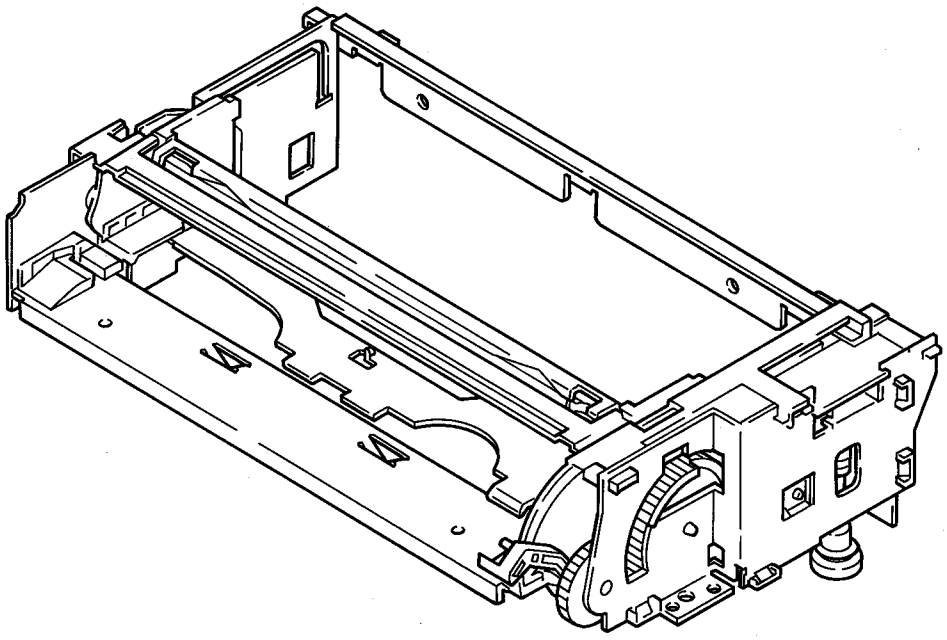
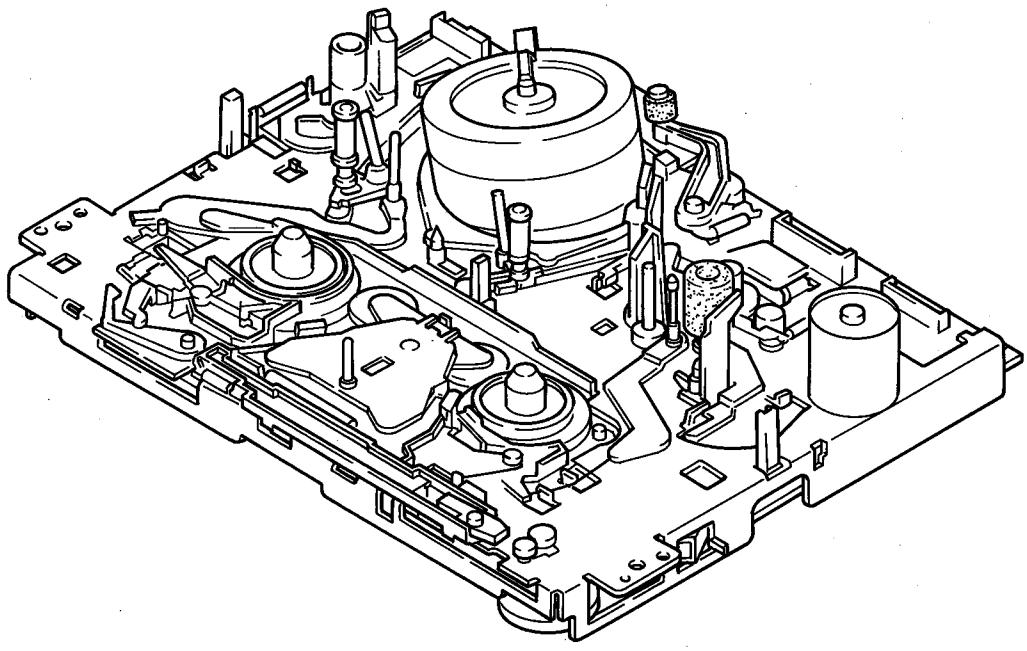
VHS MECHANICAL ADJUSTMENT MANUAL III

● Please use in conjunction with the SERVICE MANUAL





MICROFILM

VHS VIDEO RECORDER

SONY®

TABLE OF CONTENTS

1. PREPARATIONS FOR CHECKS, ADJUSTMENTS AND REPLACEMENT OF THE DECK MECHANISM

Note : Refer to "Replacement Method" in the Service manual for instructions on replacing the cabinet and PC boards. DO not perform cassette loading or threading with the VCR positioned upside-down.

1-1. LOADING AND UNLOADING VIDEO CASSETTES WITH THE POWER OFF. (Fig. 1-1.)

1) Push the lock plate left and right in the direction of arrow Ⓐ and unlock the claws ❶. At the fully unlocked position, rotate the FL pulley in the direction of arrow Ⓑ. This operation should be done while pushing the tray lock levers, as the roller will be caught by the claws ❷.
2) When unloading, rotate the FL pulley in the direction of arrow Ⓒ.

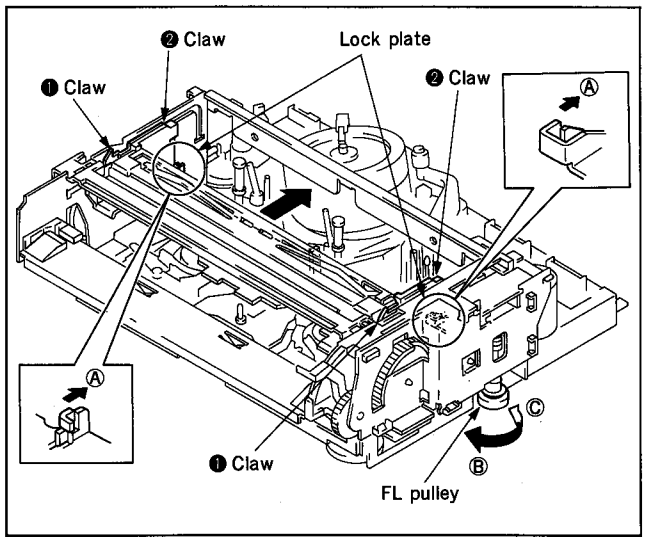


Fig. 1-1

1-2. THREADING AND UNTHREADING WITH THE POWER OFF. (Fig. 1-2)

1-2-1. Manual Threading and Unthreading

1) When threading tape, turn the loading pulley in the direction of arrow Ⓐ.
2) When unthreading tape, turn the loading pulley in the direction of arrow Ⓑ.

1-2-2. Threading and Unthreading Using a Separate Power Source.

1) Threading is performed by applying approx. 10V (500mA) to the power terminal for the loading motor ❶ using a DC stabilized power source.
2) When unthreading, apply the same voltage to the opposite polarity of the power terminal.

Note : After threading/unthreading has been completed, the motor should not be continued to be long applied with voltage.

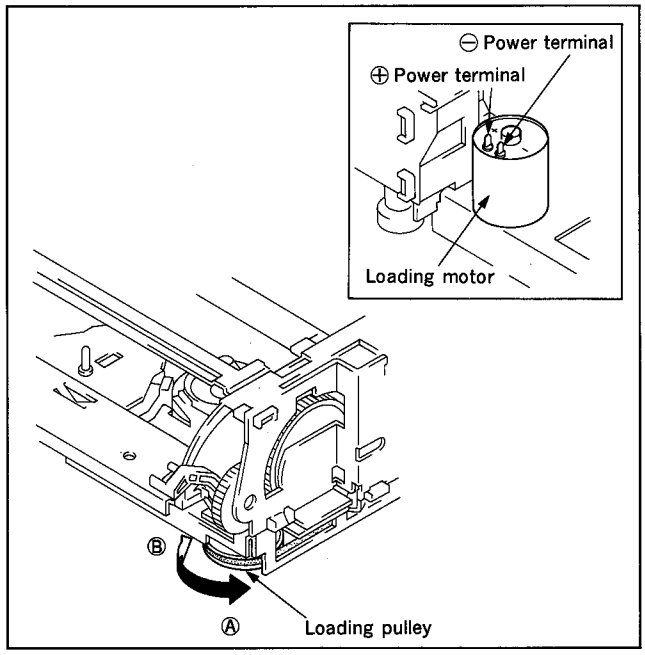


Fig. 1-2

1-3. HOW TO COMPLETE THREADING AND ENTER EACH MODE WITH FL ASS'Y REMOVED WHEN POWER IS ON

1) Pull out the power cord from an outlet.
2) Remove the FL ass'y. (Refer to 3-1. replacement of major parts and completely remove the FL belt from the eject pulley.)
3) Allow the F ass'y removed by performing the operation described in 1-1.1).
4) Plug in the power cord and turn the power ON. (This allows you to enter each mode.)

Note : It should be remembered that when the REC button is pressed without pressing the PROTECT button, the Eject mode will be entered.

2. PERIODICAL INSPECTION AND REPLACEMENT

We recommend performing the following periodical inspections and maintenance in order to ensure that the unit operates in top condition and offers full performance, as well as realizes a long life of the mechanism and tapes.

* Be sure to perform the following maintenance procedures after the usit is repaired (regardless how long the unit has been used.)

2-1. CLEANING OF ROTARY HEAD DISK ASS'Y

1) Press deer skin (Jig Ref. No. J-9) previously immersed in cleaning liquid (Jig Ref. No. J-8) lightly to the rotary drum ass'y, and turn the rotary head disk with hand slowly to clean the disk. (Never use the power motor to clean the disk by its rotation.)
2) Never move the deerskin vertically to the head chip when cleaning the disk. Otherwise, the head chip is very likely to be damaged.

2-2. CLEANING OF TAPE RUN SYSTEM

1) Clean the surfaces over which tape moves past (tape guide, drum assembly's surface, capstan pin, pinch roller, etc.) by using the deerskin previously immersed in the cleaning liquid and cotton swab.

2-3. CLEANING OF DRIVE SYSTEM

1) Clean the drive unit by using cloth moistened with the cleaning liquid.

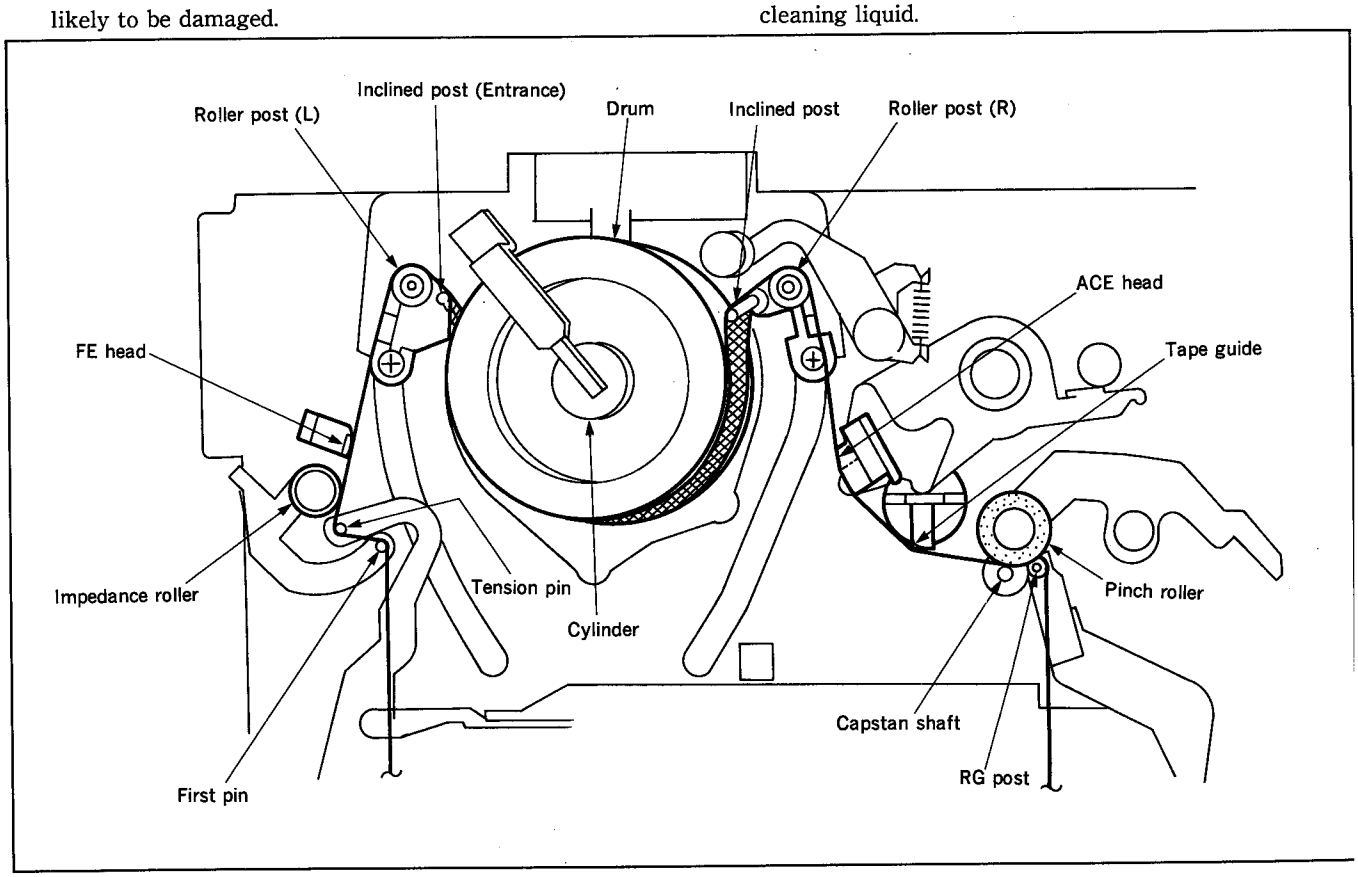


Fig. 2-1

[Notes for Cleaning]

- ○ Use cleaning liquid and cotton swab. Be careful not to dirt and damage them.
- ○ After cleaning the cylinder, be careful not to allow the grounding bar contact to lift. (Fig. A)

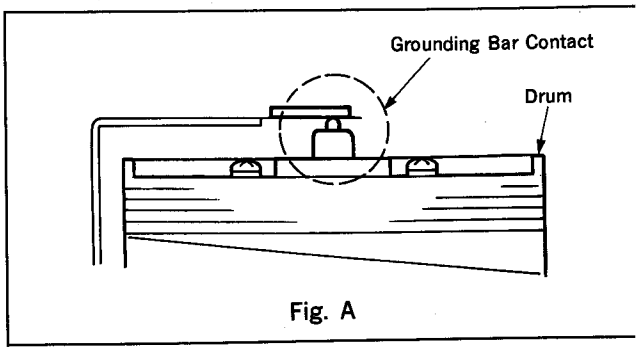


Fig. A

2-4. PERIODIC MAINTENANCE

Location of Maintenance and Check \ User Hours			500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks	
Performance Check	Clean tape running surfaces		○	○	○	○	○	○	○	○	○	○	Always perform after repair.	
	Clean, degauss ACE ass'y		○	○	○	○	○	○	○	○	○	○		
	Clean, degauss video disc ass'y		○	○	○	○	○	○	○	○	○	○	Head life is greatly affected by environment and method of use.	
Driving System	Reel belt		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Always perform after repair.	
Tape Running System	Abnormal noise		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace source of abnormal noise.	
	Tension torque measurement	Playback	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Spec : 100±30g•cm	Check according to 4-1-4. (Measured with torque cassette)
		Back tension	—	☆	—	☆	—	☆	—	☆	—	☆	Spec : 47.5±12.5g•cm	
		REV	—	☆	—	☆	—	☆	—	☆	—	☆	Spec : 165±25g•cm	
		CUE	—	☆	—	☆	—	☆	—	☆	—	☆	Spec : 115±45g•cm	
	Brake system check		—	☆	—	☆	—	☆	—	☆	—	☆	Check according to 4-1-5.	
	REC/PB function check		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Always perform after repair.	

