HITACHI

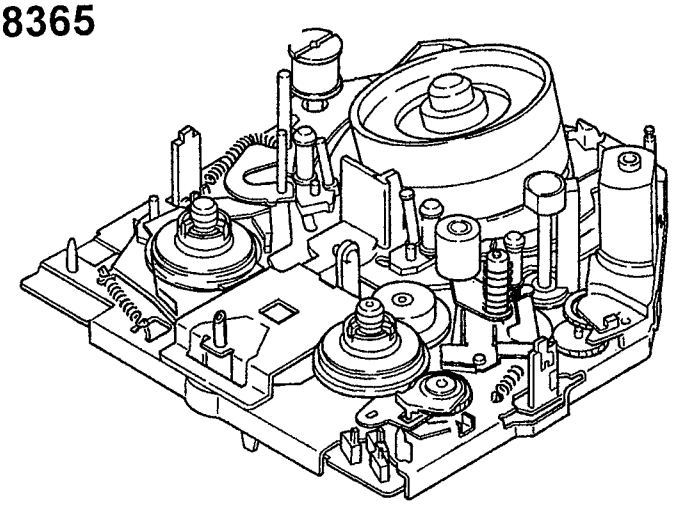
SERVICE MANUAL

V18365

TK | No.6406E

TH MECHANISM

Disassembly & Adjustment



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Note

This manual applies to new 8mm video camera/recorders (TH Mechanism) issued on May, 1994 and later.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

8mm VIDEO CAMERA/RECORDER

May 1994 TOKAI Consumer Electronics Division

ENGLISH

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UNLOADING METHOD

The method to set the unassembled mechanism to the unloading state is described here.

1. When the loading motor is normal (Fig. 1)

<Procedure>
1) Set the power supply to 3-5V DC. (Do not apply more than 5V as this could result in a secondary defect.)
2) Connect the red wire to the positive terminal and brown wire to the negative terminal to activate unloading.

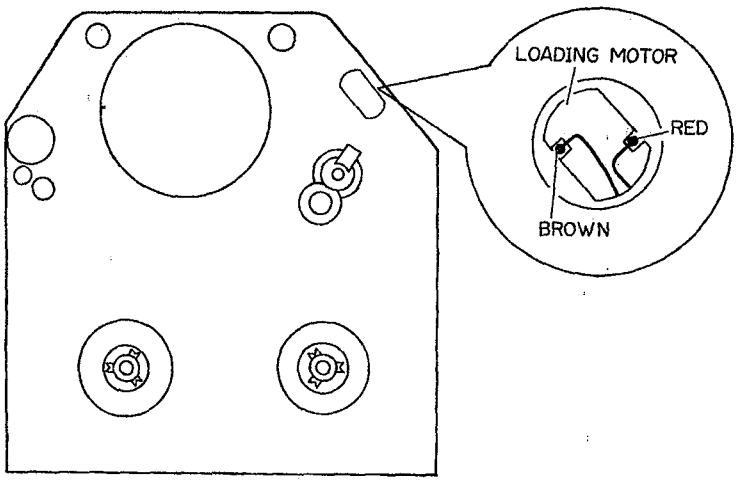


Fig. 1

2. When the loading motor is faulty (Fig. 2)

<Procedure>
1) Remove the loading motor.
2) Turn the cam gear shown in Fig.2 with your hand in the direction of arrow (A).

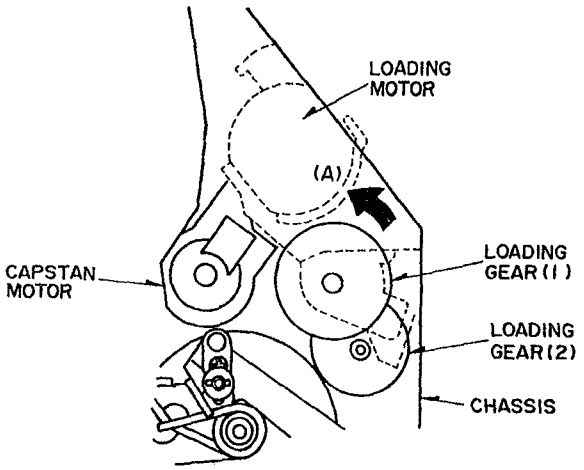
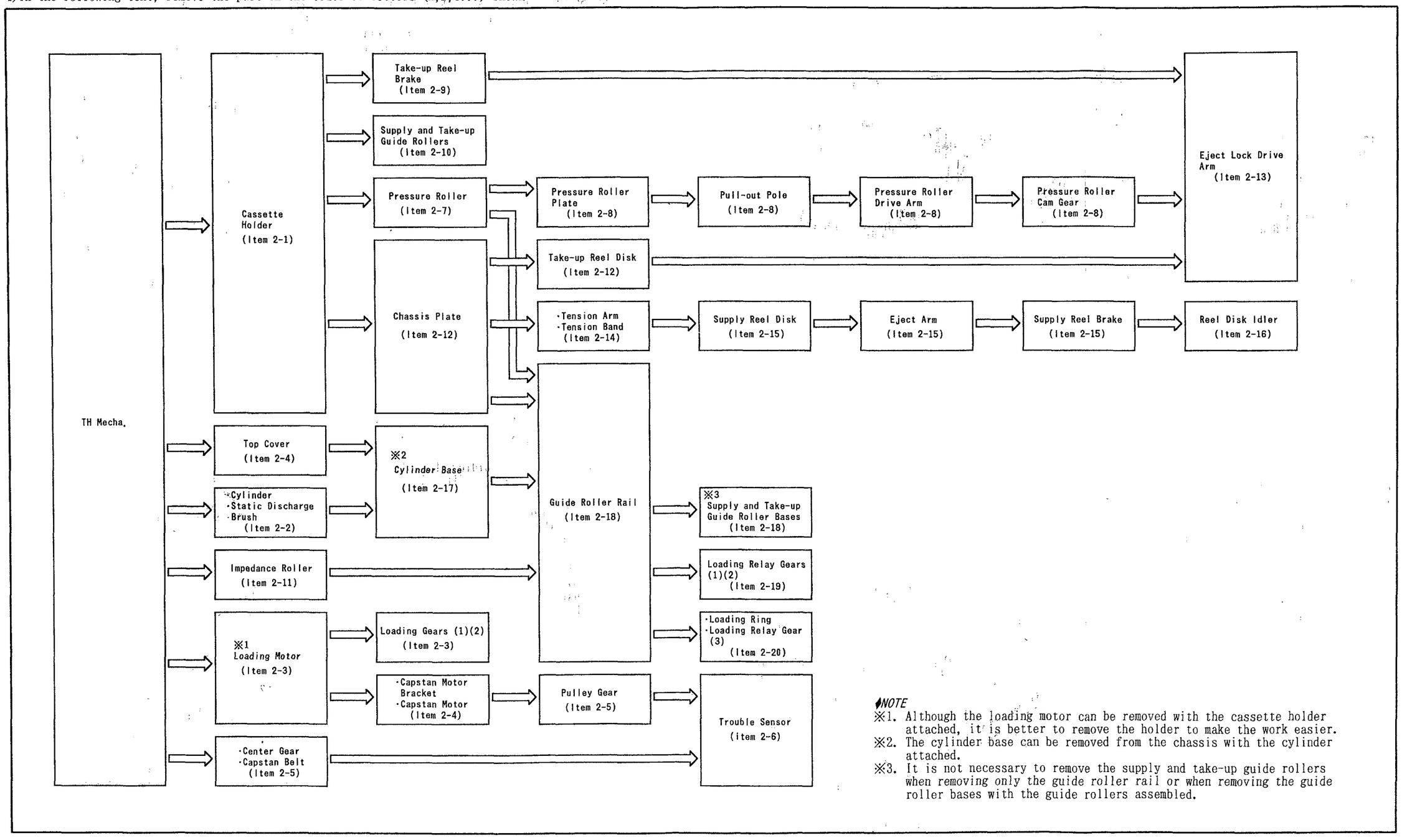


Fig. 2

DISASSEMBLY METHOD

Refer to the following "Parts hierarchy chart" first when replacing defective parts.
This chart showns the parts removal procedure as the hierarchy in which parts should be replaced.

[How to use the parts hierarchy chart]
1) Search for the part to be replaced in chart.
2) Check the part in the rank above the part to be replaced and the start dismantling.
3) Replace the defective part and install it by the reverse order to that shown in the hierarchy chart.
4) In the following text, remove the part in the order of letters (A,B,C...) shown in the illustations.



NOTE
※1. Although the loading motor can be removed with the cassette holder attached, it is better to remove the holder to make the work easier.
※2. The cylinder base can be removed from the chassis with the cylinder attached.
※3. It is not necessary to remove the supply and take-up guide rollers when removing only the guide roller rail or when removing the guide roller bases with the guide rollers assembled.

1. IDENTIFICATIONS OF MAJOR MECHANICAL COMPONENTS

Numbers in ( ) show the numbers of item that describe how to remove the components.

