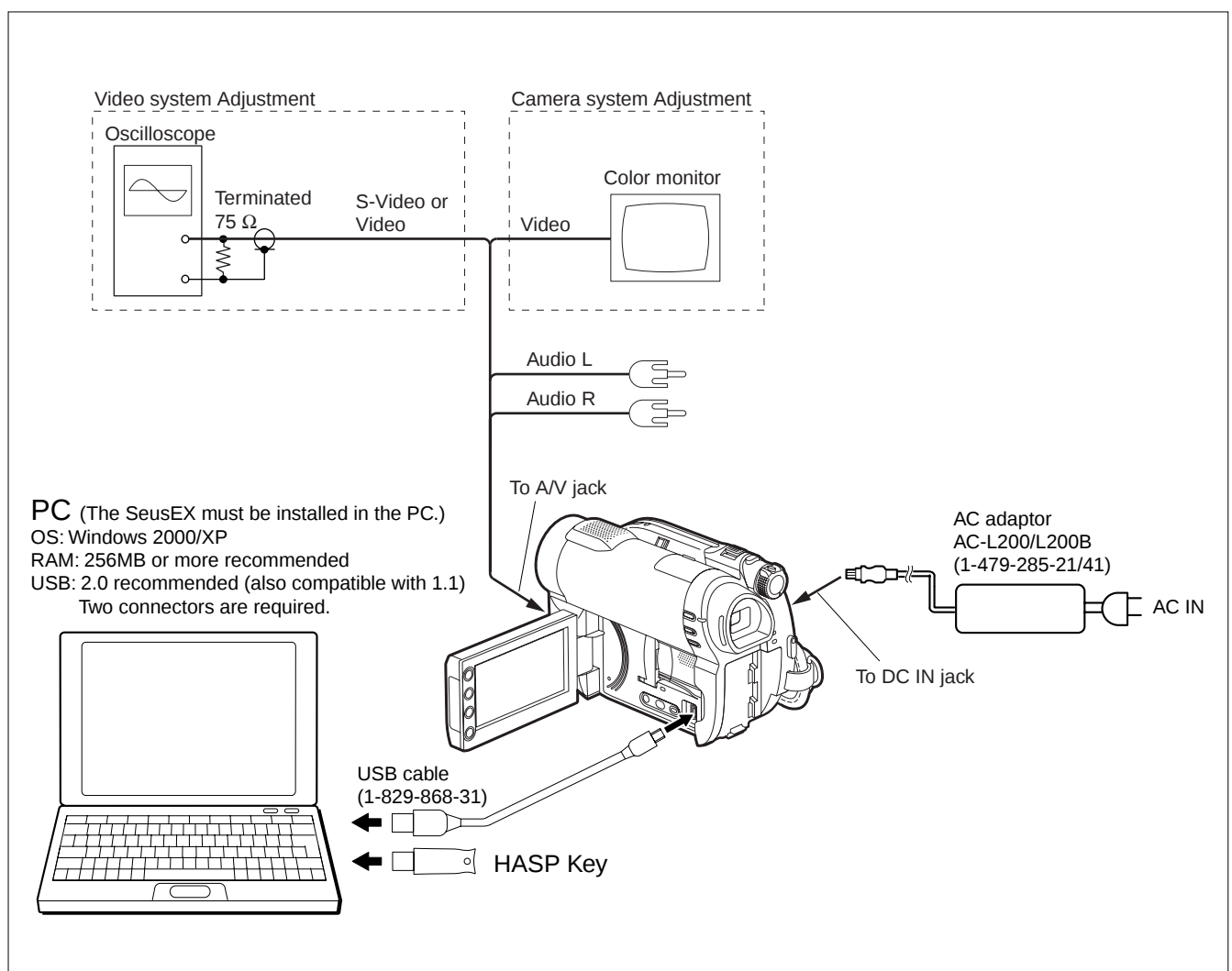


Fig. 6-1-3

1-1-2. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without inserting disc.

- | | | | |
|-------------------------|-------|--|-----|
| 1. POWER switch | Movie | 5. (HOME) menu – (SETTINGS) – MOVIE SETTINGS | |
| 2. BACK LIGHT | OFF | DIGITAL ZOOM | OFF |
| 3. NIGHTSHOT PLUS | OFF | STEADY SHOT | OFF |
| 4. (OPTION) menu | | AUTO SLW SHUTTR | OFF |
| FOCUS | AUTO | 6. (HOME) menu – (SETTINGS) – GENERAL SET | |
| | | DEMO MODE | OFF |

2. Order of Adjustments

Basically carry out adjustments in the order given.

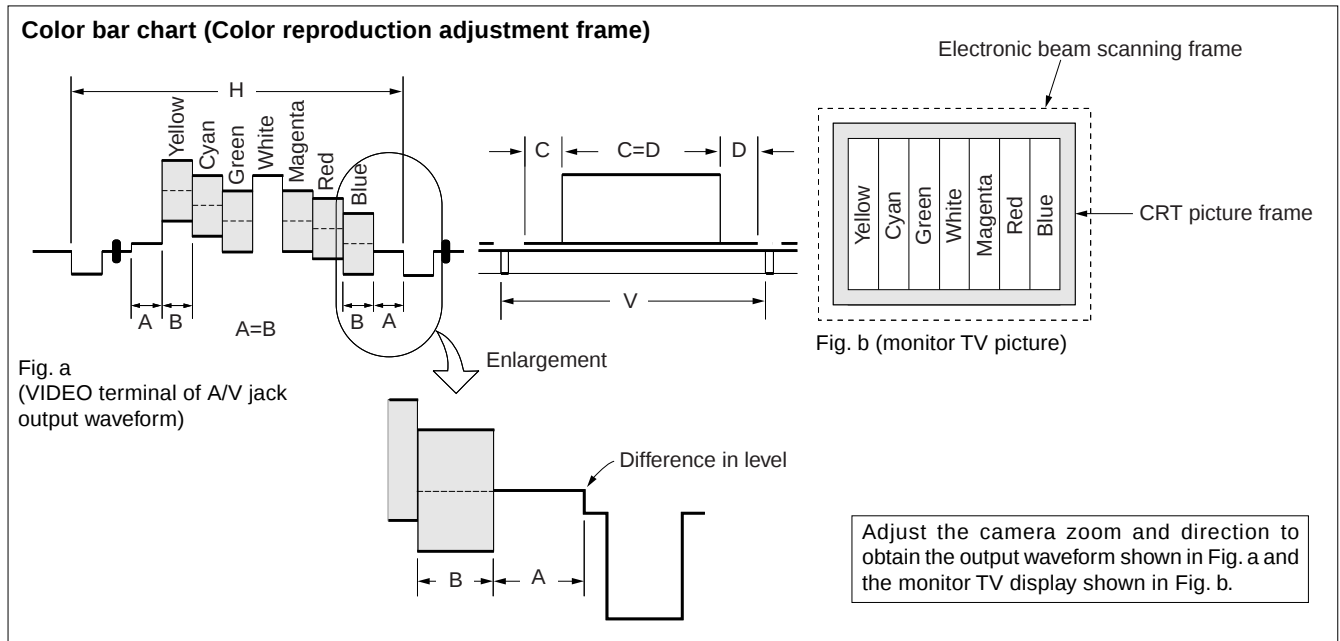


Fig. 6-1-4

3. Subjects

- 1) Color bar chart (Color reproduction adjustment frame)
When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 6-1-4. (Color reproduction adjustment frame)
- 2) Clear chart (AWB adjustment frame)
Shoot the color bar chart. Then adjust the zoom to TELE side from WIDE side, and stop it when the black frame of the chart disappears. Remove the color bar chart from pattern box and insert a clear chart in its place.
- 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. 6-1-5.

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

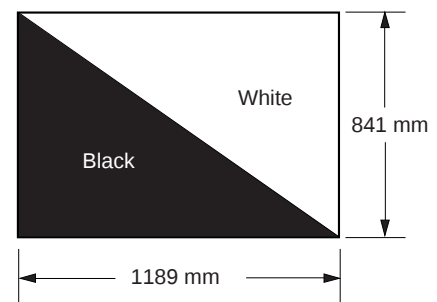


Fig. 6-1-5

1-2. ADJUSTMENT PROGRAM

The DCR-DVD110E/DVD115E/DVD310E/DVD410E//DVD610/DVD610E/DVD710/DVD710E/DVD810/DVD810E are adjusted by the Automatic Adjustment Program. The Automatic Adjustment Program enters automatically via the SeusEX the adjustment operations that were formerly entered manually by the adjustment remote commander (some items may be adjusted by manual operation on the operation screen of the SeusEX).

1. Precautions When Using Automatic Adjustment Program

- 1) The Automatic Adjustment Program writes the adjustment results such as EVR data to the set through two-way communication with the camcorder via the SeusEX. Accordingly, the Automatic Adjustment Program must be used in the environment where the SeusEX operates.
- 2) The Automatic Adjustment Program cannot be used when the SEUS or the SeusCam is running. Exit the SEUS or the SeusCam before using the Automatic Adjustment Program.
- 3) The SeusEX must be already started on the PC when using the Automatic Adjustment Program. With the SeusEX not started, some adjustment items will take time in adjustment.
- 4) The program run time may vary depending on the environment of the personal computer used.

2. Start of Automatic Adjustment Program

Double-click the application file (DCR-DVD610 Series Auto-Adj Ver_1.3r04.exe or DCR-DVD710 Series Auto-Adj Ver_1.3r04.exe), and the Automatic Adjustment Program will start.

3. Function of Each Button on Main Menu Screen

When the Automatic Adjustment Program started, the Main Menu screen in Fig. 6-1-6 will appear. On this screen, select each adjustment section.

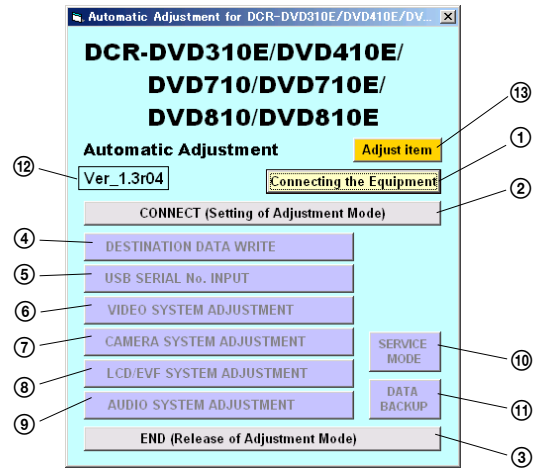


Fig. 6-1-6

- ① **[Connecting the Equipment]** button
A connection diagram of the equipment is displayed.
- ② **[CONNECT]** button
The mode of Camcorder is switched to the Adjustment Mode. When the Adjustment Mode has switched normally, the operation of the buttons ④ - ⑪ is enabled.
- ③ **[END]** button
The mode of Camcorder is switched to the normal mode. When the normal mode has switched correctly, the Automatic Adjustment Program is finished.
- ④ **[DESTINATION DATA WRITE]** button
The "DESTINATION DATA WRITE" screen appears.
- ⑤ **[USB SERIAL No. INPUT]** button
The "USB SERIAL No. INPUT" screen appears.
- ⑥ **[VIDEO SYSTEM ADJUSTMENT]** button
The "VIDEO SYSTEM ADJUSTMENT" screen appears.
- ⑦ **[CAMERA SYSTEM ADJUSTMENT]** button
The "CAMERA SYSTEM ADJUSTMENT" screen appears.
- ⑧ **[LCD/EVF SYSTEM ADJUSTMENT]** button
The "LCD/EVF SYSTEM ADJUSTMENT" screen appears.
- ⑨ **[AUDIO SYSTEM ADJUSTMENT]** button
The "AUDIO SYSTEM ADJUSTMENT" screen appears.
- ⑩ **[SERVICE MODE]** button
The "SERVICE MODE" screen appears.
- ⑪ **[DATA BACKUP]** button
The "DATA BACKUP" screen appears.
- ⑫ This part indicates the version of Automatic Adjustment Program.
- ⑬ **[Adjust item]** button
"Adjusting items when replacing main parts and boards" table is displayed.

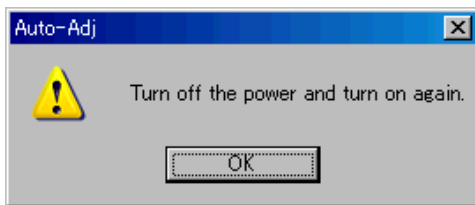
4. Setting of Adjustment Mode

Before performing the adjustment, “Setting of Adjustment Mode” is required.

[Setting method]

- 1) Connect the Camcorder to the PC with a USB cable, and turn on the power switch.
- 2) The USB SELECT menu will appear on the LCD screen of the Camcorder, and then select “USB CONNECT (Memory Stick)” to establish the connection.
- 3) Start the Automatic Adjustment Program, and click the **Connect** button on the Main Menu screen.
- 4) When the following message is displayed, turn off and on again the power switch of the Camcorder.

Note: Turning off and on the power switch causes the Camcorder to be switched to the Adjustment Mode. After the Camcorder restarted, click the **OK** button in the message window.



- 5) Upon successful completion of the settings in the Adjustment Mode, the operation of each button on the Main Menu screen is enabled.

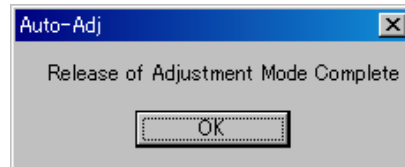
5. Release of Adjustment Mode

To finish the adjustment, be sure to perform “Release of Adjustment Mode”.

[Releasing method]

- 1) Click the **END** button on the Main Menu screen.
- 2) When the following message is displayed, releasing of adjustment mode has completed. Click the **OK** button in the message window to exit the Automatic Adjustment Program.

Note: The Camcorder switches to the normal mode by turning off and on the power switch. After the adjustment finished, turn off and on again the power switch of the Camcorder to confirm that the USB SELECT menu is displayed.



1-3. DESTINATION DATA WRITE

Note: The DESTINATION DATA WRITE can be set with the Service board only.

Performing the DESTINATION DATA WRITE with other than the Service board causes the error (E:20:00 will be blinking) and the power to be shut down.

1. Function of Each Button on Destination Data Write Screen

Click the [DESTINATION DATA WRITE] button on the Main Menu screen, and the “DESTINATION DATA WRITE” screen in Fig. 6-1-7 will appear.

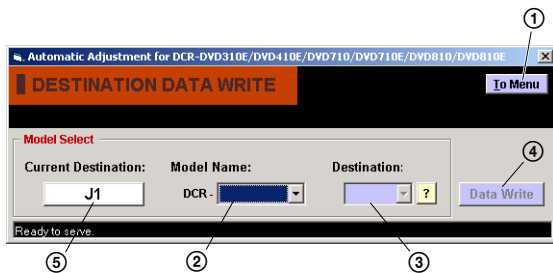


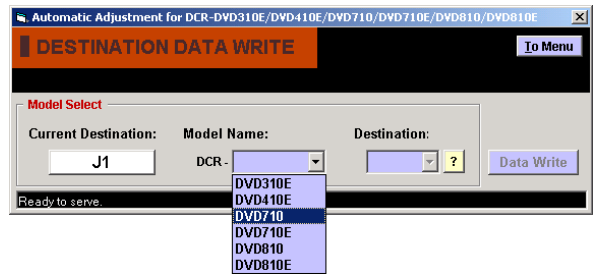
Fig. 6-1-7

- ① [To Menu] button
Return to the main menu.
- ② Model Name List
Selects the model name.
- ③ Destination List
Selects the written destination.
- ④ [Data Write] button
Write the destination data to the camcorder.
- ⑤ Destination Check button
Current destination setting checked when the “DESTINATION DATA WRITE” screen started is displayed.
When this button is clicked, the destination is checked and the display is updated.

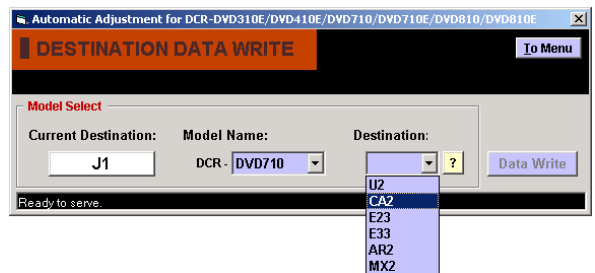
2. Destination Data Write

[Writing method]

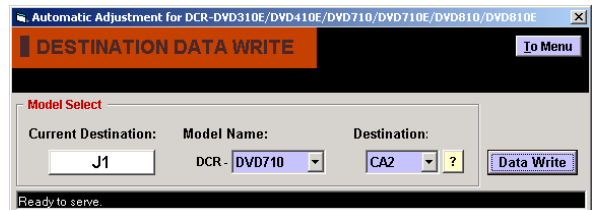
- 1) Select the model name from the pulldown list.



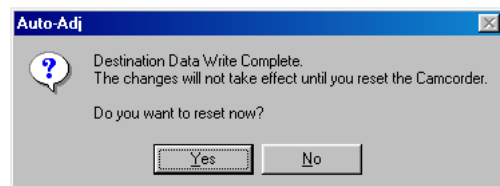
- 2) Select the target destination from the pulldown list.



- 3) Click the [Data Write] button.



- 4) Following message will be appeared after completing data writing.



- 5) After the destination data writing completed, click the Destination Check button to check the destination.