○ Cleaning ☆ Check

Note : Refer to the above items for part replacement when performing an overhaul.

2-5. SERVICE TOOLS AND JIGS

Ref. No.	Description	Part No.	Printing on jig	Remarks
J-1	Master plane	H-7099-279-H		
J-2	Reel disc height jig	H-7099-038-H		
J-3	Torque gauge adapter	H-7099-035-H		
J-4	Torque gauge	H-7099-039-H		
J-5	0.93mm Allen wrench	H-7099-202-H		
J-6	NTSC torque cassette VHT-063S PAL torque cassette VHT-066S	J-6082-011-A J-6082-066-A		For rewind torque and back tension
	NTSC torque cassette VHT-404S PAL torque cassette VHT-404S	J-6082-012-A J-6082-067-A		For cue/review
J-7	NTSC alignment tape JVC-MH-1 PAL alignment tape JVC-MH-2	H-7099-046-H H-7099-052-H		
	NTSC Hi-Fi alignment tape PAL Hi-Fi alignment tape	H-7099-153-H H-7099-175-H		
J-8	Cleaning fluid	Y-2031-001-0	——	
J-9	Chamois cloth	2-034-697-00	——	Cleaning
J-10	Head degausser	Widely available	——	Video, audio head degaussing
J-11	Small adjustment mirror (with handle) Small adjustment mirror (mirror only)	J-6080-029-A J-6080-030-1	SL-5052	For tape path and tape running adjustment and check

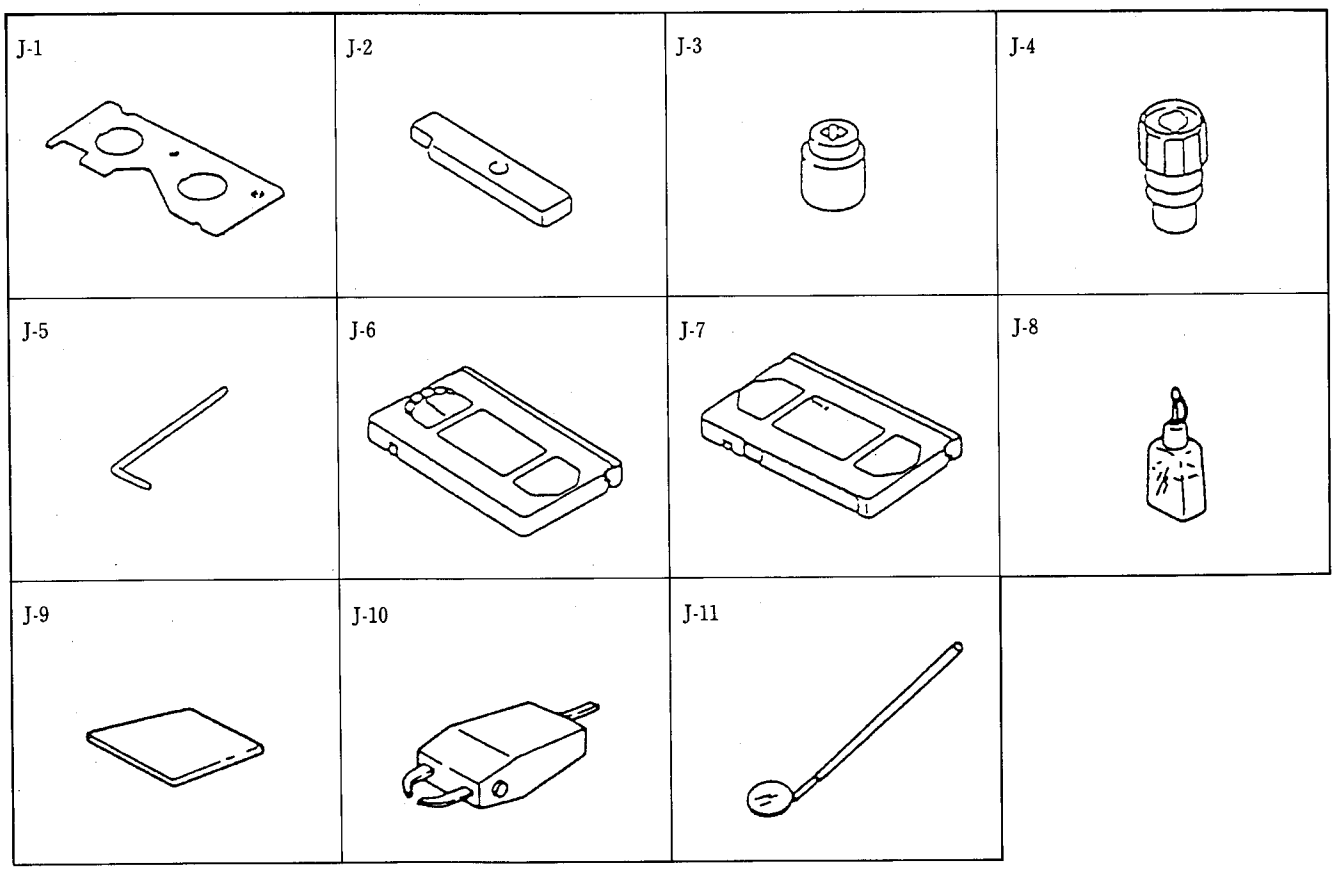


Fig. 2-2. Service tools and jigs

3. REPLACEMENT OF MAJOR COMPONENT PARTS OF THE DECK MECHANISM

Note : ○ Refer to "Replacement Method" in the Service Guide for replacing the cabinet and PC boards.
○ When mounting parts, reverse the replacement procedure while referring to "Precautions on Mounting Parts".
○ After grease coated parts such as gears are replaced, regrease the replaced part.
○ Do not touch the guides (taped surface) and brake shoe directly with your fingers or grease them, etc.
○ Gears must be mounted so that they mesh with each other.

3-1. FL ASS'Y (Fig. 3-1)

1) Remove two screws ❶.
2) Remove the FL bert ❷ and hook the belt on Ⓔ part.
3) Slide the FL ass'y ❸ in the direction of arrow Ⓐ and remove the assembly in the direction of arrow Ⓑ.

[Precautions on remounting]

○ When installing the FL ass'y ❸, ensure that Ⓒ part is firmly engaged with Ⓓ part.
○ When installing the FL ass'y ❸, put the FL belt ❷ on the FL pulley Ⓕ.
○ Take care that the FL belt is free from twist and dirt.

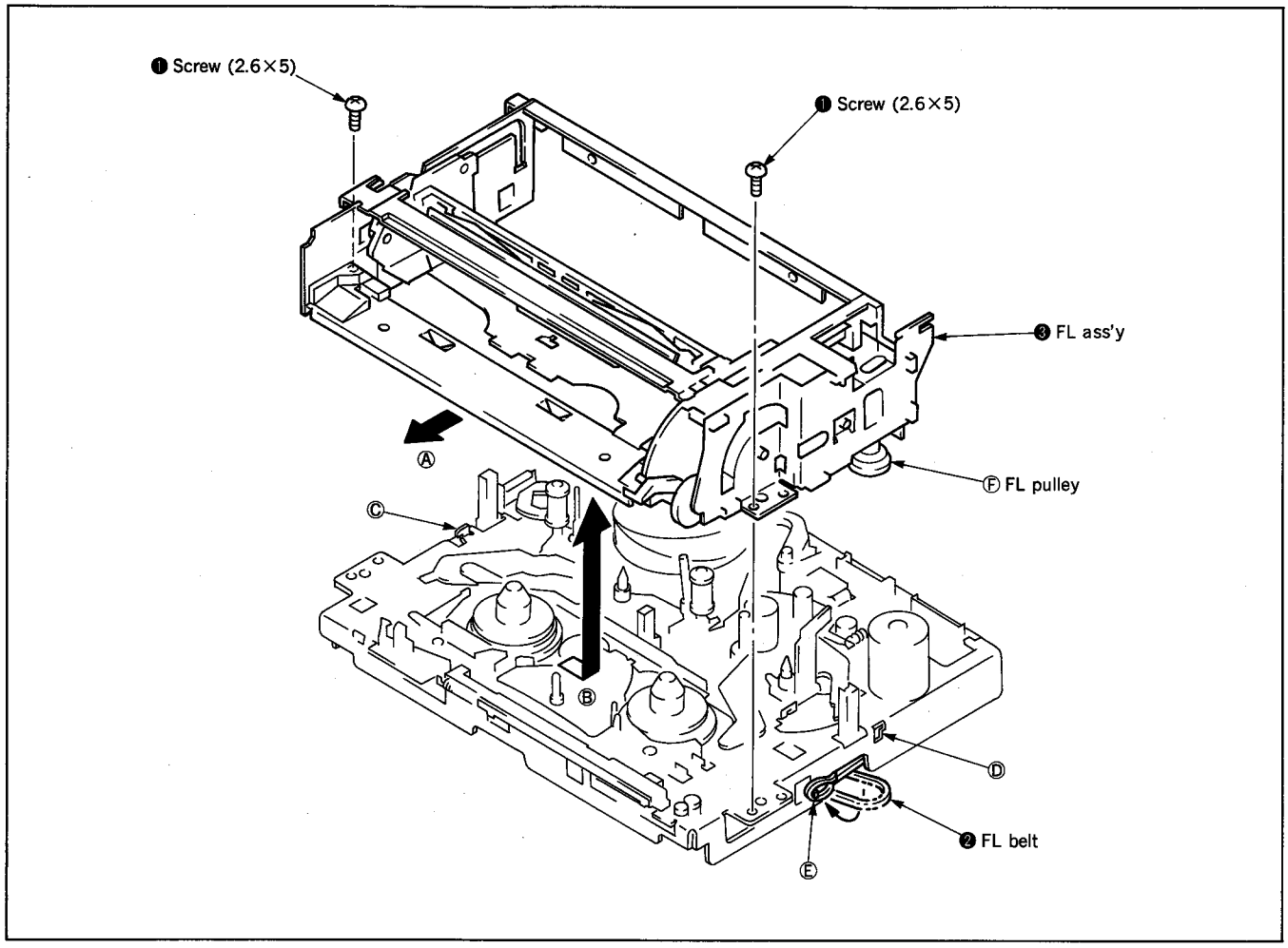


Fig. 3-1

3-1-1. Frame Cover, Switch Arm, Worm Wheel, Lift Gear (R) Ass'y, Switch Lever and Lift Lever Ass'y (Fig. 3-2)

1) Remove screw ❶ and remove the collar ❷.
2) Undo six claws ❸ and remove the frame cover ❹ in the arrow direction.
3) Remove the FL PWB B ass'y ❺.
4) Remove the switch arm ❻ and pull out the worm wheel ❼ in the arrow direction.
5) Undo two claws ❽ and remove the switch lever ❾ in the arrow direction.
6) Pull out the left gear (R) ass'y ❿ in the arrow direction.
7) Remove the synchro gear ⓫ from the slot of Ⓔ part.
8) Undo the claw ⓬, then remove the spring ⓮ and the lift lever ass'y ⓭.

[Precautions on remounting]

1) Before installing the lift lever ass'y ⓭, first install the spring ⓮ to the assembly. (Fig. B)
2) Engage claw Ⓕ on the lift lever ass'y with Ⓖ part and insert the assembly.
3) After installation, remove the spring from the claw Ⓗ and hook it onto the chassis. (Fig. B)
4) When installing the synchro gear ass'y ⓫ and the lift gear (R) ass'y ⓾, align register marks and have teeth engaged. (Fig. A)
5) When installing the lift gear (R) ass'y ⓾ and the worm wheel ❼, align register marks and have teeth engaged. (Fig. A)
6) When installing the switch lever ❾, place the switch Ⓘ in between two claws Ⓙ as shown in Fig. C.
7) When installing the switch arm ❻, position the switch arm ❻ with respect to claw Ⓛ on Ⓚ part as shown in Fig. D.
8) The tightening torque for screw ❶ should be 1000g•cm.
9) When installing the frame cover ❹, align the axles of the synchro gear ass'y ⓫, lift gear (R) ass'y ⓾ and worm wheel ❼ with their corresponding holes in the frame cover and insert them. (Fig. A)

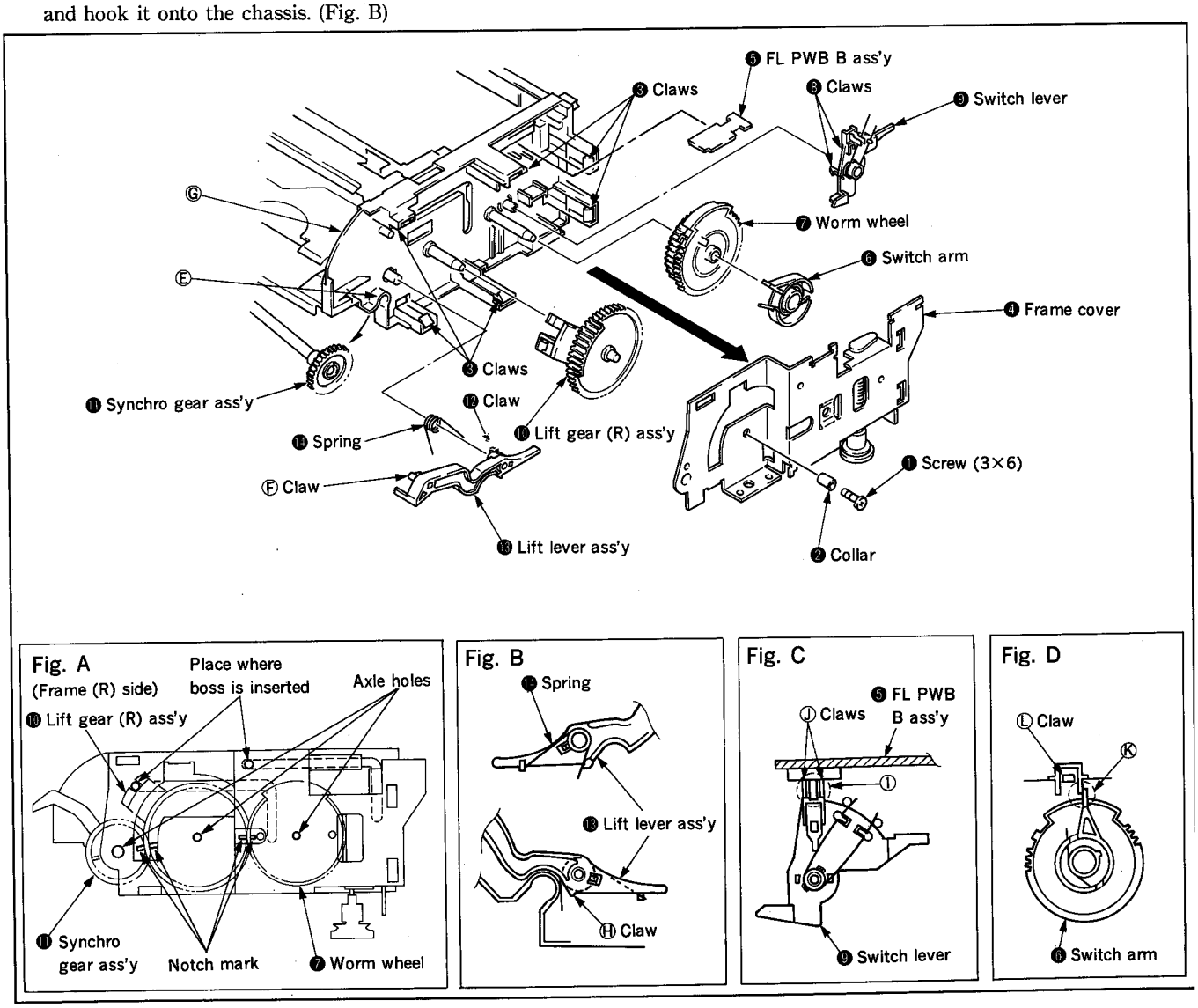


Fig. 3-2

3-1-2. Lift Gear (L) Ass'y (Fig. 3-3)

1) Place the cassette holder ass'y ❶ in the loading state as instructed in Section 1-1.
2) Undo two claws and pull out the lift gear (L) ass'y ❸.

