JVC®

SERVICE MANUAL

HD CAMERA RECORDER

GY-HD250U/GY-HD250CHU
GY-HD251E/GY-HD251CHE
GY-HD200U/GY-HD200CHU
GY-HD200E/GY-HD200CHE
GY-HD201E/GY-HD201CHE

This photo shows the GY-HD250U.
(The lens is not included in the CH models).

Mini DV HDV

Note

- **Lead free solder used in the board (material : Sn, Ag, In, Bi, melting point : 227 Centigrade)**

No. HC014
Jan. 2007

100% recycled paper

TABLE OF CONTENTS

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

●Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded ( ) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape 3) Spacers 5) Barrier
   2) PVC tubing 4) Insulation sheets for transistors

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

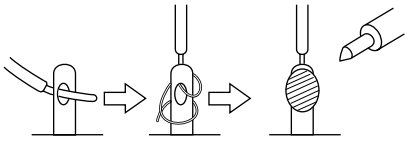


Fig.1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

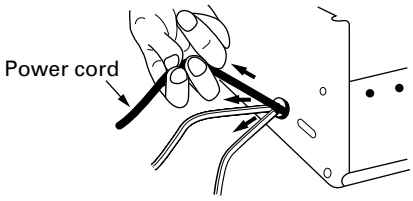


Fig.2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

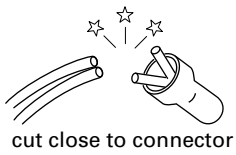


Fig.3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

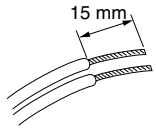


Fig.4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

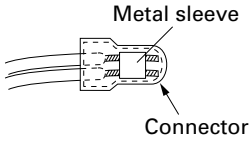


Fig.5

(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

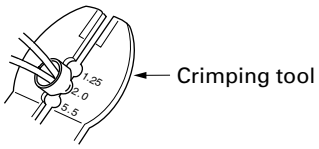


Fig.6

(5) Check the four points noted in Fig.7.

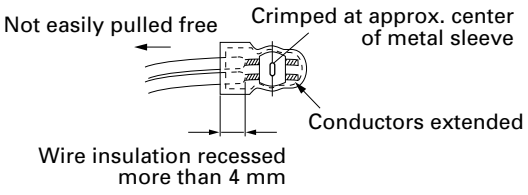


Fig.7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test
Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance
When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

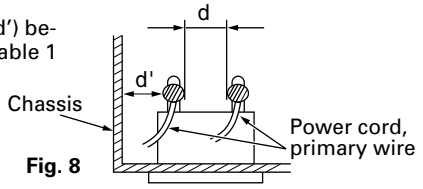


Fig. 8

4. Leakage current test
Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
Measuring Method : (Power ON)
Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

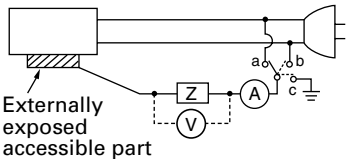


Fig. 9

5. Grounding (Class Ⅰ model only)
Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
Measuring Method:
Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

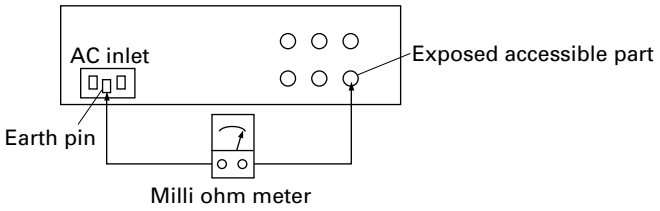


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 miute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ/500 V DC	AC 3 kV 1 minute (Class Ⅱ) AC 1.5 kV 1 minute (Class Ⅰ)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 1
SERVICE CAUTIONS AND DISASSEMBLY

About CH model
CH models are without only lens assembly.

1.1 GENERAL DESCRIPTION

1.1.1 Cautions

(1) Always unplug the DC power or the battery before attaching, removing or soldering a part.
(2) When unplugging a connector, do not pull the wire but grasp the connector body.
(3) When attaching exterior cover, put the cables and wire in order and check carefully not to damage cables.

1.1.2 Screws and washers used in camera components.

The table 1.1.2 shows the symbols, design, part numbers and colors of screws and washers used with the camera components.
When disassembling or assembling the camera, be sure to install the correct screws and washers by referring to the following tables.

Symbol	Design	Part No.	Color
(S1)		QYSPSPU2040MA	Black
(S2)		QYSPSPU2080MA	Black
(S3)		QYSPSPU2030NA	Silver
(S4)		QYSPSPH2006NA	Silver
(S5)		SS411354-B2006N	Silver
(S6)		QYSPSPU2080MA	Silver
(S7)		QYSPSPU2040NA	Silver
(S8)		QYSDSP2605NA	Silver
(S9)		QYSDSP3008MA	Black
(S10)		QYSPSPT2640MA	Black
(S11)		QYSDSP4010NA	Silver
(S12)		QYSDSP2605MA	Black
(S13)		QYSPSPT1460MA	Black
(S14)		LY30031-052A	Black
(S15)		QYSPSPT2030MA	Black
(S16)		QYSSSP2606NA	Silver

Symbol	Design	Part No.	Color
W1		QYWBS285803NA	Silver

Table 1.1.2

1.2 HOW TO REMOVE THE EXTERIOR PARTS

1.2.1 Left side cover

(1) Remove the two screws (S16) and slide the shoulder pad backward to remove.

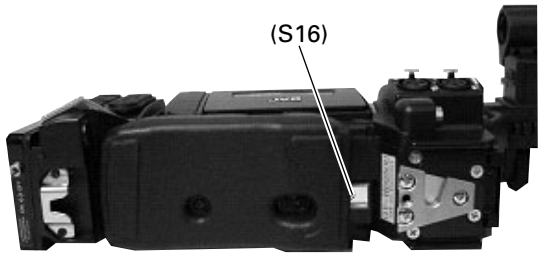


Fig. 1.2.1 (1)

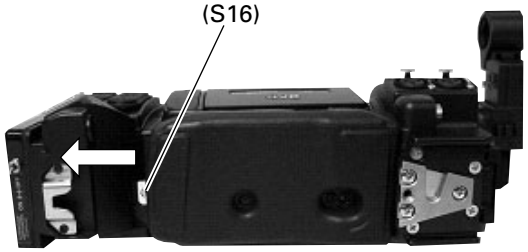


Fig. 1.2.1 (2)

Note :
- When attaching the shoulder pad, make sure to insert the guide rail of the shoulder pad into the hole of the bottom and tighten the screws.
- When attaching the shoulder pad, pressing the push plate and then slide the guide rail.

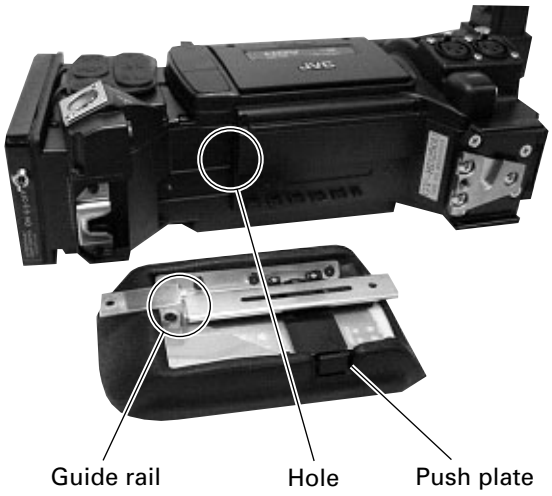


Fig. 1.2.1 (3)

(2) Remove the two screws (S2), slide the cassette cover downward and pull out to remove.

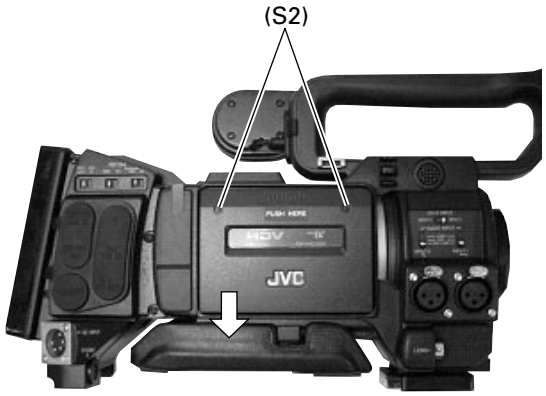


Fig. 1.2.1 (4)

Note :
When attaching the cassette cover, make sure to insert the hook of the cassette cover to the correct position of the cassette housing.

(3) Remove the five screws (S1), (S2) and open the left side cover.

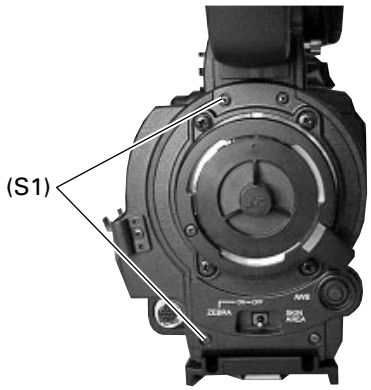


Fig. 1.2.1 (5)

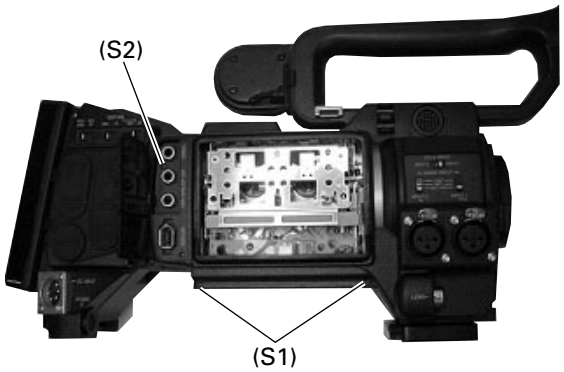


Fig. 1.2.1 (6)

(4) Disconnect the cables CN13 and CN43.

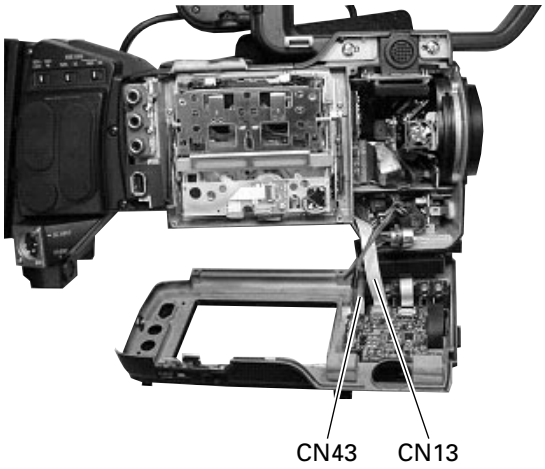


Fig. 1.2.1 (7)

1.2.2 Right side cover

(1) Remove the five screws (S1) and open the right side cover.

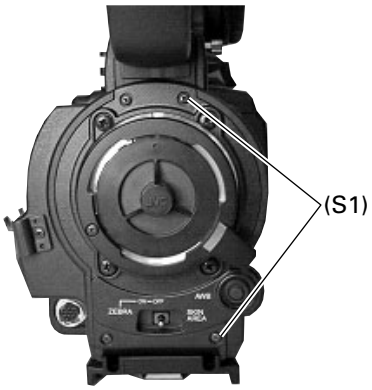


Fig. 1.2.2 (1)

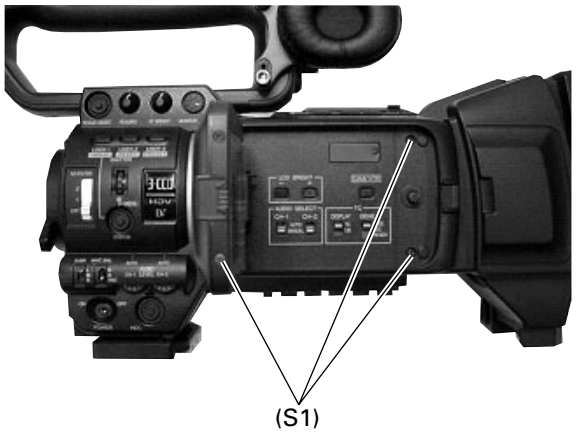


Fig. 1.2.2 (2)

(2) Disconnect the cables CN14 and CN43 on AUDIO board, CN10 on STA board.

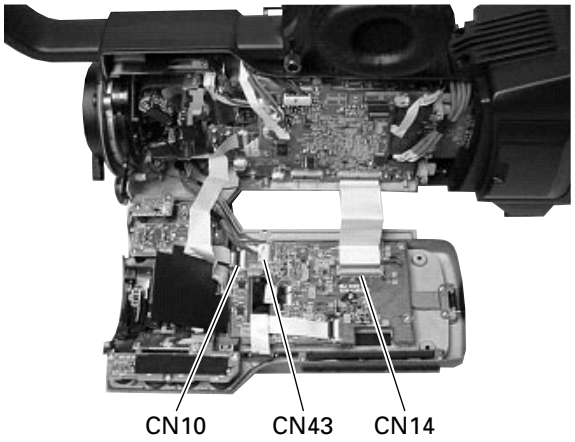


Fig. 1.2.2 (3)

1.3 HOW TO REMOVE THE OPTICAL BLOCK ASSEMBLY

CAUTION :

- When removing/mounting the optical block assembly in the camera, take care not to damage cables, also the positioning of the wire assembly is important. A malfunction may occur if wires are somehow caught up.
- Take also care not to press the IS boards or cables. If pressing strongly, the RGB registration of CCDs may be changed.

(1) Remove the left side cover and the right side cover. (See section 1.2.1 and 1.2.2)
(2) Remove the two screws (S7) and remove the SD board.
(3) Disconnect the FPC CN26, CN27, CN28 and CN90.

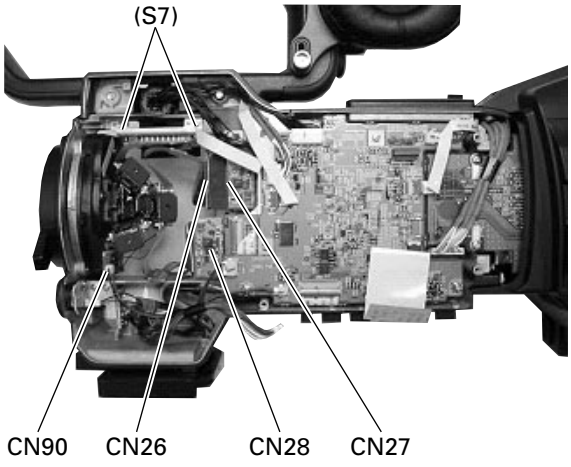


Fig. 1.3 (1)

(4) Remove screw (S10) and remove the PING.

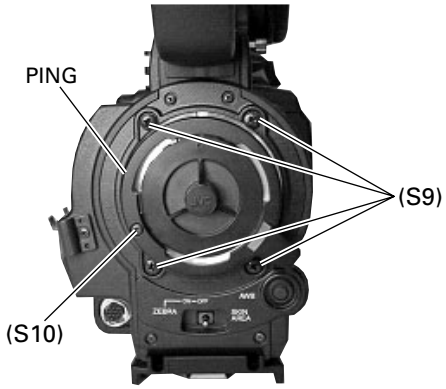


Fig. 1.3 (2)

(5) Remove four screws (S9) and remove optical block assembly carefully not to press the boards or the cables.
(6) Remove two screws (S13) and remove the FAN motor. Remove a screw (C) and remove FNC board.

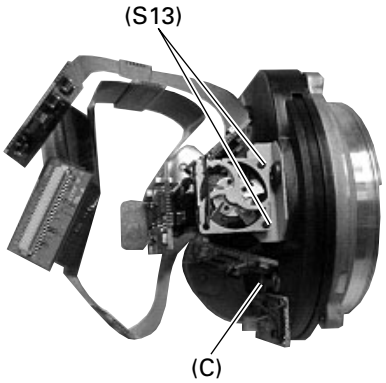


Fig. 1.3 (3)

(7) When replacing the optical block, be sure to attach the original FAN motor and FNC board to new optical block because those are not included on the optical block assembly.

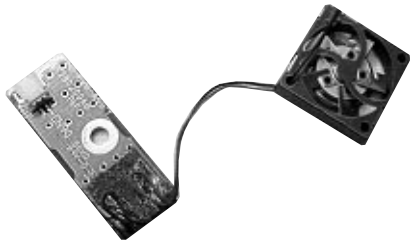


Fig. 1.3.1 (4) FAN motor assembly

Note :

- The CCDs are bonded precisely to the prism by UV-curable adhesive. In case of trouble with a CCD, it is not possible to replace an individual CCD, but the entire optical block assembly should be replaced.
- The optical block assembly supplied as a service part.

1.4 HOW TO REMOVE THE VCR UNIT

1.4.1 Mechanism unit

(1) Remove the left side cover. (see section 1.2.1)
(2) Remove four screws (S7).

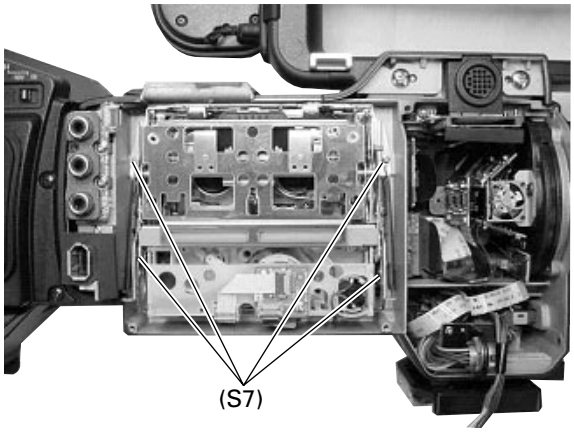


Fig. 1.4.1 (1)

(3) Lift up the mechanism unit gently and disconnect the cables CN75, CN16 and CN17.

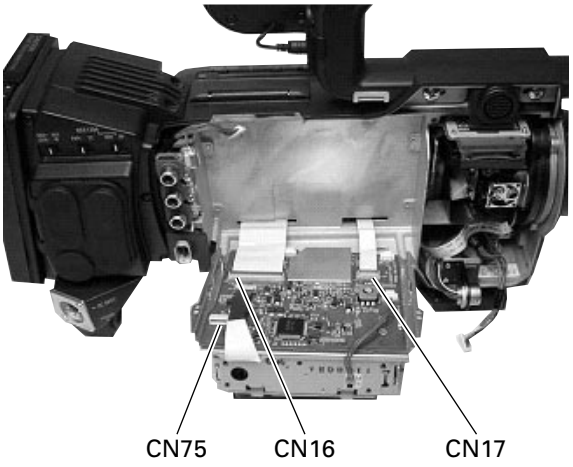


Fig. 1.4.1 (2)

1.4.2 Cassette housing

(1) Remove the mechanism unit. (see section 1.4.1)
(2) Remove CN1 and release the motor wire. Release the lock sideways and remove the tape guard

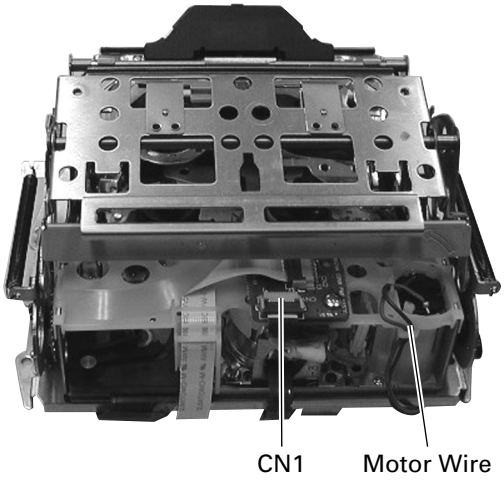


Fig. 1.4.2 (1)

(3) Pop up the cassette housing by sliding release lever and remove the two screws (A).

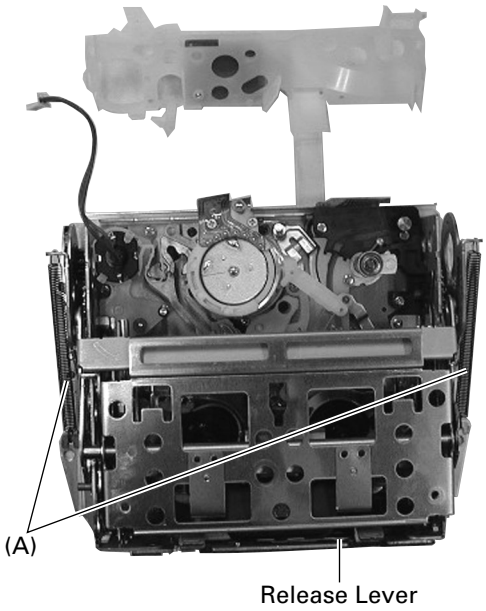


Fig. 1.4.2 (2)

(4) Slide the outer unit to rear direction and lift up slightly. Pull out to side direction to release the outer unit. Perform same manner other side.

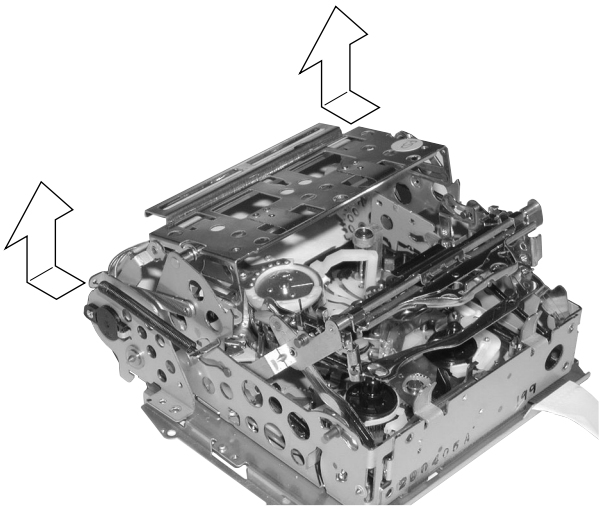


Fig. 1.4.2 (3)

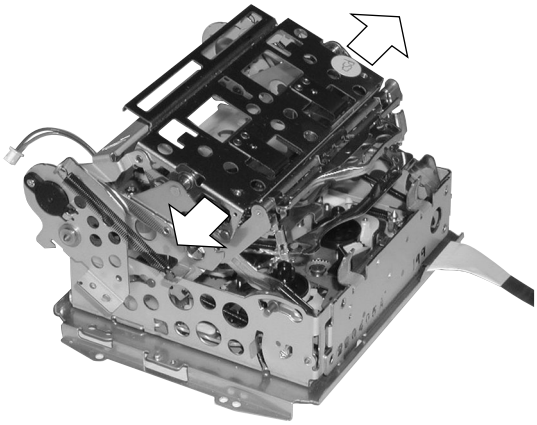


Fig. 1.4.2 (4)

(5) Slide the cassette housing to the position of fig.1.4.2(5) and hold the cassette housing slightly to inside direction to release it.

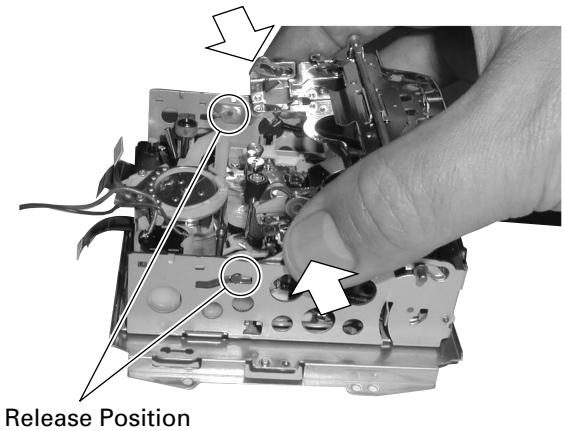


Fig. 1.4.2 (5)

(6) Release bosses of the cassette housing from the mechanism unit.

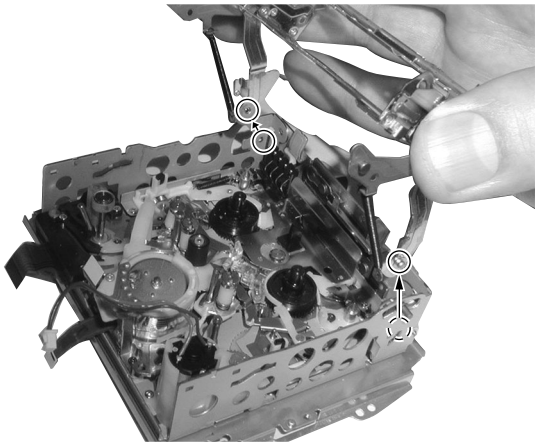


Fig. 1.4.2 (6)

1.5 HOW TO REMOVE MAJOR BOARDS

1.5.1 AUDIO board

(1) Remove the right side cover. (See section 1.2.2)
(2) Disconnect flat cables CN44, CN45 and CN62.
(3) Remove six screws (S3) to remove AUDIO board.

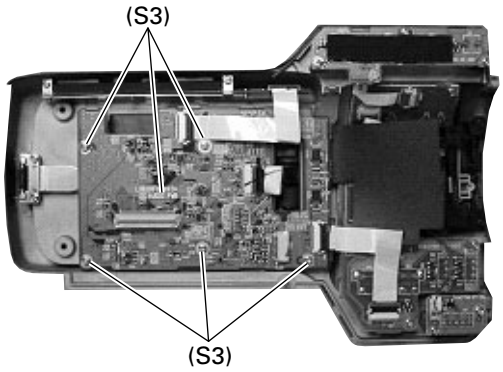


Fig. 1.5.1 (1)

Note :
CN62 may be slightly hard to connect FPC cable. Make sure to insert the cable to correct position.

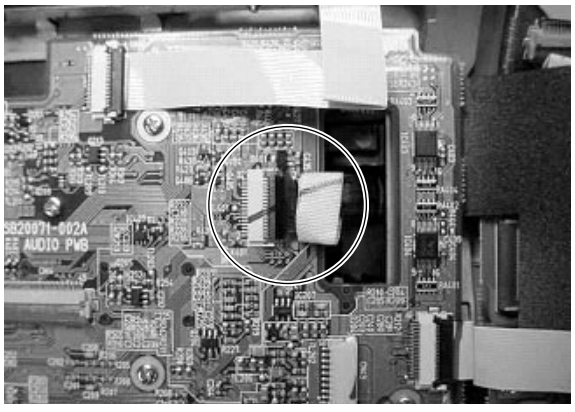


Fig. 1.5.1 (2)

1.5.2 LCD monitor

(1) Remove the Audio board. (See section 1.5.1)
(2) Remove two screws (B).

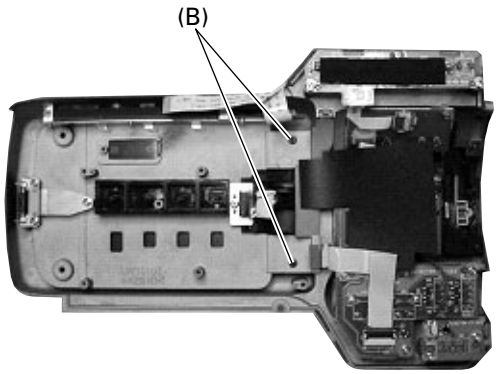


Fig. 1.5.2 (1)

(3) Remove the hinge cover and remove two screws (S14).

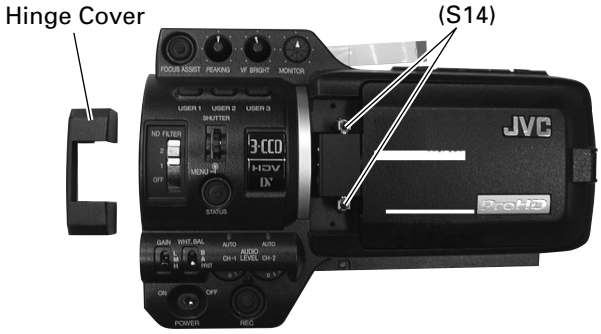


Fig. 1.5.2 (2)

1.5.3 CODEC board

(1) Remove the right side cover. (See section 1.2.2)
(2) Remove four screws (S4) with washers and (S6).
(3) Remove the cables CN4, CN9, CN12, CN22, CN23, CN34, CN48, CN83 and CN90.

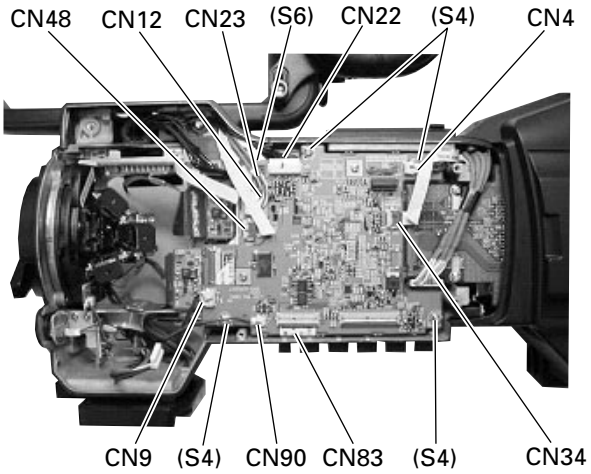


Fig. 1.5.3 (1)

(4) Remove tow screws (S3). Remove the heat sink carefully because it is being fitted sticky.

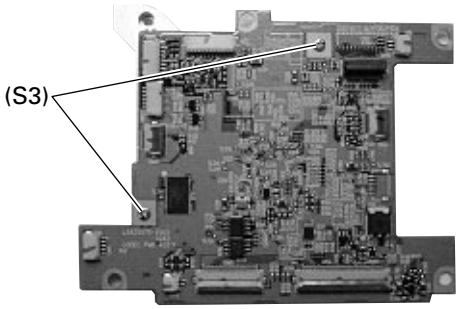


Fig. 1.5.3 (2)

1.5.4 DV board

(1) Remove CODEC board. (See section 1.5.3)
(2) Remove six screws (S5) and four screws (S8).
(3) Remove CN13, CN16, CN17, CN18, CN19.

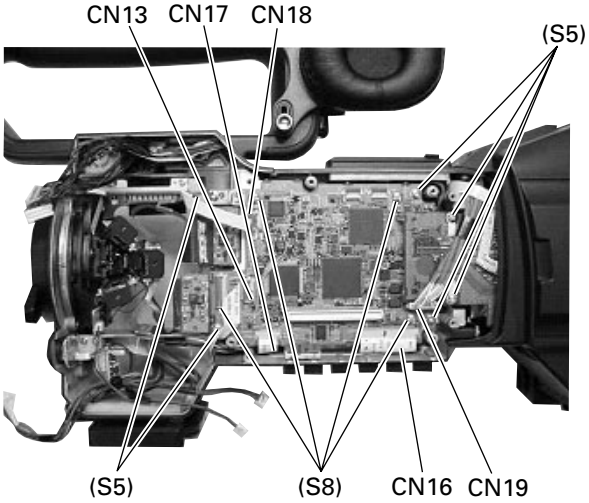


Fig. 1.5.4 (1)

(4) Take the GENLOCK board up slightly to release the B to B connector between the GENLOCK board and the DV board. Pull the DV board out and remove CN29.

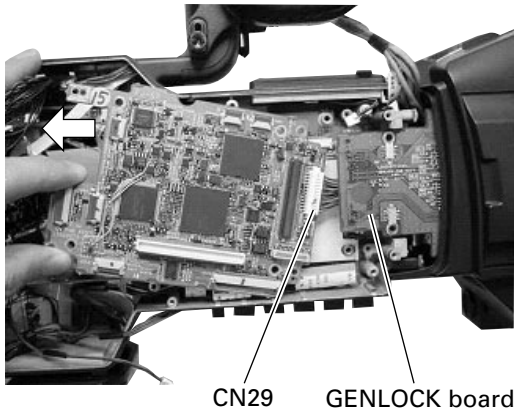


Fig. 1.5.4 (2)

1.5.5 CAM board

(1) Remove CODEC and DV boards. (See section 1.5.3 and 1.5.4)
(2) Remove CN3, CN26, CN27 and CN28.
(3) Take the CAM board out and remove CN30.

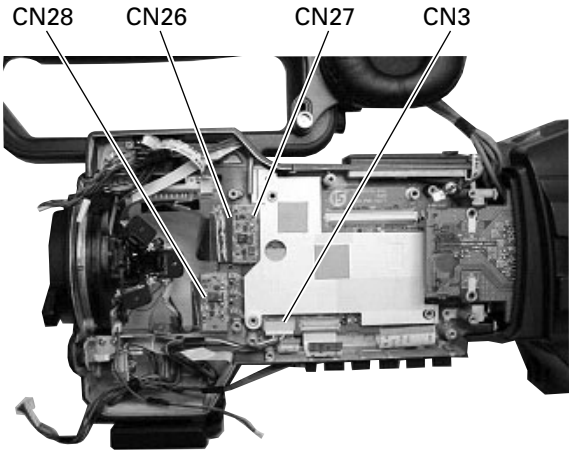


Fig. 1.5.5 (1)

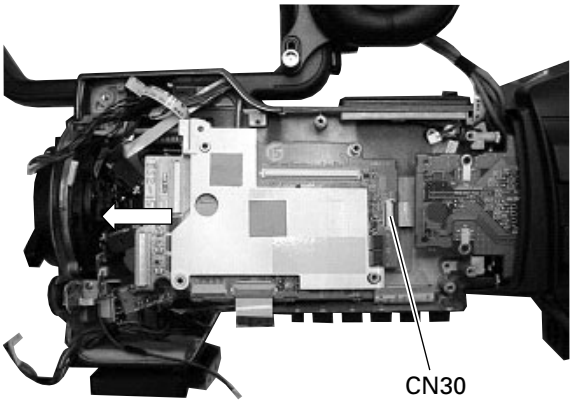


Fig. 1.5.5 (2)

(4) Remove the heat sink carefully because it is being fitted sticky. If it is difficult to remove it, there is easy way to warm up the heat sink with the hair dryer.

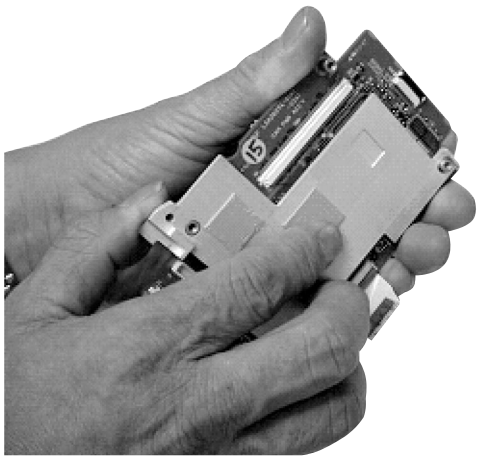


Fig. 1.5.5 (3)

1.5.6 PS250 board

(1) Remove four screws ① and then remove the battery mount plate. (The figure is U-model and Anton type is mounted. For E-model, IDX type is mounted.)

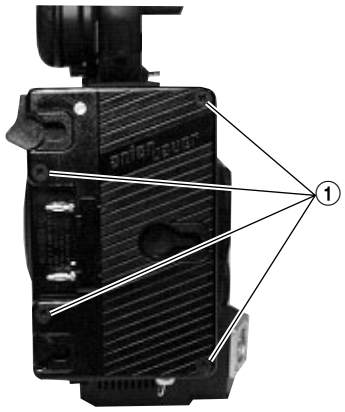


Fig. 1.5.6 (1)

(2) Remove four screws (S15) and then remove the cover.