1-1. Top View

1. Cylinder (2-2)
2. Capstan Motor (2-4, 5)
3. Loading Motor (2-3)
4. Pull-out Pole (2-8)
5. Loading Gear (1) (2-3)
6. Loading Gear (2) (2-3)
7. Pressure Roller Cam Gear (2-8)
8. Pressure Roller (2-7)
9. Loading Relay Gear (1) (2-18)
10. Take-up Reel Brake (2-9)
11. Eject Lock Drive Arm (2-13)
12. Take-up Reel Disk (2-12)
13. Reel Drive Idler (2-15)
14. Take-up Guide Roller (2-10)
15. Loading Relay Gear (3) (2-19)
16. Supply Reel Disk (2-15)
17. Supply Reel Brake (2-15)
18. Tension Band Holder (Tension Band) (2-14)
19. Eject Arm (2-15)
20. Tension Spring (2-14)
21. Tension Arm (2-14)
22. Supply Guide Roller (2-10)
23. Impedance Roller (2-11)

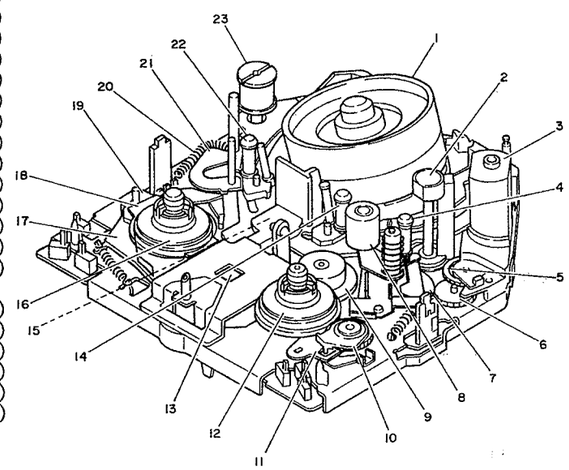


Fig. 1-1

1-2. Bottom View

1. Capstan Motor (2-4)
2. Capstan Motor Bracket (2-4)
3. Pulley Gear (2-5)
4. Static Discharge Brush (2-2)
5. Trouble Sensor Circuit Board (2-6)
   - End LED
   - Supply and Take-up END Sensors
   - Supply and Take-up Reel Sensors
   - Safty Tab Switch
   - Tape Select Switch
   - Hi-8 Switch (For Hi-8 model)
   - Cassette Holder Switch
   - Mechanism State Switch
6. Capstan Belt (2-5)
7. Center Gear (2-5)

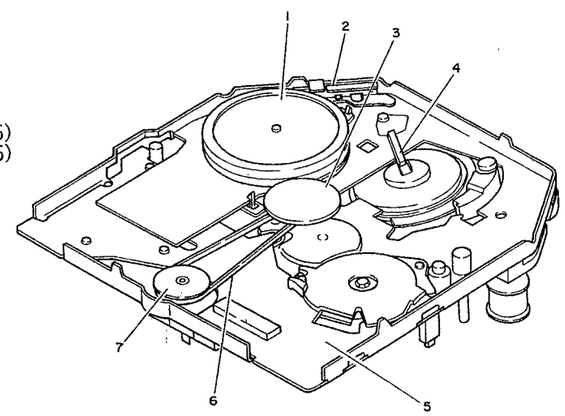


Fig. 1-2

2. TAPE TRANSPORT MECHANISM DISASSEMBLY

- Before Reinstalling the Disassembly -
- Set the camera/recorder to the unloading stop state.

2-1. Cassette holder (Fig. 2-1)

1) Move the eject lever in the direction of arrow (A) and set the unit to the eject state.

Caution when reinstalling
- Reinstall the cassette holder so that section (B) of the eject lock slider is inserted into section (C) of the eject lock arm.

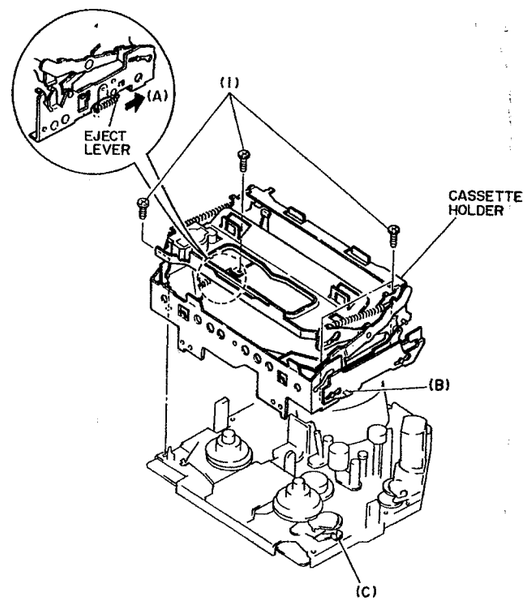


Fig. 2-1

2-2. Static discharge brush, cylinder (Fig. 2-2)

1) Remove screw (1) holding the static discharge brush.
2) Remove two screws (2) holding the cylinder.
3) Remove the cylinder in the direction of arrow (A).

Cautions during work
- Take care as the spring is removed on its own when screw (B) holding the cylinder is removed.
- Do not touch video head tips with your fingers or tools, etc. during work.

Adjustment after reinstalling
- After reinstalling the cylinder, be sure to perform the following adjustment.

「4. ADJUSTMENT AFTER REPLACING CYLINDER」 in chapter 2

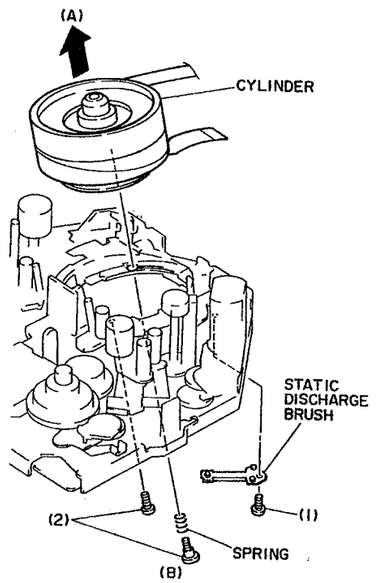


Fig. 2-2

2-3. Loading motor, loading gears (1)(2) (Fig. 2-3)

1) Remove two screws (1) holding the loading motor.
2) Remove the loading motor and loading gears (1) and (2) from chassis in the direction of arrow (A).

Adjustment after reinstalling

- After reinstalling the loading motor and loading gears (1)(2), be sure to perform the following adjustment.

  「3. PHASE MATCHING IN ASSEMBLY」 in chapter 1

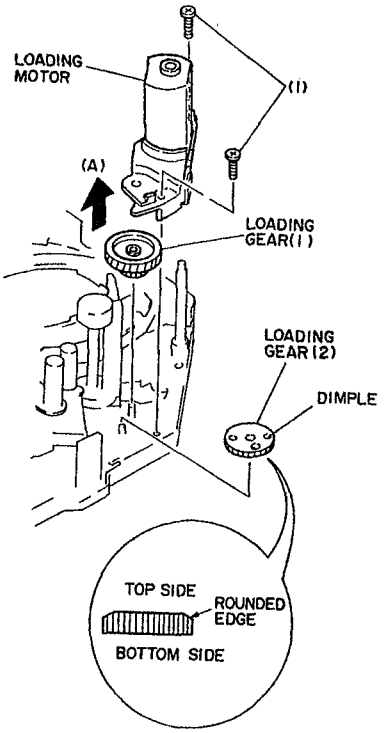


Fig. 2-3

2-4. Tape cover, capstan motor bracket, capstan motor (Figs. 2-4, 2-5)

1) Release tab (1) and pull out the tape cover from the chassis. (See Fig. 2-4)
2) Remove screw (3) holding the capstan motor bracket. (See Fig. 2-5)
3) Remove three screws (2) holding the capstan motor. (See Fig. 2-4)
4) Release three tabs (4) holding the capstan motor and remove the capstan motor in the direction of arrow (A). (See Fig. 2-5)

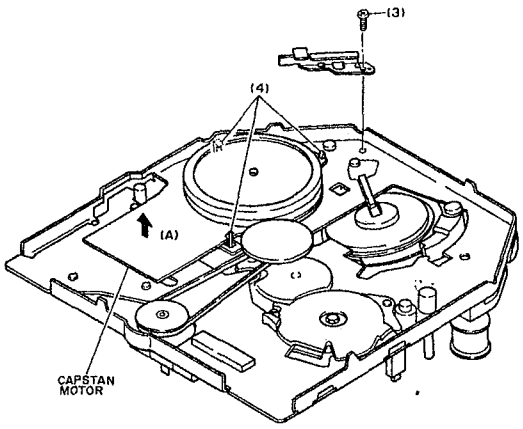


Fig. 2-5

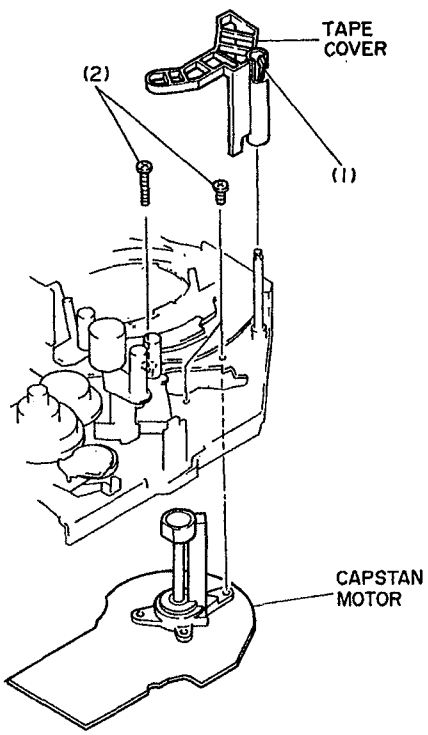


Fig. 2-4

2-5. Pulley gear, center gear, capstan belt (Fig. 2-6)

1)Remove washer (1) holding the pulley gear.
2)Remove washer (2) holding the center gear.
3)Remove the center gear and pulley gear together with the capstan belt.

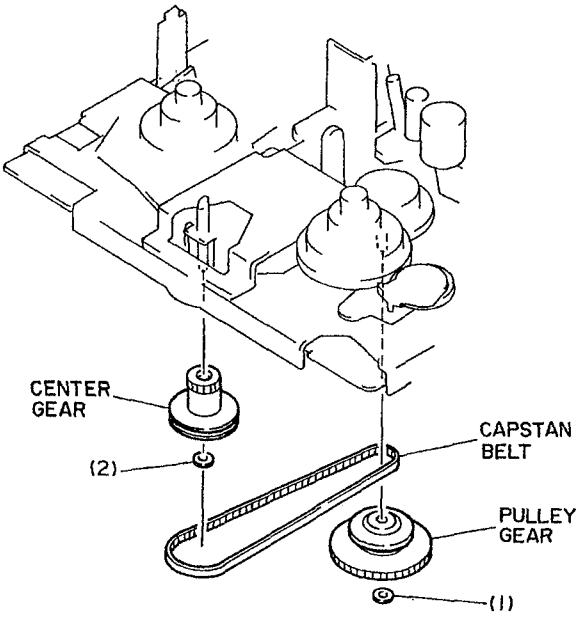


Fig. 2-6

2-6. Trouble sensor circuit board (Fig. 2-7)

1)Remove five screws (1)
2)Slide the supply reel brake in the direction of arrow (A) to release trouble sensor circuit board.

