SECTION 2

MECHANICAL ADJUSTMENTS

CONTENTS

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 0.14 N/m (1.4 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

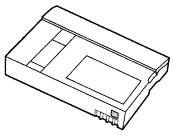
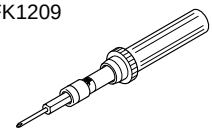
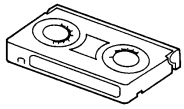
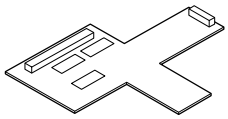
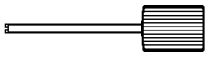
1	Alignment tape	4	Torque screwdriver
VFK1842 		VFK1209 	VFK1845  Replaceable bit (long type)
2	Cassette torque meter	5	REWRITE board (Connector board)
VFK1843 for FWD mode VFK1844 for REV mode 		VFK1846 	
3	Post driver		
VFK1149 			

Table 2-1-2

2.2 DISASSEMBLY/ASSEMBLY OF THE MECHANISM

2.2.1 Mechanism position for disassembly/assembly

The mechanism should basically be disassembled and assembled in the unloading end (No Cassette) position.
However, other mechanism position is sometimes required for disassembly or assembly. In such a case, the required position is specified every time in the descriptions in 2.6, “Replacement of major parts”.

2.2.2 Mode transition

To change the mechanism mode manually, rotate the emergency gear of the mode motor assembly shown in Fig. 2.2.1 as below while holding it down.
The mechanism mode can be changed by applying 3 V DC to the mode motor electrodes.
The MINI and STD reel positions can be changed over by manually sliding the reel change plate.

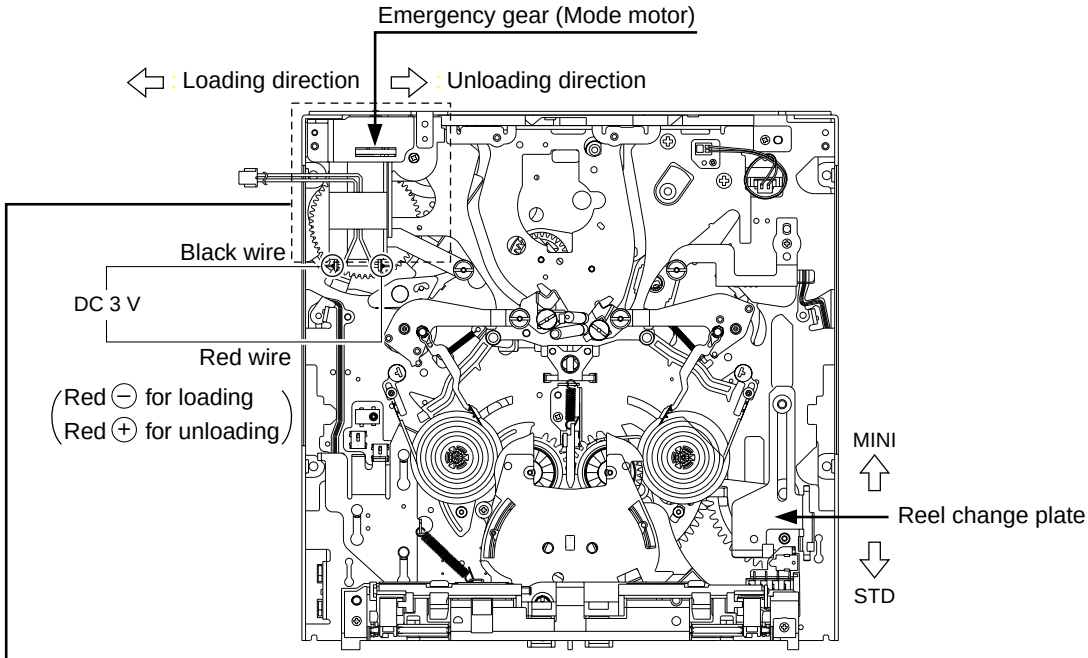


Fig. 2.2.1

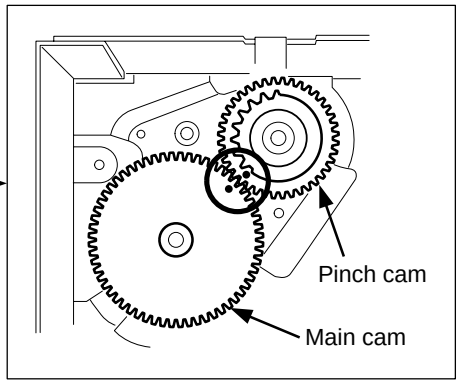


Fig. 2.2.2

Important:
When turn the Emergency gear (Mode) to Unloading direction by hand until the hole of the Main cam and the hole of the pinch cam in a straitline connecting. (refer to Fig.2.2.2)
Please do not turn the Emergency gear (Mode) more than the above.

2.3 MECHANISM TIMING CHART

See Table 2-3-1 below.

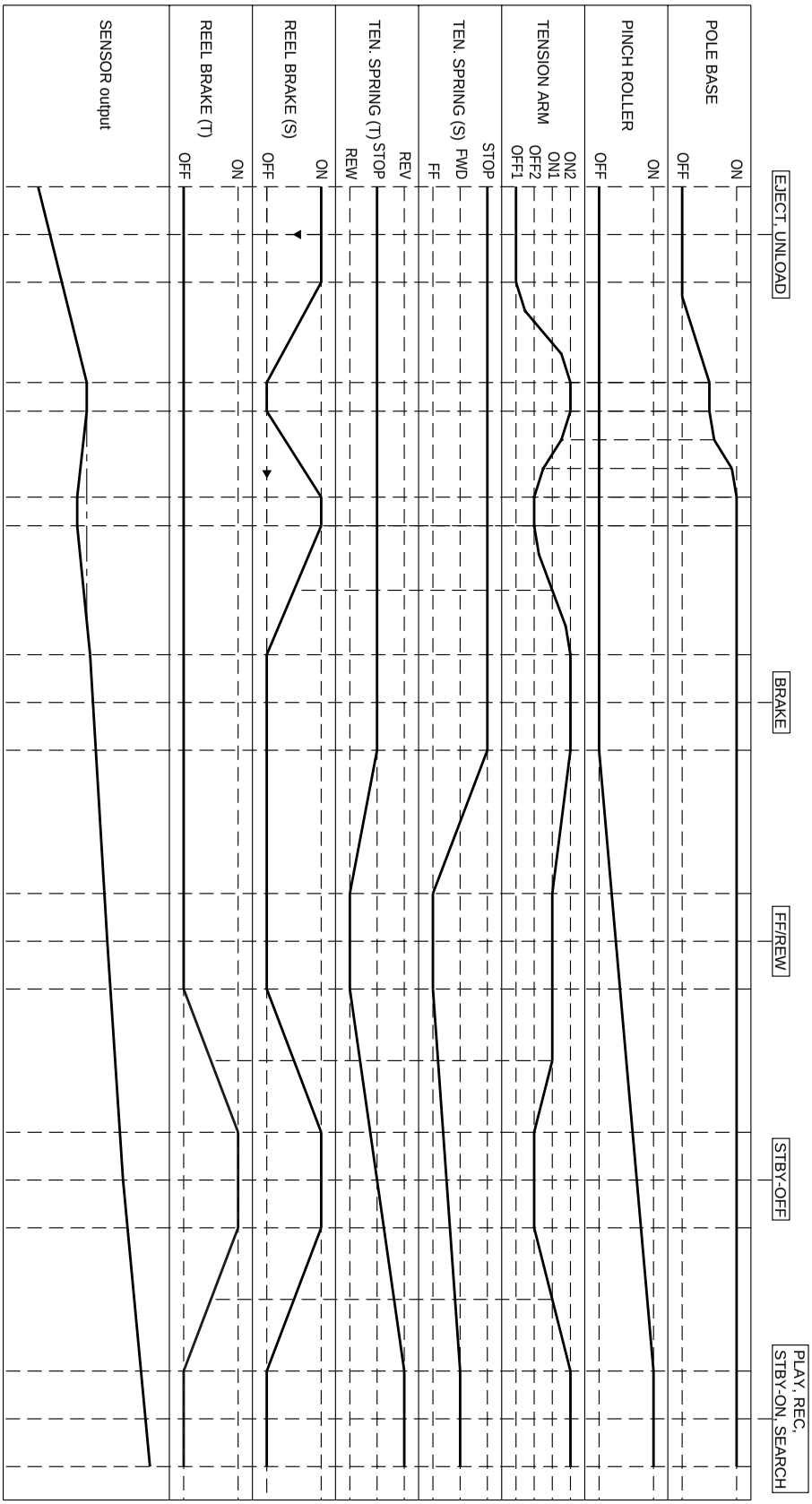


Table 2-3-1

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

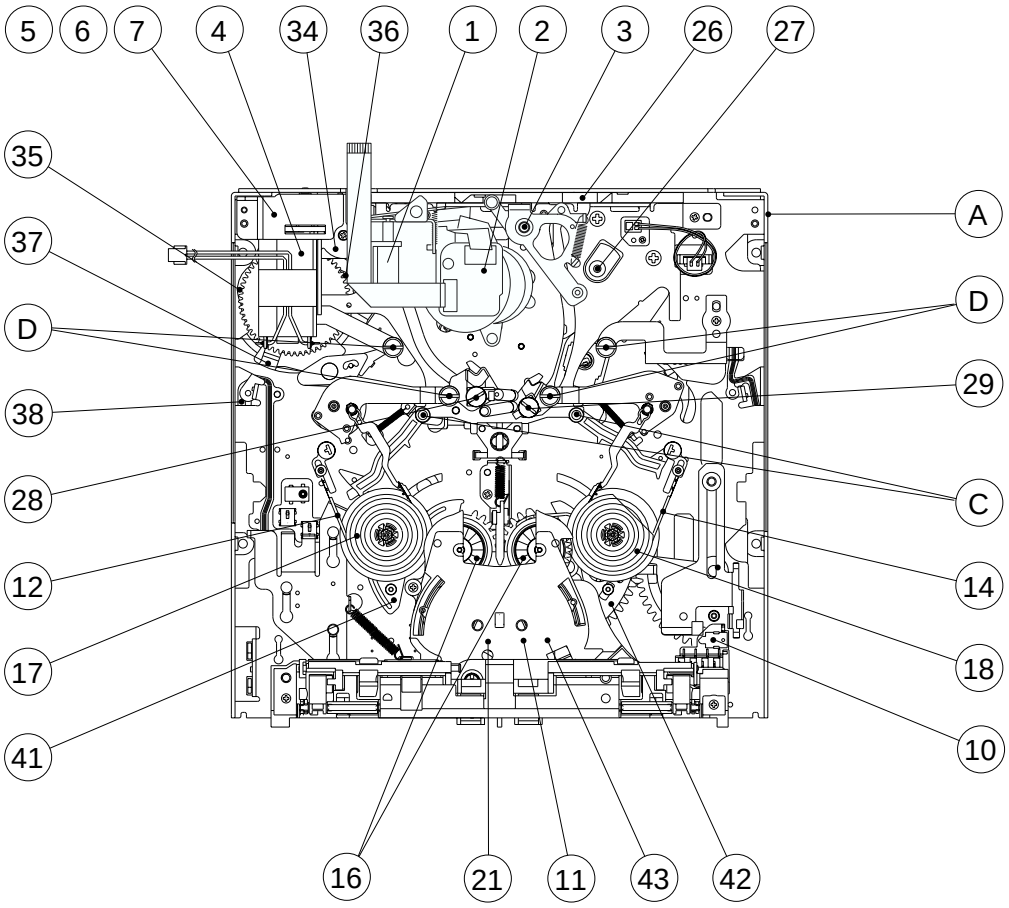


Fig. 2.4.1

2.4.2 Maintenance/inspection table

1) Replace the whole mechanism assembly in the 6000H maintenance.
2) The SUP/TU tension arm assemblies, sub-deck assembly (ENT. G. roller section) and EGR ARM assembly have undergone perpendicularity management after being assembled. If any of the above assemblies needs replacement, the whole mechanism assembly should be replaced.