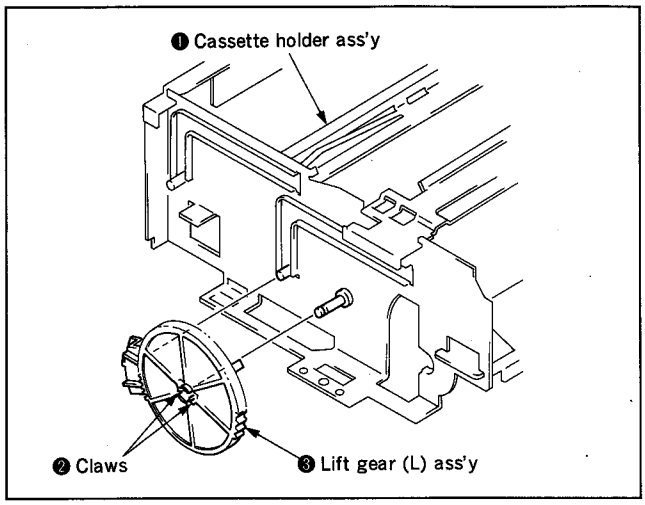


Fig. 3-3

[Precautions on remounting]

○ When installing the synchro gear ass'y and the lift gear (L) ass'y ❸, align register marks and have teeth engaged. (Fig. 3-4)

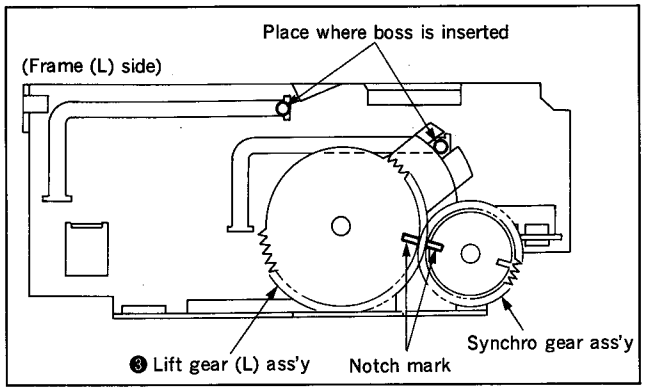


Fig. 3-4

3-1-3. Upper Plate, Rear Angle, Cassette Guide (L), Cassette Holder Ass'y, Frame (L) Caulking and Synchro Gear Ass'y (Fig. 3-5)

1) Place the cassette holder ass'y ❼ in the loading state as instructed in section 1-1.
2) Remove two screws ❶.
3) Undo two claws ❷ and pull out the upper plate ❸ and the rear angle ❹ from the frame (R) ⓬.
4) Undo the claw ❺ and remove the cassette guide (L) ❻.
5) Remove the cassette holder ass'y ❼.
6) Undo the claw ❽ and pull out the front angle ❾ from the frame R ⓬.
7) Remove the frame (L) caulking ⓾ and remove the synchro gear ass'y ⓫ in the arrow direction.

[Precautions on remounting]

○ When installing the frame (L) caulking ⓾, check to make sure that two bosses are fit into the slot ⓾ on the caulk. (Section 3-1-3, Fig 3-5)
○ When installing the frame (R) ⓬, check to make sure that two bosses are fit into the slot ⓬ on the frame. (Section 3-1-3, Fig 3-5)

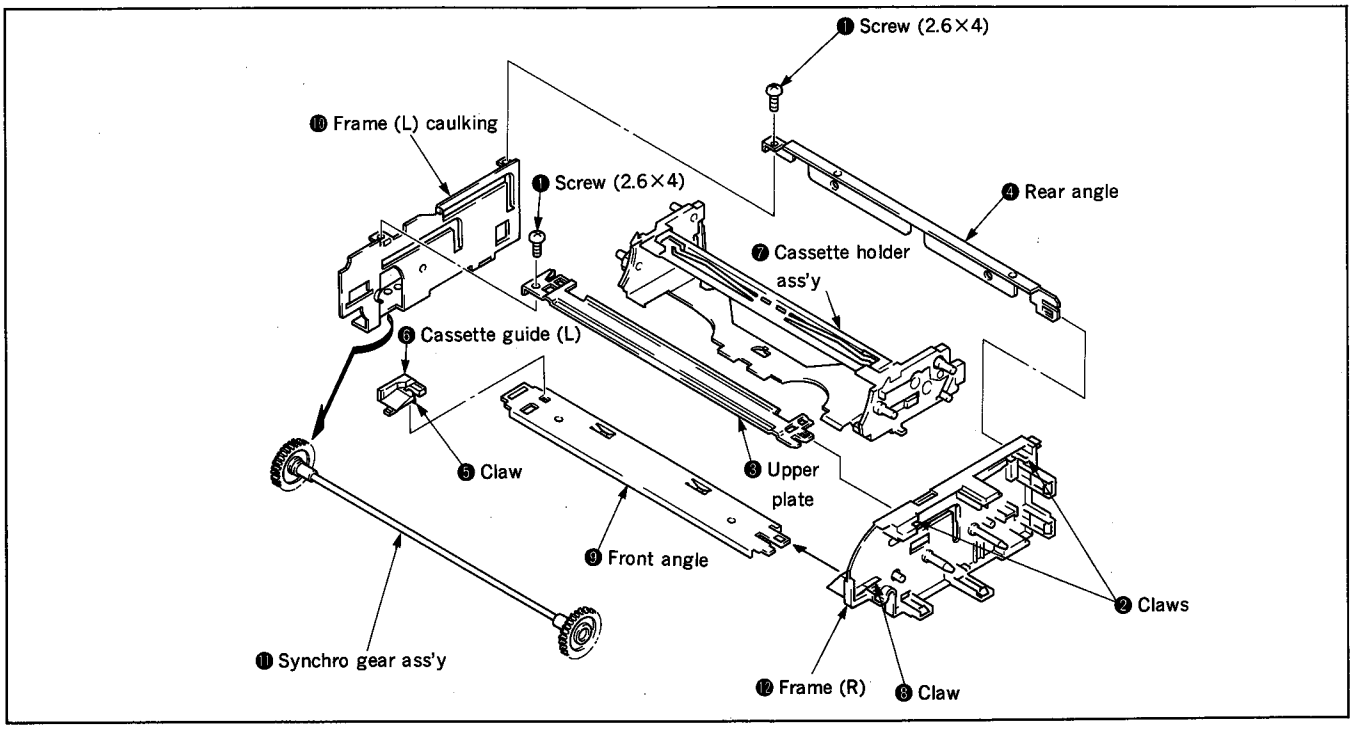


Fig. 3-5

3-2. FE BASE ASS'Y (Fig. 3-6)

1) Remove the DM lead wire ❶.
2) Undo two claws ❷ and remove the PWB joiner ❸.
3) Remove screw ❹.
4) Undo two claws ❺ on the sensor and lift in the direction of the arrow Ⓑ.
5) Take off the PWB board ❻ in the direction of the arrow Ⓒ, then lift the board in the direction of arrow Ⓓ and remove it.
6) Remove spring ❼.
7) Align the FE base ass'y ❽ with the slot Ⓕ, then turn the assembly in the arrow direction and remove it.

[Precautions on remounting]

○ When installing the FE base ass'y ❽, align the three claws Ⓔ with the slot Ⓕ and insert the assembly fully.
○ When installing the PWB joiner ❸, clean the board pattern side with alcohol or other solvent. be careful not to deform the brush.
○ Keep the impedance roller and FE head surfaces clean. do not touch them directly with fingers or tool.

[Adjustment after replacement]

○ Perform tape path adjustments as described in 4-1.

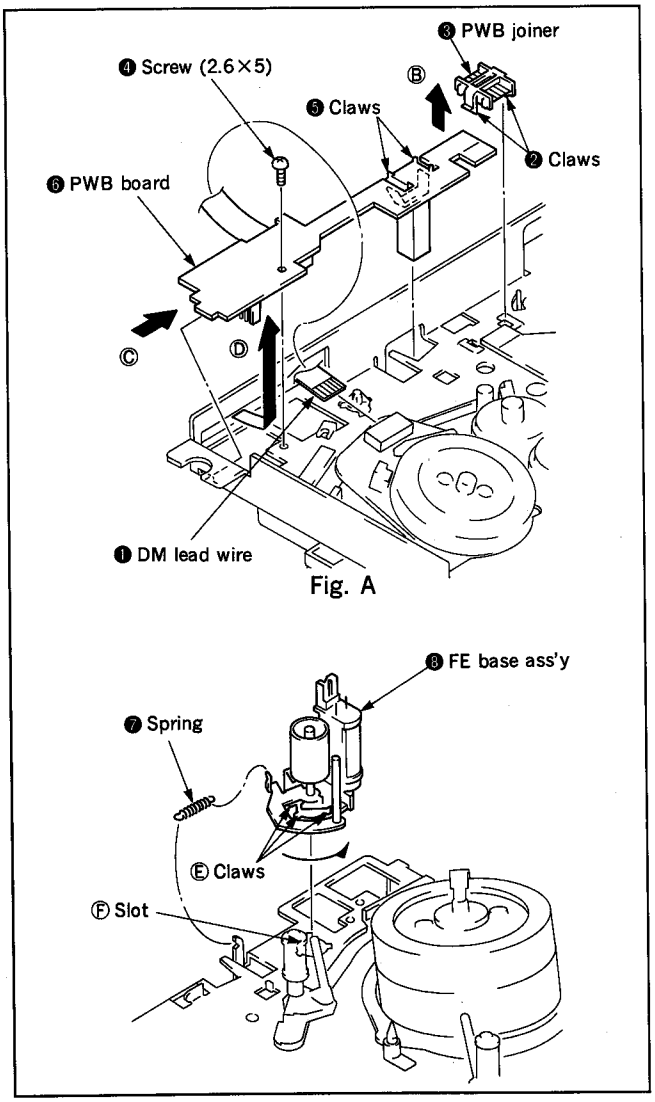


Fig. 3-6

3-3. CLEANING LEVER ASS'Y (Fig. 3-7)

1) Undo two claws ❶ and pull out the cleaning lever ass'y ❷.

[Precautions on remounting]

○ When installing the cleaning lever ass'y ❷, ensure that spring Ⓐ is secured with hook Ⓑ (Fig. A).

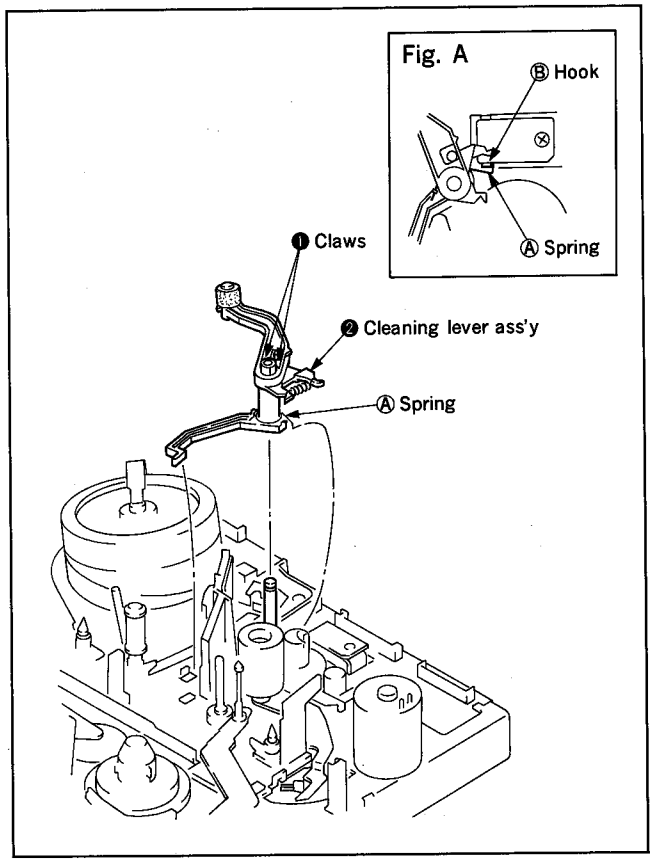


Fig. 3-7

3-4. P ROLLER ARM ASS'Y (Fig. 3-8)

1) Remove the washer ❶.
2) Unfasten the P arm spring ❷ from the hook Ⓑ and pull out the P roller arm ass'y ❸.

[Precautions on remounting]

- Ensure that the P arm spring ❷ is secured with hook Ⓑ (Fig. A).
- Take care to prevent the P arm spring ❷ from overriding the shaft seat Ⓒ.
- When installing the P roller arm ass'y ❸, place the assembly on the right side of hook Ⓓ (Fig. A).
- Removed washers should not be reused.

