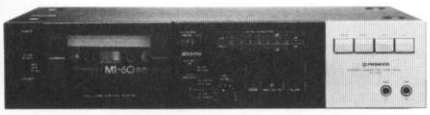
PIONEER®

Service Manual

CIRCUIT & MECHANISM DESCRIPTIONS
REPAIR & ADJUSTMENTS



ORDER NO.
ARP-147-0

STEREO CASSETTE TAPE DECK

CT-730

MODEL CT-730 COMES IN FIVE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KU	120V only	U.S.A. model
HE	220V and 240V (Switchable)	Europe model
HB	220V and 240V (Switchable)	United Kingdom model
HP	220V and 240V (Switchable)	Australia model
D	120V 220V and 240V (Switchable)	General export model

- **This service manual is applicable to the KU, HE, HB, HP and D types.**
- **Ce manuel d'instruction se refère au mode de réglage, en fançais.**
- **Este manual de servicio trata del método de ajuste escrito en español.**

CONTENTS

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1. SPECIFICATIONS

Systems . . . . . Compact cassette, 2-channel stereo
Heads . . . . . "Hard Permalloy" recording/playback head x 1
"Ferrite" erasing head x 1
Motor . . . . . DC servo motor x 1
Wow and Flutter . . . . . No more than 0.05% (WRMS)
Fast Winding Time . . . . Approximately 100 seconds (C-60 tape)
Frequency Response
-20dB recording:
Normal tape . . . . . 25 to 15,000Hz
(35 to 14,000Hz ±3dB)
Chrome tape . . . . . 25 to 16,000Hz
(35 to 15,000Hz ±3dB)
Metal tape . . . . . 25 to 17,000Hz
(35 to 16,000Hz ±3dB)
Signal-to-Noise Ratio
Dolby NR OFF . . . . . More than 57dB
Dolby NR ON . . . . . More than 67dB (over 5kHz)
Harmonic Distortion . . . . . No more than 1.2% (0dB)
Input
(Sensitivity/Maximum allowable input/Impedance)
MIC (L, R) . . . . . 0.3mV/57mV/10kΩ, 6mm diam. jack
(Reference MIC impedance; 250Ω to 10kΩ)
LINE (INPUT) 50mV/25V/75kΩ
Output (Reference level/Load impedance)
LINE (OUTPUT) 450mV/50kΩ

Subfunctions

- Dolby NR system (ON/OFF) B type
- 3 position tape selector (NORM/CrO_2/METAL)
- IC full logic control
- Air damp eject function
- Full automatic stop mechanism
- REC muting function
- Music search function
- Timer stand-by mechanism
- One-touch recording system
- LED level meter
- Auto function system

Miscellaneous

Power Requirements
KU model; AC 120V, 60Hz
HE, HB, HP models; AC220V/240V (switchable), 50/60Hz
D model; AC120V/220V/240V (switchable), 50/60Hz
Power Consumption
KU, HE, HB, HP models 25W
D model 21W
Dimensions . . . . . 420 (W) x 101 (H) x 235 (D) mm
16-9/16 (W) x 4 (H) x 9-1/4 (D) in
Weight (without package) . . . . . 4.2kg (9 lb 4 oz)

Furnished Parts

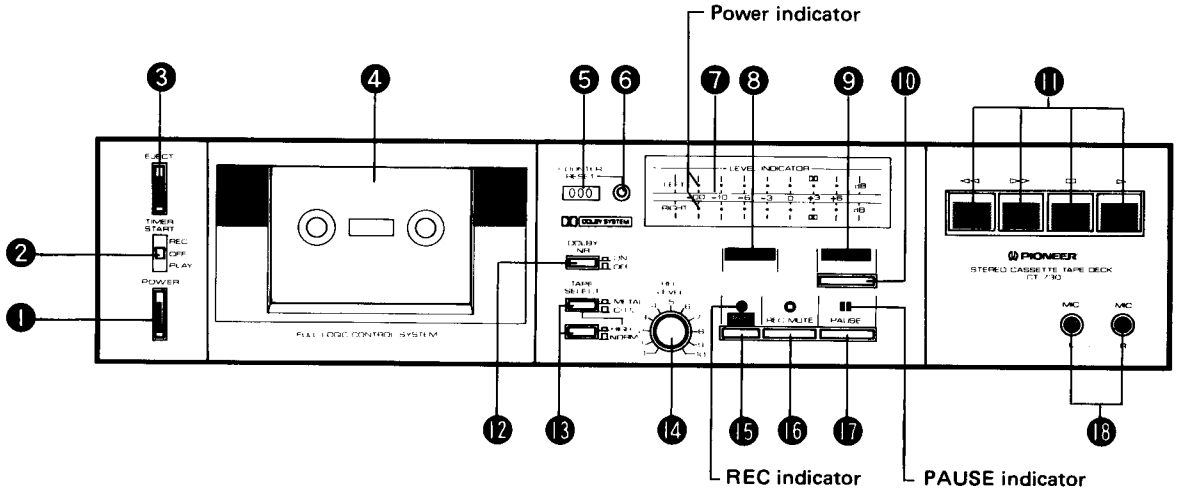
Operating instructions 1
Connection cord with pin plugs 2

NOTES:

1. Reference Tapes: Normal & LH: DIN 45513/BLATT6 or equiv.
CrO_2 DIN 45513/BLATT7 (CrO_2) or equiv.
2. Reference Recording Level: Meter 0dB indicating level (160 nwb/m magnetic level = Philips cassette reference level)
3. Reference Signal: 333Hz
4. Wow & Flutter: • JIS [3kHz, with accustic compensation (weighted) rms value] DIN [3,150Hz, with acoustic compensation (weighted) PEAK value]; DIN 45507
5. Frequency Response: • Measured at -20dB level, DOLBY NR OFF, level deviation is ±6dB without indication.
6. Signal to Noise Ratio: • Measured at the third harmonic distortion 3% level, weighted (DIN 45513/BLATT7).
7. Sensitivity: Input level (mV) required for reference recording level with input (REC) controls set to maximum.
8. 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.
9. Reference Output Level: Playback output level when meter indicates 0dB.

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

2. FRONT PANEL FACILITIES



❶ POWER SWITCH

When this switch is depresed, the power is turned on and the level indicator "∞" lights. Depress the switch again to release it when turning off the power to the deck.

- The muting circuit is actuated after the POWER switch has been set to ON and there will be no operation for about 4 seconds. This is not a failure or malfunction.
- When the POWER switch is set to the OFF position while the tape deck is operating, the deck's operation is released and the stop mode is established.

❷ TIMER START SWITCH

This switch is used when an optional audio timer is employed for unattended recording or wake-up playback operations. Keep this switch at the OFF position when the timer is not being used.

REC : Set to this position to set the tape deck automatically to the recording mode at the time preset on the audio timer and to start the recording of programs unattended, for instance.

OFF : For when the timer is not being used.

PLAY : Set to this position to set the tape deck automatically to the playback mode at the time preset on the audio timer and to start the playback. The tape playback function can be used to wake-up in the morning instead of an alarm clock.

For detailed instructions on the use of this function, refer to RECORDING AND PLAYBACK USING THE AUDIO TIMER on page 10.

❸ EJECT BUTTON

Depress this button to open the cassette holder. To close the cassette holeer, push the top back until it locks.

- Do not press this button when the tape is in motion.

❹ CASSETTE DOOR

❺ TAPE COUNTER

This counter shows the position of the tape using a three-digit meter.

❻ COUNTER RESET BUTTON

Depress this button to reset the tape counter display to "000".

❼ LEVEL INDICATOR

These indicate the input level during recording and the output level during playback.

❽ PLAY INDICATOR

This indicator lights during the playback or recording mode. When the PAUSE switch is depressed and the PLAY/PAUSE or REC/PAUSE mode is established, the indicator goes off.

❾ MS (Music Search) INDICATOR

This indicator lights while the music search switch is kept in the depressed position.

❿ MUSIC SEARCH SWITCH

When this switch is depressed and the ▶▶ (FF) or ◀◀ (REW) switch is depressed, the unrecorded blanks between the program on the cassette tape are detected and the deck is automatically set to the playback mode.

⓫ OPERATING SWITCHES

- ▶ (PLAY) : Depress this switch to start tape playback.
- ▶▶ (FF) : Depress this switch to send the tape forward at high speed (The tape will travel from left to right).
- ◀◀ (REW) : Depress this switch to rewind the tape at high speed (The tape will travel from right to left).
- ■ (STOP) : Depress this switch to stop the tape travel and to release the operating switches.

⓬ * DOLBY NR SWITCH

Depress this switch to ON for recording with the built-in Dolby Noise Reduction system and for playback of tapes which have been recorded using the Dolby Noise Reduction system.
For other tapes, do not press this switch.

⓭ TAPE SELECT SWITCHES

This selector allows the bias and equalizer characteristics to be selected during recording and equalizer characteristics during playback in line with the type of tape you are using.

Normal tape : Release the bottom switch to the "out" position (NORM).

Chrom tape : Depress the bottom switch to the "in" position (HIGH) and release the top switch to the "out" position (CrO_2).

Metal tape : Depress both the top and bottom switches to the "in" positions.

⓮ REC LEVEL CONTROL

Use this to adjust the level of the input signals from the MIC jacks or rear panel LINE-INPUT. Turning the control to the clockwise increase the level.

⓯ REC SWITCH

Depress this switch to start tape recording. This switch will not work when a cassette is not loaded or when the erasure prevention tabs of a loaded cassette have been broken off.
When this switch is depressed to the ON position, the REC and PLAY indicators will be illuminated.

⓰ REC MUTE SWITCH

Depressing this switch during recording makes it possible to create an unrecorded blank on the cassette tape only for the time during which the switch is kept depressed. This switch is used for providing blanks of the required length between programs and editing tapes so that they are easier to listen to and for creating the unrecorded blanks which are required for operating the MUSIC SEARCH facility.

- No signal are recorded when the switch is touched during recording. Do not touch the switch unless necessary.
- REC MUTE (●) is display only but does not illuminate.

⓱ PAUSE SWITCH

Depress this switch to stop the tape temporarily during recording or playback. Depress this switch again to allow the tape to continue to travel. When this switch is depressed to the ON position, the ▮▮ (PAUSE) indicator will be illuminated.

- The tape does not stop during fast forward or rewind operations even when the PAUSE switch is depressed.

⓲ MIC JACKS

These are the input jacks for microphone recording. Plug the left channel microphone into the L jack and the right channel microphone into the R jack.

