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1. GENERAL

1.1. Control Functions

Nakamichi 680ZX control functions are shown below:

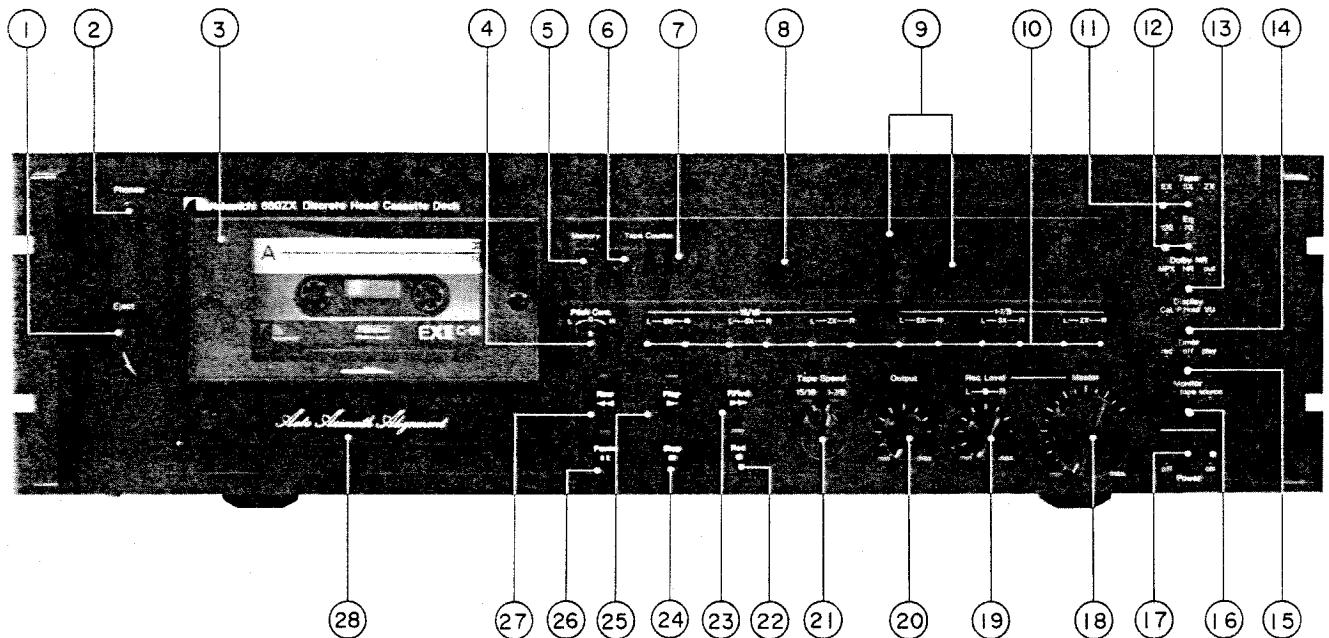


Fig. 1.1 Front View

- | | |
|--|----------------------------------|
| 1. Eject Lever | 15. Timer Switch |
| 2. Headphone Jack | 16. Monitor Switch |
| 3. Cassette Holder (with see-thru cover) | 17. Power Switch |
| 4. Pitch Control | 18. Master Input Level Control |
| 5. Tape Start Memory Switch | 19. Input Level Controls |
| 6. Counter Reset Button | 20. Output Level Control |
| 7. Tape Counter | 21. Tape Speed Selector |
| 8. RAMM Display | 22. Record Button |
| 9. Fluorescent (FL) Level Indicators | 23. Fast-Forward Button |
| 10. Record Calibration Controls | 24. Stop Button |
| 11. Tape Switch (EX/SX/ZX) | 25. Play Button |
| 12. Eq. Switch (120 μ s/70 μ s) | 26. Pause Button |
| 13. Dolby NR/MPX Filter Switch | 27. Rewind Button |
| 14. Display Switch | 28. Auto Azimuth Alignment Cover |

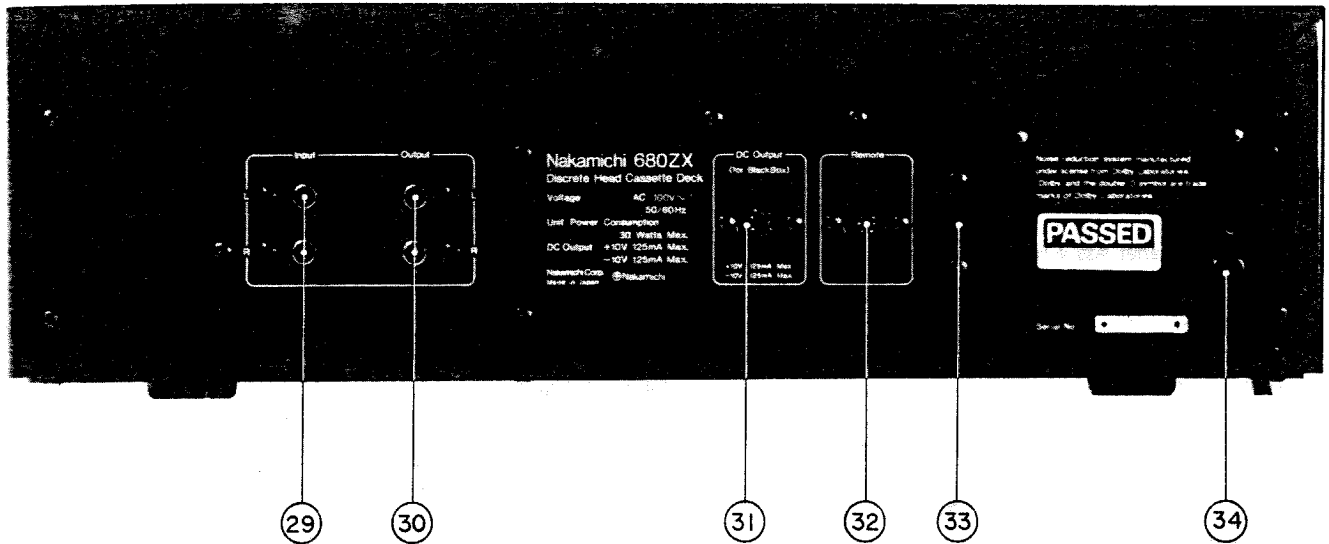


Fig. 1.2 Rear View

- | | |
|--------------------|---------------------------|
| 29. Input Jacks | 32. Remote Control Socket |
| 30. Output Jacks | 33. Voltage Selector |
| 31. DC Output Jack | 34. Power Cord |

1.2. Voltage Selector

Voltage selector is installed on the rear panel for other versions of the Nakamichi 680ZX. This voltage selector can select either 120 V or 220 – 240 V at customer's disposal.

2. REMOVAL PROCEDURES

2.1. Side Panel Ass'y

Refer to Fig. 2.1.

Remove F01 and F02, then disassemble F03 (Side Panel Ass'y)

2.2. Top Cover Ass'y

Refer to Fig. 2.1.

(1) Remove Side Panel Ass'y referring to item 2.1.

(2) Remove F04 and F05, then disassemble F06 (Top Cover Ass'y).

2.3. Bottom Cover Ass'y

Refer to Fig. 2.1.

Remove F07, then disassemble F08 (Bottom Cover Ass'y).

2.4. Cassette Case Cover Ass'y and Azimuth Alignment Cover Ass'y

Refer to Fig. 2.1.

(1) Turn fully counterclockwise two screws which are mounted on the Cassette Case Cover, then disassemble F09 (Cassette Case Cover Ass'y).

(2) Turn fully counterclockwise two screws which are mounted on the Front Panel Escutcheon Ass'y, then disassemble F10 (Azimuth Alignment Cover Ass'y).

2.5. Front Panel Ass'y

Refer to Fig. 2.2.

(1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to items 2.2 and 2.3.

(2) Pull out F01 (Volume Knob A), F02 (Volume Knob L), F03 (Volume Knob R), F04 (Volume Knob B) and F05 (Pitch Control Knob).

(3) Remove F06, F07 and F08, then disassemble F09 (Front Panel Ass'y including 2 connectors).

2.6. Headphone Jack Ass'y

Refer to Fig. 2.2.

(1) Remove Front Panel Ass'y referring to item 2.5.

(2) Remove F10, then disassemble F11 (Headphone Jack Ass'y).

2.7. Mechanism Ass'y

Refer to Fig. 2.2.

(1) Remove Front Panel Ass'y referring to item 2.5.

(2) Remove F12, then disassemble F13 (Mechanism Ass'y including 7 connectors).

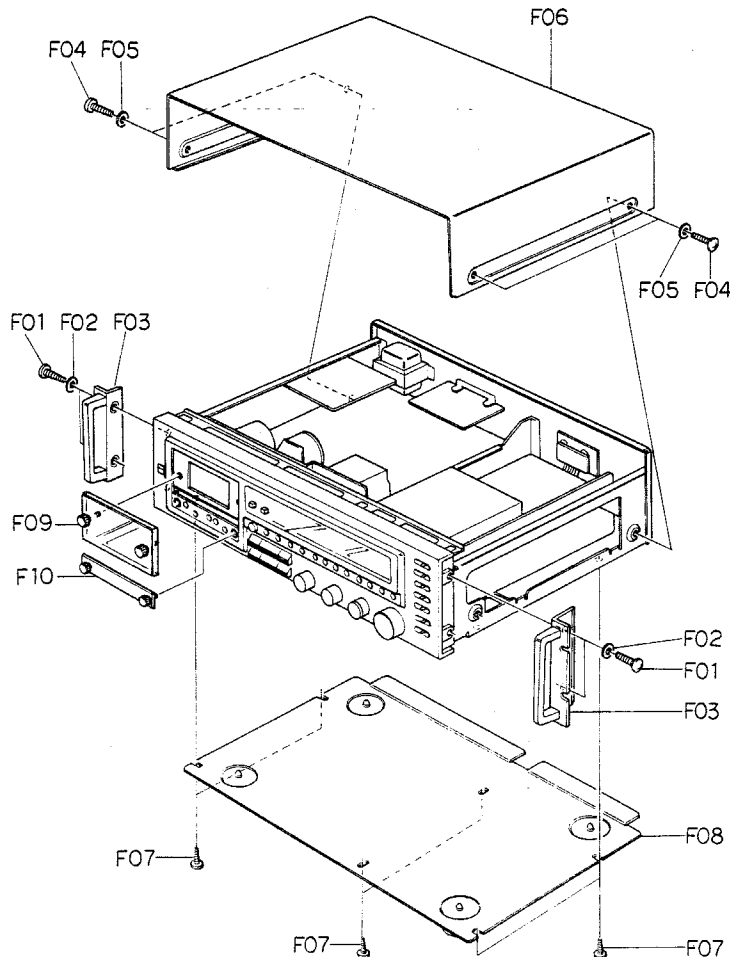


Fig. 2.1

2.8. FL Indicator Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F01, then disassemble F02 (FL Indicator Ass'y including 3 connectors).