3. Selectable Language Table

DESTINATION	AREA	SELECTABLE LANGUAGE																			
		English	Japanese	French	Italian	German	Spanish	Dutch	Russian	Simplified Chinese	Portuguese	Greek	Braz.Portuguese	Canadian French	Espanyol	Traditional Chinese	Korean	Simplified English	Albanian	Persian	Thai
NTSC model	J1	J	●																		
	U2	US	●										○	○	○			○			
	MX2	MX	○										○	○	●			○			
	AR2	AR	○										○	○	●			○			
	BR1	BR	○										●	○	○			○			
	E33	E	○										○	○	●			○			
	E23		●										○	○	○	○		○			
	KR2	KR	○										○	○	○	○	●	○			
PAL model	JE3	JE	●										○	○	○	○		○			
	CA2	CND	●										○	○	○	○	○	○			
	E35	E	●		○	○	○	○	○	○	○	○				○		○	○	○	○
	E36		●		○	○	○	○	○	○	○	○				○		○	○	○	○
	E37		●		○	○	○	○	○	○	○	○				○		○	○	○	○
	TH6	Thai	●		○	○	○	○	○	○	○	○				○		○	○	○	○
	HK1	HK	●		○	○	○	○	○	○	○	○				○		○	○	○	○
	AU2	AUS	●		○	○	○	○	○	○	○	○				○		○	○	○	○
	CN1	CH	○		○	○	○	○	○	●	○	○				○		○	○	○	○
	JE3	JE	●		○	○	○	○	○	○	○	○				○		○	○	○	○
	CEL	NE	●		○	○	○	○	○	○	○	○				○		○		○	○
	CEI	AEP	●		○	○	○	○	○		○	○	○			○		○		○	○
	CEJ		●		○	○	○	○	○		○	○	○			○		○		○	○
	CEM	EE	●		○	○	○	○	○		○	○	○			○		○		○	○
	CEH	UK	●		○	○	○	○	○		○	○	○			○		○		○	○

●: INITIAL LANGUAGE

Table 6-1-3

1-4. USB SERIAL No. INPUT

The set is shipped with a unique ID (USB Serial No.) written in it. This ID has not been written in a new board for service, and therefore it must be entered after the board replacement.

If original ID can be read from the board before replacement, read it from the board before replacement using the “SERIAL READ/ WRITE” screen, and then write it after replacement.

If original ID cannot be read from the board before replacement, write the ID for service using the “MANUAL WRITE” screen. (The ID for service is different from the ID written when the set is shipped.) Enter the PRODUCT ID (last 5 characters of model name) and SERIAL No. into the screen and write them.

1. Function of Each Button on USB Serial No. Input Screen

Click the **USB SERIAL No. INPUT** button on the Main Menu screen, and the “USB SERIAL No. INPUT” screen in Fig. 6-1-8 will appear.

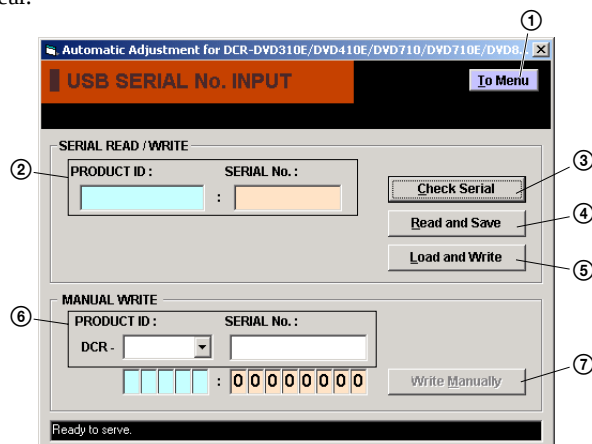


Fig. 6-1-8

- ① **To Menu** button
Return to the main menu.
- ② Display area
The “PRODUCT ID” and “SERIAL No.” are displayed.
- ③ **Check Serial** button
The USB SERIAL No. data is read from the camcorder and displayed in the display area.
- ④ **Read and Save** button
The USB SERIAL No. data is read from the camcorder and saved in PC as a file.
Default file name is as follows:
(Example: MEGA model)
DCR-DVD710_SERIAL_ xxxxxxxx_yyyyymmdd.dat

Date

USB serial number

Data name
- ⑤ **Load and Write** button
The USB SERIAL No. data is loaded from the file saved in PC and written to the camcorder.
- ⑥ Input area
Enter “PRODUCT ID” and “SERIAL No.” when writing the ID for service.
The “PRODUCT ID” is set from the last 5 characters of model name if the model name is selected.
For the “SERIAL No.”, read it from the label on the camcorder body and enter it.
- ⑦ **Write Manually** button
The USB SERIAL No. data entered in the input area is written to the camcorder.

1-5. VIDEO SYSTEM ADJUSTMENTS

1. Function of Each Button on Video System Adjustment Screen

Click the **VIDEO SYSTEM ADJUSTMENT** button on the Main Menu screen, and the “VIDEO SYSTEM ADJUSTMENT” screen in Fig. 6-1-9 will appear.

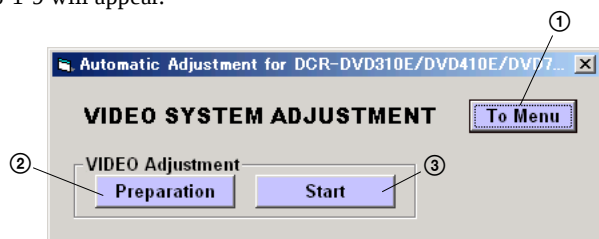


Fig. 6-1-9

- ① **To Menu** button
Return to the main menu.
- ② **Preparation** button
Notes for adjustment or jigs used are displayed.
- ③ **Start** button
“Video Adjustment” starts.

2. Adjustment Items of VIDEO System Adjustment

The adjustment items of video system adjustment are as listed in Table 6-1-4. The Automatic Adjustment Program executes the adjustment items if the VIDEO Adjustment Start button is clicked.

Button Name	Adjustment	Measurement Point	Measuring Instrument	Adjusting Address		
				Block	Page	Address
(Note)	Origin Oscillation Check	Pin ③ of X1701 on VC-520 board	Frequency counter	-	-	-
VIDEO Adjustment	S VIDEO OUT Y Level Adj.	Y signal terminal of S VIDEO plug of A/V jack (75 ohm terminated)	Oscilloscope	10	60	4400
	S VIDEO OUT Chroma Level Adj.	Chroma signal terminal of S VIDEO plug of A/V jack (75 ohm terminated)	Oscilloscope	10	60	4401, 4402
	VIDEO OUT Level Check	VIDEO terminal of A/V jack (75 ohm terminated)	Oscilloscope	-	-	-

Note: The Automatic Adjustment Program does not support.

Table 6-1-4

3. Origin Oscillation Check

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

Subject	Not required
Measurement Point	Pin ③ of X1701 on VC-520 board
Measuring Instrument	Frequency counter
Specified value	$f = 12000000 \pm 240 \text{ Hz}$

Switch setting

- 1) POWER MOVIE mode

Checking method:

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

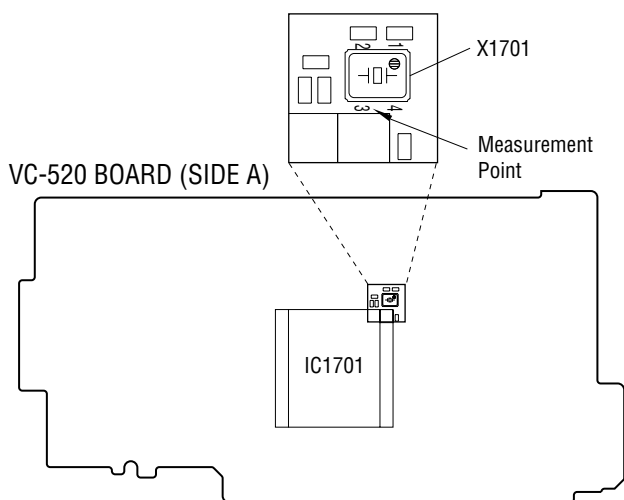


Fig. 6-1-10

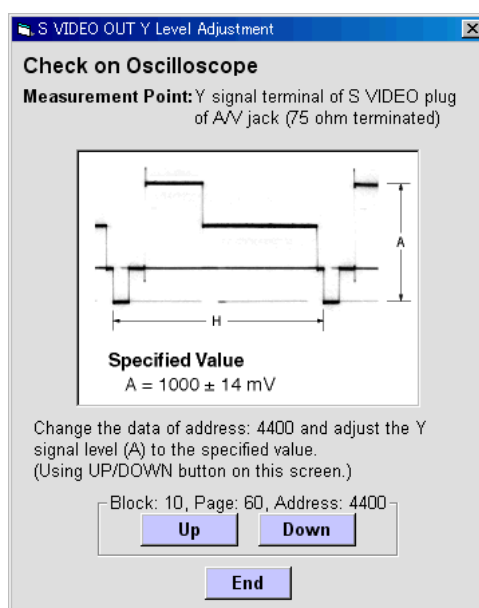
4. VIDEO Adjustment

[Automatic Adjustment Program execution items and sequence]

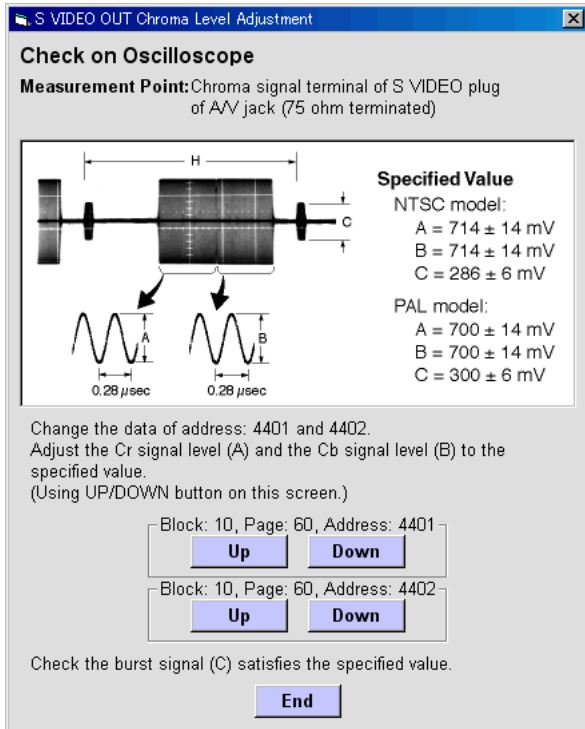
1. Data Setting during Video Adj.
2. S VIDEO OUT Y Level Adj.
3. S VIDEO OUT Chroma Level Adj.
4. VIDEO OUT Level Check

[Adjusting method]

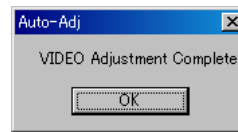
- 1) Click the **[Start]** button of the VIDEO Adjustment.
- 2) The Automatic Adjustment Program executes the "1. Data Setting during Video Adj."
- 3) If "1. Data Setting during Video Adj." completed successfully, the following screen is displayed during the execution of "2. S VIDEO OUT Y Level Adj.". Using the **[Up]**/**[Down]** button on the screen, adjust so that the Y signal level satisfies the specified value. After the adjustment, click the **[End]** button in the screen.



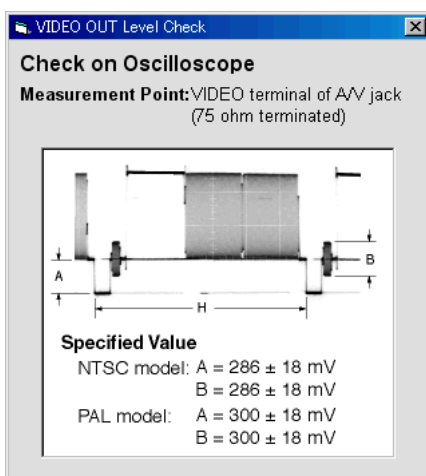
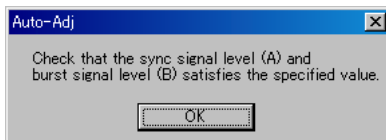
- 4) After that, the following screen is displayed during the execution of “3. S VIDEO OUT Chroma Level Adj.”. Using the [Up]/[Down] button on the screen, adjust so that the Cr signal level and the Cb signal level satisfies the specified value. After the adjustment, check that the burst level of the chroma signals satisfies the specified value, and click the [End] button in the screen.



- 6) Upon successful completion of all item the VIDEO Adjustment, the following message is displayed. Click the [OK] button.



- 5) If the [End] button is clicked, “4. VIDEO OUT Level Check” will be executed. The following message and screen are displayed. Check that the sync signal level and burst level of the video signals satisfies the specified value, and click the [OK] button in the message.



1-6. CAMERA SYSTEM ADJUSTMENTS (Non MEGA model)

1. Function of Each Button on Camera System Adjustment Screen

Click the **CAMERA SYSTEM ADJUSTMENT** button on the Main Menu screen, and the “CAMERA SYSTEM ADJUSTMENT” screen in Fig. 6-1-11 will appear.

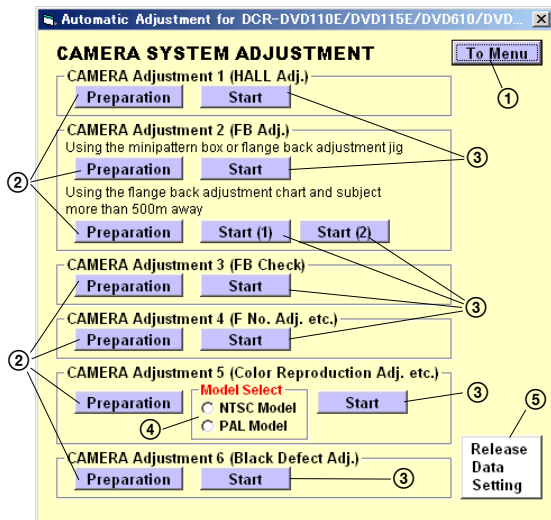


Fig. 6-1-11

- ① **To Menu** button
Return to the main menu.
- ② **Preparation** button
Notes for adjustment or jigs used are displayed.
- ③ **Start** button
Each adjustment from “Camera Adjustment 1” to “Camera Adjustment 6” starts.
- ④ **Model Select** radio button
Selects the model to be adjusted.
Note: NTSC model: DCR-DVD610
PAL model: DCR-DVD110E/DVD115E/DVD610E
- ⑤ **Release Data Setting** button
The data setting at the adjustment is cancelled.
During the data setting, the button color changes from “white” to “red”. When the data setting is cancelled, the button color returns to “white”.
(Use this button when an error occurred in the camera adjustment. If the adjustment completed successfully, the data setting is automatically cancelled and the button color returns to “white”.)

2. Adjustment Items of Camera System Adjustment

The adjustment items of camera system adjustment are as listed in Table 6-1-5. The Automatic Adjustment Program divides the adjustment items into six, camera adjustment 1-6. Clicking either CAMERA Adjustment Start button allows the adjustment item which corresponds to that button to be executed.

The adjustment conditions of the subject and filter vary depending on which item is adjusted. The Adjustment Program displays an instruction for the subject and filter as a message during the adjustment.

Button Name	Adjustment	Subject	Adjusting Address		
			Block	Page	Address
CAMERA Adjustment 1	HALL Adj.	Not required	11	61	0150 to 0159, 0190 to 019B
CAMERA Adjustment 2	Flange Back Adj.	Siemens star chart with ND filter for minipattern box (Note) or Flange back adjustment jig	11	61	0020 to 0030, 004C, 004D
		Flange back adjustment chart and subject more than 500 m away			
CAMERA Adjustment 3	Flange Back Check	Siemens star chart	-	-	-
CAMERA Adjustment 4	F No. Standard Data Input	Clear chart (Center frame)	11	61	0160 to 017F
	MAX GAIN Adj.		11	61	015C to 015F
CAMERA Adjustment 5	Color Reproduction Adj.	Color bar chart (Color reproduction adjustment frame)	11	61	0060 to 006E
	Color Reproduction Check		-	-	-
	AWB & LV Standard Data Input	Clear chart (All White frame)	11	61	0074 to 007B, 0180 to 018B, 01C0 to 01C3
	AWB Adj.	Clear chart (All White frame) Filter C14 for color temperature correction	11	61	0070 to 0073, 008C to 0093, 01C4 to 01C7
	AWB Check	Clear chart (All White frame) ND filter 1.0, 0.4 and 0.1	-	-	-
CAMERA Adjustment 6	Black Defect Adj.	Clear chart (All White) (Shoot the clear chart with the zoom TELE end.)	11	61	00C0 to 011D, 01A0 to 01B3

Note: Dark Siemens star chart.

Table 6-1-5

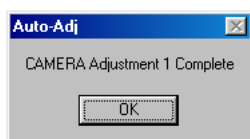
3. CAMERA Adjustment 1

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. HALL Adj.
3. Release of Data Setting during Camera Adj.

[Adjusting method]

- 1) Click the **[Start]** button of the CAMERA Adjustment 1.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) If “1. Data Setting during Camera Adj.” completed successfully, and the items “2. HALL Adj.” and “3. Release of Data Setting during Camera Adj.” will be executed.
- 4) Upon successful completion of all items of the CAMERA Adjustment 1, the following message is displayed. Click the **[OK]** button.



4. CAMERA Adjustment 2 (Using the minipattern box or flange back adjustment jig)

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. Flange Back Adj.
3. Release of Data Setting during Camera Adj.

[Preparation (Using the minipattern box)]

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

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

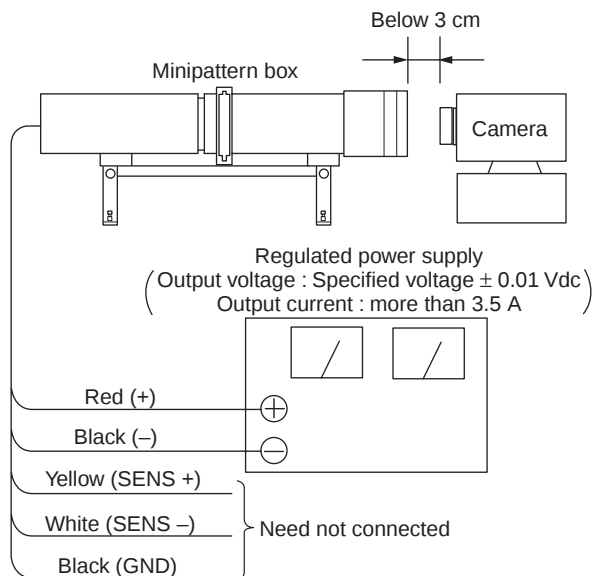


Fig. 6-1-12

[Preparation (Using the flange back adjustment jig)] (Illuminance: 950 to 1050 lux)

Note 2: When using the flange back adjustment jig, take care of the following points:

- For the illumination, use a light source such as an incandescent lamp or inverter type fluorescent light free from flickering.
- Do not make an adjustment in the environment where fluorescent lamp flickering occurs even if the illuminance can be ensured with the room illumination only. Use an incandescent lamp or inverter type fluorescent light at a place free from the influence of room illumination.