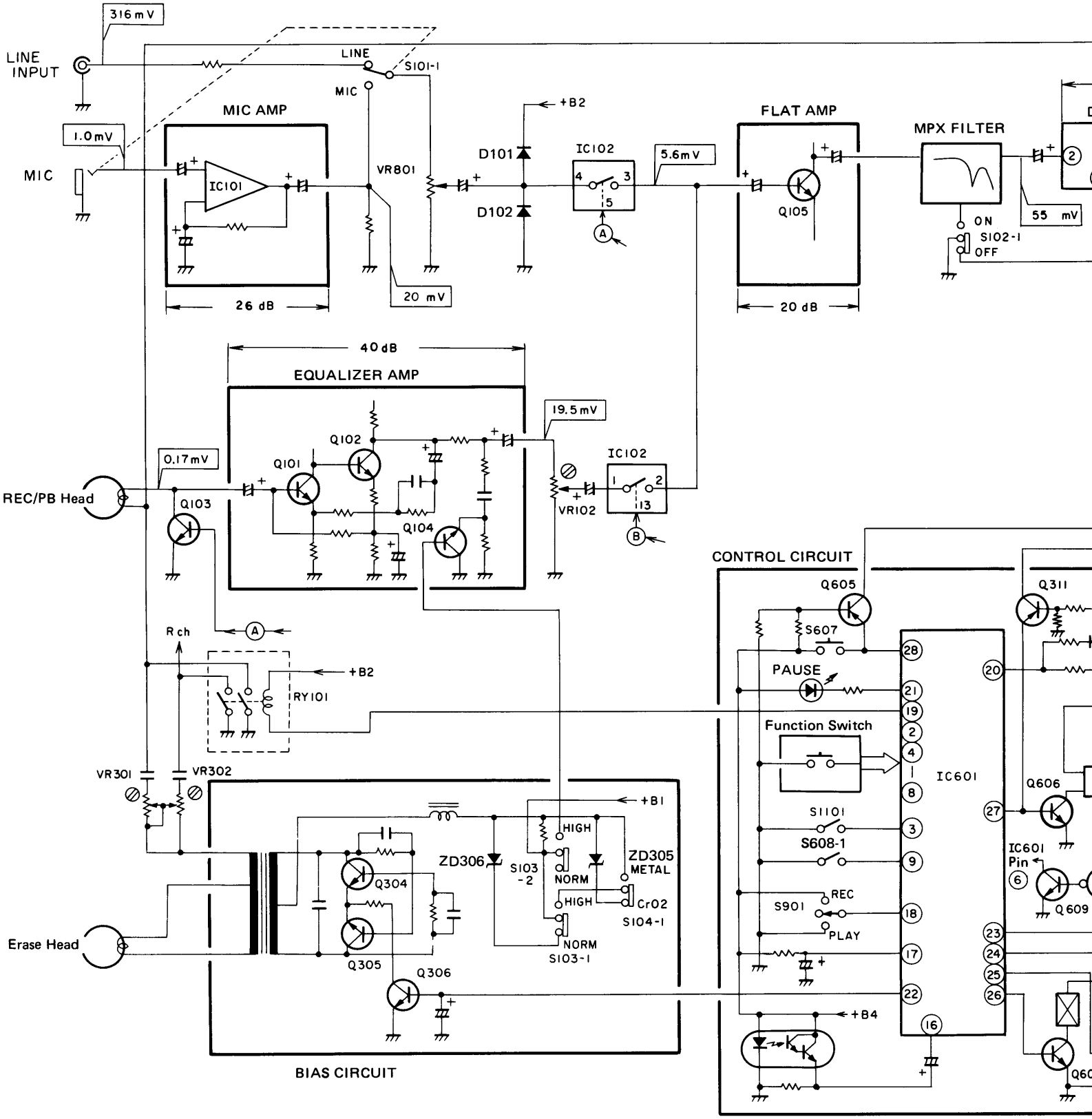
* DOLBY NOISE REDUCTION SYSTEM

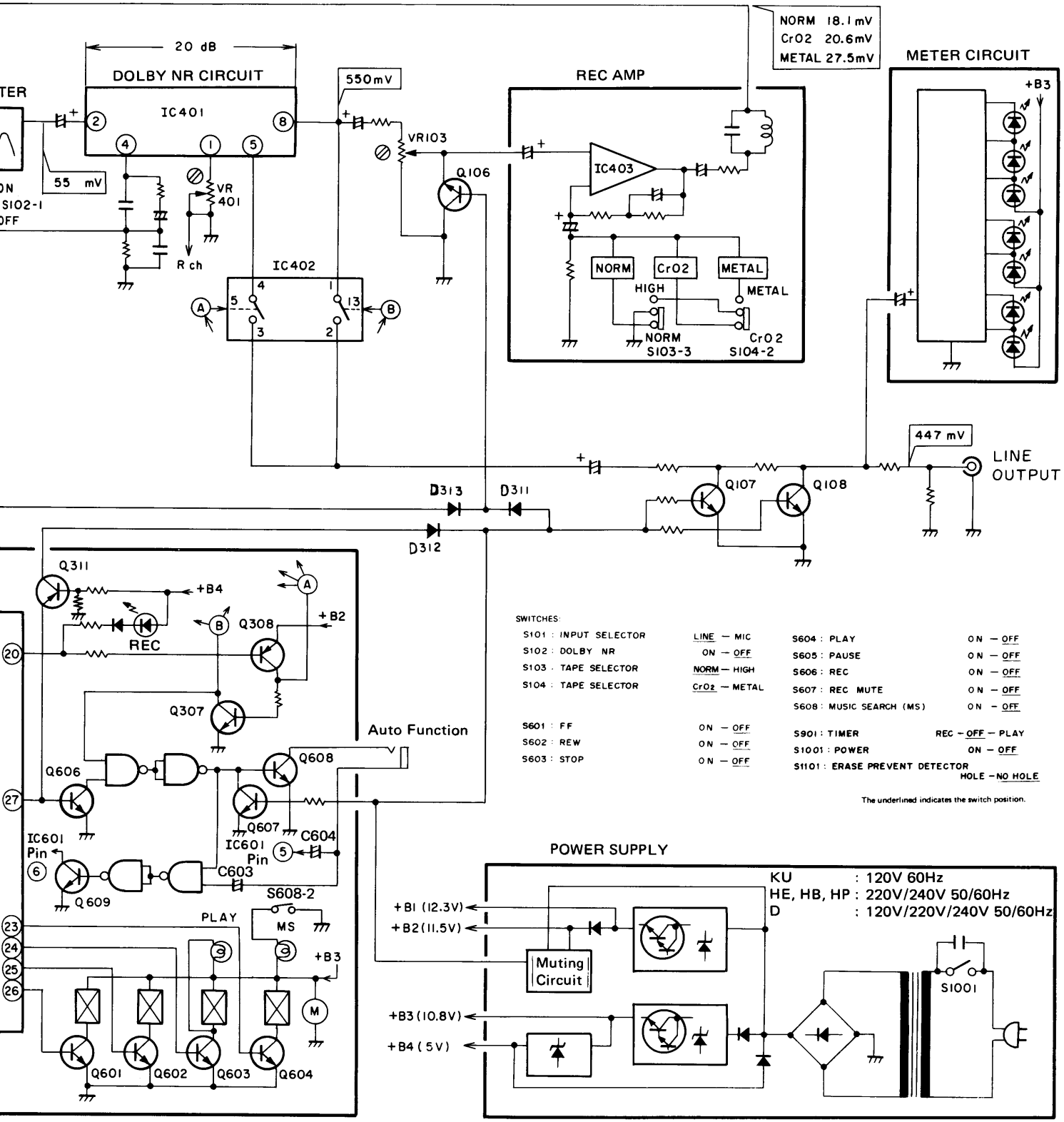
The tape hiss (noise in the high-frequency region) which is inherent to cassette tapes and which is heard when sound recorded onto a tape is played back has always been annoying.
This is particularly the case when, for instance, during an orchestral piece high-range pianissimo sections such as those created by violins are heard. The Dolby noise reduction system was developed to reduce this noise. It functions when the midrange and treble parts where the tape hiss is noticeable are lower than the fixed level by recording these parts at a higher level then the normal recording level. During playback, however, the level is reduced by an amount equivalent to its increase during playback.

- The DOLBY NR switch should always be set to ON when playing back a tape which was recorded using the Dolby noise reduction system. The high frequency sound will not be heard properly when a tape which was no recorded using the Dolby system is played back with the DOLBY NR switch at ON.

* The word "Dolby" and DD are trademark of Dolby Laboratories Licensing Corporation.
Noise Reduction System manufactured under license from Dobly Laboratories Licensing Corporation.

3. BLOCK DIAGRAM





SWITCHES:

S101 : INPUT SELECTOR	LINE — MIC	S604 : PLAY	ON — OFF
S102 : DOLBY NR	ON — OFF	S605 : PAUSE	ON — OFF
S103 : TAPE SELECTOR	NORM — HIGH	S606 : REC	ON — OFF
S104 : TAPE SELECTOR	CrO2 — METAL	S607 : REC MUTE	ON — OFF
		S608 : MUSIC SEARCH (MS)	ON — OFF
S601 : FF	ON — OFF	S901 : TIMER	REC — OFF — PLAY
S602 : REW	ON — OFF	S1001 : POWER	ON — OFF
S603 : STOP	ON — OFF	S1101 : ERASE PREVENT DETECTOR	HOLE — NO HOLE

The underlined indicates the switch position.

4. CIRCUIT DESCRIPTIONS

4.1 PLAYBACK CIRCUIT

The signal from the playback head is amplified by the Q101/Q102 2-stage direct-coupled amplifier. In the NORM position, the playback equalization (120μs) compensation is achieved by the NF circuit between the Q102 collector and Q101 emitter. In the METAL and CrO_2 positions, Q104 is turned on, and the equalization characteristics switched from 120μs to 70μs to compensate the frequency response. The level of the EQ AMP output is set by a variable resistor, and further amplified by the Q105 flat amplifier before being passed through the MPX filter and applied to pin 2 of the Dolby IC.
This Dolby circuit consists of IC401 (HA11226), and the Dolby ON/OFF switch is linked to the MPX filter ON/OFF switch. When the Dolby switch is OFF, the 19kHz filter is bypassed. The Dolby circuit output appears at pin 8 of IC401, and is passed to LINE OUTPUT via a switching IC (IC402).

4.2 RECORDING CIRCUIT

The input signal from the microphone jack is amplified by the microphone amplifier IC101, and passed via the MIC/LINE selector switch to the INPUT volume control where the input level is adjusted. This adjusted signal is passed via IC102 to flat amplifier Q105. D101 and D102 in the stage before IC102 form a protector circuit designed to protect IC102 from large input signals. The signal amplified by the flat amplifier is passed via the MPX filter to pin 2 of the Dolby IC, the output appearing at pin 8. The level of this output is adjusted by variable resistor. Then after equalization in the REC AMP (IC403) in accordance to the type of tape being used, the signal is passed to the recording head.

4.3 CONTROL CIRCUIT

The control circuit in this deck utilizes a one-chip IC (PM9002A) which enables feather-touch operations. In addition to mechanism control, this IC also includes music search (MS), auto-stop, and timer start functions. And due to the digital counter frequency divider system employed in timing settings for the mechanism control, all operational timing discrepancies have been eliminated. The PM9002A pin layout is shown in Fig. 4-3, the functional block diagram in Fig. 4-2, and the output pin time charts during different modes in Figs. 4-5 and 4-6. For interrelations between circuits, see the block diagram on page 5 and in Fig. 4-1.

Operations during Each Mode

The mechanical operations effected by the following circuit changes are described in the next chapter (see page 11).

1. When the POWER Switch is Switched ON

Then the POWER switch is switched on, +5V is applied to pin 1 (Vcc) of IC601. During the initial period when pin 1 voltage is being increased from 0V to 5V (approximately from 0.6V to 2.4V) the IC's internal reset circuit is activated, putting the IC into stop status which is maintained for about four seconds. During this time, no change can be effected by pressing any of the other operation control buttons.

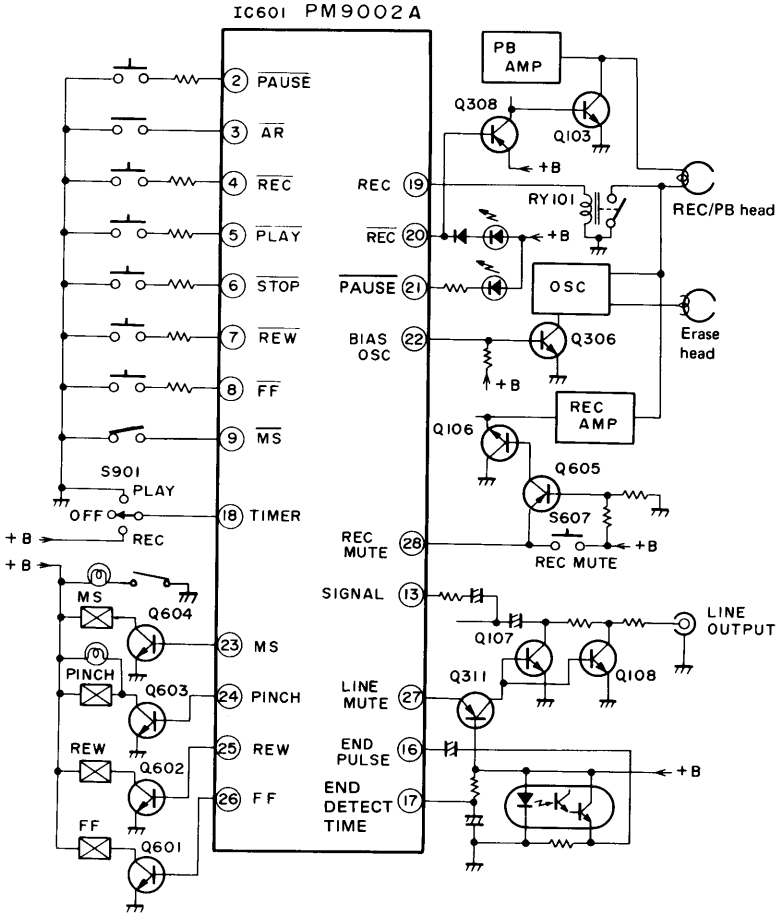


Fig. 4-1 Control system block diagram

2. Play Mode

When the PLAY button is pressed, the level of pin 5 ($\overline{\text{PLAY}}$) of IC601 is switched to "L" level, and the level of pin 24 (PINCH SOL) to "H" level. Q603 is turned on and the pinch roller activated. In addition, IC601 pin 27 (LINE MUTE) is opened 416ms after the PLAY button is pressed, thereby releasing the line mute status to enable play mode operations to commence.

