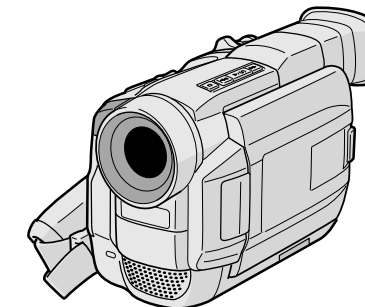


SERVICE MANUAL

DIGITAL VIDEO CAMERA

GR-DVL108EG/EK, DVL109EG/EK
DVL308EG/EK, DVL309EG

Mini DV PAL
DSC
DIGITAL
STILL CAMERA

SPECIFICATIONS *(The specifications shown pertain specifically to the model GR-DVL108EG/109EG/308/EG309EG)*

Camcorder		For Digital Still Camera	
For General		For Digital Still Camera	
Power supply	: DC 6.3 V \square (Using AC Power Adapter/Charger) DC 7.2 V \square (Using battery pack)	Storage media	: MultiMediaCard
Power consumption		Compression system	: JPEG (compatible)
LCD monitor off, viewfinder on	: Approx. 4.3 W	File size	: VGA: 640 x 480 pixels
LCD monitor on, viewfinder off	: Approx. 5.3 W	Picture quality	: 2 modes (FINE/STANDARD)
Video light	: Approx. 3.5 W	Approximate number of storable images	
Dimensions (W x H x D)	: 80 mm x 96 mm x 170 mm (with the LCD monitor closed and the viewfinder pushed down)	(with the provided MultiMediaCard [8 MB])	
Weight		FINE	: 100
GR-DVL309/DVL308	: Approx. 600 g	STANDARD	: 200
GR-DVL109/DVL108	: Approx. 580 g	(with an optional MultiMediaCard [16 MB])	
Operating temperature	: 0°C to 40°C	FINE	: 200
Operating humidity	: 35% to 80%	STANDARD	: 400
Storage temperature	: -20°C to 50°C		
Pickup	: 1/4" CCD	For Connectors	
Lens	: F 1.8, f = 3.6 mm to 36 mm, 10:1 power zoom lens	S	: Y : 1 V (p-p), 75 Ω , analogue output C : 0.29 V (p-p), 75 Ω , analogue output
Filter diameter	: ϕ 37 mm	AV	
LCD monitor		Video output	: 1 V (p-p), 75 Ω , analogue
GR-DVL309/DVL308	: 3.5" diagonally measured, LCD panel/TFT active matrix system	Audio output	: 300 mV (rms), 1 k Ω , analogue, stereo
GR-DVL109/DVL108	: 2.5" diagonally measured, LCD panel/TFT active matrix system	DV	
Viewfinder		Input/output	
GR-DVL309/DVL308	: Electronic viewfinder with 0.44" colour LCD	(GR-DVL309/DVL109 only)	: 4-pin, IEEE 1394 compliant
GR-DVL109/DVL108	: Electronic viewfinder with 0.24" black/white LCD	Output	
Speaker	: Monaural	(GR-DVL308/DVL108 only)	: 4-pin, IEEE 1394 compliant
For Digital Video Camera		PC (DIGITAL PHOTO)	
Format	: DV format (SD mode)	Digital still output	: ϕ 2.5 mm, 3-pole
Signal format	: PAL standard	JLIP/EDIT	: ϕ 3.5 mm, 4-pole
Recording/Playback format	: Video : Digital component recording Audio : PCM digital recording, 32 kHz 4-channel (12-bit), 48 kHz 2-channel (16-bit)	AC Power Adapter/Charger AA-V40EG	
Cassette	: Mini DV cassette	Power requirement	: AC 110 V to 240 V~, 50 Hz/60 Hz
Tape speed	: SP: 18.8 mm/s LP: 12.5 mm/s	Power consumption	: 23 W
Maximum recording time	: SP: 80 min. LP: 120 min.	Output	
		Charge	: DC 7.2 V \square , 1.2 A
		VTR	: DC 6.3 V \square , 1.8 A
		Dimensions (W x H x D)	: 68 mm x 38 mm x 110 mm
		Weight	: Approx. 260 g

Specifications shown are for SP mode unless otherwise indicated. E & O.E. Design and specifications subject to change without notice.

GR-DVL108EG/EK, DVL109EG/EK, DVL308EG/EK, DVL309EG

No. 86576

JVC

VICTOR COMPANY OF JAPAN, LIMITED
VIDEO DIVISION

S40894

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The following table lists the differing points between Models GR-DVL108EG/EK, GR-DVL109EG/EK, GR-DVL308EG/EK and GR-DVL309EG in this series.

	GR-DVL108EG	GR-DVL108EK	GR-DVL109EG	GR-DVL109EK	GR-DVL308EG	GR-DVL308EK	GR-DVL309EG
VIEW FINDER	B/W		B/W		COLOR		COLOR
LCD MONITOR	2.5"		2.5"		3.5"		3.5"
DV IN/OUT	OUTPUT ONLY		INPUT/OUTPUT		OUTPUT ONLY		INPUT/OUTPUT
DV CABLE	OPTION		PROVIDE		OPTION		PROVIDE
SIDE LED INDICATER	NOT USED		NOT USED		USED		USED
AC POWER ADAPTER	AA-V40EG	AA-V40EK	AA-V40EG	AA-V40EK	AA-V40EG	AA-V40EG	AA-V40EG

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 \triangle 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.

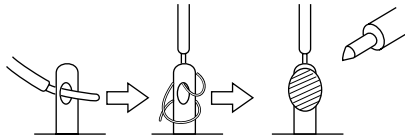


Fig.1

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.

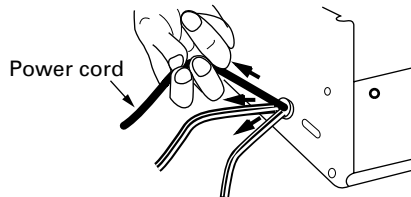


Fig.2

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.

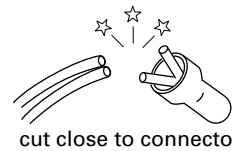
1) **Connector part number** : E03830-001

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).



cut close to connector

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.

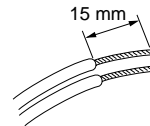


Fig.4

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

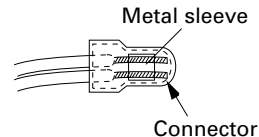


Fig.5

(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.

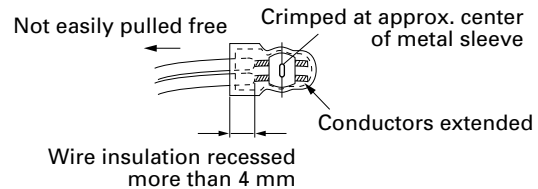


Fig.7

● 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

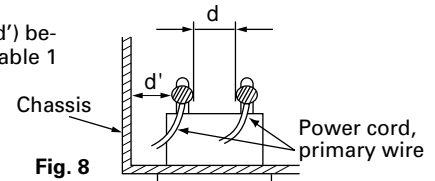
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

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.

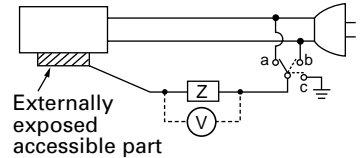


4. Leakage current test

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.

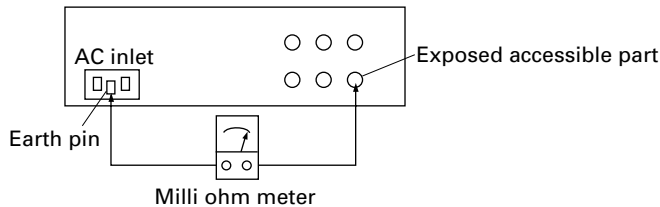


5. Grounding (Class I model only)

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.



Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	$Z \leq 0.1 \text{ ohm}$
Europe & Australia	$Z \leq 0.5 \text{ ohm}$

Fig. 10

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	$R \geq 1 \text{ M}\Omega/500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3 \text{ mm}$
100 to 240 V			AC 1.5 kV 1 minute	$d, d' \geq 4 \text{ mm}$
110 to 130 V	USA & Canada	$1 \text{ M}\Omega \leq R \leq 12 \text{ M}\Omega/500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3.2 \text{ mm}$
110 to 130 V 200 to 240 V	Europe & Australia	$R \geq 10 \text{ M}\Omega/500 \text{ V DC}$	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	$d \geq 4 \text{ mm}$ $d' \geq 8 \text{ mm}$ (Power cord) $d' \geq 6 \text{ mm}$ (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	$1 \text{ k}\Omega$	$i \leq 1 \text{ mA rms}$	Exposed accessible parts
110 to 130 V	USA & Canada	$0.15 \mu\text{F}$ and $1.5 \text{ k}\Omega$	$i \leq 0.5 \text{ mA rms}$	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	$2 \text{ k}\Omega$	$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Antenna earth terminals
		$50 \text{ k}\Omega$	$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	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 DISASSEMBLY

1.1 BEFORE ASSEMBLY AND DISASSEMBLY

1.1.1 Precautions

1. Be sure to remove the power supply unit prior to mounting and soldering of parts.
2. When removing a component part that needs to disconnect the connector and to remove the screw for removing itself, first disconnect the connecting wire from the connector and then remove the screw beforehand.
3. When connecting and disconnecting the connectors, be careful not to damage the wire.
4. When replacing chip parts (especially IC parts), desolder completely first (to prevent peeling of the pattern).
5. Tighten screws properly during the procedures.
Unless specified otherwise, tighten screws at a torque of 0.078N·m (0.8kgf·cm).

1.1.2 Assembly and disassembly

STEP	PART	Fig No.	POINT	NOTE
①	TOP COVER	Fig.1-3-2	2(S①a), (S①b), (L①)	-
②	FRONT ASSY (Inc. MIC, DC LIGHT)		(S②a), (S②b), (S②c), (S②d) (L②a), 2(L②b) ☆CN(A), (B)	NOTE ②a NOTE ②b NOTE ②c NOTE ②d

↑ (1)
↑ (2)
↑ (3)
↑ (4)
↑ (5)

(1) Indicate the disassembly steps. When assembling, perform in the reverse order of these steps. This number corresponds to the number in the disassembly diagram.

(2) Indicates the name of disassembly/assembly parts.

(3) Indicates the number in the disassembly diagram.

(4) Indicates parts and points such as screws, washers, springs which must be removed during disassembly/assembly.

S = Screw
 Lock (L), soldering (SD), shield, connector, etc.
 P = Spring
 W = Washer
 ☆CN = Connector

[Example] 2(S①a): Remove the two screws (S①a) fastening the part ①.

(5) Precautions on disassembly/assembly.

1.1.3 Destination of connectors

Note: Three kinds of double-arrows in connection tables respectively show kinds of connector/wires.

- ↔ : Wire
- ⇔ : Flat wire
- ↔ : Board to Board connector

[Example]

CONN. No.	CONNECTOR			Pin No.	
(A)	MAIN	CN104	↔	DC LIGHT	2

1.1.4 Disconnection of Connectors (Wires)

Connector

Pull both ends of the connector in the arrow direction, remove the lock and disconnect the flat wire.

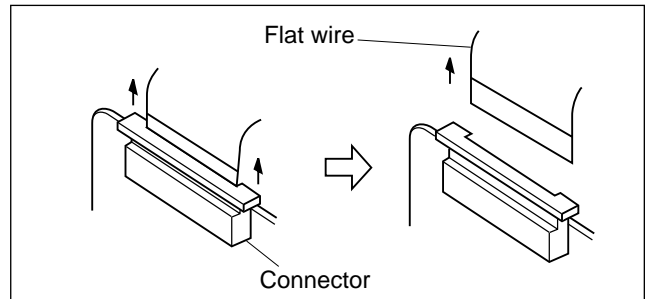


Fig. 1-1-1 Connector 1

Extend the locks in the direction of the arrow for unlocking and then pull out the wire. After removing the wire, immediately restore the locks to their original positions because the locks are apt to come off the connector.

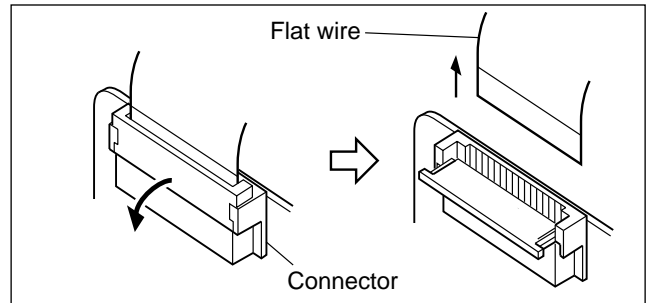


Fig. 1-1-2 Connector 2

B-B connector

Pull the board by both the sides in the direction of the arrow for disconnecting the B-B connector

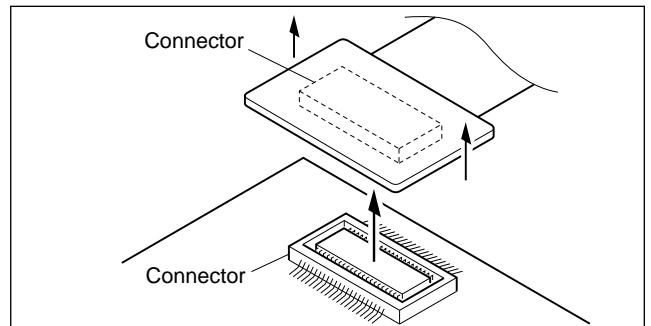


Fig. 1-1-3 Connector 3

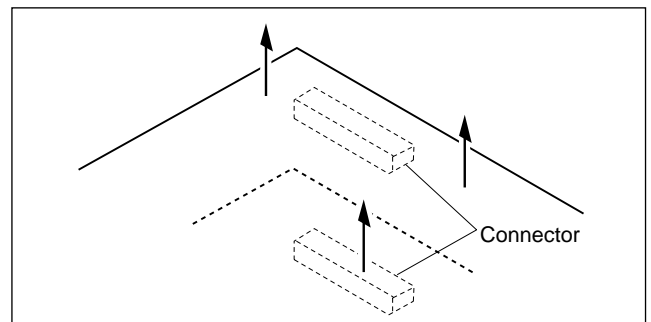


Fig. 1-1-4 Connector 4

1.2 TOOLS AND EQUIPMENTS REQUIRED FOR ADJUSTMENTS

1.2.1 Tools required for adjustments

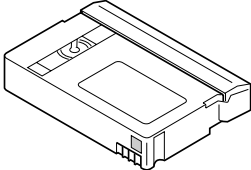
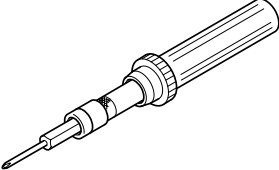
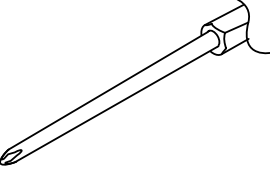
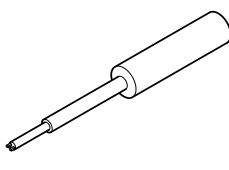
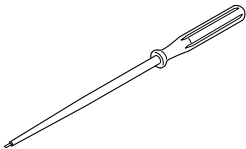
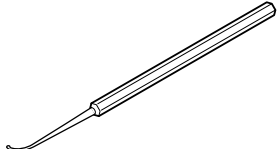
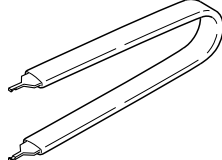
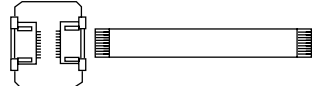
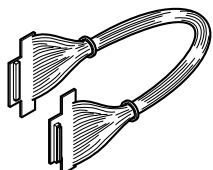
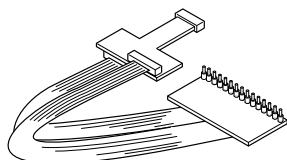
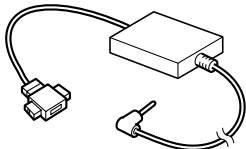
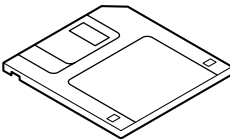
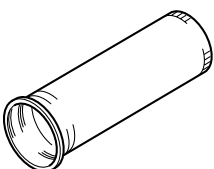
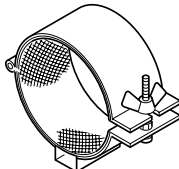
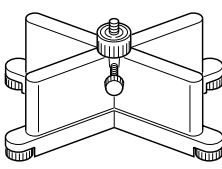
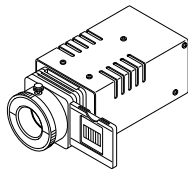
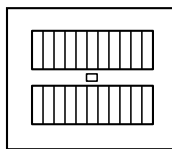
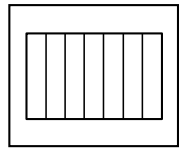
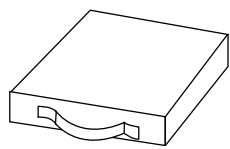
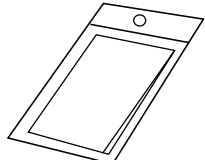
1	Alignment tape MC-2	2	Torque driver YTU94088	3	Bit YTU94088-003	4	Guide driver YTU94148A
							
5	Adjustment driver YTU94028	6	Chip IC replacement jig PTS40844-2	7	Connector extractor YTU94036A	8 Patch cord YTU94074-24/YTU94077-24	
							
9	Patch cord YTU94126A-30	10	Jig connector cable YTU93082E	11	PC cable QAM0099-002	12 Service support system YTU94057-46	
							
13	INF adjustment lens YTU92001B	14	INF adjustment lens holder YTU94087	15	Camera stand YTU93079	16 Light box unit YTU93096A	
							
17	Gray scale chart YTU94133A	18	Color bar chart YTU94133C	19	Soldering kit YTU96016C	20 Cleaning cloth KSMM-01	
							

Table 1-2-1

1. Alignment tape
To be used for check and adjustment of interchangeability of the mechanism.
2. Torque driver
Be sure to use to fastening the mechanism and exterior parts because those parts must strictly be controlled for tightening torque.
3. Bit
This bit is slightly longer than those set in conventional torque drivers.
4. Guide driver
To be used to turn the guide roller to adjustment of the linearity of playback envelope.
5. Adjustment driver
To be used for adjustment.
6. Chip IC replacement jig
To be used for adjustment of the camera system.
7. Connector extractor
To be used to release the connector.
- 8,9. Patch cord
To be used to connect electrical parts, P.C. boards, etc. for servicing.
Note: The patch cord that is newly required for repair service. Besides this patch cord, existing patch cords are also required for service.
10. Jig connector cable
Connected to CN105 of the main board and used for electrical adjustment, etc.

11. PC cable
To be used to connect the VideoMovie and a personal computer with each other when a personal computer is used for adjustment.
12. Service support system
To be used for adjustment with a personal computer.
13. INF adjustment lens
To be used for adjustment of the camera system.
14. INF adjustment lens holder
To be used together with the camera stand for operating the VideoMovie in the stripped-down condition such as the status without the exterior parts or for using commodities that are not yet conformable to the interchangeable ring.
15. Camera stand
To be used together with the INF adjustment lens holder.
16. Light box unit
To be used for adjustment of the camera system.
17. Gray scale chart (for Light box unit)
To be used for adjustment of the camera system.
18. Color bar chart (for Light box unit)
To be used for adjustment of the camera system.
19. Soldering kit
Thin head is made so that it can be inserted into small spaces.
20. Cleaning cloth
Recommended cleaning cloth to wipe down the video heads, mechanism (tape transport system), optical lens surface.

1.3 DISASSEMBLY/ASSEMBLY OF CABINET PARTS AND BOARD ASSEMBLY

1.3.1 Disassembly flow chart

This flowchart indicates the disassembly step for the cabinet parts and board assembly in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order.

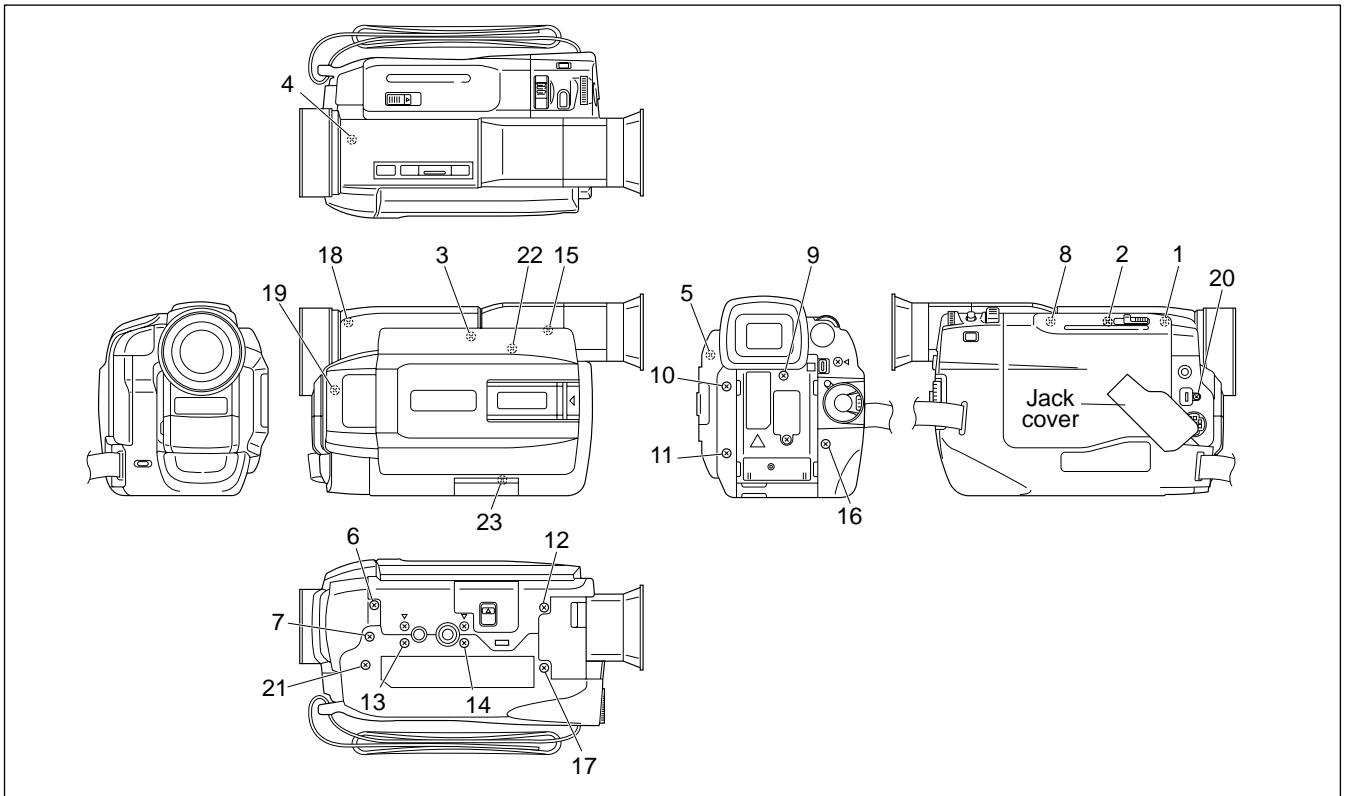
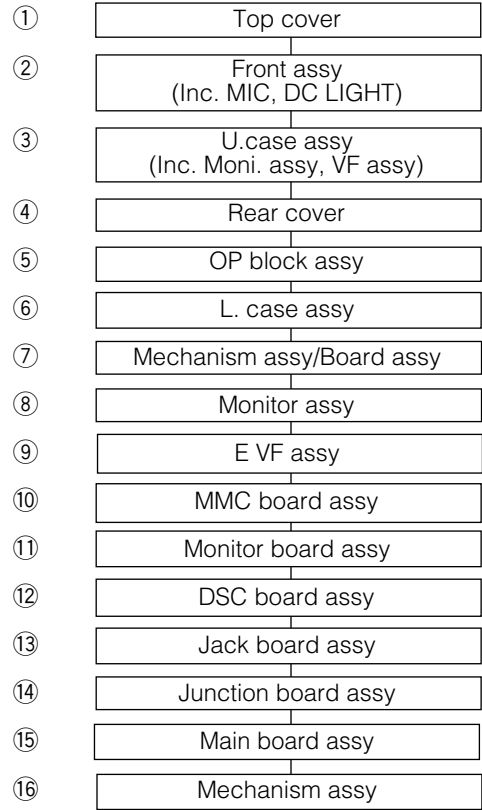


Fig. 1-3-1

1.3.2 Disassembly method (I)

Note: For the position of the screw, refer to Fig. 1-3-1.

