

4. The upper cylinder unit can be reinstalled by reversing the removal procedure, however, when the upper cylinder is reinstalling, be extremely carefull so that white portion of C. Board of the upper cylinder correctly matches the white portion of the bottom cylinder as shown below.

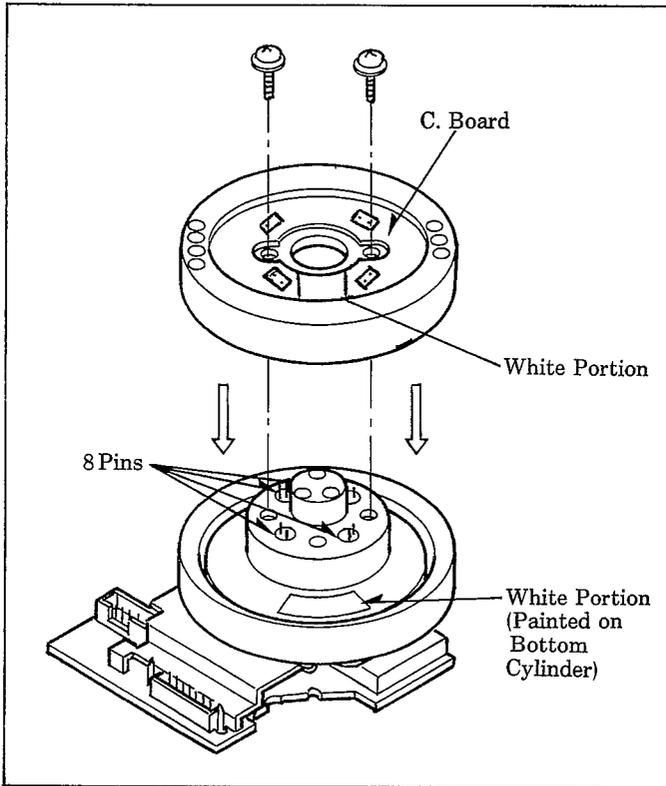


Fig. D16

**Note:**

1. If the Upper Cylinder Unit is reversely installed, no colour would appear when playing back a pre-recorded tape.
2. Do not loosen the 3 small screws on the top of the cylinder as shown below. If these 3 screws are loosend, Cylinder motor is broken and not restored.

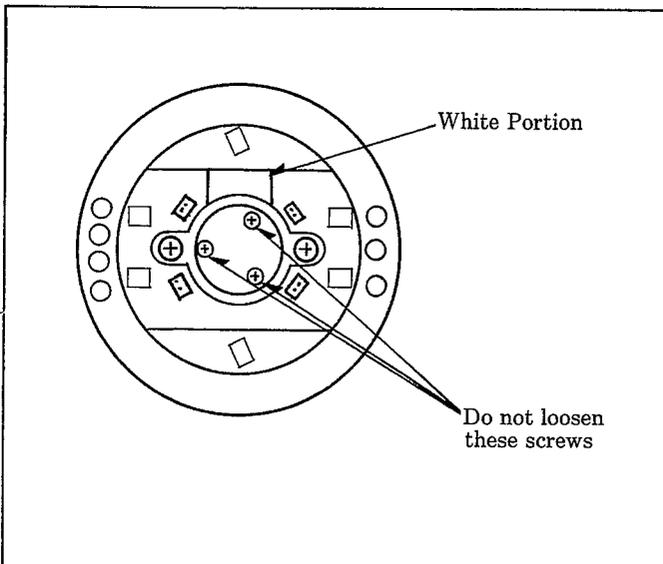


Fig. D17

## 2-3. MECHANICAL ADJUSTMENT PROCEDURES

### 2-3-1. TENSION ADJUSTMENT OF TIMING BELT

**(Equipment Required)**

Fan Type Tension Gauge (VFK62)

**(Specification)** 40  $\pm$  5g

1. Loosen a screw (A) slightly by using the screwdriver.
2. Set the Fan Type Tension Gauge to the direction indicated by the arrow (B) as shown in Fig. M1.
3. Tighten a screw (A) when the reading of the Fan Type Tension Gauge becomes within 40  $\pm$  5g.

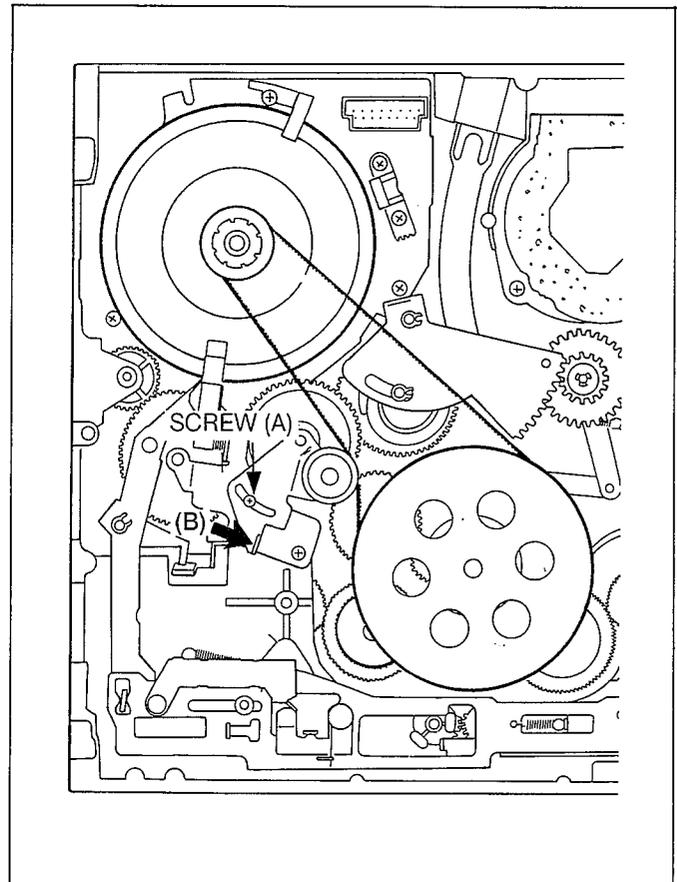


Fig. M1

### 2-3-2. POSITION ADJUSTMENT OF TENSION POST

**(Equipment Required)**

Tension Post Adjustment Plate (VFK0387)

Hex. Wrench : 2mm (Hex Wrench Set : VFK0326)

1. Disconnect the AC plug.
2. Remove the cassette compartment and disconnect the flexible (flat) cable from P1503.
3. Turn the Capstan Motor to the clockwise while the change lever is being pushed until the loading is completed as shown in Fig. M2.

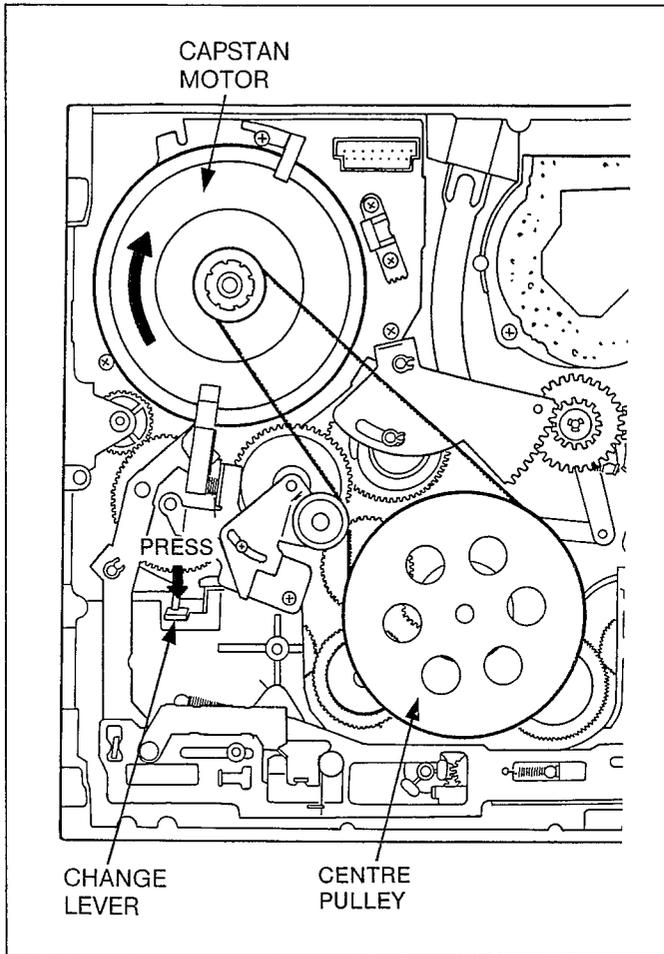


Fig. M2

4. Place the Adjustment Plate and insert the hex wrench into the hole of Tension Band Fastener as shown in Fig. M3.
5. Adjust the hole of Tension Band Fastener by using the hex wrench so that the Tension Post just touches the fixture of Adjustment Plate.
6. After the Adjustment, turn the Capstan Motor until the unloading is completed.

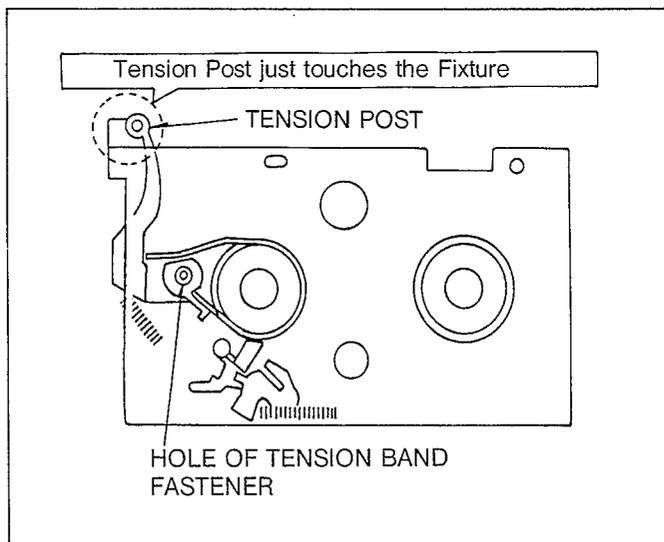


Fig. M3

Note:  
When you assemble cassette compartment, refer to item 2-4-10 Reinstallation of Cassette Compartment.

### 2-3.3. MEASUREMENT AND ADJUSTMENT OF BACK TENSION

#### (Equipment Required)

Back Tension Meter (Tentelometer or VFK0132)  
VHS Cassette Tape (120 minutes tape)

(Specification) 20~25g

1. Playback the cassette tape from the beginning and wait until the tape movement get the stabilization. (for approx. 10~20 seconds)
2. Insert the Back Tension Meter into the path of a tape, and measure the back tension to be within specification as shown in Fig. M4.

