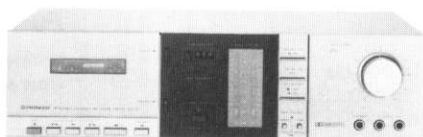


# Service Manual

**CIRCUIT & MECHANISM  
DESCRIPTIONS  
REPAIR & ADJUSTMENTS**



**ORDER NO.  
ARP-061-0**

**STEREO CASSETTE TAPE DECK**

## CT-3

**MODEL CT-3 COMES IN SIX VERSIONS DISTINGUISHED AS FOLLOWS:**

| Type | Voltage                            | Remarks              |
|------|------------------------------------|----------------------|
| KU   | AC120V only                        | U.S.A. model         |
| KC   | AC120V only                        | Canada model         |
| D    | AC120V, 220V and 240V (switchable) | General export model |
| HE   | AC220V and 240V (switchable)       | Europe model         |
| HB   | AC220V and 240V (switchable)       | United Kingdom model |
| HP   | AC220V and 240V (switchable)       | Australia model      |

- This service manual is applicable to the KU type. When repairing the KC and D types, please see page 23.
- When repairing the HE, HB and HP types, please see the additional service manual <ARP-060>.
- Ce manuel d'instruction se réfère au mode de réglage, en français.
- Este manual de servicio trata del método de ajuste escrito en español.

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# 1. SPECIFICATIONS

## Tape Deck Section

|                                                           |                                                                             |
|-----------------------------------------------------------|-----------------------------------------------------------------------------|
| System                                                    | Compact cassette, 2-channel stereo                                          |
| Motor                                                     | DC servo motor x 1                                                          |
| Heads                                                     | "Hard Permalloy" Recording/Play-back head x 1<br>"Ferrite" Erasing head x 1 |
| Fast Winding Time                                         | Approximately 110 seconds (C-60 tape)                                       |
| Wow and Flutter                                           | No more than 0.05% (WRMS)                                                   |
| Frequency Response                                        |                                                                             |
| -20 dB recording:                                         |                                                                             |
| Normal, LH tapes                                          | 20 to 14,000 Hz<br>(35 to 12,000 $\pm 3$ dB)                                |
| Chromium dioxide tape                                     | 20 to 16,000 Hz<br>(35 to 15,000 Hz $\pm 3$ dB)                             |
| Metal tape                                                | 20 to 17,000 Hz<br>(35 to 16,000 Hz $\pm 3$ dB)                             |
| 0 dB recording:                                           |                                                                             |
| Chromium dioxide tape                                     | 35 to 8,000 Hz $\pm 3$ dB                                                   |
| Metal tape                                                | 35 to 13,000 Hz                                                             |
| Signal-to-Noise Ratio                                     |                                                                             |
| Dolby NR OFF                                              | More than 58 dB                                                             |
| Dolby NR ON                                               | More than 68 dB<br>(at 5 kHz)                                               |
| Harmonic Distortion                                       | No more than 1.2% (0 dB)                                                    |
| Input (Sensitivity/Maximum allowable input/Impedance)     |                                                                             |
| Mic (L, R)                                                | 0.3 mV/57 mV/10 k $\Omega$ , 6 mm diam. jack                                |
| (Reference MIC impedance; 250 $\Omega$ to 10 k $\Omega$ ) |                                                                             |
| LINE (INPUT)                                              | 50 mV/25 V/75 k $\Omega$ , Pin jack                                         |
| Output (Reference level/Load impedance)                   |                                                                             |
| LINE (OUTPUT)                                             | 450 mV/50 k $\Omega$ , pin jack                                             |
| HEADPHONES                                                | 65 mV/8 $\Omega$ , 6 mm                                                     |

## Subjunctions

Dolby NR system B type  
 Stand-by mechanism with unattended recording  
 REC muting function  
 Mechanical auto stop  
 3 position tape selector (NORM/CrO<sub>2</sub>/METAL)  
 One Touch recording system  
 REC function with LED indicator lamp  
 Soft Lock mechanism  
 2 color digital level meter (6 seg LED Peak Meter)  
 MS (Music Search) system  
 MPX filter switch

## Miscellaneous

|                          |                                                                           |
|--------------------------|---------------------------------------------------------------------------|
| Power Requirements       |                                                                           |
| KU (KC) type             | AC120V, 60 Hz                                                             |
| Power Consumption        | 16 watts                                                                  |
| Dimension                | 420 (W) x 120 (H) x 245 (D) mm<br>16-9/16 (W) x 4-3/4 (H) x 9-5/8 (D) in. |
| Weight (without package) | 4.4 kg (9 lb 11 oz)                                                       |

## Furnished Parts

|                                |   |
|--------------------------------|---|
| Connection cord with pin plugs | 2 |
| Operating instructions         | 1 |

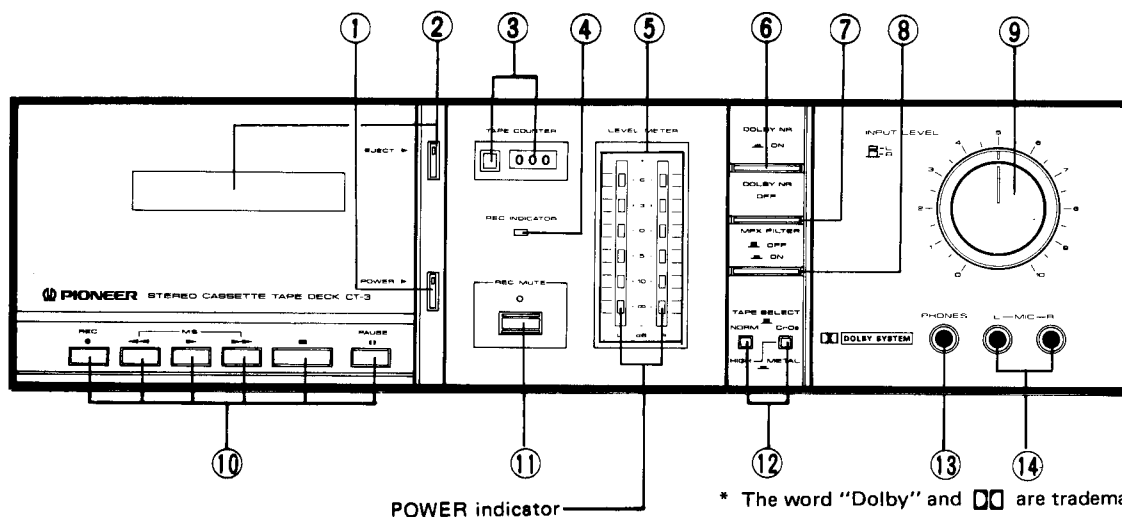
### Note:

*Specifications and the design subject to possible modifications without notice due to improvements.*

## NOTES:

- Reference Tapes: Normal & LH: DIN 45513/BLATT6 or equiv.  
CrO<sub>2</sub> DIN 45513/BLATT7 (CrO<sub>2</sub>) or equiv.
- Reference Recording Level: Meter 0 dB indicating level (160 nwb/m magnetic level = Phillips cassette reference level)
- Reference Signal: 333 Hz
- Wow & Flutter: • JIS [3 kHz, with accustic compensation (weighted) rms value]
- Frequency Response: • Measured at -20 dB level, DOLBY NR OFF, level deviation is  $\pm 6$  dB without indication.
- Signal to Noise Ratio: • Measured at the third harmonic distortion 3% level, weighted.
- Sensitivity: Input level (mV) required or reference recording level with input (REC) controls set to maximum.
- Maximum Allowable Input: While decreasing settings of input (REC) level controls and increasing level at input jacks, this is the maximum input level (mV) at the point where recording amplifier output waveform becomes clipped.
- Reference Output Level: Playback output level when meter indicates 0 dB.

## 2. FRONT PANEL FACILITIES



\* The word "Dolby" and  are trademarks of Dolby Laboratories Licensing Corporation.

### ① POWER switch

Depress this switch to turn on or turn off power. When the switch is depressed power is supplied and POWER indicator lights. When the switch is released power is turned off and POWER indicator is extinguished.

### ② EJECT button and cassette holder

The cassette tape is housed in this holder.

To open the holder: Depress the EJECT button.

To close the holder: Push the holder by hand.

### ③ TAPE COUNTER and reset button

The figures on the tape counter increase or decrease in line with the forward or rewind movement of the tape. If the counter is set to "000" at the start of recording, it will be easy to find the recording start position when you want to listen to the program again at a later date. (Rewind the tape to the "000" position on the counter.)

### ④ REC indicator

This lights when the REC switch is depressed.

### ⑤ Recording/playback level meter

This indicates the strength of the sound being played back or the sound about to be recorded.

### ⑥ DOLBY\* NR ON switch

Depress this to the ON position when recording or playing back a tape with the Dolby noise reduction system.

### ⑦ DOLBY\* NR OFF switch

Depress this to the OFF position.

### ⑧ MPX FILTER switch

Depress this when recording an FM program with the Dolby noise reduction system.

### ⑨ INPUT recording level controls

Rotate these controls while observing the level meter when adjusting the strength of the sound that is to be recorded. The strength is increased when the controls are rotated clockwise from the "0" minimum position.

Front control: For left channel adjustments

Back control: For right channel adjustments

The controls normally rotate together. To rotate only one control, hold the other so that it will not move.

### ⑩ Function switches

REC switch:

Depress to start the recording operations.

REWIND switch (  ):

Depress to rewind the tape.

PLAY switch (  ):

Depress to start tape play.

When using the Music Search (MS) function, operate the PLAY switch (  ) and REWIND switch (  ) or the FAST FORWARD switch (  ) in combination.

FAST FORWARD switch (  ):

Depress to fast forward the tape.

PAUSE switch:

Depress to temporarily suspend recording or to adjust the recording level.

Release the PAUSE switch to resume recording.

*NOTE: The tape will not stop even if this switch is depressed when you are performing a rewind or fast forward operation.*

STOP switch (  ):

Depress to stop the playback, recording, fast forward and rewind operations.

### ⑪ REC MUTE switch

Depress to create unrecorded blanks between tape programs. When the switch is pushed during recording, no sound is recorded for as long as the switch is in the depressed position (thereby creating an unrecorded blank).

### ⑫ TAPE SELECTOR switches

Use these switches in line with the tapes being used.

For normal tapes:

- Set the left-side switch to the NORM  (out) position.
- The right-side switch position is not used.

For chrome tapes:

- Depress the left-side switch to the HIGH  (in) position.
- Set the right-side switch to the CrO<sub>2</sub>  (out) position.

For metal tapes:

- Depress the left-side switch to the HIGH  (in) position.
- Depress the right-side switch to the METAL  (in) position.

### ⑬ PHONES jack

Insert the plug of the stereo headphones into this jack.

### ⑭ MIC jacks

Insert the microphone plugs (L and R) into these jacks when recording with microphones.

### 3. DISASSEMBLY

**NOTE:**

*Do not apply unnecessary force to hooks since this may result in damage.*

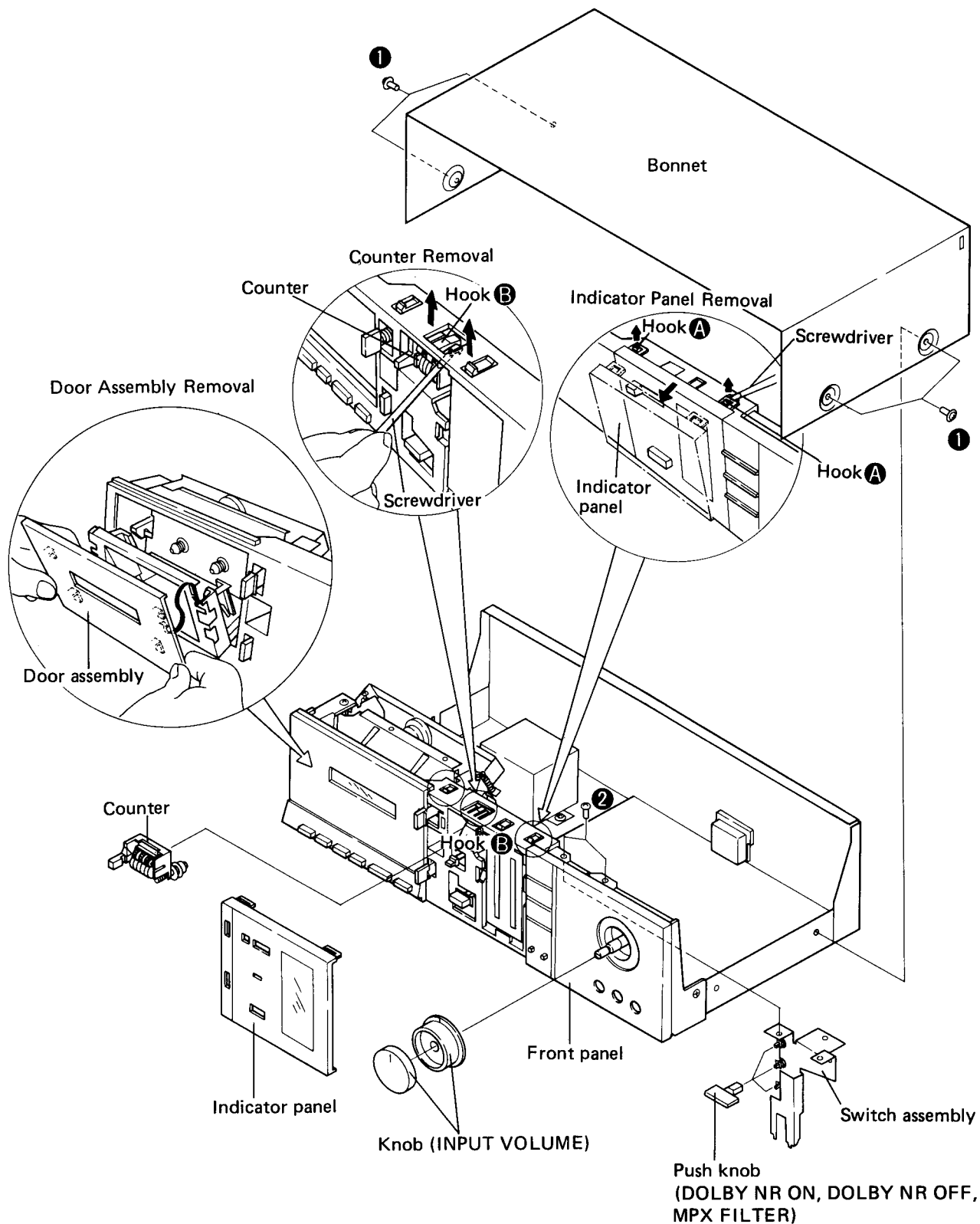


Fig. 3-1 Disassembly 1

### Bonnet Removal

Remove the four screws ❶ on each side of the bonnet.

### Indicator Panel Removal

1. Lift the hooks ❸ retaining the indicator panel using screwdriver.
2. Pull the indicator panel toward you and remove it.

### Door Assembly Removal

1. Depress the EJECT button and open the cassette holder.
2. Pull up the door assembly and remove it.

### Counter Removal

1. Gently raise the hook ❹ of the front panel with the small screwdriver.
2. Pull the counter toward you and remove it.

### Switch Assembly Removal

Remove the two screws ❷.

### Mechanism Assembly Removal

1. Remove the counter belt and the REC joint.
2. Remove the six screws ❸.

### Meter Assembly Removal

Remove the hooks ❺ of the front panel and remove the meter assembly.

### Indicator Assembly Removal

Remove the hooks ❻ of the front panel and remove the indicator assembly.

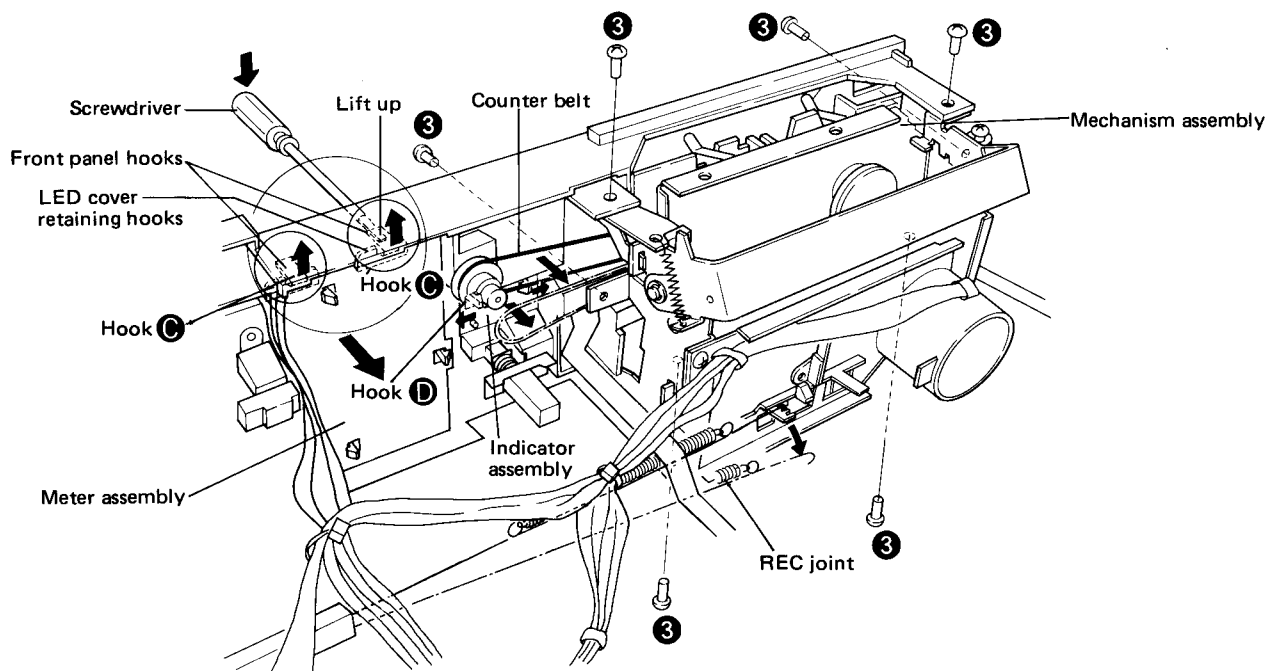


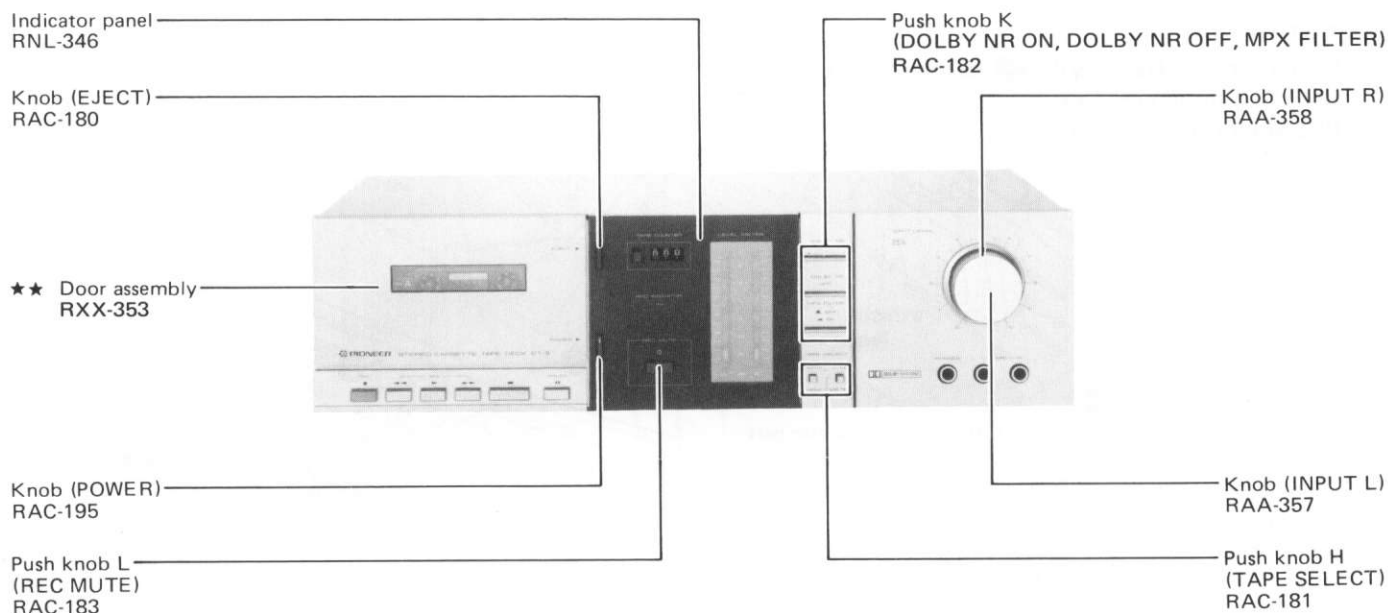
Fig. 3-2 Disassembly 2

## 4. PARTS LOCATION

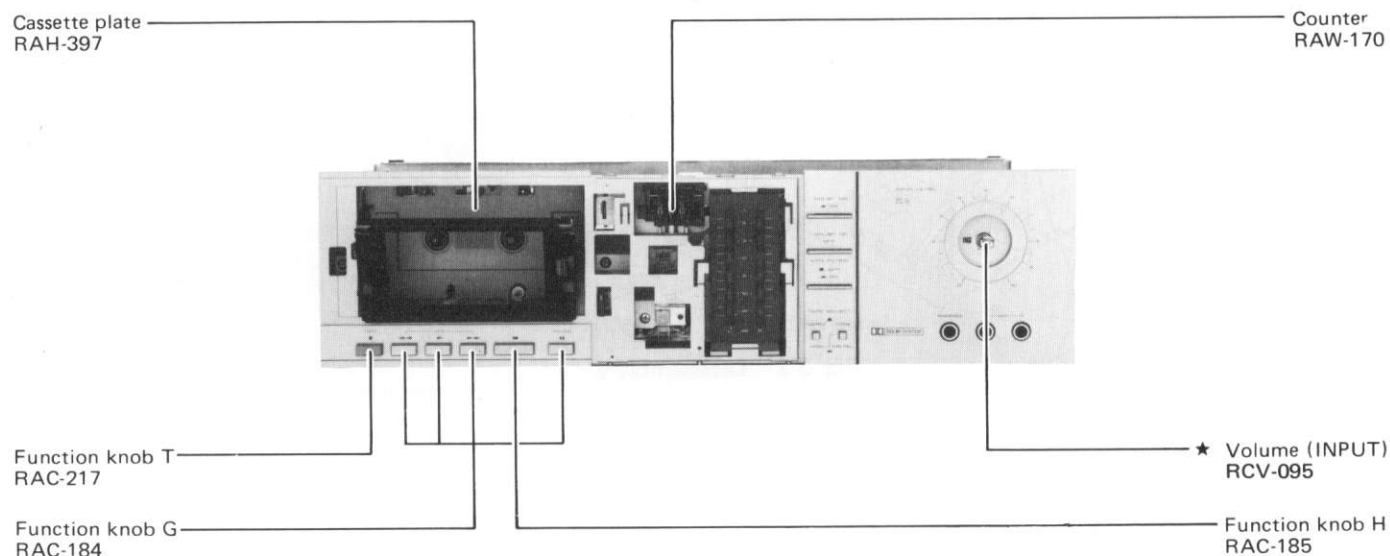
### NOTES:

- Parts without part number cannot be supplied.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks **★★** and **★**.  
**★★ GENERALLY MOVES FASTER THAN ★.**  
 This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

### Front Panel View



### Front View with Panel Removed



## Top View with Bonnet Removed

⚠ ★ Power switch (S305)  
RSA-055

⚠ ★ Power transformer (120V)  
RTT-236

Mechanism assembly  
RYM-118

Switch assembly

Mother assembly  
RWX-574

Volume assembly

Front panel  
RNT-020

## Rear Panel View

Terminal (LINE)  
RKB-018

Bonnet  
RNA-560

⚠ Strain relief  
AEC-376

⚠ AC cord  
RDG-022  
(RDG-030)