	Part Name	Symbol No.	Operating Hours (DRUM Hour Meter)												Ref. Section
			500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	
1	㉘ SUP P. BASE ASSEMBLY	M3 66	★	○★	★	●	★	○★	★	●	★	○★	★	—	2.6.17
2	㉙ TU P. BASE ASSEMBLY	M3 67	★	○★	★	●	★	○★	★	●	★	○★	★	—	2.6.17
3	Ⓓ GUIDE ROLLER	M3 30	★	○★	★	●	★	○★	★	●	★	○★	★	—	2.4.1
4	Ⓓ COLLER	M3 31	★	○★	★	●	★	○★	★	●	★	○★	★	—	2.4.1
5	Ⓓ FRANGE	M3 32	★	○★	★	●	★	○★	★	●	★	○★	★	—	2.4.1
6	③ PINCH R.ARM ASSEMBLY	M3 4	★	○★	★	●	★	○★	★	●	★	○★	★	—	2.6.3
7	② DRUM ASSEMBLY	M3 80	★	★	★	●	★	★	★	●	★	★	★	—	2.6.2
8	㉗ CAPSTAN SHAFT	M3 64	★	★	★	★	★	★	★	★	★	★	★	—	
9	㉗ CAPSTAN MOTOR	M3 64	—	—	—	—	—	—	—	—	—	○	—	—	2.6.16
10	㉑ REEL MOTOR	M3 24	—	—	—	—	—	—	—	—	—	○	—	—	2.6.13
11	⑩ M.I.C. terminal	M3 51	★	★	★	★	★	★	★	★	★	★	★	—	
12	⑩ M.I.C. CONNECTOR ㊸ FPC 1 ASSEMBLY ⑪ IDLER COVER	M3 51 M3 49 M3 52	— ★ —	— ★ —	— ★ —	— ★ —	— ★ —	— ★ —	— ★ —	— ★ —	— ★ —	— ★ —	— ★ —	— — —	2.6.6 2.6.25 2.6.7
13	Ⓒ CASSETTE GUIDE PIN		★	★	★	★	★	★	★	★	★	★	★	—	2.4.1
15	④ MODE MOTOR ASSEMBLY	M3 47	—	—	—	—	—	—	—	—	—	—	—	—	2.6.4
16	㉟ MAIN CAM	M3 12	—	—	—	—	—	—	—	—	—	—	—	—	2.6.20
17	⑥ GEAR 1	M3 44	—	—	—	—	—	—	—	—	—	—	—	—	2.6.4
18	⑦ GEAR 2	M3 45	—	—	—	—	—	—	—	—	—	—	—	—	2.6.4
19	⑤ WORM WHEEL	M3 46	—	—	—	—	—	—	—	—	—	—	—	—	2.6.4
20	㉞ PINCH CAM GEAR	M3 13	—	—	—	—	—	—	—	—	—	—	—	—	2.6.20
21	㉖ PINCH PLATE	M3 17	—	—	—	—	—	—	—	—	—	—	—	—	2.6.16
22	㊳ CTL. PLATE	M3 9	—	—	—	—	—	—	—	—	—	—	—	—	2.6.22
23	㊲ CTL. ARM ASSEMBLY	M3 56	—	—	—	—	—	—	—	—	—	—	—	—	2.6.21
24	㊱ ARM GEAR	M3 11	—	—	—	—	—	—	—	—	—	—	—	—	2.6.21
25	㊶ SUP REEL PLATE ASSEMBLY	M3 54	—	—	—	—	—	—	—	—	—	—	—	—	2.6.24
26	㊷ TU REEL PLATE ASSEMBLY	M3 55	—	—	—	—	—	—	—	—	—	—	—	—	2.6.24
27	⑰ SUP REEL DISK ASSEMBLY	M3 35	—	○	—	●△	—	○	—	●△	—	○	—	—	2.6.10
28	⑱ TU REEL DISK ASSEMBLY	M3 36	—	○	—	●△	—	○	—	●△	—	○	—	—	2.6.10
29	⑯ CONN. GEAR ASSEMBLY	M3 37	—	○	—	●△	—	○	—	●△	—	○	—	—	2.6.10
30	⑫ SUP TENSION BAND ASSEMBLY	M3 38	—	○	—	●	—	○	—	●	—	○	—	—	2.6.8
31	⑭ TU TENSION BAND ASSEMBLY	M3 39	—	○	—	●	—	○	—	●	—	○	—	—	2.6.9
32	⑪ IDLER ARM ASSEMBLY	M3 40	—	○	—	●	○	○	—	●	—	○	—	—	2.6.7
33	① HEAD CLEANAER	M3 5A	○	●	○	●	—	●	○	●	○	●	○	—	2.6.2
34	Ⓑ CASSETTE HOUSING ASSEMBLY	M3 90	—	—	—	—	—	—	—	—	—	—	—	—	2.6.1
35	Ⓐ MECHANISM ASSEMBLY	M3 1	—	—	—	—		—	—	—	—	—	—	●	

★: Clean with ethyl alcohol. ○: 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 tape transport system should be cleaned periodically. Be sure to clean the tape transport system upon receipt of a set for servicing, etc. To clean use a cleaning cloth moistened with ethyl alcohol.

1) When the video head is stained, the playback output level decreases and a read error will not be able to be corrected by the error correction. If this occurs, block noise appear on the monitor, the audio will not be output, and the video output will eventually be lost when the video head becomes extremely dirty. To clean the drum, while applying cleaning cloth (service part No. : VZZ0095) or high quality paper gently to the upper drum, rotate the upper drum in the normal (counterclockwise) rotation direction.
   The dirt deposited on the video head can be removed by playing a cleaning tape.

CAUTION

Do not move the cleaning paper while applying it to the video head. Otherwise, the video head may be damaged.

2) The lower drum tends to attract dirt on the leader section and the linearity cannot be guaranteed when the lower drum becomes extremely dirty. Particularly, the tape inlet and output sections gather dirt easily, causing symptoms such as dropout of the reproduced FM signal, deterioration of video quality and lack of audio output. In order to clean the leader section, rub a toothpick gently along its edge.

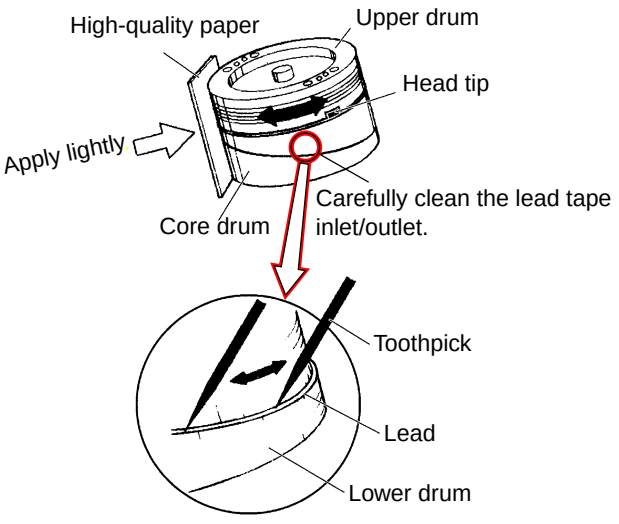


Fig. 2.4.2

3) Stain of the tape transport system leads to tape damage. When magnetic dust or dirt penetrates inside the rollers, a rotation malfunction may affect the video. Clean the tape transport parts carefully using a cleaning cloth or cotton swab moistened with ethyl alcohol.

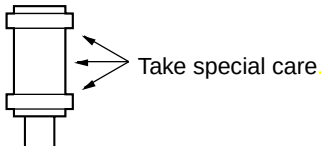


Fig. 2.4.3

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	VFK1778
Grease	Maltemp SH-P	VFK1748

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 section 6, “EXPLODED VIEWS & REPLACEMENT 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.

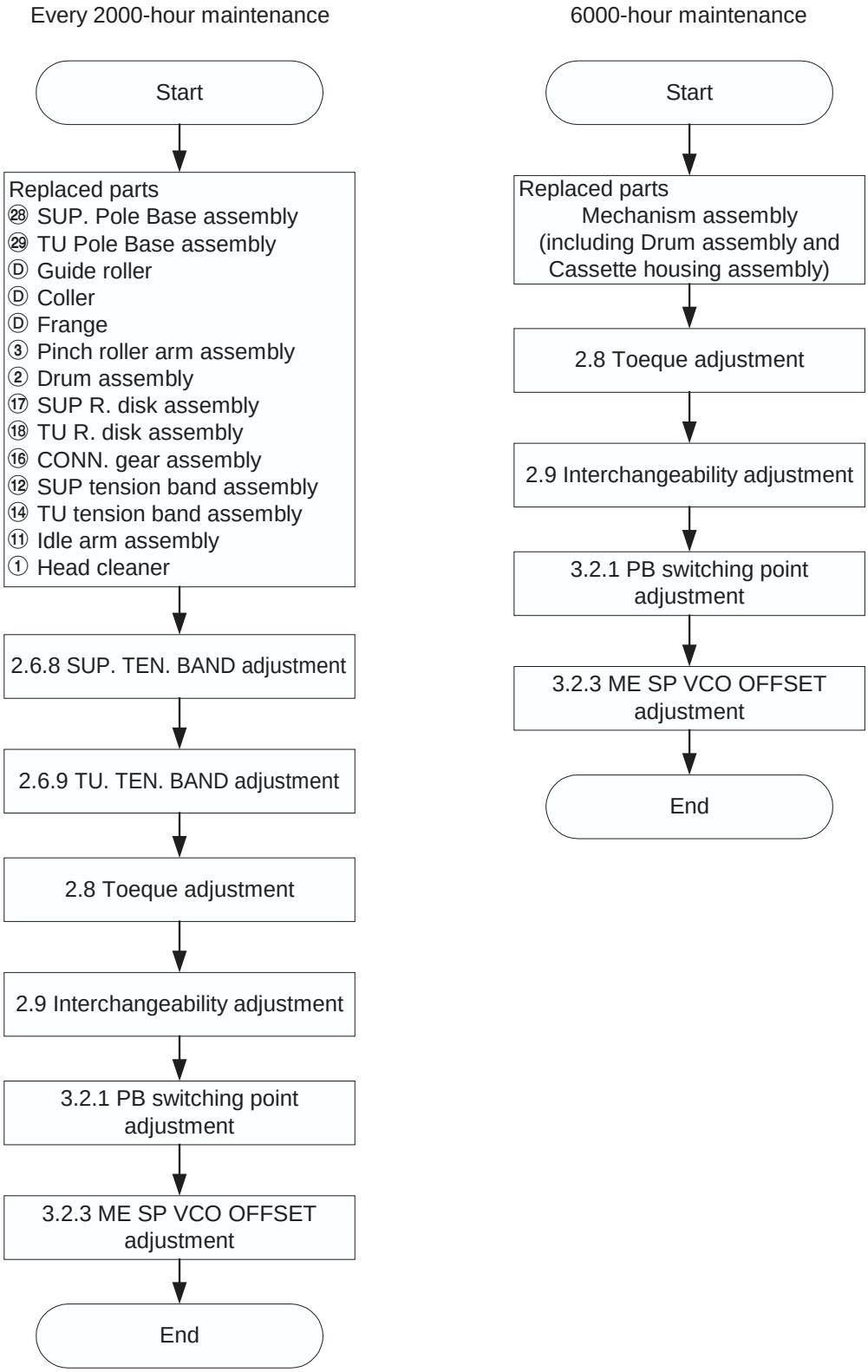


Fig. 2.5.1

No.	Item	Ref. Illustration	Procedure

2.6 REPLACEMENT OF MAJOR PARTS

- The disassembly procedures shown in oder of disassembly. To remove the part, it is necessary to have completed all the stages before it.
- Always use a torque driver and the specified securing torque to tighten screws.
- Position the mechanism to the unloading end (No Cassette) mode before disassembly or assembly unless otherwise specified.

1	**Ⓑ Cassette housing assembly**	**<Disassembly>** 1) Turn the cassette housing motor emergency gear in the direction of the arrow, while pushing the lock lever in the direction of arrow 2, then move the cassette holder so that the cassette holder bar comes in the position shown in the illustration. 2) Remove two screws (S1), slide the cassette housing toward the front and remove it by releasing the lock on the Hook function as shown by arrow 3. **<Assembly>** 1) Reverse the disassembly procedure. 2) Screws (S1) should be tightened using a securing torque of 0.2 N/m (2 kgf/cm). **Note:** **Be sure to attach the cassette housing in the same position as when it was removed.**
2	**① Head cleaner assembly/ ② Drum assembly**	**<Disassembly>** **Head cleaner assembly:** 1) Remove the screw (S2) and remove the head cleaner assembly. **Drum assembly:** 1) Remove the Drum FPC from the DV/CPU circuit board CN107. 2) Remove the screw (S3) and remove the drum assembly. **<Assembly>** 1) Reverse the disassembly procedure. 2) Drum section screws (S3) should be tightened in order of ① — ③ and using a securing torque of 0.04 N/m (0.4 kgf/cm).