STEP No.	PART	Fig No.	POINT	NOTE
①	TOP COVER	Fig.1-3-2	2(S①a), (S①b), (L①)	-
②	FRONT ASSY (Inc. MIC, DC LIGHT)		(S②a), (S②b), (S②c), (S②d) (L②a), 2(L②b) ☆CN ④, ⑥	NOTE②a NOTE②b NOTE②c NOTE②d
③	U. CASE ASSY (Inc. MONITOR UNIT ASSY / VF ASSY, etc.)		(S③a), (S③b), 2(S③c) (S③d), 2(S③e), (L③) ☆CN ③, ⑤	NOTE③a NOTE③b NOTE③c
④	REAR COVER		3(S④) ☆CN ⑤	NOTE④
⑤	OP BLOCK ASSY		2(S⑤) BKT (OP) ☆CN ⑥, ⑦	-
⑥	L. CASE ASSY		(S⑥a), (S⑥b), 2(S⑥c) ☆CN ⑧ JACK COVER	NOTE⑥
⑦	MECHANISM ASSY /MAIN BOARD ASSY, etc.		-	NOTE⑦

Table 1-3-2

CONN. No.	CONNECTOR			Pin No.	
④	MAIN	CN104	↔	DC LIGHT	2
⑥	MAIN	CN106	↔	MIC	3
③	MAIN	CN101	↔	MONITOR CN7601	32
⑤	DSC	CN802	↔	MMC	10
⑤	REAR	CN551	↔	MAIN CN103	11
⑥	MAIN	CN107	↔	CCD	18
⑦	MAIN	CN108	↔	OP BLOCK	24
⑧	MAIN	CN114	↔	ZOOM OPE	15

Table 1-3-3

- Note②a:** Pay heed to the screws to remove.
- Note②b:** Pay heed to the screws to remove.
- Note②c:** For removing the DC light, disengage it from the internal pawls in both sides.
- Note②d:** For removing the microphone, remove the screw from the inside and draw out the microphone. If the seat is stuck to the inside, remove it beforehand.
- Note③a:** Pay heed to the screws to remove.
- Note③b:** Pay heed to the part not to damage it.
- Note③c:** For disassembling the ⑧ monitor assembly and ⑨ VF assembly, refer to the section 1.3.3.
- Note④:** When assembling, pay careful attention to the wire not to damage it.
- Note⑥:** Remove the cover and the screws.
- Note⑦:** For disassembling the mechanism assembly and board assemblies, refer to the section 1.3.4.

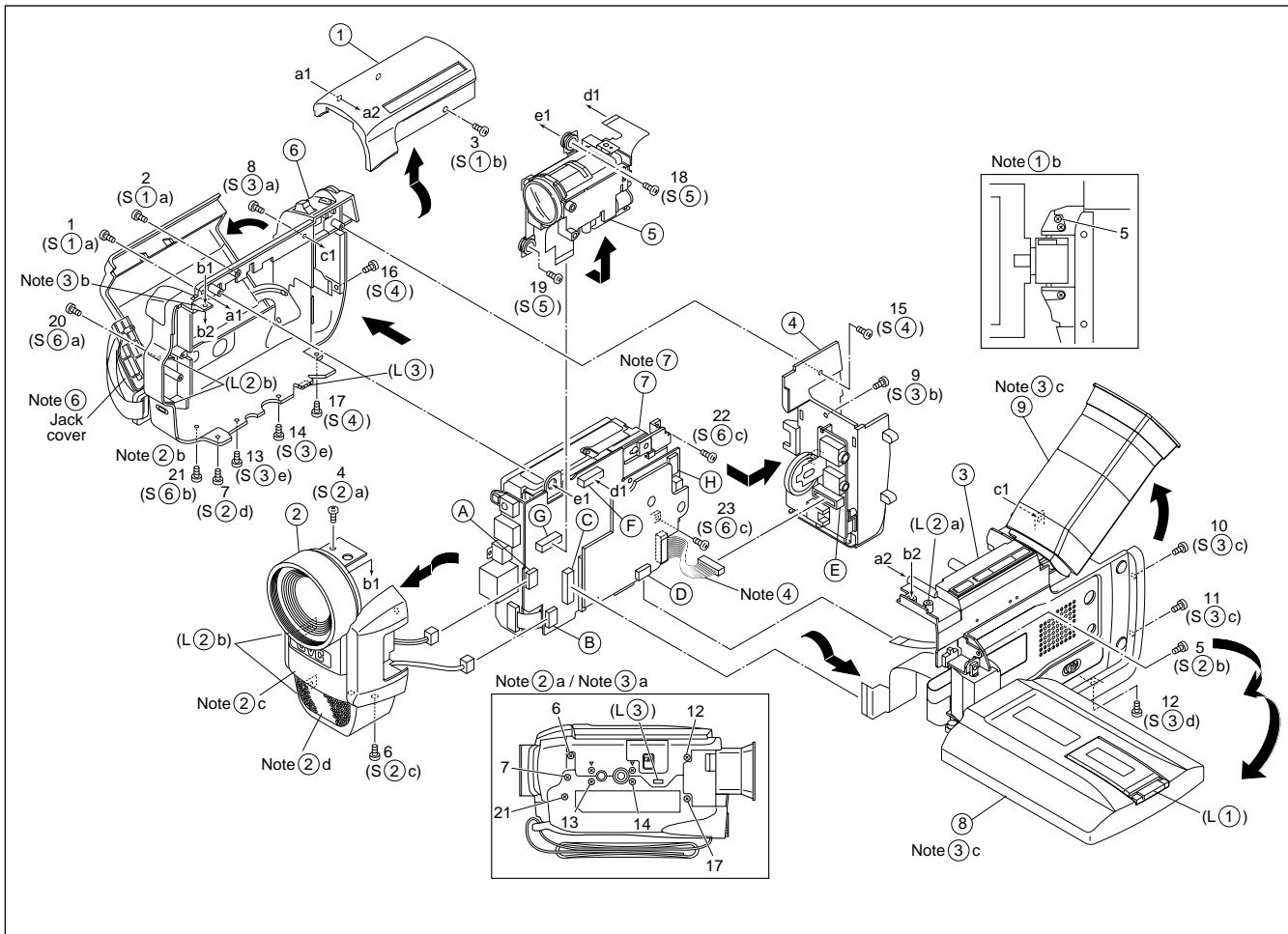


Fig. 1-3-2

1.3.3 Disassembly method (II)

STEP No.	PART	Fig No.	POINT	NOTE
⑧	MONITOR ASSY	Fig.1-3-3	2(S⑧), (L⑧) ☆CN ①	NOTE⑧
⑨	E VF ASSY		(S⑨a), 2(S⑨b) ☆CN ②	NOTE⑨a NOTE⑨b
⑩	MMC BOARD ASSY		3(S⑩), (L⑩)	-
⑪	MONITOR BOARD ASSY		(S⑪a), (S⑪b), 2(S⑪c) SPEAKER, PLATE (SPK) KNOB (DC LIGHT/DSC) ☆CN ③	NOTE⑪a NOTE⑪b

Table 1-3-4

CONN. No.	CONNECTOR				Pin No.
①	MONITOR	CN7604	↔	LCD BL	CN7501 33/32
②	MONITOR	CN7602	↔	B/W VF	CN7201 20
③	MONITOR	CN7605	↔	SPEAKER	2

Table 1-3-5

Note⑧: Carefully proceed in the work not to damage the switch.

Note⑨a: When disassembling, raise the E. VF assembly to the utmost position for disconnecting the FPC and removing the screw.

Note⑨b: For removing the E. VF assembly, raise it furthermore and remove it while widening the opening between the E. VF assembly and operation switch as the tapped holes No. 4, 5 and holes of the hinge assembly are shifted off each other.

Pay heed to the FPC wire and parts not to break or damage anything through the work.

Note⑪a: When assembling, check to see if the speaker is properly set in the frame and tightly fastened with the plate.

Note⑪b: When disassembling, be careful not to lose any part.

When assembling, pay careful attention to the position of the switch and knob, and check to see if the switch slides smoothly after assembly.

KNOB (COLOR): DC LIGHT (Gray)/DSC (Violet)

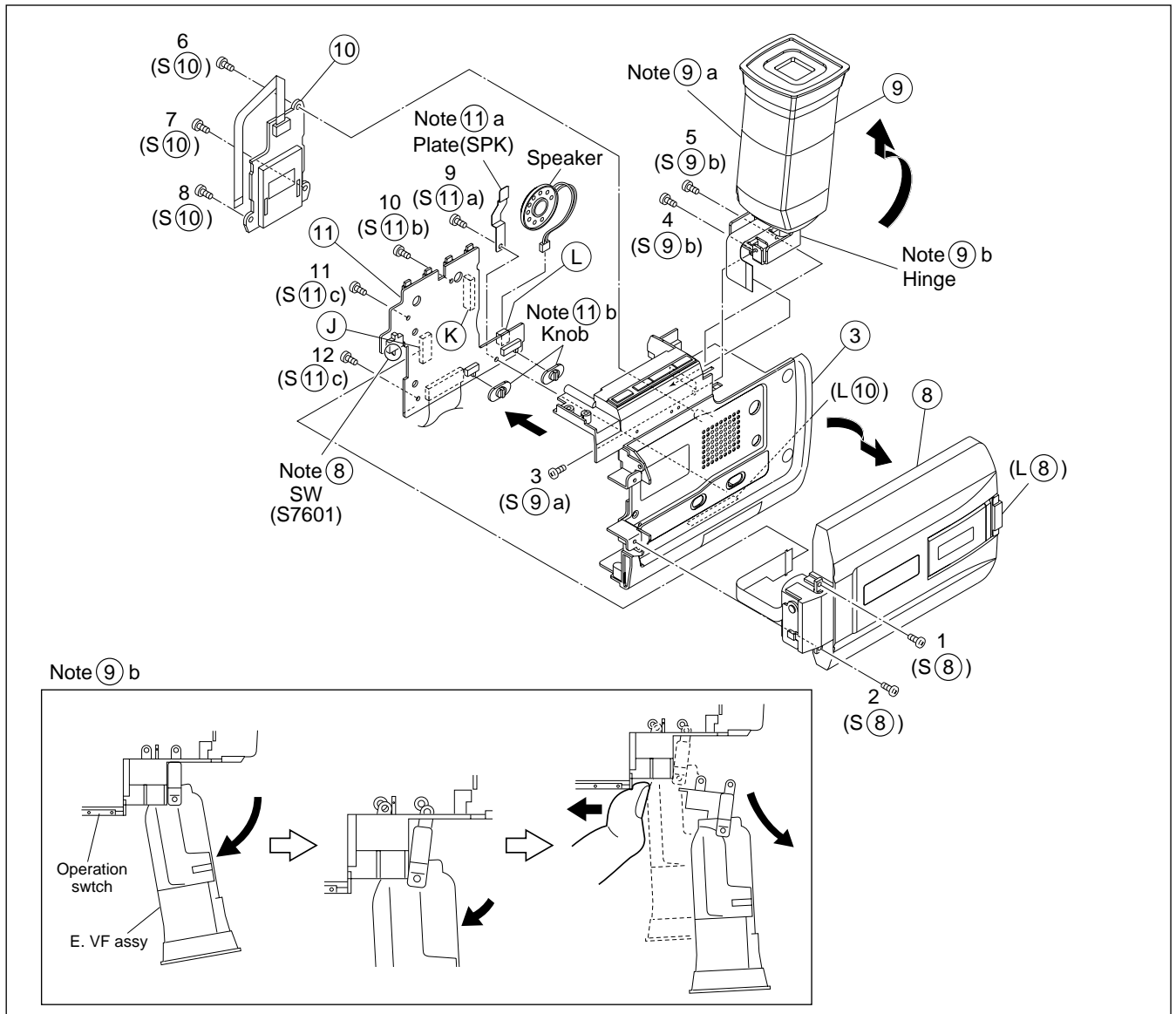


Fig. 1-3-3

1.3.4 Disassembly method (III)

STEP No.	PART	Fig No.	POINT	NOTE
12	DSC BOARD ASSY	Fig.1-3-4	2(S12) ☆CN M	-
13	JACK BOARD ASSY		2(S13) ☆CN N	-
14	JUNC. BOARD ASSY		(S14a), (S14b) ☆CN O, P, Q, R	NOTE13
15	MAIN BOARD ASSY		(S15a), 2(S15b), (L15) SHIELD CASE ☆CN S, T, U	-
16	MECHANISM ASSY		2(S16), 2(L16) HOLDER(M) ASSY	-

Table 1-3-6

CONN. No.	CONNECTOR				Pin No.
M	MAIN	CN109	↔	DSC	CN801 30
N	JACK	CN501	↔	MAIN	CN102 22
O	MAIN	CN113	↔	JUNCTION	CN571 33
P	JUNCTION	CN574	↔	LOADING MOTOR	6
Q	JUNCTION	CN573	↔	DRUM MOTOR	11
R	JUNCTION	CN572	↔	SENSOR	15
S	MAIN	CN110	↔	HEAD	8
T	MAIN	CN112	↔	CAPSTAN MOTOR	18
U	MAIN	CN111	↔	ROTARY ENCODER	6

Table 1-3-7

Note13: When removing, first disconnect the connectors O, P and Q, next remove the screws. Then, open the board assembly and disconnect the connector R on the back side.

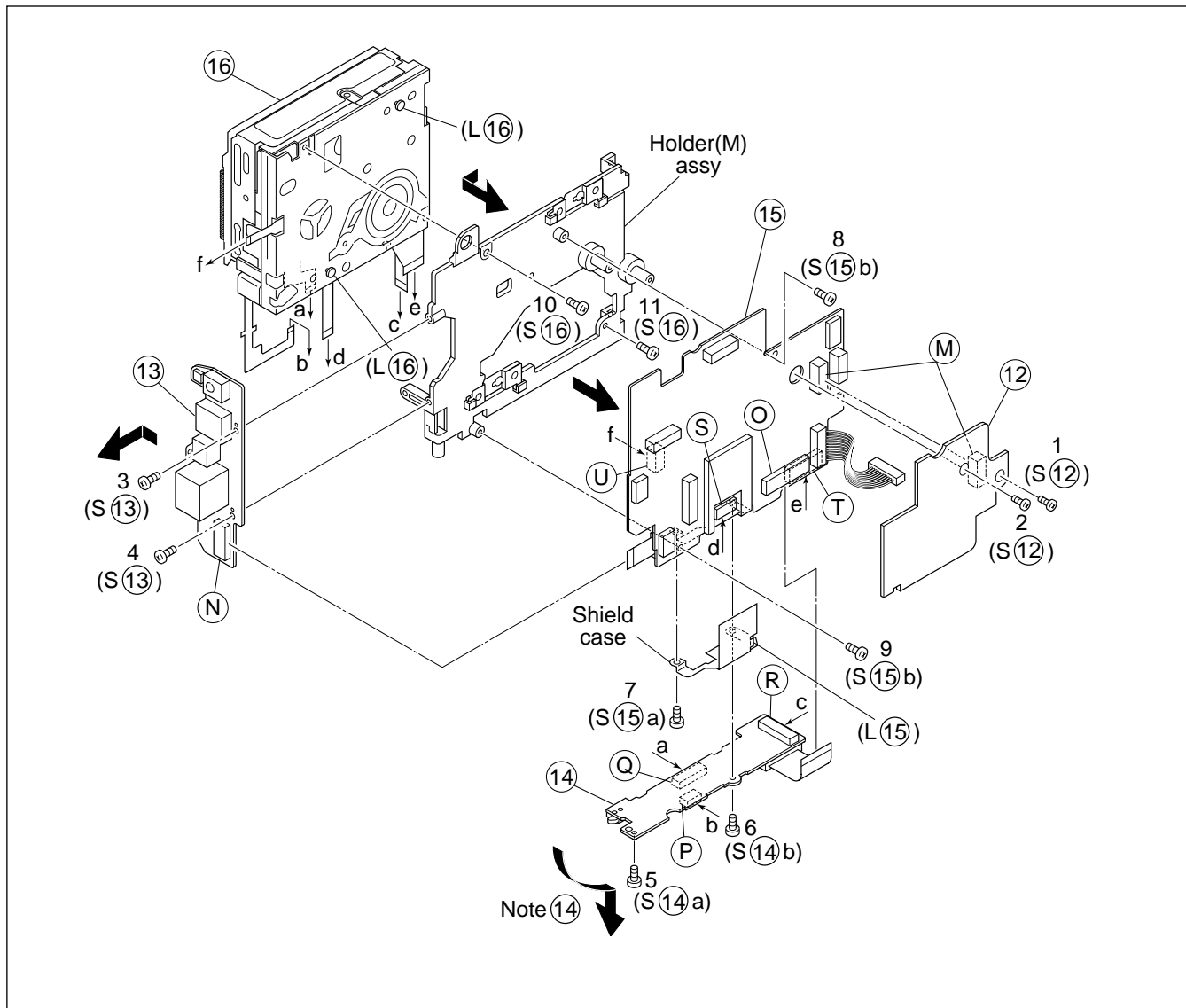


Fig. 1-3-4

1.4 ⑧ MONITOR ASSEMBLY

Note: The shape of the monitor assembly varies by the size of the LCD screen.
For the 2.5"-type LCD, refer to Fig. 1-4-1.

1.4.1 Disassembly/assembly of monitor assembly (for 2.5"-type LCD)

Note: Be careful not to soil or scratch the monitor screen through the disassembly/assembly work.

1. Remove the four screws 1 to 4 in numerical order. While disengaging the six hooks (L④a to L④f) in alphabetical order, remove the monitor cover assembly.
2. Unlock the connector ③ and then disconnect the FPC while lifting the hinge assembly upwards to remove it together with the FPC.

Note④a: For disconnecting the FPC, unlock the connector first and then lift the hinge assembly upwards. Accordingly, the FPC is disconnected together with the hinge assembly.

3. Disconnect the wire and FPC from the two connectors ⑥,

- ④, and then remove the MONITOR BL board assembly, holder (PWB) and backlight together.
4. Remove the LCD module while disengaging it from the two hooks (L④g, L④h).

1.4.2 Disassembly/assembly of hinge assembly (for 2.5"-type LCD)

1. Remove the one screw 5 first, and then remove the two screws 6, 7 after removing the SW board assembly. While disengaging the four hooks (L④j, L④k) in both sides, remove the hinge cover (1) and (2).
2. Disconnect the FPC from the hinge assembly.

Note④b: When disassembling/assembling the hinge assembly, pay careful attention to every part not to damage anything.

Note④c: When connecting the FPC, arrange the FPC wire by winding it around the shaft (hinge pin) of the hinge assembly by two and a half turns while paying heed to the orientation of the hinge assembly and FPC.