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

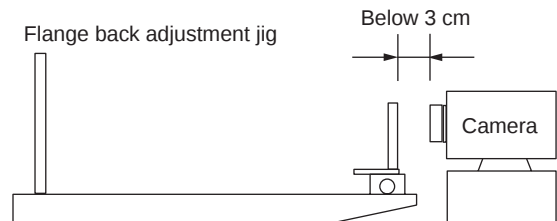
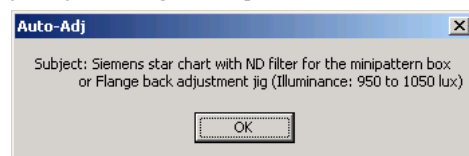


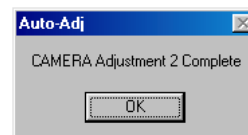
Fig. 6-1-13

[Adjusting method]

- 1) Click the **[Start]** button of the CAMERA Adjustment 2.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed. Set the subject by referring to “Preparation”.



- 4) If the **[OK]** button is clicked, “2. Flange Back Adj.” and “3. Release of Data Setting during Camera Adj.” will be executed.
- 5) Upon successful completion of all items of the CAMERA Adjustment 2, the following message is displayed. Click the **[OK]** button.



5. CAMERA Adjustment 2 (Using the flange back adjustment chart and subject more than 500 m away)

5-1. CAMERA Adjustment 2 (1)

[Automatic Adjustment Program execution items and sequence]

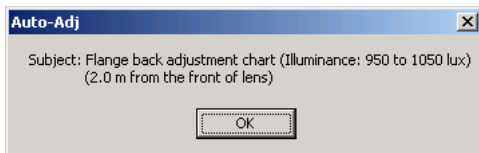
1. Data Setting during Camera Adj.
2. Flange Back (1) Adj.
3. Release of Data Setting during Camera Adj.

[Preparation]

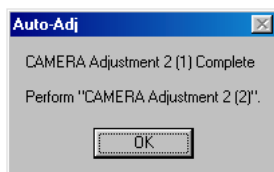
- 1) Place the Flange back adjustment chart at 2 m position away from the lens.
- 2) Check that the center of Flange back adjustment chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

[Adjusting method]

- 1) Click the [Start (1)] button of the CAMERA Adjustment 2.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed. Set the subject by referring to “Preparation”.



- 4) If the [OK] button is clicked, “2. Flange Back (1) Adj.” and “3. Release of Data Setting during Camera Adj.” will be executed.
- 5) Upon successful completion of all items of the CAMERA Adjustment 2 (1), the following message is displayed. Click the [OK] button.



- 6) Perform “CAMERA Adjustment 2 (2)”.

5-2. CAMERA Adjustment 2 (2)

[Automatic Adjustment Program execution items and sequence]

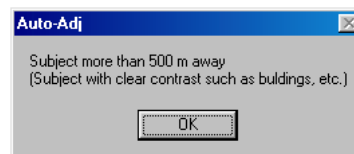
1. Data Setting during Camera Adj.
2. Flange Back (2) Adj.
3. Release of Data Setting during Camera Adj.

[Preparation]

- 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)

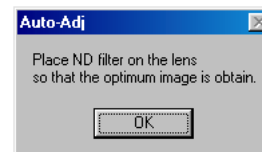
[Adjusting method]

- 1) Click the [Start (2)] button of the CAMERA Adjustment 2.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed. Set the subject by referring to “Preparation”.

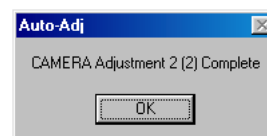


- 4) If the [OK] button is clicked, “2. Flange Back (2) Adj.” will be executed.

The following message is displayed during the execution of adjustment, and then place the ND filter on the lens so as to obtain the optimum image.



- 5) If “2. Flange Back Adj.” completed successfully, “3. Release of Data Setting during Camera Adj.” will be executed.
- 6) Upon successful completion of all items of the CAMERA Adjustment 2 (2), the following message is displayed. Click the [OK] button.



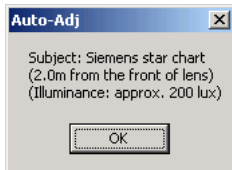
6. CAMERA Adjustment 3

[Automatic Adjustment Program execution items and sequence]

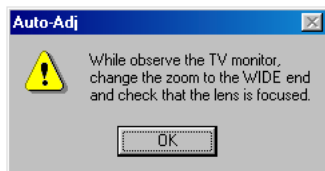
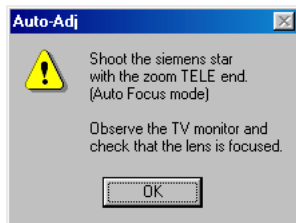
1. Data Setting during Camera Adj.
2. Flange Back Check
3. Release of Data Setting during Camera Adj.

[Adjusting method]

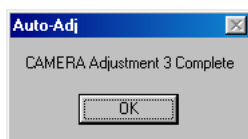
- 1) Click the **[Start]** button of the CAMERA Adjustment 3.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed. Set the subject in accordance with the message.



- 4) If the **[OK]** button is clicked, “2. Flange Back Check” is executed. The following messages are displayed, and then operate the camera to make a check in accordance with the messages.



- 5) Upon completion of “2. Flange Back Check”, “3. Release of Data Setting during Camera Adj.” is executed.
- 6) Upon successful completion of all items of the CAMERA Adjustment 3, the following message is displayed. Click the **[OK]** button.



7. CAMERA Adjustment 4

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. Picture Frame Setting (Center Frame)
3. F No. Standard Data Input
4. MAX GAIN Adj.
5. Release of Data Setting during Camera Adj.

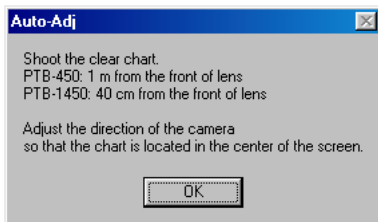
[Adjusting method]

- 1) Select the model (NTSC Model or PAL Model) with the Model Select radio button.

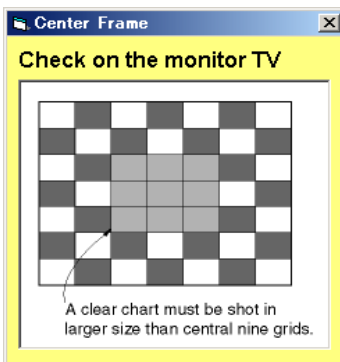
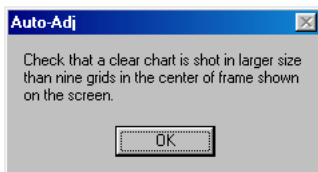
Note: NTSC model: DCR-DVD610

PAL model: DCR-DVD110E/DVD115E/DVD610E

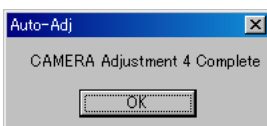
- 2) Click the **[Start]** button of the CAMERA Adjustment 4.
- 3) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 4) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed during the execution of “2. Picture Frame Setting (Center Frame)”. Set the subject in accordance with the message.



- 5) If the **[OK]** button is clicked, the following message is displayed, and then check the size of clear chart shot on the monitor screen.



- 6) After the checking, if the **[OK]** button in the message window is clicked, the adjustment items from “3. F No. Standard Data Input” to “4. MAX GAIN Adj.” are executed.
- 7) Upon successful completion of the “4. MAX GAIN Adj.”, “5. Release of Data Setting during Camera Adj.” is executed.
- 8) Upon successful completion of all items of the CAMERA Adjustment 4, the following message is displayed. Click the **[OK]** button.



8. CAMERA Adjustment 5

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. Picture Frame Setting (Color Reproduction Adjustment Frame)
3. Color Reproduction Adj.
4. Color Reproduction Check
5. Picture Frame Setting (AWB Adjustment Frame)
6. AWB & LV Standard Data Input
7. AWB Adj.
8. AWB Check
9. Release of Data Setting during Camera Adj.

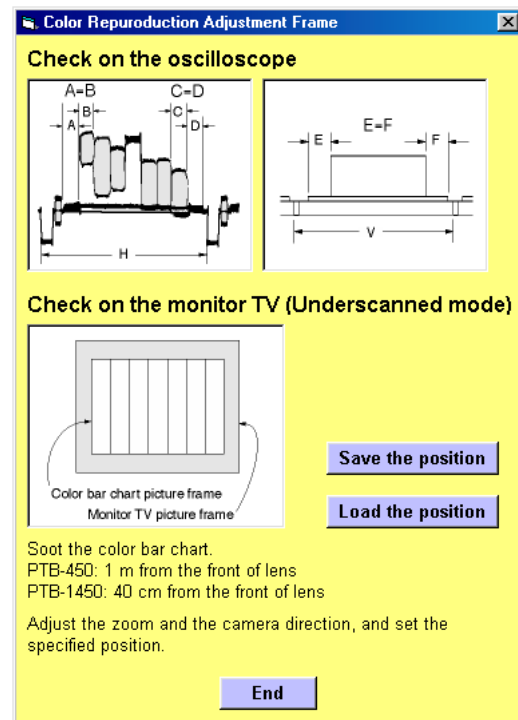
[Adjusting method]

- 1) Select the model (NTSC Model or PAL Model) with the Model Select radio button.

Note: NTSC model: DCR-DVD610

PAL model: DCR-DVD110E/DVD115E/DVD610E

- 2) Click the **[Start]** button of the CAMERA Adjustment 5.
- 3) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 4) Upon successful completion of the “1. Data Setting during Camera Adj.”, “2. Picture Frame Setting (Color Reproduction Adjustment Frame)” is executed and the following message is displayed. Adjust the zoom and camera direction and then set the picture frame. After the setting finished, click the **[End]** button.



The buttons on this screen provide the following functions:

[Save the position] button

Saves the camera zoom and focus position data.

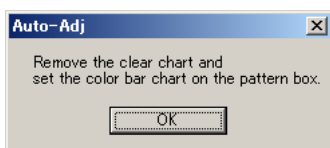
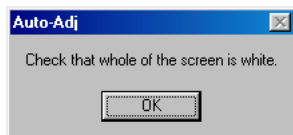
[Load the position] button

Reads the camera zoom and focus position data saved last and moves the camera zoom and focus to that position.

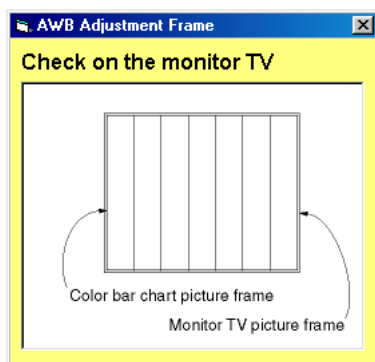
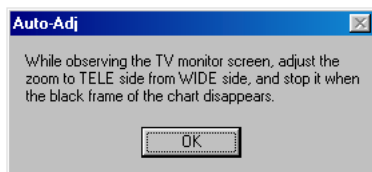
Note 1: The zoom and focus position data are saved with “DCR_DVD610_ZoomFocusData.txt” file name in the same holder as the Automatic Adjustment Program. No position data can be read if this file is moved or deleted.

Note 2: Only the latest position data can be saved. If the **[Save the position]** button is clicked, the latest data are saved overwriting the previous data.

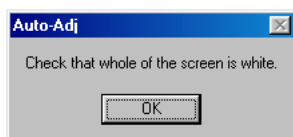
- 5) After setting the picture frame, if the **[End]** button is clicked, “3. Color Reproduction Adj.” and the adjustment items of “4. Color Reproduction Check” are executed. The following messages are displayed in the order given below during the execution. Then, change the chart in accordance with the messages.



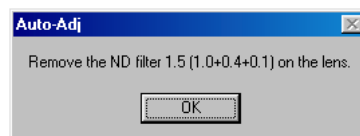
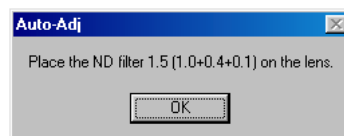
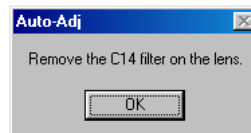
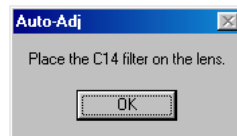
- 6) Upon successful completion of the “7. Color Reproduction Check”, the following message is displayed. Then, set the picture frame in accordance with the message.



- 7) If the **[OK]** button is clicked, “5. Picture Frame Setting (AWB Adjustment Frame)” is executed. The following messages are displayed in the order given below during the execution. Then, change the chart in accordance with the messages.

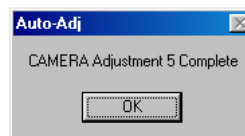


- 8) After the setting, if the **[OK]** button is clicked, the adjustment items from “6. AWB & LV Standard Data Input” to “8. AWB Check” are executed. During the execution, the following messages are displayed in the order given below. Place or remove the filters on the lens in accordance with the messages.



- 9) Upon completion of “8. AWB Check”, “9. Release of Data Setting during Camera Adj.” is executed

- 10) Upon successful completion of all items of the CAMERA Adjustment 5, the following message is displayed. Click the **[OK]** button.



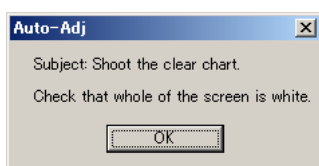
9. CAMERA Adjustment 6

[Automatic Adjustment Program execution items and sequence]

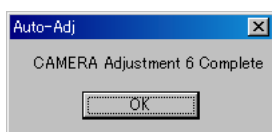
1. Data Setting during Camera Adj.
2. Black Defect Adj.
3. Release of Data Setting during Camera Adj.

[Adjusting method]

- 1) Click the **[Start]** button of the CAMERA Adjustment 6.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed. Then, set the subject in accordance with the message.



- 4) Click the **[OK]** button, and the “2. Black Defect Adj.” will be executed.
- 5) Upon completion of “2. Black Defect Adj.”, “3. Release of Data Setting during Camera Adj.” is executed.
- 6) Upon successful completion of all items of the CAMERA Adjustment 6, the following message is displayed. Click the **[OK]** button.



1-7. CAMERA SYSTEM ADJUSTMENTS (MEGA model)

1. Function of Each Button on Camera System Adjustment Screen

Click the **CAMERA SYSTEM ADJUSTMENT** button on the Main Menu screen, and the “CAMERA SYSTEM ADJUSTMENT” screen in Fig. 6-1-14 will appear.

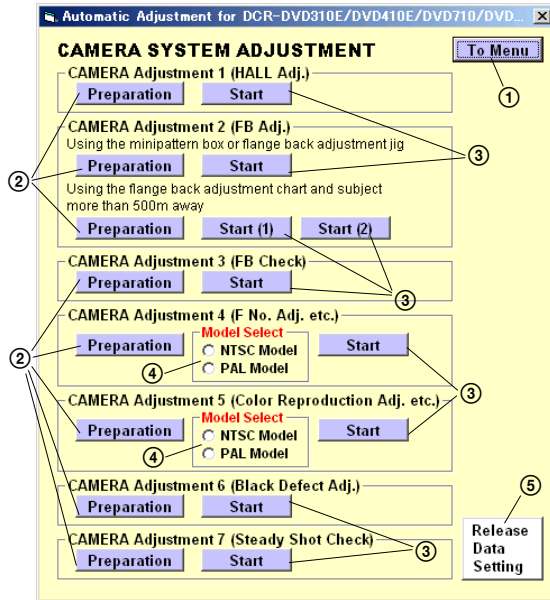


Fig. 6-1-14

- ① **To Menu** button
Return to the main menu.
- ② **Preparation** button
Notes for adjustment or jigs used are displayed.
- ③ **Start** button
Each adjustment from “Camera Adjustment 1” to “Camera Adjustment 7” starts.
- ④ **Model Select** radio button
Selects the model to be adjusted.
Note: NTSC model: DCR-DVD710/DVD810
PAL model: DCR-DVD310E/DVD410E/DVD710E/DVD810E
- ⑤ **Release Data Setting** button
The data setting at the adjustment is cancelled.
During the data setting, the button color changes from “white” to “red”. When the data setting is cancelled, the button color returns to “white”.
(Use this button when an error occurred in the camera adjustment. If the adjustment completed successfully, the data setting is automatically cancelled and the button color returns to “white”.)

2. Adjustment Items of Camera System Adjustment

The adjustment items of camera system adjustment are as listed in Table 6-1-6. The Automatic Adjustment Program divides the adjustment items into seven, camera adjustment 1-7. Clicking either CAMERA Adjustment Start button allows the adjustment item which corresponds to that button to be executed.

The adjustment conditions of the subject and filter vary depending on which item is adjusted. The Adjustment Program displays an instruction for the subject and filter as a message during the adjustment.

Button Name	Adjustment	Subject	Adjusting Address		
			Block	Page	Address
CAMERA Adjustment 1	HALL Adj.	Not required	11	61	0150 to 0159, 0190 to 019B
CAMERA Adjustment 2	Flange Back Adj.	Siemens star chart with ND filter for minipattern box (Note) or Flange back adjustment jig	11	61	0020 to 0030, 004C, 004D
		Flange back adjustment chart and subject more than 500 m away			
CAMERA Adjustment 3	Flange Back Check	Siemens star chart	-	-	-
CAMERA Adjustment 4	F No. Standard Data Input	Clear chart (Center frame)	11	61	0160 to 017F
	MAX GAIN Adj.		11	61	015C to 015F
	Mechanical Shutter Adj.		11	61	0120 to 0136
CAMERA Adjustment 5	Color Reproduction Adj.	Color bar chart (Color reproduction adjustment frame)	11	61	0060 to 006E
	Color Reproduction Check		-	-	-
	AWB & LV Standard Data Input	Clear chart (All White frame)	11	61	0074 to 007B, 0180 to 018B, 01C0 to 01C3
	AWB Adj.	Clear chart (All White frame) Filter C14 for color temperature correction	11	61	0070 to 0073, 008C to 0093, 01C4 to 01C7
	AWB Check	Clear chart (All White frame) ND filter 1.0, 0.4 and 0.1	-	-	-
CAMERA Adjustment 6	Black Defect Adj.	Clear chart (All White) (Shoot the clear chart with the zoom TELE end.)	11	61	00C0 to 011D, 01A0 to 01B3
CAMERA Adjustment 7	Steady shot Check	Not required	-	-	-

Note: Dark Siemens star chart.