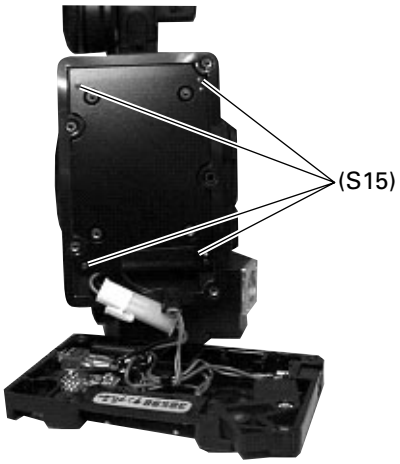


Fig. 1.5.6 (2)

(3) Remove four screws (S5) and remove CN30.

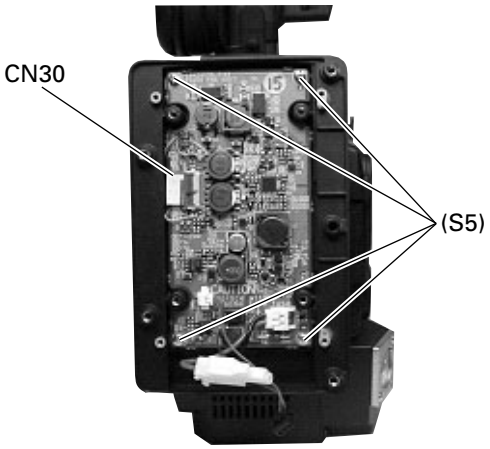


Fig. 1.5.6 (3)

(4) Disconnect the cables CN29, CN75, CN88 and CN93.

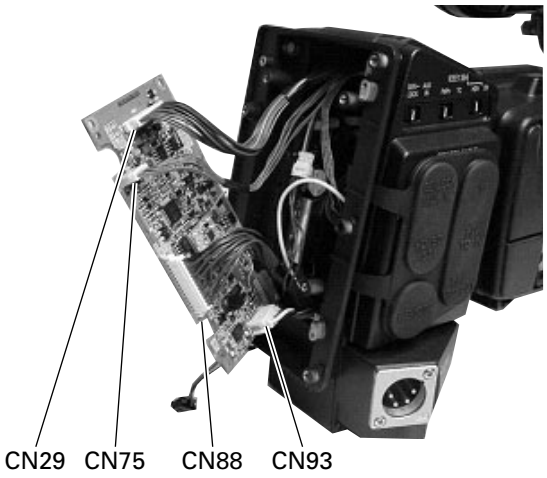


Fig. 1.5.6 (4)

Note :
When replacing the Fuse F1, ensure to replace with same type fuse. (Refer to the parts list)

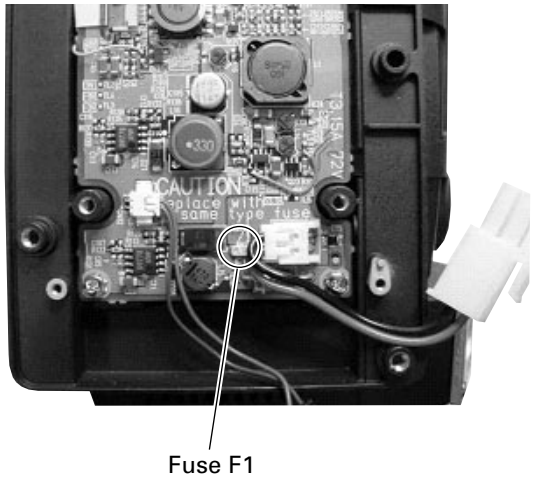


Fig. 1.5.6 (5) Location of FUSE

1.5.7 GENLOCK board

(1) Remove the right side cover. (See 1.2.2)
(2) Remove the PS250 board. (See 1.5.6)
(3) Remove five screws (S12).

Fig. 1.5.7 (1)

(4) Remove two screws (S5) on the GENLOCK board and remove CN19. Take the GENLOCK board up slightly to release the B to B connector between the GENLOCK board and the DV board.

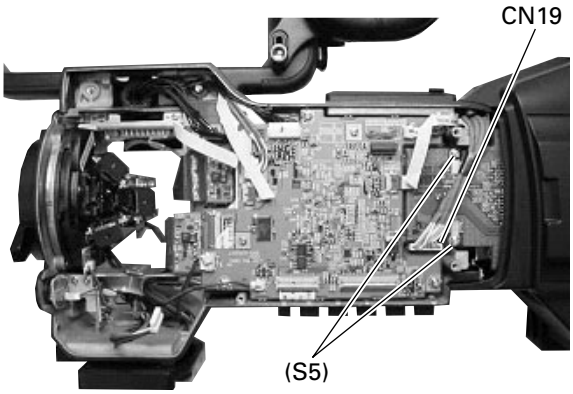


Fig. 1.5.7 (2)

(5) Take out the GENLOCK board and then disconnect CN85, CN86, CN87, CN88 and J1.

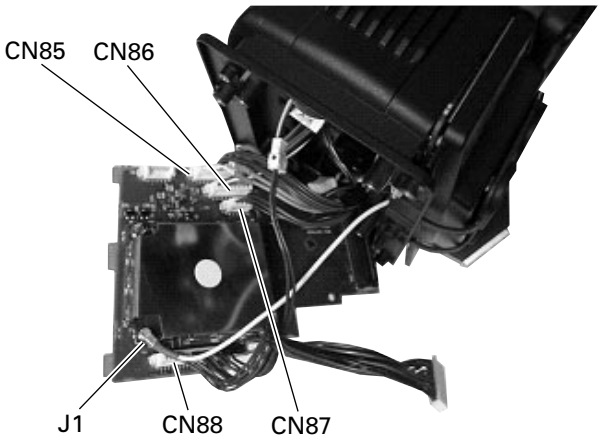


Fig. 1.5.7 (3)

Note :
When installing the GENLOCK board, make sure to insert the board correctly into the three slits.

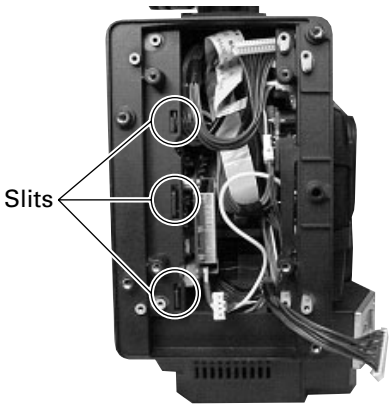


Fig. 1.5.7 (4) Back view

1.5.8 HANDLE assembly

(1) Remove the left side cover and the right side cover. (See section 1.2.1 and 1.2.2)
(2) Remove two screws (S11).

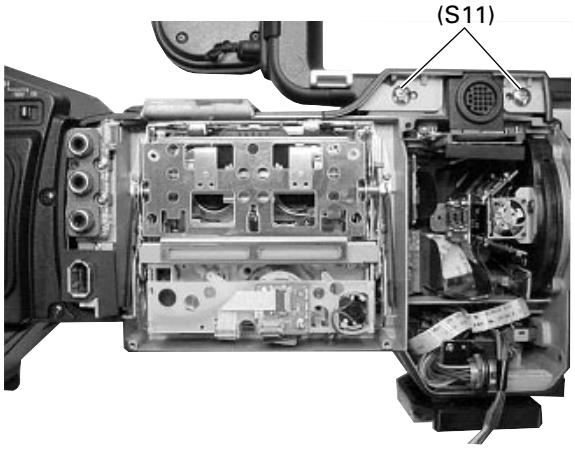


Fig. 1.5.8 (1)

(3) Remove the cables CN12, CN22, CN23 and CN48. Remove the screw (S6) for tighten the heat pipe.

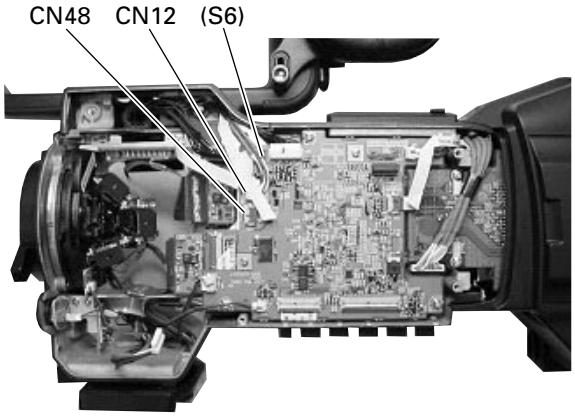


Fig. 1.5.8 (2)

(4) Lift up the handle assembly carefully.

Fig. 1.5.8 (3)

(5) Remove three screws (S2).

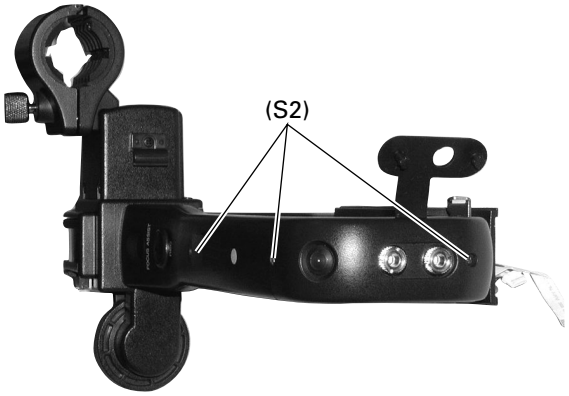


Fig. 1.5.8 (4)

(6) Remove the handle cover (R) and the handle cover (T).

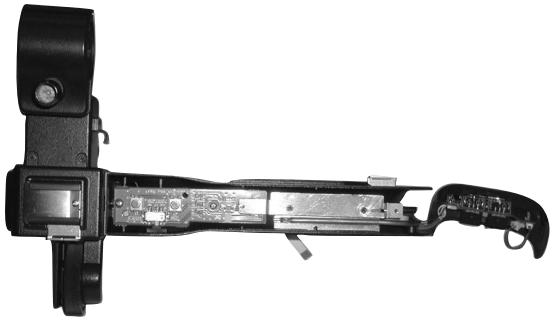


Fig. 1.5.8 (5)

Note :
When connecting the LED connector on EAR board, ensure the polarity that the RED wire should be connected longer pin of the LED.

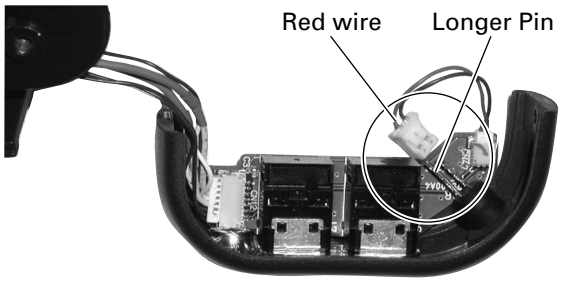


Fig. 1.5.8 (6)

1.6 SERVICE MENUS

1.6.1 Modes required in servicing

(1) While holding down the specified button(s) (FOCUS ASSIST, USER 3), press and hold the STATUS button for more than 1 second in order to display the first-level menu of the service menu hierarchy. The items in the first-level menu vary according to which specified button is being held at the moment the STATUS button is pressed. (Characters are displayed on LCD monitor screen or View finder.)

MENU Item	Displayed Content	When power up		
		–	Holding DISPLAY button	Holding DISPLAY button
		Activation Method		
		FOCUS ASSIST	USER 3	FOCUS ASSIST + USER 3
CAMERA1	Camera setting, blemish detect	○	○	○
CAMERA2	Error correct ON/OFF	–	○	○
CAMERA3	AW data reset menu	–	–	○
VTR1	Repeat, FF/REW speed setting	○	○	○
VTR2	Long pause, shutdown setting	–	○	○
VTR3	Reserved, BATT, Info.	–	–	○
DIP SW	DIP SW MENU	–	○	○
HOUR METER	Hour Meter indication	–	○	○
ERROR HISTORY	Error History	–	○	○
OTHERS	MENU SAVE etc.	–	○	○
VERSION	CPU Version indication	○	–	–

Table 1.6.1 Service Menu First Tier List

1.6.2 Operation in the first-level of the service menu

(1) While holding down the specified button(s) (FOCUS ASSIST or USER 3), press and hold the MENU (STATUS) button for more than 4 seconds.
(2) The first-level of the service menu is displayed.
(3) Rotate the SHUTTER dial to move the cursor (▷) on to the item to be modified.
(4) Push into the SHUTTER dial to direct the item on which the cursor (▷) is located.
- Pressing the STATUS button returns to the MENU display.
- Can not open the service MENU while recording.

```
  --- ADVANCED MENU ---
▷ VERSION CHECK..
  CAMERA1..
  VTR1..
  EXIT
```

Fig. 1.6.2 (1)

While holding down the FOCUS ASSIST button, press and hold STATUS button for more than 1 second,this MENU screen is shown on the monitor. (Refer to Fig. 1-6-2(1))

```
  --- SERVICE MENU ---
▷ CAMERA1..
  CAMERA2..
  VTR1..
  VTR2..
  DIP SW..
  HOUR METER
  ERROR HISTORY..
  OTHERS..
  EXIT
```

Fig. 1.6.2 (2)

At first, while holding down the DISPLAY button, turn ON the power switch, and then, while holding down the USER 3 button, press and hold STATUS button for more than 4 seconds, this MENU screen is shown on the monitor. (Refer to Fig. 1-6-2(2))

```
  --- FACTORY MENU ---
▷ CAMERA1..
  CAMERA2..
  CAMERA3..
  VTR1..
  VTR2..
  VTR3..
  DIP SW..
  HOUR METER
  ERROR HISTORY..
  OTHERS..
  EXIT
```

Fig. 1.6.2 (3)

At first, while holding down the DISPLAY button, turn ON the power switch, and then, While holding down the FOCUS ASSIST and USER 3 button, press and hold STATUS button for more than 4 seconds, this MENU screen is shown on the monitor. (Refer to Fig. 1-6-2(3))

1.6.3 CAMERA 1 menu

(1) In a service menu, place the cursor (▷) on "CAMERA 1" and push the SHUTTER dial to display the CAMERA1 menu.

```
      --- CAMERA1 ---

  ALC MODE          ALC+EEI
  EEI MAX           1/240
  IRIS ENF AUTO     ON
  LIVE FRAME RATE   REC
  PIXEL COMPEN DET  CANCEL
  TALLY SYSTEM      AUTO
  PAGE BACK
```

Fig. 1.6.3 (1)

(2) Rotate the SHUTTER dial to move the cursor (▷) on the mode to be adjusted.
(3) Push the SHUTTER dial so that the parameter blinks.
(4) Rotate the SHUTTER dial to vary the parameter.
(5) After completing the parameter setting, push the SHUTTER dial to stop the blinking of the parameter and store the setting in memory.
(6) After completing the setting, move the cursor (▷) to "PAGE BACK" and push the SHUTTER dial to return to the display at the higher hierarchy level.

Item		Parameter
ALC MODE	[ALC + EEI]	When selected ALC mode including FAS mode, EEI function will be activated.
	ONLY ALC	When selected ALC mode including FAS mode, EEI function will not be activated.
EEI MAX	U MODEL	1/240 Maximum shutter speed is set to 1/240 second.
		[1/480] Maximum shutter speed is set to 1/480 second.
		1/960 Maximum shutter speed is set to 1/960 second.
	E MODEL	1/200 Maximum shutter speed is set to 1/200 second.
		[1/400] Maximum shutter speed is set to 1/400 second.
		1/800 Maximum shutter speed is set to 1/800 second.
IRIS ENF. AUTO	OFF	When selected FULL AUTO mode, IRIS mode will be depeng on IRIS MODE switch of the lens.
	[ON]	When selected FULL AUTO mode, Auto Iris mode will be activated even Manual Iris mode is selected.
LIVE FRAME RATE	[REC]	Outputs the recording picture for LIVE picture.
	SENSOR	Outputs the sensor (CCD) picture for LIVE picture.
PIXEL COMPEN DET *1	[CANCEL]	Does not execute blemish detection.
	EXECUTE	Execute blemish detection.
TALLY SYSTEM	[AUTO]	Selects the tally system automatically. When connects the RM-P210, depends on TALLY IN/PREVIEW IN signal from RM-P210.
	TAPE	The lamp blinks at 1Hz during VTR recording
	TAPE+HDD	The lamp blinks at 1Hz during VTR and HDD recording. Blinks once and then twice repeatedly.

*1 When VIDEO FROMAT menu is not set to HDV-HD24P, " - - - - - " is displayed and this cannot be selected.

([ ] indicates the factory setting.)

Table 1.6.3 (1)

■ White blemish detection

Open the User MENU, select "VIDEO FORMAT", "REC", set to "HDV-HD24P" and push the SHUTTER dial.

Select "FRAME RATE", set to "24" and push the SHUTTER dial. Select "EXECUTE", push the SHUTTER dial, then GY-HD250/200 is automatically rebooted.

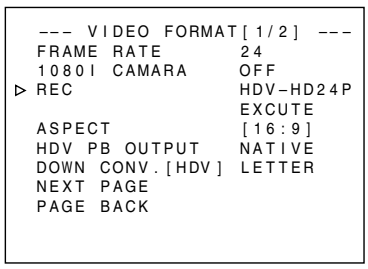


Fig. 1.6.3 (2)

Open the Service MENU, select "CAMERA1", "PIXEL COMPEN DET", "EXECUTE" and push the SHUTTER dial, then CCD white blemish detect operation starts automatically. At this time, the lens is closed and the camera is in the SLOW SHUTTER mode.

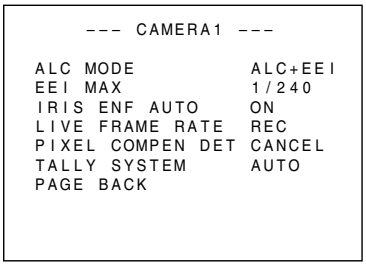


Fig. 1.6.3 (3)

When the white blemish detection completes, the result data is stored in the memory of CPU,
end message is shown as below, then please turn off.

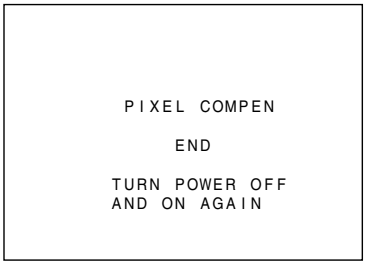


Fig. 1.6.3 (4)

After completing white blemish detection, return "REC" and "FRAME RATE" setting to original one's.

If any errors occurs during the detection operation, an error message is displayed , and return to MENU display.

Message	Error details	Treatment
LENS NOT CLOSED?	The lens does not close for detection.	No result is stored in the EEPROM.
COUNT OVER	The number exceeds the specified count.	Only the specified count of data is stored in the EEPROM.

Table 1.6.3 (2)

■ **Details on correctable white blemish**

Up to 127 errors with composite video levels of 50mV or more can be corrected. No limitation of errors per line within 127 however, the maximum consecutive errors are 4 and the correction results may be inferior to the case of single error correction.

Oblique noise may be observed on the screen during white blemish detection. This is due to the principles of error correction and is not a malfunction.

White blemish can be detected in the following area.

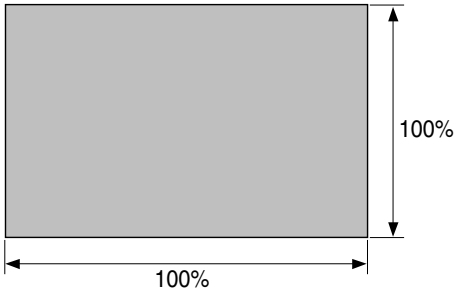


Fig. 1.6.3 (5)

1.6.4 CAMERA 2 menu

(1) In a service menu, place the cursor on "CAMERA 2" and push the SHUTTER dial to display the CAMERA2 menu.

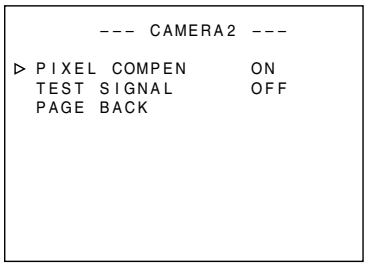


Fig. 1.6.4

Operation ways are almost same as CAMERA 1 MENU, so please refer it.

Item	Parameter	
PIXEL COMPEN *1	OFF	Does not correct the detected white blemish.
	[ON]	Corrects the detected white blemish.
	CHECK	Light up the pixels which are the detected white blemish.
TEST SIGNAL	[OFF]	No output test signal
	RAMP-Y	Outputs Y-RAMP signal
	RAMP-CbCr	Out puts CbCr-RAMP signal
	SWEEP-H	Outputs SWEEP-H signal
	SWEEP-V	Outputs SWEEP-V signal
	TEST-BARS	Outputs BARS (Full) signal
	TEST-24P	Outputs 24P test signal
	FRAME	Outputs effective aria signal for checking image
	BLEMISH	Addition of DUMMY BLEMISH signal on the image
RM DC DISP (HD250/251 only)	[OFF]	When connecred with RM-P210, the voltage of power is not displayed.
	ON	When connected with RM-P210, the voltage of power is displayed.

([ ] indicates the factory setting.)

*1: This mode is automatically set to ON when the power is turned on.
The OFF mode is enabled only after it is set to OFF at this screen until the power is turned off.

Table 1.6.4

1.6.5 CAMERA 3 menu

In a service menu, place the cursor on "CAMERA 3" and push the SHUTTER dial to display the CAMERA3 menu.

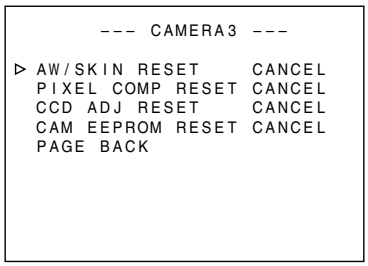


Fig. 1.6.5

Operation ways are almost same as CAMERA 1 MENU, so please refer it.

Item	Parameter	
AW/SKIN RESET	[CANCEL]	Does not reset the auto white data and the skin detect data.
	EXECUTE	Resets the auto white data and the skin detect data.
PIXEL COMP RESET	[CANCEL]	Does not reset the detected white blemish data.
	EXECUTE	Resets the detected white blemish data.
CCD ADJ RESET	[CANCEL]	Does not reset the CCD adjustment data.
	EXECUTE	Resets the CCD adjustment data.
CAM EEPROM RESET *1	[CANCEL]	Does not reset the EEPROM data for CAMERA CPU.
	EXECUTE	Resets the EEPROM data for CAMERA CPU.

([ ] indicates the factory setting.)

*1: CAM EEP-ROM data is as follows.
- The camera adjustment data.
- The pixel compensation data.
- The linearity data for the split screen of CCD.
- The shading correction data for split screen.

Table 1.6.5

1.6.6 VTR 1 menu

In a service menu, place the cursor on "VTR 1" and push the SHUTTER dial to display the VTR 1 menu.

```
        --- VTR1 ---

▷ BATT.DISPLAY      AUTO
  REC REPEAT        OFF
  PLAY REPEAT       OFF
  REMOTE FF/REW     FF/REW
  STEP SLOW[DV]     FRAME
  FF/REW SPEED      MAX
  VIDEO OUT HBLANK  DV
  SDI OUT..
  PAGE BACK
```

Fig. 1.6.6 (1) VTR 1 menu

```
      --- SDI OUT ---

  OUT TYPE          CONSUMER
  LTC               ON
  VITC              ON
  AUDIO+TC          ON
  PAGE BACK
```

Fig. 1.6.6 (2) SDI OUT

Operation ways are almost same as CAMERA 1 MENU, so please refer it.

Item	Parameter	
BATT. DISPLAY	OFF	Does not indicate the Battery information.
	[AUTO]	Show the Battery information as Battery Info of VTR3 MENU.
REC REPEAT	[OFF]	Disable repeat recording
	2	Perform repeat recording 2 times.
	5	Perform repeat recording 5 times.
	12	Perform repeat recording 12 times.
	ON	Enable full repeat recording.
PLAY REPEAT	[OFF]	Disable repeat playback.
	ON	Enable repeat playback.
REMOTE FF/REW	[FF/REW]	When FF/REW command is received from REMOTE, it runs as FF/REW mode.
	SEARCH	When FF/REW command is received from REMOTE, it runs as search FWD/REV mode.
STEP SLOW [DV]	FIELD	Field by field step advance.
	[FRAME]	Frame by frame step advance.
FF/REW SPEED	X5	Maximum FF/REW speed is limited up to x5.
	X7.5	Maximum FF/REW speed is limited up to x7.5.
	X10	Maximum FF/REW speed is limited up to x10.
	[MAX] *1	No limitation
VIDEO OUT HBLANK	DV	Horizontal effective pixels are 720.
	[STANDARD]	Horizontal effective pixels are 710 at 60/30 frame rate and 702 at 50/25 frame rate.
SDI.. (HD250/251 only)	Refer to the table 1.6.6 (2)	

([ ] indicates the factory setting.)

*1: Maximum speed is x20 at VTR mode, but no function at CAM mode.

Table 1.6.6 (1)

Item	Parameter	
OUT TYPE	CONSUMER	Add the AES/EBU consumer channel status bits
	[PRO]	Add the AES/EBU Professional channel status bits
LTC	OFF	Does not add the LTC data on SDI output
	[ON]	Add the LTC data on SDI output
VITC	OFF	Does not add the LTC data on SDI output
	[ON]	Add the VITC data on SDI output
AUDIO+TC	OFF	Does not add the audio data and TC data on SDI output
	[ON]	Add the audio data and TC data on SDI output

([ ] indicates the factory setting.)

Table 1.6.6 (2)

1.6.7 VTR 2 menu

In a service menu, place the cursor on "VTR 2" and push the SHUTTER dial to display the VTR 2 menu.

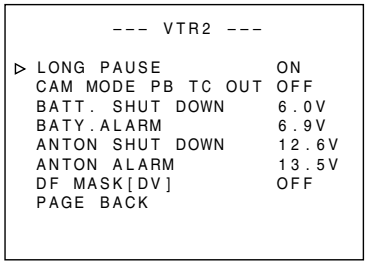


Fig. 1.6.7

Operation ways are almost same as CAMERA 1 MENU, so please refer it.

Item	Parameter	
LONG PAUSE	OFF	Disable the long pause function
	[ON]	Enable the long pause function
CAM MODE PB TC OUT (HD250/251 only)	[OFF]	Outputs TC data from TC generator when camcorder is in CAM mode
	ON	Output the playback TC data during playback mode
ANTON SHUT DOWN	[12.0V]	Setting of the ANTON battery voltage when shutdown should occur. Setting in 0.1V steps between 12.0V and 14.0V
ANTON ALARM	[12.8V]	Setting of the ANTON battery voltage when the battery alarm indicated. Setting in 0.1V steps between 12.0V and 14.0V
IDX SHUT DOWN	[12.0V]	Setting of the IDX battery voltage when shutdown should occur. Setting in 0.1V steps between 12.0V and 14.0V
IDX ALARM	[12.5V]	Setting of the IDX battery voltage when the battery alarm indicated. Setting in 0.1V steps between 12.0V and 14.0V
DF BIT [DV] *1	[OFF]	DF BIT is not recorded
	ON	DF BIT is recorded as per format.

([ ] indicates the factory setting.)

*1 : FRAME RATE 50/25 only

Table 1.6.7

1.6.8 VTR 3 menu

In a service menu, place the cursor on "VTR 3" and push the SHUTTER dial to display the VTR 3 menu.

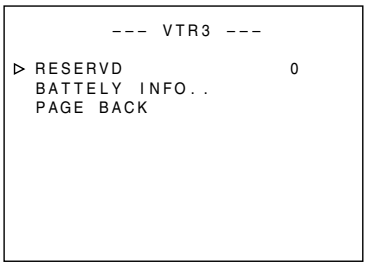


Fig. 1.6.8 (1)

Changing of setting is prohibited.

Item	Parameter	
RESERVED	[0]	Normal setting
BATTERY INFO		Display the battery information.

([ ] indicates the factory setting.)

Table 1.6.8 (1)

■ BATTERY INFO Display

Display method

Move the cursor to the "BATTERY INFO.." in "VTR3" screen and press SHUTTER dial. BATTERY INFO screen will be displayed.

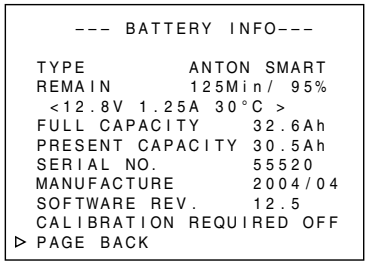


Fig.1.6.8 (2) BATTERY INFO
(When the Anton/Bauer Smart Battery is detected)

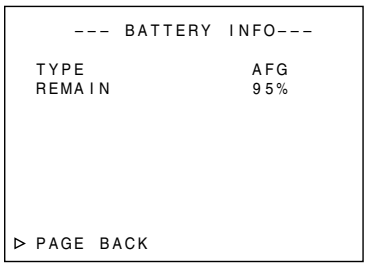


Fig. 1.6.8 (3)
(When AFG supported battery is detected)

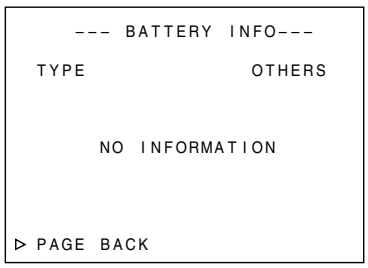


Fig. 1.6.8 (4)
(When others batteries are detected)

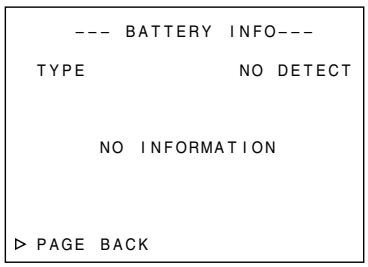


Fig. 1.6.8 (5)
(When no battery is detected)

Item		Descriptions	
TYPE		ANTON SMART	When ANTON/BAUER SMART BATTERY is connected
		AFG	When BATTERY with I/F of AFG (AnalogFuelGauge) is connected
		OTHERS	When other BATTERY is connected
		NO DETECT	When no BATTERY is connected
REMAIN	Minute	Remaining battery lasting time [min] calculated based on current power consumption	
	%	Current remaining capacity [%] corresponding to total battery capacity	
	Voltage	Output voltage of battery	
	Current	Output current of battery	
	Temperature	Temperature of battery	
FULL CAPACITY		Capacity [Ah] when the BATTERY is fully charged	
PRESENT CAPACITY		Current BATTERY capacity [Ah]	
SERIAL NO.		Manufactured serial number	
MANUFACTURE		Manufactured date	
SOFTWARE REV.		Software revision number	
CALIBRATION REQUIRED		OFF	Calibration not required
		ON	Calibration required

Table 1.6.8 (2) Discription of Battery Info.

1.6.9 DIP SW menu

(1) In a service menu, place the cursor on "DIP SW " and push the SHUTTER dial to display the DIP SW menu.

```
      --- DIP SW ---
  DIPSW ALL RESET CANCEL
▷ DIP SW 0~7..
  DIP SW 8~15..
  DIP SW 16~23..
  DIP SW 24~31..
  DIP SW 32~39..
  DIP SW 40~47..
  DIP SW 48~55..
  DIP SW 56~63..
  PAGE BACK
```

Fig. 1.6.9 (1) DIP SW TOP menu

```
   --- DIP SW[1/8] ---

▷ DIPSW 0          0
  DIPSW 1          OFF
  DIPSW 2          OFF
  DIPSW 3          OFF
  DIPSW 4          OFF
  DIPSW 5          OFF
  DIPSW 6          OFF
  DIPSW 7          OFF

  PAGE BACK
```

Fig. 1.6.9 (2)

```
   --- DIP SW[2/8] ---

▷ DIPSW 8          OFF
  DIPSW 9          OFF
  DIPSW 10         OFF
  DIPSW 11         OFF
  DIPSW 12         OFF
  DIPSW 13         OFF
  DIPSW 14         OFF
  DIPSW 15         OFF

  PAGE BACK
```

Fig. 1.6.9 (3)

```
   --- DIP SW[3/8] ---

▷ DIPSW 16         OFF
  DIPSW 17         OFF
  DIPSW 18         OFF
  DIPSW 19         OFF
  DIPSW 20         OFF
  DIPSW 21         OFF
  DIPSW 22         OFF
  DIPSW 23         OFF

  PAGE BACK
```

Fig. 1.6.9 (4)

```
   --- DIP SW[4/8] ---

▷ DIPSW 24         OFF
  DIPSW 25         OFF
  DIPSW 26         OFF
  DIPSW 27         OFF
  DIPSW 28         OFF
  DIPSW 29         OFF
  DIPSW 30         OFF
  DIPSW 31         OFF

  PAGE BACK
```

Fig. 1.6.9 (5)

```
   --- DIP SW[5/8] ---

  DIPSW 32         0
▷ DIPSW 33         0
  DIPSW 34         0
  DIPSW 35         OFF
  DIPSW 36         OFF
  DIPSW 37         OFF
  DIPSW 38         OFF
  DIPSW 39         OFF

  PAGE BACK
```

Fig. 1.6.9 (6)

```
   --- DIP SW[6/8] ---

▷ DIPSW 40         OFF
  DIPSW 41         OFF
  DIPSW 42         OFF
  DIPSW 43         OFF
  DIPSW 44         OFF
  DIPSW 45         OFF
  DIPSW 46         OFF
  DIPSW 47         OFF

  PAGE BACK
```

Fig. 1.6.9 (7)

```
   --- DIP SW[7/8] ---

▷ DIPSW 48         OFF
  DIPSW 49         OFF
  DIPSW 50         OFF
  DIPSW 51         OFF
  DIPSW 52         OFF
  DIPSW 53         OFF
  DIPSW 54         OFF
  DIPSW 55         OFF

  PAGE BACK
```

Fig. 1.6.9 (8)

```
   --- DIP SW[8/8] ---

▷ DIPSW 56         0
  DIPSW 57         0
  DIPSW 58         0
  DIPSW 59         0
  DIPSW 60         0
  DIPSW 61         0
  DIPSW 62         0
  DIPSW 63         0

  PAGE BACK
```

Fig. 1.6.9 (9)

Operation ways are almost same as CAMERA 1 menu, so please refer it.

All DIP Switch settings which are shown below should not be changed ecxept for repair or maintenance. And do not forget to return original position after repair.

Item	Parameter	Factory setting
DIP SW ALL RESET	CANCEL Cancel to reset all DIPSW settings. EXECUTE Execute to reset all DIPSW settings.	CANCEL
--- DIP SW 1/8 ---		
DIP SW 0	1 : Displays error rate monitor and CPU port information	0
DIP SW 1	ON : Disable warning message display	OFF
DIP SW 2	Change prohibited	OFF
DIP SW 3	ON : Disable DEW warning	OFF
DIP SW 4	Change prohibited	OFF
DIP SW 5	Change prohibited	OFF
DIP SW 6	Change prohibited	OFF
DIP SW 7	Change prohibited	OFF
--- DIP SW 2/8 ---		
DIP SW 8	Change prohibited	OFF
DIP SW 9	Change prohibited	OFF
DIP SW 10	ON : Displays error rate solely for audio block on the error rate monitor screen	OFF
DIP SW 11	Change prohibited	OFF
DIP SW 12	Change prohibited	OFF
DIP SW 13	Change prohibited	OFF
DIP SW 14	Change prohibited	OFF
DIP SW 15	Change prohibited	OFF
--- DIP SW 3/8 ---		
DIP SW 16 to DIP SW 23	Change prohibited	OFF
--- DIP SW 4/8 ---		
DIP SW 24 to DIP SW 31	Change prohibited	OFF
--- DIP SW 5/8 ---		
DIP SW 32	Change prohibited	0
DIP SW 33	Change prohibited	0
DIP SW 34	Change prohibited	0
DIP SW 35	Change prohibited	OFF
DIP SW 36	Change prohibited	OFF
DIP SW 37	Change prohibited	OFF
DIP SW 38	Change prohibited	OFF
DIP SW 39	Change prohibited	OFF
--- DIP SW 6/8 ---		
DIP SW 40 to DIP SW 47	Change prohibited	OFF
--- DIP SW 7/8 ---		
DIP SW 48 to DIP SW 55	Change prohibited	OFF
--- DIP SW 8/8 ---		
DIP SW 56 to DIP SW 63	Change prohibited	0

Table 1.6.9

ERROR RATE MONITOR screen

By setting "DIP SW 0" to "1", error rate and each CPU port information display screen will appear on the LCD monitor, View finder and monitor.