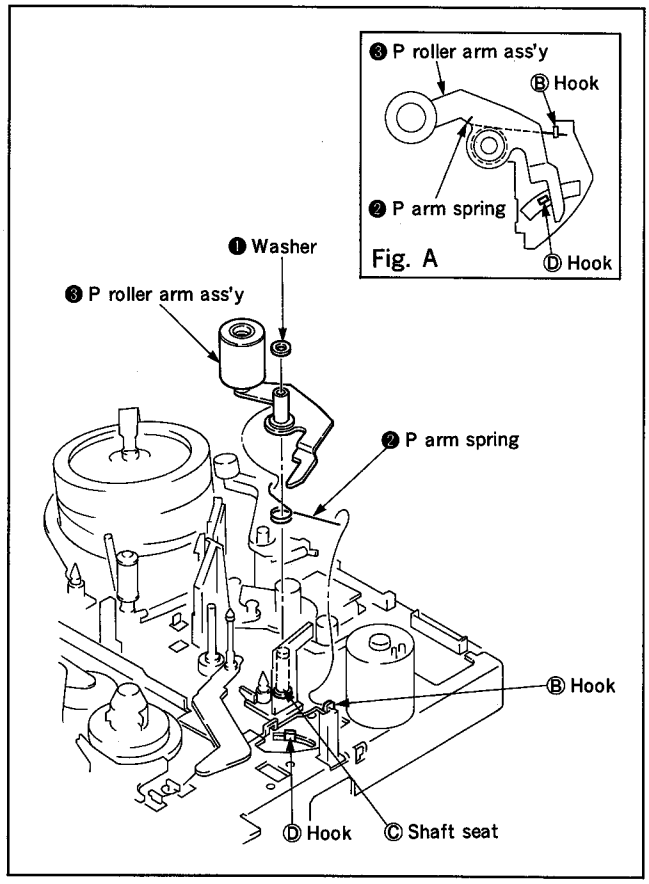


Fig. 3-8

3-5. AH BASE ASS'Y (Fig. 3-9)

1) Remove the cleaning lever ass'y as instructed in Section 3-3.
2) Remove the ADJ spring ❶.
3) Remove the screw ❷.
4) Pull out the AH base ass'y ❸ and remove the AH base spring ❹.

[Precautions on remounting]

- Ensure that the ADJ spring ❶ is secured with hook Ⓐ.
- When installing the AH base ass'y ❸, tighten screw ❷ until the AH base ass'y is not in contact with the P roller ass'y.

[Adjustment after replacement]

- Perform tape path adjustments as described in 4-1.

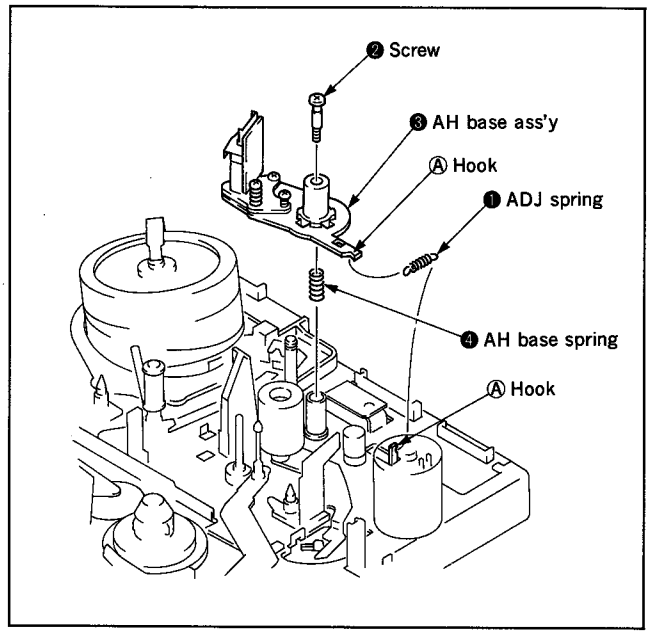


Fig. 3-9

3-6. L MOTOR ASS'Y (Fig. 3-10)

1) Remove the loading belt ❶ with it put on the loading pulley Ⓑ. (This is to prevent damage to the belt.)
2) Remove the connector ❷.
3) Remove two screws ❸ and remove the L motor ass'y ❹.

[Precautions on remounting]

- ○ When installing the L motor ass'y ❹, put the loading belt ❶ on the loading pulley Ⓑ (Fig. A).
- ○ Install the L motor ass'y ❹ so that the L motor label is on the front side.
- ○ Take care that the loading belt is free from twist and dirt.

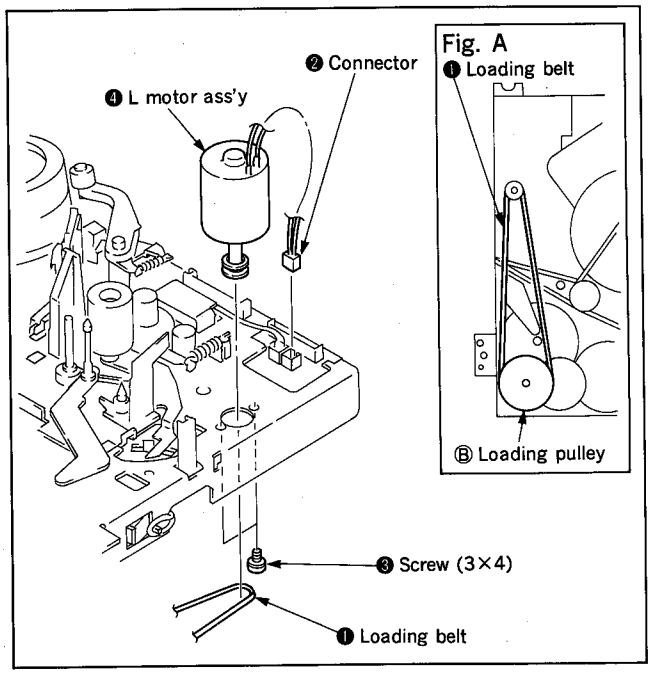


Fig. 3-10

3-7. DRUM ASS'Y (Fig. 3-11)

1) Remove the cleaning lever ass'y as instructed in Section 3-3.
2) Remove the DM lead wire ❶.
3) Remove three screws ❷ and remove the drum ass'y ❸ in the arrow direction.

[Precautions on remounting]

- ○ Do not to touch the tape contact surfaces of the head chip Ⓐ and drum ass'y ❸ directly by fingers and tooling.
- ○ When tightening screws ❷, take care to prevent screws from projecting and slanting.
- ○ Take care to avoid bent and damage of the DM lead wire ❶.
- ○ When inserting the lead wire terminal Ⓑ into the board connector Ⓒ, ensure that the terminal is firmly inserted.
- ○ The tightening torque for screw ❷ should be 7500g•cm.

[Adjustment after replacement]

- ○ Perform tape path adjustments as described in 4-1.

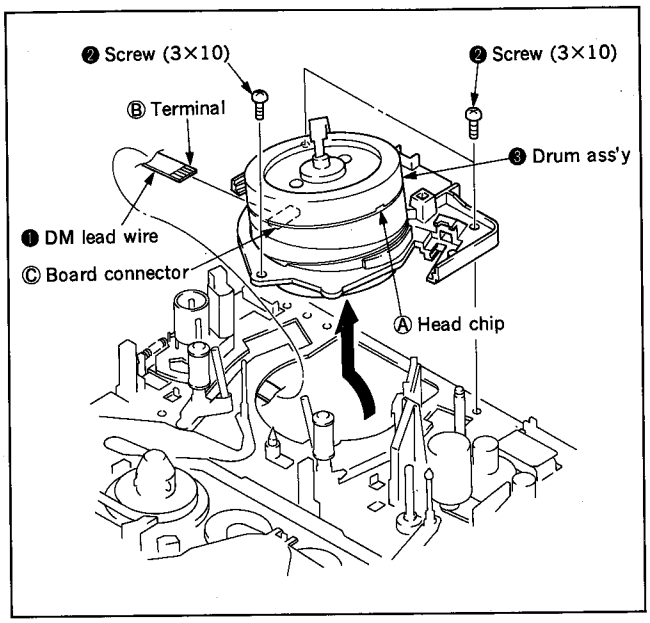


Fig. 3-11

3-8. L BLOCK (L, R) ASSEMBLIES, ROLLER POST (Fig. 3-12)

1) Remove screw ❶ and remove the loading boss ❷.
2) Slide the L block (L) ass'y ❸ in the direction of arrow Ⓐ and remove the assembly in the direction of arrow Ⓑ.
3) Remove the screw ❹ and remove the loading boss ❺.
4) Slide the L block (R) ass'y ❻ in the direction of arrow Ⓒ and remove the assembly in the direction of arrow Ⓓ.
5) When removing the roller post ❼, loosen the screw ❽, then turn the post in the direction of arrow Ⓔ and pull out it.

[Precautions on remounting]

○ Keep clean the tape contact surface of the roller post ❼. Do not touch the contact surface directly by fingers and tooling.

[Adjustment after replacement]

○ Perform tape path adjustments as described in 4-1.

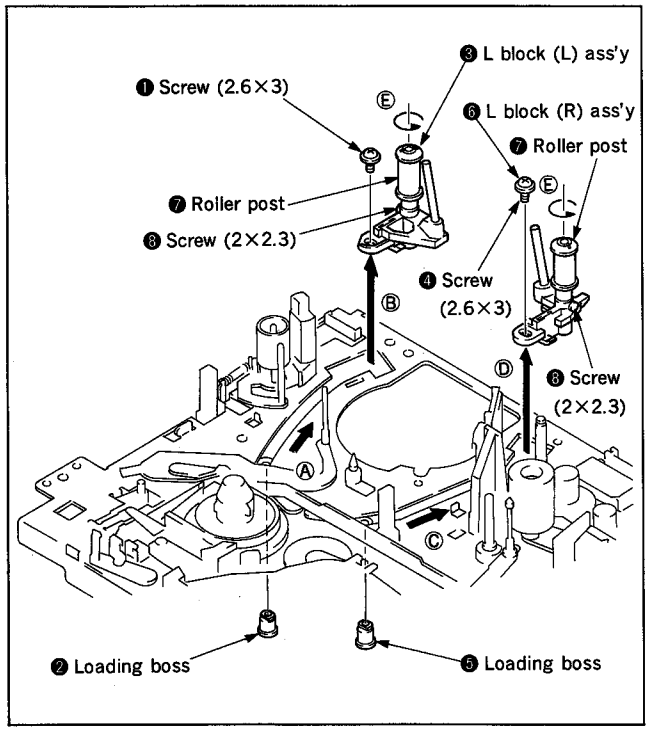


Fig. 3-12

3-9. TENSION ARM ASS'Y, BT BAND ASS'Y (Fig. 3-13)

1) Remove the BT pull up plate as instrcted in section 3-18.
2) Remove the BT spring ❶.
3) Remove the screw ❷.
4) Remove two claws ❸, then push the S soft brake ❹ in the direction of arrow Ⓐ and pull out the tension arm ass'y ❺.
5) Turn the claw ❻ in the direction of arrow Ⓑ and remove the BT band ass'y ❼.

[Precautions on remounting]

○ Before installing the tension arm ass'y ❺, install the BT band ass'y ❼ to the tension arm ass'y ❺.
○ When installing the tension arm ass'y ❺, ensure that the arm shaft Ⓒ is firmly fit into the arm metal Ⓓ.
○ When installing the BT band ass'y ❼, insert the projection Ⓔ into the hole Ⓕ.

[Adjustment after replacement]

○ Perform tape path adjustments as described in 4-1.

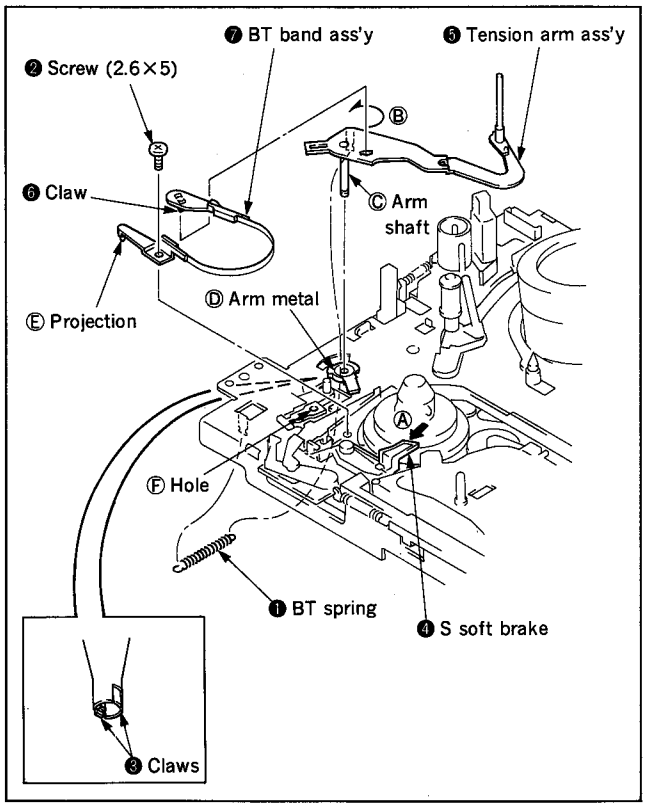


Fig. 3-13

3-10. RG ARM ASS'Y (Fig. 3-14)

1) Unfasten two claws ❶ and pull out the RG arm ass'y ❷.

[Precautions on remounting]

○ When installing the RG arm ass'y ❷, fit the projection Ⓐ on the right side of the spring Ⓑ.

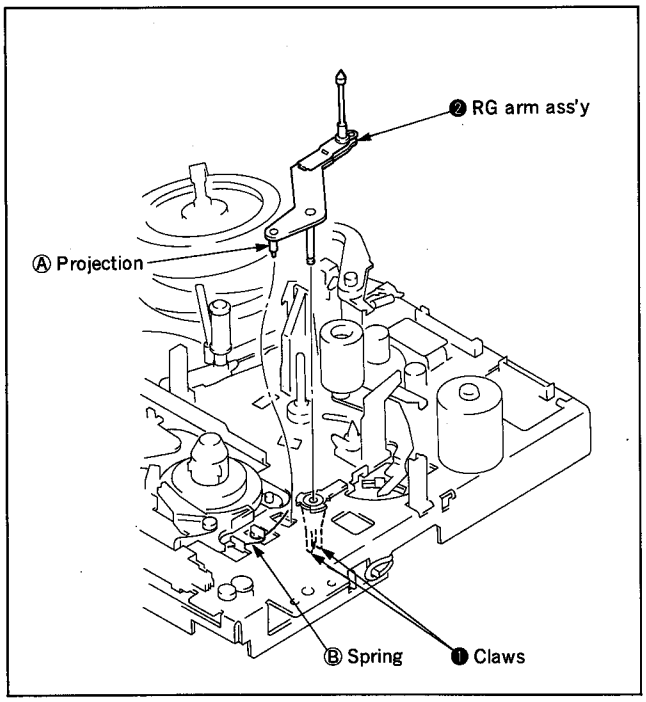


Fig. 3-14

3-11. SS BRAKE ARM, TS BRAKE ARM, REEL TABLE ASS'Y (Fig. 3-15)

1) Remove the washer ❶.
2) Unfasten the arm spring ❸ from the hook ❷ and pull out the SS brake arm ❹.
3) Pull out the reel table ass'y ❺ and pull out the washer ❻.
4) Remove the washer ❼.
5) Unfasten the arm spring ❾ from the hook ❽ and pull out the TS brake arm ❿.
6) Push the brake arm (R) ass'y ⓫ in the direction of arrow Ⓐ and pull out the reel table ass'y ⓬. Then pull out the washer ⓭.