Table 6-1-6

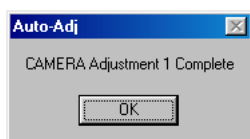
3. CAMERA Adjustment 1

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. HALL Adj.
3. Release of Data Setting during Camera Adj.

[Adjusting method]

- 1) Click the **[Start]** button of the CAMERA Adjustment 1.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) If “1. Data Setting during Camera Adj.” completed successfully, and the items “2. HALL Adj.” and “3. Release of Data Setting during Camera Adj.” will be executed.
- 4) Upon successful completion of all items of the CAMERA Adjustment 1, the following message is displayed. Click the **[OK]** button.



4. CAMERA Adjustment 2 (Using the minipattern box or flange back adjustment jig)

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. Flange Back Adj.
3. Release of Data Setting during Camera Adj.

[Preparation (Using the minipattern box)]

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

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

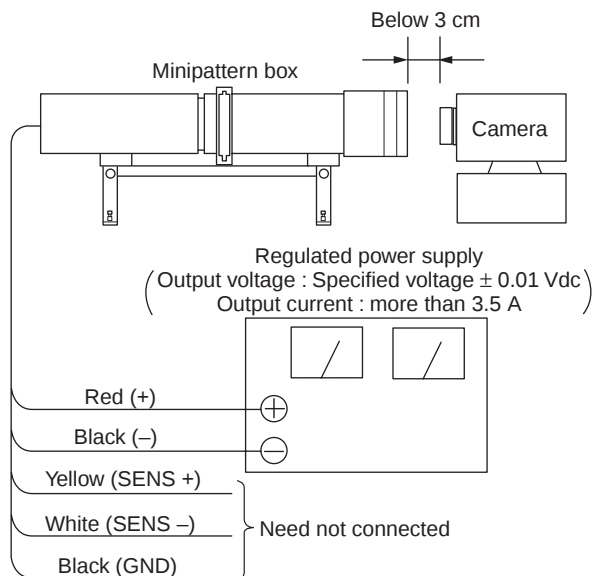


Fig. 6-1-15

[Preparation (Using the flange back adjustment jig)] (Illuminance: 950 to 1050 lux)

Note 2: When using the flange back adjustment jig, take care of the following points:

- For the illumination, use a light source such as an incandescent lamp or inverter type fluorescent light free from flickering.
- Do not make an adjustment in the environment where fluorescent lamp flickering occurs even if the illuminance can be ensured with the room illumination only. Use an incandescent lamp or inverter type fluorescent light at a place free from the influence of room illumination.

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

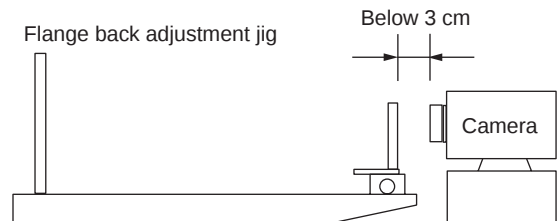
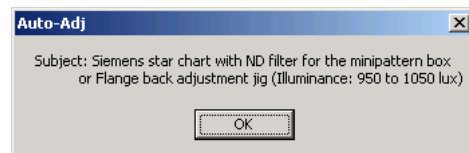


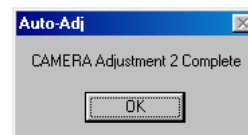
Fig. 6-1-16

[Adjusting method]

- 1) Click the **[Start]** button of the CAMERA Adjustment 2.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed. Set the subject by referring to “Preparation”.



- 4) If the **[OK]** button is clicked, “2. Flange Back Adj.” and “3. Release of Data Setting during Camera Adj.” will be executed.
- 5) Upon successful completion of all items of the CAMERA Adjustment 2, the following message is displayed. Click the **[OK]** button.



5. CAMERA Adjustment 2 (Using the flange back adjustment chart and subject more than 500 m away)

5-1. CAMERA Adjustment 2 (1)

[Automatic Adjustment Program execution items and sequence]

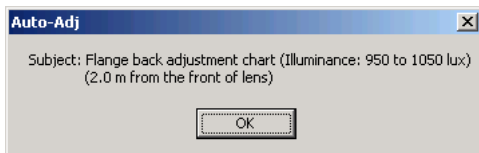
1. Data Setting during Camera Adj.
2. Flange Back (1) Adj.
3. Release of Data Setting during Camera Adj.

[Preparation]

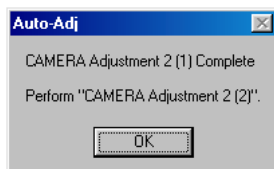
- 1) Place the Flange back adjustment chart at 2 m position away from the lens.
- 2) Check that the center of Flange back adjustment chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

[Adjusting method]

- 1) Click the [Start (1)] button of the CAMERA Adjustment 2.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed. Set the subject by referring to “Preparation”.



- 4) If the [OK] button is clicked, “2. Flange Back (1) Adj.” and “3. Release of Data Setting during Camera Adj.” will be executed.
- 5) Upon successful completion of all items of the CAMERA Adjustment 2 (1), the following message is displayed. Click the [OK] button.



- 6) Perform “CAMERA Adjustment 2 (2)”.

5-2. CAMERA Adjustment 2 (2)

[Automatic Adjustment Program execution items and sequence]

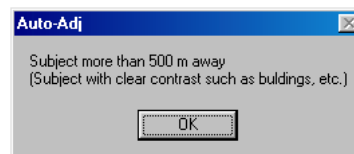
1. Data Setting during Camera Adj.
2. Flange Back (2) Adj.
3. Release of Data Setting during Camera Adj.

[Preparation]

- 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)

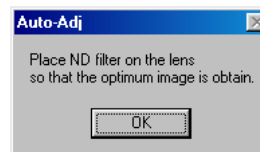
[Adjusting method]

- 1) Click the [Start (2)] button of the CAMERA Adjustment 2.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed. Set the subject by referring to “Preparation”.

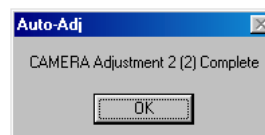


- 4) If the [OK] button is clicked, “2. Flange Back (2) Adj.” will be executed.

The following message is displayed during the execution of adjustment, and then place the ND filter on the lens so as to obtain the optimum image.



- 5) If “2. Flange Back Adj.” completed successfully, “3. Release of Data Setting during Camera Adj.” will be executed.
- 6) Upon successful completion of all items of the CAMERA Adjustment 2 (2), the following message is displayed. Click the [OK] button.



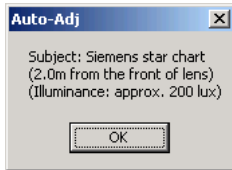
6. CAMERA Adjustment 3

[Automatic Adjustment Program execution items and sequence]

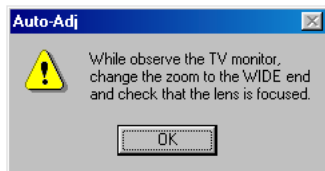
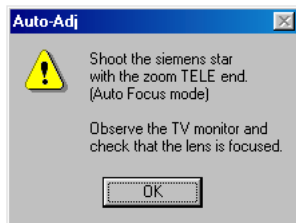
1. Data Setting during Camera Adj.
2. Flange Back Check
3. Release of Data Setting during Camera Adj.

[Adjusting method]

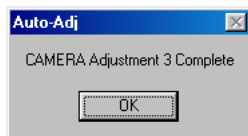
- 1) Click the **[Start]** button of the CAMERA Adjustment 3.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed. Set the subject in accordance with the message.



- 4) If the **[OK]** button is clicked, “2. Flange Back Check” is executed. The following messages are displayed, and then operate the camera to make a check in accordance with the messages.



- 5) Upon completion of “2. Flange Back Check”, “3. Release of Data Setting during Camera Adj.” is executed.
- 6) Upon successful completion of all items of the CAMERA Adjustment 3, the following message is displayed. Click the **[OK]** button.



7. CAMERA Adjustment 4

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. Picture Frame Setting (Center Frame)
3. F No. Standard Data Input
4. MAX GAIN Adj.
5. Mechanical Shutter Adj.
6. Release of Data Setting during Camera Adj.

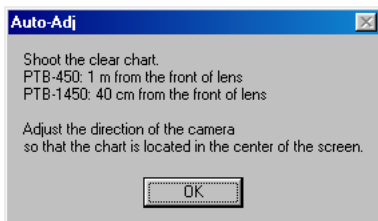
[Adjusting method]

- 1) Select the model (NTSC Model or PAL Model) with the Model Select radio button.

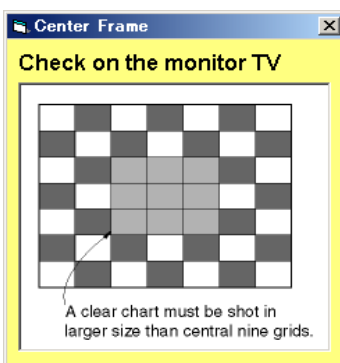
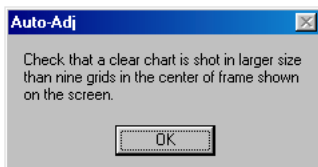
Note: NTSC model: DCR-DVD710/DVD810

PAL model: DCR-DVD310E/DVD410E/DVD710E/
DVD810E

- 2) Click the **[Start]** button of the CAMERA Adjustment 4.
- 3) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 4) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed during the execution of “2. Picture Frame Setting (Center Frame)”. Set the subject in accordance with the message.

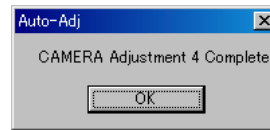


- 5) If the **[OK]** button is clicked, the following message is displayed, and then check the size of clear chart shot on the monitor screen.



- 6) After the checking, if the **[OK]** button in the message window is clicked, the adjustment items from “3. F No. Standard Data Input” to “5. Mechanical Shutter Adj.” are executed.
- 7) Upon successful completion of the “5. Mechanical Shutter Adj.”, “6. Release of Data Setting during Camera Adj.” is executed.

- 8) Upon successful completion of all items of the CAMERA Adjustment 4, the following message is displayed. Click the **[OK]** button.



8. CAMERA Adjustment 5

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during Camera Adj.
2. Picture Frame Setting (Color Reproduction Adjustment Frame)
3. Color Reproduction Adj.
4. Color Reproduction Check
5. Picture Frame Setting (AWB Adjustment Frame)
6. AWB & LV Standard Data Input
7. AWB Adj.
8. AWB Check
9. Release of Data Setting during Camera Adj.

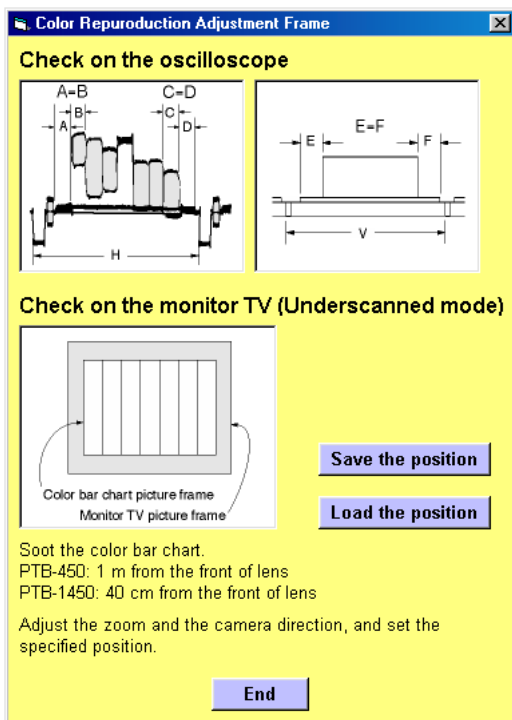
[Adjusting method]

- 1) Select the model (NTSC Model or PAL Model) with the Model Select radio button.

Note: NTSC model: DCR-DVD710/DVD810

PAL model: DCR-DVD310E/DVD410E/DVD710E/DVD810E

- 2) Click the **[Start]** button of the CAMERA Adjustment 5.
- 3) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 4) Upon successful completion of the “1. Data Setting during Camera Adj.”, “2. Picture Frame Setting (Color Reproduction Adjustment Frame)” is executed and the following message is displayed. Adjust the zoom and camera direction and then set the picture frame. After the setting finished, click the **[End]** button.



The buttons on this screen provide the following functions:

[Save the position] button

Saves the camera zoom and focus position data.

[Load the position] button

Reads the camera zoom and focus position data saved last and moves the camera zoom and focus to that position.

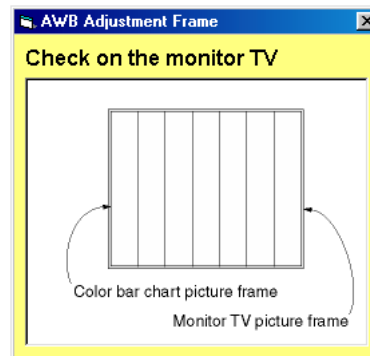
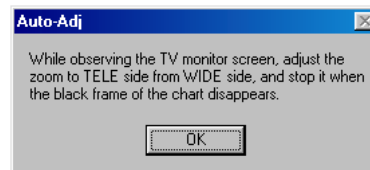
Note 1: The zoom and focus position data are saved with “DCR_DVD710_ZoomFocusData.txt” file name in the same holder as the Automatic Adjustment Program. No position data can be read if this file is moved or deleted.

Note 2: Only the latest position data can be saved. If the **[Save the position]** button is clicked, the latest data are saved overwriting the previous data.

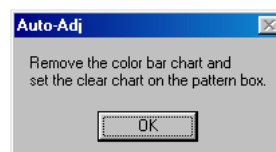
- 5) After setting the picture frame, if the **[End]** button is clicked, “3. Color Reproduction Adj.” and the adjustment items of “4. Color Reproduction Check” are executed. The following messages are displayed in the order given below during the execution. Then, change the chart in accordance with the messages.



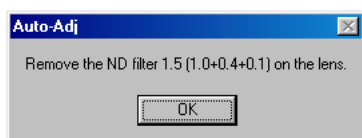
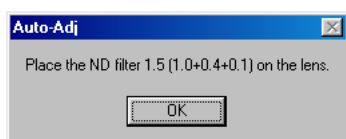
- 6) Upon successful completion of the “4. Color Reproduction Check”, the following message is displayed. Then, set the picture frame in accordance with the message.



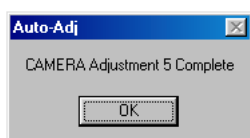
- 7) If the **[OK]** button is clicked, “5. Picture Frame Setting (AWB Adjustment Frame)” is executed. The following messages are displayed in the order given below during the execution. Then, change the chart in accordance with the messages.



- 8) After the setting, if the button is clicked, the adjustment items from “6. AWB Standard Data Input” to “8. AWB Check” are executed. During the execution, the following messages are displayed in the order given below. Place or remove the filters on the lens in accordance with the messages.



- 9) Upon completion of “8. AWB Check”, “9. Release of Data Setting during Camera Adj.” is executed
- 10) Upon successful completion of all items of the CAMERA Adjustment 5, the following message is displayed. Click the button.



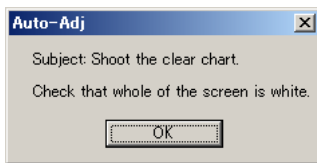
9. CAMERA Adjustment 6

[Automatic Adjustment Program execution items and sequence]

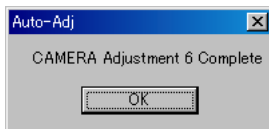
1. Data Setting during Camera Adj.
2. Black Defect Adj.
3. Release of Data Setting during Camera Adj.

[Adjusting method]

- 1) Click the **[Start]** button of the CAMERA Adjustment 6.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed. Then, set the subject in accordance with the message.



- 4) Click the **[OK]** button, and the “2. Black Defect Adj.” will be executed.
- 5) Upon completion of “2. Black Defect Adj.”, “3. Release of Data Setting during Camera Adj.” is executed.
- 6) Upon successful completion of all items of the CAMERA Adjustment 6, the following message is displayed. Click the **[OK]** button.



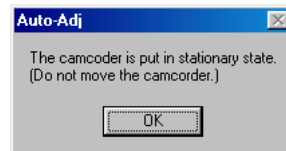
10. CAMERA Adjustment 7

[Automatic Adjustment Program execution items and sequence]

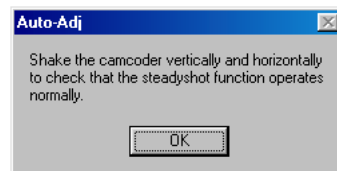
1. Data Setting during Camera Adj.
2. Steady Shot Check
3. Release of Data Setting during Camera Adj.

[Adjusting method]

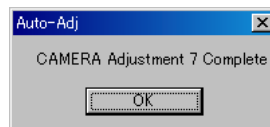
- 1) Click the **[Start]** button of the CAMERA Adjustment 7.
- 2) The Automatic Adjustment Program executes “1. Data Setting during Camera Adj.”.
- 3) Upon successful completion of the “1. Data Setting during Camera Adj.”, the following message is displayed. With the camcorder in stationary state, click the **[OK]** button.



- 4) If the **[OK]** button is clicked, “2. Steady Shot Check” is executed. Upon successful completion of the “2. Steady Shot Check”, the following message is displayed. Check that the steadyspot function operates normally in accordance with the message.



- 5) If the **[OK]** button is clicked, “3. Release of Data Setting during Camera Adj.” is executed.
- 6) Upon successful completion of all items of the CAMERA Adjustment 7, the following message is displayed. Click the **[OK]** button.