The values which are pointed by arrow are the error rate value. Error rate of CH-1 shown in upper row, and CH-2 shown in lower row, and these value are indicated total AUDIO/VIDEO error rate.

When the error rate increase , the warning message "HEAD CLEANING REQUIRED" is displayed. And this message is indicate when the error rate value is over 4,500 (one-channel AUDIO/VIDEO total) for 7 seconds consecutively.

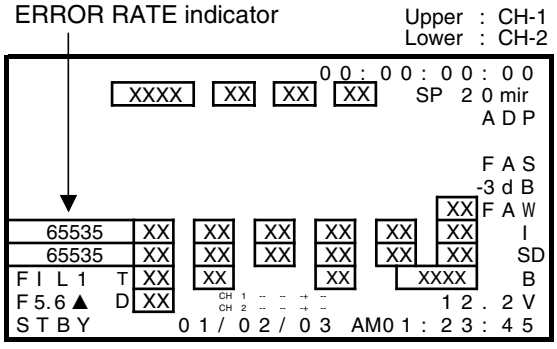


Fig. 1.6.9 (10)

1.6.10 HOUR METER

In a service menu, place the cursor on "HOUR METER " and push the SHUTTER dial to display the HOUR METER menu.

```
  --- HOUR METER[1/2] ---
▷ DRUM            CLEAR
  TOTAL DRUM      000000H
  FAN             000000H
  POWER           000000H
  CAPSTAN         000000H
  SEACH           000H00M
  FF/REW          000H00M
  NEXT PAGE
  PAGE BACK
```

Fig. 1.6.10 (1)

```
  --- HOUR METER[2/2] ---
▷ LOADING         0000000
  EJECT           0000000
  FWD/REV         0000000
  CLEANING TAPE   0000000
  PAGE BACK
```

Fig. 1.6.10 (2)

Operation ways are almost same as CAMERA 1 menu, so please refer it.

Item	Parameter
DRUM	000000 Displays the drum hour meter(maintenance for drum)
	CLEAR Resets the drum hour meter.
TOTAL DRUM	000000 Displays the total hour meter.
	CLEAR Resets the total drum hour meter. (This does not work unless the special setting)
FAN	000000 Displays the fan hour meter.
	CLEAR Resets the fan hour meter.
POWER	000000 Displays the power hour meter.
	CLEAR Resets the power hour meter.
CAPSTAN	000000 Displays the capstan hour meter.
	CLEAR Resets the capstan hour meter.
SEARCH	000000 Displays the search hour meter.
	CLEAR Resets the search hour meter.
FF/REV	000000 Displays the FF/REW hour meter.
	CLEAR Resets the FF/REW hour meter.
LOADING	000000 Displays the loading count.
	CLEAR Resets the loading count.
EJECT	000000 Displays the eject count.
	CLEAR Resets the eject count.
FWD/REV	000000 Displays the forward/reverse switching count.
	CLEAR Resets the forward/reverse switching count.
CLEANING TAPE	000000 Displays the cleaning tape working count.
	CLEAR Resets the cleaning tape working count.

Table 1.6.10

1.6.11 ERROR HISTORY

In a service menu, place the cursor on "ERROR HISTORY " and push the SHUTTER dial to display the ERROR HISTORY menu.

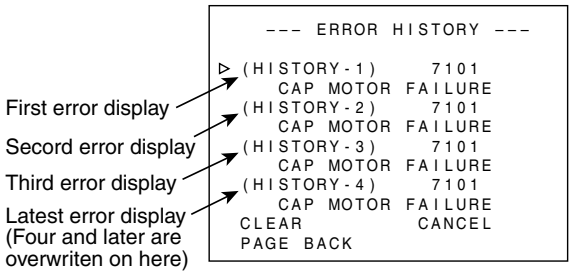


Fig. 1.6.11

(1) Rotate the SHUTTER dial to move the cursor onto the item to show details.
(2) Push the SHUTTER dial so that the details of ERROR HISTORY is shown.
(3) Rotate the SHUTTER dial to move cursor onto the "CLEAR", push the SHUTTER dial, then ERROR HISTORY will be deleted.

Note :

ERROR HISTORY is stored from "HISTORY-1" box to "HISTORY-4"box. Latest error is stored "HISTORY-4" box, and if there will be occur another error then latest error history will be rewrite on "HISTORY-4". From "HISTORY-1" to "HISTORY-3" remains, except to "CLEAR" operation.

1.6.12 Detail indication of ERROR HISTORY

In a ERROR HISTORY display, place a cursor onto the item and push SHUTTER dial, then detail display (MECHANISM INFO) picture will be shown.
MECHANISM INFO has 2 pages.

```
  -- MECHANISM INF0[1/2]--

  P.TM 000000H
  SYS MODE:PLAY[01.00]
  MSD MODE:PLAY[01.00]
           ->STOP[00.00]
  LAST KEY:PLAY[00.00]
  TAPE REM[0000]
  DEW [00] TEMP[00]
  DIAMETER TU[00]SP[00]
▷ NEXT PAGE
  PAGE BACK
```

```
  -- MECHANISM INF0[2/2]--

  M.POSI BRK2FAST>BRK2FAST
  H.POSI ---      >---
  CAP[OFF FWD]REL[OFF FWD]
  DRM[OFF]DIR[FWD]
  DRV[FF]CAPV[20]RELV[00]
  MCV/SPD[AC]RELI[00]
  BGN[OFF]END[ON] CAS[OFF]
  STD[---] HW[---]HW2[---]
  SPL[---]THIN[ON]
▷ PAGE BACK
```

Fig. 1.6.12 MECHANISM INFO

Item	Content	Displayed Content
P.TM	POWER HOUR METER	Power hour meter is displayed.
SYS MODE	SYSCON CPU mode when error occurred PLAY (03, 00) MODE DATA / Parameter	SFF/SREW parameter is speed display. (Refer to Table 1-9-11 (2) Speed parameter) Parameters of other modes are irrelevant. EJECT (01) : Eject STOP (02) : Stop PLAY (03) : Play — REC (13) : Rec STL (04) : Still — RECP (14) : Rec Pause FF (05) : FF — DVRC (15) : DV Rec REW (06) : Rew — DVRP (16) : DV Rec Pause SFF (07) : Search Fwd — POFF (1A) : Power Off SREW (08) : Search Rev — NDEF (1F) : During initial operation SFF/SREW parameter is speed display (See Table 1-9-11 (2))
MSD MODE	MSD CPU mode and target mode when error occurred PLAY (01, 00) MODE DATA / Parameter	
LAST KEY	Final Key code when error occurred PLAY (E7, 01) MODE DATA / Parameter	Other parameters are 01: ON, 00: OFF REC (E0) : Rec — SFF (EB) : Search Fwd RECP (E1) : Rec Pause — SREW (EC) : Search Rev DVRP (E2) : DV Rec Pause — STOP (F0) : Stop ADUB (E5) : Audio Dub — EJECT (F1) : Eject ADBP (E6) : Audio Dub Pause — HWUP (F2) : Housing Up PLAY (E7) : Play — HWDN (F3) : Housing Down STL (E8) : Still — POFF (F4) : Power Off FF (E9) : FF — DVRC (F5) : DV Rec REW (EA) : Rew — PON (FA) : Power on
TAPE REM	TAPE REMAIN	Displays tape remaining in minutes ([FFFF] : not detected)
DEW	DEW sensor A/D intake value	DEW display at over [48]
TEMP	Temperature sensor A/D intake value The value “49” [5°C] is threshold of detecting low temperture. The value “DC” [60°C] is the threshold of displaying “OVER HEATING” message.	Temperature is displayed in hexadecimal value. -10°C ➡ [22] 20°C ➡ [7C] 50°C ➡ [CC] - 5°C ➡ [2D] 25°C ➡ [8C] 55°C ➡ [D4] 0°C ➡ [3A] 30°C ➡ [9C] 60°C ➡ [DC] 5°C ➡ [49] 35°C ➡ [AA] “OVER HEATING” message 10°C ➡ [59] 40°C ➡ [B7] 65°C ➡ [E1] 15°C ➡ [6A] 45°C ➡ [C2] 70°C ➡ [E6]
DIAMETER	Displays wound tape diameter (Take-up, Supply)	[00]—[FF] : 0mm-82mm (Diameter) ([00] is non-detected)
M. POSI	Mechanism position and target mechanism position	[2EJ], [EJ], [EJ2CAIN], [CAIN], [CAIN2HLD], [HLD], [HLD2REV], [REV], [REV2FWD], [FWD], [FWD2STP], [STP], [STP2], [CLNOFF], [INIT]
H.POSI	For mechanism of DV3000	Always “ - - - ” is displayed
CAP	Capstan status	[ON] : Rotate — [FWD/REV]: Direction display [OFF] : Stop
REL	Reel status	[ON] : Rotate — [FWD/REV]: Direction display [OFF] : Stop
DRM	Drum status	[ON] : Rotate [OFF] : Stop
DIR	Direction of tape running (Direction of target)	[FWD/REV]: Direction display
DRV	Drum control voltage	[00-FF] : 0—3V
CAPV	Capstan control voltage	[00-FF] : 0—3V
RELV	Reel control torque value	[00-FF] : 0—3A

Item	Content	Displayed Content
MCV/SPD	Loading/cassette housing control voltage (when error code 4xxx and error code 3xxx is displayed.)	[00-FF] : 0—8V (Displays mode motor control voltage during error code 3xxx) (Displays cassette motor control voltage during error code 4xxx)
	Tape speed (When the code excepting error code 4xxx and error code 3xxx is displayed.)	[00-FA] : 0—25X (FF is displayed when the speed is faster than this.) "Tape speed" is a function to convert the hexadecimal value into a decimal value, and no speed parameter of the tape. (ex. FAh = 250 → The speed is 25.0X.)
RELI	Reel current (Cassette housing motor current only during housing-related warning)	[00-FF] : 0—1.2A
BGN	Begin sensor	[ON] : Leader tape detected [OFF] : Magnetic tape detected
END	End sensor	[ON] : Trailer tape detected [OFF] : Magnetic tape detected
CAS	Cassette SW status	[ON] : No cassette [OFF] : Cassette detected
STD	For mechanism of DV3000	Always " - - - " is displayed
HW/HW2	For mechanism of DV3000	Always " - - - " is displayed
SPL	For mechanism of DV3000	Always " - - - " is displayed
THIN	Thin tape detection	[ON] : THIN [OFF] : NORMAL

Table 1.6.12 (1) MECHANISM INFO content

Parameter	Speed
BD	+ 8.5
A9	+ 5.5
91	+ 2.5
80	+ 1
81	– 1.5
91	– 2.5
A9	– 4.5
BD	– 6.5

Table 1.6.12 (2) HDV Speed parameter

Parameter	Speed	Parameter	Speed
00	x 0	82	x 1.08
1F	x 0.03	83	x 1.11
40	x 0.10	84	x 1.12
53	x 0.20	85	x 1.16
61	x 0.30	91	x 2.00
6D	x 0.50	A9	x 5.00
7A	x 0.80	BD	x 9.00
7B	x 0.84	C0	x 10.0
7D	x 0.90		
7F	x 0.96		
80	x 1.00		
81	x 1.04		

Table 1.6.12 (3) DV Speed parameter

Error code	Display	Content of occurrence	Method of detection	Detected signal
0201	CONDENSATION ON DRUM	DEW detected	If DEW sensor detects condensation	IC71 (MSD) –detects voltage of pin E16
3200	LOADING FAILURE	Does not load	If mechanism position does not move in loading direction within 5 seconds	IC71 (MSD) –detects output of pin F14, rotary encoder
3300	UNLOADING FAILURE	Does not unload	If mechanism position does not move in unloading direction within 5 seconds	IC71 (MSD) –detects output of pin F14, rotary encoder
	No display	Does not intake	If intake is not completed within 5 seconds (Ejects without warning)	IC71 (MSD) –pin M9, CASSETTE SW is not detected within 5 seconds
4100	CASSETTE EJECT FAILURE	Does not eject	If eject is not completed within 5 seconds	IC71 (MSD) –pin P9, HOUSING SW is not detected within 5 seconds
5605	DEFECTIVE TAPE	Tape abnormality during intake	If begin or end side sensor is ON after intake	IC71 (MSD) –pin E15, START sensor and pin E14, END sensor are both detected
5606	DEFECTIVE TAPE	Tape tear during unloading	If reel FG is excessive during unloading	IC71 (MSD) –pin R14, TU REEL FG is detected
5607	DEFECTIVE TAPE	Tape tear during loading	If reel FG is insufficient during loading	IC71 (MSD) –pin R14, TU REEL FG is detected
5608	DEFECTIVE TAPE	Tape tear on the loading side	If only supply side reel does not rotate during FWD/REV	IC71 (MSD) –pin R13, SUP REEL FG is not detected
5609	DEFECTIVE TAPE	Tape tear during slack takeup	If tape slack takeup is not completed within 10 seconds	IC71 (MSD) –pin R14, TU REEL FG and pin R13, SUP REEL FG are both detected
5702	TAPE END DET. ERROR	End sensor abnormality	If trailer tape sending is not completed within 3 seconds	IC71 (MSD) –pin E14, END sensor is detected for over 3 seconds
5802	TAPE BEGIN DET. ERROR	Begin sensor abnormality	If leader tape sending is not completed within 3 seconds	IC71 (MSD) –pin E15, START sensor is detected for over 3 seconds
7001	DRUM MOTOR FAILURE	Drum motor does not rotate	If drum motor does not rotate for over 4 seconds	IC71 (MSD) –pin T13, DRUM FG is not detected for over 4 seconds
7101	CAP MOTOR FAILURE	Capstan motor does not rotate	If capstan motor does not rotate for over 2 seconds	IC71 (MSD) –pin T14, CAP FG is not detected for over 2 seconds
7202	SUPPLY REEL FAILURE	SUP reel does not rotate	If SUP reel does not rotate for over 3 seconds	IC71 (MSD) –pin R13, SUP REEL FG is not detected for over 3 seconds
7203	SUPPLY REEL FAILURE	SUP side tape slack	If only SUP reel does not rotate during REV	IC71 (MSD) –pin R13, SUP REEL FG is not detected
7302	TAKE UP REEL FAILURE	TU reel does not rotate	If TU reel does not rotate for over 3 seconds	IC71 (MSD) –pin R14, TU REEL FG is not detected for over 3 seconds
7303	TAKE UP REEL FAILURE	TU side tape slack	If only TU reel does not rotate during FWD	IC71 (MSD) –pin R14, TU REEL FG is not detected
7305	TAKE UP REEL FAILURE	Tape slack during unloading	If TU reel FG is insufficient during unloading	IC71 (MSD) –pin R14, TU REEL sensor is detected

Table 1.6.12 (4) Error Code Contents

1.6.13 OTHERS menu

In a service menu, place the cursor on "OTHERS" and push the SHUTTER dial to display the OTHERS menu.

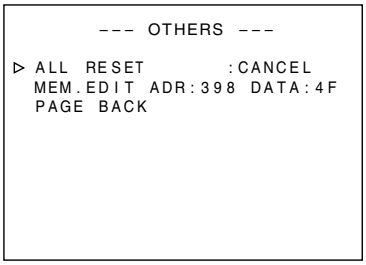


Fig. 1.6.13

Operation ways are almost same as CAMERA1 MENU, so please refer it.

Item	Parameter
ALL RESET	[CANCEL] Standard setting EXECUTE Resets all EEP-ROM data to default settings except adjustment data, hour meter data, and IEEE1394 ID data.
MEM.EDIT	Contents of the EEP-ROM can be edited directly ADR: Address (0x000-0x7DF) display DATA: Display of data embedded in address shown by ADR **[Operation procedure]** 1. Rotate the SHUTTER dial to move the cursor to MEM.EDIT. 2. Push the SHUTTER dial to blink the "ADR" parameter. 3. Then rotate the SHUTTER dial to adjust the specified value. 4. Next, push the SHUTTER dial to blink the DATA parameter. 5. Rotate the SHUTTER dial to adjust the specified value. 6. Finally, push the SHUTTER dial to store the data. **(NOTE)** Data that is crucial for the system is stored in the EEP-ROM, and making unadvised changes to it can cause the unit to stop operating correctly. Please do not use anything other than the IEEE1394 ID setting.

(□ is default setting when shipped from factory)

Table 1.6.13 OTHERS Menu Setting Items List

1.6.14 Version check menu

Displays version of SYSCON CPU, Camera CPU , VTR CPU, SD CPU, SD BOOT, SENC CPU, FPGA5, FPGA6 and FPGA7.

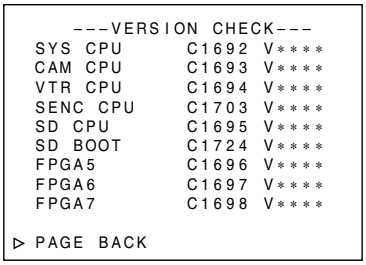


Fig. 1.6.14 CPU Version check

1.7 EEP-ROM

(1) EEP-ROM and maintenance data

GY-HD250/251/200/201 is equipped with three EEP-ROMS for the purpose of data maintenance, and their contents are as per the following list. When the circuit board or EEP-ROM is replaced, there will be no data in the EEP-ROM. When the unit is powered up, and the SYSCON CPU recognizes that there is no data in the EEP-ROM, it automatically writes initial data into the EEP-ROM to initialize it. The memory data shown in Table 1.7 will all be reset back to default settings, so it will be necessary to perform necessary adjustments and settings again.

EEP-ROM	Board name	Memory data content
IC801	DV board (MSD CPU)	• Adjusted data (DVC & VTR section) • IEEE1394 ID data • HOUR METER data
IC10	ISB board (Camera CPU)	• Blemish data • Adjusted data (Camera section)
IC1005	DV board (SYSCON CPU)	• User menu and Service menu settings data • ERROR HISTORY • Backup data of encoder adjustment in camera section
IC1	VF IF board	• Adjustment data (View Finder)

Table 1.7 EEP-ROM Memory Data Content

(2) IEEE1394 ID setting method

IEEE1394 equipped units have an ID, as defined by the IEEE1394 standard, stored in the internal EEP-ROM (IC 801. At the time of production, the ID numbers allotted to each individual unit are written into the unit's memory, and a sticker bearing the ID is affixed inside the unit. When the EEP-ROM or MAIN circuit board is replaced, the ID needs to be set again.

Procedure for setting IEEE1394 ID

The ID is an 8 digit, hexadecimal code, with 1 high-end Byte being the model code, and 3 low-end Bytes being unique to the unit. The model code is automatically initialized, so only the lower 3 Bytes of unique code need to be set manually. Go from Service Menu → OTHERS Menu → MEM. EDIT (Memory Edit) to select the address in the ID data section and make the setting directly. The 3 low-end Byte address is as follows. Make the setting while confirming the ID printed on the label (GY-HD250 ID: 83xxxxxx, GY-HD251 ID: 84xxxxxx) pasted on the inside of the GY-HD250 (See Fig. 1-7-15).

IEEE1394 ID data :	GY-HD250	83	xx	xx	xx	(Indicates on the label of GY-HD250/251/200 inside.)
	GY-HD251	84				
	GY-HD200	81	⇩	⇩	⇩	
	GY-HD201	82				
MEMORY Address number			"391"	"392"	"393"	(Each 1 Byte ID data are stored for every one Memory Address number.)

Setting procedure

(1) Rotate the SHUTTER dial to move the cursor to MEM. EDIT.
(2) Push the SHUTTER dial to make the ADR parameter blink.
(3) Select ADR parameter "391".
(4) Push the SHUTTER dial to make the DATA parameter blink.
(5) Rotate the SHUTTER dial to set the ID data for ADR = "391".
(6) Push the SHUTTER dial to confirm the DATA parameter.
(7) In the same manner, select ADR parameter "392" and "393" to set the ID data.

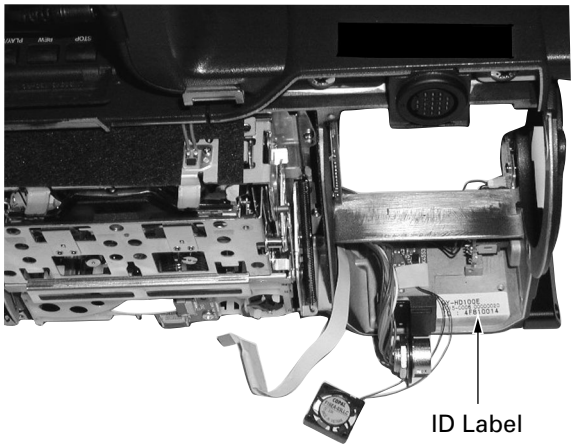


Fig. 1.7 ID Label Attachment Position

1.8 HOW TO UPDATE THE FIRMWARE

Notes :

- When replacing CAM board or DV board or CODEC board, the firmware update is required to maintain combination with other CPU versions.
- Do not turn the power off during the update, otherwise CPU may be destroyed and replacement of CPU or board will be required.
- Under the battery operation firmware update can not be allowed, use the AC adapter.
- When update is failed audio AUTO LED's are flashing alternately. In this case try again after removing SD memory card.
- Remove the IEEE1394 cable, otherwise it may cause some troubles on GY-HD250/200.
- Do not format the SD memory card by PC.
  The SD memory card formatted by PC will not work correctly due to wrong formatting. In this case format the SD memory card on GY-HD250/200.
  You can also format the SD memory card using the general digital still camera equipped SD memory card slot, or formatting software supplied from SD memory card manufacturer such as Panasonic.

1.8.1 Preparation (Copy the firmware to SD memory card)

Notes :

- 32MB - 512 MB of Panasonic SD memory card is recommended.
- The update file is named as "GY-HD250.UPD" for GY-HD250 and "GY-HD200.UPD" for GY-HD200.
- The update file should be put on the directory "//PRIVATE/JVC/GY-HD250" for GY-HD250 and "//PRIVATE/JVC/GY-HD200" for GY-HD200, otherwise the update is not executed.

(1) Download the update file from JS-NET and unzip it to a PC.
(2) Insert the SD memory card to the PC and confirm that no file is in the SD memory card. If there are some files, delete them.
(3) Make the directory "//PRIVATE/JVC/GY-HD250" for GY-HD250 or "//PRIVATE/JVC/GY-HD200" for GY-HD200 on the SD memory card.
(4) Copy the unzipped update file to the folder "GY-HD250" or "GY-HD200" on the SD memory card.

1.8.2 Update procedure

(1) Eject and take out the cassette if loaded, and close the cassette cover.
(2) While pressing USER2 and USER3 buttons, turn on the power. Both HDV and DV LED will turn on a light.
(3) Insert the SD memory card to the card slot of GY-HD250/200.
(4) Rotate the SHUTTER dial, move the cursor to "UPGRADE" and press SHUTTER dial.
(5) Rotate the SHUTTER dial, select EXECUTE and press SHUTTER dial.
(6) Rotate the SHUTTER dial, move the cursor to "CONTINUE?" and press SHUTTER dial.
(7) Rotate the SHUTTER dial, select EXECUTE and press SHUTTER dial.

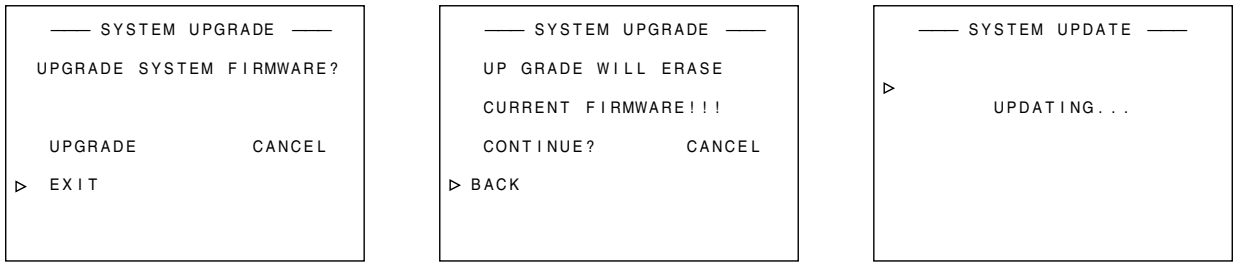


Fig. 1.8.1 SYSTEM UPDATE menu screen

(8) When update is completed, audio AUTO LED's of AUDIO CH-1 and CH-2 are blinking slowly. It will take about 10 minutes to complete.
(9) Remove the SD memory card, then GY-HD250/200 will reboot automatically.
(10) Turn off the power and turn on again.
(11) Enter the Service Menu to check CPU VERSION.

1.9 PRECAUTIONS WHEN CHANGING BOARDS

After changing board in service, it may require to perform firmware version update and adjustment.

1.9.1 When version update is required

For GY-HD250/200, there are multiple CPU and FPGA allocated across 3 boards. (Refer to Table 1.8.1)
CPU/FPGA has its individual firmware and each firmware has its combination.

When changing either of CAM board assembly, DV board assembly or CODEC board assembly, the combination of version might result in mismatch. In such case, as camera might malfunction, make sure to perform version update after changing these boards.

Board Assembly	CPU/FPGA with firmware
CAM board assembly	IC68 (CAM CPU)
DV board assembly	IC1002 (SYS CPU) IC71 (MSD CPU) IC2301 (SD CPU) IC2303 (Flash ROM for FPGA 5.6.7)
CODEC board assembly	IC1 (S.ENC CPU)

Table 1.8.1 board assembly and CPUs

1.9.2 When adjustment is required

The adjustment data is stored in the EEP-ROM.
When the board to be changed is mounted with EEP-ROM, readjustment is required as the adjustment data will be lost.
Boards mounted with EEP-ROM are DV BOARD, ISB Board (OP Block) and VF IF board. (Refer to "Section 1.6.15 EEP-ROM".)

[DV BOARD ASSEMBLY]

The adjustment data of VTR and DVC unit is stored in EEP-ROM IC801. These adjustments are required after changing board.
Note:
To continue using the EEP-ROM data, it is also possible to remount original IC801 onto the new board.

[OPTICAL BLOCK ASSEMBLY (ISB BOARD)]

The EEP-ROM (IC10) of camera CPU, which stores CCD adjustment data and camera process data, is mounted in OPTICAL BLOCK ASSEMBLY IS Board.
OPTICAL BLOCK ASSEMBLY is supplied from the parts center after adjustment of CCD (Split Screen, Black ADJ etc.) is completed. By transferring the adjustment data of camera process after changing OP BLOCK ASSEMBLY, it is not required to readjust.

How to transfer the adjustment data of camera process

(1) Select the adjustment menu to "201. EEP COPY SYS TO CAM" in NTSC mode. (Refer to the section 3.3 ADJUSTMENT MENU)
(2) Rotate the SHUTTER dial, select EXECUTE and press SHUTTER dial.
(3) "Complete" message appears when the copy complete.
(4) Change the VIDEO MODE from NTSC to PAL and then, execute the step (1) to (3) in the same way.

Note:

The SYS CPU has the backup adjustment data of camera, and it's data is copied.

[VF IF board Assembly]

VF adjustment data is stored in EEP-ROM IC1. Adjustment is required after changing board.

Note:

To continue using the EEP-ROM data, it is also possible to remount original IC1 onto the new board.

1.10 HOW TO REMOVE THE CASSETTE TAPE IN AN EMERGENCY

When the cassette tape cannot be ejected due to electrical problem, remove it according to the procedures below:
This method cannot be applied if the mechanical unit is stuck due to mechanism damage.

(1) Remove the left side cover of the main unit.
(2) Supply DC 3V by connecting the red wire of the terminal above the loading motor to + polarity, and brown wire to – polarity to unload slightly. Perform unloading little by little as the tape will be damaged if the tape is unloaded fully causing it to be ejected with slack.

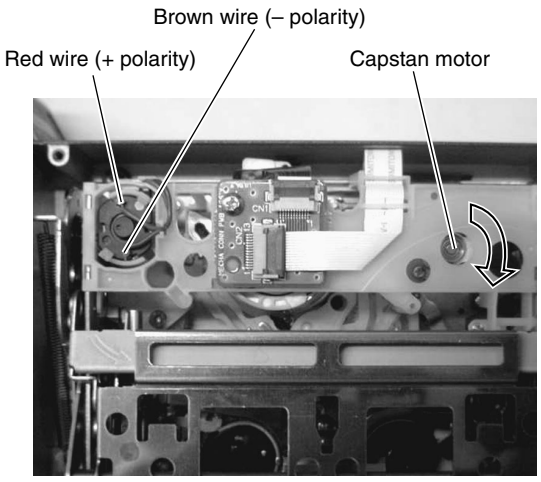


Fig.1.10.1

If DC3V power supply is not available, remove the loading motor from the mechanism assembly so that unloading can be performed by turning the red wheel gear counterclockwise.

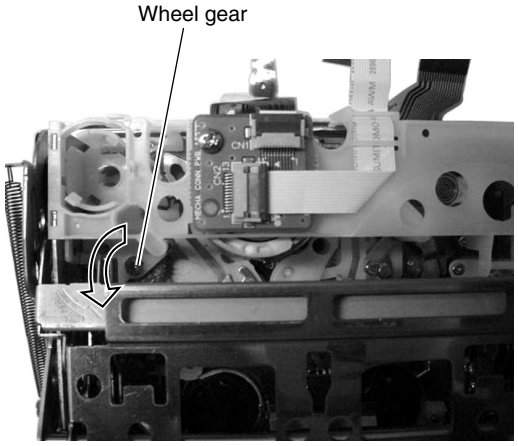


Fig.1.10.2

(3) Use a pointed tool (Chip IC relacement tool) to wind the slacked tape at the shaft section above the capstan motor in the direction of the arrow.
(4) Repeat (2) and (3) above without causing tape damage until the tape is fully wound into the cassette.
(5) After checking that the tape is fully wound, slide the lock lever locking the cassette housing to the supply side, pull the release lever forward, then eject and remove the cassette tape.

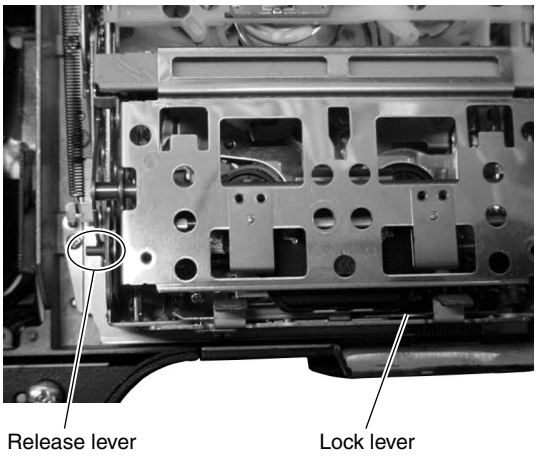


Fig.1.10.3

SECTION 2
MECHANICAL ADJUSTMENTS

2.1 BEFORE ADJUSTMENTS

2.1.1 Precautions

1) Be sure to apply a screw securing torque when attaching a part.
   The securing torque should be 0.04 N-m (0.4 kgf-cm) unless otherwise specified.
2) Always unplug the power cord of the set before attaching, removing or soldering a part.
3) When unplugging a connector, do not pull the wire but grasp the connector body.
4) Do not make an adjustment or rotate a potentiometer blindly while the source of trouble is not identified.
5) Before adjusting electrical circuitry, be sure to wait for more than 10 minutes after turning the power on.

2.1.2 Measuring instruments required for adjustments

Instrument	Condition
Oscilloscope	Calibrated instrument with measuring bandwidth of 100 MHz or more.

Table 2-1-1

2.1.3 Equipment required for adjustments

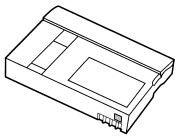
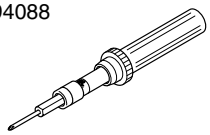
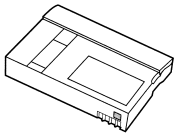
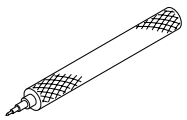
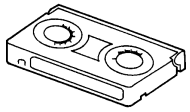
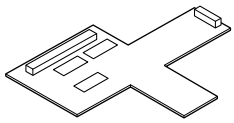
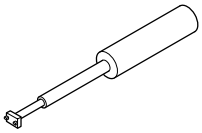
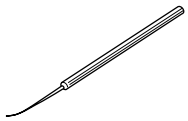
1	Alignment tape	5	Torque screwdriver
MC-1 (NTSC) MC-2 (PAL) 		YTU94088 	YTU94088-003  Replaceable bit (long type)
2	DV tape	6	Slit washer attaching tool
For use in self-recording/playback. (M-DV 63PRO BU) 		YTU94121A 	
3	Cassette torque meter	7	Connector board (REWRITE PWB)
YTU94150A (or YTU94151A) 		CK453800C 	
4	Guide screwdriver	8	Chip IC replacement tool
YTU94085 		PTS40844-2 	

Table 2-1-2

2.2 BASICS OF MECHANISM DISASSAMBLY/ASSEMBLY

2.2.1 Assembly mode

The disassembly and assembly of the mechanism can be done in the ASSEMBLY mode (see Table 2-2-1).
The ASSEMBLY mode is provided in the intermediate position between C-IN and Harf LOAD. As the C-IN (Cassette IN) mode is usually set when a cassette tape is ejected, the ASSEMBLY mode should be entered after entering the C-IN mode.

There are 2 ways to set to ASSEMBLY mode as shown below:
1) Apply DC 3 V to the motor.
2) Remove the motor from the bracket (Gear cover) and turn the wheel gear 2 using screwdriver.

As shown in Fig. 2-2-1, the ASSEMBLY mode position refers to where the hole position of 7 cm component matches the hole position of the main deck.