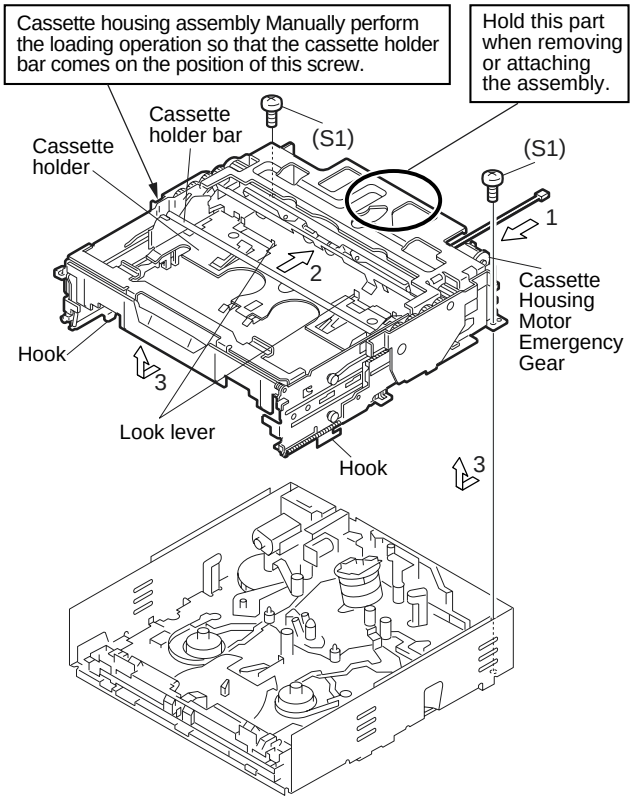


Fig. 2.6.1

Hook function of the Cassette housing.

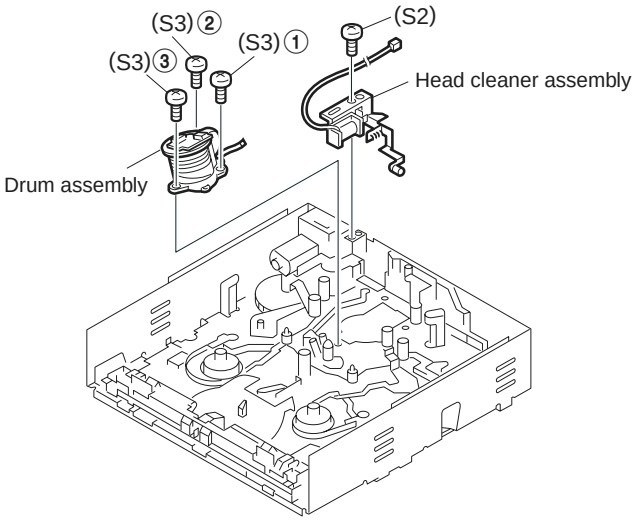
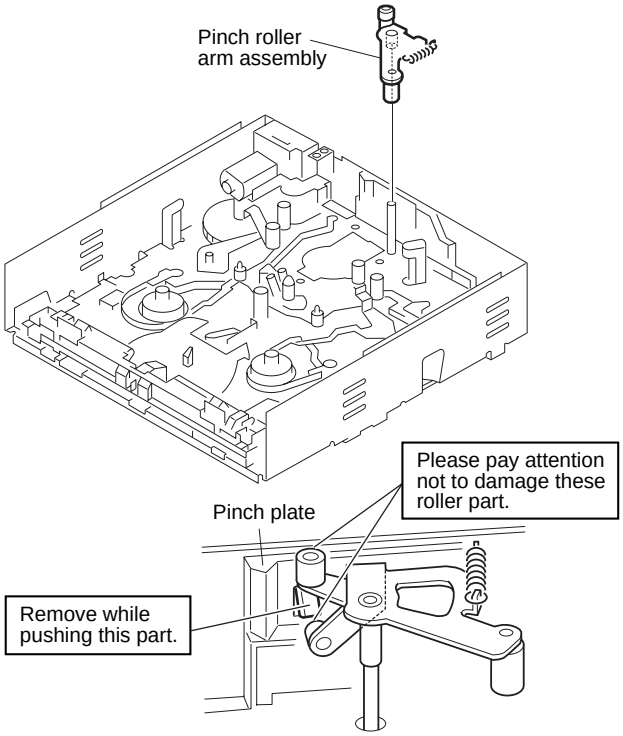
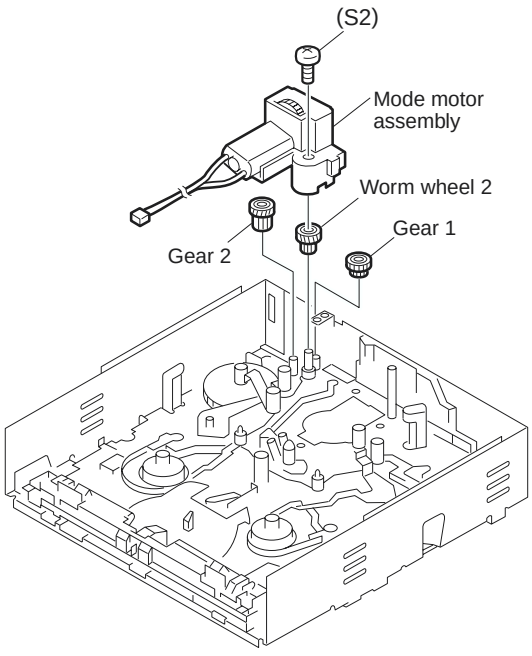
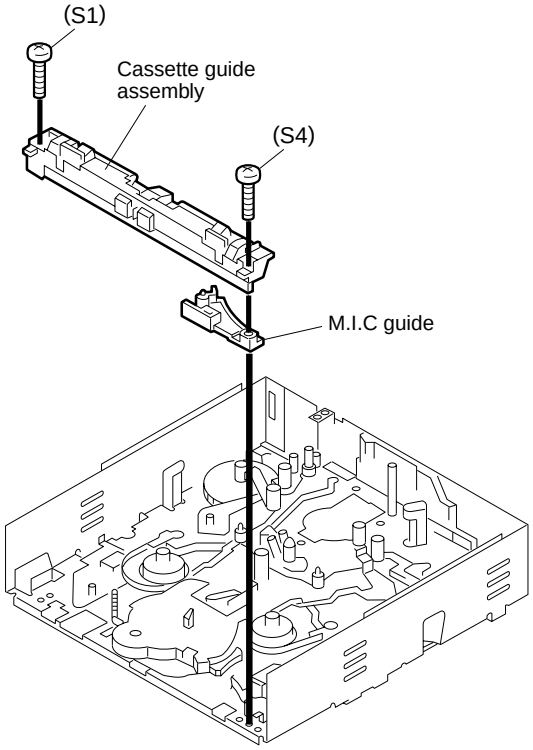
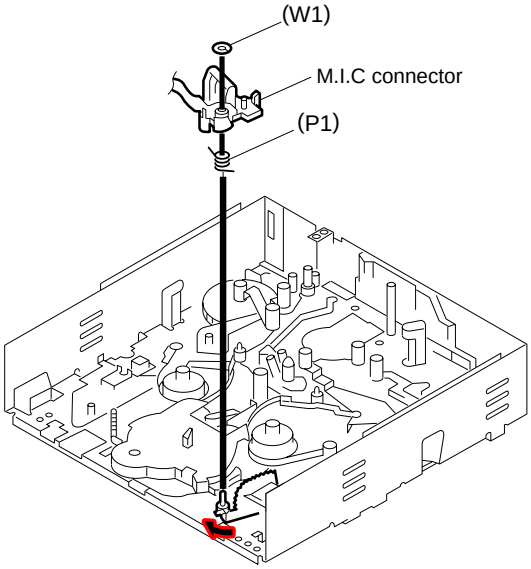
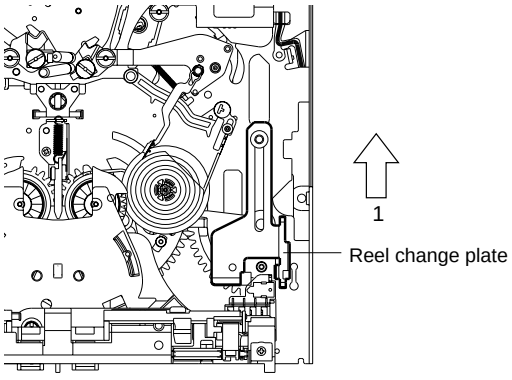


Fig. 2.6.2

No.	Item	Ref. Illustration	Procedure
3	**③ Pinch roller arm assembly**  **Fig. 2.6.3**		**<Disassembly>** 1) While pushing the hook on the pinch plate, lift the pinch roller arm assembly upward to remove. **<Assembly>** 1) Reverse the disassembly procedure.
4	**④ Mode motor assembly/ ⑤ Worm wheel 2/ ⑥ Gear 1/ ⑦ Gear 2**  **Fig. 2.6.4**		**<Disassembly>** **Mode motor assembly:** 1) Remove the screw (S2) and remove the mode motor assembly. **Worm wheel 2 & gears 1 and 2:** 1) Lift the worm wheel 2 upward to remove. 2) Lift the gear 1 upward to remove. 3) Lift the gear 2 upward to remove. **<Assembly>** 1) Reverse the disassembly procedure. **Note:** **Worm wheel 2 and gears 1 and 2 do not require the mechanism phase adjustment.**

No.	Item	Ref. Illustration	Procedure

5	**Cassette guide assembly/ M.I.C guide**  **Fig. 2.6.5**	**<Disassembly>** **Cassette guide assembly:** 1) Remove the screws (S1) (S4) and remove the cassette guide assembly. **M.I.C guide:** 1) While pushing the hook on the M.I.C guide, lift it upward to remove. **<Assembly>** 1) Reverse the disassembly procedure.
6	(10) **M.I.C connector**  **Fig. 2.6.6 (1)**	**<Disassembly>** 1) Slide the reel change plate in the direction of arrow 1 to place the reel in the mini-cassette position. 2) Remove the slit washer (W1) and remove the M.I.C connector. 3) Remove the spring (P1). **<Assembly>** 1) Reverse the disassembly procedure.  **Fig. 2.6.6 (2)**

No.	Item	Ref. Illustration	Procedure

7 ⑪ **Idler arm assembly**

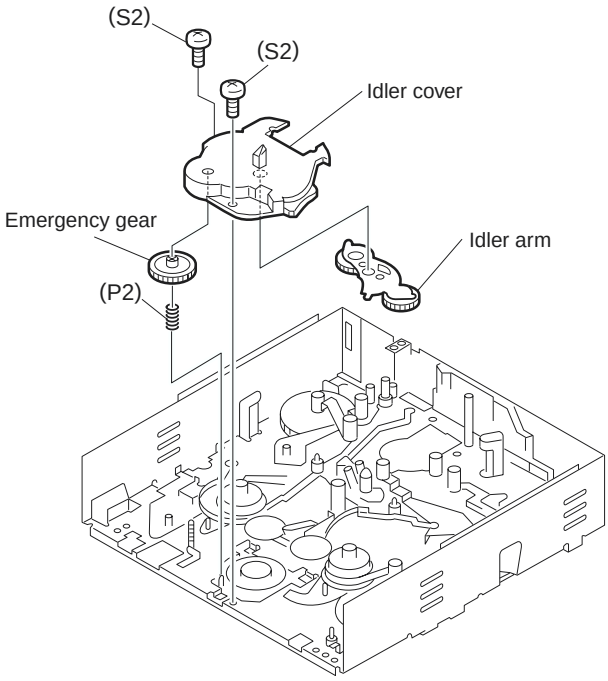


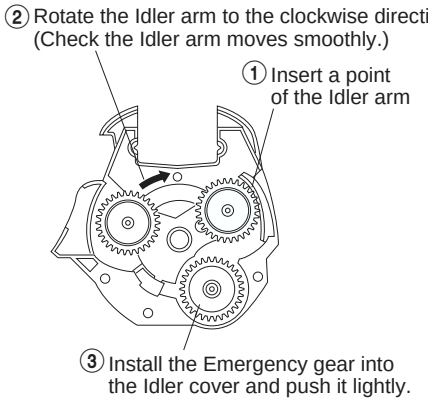
Fig. 2.6.7

<Disassembly>

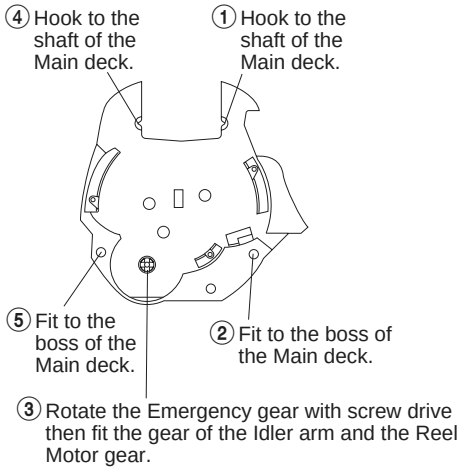
1) Remove the two screws (S2) and remove the idler cover.
2) Remove the idler arm.
3) Remove the emergency gear.
4) Remove the spring (P2).