1-8. LCD/EVF SYSTEM ADJUSTMENTS

1. Function of Each Button on LCD/EVF System Adjustment Screen

Click the **LCD/EVF SYSTEM ADJUSTMENT** button on the Main Menu screen, and the “LCD/EVF SYSTEM ADJUSTMENT” screen in Fig. 6-1-17 will appear.

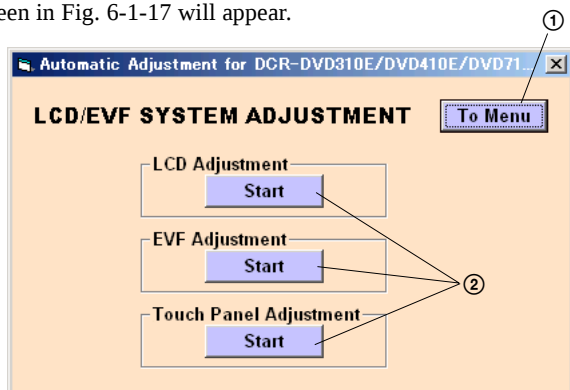


Fig. 6-1-17

① **To Menu** button

Return to the main menu.

② **Start** button

Each adjustment “LCD Adjustment”, “EVF Adjustment” or “Touch Panel Adjustment” starts.

2. Adjustment Items of LCD/EVF System Adjustment

The adjustment items of LCD/EVF system adjustment are as listed in Table 6-1-7. The Automatic Adjustment Program executes the adjustment items if the LCD/EVF Adjustment Start button is clicked.

Button Name	Adjustment	Adjusting Address		
		Block	Page	Address
LCD Adjustment	VCO Adj.	10	60	1050 (NTSC model), 1051 (PAL model)
	Contrast Adj.	10	60	1058
	V-COM Adj.	10	60	1052
	Transmissive Mode White Balance Adj.	10	60	1056, 1057
	Reflective Mode White Balance Adj.	10	60	107B, 107C
EVF Adjustment	VCO Adj.	10	60	103F (NTSC model), 1040 (PAL model)
	Contrast Adj.	10	60	1047
	White Balance Adj.	10	60	1045, 1046
Touch Panel Adjustment	Touch Panel Adj.	(Note)		

Note: The adjustment data cannot be read or written from the SeusEX.

Table 6-1-7

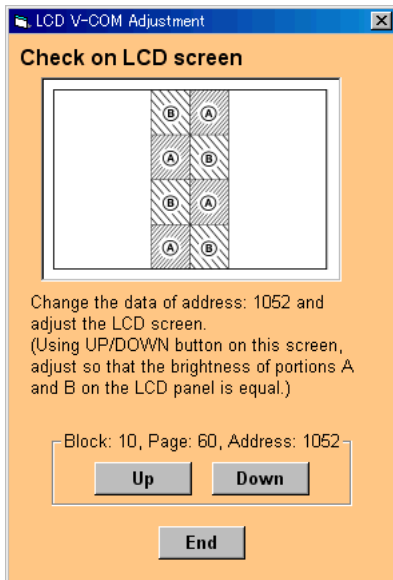
3. LCD Adjustment

[Automatic Adjustment Program execution items and sequence]

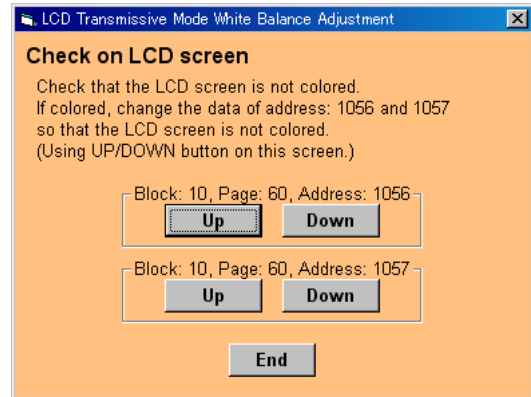
1. Data Setting during LCD/EVF Adj.
2. LCD Automatic Adj.
(VCO Adj., Contrast Adj.)
3. V-COM Adj.
4. Transmissive Mode White Balance Adj.
5. Reflective Mode White Balance Adj.

[Adjusting method]

- 1) Click the **[Start]** button of the LCD Adjustment.
- 2) The Automatic Adjustment Program executes the “1. Data Setting during LCD/EVF Adj.” and “2. LCD Automatic Adj.”.
- 3) After that, the following screen is displayed during the execution of “3. V-COM Adj.”. Using the **[Up]**/**[Down]** button on the screen, adjust so that the brightness of portions A and B on the LCD panel is equal. After the adjustment, click the **[End]** button in the screen.



- 4) If the **[End]** button is clicked, the following screen is displayed during the execution of “4. Transmissive Mode White Balance Adj.”. Check that the LCD screen is not colored. If colored, using the **[Up]**/**[Down]** button on the screen, adjust so that the LCD screen is not colored. After the adjustment, click the **[End]** button in the screen.



- 5) If the **[End]** button is clicked, “5. Reflective Mode White Balance Adj.” will be executed.
- 6) Upon successful completion of all item the LCD Adjustment, the following message is displayed. Click the **[OK]** button.



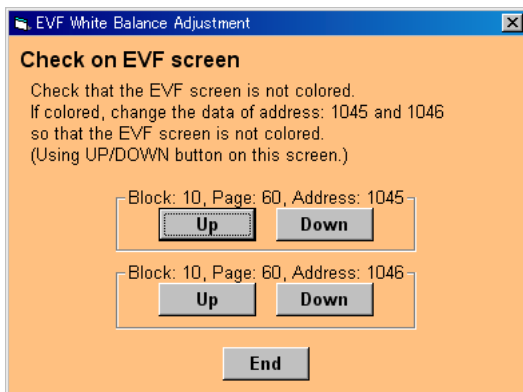
4. EVF Adjustment

[Automatic Adjustment Program execution items and sequence]

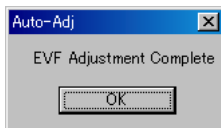
1. Data Setting during LCD/EVF Adj.
2. EVF Automatic Adj.
(VCO Adj., Contrast Adj.)
3. White Balance Adj.

[Adjusting method]

- 1) Click the **[Start]** button of the EVF Adjustment.
- 2) The Automatic Adjustment Program executes the “1. Data Setting during LCD/EVF Adj.” and “2. EVF Automatic Adj.”.
- 3) After that, the following screen is displayed during the execution of “3. White Balance Adj.”. Check that the EVF screen is not colored. If colored, using the **[Up]/[Down]** button on the screen, adjust so that the EVF screen is not colored. After the adjustment, click the **[End]** button in the screen.



- 4) Upon successful completion of all item the EVF Adjustment, the following message is displayed. Click the **[OK]** button.



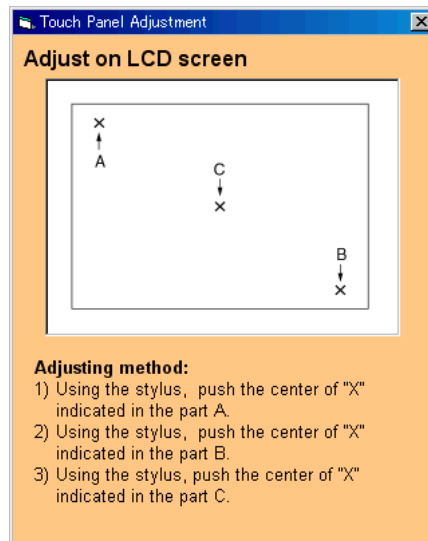
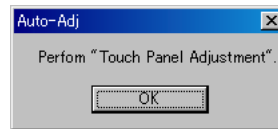
5. Touch Panel Adjustment

[Automatic Adjustment Program execution items and sequence]

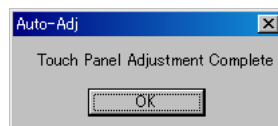
1. Touch Panel Adj.

[Adjusting method]

- 1) Click the **[Start]** button of the Touch Panel Adjustment.
- 2) The Automatic Adjustment Program executes the “1. Touch Panel Adj.1”. The following message is displayed, and then adjust the LCD screen in accordance with the instructions given on the screen. After the adjustment, click the **[OK]** button in the message window.



- 3) Upon successful completion of all item the Touch Panel Adjustment, the following message is displayed. Click the **[OK]** button.



1-9. AUDIO SYSTEM ADJUSTMENTS (DCR-DVD115E/DVD310E/DVD410E/DVD710/ DVD710E/DVD810/DVD810E)

1. Function of Each Button on Audio System Adjustment Screen

Click the **AUDIO SYSTEM ADJUSTMENT** button on the Main Menu screen, and the “AUDIO SYSTEM ADJUSTMENT” screen in Fig. 6-1-18 will appear.

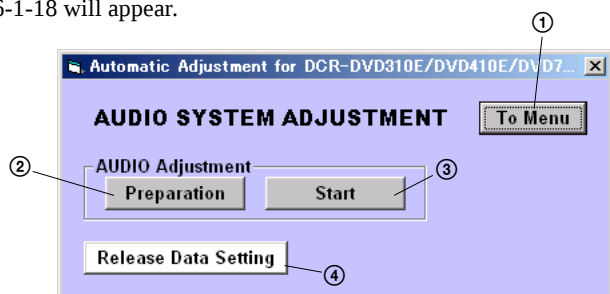


Fig. 6-1-18

- ① **To Menu** button
Return to the main menu.
- ② **Preparation** button
Notes for adjustment or jigs used are displayed.
- ③ **Start** button
“Audio Adjustment” starts.
- ④ **Release Data Setting** button
The data setting at the adjustment is cancelled.
During the data setting, the button color changes from “white” to “red”.
When the data setting is cancelled, the button color returns to “white”. (Use this button when an error occurred in the audio adjustment. If the adjustment completed successfully, the data setting is automatically cancelled and the button color returns to “white”.)

2. Adjustment Items of AUDIO System Adjustment

The adjustment items of audio system adjustment are as listed in Table 6-1-8. The Automatic Adjustment Program executes the adjustment items when the AUDIO Adjustment Start button is clicked.

Button Name	Adjustment	Adjusting Address		
		Block	Page	Address
AUDIO Adjustment	Internal 3ch Microphone Sensitivity Adj.	10	60	0104 to 013F

Table 6-1-8

3. AUDIO Adjustment

Note 1: Perform “AUDIO Adjustment” without inserting disc.

Note 2: AUDIO Adjustment is available only once after the power is turned on. If the adjustment is retried, turn off the power and turn on again.

[Automatic Adjustment Program execution items and sequence]

1. Data Setting during AUDIO Adj.
2. Internal 3ch microphone Adj.
3. Release of Data Setting during Audio Adj.

[Preparation]

Prepare an amplifier built-in speaker for PC and arrange it above the internal 3ch microphone of the camcorder.

- Adjust the speaker position so that it is within ± 3 cm from the center of camcorder internal 3ch microphone at the height of 40 cm.
- The diaphragm of speaker position should be set face down toward the internal 3ch microphone.
- The speaker may be held by hand if it is hard to secure.

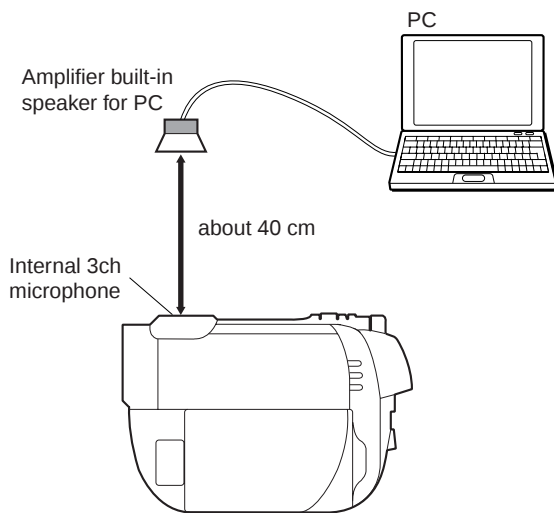
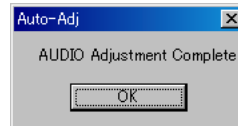


Fig. 6-1-19

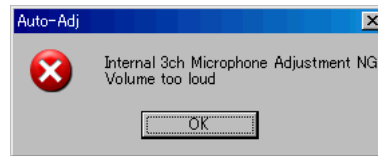
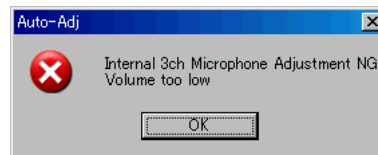
[Adjusting method]

- 1) Play back the adjustment sound source file on the PC.
- 2) Set the speaker volume so that the adjustment signal sound is heard to the extent of the loudness of talking voices.
- 3) Click the **[Start]** button of the AUDIO Adjustment.
- 4) The Automatic Adjustment Program executes “1. Data Setting during Audio Adj.”.
- 5) When “1. Data Setting during Audio Adj.” completed successfully, and the items “2. Internal 3ch microphone Adj.” and “3. Release of Data Setting during Audio Adj.” will be executed.
- 6) Upon successful completion of all items of the AUDIO Adjustment, the following message is displayed. Click the **[OK]** button.



In case of adjustment NG, reduce or increase the speaker volume, and then retry adjustment.

If the Adjustment Program displays a message “Volume too loud” or “Volume too low”, adjust the speaker volume following the message.



1-10. ERROR

In the case of an error during the execution of adjustment, the Automatic Adjustment Program interrupts the processing at that point, and displays an error message, and then terminates the program execution there.

1-10-1. Error Message

When an error message is displayed, perform the remedy given below, and then retry adjustment. If the error message is displayed though the remedy was performed, the circuits will be faulty.

1. Connect Error, Adjust Control Error

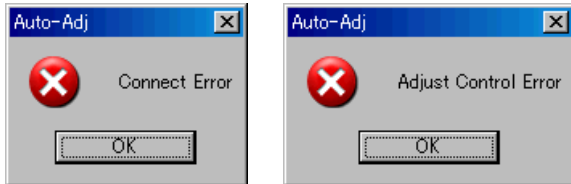


Fig. 6-1-20

Symptom	USB communication with the set is abnormal.
Cause	• USB cable is not inserted tightly. • Power supply is not installed correctly. • Communication with SeusEX is abnormal.
Remedy	• Disconnect the USB cable once, and then re-connect it tightly and check that the set is in "USB Mode". • Install the power supply correctly. • Start the SeusEX and click the [Connect] to check that the connection state is established.

2. RESET the CAMERA and Try Again



Fig. 6-1-21

Symptom	The camera is not ready for adjustment.
Cause	Data error exists in the camera.
Remedy	Reset the camera.

3. Adjustment Time Out

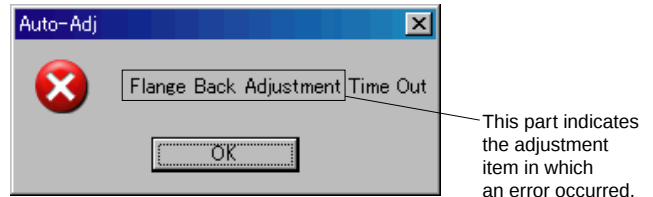


Fig. 6-1-22

Symptom	Adjustment does not finish within the specified time.
Cause	• Adjustment conditions are wrong. • Data error exists in the camera.
Remedy	• Check that the conditions such as a subject are correct. • Reset the camera.

4. Adjustment NG

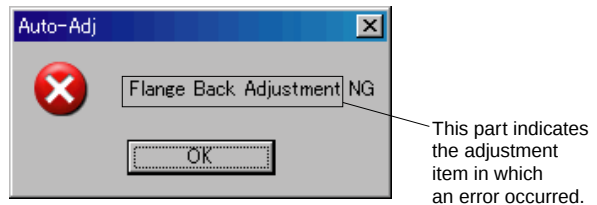


Fig. 6-1-23

Symptom	The adjusted data does not become the specified value.
Cause	• Adjustment conditions are wrong. • Data error exists in the camera.
Remedy	• Check that the conditions such as a subject are correct. • Reset the camera.

1-10-2. Precautions When an Error Occurred

The Automatic Adjustment Program sets the data for adjustment before the adjustment starts. Accordingly, if the adjustment terminates by an error, the data during the adjustment may be left in the camera.

Note: With this data left in the camera, the camera will not operate normally.

In this case, the [Release Data Setting] button is displayed in “red” on the screen as shown figures below. Click the [Release Data Setting] button to cancel the data setting. When the data setting is cancelled, the button color becomes “white”.