2.9. Auto Azimuth P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove one connector and the wires connected by wrapping.
- (3) Remove F03, then disassemble F04 (Auto Azimuth P.C.B. Ass'y)

2.10. Logic P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove 7 connectors and the wires connected by wrapping from F06 (Logic P.C.B. Ass'y).
- (3) Remove F05, then disassemble F06 (Logic P.C.B. Ass'y).

2.11. Switch P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Pull out F07 (Function Switch Knob Ass'y).
- (3) Remove the Flat Cables, connector and wires connected by wrapping from F10 (Switch P.C.B. Ass'y).
- (4) Remove F08 and F09, then disassemble F10 (Switch P.C.B. Ass'y).

2.12. Main P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Remove FL Indicator Ass'y and Switch P.C.B. Ass'y referring to items 2.8 and 2.11.
- (2) Remove the Flat Cables, 3 connectors and wires connected by wrapping from F12 (Main P.C.B. Ass'y).
- (3) Remove F11, then disassemble F12 (Main P.C.B. Ass'y).

2.13. Volume P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Remove FL Indicator Ass'y referring to item 2.8.
- (2) Remove F13 and the Flat Cable from F14 (Volume P.C.B. Ass'y). then disassemble F14 (Volume P.C.B. Ass'y).

2.14. Record Cal. P.C.B. A Ass'y, Record Cal. P.C.B. B Ass'y and Lamp P.C.B. A Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F15, then disassemble F16 (Calibration Case Ass'y)
- (3) Remove F17, then disassemble F18 (Record Cal. P.C.B. A Ass'y).
- (4) Remove F19, then disassemble F20 (Record Cal. P.C.B. B Ass'y).
- (5) Remove F21, then disassemble F22 (Lamp P.C.B. A Ass'y).

2.15. Power Switch

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F23, then disassemble F24 (Power Switch Knob).
- (3) Remove F25, then disassemble F26 (Power Switch Holder Ass'y).
- (4) Remove F27, then disassemble F28 (Power Switch).

2.16. Lamp P.C.B. B Ass'y and Lamp P.C.B. C Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F29, then disassemble F30 (Insulator) and F31 (Lamp P.C.B. B Ass'y).
- (3) Remove F32 (Lamp P.C.B. C Ass'y) by releasing the self-interlocking pin of the Reflector.

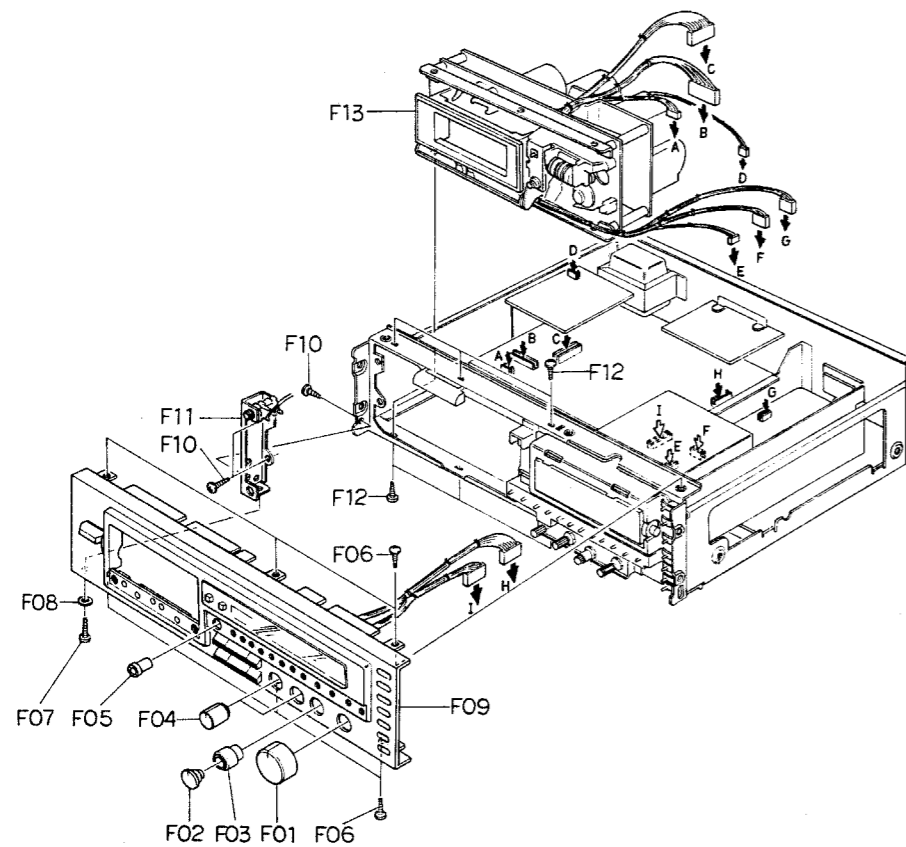


Fig. 2.2

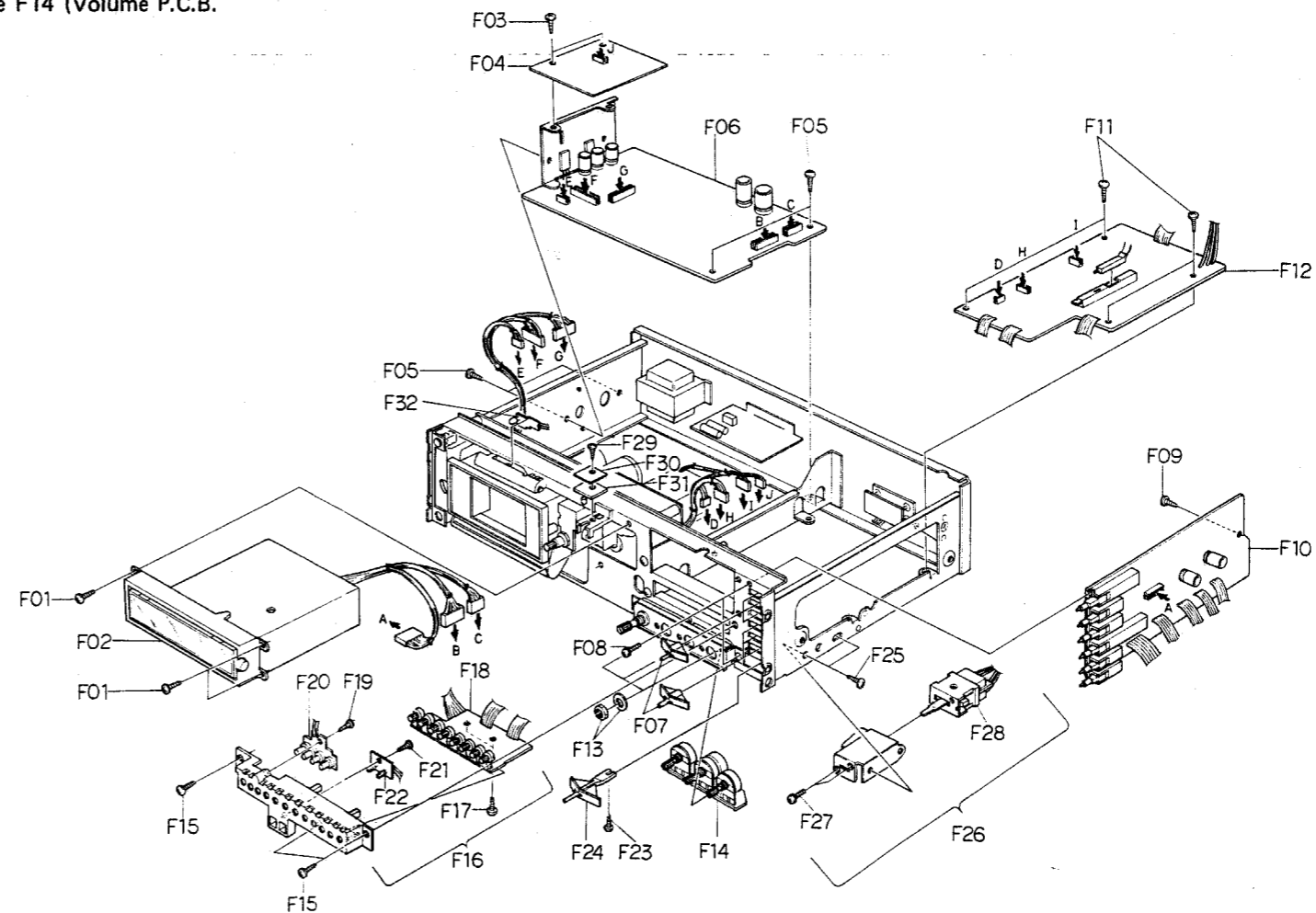


Fig. 2.3

2.17. Control Switch P.C.B. Ass'y

Refer to Fig. 2.4.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F01, F02, F03 and F04, then disassemble F05 (Control Button Ass'y).
- (3) Remove F06, then disassemble F07 (Control Switch P.C.B. Ass'y).

2.18. Indicator P.C.B. Ass'y

Refer to Fig. 2.5.

- (1) Refer to Fig. 2.3. Remove FL Indicator Ass'y referring to item 2.8.
- (2) Remove F01, then disassemble F02 (Shield Cover).
- (3) Remove F03 (Indicator P.C.B. C Ass'y) by releasing the self-interlocking pin of the P.C.B. supporters.
- (4) Remove F04, then disassemble F05 (Indicator P.C.B. B Ass'y).
- (5) Remove F06 and F07, then disassemble F08 (FL Indicator Holder L), F09 (FL Indicator Holder R) and F10 (Indicator P.C.B. A Ass'y).

2.19. Rear Panel Ass'y

Refer to Fig. 2.6.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to items 2.2 and 2.3.
- (2) Remove F01 and F02, then disassemble F03 (Rear Panel Ass'y).

2.20. Power Transformer and Fuse P.C.B. Ass'y

Refer to Fig. 2.6.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to items 2.2 and 2.3.
- (2) Remove F04 and F05, then disassemble F06 (Power Transformer) and F07 (Transformer Plate).
- (3) Remove F08 and F09, then disassemble F10 (Fuse P.C.B. Ass'y).