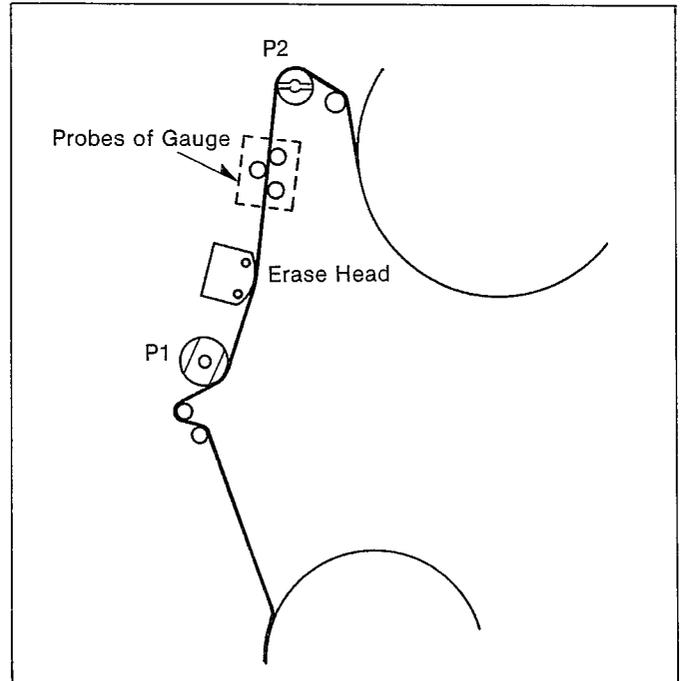


Fig. M4 Measurement of Back Tension

#### Note:

1. While measuring, make sure that the three probes of the meter are all in good contact with the tape.
2. As the tension meter is very sensitive, we recommend taking 3 separate readings.
3. If it is out of specification, change the spring notch as shown in Fig. M5.

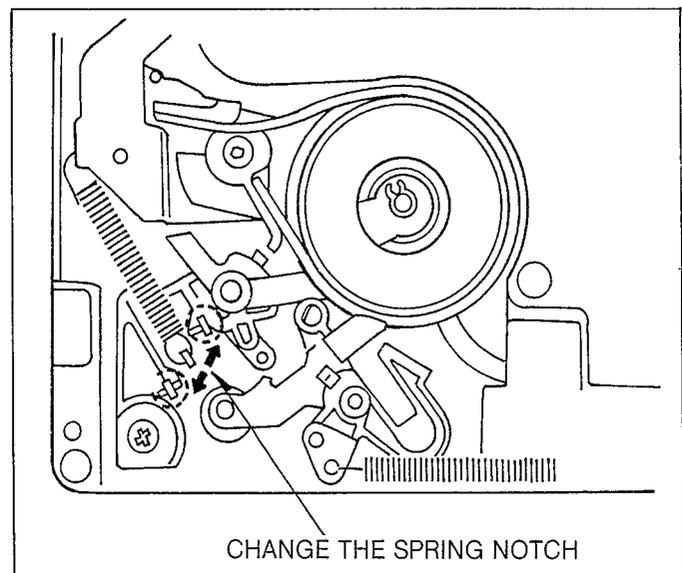


Fig. M5

### 2-3-4. HEIGHT ADJUSTMENT OF THE REEL TABLES

**(Equipment Required)**

Post Adjustment Plate (VFK0191/Tool Kit:VFK0283)  
 Reel Table Height Gauge(VFK0190)

**(Specification)** 0~0.2mm

1. Remove the cassette compartment.
2. Place the Post Adjustment Plate on the reel tables.
3. Place the Reel Table Height Gauge on the plate so that the scraper of the gauge touches the cut-out portion of the plate, then set the gauge to zero "0" as shown in Fig. M6.

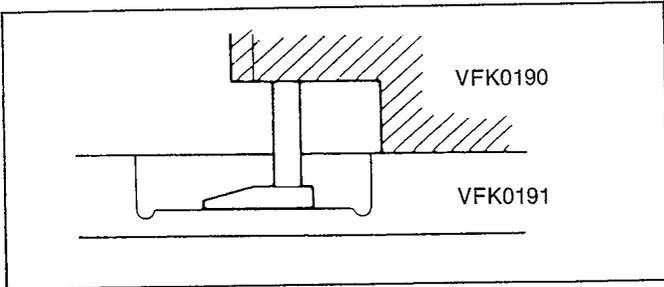


Fig. M6 Adjustment of Reel Table Height-(1)

4. Measure the meter indication of top surface or reel table as shown in Fig. M7. And then perform the same measurement and confirmation for the other reel table.

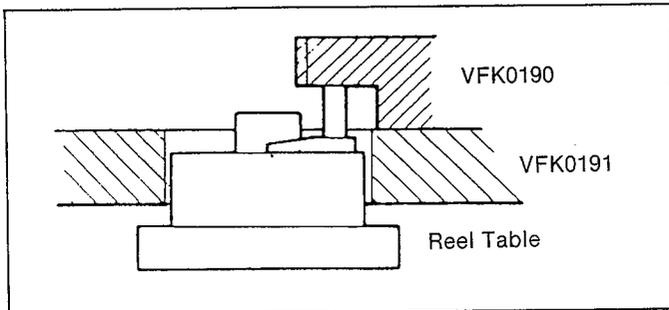


Fig. M7 Adjustment of Reel Table Height-(2)

5. If the difference is more than 0.2mm higher or lower, replace the poly-slider washer located under the reel table with one of the appropriate thickness. Poly-slider washers are available in thickness of 0.13mm, 0.25mm and 0.5mm.

Thickness	Washer	Part No.
0.13mm		XWXV3Z6
0.25mm		XWXV3A6
0.5mm		VMX1171

Fig. M8

**Note:**

If you use 0.13mm or 0.25mm washers, put these (0.13mm or 0.25mm) washers under the 0.5mm washer (Put these washers on the chassis)

### 2-3-5. ADJUSTMENT OF THE CAPSTAN THRUST GAP

**(Equipment Required)**

Reel Table Height Gauge (VFK0190)  
 Height Adjustment Jig (VFK0344/Tool Kit:VFK0283)

**(Specification)** 0.5 ~ 0.55mm

1. Turn a Thrust Adjust Screw slightly until the capstan rotor unit just touches the coil of the capstan stator unit.

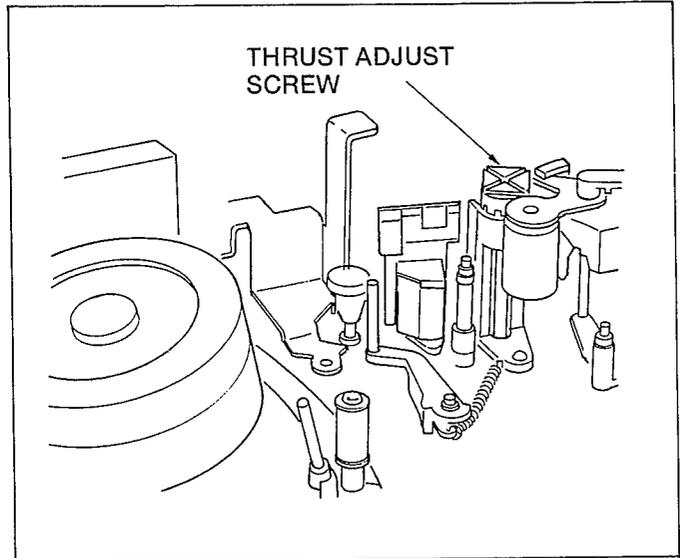


Fig. M9

2. Set the height adjustment Jig on the capstan Rotor unit.
3. Place the height gauge on the bottom case unit and set the height gauge to zero "0".

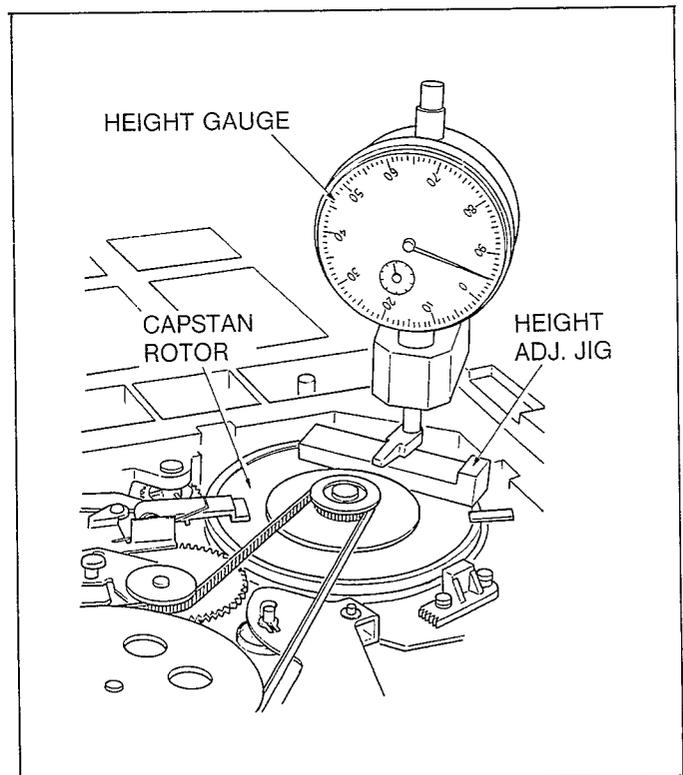


Fig. M10

- Adjust a Thrust Adjust Screw so that the thrust gap becomes  $0.5 \sim 0.55\text{mm}$ .

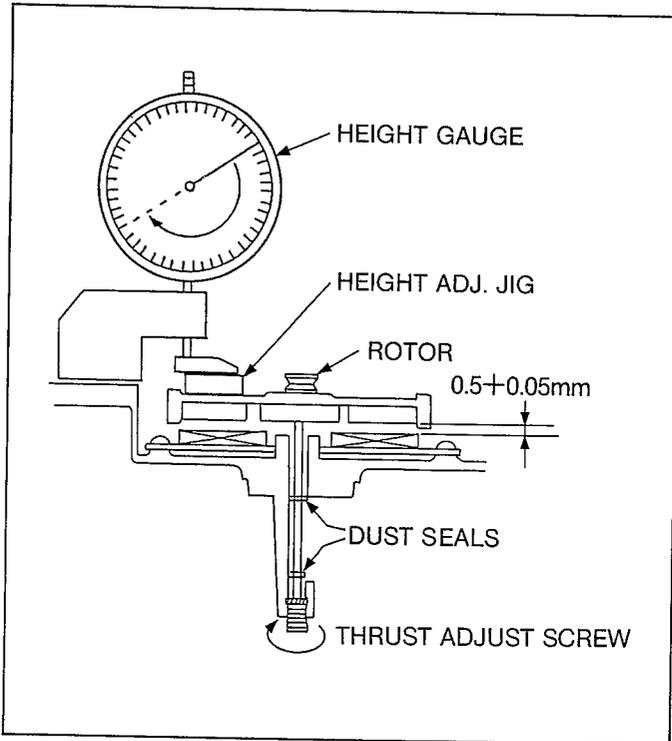


Fig. M11

#### 2-3-6. HEIGHT ADJUSTMENT OF TAPE GUIDE POST (P2 AND P3)

##### (Equipment Required)

Post Adjustment Plate (VFK0191/Tool Kit: VFK0283)  
 Reel Table Height Gauge (VFK0190)  
 Post Adjustment Screwdriver (VFK0329/Tool Kit: VFK0283)

- Remove the cassette compartment.
- Place the Post Adjustment Plate over the reel tables. Confirm that the Post Adjustment Plate is firmly seated as shown in Fig. M12.