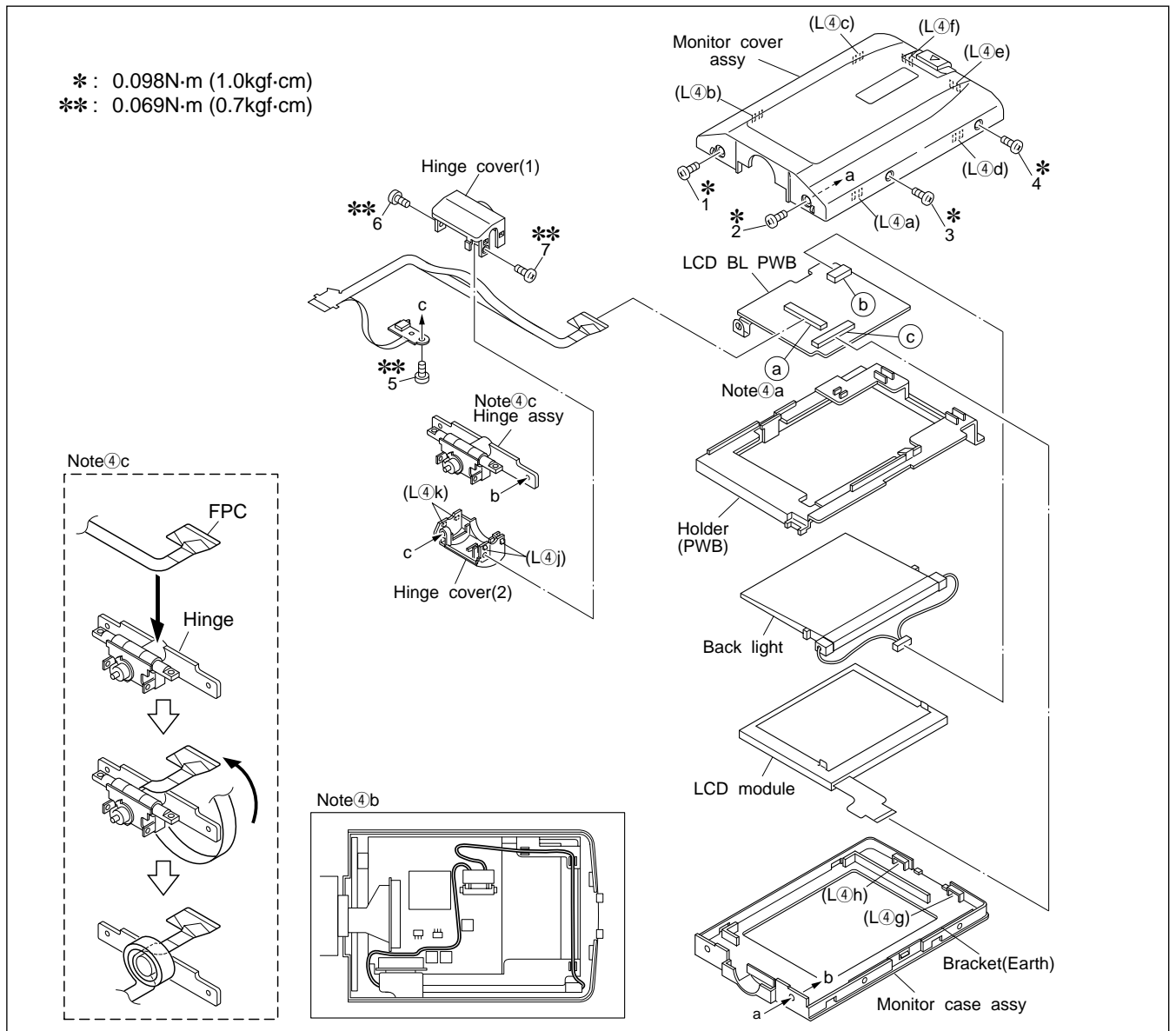


Fig. 1-4-1

Note: The shape of the monitor assembly varies depending on the size of the LCD screen.

For the 3.5"-type LCD, refer to Fig. 1-4-2.

1.4.3 Disassembly/assembly of monitor assembly (for 3.5"-type LCD)

Note: Be careful not to soil or scratch the monitor screen through the disassembly/assembly work.

1. Remove the four screws 1 to 4 in numerical order. While disengaging the six hooks (L④a to L④f) in alphabetical order, open the monitor cover assembly and remove it after disconnecting the FPC from the connector ①.

Note④d: When removing the monitor cover assembly, be careful not to damage the FPC and connector.

2. Unlock the connector ② and then disconnect the FPC while lifting the hinge assembly upwards to remove it together with the FPC.

Note④e: For disconnecting the FPC, unlock the connector first and then lift the hinge assembly upwards. Accordingly, the FPC is disconnected together with the hinge assembly.

3. Disconnect the wire and FPC from the two connectors ③, ④, and then remove the MONITOR BL board assembly, holder (PWB) and backlight together.

4. Remove the LCD module while disengaging it from the four hooks (L④g to L④k).

1.4.4 Disassembly/assembly of hinge assembly (for 3.5"-type LCD)

1. Remove the one screw 5 first, and then remove the two screws 6, 7 after removing the SW board assembly. While disengaging the four hooks (L④j, L④k) in both sides, remove the hinge cover (1) and (2).

Note④g: When disassembling/assembling the hinge assembly, pay careful attention to every part not to damage anything.

Note④h: When connecting the FPC, arrange the FPC wire by winding it around the shaft (hinge pin) of the hinge assembly by two and a half turns while paying heed to the orientation of the hinge assembly and FPC.

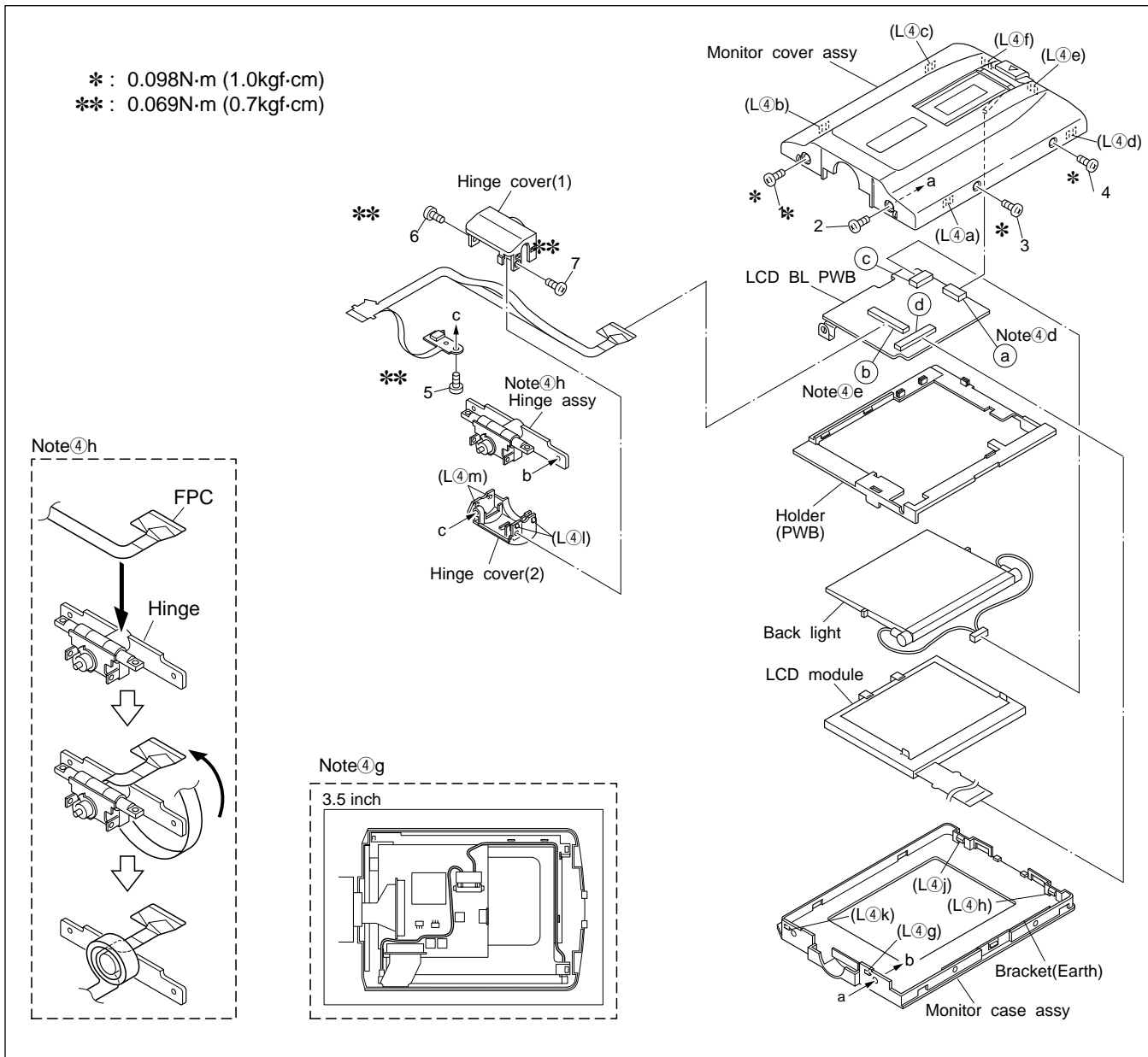


Fig. 1-4-2

1.5 ⑨ E. VF ASSEMBLY

Note: The shape of the E. VF assembly varies by the type of the viewfinder (B/W, color VF).

(For the B/W VF, refer to Fig. 1-5-1.)
 (For the COLOR VF, refer to Fig. 1-5-2.)

1.5.1 Disassembly/assembly of E. VF assembly (for B/W VF)

Note: Place the E. VF assembly with the VF case (upper) assembly down through the disassembly/assembly work.

1. First remove the two screws (1, 2), next remove the eyepiece assembly.
2. Remove the two screws (3, 4), and disengage the two hooks (L⑤a, L⑤b) in both sides while extending the VF case (upper) assembly by one side. Accordingly, the VF case (lower) can be removed.

Note⑤a: When reassembling, install the VF case (lower) paying careful attention to the FPC so that it is not caught in the hinge assembly of the VF case (lower)

when the hinge assembly is folded down.

Note⑤b: Don't remove the hinge assembly fastened to the VF case (lower) with the screws unreasonably except for replacement. For removing the hinge assembly for replacement, remove the two screws (6, 7). When installing a new hinge assembly, be sure not to use the screws that were once removed but to use new screws to fasten it.

3. Remove the one screw (5) and remove the board assembly, LCD module and holder together.

Note⑤c: When reassembling, set the holder in the groove and fasten the board assembly with the screw while arranging the FPC carefully.

4. Disconnect the FPC and wire, and then remove the LCD module.
5. Remove the holder while disengaging it from the two hooks (L⑤c, L⑤d).

Note⑤d: When reassembling, pay careful attention to the vertical orientation.

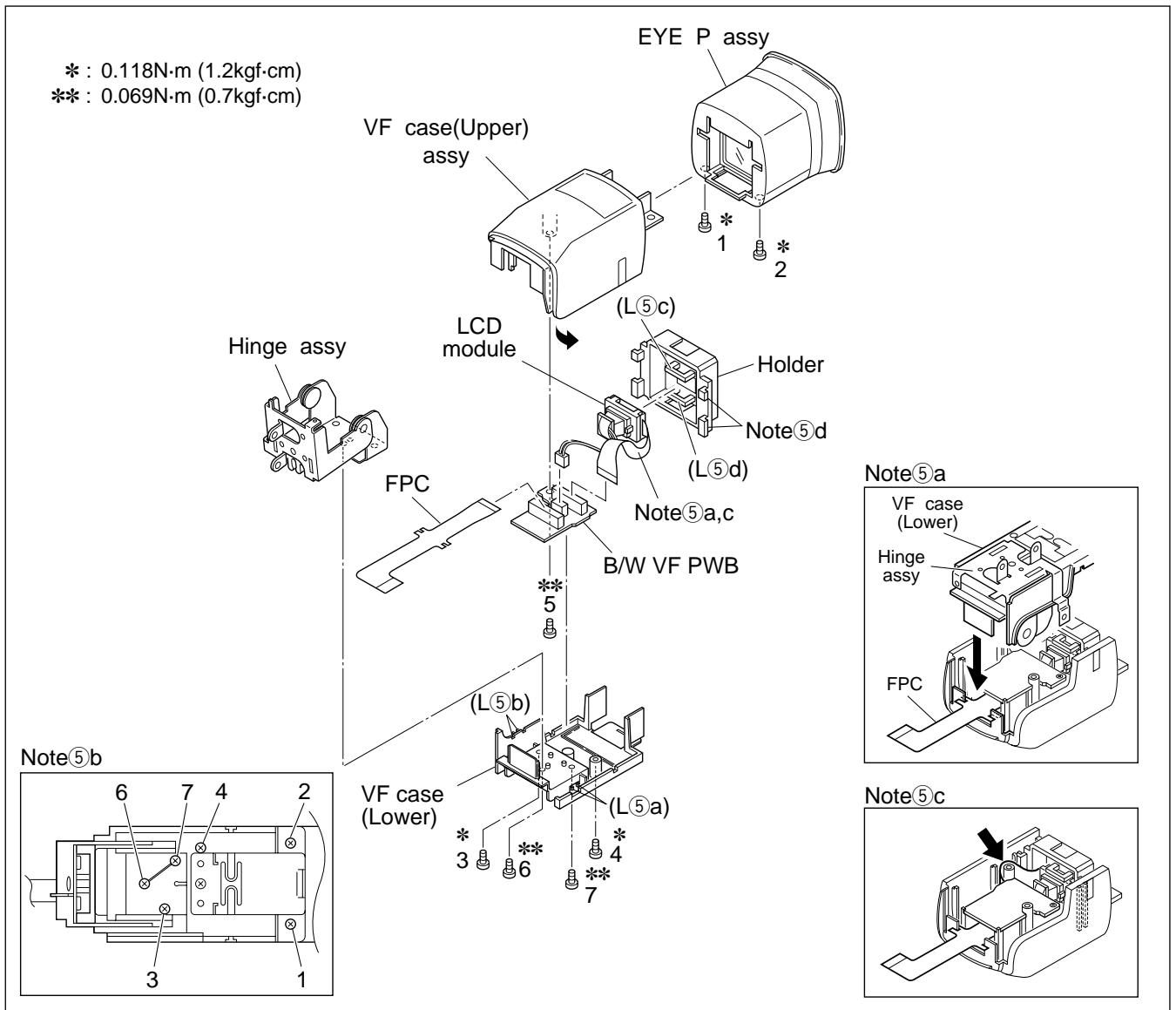


Fig. 1-5-1

1.5.2 Disassembly/assembly of E. VF assembly (for color VF)

Note: Place the E. VF assembly with the VF case (upper) assembly down through the disassembly/assembly work.

1. Remove the two screws (1, 2) and then remove the eyepiece assembly.
2. Remove the two screws (3, 4), and disengage the two hooks (L5a, L5b) in both sides while extending the VF case (upper) assembly by one side. Accordingly, the VF case (lower) can be removed.

Note5e: When reassembling, first set the LCD module and FPC in the VF case (upper), next install the VF case (lower) paying careful attention to the FPC so that it is not caught in the hinge assembly of the VF case (lower) when the hinge assembly is folded down.

Note5f: Don't remove the hinge assembly fastened to the VF case (lower) with the screws unreasonably except for replacement. For removing the hinge assembly for replacement, remove the two screws (5, 6). When installing a new hinge assembly, be sure not to use the screws that were once removed but to use new screws to fasten it.

3. Remove the LCD module and FPC module.

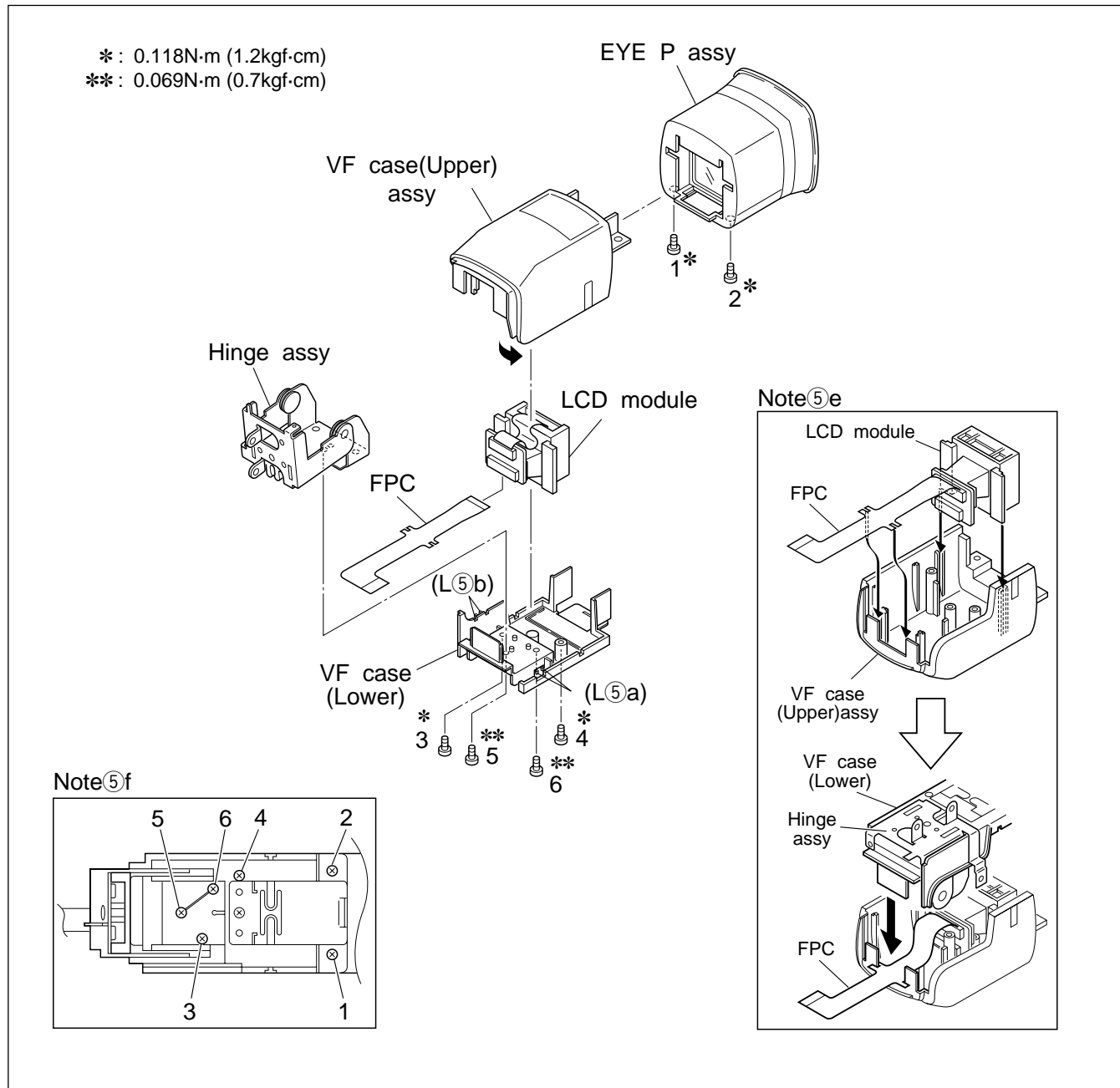


Fig. 1-5-2

1.6 DISASSEMBLY/ASSEMBLY OF OP BLOCK ASSEMBLY/CCD BOARD ASSEMBLY

1.6.1 Precautions

1. Through the disassembly/assembly work, carefully handle the CCD image sensor, optical LPF, lens, and so on paying the closest attention to the surface of each part so as to prevent it from getting soiled, dusty or scratched. If some of them gets soiled with fingerprints, etc., wipe it out with silicone paper, clean chamois, or super cleaning cloth recommended by JVC, or the like.
2. The new CCD image sensor is occasionally shipped from the factory as a protection seal is applied onto its transparent glass. If so, leave the protection seal as it is and remove it just before installing the CCD image sensor into the OP block assembly.
3. The orientation of the optical LPF is an important factor for installation. If there is some marking on the LPF, be sure to note it down before removing and to reassemble it very carefully as it was referring to the marking.

1.6.2 How to remove CCD board assembly and CCD base assembly

1. Unsolder the CCD board assembly by the 14 points (SD1) and then remove it.
2. Remove the two screws (1, 2) and remove the CCD base assembly.

Note⑥a: When removing the CCD base assembly, pay heed to the CCD image sensor because the spacer rubber and optical LPF are occasionally removed together with the CCD image sensor.

Note⑥b: When replacing the CCD image sensor, don't replace it individually but replace the CCD base assembly in whole with a new one.

1.6.3 How to assemble CCD base assembly and CCD board assembly

1. Install the optical LPF with the spacer rubber attached to its CCD side in the OP block assembly.

Note⑥c: Pay careful attention to the orientation of the LPF.

2. Set the CCD base assembly with careful attention to the spacer rubber not to come off the right position, and fasten them together with the two screws (1, 2).
3. Set the CCD board assembly in the CCD base assembly, and then solder it by the 14 points (SD1).

Note⑥d: When soldering the FPC wire to the terminal after replacement of the focus motor or zoom motor, be sure to keep the tip of a soldering iron approximately 1 mm apart from the terminal.

Note⑥e: The iris motor unit includes the FPC assembly and two sensors.

1.6.4 Replacement of service parts

Service parts to be supplied for the OP block assembly are as follows.

When replacing a part, be very careful not to get the FPC wire broken or damaged by overheating in soldering.

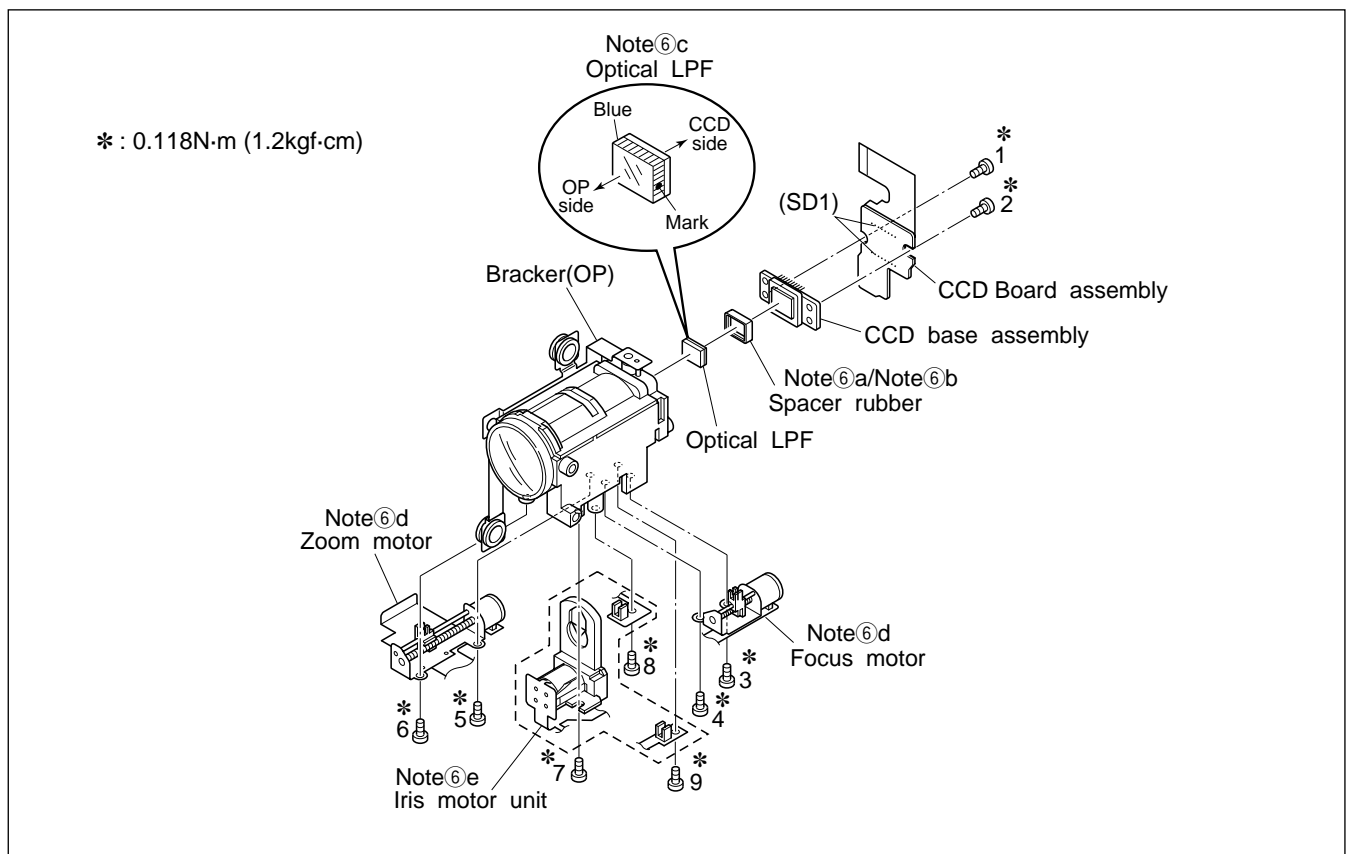


Fig. 1-6-1

1.7 CONNECTION OF CONNECTORS

<PATCH CORDS>

Note: The patch cord No. ② is a new implement, which is to be used as a requisite for servicing this model as well as existing patch cords.