2.21. Cassette Case Ass'y and Cover Plate Ass'y

Refer to Fig. 2.7.

- (1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.7.
- (2) Press the Eject Button to open the Cassette Case Ass'y.
- (3) Remove F01 and F02, then disassemble F03 (Cassette Case Holder L Ass'y) by releasing the self-interlocking pin of the Damper Lock Arm and F04 (Cassette Case Ass'y).
- (4) Remove F05, then disassemble F06 (Cover Plate Ass'y).

2.22. Tape Counter Ass'y, Memory Switch and Pitch Control Volume

Refer to Fig. 2.7.

- (1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.7.
- (2) Remove F07, then disassemble F08 (Tape Counter Ass'y).
- (3) Remove F09, then disassemble F10 (Pitch Control Holder Ass'y).
- (4) Remove F11, then disassemble F12 (Memory Switch).
- (5) Remove F13, then disassemble F14 (Pitch Control Volume).

2.23. Capstan Motor Ass'y and Flywheel Ass'y

Refer to Fig. 2.8.

- (1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.7.
- (2) Remove F01 and F02, then disassemble F03 (Flywheel Holder Ass'y) and F08 (Capstan Belt).
- (3) Remove F04, then disassemble F05 (Capstan Motor Ass'y).
- (4) Remove F06, then disassemble F07 (Speed Cal. P.C.B. Ass'y).
- (5) Remove F09 (Supply Flywheel Ass'y), then disassemble F10 (Take-up Flywheel Ass'y).
- (6) After removing both Flywheel Assemblies, disassemble F11 (Thrust Washer 3 mm), F12 (Thrust Washer 2.6 mm), F13 (Flange Thrust Cap) and F14 (Thrust Spring).

2.24. Sub Mechanism Chassis Ass'y

Refer to Fig. 2.9.

- (1) Remove Flywheel Holder Ass'y referring to item 2.23.
- (2) Remove F01 and F02, then disassemble F03 (Sub Mechanism Chassis Ass'y).

2.25. Control Motor Ass'y and Reel Motor Ass'y

Refer to Fig. 2.9.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
- (2) Remove F04, then disassemble F05 (Control Motor Ass'y).
- (3) Remove F06, then disassemble F07 (Reel Motor Ass'y).

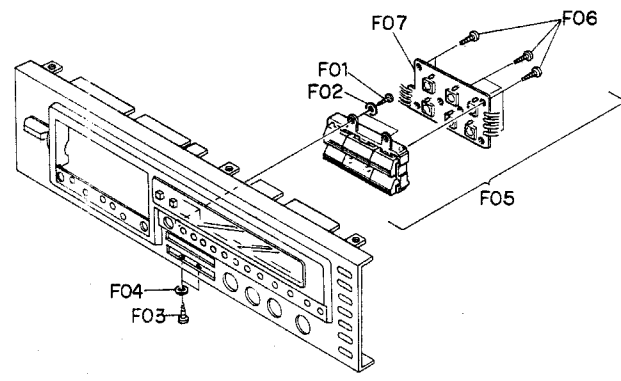


Fig. 2.4

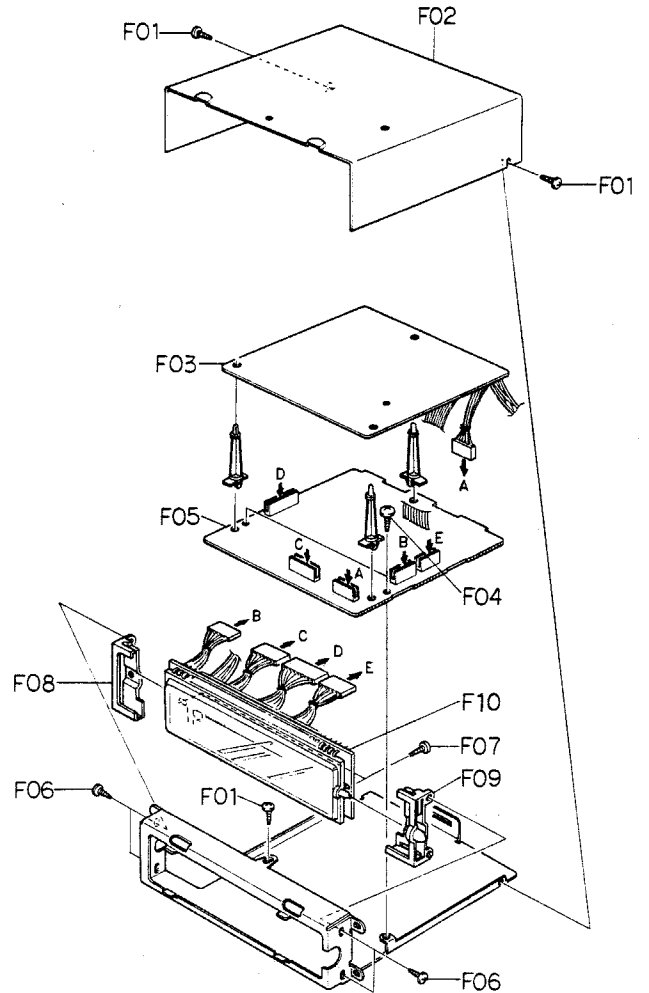


Fig. 2.5

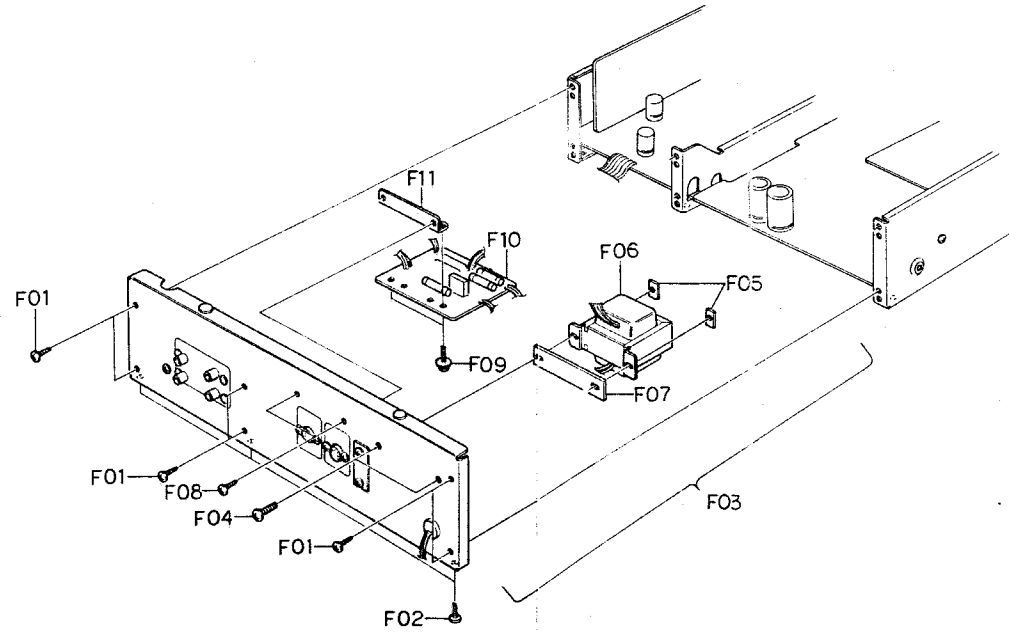


Fig. 2.6

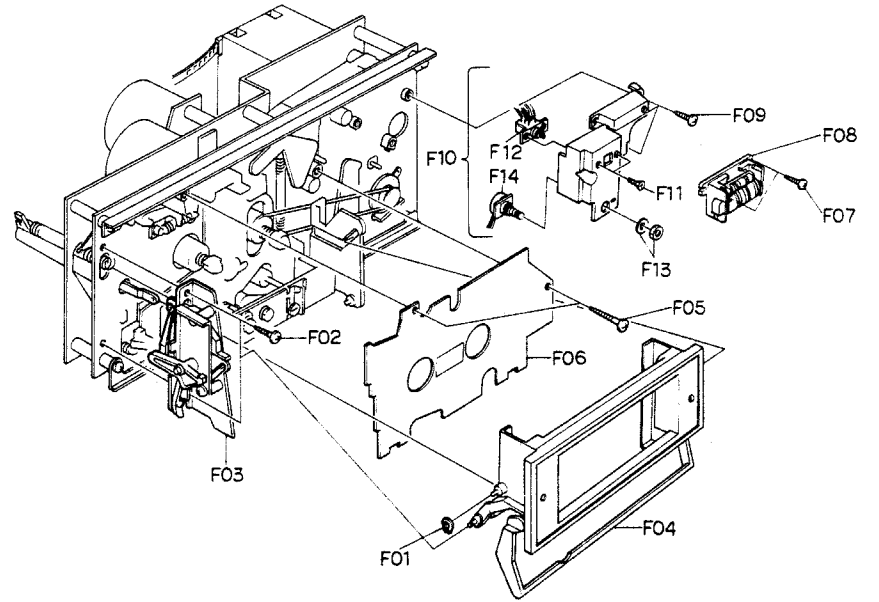


Fig. 2.7

2.26. Cam Control Volume

Refer to Fig. 2.9.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
- (2) Remove F08, then disassemble F09 (Volume Coupler).
- (3) Remove F10, then disassemble F11 (Cam Control Volume).

2.27. Azimuth Motor Ass'y

Refer to Fig. 2.9.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
- (2) Remove F12, then disassemble F13 (Azimuth Alignment Motor Ass'y).
- (3) Remove F14, then disassemble F15 (Azimuth Motor Ass'y) and F16 (Drive Pulley Ass'y).

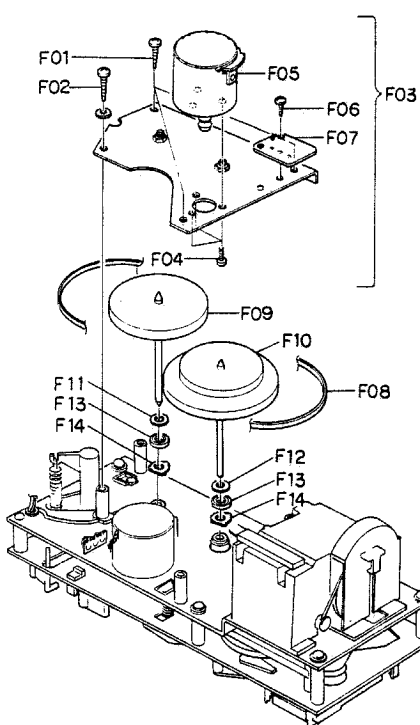


Fig. 2.8

2.28. Reel Hub Ass'y and Idler Ass'y

Refer to Fig. 2.9.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
- (2) Remove F17 (Reel Hub Head), then disassemble F18 (Reel Hub B Ass'y), F19 (Reel Hub Take-up Ass'y), F20 (Reel Hub Supply Ass'y), F21 (Back Tension Ass'y) and F22 (Back Tension Spring).
- (3) Remove F23, then disassemble F24 (Idler Ass'y).