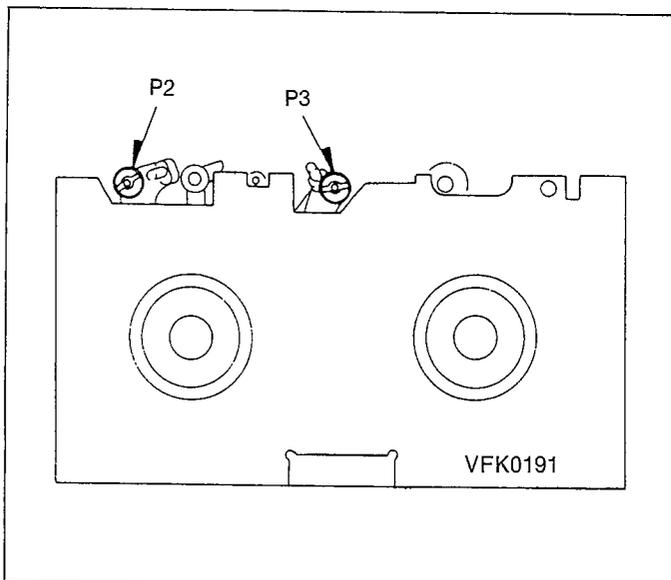


Fig. M12

- Lower 2 tape guide posts (P2 and P3) by turning the Post Adjustment screwdriver so that the condition of height becomes as shown in Fig. M13. That is, the lower edge of Tape guide should be lower than surface of Adjustment Plate.

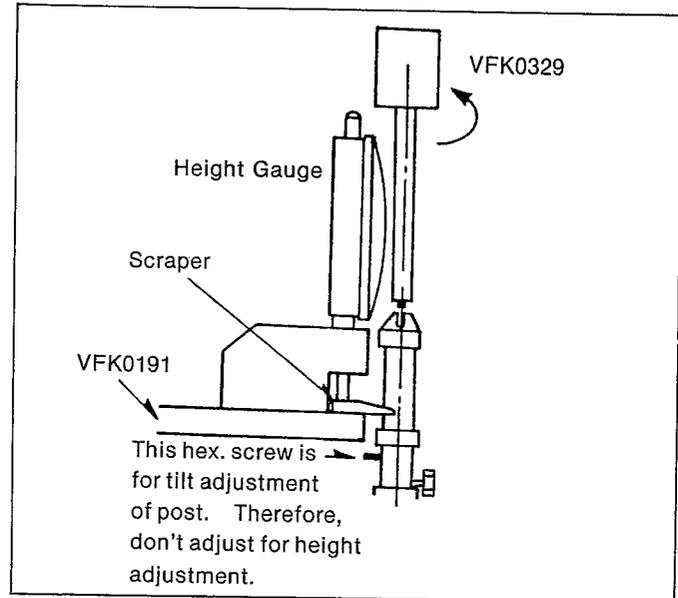


Fig. M13

- Place the scraper of Reel Table Height Gauge as shown in Fig. M14.

Set the gauge to zero, then raise the post slowly until the lower tape guide just touches the bottom of the scraper. Use the gauge to determine the exact point at which the lower tape guide touches the scraper.

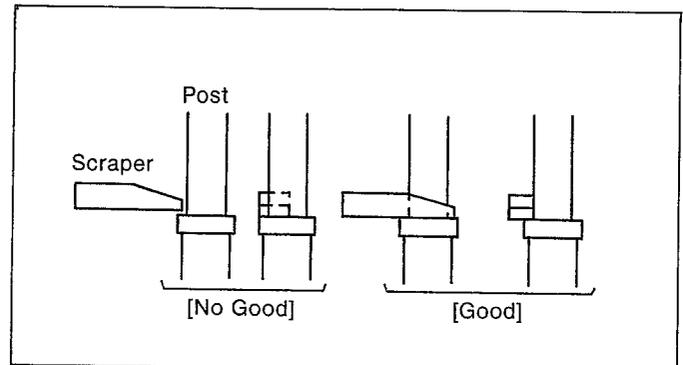


Fig. M14

##### Note:

After the adjustment, install the cassette compartment referring the item 2-4-10 Reinstallation of cassette compartment.

#### 2-3-7. HEIGHT ADJUSTMENT OF THE PULL-OUT POST (P5 POST)

##### (Equipment Required)

Post Adjustment Plate (VFK0191/Tool Kit: VFK0283)  
 Reel Table Height Gauge (VFK0190)  
 Nut Driver (Purchase locally)

(Specification)  $-0.06 \pm 0.01\text{mm}$

Note:

Unless the replacement or adjustment of this post is required, the adjustment nut should not be turned.

1. Remove the cassette compartment.
2. Place the Post Adjustment Plate over the reel tables.
3. Turn the Capstan Motor to counterclockwise (loading direction) until the mechanical condition becomes as shown in Fig. M15.

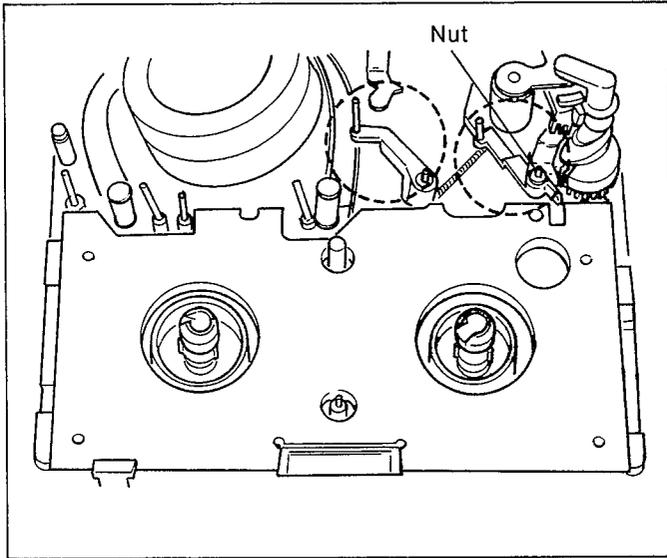


Fig. M15

4. Place the Reel Table Height Gauge on the Post Adjustment Plate and set the gauge to zero "0" as shown in Fig. M16.

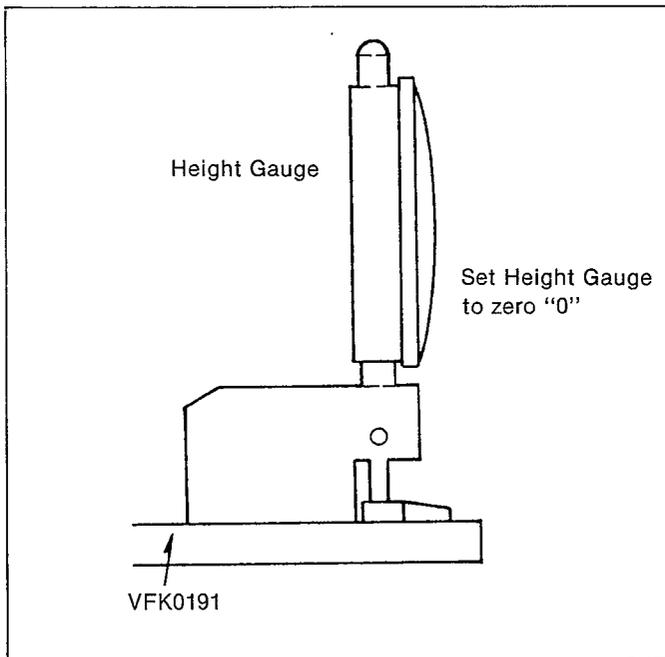


Fig. M16

5. Place the Reel Table Height Gauge as shown in Fig. M17 and turn the nut slowly until the gauge reads  $-0.06 \pm 0.01\text{mm}$ .

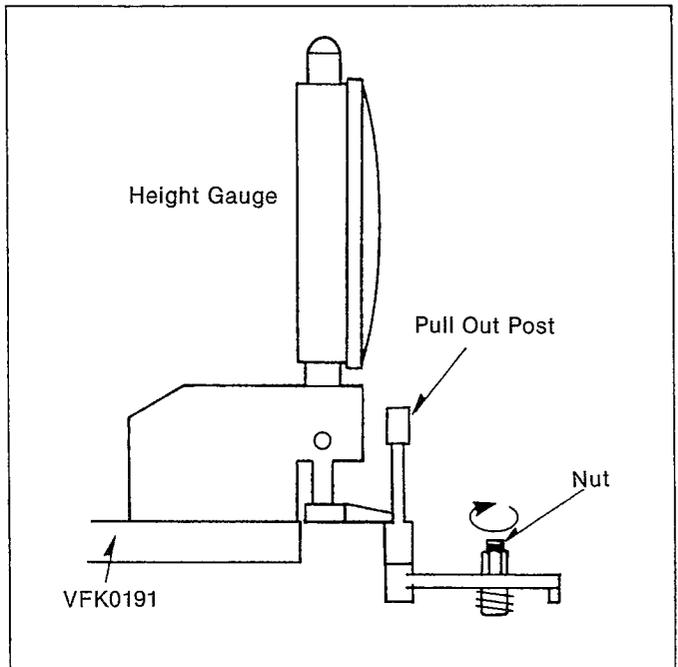


Fig. M17

6. After the adjustment, install the cassette compartment. (Refer to 2-4-10 Reinstallation of Cassette Compartment).
7. Play back a normal cassette tape and make sure that the edges of the tape are not curling at the bottom or top end of the posts P1, P2, P3, P4 and pull out post as shown in Fig. M18.

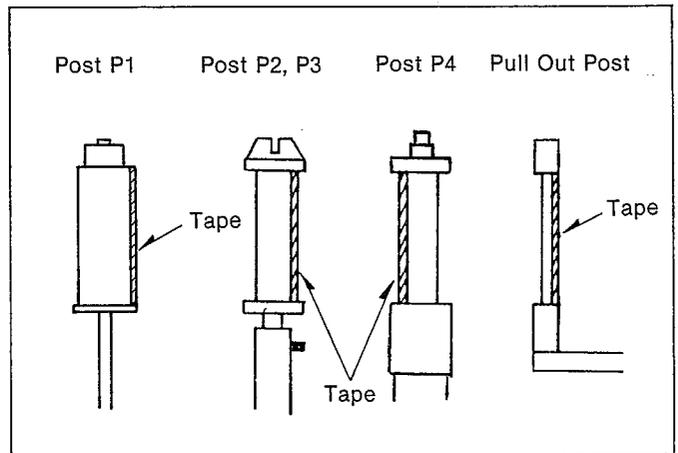


Fig. M18

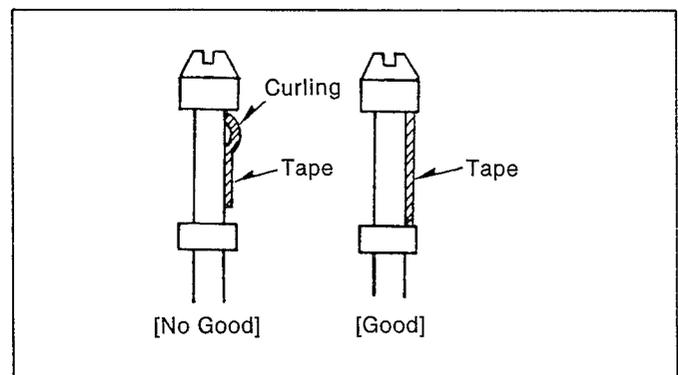


Fig. M19

8. If curling appears, readjusts each post(except P1,P4).

### 2-3-8. TAPE INTERCHANGEABILITY ADJUSTMENT

Note:

Proceed the following procedures for Tape Interchangeability Adjustment to do it Correctly and Smoothly.

- A. Confirmation and Adjustment of P2 and P3 Posts.
- B. Tilt Adjustment of A/C Head.
- C. Height Adjustment of A/C Head.
- D. Azimuth Adjustment of A/C Head.
- E. Horizontal Position of A/C Head.

If the Tape Interchangeability Adjustment is not perfect, repeat the above procedures from A to E.

#### A. Confirmation and Adjustment of P2 and P3 Posts

##### (Equipment Required)

Alignment Tape (VFJ8125H3F)  
Post Adjustment Screwdriver (VFK0329/Tool Kit : VFK0283)

1. Set the tracking control into the fix position. And connect the oscilloscope to the output of the Head Amp as shown in Fig. M20.