Caution during work
- The following sensors and switches are installed on the trouble sensor circuit board.
- End LED
- Supply and Take-up End Sensors
- Supply and Take-up Reel Sensors
- Safety Tab Switch
- Tape Select Switch
- Hi-8 Tape Switch (For Hi-8 model)
- Cassette Holder Switch
- Mechanism State Switch

Adjustment after reinstalling
- After reinstalling the trouble sensor circuit board, be sure to perform the following adjustment.

「3.PHASE MATCHING IN ASSEMBLY」 in chapter 1

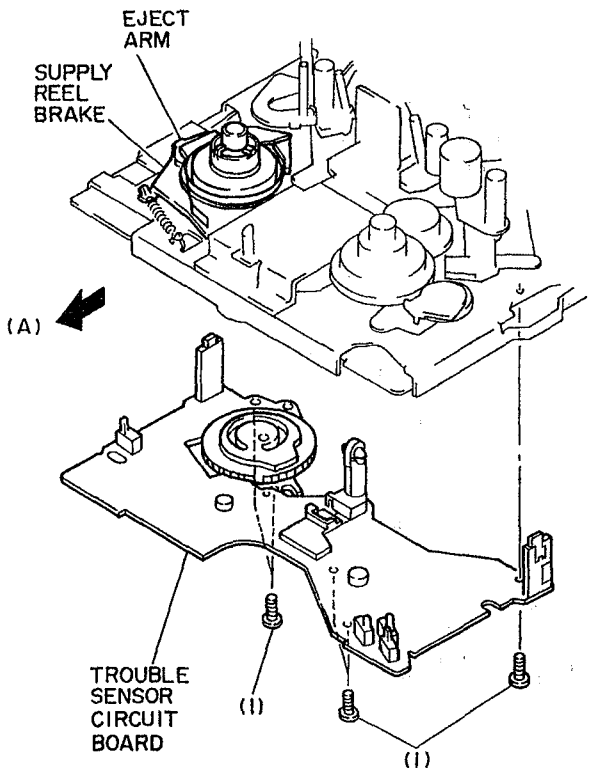


Fig. 2-7

2-7. Pressure roller (fig. 2-8)

1) Remove washer (1).
2) Pull out the pressure roller from the pressure roller shaft.

Caution during work
- Do not remove the spring of the pressure roller.

Caution when reinstalling
- Reinstall the pressure roller so that pin (A) of the pressure roller drive arm is inserted into groove (B) in the pressure roller.

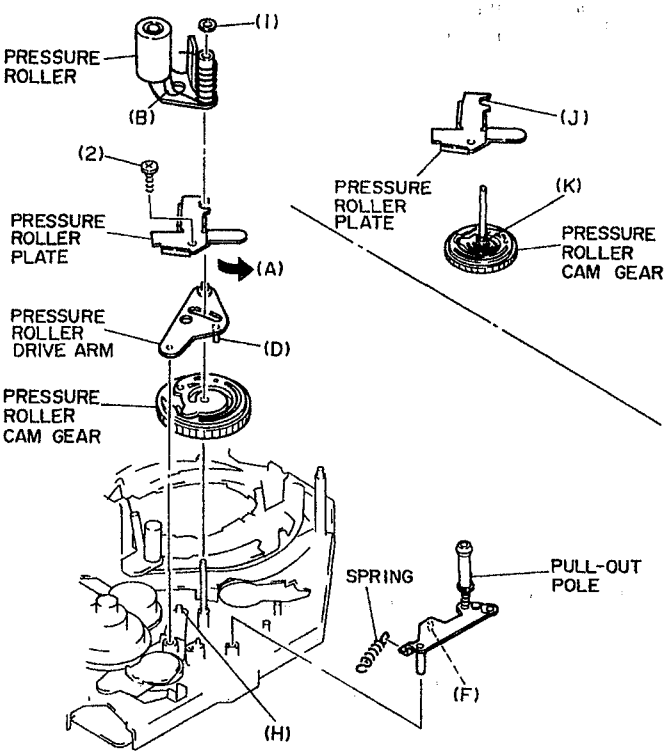


Fig. 2-8

2-8. Pressure roller plate, pull-out pole, pressure roller drive arm, pressure roller cam gear (Figs. 2-8, 2-9)

1) Remove screw (2) holding the puressure roller plate. (See Fig. 2-8)
2) Move the pressure roller plate in the direction of arrow (C) and remove the pressure roller plate. (See Fig. 2-8)
3) Remove the spring. (See Fig. 2-8)
4) Pull out the pull-out pole from the chassis. (See Fig. 2-8)
5) Remove the pressure roller drive arm from the chassis. (See Fig. 2-8)
6) Pull out the pressure roller cam gear from the pressure roller shaft. (See Fig. 2-8)

Cautions when reinstalling
- Reinstall the pressure roller drive arm so that pin (D) of this arm is inserted into groove (E) in the surface of the pressure roller came gear. (See Figs. 2-8, 2-9)
- Reinstall the pull-out pole so that pin (F) of this pole is inserted into groove (G) in the surface of the pressure roller cam gear. (See Figs. 2-8, 2-9)
- Reinstall the pressure roller cam gear so that pin (H) of the cassette holder lock arm is inserted into groove (I) in the back of the pressure roller cam gear. (See Figs. 2-8, 2-9)
- Reinstall the pressur roller plate (J) by inserting it into the groove (K). (See Figs. 2-8)

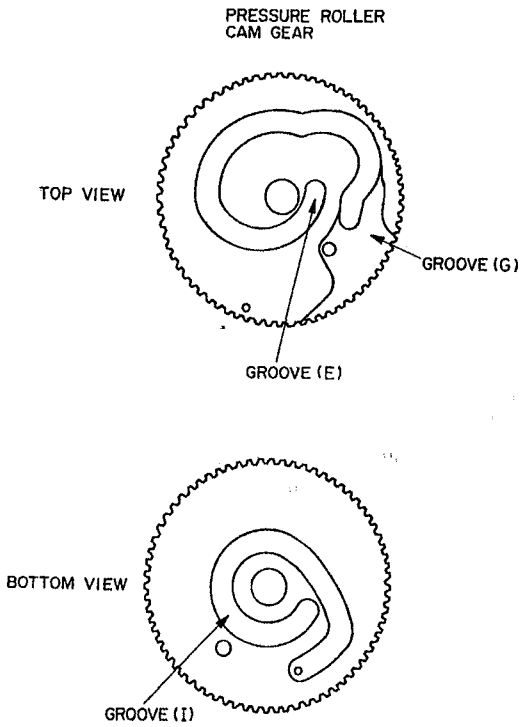


Fig. 2-9

2-9. Take-up reel brake (Fig. 2-10)

1) Remove washer (1).
2) Remove the take-up reel brake from the chassis.

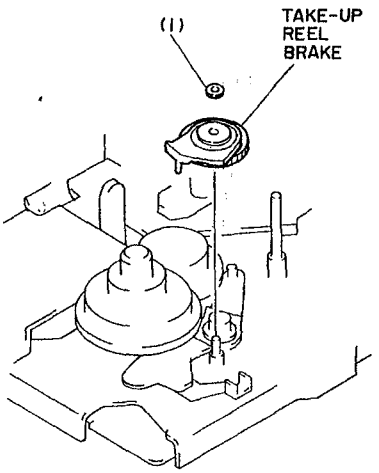


Fig. 2-10

2-10. Supply and take-up guide rollers (Fig. 2-11)

1) Loosen screw (1) holding the supply guide roller.
2) Loosen screw (2) holding the take-up guide roller.
3) Use the special screwdriver (to adjust the guide roller) to turn the top of the supply and take- up guide rollers counterclockwise.

Adjustment after reinstalling

- After reinstalling the supply and take-up guide rollers, be sure to perform the following adjustment.

  「3-3. Supply/Take-up Guide Roller Height Adjustment」 in chapter 2

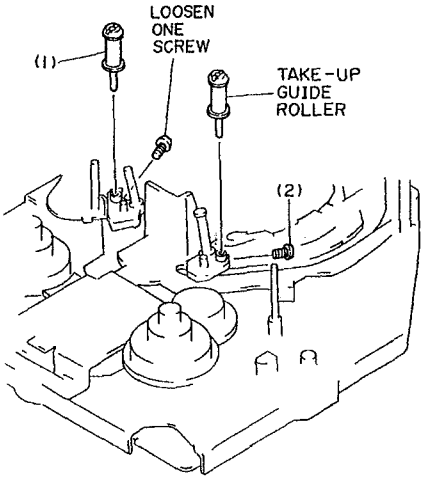


Fig. 2-11

2-11. Impedance roller (Fig. 2-12)

1) Use a flat-bladed screwdriver to turn the top of the impedance roller counterclockwise to remove it.

Adjustment after reinstalling

- After reinstalling the impedance roller, be sure to perform the following adjustment.

  「3-2. Pull-out Pole and Impedance Roller Height Check/Adjustment」 in chapter 2

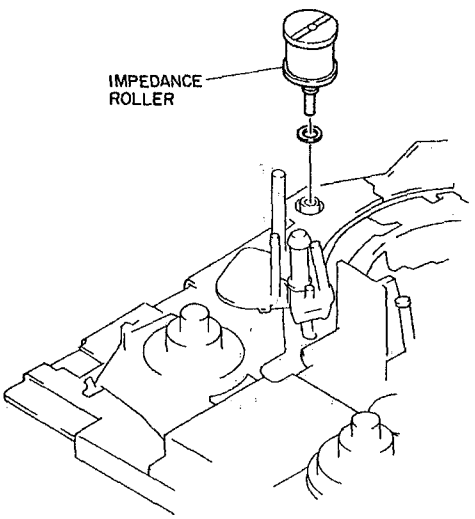


Fig. 2-12

2-12. Chassis plate, take-up reel disk (Fig. 2-13)

1) Remove screw (1) holding the chassis plate.
2) Remove the chassis plate from the chassis.
3) Pull out the take-up reel disk from the take-up reel disk shaft.