2.29. Cam Drive Gear and Control Cam

Refer to Fig. 2.9.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
- (2) Remove F25, then disassemble F26 (Cam Drive Gear).
- (3) Remove F27, then disassemble F28 (Counter-Load Arm Ass'y).
- (4) Remove F29, then disassemble F30 (Control Cam).

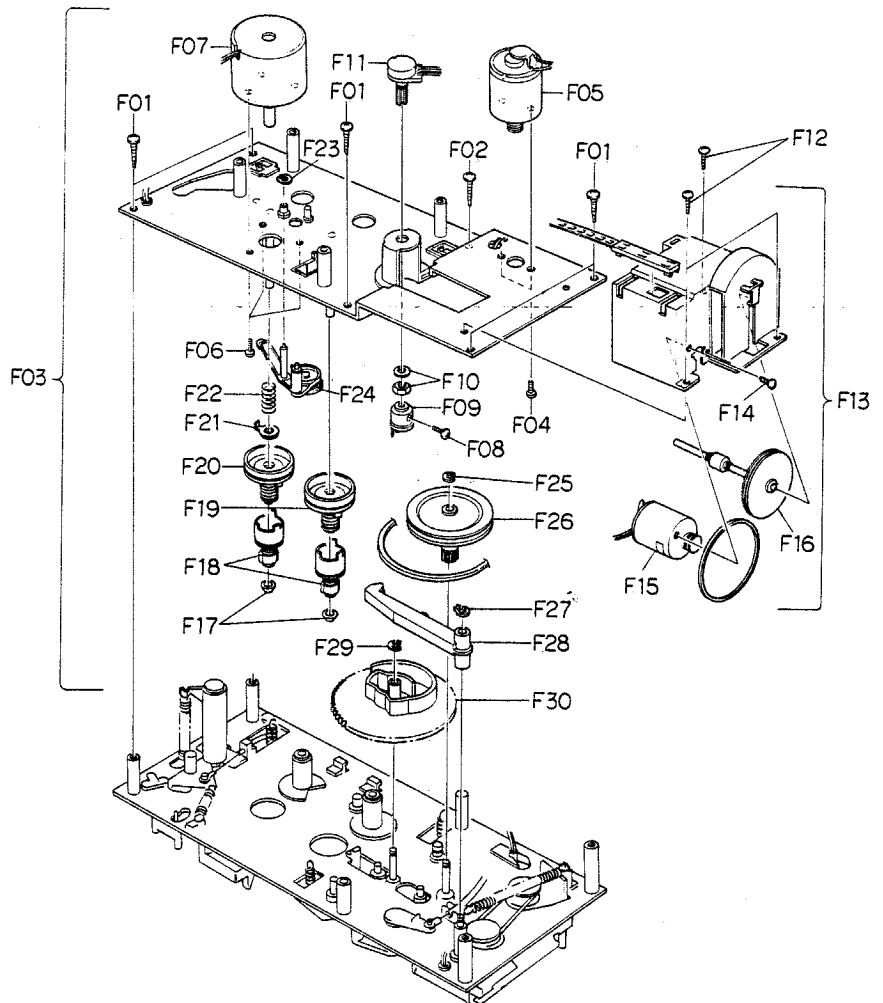


Fig. 2.9

2.30. Head Mount Base Ass'y

Refer to Fig. 2.10.

- (1) Refer to Fig. 2.7. Remove Cassette Case Ass'y referring to item 2.21.
- (2) Remove F01, then disassemble F02 (Head Mount Base Ass'y).

2.31. Pressure Roller Ass'y and Erase Head

Refer to Fig. 2.10.

- (1) Remove Head Mount Base Ass'y referring to item 2.30.
- (2) Remove F03, then disassemble F04 (Supply Pressure Roller Ass'y).
- (3) Remove F05, then disassemble F06 (Erase Head).
- (4) Remove F07, then disassemble F08 (Take-up Pressure Roller Ass'y).

2.32. Playback Head Ass'y and Record Head Ass'y

Refer to Fig. 2.10.

- (1) Remove Head Mount Base Ass'y referring to item 2.30.
- (2) Turn F09 by 90° by pushing it, then disassemble F10 (Playback Head Ass'y).
- (3) Turn F10 by 90° by pushing it, then disassemble F12 (Record Head Ass'y) and F13 (RH Azimuth Alignment Plate).

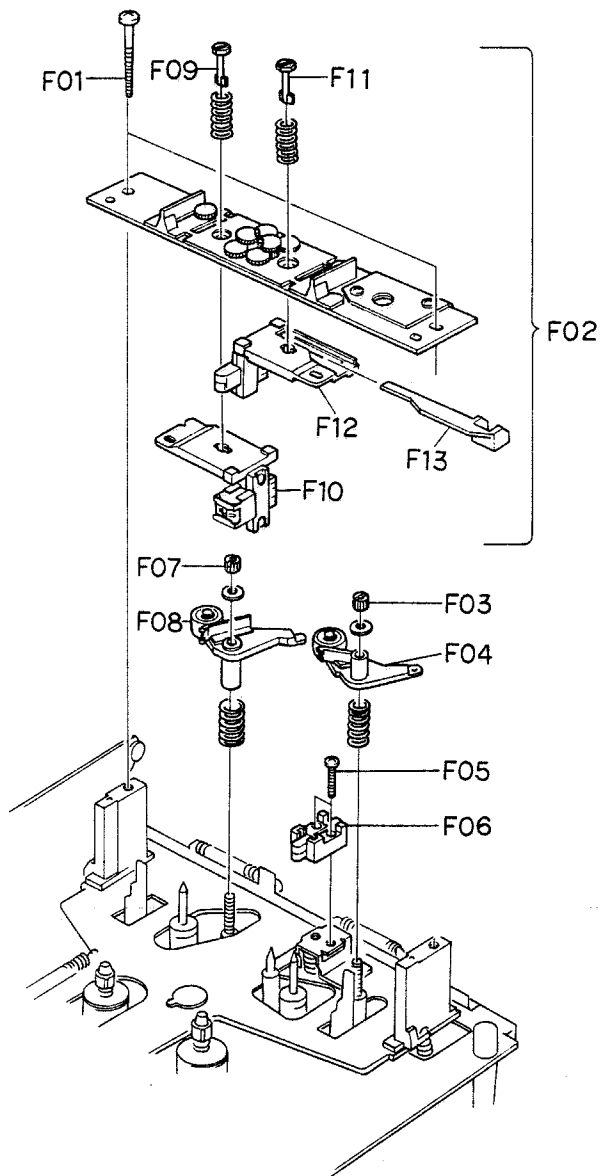


Fig. 2.10

3. MEASUREMENT INSTRUMENTS

- (1) Audio Generator (20 Hz — 200 kHz)
- (2) AC Millivolt Meter (with dB measures)
- (3) Oscilloscope (DC — 5 MHz)
- (4) Distortion Meter
- (5) Speed & Wow/Flutter Meter
- (6) Frequency Counter (DC — 1 MHz)
- (7) Ohm Meter
- (8) DC Volt Meter
- (9) AC Volt Meter
- (10) Torque Gauge (DA09013A)
- (11) 15 kHz Azimuth Tape (DA09004A)
- (12) 3 kHz Speed & Wow/Flutter Tape (DA09006A) for Standard Speed (1-7/8 ips)
- (13) 3 kHz Speed & Wow/Flutter Tape (DA09049A) for Half-Speed (15/16 ips)
- (14) 1 kHz Track Alignment Tape (DA09007A)
- (15) 400 Hz Level Tape (DA09005A)
- (16) 20 kHz PB Frequency Response Tape (DA09001A)
- (17) 15 kHz PB Frequency Response Tape (DA09002A)
- (18) 10 kHz PB Frequency Response Tape (DA09003A)
- (19) Reference EXII Tape (DA09021A)
- (20) Reference SX Tape (DA09025A)
- (21) Reference ZX Tape (DA09037A)
- (22) Tilt Check Gauge M-9039 (DA09039A)
- (23) EH Tilt Check Gauge M-9040 (DA09040A)
- (24) EH Stroke Check Gauge M-9042 (DA09042A)
- (25) EH Stroke Check Gauge M-9051 (DA09051A)
- (26) Stroke Check Gauge M-9047 (DA09047A)
- (27) Record Head Mounting Gauge M-9048 (DA09048A)
- (28) Back Tension Gauge (DA09055A)
- (29) Tension Arm Adjustment Cassette (DA09056A)
- (30) Audio Analyzer T-100
(including Distortion, Wow/Flutter, Speed, Oscillator and dB meter)

Notes: 1. (10) — (30) are the products of Nakamichi Corporation.

2. EH Stroke Check Gauge M-9042 (DA09042A) should be used for the Models serial Nos. from A11601001 to A11603009, and EH Stroke Check Gauge M-9051 (DA09051A) is for the Models bearing serial Nos. A11603010 and greater.

3. Back Tension Gauge (DA09055A) and Tension Arm Adjustment Cassette (DA09056A) are used for the Models bearing serial Nos. A11606264 and greater.

4. MECHANICAL ADJUSTMENTS

4.1. Mechanism Control Cam Adjustment

Before adjustment, disassemble the Front Panel Ass'y, then remove the Cover Plate referring to items 2.5 and 2.21.

(1) Offset Adjustment of Control Motor Driver

(a) Refer to Figs. 4.1 and 4.2.

Adjust VR402 and VR403 on the Logic P.C.B. to locate approximately at the middle of the variable range. Then turn ON the Power Switch.

VR402 (for Cam position stop)

VR403 (for Cam position play)

(b) Press the Stop Switch to set the N-680ZX in stop mode.

Adjust VR402 (for stop) so that the "S" mark on the Cam corresponds to the pointer on the mechanism chassis.

(c) Press the Play Switch to set the N-680ZX in playback mode.

(Cam will rotate, and the position marked with "PY" comes to the pointer.) Adjust VR403 (for play) so that the "PY" mark on the Cam corresponds to the pointer.

