

MECHANICAL ADJUSTMENTS SUBINDEX

Mechanical Checks/Gear Alignment
Back Tension Measurement/Adjustment
Operating the VCR Without a Cassette Tape
Tension Pole Position Adjustment
Tape Path Alignment Procedures
Adjustment Flow for the Tape Transporting System
The Schematic Diagram of Tape Transporting System
Rough Adjustment of S & T Guide Rollers
Pre-adjustment of AC Head Assembly
Audio Azimuth Adjustment
AC Head Height Adjustment
X-Axis Position Adjustment
Playback Phase Adjustment
Linearity Adjustment
Fine Adjustment of Envelopes at Drum Entrance/Exit Parts
Transitional Operation Confirmation (Review to Play)
Audio Output Confirmation (AC Head Tilt/Height Adjustment)
AC Head Azimuth Adjustment
X-Axis Adjustment

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C
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MECHANICAL ADJUSTMENTS



Mechanical Checks/Gear Alignment

Some disassembly is required to access the adjustment locations. Refer to the "Disassembly Section" in this publication for disassembly instruction.

Caution: Use an isolation transformer when servicing.

1. Make sure that the datum hole of the cam gear "A" is aligned with the hole "B" in the main base in the EJECT mode. (Fig. 1)

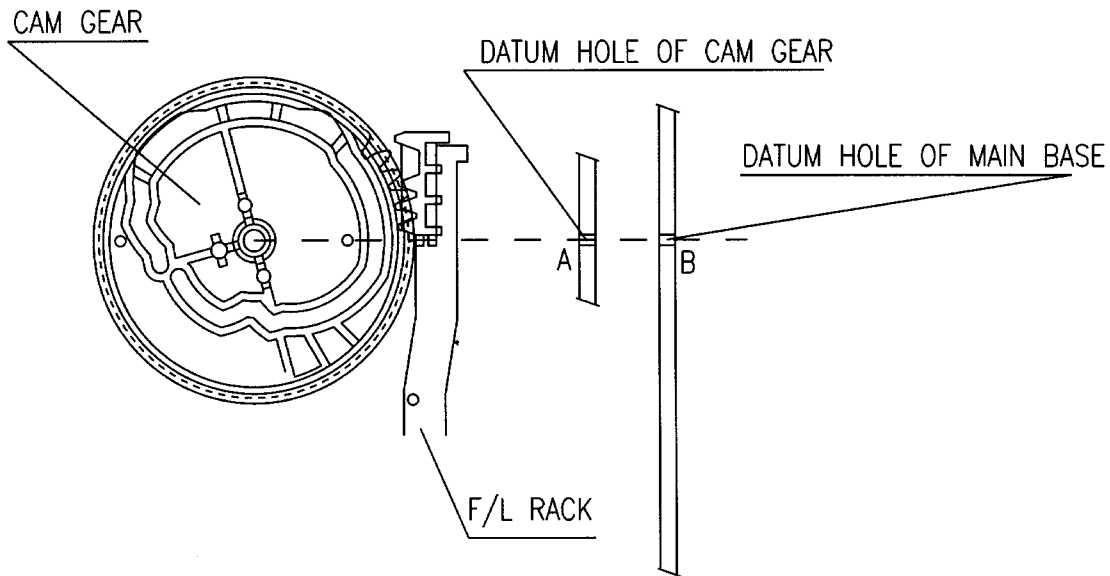


Fig. 1 Mechanical Checks/Cam Gear and F/L Alignment

2. Make sure that the part of the relay lever "A" which is assembled with Connect Plate is fully rotated up to the left end of the hole "B". (Fig. 2)

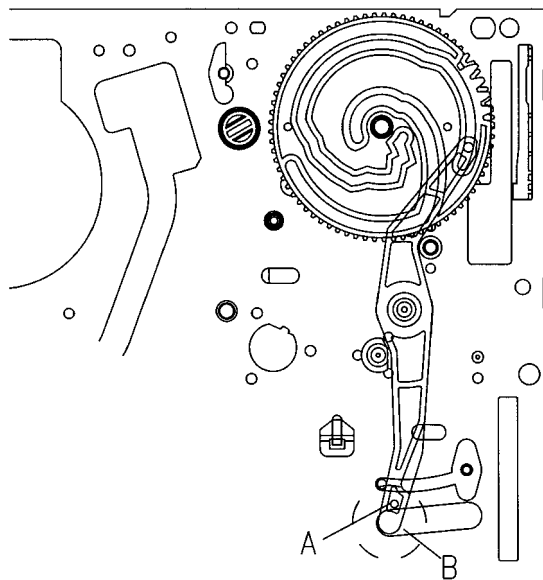


Fig. 2 Mechanical Checks/Relay Lever and Cam Gear Alignment



MECHANICAL ADJUSTMENTS



Mechanical Checks/Gear Alignment (Cont'd)

3. There are two (2) triangular marks on the mode sense switch. When installing the L/C bracket assembly on the main base, confirm that the two (2) triangular marks are aligned with each other in the EJECT mode. (Fig. 3)