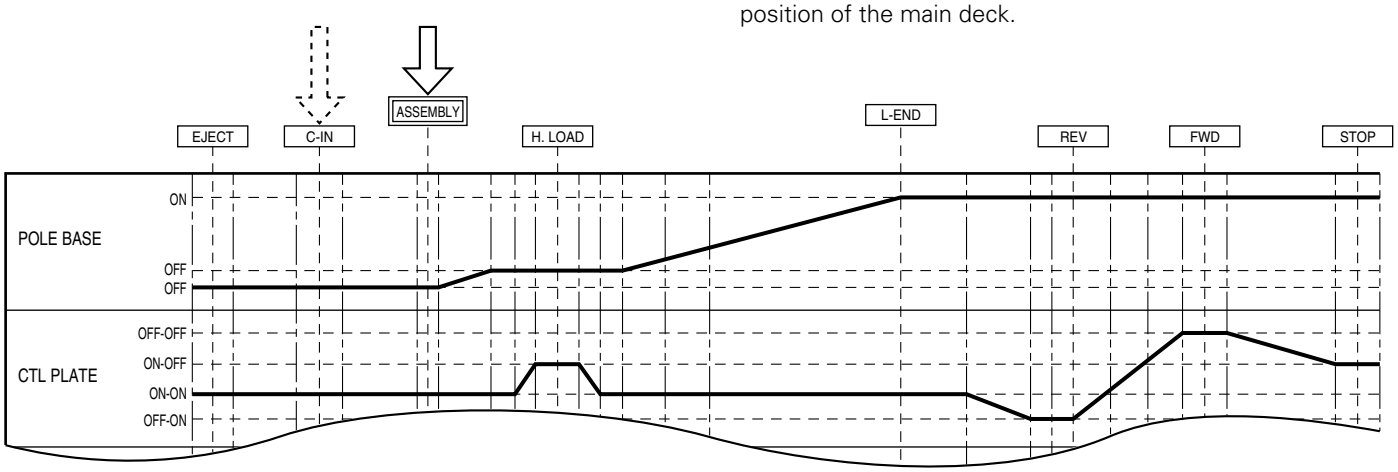


Table 2-2-1

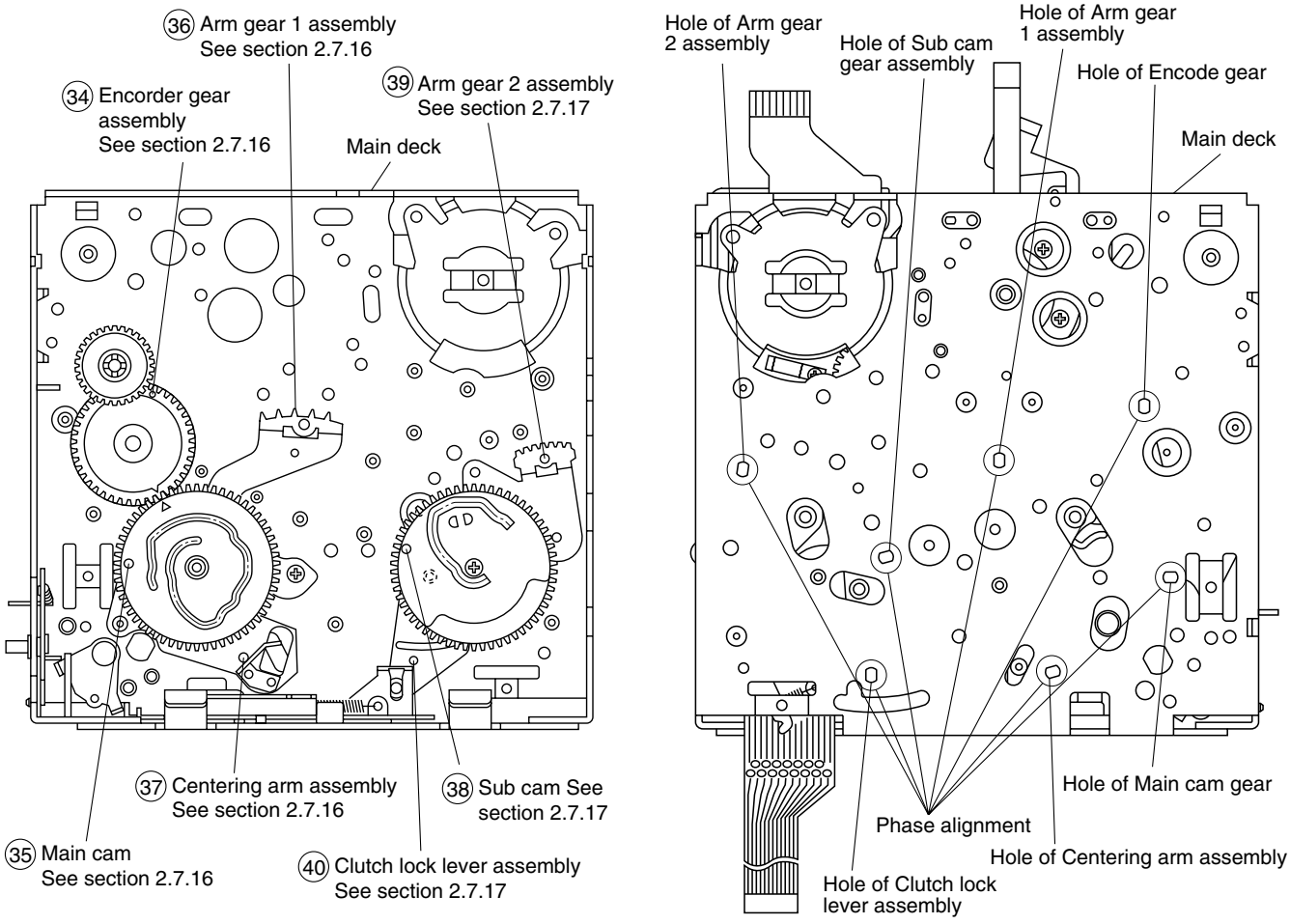


Fig. 2-2-1

2.3 MECHANISM TIMING CHART

See following table (Table 2-3-1).

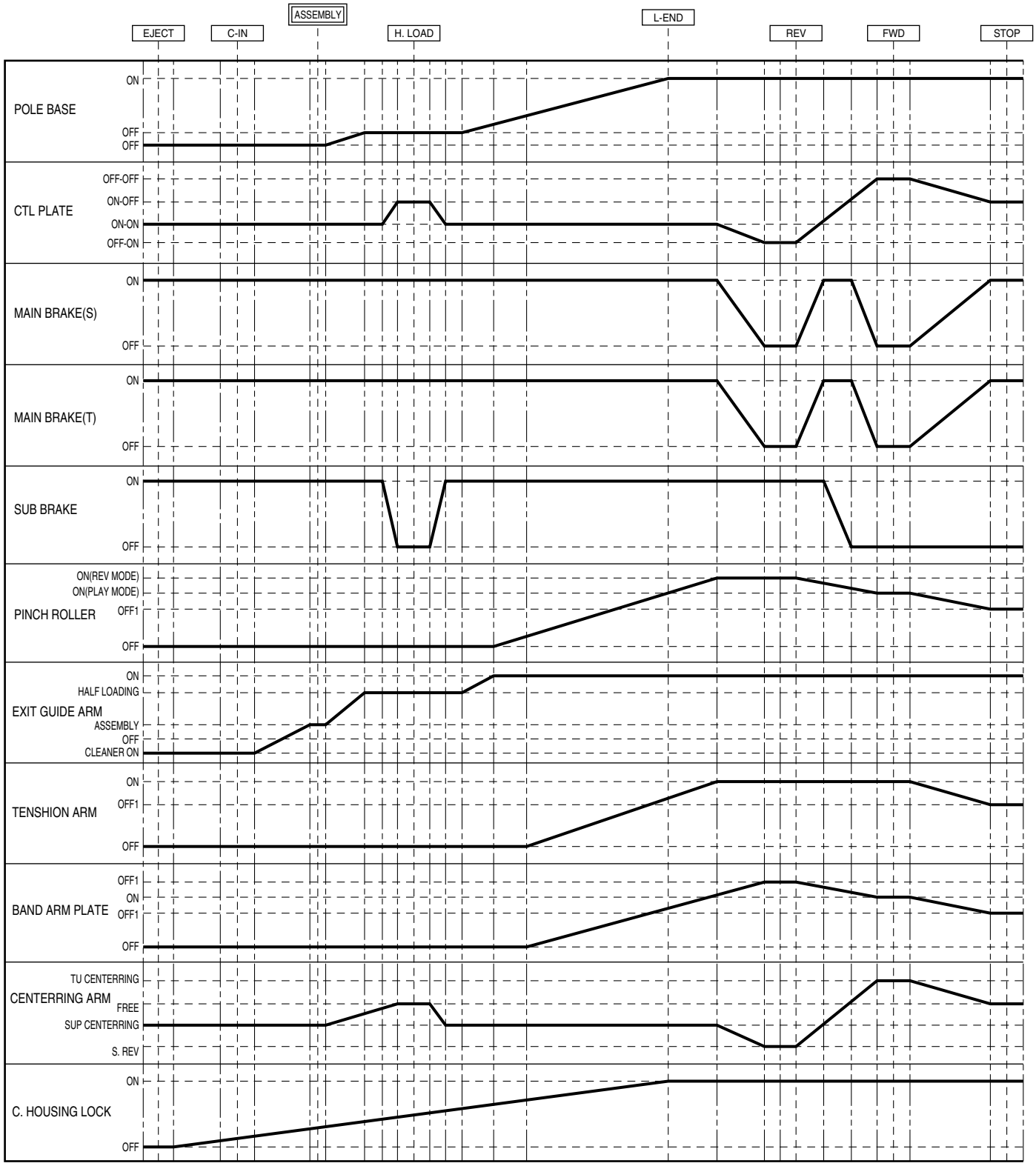


Table 2-3-1

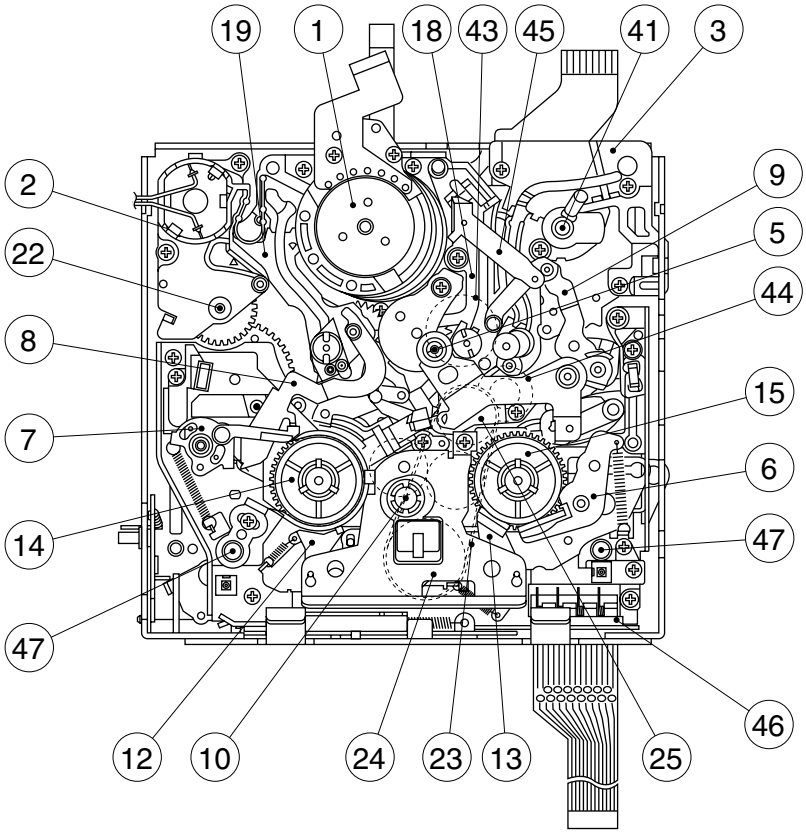
2.4 MAINTENANCE AND INSPECTION OF MAJOR PARTS

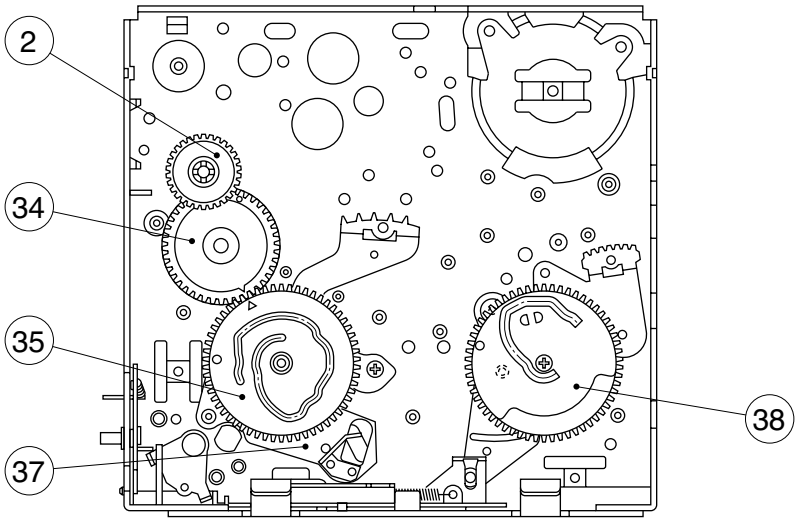
Periodical inspection and maintenance are requisite to maintain the initial performance and reliability of the product. Table 2-4-1 (Maintenance & Inspection List) has been compiled assuming standard operating conditions, and the specifications in the table are greatly variable depending on the actual operating environment and conditions. Remember that, if the maintenance and inspection are not enforced properly, the operating hours of the product will not only reduce considerably but other unfavorable influences may produce.

Rubber parts may deform or degrade after long period of storage even if they are not used in this period.

The service life of the drum is variable depending on the tape used and operating environment.

2.4.1 Layout of major parts





2.4.2 Maintenance and inspection list

1) The 6000 H maintenance consists of a replacement of the entire mechanism assembly.
2) When mounting the capstan motor on the main deck, control of the verticality is required. Therefore, when the capstan motor reaches the end of its service life, the entire mechanism assembly should be replaced.

	Part Name	Symbol No.	Operating Hours (DRUM Hour Meter)												Ref.
			500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	
1	Tape transport parts		★	★	★	★	★	★	★	★	★	★	★		—
2	② Gear cover assembly	M 8 46	★	○★	★	●	★	○★	★	●	★	○★	★		2.7.2
3	⑧ Tension arm assembly	M 8 40	★	○★	★	●	★	○★	★	●	★	○★	★		2.7.8
4	⑲ Guide rail (S) assembly	M 8 22	★	○★	★	●	★	○★	★	●	★	○★	★		2.7.12
5	⑱ Guide rail (T) assembly	M 8 23	★	○★	★	●	★	○★	★	●	★	○★	★		2.7.12
6	③ Middle catcher assembly	M 8 24	★	○★	★	●	★	○★	★	●	★	○★	★		2.7.5
7	㊶ Capstan shaft	M 8 4	★	★	★	★	★	★	★	★	★	★	★		—
8	⑤ Pinch roller arm assembly	M 8 44	★	○★	★	●	★	○★	★	●	★	○★	★		2.7.3
9	⑨ Exit guide arm assembly	M 8 43	★	○★	★	●	★	○★	★	●	★	○★	★		2.7.4
10	① Drum assembly	M 8 50	○★	○★	★	●	★	○★	○★	●	★	○★	○★		2.7.2
11	㊶ Capstan motor	M 8 4						○	○	○	○	○	○	●	—
12	㉕ Reel drive pulley assembly	M 8 33		○△		●△		○△		●△		○△			2.7.14
13	㊸ R.drive gear 1	M 8 47		○△		●△		○△		●△		○△			2.7.14
14	㊹ R.drive gear 2	M 8 48		○△		●△		○△		●△		○△			2.7.14
15	㉔ Center gear assembly	M 8 34		○△		●△		○△		●△		○△			2.7.13
16	㉓ Timing belt	M 8 11		○		●		○		●		○			2.7.13
18	⑥ Sub-brake assembly	M 8 36		○		●		○		●		○			2.7.10
19	⑫ Main brake (S) assembly	M 8 38		○		○		○		○		○			2.7.10
20	⑬ Main brake (T) assembly	M 8 37		○		●		○		●		○			2.7.10
21	⑭ ⑮ Reel disk assemblies	M 8 39		○		●△		○		●△		○			2.7.11
22	⑦ Band arm plate assembly	M 8 41		○		●		○		●		○			2.7.8
23	⑩ Swing arm assembly	M 8 42		○		●		○		●		○			2.7.7
24	㉒ Wheel gear-2	M 8 3		○		●		○		●		○			2.7.13
25	㉞ Encoder gear	M 8 21		○		●		○		●		○			2.7.16
26	㊲ Centering arm assembly	M 8 26		○		●		○		●		○			2.7.16
27	㉟ Min cam	M 8 8		○		●		○		●		○			2.7.16
28	㊳ Sub cam	M 8 9		○		●		○		●		○			2.7.17
29	㊺ Cleaner arm assembly	M 8 43	○	●	○	●	○	●	○	●	○	●	○		2.7.4
30	㊼ Cassette guide pin (Sub deck)	M 8 35	★	★	★	★	★	★	★	★	★	★	★		—
31	㊻ MIC contact (Sub deck)	M 8 35	★	★	★	★	★	★	★	★	★	★	★		—
32	Mechanism assembly (including cassette housing assembly)	M 8 1												●	—
33	FAN motor	M 2 43 M 3 71												●	—

★: Clean with ethanol. ○: Check and replace if required. ●: Replace. △: Oil the shaft.
After replacing a part, apply lubricant to the required points.

Table 2-4-1

2.4.3 Cleaning

The mechanism incorporates a video head cleaner that is effective for the removal of magnetic dust, etc. However, tape lubricant adhering to the head surface produces a spacing loss, it is recommended to polish the heads using a head cleaning tape. When the video heads become soiled an increase in the error rate results. Eventually, when the error rate increase is too much to be corrected by the error correction circuit, block noise will be observed in the picture.

1) Cleaning the video heads
   Use the DVC cleaning cassette for cleaning the video heads. Always be sure to use the cleaning cassette, recommended Part No. M-DV12CLAUX.
   The video heads should be cleaned periodically. Moreover, care should be taken about the operating environment as the tape running time standard varies accordingly. Please refer to "Precautions for Use of Head Cleaning Tape" in the instructions.

Caution

- **As the DVC cleaning tape has a much higher lapping effect than VHS cleaning tapes, frequent use of the DVC cleaning tape will reduce the head service life. Do not play the DVC cleaning tape for more than 10 seconds per run or for more than 4 times per cleaning session.**
- **The cleaning tape can be used effectively for up to about 4 passes. It cannot improve the cleaning effect even if it is run for more than 4 times.**

2) Cleaning the upper/lower drums
   Use a cleaning cloth or high-quality paper sheet to clean the upper drum. Moisten the cloth or paper sheet with a small amount of ethyl alcohol, apply it lightly against the upper drum while turning it by hand.
   After this operation, wipe it with a dry cloth or paper sheet without alcohol. Be sure to play the cleaning tape to its end.
   The lower drum tends to gather magnetic dust, etc. in its lead section, and linearity cannot be achieved if this becomes excessively dirty. The tape inlet and outlet areas are contaminated particularly easily, causing trouble such as dropout in FM signal reproduction, block noise on one side of a monitored picture, absence of audio output or incapability of time code readout. To clean the lead section, use a toothpick and rub lightly along the lead section. Be careful not to scratch the video head when this is done.

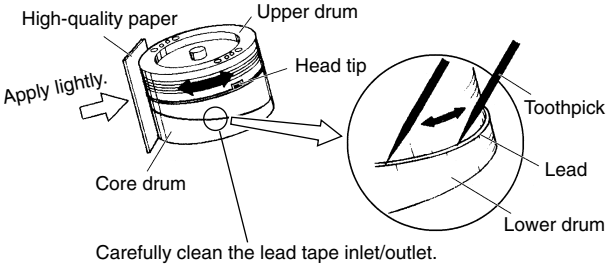


Fig. 2-4-1

3) Cleaning the tape transport system
   Moisten the tip of a cotton swab with alcohol and use it to clean the tape transport parts. Take special care of the TU/SUP guide roller flanges and the rear sides of the inclined poles, as these are the parts that most frequently collect magnetic dust.

Caution

Do not wipe the capstan shafts using alcohol. Otherwise, the oil in the bearings may be diluted by the alcohol and become attached to the tape.

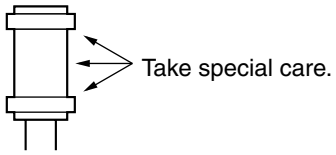


Fig. 2-4-2 Guide Roller

2.4.4 Oiling and greasing

Table 2-4-2 shows the oil and greases used with the set.

Classification	Name	Part No.
Oil	Cosmo Hydro HV100	YTU94027
Grease	Maltemp SH-P	KYODO-SH-P
	Hanal	RX-410R

Table 2-4-2

1) Oiling should be performed periodically. Oil the shafts by referring to the maintenance table.
2) After replacing a part, grease the required points. For the parts to be greased see the exploded diagram in chapter 5, "DISASSEMBLY DRAWINGS AND PARTS LIST".
3) As Hanal separates over time, be sure to mix it (shake) well before use.
4) Take care not to leave grease or oil on the tape transport parts which come into contact with the tape or on the brake pads.
5) Take care not to apply too much oil or grease. The standard oiling quantity is one drop and the standard greasing quantity is the quantity with which the grease does not overflow.

2.5 PERIODICAL MAINTENANCE

Perform maintenance at the correct times in accordance with the maintenance table.
Fig. 2-5-1 shows the flow chart of periodical maintenance procedures at different operating hours.

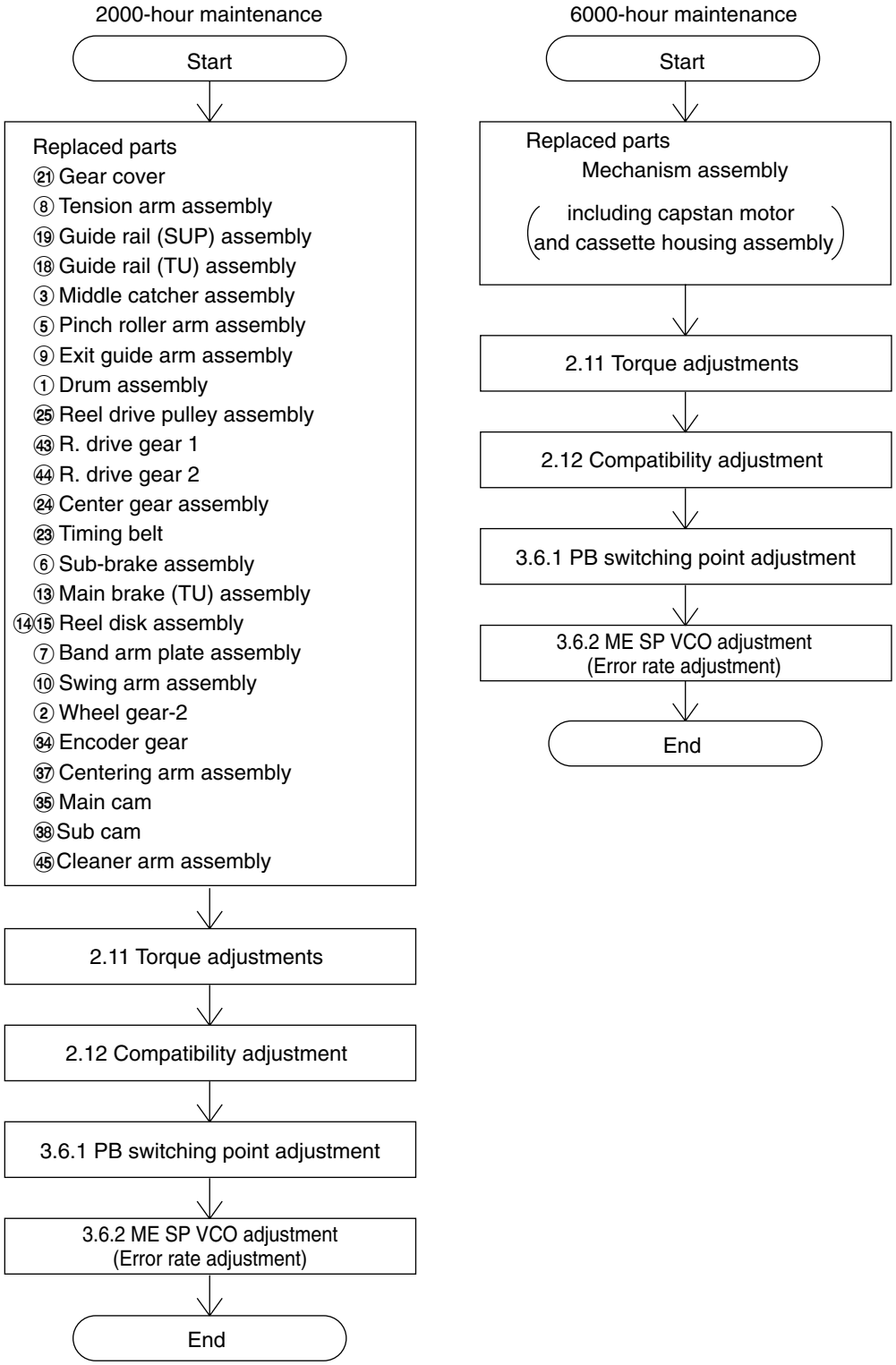


Fig. 2-5-1

2.6 DISASSEMBLY/ASSEMBLY OF MECHANISM ASSEMBLY

2.6.1 Assembly/disassembly

The following table shows the mechanism assembly/disassembly procedures.

① : Names of the disassembled/assembled parts.
② : Items of disassembly.
③ : Parts to be removed for disassembly, such as screws, washers and springs, and points.

Symbol	Name or Point
S	Screw
W	Washer
P	Spring
*	Connector, lock (L), soldering (SD), shield, etc.

2.6.2 Screws and washers used in mechanism assembly disassembly/assembly

Table 2-6-1 shows the symbols, designs, part numbers and colors of the screws and washers used with the Mechanism assembly.
When disassembling or assembling the Mechanism assembly, be sure to attach the correct screws and washers by referring to the following table.

Symbol	Design	Part No.	Color
(S1)		QYSDSP2005Z	Gold
(S2)		YQ43893	Silver
(S3)		YQ43893-7	Black
(S4)		QYSPSF2006Z	Gold
(S5)		LL40426-001A	Silver

Symbol	Design	Part No.	Color
W1		YQ44246	Red
W2		YQ44246-3	Black
W3		YQ43933-2	Black

Fig. 2-6-1

	Part Name	Item No.	Points	Remark
1	Ⓐ Cassette housing assembly, Ⓑ Main deck assembly	1	2(S1), 2(L1)	
2	① Drum assembly	2	3(S2)	
3	② Motor bracket (Gear cover) assembly	2	2(S2)	
4	③ Middle catcher assembly	5	3(S2)	
	↑①	↑②	↑③	

2.6.3 Mechanism assembly disassembly procedure table

No.	Part Name	Item No.	Points	Remark
1	Ⓐ Cassette housing assembly	1	2 (S5), 2 (L1)	
2	① Drum assembly	2	3 (S2)	
3	② Motor bracket (Gear cover) assembly	2	2 (S2)	
4	③ Middle catcher assembly	5	3 (S2)	
5	④ Reel cover assembly	6	(S2), 2 (L6)	
6	⑤ Pinch roller arm assembly	3	(W1), (L7)	
7	⑥ Sub-brake assembly	10	(P1), (W1), (L8)	
8	⑦ Band arm plate assembly	8	(S3), (L9), (P2), (W2)	
9	⑧ Tension arm assembly	8	(P3)	
10	⑨ Exit guide arm assembly	4	(W1)	
11	⑩ Swing arm assembly	7	–	Position alignment
12	⑪ Sub-deck assembly	9	5 (S2)	Position alignment
13	⑫ Main brake (SUP) assembly	10	(P4), (L10)	
14	⑬ Main brake (TU) assembly	10	(P5), (L11)	
15	⑭ Reel disk assembly (SUP)	11	–	
16	⑮ Reel disk assembly (TU)	11	–	
17	⑯ Prism	7	(S2)	
18	⑰ Control plate	11	2 (L12)	
19	⑱ Guide rail (TU) assembly	12	4 (S2)	Position alignment
20	⑲ Guide rail (SUP) assembly	12	(S2), 2 (L13)	Position alignment
21	㉒ Wheel gear 2	13	–	
22	㉓ Timing belt	13	–	
23	㉔ Center gear assembly	13	–	
24	㉕ Reel drive pulley assembly	14	(W1)	
25	㉙ Tension control arm assembly	15	(L15)	Position alignment
26	㉚ Brake control arm assembly	15	(W1), (L16)	Position alignment
27	㉛ Charge arm assembly	15	(L17)	Position alignment
28	㉞ Encoder gear	16	–	Phase alignment
29	㉟ Main cam	16	(W1)	Phase alignment
30	㊱ Arm gear 1 assembly	16	Collar	Position alignment
31	㊲ Centering arm assembly	16	–	Position alignment
32	㊳ Sub cam	17	(S2)	Phase alignment
33	㊴ Arm gear 2 assembly	17	–	Position alignment
34	㊵ Clutch lock lever (C.P.D arm) assembly	17	(L19)	Position alignment
35	㊶ Capstan motor	–	–	Change with mechanism assembly
36	㊷ Drum base deck	–	3 (S2)	
37	㊸ R.drive gear 1	14	(W1)	
38	㊹ R.drive gear 2	14	(W1)	
39	㊺ Cleaner (Exit guide) arm assembly	4	(W1)	

Table 2-6-2

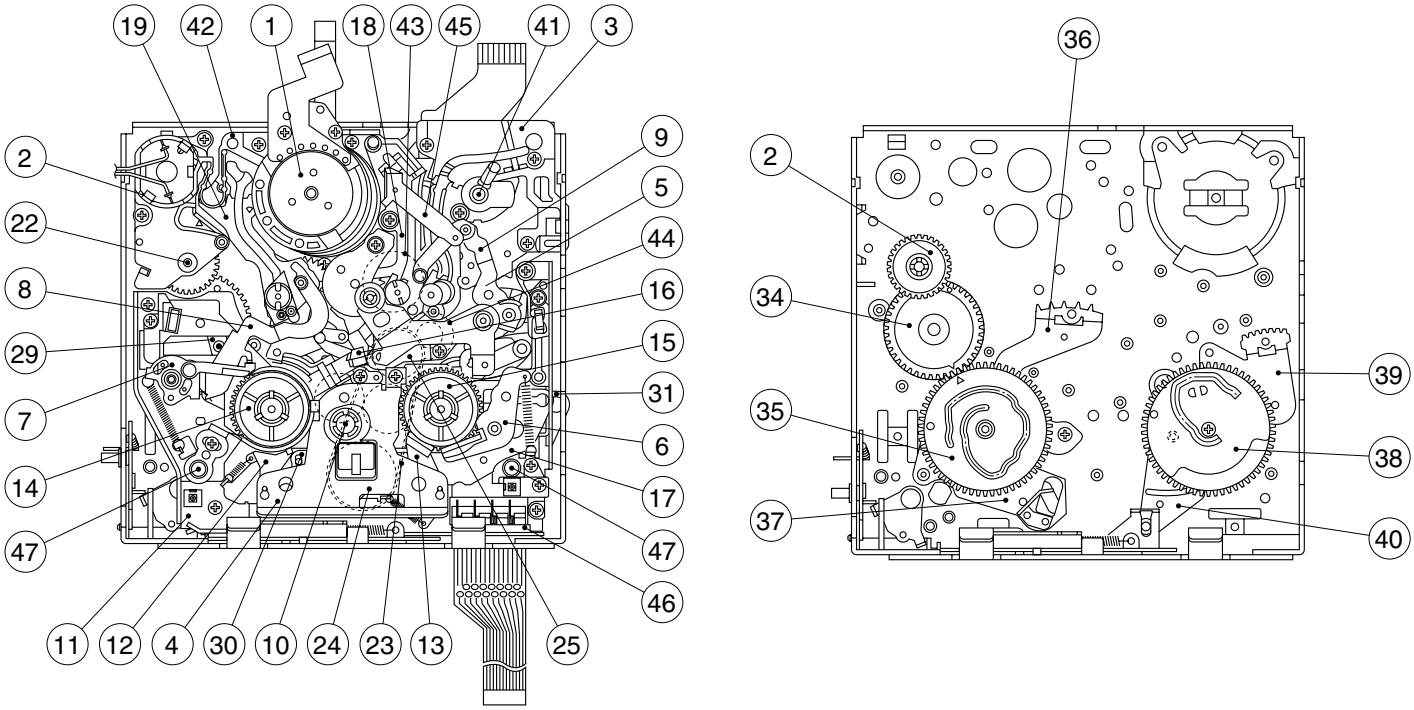


Fig. 2-6-1

2.6.4 Mechanism disassembly/assembly procedure chart

<How to read the chart>

- The following chart shows the disassembly/assembly procedures by dividing them into blocks A to I.
- To remove the tension arm sub-assembly which is located in block D; start disassembly from block A. The tension arm sub-assembly can be removed as the fourth operation after the removals of the cassette housing assembly (block A) → reel cover assembly (block B) → band arm plate assembly (block C).
- The parts enclosed in thick frames are the maintenance parts listed in the maintenance table.
- For details on the disassembly/assembly, see section 2.7, "Replacement of Major Parts".