(d) Repeat above (b) and (c) 2 - 3 times so that the "S" and "PY" marks on the Cam correspond to the pointer accurately in stop and playback modes respectively.

(This adjustment is required because the position adjusted by one volume will be slightly changed when the other volume is adjusted.)

(e) Set the N-680ZX in FF, pause, or cue mode by pressing each switch (press FF and Pause Switches to set the N-680ZX in cue mode) and check to insure that the pointer is in a range of "F", "PS", or "CU" mark respectively.

(f) If out of the range, precise adjustment for each position according to "(2) Offset Fine Adjustment of Control Motor Driver" will be required.

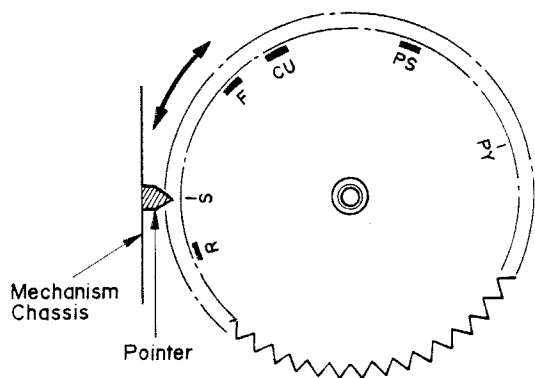


Fig. 4.1

(2) Offset Fine Adjustment of Control Motor Driver

Adjust only if a satisfactory result is not obtained in "(1) Offset Adjustment of Control Motor Driver". This adjustment is made by changing the value of the fixed resistors on the Logic P.C.B.

Note: The value of voltage is typical value.

(a) Observation Point of Reference Voltage

Observe the each voltage at the sliding contact of the Cam Control Volume VR405 (10 kΩ) in stop, fast (FF or REW), pause, record and playback modes.

(b) Reference Voltage

Reference voltage at the sliding contact of VR405 (Cam Control Volume) in each mode is as follows:

Mode	Reference Voltage (Typical Value)
Stop	3.0 V
Fast (FF/REW)	1.3 V
Pause	-2.8 V
Play	-5.4 V

±0.25 V (for Stop and Fast modes)
±0.4 V (for Pause and Play modes)

(c) Resistors for Adjustment

Mode	Ref. No.	Typical Value
Stop	R461	9.1 kΩ (F)
Fast (FF/REW)	R462	4.32 kΩ (F)
Pause	R445	287 kΩ (F)
Play	R443	174 kΩ (F)

(d) Adjustment Procedures

1) Press the Stop Switch to set the N-680ZX in stop mode.

Adjust the value of R461 to obtain 3.0 V (±0.6 V) at the sliding contact of VR405.

Note: When R461 is adjusted, the reference voltage in fast (FF or REW) mode is changed. Therefore, re-check of the reference voltage in fast (FF or REW) mode is required. If the reference voltage is out of the range, re-adjustment of R462 according to next step 2) is necessary.

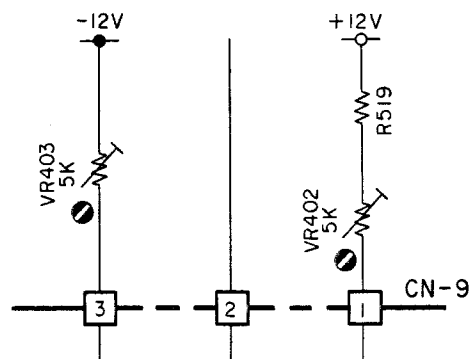


Fig. 4.2

- 2) Set the N-680ZX in FF mode, then adjust the value of R462 so that the voltage of VR405 will become lower by 1.7 V (± 0.25 V) than in stop mode.

- 3) Press the Pause Switch to set the N-680ZX in pause mode.

Adjust the value of R445 to obtain -2.8 V ($+0.4$, -0.15 V) at the sliding contact of VR405.

- 4) Set the N-680ZX in playback mode, then adjust the value of R443 so that the voltage of VR405 will become lower by 2.6 V (± 0.4 V) than in pause mode.

(3) Cam Timing Adjustment

- (a) Remove the wires from the Control Motor Terminals to set the motor open.

- (b) Without loading a cassette tape and with pressing the Record Protecting Switch with your finger tip, press the Record and Play Switches to set the N-680ZX in record mode.

- (c) Turn the Cam and bring the "PY" mark toward the pointer by hand. Reel Motor will rotate before the "PY" mark reaches the pointer. Adjust the value of R483 and R484 so that the voltage at sliding contact of VR405 becomes -3.6 V (± 0.3 V) when Reel Motor starts rotation.

- (d) Observe the mute signal at the Q418 collector.

Turn the Cam referring to above step (c) and check to insure that the voltage at the sliding contact of VR405 is -3.8 V (± 0.3 V) when mute is released (mute signal changes from H to L).

(This voltage is determined by the adjustment of R483 and R484 in above step (c).)

- (e) Observe the $\overline{\text{Rec}}$ signal at the Q417 collector. Turn the Cam referring to above step (c) and adjust the value of R488 to obtain -2.1 V (± 0.4 V) at the sliding contact of VR405 when $\overline{\text{Rec}}$ signal changes from H to L (bias oscillation will begin).

- (f) Upon completion of the above adjustment, re-connect wires to the motor terminals.

4.2. Tape Speed Adjustment

(1) Standard Speed (1-7/8 ips)

- (a) Remove the Top Cover.
 (b) Connect a Frequency Counter to Output Jack.
 (c) Load a 3 kHz Speed Wow/Flutter Tape (DA09006A) and play it back.
 (d) Referring to Fig. 4.3, adjust the Tape Speed Adjustment Volume VR407 on the Speed Cal. P.C.B. to obtain 3,000 Hz on the Frequency Counter.

(2) Half-Speed (15/16 ips)

- (a) Remove the Top Cover.
 (b) Connect a Frequency Counter to Output Jack.
 (c) Load a 3 kHz Speed Wow/Flutter Tape (DA09049A) and play it back.
 (d) Referring to Fig. 4.3, adjust the Tape Speed Adjustment Volume VR408 on the Speed Cal. P.C.B. to obtain 3,000 Hz on the Frequency Counter.

CCW: Motor drives slowly.

CW: Motor drives fast.

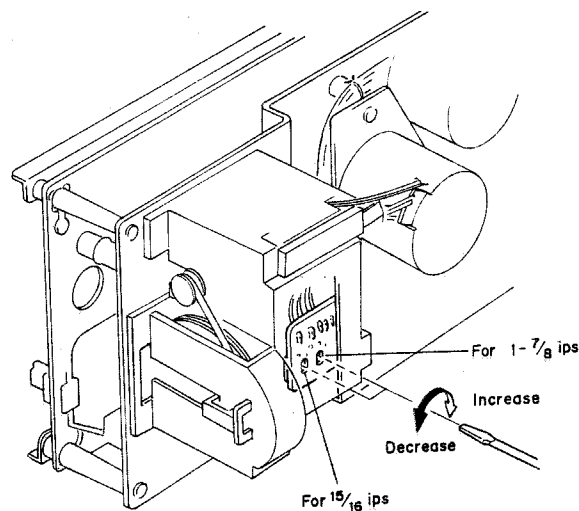


Fig. 4.3

4.3. Record Head and Playback Head Tilt Adjustment

Note: On items 4.3–4.9, please refer to Fig. 4.4 flow chart.

Refer to Figs. 4.5 and 4.6.

- (1) Load a Tilt Check Gauge M-9039 (DA09039A) in the N-680ZX.
- (2) Clip the grounding terminal of the Tilt Check Gauge with one end of the cord with clip, and the other end to the chassis of the N-680ZX.
- (3) Remove both of the Height Gears.
- (4) Set the N-680ZX in play mode. Check to insure whether the Beacons Playback Head "Upper" or "Lower" and Record Head "Upper" or "Lower" are illuminating. In order not to give damages onto the head surfaces, push both of slide knobs of the Gauge to the direction of arrow marks, then return it to the original place to be in contact with record head and playback head surfaces after play mode is se-

curely locked.

- (5) Check to insure freedom from contact between the Gauge and pad lifter.
- (6) Beacon Playback Head "Lower" will light on when height adjustment screw (P) turned clockwise but Playback Head "Upper" when counterclockwise. Adjust so that both "Upper" and "Lower" will light on even when you move the slide knob to the direction of an arrow mark and then return it to the original place.
- (7) Same procedures will apply to the Beacons Record Head "Upper" and "Lower", except for the height adjustment screw (R).
- (8) Set the N-680ZX in stop mode and fit both of the serrated height gears. Then set the N-680ZX again in play mode and insure all of the 4 Beacons are illuminating. If not, (3) through (7) will have to be repeated till satisfactory results are obtained.