	Connection			Pin No.	Parts Number
①	MAIN	CN107	↔	CCD	18 YTU94074-18 /YTU94077-18
②	MAIN	CN108	↔	OP BLOCK	24 YTU94074-24 /YTU94077-24
③	MAIN	CN114	↔	ZOOM UNIT	15 YTU94074-15 /YTU94077-15
④	MONITOR	CN7604	↔	LCD BL CN7501	33/32 YTU94129A-33 /YTU94109-33
⑤	JACK	CN501	↔	MAIN CN102	22 YTU94074-22 /YTU94077-22
⑥	MAIN	CN111	↔	ROTARY ENCODER	6 YTU94074-6 /YTU94077-6
⑦	MAIN	CN109	↔	DSC CN801	30 YTU94126A-30

Table 1-7-1

Note: Since the label of the test point on the board does not correspond to that of the jig connector (CN105), refer to the following table when using the jig connector practically.

Besides the patch cord No. ②, prepare existing patch cords depending on the situation.

JIG CONNECTOR CN105	Y TU93082E	JIG BOARD (LABEL)	
AL_3V	20	VPP_7.8V	20
JIG_SCK	10	MCU_RST	19
JIG_SPT	19	JIG_TX	18
SBT	9	GND	17
SBE	18	VF_B_OUT	16
JLIP_RX	8	VF_R_OUT	15
JLIP_TX	17	VF_VCOM	14
GND	7	RXD	13
HID	16	TXD	12
PB_VCO	6	VF_GVOUT	11
ENV_OUT	15	GND	10
MAIN_VCO	5	V_FF	9
ATIF	14	V_O/L	8
FS_PLL	4	V_TP_FM	7
REC_MON	13	PB_CTL	6
SPA	3	V_OUT_J	5
SBD	12	GND	4
JIG_MOD	2	AO_SIG_J	3
RESET	11	GND	2
VPP	1	AL_3.2V	1

The label of the test point on the board →
The label of the jig connector (CN105) →

Table 1-7-2

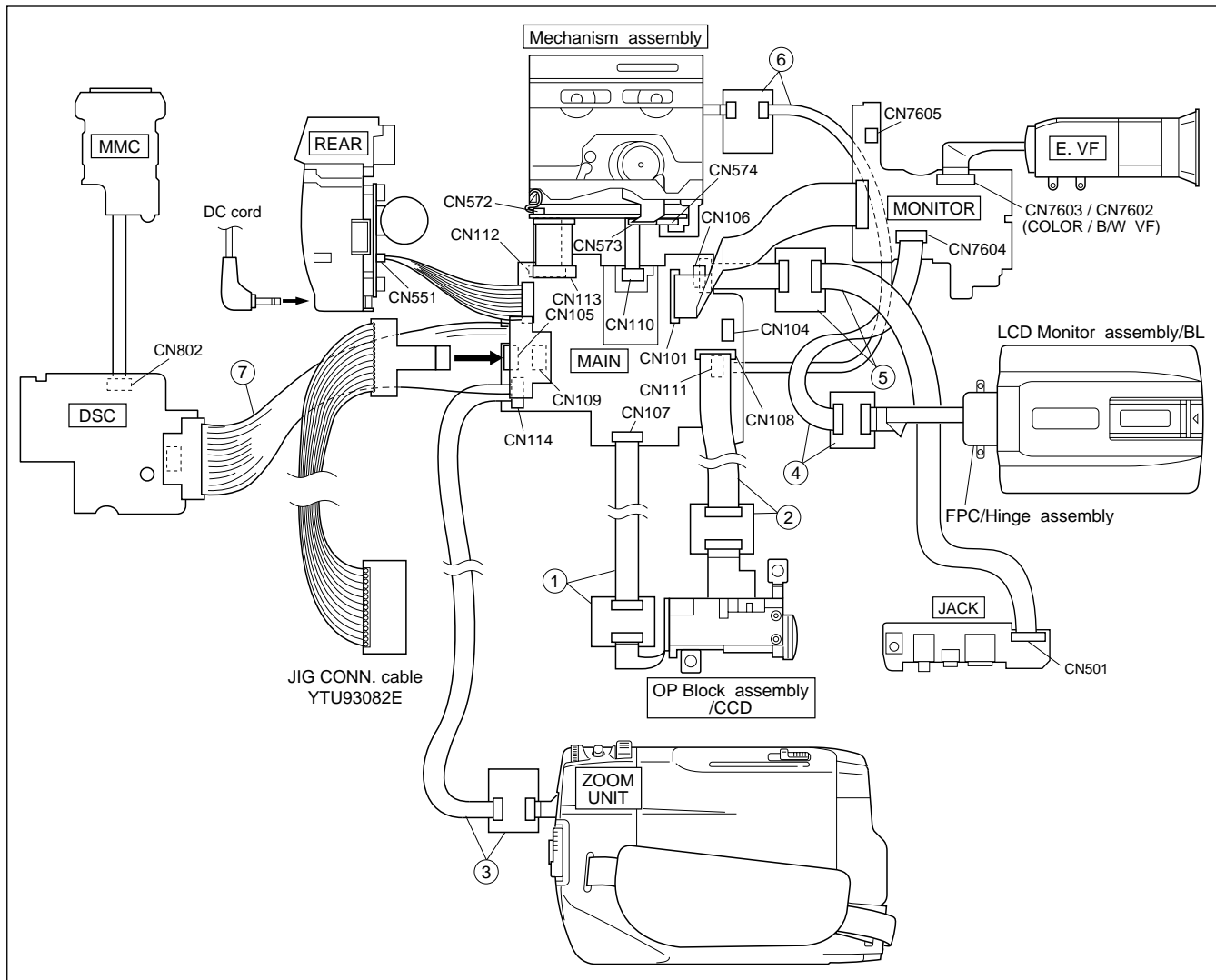


Fig. 1-7-1

1.8 SERVICE NOTE

Symbol No. →	①	②	③ (⑧ / ⑨)	④	⑤	⑥
Removing order of screw →	1	2	3	4	5	6
Place to stick screw →			*			
Reference drawing →	Fig. 1-3-2					
Screw tightening torque →	I					

Symbol No. →	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯
Removing order of screw →	1	2	3	4	5	6	7	8	9
Place to stick screw →	*	*	*	*	*	*	*	*	*
Reference drawing →	Fig. 1-3-3								
Screw tightening torque →	III								

Removing order of screw →	MONITOR ASSY						
Place to stick screw →	1	2	3	4	5	6	7
Reference drawing →	Fig. 1-4-1						
Screw tightening torque →	III						

Removing order of screw →	B/W VF ASSY						
Place to stick screw →	1	2	3	4	5	6	7
Reference drawing →	Fig. 1-5-1						
Screw tightening torque →	V						

Removing order of screw →	COLOR VF ASSY					
Place to stick screw →	1	2	3	4	5	6
Reference drawing →	Fig. 1-5-2					
Screw tightening torque →	IV					

Removing order of screw →	OP BLOCK ASSY								
Place to stick screw →	1	2	3	4	5	6	7	8	9
Reference drawing →	Fig. 1-6-1								
Screw tightening torque →	V								

< NOTE >

- 1) * : Dont t reuse the screw, because screw lock bond was applied to them.
- 2) Pay careful attention to tightening torque for each screw.
 - I : 0.078N/Em (0.8kgf/Em)
 - II : 0.147N/Em (1.5kgf/Em)
 - III : 0.098N/Em (1.0kgf/Em)
 - IV : 0.069N/Em (0.7kgf/Em)
 - V : 0.118N/Em (1.2kgf/Em)

Table 1-8-1

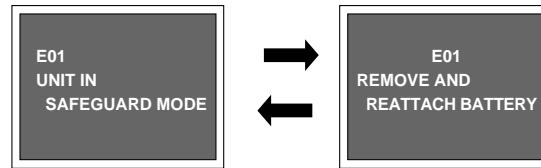
1.9 EMERGENCY DISPLAY

Whenever some abnormal signal is input to the syscon CPU, an error number (E01, as an example) is displayed on the LCD monitor or (in the electronic view finder).

In every error status, such the message as shown below alternately appear over and over.

- In an emergency mode, all operations except turning on/off the POWER switch are ineffectual.

Example (in case of the error number E01):



LCD display	Emergency mode	Details	Possible cause
E01	LOADING	In the case the encoder position is not shifted to the next point though the loading motor has rotated in the loading direction for 4 seconds or more. This error is defined as [E01].	<ol style="list-style-type: none"> The mechanism is locked during mode shift. The mechanism is locked at the mechanism loading end, because the encoder position is skipped during mechanism mode shift. No power is supplied to the loading MDA.
E02	UNLOADING	In the case the encoder position is not shifted to the next point though the loading motor has rotated in the unloading direction for 4 seconds or more. This error is defined as [E02].	<ol style="list-style-type: none"> The mechanism is locked during mode shift. The mechanism is locked at the mechanism loading end, because the encoder position is skipped during mechanism mode shift.
E03	TU & SUP REEL FG	In the case no REEL FG is produced for 4 seconds or more in the capstan rotation mode after loading was complete, the mechanism mode is shifted to STOP with the pinch roller set off. This error is defined as [E03]. However, no REEL EMG is detected in the SLOW/STILL mode.	<ol style="list-style-type: none"> The idler gear does not engage with the reel disk well. Though the idler gear and reel disk are engaged with each other, the tape is not wound because of overload to the mechanism. No FG pulse is output from the reel sensor. No power is supplied to the reel sensor. Tape transport operation takes place with a cassette having no tape inside. The tape slackens and no pulse is produced until the slack is taken up and the tape comes into the normal status.
E04	DRUM FG	In the case there is no DRUM FG input in the drum rotation mode for 4 seconds or more. This error is defined as [E04], and the mechanism mode is shifted to STOP with the pinch roller set off.	<ol style="list-style-type: none"> The drum cannot be started or drum rotation is stopped because tape transport load is too high. <ol style="list-style-type: none"> Tape tension is extremely high. The tape is damaged or soiled with grease, etc. The DRUM FG signal is not received by the syscon CPU. <ol style="list-style-type: none"> Disconnection in the middle of the signal line. Failure of the DRUM FG pulse generator (hall element). No drum control voltage is supplied to the MDA. No power is supplied to the DRUM MDA.
E05	—	—	—
E06	CAPSTAN FG	In the case no CAPSTAN FG is produced in the capstan rotation mode for 2 seconds or more. This error is defined as [E06], and the mechanism mode is shifted to STOP with the pinch roller set off. However, no CAPSTAN EMG is detected in the STILL/FF/REW mode.	<ol style="list-style-type: none"> The CAPSTAN FG signal is not received by the syscon CPU. <ol style="list-style-type: none"> Disconnection in the middle of the signal line. Failure of the CAPSTAN FG pulse generator (MR element). No capstan control voltage is supplied to the MDA. No power is supplied to the CAPSTAN MDA. The capstan cannot be started or capstan rotation is stopped because tape transport load is too high. <ol style="list-style-type: none"> Tape tension is extremely high. (Mechanical locking) The tape is damaged or soiled with grease, etc. (Tape tangling occurs, etc.)

(DVC_03)

Table 1-9-1

SECTION 2 MECHANISM ADJUSTMENT

2.1 PRELIMINARY REMARKS ON ADJUSTMENT AND REPAIR

2.1.1 Precautions

1. When fastening parts, pay careful attention to the tightening torque of each screw. Unless otherwise specified, tighten a screw with the torque of 0.039 N·m (0.4 kgf·cm).
2. Be sure to disconnect the set from the power supply before fastening and soldering parts.
3. When disconnecting/connecting wires, be careful not to get them and their connectors damaged. (Refer to the Section 1.)
4. When replacing parts, be very careful neither to damage other parts nor to fit wrong parts by mistake.

2.1.2 Notes on procedure for disassembly/assembly

The disassembling procedure table (Table 2-2-2 on page 2-5, a part of the table is shown below for reference) shows the procedure to disassemble/reassemble mechanism parts. Carefully read the following explanation before starting actual disassembling/reassembling work. The item numbers (circled numbers) in the following explanation correspond to those appearing under respective columns of the table.

- (1) Circled numbers appearing in this column indicate the order to remove parts. When reassembling, follow these numbers in the reverse order. Circled numbers in this column correspond to those appearing in drawings of this section.
- (2) This column shows part names corresponding to circled numbers in the left column.
- (3) The symbol (T or B) appearing in this column shows the side which the objective part is mounted on.
T = the upper side, B = the lower side
- (4) Symbols appearing in this column indicate drawing numbers.

- (5) This column indicates parts and points such as screws, washers, springs, and others to be removed/fitted for disassembling/reassembling the mechanism. Besides such the parts, this column occasionally indicates working points.

P = Spring

W = Washer

S = Screw

* = Lock (L), soldering (SD), shield, connector (CN), etc.

Example

- Remove (W1) = Washer W1.
- * Remove the solder at (SD1) = Point SD1.
- * Disconnect (A) = Connector (A).

- (6) Numbers in this column represent the numbers of notes in the text. For example, "1" means "Note 1". (For parts that need phase adjustment after reassembling, refer to "2.2.7 Check and adjustment of mechanism phase".)
- (7) This column indicates required after-disassembling/-reassembling work such as phase adjustment or mechanism adjustment.

Step	Part Name		Fig.	Point	Note	Remarks
(A)	Cassette housing assembly	T	Fig. 2-2-12	3(S1),(L1a)-(L1d)	1a, 1b, 1c, 1d	Adjustment
(2a)	Reel disk (SUP) assembly	T	Fig. 2-2-13	(W2)	2a, 2b	
(2b)	Reel disk (TU) assembly	T	Fig. 2-2-13	(W2)	2a, 2b	
(2c)	Reel cover assembly	T	Fig. 2-2-13	(S2b),2(S2a),(W2)	2d	
(3a)	Tension arm assembly	T	Fig. 2-2-14	(W3a)	3b	

↑
(1)

↑
(2)

↑
(3)

↑
(4)

↑
(5)

↑
(6)

↑
(7)

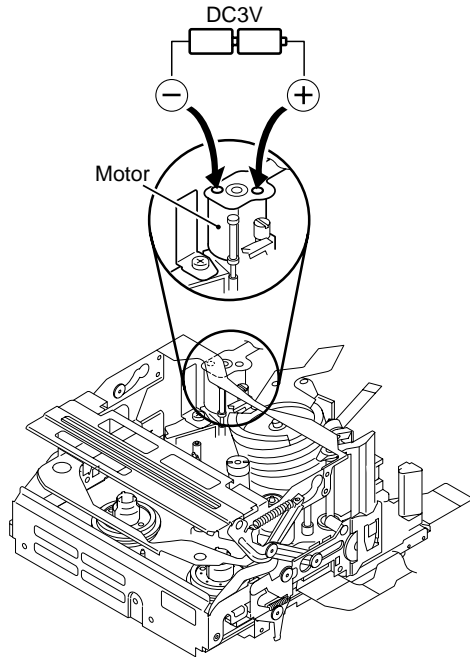
2.2 DISASSEMBLY/ASSEMBLY OF MECHANISM ASSEMBLY

2.2.1 General statement

The mechanism should generally be disassembled/assembled in the EJECT mode (ASSEMBLY mode). (Refer to Fig. 2-2-1.)

However, when the mechanism is removed from the main body, it is set in the STOP mode. Therefore, after the mechanism is removed from the main body, supply 3 V DC to the electrode on the top of the loading motor to enter the mechanism mode into the EJECT mode compulsorily.

<Mechanism assembly/Cassette housing assembly>



<Back side of the mechanism assembly>

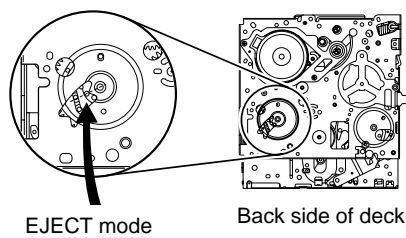


Fig. 2-2-1

2.2.2 Explanation of mechanism mode

The mechanism mode of this model is classified into six modes as shown in Table 2-2-1. Each mechanism mode can be distinguished from others by the relative position of the "O" mark on the sub cam gear to the inner or outer protrusion on the main deck.

Refer to Fig. 2-2-2 to 2-2-7 below.

The EJECT mode, C IN mode and SHORT FF mode should be recognized by the relative position of the "O" mark to the inner protrusion, while the STOP mode, REV mode and PLAY mode should be recognized by that to the outer protrusion.

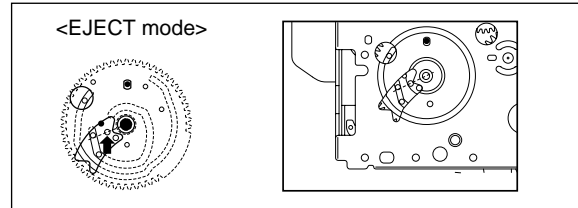
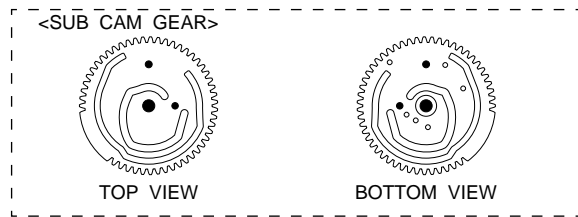