Note:

To get a stable waveform of the Head Amp output on the oscilloscope, use the head switching pulse as a triggering signal as shown in Fig. M20

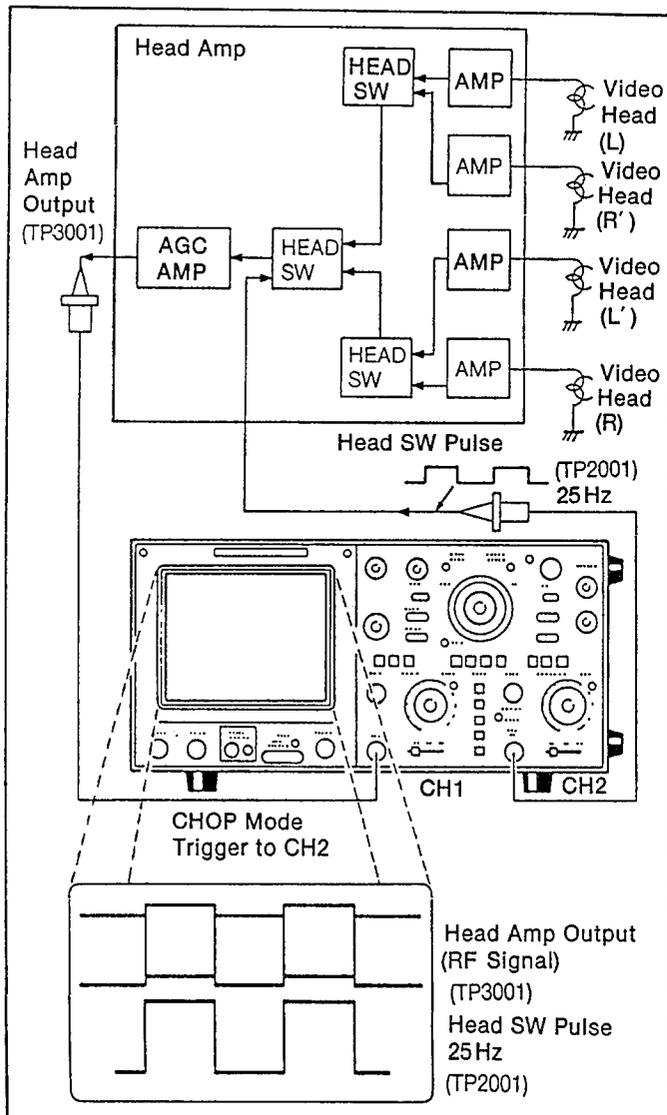


Fig. M20 Connection of Oscilloscope

2. Play back the alignment tape (VFJ8125H3F).
3. If the RF envelope appears like example "A" or "B" in Fig. M21 then adjustment of the tape guide post (P2 : Entrance) is necessary.
4. Adjust the tape guide post (P2) with the post adjustment screwdriver so that the RF envelope waveform at the entrance portion becomes flat as shown in Fig. M21-"C".

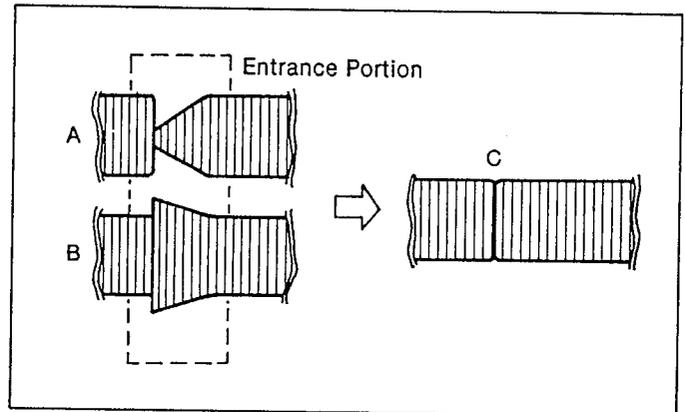


Fig. M21

5. If the RF envelope appears like example "D" or "E" in Fig. M22, then adjustment of the tape guide post (P3:Exit) is necessary.
6. Adjust the tape guide post (P3) in the same manner as the P2 post so that the exit portion becomes flat as shown in Fig. M22-"F".

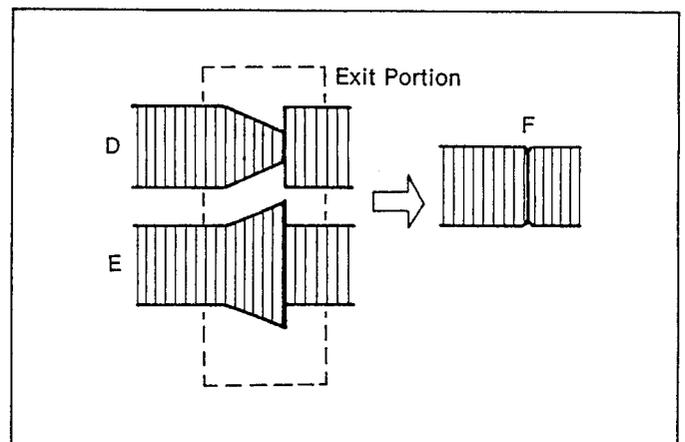


Fig. M22

7. Turn the Tracking VR fully clockwise and counter clockwise. The output envelop should vary nearly parallel with other condition as shown in Fig. M23.
8. Turn the Tracking VR into centre fix position and adjust for maximum RF envelope. If the RF envelope does not meet these specifications,  $V1/V \geq 0.7$ ,  $V2/V \geq 0.8$ , then repeat steps 1-8 again.

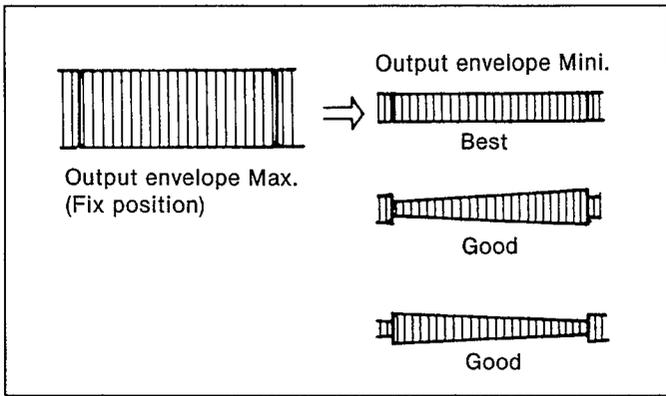


Fig. M23

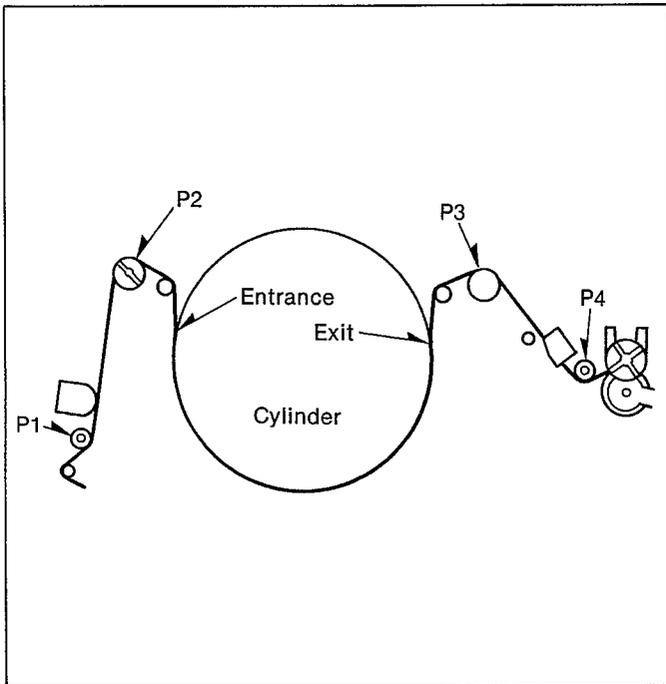


Fig. M24 Loading Position of Posts

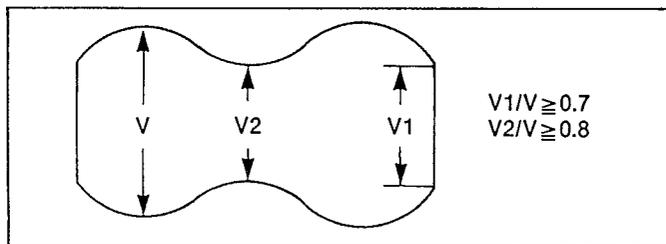


Fig. M25 Spec. of Envelope Figure

### B. Tilt Adjustment of A/C Head

Note:

This procedure should be performed after replacing the A/C HEAD and pressure roller.

Playback the beginning portion of blank cassette tape and confirm that the tape runs between lower and upper limiter of P4 post. If there is waving or frilling in the lower edge or top edge of the tape, correct the tilt of the A/C head by turning the screw (B) located behind the A/C head.

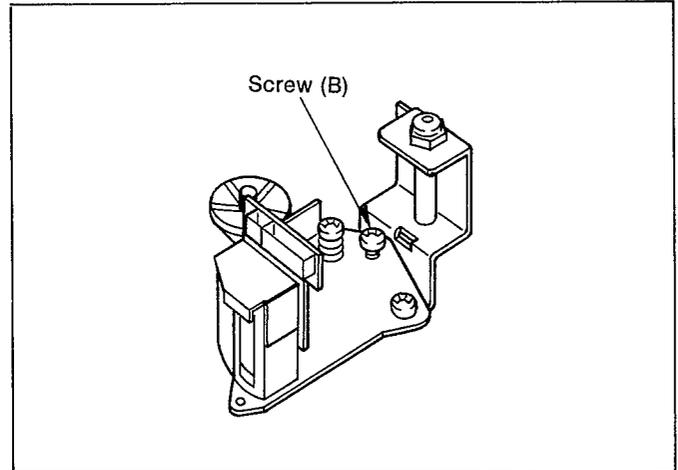


Fig. M26

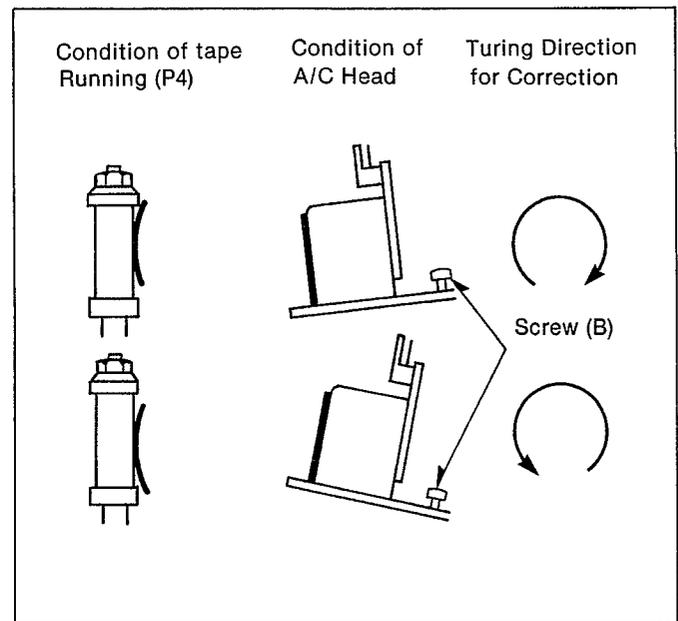


Fig. M27

Note:

After Tilt adjustment of A/C head, height adjustment of A/C head is required.