Caution when reinstalling

- When reinstalling the chassis plate, make sure the flange covers over the edges of the tension band.

2-13. Eject lock drive arm (Fig. 2-13)

1) Remove the eject lock drive arm from the eject lock arm.

Caution when reinstalling

- Reinstall the eject lock drive arm so that pin (B) of the eject lock arm is inserted into hole (A) in the eject lock drive arm.

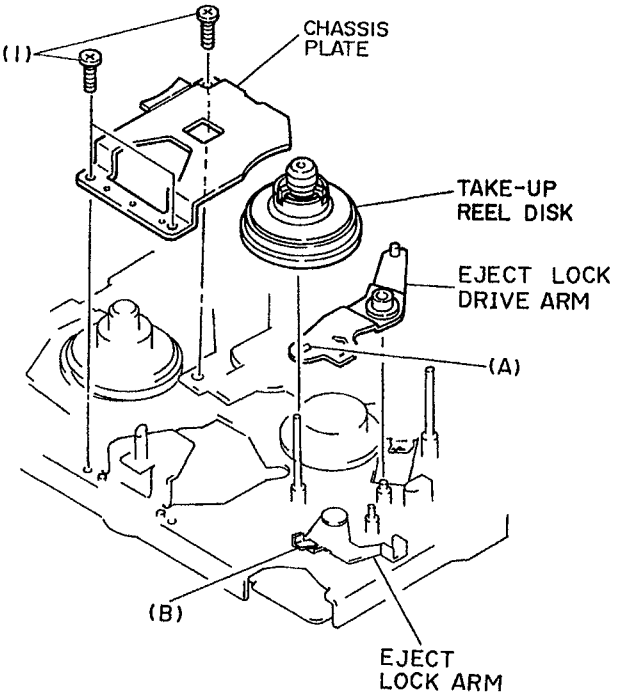


Fig. 2-13

2-14. Tension arm, tension band (Fig. 2-4)

1) Remove the tension spring.
2) Remove screw (1) holding the tension band.
3) Remove washer (2) holding the tension arm.
4) Remove the tension arm and tension band from the chassis.
5) Release two tabs (3) and remove the tension band from the tension arm.

Adjustment after reinstalling

- After reinstalling the tension arm and tension band, be sure to perform the following adjsutment.

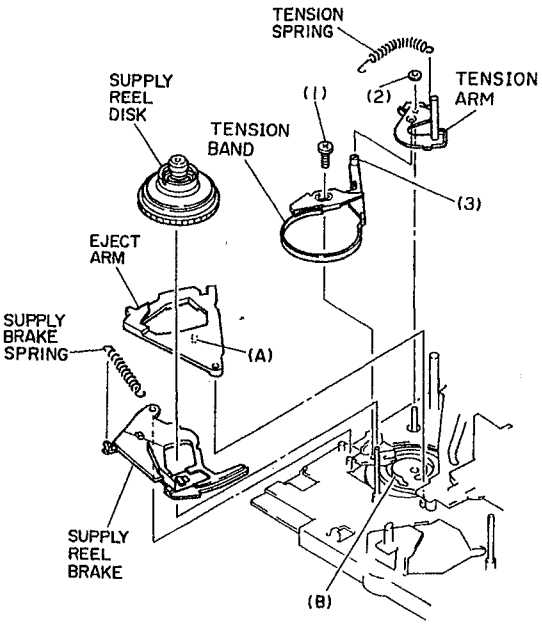
「3-1. Tension Pole Postion/Tension Torque Adjustments」 in chapter 2

2-15. Supply reel disk, eject arm, supply reel brake (Fig. 2-14)

1) Pull out the supply reel disk from the supply reel disk shaft.
2) Remove the supply brake spring.
3) Remove the eject arm and supply reel brake from the chassis.

Caution when reinstalling

- Reinstall the eject arm so that pin (A) of the arm is inserted into groove (B) in the mechanism state switch.



TENSION SPRING	12.9mm
SUPPLY BRAKE SPRING	10.8mm

Fig. 2-14

2-16. Reel drive idler (Fig. 2-15)

1) Remove the reel drive idler from the chassis in the direction of arrow (A).

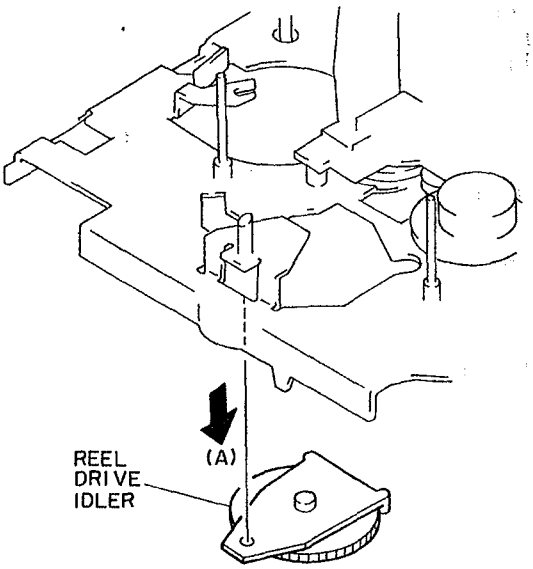


Fig. 2-15

2-17. Cylinder base (Fig. 2-16)

1) Remove three screws (1) holding the cylinder base.

2-18. Guide roller rail, supply and take-up guide roller bases. (Fig. 2-16)

1) Remove two screws (2) holding the guide roller rail.
2) Remove the guide roller rail and guide roller bases from the chassis.
3) Remove the supply guide roller base along the groove in the rail in the direction of arrow (A).
4) Remove the take-up guide roller base along the groove in the rail in the direction of arrow (B).

Adjustment after reinstalling

- After reinstalling the guide roller rail and supply and take-up guide roller bases, be sure to perform the following adjustment.

  「3-3. Supply/Take-up Guide Roller Height Adjustment」 in chapter 2

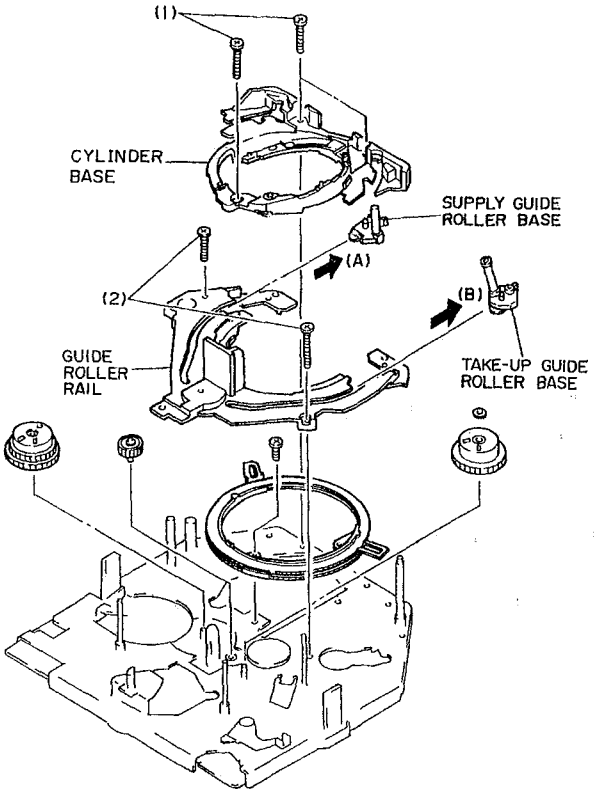


Fig. 2-16

2-19. Loading Relay gears (1)(2) (Fig. 2-17)

1) Remove the loading relay gear (2) from the chassis.
2) Remove washer (1) holding the loading gear (1).
3) Remove the loading relay gear (1) from the chassis.

Adjustment after reinstalling

- After reinstalling the loading relay gears (1) and (2), be sure to perform the following adjustment.

  「3. PHASE MATCHING IN ASSEMBLY」 in chapter 1

2-20. Loading ring, loading relay gear (3) (Fig. 2-17)

1) Remove screw (2) holding the loading ring.
2) Remove the loading ring from the chassis.
3) Remove the loading relay gear (3) from the chassis.

Adjustment after reinstalling

- After reinstalling the loading ring and loading relay gear (3), be sure to perform the following adjustment.

  「3. PHASE MATCHING IN ASSEMBLY」 in chapter 1

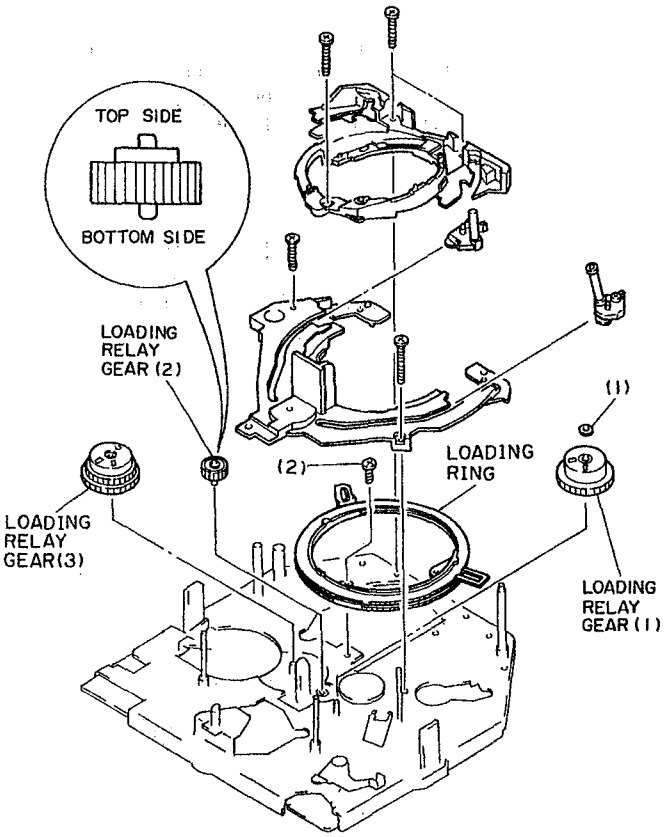


Fig. 2-17

3. PHASE MATCHING IN ASSEMBLY

Cautions

- Here, the phases of all components are aligned in the unloading/stop mode. Be sure to set the camera/recorder to the unloading/stop mode before dismantling the tape transport block.
- Be sure to check and adjust when reinstalling the mechanism state switch, loading motor, gears and loading ring.