Fig. 2-2-2

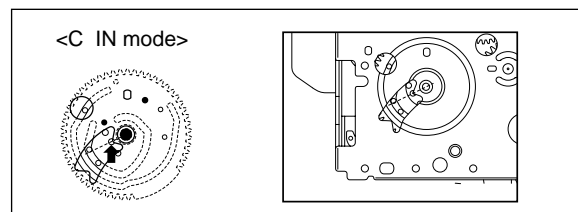


Fig. 2-2-3

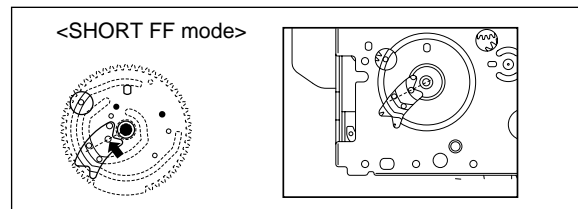


Fig. 2-2-4

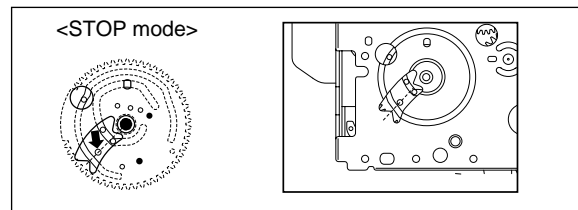


Fig. 2-2-5

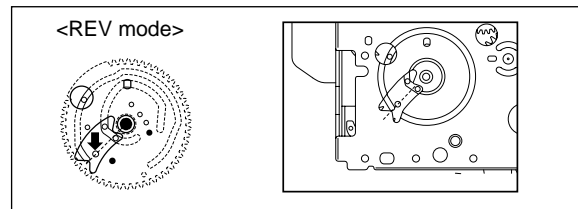


Fig. 2-2-6

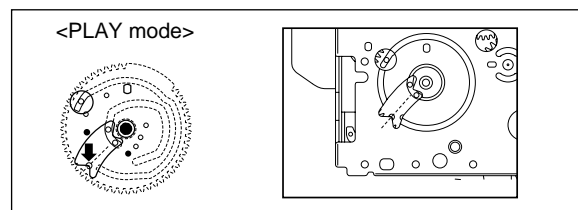


Fig. 2-2-7

2.2.3 Mechanism timing chart

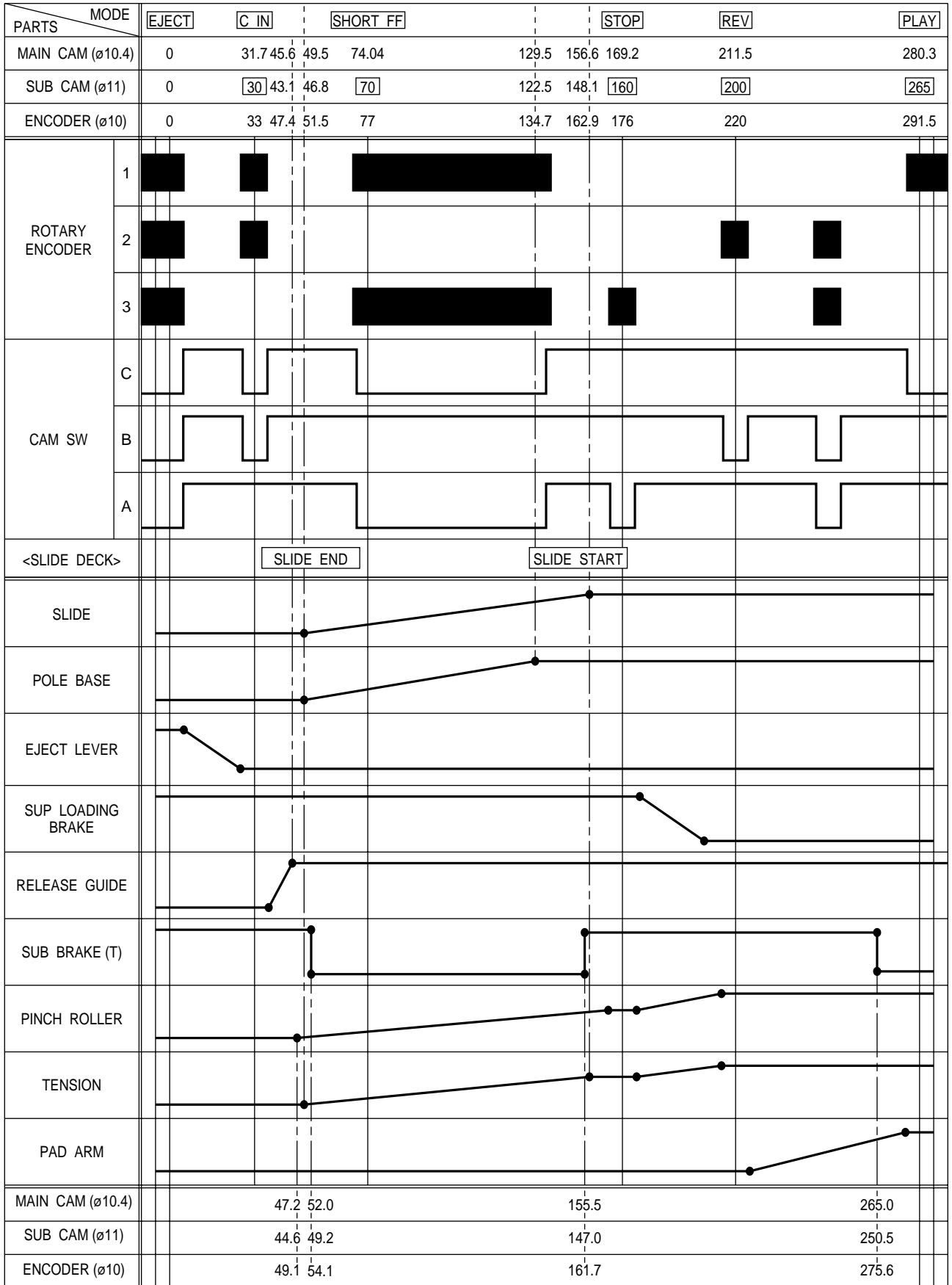


Table 2-2-1

2.2.4 Disassembly/assembly of mechanism assembly

1. Configuration

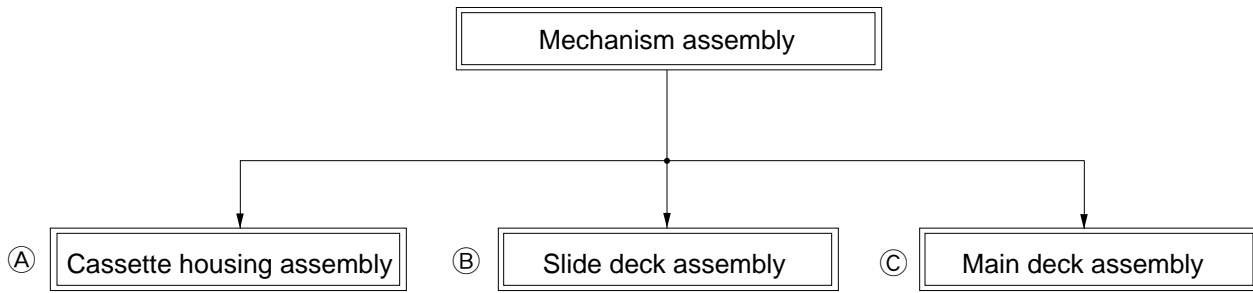


Fig. 2-2-8

2. Procedures for disassembly

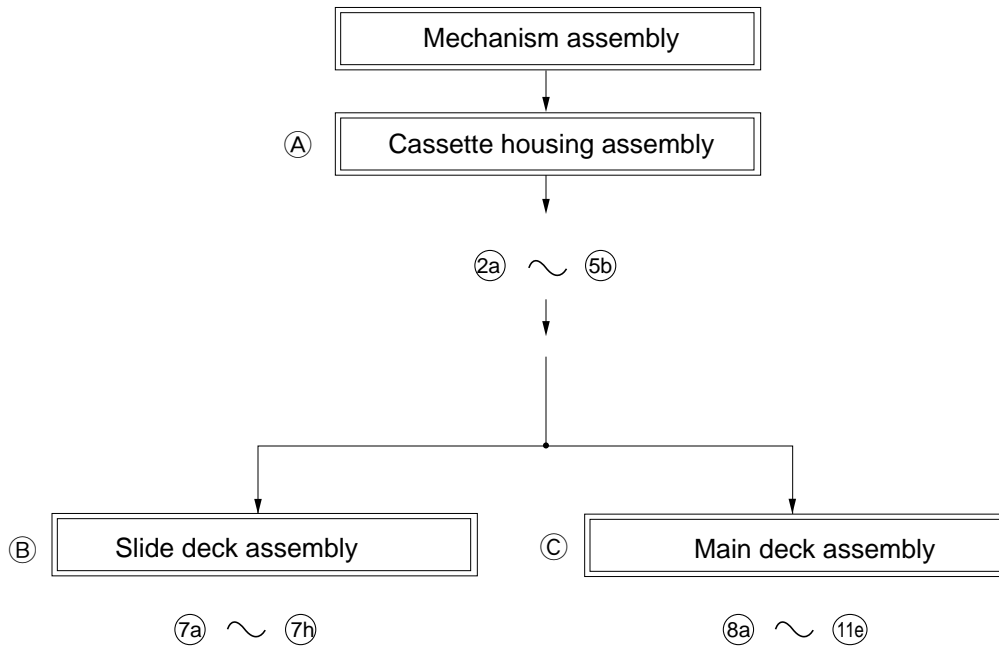


Fig. 2-2-9

3. Disassembling procedure table

Step	Part Name		Fig.	Point	Note	Remarks
Ⓐ	Cassette housing assembly	T	Fig. 2-2-12	3(S1),(L1a)-(L1d)	1a, 1b, 1c, 1d	Adjustment
②a	Reel disk (SUP) assembly	T	Fig. 2-2-13	(W2)	2a, 2b	
②b	Reel disk (TU) assembly	T	Fig. 2-2-13	(W2)	2a, 2b	
②c	Reel cover assembly	T	Fig. 2-2-13	(S2b),2(S2a),(W2)	2d	
③a	Tension arm assembly	T	Fig. 2-2-14	(W3a)	3b	
③b	Release guide assembly	T	Fig. 2-2-14	-	3a	
③c	Idler arm assembly	T	Fig. 2-2-14	(W3b)	-	
③d	Guide arm assembly	T	Fig. 2-2-14	-	3a	
③e	Pinch roller arm assembly	T	Fig. 2-2-14	(W3a)	-	
④a	Cleaner arm assembly	T	Fig. 2-2-15	(L4a)	4a	
④b	Slant pole arm assembly	T	Fig. 2-2-15	(W4),(L4b),(P4a),(P4b)	4b	
④c	Drum assembly	T	Fig. 2-2-15	3(S4)	-	
⑤a	Guide roller (S) assembly	T	Fig. 2-2-16	(P5)	5a	
⑤b	Rail assembly	T	Fig. 2-2-16	3(W5a), (W5b)	5b, 5c	
Ⓑ	Slide deck assembly / Ⓒ Main deck assembly	T	Fig. 2-2-17	(W6),(L6a)-(L6d)	6a, 6b	(Adjustment)
Ⓑ	Slide deck assembly					
⑦a	Loading brake assembly	T	Fig. 2-2-18	(W7),(L7a),(P7a)	7e	Adjustment
⑦b	Guide pin (SUPPLY)	T	Fig. 2-2-18	(S7a)	-	
⑦c	Pad arm assembly	T	Fig. 2-2-18	(W7),(L7b),(P7b)	7d	
⑦d	Slide guide plate assembly	T	Fig. 2-2-18	(S7b)	7c	Adjustment
⑦e	Collar	T	Fig. 2-2-18	-	7a	
⑦f	Collar	T	Fig. 2-2-18	-	7a	
⑦g	Sub brake assembly	T	Fig. 2-2-18	(W7),(L7c),(P7c)	7b	
⑦h	Control plate assembly	T	Fig. 2-2-18	2(W7),(L7d),(P7d)	7b	
Ⓒ	Main deck assembly					
⑧a	Tension lever assembly	T	Fig. 2-2-19	-	8c	
⑧b	Slide lever assembly	T	Fig. 2-2-19	-	8b	
⑧c	Brake control lever assembly	T	Fig. 2-2-19	-	8a	
⑨a	Loading guide	T	Fig. 2-2-20	(S9)	-	
⑨b	Timing belt	T	Fig. 2-2-20	-	9b	
⑨c	Center gear assembly	T	Fig. 2-2-20	-	-	
⑨d	Motor bracket assembly	T	Fig. 2-2-20	2(S9)	9a	
⑨e	Worm wheel	T	Fig. 2-2-20	(W9)	-	(Phase adjustment)
⑨f	Gear holder	T	Fig. 2-2-20	(S9)	-	
⑩a	Main cam gear	T	Fig. 2-2-21	(S10)	10b	Phase adjustment
⑩b	Brake control plate	T	Fig. 2-2-21	(L10)	10b	Phase adjustment
⑩c	Rotary encoder	T	Fig. 2-2-21	(S10),(W10a)	10a	Phase adjustment
⑩d	Connect gear	T	Fig. 2-2-21	(W10a)	-	(Phase adjustment)
⑩e	Reel drive pulley assembly	T	Fig. 2-2-21	(W10b)	-	
⑪a	Catcher (T) assembly	T	Fig. 2-2-22	2(S11)	-	
⑪b	Capstan motor	T	Fig. 2-2-22	2(S11)	-	
⑪c	Charge arm assembly	T	Fig. 2-2-22	(W11)	11	
⑪d	Sub cam gear	T	Fig. 2-2-22	(S11)	-	Phase adjustment
⑪e	PWB holder	B	Fig. 2-2-22	2(S11)	-	

Table 2-2-2

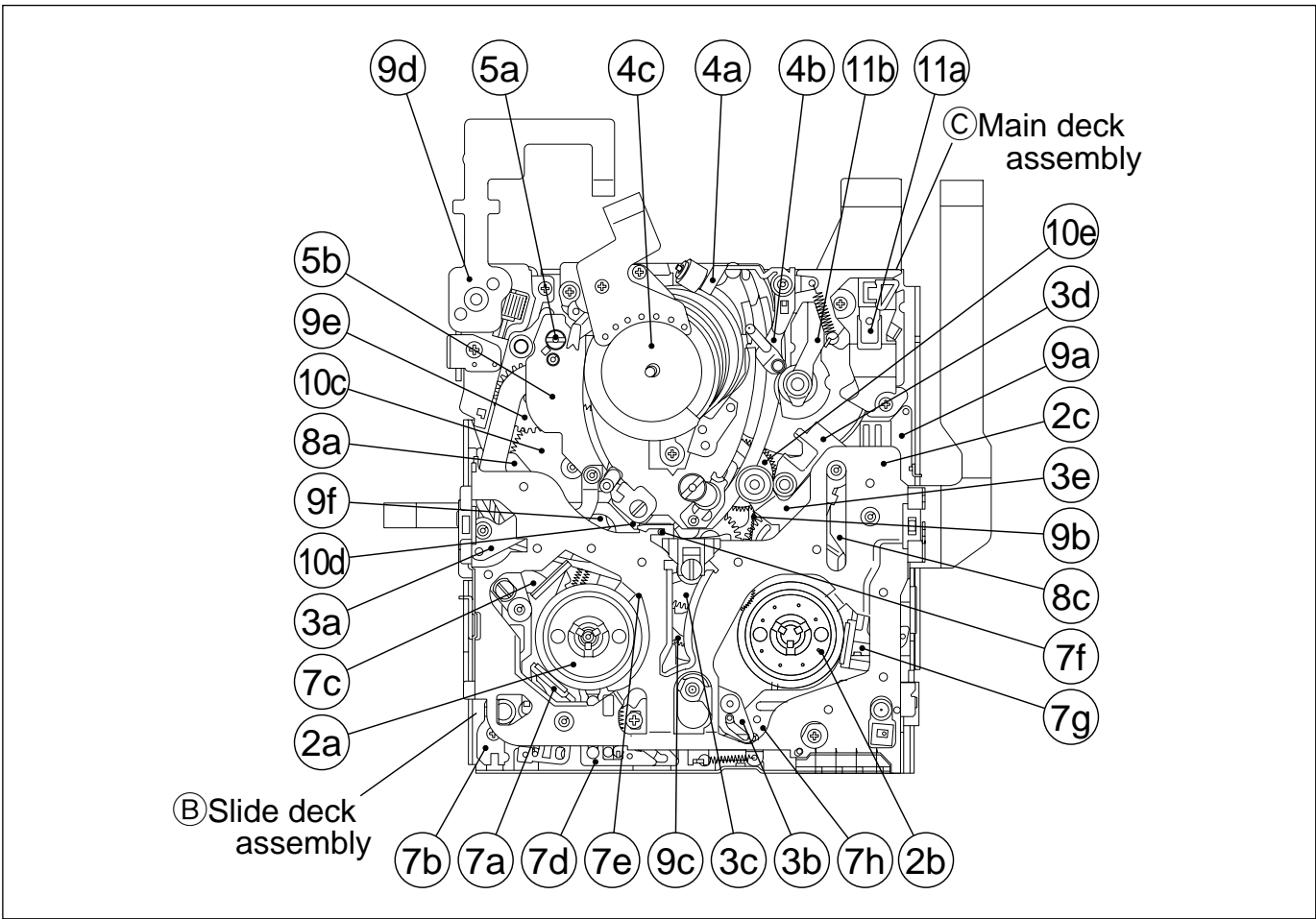


Fig. 2-2-10 Top view

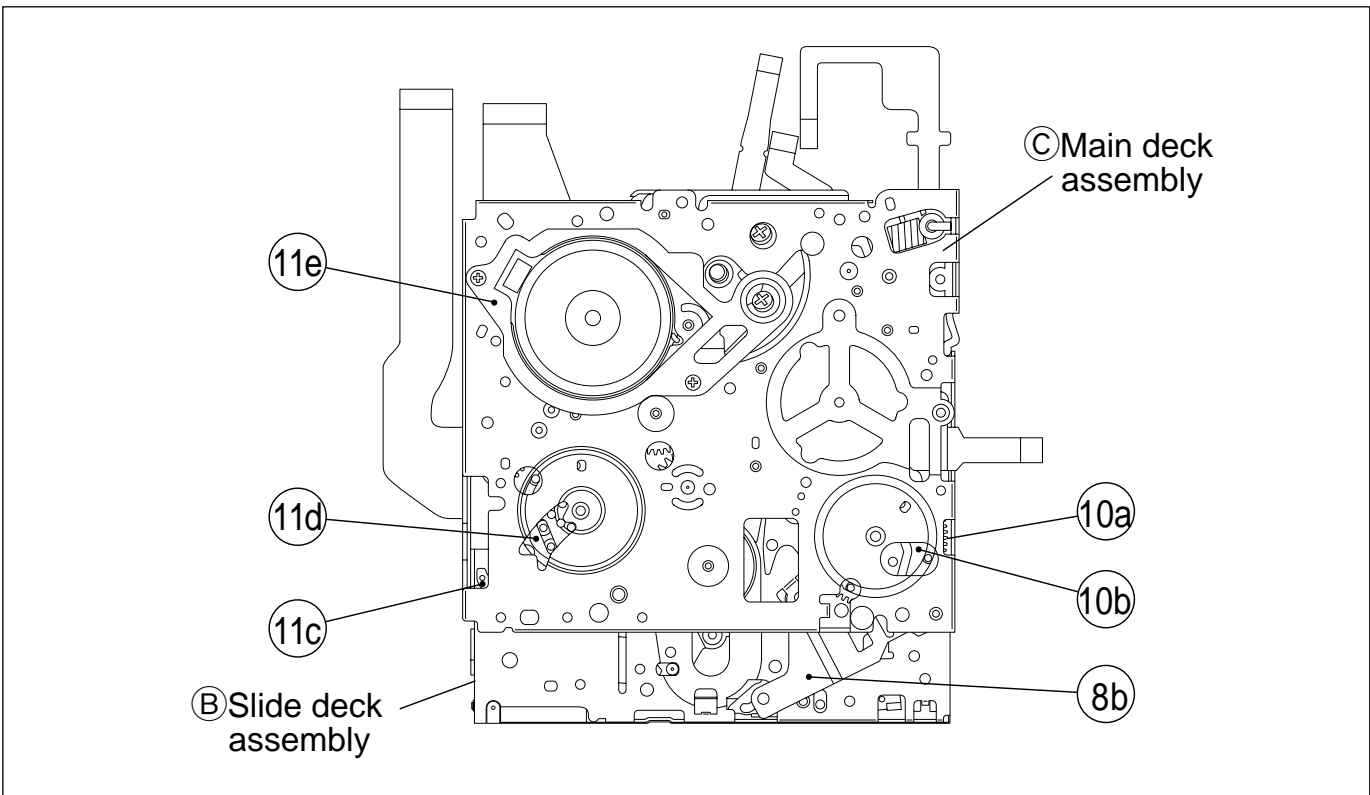


Fig. 2-2-11 Bottom view

2.2.5 Disassembly/assembly

1. (A) Cassette housing assembly

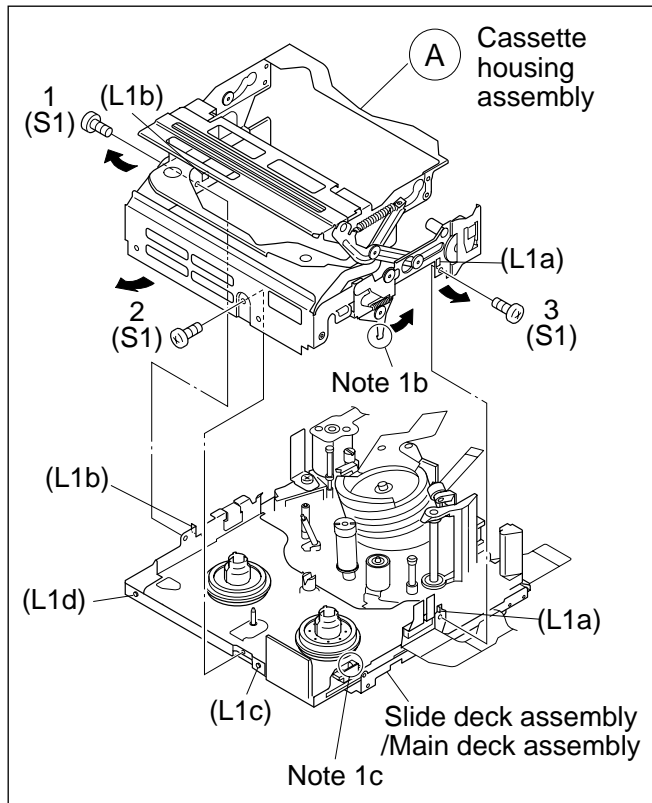


Fig. 2-2-12

2. (2a) Reel disk (SUP) assembly
- (2b) Reel disk (TU) assembly
- (2c) Reel cover assembly

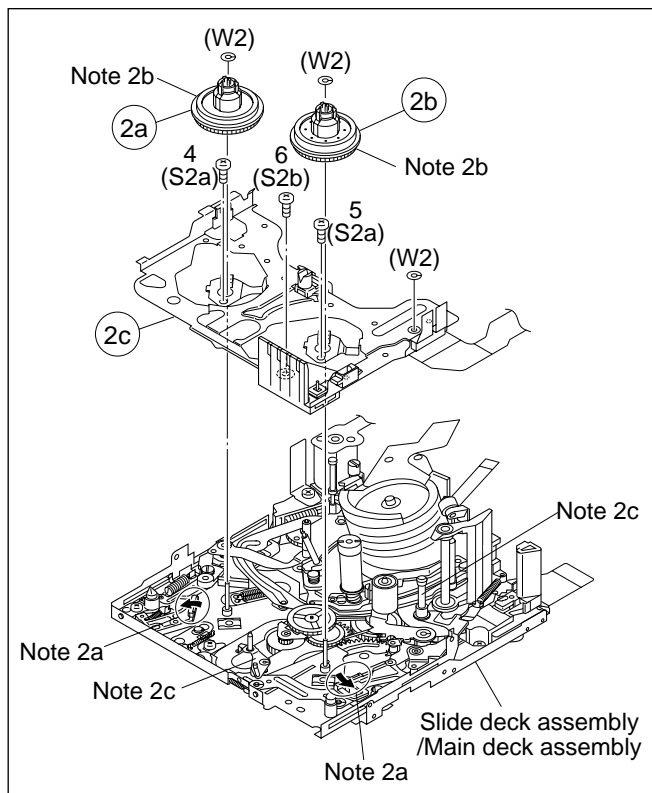
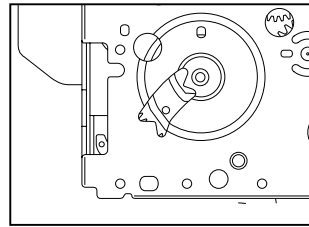
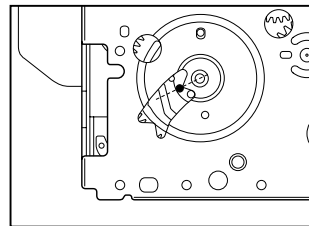


Fig. 2-2-13

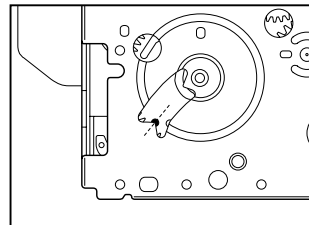
<STOP mode>



<EJECT mode>



<PLAY mode>



Note 1a:

Shift the mechanism mode from the STOP mode to the EJECT mode.

Note 1b:

Reassemble the cassette housing assembly to the mechanism as the cancel lever is moved in the direction of the arrow.

Note 1c:

When reassembling the cassette housing to the mechanism, make sure that there is no deformation in the frame or no damage to the switches, etc.

Note 1d:

After reassembling the component parts, check the mechanism operation in the PLAY mode.