[Precautions on remounting]

○ Do not touch the felt surface of the TS brake arm ❿ directry with fingers or tool.

○ Removed washers should not be reused.

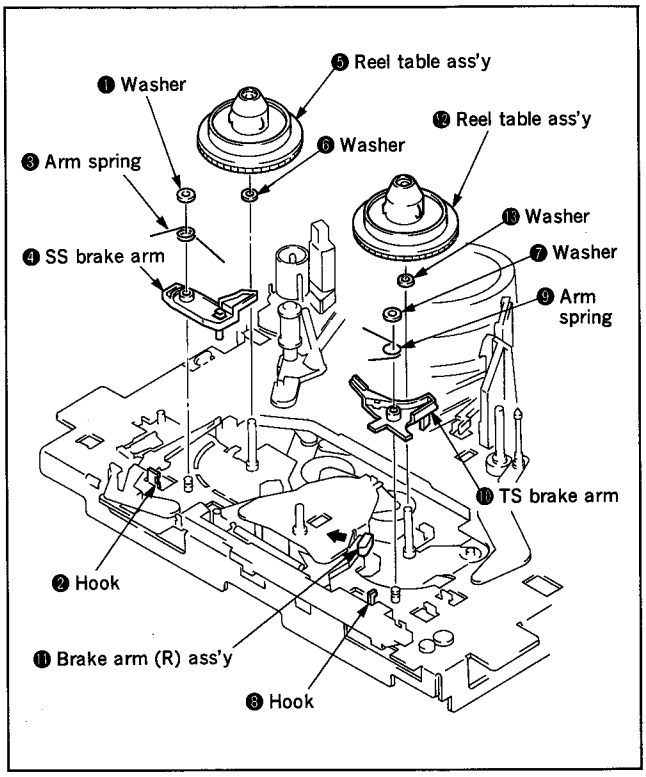


Fig. 3-15

3-12. SUB PLATE ASS'Y, BRAKE (L, R) ASS'Y (Fig. 3-16)

1) Remove the drive belt ❶.
2) Remove two screws ❷.
3) Remove the brake arm spring ❸.
4) Raise the sub plate ass'y ❹ in the direction of arrow Ⓑ and unfasten the claw ❺, then lift the assembly in the direction of arrow Ⓒ to remove it.
5) Remove the brake (L) ass'y ❻ and brake (R) ass'y ❼.

[Precautions on remounting]

- When installing the sub plate ass'y ❹, ensure that the drive belt ❶ is firmly put on the pulley groove Ⓓ (Fig. A).
- Be careful not to damage the gears.
- Take care that the drive belt ❶ is free from twist or dirt.

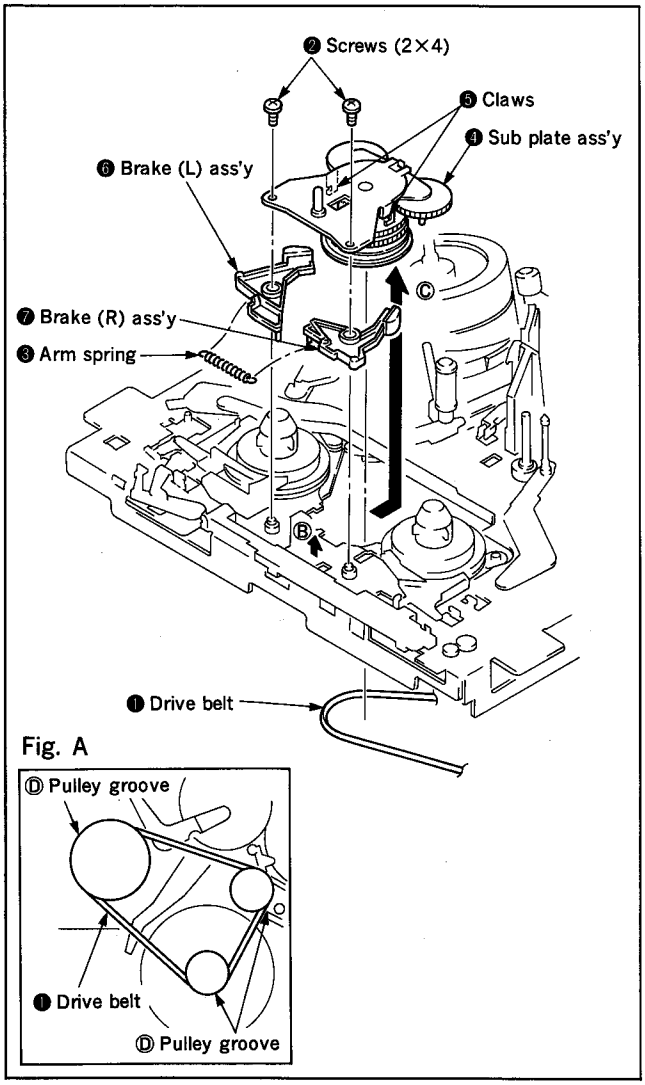


Fig. 3-16

3-13. BK SLIDE PLATE, REC ARM, REC SWITCH ARM (Fig. 3-17)

1) Remove the parts as instructed in Sections 3-9 and 3-12.
2) Unfasten two claws ❶ and remove the REC switch arm ❷.
3) Remove the arm spring ❸, then turn the REC arm ❹ in the direction of arrow Ⓒ and remove the arm.
4) Remove the BK trigger hook ❺.
5) Remove the slide spring ❻.
6) Undo the BK slide plate ❼ from the projection Ⓖ, then slide the plate in the direction of arrow Ⓓ and remove it.

[Precautions on remounting]

- Take care not to wrongly fit the long and short portions of the arm spring ❸ (Fig. B).
- Ensure that the REC switch arm ❷ is firmly fit on the REC switch (Fig. A).
- When installing the BK slide plate ❼, insert the projections Ⓖ and Ⓙ into the holes Ⓗ and Ⓘ respectively and fit the claw Ⓔ into the slots Ⓕ, then slide the plate.
- Be careful not to damage the gears.

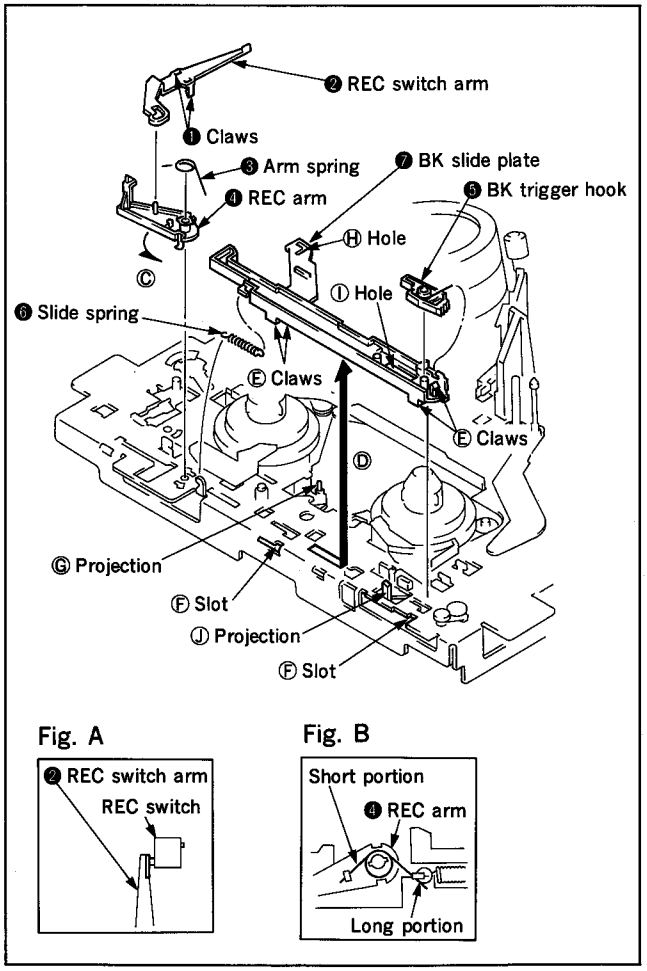


Fig. 3-17

3-14. MOTOR (Fig. 3-18)

1) Remove the drive belt as instructed in Section 3-12.
2) Unfasten two claws ❶ and lift the CM lead connector ❷ in the arrow direction.
3) Pull out the terminal ❸ and remove the CM lead connector ❷.
4) Remove three screws ❹.
5) Remove the motor ❺.

[Precautions on remounting]

- ○ Keep clean the contact Ⓐ of the flexible board.
- ○ Insert the CM lead connector terminal ❸ fully with care not to damage it.
- ○ When tightening screws ❹, use the DD motor stand to firmly tighten the screws so that screws may not project and slant. (Use the screw tightening torque of 5500g•cm.)
- ○ Be careful not to contaminate the DD capstan.

[Adjustment after replacement]

- ○ Perform tape path adjustments as described in 4-1.

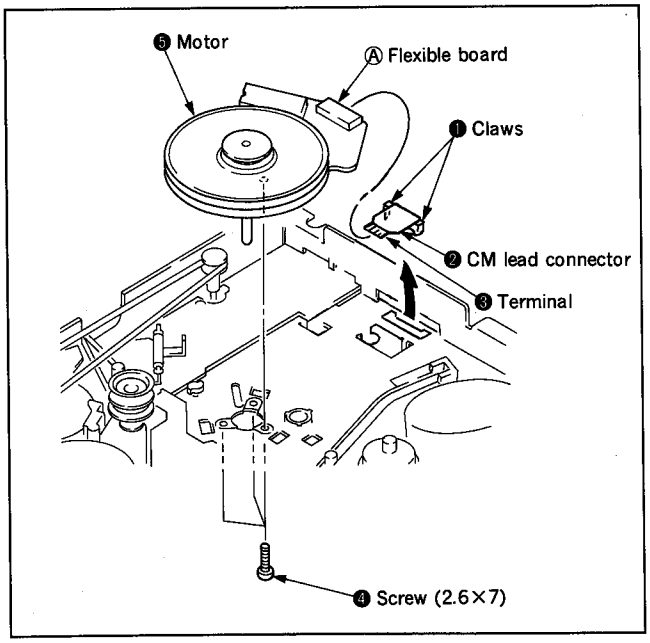


Fig. 3-18

3-15. LOADING PULLEY, LOADING GEAR (Fig. 3-19)

1) With the loading belt put on the loading pulley ❸, unfasten two claws ❷ and remove the loading pulley ❸. (This is to prevent damage to the belt.)
2) Unfasten two claws ❹ and remove the loading gear ❺.

[Precautions on remounting]

- ○ When installing the loading pulley ❸, ensure that claws ❷ are firmly fastened (Fig. A).
- ○ When installing the loading gear ❺, ensure that claws ❹ are firmly fastened (Fig. B).
- ○ If the loading pulley ❸ is applied with screw lock, remove the screw lock and then remove the pulley. In this case, the removed pulley should not be reused. (When replacing, there is no need of applying screw lock.)

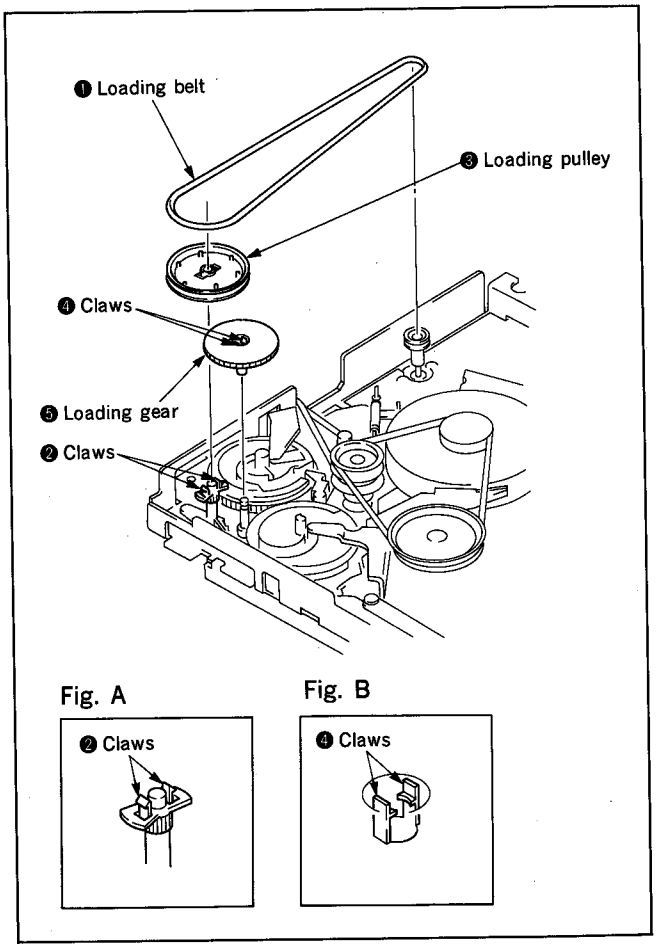


Fig. 3-19

3-16. RE PULLEY ASS'Y, EJECT PULLEY (Fig. 3-20).

1) Remove the loading belt and drive belt as instructed in Sections 3-12 and 3-15.
2) Remove the FL belt ❶.
3) Remove the washer ❷ and pull out the RE pulley ass'y ❸.
4) Remove the washer ❹ and pull out the eject pulley ❺ and breaker spring ❻.

[Precautions on remounting]

- ○ When installing the eject pulley, ensure that the FL belt ❶ is firmly put on the eject pulley (Fig. A).
- ○ Take care not to allow twist and contamination of the FL belt ❶.
- ○ Removed washers should not be reused.