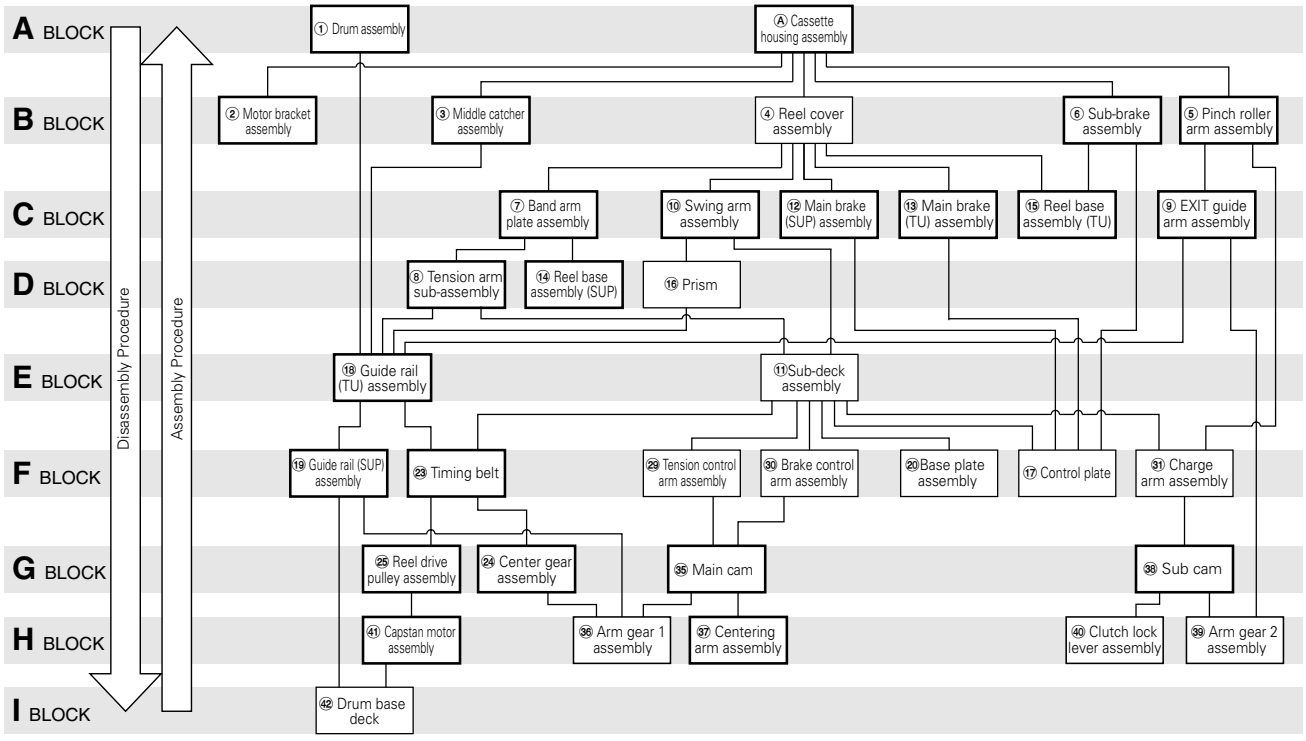


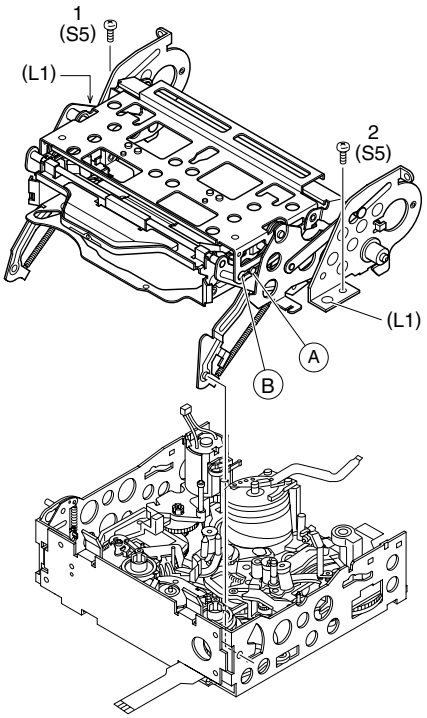
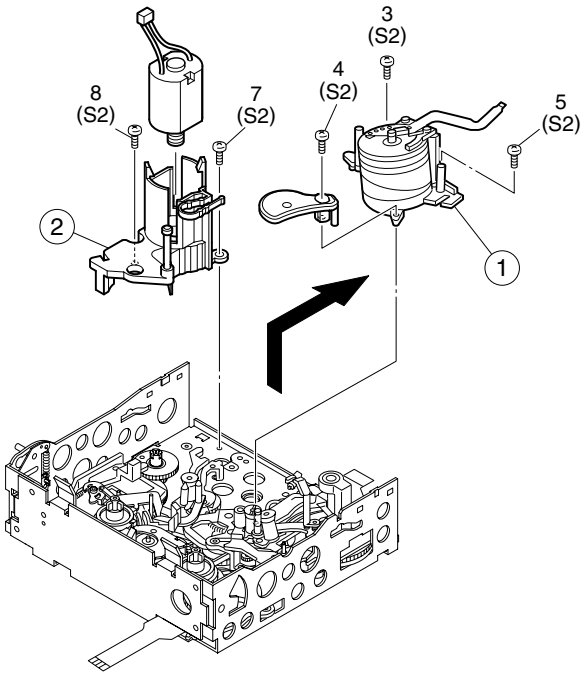
Fig. 2-6-2

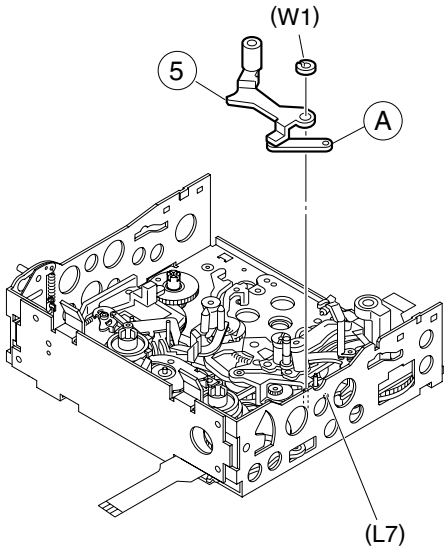
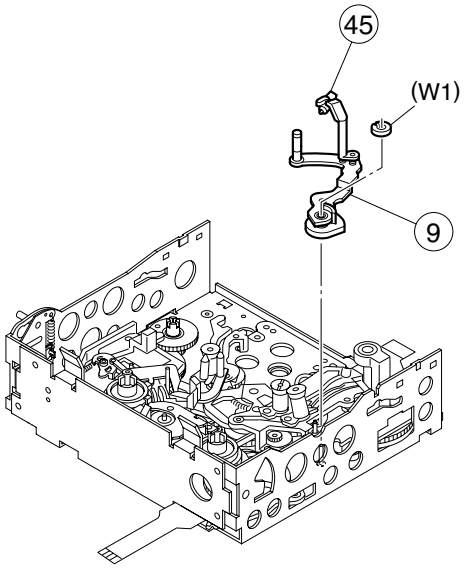
No.	Item	Reference picture/drawing	Procedure

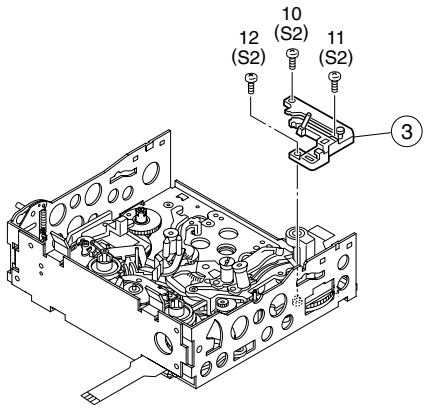
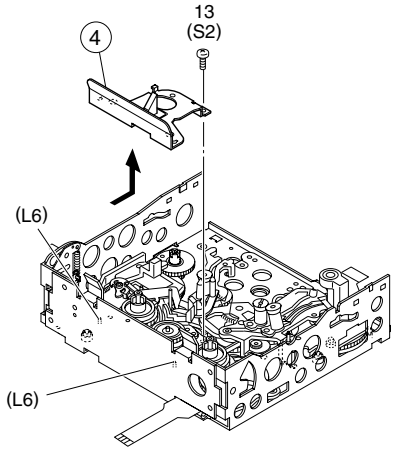
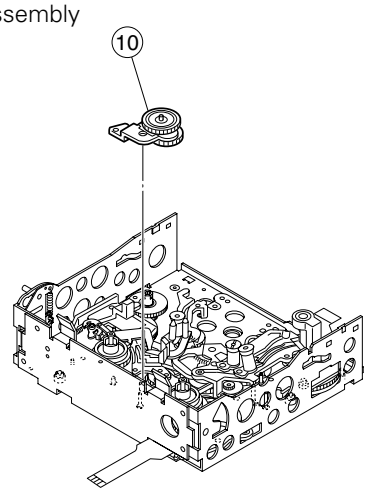
2.7 REPLACEMENT OF MAJOR PARTS

· Make sure that the mechanism is in the ASSEMBLY mode before proceeding to disassembly or assembly. (See section 2.1, "Assembly Mode".)

· Screws must always be tightened using a torque screwdriver and at the specified torque.

1	Ⓐ Cassette housing assembly  **Fig. 2-7-1**	**<Removal>** ① Cassette housing assembly See the 1.3.2 Cassette housing on the page 1-4. ② Outer unit assembly 1) Align the boss Ⓐ that pulls out the cassette housing to the round hole Ⓑ of Outer unit assembly, and then remove it. **<Attaching>** 1) Reverse the removal procedure.
2	① Drum assembly, ② Motor bracket (Gear cover) assembly  **Fig. 2-7-2**	**<Removal>** ① Drum assembly 1) Remove the 3 screws (S2) and take out the assembly. ② Motor bracket (Gear cover) assembly 1) Remove the 2 screws and take out the motor bracket assembly. 2) After removing the lock of the motor bracket, the motor can be removed by lifting the motor upward. **<Attaching>** 1) Reverse the removal procedure **NOTE** · **When mounting the motor, make sure that the claw of the motor bracket is properly locked.** **If the claw is not properly locked, change the direction for mounting the motor.**

No.	Item	Reference picture/drawing	Procedure
3	⑤ Pinch roller arm assembly	 **Fig. 2-7-3**	**<Removal>** 1) Remove the washer (W1) and pull out the assembly. **<Attaching>** 1) Fit the pinch roller arm assembly Ⓐ into the boss (L7) of the charge arm assembly. 2) Attach the washer (W1).
4	⑨ Exit guide arm assembly ㊺ Cleaner arm assembly	 **Fig. 2-7-4**	**<Removal>** 1) Remove the washer (W1) and pull out the assembly. **<Attaching>** 1) Reverse the removal procedure.

No.	Item	Reference picture/drawing	Procedure
5	③ Middle catcher assembly	 **Fig. 2-7-5**	**<Removal>** 1) Remove the 3 screws (S2) and remove the assembly. **<Attaching>** 1) Reverse the removal procedure.
6	④ Reel cover assembly	 **Fig. 2-7-6**	**<Removal>** 1) Remove the screw (S2). 2) Slide the assembly toward the drum and lift the assembly up to remove it. **NOTE** · **After having removed the reel cover, take care because the parts located below the reel cover tend to slip out easily.** **<Attaching>** 1) Insert the reel cover into (L6) and attach by reversing the removal procedure.
7	⑩ Swing arm assembly	 **Fig. 2-7-7**	**<Removal>** 1) Pull the assembly upward. **<Attaching>** 1) Reverse the removal procedure.

No.	Item	Reference picture/drawing	Procedure

8 ⑦ Band arm plate assembly, ⑧ Tension arm assembly

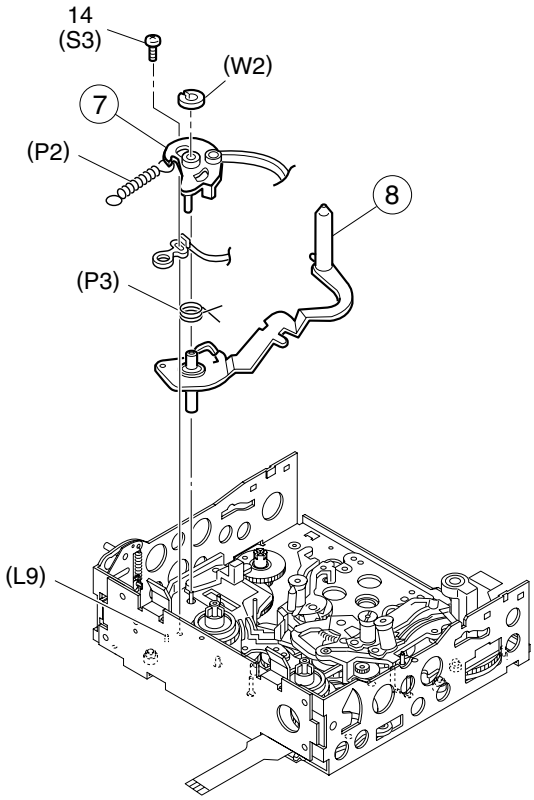
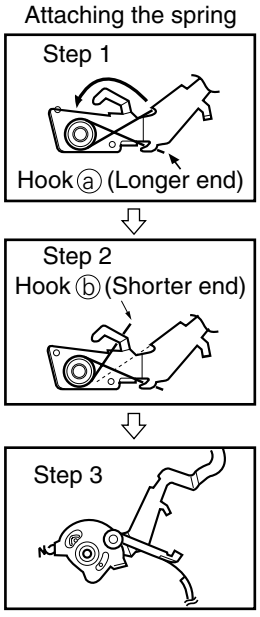


Fig. 2-7-8(a)



The spring (P3) should be attached only to the tension arm assembly ⑧. It should not contact the band arm plate assembly ⑦.

Fig. 2-7-8(b)

<Removal>

1) Remove the washer (W2).
2) Remove the screw (S3).
3) Remove the spring (P2).
4) Remove the band arm plate assembly and tension arm assembly.

NOTE

Be careful not to lose the spring (P3).

<Attaching>

1) Attach the spring (P3) to the tension arm assembly. Engage the longer end of spring to hook ⓐ and the shorter end to hook ⓑ as shown in Fig. 2-7-8(b).
2) Attach the tension arm sub-assembly.
3) Attach the band arm plate assembly.
4) Clamp with the screw (S3) and washer (W2).
5) Attach the spring (P2) to (L9).

NOTE

After attaching, ensure that the band arm assembly can rotate in the direction of the arrow as shown in Fig. 2-7-8(c).

Attach so that the section Ⓐ comes on the outer side of the tension arm assembly ⑧.

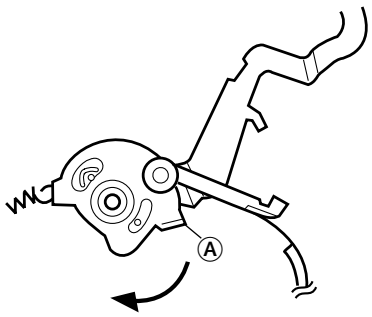


Fig. 2-7-8(c)

6) After attaching, adjust the tension.

No.	Item	Reference picture/drawing	Procedure

8 <Tension arm assembly position adjustment>

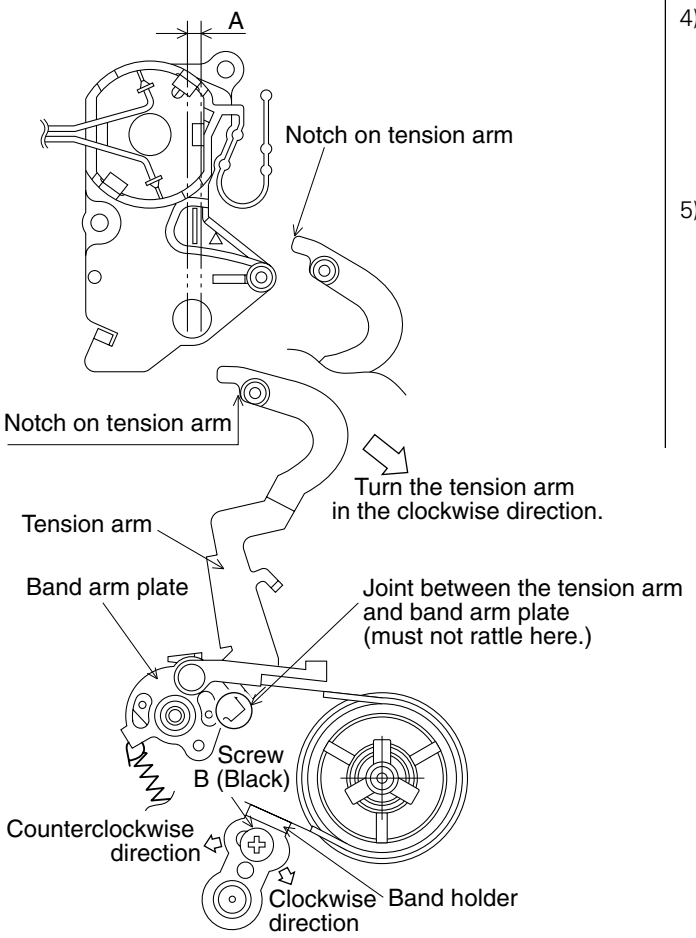


Fig. 2-7-8(d)

1) Without loading a tape, set the mechanism mode to PLAY mode.
   To switch the mode, rotate wheel gear 2 while the motor bracket assembly is disengaged (see 2.2, "Mechanism Modes").

2) Rotate the tension arm slightly clockwise to eliminate production of rattle with the band arm plate.
3) Ensure that the notch on the tension arm is located within area A. (See Fig. 2-7-8(e).)
4) If the tension arm is not located in area A, loosen screw B (black) lightly and fine-adjust the position of the band arm plate assembly. Turn the screw counterclockwise to move the tension arm extremity toward the right or clockwise to move it toward the left.
5) After the adjustment, clamp the band holder by tightening screw B (black) (with a securing torque of 5.88 Nm, or 0.6 kgf-cm). Then adjust the tension arm position again.

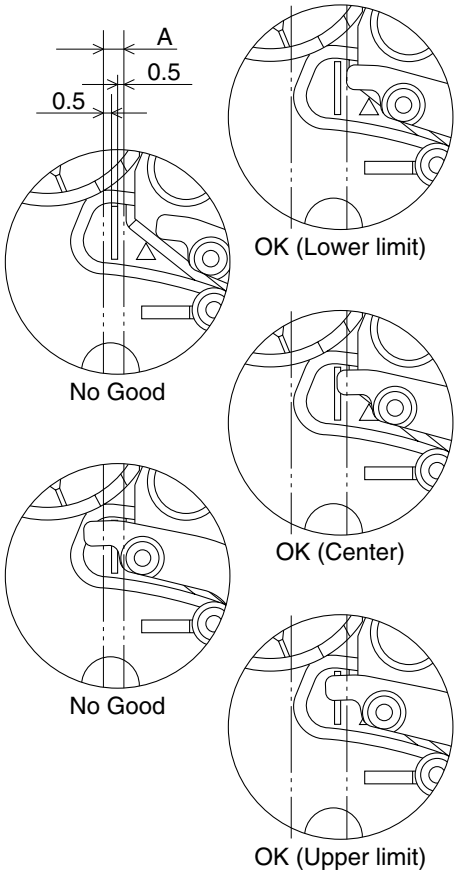
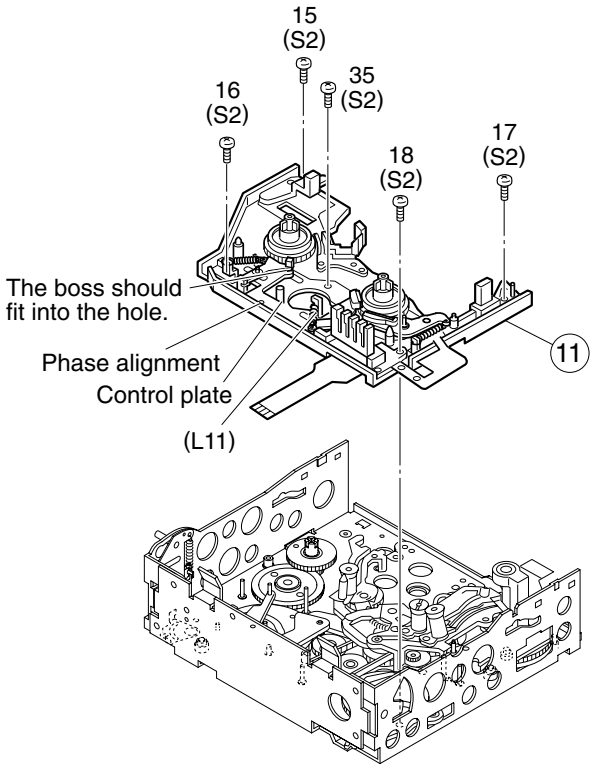
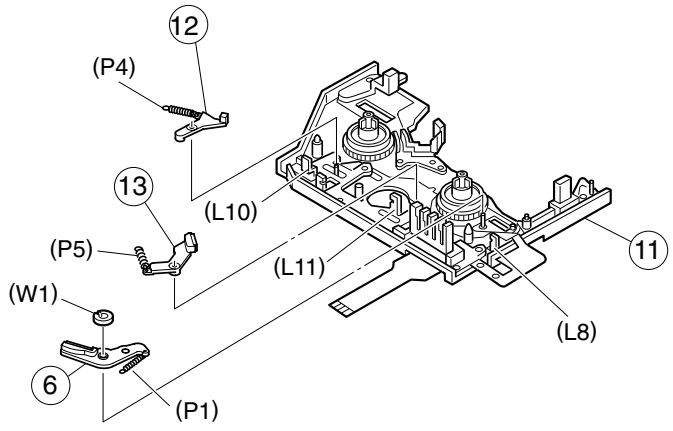


Fig. 2-7-8(e)

No.	Item	Reference picture/drawing	Procedure
9	⑪ Sub-deck assembly	 **Fig. 2-7-9**	**<Removal>** 1) Remove the 5 screws (S2) and pull out the assembly. **<Attaching>** 1) While sliding the control plate toward the left, attach the sub-deck assembly. **NOTE** · **Attach by aligning the phase holes of the main deck assembly and control plate.** 2) Clamp with 5 screws (S2).
10	⑫ Main brake (SUP) assembly, ⑬ Main brake (TU) assembly, ⑥ Sub-brake assembly	 **Fig. 2-7-10**	**<Removal>** **Main brake (SUP) (TU) assembly** 1) Remove the spring by disengaging its ends from the hooks (L10) and (L11). **Sub-brake assembly** 1) Remove the washer (W1). 2) Remove the spring by disengaging it from the hook (L8). **<Attaching>** 1) Reverse the removal procedure.

No.	Item	Reference picture/drawing	Procedure

11 ⑭ Reel disk (SUP) assembly, ⑮ Reel disk (TU) assembly, ⑰ Control plate, ⑯ Prism

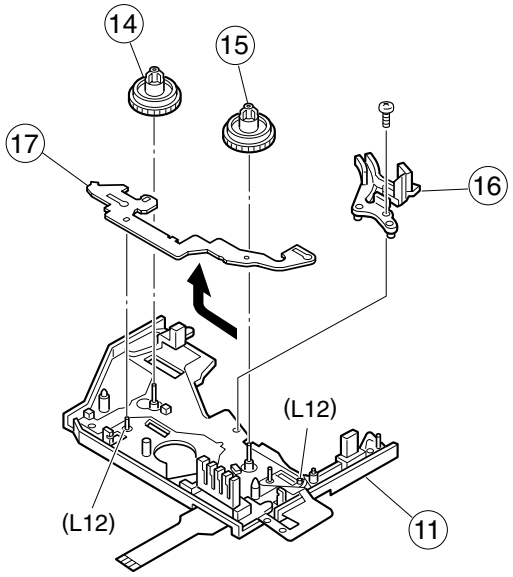


Fig. 2-7-11

<Removal>

1) Pull up each assembly to remove it. The control plate can be removed by sliding it toward the left as shown by the arrow.
2) Remove the screw (S2) to remove the prism.

<Attaching>

1) Reverse the removal procedure.

12 ⑱ Guide rail (TU) assembly, ⑲ Guide rail (SUP) assembly

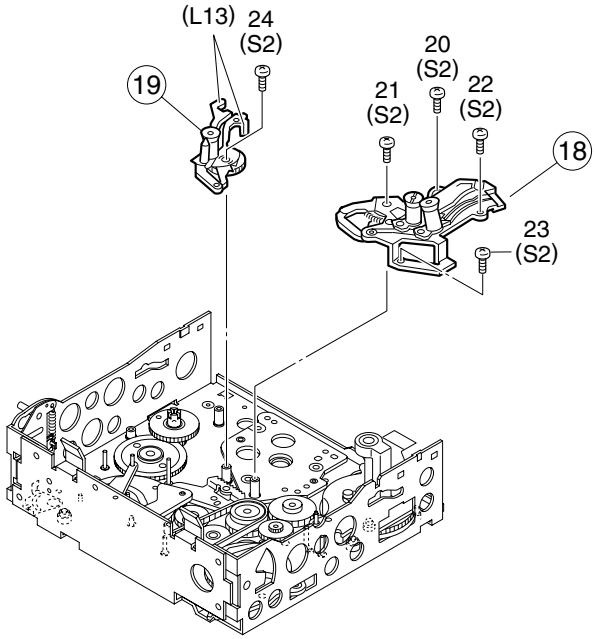


Fig. 2-7-12(a)

<Removal>

Guide rail (TU) assembly:

1) Remove the 4 screws (S2) and remove the assembly.

Guide rail (SUP) assembly:

1) Remove the screw (S2) and remove the assembly.

<Attaching>

1) Return the guide pole fully to the unloading position, and attach the assemblies by reversing the removal procedures. When attaching, place the alignment markings of the two gears so that they face each other. (See Fig. 2-7-12(b).)

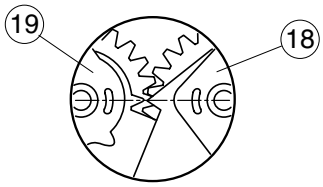
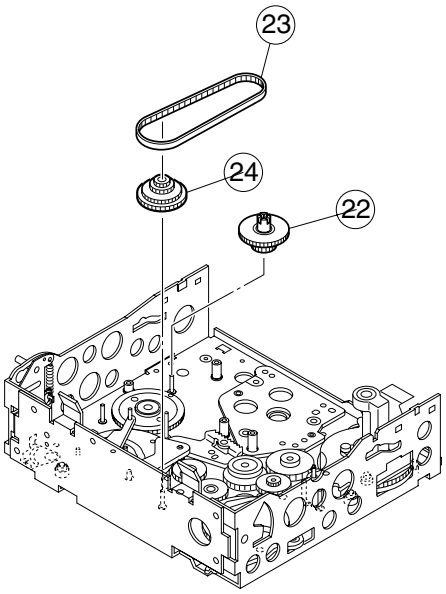
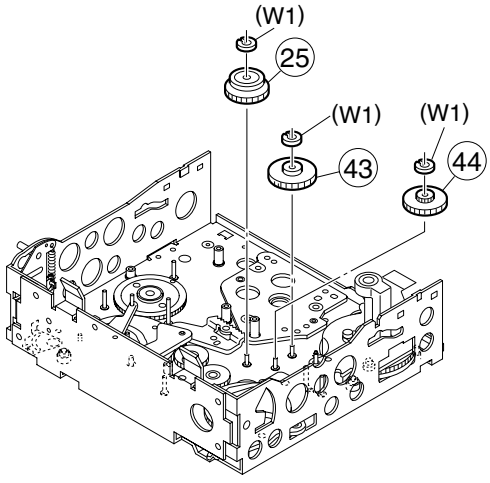


Fig. 2-7-12(b)

No.	Item	Reference picture/drawing	Procedure
13	㉒ Wheel gear 2, ㉓ Timing belt, ㉔ Center gear assembly	 **Fig. 2-7-13**	**<Removal>** 1) Each parts can be removed by simply pulling them out. **<Attaching>** 1) Reverse the removal procedure.
14	㉕ Reel drive pulley assembly, ㊸ R. drive gear 1, ㊹ R. drive gear 2	 **Fig. 2-7-14**	**<Removal>** 1) Remove the washer (W1) and take out the assembly. **<Attaching>** 1) Reverse the removal procedure.

No.	Item	Reference picture/drawing	Procedure

15 ㉙ Tension control arm assembly, ㉚ Brake control arm assembly, ㉛ Charge arm assembly

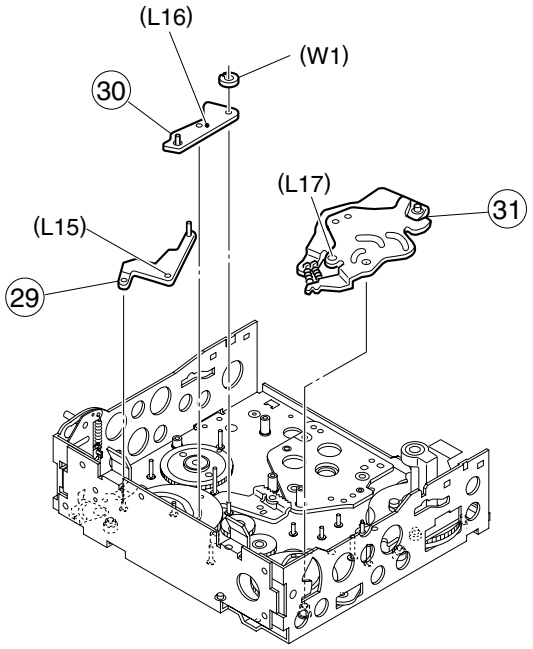


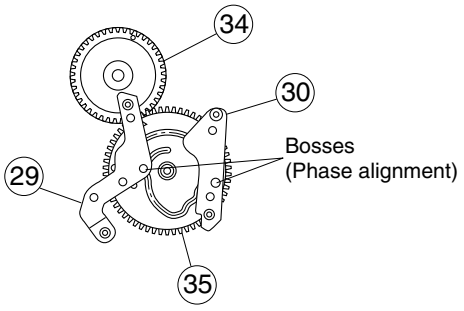
Fig. 2-7-15(a)

<Removal>

1) The brake control assembly can be removed after removing the washer (W1).

<Attaching>

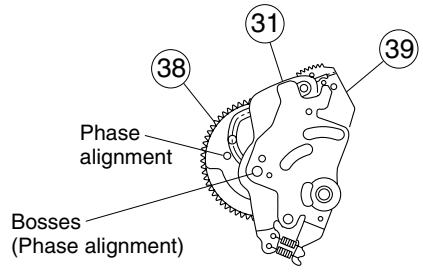
1) Align the phases of the main cam and sub cam , then attach by reversing the removal procedure. Refer to Fig. 2-7-15(b) and Fig. 2-7-15(c).



Align the phase of the main cam ㉟ then attach by fitting the bosses in the cam groove.

Fig. 2-7-15(b)

Attaching Tension Control Arm Assembly ㉙ and Brake Control Arm Assembly ㉚



Phase alignment
Boss (Phase alignment)
Align the phase of the sub cam ㊳, then attach by fitting the boss into the cam groove.

Fig. 2-7-15(c) Attaching the Charge Arm Assembly ㉛

No.	Item	Reference picture/drawing	Procedure

16 ㉞ Encoder gear, ㉟ Main cam , ㊱ Arm gear 1 assembly, ㊲ Centering arm assembly

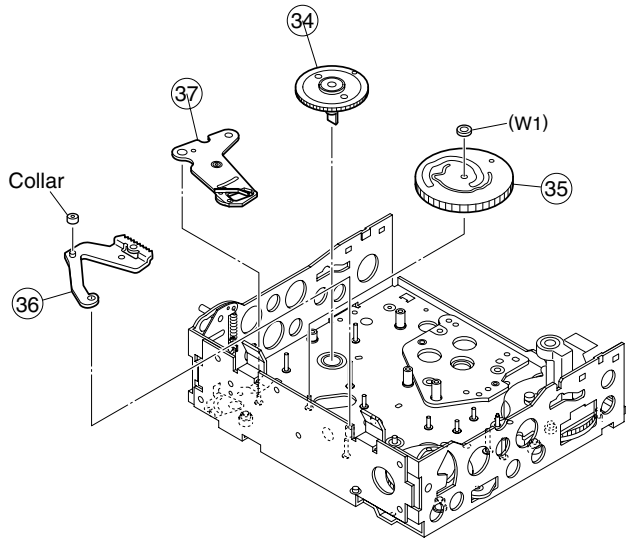
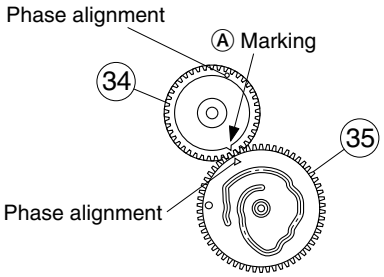


Fig. 2-7-16(a)



Align the phase of the main cam ㉟, then attach by aligning the red-colored markings Ⓐ (on 2 gear teeth) inside ○.

Fig. 2-7-16(c) Attaching the Rotary Encoder Assembly ㉞

<Removal>

1) The main cam can be removed by removing the washer (W1). As the cam gear is engaged at the rear of the main deck assembly while the phase is aligned, deviate the phase in the direction of the arrow before removal. (See Fig. 2-7-16(b).)

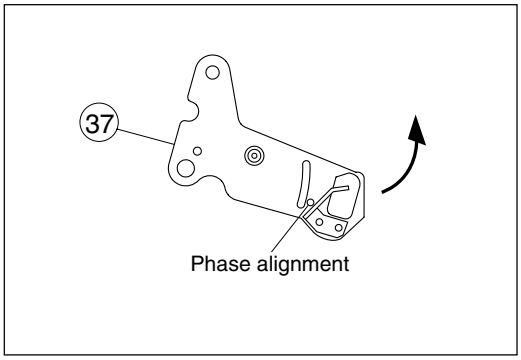
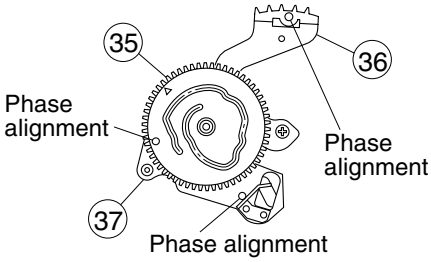


Fig. 2-7-16(b) Removing the Centering Arm Assembly ㊲

<Attaching>

1) Align the phase by referring to Figs. 2-7-16(c) and 2-7-16(d), then attach the ass'ies reverse the removal procedure.



Align the phases of the arm gear 1 assembly ㊱ and centering arm assembly ㊲, then align those of the arm gear 1 assembly ㊱ and centering arm assembly ㊲, attach the gear by fitting the bosses into the cam groove below, and fit the slit washers.

Fig. 2-7-16(d) Attaching the Main Cam ㉟

No.	Item	Reference picture/drawing	Procedure

17 ㊳ Sub cam ㊴ Arm gear 2 assembly, ㊵ Clutch lock lever assembly

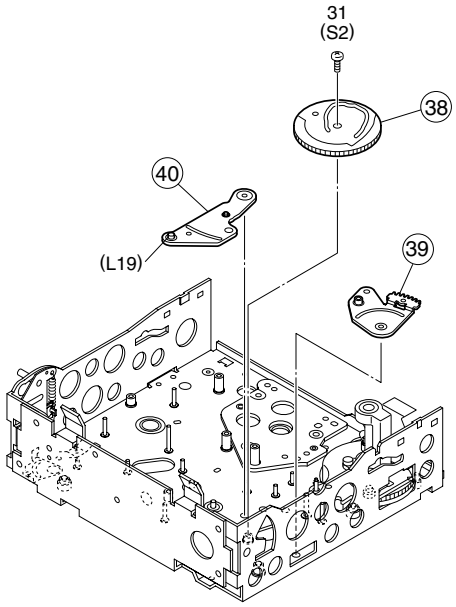


Fig. 2-7-17(a)

<Removal>

1) Remove the screw (S2) and take out the sub cam . As L19 is engaged at the rear of the main deck assembly while the phase is aligned, deviate the phase in the direction of the arrow before removal. 20. This checking should be done after completing the switching point adjustment.

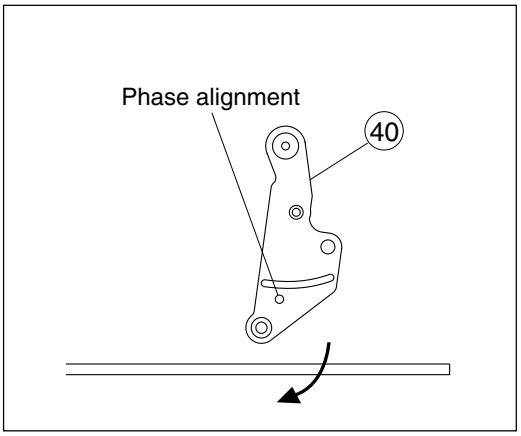
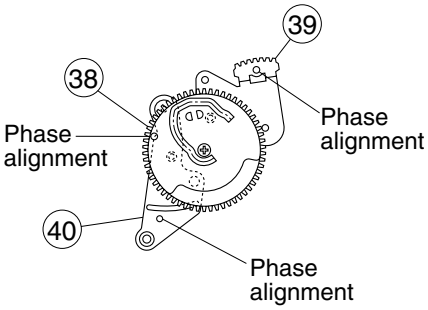


Fig. 2-7-17(b) Removing the Clutch Lock Lever Assembly ㊵

<Attaching>

1) Align the phase correctly by referring to Fig. 2-7-17(c), then attach by reversing the removal procedure.



Align the phases of the arm gear 2 assembly ㊴ and clutch lock lever assembly ㊵, attach them by fitting the boss into the cam groove below, and clamp with the screw.

Fig. 2-7-17(c) Attaching the Sub Cam ㊳

2.8 CONFIRMATION AND ADJUSTMENT OF MECHANISM PHASES

See Fig. 2-8-1.