3. Recording Mode

When a cassette half with its erasure prevention tabs intact is loaded in the deck, pin 3 ($\overline{\text{AR}}$) of IC601 is switched to "H" level, thereby enabling the deck to be switched to recording mode.
When the REC button is pressed, IC601 pin 4 ($\overline{\text{REC}}$) is changed to "L" level. Pin 20 ($\overline{\text{REC}}$) is also changed to "L" while pin 19 ($\overline{\text{REC}}$) is open. As a result, the REC indicator lights up and the reed relay (RY101) is switched off, thereby switching the signal path to the recording circuit. And the IC601 pin 24 (PINCH SOL) changed to "H" level, tape transport is commenced. Pin 22 (BIAS OSC) is opened 52ms after the REC button is pressed, thereby activating the bias oscillator. Pin 27 (LINE MUTE) and pin 28 (REC MUTE) are opened 416ms after the REC button is pressed, thereby releasing the line mute and recording mute status to permit recording to start.

4. Fast Forward Mode

When the FF button is pressed IC601 pin 8 ($\overline{\text{FF}}$) is changed to "L" level, followed by pin 26 (FF SOL) being changed to "H" level 416ms later. Q601 is thus turned on, activating the FF solenoid to start fast forward operation.

5. Rewind Mode

When the REW button is pressed, IC601 pin 7 ($\overline{\text{REW}}$) is changed to "L" level, followed by pin 25 (REW SOL) being changed to "H" level 416ms later. Q602 is thus turned on, activating the REW solenoid to start rewind operation.

6. Pause Mode

The pause mode in this deck is released by pressing the PAUSE button. The pause mode is not released by pressing the PLAY button during play/pause mode, or the REC button during recording/pause mode. Note, however, that pressing the PLAY button during recording/pause mode switches the deck to play/pause mode, and pressing the REC button during play/pause mode switches the deck to recording/pause mode.
If the PAUSE button is pressed during stop mode, pin 2 ($\overline{\text{PAUSE}}$) and pin 21 ($\overline{\text{PAUSE}}$) of IC601 are both changed to "L" level, thereby lighting up the PAUSE indicator. When both the PLAY and

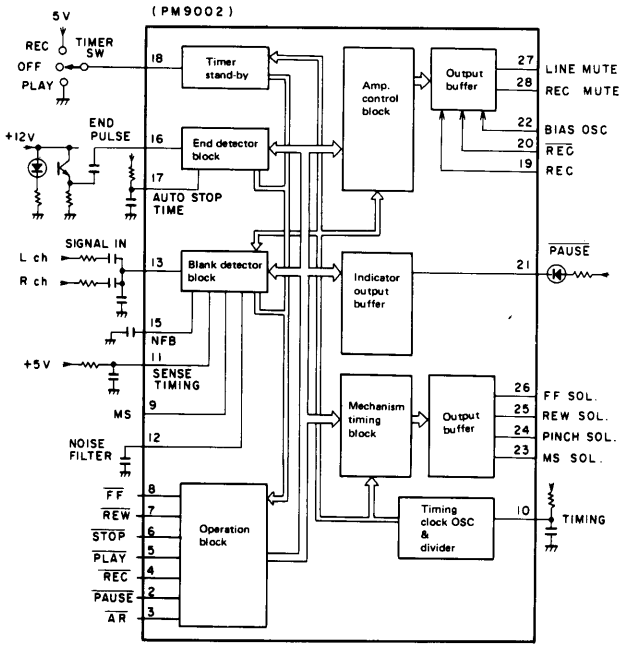


Fig. 4-2 PM9002A internal block diagram

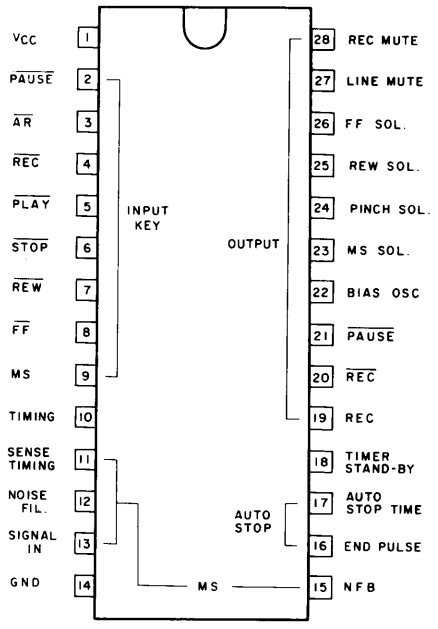


Fig. 4-3 PM9002A pin layout

PAUSE buttons are pressed, IC601 pin 21 is changed to "L" level, and the PAUSE indicator lights up. And since pin 27 (LINE MUTE) of this IC is changed to "H" level, the signal circuit is muted. If the REC and PAUSE buttons are both pressed, IC601 pin 20 ($\overline{REC}$) and pin 21 ($\overline{PAUSE}$) are changed to "L" level, resulting in both the REC and PAUSE indicators lighting up, and the signal circuit being switched to recording circuit. Furthermore, pin 27 is opened, permitting output of the signal to LINE OUTPUT, but since pin 28 has been changed to "H" level, recording mute mode is maintained.

7. MS Operation

When the FF or REW button is pressed with the MS button ON, tape transport is stopped at the blank portion of tape between tunes, and then recommenced in play mode. When the FF button is pressed with the MS button ON, IC601 pin 24 (PINCH SOL) is changed to "H" level for 312ms. The pinch solenoid is thereby activated and the head base starts to rise. Pin 23 (MS SOL) of IC601 is changed to "H" level 260ms after the FF button is pressed, resulting in Q604 being turned on and the MS solenoid being activated. Following completion of the "power assist" operation, the head base is thus moved to the MS position. The FF solenoid is activated 416ms after the FF button is pressed, resulting in fast forward tape travel. During this action, a fast forward playback signal is applied to pin 13 (SIGNAL IN) of IC601, and if this signal is interrupted for about 84ms (corresponding to a portion of blank tape between tunes) IC601 switches to playback mode automatically. The above operation is much the same when the REW button is pressed instead of the FF button.

8. Auto-stop Mode

A photo-interrupter output is applied to pin 16 (END PAUSE) of IC601 during tape transport, resulting in the capacitor connected to pin 17 (C318) being charged up and discharged repeatedly. The potential at pin 17 is thus kept below the threshold voltage, and prevents activation of the auto-stop mechanism.
When tape travel stops and the take-up reel stops turning, the photo-interrupter output is no longer applied to pin 16, and the potential on the capacitor connected to pin 17 (C318) continues to increase until it exceeds the threshold voltage. The IC is thus switched to stop mode, thereby stopping tape mechanisms.

9. Timer Start Operation

Timer recording, timer playback and off modes are attained by changing the potential of IC601 pin 18 (TIMER) to +Vcc, ground, and open respectively.
When a cassette tape with erasure prevention tabs intact is loaded, and the POWER switch is switched ON with the TIMER switch (S901) in the TIMER REC position, recording mode is started about four seconds after the power comes on. If the erasure prevention tabs have been removed, however, the tape deck remains in stop mode.
If the POWER switch is switched ON with the TIMER switch in the TIMER PLAY position, playback mode is started about four seconds after the power line voltage is established. There is no timer start operations when the TIMER switch is left in the OFF position.

10. Auto-function Operations

- **When Tape Deck is Switched to Playback Mode**

When the CT-730 is switched to playback mode pin 27 of PM9002A is changed to "L" level, and the Q606 collector to "H" level. Pin 20 of PM9002A is also changed to "H" level, resulting in Q308 being turned off, followed by Q307 also being turned off and the collector being changed to "H" level. The output of IC602 (4/4) thus becomes "L" level and the output of IC602 (3/4) "H" level. Q608 is turned on, a negative pulse is passed to the amplifier component, and the amplifier is automatically switched to tape mode.

- **When Amplifier is Switched to TAPE**

When the amplifier TAPE function selector is switched, a negative output pulse is passed from the amplifier's automatic switching terminal. This pulse is differentiated by C604, resulting in pin 5 of PM9002A being changed to "L" level. Playback mode is thereby started just as if the PLAY button (S604) had been pressed.

- **When Amplifier is Switched to PHONO**

When any of the other amplifier function selectors apart from TAPE (such as PHONO) is pressed, a positive pulse output is obtained from the amplifier's automatic switching terminal.
This pulse is differentiated by C603, resulting in "H" level being applied to IC602 (1/4), and the IC602 (2/4) output being changed to "H" level. Q609 is thus turned on, resulting in the CT-730 being switched to stop mode, just as if the STOP button (S603) had been pressed.

- **When the Tape Deck is in Recording Mode**

While the tape deck is in recording mode, pin 20 of PM9002A is at "L" level with Q307 on. The IC602 (4/4) output is thus at "H" level, and the IC602 (3/4) output level at "L" level. Hence, when a positive pulse is applied by C603, the IC602 (1/4) output remains at "H" level, preventing the deck from being switched to stop mode.
That is, the tape deck recording mode is maintained when other function selectors on the amplifier are pressed.