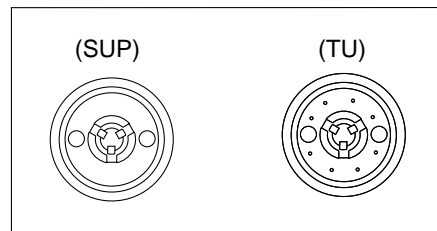
For details of checking method, refer to "2.2.8 assembling slide deck assembly and main deck assembly".

Note 2a:

When removing the reel disk assembly, be careful not to break the brake pad which applies lateral pressure to the reel disk.

Note 2b:

Be careful not to make a mistake in installing the reel disk. The SUP reel disk and TU reel disk can be distinguished from each other by the appearance as shown below.



Note 2c:

When removing the reel cover assembly, pay heed to the guide arm assembly. For, the guide arm assembly is just inserted into the slide deck assembly from the upside and it is apt to come off after the reel cover assembly is removed.

Note 2d:

When fitting the reel cover assembly to the set, carefully tighten the screw with the specified tightening torque of 0.069N·m (0.7kgf·cm).

3. 3a Tension arm assembly/3b Release guide assembly
 3c Idler arm assembly/3d Guide arm assembly
 3e Pinch roller arm assembly

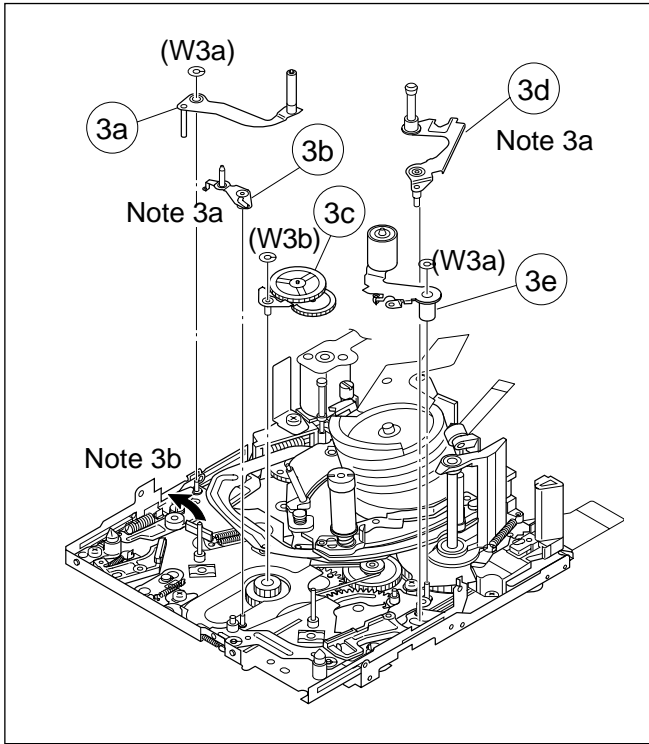


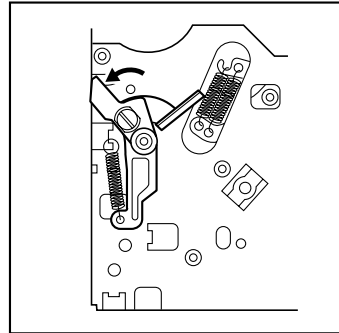
Fig. 2-2-14

Note 3a:

When removing the reel cover assembly, pay heed to release guide assembly and guide arm assembly. For, the guide arm assembly is just inserted into the slide deck assembly from the upside and it is apt to come off after the reel cover assembly is removed.

Note 3b:

Reassemble the tension arm assembly to the mechanism as the pad arm assembly is moved to the extent in the direction of the arrow.



4. 4a Cleaner arm assembly/4b Slant pole arm assembly
 4c Drum assembly

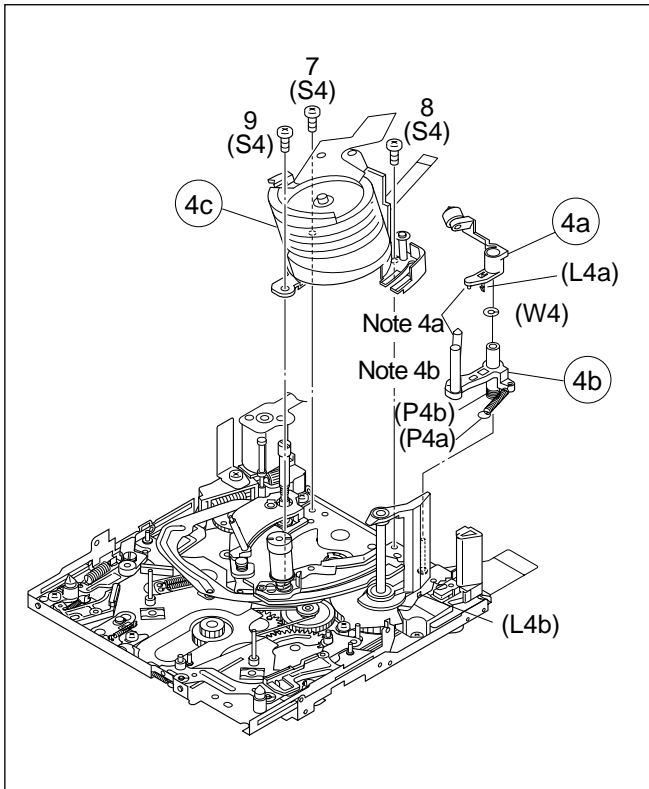


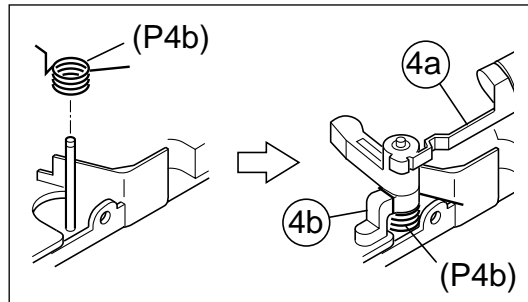
Fig. 2-2-15

Note 4a:

When removing the cleaner arm assembly, it is recommended to remove the slant pole arm assembly together with it except the case of a single unit replacement, because the hook (L4a) is hard to disengage.

Note 4b:

How to set the coil spring (P4b).



5. (5a) Guide roller (SUPPLY) assembly/ (5b) Rail assembly

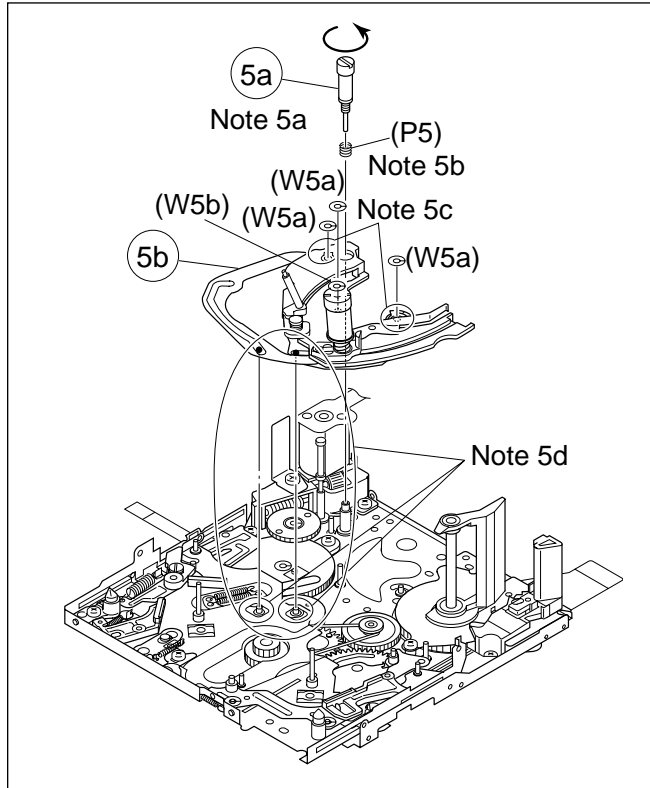
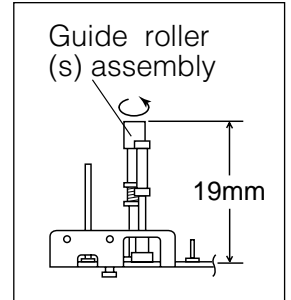


Fig. 2-2-16

Note 5a:

When reassembling, insert the tip of the guide roller with the coil spring put on it into the hole on the main deck. Tighten the guide roller by about 6 turns so that the height of the guide roller assembly is 19 mm or so as shown in the figure.



Note 5b:

Pay careful attention to the spring not to lose it.

Note 5c:

Pay careful attention to the engagement of the rail assembly's arm ends because they easily come off the engagement. Moreover, make sure that there is neither deformation nor damage observed in them.

Note 5d:

When removing the rail assembly, check to see if the collar is securely set in the arm groove.

6. (B) Slide deck assembly/ (C) Main deck assembly

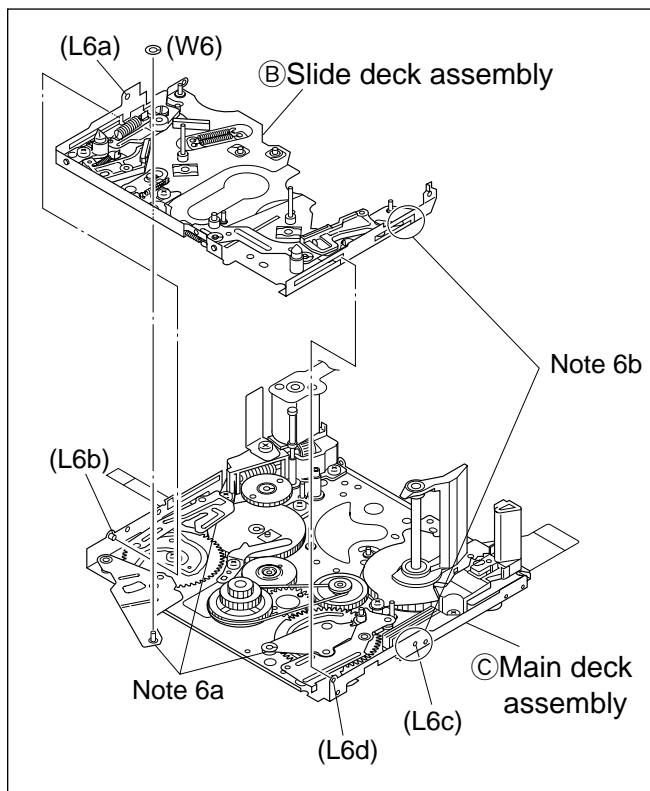


Fig. 2-2-17

Note 6a:

When removing the slide deck assembly, pay heed to the three components of the following because they are apt to come off after the slide deck assembly is removed.

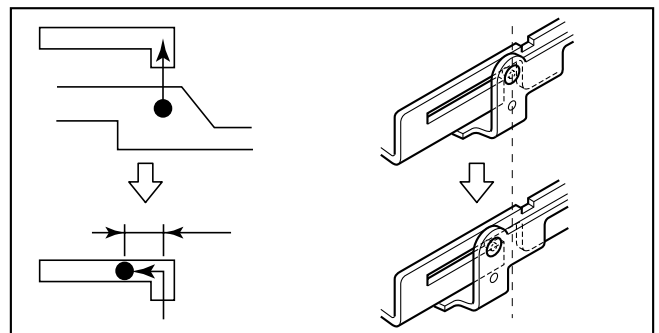
(8a) Tension lever assembly/ (8b) Slide lever assembly

(8c) Brake control lever assembly

For reassembling those components, refer to Fig. 2-2-19 on page 2-10.

Note 6b:

When reassembling the slide deck assembly to the main deck assembly, combine them with each other by the side grooves and then slide the slide deck assembly by 1 mm or so.



7. (7a) Loading brake assembly/ (7b) Guide pin (S)
 (7c) Pad arm assembly/ (7d) Slide guide plate assembly
 (7e) Collar/ (7f) Collar/ (7g) Sub brake assembly
 (7h) Control plate assembly

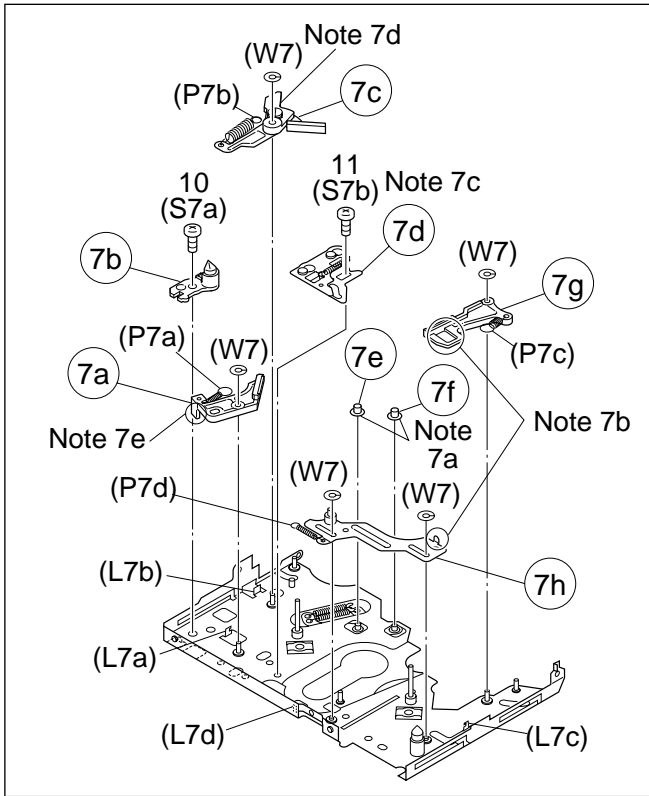
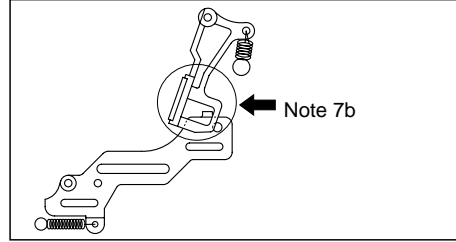


Fig. 2-2-18

Note 7a:
 Don't remove these parts unreasonably. If they are removed for some reason, be very careful not to lose them.

Note 7b:
 When reinstalling the sub brake assembly, set the control plate assembly so that its hook is set in the □ part of the sub brake assembly.



Note 7c:
 Since the slide guide plate assembly controls the slide deck assembly so that it exactly slides the main deck assembly, it must exactly be assembled in the PLAY mode. Therefore, temporarily fix the slide guide plate assembly in this stage. For details of reassembling procedure, refer to "2.2.8 Assembling slide deck assembly and main deck assembly" on page 2-15.

Note 7d:
 The pad arm assembly controls the tension level of the tension arm assembly. For adjustment of the tension arm assembly, refer to page 2-8.

Note 7e:
 When reinstalling the load brake assembly, slightly lift the slide deck assembly upwards because the lower part of the load brake assembly sticks out of the slide deck assembly.

8. (8a) Tension lever assembly/ (8b) Slide lever assembly
 (8c) Brake control lever assembly

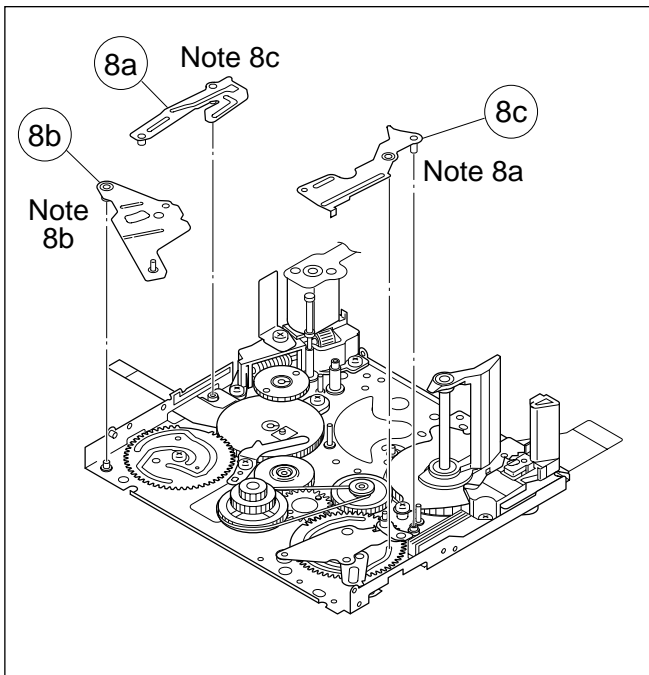
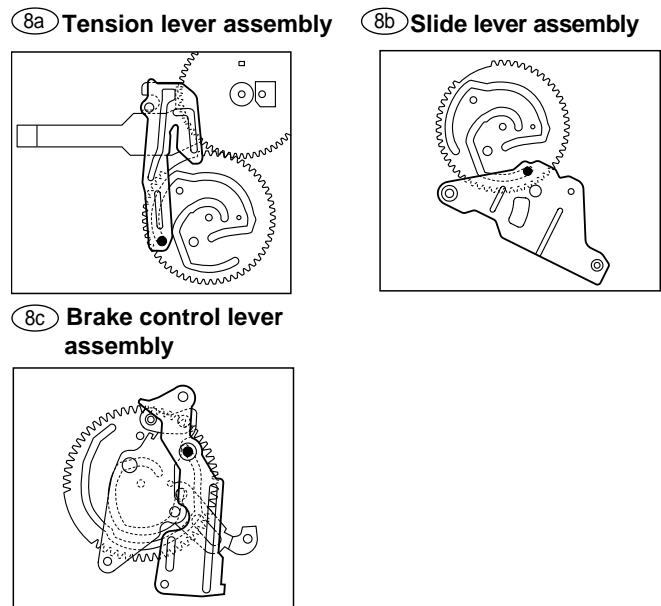


Fig. 2-2-19

Note 8a, 8b, 8c:
 For refitting the respective parts, refer to the following figures



9. 9a Loading guide/ 9b Timing belt
 9c Center gear assembly/ 9d Motor bracket assembly
 9e Worm wheel/ 9f Gear holder

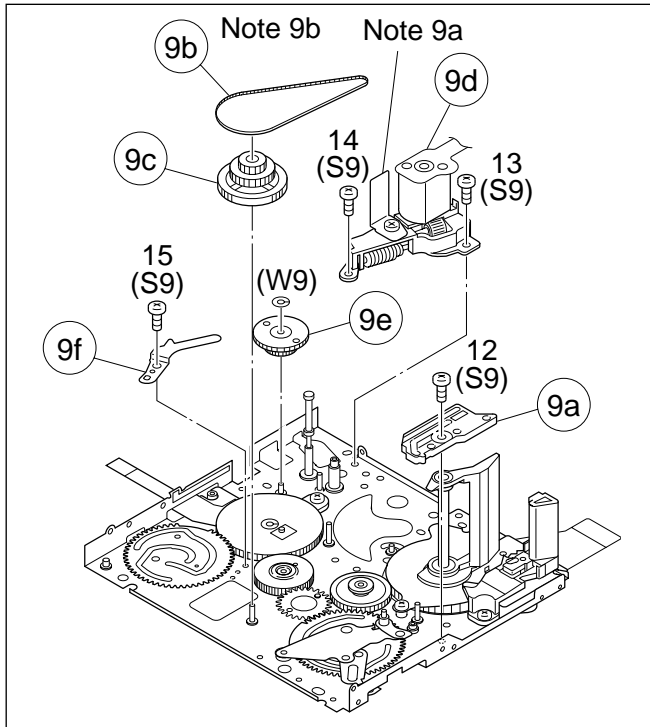


Fig. 2-2-20

Note 9a:
 Carefully handle the DEW sensor. (Don't touch the sensor surface in particular.)

Note 9b:
 When engaging the timing belt, make sure that it securely engages with the gears of both the center gear assembly and reel drive pulley assembly.

10. 10a Main cam gear/ 10b Brake control plate
 10c Rotary encoder/ 10d Connect gear
 10e Reel drive pulley assembly

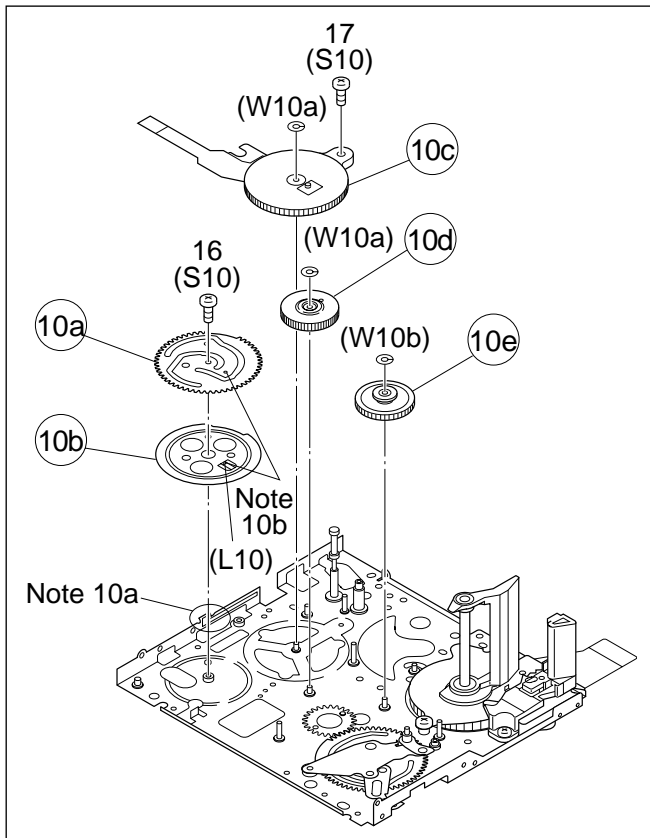
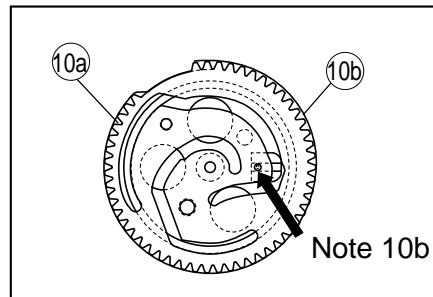


Fig. 2-2-21

Note 10a:
 When removing/refitting parts, pay careful attention to the flexible board and so on not to damage them.

Note 10b:
 When reinstalling the main cam gear and the brake control plate, first fit them together so that the protrusion on the brake control plate is set in the slot on the main cam gear as shown below, next install the two together to the main deck assembly.