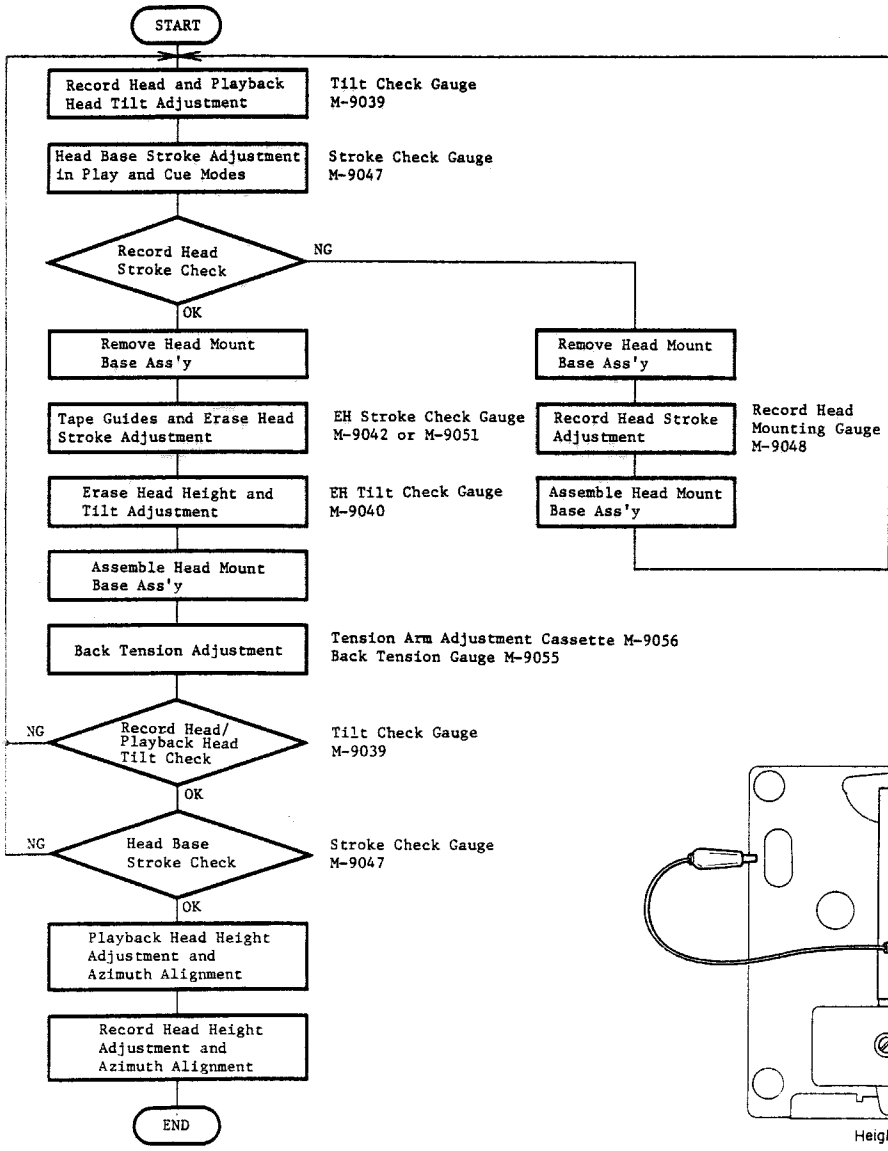


Fig. 4.4

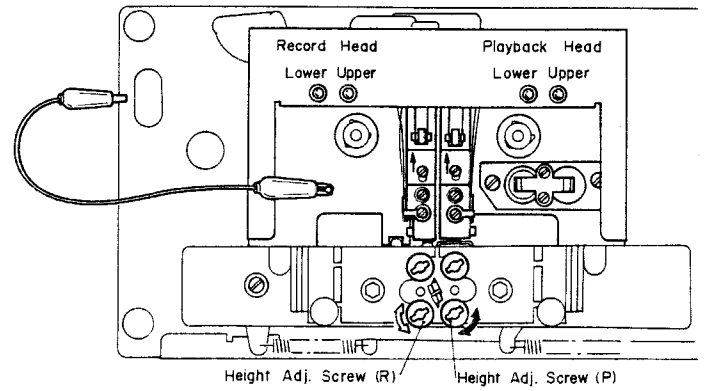


Fig. 4.5

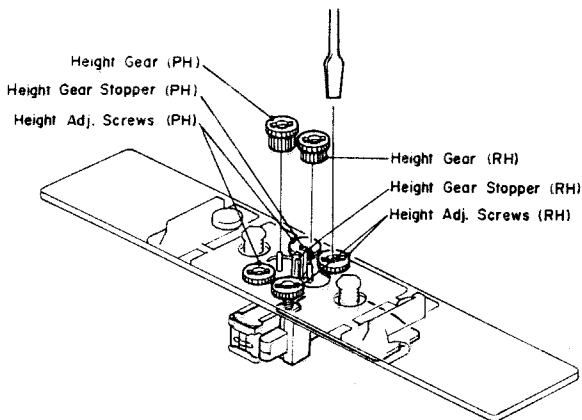


Fig. 4.6

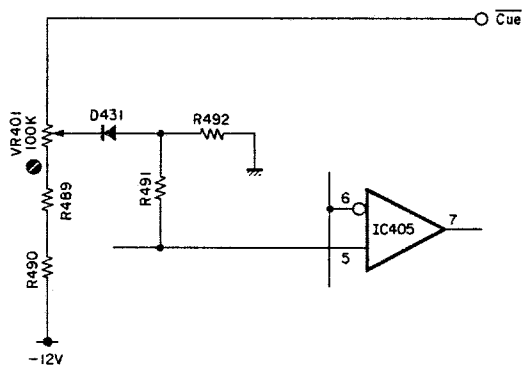


Fig. 4.8

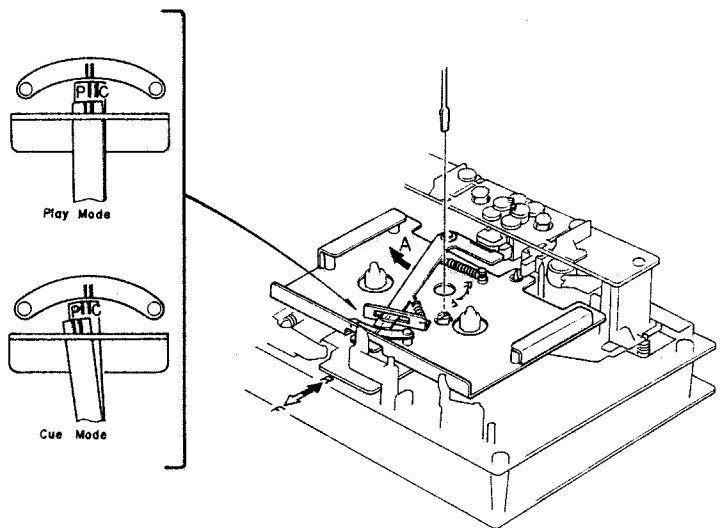


Fig. 4.7

4.4. Head Base Stroke Adjustment in Play and Cue Modes

Note: Before you conduct this adjustment, adjust with a "Tilt Check Gauge" to insure freedom from tilt on the playback head and record head.

(1) Head Base Stroke Adjustment in Play Mode

Refer to Fig. 4.7.

- Load a Stroke Check Gauge M-9047 (DA09047A) in the N-680ZX.
- Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the N-680ZX in play mode. Then slowly release the Indicators and insure whether each of the Indicators is in contact with record and playback heads.
- Check to insure whether the "P" pointer on the Playback Head Indicator locates between the 2 lines on the Indicator Plate.
- If the playback head stroke is noted to be misaligned, adjustment can be made by moving the stroke adjuster assembled in the head base assembly (either forwardly or backwardly).
- Check to insure whether the "P" pointer on the Playback Head Indicator locates between the 2 lines on the Record Head Indicator, thus check can be made on record head stroke.

- If the record head stroke is noted to be misaligned, adjustment can be made with a Record Head Mounting Gauge M-9048 (DA09048A).

(2) Head Base Stroke Adjustment in Cue Mode

Refer to Fig. 4.8.

- Load a Stroke Check Gauge M-9047 (DA09047A) in the N-680ZX.
- Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the N-680ZX in cue mode (F.F. and Pause). Then slowly release the Indicators and insure whether each of the Indicators is in contact with record and playback heads.
- Check to insure whether the "C" pointer on the Playback Head Indicator locates between the 2 lines on the Indicator Plate.
- If the playback head stroke is noted to be misaligned, adjust VR401 on the Logic P.C.B. Ass'y till satisfactory results are obtained.
- After completion of the Head Base Stroke Adjustment, check to insure accuracy of the Head Base Stroke Adjustment in play mode. If the above are inaccurate, items (1) and (2) will have to be repeated till satisfactory results are obtained.

4.5. Tape Guides Adjustment and Erase Head Stroke Adjustment

Remove Head Mount Base Ass'y referring to item 2.30. Refer to Figs. 4.9 and 4.10.

(1) Supply Tape Guide Height Adjustment

- (a) Load an EH Stroke Check Gauge M-9042/M-9051 in the N-680ZX.
- (b) Set the N-680ZX in play mode.
- (c) Slide the Supply Tape Guide Check Bar down against the supply tape guide, thus check can be made on supply tape guide height.
- (d) If the supply tape guide is misaligned, the Supply Tape Guide Check Bar will not come into the supply tape guide. If such is noted, turn to adjust the height adjustment nut A till the Supply Tape Guide Check Bar is accepted by the supply tape guide.
- (e) If the above are insured, set the N-680ZX in pause mode, then in play mode to see whether adjustments are appropriately made. If not, (b) through (e) will have to be repeated till satisfactory results are obtained.

(2) Take-up Tape Guide Height Adjustment

- (a) Load an EH Stroke Check Gauge M-9042/M-9051 in the N-680ZX.
- (b) Set the N-680ZX in play mode.
- (c) Slide the Take-up Tape Guide Check Bar down against the take-up tape guide, thus check can be made on take-up tape guide height.
- (d) If the take-up tape guide is misaligned, the Take-up Tape Guide Check Bar will not come into the take-up tape guide. If such is noted, turn to adjust the height adjustment nut B till the Take-up Tape Guide Check Bar is accepted by the take-up tape guide.
- (e) If the above are insured, set the N-680ZX in pause mode, then in play mode to see whether adjustments are appropriately made. If not, (b) through (e) will have to be repeated till satisfactory results are obtained.

(3) Erase Head Stroke Adjustment

- (a) Load an EH Stroke Check Gauge M-9042/M-9051 in the N-680ZX.
- (b) Set the N-680ZX in play mode, thus check can be made on erase head stroke through the EH Stroke Indicator.
- (c) Check to insure whether the erase head surface is aligned with red line on the EH Stroke Indicator. If not, adjust the erase head stroke by loosening 2 screws that assembled erase head and erase head plate.
- (d) After completion of adjustment, 2 pcs. of screws shall be locked with lock tight paint.

Note:

EH Stroke Check Gauge M-9042 (DA09042A) should be used for the Models serial Nos. from A11601001 to A11603009, and EH Stroke Check Gauge M-9051 (DA-09051A) is for the Models bearing serial No. A11603010 and greater.

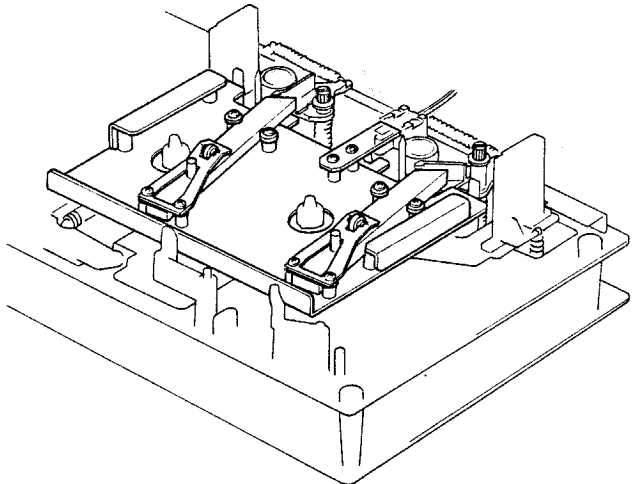


Fig. 4.9

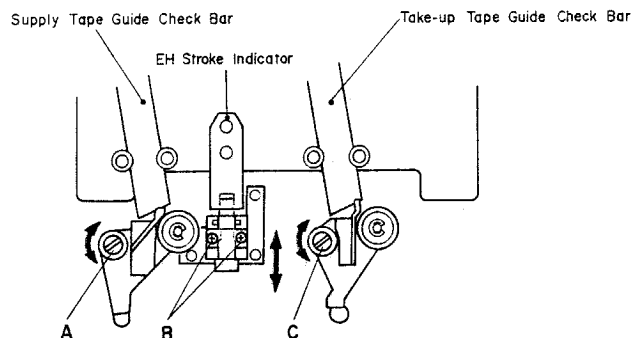


Fig. 4.10

4.6. Erase Head Height and Tilt Adjustment

Refer to Figs. 4.11 and 4.12.