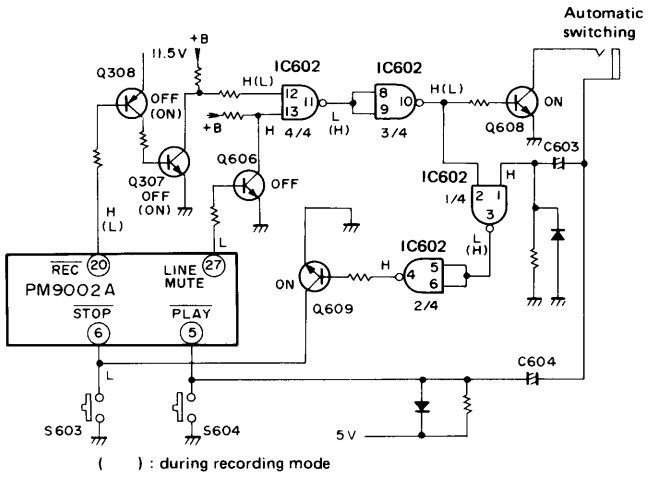


Fig. 4-4 Auto-function operation

- **Timing Chart**

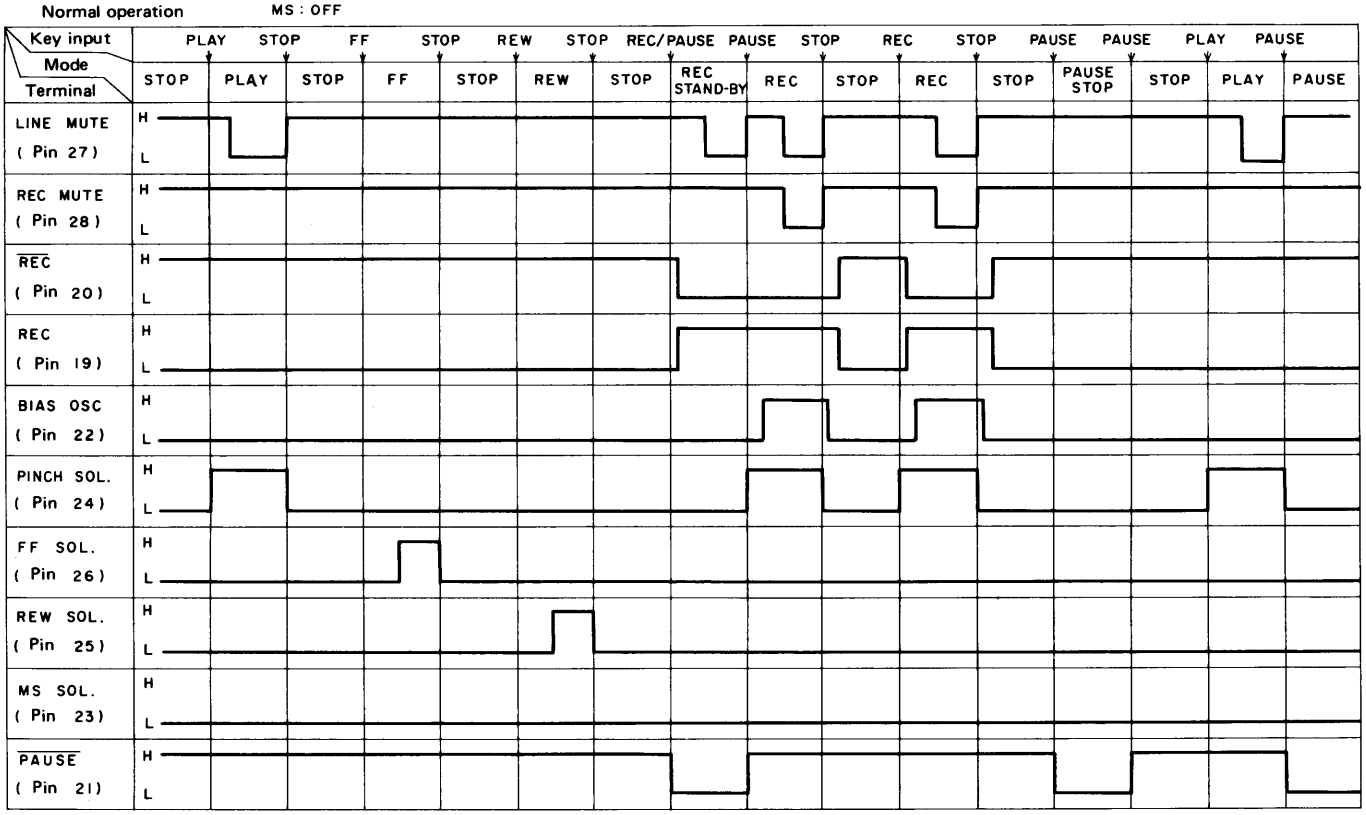


Fig. 4-5 PM9002A time chart (When MS switch is OFF)

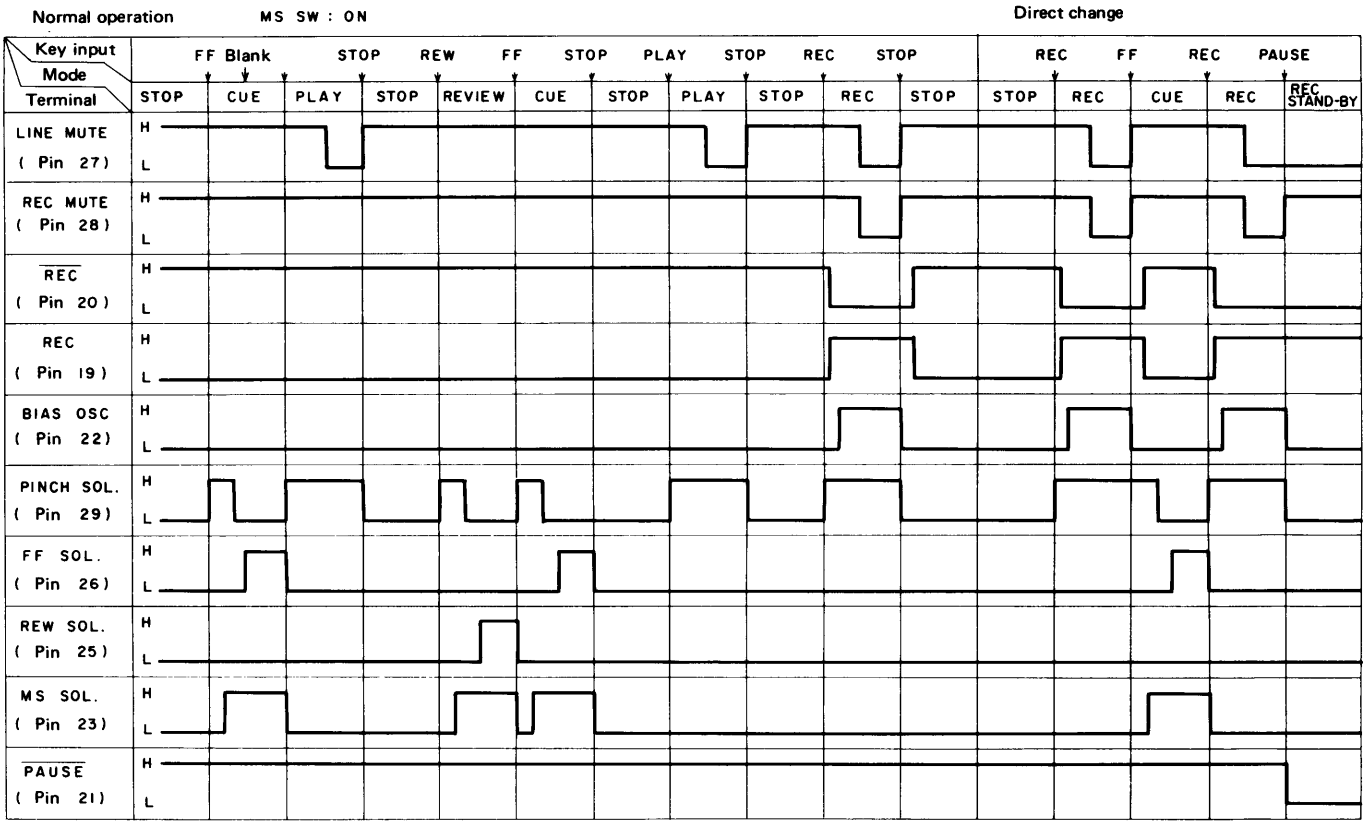


Fig. 4-6 PM9002A time chart (When MS switch is ON)

4.4 MECHANICAL OPERATIONS

Playback Mode

The CT-730 makes use of the capstan torque when shifting the head base during playback mode. (Both the recording/playback and erase heads are mounted on the head base).

- **Stop Mode (see Fig. 4-7)**

The head base shift mechanism during stop mode is shown in Fig. 4-7. Operating lever (A) presses down towards cam (C) due to operating lever spring (B). With cam (C) combined with cam gear (D), clockwise torque is applied to this cam gear. Solenoid P is inactive, and the hook of gear lever (F) is kept against stopper (G) of cam gear (D) by the cam gear return spring (E), thereby keeping cam gear (D) stationary. The flywheel is belt-driven by the capstan motor, and rotates counterclockwise together with the capstan gear.

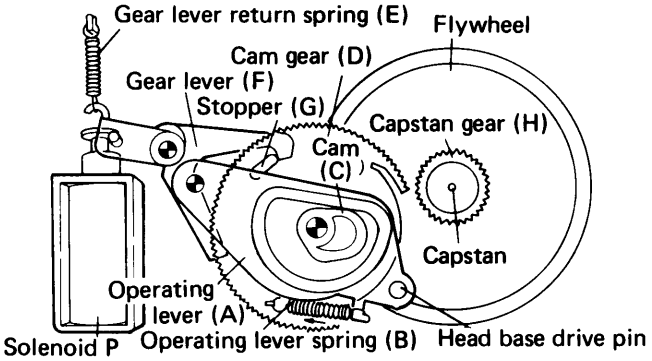


Fig. 4-7 STOP operation

- **Switch to Playback Mode from Stop Mode (see Fig. 4-8)**
  1. Solenoid P is activated ❶ , and the hook of gear lever (F) is released from stopper (G) ❷ .
  2. Operating lever (A) is pressed down onto cam (C) by operating lever spring (B) ❸ , cam gear (D) rotates ❹ and engages capstan gear (H) ❺ .

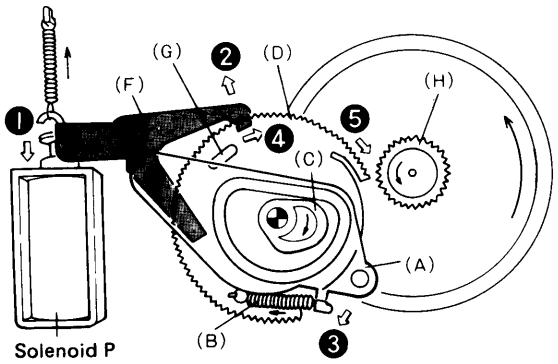


Fig. 4-8 STOP → PLAY operation 1

- **Switch to Playback Mode from Stop Mode (see Fig. 4-9)**
  3. Cam gear (H) continues rotating due to capstan gear (H) ❻ , and cam (C) pushes operating lever (A) up ❼ .
  4. After cam (C) passes the point of maximum lift, cam gear (D) disengages capstan gear (H) ❽ .

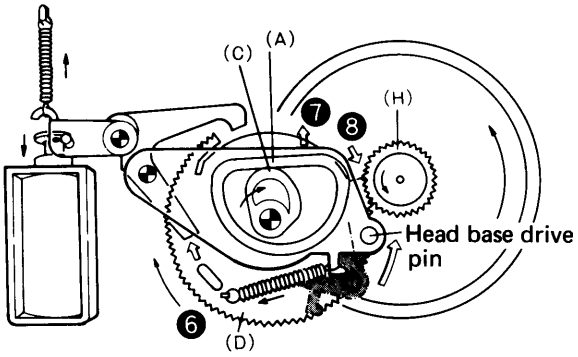


Fig. 4-9 STOP → PLAY operation 2

- **Switch to Playback Mode from Stop Mode (see Fig. 4-10)**
  5. Operating lever spring (B) forces operating lever (A) to press against cam (C) ❾ , thereby tending to continue the rotationary motion of cam gear (D), but since stopper (G) catches the arm of gear lever (F) ❿ , cam gear (D) stops rotating and operating lever (A) becomes stationary (playback mode).

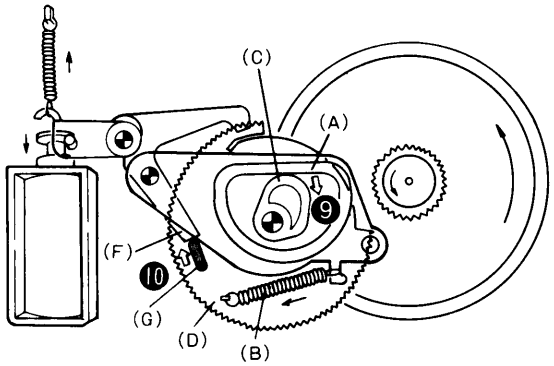


Fig. 4-10 STOP → PLAY operation 3

- **Operation of Different Parts**

As can be seen in Fig. 4-10, the head base drive pin of operating lever (A) rises during playback mode. This pin forces the head base up through the action of the HB drive spring. The pinch compressor spring is also lifted at the same time, forcing the pinch roller into close contact with the capstan. Furthermore, the brake plate is lifted to release the reel brake. Pressure is also applied to the idler arm, resulting in the TU idler transmitting drive gear rotation to the TU reel base (the drive gear being belt-driven by the capstan motor). (see Fig. 4-11).

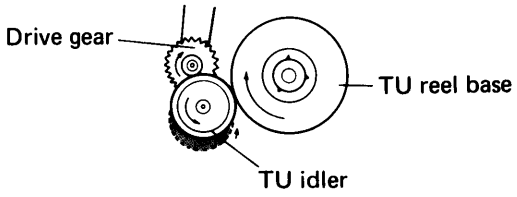


Fig. 4-11 Generation of take-up torque

- **Switch to Stop Mode from Playback Mode (see Fig. 4-12)**
  1. When solenoid P is deactivated ⓫ , the arm of gear lever (F) is disconnected from stopper (G) by the action of gear lever return spring (E) ⓬ .
  2. Operating lever spring (B) forces operating lever (A) against cam (C) ⓭ , resulting in rotation of cam gear (D) ⓮ and lowering of the head base drive pin ⓯ .
  3. Stopper (G) catches the hook of gear lever (F), stopping the mechanism in the condition shown in Fig. 4-7 (stop mode).