Camera System Adjustment screen

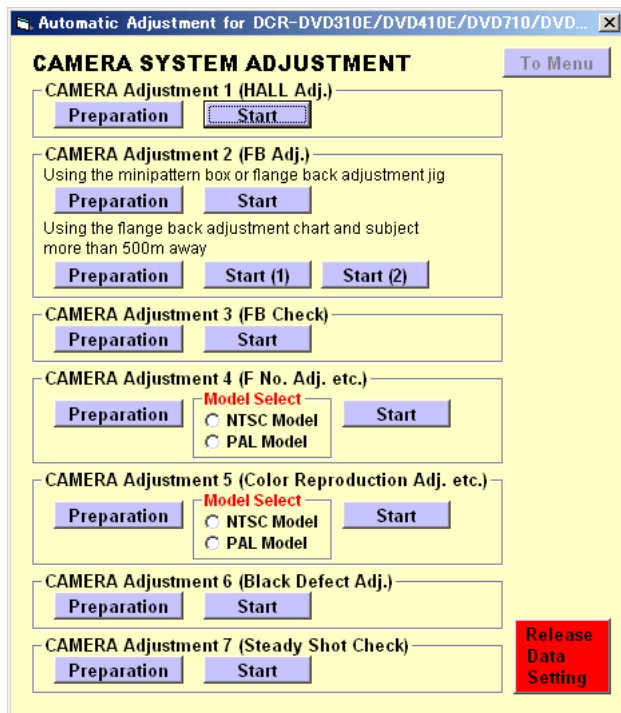


Fig. 6-1-24

Audio System Adjustment screen

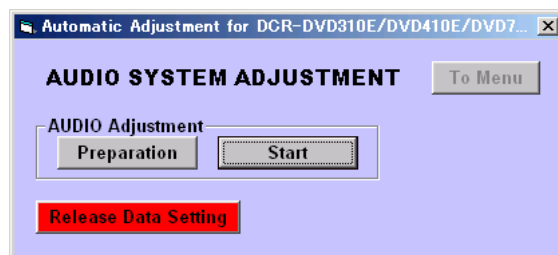


Fig. 6-1-25

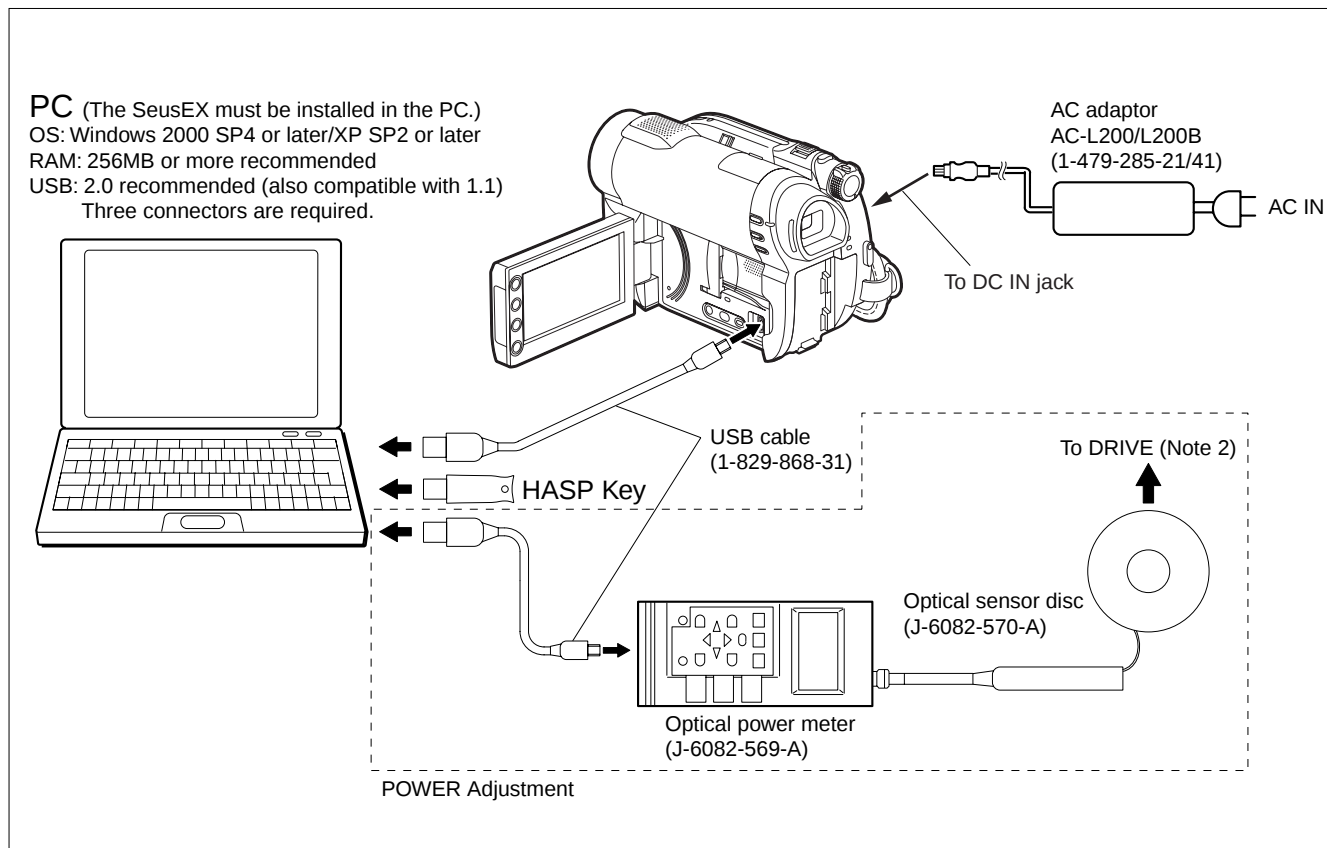
6-2. DRIVE SECTION ADJUSTMENTS

2-1. PREPARATIONS BEFORE ADJUSTMENTS (DRIVE SECTION)

2-1-1. Connection

1) Connect the apparatuses as shown below, and perform adjustment.

Note 1: Before starting the adjustment, remove the disc from the camcorder.



Note 2: Refer to “How to Set the Optical Sensor Disc”.

Fig. 6-2-1

[Connecting method]

- 1) Connect the Camcorder to the PC with a USB cable, and turn on the power switch.
- 2) The USB SELECT menu will appear on the LCD screen of the Camcorder, and then select “USB CONNECT (Memory Stick)” to establish the connection.

Note 3: Don’t select “USB CONNECT (Disc)”.



2-1-2. How to Set Optical Sensor Disc

- 1) Before setting the optical sensor disc, remove a lug on the sensor side of the disc.

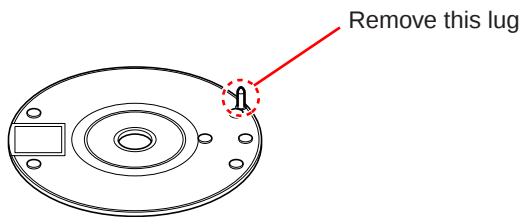


Fig. 6-2-2

- 2) Push in the optical sensor disc until it clicks same as when a disc is set, and adjust the position so that the cable from the sensor comes just above the pickup lens, as shown below. After positioning, fix the disc with a tape so that it does not rotate.

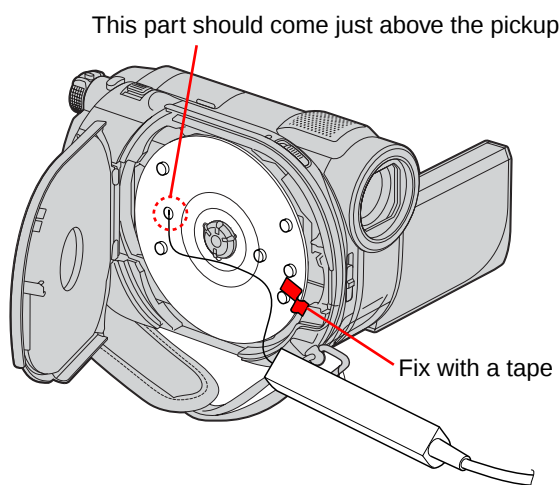


Fig. 6-2-3

2-1-3. Precautions on Adjustment

1. Adjustment data

The adjustment data for the drive block are recorded to the IC4302 on the VC-520 board.

These data cannot be read or written from the adjustment remote commander or SeusCam, unlike the camera and LCD adjustment data.

Accordingly, be sure to adjust all items of the drive adjustment when the following parts were replaced:

- Drive block
- Mounted VC-520 board
- IC4101 (RF process) on the VC-520 board
- IC4201 (DVD DSP) on the VC-520 board
- IC4401 (DVD mecha drive) on the VC-520 board

2. Order of adjustment

Adjust the drive block in the following order:

- 1) POWER Adjustment
- 2) SERVO Adjustment

3. Precaution on the laser diode

In the POWER Adjustment, operate the drive with the disc cover left open. During the adjustment, be sure to observe the following precautions:

- 1) Set the optical sensor disc correctly.
- 2) Keep the distance of more than 30 cm apart from the camcorder.
- 3) Work on the LCD screen side of the camcorder (opposite side of the drive).

Note: Laser light of the equipment is focused by the object lens in the optical pick-up so that the light focuses on the reflection surface of the disc.

Therefore, be sure to keep your eyes more than 30 cm apart from the object lens when you check the emission of laser diode.

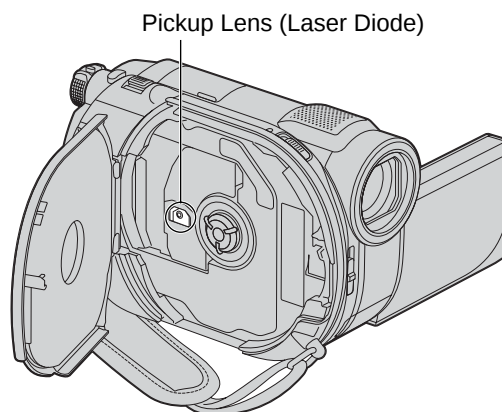


Fig. 6-2-4

2-1-4. Alignment disc

To diagnose and adjust the drive block, the discs listed in the following table are used.

Note 1: Use the specified disc that matches each diagnostic and adjustment item. (A message is displayed by the AUDIT)

If a wrong disc is used, the disc could be destroyed and could not be reused.

Note 2: Handle the disc with care, and before use, check if the disc is scratched or dirty.

Name	Use	Remark
DVD-R Disc for Self Jitter	Diagnosis and adjustment of DVD-R	This disc can be used about 78 times (min. 22 times) for the diagnosis and adjustment. (Note 3)
DVD-RW Reference + DOW Disc	Diagnosis and adjustment of DVD-RW	This disc can be used about 1174 times for the diagnosis and adjustment. (Note 3)
DVD+RDL Self Disc	Diagnosis and adjustment of DVD+RDL	This disc can be used about 38 times (min. 9 times) for the diagnosis and adjustment. (Note 3)

Table 6-2-1

Note 3: If the use counts of the DVD-R Disc for Self Jitter, DVD-RW Reference + DOW Disc, or DVD+RDL Disc for Self Jitter exceed respective limits, the following message will be displayed. Replace it with a new disc and click the **[OK]** button in the message window.

The disc use counts are saved in the PC. Accordingly, the disc used for diagnosis and adjustment, PC and drive adjustment program (AUDIT for 2008) must always be controlled in the same combination.

If the disc is used with another PC or other versions (AUDIT for Service, AUDIT for UX1, etc.), the diagnosis and adjustment will fail and that disc will no longer be able to use.

For reference (Note 3 in Japanese)

注3：DVD-R セルフジッターディスク，DVD-RWリファレンス+ DOWディスクとDVD+RDLセルフジッターディスクは，使用限度を超えると次のメッセージが表示されます。新しいディスクと交換して，メッセージの**[OK]**ボタンをクリックしてください。

ディスクの使用回数は，PC内部に保存されます。このため，診断・調整で使用するディスクとPCおよびドライブ調整プログラム（AUDIT for 2008）の組み合わせには制限があります。（2-1-5. Unique disc IDを参照）

別のPCや他のバージョン（AUDIT for Service, AUDIT for UX1等）でディスクを使用すると，診断・調整が正常に行われずNGとなってしまう，そのディスクが使用不可能になってしまう場合があります。



Fig. 6-2-5

2-1-5. Unique disc ID (For all kind, DVD-RW, DVD-R, DVD+RDL)

Unique disc ID will be written on the disc which is used first time for AUDIT for 2008.

At the same time, same disc ID will be stored in the install folder of AUDIT for 2008.

AUDIT is checking whether these ID is same or not. Thus, the PC and the adj disc must be managed together.

In fact, adjustment discs can not be swapped between the PC which AUDIT for 2008 is installed each other.

The disk which ID is not stored is considered as new disc (not recorded at all).

When you use the disc used halfway, it might be possible cause of some error.

1. Disc sharing between the previous AUDIT and AUDIT for 2008

	Start using disc first time is AUDIT for 2008	Start using disc first time is previous AUDIT
DVD-RW	Able to share	Able to share
DVD-R	It is able to use on previous AUDIT but it is unable to use on AUDIT for 2008 again. Due to address mismatch of file management.	Unable to share (AUDIT 2008 detect the disc as new one due to missing disc ID.)
DVD+RDL	It is able to use on previous AUDIT but it is unable to use on AUDIT for 2008 again. Due to address mismatch of file management.	Unable to share AUDIT 2008 detect the disc as new one due to missing disc ID.

2. Disc sharing between the PC which is installed AUDIT for 2008

All discs	Unable to share (Each PC has deferent disc information)
-----------	--

2-1-6. Installation method for “Audit for 2008”

Support environment: Windows 2000 SP4 or later, Windows XP SP2 or later
(.NET Framework which used in this program may not be installed on previous version of Windows.)

“Audit for 2008” supports all functions of “Audit for 2007”.

It is not necessary to use “Audit for 2007” any more.

Disc set for adjustment which used on “Audit for 2007” can be used on “Audit for 2008” if they aren't used on other PCs before installing “Audit for 2008”.

- 1) Uninstall “Audit for 2007”.
Control Panel → Add or Remove Programs
- 2) Uninstall “Audit for 2008” (If it is already installed).
Control Panel → Add or Remove Programs
- 3) Install .NET Framework 2.0 (only for the first time installation).
Download “dotnetfx.exe” as suitable for your PC environment from Microsoft Web site and install it.
(We confirmed normal operation just on .NET Framework 2.0.
Therefore, we can not guarantee on the other version (over ver. 3.0) of .NET Framework.)
- 4) Install “Audit for 2008”.
Double click Auditfor2008.exe and follow installer.

Note: If it is first time to install .NET Framework 2.0, we recommend to check the security patch by Windows Update, etc. and to install if necessary.

Perform just step 2 and 4 from second installation.

2-2. AUDIT (Drive Adjustment Program)

2-2-1. AUDIT Starting Method

Click the [Start] button on the task bar, and from the [Programs], click [AUDIT for Service] – [AUDIT for 2008], and the AUDIT will start. The SeusEX starts simultaneously with the start of AUDIT, and the operation screen appears only for a moment. Again, the SeusEX starts and the operation screen is displayed, and after it is minimized for display at the lower left of the desktop, the AUDIT operation screen appears. If the SeusEX cannot start (because, for instance, the HASP key is not connected to the PC), the AUDIT also does not start.

2-2-2. Description of Screen

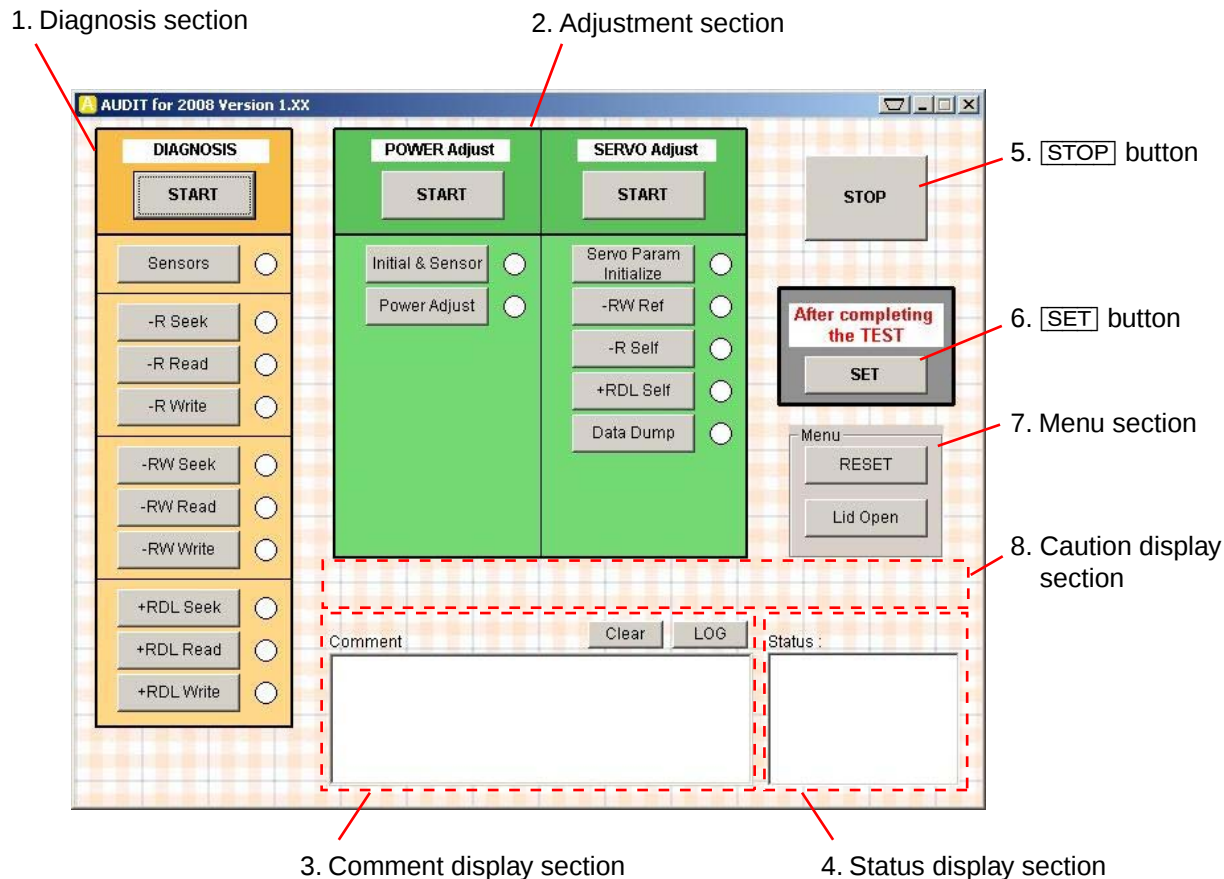


Fig. 6-2-6

1. Diagnosis section

Use these buttons when diagnosing the drive block.

2. Adjustment section

Use these buttons when adjusting the drive block.

3. Comment display section

At the execution of diagnosis and adjustment, its progress situation is displayed.

1) **Clear** button

This button clears the comment in the display section.

2) **LOG** button

This button saves the comment in the display section as a log file.

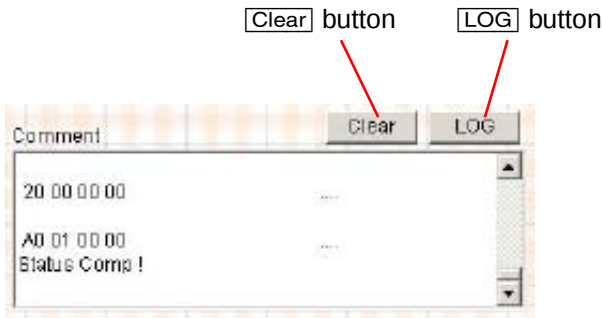


Fig. 6-2-7

4. Status display section

The result of diagnosis and adjustment is displayed.