<Assembly>

1) Attach the Idler arm and the Emergency gear into the Idler cover.



2) Attach the Idler arm assembly onto the Main deck.



Caution : When install the Idler arm assembly into the main deck, if the gear of the Idler arm and Reel Motor gear does not fit, these geare may damaged.

No.	Item	Ref. Illustration	Procedure

8 ⑫ **Supply tension band assembly/ Supply tension arm assembly**

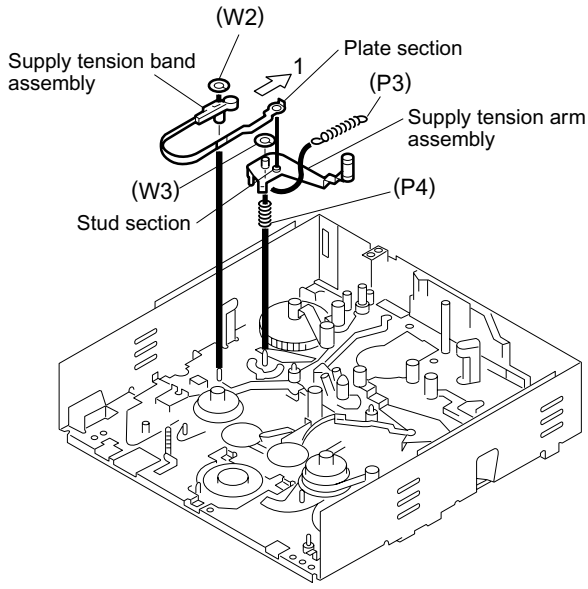


Fig. 2.6.8 (1)

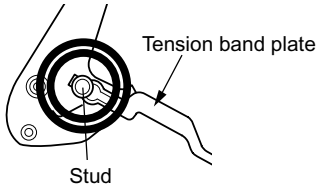


Fig. 2.6.8 (2)

<Disassembly>

Supply tension band assembly:

1) Remove the slit washer (W2).
2) Slide the tension band plate in the direction of arrow 1 and remove the plate from the tension arm stud section.

Supply tension arm assembly:

1) Remove the slit washer (W3) and remove the supply tension arm assembly.
2) Unhook the spring (P3) from the tension control arm. (See Fig. 2.6.8 (3))
3) Remove the spring (P4).

<Assembly>

1) Reverse the disassembly procedure.

Notes:

- **Pinch the tension band plate and tension arm stud together and fix them. Be careful not to bend the plate during the above. (See ◎ in Fig. 2.6.8 (2))**
- **The supply tension arm assembly has undergone perpendicularity management after being assembled, so when replacement is required, it will be necessary to replace the entire mechanism assembly.**

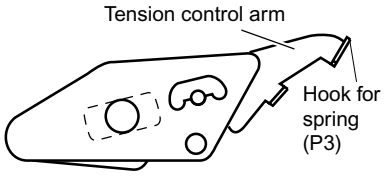


Fig. 2.6.8 (3)

<Supply tension band position adjustment>

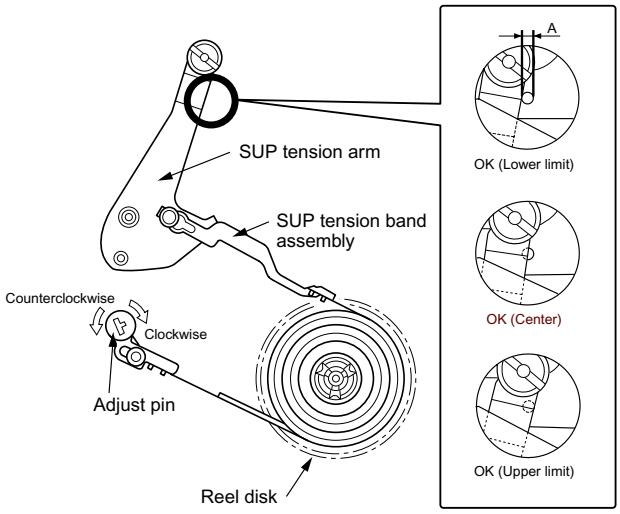


Fig. 2.6.8 (4)

1) With the cassette housing removed, place the reel in the mini-cassette position. (See Fig. 2.6.6 (2))
2) Manually rotate the emergency gear of mode motor counterclockwise (See section 2.2.2, “Mode transition”.) to perform loading untill the loading end position.
3) Confirm that the right edge of the tension arm is placed within the range of reference hole A on the sub-deck.
4) If the right edge is not within the above range, adjust by turning the adjust pin.

Clockwise rotation : to lower limit
Counterclockwise rotation : to upper limit

[Loading end position]

Perform loading until SUP REEL lock and TU REEL lock are completely separated from REEL disks.

No.	Item	Ref. Illustration	Procedure

9 ⑭ **Take-up tension band assembly/ Take-up tension arm assembly**

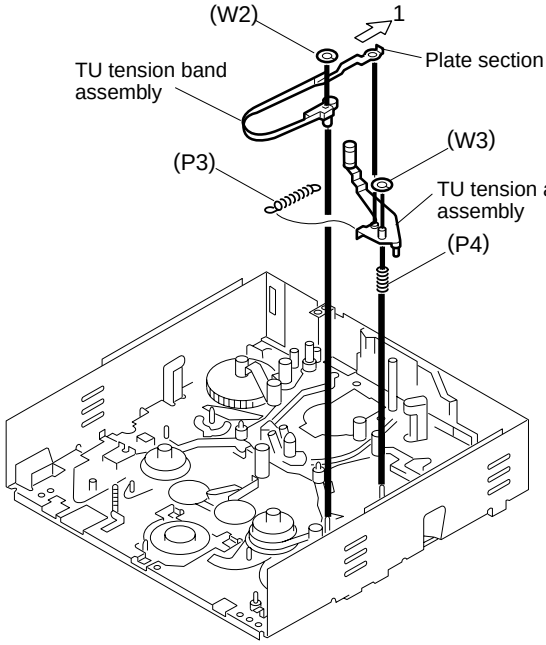


Fig. 2.6.9 (1)

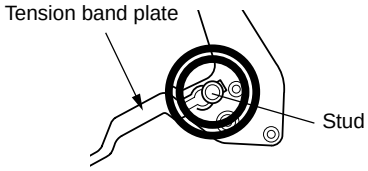


Fig. 2.6.9 (2)

<Disassembly>

Take-up tension band assembly:

1) Remove the slit washer (W2).
2) Slide the plate section of tension band in the direction of arrow 1 and remove the plate from the tension arm stud.

Take-up tension arm assembly:

1) Remove the slit washer (W3) and remove the supply tension arm assembly.
2) Unhook the spring (P3) from the tension control arm. (See Fig. 2.6.9 (3))
3) Remove the spring (P4).

<Assembly>

1) Reverse the disassembly procedure.

Notes:

- **Pinch the tension band plate and tension arm stud together and fix them. Be careful not to bend the plate during the above. (See ◎ in Fig. 2.6.8 (2))**
- **The take-up tension arm assembly has undergone perpendicularity management after being assembled, so when replacement is required, it will be necessary to replace the entire mechanism assembly.**

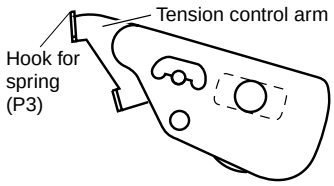


Fig. 2.6.9 (3)

<Take-up tension band position adjustment>

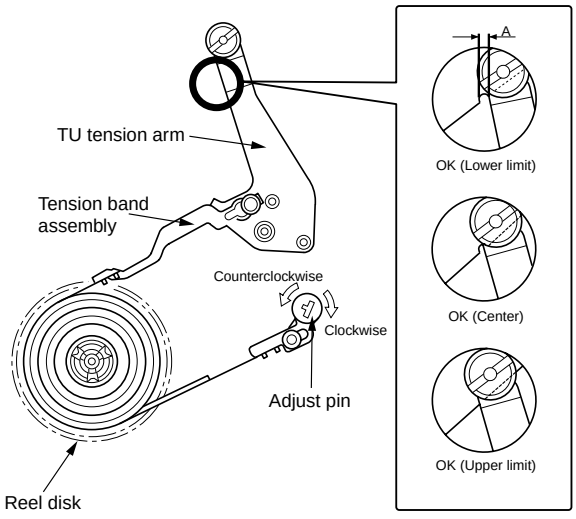


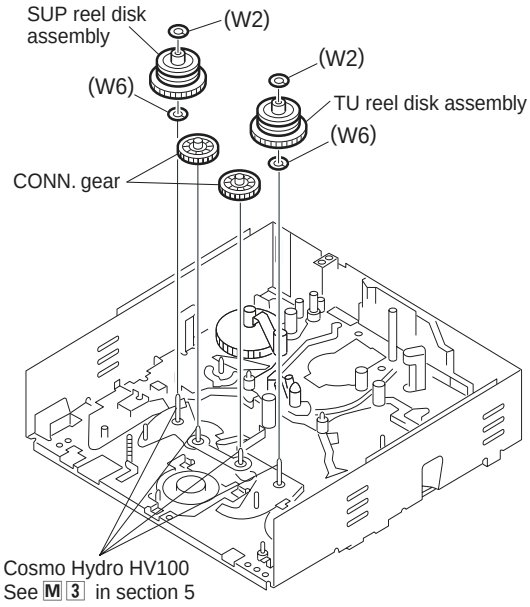
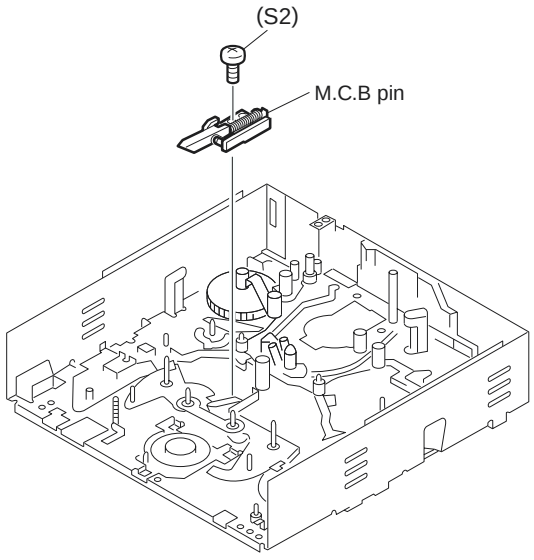
Fig. 2.6.9 (4)

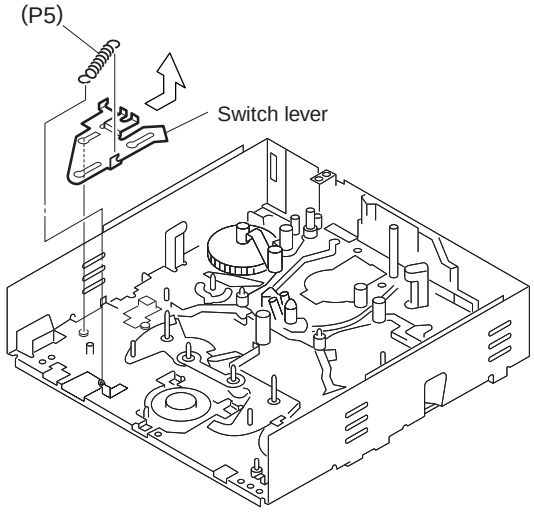
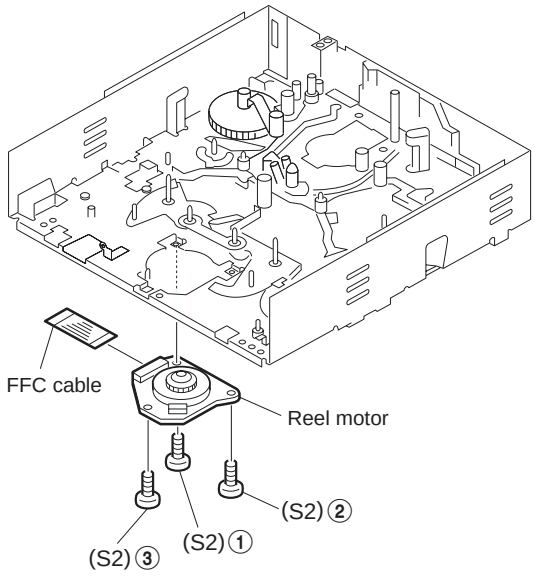
1) With the cassette housing removed, place the reel in the mini-cassette position. (See Fig. 2.6.6 (2))
2) Manually rotate the emergency gear of mode motor counterclockwise (See section 2.2.2, "Mode transition".) to perform loading untill the loading end position.
3) Canfirm that the left edge of the tension arm is placed within the range of notch A on the sub-deck.
4) If the left edge is not within the above range, adjust by turning the adjust pin.