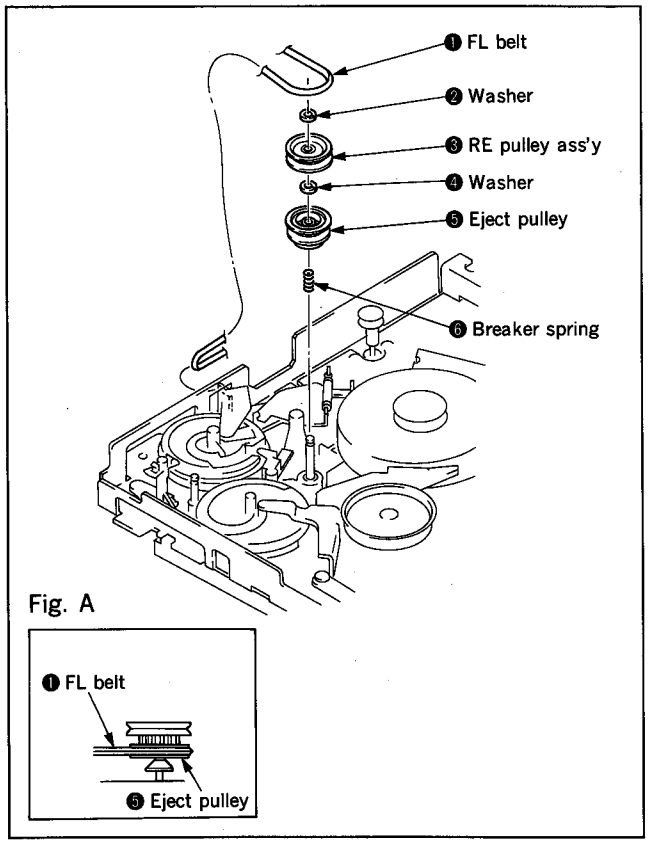


Fig. 3-20

3-17. BT PULL UP PLATE, BT LEVER, L JOINT PLATE CAULKING AND M SLIDE PLATE (Fig. 3-21)

1) Remove the drive belt as instructed in Section 3-12.
2) Remove the washer ❶.
3) Pull out the BT pull up plate ❷.
4) Remove the plate spring ❸.
5) Pull out the BT lever ❹.
6) Remove the screw ❺ and remove the L gear plate collar ❻.
7) Remove the L lever stopper ❼.
8) Pull out the L joint caulking ❽ and remove the cam roller ❾.

[Precautions on remounting]

- ○ When installing the L joint caulking ❽ to the L cam gear Ⓓ, align the cam roller ❾ with the slot Ⓔ and insert the roller (Fig. A).
- ○ When tightening screw ❺, take care to prevent the screw from projecting and slanting.
- ○ When installing the L joint caulking ❽, align the notch mark of the T loading gear (L) ass'y Ⓖ with the notch mark of the joint and engage the teeth (Fig. B).
- ○ Ensure that the projection Ⓗ is completely inserted into the lever stopper ❼ and that the stopper is not reversely installed (Fig. C).
- ○ Ensure that the plate spring ❸ is secured with the hook ❶.
- ○ When installing the BT pull up plate ❷, ensure that the projection Ⓚ is firmly inserted into the hole Ⓙ.

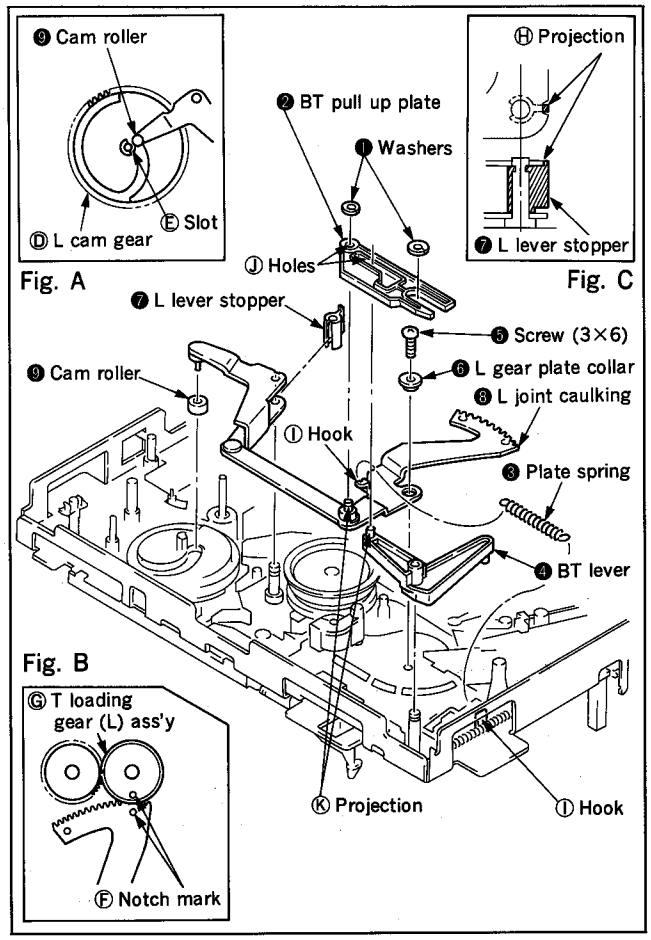


Fig. 3-21

3-18. PRESSURE PLATE ASS'Y, BREAKER ARM, P CAM GEAR AND MODE SWITCH (Fig. 3-22)

1) Remove the loading pulley and loading gear as instructed in Section 3-15.
2) Remove the FL belt as instructed in Section 3-16.
3) Turn the L cam gear ❶ in the arrow direction and place the pressure plate ass'y ❷ in threading state.
4) Remove the washer ❸ and pull out the breaker arm ❹.
5) Remove the washer ❺ and pull out the pressure plate ass'y ❷.
6) Unfasten two claws ❻ and pull out the P cam gear ❼.
7) Remove solder Ⓚ and pull out the mode switch ❽.

[Precautions on remounting]

- ○ When installing the mode switch ❽, align with the hole Ⓒ in the chassis.
- ○ When installing the P cam gear ❼ and mode switch ❽, align the projection Ⓓ on the mode switch with the slot Ⓔ in the P cam gear (Fig. B).
- ○ When installing the P cam gear ❼, as illustrated in Fig. A, align the parts Ⓕ, Ⓖ, Ⓗ, Ⓘ and Ⓙ in line.
- ○ When installing the mode switch ❽, push the switch at its top and solder the switch carefully to prevent its lift.
- ○ Removed washers should not be reused.

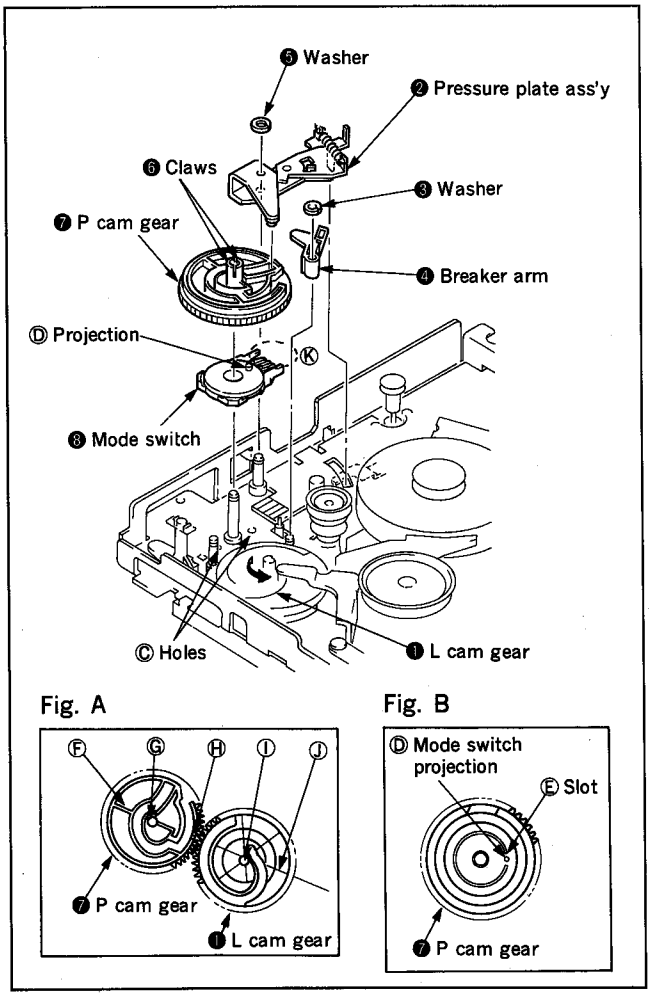


Fig. 3-22

3-19. L CAM GEAR, M SLIDE PLATE, RF GEAR ARM ASS'Y (Fig. 3-23)

1) Remove the parts as instructed in Sections 3-11, 3-13, 3-15, 3-16, 3-17 and 3-18.
2) Unfasten two claws ❶ and pull out the L cam gear ❷.
3) Remove the M lever ❸.
4) Slide the M slide plate ❹ in the direction of arrow Ⓒ and remove the plate.
5) Remove two claws ❺ and pull out the RF gear arm ass'y ❻.

[Precautions on remounting]

- ○ When installing the M slide plate ❹, push the C brake lever ❼ in the direction of arrow Ⓖ and install.
- ○ When installing the M slide plate ❹, fit the claw Ⓓ into the slot Ⓔ and slide the plate.
- ○ When installing the L cam gear ❷, align the projections Ⓕ of the M lever and BK release arm (Fig. B).
- ○ When installing the M lever ❸, the CB return lever Ⓗ should be oriented toward the direction as specified in Fig. B.

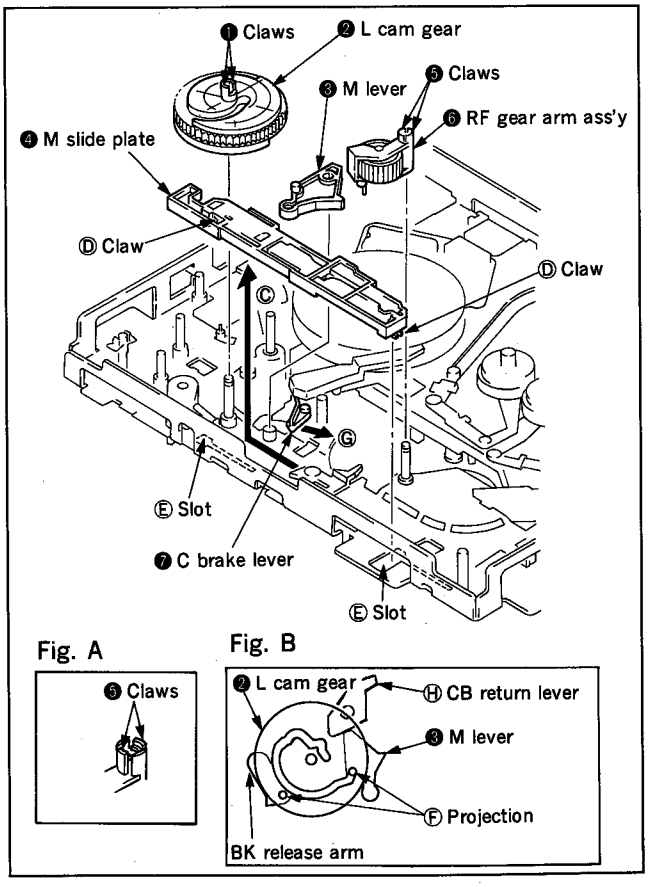


Fig. 3-23

3-20. T LOADING GEAR (L, R) ASS'Y (Fig. 3-24)

1) Remove the washer ❶.
2) Unfasten two claws ❷ and pull out the T loading gear (L) ass'y ❸.
3) Remove the spring ❹ and pull out the T loading arm ❺.
4) Remove the washer ❻.
5) Unfasten two claws ❼ and pull out the T loading gear (R) ass'y ❽.
6) Remove the spring ❾ and pull out the T loading arm ❿.

[Precautions on remounting]

- When installing the T loading gear (L, R) ASS'Y ❸ and ❽, align the notch marks and secure springs ❹ and ❾ with the hooks Ⓒ and Ⓓ respectively (Fig. A).
- When installing the T loading gear (L, R) ASS'Y ❸ and ❽, ensure that they are firmly fit on the axles Ⓔ and on the loading bosses Ⓕ.
- When installing the T loading gear (L, R) ass'y ❸,❽, align register marks and have teeth engaged. (Fig. A)

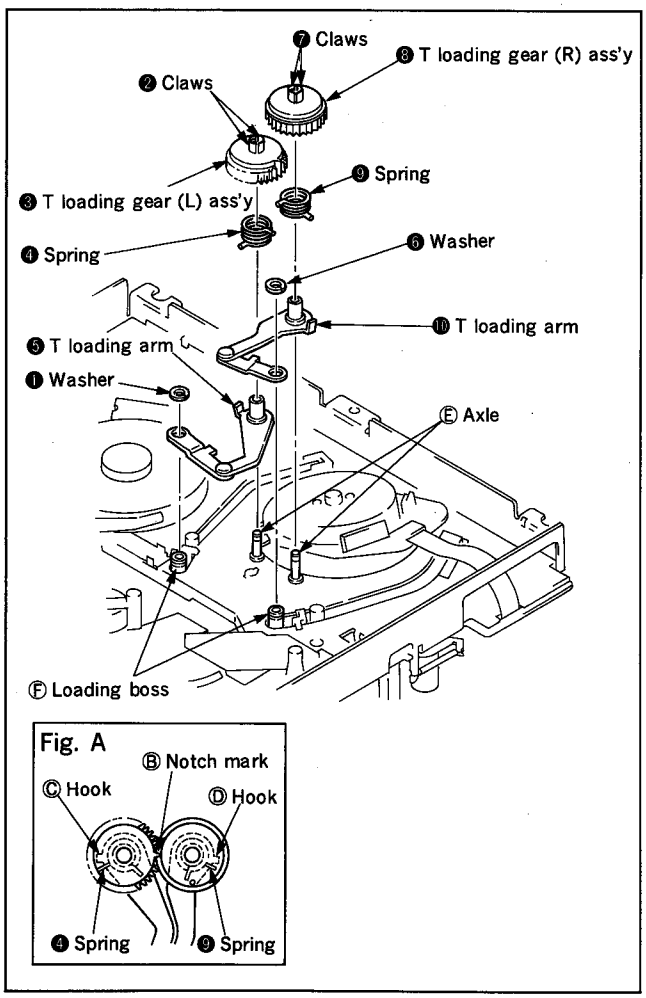


Fig. 3-24

4. ADJUSTMENT

4-1. TAPE PATH ADJUSTMENT

The "Tape path" refers to the route of the tape from the supply reel disk to the take-up reel disc via the video heads. Each component part of the tape transport system, particularly the surface of parts which make direct contact with the tape must always be kept clean, free of dust, oil, scratches and so forth.

The tape path system is factory preadjusted. When parts of the tape transport system are replaced, be sure to make the required adjustments as precisely as possible in order to ensure stable tape transport.

4-1-1. Tension Arm Position Adjustment (Fig. 4-1)

Purpose: In order to stabilize the contact of the video head with tape, the tension of tape delivered is kept almost constant.

[Adjustment method]

1) Remove the FL ass'y, complete threading without inserting a cassette tape, and place the set in the specified mode (Section 1-3).
2) For adjustment in PLAY mode, first loosen the screw ❶. Then use a screwdriver to bend Ⓐ part in the direction of arrow Ⓑ, and adjust so that the spacing between the chassis hook and the tension arm is 0.5mm. After this, tighten the screw ❶.
3) For adjustment in REV mode, unplug the power cord and turn the power. Then, place the gear plate in between the S and T reel tables. Use a screwdriver to bend Ⓒ part in the direction of arrow Ⓓ, and adjust so that the spacing between the chassis hook and the tension arm is 4mm.

Note: If the quantity of return is too small, Ⓑ part is lessened. Do not bend part Ⓑ excessively.