Fig. 6-2-8

5. **STOP** button

This button stops the diagnosis and adjustment in the midway.

6. **SET** button (After completing the TEST)

This button cancels the TEST mode set to the cam coder during the diagnosis and adjustment. If the TEST mode is cancelled successfully, the following message is displayed.

Note: Before exiting the AUDIT, be sure to cancel the TEST mode by clicking the SET button of “After completing the TEST”. Unless the TEST mode is cancelled, the drive may not operate normally, such that “disc cover does not open”, “drive error is displayed”, etc..



Fig. 6-2-9

7. Menu section

1) **RESET** button

This button resets internal register.

(Use this button to interrupt the work so far when diagnosis and adjustment stopped and no response is returned. The work terminates with the previous adjustment data written to the camcorder.)

2) **Lid Open** button

This button opens the disc cover.

8. Caution display section

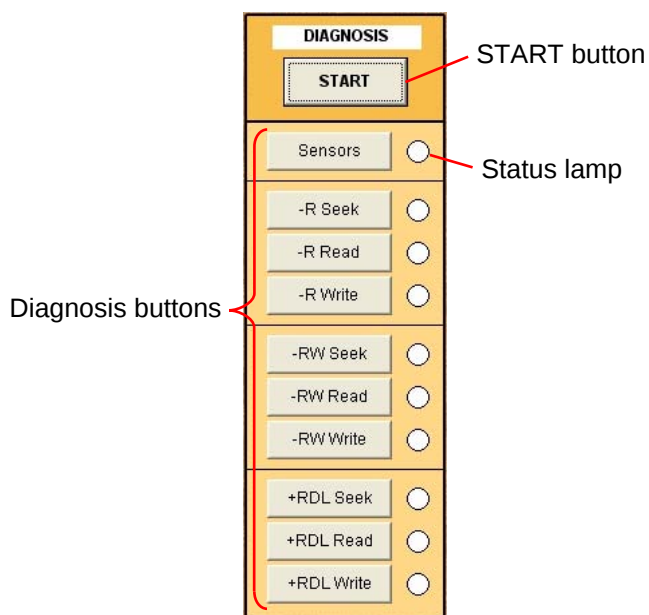
At the execution of POWER Adjustment, the caution of POWER Adjustment is displayed.



Fig. 6-2-10

2-3. DIAGNOSIS

2-3-1. Menu in Diagnosis Section



START button: All items of diagnosis buttons are executed in the descending order.

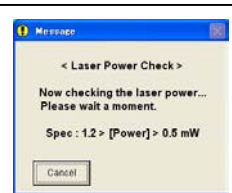
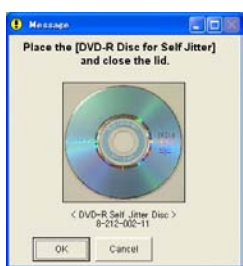
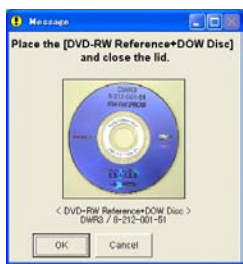
Diagnosis button: Only the diagnostic item assigned to the button name is executed.

Status lamp: Diagnosis status is displayed with color.
 White Not diagnosed
 Red blinking Diagnosis in progress
 Green Diagnosis OK
 Red Diagnosis NG

Fig. 6-2-11

2-3-2. Diagnosing Method

Order	Diagnostic item	Message	Disc	Operation
1			No Disc	Click the [START] button of "DIAGNOSIS".
2	Sensors		No Disc	Check the movement of the pickup lens (Focus direction/Tracking direction), and click the [OK] button in the message window.
3			No Disc	Check the movement of the sled, and click the [OK] button in the message window.
4			No Disc	Check the rotation of the spindle, and click the [OK] button in the message window.

Order	Diagnostic item	Message	Disc	Operation
5	Sensors		No Disc	Set the Optical sensor disc. (At this time, when the Shock Sensor senses a shock normally, this message disappears.)
6		 	Optical Sensor Disc	Set the Optical sensor disc, and with the disc cover left open, click the [OK] button in the message window. (Note 1)
7	-R Seek		DVD-R Disc for Self Jitter	Set the DVD-R Disc for Self Jitter, and then close the disc cover and click the [OK] button in the message window.
8	-R Read			(If the diagnosis result of previous item is OK, this item is executed successively.)
9	-R Write			(If the diagnosis result of previous item is OK, this item is executed successively.)
10	-RW Seek		DVD-RW Reference + DOW Disc	Remove the DVD-R Disc for Self Jitter, and set the DVD-RW Reference + DOW Disc, and then close the disc cover and click the [OK] button in the message window.
11	-RW Read			(If the diagnosis result of previous item is OK, this item is executed successively.)
12	-RW Write			(If the diagnosis result of previous item is OK, this item is executed successively.)

Note 1: In the process of checking optical power, CLASS 1M laser optical radiates.
So do not remove the Optical sensor disc.

Order	Diagnostic item	Message	Disc	Operation
13	+RDL Seek		DVD+RDL Self Disc	Remove the DVD-RW Reference + DOW Disc, and set the DVD+RDL Self Disc, and then close the disc cover and click the OK button in the message window.
14	+RDL Read			(If the diagnosis result of previous item is OK, this item is executed successively.)
15	+RDL Write			(If the diagnosis result of previous item is OK, this item is executed successively.)
16			No Disc	Remove the DVD+RDL Self Disc. (On the AUDIT screen, if the status lamps of respective diagnosis buttons are all lit in green, the diagnosis is over.)

Note 2: Before exiting the AUDIT, click the **SET** button of “After completing the TEST” to cancel the TEST mode.

2-4. POWER ADJUSTMENT

In the POWER Adjustment, operate the drive with the disc cover left open. During the adjustment, be sure to observe the following precautions:

- 1) Set the optical sensor disc correctly.
- 2) Keep the distance of more than 30 cm apart from the camcoder.
- 3) Work on the LCD screen side of the camcoder (opposite side of the drive).

2-4-1. Menu in POWER Adjustment Section

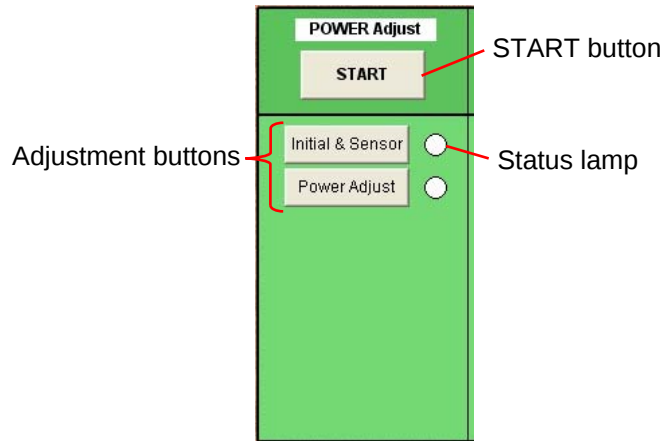


Fig. 6-2-12

- START button:** All items of adjustment buttons are executed in the descending order.
- Adjustment button:** Only the adjustment item assigned to the button name is executed.
- Status lamp:** Adjustment status is displayed with color.
- | | |
|--------------|------------------------|
| White | Not adjusted |
| Red blinking | Adjustment in progress |
| Green | Adjustment OK |
| Red | Adjustment NG |

2-4-2. Adjusting Method

Order	Adjustment item	Message	Disc	Operation
1			No Disc	Click the [START] button of “POWER Adjustment”.
2	Initial & Sensor		No Disc	Set the Optical sensor disc. (At this time, when the Shock Sensor senses a shock normally, this message disappears.)
3			Optical Sensor Disc	Set the Optical sensor disc, and with the disc cover left open, click the [OK] button in the message window. (Note 1)
4		Power Adjust		(If the adjustment result of previous item is OK, this item is executed successively.)
5			No Disc	Remove the Optical Sensor Disc. (On the AUDIT screen, if the status lamps of respective adjustment buttons are all lit in green, the adjustment is over.)

Note 1: In the process of adjusting optical power, CLASS 1M laser optical radiates.
So do not remove the Optical sensor disc.

Note 2: Before exiting the AUDIT, click the **[SET]** button of “After completing the TEST” to cancel the TEST mode.

2-5. SERVO ADJUSTMENT

2-5-1. Menu in SERVO Adjustment Section

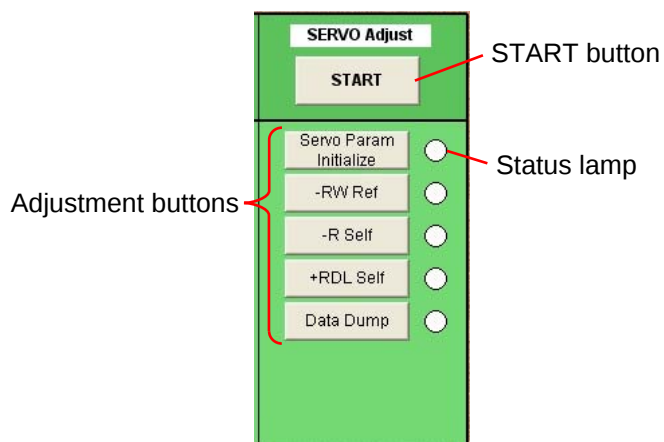


Fig. 6-2-13

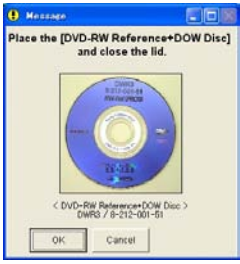
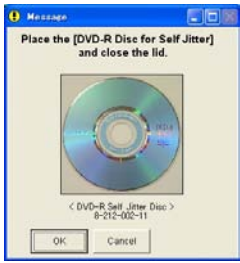
START button: All items of adjustment buttons are executed in the descending order.

Adjustment button: Only the adjustment item assigned to the button name is executed.

Status lamp: Adjustment status is displayed with color.

White	Not adjusted
Red blinking	Adjustment in progress
Green	Adjustment OK
Red	Adjustment NG

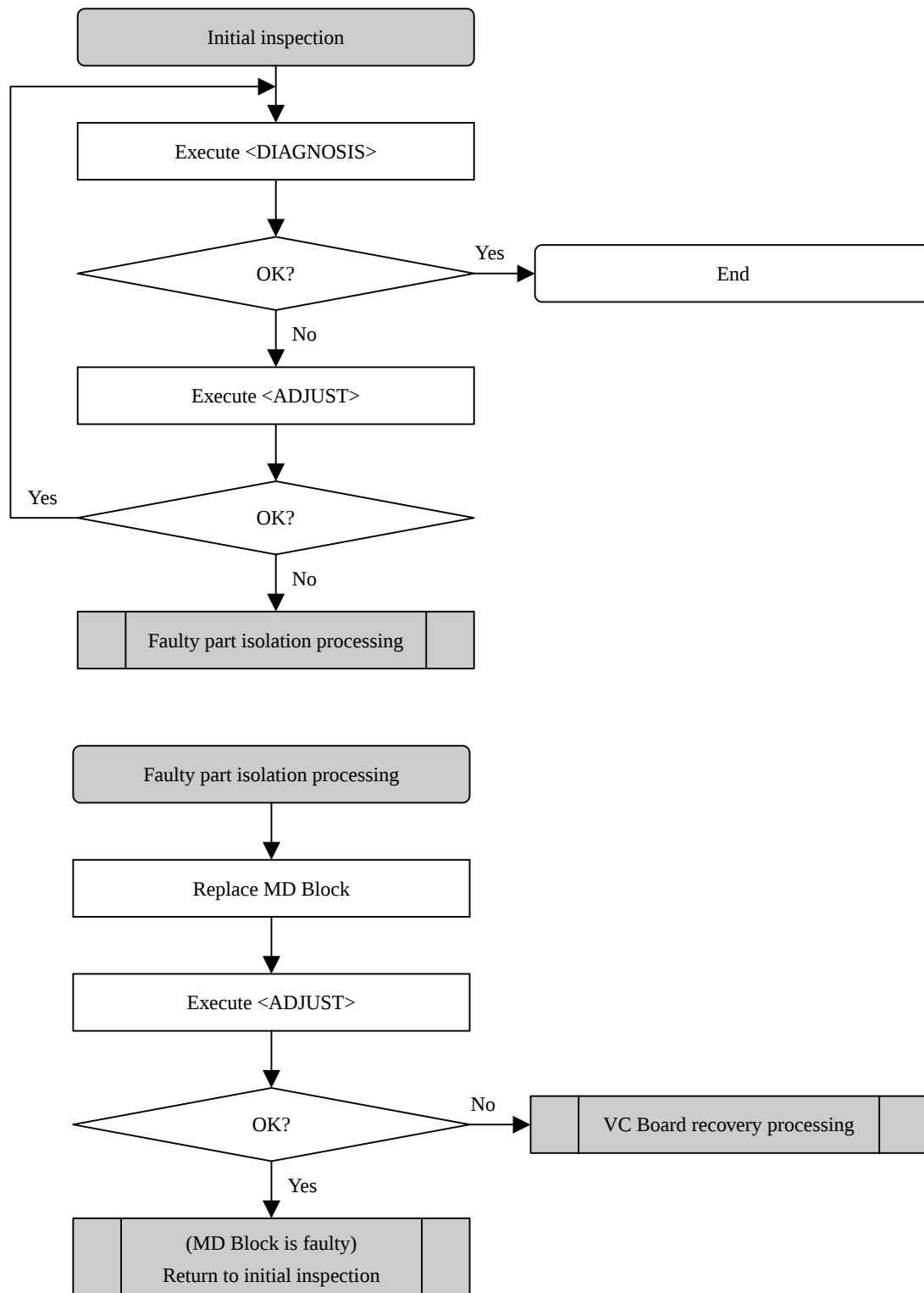
2-5-2. Adjusting Method

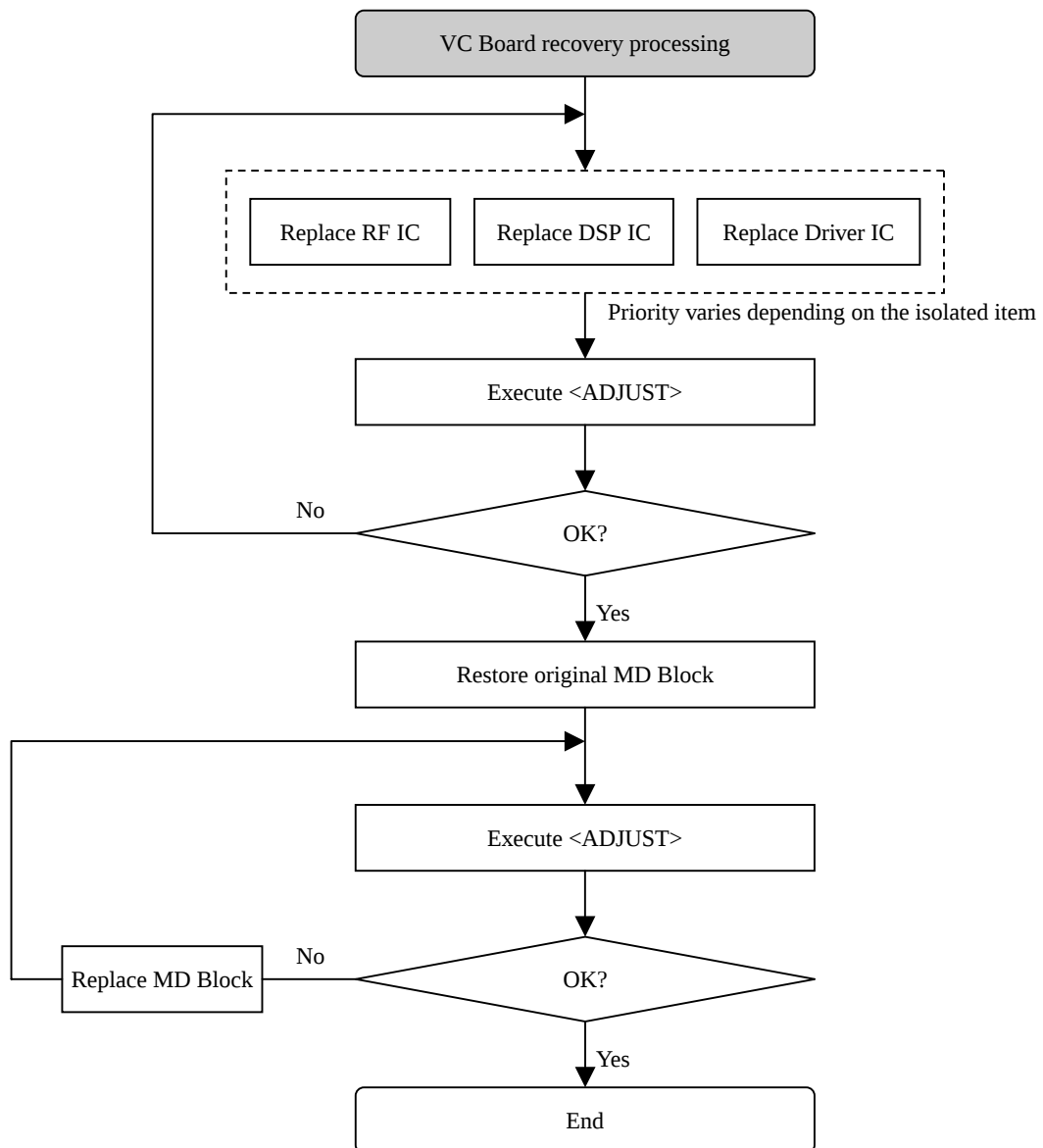
Order	Adjustment item	Message	Disc	Operation
1			No Disc	Click the [START] button of “SERVO Adjustment”.
2	Servo Param Initialize		DVD-RW Reference + DOW Disc	Set the DVD-RW Reference + DOW Disc, and with the disc cover left open, click the [OK] button in the message window.
3	-RW Ref			(If the adjustment result of previous item is OK, this item is executed successively.)
4	-RW Self			(If the adjustment result of previous item is OK, this item is executed successively.)
5	-R Self		DVD-R Disc for Self Jitter	Remove the DVD-RW Reference + DOW Disc, and set the DVD-R Disc for Self Jitter, and then close the disc cover and click the [OK] button in the message window.
6	+RDL Self		DVD+RDL Self Disc	Remove the DVD-R Disc for Self Jitter, and set the DVD+RDL Self Disc, and then close the disc cover and click the [OK] button in the message window.
7	Data Dump			(If the adjustment result of previous item is OK, this item is executed successively.)
8			No Disc	Remove the DVD+RDL Self Disc. (On the AUDIT screen, if the status lamps of respective adjustment buttons are all lit in green, the adjustment is over.)