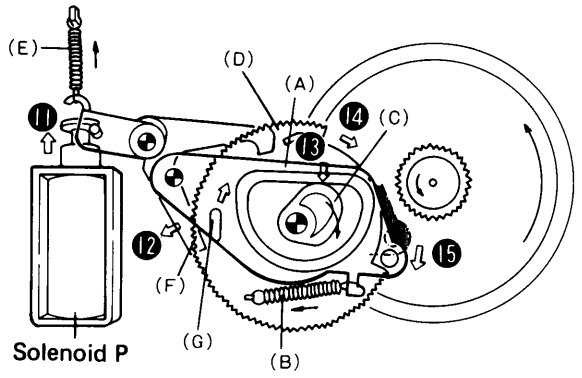


Fig. 4-12 PLAY → STOP operation

Fast Forward Operation

When solenoid F is activated, the drive arm is moved to the right, and the drive gear on the arm engages the idler gear, resulting in rotation of the TU reel base as shown in Fig. 4-13 (the drive gear being belt-driven by the capstan motor). At the same time, the pin on the branch of the drive arm pushes the brake plate up, thereby releasing the reel brake.

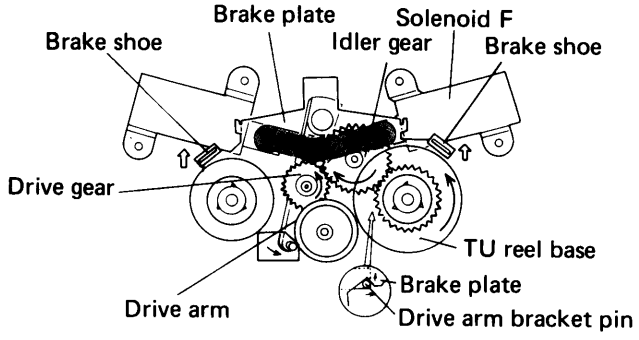


Fig. 4-13 Fast forward operation

Rewind Operation

When solenoid R is activated (see Fig. 4-14), the drive arm is moved to the left, and the drive gear on the arm engages the supply reel gear resulting in rotation of the supply reel base. At the same time, the pin at the tip of the drive arm pushes the brake plate up, thereby releasing the reel brake.

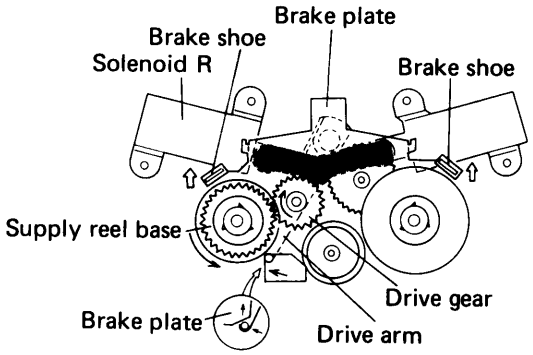


Fig. 4-14 Rewind operation

MS Operation (Music Search)

MS operation involves combination with fast forward and rewind operations similar to cue and review operations. At the beginning of MS operation, power is applied to solenoid P, resulting in the playback operation outlined in Figs. 4-8, 4-9 and 4-10 being effected in very short period of time, the head base being lifted by capstan torque. During this period, power is also supplied to the PMS solenoid. Although solenoid P is soon released, the PMS solenoid maintains the head base through the stopper lever. Since this PMS solenoid is designed to maintain only the head base, the pinch roller and TU idler are released. This is followed by power also being supplied to solenoid F or solenoid R, resulting in cue or review operation respectively.

Note: If MS operation is started after fast forward or rewind mode has aleady started, solenoid F or solenoid R is released temporarily, and reactivated after a brief period of playback mode (mechanically speaking).

5. DISASSEMBLY

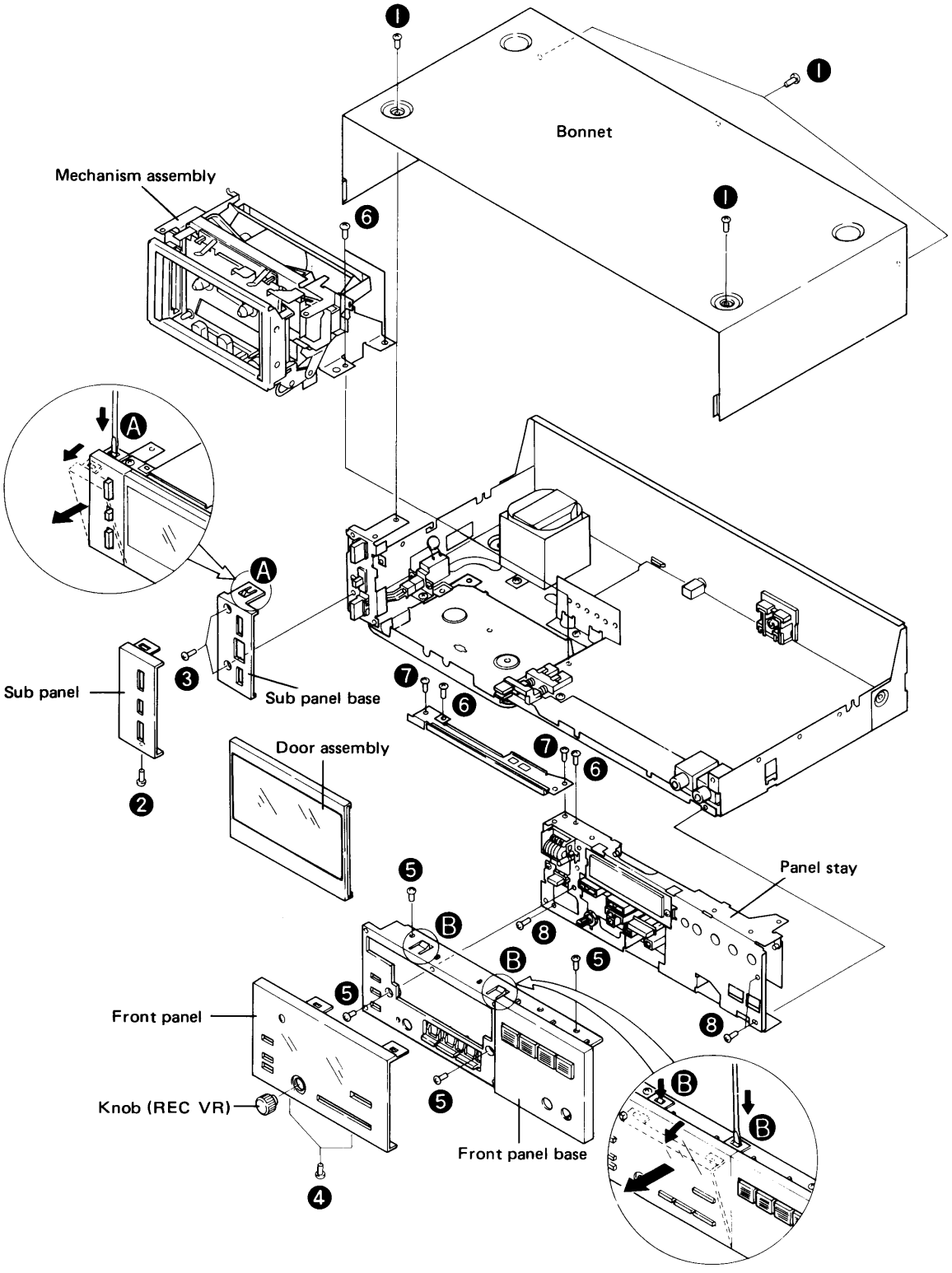


Fig. 5-1 Disassembly

Bonnet and Tape Mechanism

1. Unscrew the four screws ❶ holding the Bonnet on and remove the Bonnet by sliding it toward the rear.
2. Unscrew the sub-panel screw ❷ and gently press down on hook Ⓐ with a screwdriver so the sub-panel can be pulled loose.
3. Unscrew the two sub-panel base screws ❸ and remove the sub-panel base. The eject, stand-by and power knobs can now be removed.
4. Remove the REC VR knob and the two screws below ❹ and gently press down on hook Ⓑ with a screwdriver so the front panel can be pulled loose.
5. Unscrew the front panel base screws ❺ and remove the front panel base.
6. Remove the mechanism assembly by removing the door assembly and unscrewing screws ❻ .
7. Remove the panel stay by unscrewing screws ❼ , removing the connecting plate and unscrewing screws ❽ .

Front Panel

1. Remove the meter assembly by removing rivet Ⓒ .
2. Remove the counter by unscrewing screw ❾ .
3. Remove the control assembly by removing rivets Ⓓ .

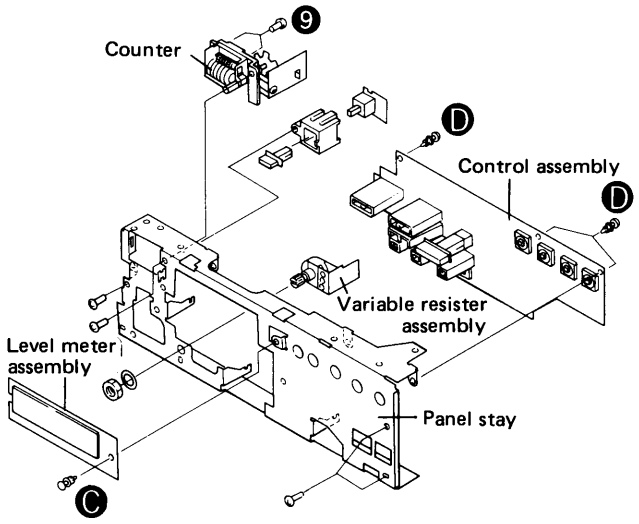


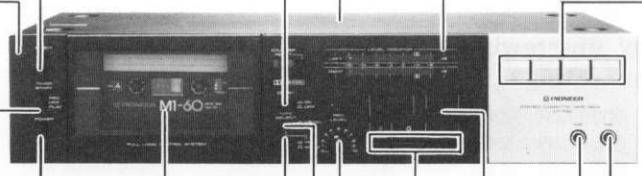
Fig. 5-2 Disassembly of front panel path

6. PARTS LOCATION

NOTES:

- *Parts without part number cannot be supplied.*
- *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.

Front Panel View



Knob (DOLBY NR)
RAC-233

Knob (Eject)
RAC-231

Sub panel
RNL-478

Knob (Stand by)
RAC-234

Knob (Power)
RAC-232

★★ Door assembly
RXX-387

Knob B (Tape selector)
RAC-237

Knob A (Tape selector)
RAC-236

Bonnet
RNA-576

Front panel
RNL-472

Knob (Function)
RAC-239

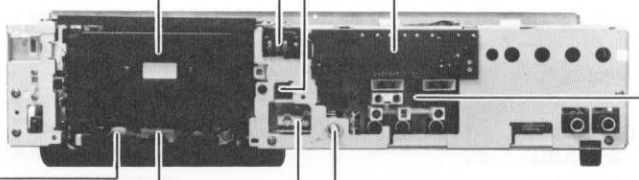
★★ MIC jack
RNK-073

Knob (MS)
RAC-235

Front panel base
RNL-464

Knob (REC VR)
RAA-368

Front View with Front Panel Removed



Counter
RAW-182

Cassette plate
RAH-413

★ Erase head
RPB-085
(RPB-096)

★★ REC/PB head
RPB-091
(RPB-097)

DOLBY NR switch assembly

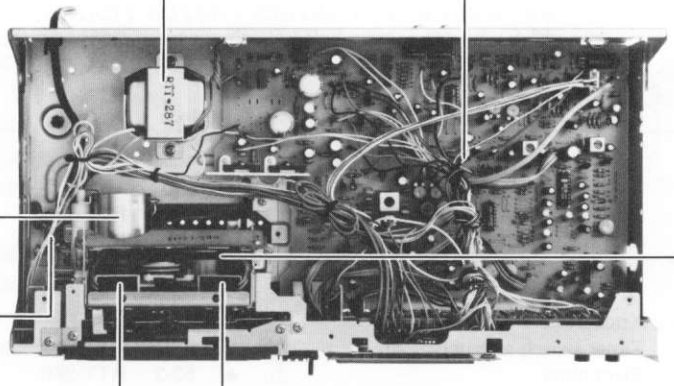
Meter assembly

Control assembly
RWG-135

★ Volume
RCV-099

★★ Push switch assembly
RSG-130

Top View with Bonnet Removed



⚠★ Power transformer
RTT-287 (120V; KU type)
RTT-286 (220V/240V; HE, HB, HP types)
RTT-288 (120V/220V/240V, D type)

Main assembly
RWX-625
(KU, D types)
RWX-626
(HE, HB, HP types)

Motor assembly
RXM-076

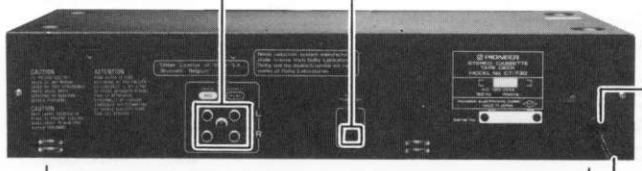
★★ Capstan belt
REB-411

⚠★★ Power switch
RSA-055 (KU type)
RSA-047 (HE, HB, HP types)
RSA-057 (D type)

⚠★ Plunger solenoid R
RXP-118 (RXP-115)) KU type
RXP-123 (RXP-121)) HE, HB, HP, D types

★ Plunger solenoid F
RXP-117 (RXP-114)) KU type
RXP-122 (RXP-120)) HE, HB, HP, D types

Rear Panel View



Terminal (LINE)
RKB-018

3.5φ jack
RKN-071

⚠ Strain relief
REC-376

Foot assembly
REC-369

⚠ Power cord
RDG-022 (RDG-030)) KU type
RDG-036 HE type
RDG-032 HB type
RDG-029 HP type
RDG-039 D type

7. EXPLODED VIEWS AND PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *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.