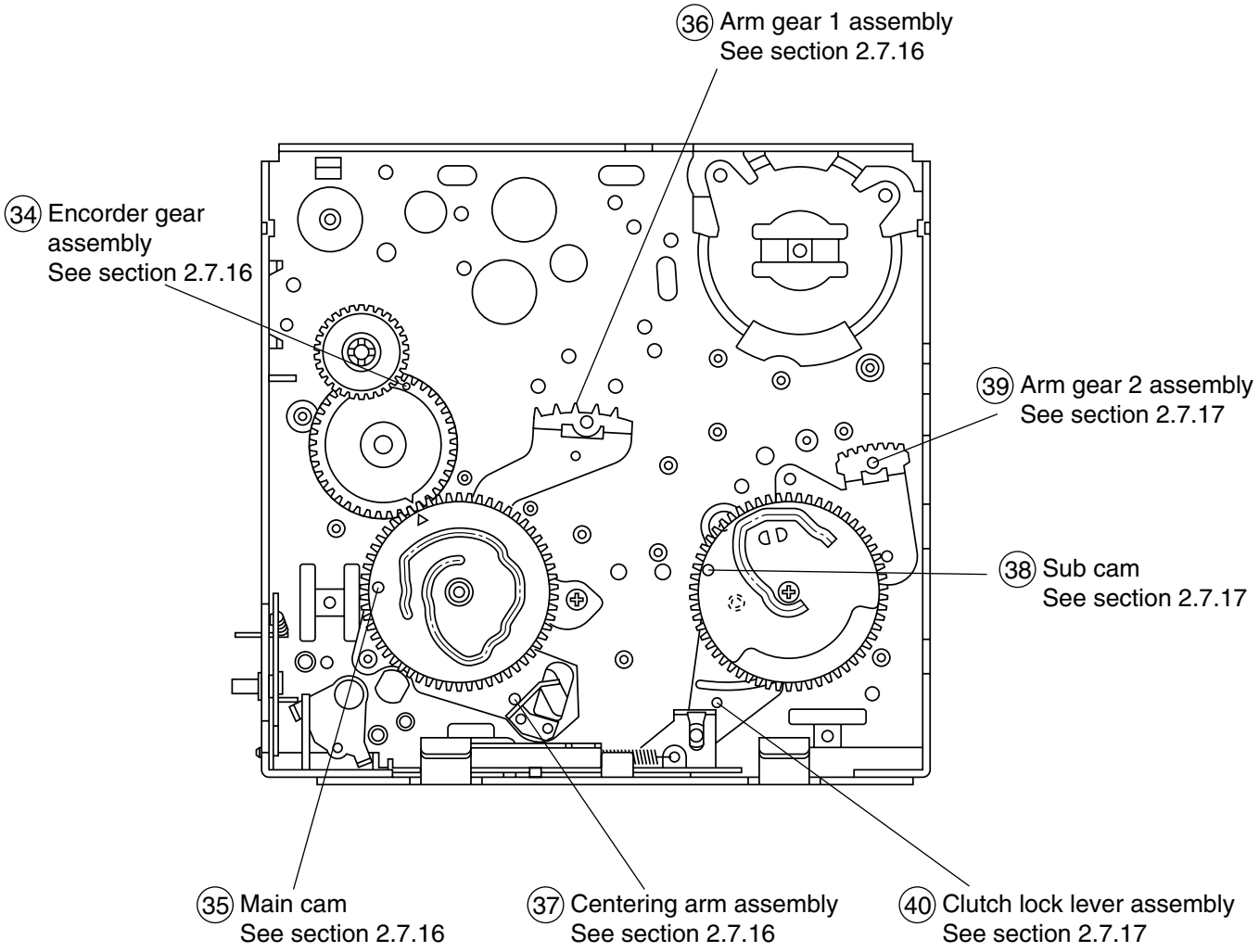


Fig. 2-8-1

2.9 DISASSEMBLY PROCEDURE LIST

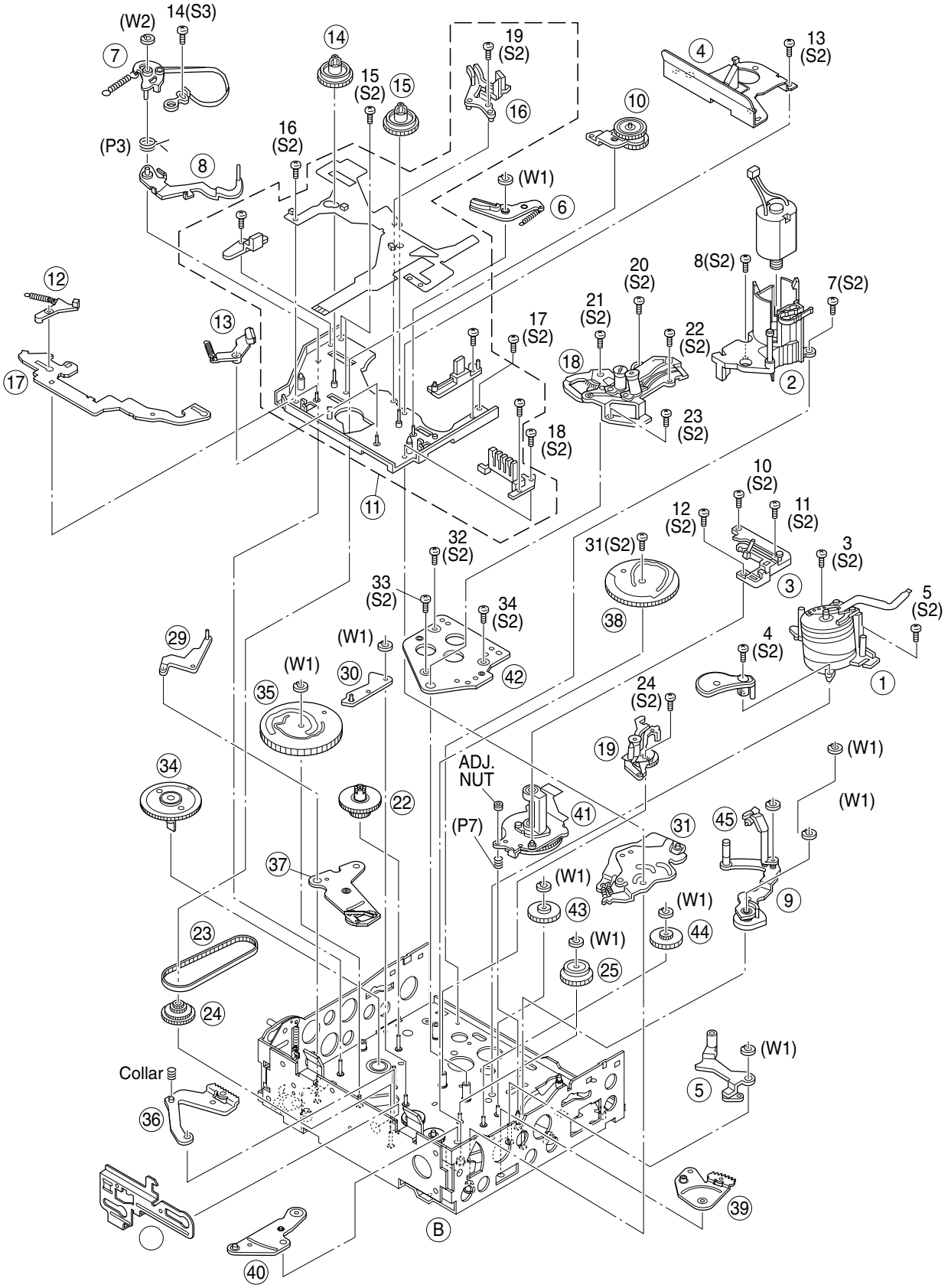


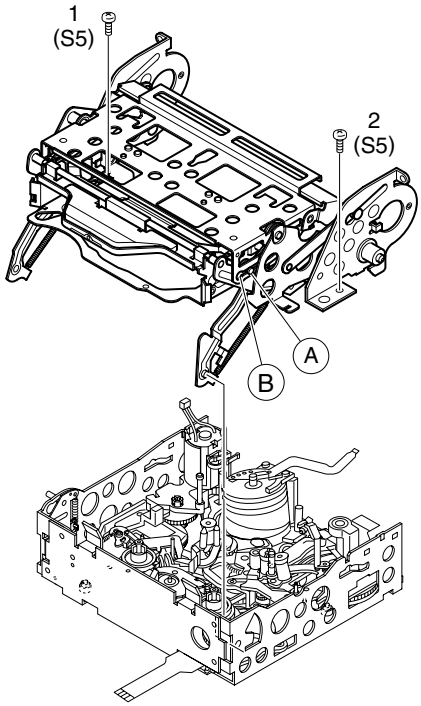
Fig. 2-9-1

Note) For the grease and oil application points, see section 5.7, "MECHANISM ASSEMBLY PARTS LIST M 8"

2.10 MECHANISM DISASSEMBLY/ASSEMBLY SHEET

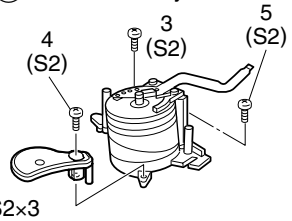
Screw Management																	
Drawing No.	Ⓐ		①			②		③			④	⑦	⑪				
No.	1	2	3	4	5	7	8	10	11	12	13	14	15	16	17	18	35
Table	S5	S5	S2	S2	S2	S2	S2	S2	S2	S2	S2	S3	S2	S2	S2	S2	S2
Application																	
Ref. No.	No.1		No.2					No.5				No.8	No.9				

Ⓐ Cassette housing assembly



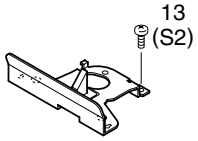
S37×2

① Drum assembly



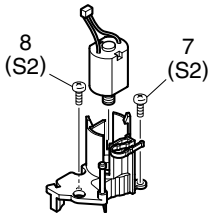
S2×3

④ Reel cover assembly



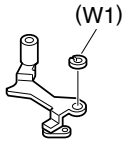
S2,L6×2

② Motor bracket assembly



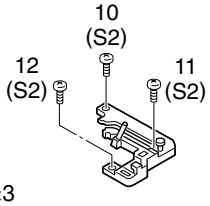
S2×4

⑤ Pinch roller arm assembly



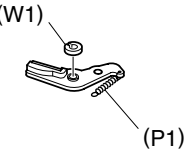
W1,7

③ Middle catcher assembly



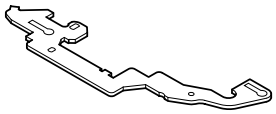
S2×3

⑥ Sub-brake assembly



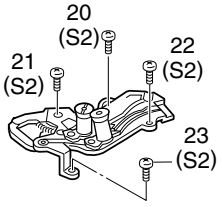
P1,W1,L8

⑰ Control plate



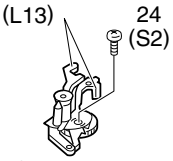
L12×2

⑱ Guide rail (TU) assembly



S2×4

⑲ Guide rail (SUP) assembly



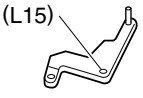
S2,L13×2

㉔ Center gear assembly

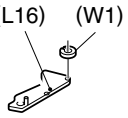
㉕ Reel drive pulley assembly

W1

㉙ Tension control arm assembly

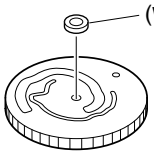


㉚ Brake control arm assembly



W1,L16

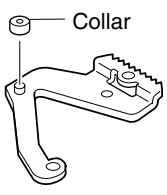
㉟ Main cam



W1

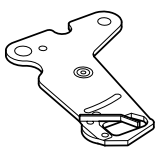
㊱ Arm gear 1 assembly

Collar

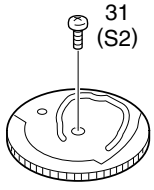


Collar

㊲ Centering arm assembly



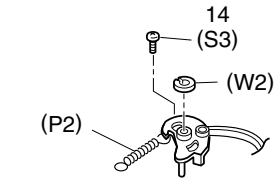
㊳ Sub cam

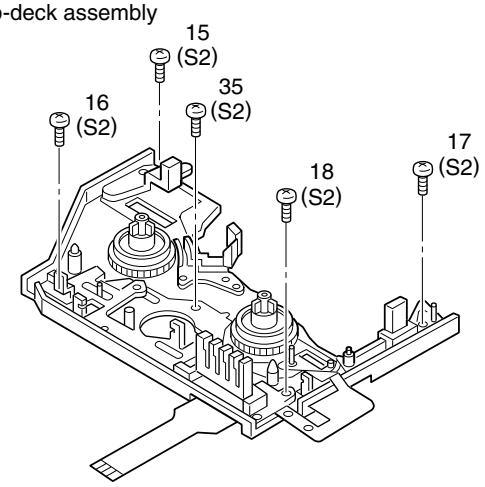


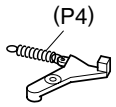
S2

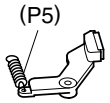
Screw Management									
⑯	⑱				⑲	㊳	㊷		
19	20	21	22	23	24	31	32	33	34
S2	S2	S2	S2	S2	S2	S2	S2	S2	S2
No.11	No.12				No.17	–			

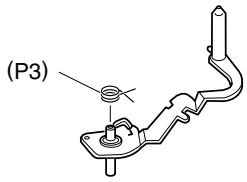
The slit washers cannot be reused once they have been removed.

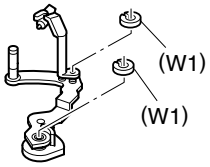
<table>
<tr>
<td>⑦ Band arm plate assembly
 

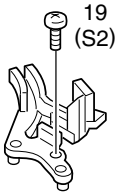
S3,P2,L9,W2</td>
<td rowspan="2">⑪ Sub-deck assembly
 

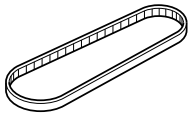
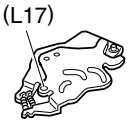
S2×5</td>
<td>⑫ Main brake (SUP) assembly
 

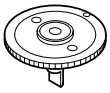
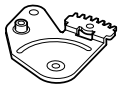
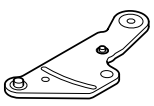
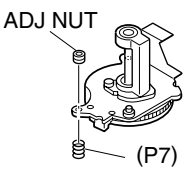
P4,L10</td>
<td>⑬ Main brake (TU) assembly
 

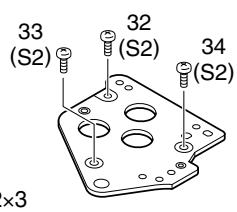
P5,L11</td>
</tr>
<tr>
<td>⑧ Tension arm assembly
 

P3</td>
<td>⑭ Reel base assembly (SUP)
  </td>
<td>⑮ Reel base assembly (TU)
  </td>
</tr>
<tr>
<td>⑨ Exit guide arm assembly
㊺ Cleaner arm assembly
 

W1</td>
<td>⑩ Swing arm assembly
  </td>
<td>㊸ R. drive gear 1
 
</td>
<td>㊹ R. drive gear 2
 
</td>
<td colspan="2">⑯ Prism
 

S2</td>
</tr>
<tr>
<td></td>
<td></td>
<td colspan="2">㉒ Wheel gear
  </td>
<td colspan="2">㉓ Timing belt
  </td>
</tr>
<tr>
<td>㉛ Charge arm assembly
 

L17</td>
<td></td>
<td></td>
<td colspan="2">㉞ Encorder gear
  </td>
</tr>
<tr>
<td>㊴ Arm gear 2 assembly
  </td>
<td>㊵ Clutch lock lever assembly (C.P.D arm assembly)
 
L19</td>
<td>㊶ Capstan motor
 

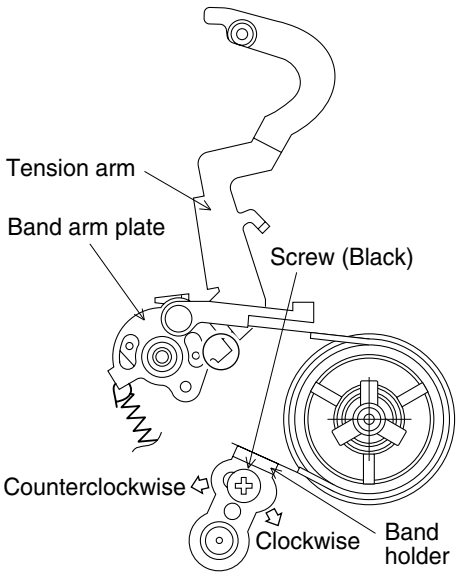
ADJ NUT,P7</td>
<td colspan="2">㊷ Drum base deck
 

S2×3</td>
</tr>
</table>

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (↑) Adjustment level (☆)	Adjustment procedure

2.11 TORQUE ADJUSTMENTS

1	SUP backup torque adjustment	• Cassette torque meter	Play	◎ Supply side indication of cassette torque meter ☆ $3.9^{+1.47}_{-0.39}$ x 10^{-4}N·m ($4.0^{+1.5}_{-0.4}$ gf·cm)	(1) Insert the cassette torque meter and enter play mode. (2) The supply backup torque should be as specified. (If it fluctuates, read the center value.) (3) If it is out of specification, eject the tape, remove the cassette housing, loosen the screw (black) slightly and fine-adjust the band holder. Slightly turn the band holder as follows. · To increase torque: Counterclockwise · To decrease torque: Clockwise. **NOTE** **The screw securing torque should be 0.0588 N-m (0.6 kgf·cm).** 4) Check the supply backup torque again and repeat the above steps until it becomes as specified.
2	Take-up wind torque adjustment	Cassette torque meter YTU94150A	PLAY, Adjustment menu No. 110	◎ Take-up side reading of cassette torque meter ☆ $4.9^{+4.90}_{-1.96}$ x 10^{-4} N·m ($5.0^{+5.0}_{-2.0}$ gf·cm)	1) Select adjustment menu [110. FWD TORQUE]. **(For the adjustment menu, see 3.3, "Adjustment menu".)** 2) Insert the torque cassette meter YTU94150A and press the [PLAY] button. 3) Adjust the TU wind torque so that it is within the specified range. · Press JOG dial to enter the adjustment mode. · To increase the torque → Rotate JOG dial to the clockwise. · To decrease the torque → Rotate JOG dial to the counter-clockwise. 4) After adjustment, press JOG dial to store the adjustment data.



2.12 COMPATIBILITY ADJUSTMENT

2.12.1 Compatibility adjustment flow chart

Fig. 2-12-1 shows the flow chart of compatibility adjustment.

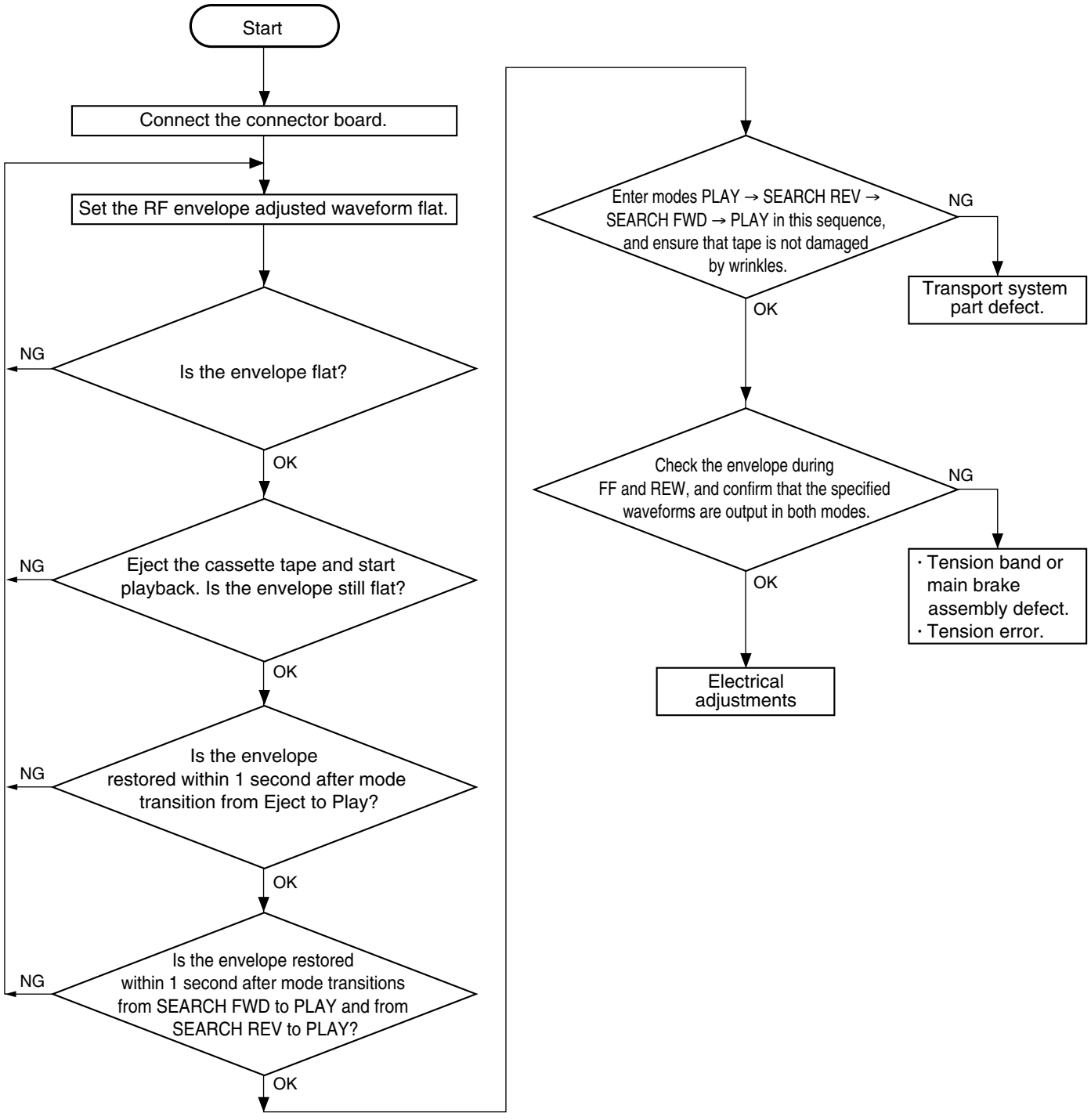


Fig. 2-12-1

2.12.2 Tape transport restriction

The unit uses only the SUP guide roller and TU guide roller to restrict the tape transport. The tape is free (no restriction) from other parts.

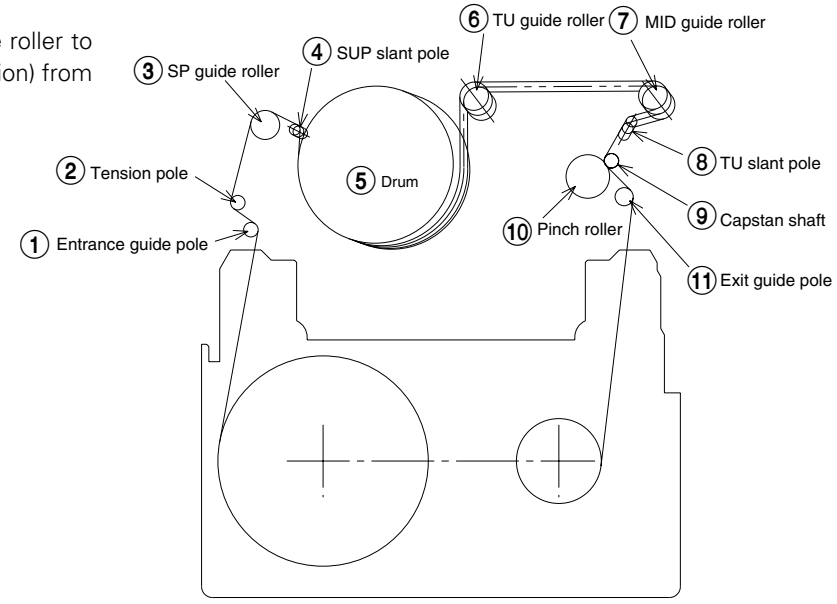


Fig. 2-12-2

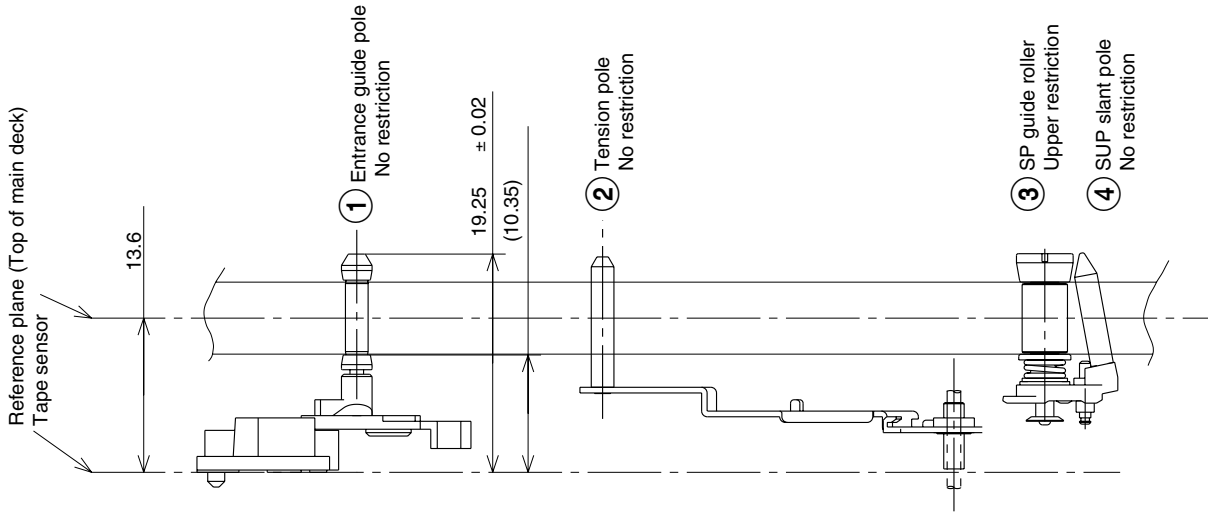


Fig. 2-12-3 Tape Restriction on Supply Side

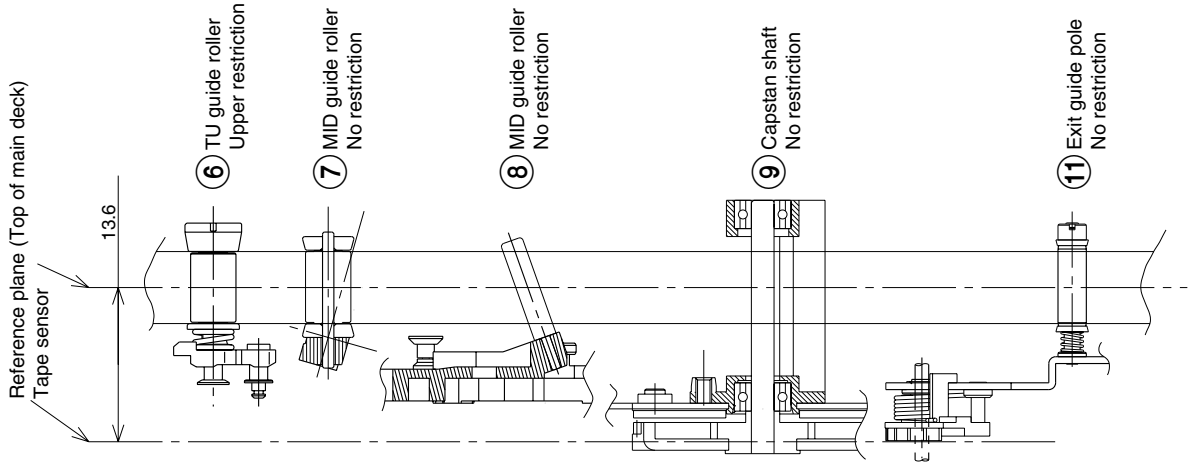


Fig. 2-12-4 Tape Restriction on Take-up Side

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure

2.12.3 Compatibility adjustment

1	Preparation				(1) Mount a Rewrite board to the CN7 on the CODEC board by inserting it in the slot that is provided to accommodate it. This may be achieved without removing the R. side cover. (See Fig. 2-12-5.) **NOTE** · **Make sure the component surface of the connector board is upside.** **NOTE** · **Be sure to clean the tape transport parts and play a cleaning tape before proceeding to the compatibility adjustment.**
2	RF envelope adjustment	• Oscilloscope, alignment tape MC-1(NTSC) or MC-2(PAL) Color bar portion	Play	◎ TP9 ENV OUT [Rewrite board] ◎ TP5 HID [Rewrite board] ⓣ Supply guide roller ⓣ Take-up guide roller ☆ Make the waveforms flat. The drop level should be less than 3 dB with both SUP and TU levels. ☆ Flatness variation should be less than 2 dB.	(1) Play alignment tape color bar portion. (2) Observe the measuring points and adjust the supply guide roller and take-up guide roller so that the RF waveform is flat. (3) Set the mode to EJECT, then set to the PLAY mode and ensure that the RF waveform is flat.

Fig. 2-12-5 How to mount a Rewrite board

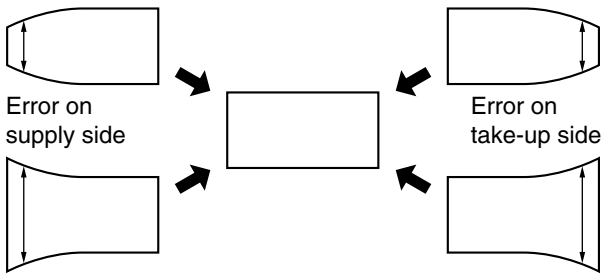


Fig. 2-12-6

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⇧) Adjustment level (☆)	Adjustment procedure
3	Waveform rise check	• Oscilloscope, alignment tape MC-1(NTSC) or MC-2(PAL) Color bar portion	Eject →Play Search FWD →Play Search REV → Play	◎ TP9 ENV OUT [Rewrite board] ◎ TP5 HID [Rewrite board] ☆The envelope waveform should be restored within 1 sec.	(1) Switch the mode from Eject → Play and ensure that the envelope waveform is restored in less than 1 sec. (2) Switch the mode from Search FWD → Play and from Search REV → Play, and ensure that the envelope is restored in less than 1 sec. in both cases. (3) If the waveform does not restore in the specified period, fine-adjust the supply/take-up guide rollers as far as the envelope waveform specification is met, then restart checking from the above procedure 1 again.
4	Damage check	• Self-recorded/ played tape 60ME	Play ↓ Search REV ↓ Search FWD ↓ Play	◎ TP9 ENV OUT [Rewrite board] ◎ TP5 HID [Rewrite board] ☆The tape should not be damaged by wrinkle.	(1) Transport the self-recorded/played tape from the beginning by changing modes in order of Play → Search REV → Search FWD → Play, and ensure that wrinkles due to strong restriction by the guide rollers and guide pole are not produced on tape. (2) Perform the same check at the section near the end of tape. (3) Make sure that no tape damage occurs when a tape is being loaded, unloaded or ejected.
5	Envelope check during FF/REW	• Oscilloscope, alignment tape MC-1(NTSC) or MC-2(PAL) Color bar portion	FF REW	◎ TP9 ENV OUT [Rewrite board] ◎ TP5 HID [Rewrite board] ☆Ⓐ > 55μsec. ☆Ⓑ ≧ T/3	(1) Insert the alignment tape and enter Stop mode. (2) Enter FF mode. (3) Ensure that the envelope output is present at 55 μs before the HID switching timing. (4) Check the take-up side of the envelope to see that the MAX output duration is more than 1/3 the HID duration. **This checking should be done after completing the switching point adjustment.** (5) Enter REW mode and check the same items as (3) and (4) above. (6) If the envelope is out of specification, check the tension band and main brake assembly and replace as required. Confirm the playback switching point.

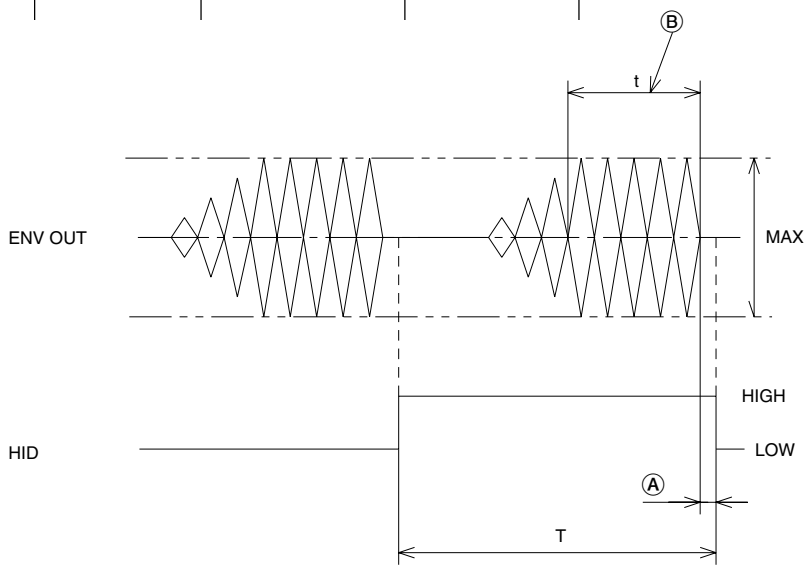


Fig. 2-12-7

SECTION 3
ELECTRICAL ADJUSTMENTS

3.1 FUNCTIONS REQUIRED FOR ADJUSTMENTS, SETUP

3.1.1 General instruments necessary for adjustment

Instrument	Condition	Instrument	Condition
Oscilloscope	Calibrated instrument with a measuring bandwidth of 150 MHz or more.	Frequency counter	Instrument calibrated for 8 digits or more. Stability of 0.1 ppm or $1x10^{-7}$ or better is required at 0 to 40°C.
Vectorscope	Calibrated instrument		
Audio tester	Calibrated instrument	Monitor TV	Color video monitor compatible with SD and HD.