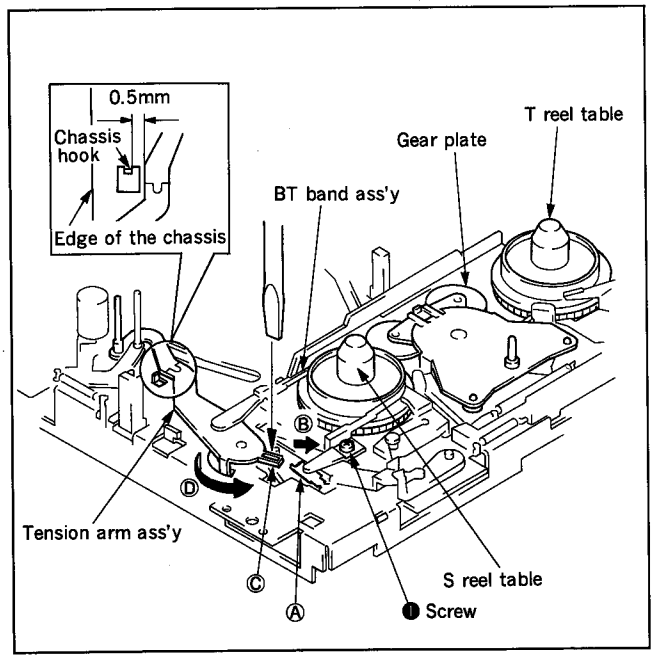


Fig. 4-1

4-1-2. ACE Head Tilt Adjustment (Rough) (Fig. 4-2)

Mode	Stop
Measuring instrument /jig	Master plane Reel disk height jig
Adjusted locations	ACE head, Tilt adjustment screw

[Adjustment method]

1) Remove the FL ass'y, complete threading without inserting a cassette tape, and place the set in the specified mode (Section 1-3).
2) Mount the master plane, then put the reel disk height jig by positioning it to the ACE head.
3) Position the reel disk height jig to the part Ⓐ of the ACE head, then turn the tilt adjustment screw so as to make the head vertical.

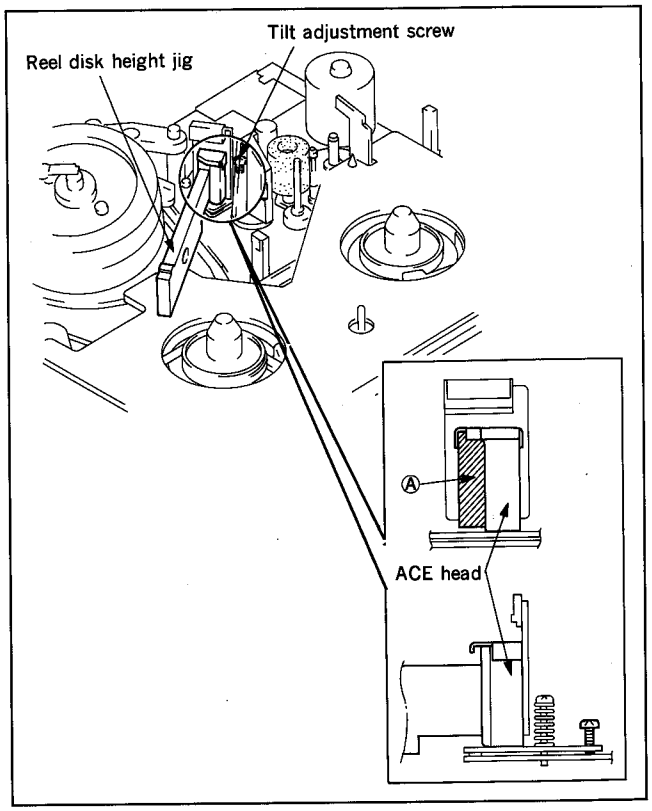


Fig. 4-2

4-1-3. ACE Head Height Adjustment (rough) (Fig. 4-3)

Mode	Playback
Measuring instrument /jig	Blank tape
Adjusted locations	ACE head

[Adjustment method]

1) Remove the FL ass'y, complete threading without inserting a cassette tape, and place the set in the specified mode (Section 1-3).
2) Set a blank tape and allow it to run, then adjust the spacings from the upper and lower ACE heads to tape edges so that the ratio of Ⓐ : Ⓑ=1 : 1.5.

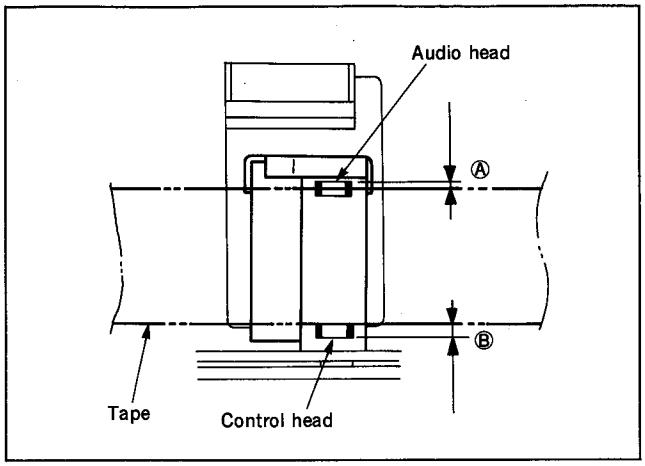


Fig. 4-3

4-1-4. Tension Torque Check

Purpose: To check tension torque and application force acting to the tape takeup and moving parts, which is necessary to ensure that the tape path is smooth and that the basic perfermance of the VTR is satisfied.
If the tape path is not smooth and/or the tape speed is not correct, this check should be performed.

Mode	Each mode of operation with torque tape inserted
Measuring instrument /jig	NTSC VHT-063S torque tape PAL VHT-066S torque tape NTSC VHT-404S torque tape PAL VHT-404S torque tape

Item	Torque tape used	VTR mode of Operation	Reel to be measured	Measurement Value
Playback torque	NTSC VHT-063S PAL VHT-066S	Playback	Takeup reel	100±30g•cm
Back tension torque	NTSC VHT-063S PAL VHT-066S	Playback	Supply reel	47.5±12.5g•cm
REV torque	NTSC VHT-404S PAL VHT-404S	REV	Supply reel	165±25g•cm
CUE torque	NTSC VHT-404S PAL VHT-404S	CUE	Takeup reel	115±45g•cm

Note: Be sure to rotate each torque tape by the minimum of one turn, and read the value at the center portion between the maximum and minimum deflections.

4-1-5. T, S Reel Brake Measurement (Fig. 4-4)

Mode	Each mode without inserting a cassette tape
Measuring instrument /jig	Torque gauge Torque gauge adapter

[S reel brake measurement method]

1) Turn the power ON, select the fast forward mode, and press the STOP button.
2) Fix both torque gauge and torque gauge adapter to the S reel table.
3) Turn clockwise and check that the torque brake is 200g•cm or more.
4) Turn counterclockwise and check that the torque brake is 80 to 170g•cm.

[T reel brake measurement method]

1) Select the rewind mode, and press the STOP button.
2) Fix both torque gauge and torque gauge adapter to the T reel table.
3) Turn clockwise and check that the torque brake is 80 to 170g•cm.
4) Turn counterclockwise and check that the torque brake is 200g•cm or more.
5) Remove both torque gauge and torque gauge adapter.
6) Select the playback mode, then pull out the power cord to run the power OFF.
7) Perform item 2) and check that the torque brake in each of clockwise and counterclockwise directions is 60g•cm±20g•cm.

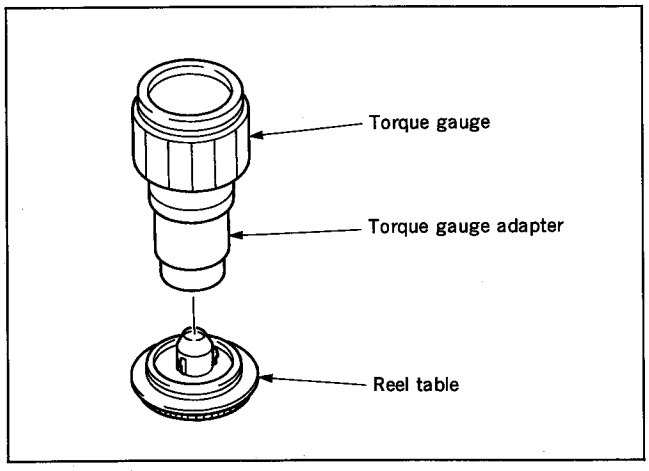


Fig. 4-4

4-1-6. L Block (L, R) Ass'y Position Adjustment (Fig. 4-5)

[Adjustment method]

1) Push the L block (L, R) assemblies in the direction of arrow Ⓐ until they are butted to stop.
2) Push the L block (L, R) assemblies in the direction of arrow Ⓑ and tighten two screws firmly.

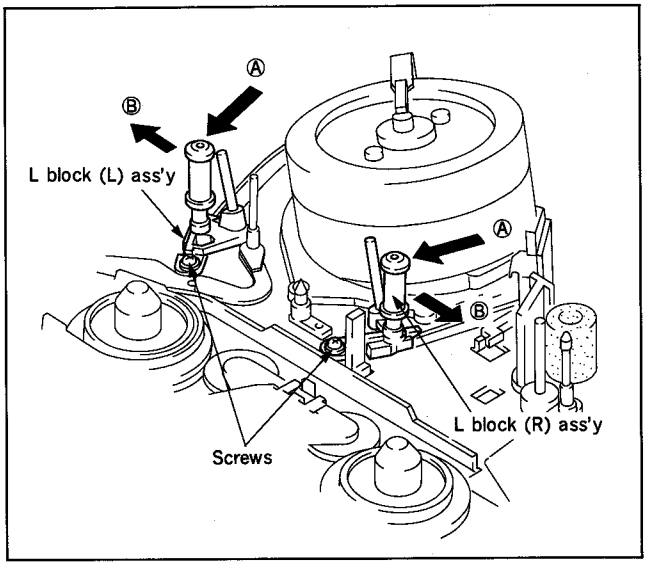


Fig. 4-5

4-1-7. Roller Post (L, R) Height Adjustment (Fig. 4-6)

Mode	Playback
Measuring instrument	HiFi alignment tape (HiFi 400Hz)
Measuring point	CH-1 : RF pin of connector PB for RF board check CH-2 : SWP pin of connector RF for RF board check
Adjustment locations	Roller post height adjustment screw

[Adjustment method]

1) Tracking (playback): Turn off Auto Tracking, and set to the center position (by pressing the tracking buttons [▽] and [△] simultaneously).
   (When performing this adjustment after replacing the drum, place Tracking in the position where the RF output is at maximum.)
2) Fully tighten the height adjustment screw and slowly loosen the screw to adjust so that the waveform of the RF output is flat.
3) Tracking buttons (playback): Alternately press [▽] and [△].
4) Confirm that drops observed in the RF output are equal at its lead and trail.

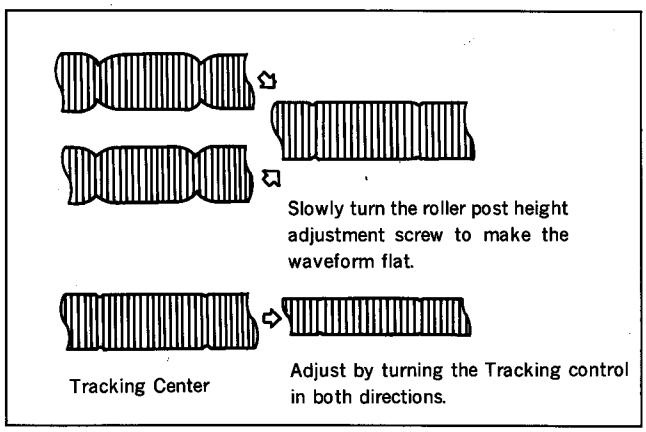


Fig. 4-6

4-1-8. ACE Head Tilt Adjustment (Precision) (Fig. 4-7)

Mode	Playback
Signal	Alignment tape (JVC-MH-1 1kHz)
Measuring instrument /jig	Oscilloscope
Measuring point	Audio output terminal
Adjustment locations	Azimuth adjustment screw Height adjustment screw Tilt adjustment screw

[Adjustment method]

1) While in FWD mode, adjust so that there is no curl or lift on the lower tape guide flange by using the azimuth adjustment screw.
2) In alternate adjustments, slightly adjust the azimuth, height so that the audio output is maximized and that is waveform is made flat (minimized in fluctuation).

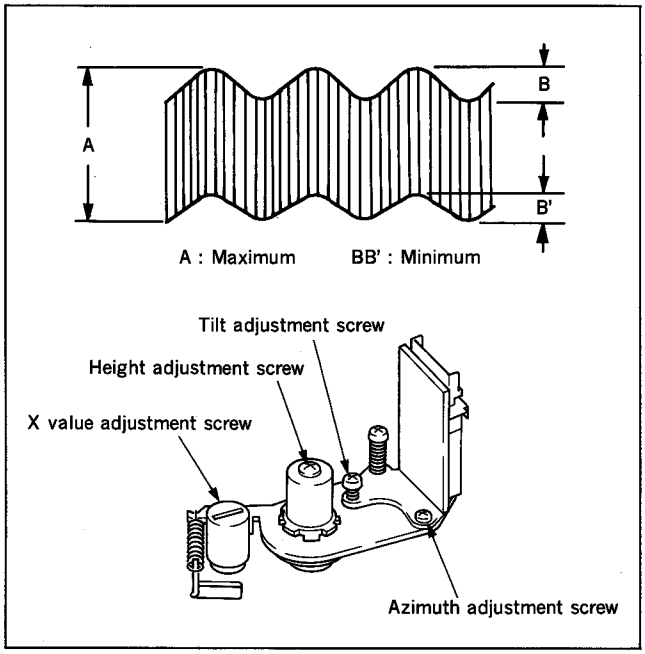


Fig. 4-7

4-1-9. X-Value Adjustment

Purpose : To assure compatibility with other VTR's.

Note : Before performing this adjustment, Tracking Preset Adjustment must be always performed. (Refer to the Service Manual.)

Turn off Auto Tracking and set to Manual mode.

Mode	Playback
Signal	HiFi alignment tape (HiFi 400Hz) or alignment tape (JVC-MH-1 1kHz)
Measuring instrument /jig	Oscilloscope
Measuring point	CH-1 : Pin RF of connector PB for RF board check CH-2 : SWP pin of connector RF for RF board check (Observe on the CHA head.)
Adjustment locations	X-value adjustment screw

[Adjustment method]

○ Adjustment by HiFi alignment tape

When the tracking is set at the center position (by pressing the [▽] and [△] keys simultaneously), adjust the RF output to maximum.