11. (11a) Catcher (T) assembly/(11b) Capstan motor
 (11c) Charge arm assembly/(11d) Sub cam gear
 (11e) PWB holder

Note 11:

The following figure shows how to put the charge arm assembly and sub cam gear assembly together.

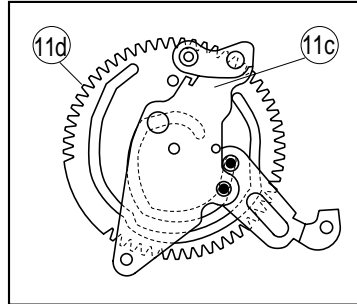
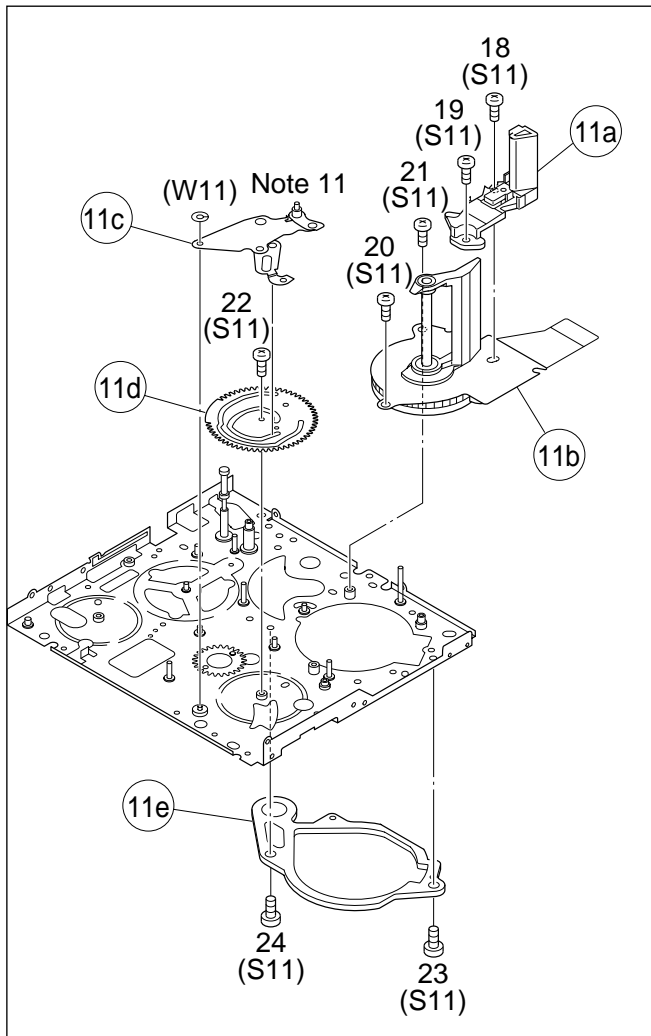


Fig. 2-2-22

2.2.6 List of procedures for disassembly

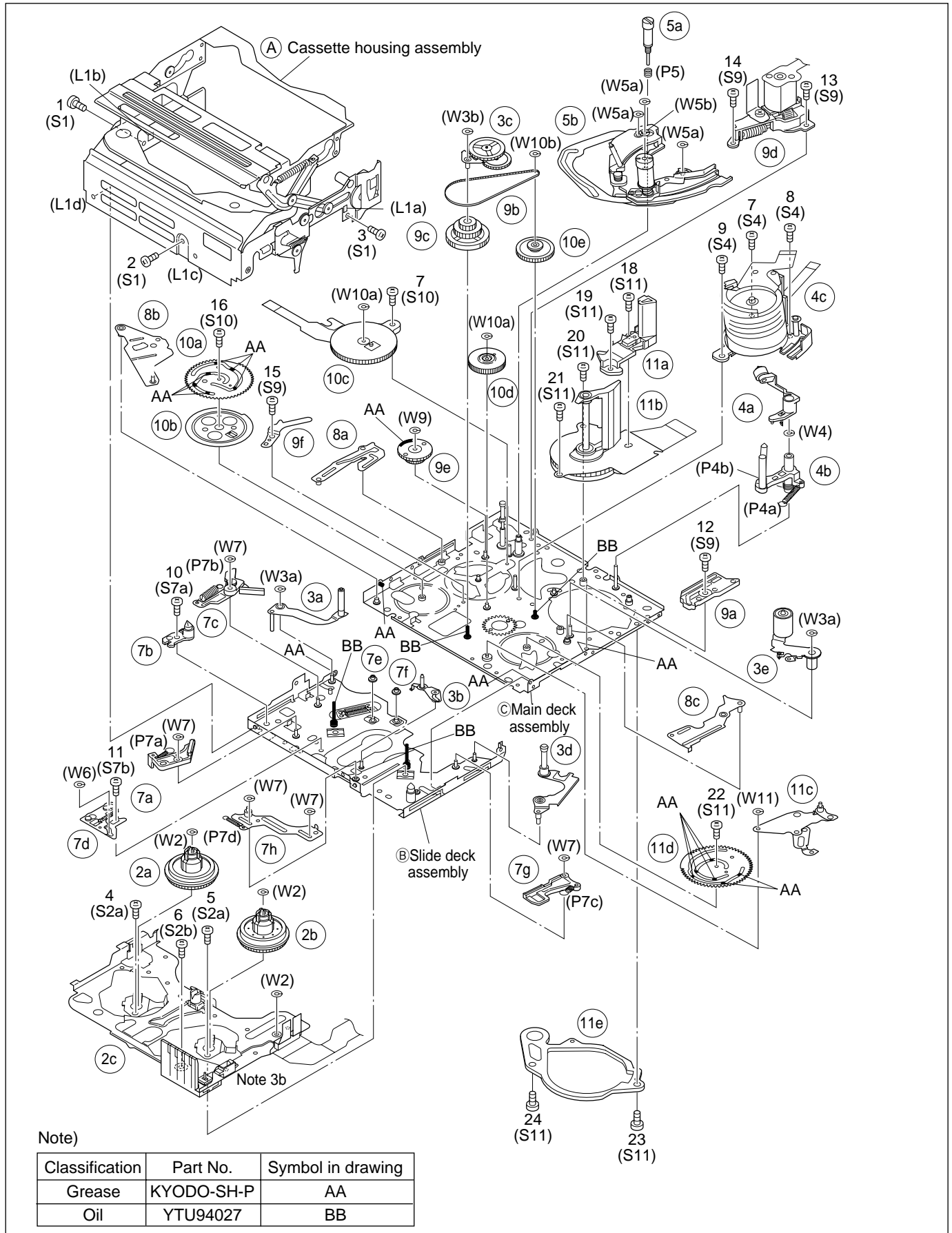


Fig. 2-2-23

2.2.7 Checkup and adjustment of mechanism phase

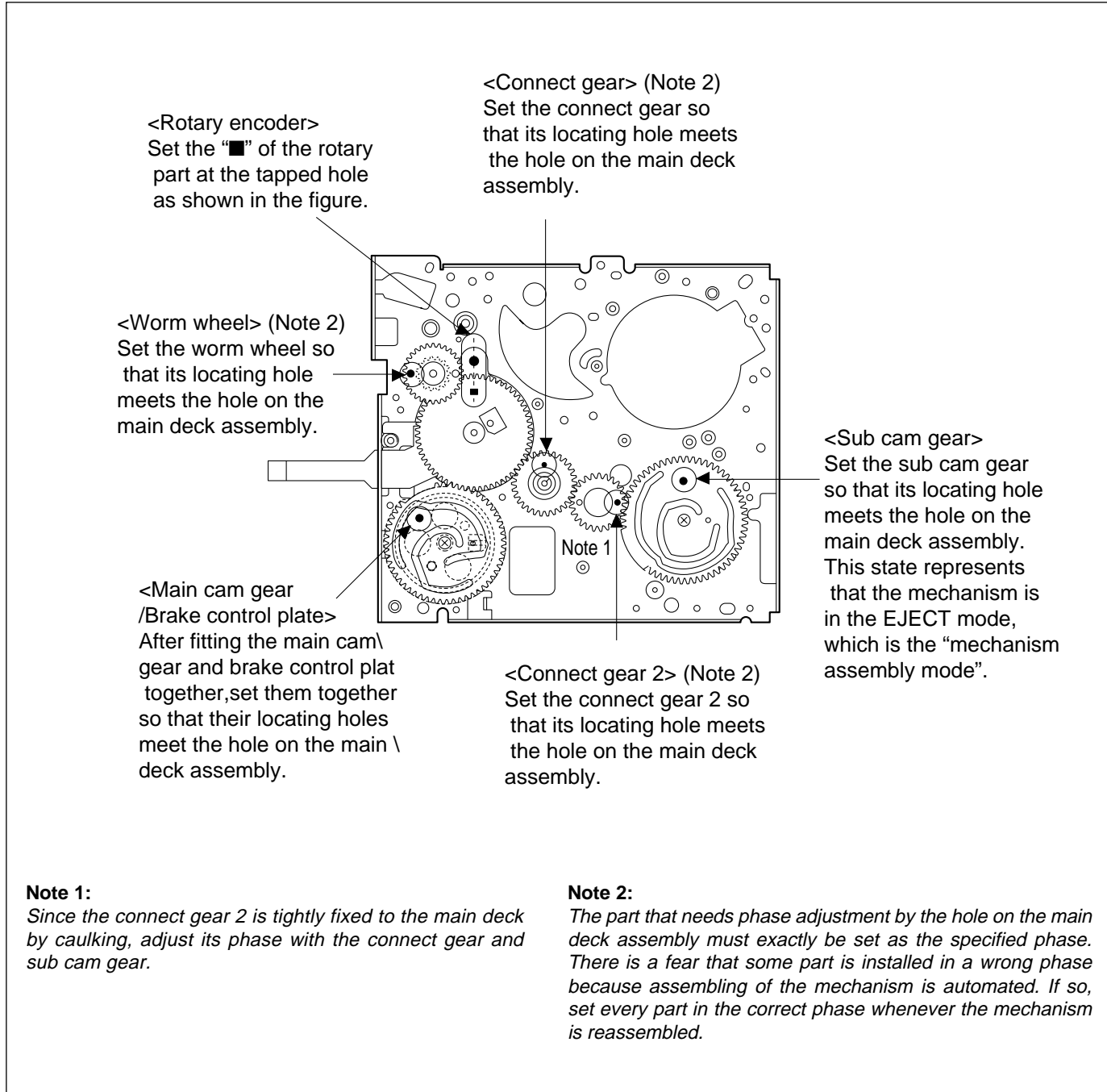


Fig. 2-2-24

2.2.8 Assembling slide deck assembly and main deck assembly

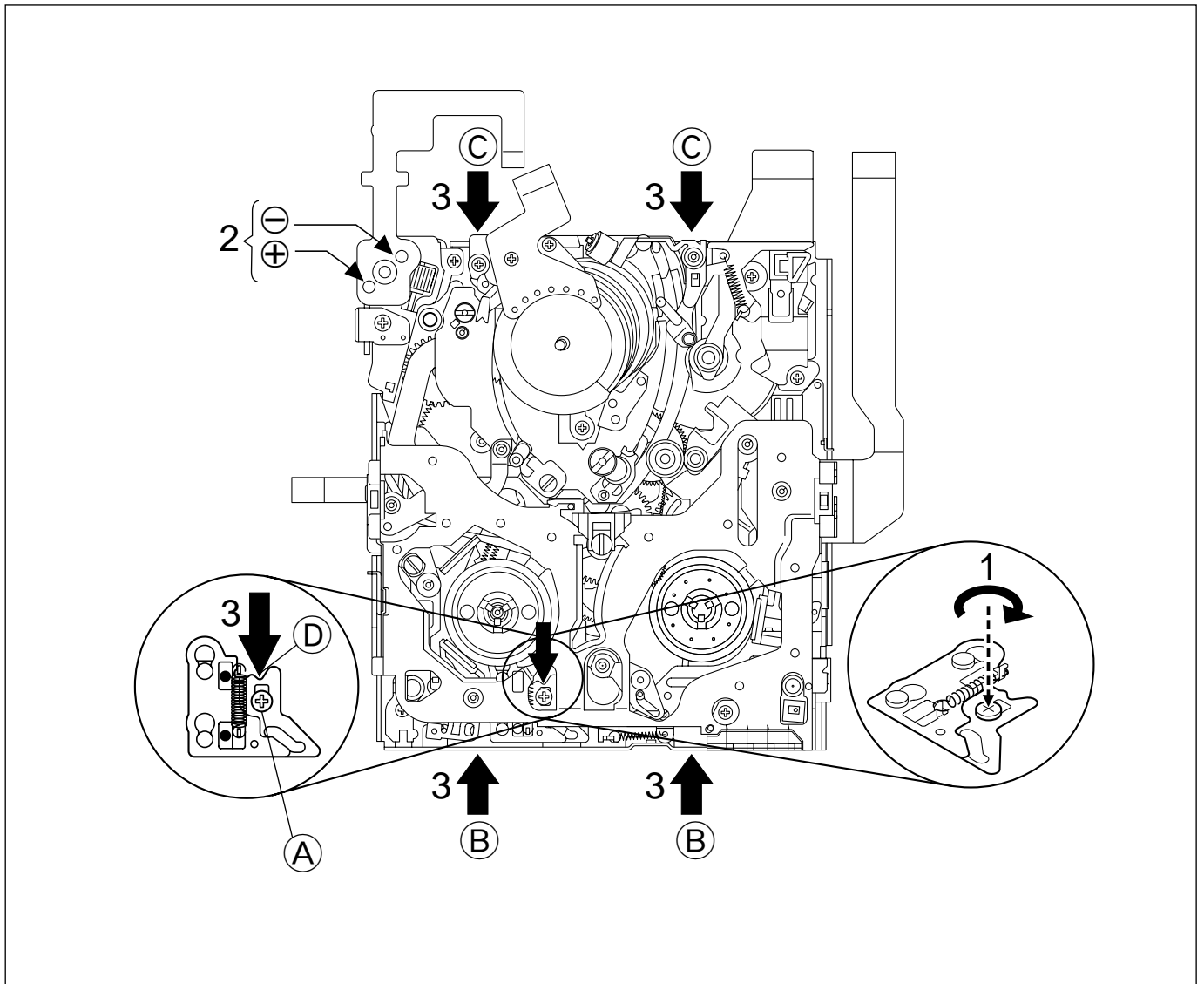


Fig. 2-2-25

Assembling procedure

1. Loosen the screw (A).
2. Set the mechanism in the PLAY mode.
(Refer to page 2-2.)
3. Press the end face B of the slide deck assembly (reel disk side) and the end face C of the main deck assembly (drum assembly side) with uniform force so that the two assemblies are tightly pressed to each other. Furthermore, press the part (D) and tighten the screw (A).

Note : Tightening torque for screw (A): 0.069 N·m (0.7 kgf·cm)

2.2.9 Locating tension pole

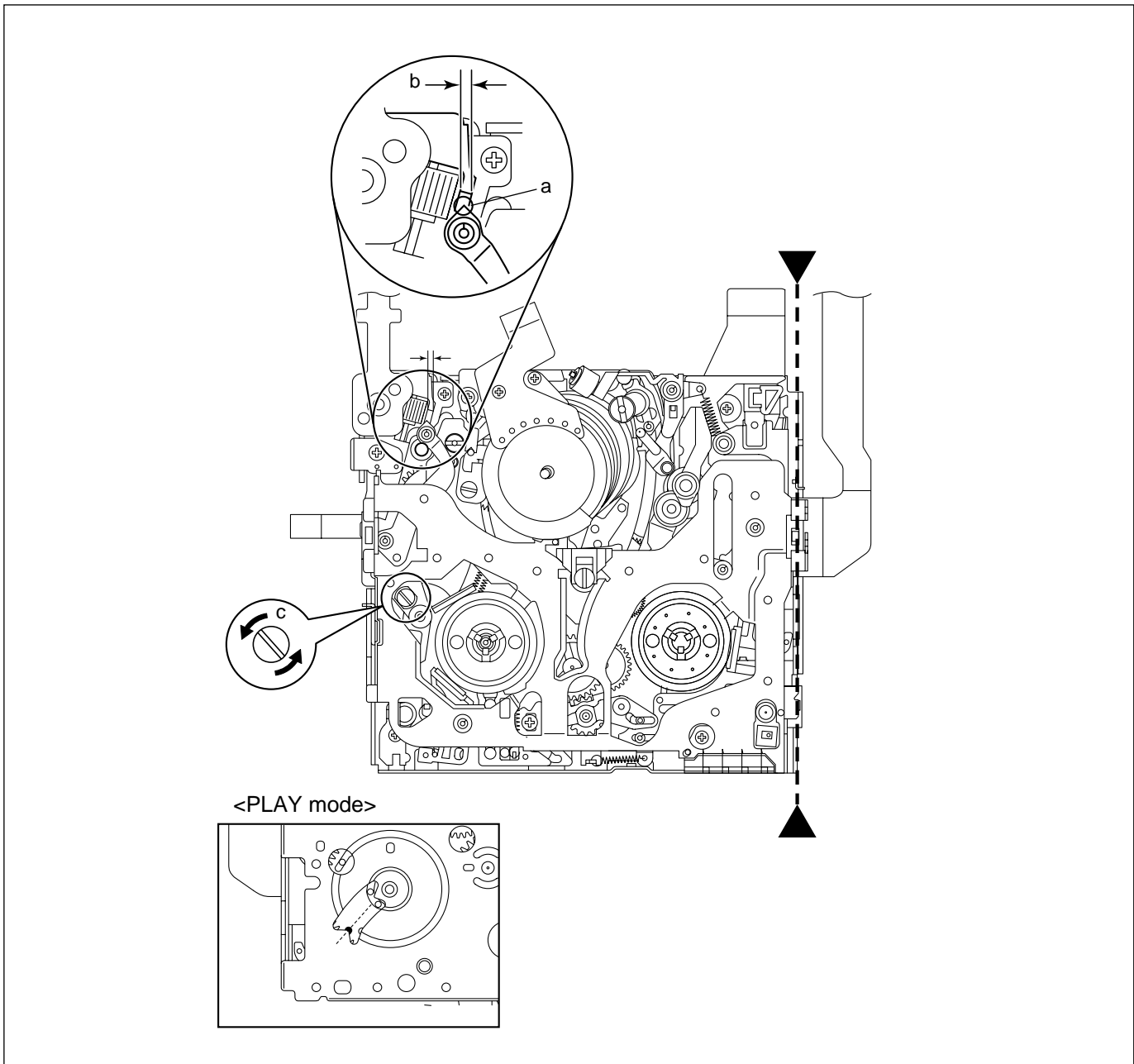


Fig. 2-2-26

Locating procedure

1. Enter the mechanism assembly into the PLAY mode.
(Refer to page 2-2.)
2. When the “▶-----◀” part is positioned down, make sure that the part “a” of the tension arm assembly is located within the range of “b”.
3. If the part “a” is out of the range, turn the pin “c” to adjust the position.

2.3 JIG CONNECTOR CABLE CONNECTOR

Remove one screw (1) first and the cover (JIG) next.