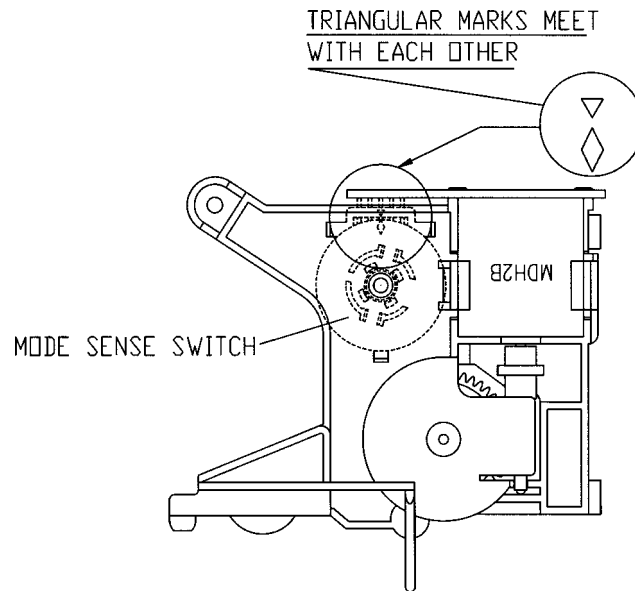


Fig. 3 Mechanical Checks/Mode Sense SW Alignment

4. Make sure that the boss "A" of the Pinch Lever Total Ass'y is positioned at the point "B" of the cam gear in EJECT mode. (Fig. 4)

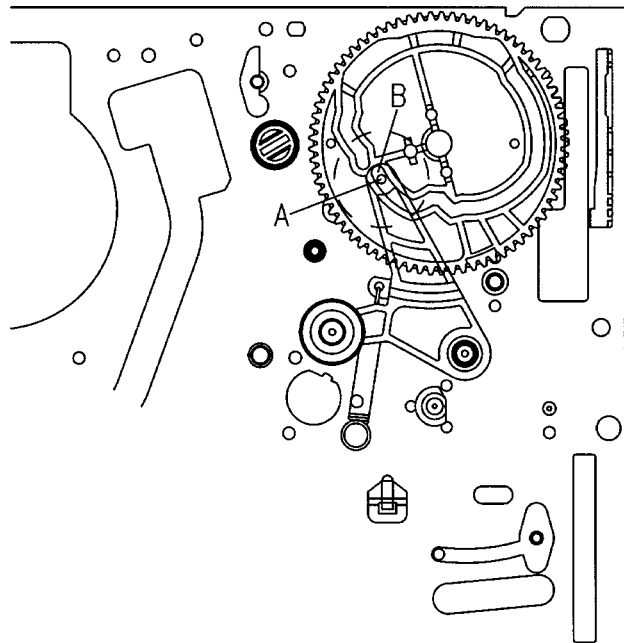


Fig. 4 Mechanical Checks/Pinch Lever and Cam Gear Alignment



**Mechanical Checks/Gear Alignment (Cont'd)**

5. Confirm that the triangular mark "A" on the Loading Gear L Ass'y is aligned with the notch "B" in the Loading Gear R ass'y in EJECT mode. (Fig. 5)
6. Make sure that the teeth of the Loading Rack are aligned with those of the Loading Gear R so that the hole "C" of the Loading Rack aligns with the circular mark "D" on the Loading Gear R. (Fig. 5).