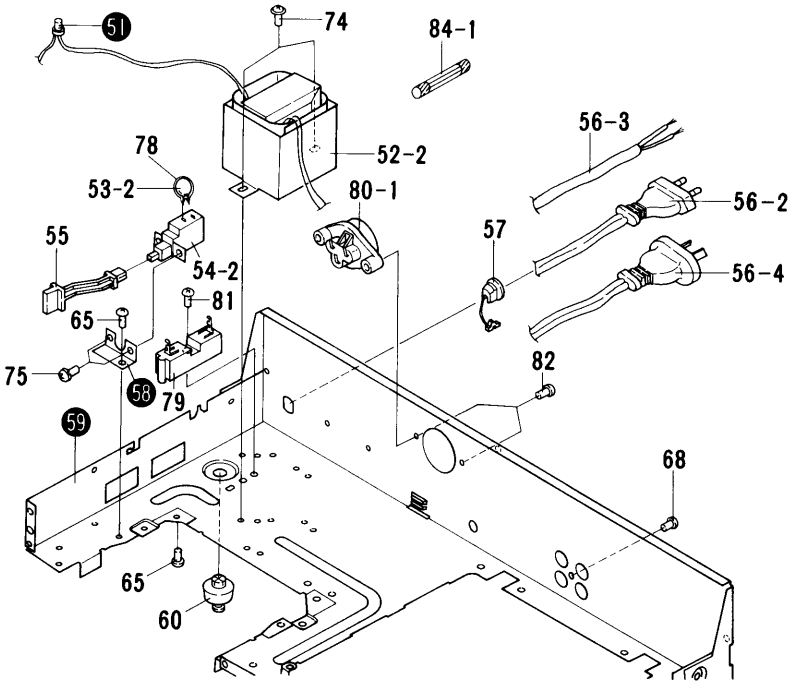
Part List

Mark	No.	Part No.	Symbol & Description
	1.	RNA-576	Bonnet
	2.		Connection plate
	3.	RNL-400	Door escutcheon
	4.		DOLBY switch assembly
	5.		Switch P.C.B. holder
	6.	RAC-233	Knob (DOLBY NR)
	7.		Timer switch assembly
	8.	RNH-136	Eject plate
	9.		Sub panel stay
	10.	RBH-917	Eject spring
	11.	RAC-231	Knob (eject)
	12.	RAC-234	Knob (stand by)
	13.	RNL-410	Sub panel base
	14.	RNL-478	Sub panel
★★	15.	RXX-387	Door assembly
	16.	REE-081	Paper
	17.	RAA-368	Knob (REC VR)
	18.	RNL-472	Front panel
	19.	RNL-464	Front panel base
	20.	RAC-239	Knob (Function)
	21.	RBH-925	Earth spring
	22.		Nylon rivet 3x4.5
	23.		Meter assembly
	24.	RAH-413	Cassette plate
	25.		Mechanism assembly
★★	26.	REB-468	Counter belt
	27.		Sensor assembly
	28.		Counter holder
	29.	RAW-182	Counter
	30.	RWG-135	Control assembly
	31.		Lamp holder
★★	32.	REL-094	Lamp
	33.		LED holder
★	34.	PR5724S	LED
★	35.	BG5724S	LED
★★	36.	RSG-131	Push switch
★★	37.	RSG-063	Function switch
	38.	RAC-235	Knob (MS)
	39.		Volume assembly
	40.		Panel stay
	41.	RWX-625	Main assembly (KU, D types)
		RWX-626	Main assembly (HE, HB, HP types)
	42.	RKN-071	3.5ϕ jack
	43.	RKB-018	Terminal (LINE)
	44.	RKN-073	MIC jack
	45.	RSG-130	Push switch assembly
	46.		Heat sink
	47.		Connector assembly 2P
	48.	RKP-298	Connector assembly 6P
	49.	RAC-236	Knob A (Tape selector)
	50.	RAC-237	Knob B (Tape selector)
	51.		Wier nut
⚠ ★	52-1	RTT-287	Power transformer (120V, KU type)
⚠ ★	52-2	RTT-286	Power transformer (220V/240V, HE, HB, HP types)
⚠ ★	52-3	RTT-288	Power transformer (120V/220V/240V, D type)
⚠	53-1	RCG-006	Capacitor (KU type)
⚠	53-2	RCG-009	Capacitor (HE, HB, HP types)
⚠	53-3	RCG-008	Capacitor (D type)
★★	54-1	RSA-055	Power switch (KU type)
⚠ ★★	54-2	RSA-047	Power switch (HE, HB, HP types)
⚠ ★★	54-3	RSA-057	Power switch (D type)
	55.	RAC-232	Knob (Power)
⚠	56-1	RDG-022 (RDG-030)	Power cord (KU type)
⚠	56-2	RDG-036	Power cord (HE bype)
⚠	56-3	RDG-032	Power cord (HB type)
⚠	56-4	RDG-029	Power cord (HP type)
⚠	56-5	RDG-039	Power cord (D type)
⚠	57.	REC-376	Strain relief
	58.		Power switch mounting plate
	59.		Main chassis
	60.	REC-369	Foot assembly
	61.		Bottom cover
	62.	REC-355	Sliding stopper
	63.		Bottom plate
	64.	BMZ30P060FZK	Screw
	65.	VCZ30P060FMC	Screw
	66.	BCZ30P060FMC	Screw
	67.	PMA26P050FMC	Screw
	68.	VPZ30P080FZK	Screw
	69.		Cushion
	70.	VPZ30P060FMC	Screw
	71.	VBZ26P060FMC	Screw
	72.	RBA-026	Screw
	73.	BMZ30P060FMC	Screw
	74.	ATZ40P080FMC	Screw
	75.	PMA30P060FMC	Screw
	76.		Serial plate (KU type)
	77.		Resinous rivet
	78.	REC-287	Capacitor cover (KU. HE, HB, HP types)

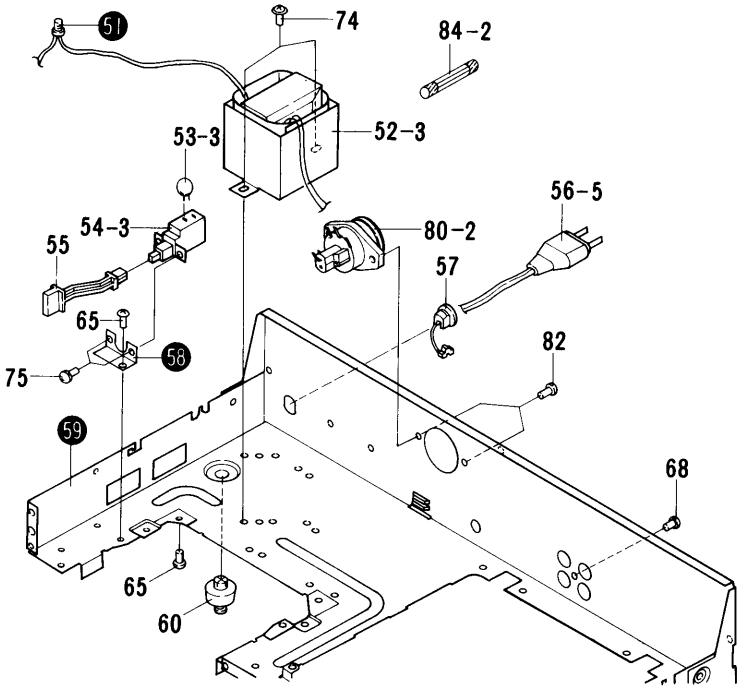
Mark	No.	Part No.	Symbol & Description
	79.	RKC-060	Relay terminal (HE, HB, HP types)
⚠	80-1	RSX-045	Line voltage selector (switchable 2 positions; 220V/240V, HE, HB, HP types)
⚠	80-2	RKR-020	Line voltage selector (switchable 3 positions; 120V/220V/240V, D type)

Mark	No.	Part No.	Symbol & Description
	81	VCZ30P080FMC	Schrew (HE, HB, HP types)
	82.	VBZ30P080FMC	Screw (HE, HB, Hp types)
	83.	PMZ30P060FMC	Screw
⚠ ★★	84-1	REK-064	Fuse 800mA (HE, HB, HP types)
⚠ ★★	84-2	REK-048	Fuse 0.5A (D type)