## 5. EXPLODED VIEWS AND PARTS LIST

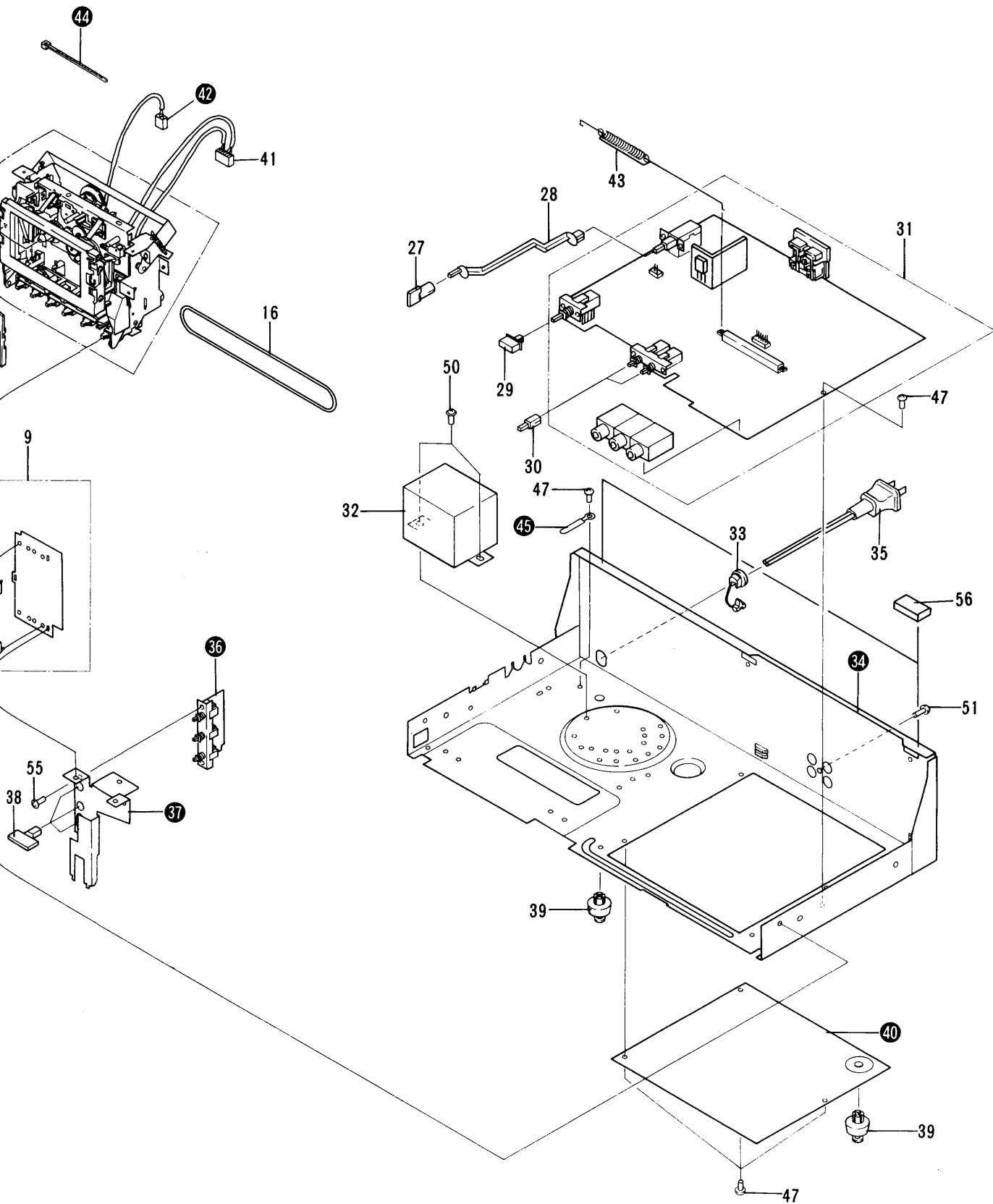
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**★★ GENERALLY MOVES FASTER THAN ★.**  
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

### Parts List

| Mark                                                                                  | No. | Part No. | Description               | Mark                                                                              | No. | Part No.     | Description                                         |
|---------------------------------------------------------------------------------------|-----|----------|---------------------------|-----------------------------------------------------------------------------------|-----|--------------|-----------------------------------------------------|
|                                                                                       | 1.  | RNA-560  | Bonnet                    |  | 35. | RDG-022      | AC cord                                             |
|                                                                                       | 2.  | RYM-118  | Mechanism assembly        |                                                                                   |     | (RDG-030)    |                                                     |
|                                                                                       | 3.  | RAH-397  | Cassette plate            |                                                                                   | 36. |              | Switch assembly                                     |
|                                                                                       | 4.  | RAC-184  | Function knob G           |                                                                                   | 37. |              | Switch bracket                                      |
|                                                                                       | 5.  | RAC-185  | Function knob H           |                                                                                   | 38. | RAC-182      | Push knob K (DOLBY NR ON, DOLBY NR OFF, MPX FILTER) |
|                                                                                       | 6.  |          | Indicator assembly        |                                                                                   | 39. | REC-369      | Foot assembly                                       |
|                                                                                       | 7.  | RNL-348  | LED cover                 |                                                                                   | 40. |              | Bottom plate                                        |
|                                                                                       | 8.  |          | .....                     |                                                                                   |     |              |                                                     |
|                                                                                       | 9.  | RWX-571  | Meter assembly            |                                                                                   | 41. | RKP-296      | Connector assembly 6P                               |
|                                                                                       | 10. |          | Volume assembly           |                                                                                   | 42. |              | Connector assembly 2P                               |
|                                                                                       | 11. | RNT-020  | Front panel               |                                                                                   | 43. | RBH-924      | REC joint C                                         |
|                                                                                       | 12. | RBH-894  | Eject spring              |                                                                                   | 44. |              | Binder                                              |
|                                                                                       | 13. |          | Eject plate               |                                                                                   | 45. |              | UL cord clamber B                                   |
|                                                                                       | 14. | RAC-180  | Knob (EJECT)              |                                                                                   | 46. | ACT40P080FNI | Screw 4x8                                           |
|                                                                                       | 15. | RAW-170  | Counter                   |                                                                                   | 47. | VCZ30P060FMC | Screw 3x6                                           |
| ★                                                                                     | 16. | REB-459  | Counter belt              |                                                                                   | 48. | VCZ30P080FMC | Screw 3x8                                           |
|                                                                                       | 17. |          | Door                      |                                                                                   | 49. | CMZ30P050FMC | Screw 3x5                                           |
| ★★                                                                                    | 18. |          | Door lens                 |                                                                                   | 50. | ATZ40P080FMC | Screw 4x8                                           |
|                                                                                       | 19. | RXX-353  | Door assembly             |                                                                                   | 51. | VBZ30P080FMC | Screw 3x8                                           |
|                                                                                       | 20. |          | .....                     |                                                                                   | 52. | .....        |                                                     |
|                                                                                       | 21. | RNL-346  | Indicator panel           |                                                                                   | 53. | .....        |                                                     |
|                                                                                       | 22. | RNL-350  | Indicator lens            |                                                                                   | 54. | RAC-217      | Function knob T                                     |
|                                                                                       | 23. | RAA-357  | Knob (INPUT L)            |                                                                                   | 55. | BMZ30P060FMC | Screw 3x6                                           |
|                                                                                       | 24. | RAA-358  | Knob (INPUT R)            |                                                                                   |     |              |                                                     |
|                                                                                       | 25. |          | .....                     |                                                                                   | 56. | REB-268      | Cushion                                             |
|                                                                                       | 26. |          | .....                     |                                                                                   |     |              |                                                     |
|                                                                                       | 27. | RAC-195  | Knob (POWER)              |                                                                                   |     |              |                                                     |
|                                                                                       | 28. | RNL-349  | Power joint               |                                                                                   |     |              |                                                     |
|                                                                                       | 29. | RAC-183  | Push knob L (REC MUTE)    |                                                                                   |     |              |                                                     |
|                                                                                       | 30. | RAC-181  | Push knob H (TAPE SELECT) |                                                                                   |     |              |                                                     |
|                                                                                       | 31. | RWX-574  | Mother assembly           |                                                                                   |     |              |                                                     |
|  ★ | 32. | RTT-236  | Power transformer (120V)  |                                                                                   |     |              |                                                     |
|    | 33. | REC-376  | Strain relief             |                                                                                   |     |              |                                                     |
|                                                                                       | 34. |          | Main chassis              |                                                                                   |     |              |                                                     |





A

B

C

D

1

2

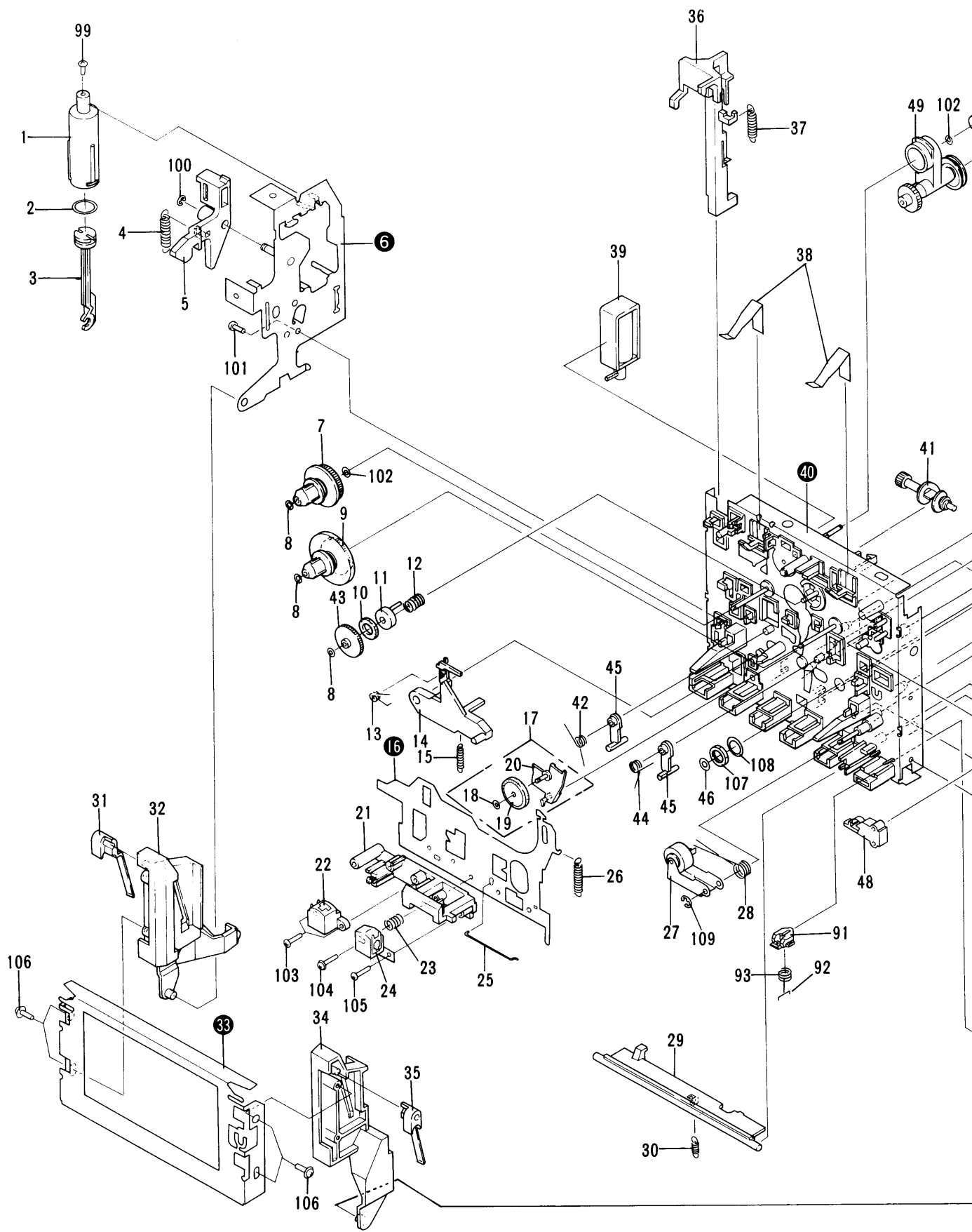
3

A

B

C

D



1

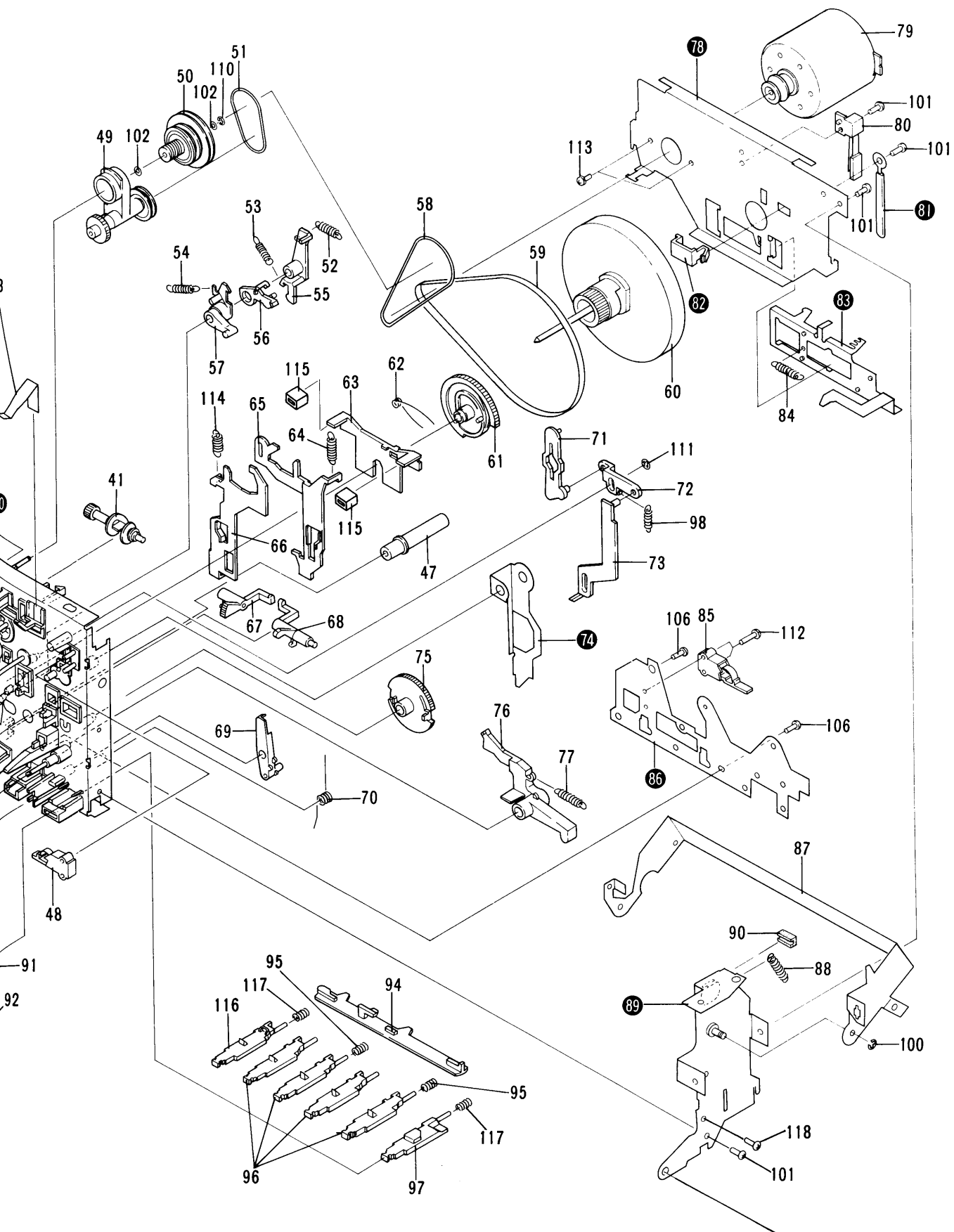
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A

B

C

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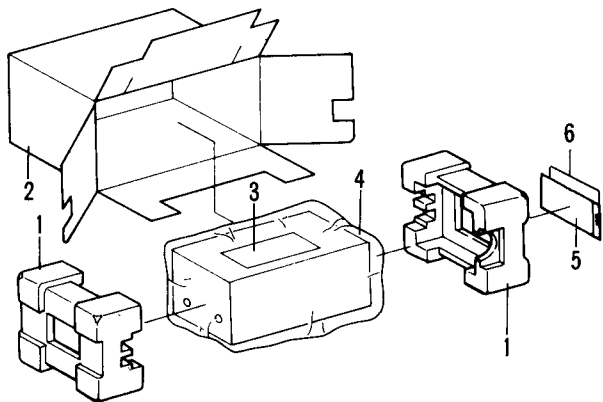
## Parts List

| Mark | No. | Part No.     | Description               | Mark | No.  | Part No.     | Description           |
|------|-----|--------------|---------------------------|------|------|--------------|-----------------------|
|      | 1.  | RNK-995      | Cylinder                  | ★★   | 51.  | REB-455      | Drive belt B          |
|      | 2.  | REB-447      | O ring                    |      | 52.  | RBH-876      | Gear lever spring A   |
|      | 3.  | RNL-329      | Piston                    |      | 53.  | RBH-877      | Gear lever spring B   |
|      | 4.  | RBH-871      | Pocket return spring      |      | 54.  | RBH-878      | Gear lever spring C   |
|      | 5.  | RNL-291      | Eject lever               |      | 55.  | RNL-297      | Gear lever A          |
|      | 6.  |              | Side plate L assembly A   |      | 56.  | RNL-282      | Gear lever B          |
| ★★   | 7.  | RXB-377      | Supply reel base assembly |      | 57.  | RNL-296      | Gear lever C          |
|      | 8.  | RBH-057      | Washer                    | ★★   | 58.  | REB-454      | Drive belt A          |
| ★★   | 9.  | RXB-360      | TU reel base assembly     | ★★   | 59.  | REB-453      | Capstan belt          |
|      | 10. | RED-194      | Detector felt             |      | 60.  | RXB-576      | Flywheel assembly     |
|      | 11. | RNL-318      | Detector disk             |      | 61.  | RNL-288      | Cam gear              |
|      | 12. | RBH-885      | Detector spring           |      | 62.  | RBH-879      | Trigger spring        |
|      | 13. | RBH-873      | Idler pressure spring     |      | 63.  | RNL-280      | Brake plate           |
|      | 14. | RNL-298      | Action lever              |      | 64.  | RBH-884      | Action plate spring   |
|      | 15. | RBH-875      | Action lever spring       |      | 65.  | RNL-292      | FF action plate       |
|      | 16. |              | Head base                 |      | 66.  | RNL-290      | REW action plate      |
|      | 17. | RXB-579      | Idler arm full assembly   |      | 67.  | RNL-277      | Joint L               |
|      | 18. | WA17D040D025 | Washer                    |      | 68.  | RNL-276      | Joint R               |
| ★★   | 19. | RNL-337      | TU idler                  |      | 69.  | RNL-281      | Gear lever R          |
|      | 20. |              | Idler arm assembly        |      | 70.  | RBH-881      | Trigger spring R      |
|      | 21. | RNL-050      | Sub head base             |      | 71.  | RNL-274      | Detector lever        |
| ★    | 22. | RPB-085      | Erase head                |      | 72.  | RNL-275      | Link                  |
|      |     | (RPB-096)    |                           |      | 73.  | RNL-289      | Stop lever            |
|      | 23. | RBH-723      | Head adjust spring        |      | 74.  |              | REC action lever      |
| ★★   | 24. | RPB-091      | REC/PB head               |      | 75.  | RNL-294      | Cam gear R            |
|      |     | (RPB-097)    |                           |      |      |              |                       |
|      | 25. | RBH-782      | HB drive spring           |      | 76.  | RNL-295      | Pause lever           |
|      |     |              |                           |      | 77.  | RBH-880      | Pause lever spring    |
|      | 26. | RBH-874      | HB return spring          |      | 78.  |              | Flywheel receptacle   |
| ★★   | 27. | RXB-495      | Pinch arm assembly        | ★★   | 79.  | RXM-088      | Motor assembly        |
|      | 28. | RBH-890      | Pinch pressure spring     | ★★   | 80.  | RSN-025      | Leaf switch           |
|      | 29. | RNL-303      | Lock plate                |      |      |              |                       |
|      | 30. | RBH-922      | Lock plate spring         |      | 81.  |              | UL cord clammer       |
|      |     |              |                           |      | 82.  |              | Thrust receptacle     |
|      | 31. | RNL-057      | Pocket spring L           |      | 83.  |              | REC action plate      |
|      | 32. | RNL-332      | Pocket L                  |      | 84.  | RBH-882      | REC return spring     |
|      | 33. |              | Pocket frame A            | ★★   | 85.  | RSN-033      | Lever switch          |
|      | 34. | RNL-333      | Pocket R                  |      |      |              |                       |
|      | 35. | RNL-058      | Pocket spring R           |      | 86.  |              | Plate                 |
|      |     |              |                           |      | 87.  |              | Eject action plate    |
|      | 36. | RNL-284      | REC detector arm          |      | 88.  | RBH-872      | Eject action spring   |
|      | 37. | RBH-883      | Detector arm spring       |      | 89.  |              | Side plate R assembly |
|      | 38. | RBK-166      | Half set spring           |      | 90.  | REB-437      | Plate stopper         |
| ★    | 39. | RXP-112      | Plunger solenoid          |      |      |              |                       |
|      | 40. |              | Chassis assembly          |      | 91.  | RNL-334      | Ratchet holder        |
|      |     |              |                           |      | 92.  | RBH-870      | Ratchet pin           |
|      | 41. | RNL-322      | Cam gear                  |      | 93.  | RBH-888      | Ratchet spring        |
|      | 42. | RBH-905      | Lock lever spring L       |      | 94.  | RNL-293      | REC connection arm    |
|      | 43. | RNK-998      | Idler gear                |      | 95.  | RBH-889      | Button return spring  |
|      | 44. | RBH-908      | Lock lever spring R       |      |      |              |                       |
|      | 45. | RNL-285      | HB lock lever             |      | 96.  | RNL-287      | Function button       |
|      |     |              |                           |      | 97.  | RNL-279      | Pause button          |
|      | 46. | RBH-030      | Oil stopper               |      | 98.  | RBH-886      | Link return spring    |
|      | 47. | RXB-582      | Metal holder assembly     |      | 99.  | VCZ26P090FMC | Screw                 |
| ★★   | 48. | RSN-034      | Lever switch              |      | 100. | YE25FUC      | Washer                |
|      | 49. | RXB-577      | Drive arm full assembly   |      |      |              |                       |
|      | 50. | RXB-580      | Drive pulley assembly     |      |      |              |                       |

| Mark | No.  | Part No.     | Description |
|------|------|--------------|-------------|
|      | 101. | VCZ26P060FMC | Screw       |
|      | 102. | WA21D040D25  | Washer      |
|      | 103. | PMZ20P130FMC | Screw       |
|      | 104. | iMZ20Y120FMC | Screw       |
|      | 105. | PMZ20P120FMC | Screw       |
|      | 106. | ATZ26P060FZK | Screw       |
|      | 107. | NK90FUC      | Nut         |
|      | 108. | RBE-021      | Washer      |
|      | 109. | YE20FUC      | Washer      |
|      | 110. | YE15FUC      | Washer      |

| Mark | No.  | Part No.     | Description           |
|------|------|--------------|-----------------------|
|      | 111. | YS20FBT      | Washer                |
|      | 112. | PMZ20P080FMC | Screw                 |
|      | 113. | PMA26P040FMC | Screw                 |
|      | 114. | RBH-916      | Action plate spring L |
|      | 115. | REB-466      | Brake shoe            |
|      | 116. | RNL-384      | REC button            |
|      | 117. | RBH-909      | Pause button spring   |
|      | 118. | VCZ26P040FMC | Screw                 |

6. PACKING



| Mark | No. | Part No. | Description                      |
|------|-----|----------|----------------------------------|
|      | 1.  | RHA-235  | Pad                              |
|      | 2.  | RHG-502  | Packing case                     |
|      | 3.  | RRB-176  | Operating instructions (English) |
|      | 4.  | RHX-031  | Sheet C                          |
|      | 5.  | RDE-010  | Connection cord                  |
|      | 6.  | REA-030  | Stopper assembly                 |

7. PARTS LIST

NOTES:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.  
Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).  
560Ω    56 × 10<sup>1</sup>    561 ..... RD¼PS 561J  
47kΩ    47 × 10<sup>3</sup>    473 ..... RD¼PS 473J  
0.5Ω    0R5 ..... RN2H 0R5K  
1Ω    010 ..... RS1P 010K  
Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).  
5.62kΩ    562 × 10<sup>1</sup>    5621 ..... RN¼SR 5621F  
The mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.  
For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.  
★★ GENERALLY MOVES FASTER THAN ★.  
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