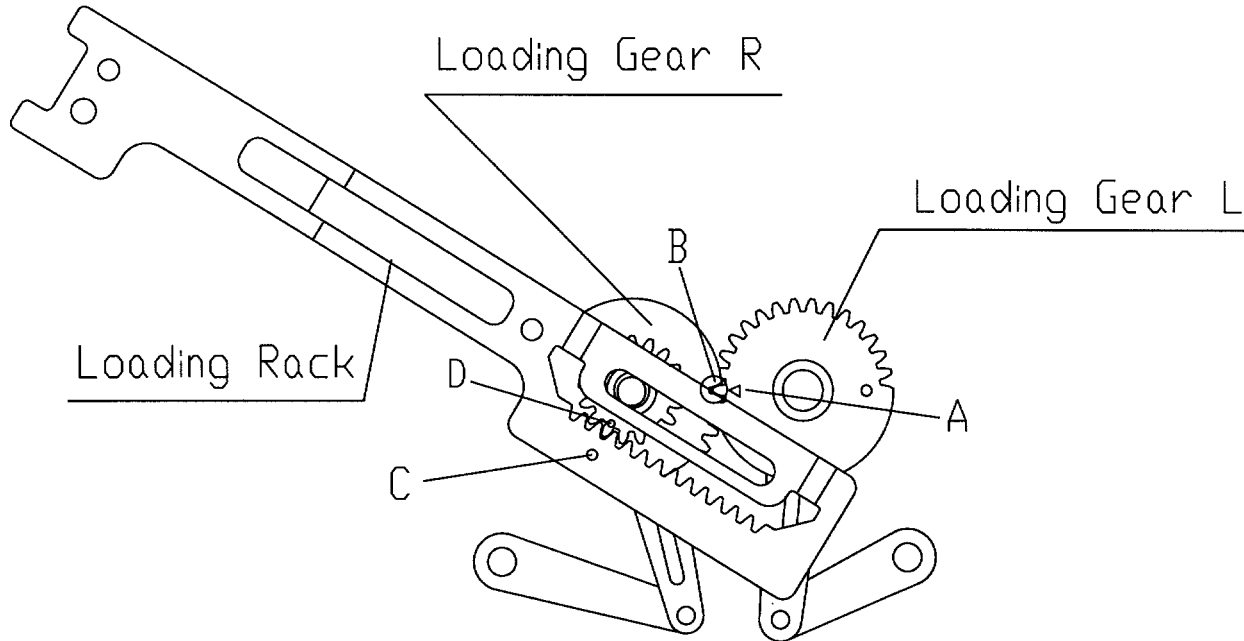


Fig. 5 Mechanical Checks/Loading Rack and Loading Gear Alignment



MECHANICAL ADJUSTMENTS

Back Tension Measurement/Adjustment

1. Confirm that the position of the tension pole is correctly positioned. If not, refer to the "Tension Pole Position Adjustment Procedures".
2. Play back cassette torque meter (play torque) for about 20 seconds (wait until the tape transporting system comes to be stable).
3. Measure the back tension with the use of a torque meter. The measured result must meet the specification (35-55 gr).
4. If the result is not within the specification, remove cassette torque meter from the main base and adjust the tension spring. If the measured result exceeds the specification, locate the spring on the hook "A". If the value does not reach the specification, locate the spring on the hook "B" and repeat the steps 1-3 of "Tension Pole Position Adjustment". (Fig. 7)

Note: It is recommended that the measurement should be repeated at least three times to guarantee an accurate reading.

Operating the VCR Without a Cassette Tape

1. Remove the Cassette Loading Mechanism.
2. By hand revolve the worm counterclockwise 7-8 times until the pole base loading process starts automatically.
3. Then PLAY mode appears. If you want another mode, press the desired button.
4. If the mechanism is in the desired mode, remove the Power.

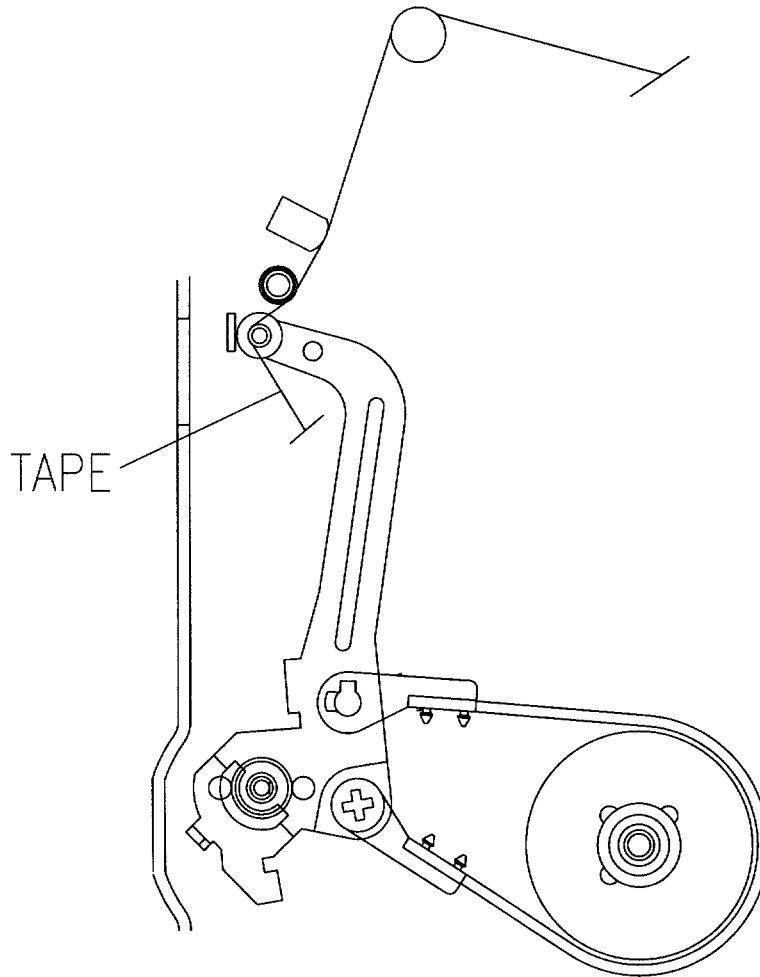


Fig. 6 Back Tension Measurement/Adjustment



**Tension Pole Position Adjustment**

1. Place VCR in PLAY mode without a cassette loaded. Refer to "Operating the VCR Without a Cassette Tape".
2. Confirm that the datum hole of the tension lever is coincident with that of the main base.
3. If the above confirmation is not satisfactory, turn Band Brake Cap clockwise or counterclockwise until the two holes are coincident with each other.