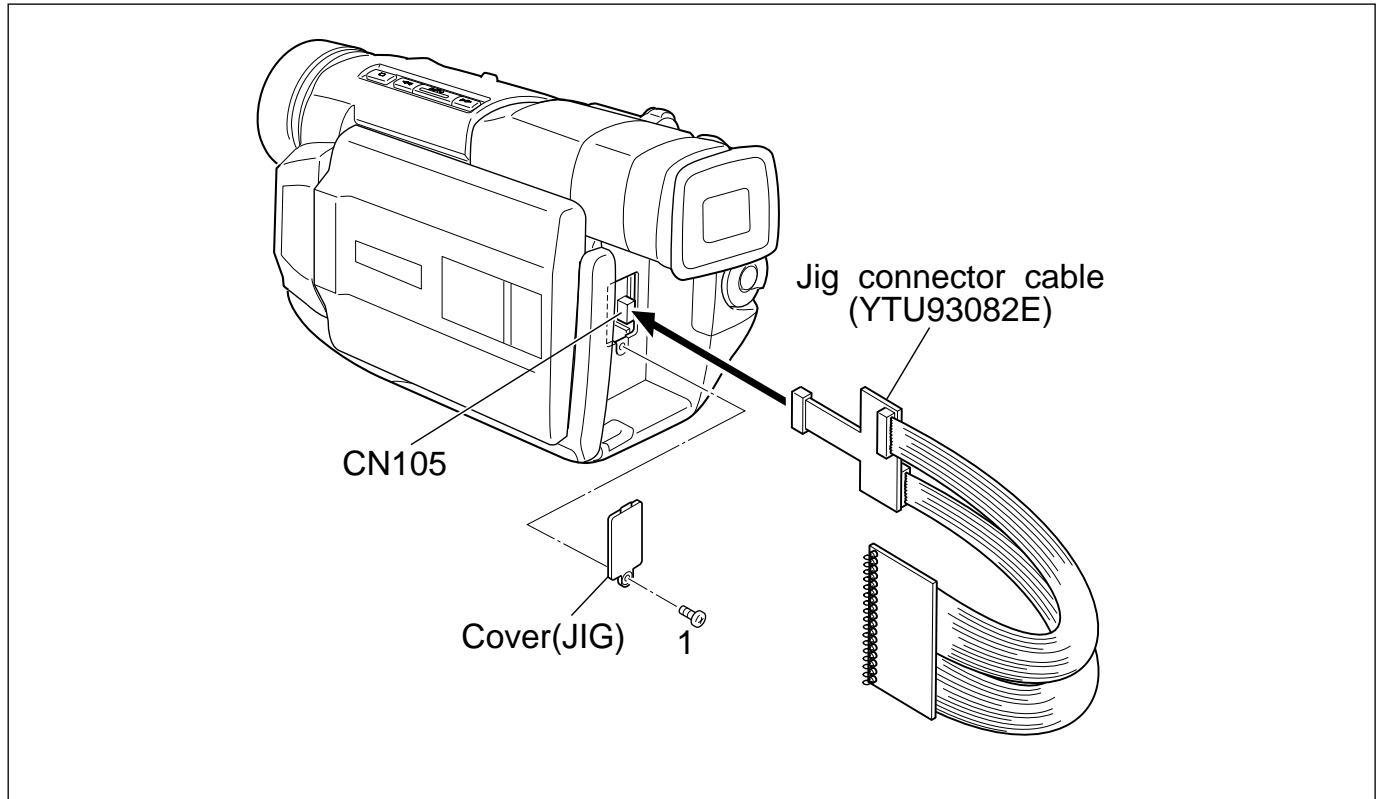


Fig. 2-3-1 Jig connector cable connection

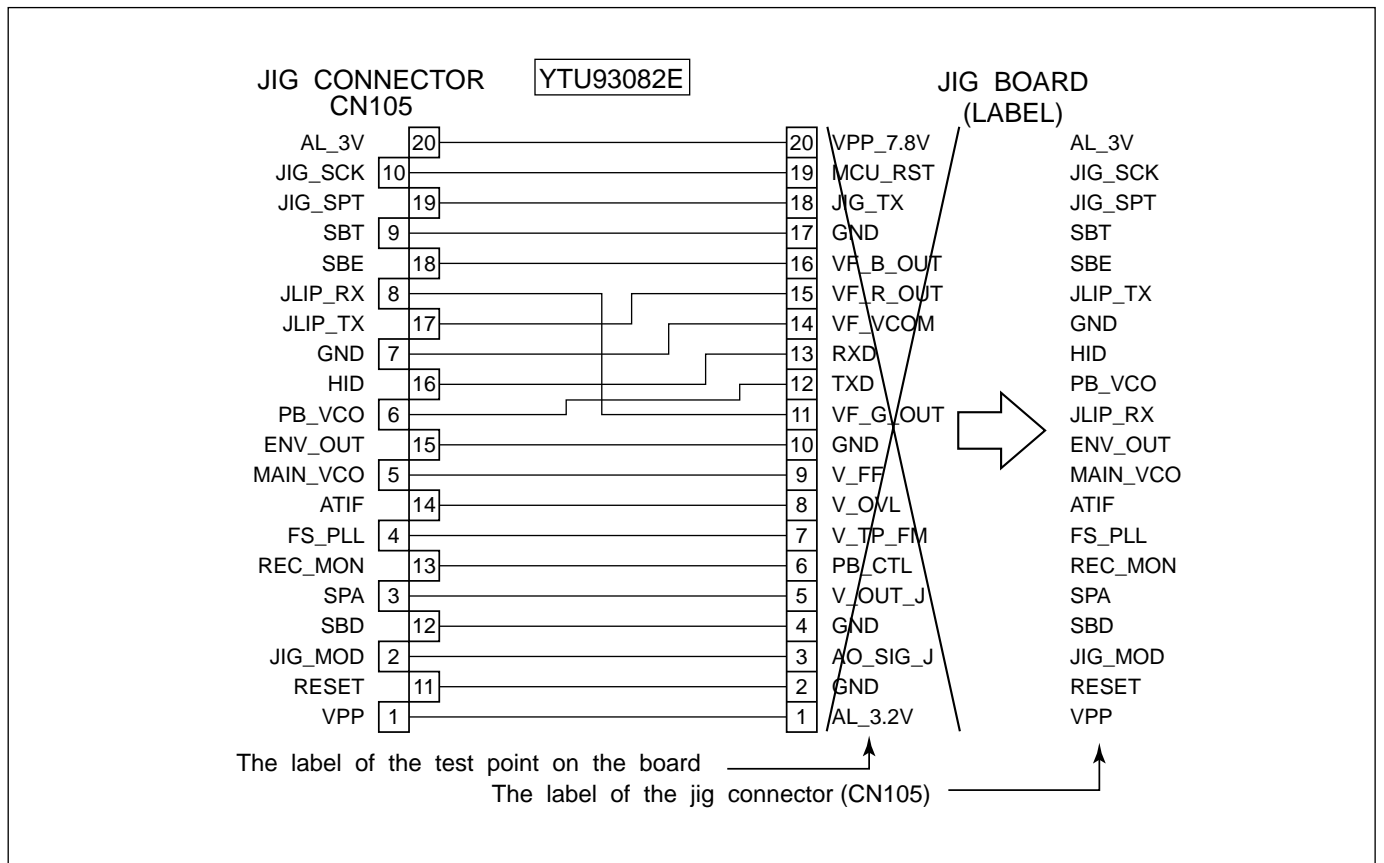


Fig. 2-3-2 Jig connector cable schematic diagram

2.4 SERVICE NOTE

Use the following chart to manage mechanism parts that are removed for disassembling the mechanism.

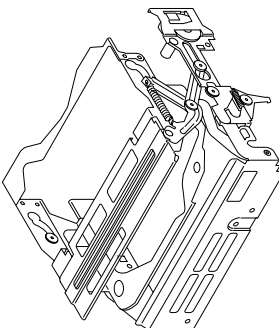


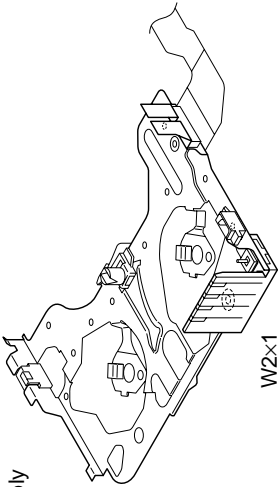



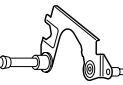
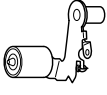

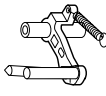
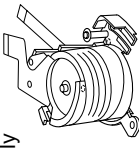

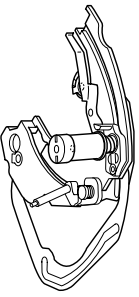
1	<p>Ⓐ Cassette housing assembly</p>  <p>S1×3</p>
2	<p>Ⓐ Reel disk (SUP) assembly</p>  <p>W2×1</p> <p>Ⓐ Reel disk (TU) assembly</p>  <p>W2×1</p> <p>Ⓐ Reel cover assembly</p>  <p>S2a×2 S2b×1 W2×1</p>
3	<p>Ⓐ Tension arm assembly</p>  <p>W3a×1</p> <p>Ⓐ Release guide assembly</p>  <p>Ⓐ Idler arm assembly</p>  <p>W3b×1</p> <p>Ⓐ Guide arm assembly</p>  <p>Ⓐ Pinch roller arm assembly</p>  <p>W3a×1</p>
4	<p>Ⓐ Cleaner arm assembly</p>  <p>Ⓐ Slant pole arm assembly</p>  <p>W4×1 P4a×1 P4b×1</p> <p>Ⓐ Drum assembly</p>  <p>S4×3</p>
5	<p>Ⓐ Guide roller (S) assembly</p>  <p>P5×1</p> <p>Ⓐ Rail assembly</p>  <p>W5a×3 W5b×1</p>

Table 2-3-1a

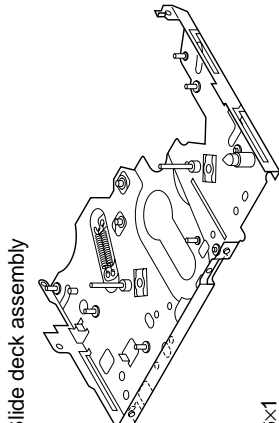
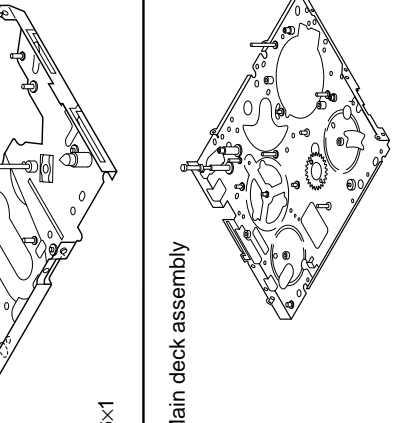
6	 <p>⑧ Slide deck assembly W6x1</p>	<p>7a) Loading brake assembly W7x1 P7ax1</p> <p>7e) Collar</p>	<p>7b) Guide pin (SUPPLY) S7ax1</p> <p>7f) Collar</p>	<p>7c) Pad arm assembly W7x1 P7bx1</p> <p>7g) Sub brake assembly W7x1 P7cx1</p>	<p>7d) Slide guide plate assembly S7bx1 W7x1</p> <p>7h) Control plate assembly W7x2 P7dx1</p>
8	 <p>⑨ Main deck assembly</p>	<p>8a) Tension lever assembly</p>	<p>8b) Slide lever assembly</p>	<p>8c) Brake control lever assembly</p>	
9	<p>9a) Loading guide S9x1</p> <p>9b) Timing belt</p>	<p>9c) Center gear assembly</p>	<p>9d) Motor bracket assembly S9x2</p>	<p>9e) Worm wheel W9x1</p>	<p>9f) Gear holder S9x1</p>
10	<p>10a) Main cam gear S10x1</p> <p>10b) Brake control plate</p>	<p>10c) Rotary encoder S10x1</p>	<p>10d) Connect gear W10ax1</p>	<p>10e) Reel drive pulley assembly</p>	
11	<p>11a) Catcher (T) assembly S11x2</p> <p>11b) Capstan motor S11x2</p>	<p>11c) Charge arm assembly W11x1</p>	<p>11d) Sub cam gear S11x1</p>	<p>11e) PWB holder S11x2</p>	

Table 2-3-1b

SECTION 3 ELECTRICAL ADJUSTMENT

3.1 PREPARATION

1. Precaution

Both the camera and deck sections of this model needs a personal computer for adjustment except simple adjustment with potentiometers. If some of the following parts is replaced for repair or other reason, the repaired set must be adjusted with a personal computer.

- OP block
- E²PROM (IC1003 of MAIN board)
- MONITOR
- E²P ROM (IC7603 of MONITOR board)

In the event of malfunction with electrical circuits, troubleshooting with the aid of proper test instruments must be done first, and then commence necessary repair, replacement and adjustment, etc.

1. In case of wiring to chip test points for measurement, use IC clips, etc. to avoid any stress.
2. Since connectors are fragile, carefully handle them in disconnecting and connecting.
3. Shortcircuit between operation un it and DECK chassis.

3.3 SETUP

1. Setup for electrical adjustment with personal computer

2. Required test equipment

1. Color TV monitor.
2. AC power adapter/charger
3. Oscilloscope (dual-trace type, observable 100 MHz or higher frequency)

Note: *It is recommended to use one observable 300 MHz or higher frequency.*

4. Digital voltmeter
5. Frequency counter (with threshold level adjuster)
6. Personal computer

3. Required adjustment tools

For details of special jigs necessary for adjustment, refer to page 1-2 and 1-3 of the Section 1.

3.2 E. VF SECTION ADJUSTMENT

Referring to "SEC. 1 DISASSEMBLY" and connect the E.VF FPC to CN7602 of the MONITOR board.

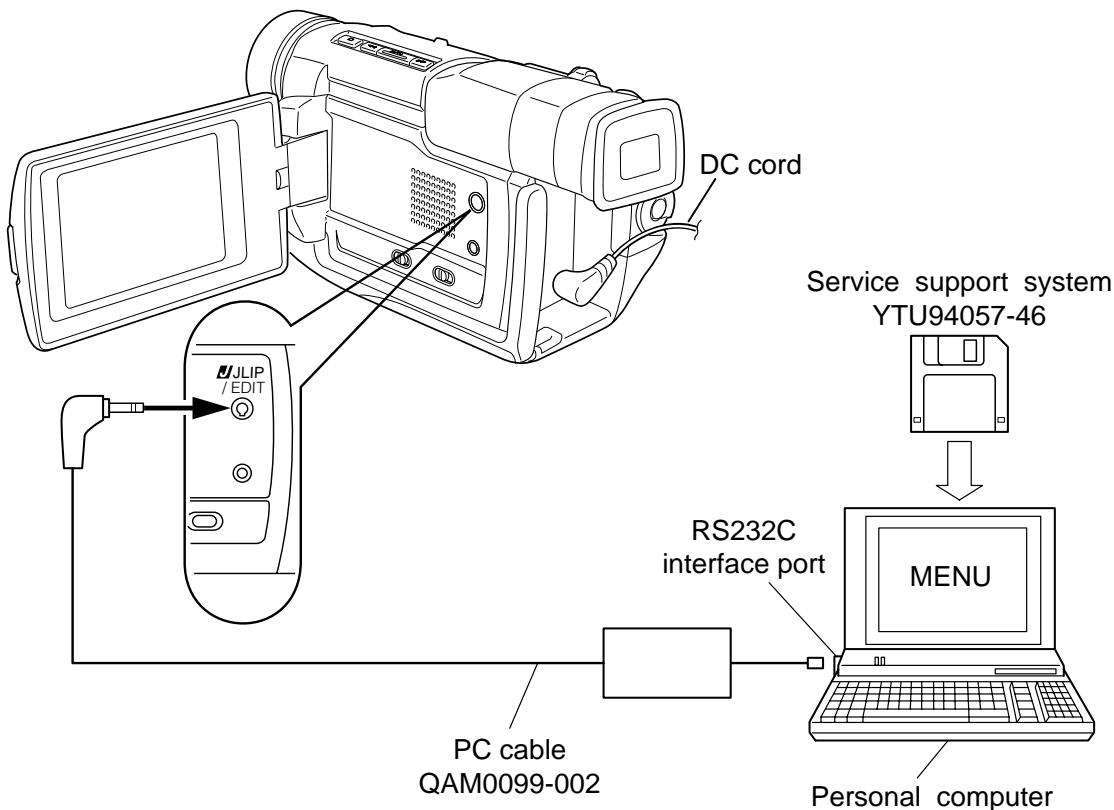


Fig. 3-3-1 Connection for Service support system (I)

2. Setup with patch cords and jig connector cables

NOTE:

Fig. 3-3-2 shows an example of expansion setup that facilitates inspection of major boards because main components are connected by means of patch cords and jig cables. For proceeding to electrical adjustment in such the setup,

disassemble the set at a certain level required for the current adjustment objectives referring to the section 1 "DISASSEMBLY" and properly set up the expanded set and test instruments.

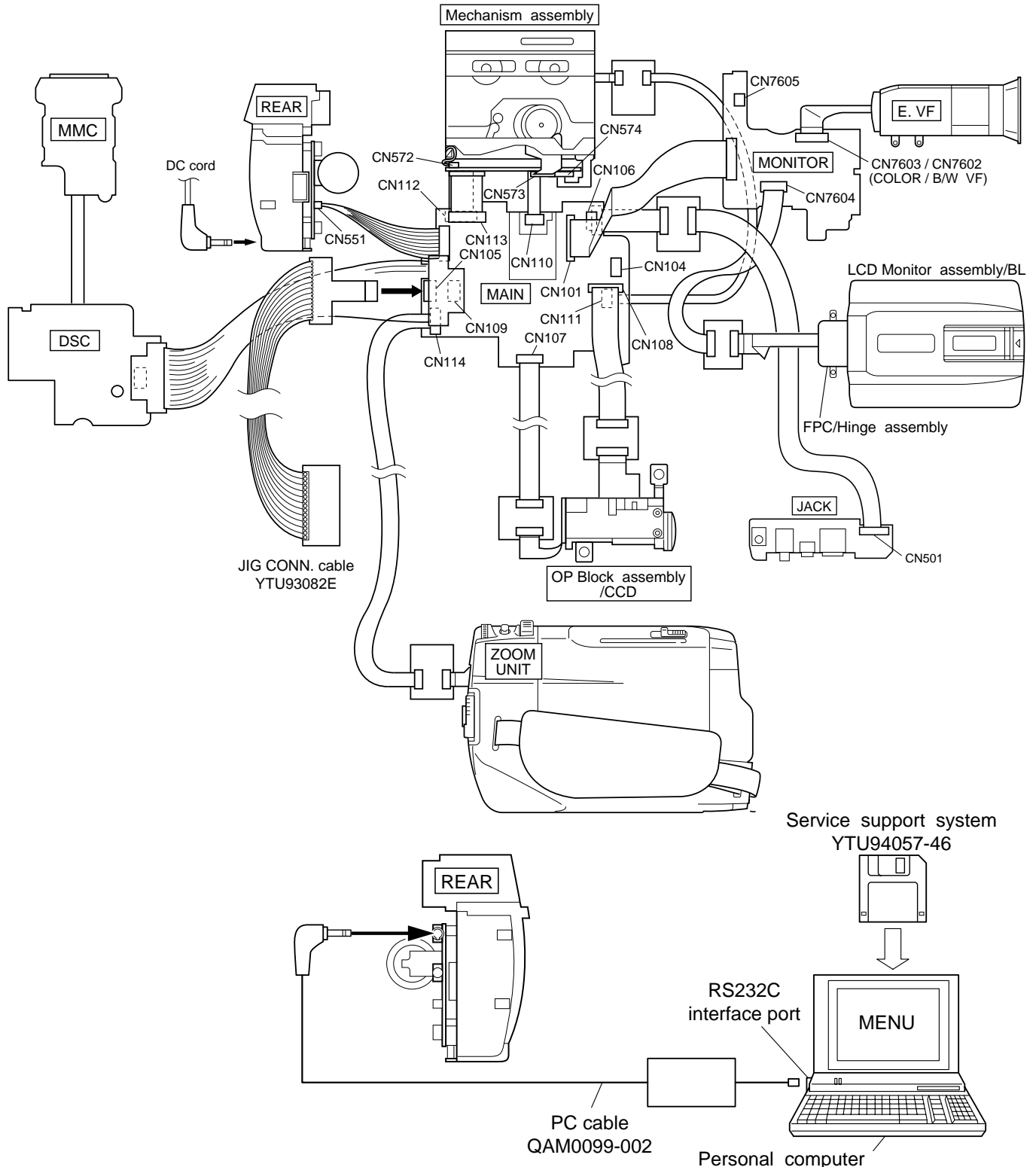


Fig. 3-3-2 Setup for electrical adjustment with personal computer (II)

3.4 ELECTRONIC VIEWFINDER (B/W VF) ADJUSTMENT

Notes: Unless otherwise specified, all measurement points and adjustment parts are located on MONITOR board.

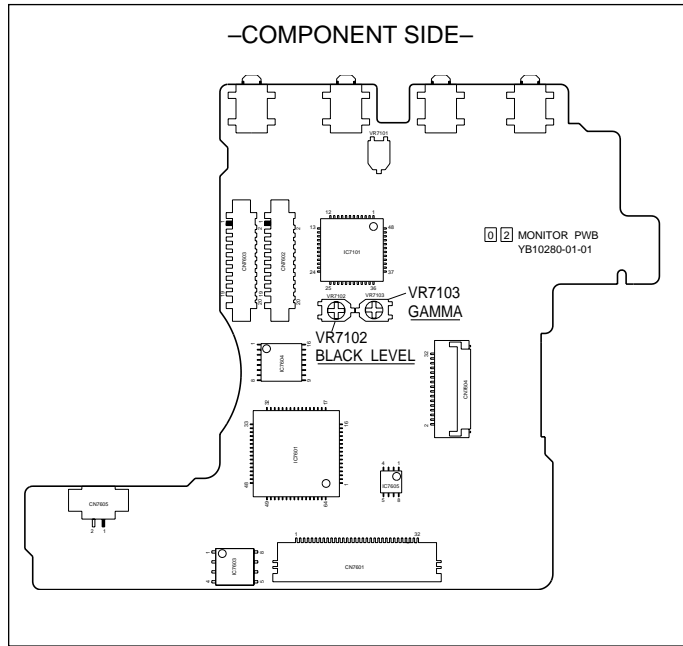


Fig. 3-4-1 MONITOR board

3.4.2 Gamma

Subject	<ul style="list-style-type: none"> • Camera picture • Gray scale
Mode	<ul style="list-style-type: none"> • EE
Equipment	<ul style="list-style-type: none"> • Oscilloscope
Measurement point	<ul style="list-style-type: none"> • IC7101 pin 27 (VIDL)
Adjustment part	<ul style="list-style-type: none"> • VR7103 (Gamma)
Specification	<ul style="list-style-type: none"> • "A" = $2.7V(p-p) \pm 0.05 V(p-p)$

- 1) Observe waveform at pin 27 of the IC7101.
- 2) Adjust VR7103 so that level of "A" (see Fig. 3-4-3) of a waveform becomes $2.7 V(p-p) \pm 0.05 V(p-p)$.

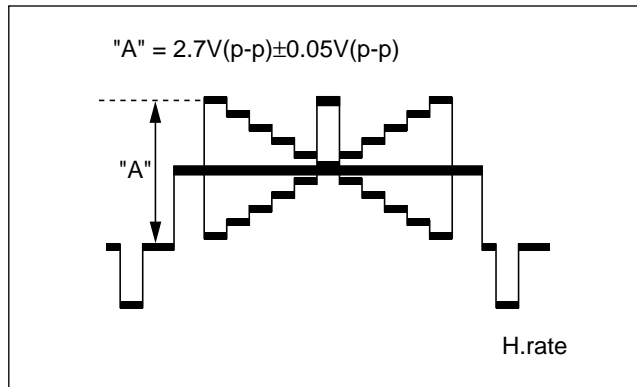


Fig. 3-4-3 Gamma

3.4.1 Black level

Subject	<ul style="list-style-type: none"> • Camera picture • Gray scale
Mode	<ul style="list-style-type: none"> • EE
Equipment	<ul style="list-style-type: none"> • Oscilloscope
Measurement point	<ul style="list-style-type: none"> • IC7101 pin 27 (VIDL)
Adjustment part	<ul style="list-style-type: none"> • VR7102 (Black level)
Specification	<ul style="list-style-type: none"> • "A" = $2.5 V \pm 0.05 V$

- 1) Observe waveform at pin 27 of the IC7101.
- 2) Adjust VR7102 so that DC level of "A" (between the pedestal level and GND, see Fig. 3-4-2) of a waveform becomes $2.5 V \pm 0.05 V$.

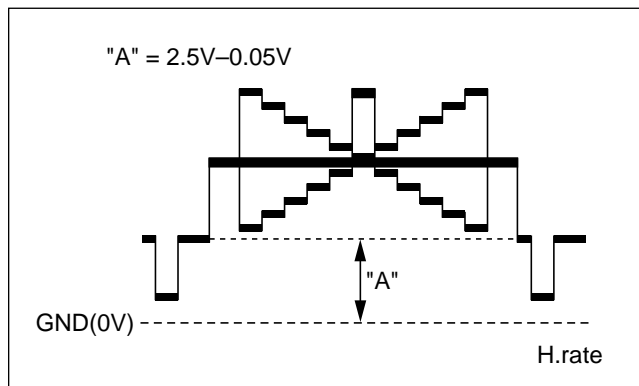


Fig. 3-4-2 Black level