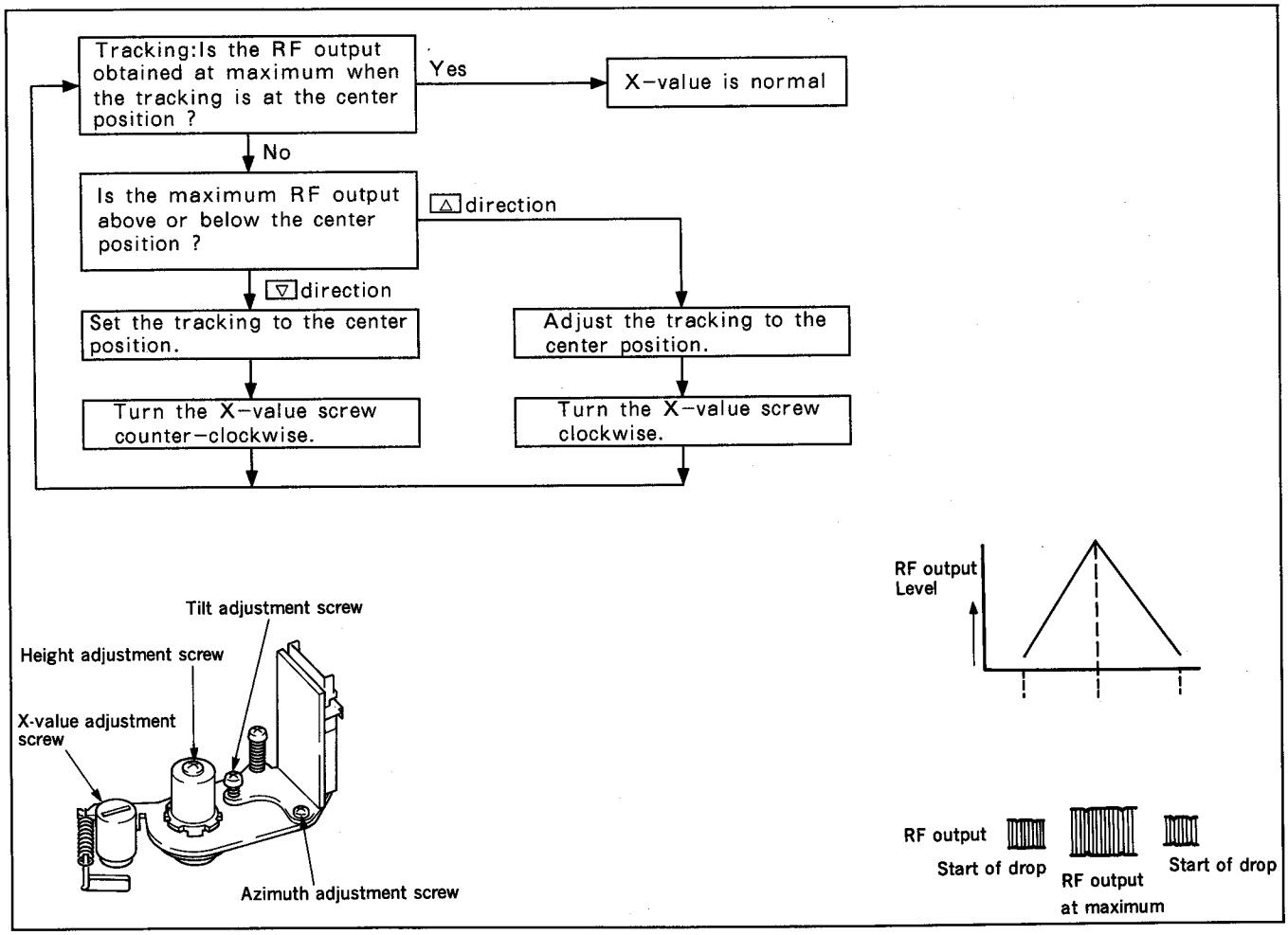


Fig. 4-8

○ Adjustment by Alignment tape (JVC-MH-1 1kHz) (Fig. 4-9)
Adjust the X-value adjuster screw so that maximum RF output is obtained and also that the RF output drops to the same position on pressing the respective [▽] and [△] buttons while the tracking is set at the center position.

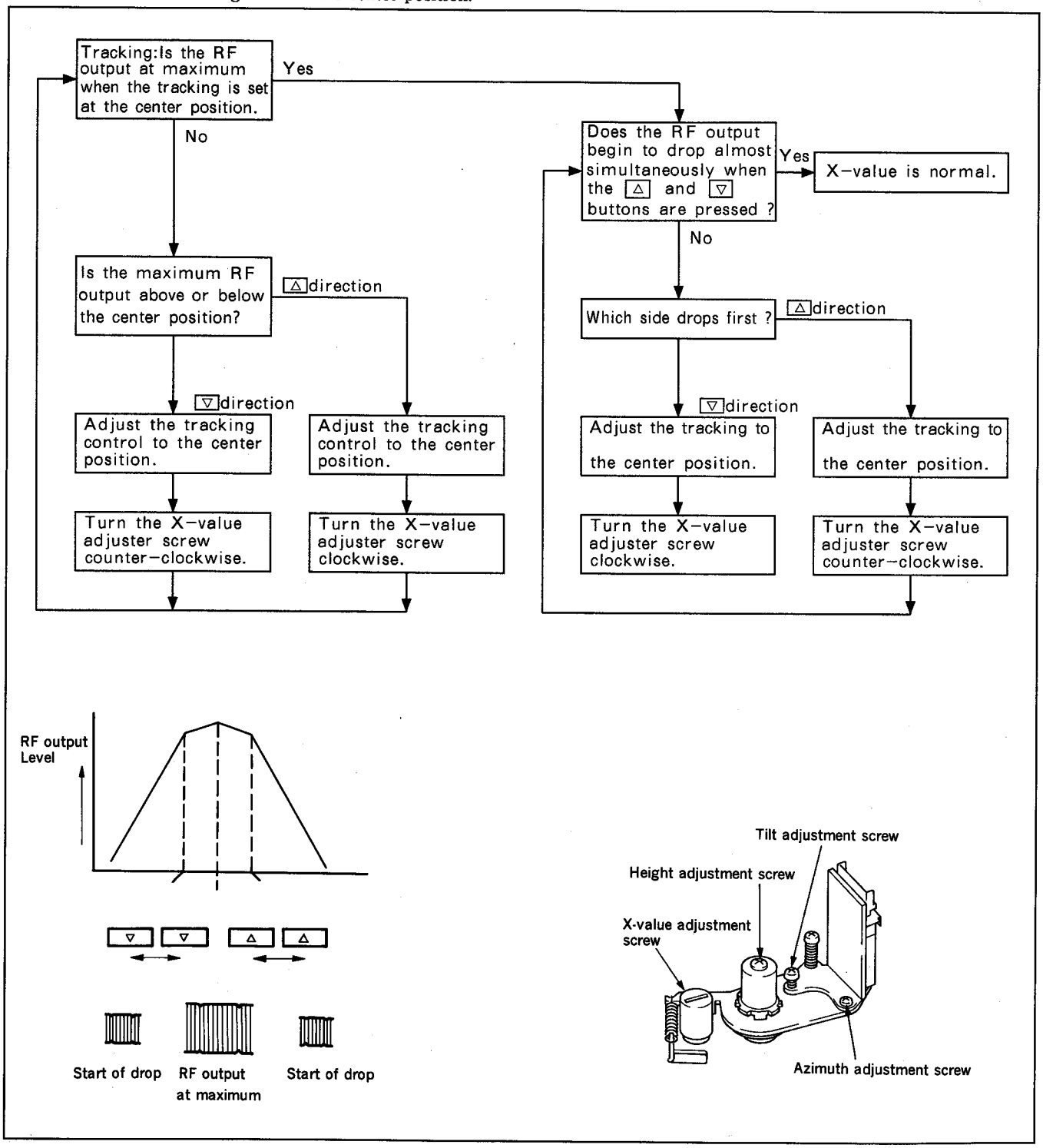


Fig. 4-9

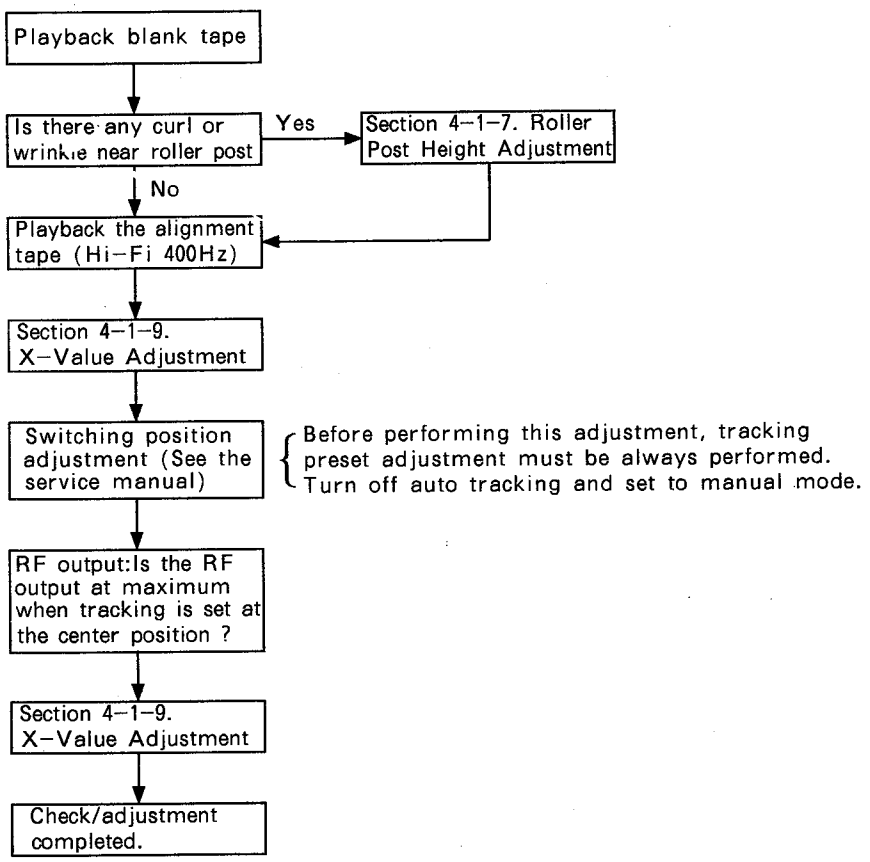
4-1-10. Adjustments after Replaceing the Drum (Video head)

Purpose : Co-relative height, X-value and other factors of the drum will deviate from those of the guide roller. If the drum in replaced properly, these deviations are extremely small.

Precaution : Turn off the auto tracking and set the manual tracking mode.

Mode	Playback
Signal	Alignment tape (JVC-MH-1 1kHz), blank tape
Measuring instrument /jig	Oscilloscope
Measuring point	CH-1 : PB RF pin of connector for RF board check CH-2 : RF SWP pin of connector for RF board check
Adjustment locations	Roller post (Section 4-1-7) X-value (Section 4-1-9) Switching position (See the Service Manual) Before performing this adjustment, Tracking Preset Adjustment must be always performed. Turn off Auto Tracking and set to Manual mode.

[Adjustment method]



4-1-11. RG Post Tilt Adjustment (Fig. 4-10)

1) Take up tape in either playback or CUE mode and then enter REV mode.
2) Slowly tighten the tilt adjustment screw and allow some curl to appear on the exit guide lower flange. Then, slowly loosen the screw until there is not any wrinkle or curl.

4-1-12. Regulation Direction Check (Fig. 4-10)

[Check method]

1) Play back raw tape and set to the CUE/REV mode. check the following places to see if there is any curl or wrinkle.

A	FE head	E	Tape guide
B	Entrance roller post	F	Capstan shaft
C	Entrance bag unit	G	RG post
D	Exit roller post		

Note : If curl or wrinkle cannot be removed, perform Adjustments from 4-1-6. again.

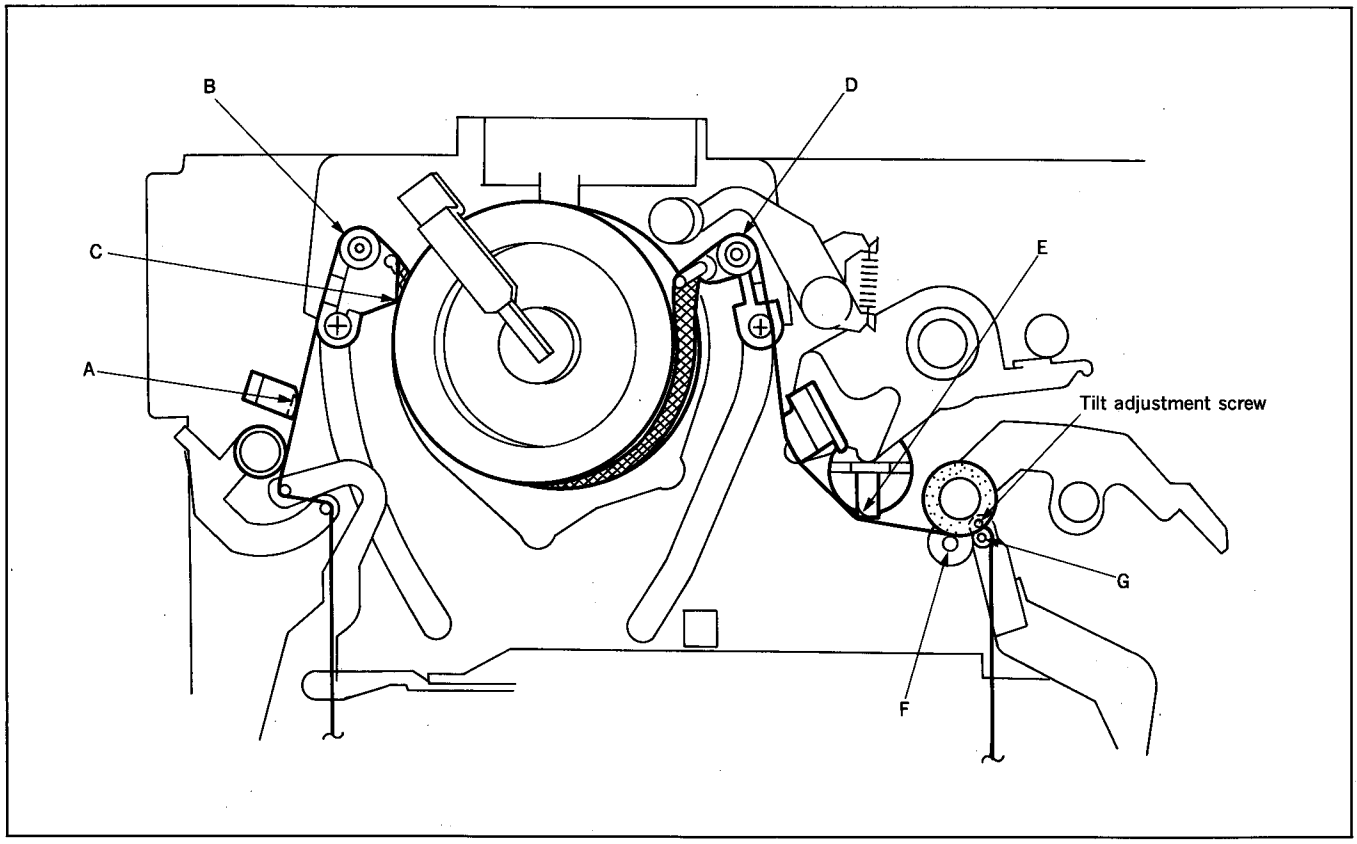


Fig. 4-10

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