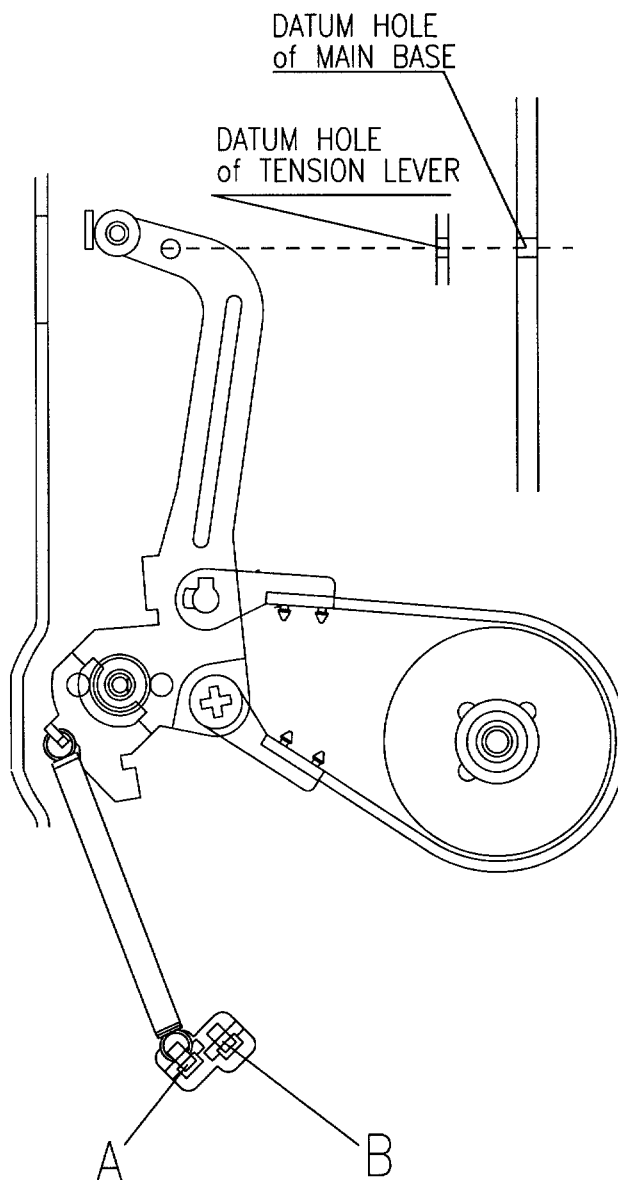


Fig. 7 Tension Pole Position Adjustment



MECHANICAL ADJUSTMENTS



Tape Path Alignment Procedures

The tape transporting system is precisely aligned at the factory and under normal circumstances will not require adjustment. However, if noise appears in the playback picture, then either tape damage occurred or the tape path has been changed, and readjustment of the tape path is necessary.

Use the following flow chart when Tape Path Alignment is necessary.