Clockwise rotation : to upper limit
Counterclockwise rotation : to lower limit

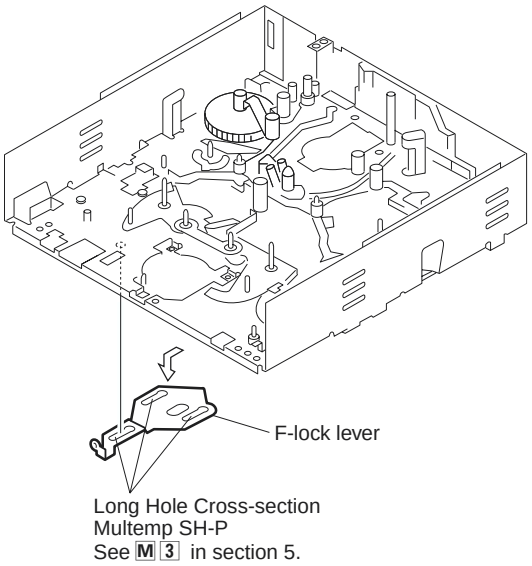
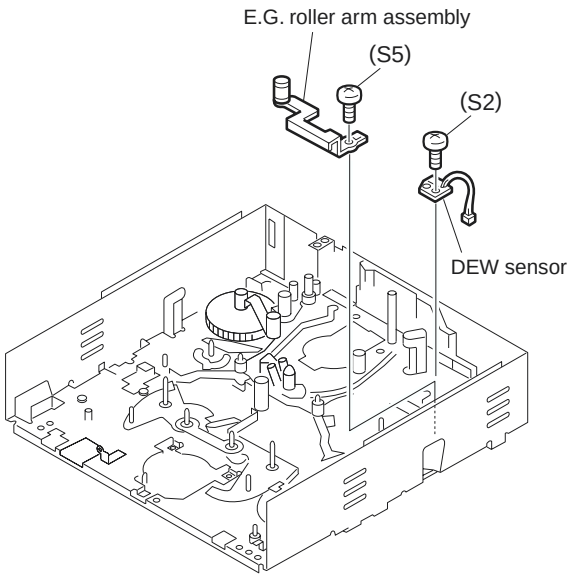
[Loading end position]

Perform loading until SUP REEL lock and TU REEL lock are completely separated from REEL disks.

No.	Item	Ref. Illustration	Procedure
10	**⑯ CONN gear assembly/ ⑰ SUP reel disk assembly/ ⑱ TU reel disk assembly**  **Fig. 2.6.10**	**<Disassembly>** **CONN. gear assembly** 1) Lift the two CONN gears upward to remove. **SUP and TU reel disk assemblies:** 1) Remove the two slit washers (W2) and lift the SUP and TU reel disk assemblies separately to remove each assembly. 2) Lift the two washers (W6) to remove. **<Assembly>** 1) Reverse the disassembly procedure.
11	**M.C.B pin**  **Fig. 2.6.11**	**<Disassembly>** 1) Remove the screw (S2) and remove the M.C.B pin. **<Assembly>** 1) Reverse the disassembly procedure.

No.	Item	Ref. Illustration	Procedure
12	**Switch lever**	 **Fig. 2.6.12**	**<Disassembly>** 1) Unhook the spring (P5). 2) Slide the switch lever in the direction of the arrow and then lift it upward to remove. **<Assembly>** 1) Reverse the disassembly procedure.
13	㉑ **Reel motor**	 **Fig. 2.6.13**	**<Disassembly>** 1) Remove the FFC from the mechanism circuit board CN124. 2) Remove the three screws (S2) and remove the reel motor. **<Assembly>** 1) Reverse the disassembly procedure. 2) Tighten the three screws (S2) in the order of ① - ③. **Note:** **Be sure to have the FFC cable installed on the reel motor side before attaching.**

No.	Item	Ref. Illustration	Procedure

14	**F-lock lever**  **Fig. 2.6.14**	**<Disassembly>** 1) Slide the F-lock lever in the direction of the arrow to remove. **<Assembly>** 1) Reverse the disassembly procedure.
15	**Dew sensor/ E.G. roller arm assembly**  **Fig. 2.6.15**	**<Disassembly>** **Dew sensor:** 1) Remove the screw (S5) and remove the DEW sensor. **E.G. roller arm assembly:** 1) Remove the screw (S2) and remove the E.G. roller arm assembly. **<Assembly>** 1) Reverse the disassembly procedure. **Note:** **The E.G. roller arm assembly has undergone perpendicularity management after being assembled, so when replacement is required, it will be necessary to replace the entire mechanism assembly.**

No.	Item	Ref. Illustration	Procedure

16 **Sub-deck/ ㉖ Pinch plate/ ㉗ Capstan motor**

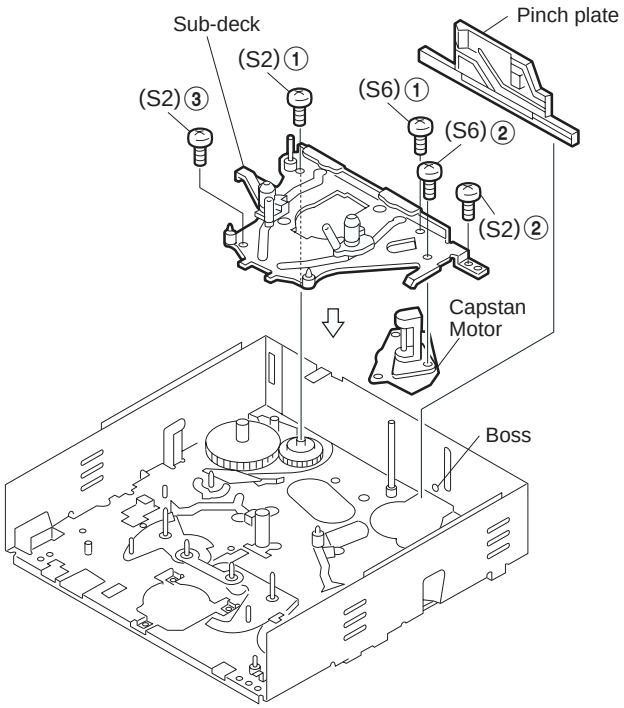


Fig. 2.6.16 (1)

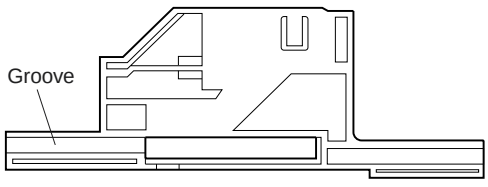


Fig. 2.6.16 (2)

<Disassembly>

Sub-deck/pin plate:

1) Remove the three screws (S2) and slide the sub-deck in the direction of arrow then remove it. The pinch plate also detaches at this time.

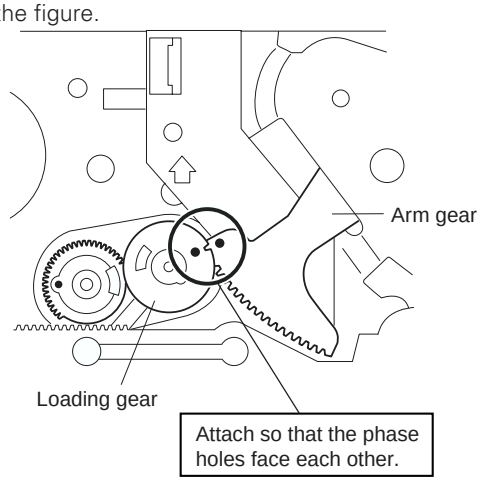
Capstan motor:

1) Remove the two screws (S6) and remove the capstan motor.

<Assembly>

Do this procedure in the unloading end position.

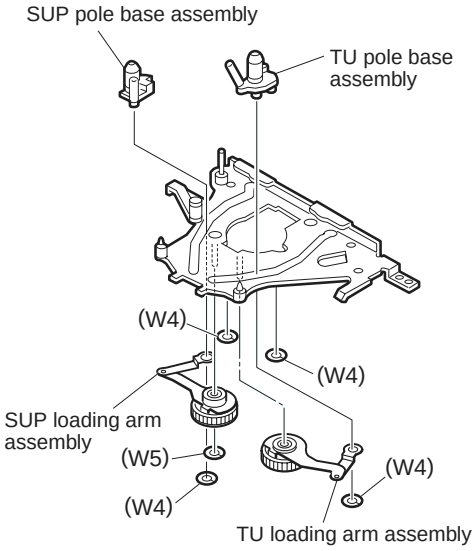
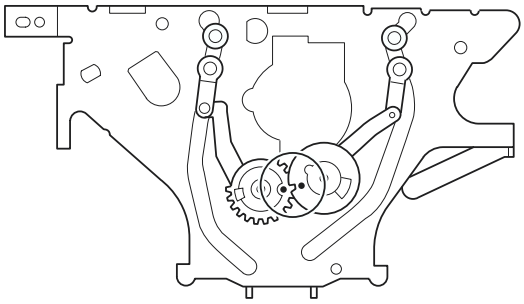
1) Fit the groove on the rear of the pinch plate into the boss on the main deck.
2) Reverse the disassembly procedure.
3) Attach the loading gear and arm gear so that the phase relationship between them is as shown in the figure.



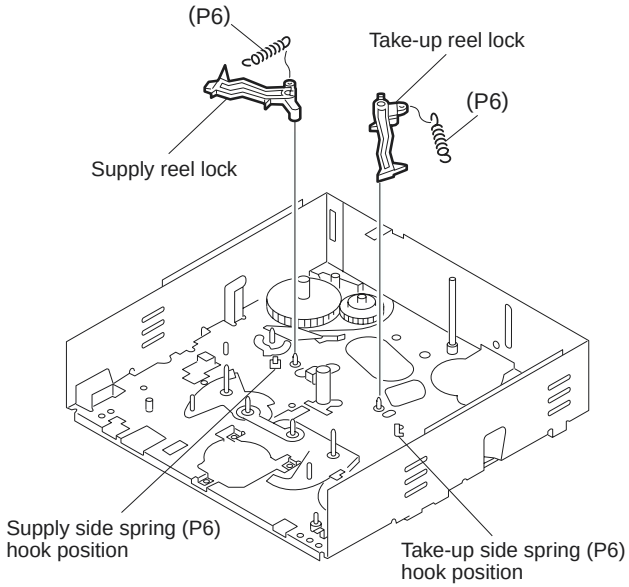
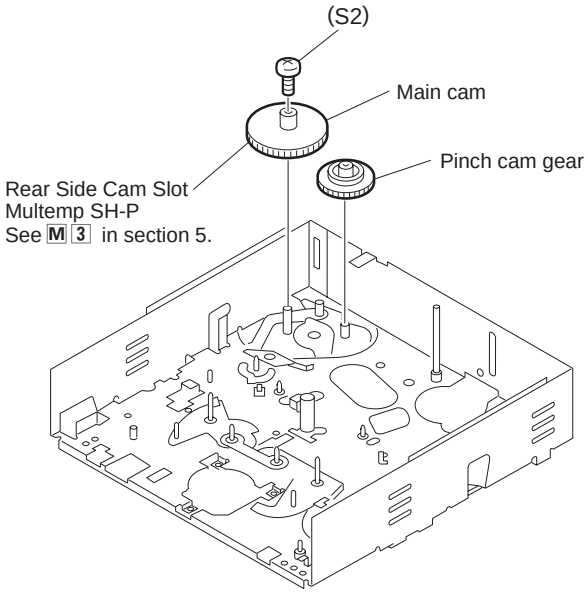
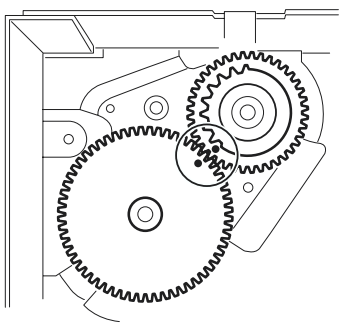
— Unloading End Position —