3-1. Mechanism State Switch [Mecha. State Sw] (Fig. 3-1)

●Procedure of phase matching in assembly

1) Align mark (A) and mark (a) on the mecha. state sw and mecha. state sw case.

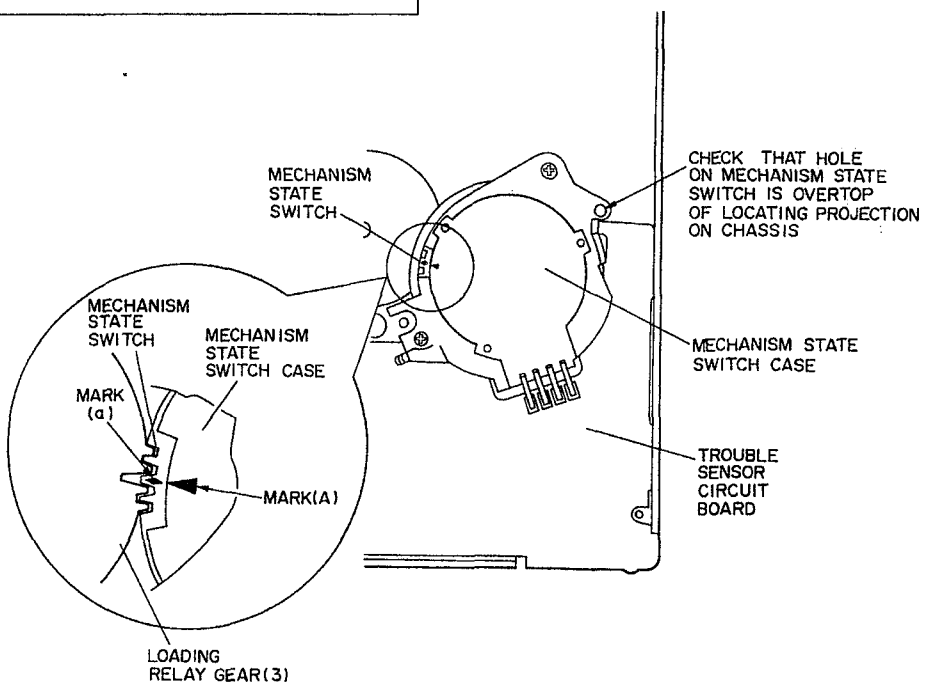


Fig. 3-1

3-2. Loading Gears and Loading Ring (Figs. 3-2, 3-3)

Caution

·Be careful that the phase of the mechanism state switch which was matched in item 3-1 does not drift.

●Procedure of phase matching in assembly

1) Align the markings of the loading ring and gears as shown in Fig. 3-2.

Caution: When reinstalling the pressure roller cam gear, set the eject lock arm to the position shown in Fig. 3-3 and check that pin (j) is inserted into groove (J) in the back of the pressure roller cam gear.

Advice: If it is difficult to see marking (D) on the lower loading ring, match the phase by the following procedure.

① Set the upper and lower loading rings to the state shown in Fig. 3-2. (Watch the guide roller fixing section.)
② Move the upper and lower loading rings so that holes (H) overlap each other.
③ If holes (H) overlap each other, the phase of the loading ring is correct.
④ If holes (K) overlap each other, the phase of the loading relay gear (4) is correct.

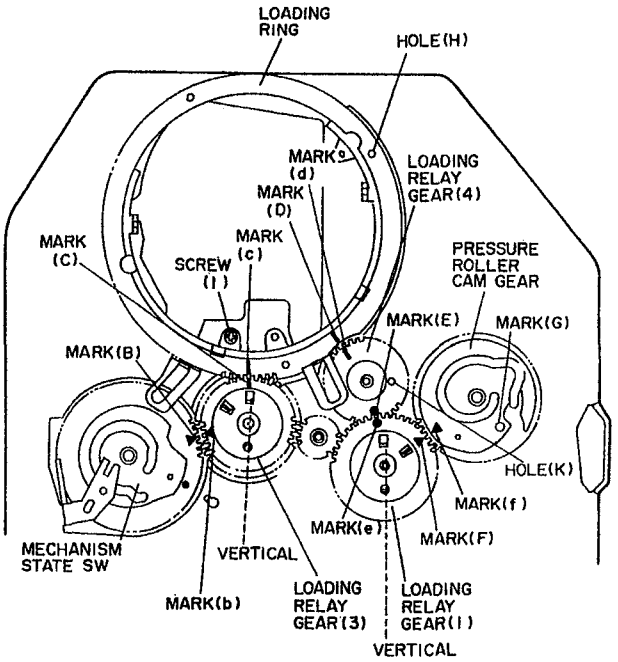


Fig. 3-2

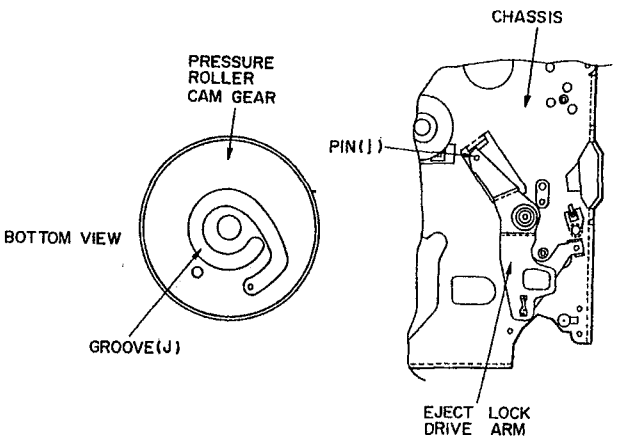


Fig. 3-3

4. PHOTOS OF MECHANISM

·Refer to these when reinstalling and perform phase matching in assembly.

4-1. Top View of Mechanism

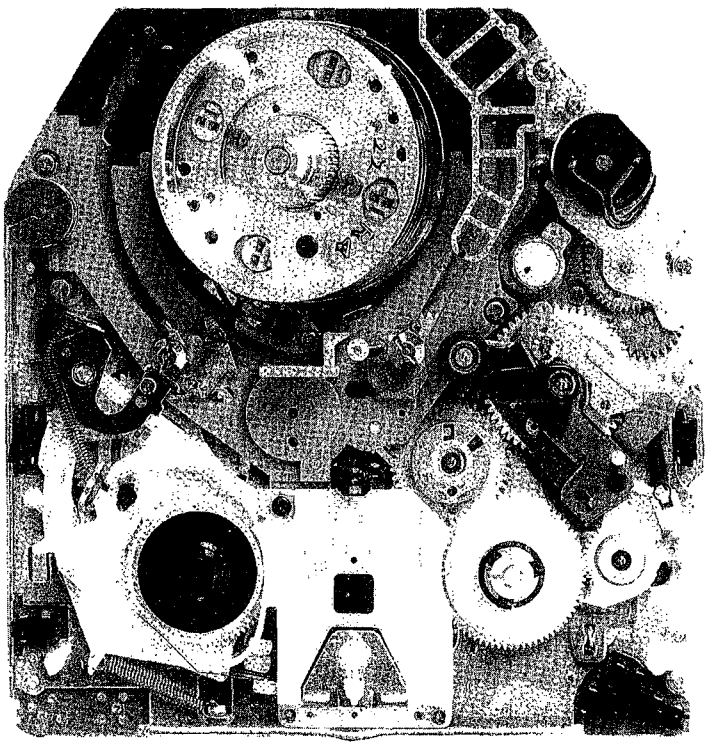


Fig. 4-1

4-2. Bottom View of Mechanism

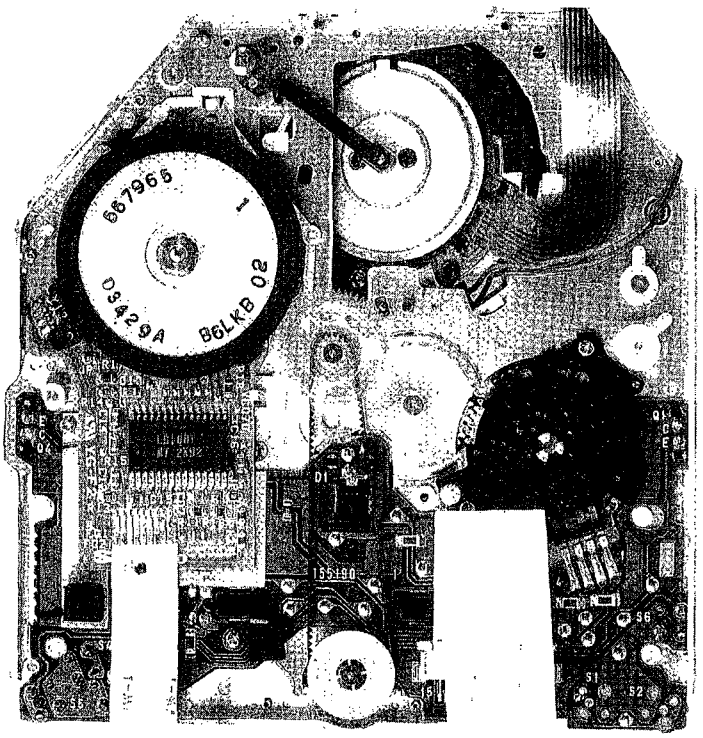
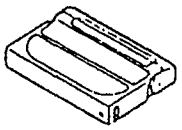