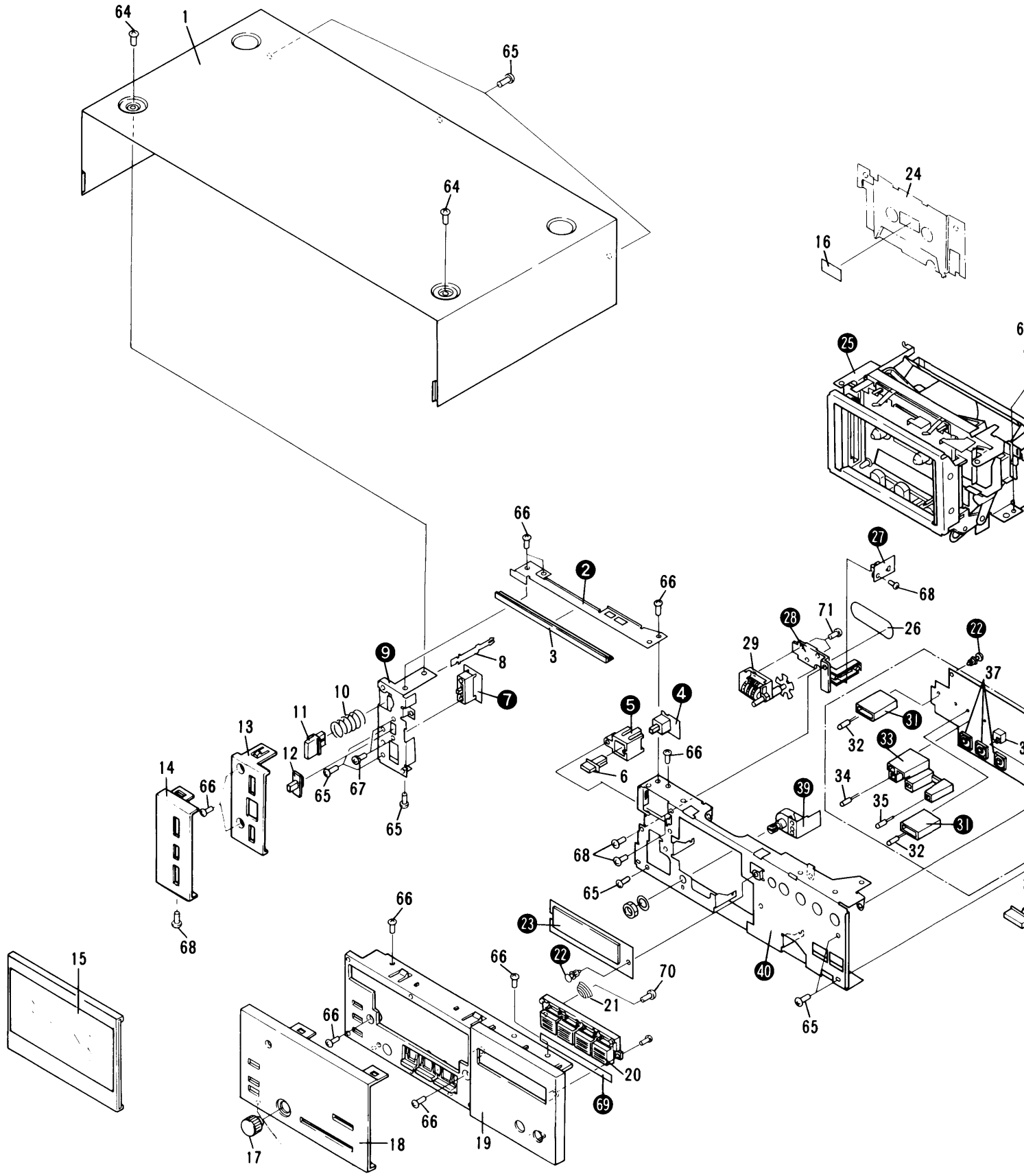
- **For HE, HB, HP types**

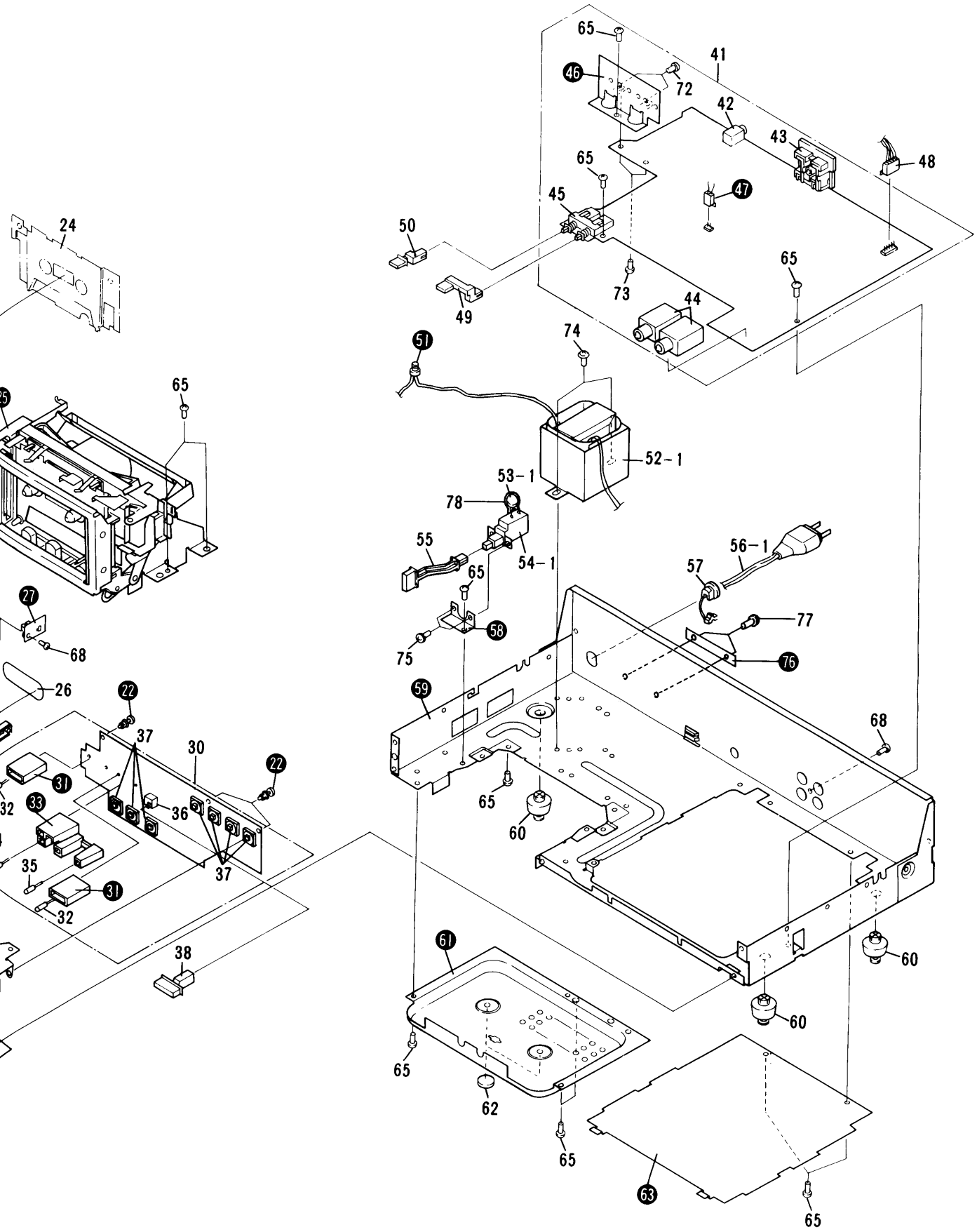


- **For D type**



Exterior (For KU type)

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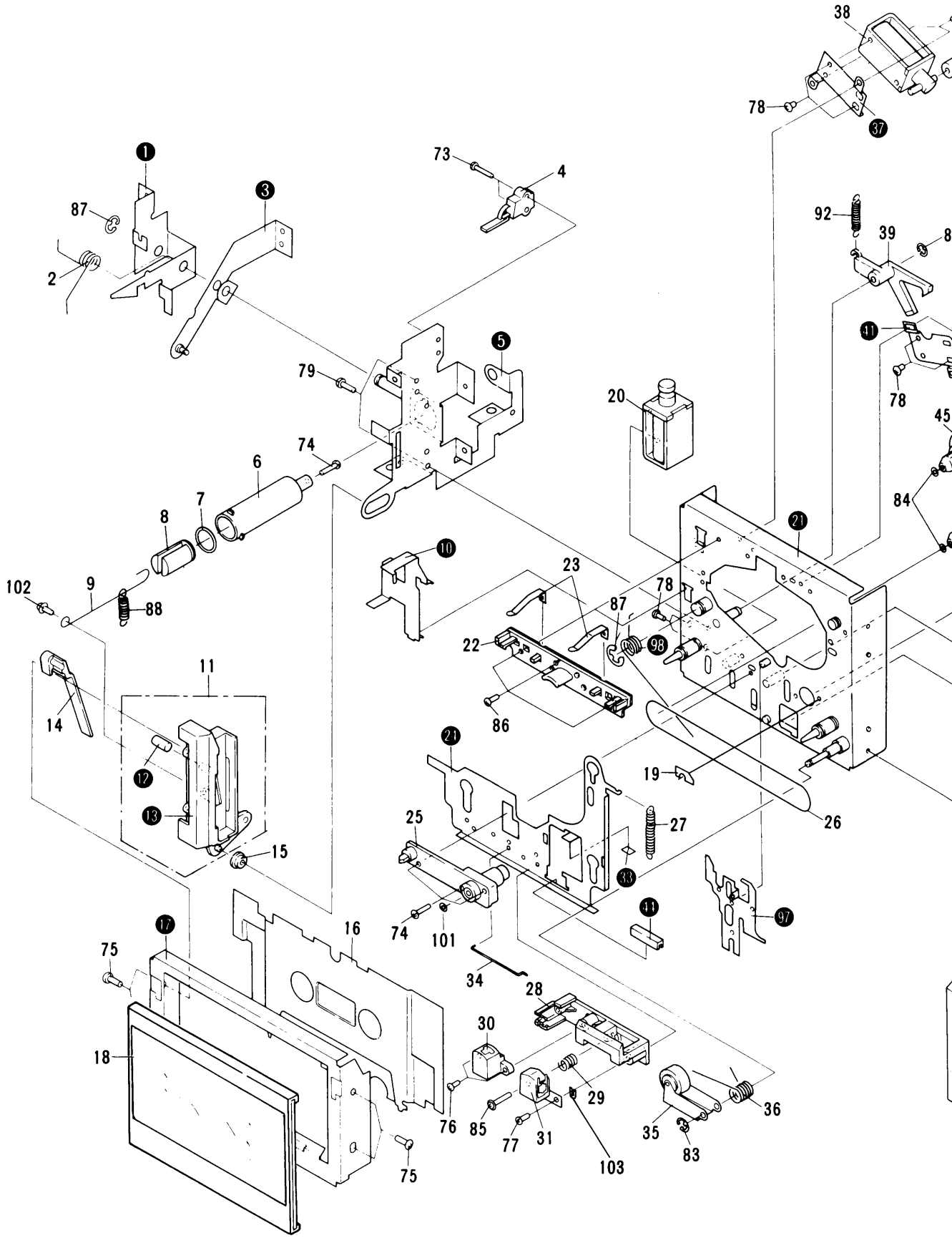
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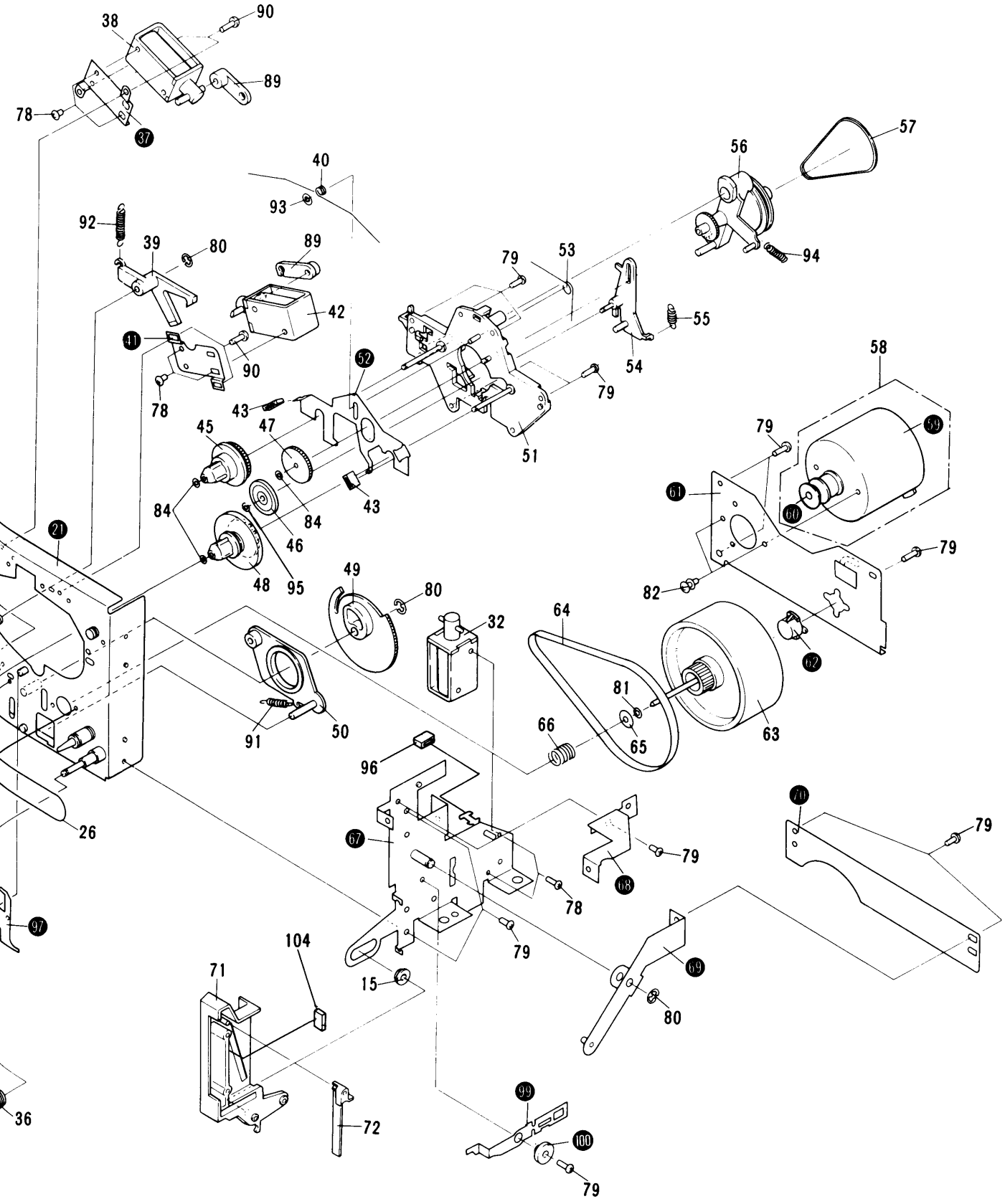
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Part List