Notes:

- **Tighten the screws (S2) of the sub deck in the order of ① - ③.**
- **The sub deck assembly has undergone perpendicularity management after being assembled, so when replacement is required, it will be necessary to replace the entire mechanism assembly.**
- **Capstan motor screws (S6) should be tightened in the order of ① - ② and using a securing torque of 0.20 N·m (2 kgf·cm).**

No.	Item	Ref. Illustration	Procedure
17	㉘ **Supply pole base assembly/** ㉙ **Take-up pole base assembly**	 **Fig. 2.6.17**	**<Disassembly>** **Do this procedure in the loading end position.** **Supply pole base assembly:** 1) Remove the two slit washers (W4) and remove the supply pole base assembly. **Take-up pole base assembly:** 1) Remove the two slit washers (W4) and remove the take-up pole base assembly. **<Assembly>** 1) Reverse the disassembly procedure.
18	**Supply loading arm assembly/ Take-up loading arm assembly**	 **Fig. 2.6.18 Sub Deck Bottom Side**	**<Disassembly>** **Do this procedure in the loading end position.** **Take-up loading arm assembly:** 1) Remove the slit washer (W5) and remove the take-up loading arm assembly. **Supply loading arm assembly:** 1) After removing the take-up loading arm assembly, remove the supply loading arm assembly. **<Assembly>** 1) Reverse the disassembly procedure. 2) Attach so that the gear holes on the assemblies face each other.

No.	Item	Ref. Illustration	Procedure

19	**Supply reel lock/ Take-up reel lock**  **Fig. 2.6.19**	**<Disassembly>** **Supply reel lock:** 1) Unhook the spring (P6) and lift the supply reel lock upward to remove. **Take-up reel lock:** 1) Unhook the spring (P6) and lift the take-up reel lock upward to remove. **<Assembly>** 1) Reverse the disassembly procedure.
20	㉞ **Pinch cam gear/** ㉟ **Main cam**  **Fig. 2.6.20 (1)**	**<Disassembly>** **Pinch cam gear:** 1) Lift the pinch cam gear upward to remove. **Main cam:** 1) Remove the screw (S2) and remove the main cam. **<Assembly>** 1) Reverse the disassembly procedure. 2) Attach the main cam and pinch cam gear so that their phase relationship is as shown in the figure.  **Fig. 2.6.20 (2)**

No.	Item	Ref. Illustration	Procedure

21 ㊱ **Arm gear/** ㊲ **Control arm**

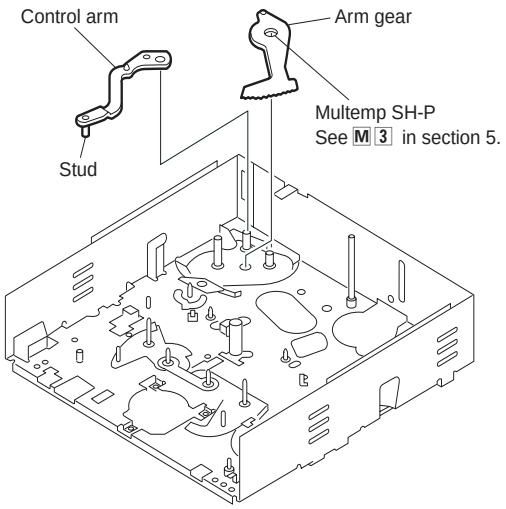


Fig. 2.6.21 (1)

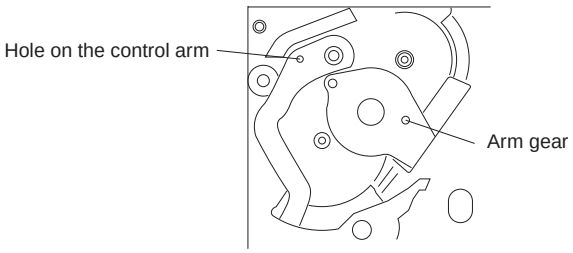


Fig. 2.6.21 (3)

<Disassembly>

Arm gear:

1) Remove the main cam as described in No. 20 and remove the arm gear.

Control arm:

1) Place the main deck upside down.
2) Bend the control plate slightly, disengage the control arm's stud from the groove on the plate and remove the control arm. (Refer to Fig. 2.6.21(2))

<Assembly>

1) Reverse the disassembly procedure.
2) Align the hole on the control arm withy that on the main deck.
3) Align the hole on the arm gear with that on the main deck.

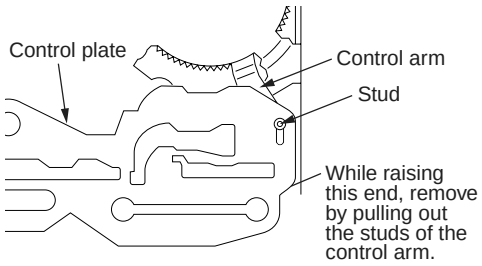


Fig. 2.6.21 (2)

22 ㊳ **Control plate/ Mode sensor gear**

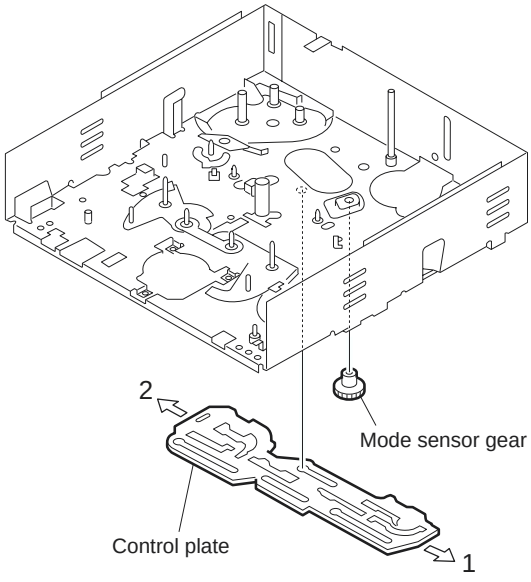


Fig. 2.6.22 (1)

<Disassembly>

Control plate:

1) Place the main deck upside down.
2) Slide the control plate in the direction of the arrow 1 to remove.

Mode sensor gear:

1) Remove the mode sensor gear as if pulling it out.

<Assembly>

1) Attach the control plate.
2) Slide the control plate in the direction of the arrow 2.
3) Attach the mode sensor gear so that the hole on it is aligned with that on the control plate.

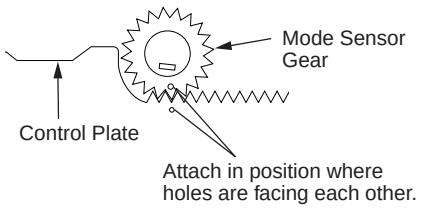
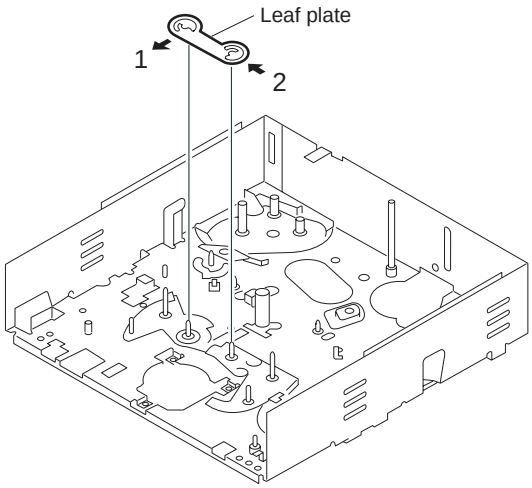
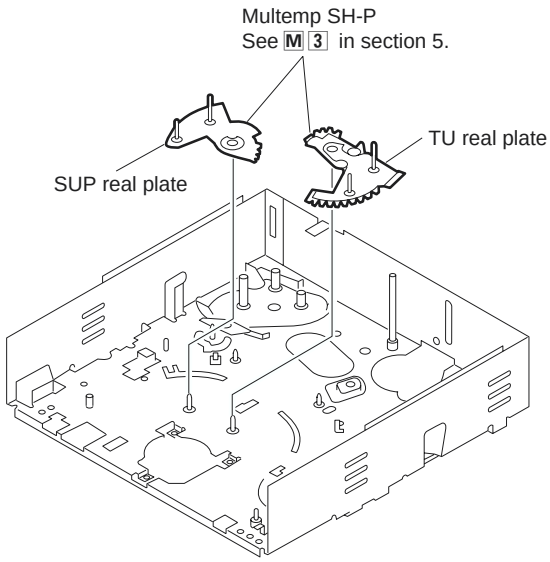
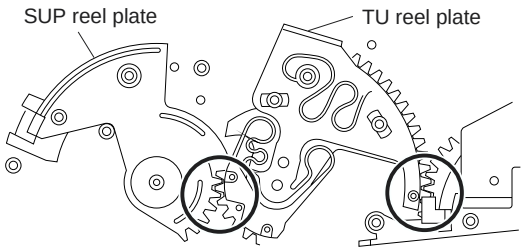
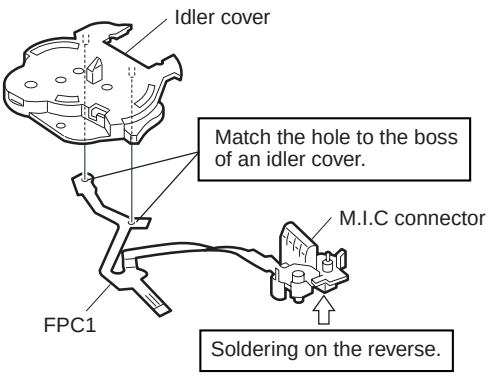
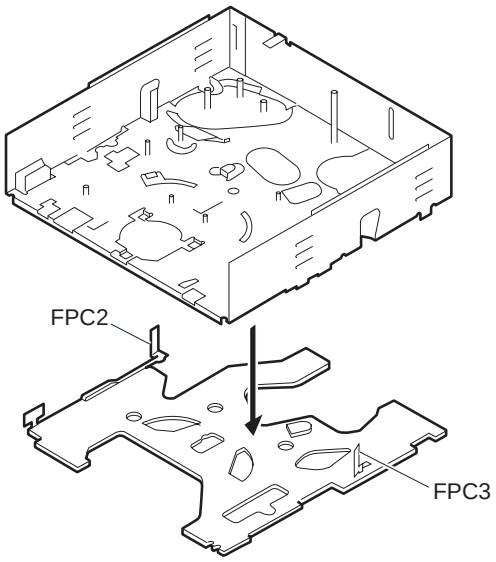
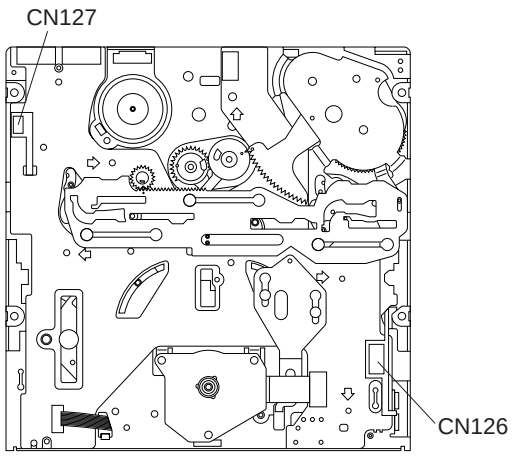


Fig. 2.6.22 (2)