## Miscellaneous Parts

### P.C. BOARD ASSEMBLIES

| Mark | Part No. | Symbol & Description |
|------|----------|----------------------|
|      | RWX-574  | Mother assembly      |
|      | RWX-571  | Meter assembly       |

### OTHERS

| Mark | Part No.                | Symbol & Description     |
|------|-------------------------|--------------------------|
| ⚠    | ★ RTT-236               | Power transformer (120V) |
| ⚠    | ★ RDG-022<br>(RDG-030)  | AC cord                  |
|      | ★★ RXM-088              | Motor assembly           |
|      | ★★ RPB-085<br>(RPB-096) | Erase head               |
|      | ★★ RPB-091<br>(RPB-097) | REC/PB head              |
|      | ★ RXP-112               | Plunger solenoid         |
|      | ★★ RSN-025              | Leaf switch (S8)         |
|      | ★★ RSN-033              | Lever switch (S7)        |
|      | ★★ RSN-034              | Lever switch (S6)        |

### Mother Assembly (RWX-574)

### CAPACITORS

| Mark | Part No.      | Symbol & Description                                                                                                                                      |
|------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | CCDSL 471K 50 | C102, C136, C202, C236                                                                                                                                    |
|      | CEANL 100M 16 | C105, C205                                                                                                                                                |
|      | CEA R10M 50   | C124, C126, C224, C226, C322                                                                                                                              |
|      | CEA R22M 50   | C142, C242                                                                                                                                                |
|      | CEA R33M 50   | C123, C127, C223, C227                                                                                                                                    |
|      | CEA R47M 50   | C129, C229                                                                                                                                                |
|      | CEA 010M 50   | C132, C232, C318, C320                                                                                                                                    |
|      | CEA 101M 10   | C306                                                                                                                                                      |
|      | CEA 100M 16   | C109, C110, C113, C115, C117,<br>C119, C125, C130, C131, C137—<br>C139, C209, C210, C213, C215,<br>C217, C219, C225, C230, C231,<br>C237—C239, C323, C307 |
|      | CEA 220M 16   | C324, C325, C330                                                                                                                                          |
|      | CEA 330M 16   | C108, C208, C319, C326                                                                                                                                    |
|      | CEA 470M 16   | C103, C118, C140, C203, C218,<br>C240, C316                                                                                                               |
|      | CEA 101M 16   | C304                                                                                                                                                      |
|      | CEA 221M 16   | C328                                                                                                                                                      |
|      | CEA 471M 16   | C305, C331                                                                                                                                                |
|      | CEA 101M 25   | C303, C329                                                                                                                                                |
|      | CEA 471M 25   | C301                                                                                                                                                      |
|      | CEA 102M 25   | C302                                                                                                                                                      |
|      | CQMA 104K 50  | C321                                                                                                                                                      |
|      | CQMA 393J 50  | C135, C235                                                                                                                                                |
|      | CQMA 273J 50  | C133, C134, C233, C234                                                                                                                                    |
|      | CQMA 153J 50  | C112                                                                                                                                                      |
|      | CQMA 103J 50  | C111, C211                                                                                                                                                |
|      | CQMA 153J 50  | C212                                                                                                                                                      |

| Mark | Part No.      | Symbol & Description   |
|------|---------------|------------------------|
|      | CQMA 223K 50  | C311                   |
|      | CQMA 153K 50  | C120, C122, C220, C222 |
|      | CQMA 103K 50  | C317                   |
|      | CQMA 472K 50  | C121, C221             |
|      | CQMA 332K 50  | C116, C216             |
|      | CQMA 182K 50  | C310                   |
|      | CQMA 102K 50  | C308, C309             |
|      | CQPA 332J 100 | C312                   |
|      | CKDYF 473Z 50 | C313—C315, C327        |

|   |                |                    |
|---|----------------|--------------------|
|   | CCDSL 181K 50  | C104, C204         |
|   | CCDSL 101K 50  | C114, C214         |
|   | CCDSL 220K 50  | C107, C207         |
|   | CCDSL 101K 500 | C141, C241         |
| ⚠ | RCG-006        | C332 (0.01/AC125V) |

### RESISTORS

*Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.*

| Mark | Part No.             | Symbol & Description                                                                       |
|------|----------------------|--------------------------------------------------------------------------------------------|
| ★    | RCP-150<br>(RCP-195) | VR101, VR201 Semifixed (22k-B)                                                             |
| ★    | RCP-149<br>(RCP-193) | VR102, VR202, VR301 Semifixed<br>(10k-B)                                                   |
| ★    | RCP-155<br>(RCP-200) | VR103, VR203 Semifixed (150k-B)                                                            |
| ⚠    | RD½PSF □□□ J         | R301, R318                                                                                 |
| ⚠    | RD¼PM □□□ J          | R103, R203, R317                                                                           |
|      | RD¼PM □□□ JNL        | R104, R204                                                                                 |
|      | RD¼PM □□□ J          | R101, R102, R105—R158, R201,<br>R202, R205—R258, R302, R303,<br>R305—R315, R319—R322, R336 |

### SEMICONDUCTORS

| Mark | Part No.                                           | Symbol & Description                            |
|------|----------------------------------------------------|-------------------------------------------------|
| ★★   | 2SC2240                                            | Q101, Q102, Q201, Q202                          |
| ★★   | 2SC1740LN<br>(2SC1815)<br>(2SC2634NC)<br>(2SC2021) | Q103—Q109, Q203—Q209, Q305,<br>Q306, Q308, Q309 |
| ⚠ ★★ | 2SD837<br>(2SD686)<br>(2SD1031)                    | Q301                                            |
| ★★   | 2SC1740LN                                          | Q302—Q304                                       |
| ⚠ ★★ | 2SC2060<br>(2SC2673)<br>(2SC1383NC)                | Q307                                            |
| ★★   | 2SA933LN<br>(2SA937)<br>(2SA1015)<br>(2SA1127NC)   | Q310                                            |
| ★★   | HA11226                                            | IC301                                           |

| Mark | Part No.                         | Symbol & Description   |
|------|----------------------------------|------------------------|
| ★★   | BA336                            | IC302                  |
| ★★   | M5218L                           | IC303                  |
| ★    | 1K34A<br>(1K60A)<br>(OA90)       | D101, D201             |
| ★    | 1S2473<br>(US1040)               | D102, D202, D306–D314  |
| ⚠ ★  | S1BV10                           | D301, D302             |
| ⚠ ★  | W03B<br>(W03C)<br>W03B<br>(W03C) | D303, D305<br><br>D304 |
| ★    | WZ-135                           | ZD301                  |
| ★    | WZ-073                           | ZD302                  |
| ★    | WZ-044                           | ZD303                  |
| ★    | BZ-140                           | ZD304                  |

## SWITCHES AND COILS

| Mark | Part No. | Symbol & Description                                                         |
|------|----------|------------------------------------------------------------------------------|
| ★★   | RSH-049  | S301-1–S301-12 Slide switch<br>(REC/P.B SELECTOR)                            |
| ★★   | RSG-118  | S302-1 – S302-4, S303-1,<br>S303-3 Push switch assembly B<br>(TAPE SELECTOR) |
| ★★   | RSG-119  | S304 Push switch assembly C<br>(REC MUTE)                                    |
| ⚠ ★★ | RSA-055  | S305 Power switch                                                            |
|      | RTF-089  | L101, L201, MPX filter                                                       |
|      | RTF-084  | L102, L202 Trap coil                                                         |
|      | RTF-085  | L103, L203 Peaking coil (3.9mH)                                              |
|      | RTD-026  | L301 OSC coil                                                                |
|      | RTF-057  | L302 Line coil                                                               |

## OTHERS

| Mark | Part No. | Symbol & Description     |
|------|----------|--------------------------|
|      | RKB-018  | Terminal (LINE)          |
|      | RKN-074  | S101, S201 Jack assembly |
|      | RBA-039  | Tapping screw            |
|      | RBF-041  | Ceramic tube             |

## Meter Assembly (RWX-571)

## CAPACITORS

| Mark | Part No.      | Symbol & Description |
|------|---------------|----------------------|
|      | CEA 100M 16   | C701, C702           |
|      | CKDYF 473Z 50 | C703                 |

## RESISTORS

*Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.*

| Mark | Part No.   | Symbol & Description |
|------|------------|----------------------|
| ⚠    | RD½PSF680J | R701, R702           |
|      | RD½PM□□□J  | R703-R708            |

## SEMICONDUCTORS

| Mark | Part No. | Symbol & Description |
|------|----------|----------------------|
| ★★   | BA6124   | IC701, IC702         |
| ★    | LN12156P | LED701, LED702       |

## Indicator Assembly

| Mark | Part No.  | Symbol & Description |
|------|-----------|----------------------|
|      | RD½PM122J | R401                 |
| ★    | LN217RP   | LED401               |

## Volume Assembly

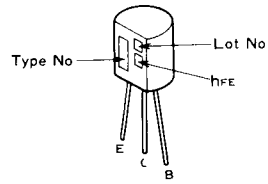
| Mark | Part No. | Symbol & Description               |
|------|----------|------------------------------------|
| ★    | RCV-095  | VR501-1, VR501-2 Volume<br>(INPUT) |

## Switch Assembly

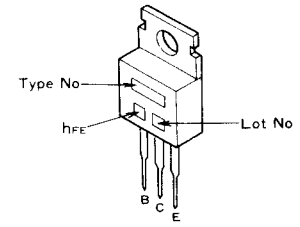
| Mark | Part No.  | Symbol & Description                                          |
|------|-----------|---------------------------------------------------------------|
|      | RD½PM125J | R601, R602                                                    |
| ★★   | RSG-133   | S601-1, S601-2, S603-1, S603-2<br>Push switch (DOLBY NR. MPX) |

## External Appearance of Transistors and ICs

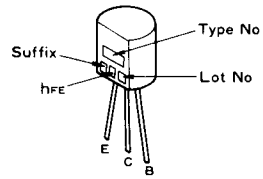
2SC1815  
2SC2240  
2SA1015



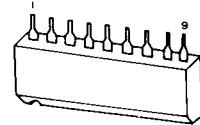
2SD837



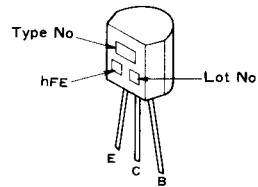
2SC1740LN  
2SA933LN



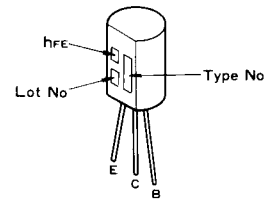
BA6124  
BA336



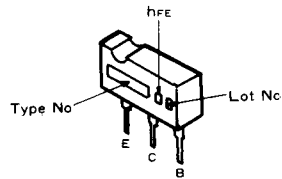
2SC2060



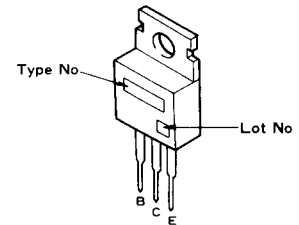
2SC1383NC



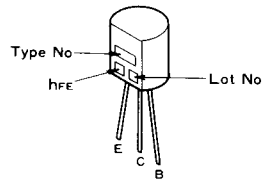
2SC2673



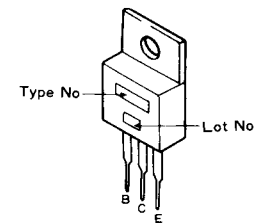
2SD686



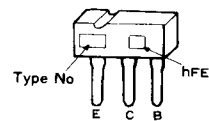
2SC2634NC  
2SA1127NC



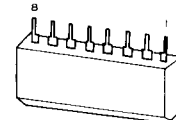
2SD1031



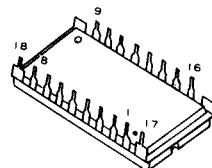
2SC2021  
2SA937



M5218L



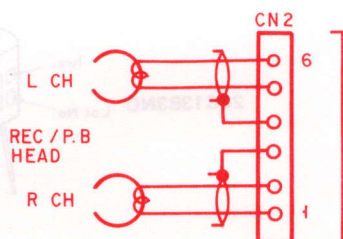
HA11226



A

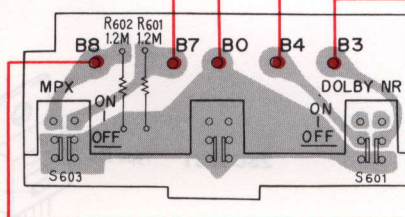
INDICATOR  
Ass'y

B



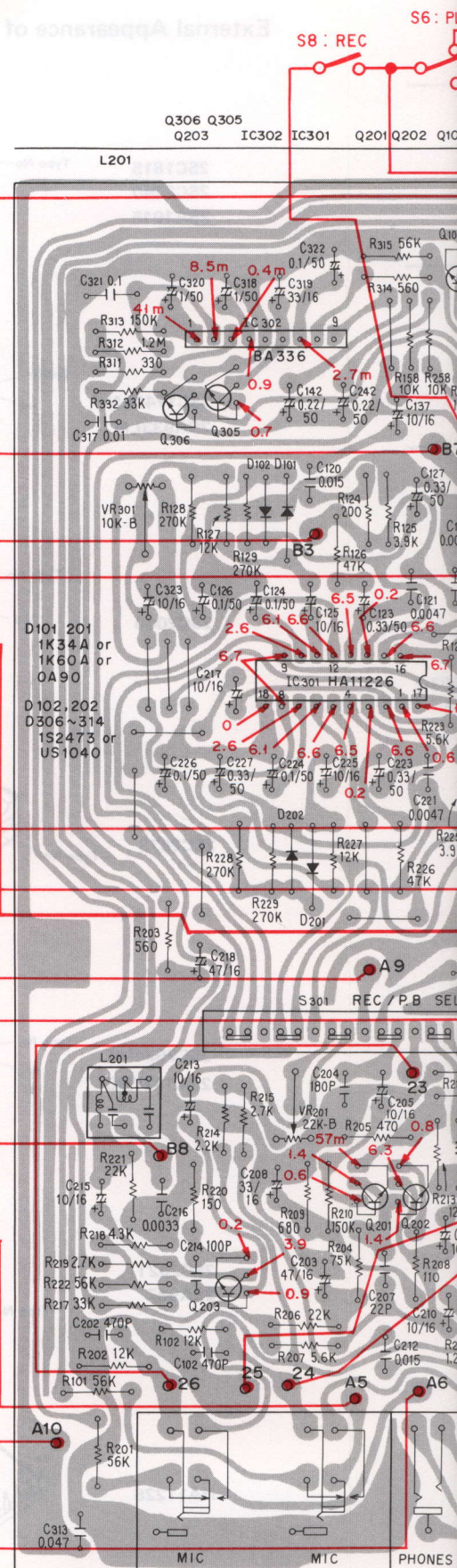
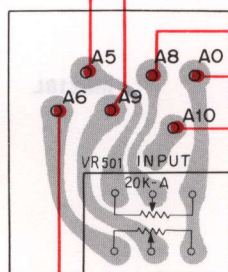
SWITCH Ass'y

C



VOLUME  
Ass'y

D



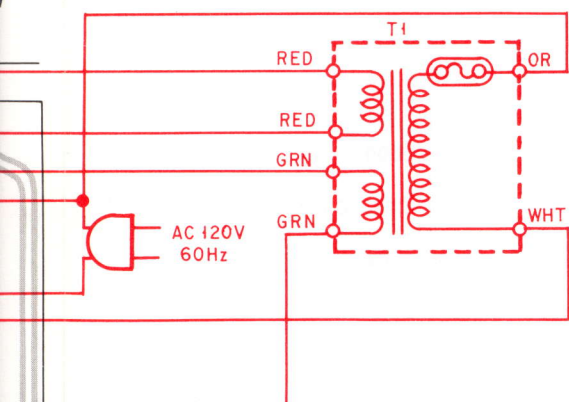


A

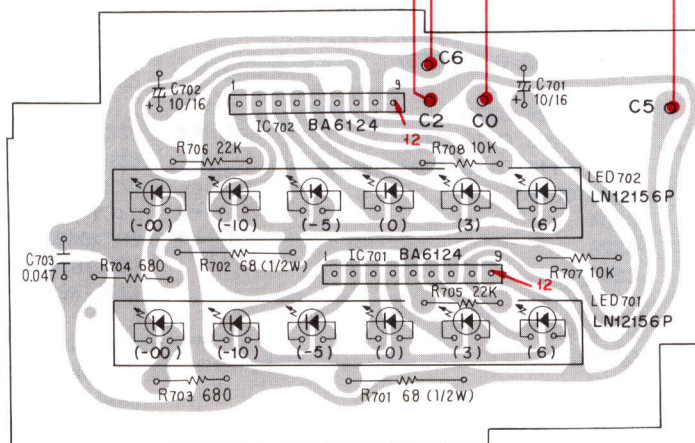
B

C

D



### METER Ass'y (RWX-571)



# 9. SCHEMATIC DIAGRAM

(KU AND KC TYPES)

MOTHER Ass'y

Q101,102,201,202 2SC2240  
EQUALIZER AMP

Q103,203 2SC1740LN  
or 2SC1815  
or 2SC2634NC  
or 2SC2021  
Q103,203  
FLAT AMP

IC301 (1/2) HA11226 DOLBY NR

IC301 (2/2) HA11226 DOLBY NR

VR301: DOLBY NR  
REC LEVEL ADJ  
RCP-149 or  
RCP-193

R301: 2.2k

R302: 2.2k

R303: 2.2k

R304: 2.2k

R305: 2.2k

R306: 2.2k

R307: 2.2k

R308: 2.2k

R309: 2.2k

R310: 2.2k

R311: 2.2k

R312: 2.2k

R313: 2.2k

R314: 2.2k

R315: 2.2k

R316: 2.2k

R317: 2.2k

R318: 2.2k

R319: 2.2k

R320: 2.2k

R321: 2.2k

R322: 2.2k

R323: 2.2k

R324: 2.2k

R325: 2.2k

R326: 2.2k

R327: 2.2k

R328: 2.2k

R329: 2.2k

R330: 2.2k

R331: 2.2k

R332: 2.2k

R333: 2.2k

R334: 2.2k

R335: 2.2k

R336: 2.2k

R337: 2.2k

R338: 2.2k

R339: 2.2k

R340: 2.2k

R341: 2.2k

R342: 2.2k

R343: 2.2k

R344: 2.2k

R345: 2.2k

R346: 2.2k

R347: 2.2k

R348: 2.2k

R349: 2.2k

R350: 2.2k

R351: 2.2k

R352: 2.2k

R353: 2.2k

R354: 2.2k

R355: 2.2k

R356: 2.2k

R357: 2.2k

R358: 2.2k

R359: 2.2k

R360: 2.2k

R361: 2.2k

R362: 2.2k

R363: 2.2k

R364: 2.2k

R365: 2.2k

R366: 2.2k

R367: 2.2k

R368: 2.2k

R369: 2.2k

R370: 2.2k

R371: 2.2k

R372: 2.2k

R373: 2.2k

R374: 2.2k

R375: 2.2k

NOTE:  
Playback signal route ———  
Recording signal route - - -



- |                       |                       |
|-----------------------|-----------------------|
| SWITCHES:             |                       |
| S 6 : PLAY            | PLAY — <u>STOP</u>    |
| S 7 : FAST            | ON — <u>OFF</u>       |
| S 8 : REC             | ON — <u>OFF</u>       |
|                       |                       |
| S101: INPUT SELECTOR  | MIC — <u>LINE</u>     |
| S201: INPUT SELECTOR  | MIC — <u>LINE</u>     |
| S301: REC/PB SELECTOR | REC — <u>PLAYBACK</u> |
| S302: TAPE SELECTOR   | <u>NORMAL</u> — HIGH  |
| S303: TAPE SELECTOR   | <u>CR02</u> — METAL   |
| S304: REC MUTE        | ON — <u>OFF</u>       |
| S305: POWER           | ON — <u>OFF</u>       |
| S601: DOLBY NR        | ON — <u>OFF</u>       |
| S603: MPX             | ON — <u>OFF</u>       |

The underlined indicates the switch position

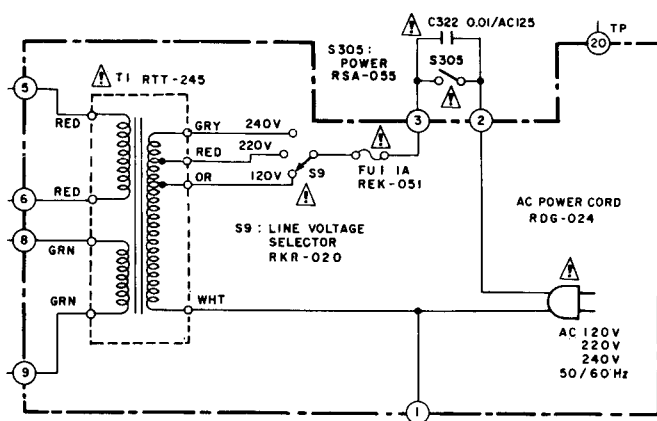
## 10. FOR KC AND D TYPES

Model CT-3 KC and D types are the same as the CT-3 KU type with the exception of following sections.

### CONTRAST OF MISCELLANEOUS PARTS

| Mark | Symbol & Description                     | Part No.          |                   |           | Remarks |
|------|------------------------------------------|-------------------|-------------------|-----------|---------|
|      |                                          | KU type           | KC type           | D type    |         |
| ▲ ★  | Power transformer (120V)                 | RTT-236           | RTT-256           | —         |         |
| ▲ ★  | Power transformer (120V, 220V and 240V)  | —                 | —                 | RTT-245   |         |
| ▲    | AC cord                                  | RDG-022 (RDG-030) | RDG-022 (RDG-030) | RDG-024 — |         |
| ▲    | Line voltage selector socket             | —                 | —                 | RKR-020   |         |
| ▲ ★★ | Fuse (1A)                                | —                 | —                 | REK-051   |         |
|      | Packing case                             | RHG-502           | RHG-503           | RHG-506   |         |
|      | Operating instructions (English)         | RRB-176           | RRB-176           | —         |         |
|      | Operating instructions (English/Spanish) | —                 | —                 | RRE-020   |         |

### SCHEMATIC DIAGRAM D type



### SPECIFICATIONS

#### Power Requirements

D type . . . . . AC120V, 220V and 240V, 50/60Hz

#### Power Consumption

D type . . . . . 14 watts

#### Dimension

D type . . . . . 420 (W) x 120 (H) x 251.7 (D) mm  
16-9/16 (W) x 4-3/4 (H) x 9-15/16 (D) in.

# 11. MECHANICAL ADJUSTMENTS

## Prior to adjustment

Clean the both reel base, the capstan, belts and the pinch roller with an alcohol moistened swab.

### 11.1 PINCH ROLLER PRESSURE ADJUSTMENT

1. Put the tape deck into the playback mode.
2. Gently push against the pinch roller arm with the tension gauge and separate the pinch roller slightly from the capstan.
3. Then the pinch roller back onto the capstan, and read the value when the pinch roller starts to rotate. If the reading fails to lie within 300g ~ 400g, replace the pinch pressure spring.

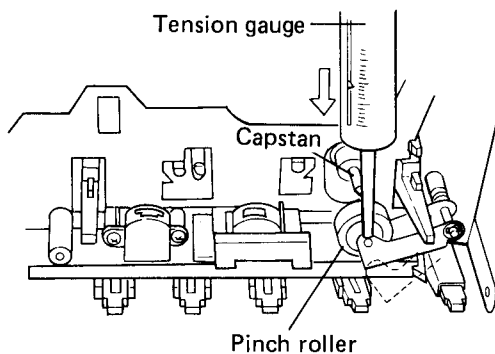


Fig. 11-1 Pinch roller pressure adjustment

### 11.2 REEL BASE TORQUE ADJUSTMENT

Measure the torque with the torque meter during playback, fast forward (FF) and rewind (REW) modes. The measured values should normally lie within the allowable ranges listed in the table 1.

If the measured values lie outside the relevant ranges, replace the TU (take-up) reel base assembly and/or supply reel base assembly, TU idler, or drive arm full assembly.