Adjustment Flow for the Tape Transporting System

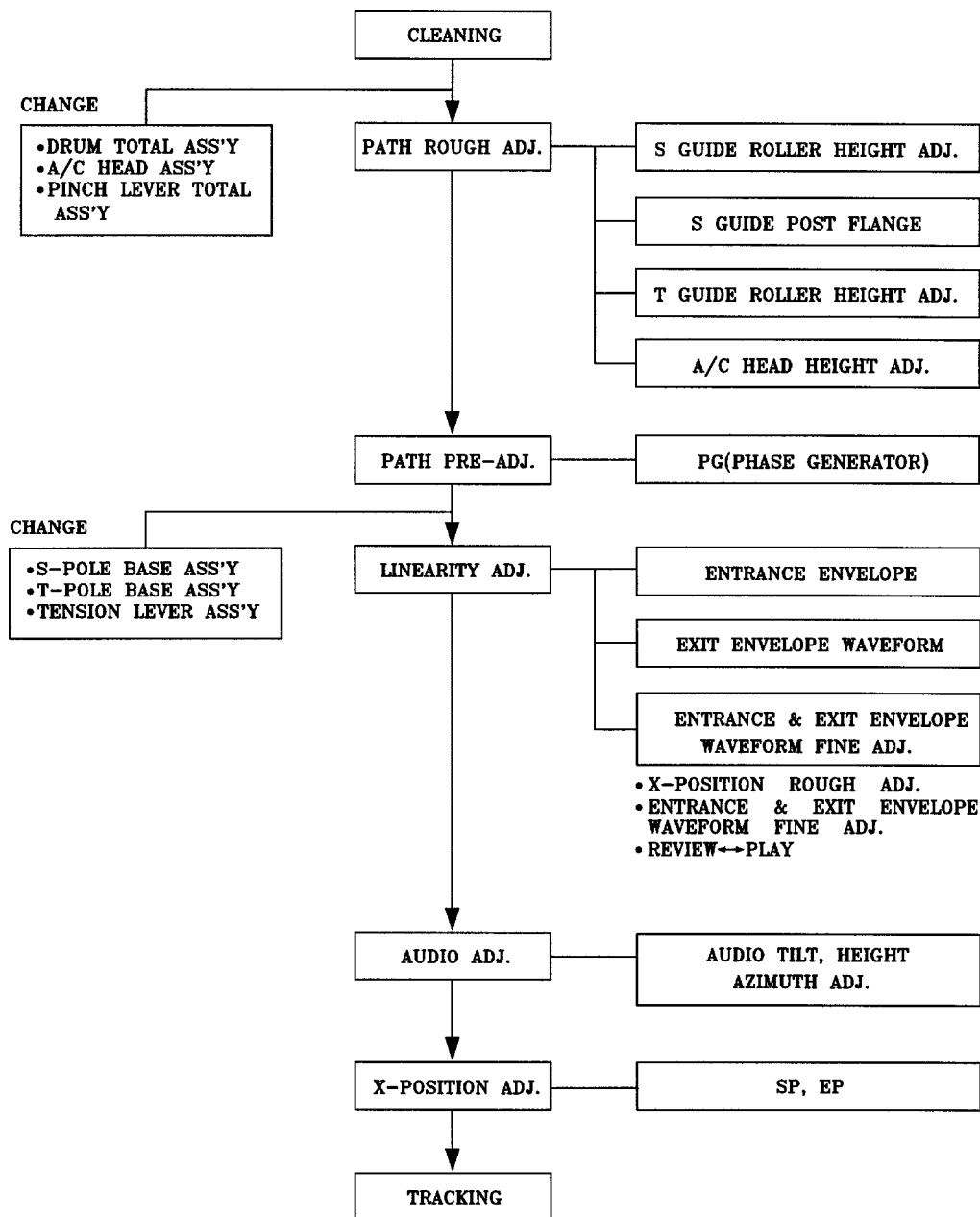


Fig. 8 Chart of Tape Path Alignment





The Schematic Diagram of Tape Transporting System

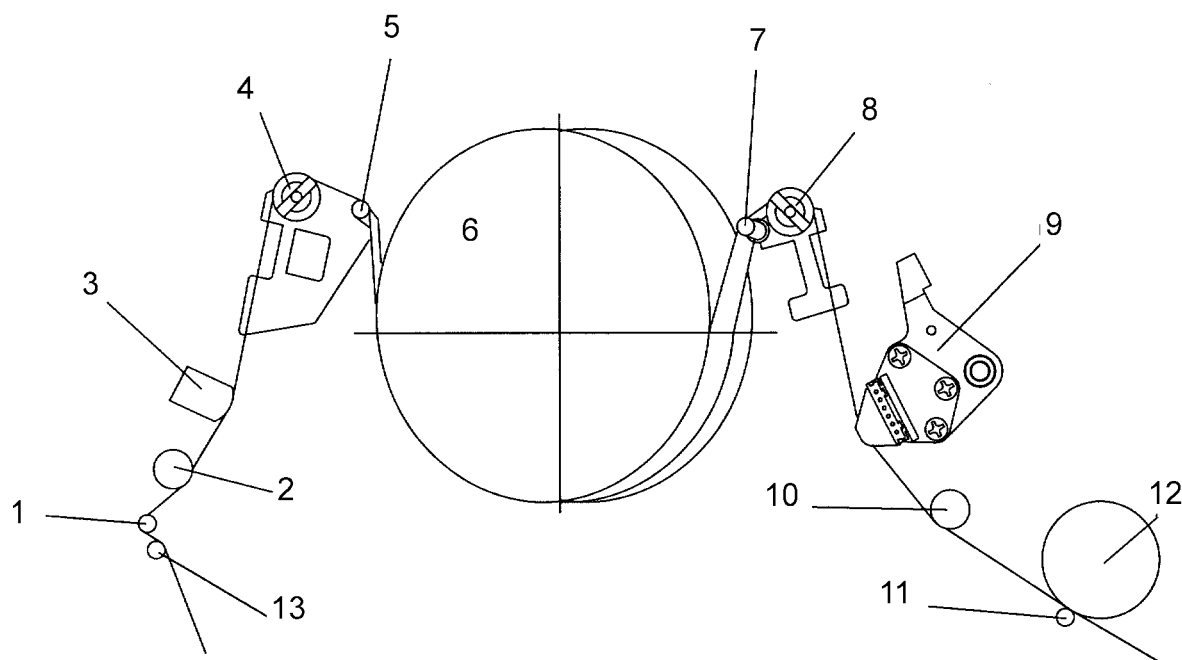


Fig. 9 Tape Transporting System

- | | |
|-------------------|-------------------|
| 1. Tension Pole | 8. T-Guide Roller |
| 2. S-Guide Post | 9. A/C Head |
| 3. FE Head | 10. T-Guide Post |
| 4. S-Guide Roller | 11. Capstan Shaft |
| 5. S-Slant Pole | 12. Pinch Roller |
| 6. Drum | 13. Vertical Post |
| 7. T-Slant Pole | |



MECHANICAL ADJUSTMENTS

Rough Adjustment of S & T Guide Rollers

When the parts shown in Fig. 9 are substituted, Tape Path can change. To prevent this, refer to the following instructions.

1. Play back a T-120 tape.
2. Confirm that the excessive tape wrinkle does not occur at each guide.
3. If tape wrinkle is observed at the guide rollers in Fig. 10, turn the S & T Guide Rollers for no wrinkle.