No.	Item	Ref. Illustration	Procedure

23	**Leaf plate**  **Fig. 2.6.23**	**<Disassembly>** 1) Push the supply side of the leaf plate in the direction of arrow 1 to release the lock. 2) Push the take-up side of the leaf plate in the direction of arrow 2 to release the lock. Now the leaf plate can be removed. **<Assembly>** 1) Reverse the disassembly procedure. **Note:** **Be careful not to deform the leaf plate during removing or attaching.**
24	**㊶ Supply reel plate/ ㊷ Tale-up reel plate**  **Fig. 2.6.24 (1)**	**<Disassembly>** **Supply reel plate:** 1) Slide the reel change plate toward the mini-cassette position. (Stop sliding before it is locked completely.) (See Fig. 2.6.6 (2)) 2) Lift the right side of the supply reel plate (gear side) and turn it slightly to remove. **Take-up reel plate:** 1) Lift the left side of the take-up reel plate and turn it slightly to remove. **<Assembly>** 1) Reverse the disassembly procedure. **Notes:** **Take-up reel plate attaching position** Attach the take-up reel plate so that the gear cogs on its inner right side are meshed with those on the left end of the reel plate drive gear. **Supply reel plate attaching position** Attach the supply reel plate so that the gear cogs on its inner right side are meshed with those on the left end of the supply reel plate.  **Fig. 2.6.24 (2)**

No.	Item	Ref. Illustration	Procedure

25	㊸ **FPC1 assembly**  **Fig. 2.6.25**	**<Disassembly>** 1) Remove the M.I.C connector and idler arm assembly as described in section 2.6.7. 2) Remove solder from the M.I.C connector (6 positions). 3) Remove the FPC1 assembly by performing the same operation as peeling adhesive tape off for the idler cover section. **<Assembly>** 1) Reverse the disassembly procedure. **Note:** **Do not reuse the removed FPC1 assembly.**
26	**FPC2 assembly/ FPC3 assembly**  **Fig. 2.6.26 (1)**	**<Disassembly>** **FPC2 assembly:** 1) Remove solder from CN126 on the mechanism board. 2) Remove the FPC2 assembly as if peeling adhesive tape off. **FPC3 assembly:** 1) Remove solder from CN127 on the mechanism board. 2) Remove the FPC3 assembly as if peeling adhesive tape off. **<Assembly>** 1) Reverse the disassembly procedure. **Note:** **Do not reuse the removed FPC1 and FPC2 assemblies.**  **Fig. 2.6.26 (2)**

No.	Item	Ref. Illustration	Procedure

27 **Cassette LED/ LED holder/ MECHA board assembly**

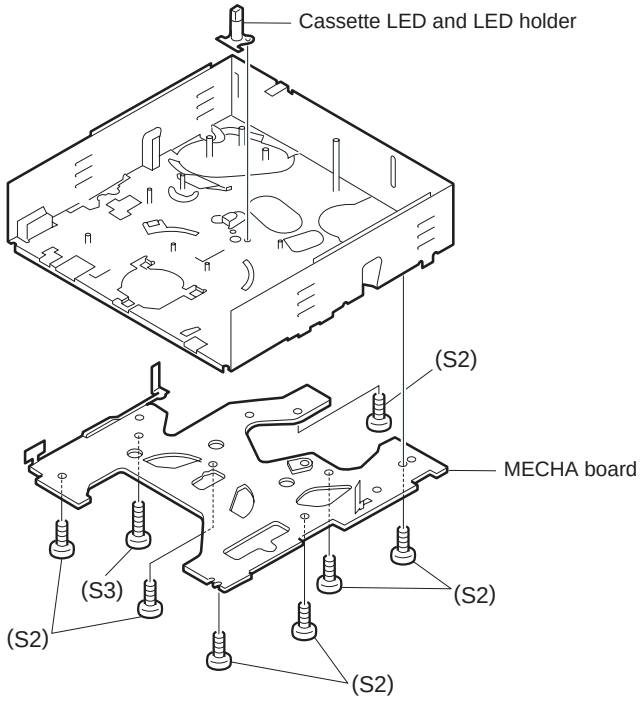


Fig. 2.6.27 (1)

<Disassembly>

Cassette LED:

1) Remove solder from LD1 on the mechanism board and remove the cassette LED.

LED holder:

1) While pushing the three claws locking the LED holder, remove it.

MECHA board assembly:

1) Remove the seven screws (S2) and a screw (S3), then remove the MECHA board assembly.

<Assembly>

1) Reverse the disassembly procedure.
2) Tighten the eight screws of the mechanism board assembly in the order shown in the illustration.

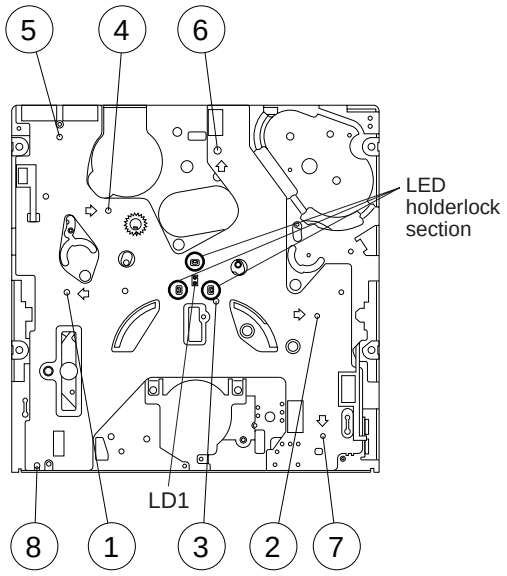


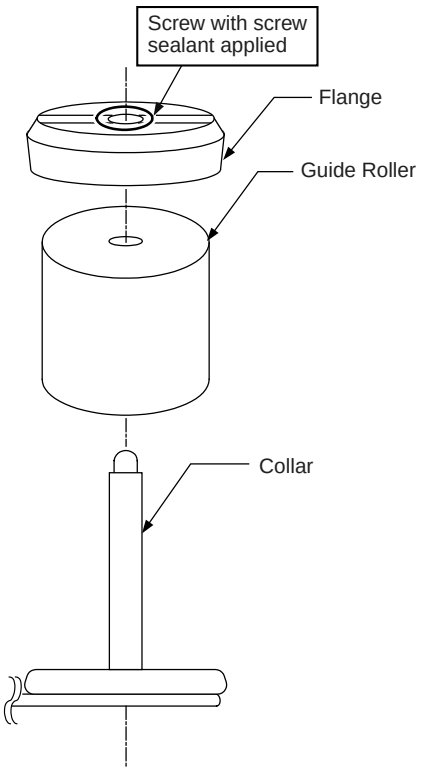
Fig. 2.6.27 (2) — Mechanism unit bottom side —

Note:
Makce sure the three claws locking of the LCD holder does not loosen.

No.	Item	Ref. Illustration	Procedure

2.7 GUIDE ROLLER REPLACEMENT METHOD

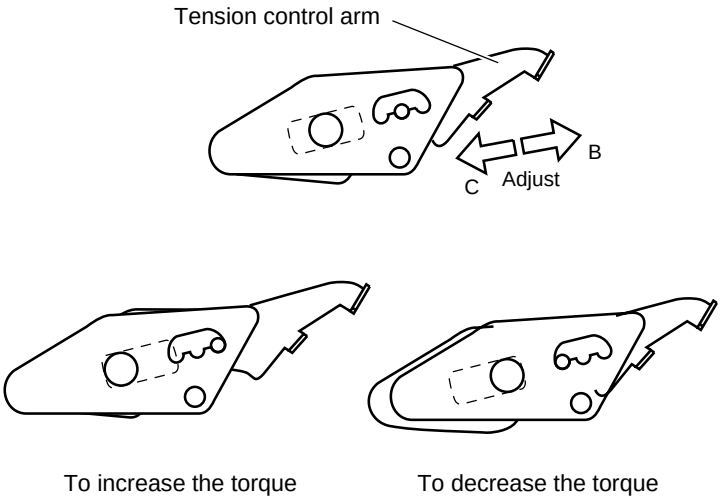
Since the SUP/TU tension arm assembly, sub deck assembly (ENT, G, roller section), and E.G.R. arm, have all undergone perpendicularity management after being assembled respectively, assembly replacement of these is not possible.
For maintenance, only the guide roller can be replaced.

No.	Item	Ref. Illustration	Procedure
1	Ⓓ **Guide roller replacement procedure for SUP/TU tension arm assembly and ENT.G. roller/E.G. roller arm assembly**	 **Fig. 2.7.1**	**<Removing>** 1) Remove the flange on the upper part of the guide roller as you would remove a screw. 2) Pull the guide roller upward and remove it. 3) Pull the collar upward and remove it. **<Installing>** 1) Proceed in the reverse order as when removing. 2) When fixing the flange in place, first tighten by hand until it stops, then tighten further using a securing torque of 0.04 N/m (0.4 kgf/cm). 3) After fixing in place, apply screw sealant to the screw on the upper end of the flange. **Note:** **When applying additional tightening force, avoid excessive force that may cause distortion of the arm section.**

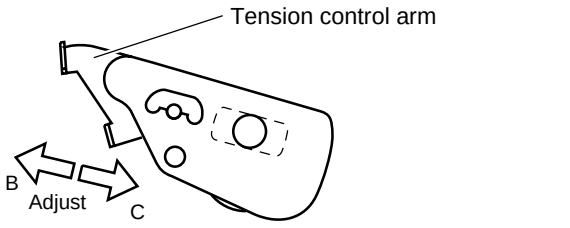
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (⇧) Adjustment level (☆)	Adjustment procedure

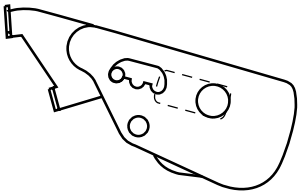
2.8 TORQUE ADJUSTMENT

1	Supply back torque adjustment	Cassette torque meter VFK1843	Play	◎ Supply side reading of cassette torque meter ☆ 6.5 $^{+1.0}_{-0.5}$ x 10^{-4} N·m	1) Insert the torque cassette meter VFK1843 and press the [PLAY] button. 2) Confirm that the SUP back torque value is within the specified range. (If the reading varies, read the center value.) 3) If the reading is out of specification, eject the cassette and adjust by moving the tension control arm. * To increase the torque → Move in direction B * To decrease the torque → Move in direction C. 4) Perform steps 1) and 2) above again and confirm that the SUP back torque value is within the specified range. If it is out of specification, check the <Supply tension band position adjustment> in 2.6.8 (4).
2	Take-up wind torque adjustment	Cassette torque meter VFK1843	PLAY, Adjustment menu No. 119	◎ Take-up side reading of cassette torque meter ☆ 11.5 $^{+1.0}_{-0.5}$ x 10^{-4} N·m	1) Select adjustment menu [119. FWD TORQUE]. **(For the adjustment menu, see 3.1.5, "Adjustment menu".)** 2) Insert the torque cassette meter VFK1843 and press the [PLAY] button. 3) Adjust the TU wind torque so that it is within the specified range. * Press SET (PAUSE) to enter the adjustment mode. * To increase the torque → Press ▲ (PLAY). * To decrease the torque → Press ▼ (STOP). 4) After adjustment, press SET (PAUSE) to store the adjustment data.

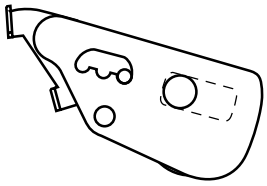


No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (↑) Adjustment level (☆)	Adjustment procedure
3	Take-up back torque adjustment	Cassette torque meter VFK1844	REV x 1	◎ Take-up side reading of cassette torque meter ☆ $6.5^{+1.0}_{-0.5}$ x 10^{-4} N·m	1) Insert the torque cassette meter VFK1844 and enter REV x1 mode. 2) Confirm that the TU back torque value is within the specified range. (If the reading varies, read the center value.) 3) If the reading is out of specification, eject the cassette and adjust by moving the tension control arm. * To increase the torque → Move in direction B * To decrease the torque → Move in direction C. 4) Perform steps 1) and 2) above again and confirm that the TU back torque value is within the specified range. If it is out of specification, check the <Take-up tension band position adjustment> in 2.6.9 (4).
4	SUP wind torque CHECK	Cassette torque meter VFK1844	REV x 1	◎ Supply side reading of cassette torque meter ☆ $11.5^{+1.5}_{-1.0}$ x 10^{-4} N·m	1) Insert the torque cassette meter VFK1844 and enter REV x1 mode. 2) Confirm that the SUP wind torque is within the specified range. If it is out of specification, check the assembly condition of the reel drive parts.





To increase the back torque



To decrease the back torque

2.9 INTERCHANGEABILITY ADJUSTMENT

2.9.1 Interchangeabilty adjustment flow chart

Fig. 2-9-1 shows the flow chart of compatibility adjustment.