Fig. 4-2

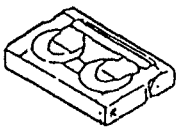
CHAPTER 2

JIGS AND TAPES FOR ADJUSTMENT

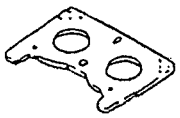
1. ALIGNMENT TAPE
   COLOR BAR/400Hz
   NTSC (20HSC-2): No.7099231
   PAL (20HSC-3): No.7099232



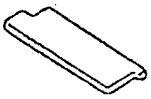
2. CASSETTE TORQUE METER
   NTSC(SRK-8T-132): No.7099235
   NTSC(SRK-8T-112): No.7099385
   PAL (SRK-8T-232): No.7099236
   PAL (SRK-8T-212): No.7099402



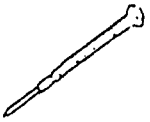
3. MASTER PLANE
   No.7099237



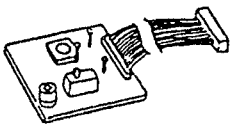
4. REEL DISK HEIGHT JIG
   No.7099238



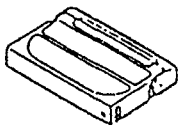
5. SPECIAL DRIVER
   No.7099239



6. ATF-R JIG (SW3:ON)
   No.7099461



★7. BLANK TAPE
   NTSC: P6-120
   PAL : P5-90

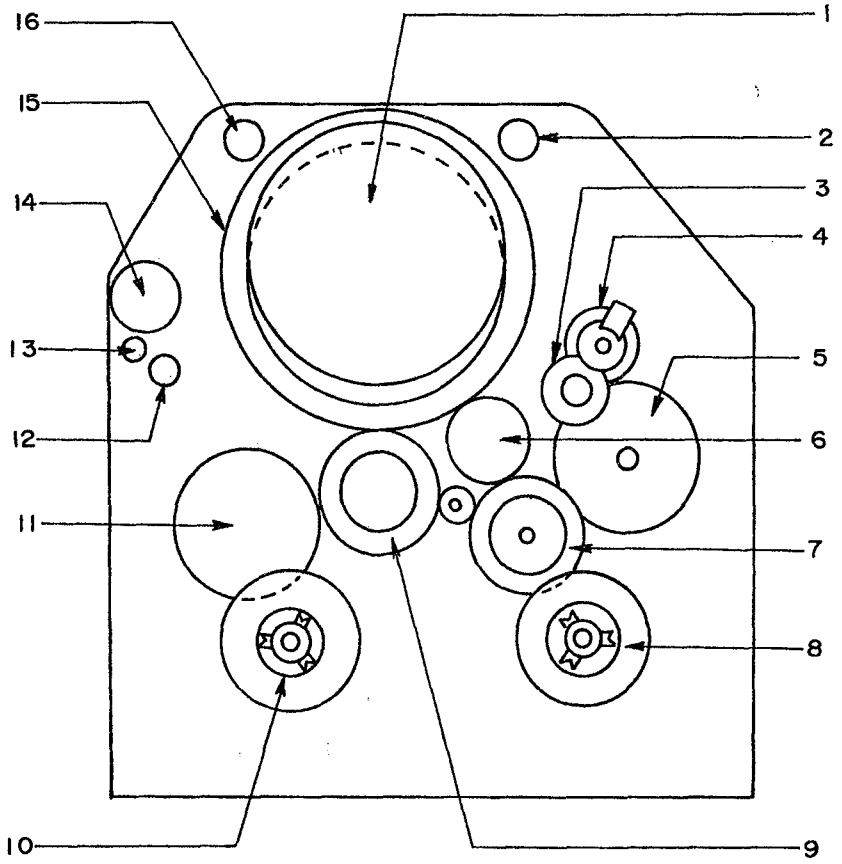


NOTE
1: Always set SW3 on the ATF-R jig to ON.
2: The ATF jig (No.7099386) can also be used in place of ATF-R jig to adjust this model.

MARKS
※ : New Jigs and tools
★ : Goods on the Market
◆ : Optional Accessory
◎ : Accessory

MECHANISM ADJUSTMENT

1. MAJOR MECHANICAL COMPONENTS



1. Cylinder
2. Take-up Guide Roller
3. Pressure Roller
4. Capstan Motor
5. Loading Cam Gear
6. Loading Relay Gear (4)
7. Loading Relay Gear (1)
8. Take-up Reel Disk
9. Loading Relay Gear (3)
10. Supply Reel Disk
11. Mechanism State Switch
12. Supply Guide Post
13. Tension Pole
14. Impedance Roller
15. Loading Ring
16. Supply Guide Roller

Fig. 1-1 Tape Transport Mechanism (Top View)

2. BEFORE STARTING ADJUSTMENT

1) Be sure to set the camera/recorder to the unloading/stop mode when dismantling the tape transport block.
2) Do not re-use washers once they have been removed.
3) Dismantle the mechanism, referring to "DISASSEMBLY" so the mechanism adjustment can be done.
4) With this camera/recorder, mechanical adjustments (tape transport system check/adjustment) can be done with the unassembled VTR block (without connecting the camera block).
5) To set the camera/recorder to the playback mode without loading a cassette, shut off the light striking the end LEDs in the chassis and press the playback button. (Shut off the light striking the end LEDs in the eject state.)

3. TAPE TRANSPORT SYSTEM CHECK/ADJUSTMENT

The tape transport system is a generic term for the path from the supply reel disk to the take-up reel disk via the cylinder. The tape transport components, especially the components which come into direct contact with the tape, should be kept clean without damage, dust or oil, etc. adhering to the contact surfaces. The tape transport system is adjusted before shipment from the factory, so perform adjustments only when components of the transport system are replaced or adjustments of the transport system have drifted.

3-1. Tension Pole Position/Tension Torque Adjustments (Fig. 3-1)

Caution

- Be sure to perform these adjustments after reinstalling the tension arm, tension band and tension spring.

Test equipment/jigs	Test equipment/jigs connection points	State of VCR	Adjustment point
		• Shut off the light striking the end LEDs and set to the playback mode without loading a cassette	• Tension band holder
• Cassette torque meter (SRK-8T-112/212)	• Load a cassette torque meter	• Set to the playback mode.	• Tension spring

●Adjustment procedure

◆Tension pole position adjustment (Fig. 3-1)

1) Hook the tension spring to position (B) of the tension supring holder.
2) Loosen screw (D) holding tension band holder (E).
3) Adjust the position of tension band holder (E) so the relationship between the hole in the tension arm and guide roller rail is as shown in Fig. 3-1.
4) Tighten screw (D).
5) Repeat playback and stop several times and check that the specification in step 3) is satisfied. If it is not satisfied, re-adjust the tension pole position.

◆Tension torque adjustment (Fig. 3-1)

1) Hook the tension spring to position (B) of the supring holder.
2) Set the tension torque on the supply side to 4.5 - 5.5 g-cm.
   If it is more than 5.6 g-cm: Move the tension spring to position (A) of the spring holder.
   If it is less than 4.4 g-cm: Move the tension spring to position (C) of the spring holder.

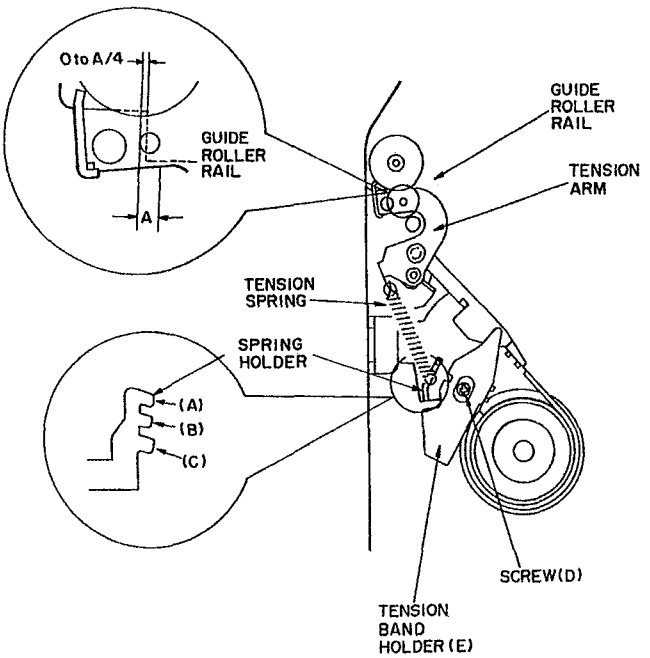


Fig. 3-1

3-2. Pull-out Pole and Impedance Roller Height Check/Adjustment (Figs. 3-2, 3-3)

Caution

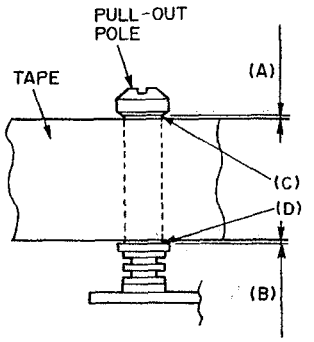
1)Be sure to check this item after reinstalling the pull-out arm and impedance roller. Basically, the pull-out pole height should not be adjusted. Adjust the pull-out height only if it is abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VCR	Adjustment point
· Blank tape · Special driver		· Load a blank tape and set to the playback mode.	· Top of pull-out pole

●Checking/adjustment procedure

◆Pull-out Pole

1)Check that the tape is running at the center of the pull-out arm. If it is not, adjust the height of the arm.
2)Set to the reverse search mode.
3)Check that the tape is running between (C) and (D) and also no curling or creasing occurs.
4)If step 3) cannot be confirmed, fine adjust the height of the pull-out arm.