Table 1

|               | TU reel base | Supply reel base |
|---------------|--------------|------------------|
| Playback mode | 35 – 55g.cm  | * 2 – 5g.cm      |
| FF mode       | 70 – 125g.cm | * 2 – 5g.cm      |
| REW mode      |              | 70 – 125g.cm     |

\* Do not back tension torque

### 11.3 TAPE SPEED ADJUSTMENT

1. Connect the frequency counter to the LINE OUTPUT terminals.
2. Play back the 3kHz portion of the STD-301 test tape. At the beginning, the frequency should be lie within the 3000Hz ~ 3010Hz range, and may be adjusted by turning the semi-fixed resistor located in the motor adjustment hole as shown in Fig. 11-2.

*Tape speed is increased by turning the semi-fixed resistor clockwise, and decreased by turning counter-clockwise.*

### 11.4 REC SWITCH ADJUSTMENT

1. Depress REC button. REC action plate moves to **A** direction. At this time, check that REC switch is ON.
2. Depress the POWER switch to turn the unit OFF.
3. Depress STOP button. The REC action plate moves slightly to **B** direction. At this time, bend and adjust the REC action plate so that a contact distance of REC switch is 0.2 ~ 0.5 mm.

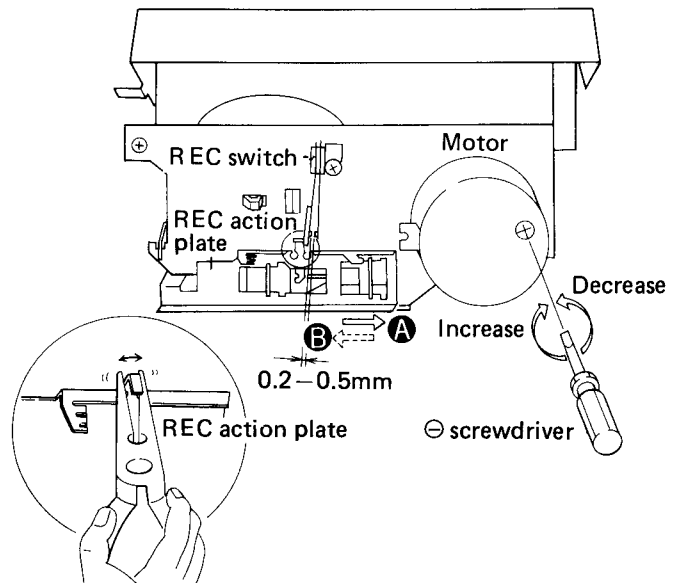


Fig. 11-2 Tape speed and REC switch adjustment

# 11. RÉGLAGES MÉCANIQUES

## Avant de procéder au réglage

Nettoyer les deux supports de bobine, le cabestan, ceintures et le galet presseur à l'aide d'un bâtonnet imbibé d'alcool.

## 11.1 RÉGLAGE DE LA FORCE D'APPUI DU GALET PRESSEUR

1. Mettre la platine en mode de lecture.
2. Appuyer doucement sur le bras du galet presseur à l'aide d'une jauge de pression et séparer légèrement le galet presseur du cabestan.
3. Laisser ensuite revenir le galet presseur sur le cabestan et lire la valeur lorsque le galet presseur commence à tourner. Si la valeur lue ne se situe pas entre 300g et 400g, remplacer le ressort du galet presseur.

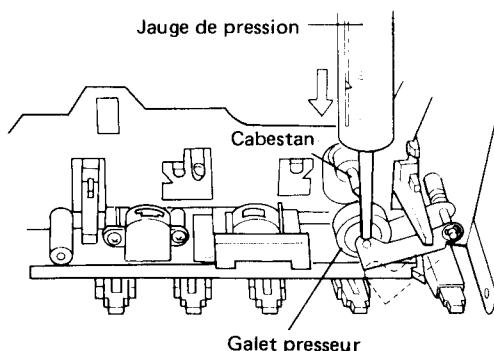


Fig. 11-1 Réglage de la force d'appui du galet presseur

## 11.2 RÉGLAGE DU COUPLE DU SUPPORT DE BOBINE

Mesurer le couple à l'aide d'un dynamomètre dans les modes de lecture, d'avance rapide (FF) et de rebobinage (REW). Les valeurs mesurées doivent normalement se situer dans les limites admissibles données au tableau 1.

Si les valeurs mesurées se trouvent en dehors des plages indiquées, remplacer l'ensemble support de bobine TU (réception) et/ou l'ensemble support de bobine débiteur, la poulie libre TU ou l'ensemble complet du bras d'entraînement.

Tableau 1

|                 | Support de bobine TU | Support de bobine débitrice |
|-----------------|----------------------|-----------------------------|
| Mode de lecture | 35 à 55g.cm          | • 2 à 5g.cm                 |
| Mode FF         | 70 à 125g.cm         | • 2 à 5g.cm                 |
| Mode REW        |                      | 70 à 125g.cm                |

• Couple de tension inverse

## 11.3 RÉGLAGE DE LA VITESSE DE DEFILEMENT DE LA BANDE

1. Raccorder le fréquencemètre aux bornes de sortie LINE OUTPUT.
2. Reproduire la partie à 3kHz de la bande d'essai STD-301. Au début, la fréquence doit se situer dans la plage de 3000Hz à 3010Hz, et elle peut être réglée en tournant la résistance ajustable située dans le trou de réglage du moteur, comme indiqué à la figure 11-2.

*La vitesse de défilement de la bande augmente lorsque la résistance ajustable est tournée dans le sens des aiguilles d'une montre, et elle décroît lorsque l'on tourne la résistance en sens inverse.*

## 11.4 RÉGLAGE DU COMMUTATEUR D'ENREGISTREMENT (REC)

1. Appuyer sur la touche d'enregistrement (REC). Le plaque de commande REC se déplace dans la direction **A**.
2. Pour éteindre l'appareil, enfoncer l'interrupteur de courant.
3. Appuyer sur la touche d'arrêt (STOP). Le plaque de command REC se déplace légèrement dans la direction **B**. Courber et ajuster alors le plaque de commande REC, de manière à ce que la course de contact du commutateur d'enregistrement soit de 0,2 à 0,5mm.

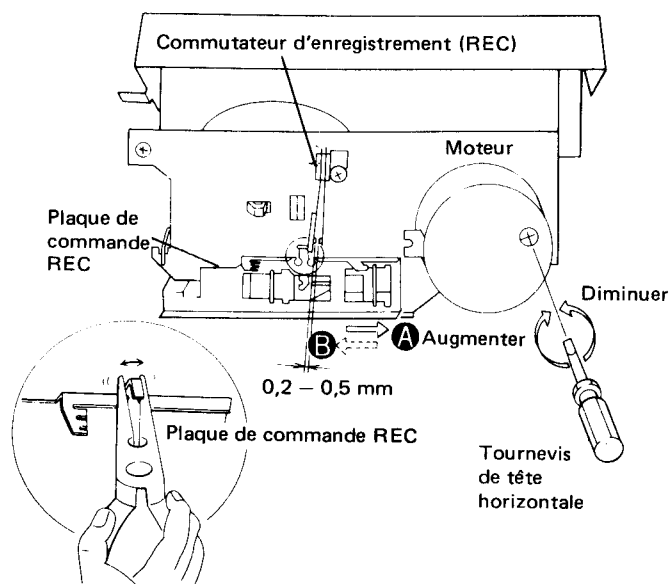


Fig. 11-2 Réglage de la vitesse de défilement de la bande et du commutateur d'enregistrement (REC)

# 11. AJUSTES MECÁNICOS

## Antes del ajuste

Limpiar ambas bases de los carretes, eje de arrastre, cinturóns y rodillo de presión con algodón humedecido en alcohol.

### 11.1 AJUSTE DE LA PRESIÓN DEL RODILLO DE PRESIÓN

1. Establecer el magnetófono en el modo de reproducción.
2. Con el calibrador de tensión presionar ligeramente contra el brazo del rodillo de presión y separar un poco dicho rodillo del eje de arrastre.
3. Luego reposicionar el rodillo de presión sobre el eje de arrastre, y leer el valor en el momento en que el rodillo de presión empieza a girar. Si la indicación cae dentro de  $300g \sim 400g$ , reemplazar el muelle del rodillo de presión.

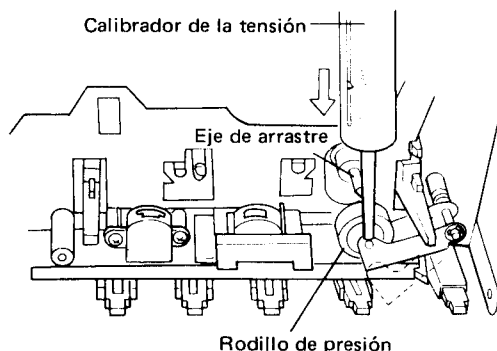


Fig. 11-1 Ajuste de la presión del rodillo de presión

### 11.2 AJUSTE DE LA TORSIÓN DE LA BASE DEL CARRETE

Utilizar el modidor de torsión para medir la torsión durante las funciones de reproducción, avance rápido (FF) y rebobinado (REW). Los valores medidos deberán estar normalmente dentro de los límites permisibles enumerados en la tabla 1.

Si los valores medidos no están dentro de tales límites, reemplazar el conjunto de la base del carrete de arrastre (TU) y/o conjunto de la base del carrete de suministro, rueda de guía TU, o todo el conjunto del brazo de arrastre.

Tabla 1

|                       | Base del carrete TU | Base del carrete de suministro |
|-----------------------|---------------------|--------------------------------|
| Modo de reproducción  | 35 – 55g.cm         | ● 2 – 5g.cm                    |
| Modo de avance rápido | 70 – 125g.cm        | ● 2 – 5g.cm                    |
| Modo de rebobinado    |                     | 70 – 125g.cm                   |

● Las notas se apoyan en la torsión de la tensión

### 11.3 AJUSTE DE LA VELOCIDAD DE LA CINTA

1. Conectar el frecuencímetro a los terminales de salida de línea (LINE OUTPUT).
2. Reproducir la parte de 3kHz de la cinta de prueba STD-301. Al principio, la frecuencia deberá estar entre  $3000Hz \sim 3010Hz$ , y podrá ajustarse girando el resistor semifijo, situado en el orificio de ajuste del motor, como se muestra en la figura 11-2.

*La velocidad de la cinta aumentará girando hacia la derecha el resistor semifijo, y se reducirá girándolo hacia la izquierda.*

### 11.4 AJUSTE DEL INTERRUPTOR DE GRABACIÓN (REC)

1. Presionar el botón REC. La plancha de accionamiento de REC se mueve en la dirección **A**. Entonces, comprobar que el interruptor REC esté en la posición ON.
2. Presionar el interruptor de la alimentación para desconectar el aparato.
3. Presionar el botón de parada (STOP). La plancha de accionamiento de REC se mueve ligeramente en la dirección **B**. Entonces, doblar y ajustar la plancha de accionamiento de REC de modo que la distancia de contacto del interruptor REC sea de  $0,2 \sim 0,5mm$ .

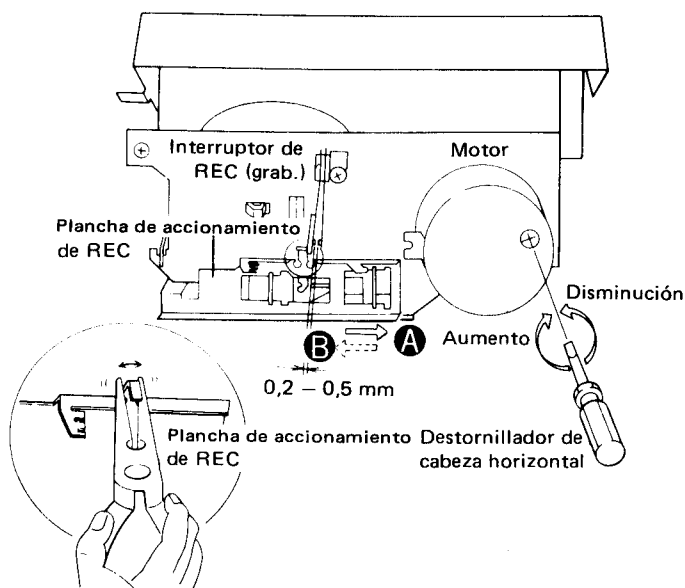


Fig. 11-2 Ajuste de la velocidad de la cinta y del interruptor de grabación (REC)

## 12. ELECTRICAL ADJUSTMENTS

### Precaution

1. Mechanical adjustment should be completed.
2. Clean the following parts with an alcohol moistened swab: Record/Playback head, Pinch roller, Erase head, Rubber belts and Capstan.
3. Demagnetize record/playback head with a head demagnetizer.
4. Do not use magnetized screwdriver for adjustments.
5. Adjustments and measurements should be performed for both L ch and R ch with rated power supply voltage.
6. Adjustments should be performed in the order given in this service manual. Altering the order can hinder proper adjustments, resulting in loss of performance.
7. Level during measurements are based on 0dBV = 1V. Connect a 50k $\Omega$  (47 – 52k $\Omega$ ) dummy resistor across the OUTPUT terminals.
8. Let the CT-3 warm up (aging) for a few minutes before proceeding with the adjustment.
9. Set the DOLBY NR switch to OFF and TAPE SELECTOR to the NORM position unless directed otherwise.

### Test Equipments/Tools Required:

1. Test tape  
 STD-341A ..... For playback adjustment  
 STD-608A ..... NORMAL blank tape  
 STD-603 ..... CrO<sub>2</sub> blank tape  
 STD-604 ..... METAL blank tape
2. Audio oscillator
3. AC millivoltmeter (AC mV)
4. Attenuator
5. Oscilloscope
6. Resistor 50k $\Omega$  (47 – 52k $\Omega$ )

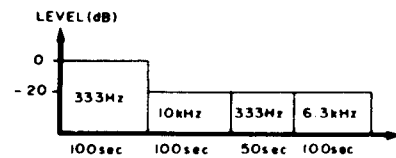


Fig. 12-1 Contents of the test tape STD-341A

### 12.1 DOLBY NR ADJUSTMENT

#### Setting

Mode ..... Record  
 AC mV meter ..... TP19 (L ch) and TP20 (R ch) of the mother assembly  
 Input Signal ..... 2kHz, -10dBV (316 mV) to LINE INPUT

#### Procedure

1. Adjust the INPUT level control so that the AC mV meter reads -2.2dBV (776 mV).
2. Next change the input signal level to -30dBV (31.6 mV) and DOLBY NR switch to the ON position.
3. Adjust the VR301 so that the AC mV meter reads -17.9dBV (127 mV).

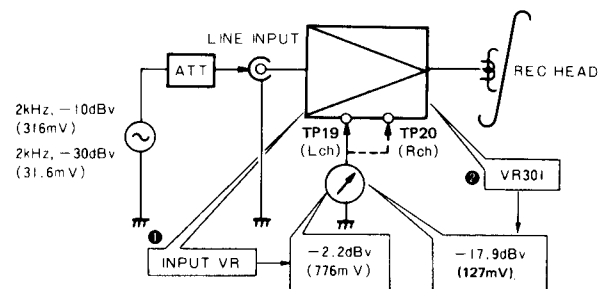


Fig. 12-2 Dolby NR adjustment

## 12.2 HEAD AZIMUTH ADJUSTMENT

### Setting

Mode ..... Playback  
 Test Tape ..... STD-341A  
 (10kHz, -20dB)  
 AC mV meter ..... LINE OUTPUT  
 VR101, VR201 ..... Turn up to maximum  
 position

### Procedure

Adjust the azimuth adjusting screw for maximum AC mV meter readings for both L and R channels. After this adjustment, lock the screw with **screw lock**.

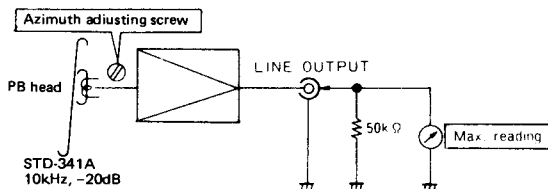


Fig. 12-3 Head azimuth adjustment

## 12.3 PLAYBACK EQUALIZER ADJUSTMENT

### Setting

Mode ..... Playback  
 Test Tape ..... STD-341A  
 (333Hz and 6.3kHz,  
 -20dB)  
 AC mV meter ..... LINE OUTPUT

### Procedure

1. Set the TAPE SELECTOR to the NORM position. Play back the 333Hz and 6.3kHz portions of the STD-341A, and check that difference between the two output levels does not exceed  $1.5\text{dB} \pm 1.5\text{dB}$ .
2. Next set the TAPE SELECTOR to the HIGH position. Play back the 333Hz and 6.3kHz portions again, and check that the difference between the two output levels does not exceed  $-2.5\text{dB} \pm 1\text{dB}$ .

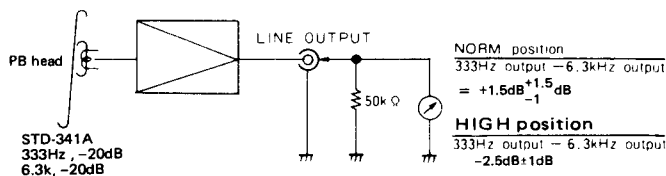


Fig. 12-4 Playback equalizer check

## 12.4 PLAYBACK LEVEL ADJUSTMENT

Since this adjustment determines the DOLBY NR level during playback, it should be performed precisely.

### Setting

Mode ..... Playback  
 Test Tape ..... STD-341A (333Hz, 0dB)  
 AC mV meter ..... TP19 (L ch) and TP20  
 (R ch)

### Procedure

Adjust the VR101 (L ch) and VR201 (R ch) so that the AC mV meter reads  $-1.2\text{dBv}$  ( $0.87\text{V}$ ).

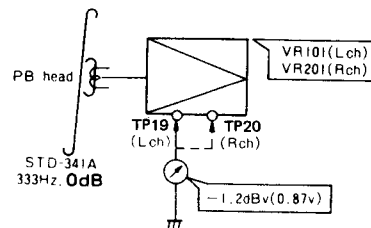


Fig. 12-5 Playback level adjustment

## 12.5 OVERALL FREQUENCY RESPONSE ADJUSTMENT

### Setting

Mode ..... Record  
 Test Tape ..... STD-608A  
 AC mV meter ..... LINE OUTPUT  
 Input Signal ..... 333Hz, -30dBv (31.6mV)  
 to LINE INPUT

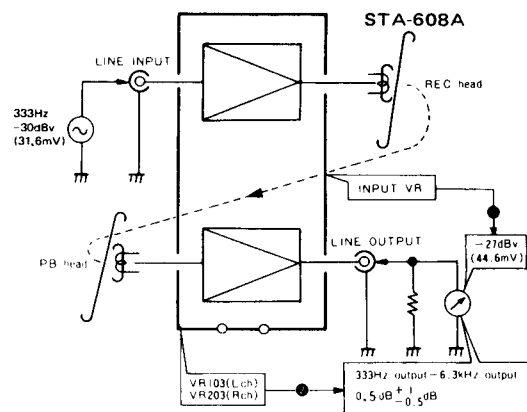


Fig. 12-6 Recording/Playback frequency response adjustment

## Procedure

1. Set the TAPE SELECTOR to the NORM position.
2. Adjust the INPUT level control so that the AC mV meter reads -27dBv (44.6 mV).
3. Record the 333Hz and 6.3kHz signals onto the STD-608A. Play back the tape and adjust the VR103 (L ch) and VR203 (R ch) so that the difference between two is 0.5dB  $\pm 0.5$  dB.

## 12.6 RECORD LEVEL ADJUSTMENT

Since this adjustment determines the DOLBY NR level during recording, it should be performed precisely.

### Setting

Mode ..... Record  
 Test Tape ..... STD-604, STD-608A, STD-603  
 AC mV meter ..... TP19 (L ch) and TP20 (R ch)  
 Input Signal ..... 333Hz, -10dBv (316mV) to LINE INPUT

### Procedure

1. Set the TAPE SELECTOR to the NORM position.
2. Adjust the INPUT level control so that the AC mV meter reads -5.2dBv (0.54V).

3. Record the 333Hz signal onto the STD-608A. Play back the tape and adjust the VR102 (L ch) and VR202 (R ch) so that the AC mV meter reads -5.2dBv (0.54V).
4. Set the TAPE SELECTOR to the CrO<sub>2</sub> position and record the 333Hz signal onto the STD-603. Play back the tape and check that the AC mV meter reads -5.2dBv (0.54V)  $\pm 1.5$ dB.
5. Next set the TAPE SELECTOR to the METAL position and record the 333Hz signal onto the STD-604. Play back the tape and check that the AC mV meter reads -5.2dBv (0.54V)  $\pm 1.5$ dB.

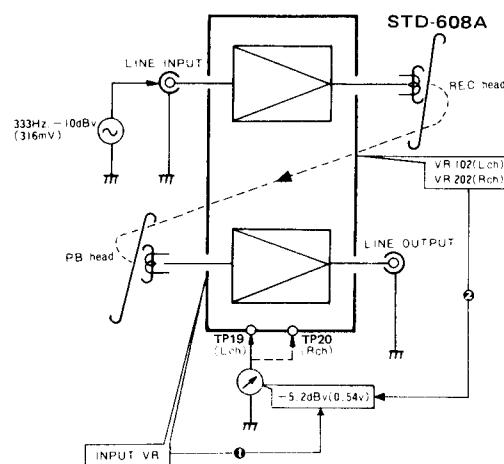
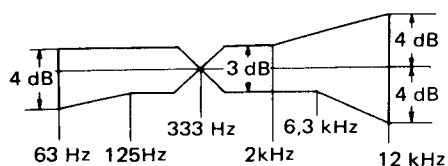


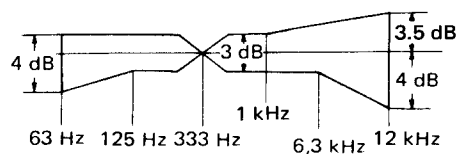
Fig. 12-7 Recording level adjustment

## Overall Frequency Response

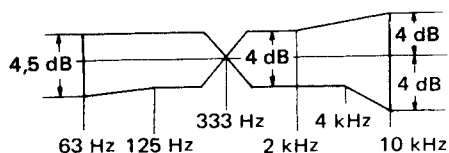
Using STD-608A and TAPE SELECTOR NORM position, with DOLBY NR OFF



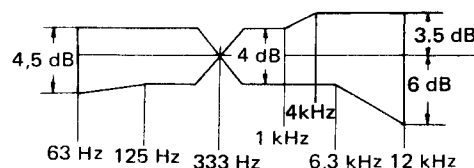
Using STD-603 and TAPE SELECTOR CrO<sub>2</sub> position, with DOLBY NR OFF



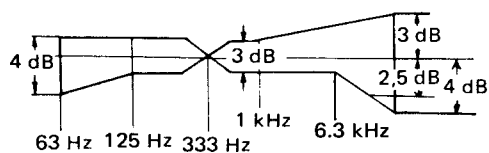
Using STD-608A and TAPE SELECTOR NORM position, with DOLBY NR ON