- (1) Remove Head Mount Base Ass'y referring to item 2.30.
- (2) Load an EH Tilt Check Gauge M-9040 (DA09040A) in the N-680ZX.
- (3) Set the N-680ZX in stop mode.
- (4) Check to insure whether one of the 3 Beacons is illuminating. Look down the mirror as shown by an arrow mark and slowly turn the Screw "Height" counterclockwise (or clockwise) so that the two horizontal lines on the mirror will become superposed on the line (in different color) of the erase head, and check to insure whether Beacon "1" is illuminating.

- (5) Turn Screw "Tilt" counterclockwise (or clockwise) to light on Beacon "2". Excessive turning will cause the Beacon "1" to light off. Adjustments of Screw "Tilt" will therefore be conducted till both of the Beacons "1" and "2" illuminate.
- (6) Turn Screw "Azimuth" counterclockwise (or clockwise) to light on Beacon "3". Excessive turning will cause either Beacon "1" or "2" to light off, and therefore adjust with Screw "Azimuth" until all of the 3 Beacons "1", "2" and "3" illuminate.

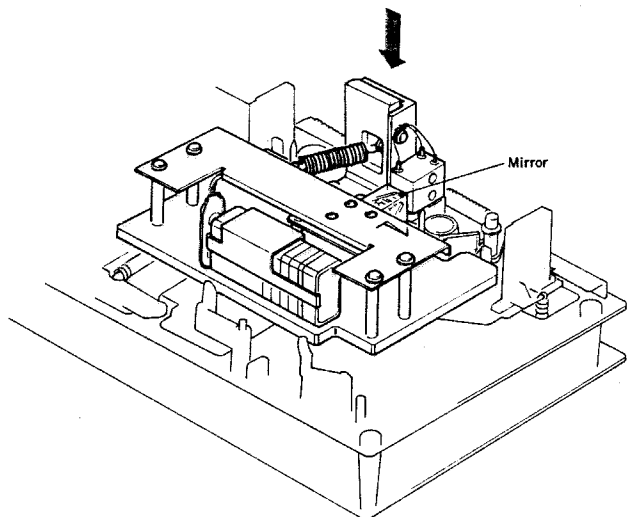


Fig. 4.11

- (7) Check to insure whether the horizontal line on the mirror corresponds to that on the erase head. If not, (4) through (7) will have to be repeated till satisfactory results are obtained.
- (8) After completion of adjustment, 3 pcs. of screws shall be locked with lock tight paint.

Note: Before use of this gauge, check to insure freedom from dust or dirt, or overflow in the groove of the erase head surface.

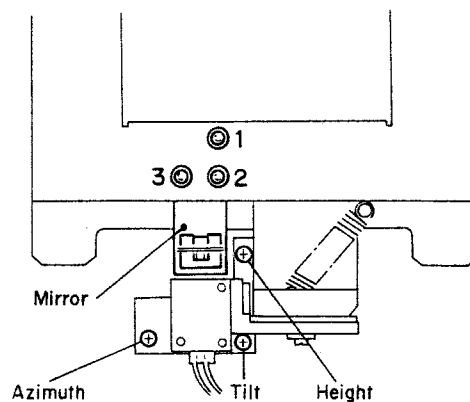


Fig. 4.12

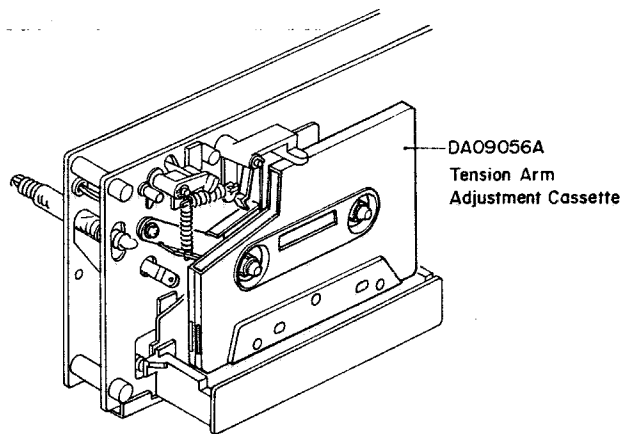


Fig. 4.13

4.7. Back Tension Adjustment

Note: This adjustment is required for the Models bearing serial Nos. A11606264 and greater.

Refer to Figs. 4.13 – 4.16.

- (1) Load the Tension Arm Adjustment Cassette (DA 09056A) referring to Fig. 4.13.
- (2) Set the Cassette Deck in play mode.
- (3) Bend the Back Tension Arm with pliers so that the gap between the Cassette Holding Spring assembled with the Head Base Ass'y and the Back Tension Arm becomes 0.5 mm as shown in Fig. 4.14. Do not bend the pointed end of the Back Tension Arm.

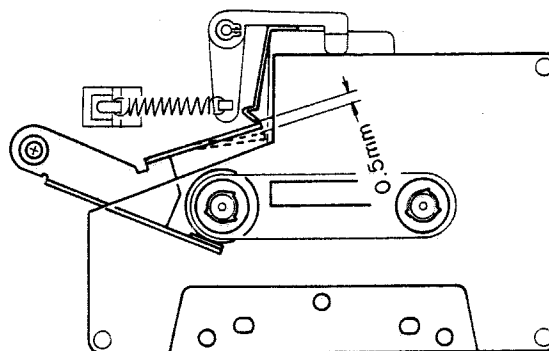


Fig. 4.14

- (4) Set the Cassette Deck in stop mode, and remove the Tension Arm Adjustment Cassette (DA09056A), then set the Cassette Deck in cue mode.

In cue mode, check to insure that the gap is found between the Supply Reel Hub B Ass'y and the Felt of Back Tension Ass'y as shown in Fig. 4.15.

- (5) Load the Back Tension Gauge (DA09055A).
- (6) Set the Cassette Deck in play mode and read the torque value of Back Tension Gauge.

If the value is in a range of 6 g-cm to 10 g-cm, adjustment is not necessary. If not, change the installation point of the Back Tension Spring as shown in Fig. 4.16, and obtain the torque of 7 g-cm to 9 g-cm range.

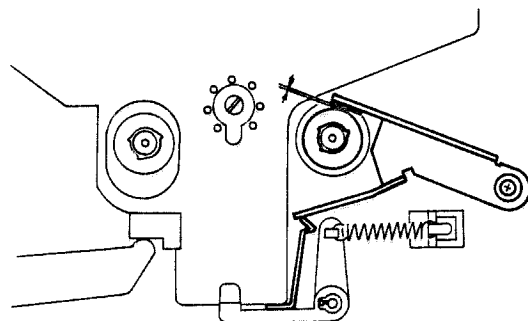


Fig. 4.15

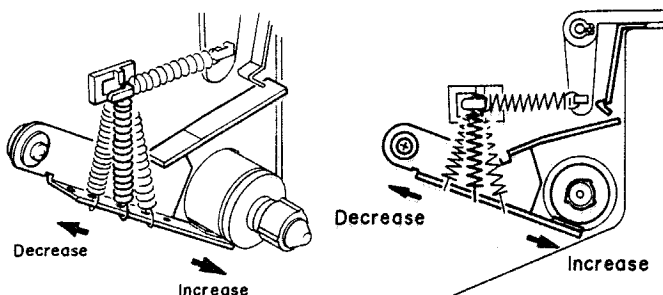


Fig. 4.16

4.8. Playback Head and Record Head Height Adjustment and Azimuth Alignment

(1) Playback Head Height Adjustment and Azimuth Alignment

Refer to Fig. 4.17.

- (a) Set the Monitor Switch to the Tape position, then connect a VTVM to the Output Jacks.
- (b) Load a 1 kHz Track Alignment Tape (DA09007A), then set the N-680ZX in play mode.
- (c) Turn the PH Height Gear until the outputs of both channels become minimum.
- (d) Load a 15 kHz Azimuth Tape (DA09004A), then set the N-680ZX in play mode.
- (e) Turn the PH Azimuth Alignment Screw until the outputs of both channels become maximum.
- (f) Repeat above steps (b) through (e) one or two times to obtain optimum performance.

(2) Record Head Height Adjustment and Azimuth Alignment

Refer to Figs. 4.17 – 4.20.

- (a) Set the N-680ZX in stop mode.
Turn the Azimuth Motor in the Azimuth Alignment Motor Ass'y by hand so that the Alignment Indicator corresponds to the pointer of the Azimuth Alignment Motor Ass'y as shown in Fig. 4.18.
Remove the Azimuth Alignment Wire by pulling out from the Azimuth Alignment Motor Ass'y. In this case, do not move the Slide Lever of the Azimuth Alignment Wire. Short both leads of capacitor C903 on the Auto Azimuth P.C.B. Ass'y with a jumper wire.

- (b) Set the Monitor Switch to the Tape position, then connect a VTVM to the Output Jacks.
- (c) Load a Reference SX Tape (DA09025A). Set the Eq. Switch to the 70 μs position and the Tape Switch to the SX position. Then set the N-680ZX in record and play mode.
- (d) Set the Display Switch to the Cal. position, then turn the RH Height Gear until the outputs of both channels become maximum.
- (e) Feed in 15 kHz (-20 dB), then set the N-680ZX in record and play mode. Turn the RH Azimuth Alignment Screw until the outputs of both channels become maximum.
- (f) Repeat above steps (d) and (e) one or two times to obtain optimum performance.
- (g) After completion of the above adjustments, perform the following electrical adjustments first at standard tape speed, then at half tape speed.

Note: Use the same side of the same tape used in the above steps.