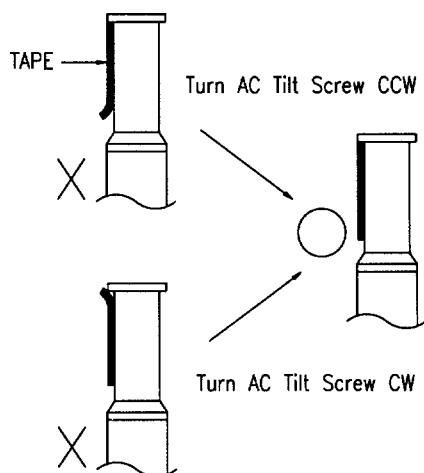
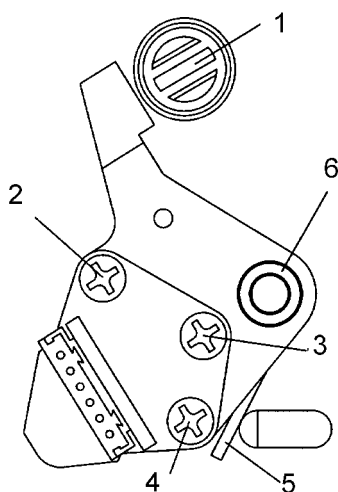


Fig. 10 Tilt Adjustment

Pre-adjustment of AC Head Assembly

1. Tilt Adjustment

- a. Play back a T-120 tape and observe the tape running condition at the upper and lower Flanges of T-Guide Post Assembly (11) in Fig. 9.
- b. Rotate the AC Head Tilt Screw until tape running condition is optimized (Fig. 10 & 11).



- | | |
|-------------------------|------------------|
| ① ADJUST BOSS | ④ FIXING SCREW |
| ② AC HEAD AZIMUTH SCREW | ⑤ AC HEAD SPRING |
| ③ AC HEAD TILT SCREW | ⑥ AC HEAD NUT |

Fig. 11 AC Head Assembly Identification



Audio Azimuth Adjustment

1. Play back the Alignment Tape (SP mode) with the following signal.
NTSC: 7KHz
2. Observe the audio output signal appearing on the Oscilloscope.
3. Turn AC Head Azimuth screw so that maximum audio output signal is obtained.

AC Head Height Adjustment

1. Play back a T-120 tape.
2. Confirm that the gap between the lower edge of the tape and the edge of the A C Head is 0.25 mm.
3. If the measure gap exceeds 0.25 mm, turn the AC Head Height Screw CCW. If not, turn it CW. Repeat this process until the measuring meets the specification.

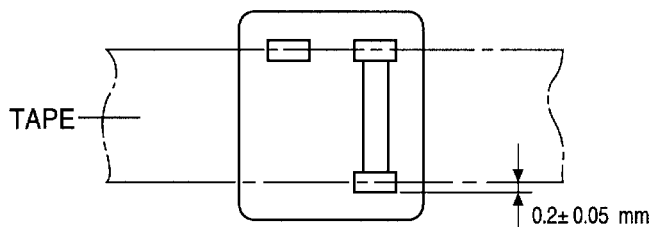


Fig. 12 AC Head Height Adjustment

X-Axis Position Adjustment

Test Points:	CTL Pulse Test Pin	Path Adj. Fixture
	Envelope Test Pin	Path Adj. Fixture
Observe:	Oscilloscope	
Adjust:	VR Control	Path Adj. Fixture
	S/T Guide Rollers	Transport Mech.

1. Connect the Path Adj. Fixture to PT01 on the Main circuit board.
2. Play back the Alignment Tape (color bar signal).
3. Connect the channel-1 scope probe to the CTL pulse test pin on the Path Adj. Fixture.
4. Connect the channel-2 scope probe to the envelope test pin on the Path Adj. Fixture. Externally trigger the scope using the SW pulse test pin on the Path. Adj. Fixture.
5. Adjust the VR Control on the Path Adj. Fixture to its center range position.
6. Using the Flat Blade Screwdriver, adjust the X-Axis position by turning Adjust Boss (Fig. 11) to obtain the maximum envelope.

Note: Before performing this adjustment, be sure to remove locking paint applied to the Adjust Boss.



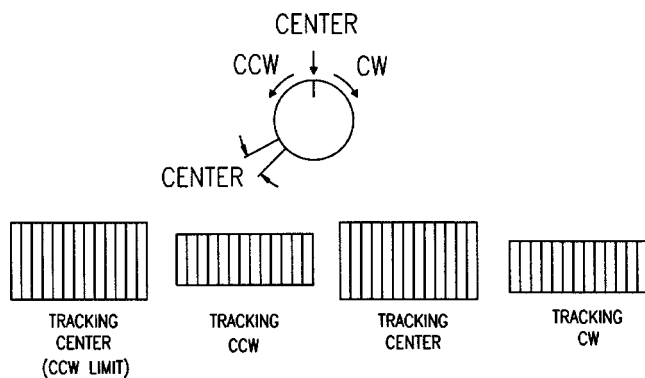


Fig. 13 X-Axis Position Adjustment

Playback Phase Adjustment

Test Points:	PT01 Pin 3	Main
	Video Out Jack	Rear Panel
Observe:	Oscilloscope	
Adjust:	VR595 (PG Shifter)	Main

The Phase Generator (PG) Shifter determines the video head switching point during playback. Wrong adjustment of the PG shifter may cause the head switching noise in the picture and/or vertical jitter.