Using STD-603 and TAPE SELECTOR CrO<sub>2</sub> position, with DOLBY NR ON



Using STD-604 and TAPE SELECTOR METAL position,  
with DOLBY NR OFF



Using STD-604 and TAPE SELECTOR METAL position,  
with DOLBY NR ON

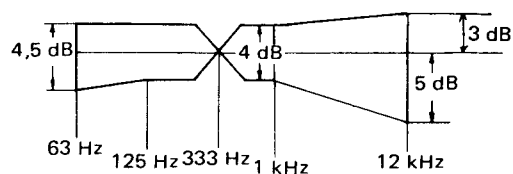


Fig. 12-8 Frequency response

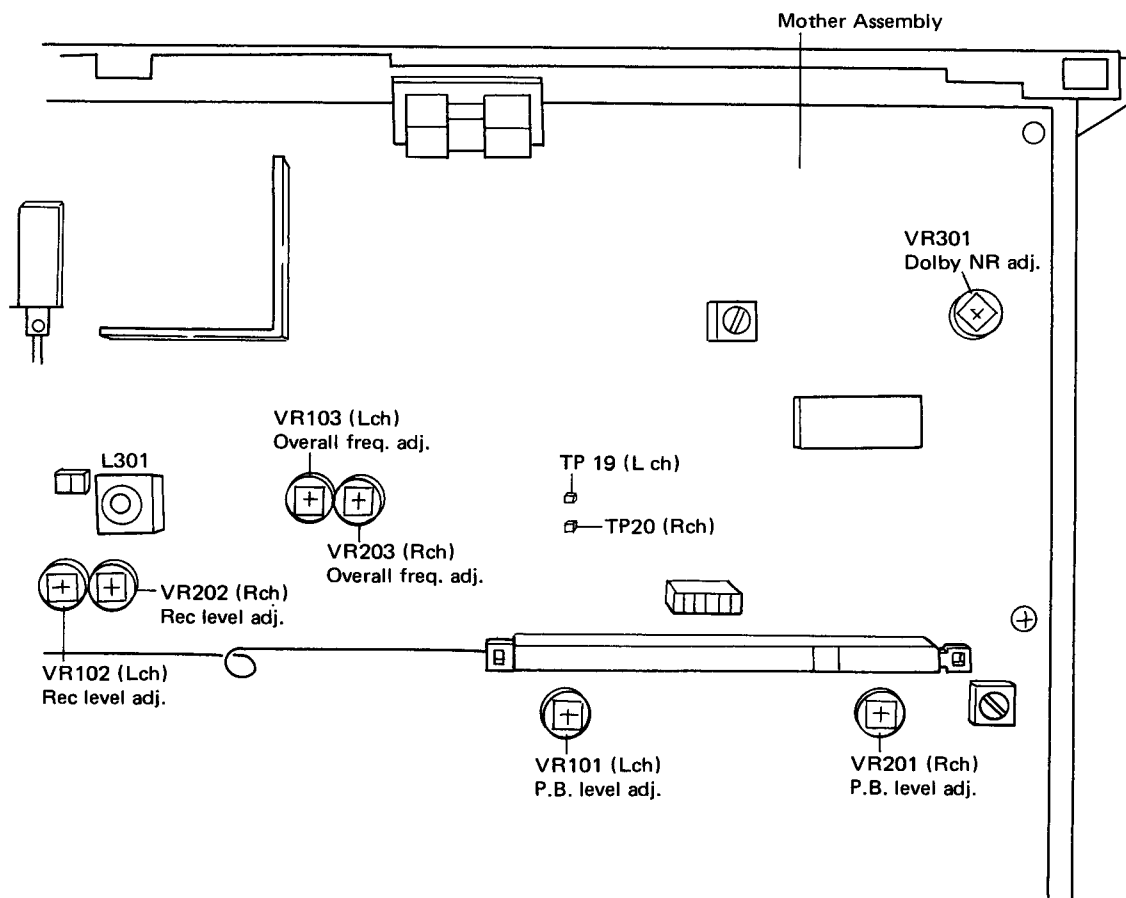


Fig. 12-9 Adjustment points

## 12. RÉGLAGES ÉLECTRIQUES

### Précautions

1. Les réglages mécaniques doivent être terminés.
2. Nettoyer les pièces suivantes à l'aide d'un bâtonnet imbibé d'alcool: tête d'enregistrement/lecture, galet presseur, tête d'effacement, courroies en caoutchouc et cabestan.
3. Démagnétiser la tête d'enregistrement/lecture à l'aide d'un démagnétiseur de tête.
4. Ne pas utiliser de tournevis magnétisé pour les réglages.
5. Les réglages et les mesures doivent être réalisés pour les canaux de gauche et de droite avec la tension d'alimentation nominale.
6. Les réglages doivent être effectués dans l'ordre indiqué dans ce manuel de service. Une modification de cet ordre peut empêcher la réalisation de réglages corrects et peut provoquer une baisse de performance.
7. Les niveaux en cours de mesure sont basés sur  $0\text{dBv} = 1\text{V}$ . Raccorder une charge fictive de  $50\text{ k}\Omega$  (47 à  $52\text{ k}\Omega$ ) entre les bornes de sortie (OUTPUT).
8. Laisser chauffer (vieillissement) le CT-3 pendant quelques minutes avant de procéder

aux réglages.

9. Placer le commutateur DOLBY NR sur OFF et le sélecteur TAPE SELECTOR sur la position NORM, sauf indication contraire.

### Equipements/outils d'essai requis

1. Bande d'essai
  - STD-341A ..... Pour le réglage de la reproduction
  - STD-608A ..... Bande "NORMAL" vierge
  - STD-603 ..... Bande "CrO<sub>2</sub>" vierge
  - STD-604 ..... Bande "METAL" vierge
2. Oscillateur BF
3. Millivoltmètre alternatif (mV CA)
4. Atténuateur
5. Oscilloscope
6. Résistance  $50\text{ k}\Omega$  (47 à  $52\text{ k}\Omega$ )

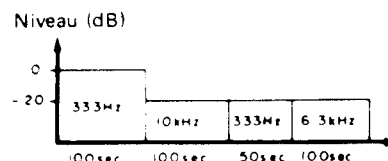


Fig. 12-1 Contenu de la bande d'essai STD-341A

### 12.1 RÉGLAGE DU CIRCUIT DOLBY NR

#### Préparation

- Mode ..... Enregistrement
- Millivoltmètre CA ..... TP19 (canal de gauche "L") et TP20 (canal de droite "R") de l'ensemble principal
- Signal d'entrée ..... 2kHz, -10dBv (316mV) à LINE INPUT

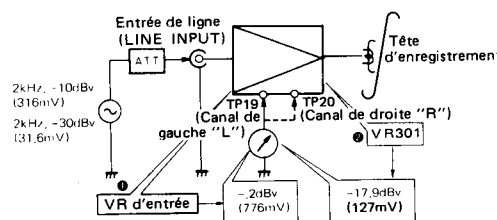


Fig. 12-3 Réglage du circuit Dolby NR

#### Procédure

1. Régler la commande de niveau d'entrée INPUT de manière à ce que le millivoltmètre CA indique -2,2dBv (776mV).
2. Faire ensuite passer le niveau du signal d'entrée à -30dBv (31,6mV) et placer le commutateur DOLBY NR sur la position ON.
3. Régler VR301 de manière à ce que le millivoltmètre CA indique -17,9dBv (127mV).

## 12.2 RÉGLAGE EN AZIMUT DE LA TÊTE

### Préparation

|                         |                                    |
|-------------------------|------------------------------------|
| Mode .....              | Lecture                            |
| Bande d'essai .....     | STD-341A (10kHz, -20dB)            |
| Millivoltmètre CA ..... | A la sortie de ligne (LINE OUTPUT) |
| VR101, VR201 .....      | Tournées en position maximum       |

### Procédure

Régler la vis de réglage d'azimut de manière à obtenir l'indication maximum du millivoltmètre CA pour les canaux de gauche et de droite. Lorsque ce réglage est terminé, verrouiller la vis à l'aide du blocage de vis.

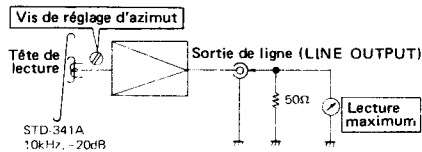


Fig. 12-3 Réglage d'azimut de la tête

## 12.3 RÉGLAGE DE L'ÉGALISATION DE LECTURE

### Préparation

|                         |                                   |
|-------------------------|-----------------------------------|
| Mode .....              | Lecture                           |
| Bande d'essai .....     | STD-341A (333Hz et 6,3kHz, -20dB) |
| Millivoltmètre CA ..... | Sortie de ligne (LINE OUTPUT)     |

### Procédure

1. Placer le sélecteur de bande TAPE SELECTOR sur la position NORM. Procéder à la reproduction des passages de 333Hz et de 6,3kHz de la bande STD-341A et vérifier que la différence entre les deux niveaux de sortie n'excède pas  $1,5\text{dB} \pm 1,5\text{dB}$ .
2. Placer ensuite le sélecteur TAPE SELECTOR sur la position HIGH. Procéder de nouveau à la reproduction des passages de 333Hz et de 6,3kHz et vérifier que la différence entre les deux niveaux de sortie n'excède pas  $-2,5\text{dB} \pm 1\text{dB}$ .

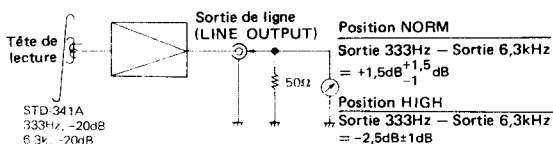


Fig. 12-4 Contrôle de l'égalisation de lecture

## 12.4 RÉGLAGE DU NIVEAU DE LECTURE

Ce réglage déterminant le niveau de DOLBY NR pendant la lecture, il doit être réalisé avec précision.

### Préparation

|                         |                                                          |
|-------------------------|----------------------------------------------------------|
| Mode .....              | Lecture                                                  |
| Bande d'essai .....     | STD-341A (333Hz, 0dB)                                    |
| Millivoltmètre CA ..... | TP19 (canal de gauche "L") et TP20 (canal de droite "R") |

### Procédure

Régler VR101 (canal de gauche) et VR201 (canal de droite), de manière à ce que le millivoltmètre CA indique  $-1,2\text{dBv}$  (0,87V).

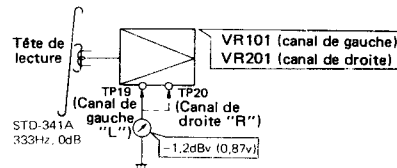


Fig. 12-5 Réglage du niveau de lecture

## 12.5 RÉGLAGE DE LA RÉPONSE EN FRÉQUENCE GLOBALE

### Préparation

|                         |                                                       |
|-------------------------|-------------------------------------------------------|
| Mode .....              | Enregistrement                                        |
| Bande d'essai .....     | STD-608A                                              |
| Millivoltmètre CA ..... | Sortie de ligne LINE OUTPUT                           |
| Signal d'entrée .....   | 333Hz, -30dBv (31,6mV) à l'entrée de ligne LINE INPUT |

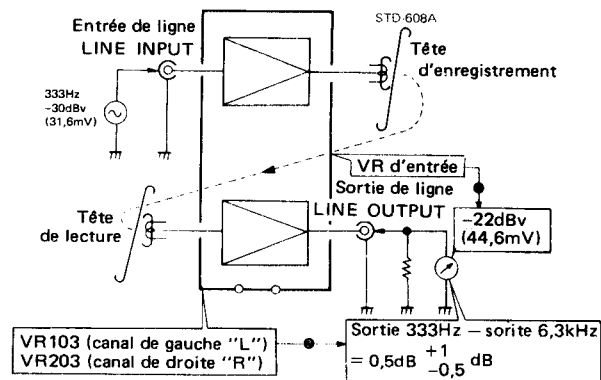


Fig. 12-6 Réglage de la réponse en fréquence enregistrement/lecture

## Procédure

1. Placer le sélecteur de bande TAPE SELECTOR sur la position NORM.
2. Régler la commande de niveau d'entrée INPUT de manière à ce que le millivoltmètre CA indique - 27dBv (44,6mV).
3. Enregistrer les signaux à 333Hz et à 6,3kHz sur STD-608A. Lire la bande et régler VR103 (canal de gauche) et VR203 (canal de droite) de manière à ce que la différence entre les deux soit de  $0,5\text{dB} \pm 0,5\text{dB}$ .

## 12.6 RÉGLAGE DU NIVEAU D'EN-REGISTREMENT

Ce réglage déterminant le niveau de DOLBY NR pendant l'enregistrement, il doit être réalisé avec précision.

### Préparation

Mode ..... Enregistrement  
 Bande d'essai ..... STD-604, STD-608A, STD-603  
 Millivoltmètre CA ..... TP19 (canal de gauche "L") et TP20 (canal de droite "R")  
 Signal d'entrée ..... 333Hz, - 10dBv (316mV) à l'entrée de ligne LINE INPUT

### Procédure

1. Placer le sélecteur de bande TAPE SELECTOR sur la position NORM.
2. Régler la commande de niveau d'entrée INPUT de manière à ce que le millivoltmètre CA indique - 5,2dBv (0,54V).

3. Enregistrer le signal de 333Hz sur la bande STD-608A. Lire la bande et régler VR102 (canal de gauche) et VR202 (canal de droite) de manière à ce que le millivoltmètre CA indique - 5,2dBv (0,54V).
4. Placer le sélecteur de bande TAPE SELECTOR sur la position CrO<sub>2</sub> et enregistrer le signal de 333Hz sur la bande STD-603. Lire la bande et vérifier que le millivoltmètre CA indique - 5,2dBv (0,54V)  $\pm 1,5\text{dB}$ .
5. Placer ensuite le sélecteur de bande TAPE SELECTOR sur la position METAL et enregistrer le signal de 333Hz sur la bande STD-604. Lire la bande et vérifier que le millivoltmètre CA indique - 5,2dBv (0,54V)  $\pm 1,5\text{dB}$ .

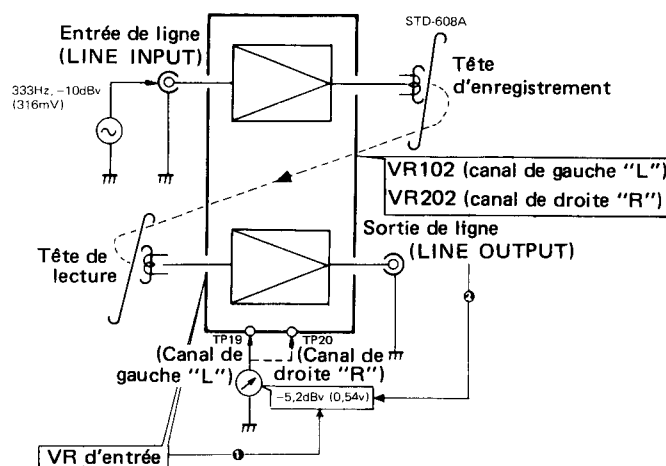
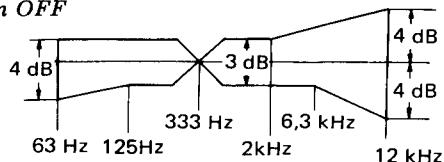


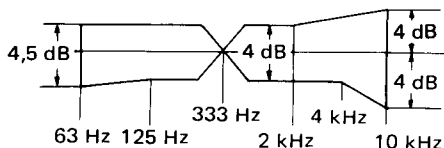
Fig. 12-7 Réglage du niveau d'enregistrement

## Réponse en fréquence globale

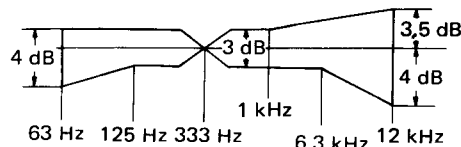
Utilisation du STD608A avec le sélecteur de bande sur la position NORMAL et le réducteur de bruit Dolby sur la position OFF



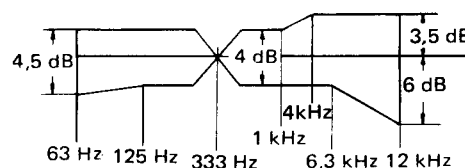
Utilisation du STD608A avec le sélecteur de bande sur la position NORMAL et le réducteur de bruit Dolby sur la position ON



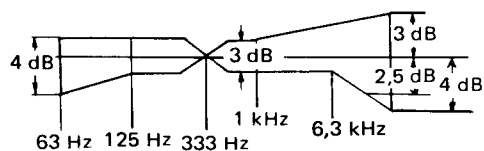
Utilisation du STD603 avec le sélecteur de bande sur la position CrO<sub>2</sub> et le réducteur de bruit Dolby sur la position OFF



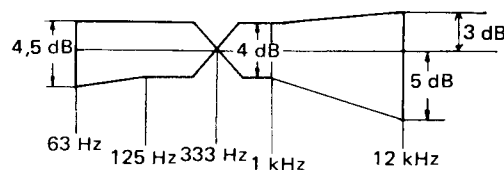
Utilisation du STD603 avec le sélecteur de bande sur la position CrO<sub>2</sub> et le réducteur de bruit Dolby sur la position ON



Utilisation du STD604 avec le sélecteur de bande sur la position *METAL* et le réducteur de bruit Dolby sur la position *OFF*



Utilisation du STD604 avec le sélecteur de bande sur la position *METAL* et le réducteur de bruit Dolby sur la position *ON*



Fgi. 12-8 Réponse en fréquence

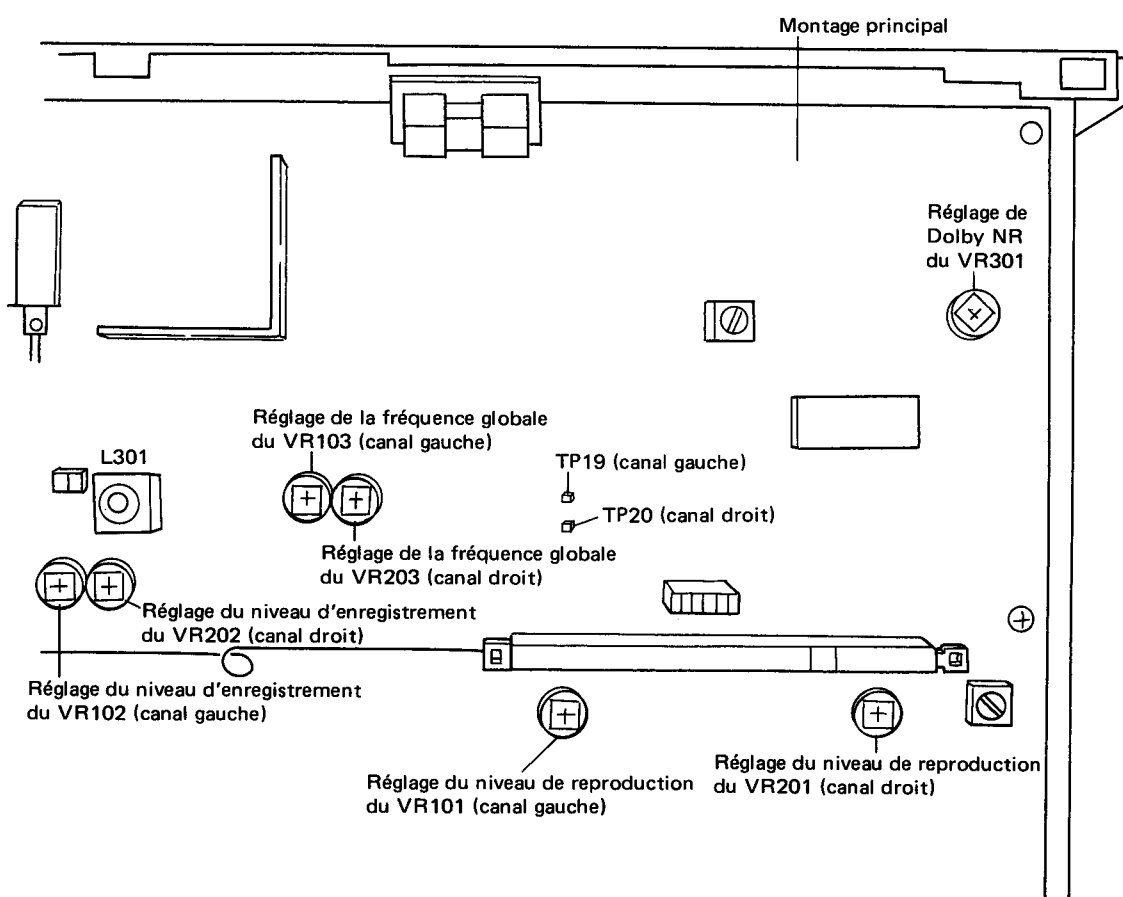


Fig. 12-9 Points de réglage

## 12. AJUSTES ELÉCTRICOS

### Precauciones

1. Deberán completarse los ajustes mecánicos.
2. Limpiar las partes siguientes con algodón humedecido en alcohol: cabeza de grabación/reproducción, rodillo de arrastre, cabeza de borrado, correas de goma y eje de arrastre.
3. Desmagnetizar la cabeza de grabación/reproducción con un desmagnetizador de cabezas.
4. No utilizar destornilladores magnetizados para los ajustes.
5. Los ajustes y las mediciones deberán realizarse para la tensión nominal de suministro de los canales izquierdo y derecho.
6. Los ajustes deberán realizarse en el orden dado en este manual de servicio. Si se altera el orden los ajustes pueden resultar inútiles, dando como resultado una pérdida de rendimiento.
7. El nivel durante las mediciones se basa en  $0\text{dBv} = 1\text{V}$ . Conectar un resistor ficticio de  $50\text{Kohmios}$  ( $47 \sim 52\text{Kohmios}$ ) a los terminales de salida (OUTPUT).
8. Dejar que el CT-3 se precaliente durante algunos minutos antes de proceder con el ajuste.

9. Poner el interruptor de reducción de ruido Dolby (DOLBY NR) en la posición OFF y el selector de cintas (TAPE SELECTOR) en la posición NORM a menos de que se diga otra cosa.

### Equipos/herramientas de pruebas requeridos:

1. Cinta de prueba  
 STD-341A ..... para el ajuste de reproducción  
 STD-608A ..... cinta NORMAL en blanco  
 STD-603 ..... cinta CrO<sub>2</sub> en blanco  
 STD-604 ..... cinta de METAL en blanco
2. Oscilador sonoro
3. Milivoltímetro de CA (AC mV)
4. Atenuador
5. Osciloscopio
6. Resistor de  $50\text{Kohmios}$  ( $47 \sim 52\text{Kohmios}$ )

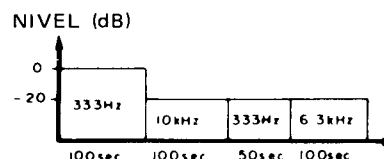


Fig. 12-1 Contenido de la cinta de prueba STD-341A

### 12.1 AJUSTE DEL SISTEMA DOLBY

#### Ajuste

Mode ..... grabación  
 Milivoltímetro de CA ... TP19(canal izq.) y TP20 (canal der.) del conjunto principal.  
 Señal de entrada ..... 2kHz, -10dBv (316mV) a LINE INPUT

#### Procedimiento

1. Ajustar el control del nivel de entrada (INPUT) de modo que el milivoltímetro de CA indique -2,2dBv (776mV).
2. Luego, cambiar el nivel de la señal de entrada a -30dBv (31,6mV) y el interruptor DOLBY NR a la posición ON.
3. Ajustar la VR301 de modo que el milivoltímetro de CA indique -17,9dBv (127mV).

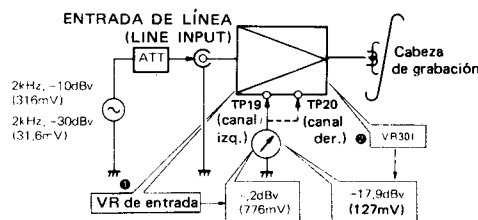


Fig. 12-2 Ajuste del sistema Dolby

## 12.2 AJUSTE DEL ACIMUT DE LA CABEZA

### Ajuste

Modo ..... reproducción  
 Cinta de prueba ..... STD-341A (10kHz, -20dB)  
 Milivoltímetro de CA ... LINE OUTPUT  
 VR101, VR201 ..... incrementar a la posición máxima

### Procedimiento

Ajustar el tornillo de ajuste del acimut para que el milivoltímetro de CA ofrezca las lecturas máximas de los canales izquierdo y derecho. Después de este ajuste, enclavar el tornillo con el bloqueador del tornillo.

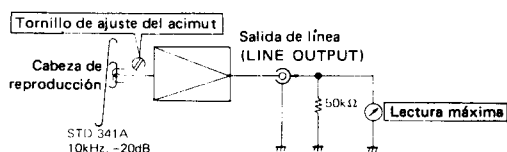


Fig. 12-3 Ajuste de acimut de la cabeza

## 12.3 AJUSTE DEL ECUALIZADOR DE REPRODUCCIÓN

### Ajuste

Modo ..... reproducción  
 Cinta de prueba ..... STD-341A (333Hz y 6,3kHz, -20dB)  
 Milivoltímetro de CA ... LINE OUTPUT

### Procedimiento

1. Poner el selector de cintas (TAPE SELECTOR) en la posición NORM. Reproducir las partes de 333Hz y 6,3kHz de la STD-341A, y comprobar la diferencia entre los dos niveles de salida no exceda de  $1,5\text{dB} \pm 1,5\text{dB}$ .
2. Luego, poner el selector de cintas (TAPE SELECTOR) en la posición HIGH. Reproducir de nuevo las partes de 333Hz y 6,3kHz, y comprobar que la diferencia entre los dos niveles de salida no exceda de  $-2,5\text{dB} \pm 1\text{dB}$ .