### C. Height Adjustment of A/C Head

Note:

This procedure should be performed only when the A/C Head is replaced.

#### (Equipment Required)

Check Light (VFK0343)  
Nut Driver (Purchase locally)

With the tape running, look at the lower edge of the control head by using the check light and check if the lower edge of tape runs along the lower edge of the control head. If it doesn't, slightly turn the nut (C) behind the A/C Head (Fig. M28) to either lower or raise the A/C head so that the tape runs along the lower edge of the control head. Turn the nut (C) clockwise to lower the head, and counter-clockwise to raise it.

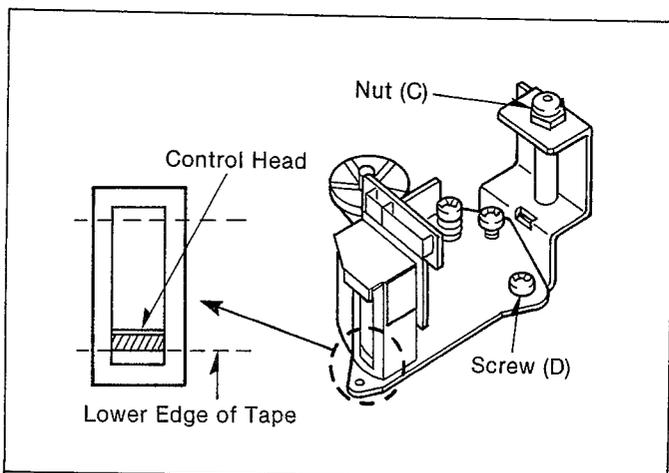


Fig. M28

### D. Azimuth Adjustment of A/C Head

Note:

This procedure should be performed only when the A/C Head is replaced and posts high are readjusted.

#### (Equipment Required)

Alignment Tape (VFJ8125H3F)

1. Connect the oscilloscope to the audio output on the rear panel.
2. Play back the 2nd portion (Normal Audio 6KHz) of the alignment tape (VFJ8125H3F).
3. Adjust the screw (D) so that the output level becomes maximum.

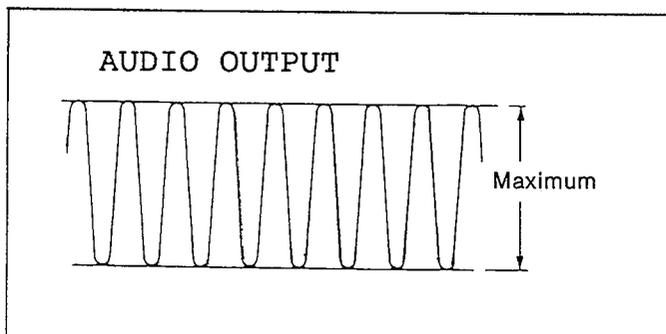


Fig. M29

### E. Horizontal Position Adjustment of A/C Head

Note:

This procedure should be performed only when the A/C head is replaced, and after performing the tape interchangeability adjustment.

#### (Equipment Required)

H-Position Adjustment Screwdriver (VFK0328/Tool Kit: VFK0283)  
Alignment Tape (VFJ8125H3F)

1. Set the Tracking Control VR to the centre fix position.
2. Connect the oscilloscope to the output of Head Amp. (Refer to Fig. M20)
3. Play back the alignment tape (VFJ8125H3F).
4. Adjust the Horizontal Position Screw of A/C head so that the RF signal becomes maximum level.

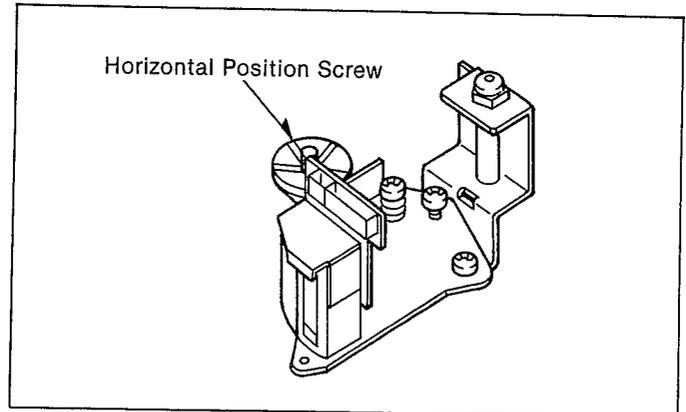


Fig. M30

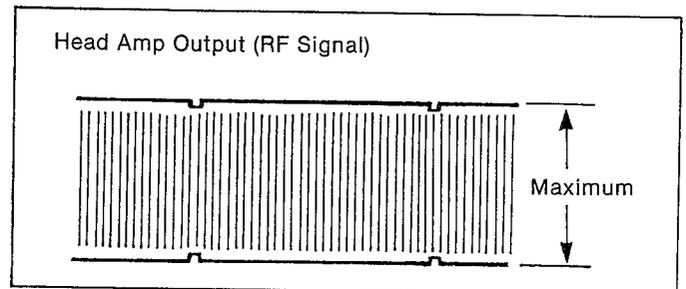


Fig. M31

## 2-4 ASSEMBLY AND ADJUSTMENT PROCEDURES OF MECHANISM

The mechanism of this model is mostly engaged to the System Control Circuit, through the mode select switch.

Therefore the relation between the mode select switch and the cam gear decides all further mechanical movement of the mechanical parts such as levers, gears, rollers and so on.

If these parts are not fixed properly, the unit will be unloaded or compulsorily stopped.

And it will result being damaged at any mechanical or electrical parts.

The overall mechanical condition (alignment) of bottom and top view are shown in Fig. A1 and Fig. A2. This mechanical adjustment is Performed in STOP mode.

The detail of mechanical condition will be described later.

### C. Height Adjustment of A/C Head

Note:

This procedure should be performed only when the A/C Head is replaced.

#### (Equipment Required)

Check Light (VFK0343)  
Nut Driver (Purchase locally)

With the tape running, look at the lower edge of the control head by using the check light and check if the lower edge of tape runs along the lower edge of the control head. If it doesn't, slightly turn the nut (C) behind the A/C Head (Fig. M28) to either lower or raise the A/C head so that the tape runs along the lower edge of the control head. Turn the nut (C) clockwise to lower the head, and counter-clockwise to raise it.

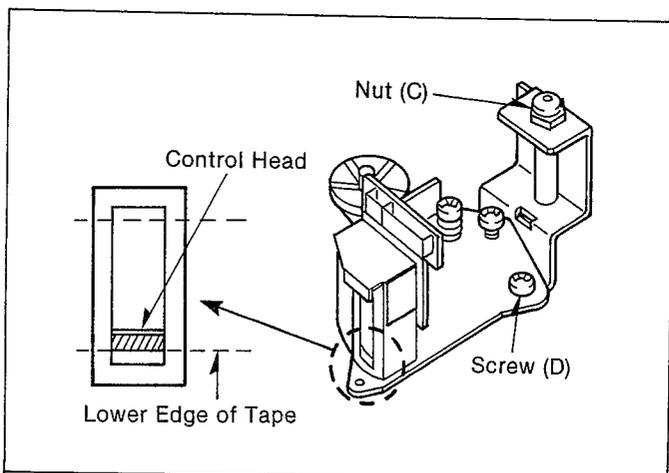


Fig. M28

### D. Azimuth Adjustment of A/C Head

Note:

This procedure should be performed only when the A/C Head is replaced and posts high are readjusted.

#### (Equipment Required)

Alignment Tape (VFJ8125H3F)

1. Connect the oscilloscope to the audio output on the rear panel.
2. Play back the 2nd portion (Normal Audio 6KHz) of the alignment tape (VFJ8125H3F).
3. Adjust the screw (D) so that the output level becomes maximum.

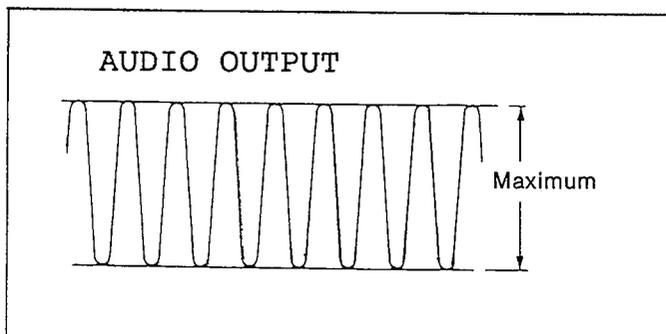


Fig. M29

### E. Horizontal Position Adjustment of A/C Head

Note:

This procedure should be performed only when the A/C head is replaced, and after performing the tape interchangeability adjustment.

#### (Equipment Required)

H-Position Adjustment Screwdriver (VFK0328/Tool Kit: VFK0283)  
Alignment Tape (VFJ8125H3F)

1. Set the Tracking Control VR to the centre fix position.
2. Connect the oscilloscope to the output of Head Amp. (Refer to Fig. M20)
3. Play back the alignment tape (VFJ8125H3F).
4. Adjust the Horizontal Position Screw of A/C head so that the RF signal becomes maximum level.

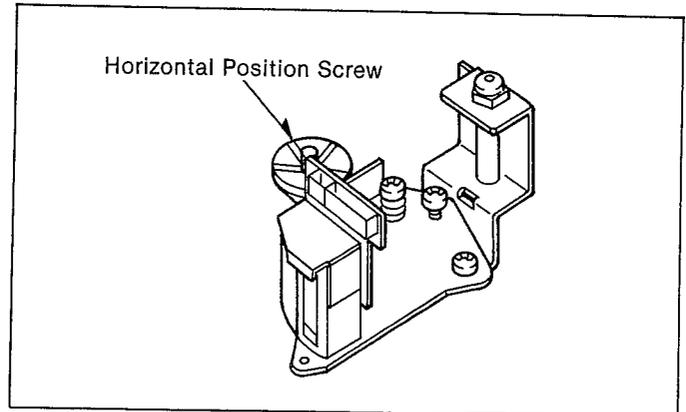


Fig. M30

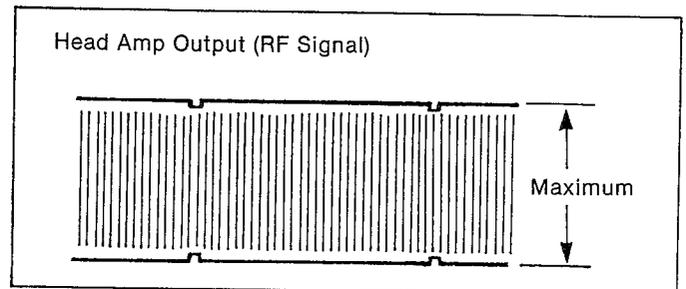


Fig. M31

## 2-4 ASSEMBLY AND ADJUSTMENT PROCEDURES OF MECHANISM

The mechanism of this model is mostly engaged to the System Control Circuit, through the mode select switch.

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If these parts are not fixed properly, the unit will be unloaded or compulsorily stopped.

And it will result being damaged at any mechanical or electrical parts.

The overall mechanical condition (alignment) of bottom and top view are shown in Fig. A1 and Fig. A2. This mechanical adjustment is Performed in STOP mode.

The detail of mechanical condition will be described later.