(A) = (B)

Fig. 3-2

◆Impedance Roller

1)Check that there is no curling or creasing of the tape around the impedance roller. If curling or creasing occurs, check the installation of the impedance roller.

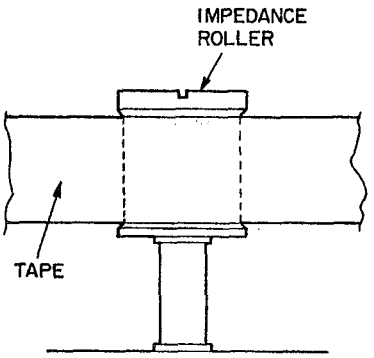


Fig. 3-3

3-3. Supply/Take-up Guide Roller Height Adjustment (Figs. 3-4, 3-5)

Caution

·Be sure to check this item after reinstalling the supply guide roller and take-up guide roller. Basically, the height of the supply/take-up guide rollers should not be adjusted. Adjust these heights only if they are abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VCR	Adjustment point
· Alignment tape · Oscilloscope · ATF-R jig · Special driver	· Test Plug on Main board · TP1(SW25/30) on ATF-R jig · TP2(GND) on ATF-R jig · TP3(FM OUT) on ATF-R jig	· Connect the ATF-R jig to test plug. · ATF-R jig (SW1: OFF, SW3: ON, RT1: mechanical center)	· Top of guide rollers

●Adjustment procedure

Caution: Before performing this adjustment, refer to Fig. 6-1 and modify the ATF-R jig. Connect the ATF-R jig before suppling power.

1) Load an alignment tape that has been completely rewound. Press the PLAY button and hold it, then set the POWER switch to VIDEO position.
2) Connect an oscilloscope to TP3 on the ATF-R jig.
3) Synchronize the oscilloscope with TP1 (SW25/30) on the ATF-R jig.
4) Set the osilloscope to (+) slope.

◆Supply Guide Roller (Fig. 3-4)

5) Press SW2 on the ATF-R jig and hold it, then perform the following steps.
6) Adjust the height of the supply guide roller so the waveform is flat.
7) Adjust the voltage level control of the oscilloscope so that portion (A) of the waveform is set to 4 graduations.
8) Set SW1 on the ATF-R jig to ON.
9) Turn RT1 on the ATF-R jig counterclockwise so that portion (A) of the waveform is set to 3 graduation.
10) Adjust the height of the supply guide roller so minimum amplitude of the waveform is set to NTSC:2.3±0.3/PAL:2.5±0.3 graduations.

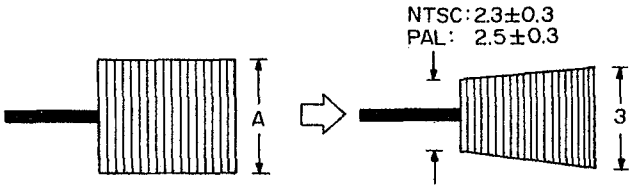


Fig. 3-4

◆Take-up Guide Roller (Fig. 3-5)

11) Set the oscilloscope to (-) slope.
12) Adjust the voltage level control of the oscilloscope so that portion (B) of the waveform is set to 4 graduarions.
13) Turn RT1 on the ATF-R jig counterclockwise so that portion (B) of the waveform is set to 3 graduations.
14) Adjust the height of the take-up guide roller so the minimum amplitude of the waveform is set to NTSC:2.5±0.3/PAL:2.3±0.3 graduations.

Caution: After adjustment is completed, be sure to reverse the modification to ATF-R jig.

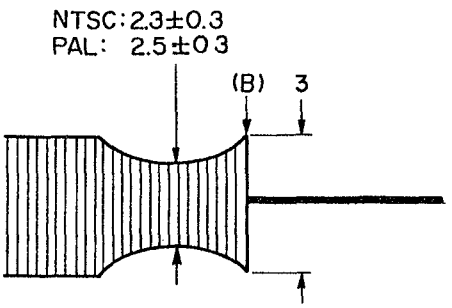


Fig. 3-5

4. ADJUSTMENT AFTER REPLACING THE CYLINDER (Figs. 4-1, 4-2)

When the cylinder is replaced, the height relative to the guide roller drifts, therefore the tape transport system and servo circuit should be adjusted. Check and adjust in the following order.

Test equipment/jigs	Test equipment/jigs connection points	State of VCR	Adjustment point
· Alignment tape · Oscilloscope · ATF-R jig · Special driver	· Test Plug on Main board · TP1(SW25/30) on ATF-R jig · TP2(GND) on ATF-R jig · TP3(FM OUT) on ATF-R jig	· Connect the ATF-R jig to test plug. · ATF-R jig (SW1: OFF, SW3: ON, RT1: mechanical center)	· Top of guide rollers

●Adjustment procedure

Caution: Before performing this adjustment, refer to Fig. 6-1 and modify the ATF-R jig.

1) Load an alignment tape that has been completely rewound. Press the PLAY button and hold it, then set the POWER switch to the VIDEO position.
2) Connect an oscilloscope to TP3 on the ATF-R jig.
3) Syncronise the oscilloscope with TP1(SW25/30) on the ATF-R jig.
4) Set the oscilloscope to (+) slope.
5) Press SW2 on the ATF-R jig and hold it, then perform the following steps.
6) Adjust the voltage level control of the oscilloscope so that portion (A) of the waveform is set to 4 graduations.
7) Set SW1 on the ATF-R jig to ON.
8) Turn RT1 on the ATF-R jig counterclockwise so that portion (A) of the waveform is set to 3 graduations.
9) Adjust the height of the supply guide roller so the minimum amplitude of the waveform is set to NTSC:2.3±0.3/PAL:2.5±0.3 graduations. (See Fig. 4-1)
10) If this cannot be confirmed, adjust the height of the supply guide roller, referring to "3-3. Supply/Take-up Guide Roller Height Adjustment".
11) Set the osilloscope to (-) slope.
12) Turn RT1 on the ATF-R jig so that portion (B) of the waveform is set to 3 graduations.
13) Check that the minimum amplitude of the waveform is set to NTSC:2.3±0.3/PAL:2.5±0.3 graduations. (See Fig.4-2)
If this cannot be confirmed, adjust the height of the take-up guide roller, referring to "3-3. Supply/Take-up Guide Roller Height Adjustment".
14) Perform the following electrical adjustments.
·Head switching point adjustment
·Record luminance/chroma level adjustment

Caution: After adjustment is complete, be sure to reverse the modification to ATF-R jig.

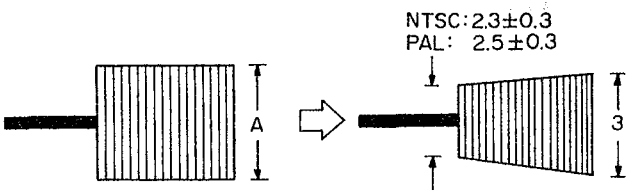


Fig. 4-1

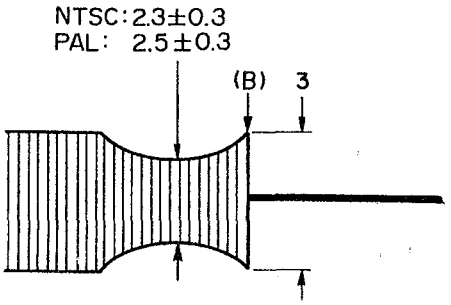


Fig. 4-2

5. CHECKING THE TORQUE

There are two types of cassette torque meter.
Choose the applicable one for the measurement to be performed.

Item	VCR mode	Measured reel disk	Torque value	Torque cassette used
Take-up torque	Playback	Take-up	7-13 g-cm	SRK-8T-212 SRK-8T-232
Rewind torque	Reverse search	Supply	25-37 g-cm	SRK-8T-232
Take-up brake torque	Reverse search to stop	Take-up	10 g-cm ro more	SRK-8T-212 SRK-8T-232
Slack removal torque	Unloading	Supply	25-37 g-cm	SRK-8T-232

6. MODIFICATION TO ATF-R JIG (Fig. 6-1)

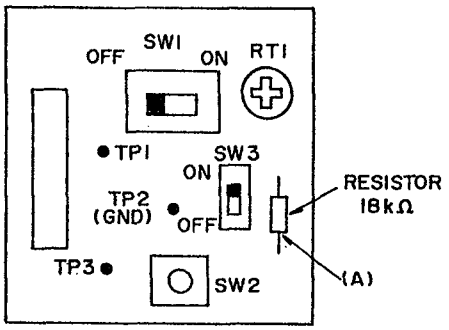
Caution: The ATF-R jig must be modified for the following adjustments.
After completing these, be sure to reverse the modification.
- 3-3. Supply/Take-up Guide Roller Height Adjustment
- 4. ADJUSTMENT AFTER REPLACING THE CYLINDER

●Procedure

1) Short terminal (A) of the resistor and TP2 (GND) on the ATF-R jig.

Note: This modification makes SW2 on the ATF-R jig a PCM area observation switch.

Caution: Use a shorting clip, etc. to short the parts; this can be removed easily after adjustment is completed.
A modification is also necessary in the same way when the ATF jig is used.



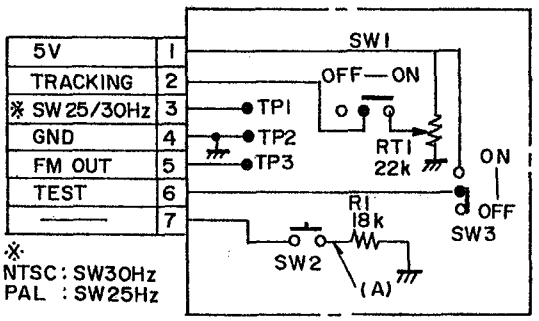


Fig. 6-1

MAINTENANCE/INSPECTION PROCEDURE

1. Required Maintenance

The recording density of a VCR is much higher than that of an audio tape recorder. VCR components must be very precise to ensure compatible with other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective.
To ensure a good picture, periodic inspection and maintenance, including replacement of worn-out parts and lubrications, is necessary.

2. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR, and the environment in which the VCR is used. But, in general home use, a good picture will be maintained if the inspection and maintenance is done every 500 hours. Table 1 shows the relation between time used per day and inspection period.

Table 1

Average hours used per day	When inspection is necessary: About 6 months	About 9 months	About 18 months
One hour	↓	↓	↓
Two hours	↓	↓	
Three hours	↓		

3. Check before starting Repairs

The faults occurring in the playback picture as shown in Table 2 can be remedied by cleaning and oiling. Check the need for lubrication and the conditions of cleanliness in the unit.
Check with the customer to find out how often the unit is used. If from that you determine that the unit is ready for inspection and maintenance, check the parts shown in Table 2.

Table 2

Phenomenon	Inspection Location
Poor S/N, no color	Dirt on video head or worn video head
Tape does not run or tape is slack	Dirt on pressure roller, cylinder or in tape transport system
Vertical jitter	Dirt on video head or in tape transport system
Low volume or sound distorted	Dirt on video head or worn video head

4. Tools Needed for Inspection and Maintenance

(1) Head cleaning kit
(2) VCR oil and grease (Table 3)
(3) Alcohol.
(4) Gauze
(5) Cleaning tape [Maxell 8M-CL MCA (dry type)]

Table 3 Locations for Greasing and Oiling

Name	Oil or Greasing Location
Sonic Slidas Oil (#1600)	Oil low-speed rotating sections
Froil (G31-SA)	Lubricate metal or molded section under light load
Molicoat (PG-641)	Lubricate metal or molded sections under light load
Lock paint	Fix adjustment screws and nuts.

5. Maintenance Procedures

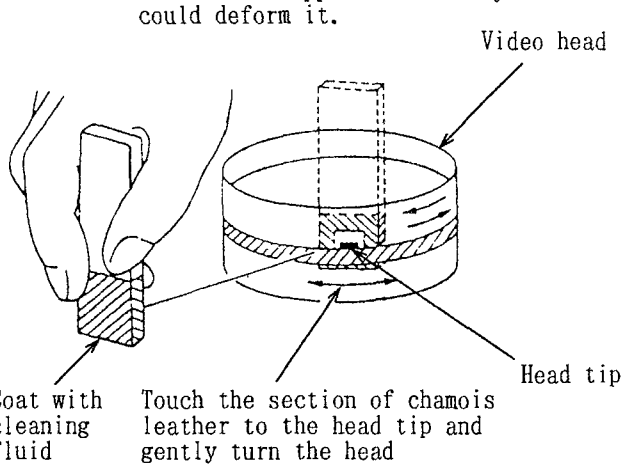
5-1 Cleaning

(1) Cleaning video head

First use a cleaning tape. Be sure to use the specified cleaning tape and read its instruction sheet carefully before using it. If dirt on head is too stubborn to remove by tape, use the cleaning kit. Moisten the cleaning stick with cleaning fluid at the point indicated.
Touch the stick to the head tip and gently turn the head (rotating cylinder) to the right and left. (Do not move the stick vertically and make sure that only the chamois leather on the stick comes into contact with the head. Otherwise, the head may be damaged.) Thoroughly dry the head. Then test run a tape.
If cleaning fluid remains on the video head, the tape may be damaged when it comes into contact with the head surface.

(2) Cleaning the tape transport system and drive system, etc.

Wipe with gauze moistened with alcohol.
Notes: 1) The tape transport system is the system which comes into contact with the running tape. The drive system consists of those parts which run the tape.
2) Make sure that during cleaning you do not touch the tape transport system with the tip of a screwdriver and that no force is applied to the system that could deform it.



5-2 Lubrication

(1) Guide lines for lubricating with oil

Use the oiler to apply one or two drop of Sonic Slidas oil. Make sure not to use too mach oil because it may spill over or leak out coming into contact with rotating parts and causing slippage or other problems. If too much oil is applied, wipe clean with alchohol.

(2) Periodic oil lubrication

Lubricate the specified locations only when replacing components. Refer to the exploded views for the lubricating locations.

5-3 Greasing

(1) Greasing guidelines

Apply grease Froil or Molicoat, with a stick or brush. DO not use excess grease. It may come into contact with the tape transport or drive system. Wipe any excess and clean with gauze moistend with alcohol.

(2) Periodic greasing

Grease the specified locations only when replacing components. Refer to the exploded views for the greasing locations.

Table 4 Parts to be Maintained/Inspected and Maintenance/Inspection Schedules

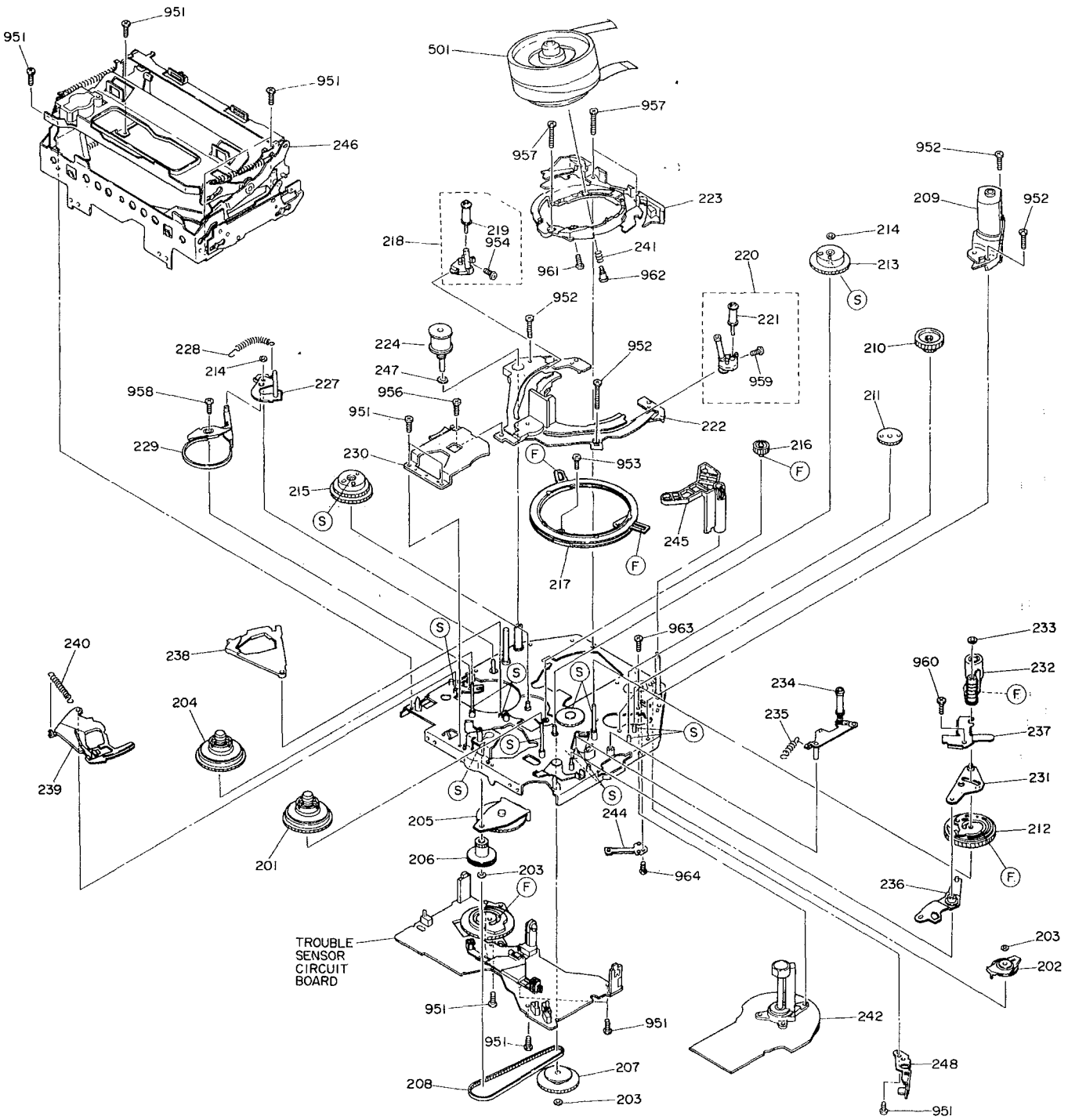
Caution: The following table does not apply to all units. The maintenance/inspection schedules depend on how the unit is used and the environment in which it is used.

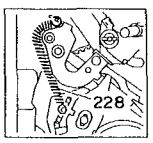
Component \ Hours	500	1000	1500	2000	2500	3000
Video heads (cylinder assembly)	C	C/R	C	C/R	C	C/R
Supply guide roller	C	C	C	C	C	C
Supply guide pole	C	C	C	C	C	C
Take-up guide roller	C	C	C	C	C	C
Pull-out pole	C	C	C	C	C	C
Tension pole	C	C	C	C	C	C
Tension band		R		R		R
Supply reel disk	C	C	C	C/R	C	C
Take-up reel disk	C	C	C	C/R	C	C
Pressure roller	C	C	C	C/R	C	C
Impedance roller	C	C	C	C	C	C
Capstan belt				R		
Reel drive idler				R		
Capstan shaft (capstan motor)	C	C	C	C/R	C	C
Loading motor				R		

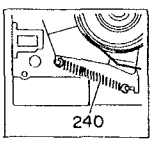
C : Cleaning

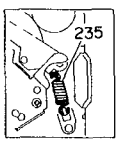
R : Parts replacing

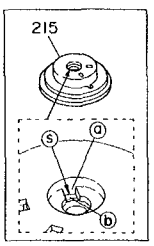
EXPLODED VIEW

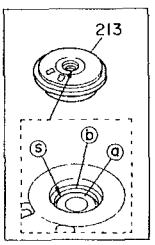












NOTE: If you change the Loading Relay Gears, please use oiler to apply Sonic Slidas oil between ⓐ to ⓑ If oil is not applied, Loading Relay Gears will be locked

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