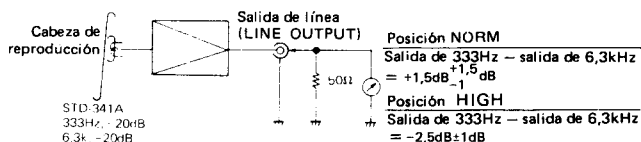


Fig. 12-4 Comprobación del ecualizador de reproducción

## 12.4 AJUSTE DEL NIVEL DE REPRODUCCIÓN

Puesto que este ajuste determina el nivel del sistema Dolby durante la reproducción, deberá realizarse con precisión.

### Ajuste

Modo ..... reproducción  
 Cinta de prueba ..... STD-341A (333Hz, 0dB)  
 Milivoltímetro de CA ... TP19 (canal izq.) y TP20 (canal der.)

### Procedimiento

Ajustar la VR101 (canal izquierdo) y la VR201 (canal derecho) de modo que el milivoltímetro de CA indique  $-1,2\text{dBv}$  (0,87V).

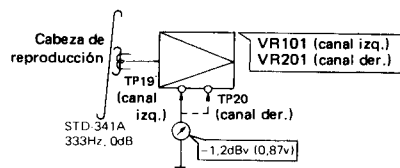


Fig. 12-5 Ajuste del nivel de reproducción

## 12.5 AJUSTE GENERAL DE LA RESPUESTA EN FRECUENCIA

### Ajuste

(31,6mV)  
 Modo ..... grabación  
 Cinta de prueba ..... STD-608A  
 Milivoltímetro de CA ... LINE OUTPUT  
 Señal de entrada ..... 333Hz, -30dBv (31,6mV) a LINE INPUT

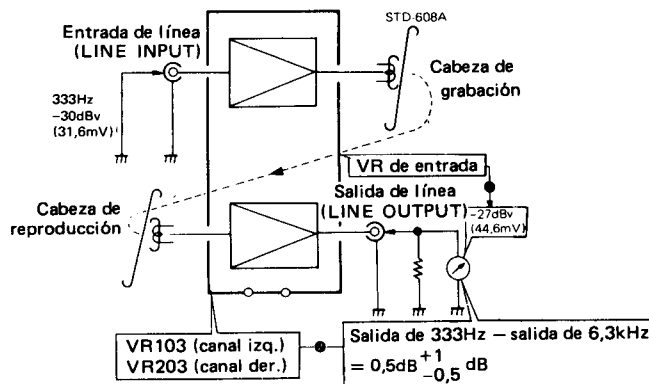


Fig. 12-6 Ajuste grabación/reproducción de la respuesta en frecuencia

## Procedimiento

1. Poner el selector de cintas (TAPE SELECTOR) en la posición NORM.
2. Ajustar el control del nivel de entrada (INPUT) de modo que el milivoltímetro de CA indique  $-27\text{dBv}$  ( $44,6\text{mV}$ ).
3. Grabar las señales de  $333\text{Hz}$  y  $6,3\text{kHz}$  de la STD-608A. Reproducir la cinta y ajustar la VR103 (canal izquierdo) y VR203 (canal derecho) de modo que la diferencia entre las dos sea de  $0,5\text{dB}^{+1}_{-0,5}\text{dB}$ .

## 12.6 AJUSTE DEL NIVEL DE GRABACIÓN

Puesto que este ajuste determina el nivel del sistema Dolby durante la grabación, deberá realizarse con precisión.

### Ajuste

Modo ..... grabación  
 Cinta de prueba ..... STD-604, STD-608A, STD-603  
 Milivoltímetro de CA ... TP19 (canal izq.) y TP20 (canal der.)  
 Señal de entrada .....  $333\text{Hz}$ ,  $-10\text{dBv}$  ( $316\text{mV}$ ) a LINE INPUT

### Procedimiento

1. Poner el selector de cintas (TAPE SELECTOR) en la posición NORM.
2. Ajustar el control del nivel de entrada (INPUT) de modo que el milivoltímetro de CA indique  $-5,2\text{dBv}$  ( $0,54\text{V}$ ).

3. Grabar la señal de  $333\text{Hz}$  en la STD-608A. Reproducir la cinta y ajustar la VR102 (canal izquierdo) y la VR202 (canal derecho) de modo que el milivoltímetro de CA indique  $-5,2\text{dBv}$  ( $0,54\text{V}$ ).
4. Poner el selector de cinta (TAPE SELECTOR) en la posición CrO<sub>2</sub> y grabar la señal de  $333\text{Hz}$  en la STD-603. Reproducir la cinta y verificar que el milivoltímetro de CA indique  $-5,2\text{dBv}$  ( $0,54\text{V}$ )  $\pm 1,5\text{dB}$ .
5. Luego, poner el selector de cintas (TAPE SELECTOR) en la posición METAL y grabar la señal de  $333\text{Hz}$  en la STD-604. Reproducir la cinta y verificar que el milivoltímetro de CA indique  $-5,2\text{dBv}$  ( $0,54\text{V}$ )  $\pm 1,5\text{dB}$ .

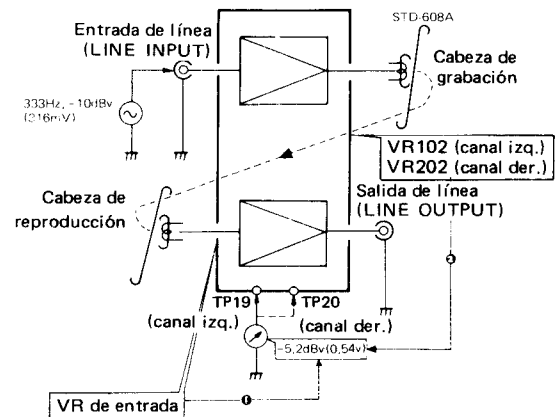
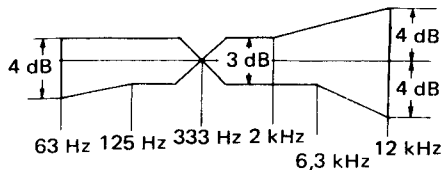


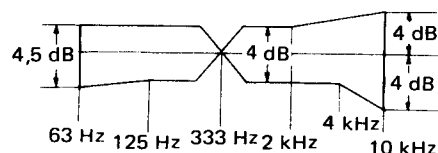
Fig. 12-7 Ajuste del nivel de grabación

## Respuesta en frecuencia

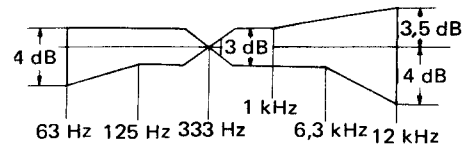
Utilizando el STD-608A y la posición NORM del selector de cintas (TAPE SELECTOR) con el sistema DOLBY NR en la posición OFF.



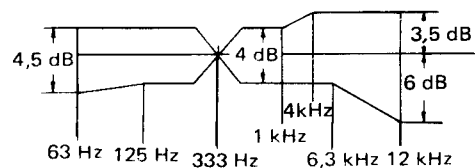
Utilizando el STD-608A y la posición NORM del selector de cintas (TAPE SELECTOR) con el sistema DOLBY NR en la posición ON.



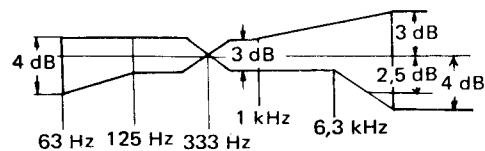
Utilizando el STD-603 y la posición CrO<sub>2</sub> del selector de cintas (TAPE SELECTOR) con el sistema DOLBY NR en la posición OFF.



Utilizando el STD-603 y la posición CrO<sub>2</sub> del selector de cintas (TAPE SELECTOR) con el sistema DOLBY NR en la posición ON.



Utilizando el STD-604 y la posición METAL del selector de cintas (TAPE SELECTOR) con el sistema DOLBY NR en la posición OFF.



Utilizando el STD-604 y la posición METAL del selector de cintas (TAPE SELECTOR) con el sistema DOLBY NR en la posición ON.

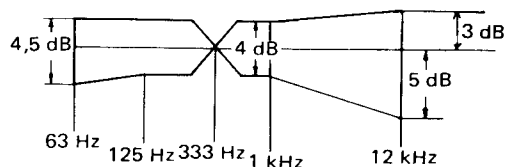


Fig. 12-8 Respuesta en frecuencia

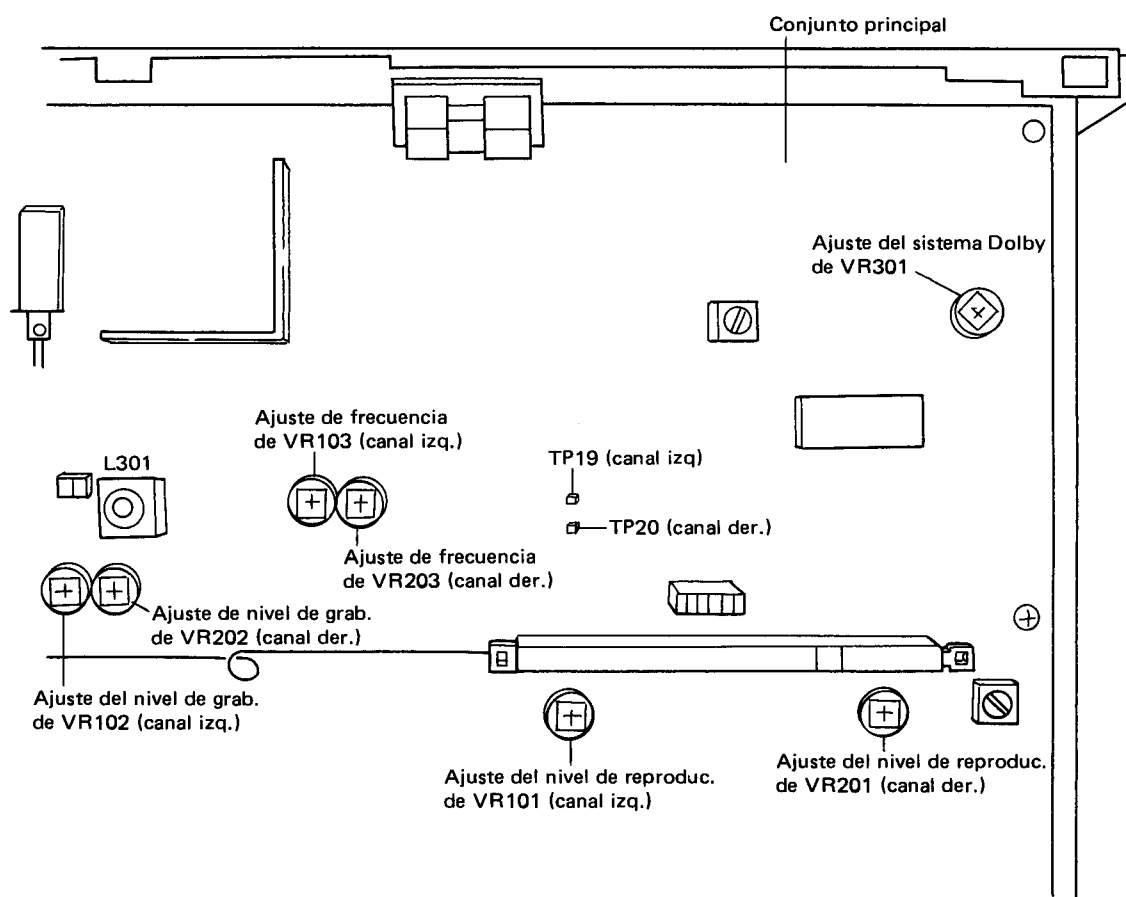
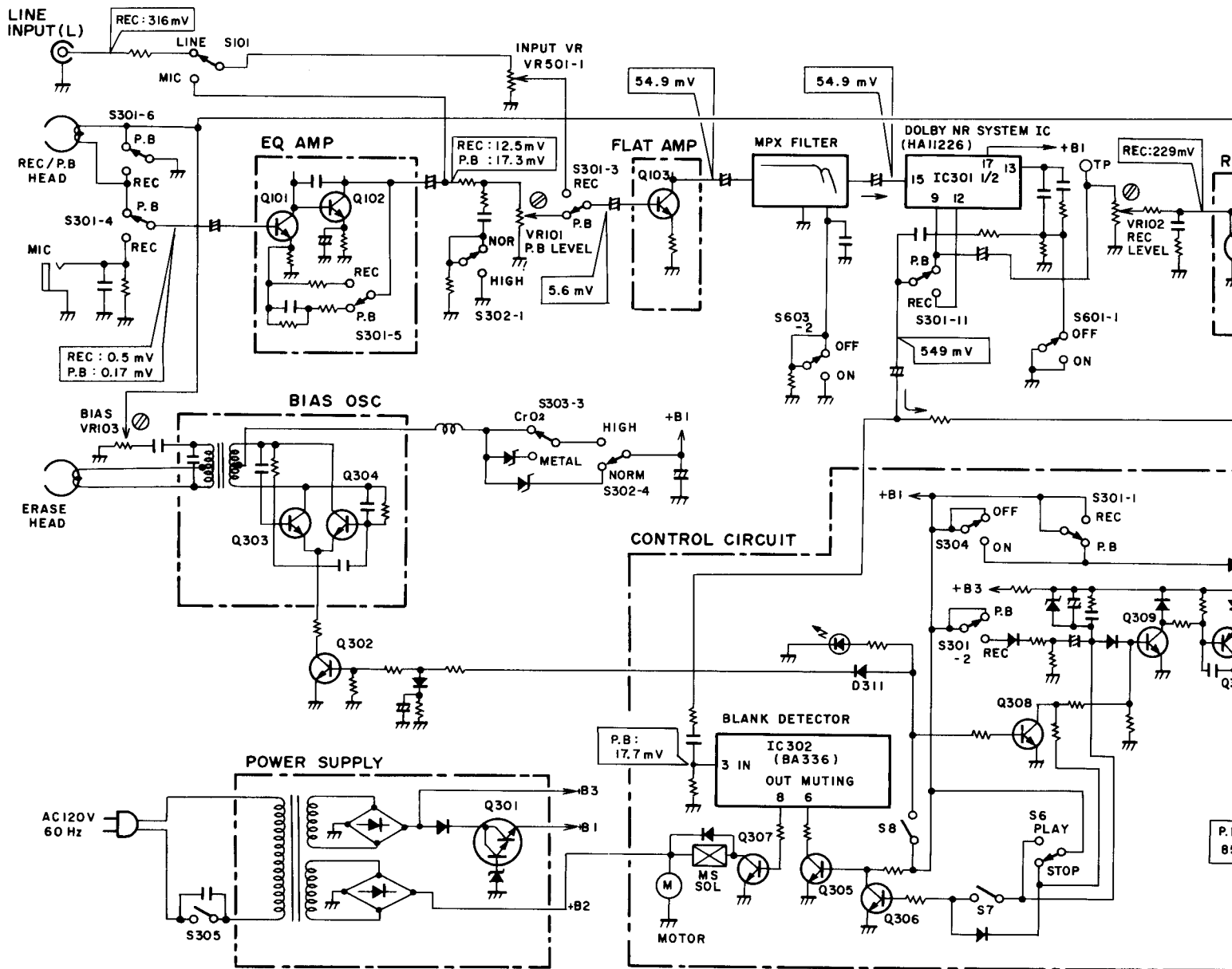


Fig. 12-9 Puntos de ajuste

### 13. BLOCK DIAGRAM



## SWITCHES

S101 : INPUT SELECTOR (MIC - LINE)  
S301 : REC/PLAYBACK SELECTOR (REC - PLAYBACK)  
S302 : TAPE SELECTOR (NORMAL - HIGH)  
S303 : TAPE SELECTOR (CrO<sub>2</sub> - METAL)

S304 : REC M  
S305 : POWER  
S601 : DOLBY  
S603 : MPX (

## 14. CIRCUIT DESCRIPTIONS

A block diagram of the circuits described in this section can be found on page 39.

### 14.1 PLAYBACK SIGNAL PATH

The audio signal picked up by the playback head is amplified to a constant level by the playback equalizer amp (Q101, Q102), and flat amp (Q103). It then proceeds to the LINE OUTPUT terminal, passing through the MPX filter and Dolby amp (IC301) along the path.

### 14.2 RECORDING SIGNAL PATH

The recording signal applied to the LINE INPUT terminal passes first through the INPUT potentiometer (volume), and is then input to the flat amp (Q103). A recording signal input through the MIC jack is first amplified by Q101 and Q102, then passes through the INPUT potentiometer (volume) on its way to the flat amp (Q103) where it is amplified to a constant level. Turning the MPX switch ON eliminates the beat frequency (pilot) escaping from the tuner section prior to the signal reaching the Dolby amp (pin 15, IC 301).

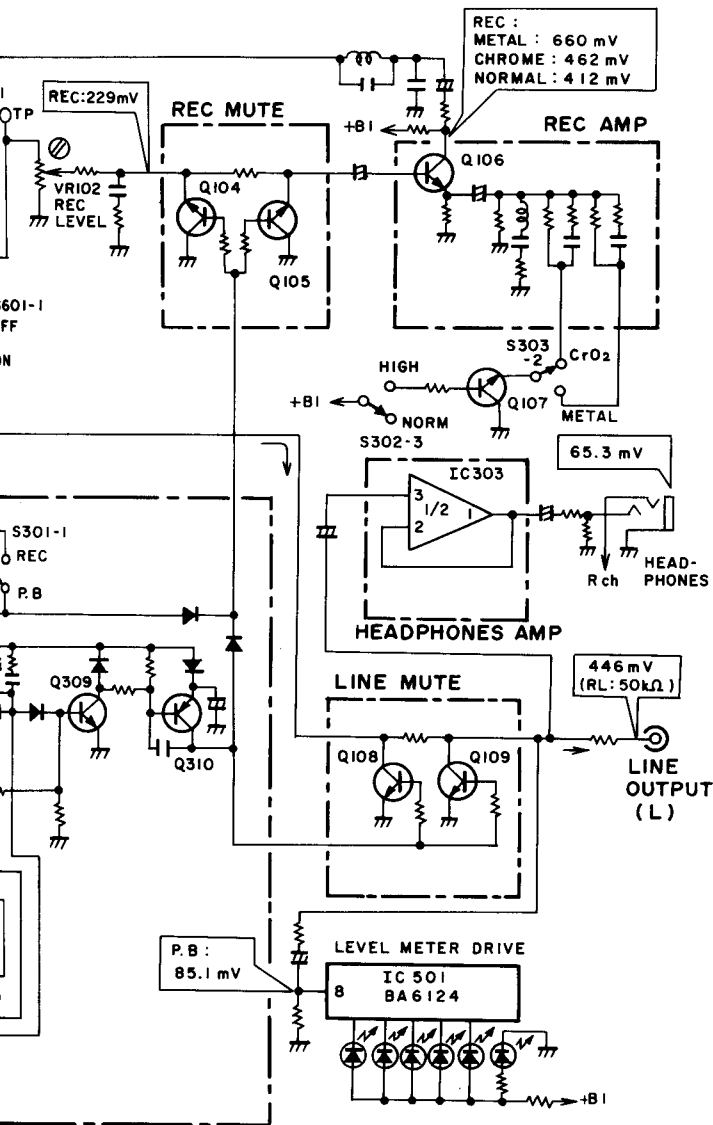
When the Dolby NR switch is placed ON, the portion of the signal processed through the Dolby circuit is combined with the original signal and output from pin 9 of IC301. It then passes through the recording level adjustment potentiometer and into the recording amp (Q106). Signals not processed through the Dolby NR circuit are output from pin 12 of IC301.

After frequency response characteristics are adjusted by the equalizer circuit in the recording amp to conform with the type of tape being used, the signal is then passed to the recording head.

When the recording mode is selected, S8 goes ON, causing +B to pass through D311 and be input to Q302, turning it ON. As Q302 goes active, the bias oscillator (Q303, Q304) commences operation, and at the same time that erase current is fed to the erase head, bias current is also passed through the bias adjustment potentiometer and fed to the recording head.

### 14.3 MUTING CIRCUIT (Refer to Fig. 14-1)

The muting circuit functions to prevent transient noise (occurring when the power switch is turned ON, or when the various mode switches are operated) from being output from the LINE OUTPUT terminal. It also prevents these noises from being recorded onto the tape.



- |                            |                         |
|----------------------------|-------------------------|
| S304 : REC MUTE (ON - OFF) | S6 : PLAY (PLAY - STOP) |
| S305 : POWER (ON - OFF)    | S7 : FAST (FF - OFF)    |
| S601 : DOLBY NR (ON - OFF) | S8 : REC (ON - OFF)     |
| S603 : MPX (ON - OFF)      |                         |

### • Power switch ON muting

1. When the power switch is turned ON, current flows from the power transformer secondary following the path D301 → R318 → C326 → D308, and as long as C326 is in a charged status, Q309, is ON.
2. When Q309 comes ON, the base potential of Q310 drops, turning Q310 ON.
3. Q310 going ON causes Q108 and Q109 to come ON, eliminating any chance of noise output from the LINE OUTPUT terminal.

### • Power switch ON → OFF muting

1. When the power switch (S305) is changed from the ON to OFF status, the charged stored in C328 is discharged following the path Q310 → R322 → D306, causing Q310 to the ON.
2. When Q310 comes ON, Q108 and Q109 also come ON effecting the muting status, and preventing any noise output through the LINE OUTPUT terminal.

### • STOP → PLAY mode muting

1. When the PLAY switch is depressed, the mechanism goes from a STOP to a PLAY status, and S6 is thrown to the PLAY side.
2. +B is then present at S6, and this current follows the path R327 → C324 → D308. In this case, Q309 is held in an ON status for as long as C324 is charging.
3. During the interval Q309 is ON, Q310 is also ON, and as occurred during power switch ON muting, Q108 and Q109 are ON, cancelling any signal output from the LINE OUTPUT terminal.

### • STOP mode muting

1. When the mechanism goes into the STOP mode, +B current is present at S6, and flows through the path R330 → R329, turning Q309 ON.
2. When Q309 goes ON, Q310 also goes ON, triggering Q108 and Q109 ON and muting LINE OUTPUT. Also, as the current passes through D313 and turns Q104 and Q105 ON, RECORD mode muting is also effected.

### • STOP → REC mode muting

1. When the mechanism goes from the STOP to the REC mode, S6 is thrown to the PLAY side, and S301-1 and S301-2 are thrown to the REC side.
2. When S6 is at the PLAY side, the muting time applied to the LINE OUTPUT terminal (noted in STOP → PALY mode muting) is extended. Then as S301-2 goes to the REC side, +B current is applied to D309, flowing through the path R323 → C325 → D308. The ON time of Q309 is extended while C325 is being charged, thus delaying the muting lift time.
3. During the interval Q309 and Q310 are ON, Q104 and Q105 also remain ON (via D313). Thus, in the time period prior to tape travel becoming stable, or when one of the mode switches is operated, any transient occurring will not be recorded onto the tape.

### • MUSIC SEARCH (MS) mode muting

1. When the PLAY switch (S6) and FAST switch (S7) are depressed together, the MS mode is entered and S6 is thrown to the PLAY side, and S7 to ON.