3.1.2 Special implements required for adjustment

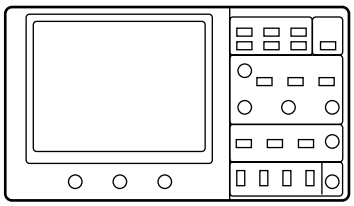
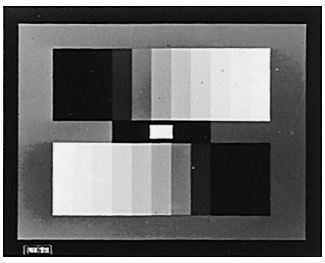
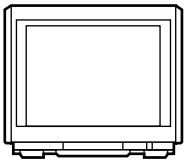
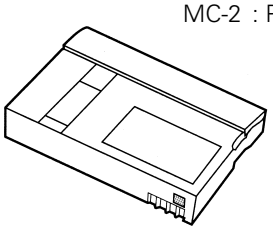
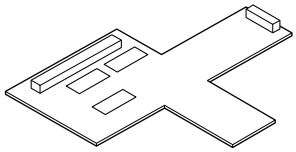
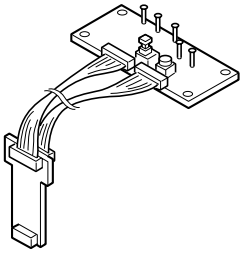
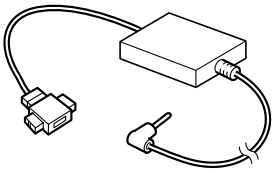
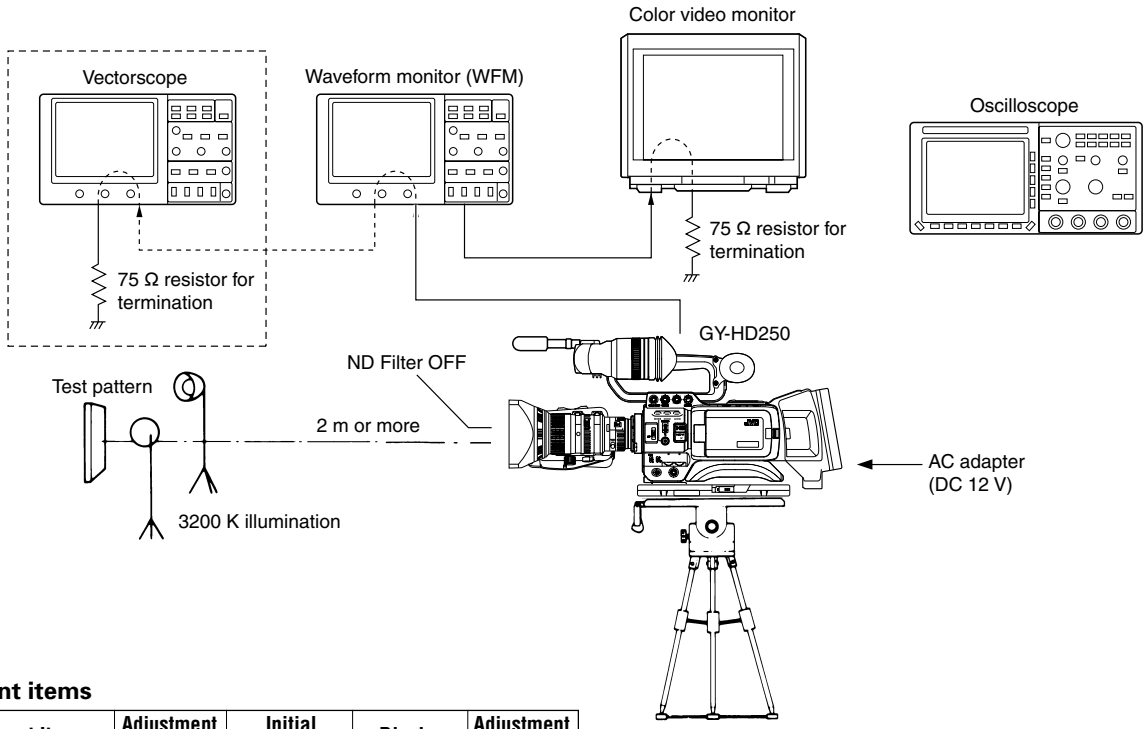
1	Waveform monitor (WFM)	2	Gray scale chart (HD/SD)	3	Tripod base
			(Part No. : RESC-017 [for HD]) (Part No. : GS2L [for SD]) 		Accessory (Model name : KA-551U) 
4	Monitor TV (SD/HD)	5	Alignment tape	6	REWRITE board
			MC-1 : NTSC MC-2 : PAL 		CK453800C 
7	Connector cable	8	PC cable		
	PTU94018A 		QAM0099-001 		

Fig. 3.1.1 Special implements required for adjustment

3.2 STANDARD SETUP



Adjustment items

Adjustment Item	Adjustment range	Initial setting	Display	Adjustment NTSC/PAL *1
0.COUNTRY	U,E/I,EC		NTSC & PAL	-
1.VIDEO MODE CHANGE	NTSC···60p mode PAL·····50p mode	NTSC	NTSC & PAL	-

For Camera adjustment

Adjustment Item	Adjustment range	Initial setting	Display	Adjustment NTSC/PAL *1
2.27MHZ CAM	0 to 255	128	NTSC & PAL	Common
5.FPGA6 VD	0 to 7	0	NTSC & PAL	Common
6.ASIC SDRAM	0 to 31	4	NTSC & PAL	Common
10.G GAIN 0054	0 to 127	63	NTSC & PAL	Common
11.B GAIN 0054	0 to 127	63	NTSC & PAL	Common
12.R GAIN 0054	0 to 127	63	NTSC & PAL	Common
13.VIDEO Y GAIN 0054	0 to 255	128	NTSC & PAL	Common
14.VIDEO Y GAIN 8076	0 to 236	137	NTSC	Common
15.B-Y	0 to 255	120 PAL: 136	NTSC & PAL	NTSC & PAL
16.R-Y	0 to 255	120 PAL: 136	NTSC & PAL	NTSC & PAL
17.BURST	0 to 127	55 PAL: 69	NTSC & PAL	NTSC & PAL
18.C GAIN	0 to 255	114 PAL: 130	NTSC & PAL	NTSC & PAL
19.Y GAIN 0054	0 to 255	128	NTSC	Common
20.PB GAIN 0054	0 to 255	190	NTSC	Common
21.PR GAIN 0054	0 to 255	190	NTSC	Common
22.Y GAIN 8076	0 to 236	137	NTSC	Common
23.PB GAIN 8076	0 to 236	96	NTSC	Common
24.PR GAIN 8076	0 to 236	96	NTSC	Common
25.IN GAIN[G]	0 to 255	128	NTSC & PAL	Common
26.IN GAIN[B]	0 to 255	128	NTSC & PAL	Common
27.IN GAIN[R]	0 to 255	128	NTSC & PAL	Common
28.WHITE OFFSET[G]	0 to 255	128	NTSC & PAL	Common
29.WHITE OFFSET[B]	0 to 255	128	NTSC & PAL	Common
30.WHITE OFFSET[R]	0 to 255	128	NTSC & PAL	Common
31.BLACK[G]L	0 to 255	128	NTSC & PAL	NTSC & PAL
32.BLACK[G]R	0 to 255	128	NTSC & PAL	NTSC & PAL
33.BLACK[B]L	0 to 255	128	NTSC & PAL	NTSC & PAL
34.BLACK[B]R	0 to 255	128	NTSC & PAL	NTSC & PAL
35.BLACK[R]L	0 to 255	128	NTSC & PAL	NTSC & PAL
36.BLACK[R]R	0 to 255	128	NTSC & PAL	NTSC & PAL
37.BLACK OFFSET[G]	0 to 255	128	NTSC & PAL	NTSC & PAL
38.BLACK OFFSET[B]	0 to 255	128	NTSC & PAL	NTSC & PAL
39.BLACK OFFSET[R]	0 to 255	128	NTSC & PAL	NTSC & PAL
40.FLARE[B]	0 to 40	20	NTSC & PAL	Common
41.FLARE[R]	0 to 40	20	NTSC & PAL	Common
42.MASTER FLARE	0 to 20	15	NTSC & PAL	Common

Adjustment Item	Adjustment range	Initial setting	Display	Adjustment NTSC/PAL *1
43.BLACK SHADING[G]L	89 to 167	148	NTSC & PAL	NTSC & PAL
44.BLACK SHADING[G]R	89 to 167	148	NTSC & PAL	NTSC & PAL
45.BLACK SHADING[B]L	89 to 167	148	NTSC & PAL	NTSC & PAL
46.BLACK SHADING[B]R	89 to 167	148	NTSC & PAL	NTSC & PAL
47.BLACK SHADING[R]L	89 to 167	148	NTSC & PAL	NTSC & PAL
48.BLACK SHADING[R]R	89 to 167	148	NTSC & PAL	NTSC & PAL
201.H1 START[G]	0 to 63	47	NTSC & PAL	Common
202.H1 STOP[G]	0 to 63	15	NTSC & PAL	Common
203.H2 START[G]	0 to 63	15	NTSC & PAL	Common
204.H2 STOP[G]	0 to 63	47	NTSC & PAL	Common
205.H1L START[G]L	0 to 63	48	NTSC & PAL	Common
206.H1L STOP[G]L	0 to 63	16	NTSC & PAL	Common
207.RESET START[G]L	0 to 63	46	NTSC & PAL	Common
208.RESET STOP[G]L	0 to 63	60	NTSC & PAL	Common
209.SHP PHASE[G]L	0 to 63	17	NTSC & PAL	Common
210.SHD PHASE[G]L	0 to 63	49	NTSC & PAL	Common
211.AD OUT PHASE[G]L	0 to 31	8	NTSC & PAL	Common
212.LVDS CLK[G]L	0 to 15	7	NTSC & PAL	Common
213.H1L START[G]R	0 to 63	48	NTSC & PAL	Common
214.H1L STOP[G]R	0 to 63	16	NTSC & PAL	Common
215.RESET START[G]R	0 to 63	46	NTSC & PAL	Common
216.RESET STOP[G]R	0 to 63	60	NTSC & PAL	Common
217.SHP PHASE[G]R	0 to 63	17	NTSC & PAL	Common
218.SHD PHASE[G]R	0 to 63	49	NTSC & PAL	Common
219.AD OUT PHASE[G]R	0 to 31	8	NTSC & PAL	Common
220.LVDS CLK[G]R	0 to 15	7	NTSC & PAL	Common
221.H1 START[B]	0 to 63	47	NTSC & PAL	Common
222.H1 STOP[B]	0 to 63	15	NTSC & PAL	Common
223.H2 START[B]	0 to 63	15	NTSC & PAL	Common
224.H2 STOP[B]	0 to 63	47	NTSC & PAL	Common
225.H1L START[B]L	0 to 63	48	NTSC & PAL	Common
226.H1L STOP[B]L	0 to 63	16	NTSC & PAL	Common
227.RESET START[B]L	0 to 63	46	NTSC & PAL	Common
228.RESET STOP[B]L	0 to 63	60	NTSC & PAL	Common
229.SHP PHASE[B]L	0 to 63	17	NTSC & PAL	Common

Adjustment Item	Adjustment range	Initial setting	Display	Adjustment NTSC/PAL *1
230.SHD PHASE[B]L	0 to 63	49	NTSC & PAL	Common
231.AD OUT PHASE[B]L	0 to 31	8	NTSC & PAL	Common
232.LVDS CLK[B]L	0 to 15	7	NTSC & PAL	Common
233.H1L START[B]R	0 to 63	48	NTSC & PAL	Common
234.H1L STOP[B]R	0 to 63	16	NTSC & PAL	Common
235.RESET START[B]R	0 to 63	46	NTSC & PAL	Common
236.RESET STOP[B]R	0 to 63	60	NTSC & PAL	Common
237.SHP PHASE[B]R	0 to 63	17	NTSC & PAL	Common
238.SHD PHASE[B]R	0 to 63	49	NTSC & PAL	Common
239.AD OUT PHASE[B]R	0 to 31	8	NTSC & PAL	Common
240.LVDS CLK[B]R	0 to 15	7	NTSC & PAL	Common
241.H1 START[R]	0 to 63	47	NTSC & PAL	Common
242.H1 STOP[R]	0 to 63	15	NTSC & PAL	Common
243.H2 START[R]	0 to 63	15	NTSC & PAL	Common
244.H2 STOP[R]	0 to 63	47	NTSC & PAL	Common
245.H1L START[R]L	0 to 63	48	NTSC & PAL	Common
246.H1L STOP[R]L	0 to 63	16	NTSC & PAL	Common
247.RESET START[R]L	0 to 63	46	NTSC & PAL	Common
248.RESET STOP[R]L	0 to 63	60	NTSC & PAL	Common
249.SHP PHASE[R]L	0 to 63	17	NTSC & PAL	Common
250.SHD PHASE[R]L	0 to 63	49	NTSC & PAL	Common
251.AD OUT PHASE[R]L	0 to 31	8	NTSC & PAL	Common
252.LVDS CLK[R]L	0 to 15	7	NTSC & PAL	Common
253.H1L START[R]R	0 to 63	48	NTSC & PAL	Common
254.H1L STOP[R]R	0 to 63	16	NTSC & PAL	Common
255.RESET START[R]R	0 to 63	46	NTSC & PAL	Common
256.RESET STOP[R]R	0 to 63	60	NTSC & PAL	Common
257.SHP PHASE[R]R	0 to 63	17	NTSC & PAL	Common
258.SHD PHASE[R]R	0 to 63	49	NTSC & PAL	Common
259.AD OUT PHASE[R]R	0 to 31	8	NTSC & PAL	Common
260.LVDS CLK[R]R	0 to 15	7	NTSC & PAL	Common
301.LIN.0TH OFFSET[G]R	0 to16383	6144	NTSC & PAL	NTSC & PAL
302.LIN.0TH X POSI[G]R	1 to 1023	512	NTSC & PAL	NTSC & PAL
303.LIN.1ST OFFSET[G]R	0 to16383	8192	NTSC & PAL	NTSC & PAL
304.LIN.1ST X POSI[G]R	1 to 1023	512	NTSC & PAL	NTSC & PAL
305.LIN.LAST OFFSET[G]R	0 to 255	128	NTSC & PAL	NTSC & PAL
306.LIN.0TH OFFSET[B]R	0 to16383	6144	NTSC & PAL	NTSC & PAL
307.LIN.0TH X POSI[B]R	1 to 1023	512	NTSC & PAL	NTSC & PAL
308.LIN.1ST OFFSET[B]R	0 to16383	8192	NTSC & PAL	NTSC & PAL
309.LIN.1ST X POSI[B]R	1 to 1023	512	NTSC & PAL	NTSC & PAL
310.LIN.LAST OFFSET[B]R	0 to 255	128	NTSC & PAL	NTSC & PAL
311.LIN.0TH OFFSET[R]R	0 to16383	6144	NTSC & PAL	NTSC & PAL
312.LIN.0TH X POSI[R]R	1 to 1023	512	NTSC & PAL	NTSC & PAL
313.LIN.1ST OFFSET[R]R	0 to16383	8192	NTSC & PAL	NTSC & PAL
314.LIN.1ST X POSI[R]R	1 to 1023	512	NTSC & PAL	NTSC & PAL
315.LIN.LAST OFFSET[R]R	0 to 255	128	NTSC & PAL	NTSC & PAL
400.HOB WSPOT1 [G]L	0 to 665	0	NTSC	Common
401.HOB WSPOT1 [G]R	0 to 665	0	NTSC	Common
402.HOB WSPOT1 [B]L	0 to 665	0	NTSC	Common
403.HOB WSPOT1 [B]R	0 to 665	0	NTSC	Common
404.HOB WSPOT1 [R]L	0 to 665	0	NTSC	Common
405.HOB WSPOT1 [R]R	0 to 665	0	NTSC	Common
406.HOB WSPOT2 [G]L	0 to 665	0	NTSC	Common
407.HOB WSPOT2 [G]R	0 to 665	0	NTSC	Common
408.HOB WSPOT2 [B]L	0 to 665	0	NTSC	Common
409.HOB WSPOT2 [B]R	0 to 665	0	NTSC	Common
410.HOB WSPOT2 [R]L	0 to 665	0	NTSC	Common
411.HOB WSPOT2 [R]R	0 to 665	0	NTSC	Common
412.HOB WSPOT3 [G]L	0 to 665	0	NTSC	Common
413.HOB WSPOT3 [G]R	0 to 665	0	NTSC	Common
414.HOB WSPOT3 [B]L	0 to 665	0	NTSC	Common
415.HOB WSPOT3 [B]R	0 to 665	0	NTSC	Common
416.HOB WSPOT3 [R]L	0 to 665	0	NTSC	Common
417.HOB WSPOT3 [R]R	0 to 665	0	NTSC	Common
418.VT WSPOT [G]L	0 to 639	0	NTSC	Common
419.VT WSPOT [G]R	0 to 639	0	NTSC	Common
420.VT WSPOT [B]L	0 to 639	0	NTSC	Common
421.VT WSPOT [B]R	0 to 639	0	NTSC	Common
422.VT WSPOT [R]L	0 to 639	0	NTSC	Common
423.VT WSPOT [R]R	0 to 639	0	NTSC	Common
200.AFE ALL RESET	0 to 1	0	NTSC & PAL	NTSC & PAL
300.LINEARITY ALL RESET	0 to 4	0	NTSC & PAL	NTSC & PAL
201.EEP COPY SYS TO CAM	0 to 1	0	NTSC & PAL	NTSC & PAL
350.CAM LINIARITY	0 to 1	0	NTSC & PAL	NTSC & PAL
351.AFE TEST MODE	128 to 128	128	NTSC & PAL	NTSC & PAL
352.AFE TEST LINEARITY	128 to 128	128	NTSC & PAL	NTSC & PAL
353.AUTO H SHADING	128 to 128	128	NTSC & PAL	NTSC & PAL

For Audio adjustment

Adjustment Item	Adjustment range	Initial setting	Display	Adjustment NTSC/PAL *1
60.AUDIO LEVEL[CH1]	0 to 1023	269	NTSC & PAL	Common
61.AUDIO LEVEL[CH2]	0 to 1023	269	NTSC & PAL	Common

For LCD & VF adjustment

Adjustment Item	Adjustment range	Initial setting	Display	Adjustment NTSC/PAL *1
70.SUB-BRIGHT[B]	27 to 107	60	NTSC & PAL	Common
71.SUB-BRIGHT[R]	27 to 107	64	NTSC & PAL	Common
72.CONTRAST	100 to 160	110	NTSC & PAL	Common
73.SUB-CONTRAST[B]	10 to 120	60	NTSC & PAL	Common
74.SUB-CONTRAST[R]	10 to 120	64	NTSC & PAL	Common
75.GAMMA-1	0 to 80	40	NTSC & PAL	Common
76.GAMMA-2	0 to 80	0	NTSC & PAL	Common
77.PSIG BRIGHT	40 to 120	77	NTSC & PAL	Common
78.COMMON DC	27 to 107	68	NTSC & PAL	NTSC & PAL
79.HUE	35 to 95	74	NTSC & PAL	Common
80.VCO FINE	0 to 255	190	NTSC & PAL	NTSC & PAL
81.BLACK LIMITER	0 to 63	45	NTSC & PAL	Common
82.VCO COARSE	1 to 7	5	NTSC & PAL	NTSC & PAL
83.H-POSITION	2 to 31	20 PAL: 14	NTSC & PAL	NTSC & PAL
84.RESOLUTION	0 to 5	2	NTSC & PAL	NTSC & PAL
85.VF SUB-BRIGHT[B]	27 to 107	60	NTSC & PAL	Common
86.VF SUB-BRIGHT[R]	27 to 107	64	NTSC & PAL	Common
87.VF CONTRAST	100 to 160	110	NTSC & PAL	Common
88.VF SUB-CONTRAST[B]	10 to 120	60	NTSC & PAL	Common
89.VF SUB-CONTRAST[R]	10 to 120	64	NTSC & PAL	Common
90.VF GAMMA-1	0 to 80	40	NTSC & PAL	Common
91.VF GAMMA-2	0 to 80	0	NTSC & PAL	Common
92.VF COM LEVEL	0 to 255	77	NTSC & PAL	Common
93.VF COMMON DC	27 to 107	40	NTSC & PAL	Common
94.VF HUE	35 to 95	74	NTSC & PAL	Common
95.VF VCO L	0 to 255	83	NTSC & PAL	Common
96.VF VCO H	0 to 1	1	NTSC & PAL	Common
97.VF H-POSITION	0 to 79	40 PAL: 30	NTSC & PAL	Common
98.VF V-POSITION	0 to 31	8	NTSC & PAL	Common
99.VF RESOLUTION	0 to 5	5	NTSC & PAL	Common

For VTR adjustment

Adjustment Item	Adjustment range	Initial setting	Display	Adjustment NTSC/PAL *1
100.PB SW POINT	0x00 to 0xFFFFFFFF	0	NTSC & PAL	Common
101.ME REC CURRENT	0 to 255	114	NTSC & PAL	Common
102.ME SP VCO	0 to 65024	2370	NTSC & PAL	Common
103.FS PLL 48kHz	0 to 255	83	NTSC & PAL	Common
104.FS PLL 44.1kHz	0 to 255	103	NTSC & PAL	Common
105.FS PLL 32kHz	0 to 255	83	NTSC & PAL	Common
106.27MHz VCO	0 to 255	176	NTSC & PAL	Common
107.ATF GAIN	0 to 255	110	NTSC & PAL	Common
108.AGC GAIN	0 to 255	128	NTSC & PAL	Common
109.BGNEND SENS	0 to 255	128	NTSC & PAL	Common
110.FWD TORQUE	0 to 255	128	NTSC & PAL	Common

The items that painted by gray does not require the adjustments.

*1 : Adjustment common is that adjustments in only NTSC mode are required. In this case, the adjustment items on the LCD are desplayed by yellow.

3.3 ADJUSTMENT MENU

3.3.1 Switches and Functions Used in Adjustments

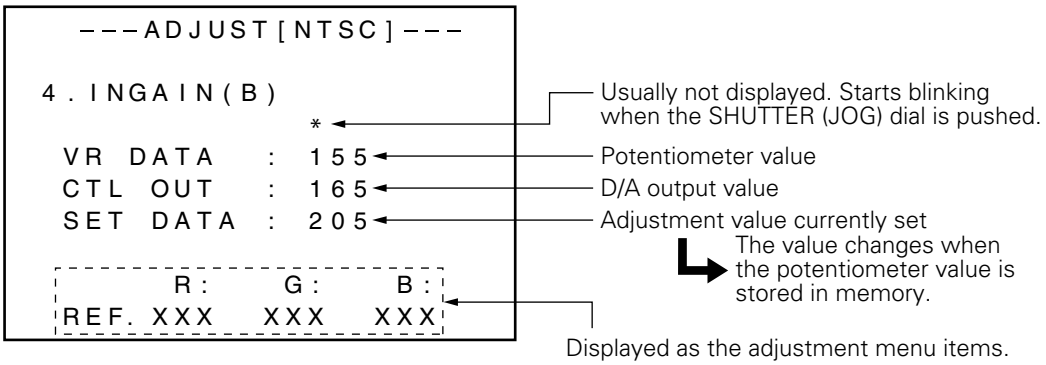
Most of the adjustment items employ microcomputer-controlled adjustments using electric potentiometers. The adjustment data is stored in EEPROM.

The switches used in the adjustments and their functions are as follows.

- MENU (STATUS) button : Press to start or exit from the adjustment menu.
- USER 1 , USER 2 : Press to select the adjustment item.
- JOG (SHUTTER) dial (rotate) : Rotate to adjust the selected item.
- JOG (SHUTTER) dial button (push in) : Press to start an adjustment and store the adjustment value in memory.

3.3.2 Procedure

(1) Turn the power ON, while holding the USER 1 and USER 2 buttons
(2) When the power is ON, press the MENU button to display the ADJUST MENU.
(3) Push the JOG dial button so that "*" blinks, and rotate the JOG dial to the specified value while observing the designated TP and measuring instrument. (In this mode, JOG dial rotate while holding the MENU button, then parameter value change quickly.)
(4) After completing the adjustment, push the JOG dial button to delete the "*" and store the adjustment value in memory. (If do not push the JOG dial button, adjustment value will not stored.)
(5) Press the USER 1 and USER 2 button to select the next item to adjust.
(6) Adjust for each item to do same procedure as above (3)(4).
(7) After completing all adjustments, turn the power OFF and ON again.
(8) To return to normal operation mode, turn the power OFF and ON again.(If did not re-start camera power, camera will be still in ADJUST MODE, so if press the MENU button then ADJUST MENU indicate on the screen and will not indicate normal menu screen.)



On-screen adjustment menu

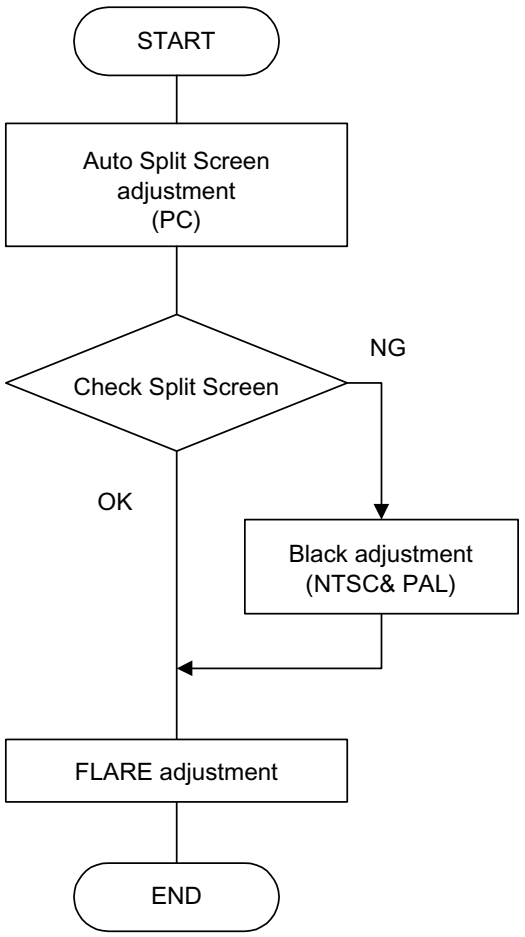
3.3.3 Adjustment mode

When the adjustment item is selected, the input signal, internal mode and output signal flow are automatically set as specified.

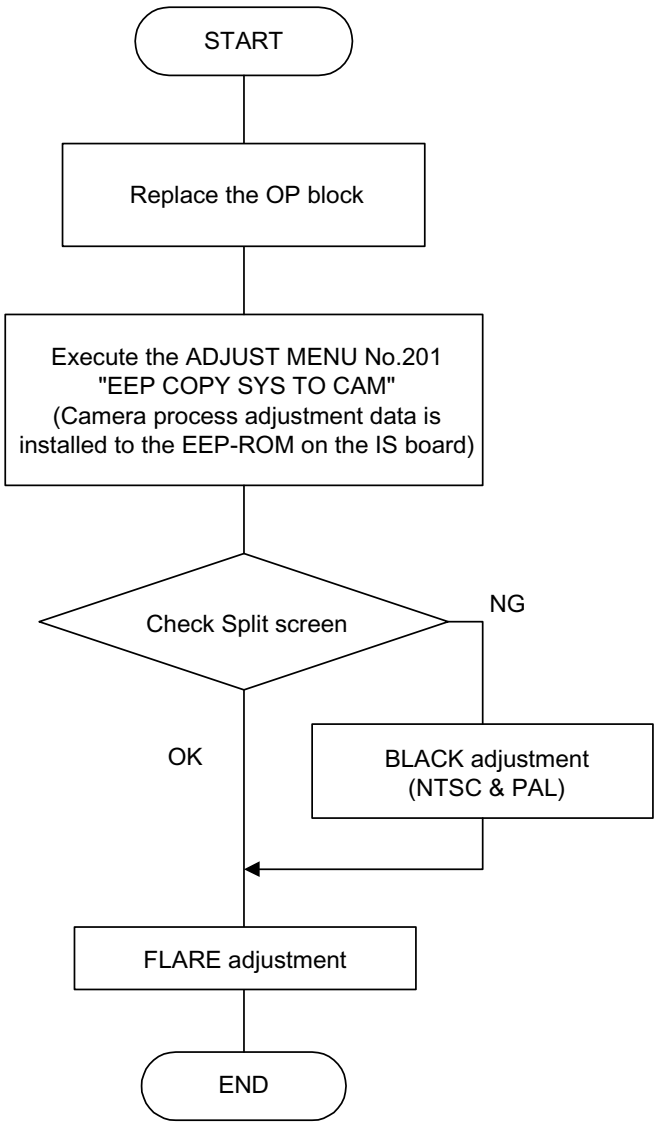
3.4 FLOWCHART OF ADJUSTMENTS

NOTE:
As the camera adjustment data is stored in the EEP-ROM on the OP block, the split screen adjustments are complete at the factory before OP block assembly is supplied as service part.
When replace the OP block assembly, only camera process adjustment is required. The SYS CPU has backup of the camera process adjustment data, so copy it from SYS to EEP-ROM on OP block by the service menu No. 201 when replace the OP block assembly.

In case of the split screen is visible



When the OP block assembly is replaced



No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure

3.5 CAMERA ADJUSTMENTS

3.5.1 Encoder adjustment

Vectorscope settings as follows.
Saturation: 75%, SET UP: 7.5%

	Preparation		ADJUST MENU No.1 "VIDEO MODE CHANGE"	☆ NTSC	(1) Select ADJUST MENU No.1, "VIDEO MODE CHANGE" (2) If system is not in NTSC, select the "NTSC" and press the JOG dial. (The camcoder will reboot automatically)
1	27MHz CAM	Frequency counter	ADJUST MENU No.2 "27MHZ CAM"	◎ TP[FH] (REWRITE BOARD) ⊕ JOG dial ☆ 27MHz ± 30Hz	(1) Select ADJUST MENU No.2 "27MHZ CAM". (2) Push the JOG dial button so that "*" blinks, and then rotate the JOG dial to adjust to the specified value. (3) Press the JOG dial to store the adjustment.
2	VIDEO Y GAIN 0054	Waveform monitor (Oscilloscope)	ADJUST MENU No.13 "VIDEO Y GAIN 0054"	◎ VIDEO OUT (75Ω terminated) ⊕ JOG dial ☆ Y level 1.0Vp-p	(1) Select ADJUST MENU No.13, "VIDEO Y GAIN 0054". (2) Rotate the JOG dial so that the Y level is as specified. (3) Press the JOG dial to store the adjustment.
3	VIDEO Y GAIN 8076	Waveform monitor (Oscilloscope)	ADJUST MENU No.14 "VIDEO Y GAIN 8076"	◎ CPN Y OUT (75Ω terminated) ⊕ JOG dial ☆ Y level 1.0Vp-p	(1) Select ADJUST MENU No.14, "VIDEO Y GAIN 8076". (2) Rotate the JOG dial so that the Y level is as specified. (3) Press the JOG dial to store the adjustment.
4	B-Y level [NTSC]	Vectorscope	ADJUST MENU No.15 "B-Y"	◎ VIDEO OUT (75Ω terminated) ⊕ JOG dial ☆ B-Y of color bar signal should be within the ⊞ mark.	(1) Select ADJUST MENU No.14, "VIDEO Y GAIN 8076". (2) Rotate the JOG dial so that the Y level is as specified. (3) Press the JOG dial to store the adjustment.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
5	R-Y level [NTSC]	Vectorscope	ADJUST MENU No.16 "R-Y"	◎ VIDEO OUT (75Ω terminated) ⊕ JOG dial ☆ B-Y of color bar signal should be within the ⊞ mark.	(1) Select ADJUST MENU No.16, "R-Y". (2) Rotate the JOG dial so that the Chroma level is as specified. (3) Press the JOG dial to store the adjustment. (4) Check that all spots of the color bar signal are within ìcmark. If out of specification, repeat adjustment No.15 "B-Y" and No.16 "R-Y" alternately.
6	BURST level [NTSC]	Waveform monitor (Oscilloscope)	ADJUST MENU No.17 "BURST"	◎ VIDEO OUT (75Ω terminated) ⊕ JOG dial ☆ Burst level 0.286Vp-p	(1) Select ADJUST MENU No.17, "BURST". (2) Rotate the JOG dial so that the BURST level is as specified. (3) Press the JOG dial to store the adjustment.
7	Chroma Gain [NTSC]	Vectorscope	ADJUST MENU No.18 "C GAIN"	◎ CPN Y OUT (75Ω terminated) ⊕ JOG dial ☆ CHROMA level should be within the ⊞ mark.	(1) Select ADJUST MENU No.18, "C GAIN". (2) Rotate the JOG dial so that the CHROMA level is as specified. (3) Press the JOG dial to store the adjustment.
8	Y GAIN 0054	Waveform monitor (Oscilloscope)	ADJUST MENU No.19 "Y GAIN 0054"	◎ CPN Y OUT (75Ω terminated) ⊕ JOG dial ☆ Y level 1.0Vp-p	(1) Select ADJUST MENU No.19, "Y GAIN 0054". (2) Rotate the JOG dial so that the CPN Y level is as specified. (3) Press the JOG dial to store the adjustment.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
9	PB GAIN 0054	Waveform monitor (Oscilloscope)	ADJUST MENU No.20 "PB GAIN 0054"	◎ CPN PB OUT (75Ω terminated) ⊕ JOG dial ☆ B-Y level 0.7Vp-p	(1) Select ADJUST MENU No.20 "PB GAIN 0054". (2) Rotate the JOG dial so that the B-Y level is as specified. (3) Press the JOG dial to store the adjustment.
10	PR GAIN 0054	Waveform monitor (Oscilloscope)	ADJUST MENU No.21 "PR GAIN 0054"	◎ CPN PR OUT (75Ω terminated) ⊕ JOG dial ☆ R-Y level 0.7Vp-p	(1) Select ADJUST MENU No.21 "PR GAIN 0054". (2) Rotate the JOG dial so that the R-Y level is as specified. (3) Press the JOG dial to store the adjustment.
11	HD Y GAIN	Waveform monitor (Oscilloscope)	ADJUST MENU No.22 "Y GAIN 8076"	◎ CPN Y OUT (75Ω terminated) ⊕ JOG dial ☆ Y level 1.0Vp-p	(1) Select ADJUST MENU No.22 "Y GAIN 8076". (2) Rotate the JOG dial so that the CPN Y level is as specified. (3) Press the JOG dial to store the adjustment.
12	HD PB GAIN	Waveform monitor (Oscilloscope)	ADJUST MENU No.23 "PB GAIN 8076"	◎ CPN Pb OUT (75Ω terminated) ⊕ JOG dial ☆ B-Y level 0.7Vp-p	(1) Select ADJUST No.23 "PB GAIN 8076". (2) Rotate the JOG dial so that the B-Y level is as specified. (3) Press the JOG dial to store the adjustment.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
13	HD PR GAIN	Waveform monitor (Oscilloscope)	ADJUST MENU No.14 "PR GAIN 8076"	◎ CPN Pr OUT (75Ω terminated) ⊕ JOG dial ☆ R-Y level 0.7Vp-p	(1) Select ADJUST No.14 "PR GAIN 8076". (2) Rotate the JOG dial so that the R-Y level is as specified. (3) Press the JOG dial to store the adjustment.
14	G GAIN 0054	Waveform monitor (Oscilloscope)	ADJUST MENU No.10 "G GAIN 0054"	◎ CPN Y OUT (75Ω terminated) ⊕ JOG dial ☆ 0.7Vp-p G level from the pedestal to 100% white	(1) Select ADJUST No.10 "G GAIN 0054". (2) Rotate the JOG dial so that the G level from the pedestal to 100% white is as specified. (3) Press the JOG dial to store the adjustment.
15	B GAIN 0054	Waveform monitor (Oscilloscope)	ADJUST MENU No.11 "B GAIN 0054"	◎ CPN Pb OUT (75Ω terminated) ⊕ JOG dial ☆ 0.7Vp-p B level from the pedestal to 100% white	(1) Select ADJUST No.11 "B GAIN 0054". (2) Rotate the JOG dial so that the B level from the pedestal to 100% white is as specified. (3) Press the JOG dial to store the adjustment.
16	R GAIN 0054	Waveform monitor (Oscilloscope)	ADJUST MENU No.12 "R GAIN 0054"	◎ CPN Pr OUT (75Ω terminated) ⊕ JOG dial ☆ 0.7Vp-p R level from the pedestal to 100% white	(1) Select ADJUST MENU No.12 "R GAIN 0054". (2) Rotate the JOG dial so that the R level from the pedestal to 100% white is as specified. (3) Press the JOG dial to store the adjustment.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure
17	Preparation for PAL adjustment		ADJUST MENU No.1 "VIDEO MODE CHANGE"	☆ PAL	(1) Select ADJUST MENU No.1, "VIDEO MODE CHANGE" (2) Select the "PAL" and press the JOG dial. (The system will reboot automatically) **NOTE:** **After this, the adjustment is in PAL mode.**
18	B-Y level [PAL]	Vectorscope	ADJUST MENU No.15 "B-Y"	◎ VIDEO OUT (75Ω terminated) ⊕ JOG dial ☆ B-Y of color bar signal should be within the ⊞ mark.	(1) Select ADJUST MENU No.15, "B-Y". (2) Rotate the JOG dial so that the Chroma level is as specified. (3) Press the JOG dial to store the adjustment.
19	R-Y level [PAL]	Vectorscope	ADJUST MENU No.16 "R-Y"	◎ VIDEO OUT (75Ω terminated) ⊕ JOG dial ☆ R-Y of color bar signal should be within the ⊞ mark.	(1) Select ADJUST MENU No.16, "R-Y". (2) Rotate the JOG dial so that the Chroma level is as specified. (3) Press the JOG dial to store the adjustment. (4) Check that all spots of the color bar signal are within ⊞ mark. If out of specification, repeat adjustment No.15 "B-Y" and No.16 "R-Y" alternately.
20	BURST level [PAL]	Waveform monitor (Oscilloscope)	ADJUST MENU No.17 "BURST"	◎ VIDEO OUT (75Ω terminated) ⊕ JOG dial ☆ Burst level 0.286Vp-p	(1) Select ADJUST MENU No.17, "BURST". (2) Rotate the JOG dial so that the BURST level is as specified. (3) Press the JOG dial to store the adjustment.
21	Chroma Gain [PAL]	Vectorscope	ADJUST MENU No.18 "C GAIN"	◎ CPN Y OUT (75Ω terminated) ⊕ JOG dial ☆ CHROMA level should be within the ⊞ mark.	(1) Select ADJUST MENU No.18, "C GAIN". (2) Rotate the JOG dial so that the CHROMA level is as specified. (3) Press the JOG dial to store the adjustment.