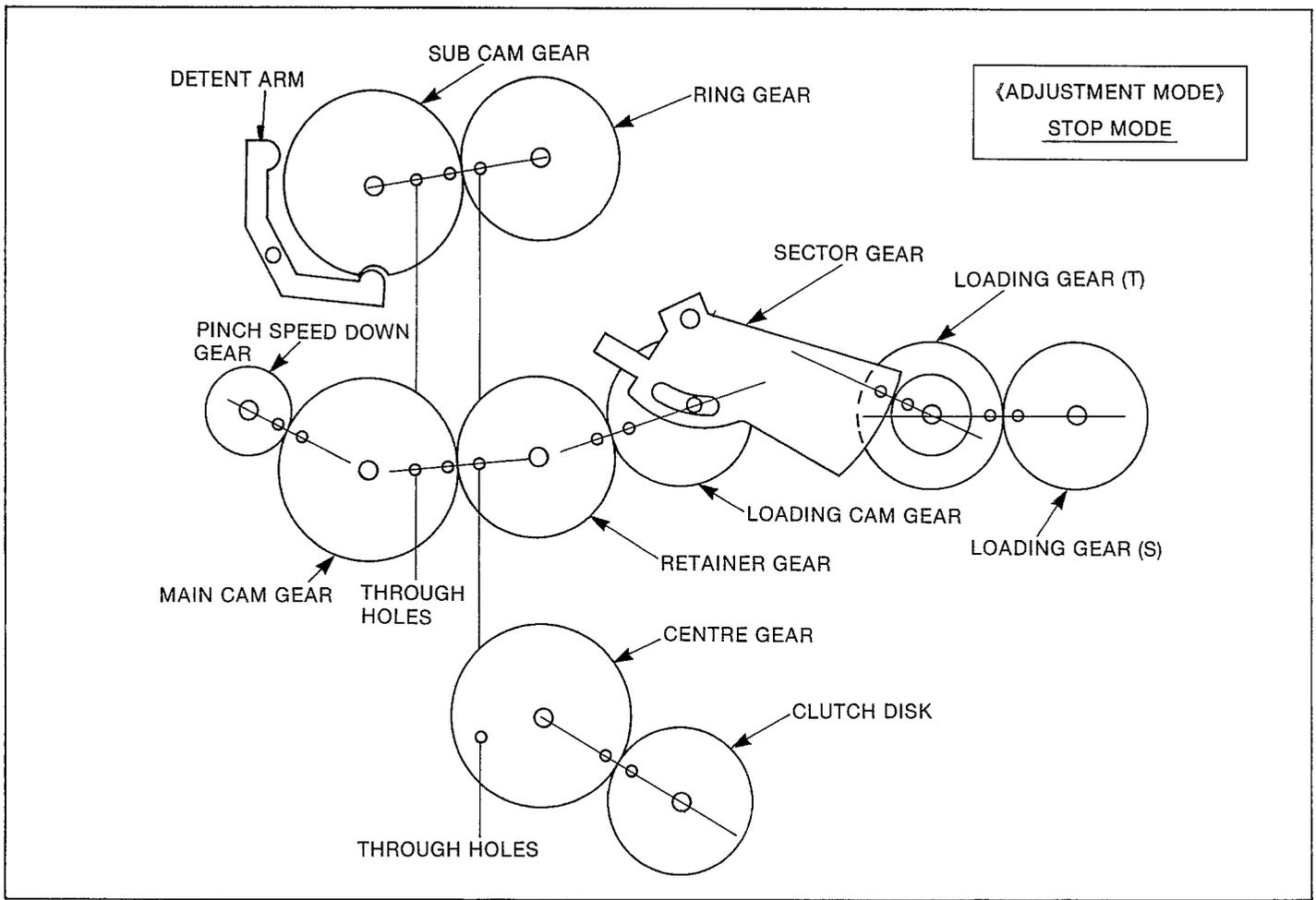


Fig. A1 Bottom View of Overall Mechanical Condition

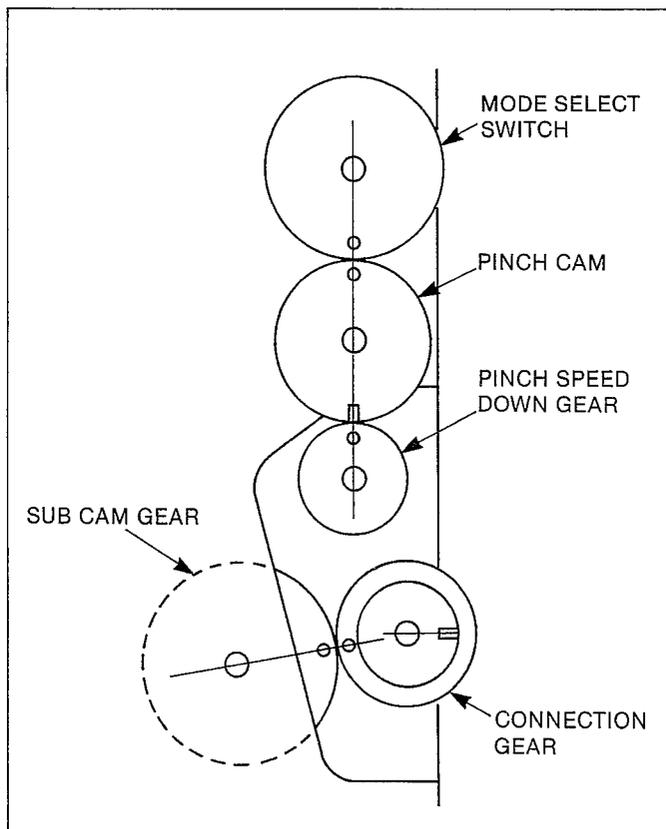


Fig. A2 Top View of Overall Mechanical Condition

#### 2-4-1. ASSEMBLY PROCEDURES OF SUB CAM GEAR, RING GEAR AND DETENT ARM

1. Install the Ring Gear so that the hole of Ring Gear is exactly in line with the hole of chassis as shown Fig. A3.
2. Install the Sub Cam Gear so that the hole of Sub Cam Gear is exactly in line with the hole of chassis, at the same time, the small hole (located just outside of large hole) of Sub Cam Gear is exactly in line with the hole of Ring Gear.
3. Install the Detent Arm.

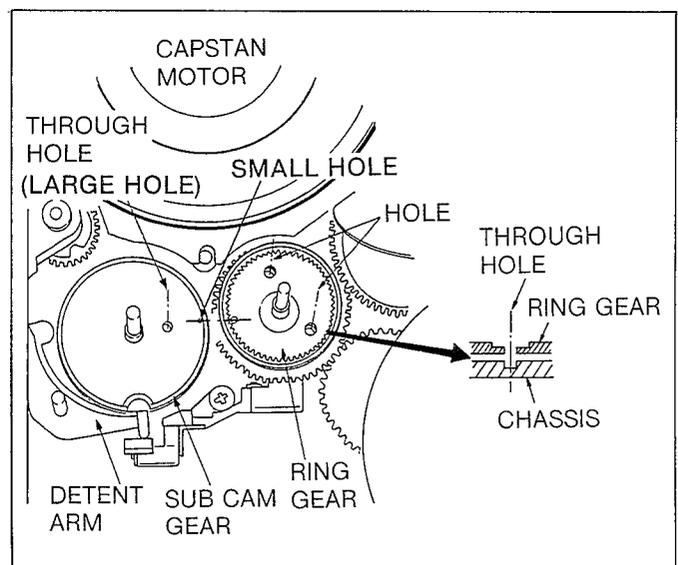


Fig. A3

**2-4-2. ASSEMBLY PROCEDURES OF MAIN CAM GEAR AND PINCH SPEED DOWN GEAR**

1. Install the Pinch Speed Down Gear from top side of chassis.
2. Install the Main Cam Gear on to the Sub Cam Gear so that the small hole of Main Cam Gear is exactly in line with the small hole of Pinch Speed Down Gear. And the large hole of Main Cam Gear is exactly in line with the large hole of Sub Cam Gear as shown in Fig. A4.

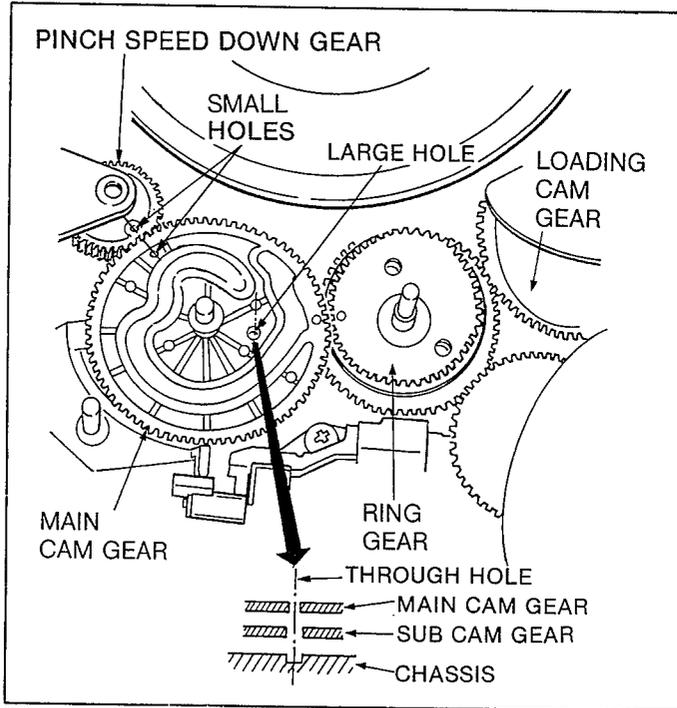


Fig. A4

**2-4-3. ASSEMBLY PROCEDURES OF LOADING CAM GEAR AND RETAINER GEAR**

1. Install the Loading Cam Gear so that the end of Sub Loading Arm comes to the rift (A) of Loading Cam Gear as shown in Fig. A5.

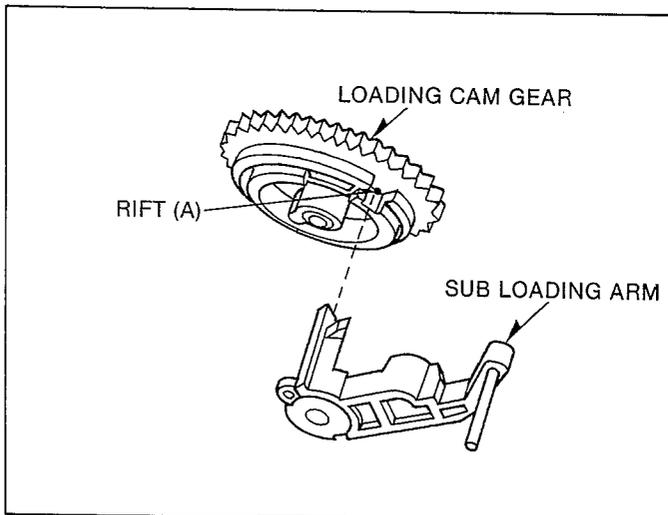


Fig. A5

2. Install the Retainer Gear on to the Ring Gear so that the hole of Retainer Gear is exactly in line with the hole of Main Cam Gear, at this time, this hole of Retainer Gear also is exactly in line with the hole of Ring Gear. At the same time, another hole of Retainer Gear is exactly in line with the hole of Loading Cam Gear as shown in Fig. A6.