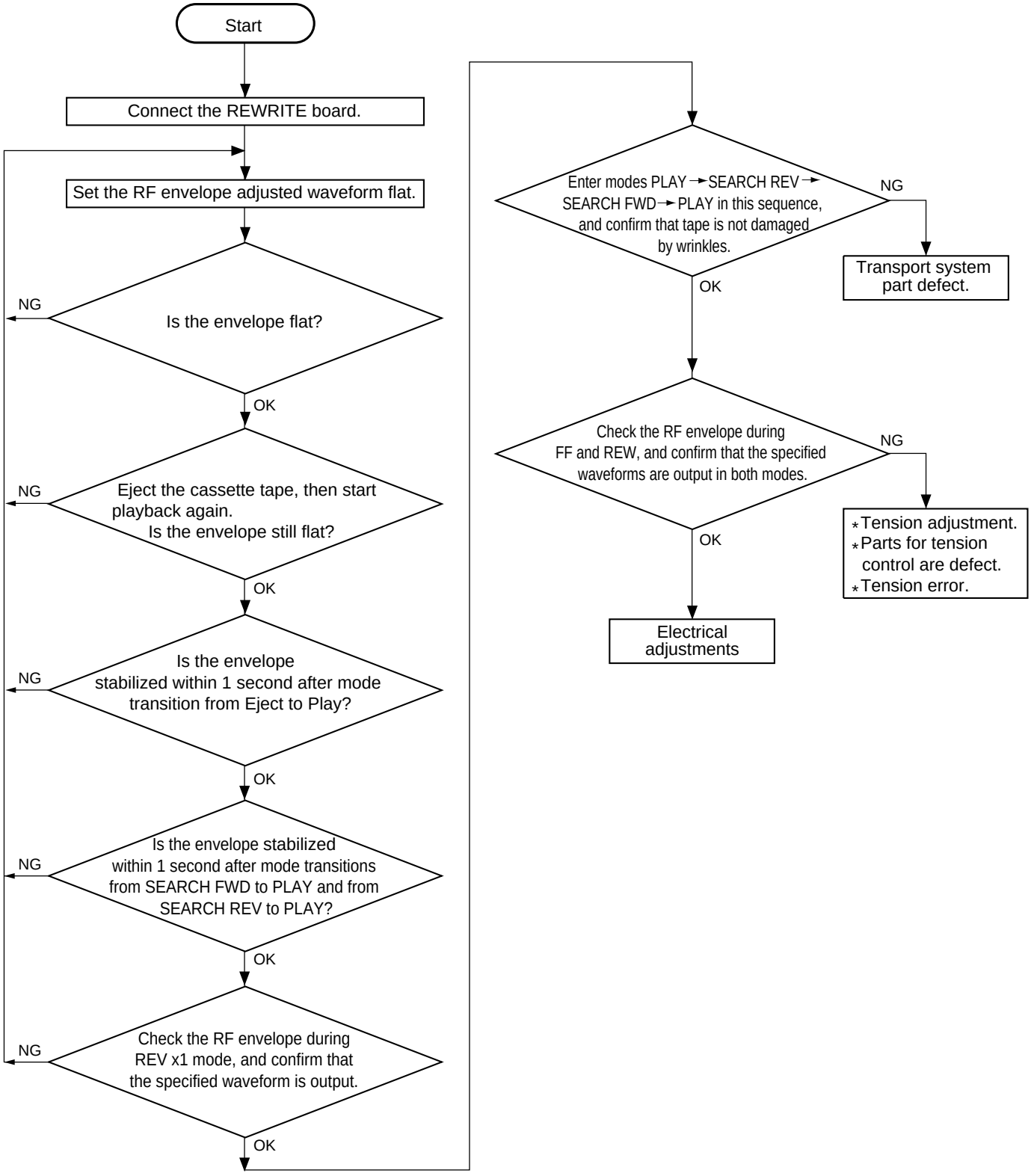


Fig. 2-9-1

2.9.2 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.

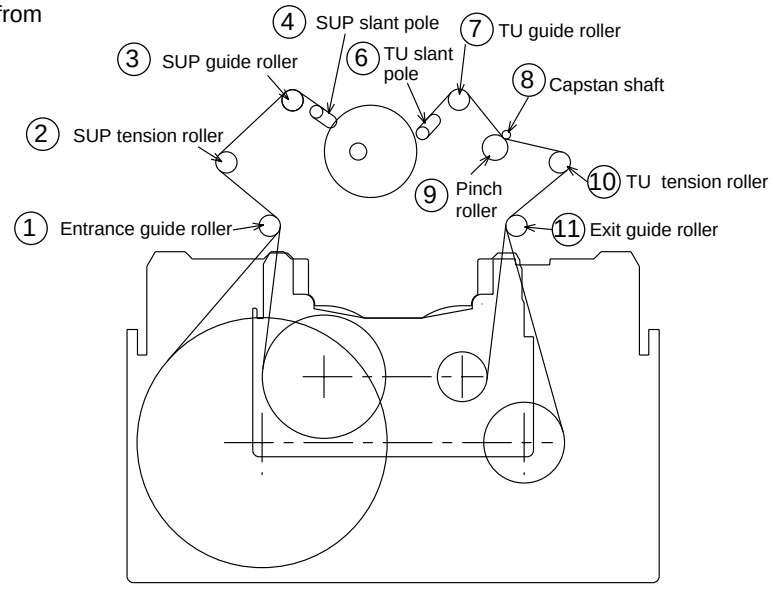


Fig. 2.9.2

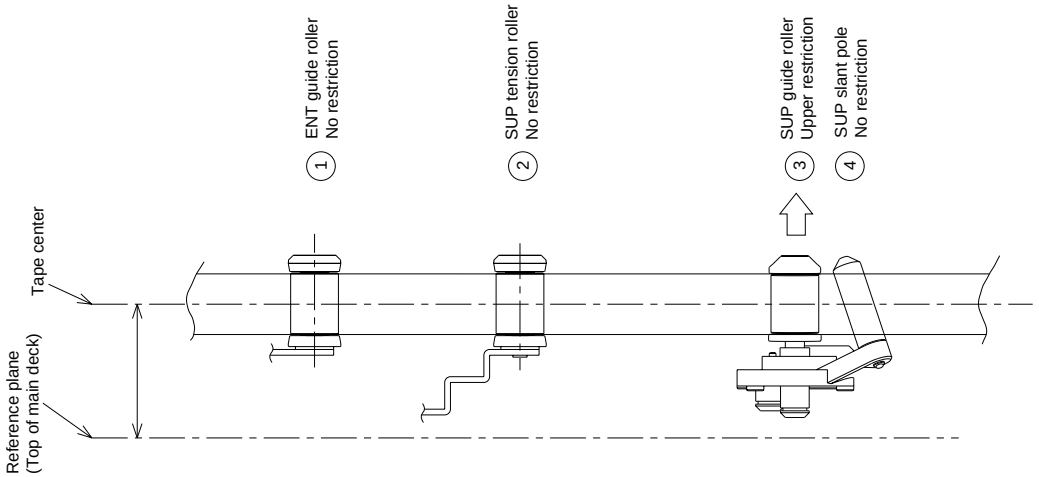


Fig. 2.9.3 Tape Restriction on Supply Side

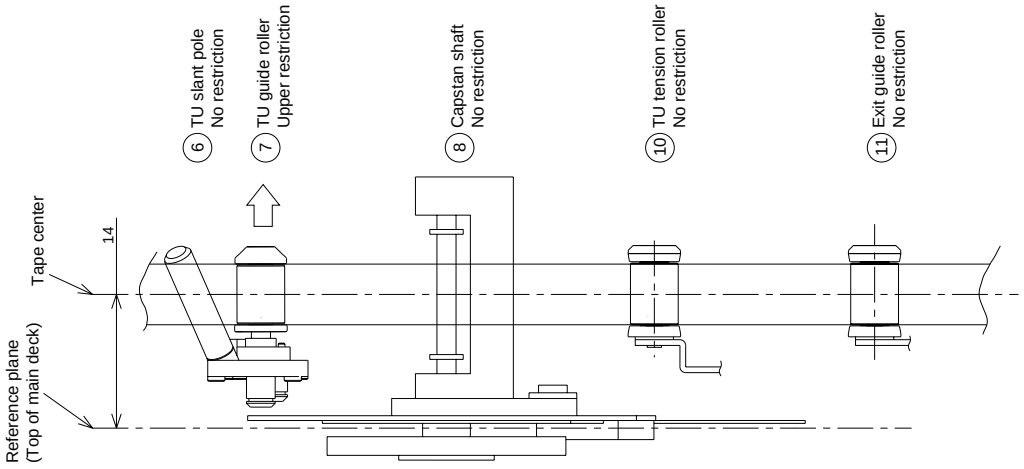


Fig. 2.9.4 Tape Restriction on Take-up Side

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

2.9.3 Interchangeability adjustment

1	Preparation				(1) Connect a REWRITE board to the CN4004 on the MAIN board. Refer to preparation of "3.2 DVC UNITS ADJUSTMENTS" for more details. **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 VFK1842 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 at both SUP and TU sides. ☆ Flatness and 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 envelope is flat. (3) Set the mode to EJECT, then set to the PLAY mode and confirm that the RF envelope is flat.

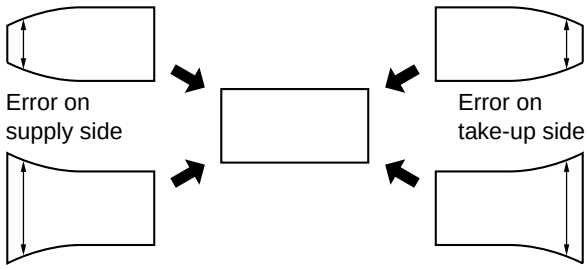


Fig. 2.9.5

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
3	Waveform rise check	• Oscilloscope, alignment tape VFK1842 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 stabilized within 1 sec.	(1) Switch the mode from Eject → Play and confirm that the envelope is stabilized in less than 1 sec. (2) Switch the mode from Search FWD → Play and from Search REV → Play, and confirm that the envelope is stabilized in less than 1 sec. in both cases. (3) If the envelope does not stabilized in the specified period, fine-adjust the supply/take-up guide rollers as far as the envelope waveform specification is satisfied, then restart checking from the above procedure (1) again.
4	Damage check	• Self-recorded/ played tape 60 ME 270ME	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 Mini cassette tape from the beginning by changing modes in order of Play → Search REV → Search FWD → Play, and confirm 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) Confirm that no tape damage occurs when a tape is being loaded, unloaded or ejected. (4) Perform the same procedures (1) — (3) with a standard cassette.
5	Envelope check during FF/REW	• Oscilloscope, alignment tape VFK1842 Color bar portion	FF REW	◎ TP9 ENV OUT [REWRITE board] ◎ TP5 HID [REWRITE board] ☆ A < 55µsec. ☆ B ≧ T/3	**This checking should be done after completing 3-2-1. PB switching point adjustment.** (1) Insert the alignment tape and enter Stop mode. (2) Enter FF mode. (3) Confirm 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. (5) Enter REV 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 if needed. Confirm the playback switching point.

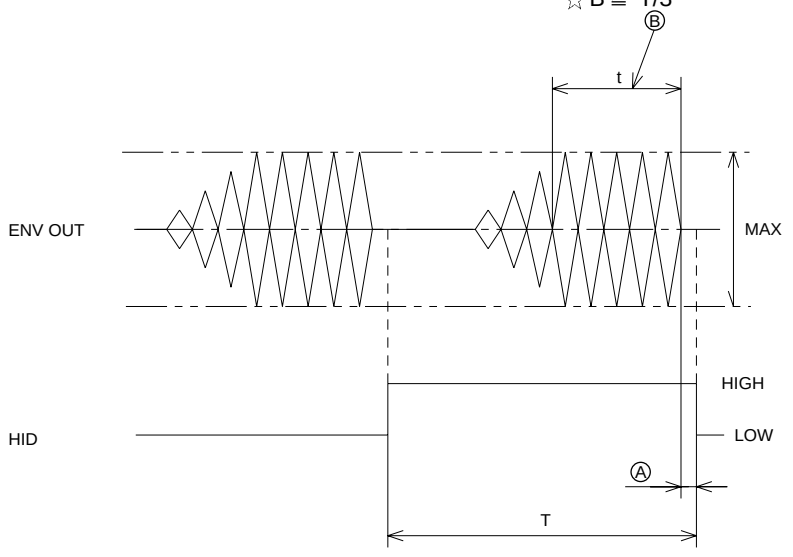


Fig. 2.9.6