3.5.2 AUTO SPLIT SCREEN ADJUSTMENT (AUTO DANSA)

(1) Required tools

① Personal computer equipped RS-232C port
OS: Windows 2000 or XP
Microsoft .NET Framework Version 2.0 installed

② Software
DANSA adjustment program, Part No. PLKS1385-V01-00

③ Cables:
PC Cable, Part No. QAM0099-001
Connector cable, part No. PTU94018A
REWRITE board, part No. CK453800C

(2) Installation of adjustment software

① If Microsoft .Net Framework Ver 2.0 is not installed on the PC, download from Microsoft web site and install it.
② Download the Auto split screen software, PLKS1385-V01-00 from JS-NET.
③ Unzip the file and double click "HD250dasaSetup.exe".
④ Follow the massage to install accordingly.

(3) Connection

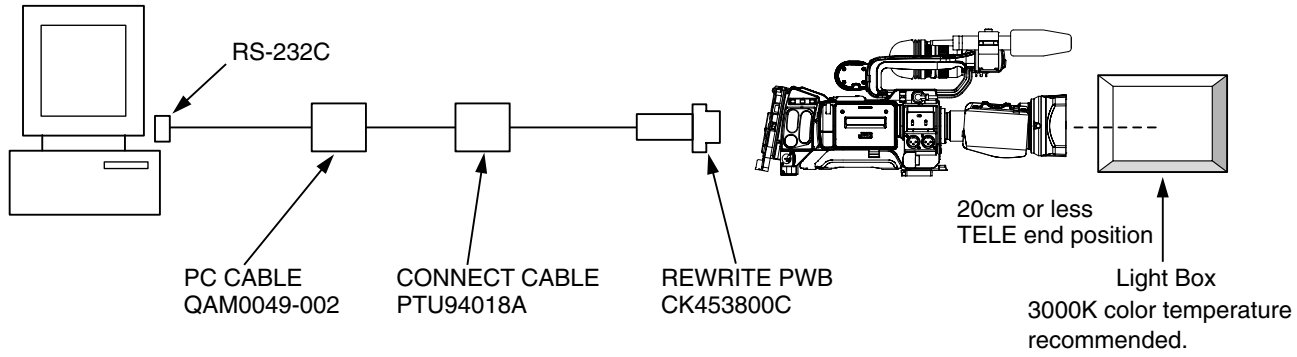


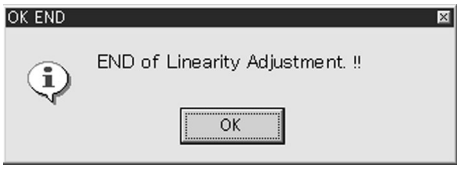
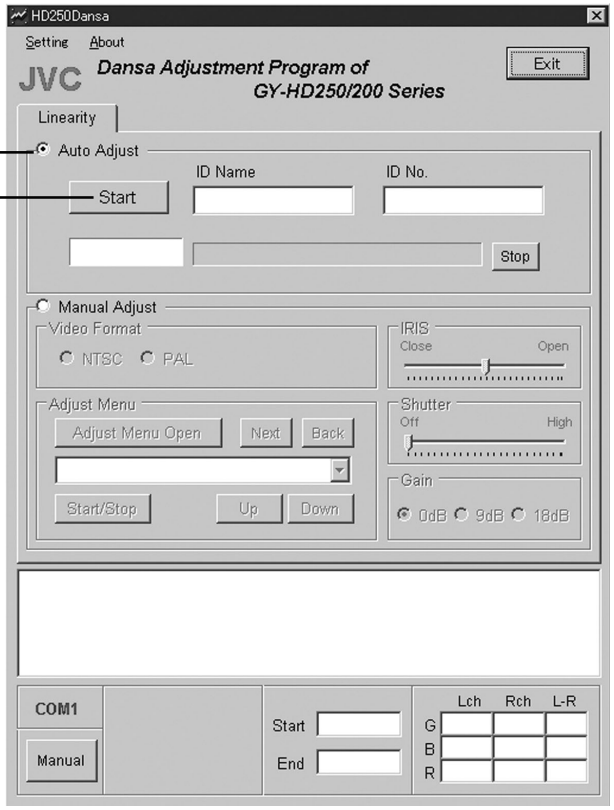
Fig. 3.5.2(1)

NOTE:

If the light box is different temperature, attach the color conversion filter on front of the lens.

Fig. 3.5.2(2)

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⇧) Adjustment level (☆)	Adjustment procedure

1	Preparation	1. Attach the Lens and Lens connector to the unit. 2. Set to AUTO IRIS mode on the Lens. 3. Set the ND Filter to "ND1" position. 4. Connect the JIG cables to the unit 5. Turn the power of the unit ON. 6. Shoot the Light Box and set the Zoom position to TELE end and fix the position so that there is no chading 7. Run the application program "HD250 Dansa". **NOTE:** **Carry out Split Screen Adjustment program after more than 15 minutes switched on the power of GY-HD250.**
2	Adjustment	1. Check the setting: Auto Adjust 2. Click the "Start" button. Approx 40 minutes are required to complete the adjustment. 3. When the pop up window is displayed, the adjustment is complete. Click OK button.  The following adjustment items are adjusted automatically. ● PRE HEATING ● IN GAIN ● WHITE OFFSET ● BLACK (NTSC) ● BLACK (PAL) ● LINIARITY (PAL) ● AUTO H SHADING (PAL) ● LINIARITY (NTSC) ● AUTO H SHADING (NTSC) 

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⊕) Adjustment level (☆)	Adjustment procedure

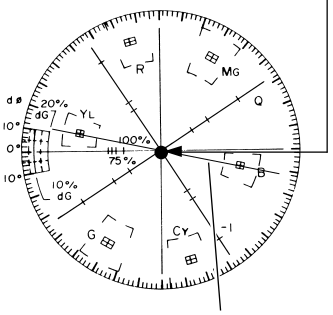
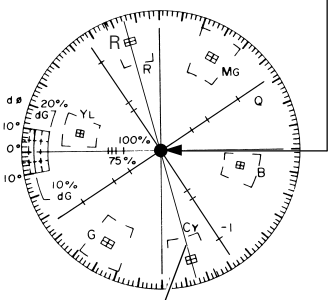
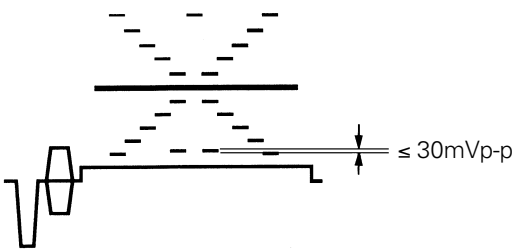
NOTE:

Black adjustment is executed by auto adjustemnt program. If the split screen is observed after auto adjustment, implement the black adjustment below by manual.

3	BLACK adjustment [NTSC]	Waveform monitor (Oscilloscope)	ADJUST MENU No.32 "BLACK [G] R" GAIN: 18dB	◎ VIDEO OUT (75Ω terminated) ⊕ JOG dial ☆ Minimize the level difference between left and right side.	(1) Select ADJUST MENU No.32 "BLACK [G] R". (2) Shoot the White chart (light box), and set the Y level to 50mV. (3) Rotate the JOG dial so that the right side level should be same as the left side. (4) Press the JOG dial to store the adjustment data.
			ADJUST MENU No.34 "BLACK [B] R" GAIN: 18dB	◎ VIDEO OUT (75Ω terminated) ⊕ JOG dial ☆ Minimize the level difference between left and right side.	(5) Select ADJUST MENU No.34 "BLACK [B] R". (6) Shoot the White chart (light box), and set the Y level to 50mV. (7) Rotate the JOG dial so that the right side level should be same as the left side. (8) Press the JOG dial to store the adjustment data.
			ADJUST MENU No.36 "BLACK [R] R" GAIN: 18dB	◎ VIDEO OUT (75Ω terminated) ⊕ JOG dial ☆ Minimize the level difference between left and right side.	(9) Select ADJUST MENU No.36 "BLACK [R] R". (10) Shoot the White chart (light box), and set the Y level to 50mV. (11) Rotate the JOG dial so that the right side level should be same as the left side. (12) Press the JOG dial to store the adjustment data.
4	BLACK adjustment [PAL]	Waveform monitor (Oscilloscope)	ADJUST MENU No.32 "BLACK [G] R" ADJUST MENU No.34 "BLACK [B] R" ADJUST MENU No.36 "BLACK [R] R"	◎ VIDEO OUT (75Ω terminated) ⊕ JOG dial ☆ Minimize the level difference between left and right side.	(1) Select ADJUST MENU No.1 "VIDEO MODE CHANGE" and Change the VIDEO MODE to PAL. (2) Select ADJUST MENU No.32 "BLACK [G] R", No.34 "BLACK [B] R", No.36 "BLACK [R] R" and carry out same manner as NTSC above.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⇧) Adjustment level (☆)	Adjustment procedure

NOTE:
Flare adjustemnt is required after auto split screen adjustemnt is implemented.

5	FLARE adjustment	Vectorscope Waveform monitor	ADJUST MENU No.40 "FLARE [B]"	◎ VIDEO OUT (75Ω terminated) ⇧ JOG dial ☆ Position the noise on the B-Y_L axis at the center of the Vectorscope	(1) Select ADJUST MENU No.40 "FLARE [B]". (2) Shoot the gray scale chart and set the lens iris so that the G REF. Data is 370 ±5 on the LCD monitor. (3) Then, open the iris by one step. (the video level increases to 200%.) (4) Rotate the JOG dial to the specified value. (5) Press the JOG dial to store the adjustment data.
		 B-Y_L axis			
	Vectorscope GAIN: MAX		ADJUST MENU No.41 "FLARE [R]"	◎ VIDEO OUT (75Ω terminated) ⇧ JOG dial ☆ Position the noise on the R-C_Y axis at the center of the Vectorscope, the carrier leak less than 0.03Vp-p	(6) Select ADJUST MENU No.41 "FLARE [R]". (7) Rotate the JOG dial to the specified value. data. (8) Press the JOG dial to store the adjustment data. (9) Pepeat the adjustment from (4) to (8) above, adjust the position of noise becomes center. (10) Check the carrier leak of black window position is less than 0.03Vp-p
		 R-C_Y axis			
		 ≤ 30mVp-p			

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⇧) Adjustment level (☆)	Adjustment procedure

3.5.3 HOB/VT WHITE BLEMISH ADJUSTMENT

NOTE:
This adjustment is only required when the white blemish correction is mis-clamping.

1	HOB WHITE SPOT	HD MONITOR	ADJUST MENU No.412 No.413 No.414 No.415 No.416 No.417	◎ CPU OUT (75Ω terminated) ⇧ JOG dial ☆ Disappear the strip noise	(1) When color strip noise caused by the horizontal OP blemish appears slightly on the monitor, execute the ADJUST MENU below to eliminate the color strip noise. No.412 "HOB WSPOT3 [G] L" No.413 "HOB WSPOT3 [G] R" No.414 "HOB WSPOT3 [B] L" No.415 "HOB WSPOT3 [B] R" No.416 "HOB WSPOT3 [R] L" No.417 "HOB WSPOT3 [R] R" (2) Check which side of the monitor and R/G/B the color noise occurs. (3) Select the corresponding adjust menu and push the JOG dial. The marker line appears on the monitor. (4) Move the marker line to the center of the color strip noise so that the color noise data.
2	VT WHITE SPOT	HD MONITOR	ADJUST MENU No.420 No.421 No.422 No.423	◎ CPU OUT (75Ω terminated) ⇧ JOG dial ☆ Disappear the strip noise	(1) When the vertical white line caused by the vertical transfer blemish appears slightly on the monitor, execute the ADJUST MENU below to eliminate the white noise. No.420 "VT WSPOT [B] L" No.421 "VT WSPOT [B] R" No.422 "VT WSPOT [R] L" No.423 "VT WSPOT [R] R" (G-ch does not operate) (2) Check which side of the monitor and R/B the color noise occurs. (3) Select the corresponding adjust menu and push the JOG dial. The marker line appears on the monitor. (4) Move the marker line to the line noise so that the line noise disappears data.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⇧) Adjustment level (☆)	Adjustment procedure

3.5.4 AUDIO adjustment

Audio adjustments are required to input the test signal from LINE input.
All switches and VR's should be set the position as below.

AUDIO INPUT (INPUT1/INPUT2)	: LINE	AUDIO MODE (MENU)	: 48k
CH2 INPUT	: INPUT 2	AUDIO SELECT (CH-1/CH-2)	: MANUAL
AUDIO REF.LEVEL (MENU)	: –20dB	MONITOR SELECT	: BOTH
OUTPUT CHARACTOR (MENU)	: ON	WIND CUT (MENU)	: OFF
TEST TONE (MENU)	: OFF		

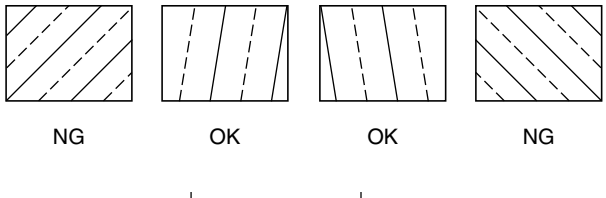
1	INPUT LEVEL setting	Audio tester 1KHz/+4dBs	Camera mode	◎ LINE OUT ⇧ AUDIO LEVEL VR ☆ -8dBs	(1) Input the test signal (1KHz /+4dBs) to the LINE input, adjust the audio level to the specified level.
2	Audio level meter adjustment	1KHz/+4dBs	Camera mode LCD should be Spread indication ADJUST MENU No.60 : AUDIO LEVEL (CH-1) No.61 : AUDIO LEVEL (CH-2)	◎ LCD MONITOR (Audio level meter) ⇧ Auto adjustment ☆ -20dBs	(1) This adjustment item should be do after complete the INPUT LEVEL setting. (2) Press the USER 1/2 button to select ADJUST MENU No.60 "AUDIO LEVEL (CH1)". (3) Press the JOG dial to display (blink) the * mark on the adjustment screen. (4) Press the JOG dial again to clear the * mark display. (5) Press the USER1 button to select ADJUST MENU No.61 "AUDIO LEVEL (CH2)". (6) Perform the adjustment using steps same as (3) and (4) above. (7) Turn off the power once and turn it on again. (8) Press the DISPLAY button to select enlarged display for the LCD level meter. (9) Check that the LCD level meter is lit to the level of –20dB.

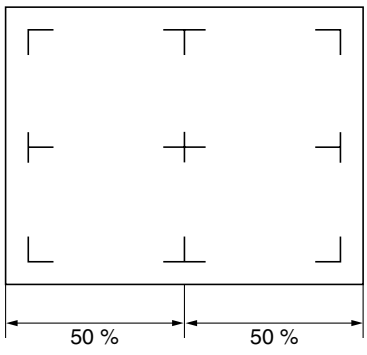
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⇧) Adjustment level (☆)	Adjustment procedure

3.5.5 MONITOR LCD adjustment

For the MONITOR LCD adjustment, the following adjustment are required only. Other adjustment items should be default value.

1	COMMON DC	—	ADJUST MENU No. 78 "COMMON DC"	◎ MONITOR LCD ⇧ JOG dial ☆ Minimize the flicker	(1) Press the USER 1/2 button to select ADJUST MENU No.78,"COMMON DC". (2) Rotate the JOG dial to adjust to the specified level. (3) Press the JOG dial to store the adjustment data.
2	VCO	—	ADJUST MENU No. 80 "VCO FINE"	◎ MONITOR LCD ⇧ JOG dial ☆ Most stable point for monitor screen	(1) Press the USER 1/2 button to select ADJUST MENU No.80."VCO FINE". (2) Rotate the JOG dial to adjust to the specified level. **NOTE:** **If adjustment cannot be done, change ADJUST MENU No. 82 "VCO COARSE" to 3 or 5 and readjust.** (3) Press the JOG dial to store the adjustment data.
3	H-POSITION		ADJUST MENU No. 83 "H-POSITION"	◎ MONITOR LCD ⇧ JOG dial ☆ Screen centering	(1) Press the USER 1/2 button to select ADJUST MENU No.83,"H POSITION". (2) Rotate the JOG dial to adjust the marker to horizontal center of the screen. (3) Press the JOG dial to store the adjustment data.



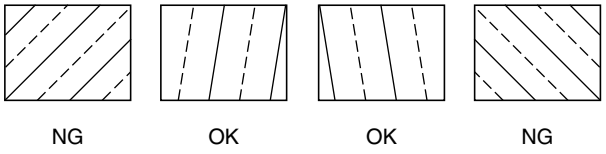
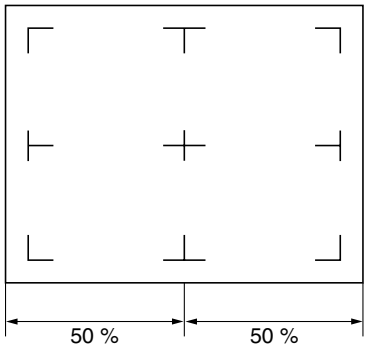


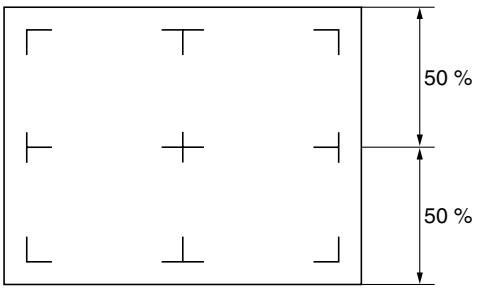
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⇧) Adjustment level (☆)	Adjustment procedure
4	SUB BRIGHT		ADJUST MENU No.70 "SUBBRIGHT [B]" ADJUST MENU No.71 "SUBBRIGHT [R]"	◎ LCD Monitor ⇧ JOG dial ☆ SET DATA No.70 "60" No.71 "64"	(1) Press the USER 1/2 button to select ADJUST MENU No.70 "SUB-BRIGHT [B]". (2) Rotate the JOG dial so that the SET DATA is 60 (initial setting) (3) Press the USER 1/2 button to select ADJUST MENU No.71 "SUB-BRIGHT [R]". (4) Rotate the JOG dial so that the SET DATA is 64 (initial setting) (5) Close the ADJUST MENU and shoot the gray scale chart. (6) Check the white balance on LCD monitor. If it is not correct, re-adjust the Menu No.70 "SUBBRIGHT [B]" and No.71 "SUB-BRIGHT [R]". ● No.70 "SUB-BRIGHT [B]" is for B-YL axis. ● No.71 "SUB-BRIGHT [R]" is for R-CY axis

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure

3.5.6 VIEWFINDER adjustment

For the VIEWFINDER adjustment, the following adjustment are required only. Other adjustment items should be default value.

1	VF COMMON DC		ADJUST MENU No. 93 "VF COMMON DC"	◎ VIEWFINDER ⓣ JOG dial ☆ Minimize the flicker	(1) Press the USER 1/2 button to select ADJUST MENU No.93,"VF COMMON DC". (2) Rotate the JOG dial to adjust to the specified level. (3) Press the JOG dial to store the adjustment data.
2	VF VCO	 	ADJUST MENU No. 95 "VF VCO L"	◎ VIEWFINDER ⓣ JOG dial ☆ Most stable point for monitor screen	(1) Press the USER 1/2 button to select ADJUST MENU No.95."VF VCO L". (2) Rotate the JOG dial to adjust to the specified level. **NOTE:** **If adjustment cannot be done, change ADJUST MENU No. 96 "VF VCO H" value from 1 to 0 and readjust.** (3) Press the JOG dial to store the adjustment data.
3	VF H-POSITION	 	ADJUST MENU No. 97 "VF H-POSITION"	◎ VIEWFINDER ⓣ JOG dial ☆ Screen centering	(1) Press the USER 1/2 button to select ADJUST MENU No.97,"VF H POSITION". (2) Rotate the JOG dial to adjust the marker to horizontal center of the screen. (3) Press the JOG dial to store the adjustment data.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⇧) Adjustment level (☆)	Adjustment procedure
4	VF V-POSI-TION adjustment		ADJUST MENU No. 98 "VF V-POSI-TION"	◎ VIEWFINDER ⇧ JOG dial ☆ Screen centering	(1) Press the USER 1/2 button to select ADJUST MENU No.98 "VF V POSITION". (2) Rotate the JOG dial to adjust the marker to vertical center of the screen. (3) Press the JOG dial to store the adjustment data.
5	VF SUB BRIGHT		ADJUST MENU No.85 "VF SUB-BRIGHT ADJUST MENU No.86 "VF SUB-BRIGHT	◎ LCD Monitor ⇧ JOG dial ☆ SET DATA No.70 "60" No.71 "64"	(1) Press the USER 1/2 button to select ADJUST MENU No.85 "VF SUB-BRIGHT [B]". (2) Rotate the JOG dial so that the SET DATA is 60 (initial setting) (3) Press the USER 1/2 button to select ADJUST MENU No.86 "VF SUB-BRIGHT [R]". (4) Rotate the JOG dial so that the SET DATA is 64 (initial setting) (5) Close the ADJUST MENU and shoot the gray scale chart. (6) Check the white balance on LCD monitor. If it is not correct, re-adjust the Menu No.85 "VF SUB-BRIGHT [B]" and No.86 "VF SUB-BRIGHT. ● No.85 "VF SUB-BRIGHT [B]" is for B-YL axis. ● No.86 "VF SUB-BRIGHT [R]" is for R-CY axis

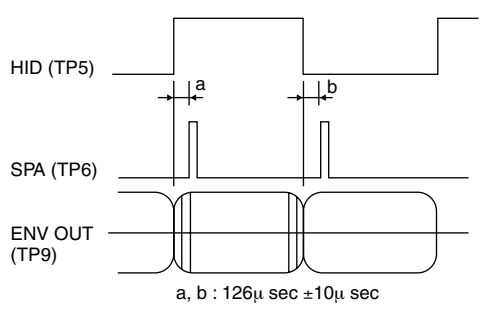
3.6 DVC UNIT ADJUSTMENTS

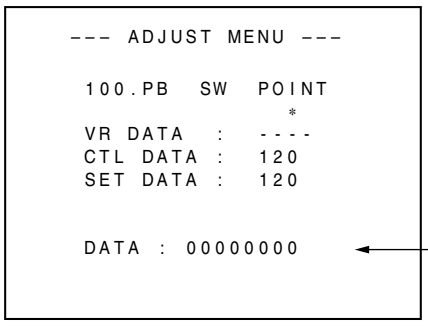
Preparation : Connect the Rewrite board (CK453800C) to CN7 on the CODEC board. Connect it in the orientation shown in Fig. 3.4, so that the test point surface (component mounting surface) faces upward.

NOTE:
When adjusting this item, set the MODE switch to VTR.

Fig. 3.4 Rewrite board connection method

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
1	PB switching point adjustment	Alignment tape, NTSC : MC-1, or PAL : MC-2 color bar recorded section	• PLAY • ADJUST MENU, 100. PB SW POINT	◎ TP6 (SPA) ◎ TP9 (ENV OUT) TRIG: TP5 (HID) GND: TP1 (GND) [Rewrite board] ⓣ Auto adjustment ☆ a, b = 126 μs sec ± 10 μs sec	(1) Press the EDIT USER 1/2 button to select ADJUST MENU No. 100, "PB SW POINT". (2) Play the alignment tape. Ensure that the compatibility adjustment has been performed and the FM waveform at TP9 (ENV OUT) is flat and stable. (3) Press the JOG dial to cause the * marking to blink. The PB switching point will be adjusted automatically. (4) Measure TP6 (SPA) by triggering TP5 (HID) and confirm that the values a and b are within the specified ranges. (5) Rotate the JOG dial to display the adjustment data in the "DATA:" field. (The DATA value should not be 00000000 or FFFFFFFF.) (6) Press the [JOG] button so that the * marking stops blinking. Now the adjustment is complete. **NOTE:** **Make sure that the data value is displayed before pressing the JOG dial. If this adjustment is completed before the data value is displayed the adjustment value will not be put into the memory.**





Rotate the JOG dial to display data.

After displaying the data, press the JOG dial to complete the adjustment.

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓘ) Adjustment level (☆)	Adjustment procedure
2	ME SP VCO [Error rate adjustment]	Oscilloscope Self-recording tape	• Self-REC/ PLAY • ADJUST MENU No.102	◎ TP2 (SBE) [REWRITE BOARD] ⓘ JOG dial ☆ Minimum error rate, which should be = 498 or less (per CH)	Note: **¥ Be sure to use a brand-new tape for this adjustment.** **¥ Be sure to clean the drum with a head cleaning tape before adjustment.** **¥ The error rate should be mesured with the Viterbi OFF. The Viterbi is set to OFF automatically when the adjustment mode is entered.** (1) Prior to the procedure below, prepare self-recording tape. (2) Select "102. ME SP VCO" adjustment. (3) Play back the self recording tape, and decrease the VR DATA to make the SBE waveform abnormal. (Fig. 3.5.2(2)) (Pressing the [STATUS] button simultaneously with the JOG dial varies the adjustment value by ±10 steps) (4) Increase the adjustment VR DATA little by little, and define the point where the SBE waveform becomes normal as value "A". (Fig. 3.5.2(3)) (5) Increase the adjustment VR DATA to make the SBE waveform abnormal. (Fig. 3.5.2(2)) (6) Decrease the adjustment VR DATA little by little, and define the point where the SBE waveform becomes normal as "B". (Fig. 3.5.2(3)) (7) Calculate the intermediate value "C" between the point A and the point B, and set the value C. (Since the adjustment values are hex number, use a functional computation-capable calculator or the PC calculator provided in Accessories.) **Setting value C=(A+B)/2** (8) Confirm that the error rate value is 498 or less in each channel. (9) Check the tolerance of adjustment. Shift the adjustment value against the setting value by ±60h. Conform that the error rate is 3,000 or less in each channel. When the error rate is over 3,000, recheck the adjustment procedure from (4). (For example, when the adjustment value is "9ED", ±60h is "A4D" and "98D". So, shift the value to "A4D" and "98D", and check the tolerance of error rate adjustment.) (10) Return the adjustment value to the setting value C, and Press the JOG dial to store the adjustment data.

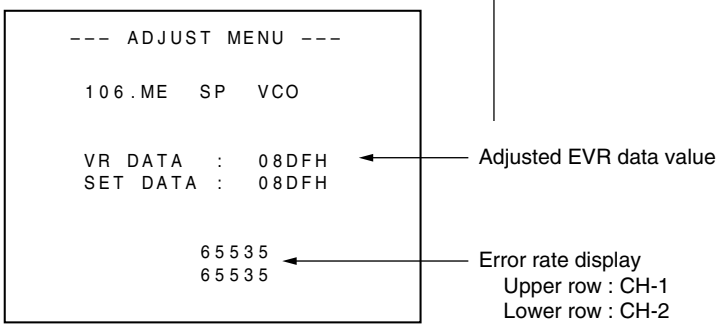


Fig. 3.6.2 (1) SP VCO Menu

SBE waveform (abnormal)
Bright parts appear randomly on the waveform.

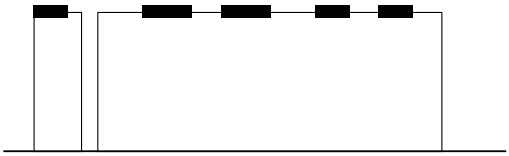


Fig. 3.6.2 (2)

SBE waveform (normal)
Narrow pulse trains appear uniformly Brightness is low.

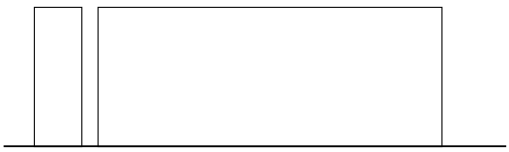


Fig. 3.6.2 (3)

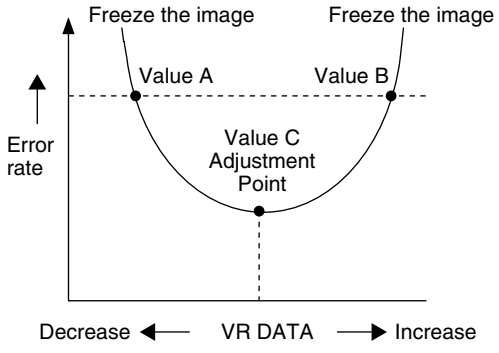


Fig. 3.6.2 (4) Consept of the adjustment

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⇧) Adjustment level (☆)	Adjustment procedure
3	FS PLL 48 kHz adjust-ment	No input. Frequency counter	EE ADJUST MENU, No.103. FS PLL 48 kHz	◎ TP4 (FS PLL) GND: TP1 (GND) [Rewrite board] ⇧ JOG dial ☆ 12.288 MHz ± 0.1 MHz	(1) Press the USER 1/2 button to select ADJUST MENU No. 103, "FS PLL 48 kHz". (2) Adjust the frequency to the specified level. (3) Press the JOG dial to store the adjustment data.
4	FS PLL 44.1 kHz adjustment	No input Frequency counter	EE ADJUST MENU, No.104. FS PLL 44.1 kHz	◎ TP4 (FS PLL) GND: TP1 (GND) [Rewrite board] ⇧ JOG dial ☆ 11.2896 MHz ± 0.1 MHz	(1) Press the USER 1/2 button to select ADJUST MENU No. 104, "FS PLL 44.1 kHz". (2) Adjust the frequency to the specified level. (3) Press the JOG dial to store the adjustment data.
5	FS PLL 32kHz adjustment	No input Frequency counter	EE ADJUST MENU, No.105. FS PLL 32kHz	◎ LCD Monitor ⇧ JOG dial ☆ Same value as the MENU No. 103, "FS PLL 48 MHz"	(1) Press the USER 1/2 button to select ADJUST MENU No.105, "FS PLL 32kHz" (2) Adjust to the same value as the "103. FS PLL 48kHz" adjustment (Setting range: 0 to 255) (3) Press the JOG dial to store the adjustment.
6	27 MHz VCO adjustment	No input. Frequency counter	EE ADJUST MENU, No.106. 27 MHz VCO	◎ TP7 (MAIN VCO) GND: TP1 (GND) [Rewrite board] ⇧ JOG dial ☆ 13.5 MHz ± 0.1 MHz	(1) Press the USER 1/2 button to select ADJUST MENU No. 106, "27 MHz VCO". (2) Adjust the frequency to the specified level. (3) Press the JOG dial to store the adjustment data.

GY-HD200U/GY-HD200CHU
GY-HD200E/GY-HD200CHE
GY-HD201E/GY-HD201CHE

The differences between GY-HD250 and GY-HD200

1. Hardware

Symbol No.	Part Name	GY-HD250U	GY-HD251E	GY-HD200U	GY-HD200E	GY-HD201E	Remark
CABINET ASSEMBLY							
M2-20	PLATE	LW40820-005A	LW40820-006A	LW40820-007A		LW40820-008A	Model name label
CHASSIS ASSEMBLY							
M3-48	BNC CONNECTOR	QNZ0472-001		None			SDI terminal
M3-54	CON.COVER	LS10143-001B		LS10143-002A			KA,SDI,GENLOCK con.
M3-62	KNOB	LW40891-001A-H x3		LW40891-001A-H x1			Slide SW
M3-65	SDI SHIELD	LS41032-001A		None			SDI board
M3-66	COAXIAL CABLE	QAM0275-012		None			SDI terminal
M3-76	CON.CAP	LS30680-001A		LS30738-001A			
M3-83	BATT ADAPTER	Anton Bauer	IDX	Anton Bauer	IDX		
M3-88	CIR CONNECTOR	QNZ0905-001		None			Studio terminal
M3-89	SHRINK TUBE	QWTE200-010		None			Studio terminal
M3-90	CONNECTING WIRE	WJM0475-001A-E		None			Studio terminal
M3-S57	SCREW	QYSDSF3006MA x3		QYSDSF3006MA x2			For VBNC board
M3-S51	SCREW	QYSDSP2605NA x2		None			For SDI board
BOARD ASSEMBLY							
05	DV Board	LSA20073-01B1	LSA20073-02B1	LSA20073-03B1	LSA20073-04B1	LSA20073-05B1	
36	VBNC Board	LSA20076-01A3		LSA20076-02A3			No GENLOCK BNC
35	SW Board	LSA20076-01A2		LSA20076-02A2			One slide switch
33	SDI Board	LSA20077-01A2		None			
PACKING							
	INST BOOK	LST0440-001A-H	LST0440-001A-H	LST0512-001A-H	LST0512-001A-H		English
			LST0441-001A-H		LST0513-001A-H		German
			LST0442-001A-H		LST0514-001A-H		French
			LST0443-001A-H		LST0515-001A-H		Spanish
			LST0444-001A-H		LST0516-001A-H		Italian
	Tripod base	QAL0802-001	None	None			

2. Firmware

FIRMWARE	GY-HD250U	GY-HD251E	GY-HD200U	GY-HD200E	GY-HD201E
UPDATE FILE	PLSC1700		PLSC1729		
SYS CPU	PLSC1692		PLSC1720		
CAM CPU	PLSC1693		←		
VTR CPU	PLSC1694		PLSC1722		
SENC CPU	PLSC1703		←		
SD CPU	PLSC1695		PLSC1723		
SD BOOT	PLSC1714		PLSC1724		
FPGA5	PLSC1696		←		
FPGA6	PLSC1697		←		
FPGA7	PLSC1698		←		

JVC®

Victor Company of Japan, Limited

Printed in Japan
(S)