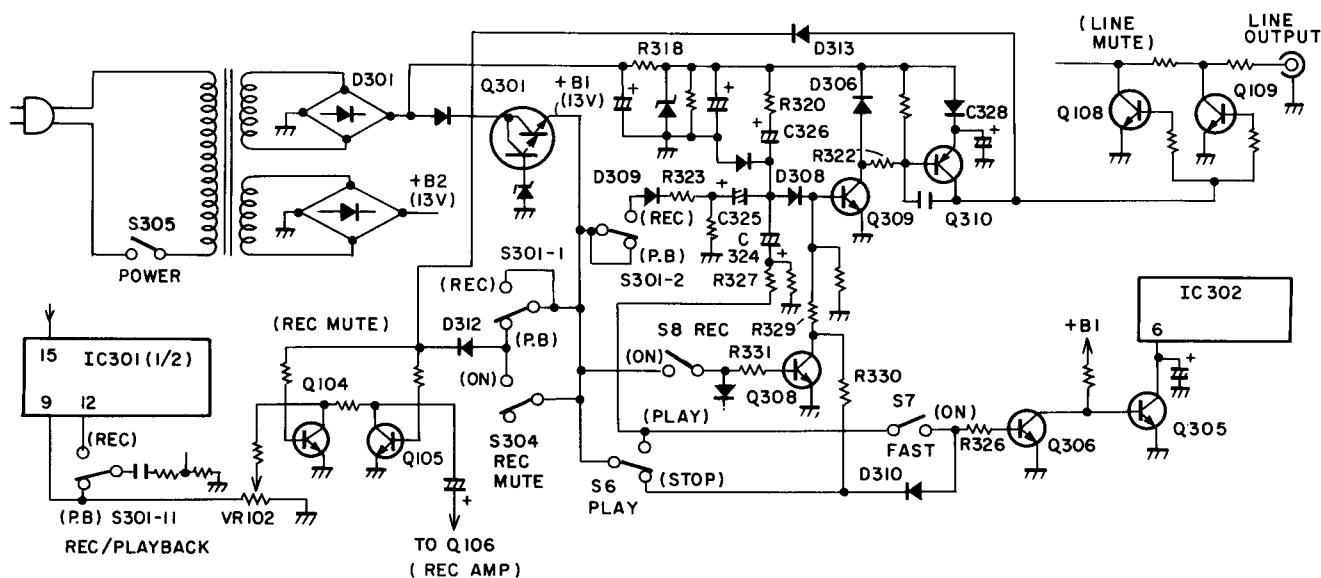


Fig. 14-1 Muting circuit

1. When the PAUSE button is pressed while the unit is in the REC mode, S6 is thrown to the STOP side, however, since S8 is still in an ON status, +B remains present at S8 and through R331, turn Q308 ON.
2. When Q308 is ON, both Q309 and Q310 remain in an OFF status, lifting LINE muting during this interval.

The MS mode functions to locate music selections by locating non-recorded sections of over 4 seconds duration in the tape. MS operation is controlled by IC302 (BA336).

1. The MS mode is entered when the PLAY switch (S6) and FAST switch (S7) are depressed together. This causes S6 to be thrown to the PLAY side and S7 to be thrown ON. +B1 is applied to Q306 (via R326), turning Q306 ON. As Q306 comes ON, the base potential of Q305 drops turning it OFF, and the muting is lifted from the 6 pin of IC302. As muting is lifted, MS commences its operation.
2. The audio signal picked up from the playback head travels the path EQ amp → flat amp → MPX filter → IC301 pin 15 → IC301 pin 9, and

3. When the audio signal at pin 3 of IC302 is below the input decision level, a pulse is output from pin 8 of IC302 and Q307 goes instantly ON. When Q307 goes ON, the MS solenoid is activated and the FAST travel mechanism is released (by S7 going OFF), and the PLAY mode is re-entered.
4. As S7 goes OFF, so does Q306. Q305 goes ON, and muting is applied to pin 6 of IC302 ending MS operations.

BA336 is the IC performing the tape blank detection function. It consists of a preamp (with limiter circuit), comparator, flip-flop, and driver. (Refer to the block diagram and timing chart in Figs. 14-3 and 14-4 respectively.)

1. In the FAST mode, the audio signal enters pin 3 of BA336. After amplification by the preamp, it is compared with the reference voltage (Vref) by comparator I. If the signal is below the input decision level (in which case the tape is not recorded, or is recorded with an extremely low level signal), the potential at pin 2 begins to rise according to the time constant set by C321 and R312 (this C/R time constant also determines blank detection time), and when it reaches  $1/2 V_{cc}$ , the output of the blank detection time setting comparator (comparator II) is triggered to the opposite



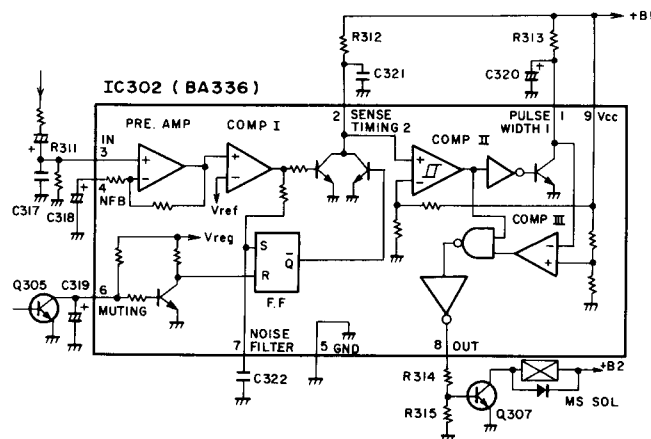
state. (Blank detection time is determined from the point the input signal dropped below the input decision level to the point when the output pulse is produced.)

- From this point, the potential at pin 1 (output pulse width set by C/R time constant) begins to rise in accordance with the time constant of C320 and R313. When it reaches  $1/2 V_{cc}$ , the pulse width setting comparator (comparator III) is triggered to the opposite state. Thus, during the interval between the point where the blank detection time setting comparator (comparator II) is reversed and the pulse width setting comparator (comparator III) is reversed, output is at a HIGH level.

This HIGH level output turns Q307 ON, operating the MS solenoid.

- When the power switch is turned ON, or when muting is OFF, a fixed-time interval reset pulse is generated resetting the internal flip-flop circuit, and no output pulse is produced.

(Capacitor C319 connected to pin 6 serves to prevent the song finder function from until the circuits have stabilized after power has been turned ON.) After this, the input signal sets the flip-flop circuit, and the song finder function enters into a waiting status, and an output pulse is produced at each blank between music selections.



## 15. CASSETTE DECK MECHANICAL OPERATIONS (SIMPLIFIED DESCRIPTION)

The mechanical portion of the CT-3 uses separate power assist mechanisms for the PLAY and REC system for light-touch operation. A mechanical auto-stop and MS (Music Search) function is also built-in.

### 15.1 STOP MODE

Fig. 15-1 shows the PLAY and REC power assist mechanisms in the stop mode. In this status, the cam gear stopper A is making contact with gear lever A, so the cam gear and capstan gear (flywheel) are not meshed. (When the power switch is ON, the motor continues rotating, driving the capstan gear via the belt).

### 15.2 PLAY OPERATIONS (Fig. 15-2, 15-3)

1. When the PLAY button is pressed down, the shape of the button forces gear lever A in the ① direction. Also, at the same time, gear lever B travels in the ① direction, and gear lever A and cam gear stopper A are disengaged.
2. The cam gear is forced in the direction ② by the trigger spring. Consequently, it starts rotating in the direction ② (CCW) and meshes with the capstan gear (flywheel).

3. As the capstan gear and cam gear are now engaged, the force transmitted by the motor and flywheel rotate the cam gear further, until stopper C makes contact with gear lever B. It stops in that position. At this point, the capstan gear and cam gear are no longer meshed. (See right side of Fig. 15-2).
4. Now, the projection on the cam gear boss is forcing the brake-plate down in the direction ③, and braking force is released from the reel base.
5. Also, the cam shape of the cam gear is moving the action lever in the ④ direction.
6. The head base is lifted by the action of this action lever, placing it in the PLAY position and throwing the PLAY switch to the PLAY side. (See Fig. 15-3). This action also presses down on the pinch roller pressure spring causing pressure contact between the pinch roller and capstan, and starting tape travel.
7. At the same time, the TU (take-up) idler is forced up into contact with the take-up reel base to start it rotating, and the PLAY mode is entered.

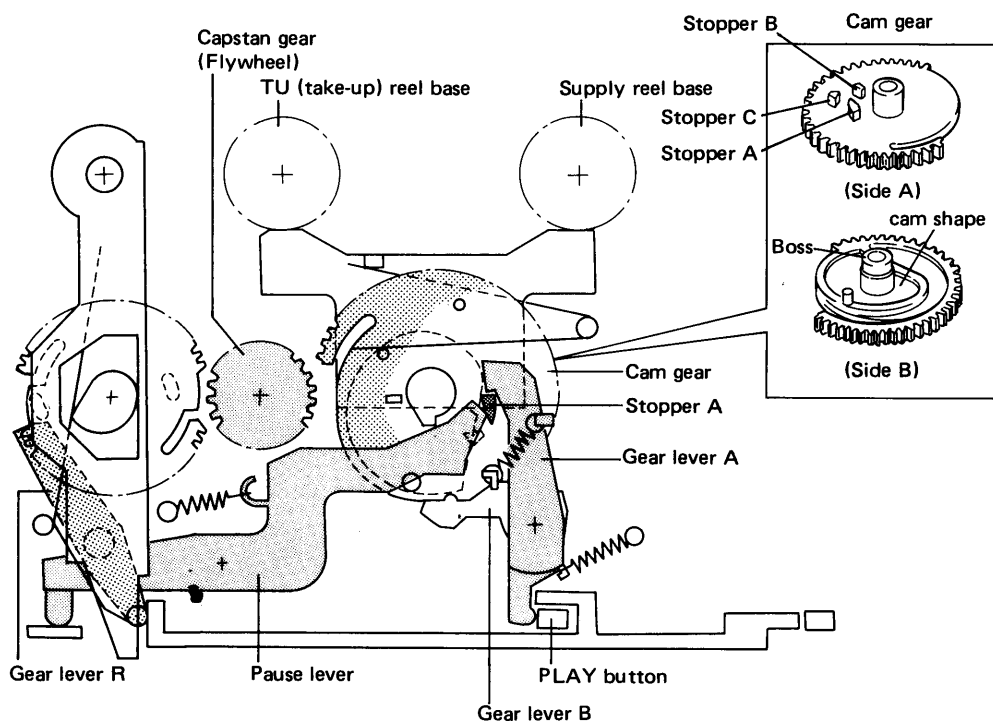


Fig. 15-1 Mechanism in STOP mode (Rear View)

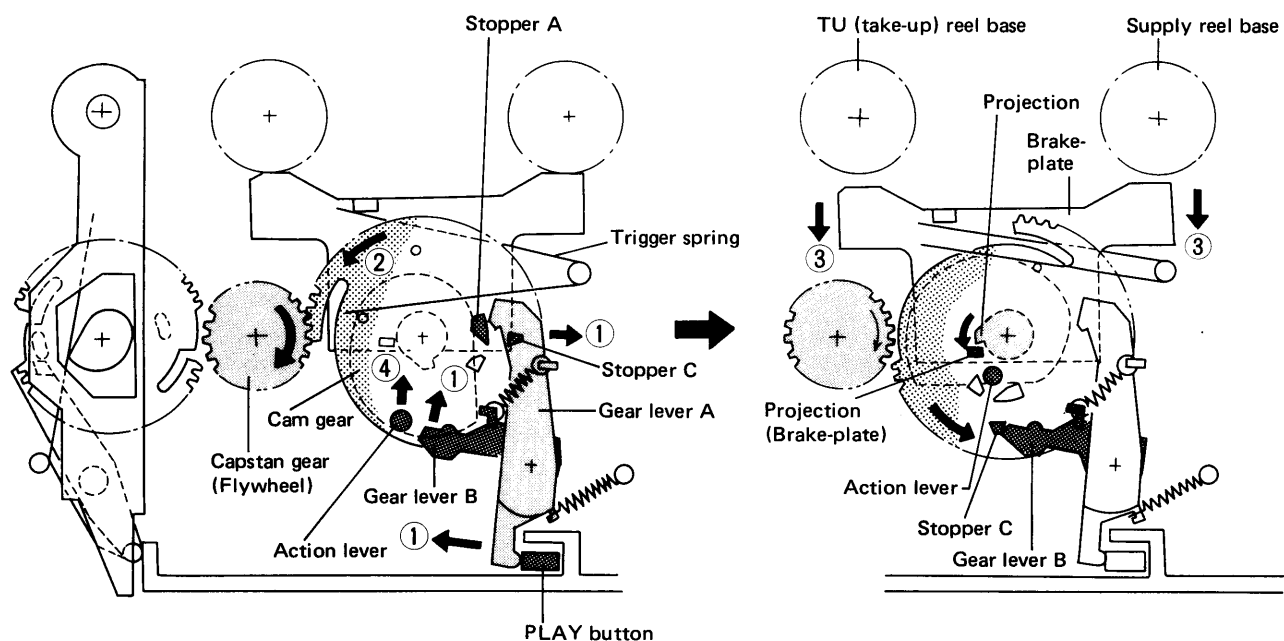


Fig. 15-2 STOP → PLAY operation

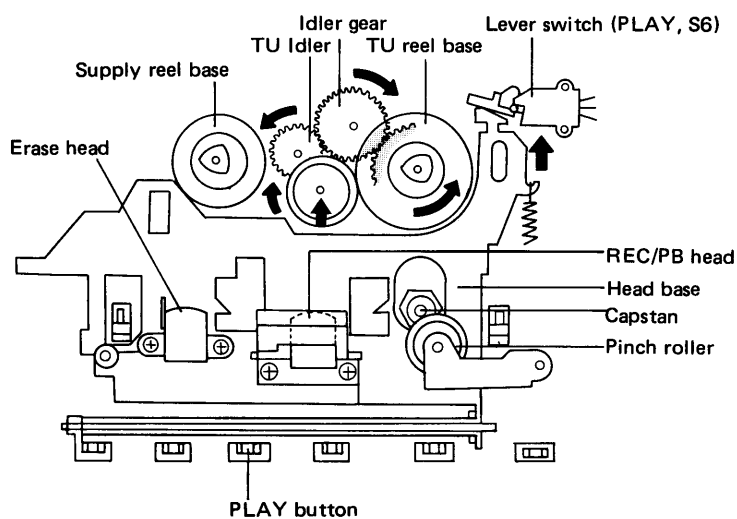
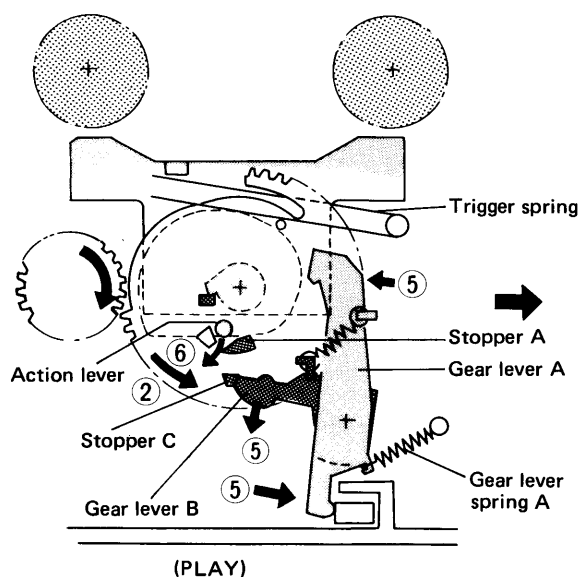


Fig. 15-3 PLAY operation

### 15.3 PLAY → STOP OPERATION (Fig. 15-4)

1. When the STOP button is pressed, the PLAY button lock is released, and the force of gear lever spring A returns gear lever A and B in the direction ⑤. This action separates cam gear stopper C from gear lever B.
2. As cam gear stopper C moves away from gear lever B, the compression force of the trigger spring rotates the cam gear in the direction ② until stopped by contact between cam gear stopper A and gear lever A. (See the right side of Fig. 15-4).
3. This rotating action releases the brake-plate from the projection on the cam gear boss. The brake-plate is returned to its up position by the force of the trigger spring, stopping the rotation of the supply and take-up reel base.
4. At the same time, the shape of the cam (machined on the upper surface of the cam gear) returns the action lever in the ⑥ direction, releasing the pressure contact the pinch roller and TU idler are placing on the reel base. The head base also returns to the STOP position, and the PLAY switch is thrown to the STOP side, completing entry into the STOP mode.



### 15.4 PLAY → PAUSE OPERATION → PAUSE RELEASE (Fig. 15-5)

1. When the PAUSE button is pressed (unit in PLAY mode), the cam on the PAUSE button moves the pause lever in the ⑦ direction.
2. The pause lever pushes gear lever B up in the ⑧ direction, releasing the cam gear stopper C. The cam gear starts rotating in the ⑨ direction, stopping at the point cam gear stopper A makes contact with the pause lever tip.
3. The rotation of the cam gear causes the brake plate, pinch roller, TU idler, head base, and PLAY switch to all return to the STOP position (See 15.3, PLAY → STOP Operations), entering the PAUSE mode.

#### PAUSE Mode Release:

4. Once again pressing the PAUSE button releases the pause ratchet mechanism, and the pause button (presently in contact with the return spring) returns to its original position.
5. Since the pause lever is moved in the ⑩ direction by the pause lever return spring, stopper A on the cam gear is released from the pause lever.
6. The force of the trigger spring moves the cam gear in the ⑨ direction and starts meshing the cam gear with the capstan gear. From this point, all operations are the same as in the PLAY mode, and tape travel is re-started.

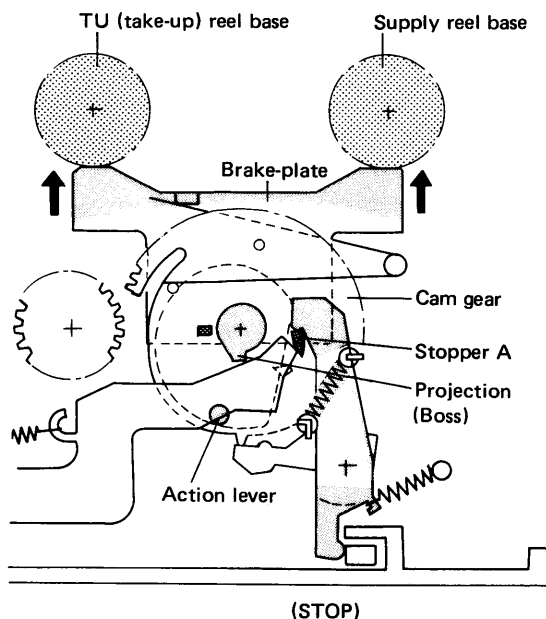


Fig. 15-4 PLAY → STOP operation

### 15.5 REC OPERATIONS (Fig. 15-6, 15-7)

1. When the REC button is pressed, the cam on the REC button moves the REC connection arm in the ① direction, gear lever R in the ② direction, and gear lever A in the ③ direction.
2. With the movement of gear lever R, stopper A on cam gear R is released from gear lever R, cam gear forced down by the pressure exerted by trigger spring R, and starts rotating in the ④ direction. It then commences to mesh with the capstan gear.
3. As cam gear R becomes meshed with the capstan gear, cam gear R continues rotating until stopper B (on cam gear R) makes contact with gear lever R, stopping it in that position.
4. At this time, the shape of the cam on cam gear R causes the REC action lever to move in the ⑤ direction, pressing on the REC action plate. (Fig. 15-7).
5. The function of the REC action plate is to throw the REC switch and REC/PLAY switch to the REC side.

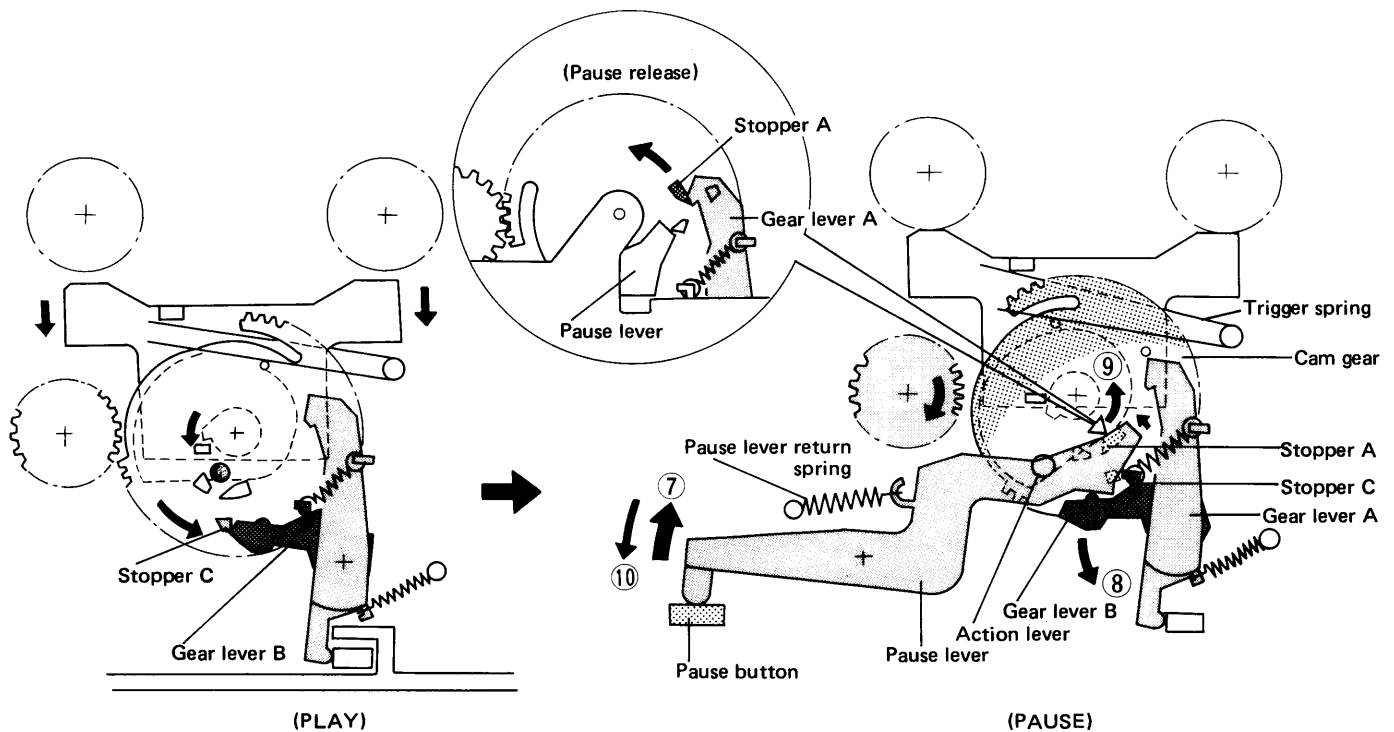


Fig. 15-5 PLAY → PAUSE operation

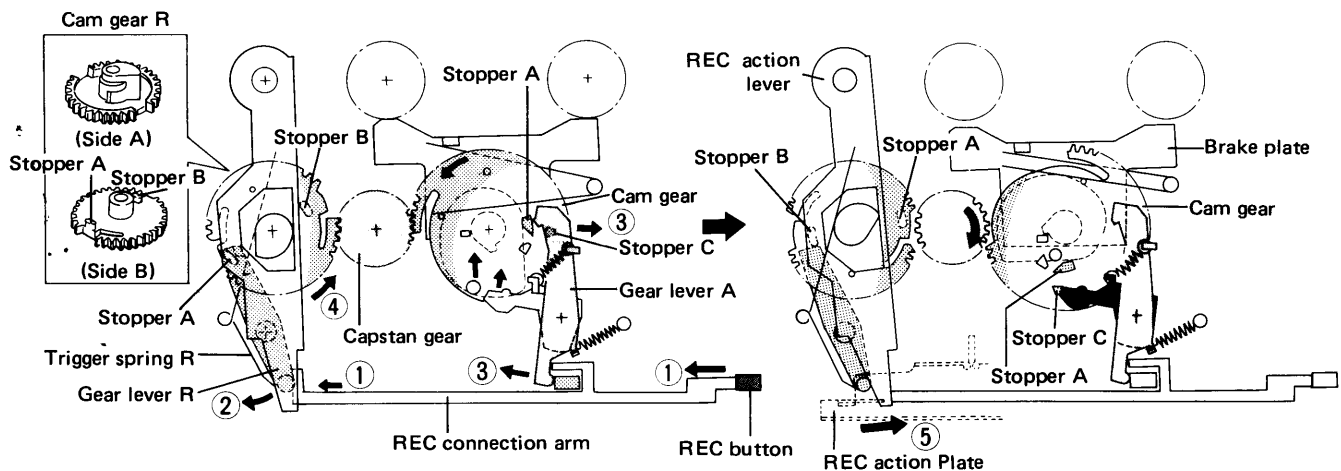


Fig. 15-6 STOP → REC operation

6. Also, as gear lever A becomes released from stopper A on the cam gear (noted in step 1. above), the cam gear meshes with the capstan gear to start tape travel, and as the PLAY switch is also thrown to the PLAY side (see 15.2, PLAY Operations), the REC mode is entered.

#### 15.6 REC → PAUSE OPERATION → PAUSE RELEASE

1. In going from REC to PAUSE, all operations are as outlined in 15.4 PLAY → PAUSE Operation. In other words, when the REC switch and the REC/PLAY switch remain on the REC side, tape travel is stopped by only the PLAY switch being thrown to the STOP side.
2. PAUSE release also conforms to the operations outlined in 15.4 PLAY → PAUSE Operation → PAUSE Release. Here, the PLAY switch is thrown to the PLAY side, and re-starting tape travel causes entry into the REC mode.