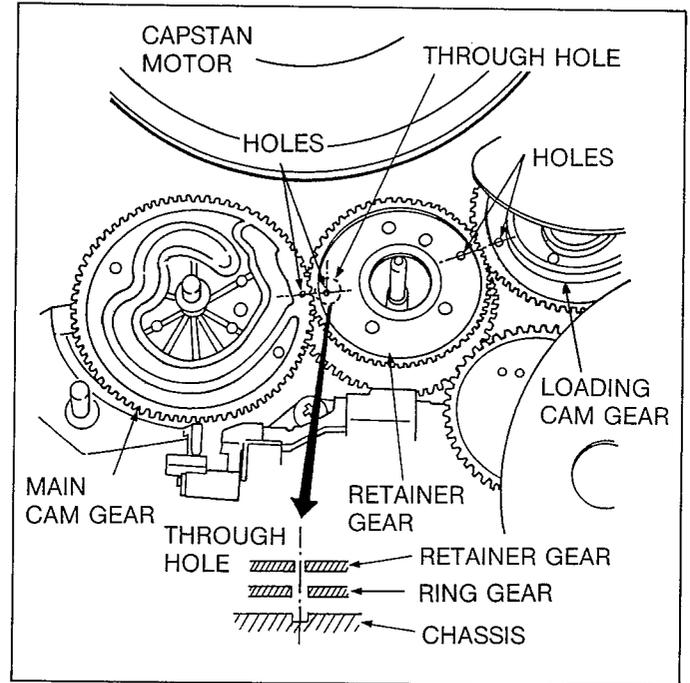


Fig. A6

**2-4-4. ASSEMBLY PROCEDURES OF CENTRE GEAR**

1. Install the Centre Gear on to the Retainer Gear so that the hole of Center Gear is exactly in line with the hole of Retainer Gear, at this time, another hole of Center Gear is exactly in line with the small hole of Clutch Disk, then insert the cut washer.

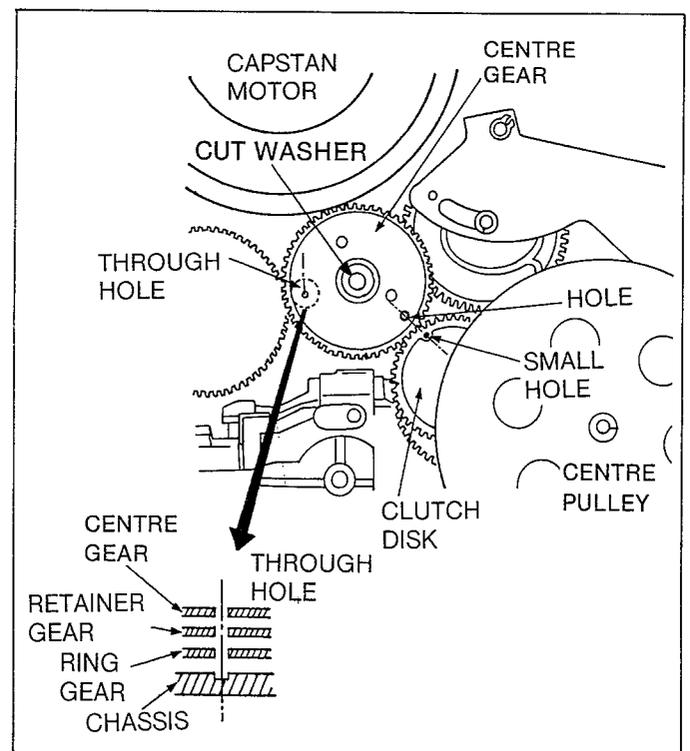


Fig. A7

**2-4-5. ASSEMBLY PROCEDURES OF MAIN LEVER (1) UNIT AND CAM FOLLOWER ARM UNIT**

1. Install the Cam Follower Arm Unit so that the pin of Cam Follower Arm insert to the groove of Main Cam Gear then insert a retaining ring.
2. Install the Main Lever (1) Unit and then insert the cut washers as shown in Fig. A8.

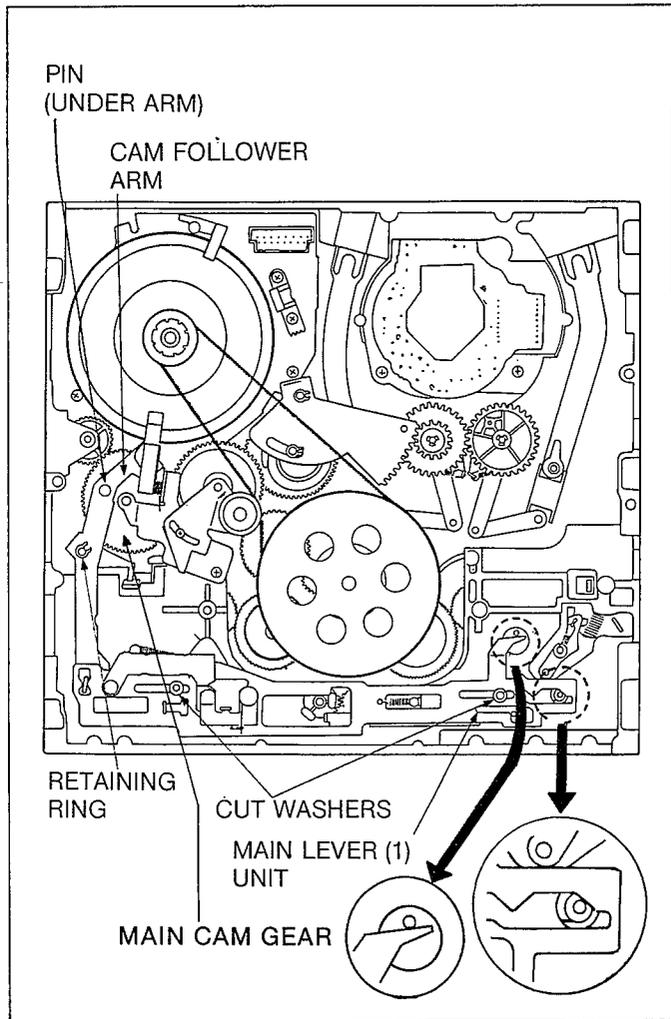


Fig. A8

**2-4-6. ASSEMBLY PROCEDURES OF LOADING GEAR (T), LOADING GEAR (S), SECTOR GEAR, TENSION ROLLER UNIT AND SS BRAKE ARM UNIT**

1. Set the P2 and P3 posts to unloading position, then install the Loading Gear (T) and (S) so that the hole of Loading Gear (T) is exactly in line with the hole of Loading Gear (S).
2. Install the Sector Gear so that the hole of Sector Gear is exactly in line with the projection mark of Loading Gear (T). Then insert the retaining rings.
3. Install the Tension Roller Unit and SS Brake Unit, then tighten the screws.

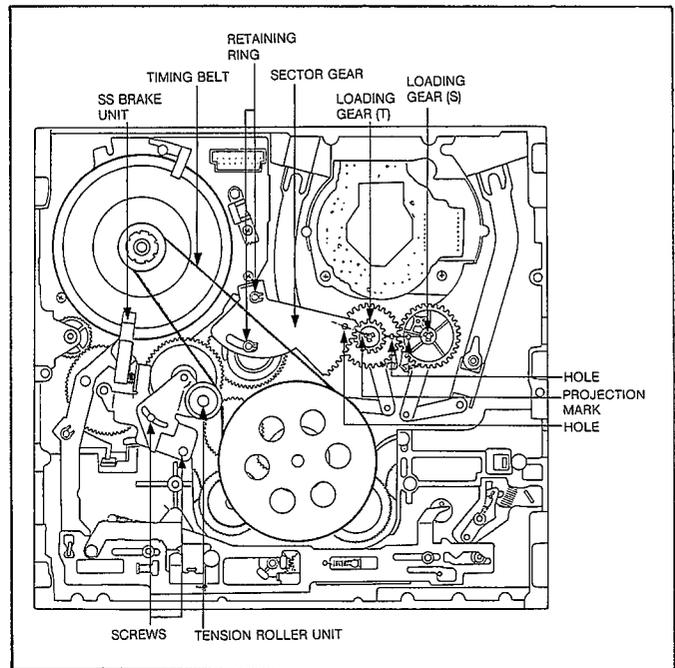


Fig. A9

**2-4-7. ASSEMBLY PROCEDURES OF CONNECTION GEAR**

Note:

Before this assembling, Sub Cam Gear position (and positions of bottom side gears) must be in correct positions as described before. Install the connection gear so that the small hole of connection gear is exactly in line with the small hole of Sub Cam Gear as shown in Fig. A10.

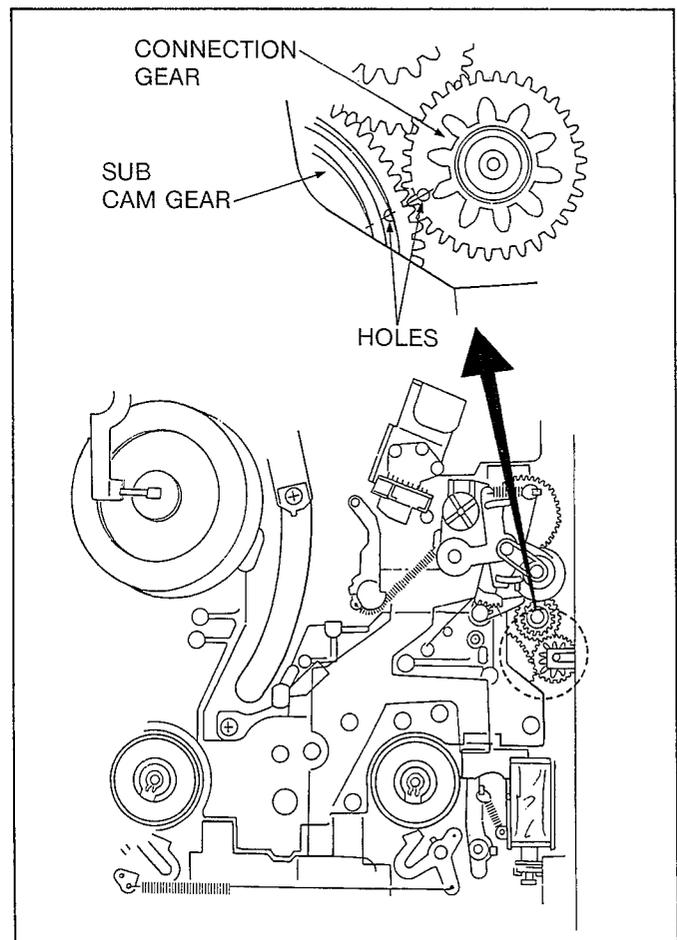


Fig. A10

**2-4-8. ASSEMBLY PROCEDURES OF MODE SELECT SWITCH AND P5 PULL OUT SECTOR GEAR**

1. Install the Mode Select Switch and tighten a screw, then solder the 5 soldering portions.
2. Install the P5 Pull Out Sector Gear so that the hole of P5 Pull Out Sector Gear is exactly in line with the tip of edge at P5 gear as shown in Fig. A11.