Note: Before exiting the AUDIT, click the **[SET]** button of “After completing the TEST” to cancel the TEST mode.

2-6. TROUBLESHOOTING

2-6-1. Fundamental Troubleshooting Flow





2-6-2. Diagnosis

Sensor

Purpose	Trouble Symptom	Cause	Repair
Check operation of OP (Focus, Tracking, Sled, Spindle)		Faulty OP Faulty Driver IC	Replace the MD block Replace the VC board
Check the emission of laser diode		Faulty connection of flexible board	Check flexible board
Check various sensors (Dew sensor, Temperature sensor, Shock sensor)		Faulty OP Faulty sensor, Faulty connection of flexible board	Replace the MD block Temperature sensor → Replace the MD block Dew sensor → Check flexible board Shock sensor → Replace the VC board
Disc type check (only DVD-R)		OP age-based change Faulty operation of mechanism Faulty DSP IC Faulty RF IC	Replace the MD block Replace the MD block Replace the VC board Replace the VC board

The following diagnosis is performed with DVD-R, DVD-RW and DVD+DLR

The diagnosis of DVD+RDL is performed with L0/L1 layer each layer.

Seek

Purpose	Trouble Symptom	Cause	Repair
Check the seek performance (Seek between 2 points) x5 x2 patterns → Calculation of average time		OP age-based change Faulty mechanism Faulty DSP IC Faulty RF IC	Readjust Replace the MD block Replace the VC board Replace the VC board

Read

Purpose	Trouble Symptom	Cause	Repair
Check the read performance LPP Error Rate, RF Jitter		OP age-based change Faulty mechanism Faulty DSP IC Faulty RF IC	Readjust Replace the MD block Replace the VC board Replace the VC board

Write

Purpose	Trouble Symptom	Cause	Repair
Check the write performance During LPP/ADIP Error Rate, RF Jitter		OP age-based change Faulty mechanism Faulty DSP IC Faulty RF IC	Readjust Replace the MD block Replace the VC board Replace the VC board

2-6-3. Power Adjust

Prepare, Sensor

Purpose	Trouble Symptom	Cause	Repair
Initialization of all data at adjustment area		Faulty Flash IC	Replace the VC board
Check operation of Shock sensor		Faulty shock sensor	Replace the VC board

Laser Power Adjustment

Purpose	Trouble Symptom	Cause	Repair
Adjust the Laser power		Faulty connection to power meter	Check connection to power meter, Check power supply
		Faulty installation of power sensor jig	Check installation of power sensor jig
		Faulty lighting of LD	Check flexible board, Replace the MD block
		Faulty operation of mechanism	Replace the MD block
		Faulty RF IC	Replace the VC board
		Faulty DSP IC	Replace the VC board
		Faulty SDRAM IC	Replace the VC board
		Faulty Flash IC	Replace the VC board

2-6-4. Servo Adjust

Servo Parameter Initialize

Purpose	Trouble Symptom	Cause	Repair
Initialization of servo-related adjustment data		Faulty Flash IC Faulty DSP IC	Replace the VC board Replace the VC board

DVD-RW Reference Disc Adjustment

Purpose	Trouble Symptom	Cause	Repair
Adjust the servo with DVD-RW		The disc is dirty or has scratches on it Faulty OP Faulty DSP IC Faulty RF IC	Check disc Replace the MD block Replace the VC board Replace the VC board

DVD-RW Self Jitter

Purpose	Trouble Symptom	Cause	Repair
Adjust the recording with DVD-RW Check the self recording with DVD-RW		The disc is dirty or has scratches on it Faulty OP Faulty DSP IC Faulty RF IC	Check disc Replace the MD block Replace the VC board Replace the VC board

DVD-R Self Jitter

Purpose	Trouble Symptom	Cause	Repair
Adjust the servo with DVD-R Adjust the recording with DVD-R Check the self recording with DVD-R		The disc is dirty or has scratches on it Faulty OP Faulty DSP IC Faulty RF IC	Check disc Replace the MD block Replace the VC board Replace the VC board

DVD+RDL Self Jitter

Purpose	Trouble Symptom	Cause	Repair
Adjust the servo with DVD+RDL Adjust the recording with DVD+RDL Check the self recording with DVD+RDL		The disc is dirty or has scratches on it Faulty OP Faulty DSP IC Faulty RF IC	Check disc Replace the MD block Replace the VC board Replace the VC board

Data Dump

Purpose	Trouble Symptom	Cause	Repair
The adjustment value is dumped		Faulty DSP IC Faulty RF IC	Replace the VC board Replace the VC board

6-3. SERVICE MODE

3-1. APPLICATION FOR ADJUSTMENT (SeusEX)

The adjustment software (SeusEX) can change operational coefficients of signal processing, EVR data, etc. same as the adjustment remote commander. The SeusEX performs two-way communication between PC and camcorder using the USB terminal. The two-way communication result data can be written in the nonvolatile memory.

1. Connection

- 1) Connect the HASP key to the USB terminal of the PC.
- 2) Connect the PC and camcorder with the USB cable.
- 3) Start the SeusEX on the PC.
- 4) Click **[Connect]** on the SeusEX screen. If the connection is normal, the SeusEX screen will be as shown in Fig. 6-3-1, indicating the “connected” state.

Note: The SeusEX will go in “disconnect” state, if the camcorder is turned off (for instance, by resetting the set). In such a case, click **[Connect]** on the SeusEX screen to restore the “connected” state.

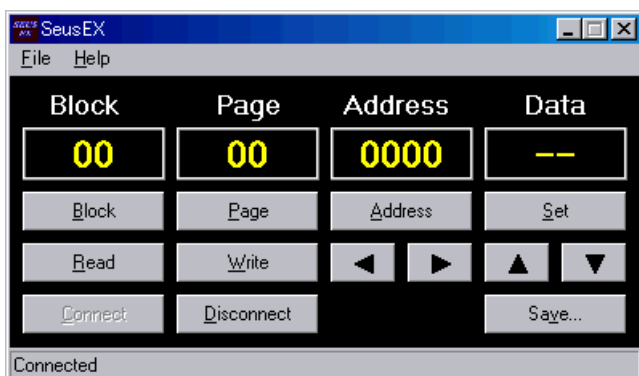


Fig. 6-3-1

2. Operation

- **Block change**
To change the block, click **[Block]** on the SeusEX screen and enter the block to be changed. The block is displayed in hexadecimal notation.
- **Page change**
To change the page, click **[Page]** on the SeusEX screen and enter the page to be changed. The page is displayed in hexadecimal notation.
- **Address change**
To change the address, click **[Address]** on the SeusEX screen and enter the address to be changed. The address is displayed in hexadecimal notation.
- **Data change**
To change the data, click **[Set]** on the SeusEX screen and enter the data. The data is displayed in hexadecimal notation. This operation does not write the data to the nonvolatile memory.
- **Data writing**
To write the data to the EEPROM, click **[Write]** on the SeusEX screen and enter the data value to be written. To write the data to the flash memory, change the data value using the **[Set]** on the SeusEX screen and then click **[Save]** to save the data.
- **Data reading**
The data displayed on the SeusEX screen are the data values at the time when the pages and addresses were set, and they are not updated automatically. To check the data change, click **[Read]** on the SeusEX screen and update the displayed data.

3-2. SERVICE MODE

1. Function of Each Button on Service Mode Screen

Click the **[SERVICE MODE]** button on the Main Menu screen, and the “SERVICE MODE” screen in Fig. 6-3-2 will appear.

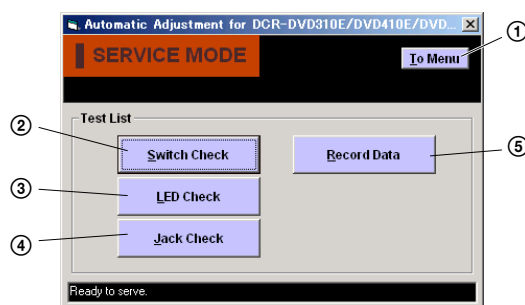
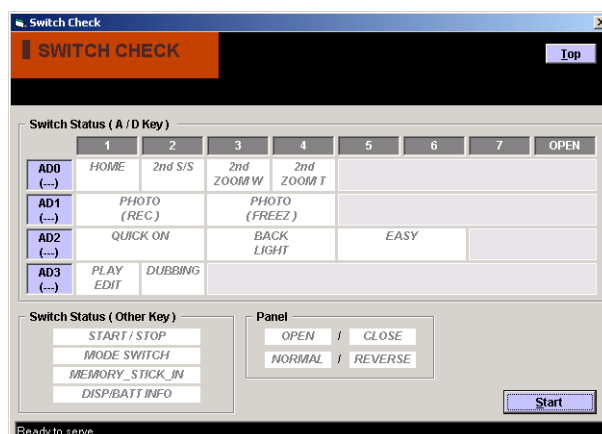


Fig. 6-3-2

- ① **[To Menu]** button
Return to the main menu.
- ② **[Switch Check]** button
“SWITCH CHECK” screen appears.
- ③ **[LED Check]** button
“LED CHECK” screen appears.
- ④ **[Jack Check]** button
“JACK CHECK” screen appears.
- ⑤ **[Record Data]** button
“RECORD DATA” screen appears.

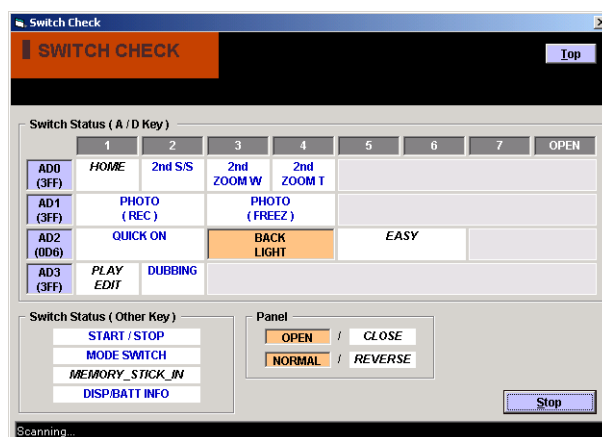
2. Switch Check

Click the **[Switch Check]** button on the SERVICE MODE screen, and the “SWITCH CHECK” screen will appear.



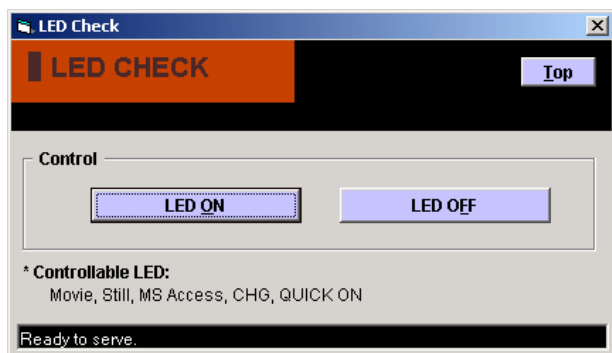
Using method:

Click the **[Start]** button, and the switch check will start. During execution of switch check, the pressed switch is displayed in orange. Also, once the switch was pressed, its name characters change to blue in color.



3. LED Check

Click the **LED Check** button on the SERVICE MODE screen, and the “LED CHECK” screen will appear.

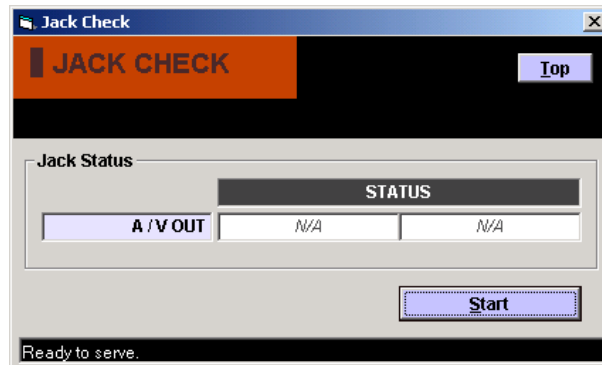


Using method:

LED ON or OFF can be controlled with **LED ON** or **LED OFF** button on the screen.

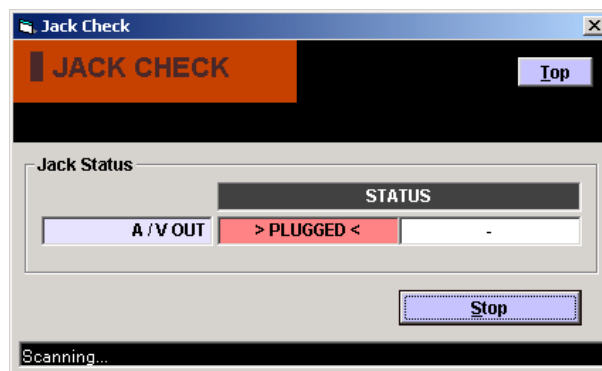
4. Jack Check

Click the **Jack Check** button on the SERVICE MODE screen, and the “JACK CHECK” screen will appear.



Using method:

Click the **Start** button, and the jack check will start. During execution of jack check, the connected jack is displayed in orange.



5. Record Data

Click the **Record Data** button on the SERVICE MODE screen, and the “RECORD DATA” screen will appear.

The screenshot shows the 'Record Data' screen with the following sections:

- Record of Use:**

Initial power on date :	Power on Total Time (Min) :
2008/01/01	63
PB Laser Output Total Time (Sec) :	REC Laser Output Total Time (Sec) :
162	12
Spindle Rotate Total Time (Sec) :	Final High Temperature occurrence date :
197	N/A
- Counter:**

Reset :	Salvage (MS1) :	LCD Open(N) :
4	0	21
Power Switch :	Recovery (MS1) :	LCD Close(N) :
37	0	1
Last ALO :	Salvage (DVD) :	LCD Open(R) :
0	0	2
Normal Eject :	Recovery (DVD) :	LCD Close(R) :
0	0	1
Forced Eject :	Salvage (Int.Flash) :	
0	0	
	Recovery (Int.Flash) :	
	0	
- Record of Self-Diagnosis:**

E / H Category	C Category
1: --:--:--	1: --:--:--
2: --:--:--	2: --:--:--
3: --:--:--	
4: --:--:--	

Buttons: **Clear Self-Diagnosis Data Only**, **Clear All Recorded-Data**

Status bar: Ready to serve.

The record data such as use record and self-diagnostic record are displayed.

Initializing method (Self-Diagnosis Data Only):

Click the **Clear Self-Diagnosis Data Only** button on the screen, and the Self-Diagnosis Data will be initialized.

Initializing method (All Record-Data):

Click the **Clear All Recorded-Data** button on the screen, and the All Recorded-Data will be initialized.

Note: Performing the initialization causes all the user settings including time setting to be initialized, too.

3-3. DATA BACKUP

With the “DATA BACKUP”, the adjustment data in the camcorder can be backed up in the PC as a file.
The adjustment data that can be backed up are as follows.

- 1) Video System Adjustments
- 2) Camera System Adjustments
- 3) LCD/EVF System Adjustments
- 4) Audio System Adjustments

Note: The adjustment data for the drive cannot be backed up.

1. Function of Each Button on Data Backup Screen

Click the [DATA BACKUP] button on the Main Menu screen, and the “DATA BACKUP” screen in Fig. 6-3-3 will appear.

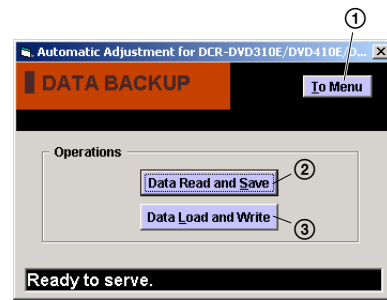


Fig. 6-3-3

- ① [To Menu] button
Return to the main menu.
- ② [Data Read and Save] button
Read the adjustment data from the camcorder and save them in PC as a file.
Default file name is as follows:
(Example: MEGA model)
DCR-DVD710_MEM_XXXXXXX_yyyymmdd.dat

Date
USB serial
number
Data name
- ③ [Data Load and Write] button
Load the adjustment data from the file saved in PC and write them to the camcorder.

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2007.12	Official Release	—	—
1.1	2008.01	Revised-1 (A1 DI07-262)	Replace the previously issued SERVICE MANUAL 9-852-249-51 with this Manual. • Change of Automatic Adjustment Program Version of Automatic Adjustment Program has been changed from Ver_1.0r01 into Ver_1.1r02. • Correction of adjustment condition. • Change of System requirements for using AUDIT. • Addition of Installation method for “Audit for 2008”. • Deletion of Installation Method. S.M. revised: Page 6-3 , Page 6-7 , Page 6-18 , Page 6-19 , Page 6-20 , Page 6-27 , Page 6-28 , Page 6-29 , Page 6-41 , Page 6-45 , Page 6-46	Yes
1.2	2008.03	Revised-2 (A2 DI07-300)	Replace the previously issued SERVICE MANUAL 9-852-249-52 with this Manual. • Change of Automatic Adjustment Program Version of Automatic Adjustment Program has been changed from Ver_1.1r02 into Ver_1.2r03. S.M. revised: Page 6-7	Yes
1.3	2008.05	Revised-3 (A3 DI08-050)	Replace the previously issued SERVICE MANUAL 9-852-249-53 with this Manual. • Change of Automatic Adjustment Program Version of Automatic Adjustment Program has been changed from Ver_1.2r03 into Ver_1.3r04. • Addition of Thai Model • Addition of Record Data S.M. revised: Page 6-7 , Page 6-10 , Page 6-60 , Page 6-62	Yes