- (1) Standard Speed (1-7/8 ips):
 - a) Set the Monitor Switch to the Tape position and the Display Switch to the Cal. position, then set the N-680ZX in record and play mode.
 - b) Adjust VR404 on the Logic P.C.B. Ass'y so that the cursors are coincident with the rightmost edges of the main displays on the FL Level Indicators.
 - c) Adjust VR901 on the Auto Azimuth P.C.B. Ass'y so that the Azimuth Motor stops its rotation.

- (2) Half-Speed (15/16 ips):
- Set the Tape Selector to the 15/16 ips position.
 - Feed in 15 kHz (-20 dB), then set the N-680ZX in record and play mode. Turn the RH Azimuth Alignment Screw until the outputs of both channels become maximum.
 - Set the Monitor Switch to the Tape position and the Display Switch to the Cal. position, then set the N-680ZX in record and play mode.
 - Adjust VR405 on the Logic P.C.B. Ass'y so that the cursors are coincident with the rightmost edges of the main displays on the FL Level Indicators.
 - Adjust VR902 on the Auto Azimuth P.C.B. Ass'y so that the Azimuth Motor stops its rotation.
- (h) Set the N-680ZX in stop mode.

Mount the Azimuth Alignment Wire on the Azimuth Alignment Motor Ass'y referring to Fig. 4.19. (Correct the position of the Slide Lever of the Azimuth Alignment Wire by sliding by hand, then insert the Slide Lever into the receptacle of the Azimuth Alignment Motor Ass'y.)

Remove the shorting jumper wire from C903 on the Auto Azimuth P.C.B. Ass'y.

- After completion of the above adjustments, record 400 Hz tone to the same portion of both sides A and B of the tape.
- Immerse the recorded tape in a magnetized developing solution. In turn, check to insure that the recording head tracks across the center are separated with a distance of 0.55 to 0.75 mm (typically 0.65 mm) as illustrated in Fig. 4.20.

Note: Liquid for tape magnetized development solution

"MAGNA-SEE SOUND CRAFT a product of CBS RECORDS a division of Columbia Broadcasting System, Inc., Danbury, Conn. 06810 U.S.A., or equivalent".

After development, clean the tape otherwise pressure rollers and heads will become dirty.

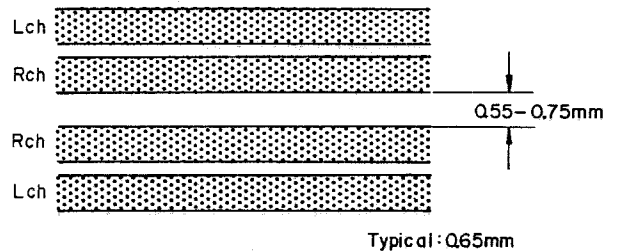


Fig. 4.20

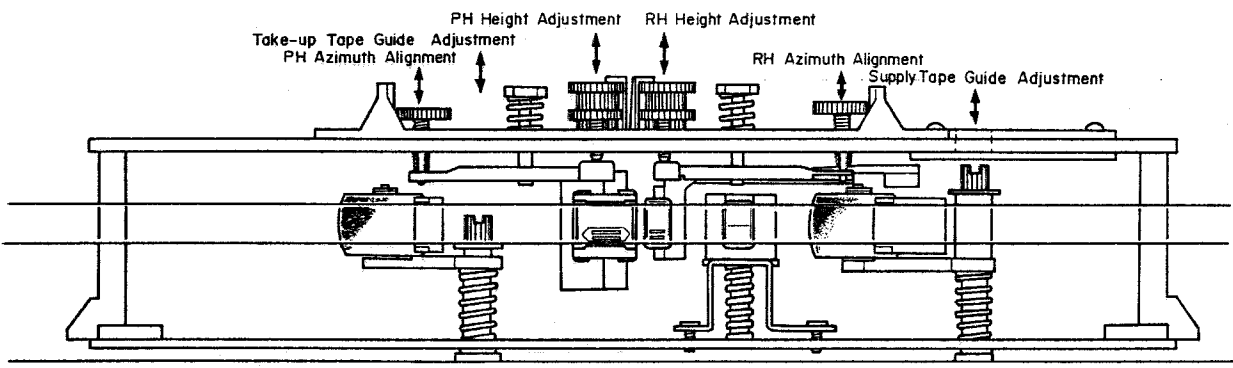


Fig. 4.17

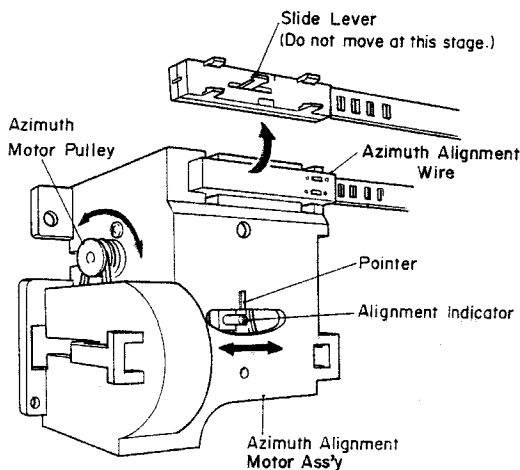


Fig. 4.18

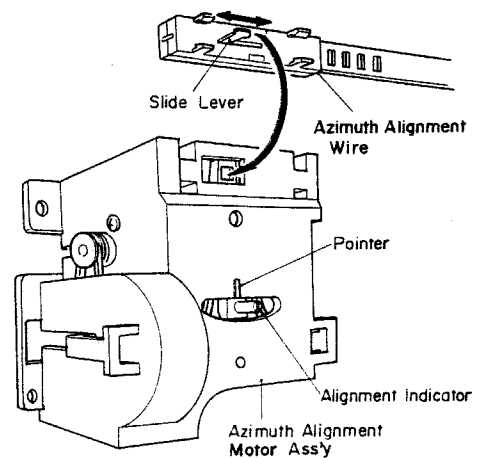


Fig. 4.19

4.9. Record Head Stroke Adjustment

Refer to Figs. 4.21 and 4.22.

Note: This adjustment will be required only to insure freedom from misalignment of the record head stroke in the record head stroke check mode.

- (1) Check the accuracy of the record head stroke.
- (2) Remove Head Mount Base Ass'y referring to item 2.30.
- (3) Remove the record head assembly.
- (4) Adjustment of Record Head Mounting Gauge M-9048 (DA09048A)
 - (a) Mount the Block B onto the Mounting Gauge Plate.
 - (b) Loosen the 2 screws fixing the Block A.
 - (c) As shown in Fig. 4.21 hold the Gauges (3.05 mm and 0.1 mm thickness) between the Block A and Block B, fix the Block A with screws, pushing the Block A to the 2 guide pins.
- (5) Remove the Block B from the Mounting Gauge Plate.
- (6) As shown in Fig. 4.22, mount the R-8L record head assembly onto the Mounting Gauge Plate, then check the location of the R-8L record head surface. (If record head contacts to the Block C, loosen 2 pcs. of screws that assembled record head and R-8L record head assembly, then place the R-8L record head assembly onto the Plate.)
- (7) Remove the R-8L record head assembly from the Mounting Gauge Plate.

- (8) Readjustment of Record Head Mounting Gauge M-9048 (DA09048A)
 - (a) Mount the Block B onto the Mounting Gauge Plate.
 - (b) Loosen the 2 screws fixing the Block A.
 - (c) As shown in Fig. 4.21 hold the Gauges (3.05 mm and either one of 0.05, 0.15, 0.2, 0.25, 0.3 or 0.35 mm thickness) between the Block A and Block B, fix the Block A with screw, pushing the Block A to the 2 guide pins.

- (9) Remove the Block B from the Mounting Gauge Plate.
- (10) Mount the R-8L record head assembly onto the Mounting Gauge Plate.
- (11) As shown in the Fig. 4.22, loosen the R-8L record head with 2 pcs. of screws onto the record head plate. As the location of the Block A is secured by the item (8)-(c), push the record head to the directions A and B, then tighten 2 pcs. of screws.
- (12) Check to insure freedom from gap between the Block C and record head surface, then tighten the 2 pcs. of screws on the record head plate with lock tight paint.
- (13) Assemble the record head assembly to the head mount base assembly.
- (14) Assemble the head mount base assembly to the mechanism assembly.
- (15) Check the record head stroke.

If the above are inaccurate, items (1) through (15) will have to be repeated till satisfactory results are obtained.

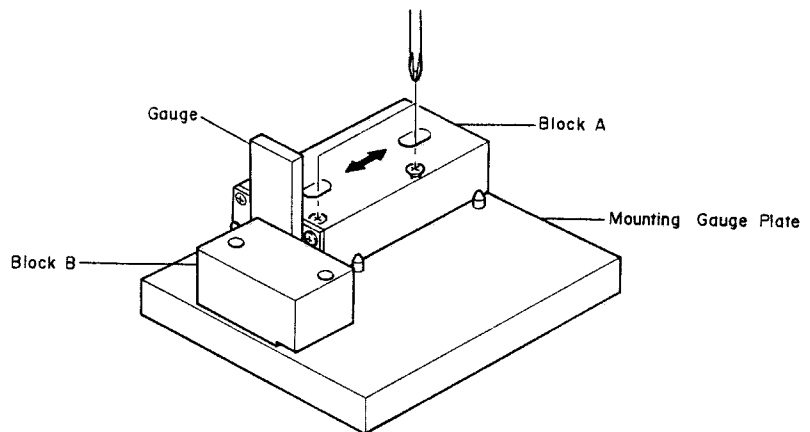
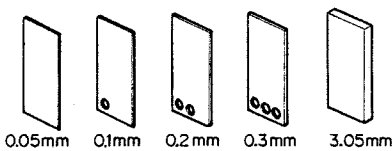


Fig. 4.21

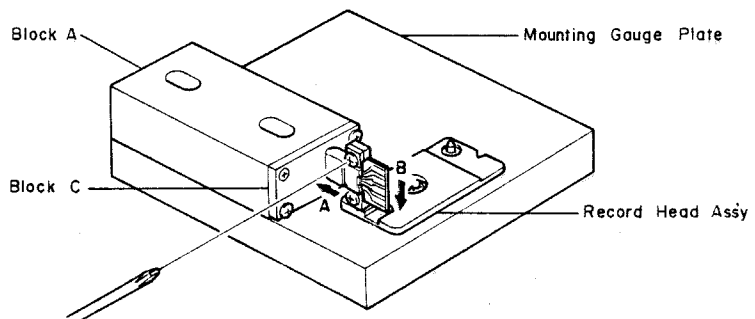


Fig. 4.22