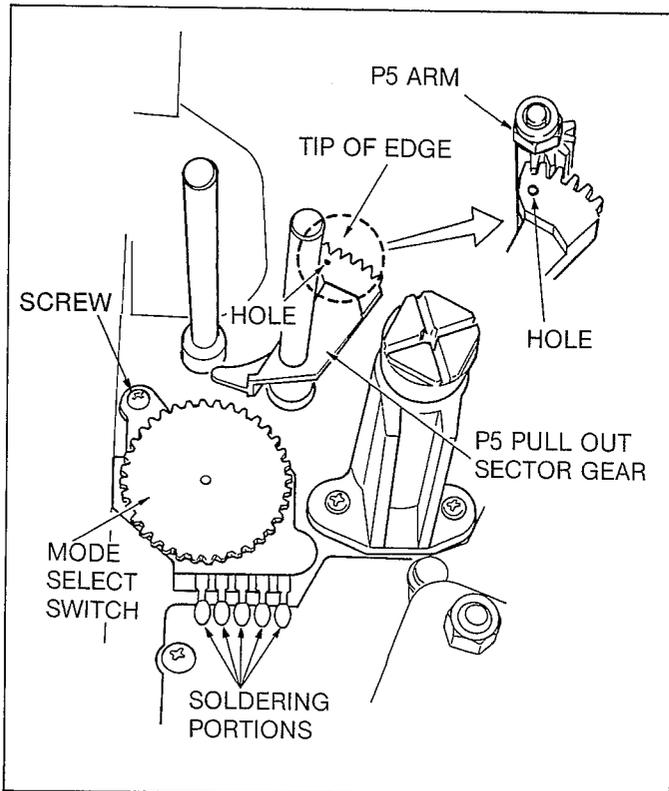


Fig. A11

**2-4-9. ASSEMBLY PROCEDURES OF PINCH CAM AND PRESSURE ROLLER UNIT**

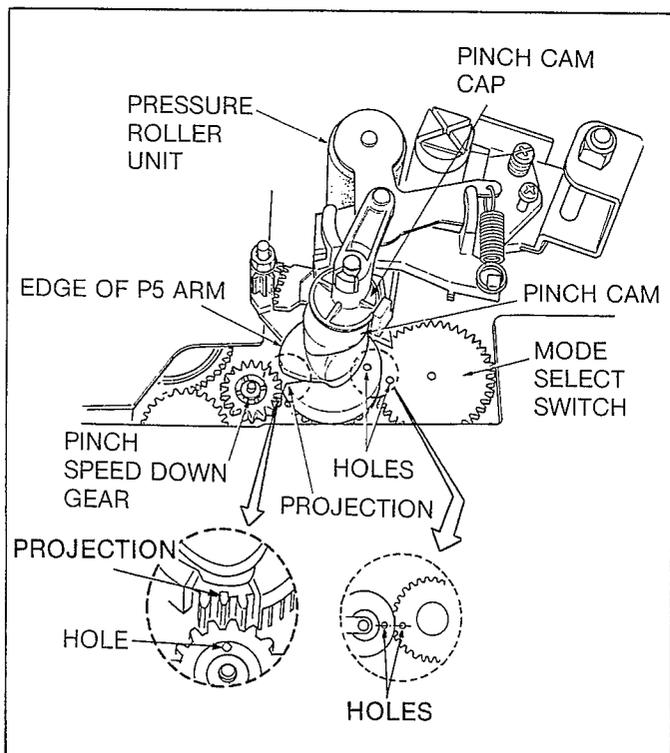


Fig. A12

1. Install the Pinch Cam so that the edge of P5 Arm comes into the Rift of Pinch Cam and Projection of Pinch Cam is exactly in line with the hole of Pinch Speed Down Gear, at this time, the hole of Mode Select Switch is exactly in line with the hole of Pinch Cam as shown in Fig. A12.
2. Install the Pressure Roller Unit, then install the Pinch Cam Cap.

**2-4-10. REINSTALLATION OF CASSETTE COMPARTMENT**

When reinstall the cassette compartment, the position adjustment (alignment) of mechanism is necessary for correct working as follows.

1. Press the change Lever to the direction indicated by arrow mark as shown in Fig. A13 (to release the lock).
2. Turn the Capstan Motor counter clockwise until mechanism is placed to Eject position fully (until mechanism come to final position) and keep this position.

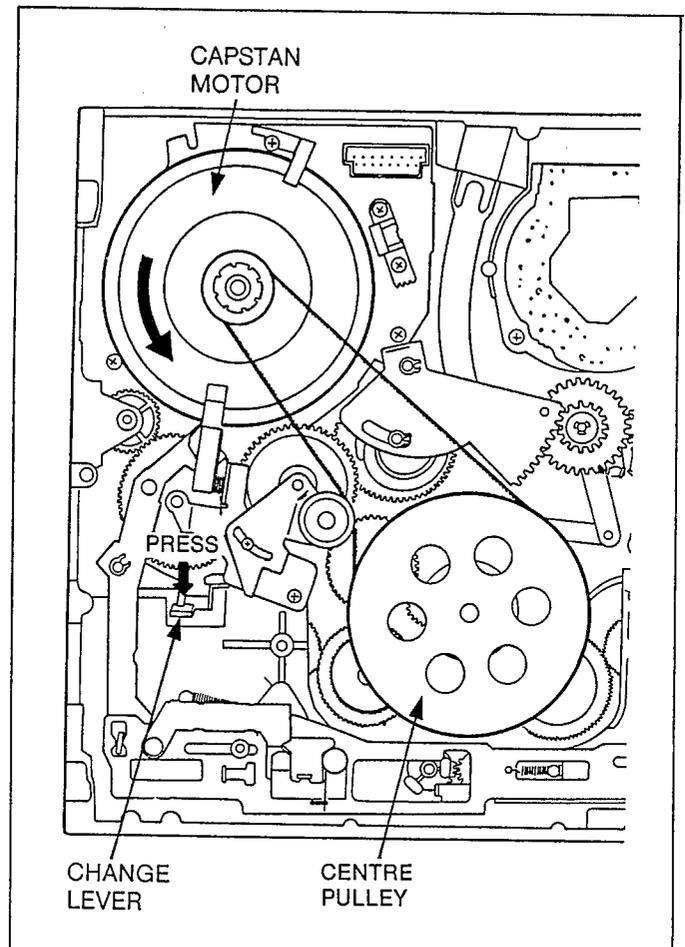


Fig. A13

3. Memorize the position of marking or hole on the Connection Gear (located top view, right side as shown in Fig.A14) and turn the Capstan Motor to counter clockwise so that marking or hole of Connection Gear return to just one rotation back and keep this position.

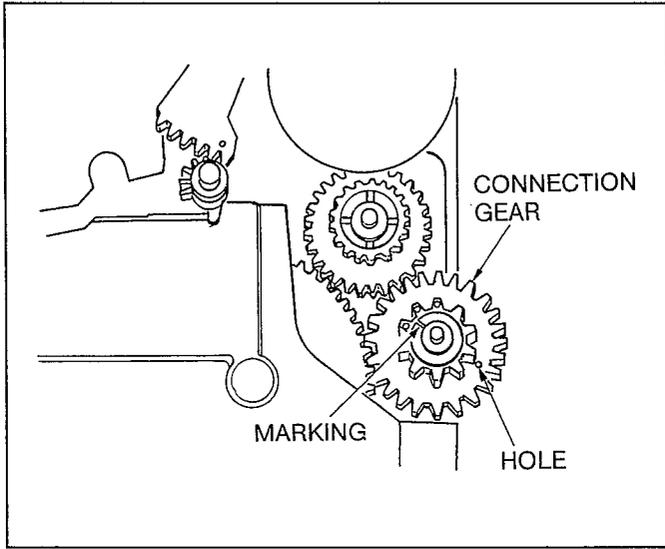


Fig. A14

4. Slide the cassette holder just a little so that second tip of Rack A (1) Gear (located bottom view, right side of cassette compartment) come to centre of rectangular hole as shown in Fig.A15.
5. Remove the 2 screws (A) and carefully remove the top plate from the cassette compartment. (so that Connection Gear and Rack A (1) Gear can be seen when reinstalling).
6. Install slowly the cassette compartment to chassis so that the second tip of Rack A (1) Gear comes into the fifth slot of Connection Gear as shown in Fig.A16. If it is not, slide the cassette holder a little bit for correct position

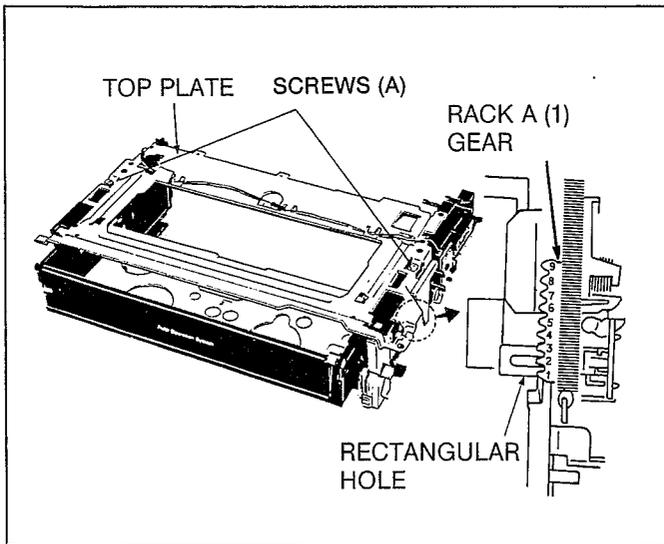


Fig. A15

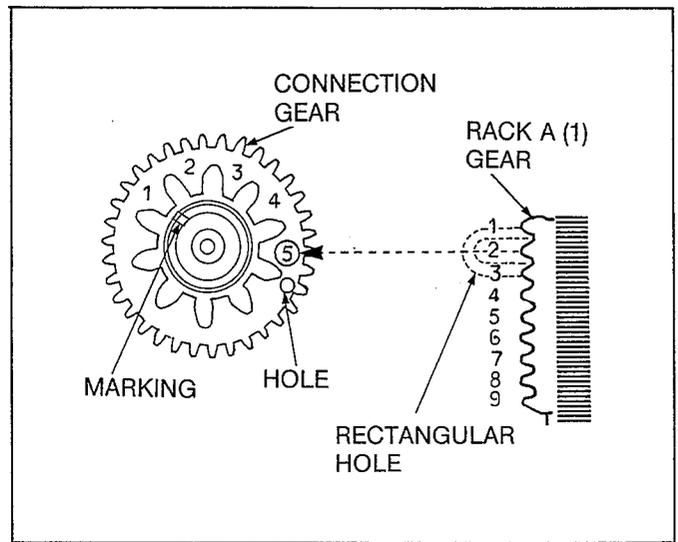


Fig. A16

7. Reinstall the top plate and tighten the 2 screws (A), then tighten the 4 screws (B) and (C) as shown in Fig.A17. Re-connect the flexible cable to P1503.

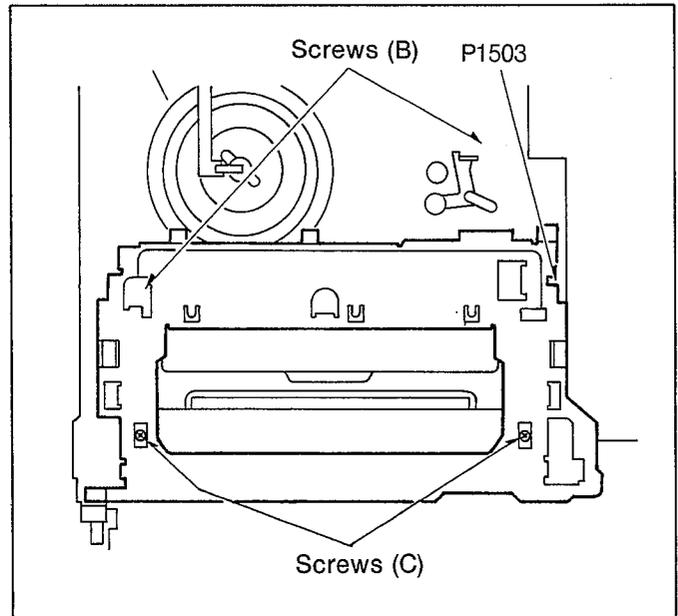


Fig. A17

Note:  
If mechanism doesn't work correctly, carefully repeat 1~7 in item 2-4-10 Reinstallation of cassette compartment.