1. Play back the Alignment Tape (color bar signal or monoscope signal).
2. Connect the channel-1 scope probe (1Vdiv.: 50psec/div.) to PT01 pin 3. Trigger the scope on channel-1.
3. Connect the channel-2 scope probe (1V/div.) to the video out jack.
4. Set the scope to (-) slope and adjust the PG Shifter Control (VR595) so that the trailing edge of the SW30Hz pulse is placed $6.5 \pm 0.5H$ (horizontal) lines before the start of the vertical (horizontal) lines before the start of the vertical sync pulse.

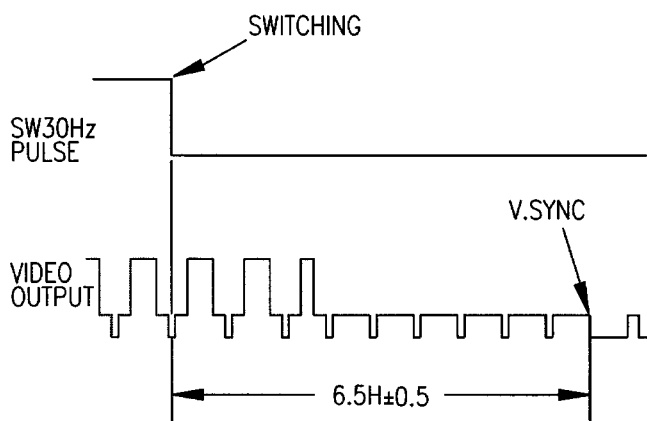


Fig. 14 Playback Phase Adjustment

Linearity Adjustment

Test Points:	CTL Pulse Test Pin	Path Adj. Fixture
	Envelope Test Pin	Path Adj. Fixture
Observe:	Oscilloscope	
Adjust:	VR Control	Path Adj. Fixture
	S/T Guide Rollers	Transport Mech.

1. Connect the Path Adj. Fixture to PT01 on the Main circuit board.
2. Play back the Alignment tape (color bar signal).
3. Connect the channel-1 scope probe to the CTL pulse test pin on the Path Adj. Fixture.
4. Connect the channel-2 scope probe to the envelope test pin on the Path Adj. Fixture. Externally trigger the scope using the SW pulse test pin on the Path Adj. Fixture.
5. Adjust the VR Control on the Path Adj. Fixture so the envelope (FM) signal of the Alignment tape is maximum.
6. Adjust the S/T guide rollers so that the envelope (FM) signal waveform at the entrance and exit sides are as shown in Fig. 15.

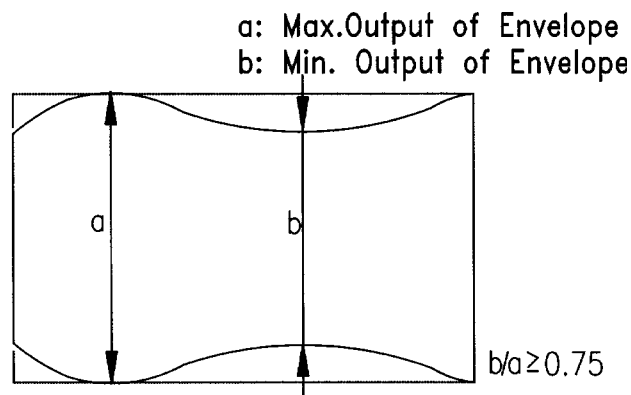


Fig. 15 Linearity Adjustment



MECHANICAL ADJUSTMENTS

Fine Adjustment of Envelopes at Drum Entrance/Exit Parts

Test Points:	CTL Pulse Test Pin	Path Adj. Fixture
	Envelope Test Pin	Path Adj. Fixture
Observe:	Oscilloscope	
Adjust:	VR Control	Path Adj. Fixture
	S/T Guide Rollers	Transport Mech.

1. Connect the Path Adj. Fixture to PT01 on the Main circuit board.
2. Play back the alignment tape (color bar signal).
3. Connect the channel-1 scope probe to the CTL pulse test pin on the Path Adj. Fixture.
4. Connect the channel-2 scope probe to the envelope test pin on the Path Adj. Fixture. Externally trigger the scope using the SW pulse test pin on the Path Adj. Fixture.
5. Adjust the VR control on the Path Adj. Fixture CCW and CW and confirm that the envelope waveform changes uniformly and remains flat throughout the overall range.
6. If the envelope is not uniform, slightly adjust the S/T Guide Rollers to correct the envelope.

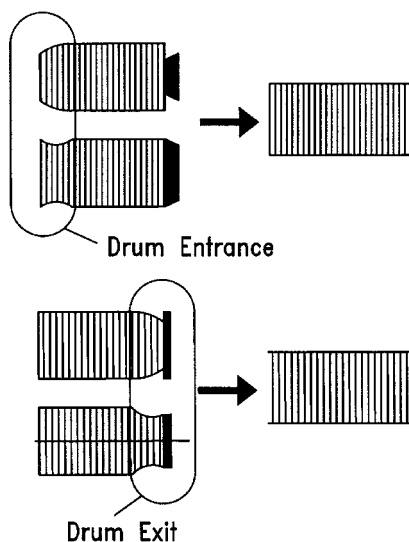


Fig. 16 Fine Adjustments of Drum Entrance/Exit Envelopes

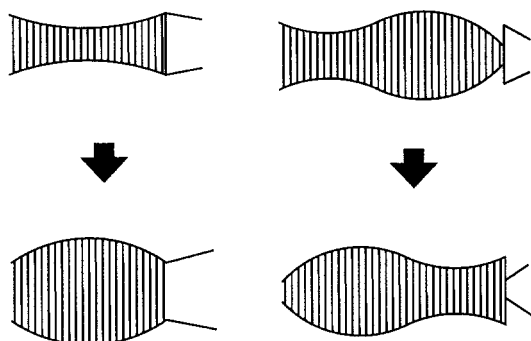


Fig. 17 Fine Adjustments of Envelopes at Drum Entrance/Exit Parts



Transitional Operation Confirmation (Review to Play)