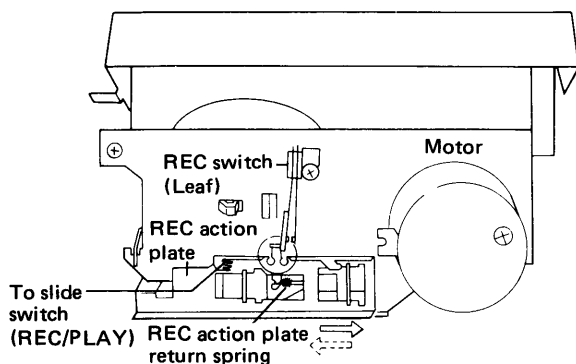


Fig. 15-7 STOP→REC operation  
(REC switch ON)

#### 15.7 REC → STOP MODE (Fig. 15-8)

1. When the STOP button is pressed releasing the REC button lock, the trigger spring R returns the REC connection arm and gear lever R in the ⑥ direction, breaking contact with stopper B on cam gear R.
  2. The REC action plate return spring rotates cam gear R in the ⑦ direction, and starts meshing it with the capstan gear.
  3. Cam gear R continues to rotate until stopper A (on cam gear R) makes contact with gear lever R, stopping it in the former position of stopper B.
  4. The shape of the cam on cam gear R returns the REC action lever and REC action plate to the STOP position, and throws the REC switch and REC/PLAY switch to the PLAY side.
  5. Also, the action of gear lever A returning to the STOP position throws the PLAY switch to the STOP side, halting tape travel. (Refer to 15.3 PLAY → STOP Operation).
- \* In the REC → STOP cycle, cam gear R and the capstan gear are meshed to have the switch timing of the PLAY and REC/PLAY switches.

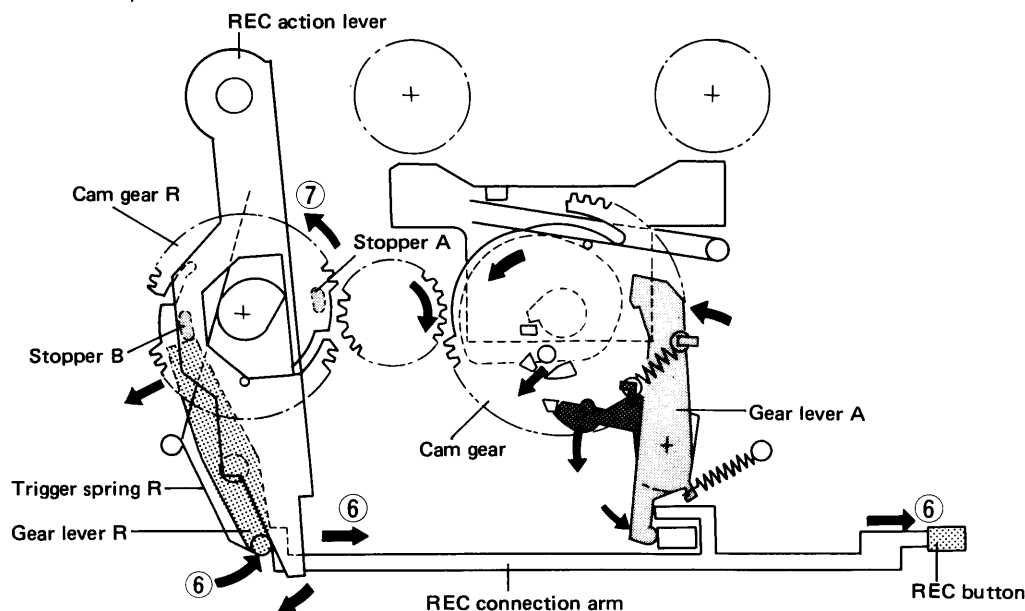


Fig. 15-8 REC → STOP operation

## 15.8 FF (Fast Forward) (or REW) OPERATIONS (Fig. 15-9 ~ 15-11)

1. When the FF (or REW) button is pressed, joint R (L) moves in the direction of ①, pressing down (① direction) on the FF (REW) action plate. At the same time, the lever switch is thrown to the ON position (Fig. 15-10, 15-9).
2. Next, the brake-plate is pressed down by the FF (REW) action plate, and at this time the driving arm is forced in the ③ (or ④) direction to start the reel base rotating in the FF (or REW) mode.
3. At the same time, gear lever C moves in the ⑤ direction and the head base (HB) lock lever moves in the ⑥ (or ⑦) direction. (This procedure also applies to MS operations).

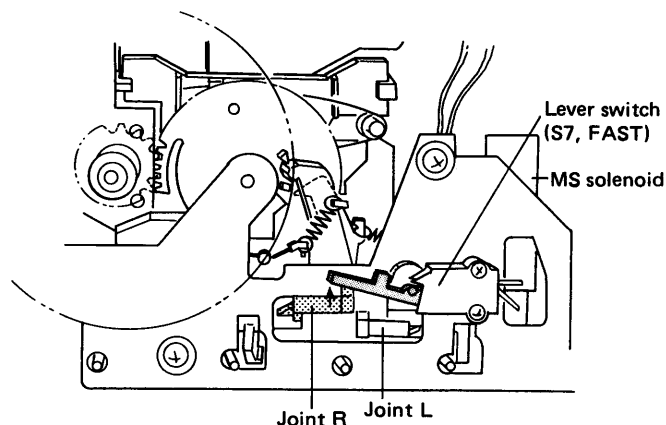


Fig. 15-9 FF (REW), MS operation I  
(Lever switch ON)

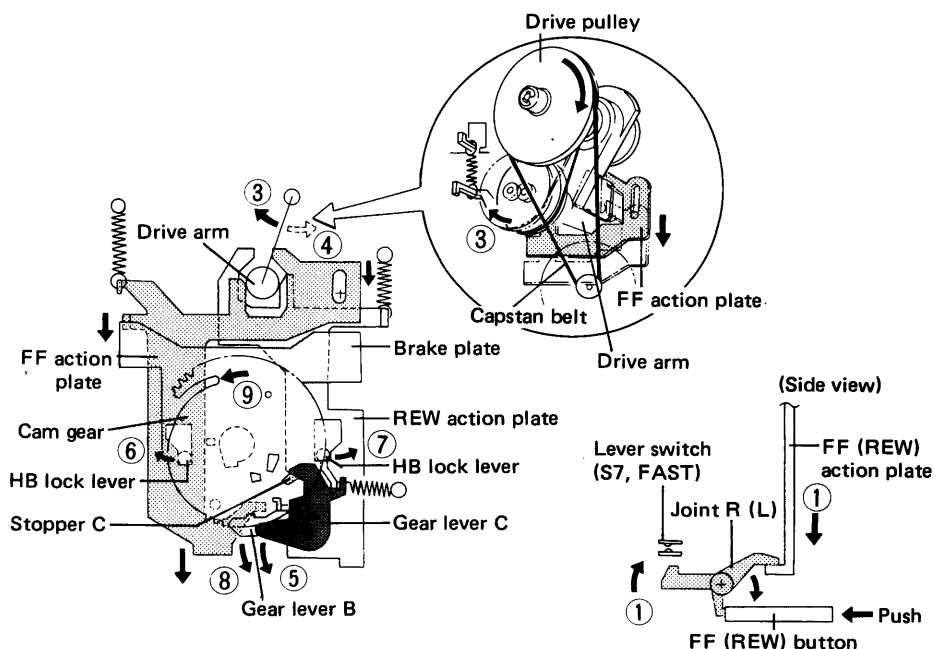


Fig. 15-10 FF (REW) operation, MS operation II

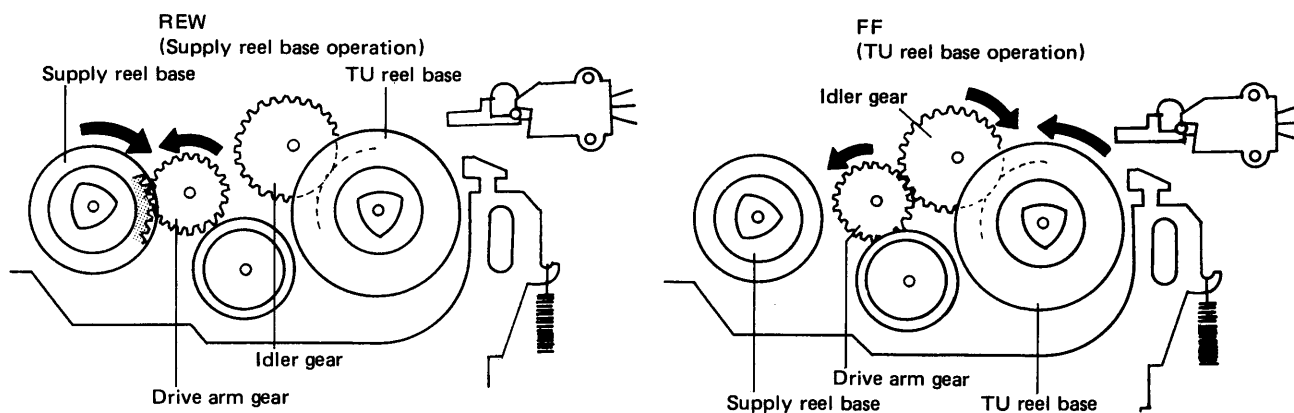


Fig. 15-11 FF, REW operation III

### 15.9 MS OPERATIONS (Figs. 15-10, 15-12)

1. When the FF (or REW) button is pressed in the PLAY mode, the action of gear lever C returns gear lever B in the ⑧ direction (Refer to 15.8 FF (or REW) Operations) to free stopper C on the cam gear.
2. The cam gear rotates in the ⑨ direction until stopped by cam gear stopper C making contact with gear lever C.
3. Also, the rotation of the cam gear causes the action lever to return to the STOP position, moving the pinch roller away from the capstan and releasing pressure contact from the TU idler.
4. At the same time, the head base returns toward the down position, but the HB lock lever acts as a stop, holding it half way between the PLAY and STOP position. At this time, the PLAY switch also remains in the PLAY position.
5. The action of joint R (L) throws the lever switch to the ON side, and the driving arm moving in the ③ (or ④) direction starts reel base rotation in the FF (or REW) mode. (See also 15.8, FF (or REW) Operation, step 3).
6. When the tape blank detector circuit locates a non-recorded section of the tape, the MS solenoid is activated, pulling the lock plate in the direction of ⑩ (Fig. 15-12).
7. The draw stroke of the MS solenoid is set so that only the FF (REW) button lock is released. The PLAY button remains in the locked position.
8. The above description covers the mechanical operations as the unit goes from MS detection mode to STOP to PLAY. MS operations are terminated when play begins again at the beginning of a music selection.

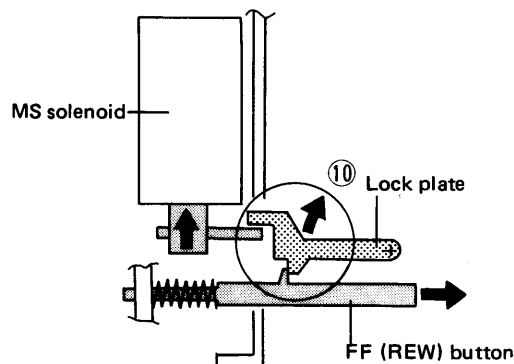


Fig. 15-12 FF (REW) button release

### 15.10 AUTO-STOP OPERATIONS (Fig. 15-13)

1. In each of the previously covered operation cycles, when the brake-plate is moved in the direction of ⑪, the detector lever is pulled in the ⑫ direction by the force of the link return spring. As the cam gear rotates, pin (A) on the detector lever makes contact with cam (A) or cam (B) on the cam gear.
2. The cam gear normally turns with motor rotation, and with each revolution of the cam gear, the detector lever is moved to a center position relative to cam (A) (PLAY, REC, FF) or cam (B) (REW).
3. After the detector lever has been moved to the center position, if the reel base is still rotating, the friction torque of the detector disc again moves it to the right (in REW) or left (in PLAY, REC, FF). When the take-up reel base is rotating, the friction torque of the detector disc is generated by the rubbing action of the detector spring and detector felt placed between the idler gear and the detector disc, and this torque exerts its force in the opposite direction of take-up reel rotation. This friction torque is used to move the detector lever to the right (or left). As long as the reel base continues to rotate, the back and forth motion of the detector lever will also continue.
4. When the tape is fully taken up and the reel base stops, the shape of the cam (on the cam gear) and the friction torque of the detector disc act to position the detector lever in the center position.
5. Next, the cam gear continues to rotate, so pin (B) of the cam gear presses pin (A) of the detector lever.
6. The detector lever, being moved by the cam gear, moves the stop lever (via the coupling link) in the direction of ⑬ and pulls the lock plate in the ⑭ direction to release the button lock. All mechanisms are returned to STOP mode.

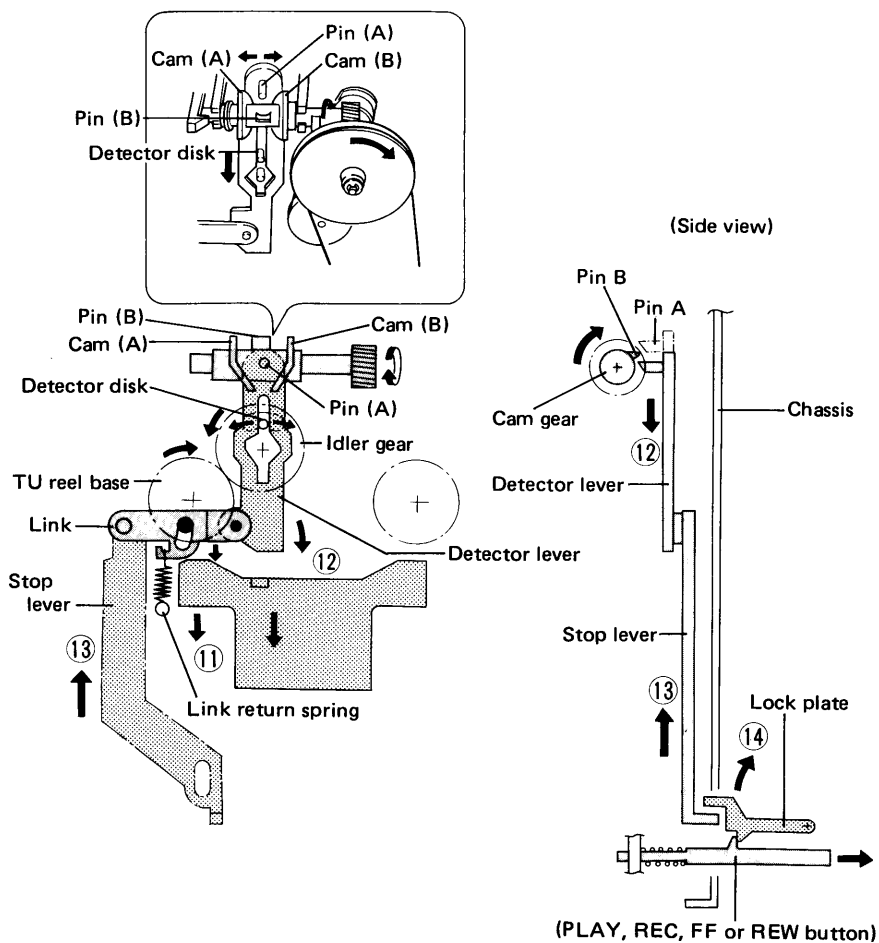
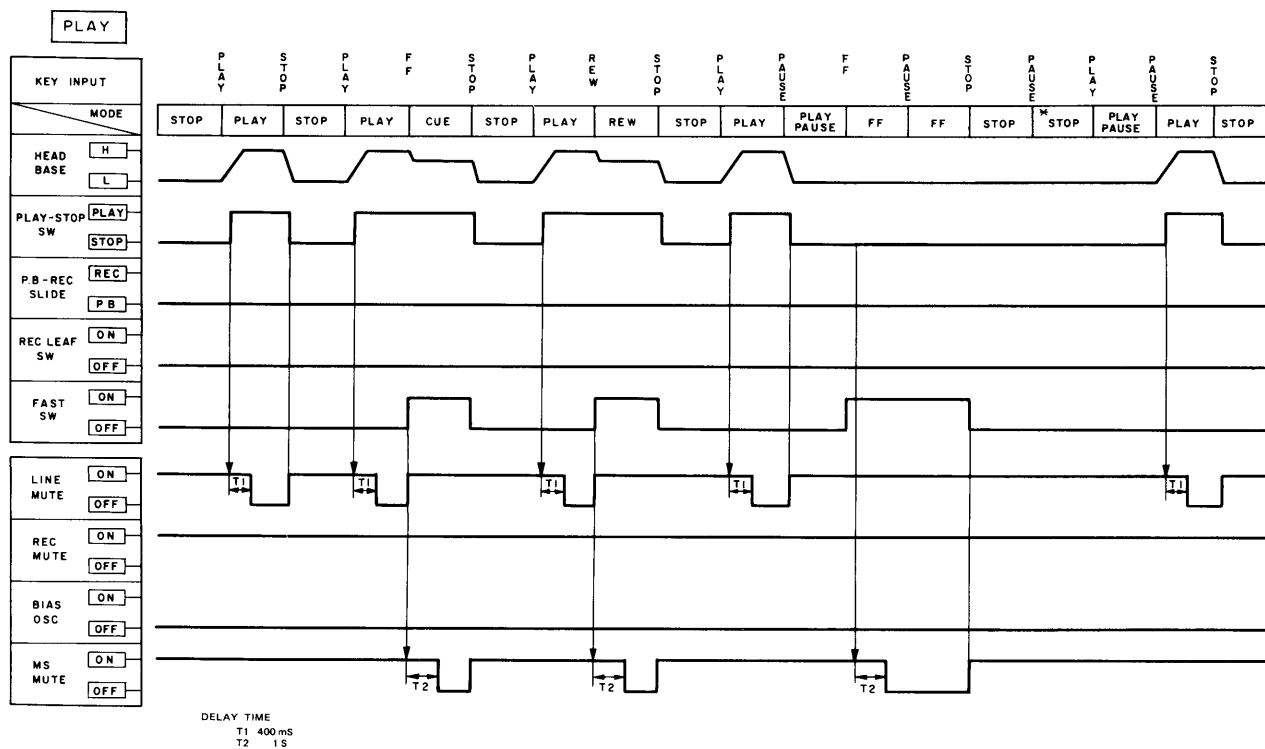
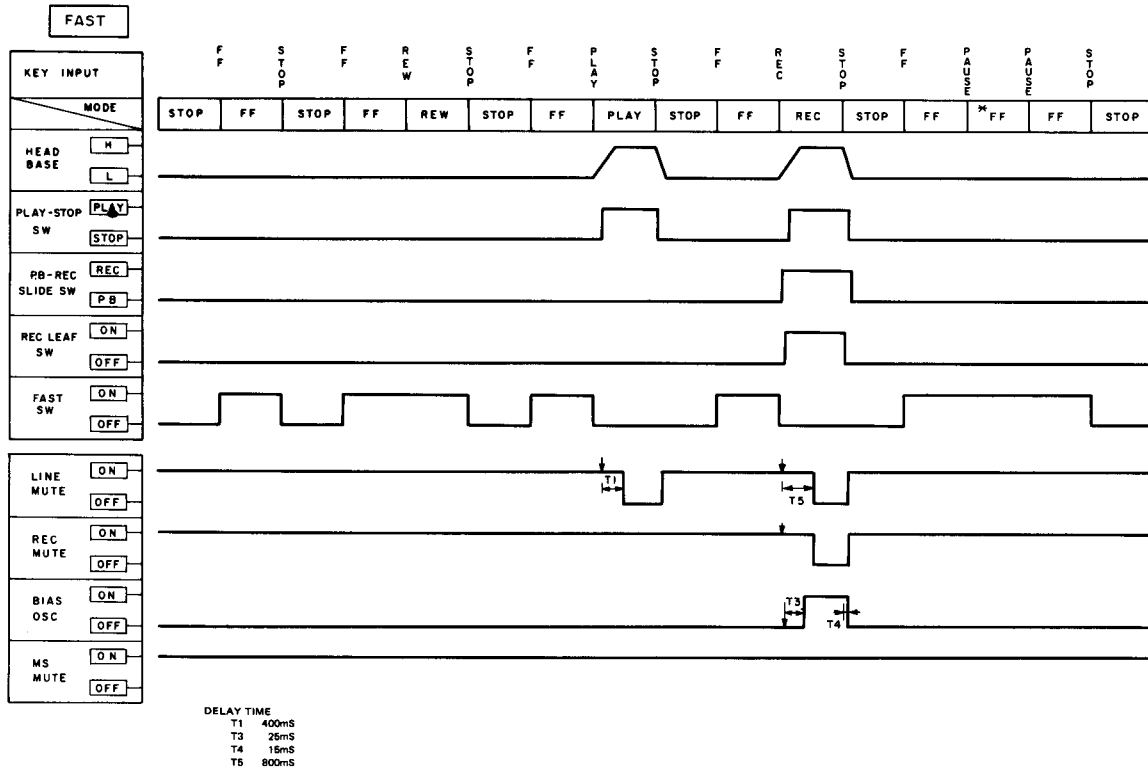
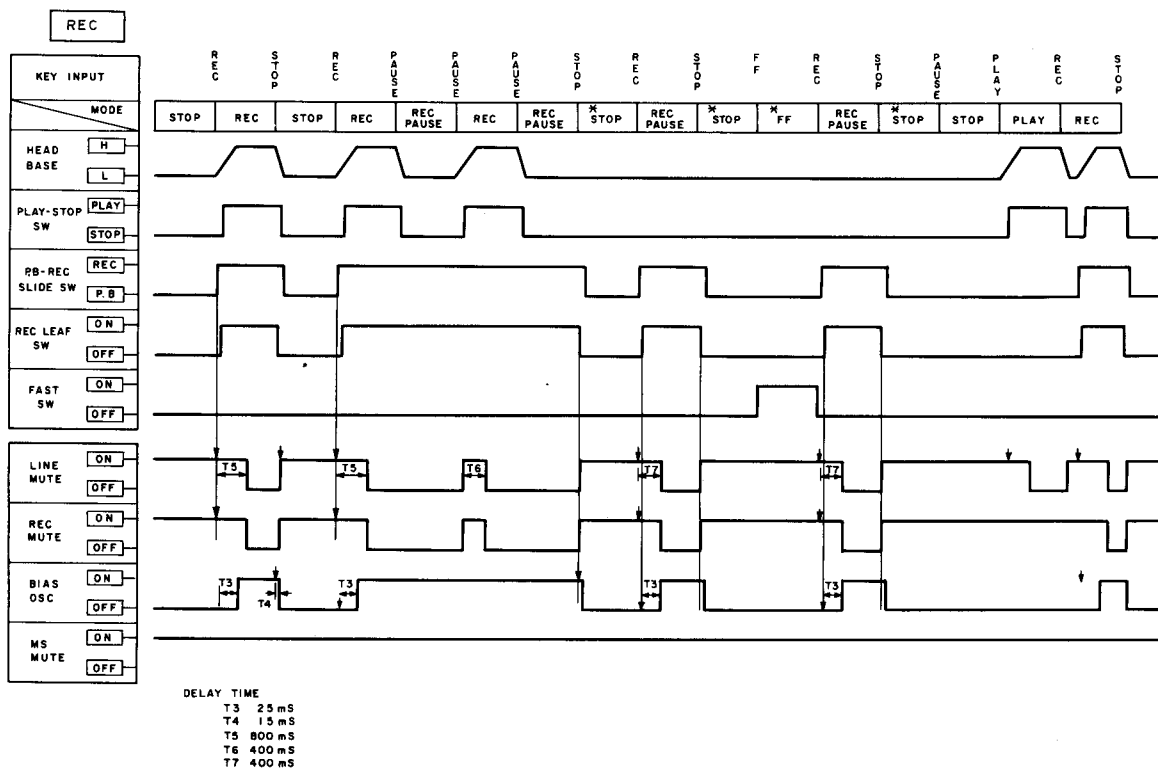


Fig. 15-13 AUTO-STOP operation

## 15.11 TIMING CHARTS





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