Test Points:	CTL Pulse Test Pin	Path Adj. Fixture
	Envelope Test Pin	Path Adj. Fixture
Observe:	Oscilloscope	
Adjust:	VR Control	Path Adj. Fixture
	S/T Guide Rollers	Transport Mech.

1. Connect the Path Adj. Fixture to PT01 on the Main circuit board.
2. Play back the Alignment Tape (color bar alignment).
3. Connect the channel-1 scope probe to the CTL pulse test pin on the Path Adj. Fixture.
4. Connect the channel-2 scope probe to the envelope test pin on the Path Adj. Fixture. Externally trigger the scope using the SW pulse test pin on the Path Adj. Fixture.
5. Adjust the VR Control on the Path Adj. Fixture so that the envelope signal of the test tape is maximum.
6. Operate VCR in the Review mode for approximately 15 seconds and then change the mode to the Play mode.
7. Confirm that within three (3) seconds the envelope waveform is recovered when the mode changes from Review to Play mode.
8. If the waveform is not recovered within the three (3) seconds when the mode changes from Review to Play mode, make sure that the tape runs smoothly at the lower Flange of T Guide Post. Slightly adjust the S/T Guide Rollers to amend the problem.

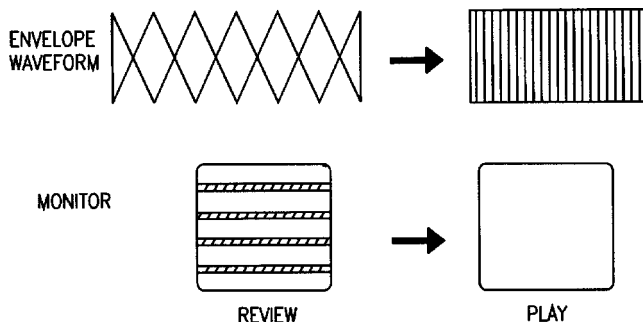


Fig. 18 Transitional Operation Confirmation (Review to Play)



VR352

MECHANICAL ADJUSTMENTS

Audio Output Confirmation (AC Head Tilt/Height Adjustment)

Test Points: Audio Out	Audio Out Jack
Observe: Oscilloscope	

1. Connect the oscilloscope to the audio output jack on VCR.
2. Playback the 400-1000Hz Audio Alignment Tape.
3. Confirm that the audio output signal is between -6dBm and -8dBm.

Note: If the audio signal is not within the specification, readjust the A/C Head Tilt Screw and the A/C Head Height Nut slightly to maximize the audio output. Refer to Fig. 11 for adjustment screw location.

AC Head Azimuth Adjustment

Test Points: Audio Out	Audio Out Jack
Observe: Oscilloscope	

1. Connect the oscilloscope to the audio output jack on VCR.
2. Play back the 400-1000Hz Audio Alignment Tape.
3. Adjust the AC Head Azimuth Screw for maximum audio output (specification = -10dBm to 12dBm). Refer to Fig. 11 for adjustment screw location.
4. After completing the adjustment procedure, reconfirm "Fine Adjustment of Envelopes at Drum Entrance/Exit Parts."



X-Axis Adjustment

Test Points: CTL Pulse Test Pin	Path Adj. Fixture
Envelope Test Pin	Path Adj. Fixture
Observe: Oscilloscope	
Adjust: VR Control	Path Adj. Fixture
S/T Guide Rollers	Transport Mech.

1. Connect the Path Adj. Fixture to PT01 on the Main circuit board.
2. Play back the Alignment Tape (color bar signal).
3. Connect the channel-1 scope probe to the CTL pulse test pin on the Path Adj. Fixture.
4. Connect the channel-2 scope probe to the envelope test pin on the Path Adj. Fixture. Externally trigger the scope using the SW pulse test pin on the Path Adj. Fixture.
5. Adjust the VR Control on the Path Adj. Fixture to its center range position.
6. Using a flat blade screwdriver, adjust the X-Axis Position Point by turning Adjust Boss so that the envelope waveform is as shown in Fig. 19 when the VR Control on the Path Adj. Fixture is turned fully CCW or CW.
7. After completing the adjustment procedure, perform the "Playback Phase Adjustment".

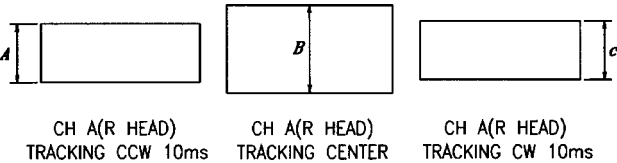


Fig. 19 X-Axis Adjustment