Mark	No.	Part No.	Symbol & Description
	1.		Eject lever
	2.	RBH-743	Eject lever spring
	3.		Side arm L assembly
	4.	RSN-027	Lever switch
		(RSN-010)	
		(RSN-032)	
	5.		Side plate L assembly
	6.	RNK-995	Cylinder
	7.	REB-447	O ring
	8.	RNL-053	Piston
	9.	RBH-822	Connection rod
	10.		REC prevent lever
	11.	RXB-627	Pocket L assembly
	12.		Bush
	13.		Pocket L
	14.	RNL-057	Pocket spring L
	15.	RNK-994	Guide roller
	16.	RAH-413	Cassette plate
	17.		Pocket frame A
★★	18.	RXX-387	Door assembly
	19.	RNH-031	Spacer
★	20.	RXP-116	Plunger solenoid P
		(RXP-113)	
	21.		Chassis assembly
	22.	RNL-042	Half holder
	23.	RNF-895	Half spring
	24.		Head base
	25.	RXB-359	Bearing holder assembly
★	26.	REB-468	Counter belt
	27.	RBH-865	HB return spring
	28.	RNL-050	Sub head base
	29.	RBH-723	Head adjust spring
★	30.	RPB-085	Erase head
		(RPB-096)	
★★	31.	RPB-091	REC/PB head
		(RPB-097)	
	32.	RXP-119	Plunger solenoid (PMS)
	33.		BT felt
	34.	RBH-794	HB drive spring
★★	35.	RXB-495	Pinch arm assembly
	36.	RBH-893	Pinch pressure spring
	37.		Solenoid bracket L
★	38.	RXP-123	Plunger solenoid R (HE, HB, HP,
		(RXP-121)	D types)
		RXP-118	Plunger solenoid R (KU type)
		(RXP-115)	
	39.	RNL-051	Gear lever
	40.	RBH-727	Brake spring
	41.		Solenoid bracket R
★	42.	RXP-122	Plunger solenoid F (HE, HB, HP,
		(RXP-120)	D types)
		RXP-117	Plunger solenoid F (KU type)
		(RXP-114)	
	43.	REB-187	Brake shoe
	44.		Shaft stopper
★★	45.	RXB-377	Supply reel base assembly
	46.	RNK-999	TU idler
	47.	RNK-998	Idler gear
★★	48.	RXB-360	TU reel base assembly
	49.	RNL-059	Cam gear
	50.	RXB-541	Lever assembly
	51.	RXB-378	Reel base assembly
	52.		Brake plate
	53.	RBH-725	FR spring
	54.	RXB-374	Idler arm assembly
	55.	RBH-724	Idler pressure spring
	56.	RXB-376	Drive arm full assembly
★★	57.	REB-446	Drive belt
★★	58.	RXM-076	Motor assembly
	59.		Motor
	60.		Motor pulley
	61.		Flywheel holder
	62.		Thrust receptacle
	63.	RXB-500	Flywheel assembly
		(RXB-358)	
★★	64.	REB-411	Capstan belt
	65.	RBF-051	Washer
	66.	RBH-721	Flywheel spring
	67.		Side plate R assembly
	68.		Mounting plate
	69.		Side arm R assembly
	70.		Connection plate
	71.	RNL-397	Pocket R
	72.	RNL-058	Pocket spring R
	73.	PMZ20P080FMC	Screw
	74.	VCZ26P090FMC	Screw
	75.	ATZ26P060FZK	Screw
	76.	PMZ20P130FMC	Screw
	77.	PMZ20P120FMC	Screw
	78.	PMZ26P030FMC	Screw
	79.	VCZ26P060FMC	Screw
	80.	YE30FUC	Washer
	81.	WA21D040D025	Washer
	82.	PMA26P040FMC	Screw
	83.	YE20FUC	Washer
	84.	WA17D032D025	Washer
	85.	IMZ20Y120FMC	Screw
	86.	PCZ26P060FMC	Screw
	87.	YE40FUC	Screw
	88.	RBH-795	Earth spring
	89.	RNL-047	Solenoid arm
	90.	PMZ26P060FMC	Screw
	91.	RBH-842	Lever spring
	92.	RBH-722	Gear return spring
	93.	YS20FBT	Washer
	94.	RBH-758	FF spring
	95.	WA16D032D025	Washer
	96.	REB-241	Door stopper
	97.		PMS plate
	98.	RBH-778	Return spring

Mark	No.	Part No.	Description
	99.		Stopper lever
	100.	RLB-390	Stopper
	101.	RBF-050	Oil stop washer
	102.	RBA-076	Special screw
	103.	RNH-989	Spacer
	104.	REB-440	Stopper

8. ELECTRICAL 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 x 10¹*	*561*	*RD¼PS 5 6 1 J*
47kΩ	*47 x 10³*	*473*	*RD¼PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 x 100*	*5621*	*RN¼SR 5 6 2 1 F*

- *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 List

P.C BOARD ASSEMBLIES

Mark	Part No.	Symbol & Description
	RWX-625	Main assembly (KU, D types)
	RWX-626	Main assembly (HE, HB, HP types)
	RWG-135	Control assembly
		DOLBY NR switch assembly
		Timer switch assembly
		Volume assembly
		Sensor assembly
		Meter assembly

OTHERS

Mark		Part No.	Symbol & Description	
⚠	★	RTT-287	T1	Power transformer (120V, KU type)
⚠	★	RTT-286	T1	Power transformer (220V/240V; HE, HB, HP types)
⚠	★	RTT-288	T1	Power transformer (120V/220V/240V; D type)
⚠	★★	RSA-055	S1001	Power switch (KU type)
⚠	★★	RSA-047	S1001	Power switch (HE, HB, HP types)
⚠	★★	RSA-057	S1001	Power switch (D type)
⚠		RCG-006	C1001	Capacitor (KU type)
⚠		RCG-009	C1001	Capacitor (HE, HB, HP types)
⚠		RCG-008	C1001	Capacitor (D type)

Main Assembly (RWX-625: KU, D, types) (RWX-626: HE, HB, HP types)

CAPACITORS

Mark	Part No.	Symbol & Description
	CCDSL 331K 50	C101, C201
	CEANL 3R3M 25	C117, C217
	CEANL 100M 16	C102, C202
	CEA R22M 50	C302, C303
	CEA R10M 50	C415, C416, C419, C420
	CEA R33M 50	C413, C414, C421, C422, C125, C225,
	CEA 010M 50	C113, C213, C123, C223, C134, C234
	CEA 2R2M 50	C222
	CEA 4R7M 50	C127, C227, C309
	CEA 100M 16	C107, C110, C111, C115, C118–C120, C124, C207, C210, C211, C215, C218–C220, C224, C311, C401, C402, C405–C408, C417, C418, C423
	CEA 330M 16	C103, C203, C122
	CEA 470M 16	C108, C208, C112, C212, C314, C317
	CEA 101M 10	C323, C330
	CEA 101M 16	C307, C310, C312
	CEA 101M 25	C305
	CEA 221M 6.3	C315, C327

Mark	Part No.	Symbol & Description
	CEA 221M 16	C306, C313
	CEA 471M 16	C424
	CEA 102M 25	C301, C304
	CQMA 103J 50	C105, C205
	CQMA 153J 50	C403, C404, C411, C412
	CQMA 223J 50	C109, C209, C319
	CQMA 332J 50	C121, C221
	CQMA 472J 50	C409, C410
	CQMA 123J 50	C128, C228, C133, C233
	CQMA 822J 50	C131, C231
	CQMA 102K 50	C321, C322
	CQMA 182K 50	C320
	CQPA 332J 100	C318
	CCDSL 220K 50	C106, C206
	RCA-054	C136, C236 Ceramic
	CKDYF 102Z 50	C104, C114, C116, C204, C214, C216
	CKDYF 103Z 50	C308, C325, C316, C331
	CKDYF 473Z 50	C329
	CKDYB 471K 50	C126, C226

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 (RCP-195)	VR102, VR202 Semi-fixed (22k-B)
★	RCP-149 (RCP-193)	VR103, VR203, VR401 Semi-fixed (10k-B)
★	RCP-155 (RCP-200)	VR301, VR302 Semi-fixed (150k-B)
	RM5-104JB	R141, R142, R241, R242, R217
⚠	RS1PF 820J	R309
⚠	RD½PSF 471J	R301, R228
⚠	RD½PSF 102J	R308
	RD¼PM □□□J	R101, R103–R115, R117–R129, R131–R139, R143–R145, R147–R150, R152–R157, R159, R160, R160, R163, R201, R203–R215, R218–R227, R229, R231–R237, R245, R247–R250, R252–R257, R259, R260, R263, R302, R306, R312–R326, R331, R332, R401–R416

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	BA328	IC101
★★	HD14066B (TC4066BP) (MB84066BM)	IC102, IC402
★★	HA11226	IC401
★★	NJM4558D (BA4558) (AN6552)	IC403
★★	2SC2240	Q101, Q102, Q201, Q202
★★	2SC1815 (2SC1740LN) (2SC2634NC) (2SC2021)	Q103–Q108, Q203–Q208, Q307
★★	2SC1740LN	Q304–Q306
★★	2SA1015 (2SA937) (2SA1127NC) (2SA933LN)	Q303, Q308, Q311
⚠ ★★	2SD837 (2SD1031)	Q301, Q302
★	1S2473 (US1040)	D101, D102, D201, D202, D403, D307–D309, D311–D314
★	1K34A (1K60A) (0A90)	D401, D402
⚠ ★	1SR35-100 (W03B) (W03C)	D305, D306, D315
⚠ ★	1B2Z1-LC2	D301
⚠ ★	1B2C1-LC2	D302
⚠ ★	WZ-135	ZD301
⚠ ★	WZ-120	ZD302
★	BZ-050	ZD303
★	WZ-044	ZD305
★	WZ-073	ZD306

COILS

Mark	Part No.	Symbol & Description
	RTF-084	L101, L201 Trap coil
	RTF-095	L102, L202 Peaking coil (8.2mH)
	RTF-089	L104, L204 MPX filter
	RTF-057	L301 Line coil
	RTD-026	T301 OSC coil

OTHERS

Mark	Part No.	Symbol & Description
★★	RSG-130	S103, S104 Push switch assembly
★★	RSR-035	RY101 Lead relay
★★	RKN-073	S101 Mic jack
	RKB-018	Terminal (LINE)
	RKN-071	3.5ϕ Jack
	M15-414	14□ Shield case
	RKH-005	Insulator
	REE-051	Insulator
	RBA-026	Screw
		Fuse holder (HE, HB, HP, types)

NOTE:

The voltage change assemblies (RWX-625 and RWX-626) have basically the same circuits.

Control Assembly

CAPACITORS

Mark	Part No.	Symbol & Description
	CKDYF 103Z 50	C601, C605
	CQMA 473J 50	C602
	CAMA 104J 50	C606
	CEA 010M 50	C608
	CEA R10M 50	C607
	CEA 100M 16	C603, C609, C610
	CEA 100M 6R3 NP	C604

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
	RD¼PM □□□J	R601–R614, R617–R625, R627–R629

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	PM9002A	IC601
★★	HD14011B (TC4011BP) (MB84011BM)	IC602
★★	2SC2060 (2SC2673) (2SC1383NC)	Q601–Q604
★★	2SA933LN (2SA1015) (2SA937) (2SA1127NC)	Q605
★★	2SC1815 (2SC1740LN) (2SC2634NC) (2SC2021)	Q606–Q609
★	1SR35-100 (W03B) (W03C)	D601–D604
★	1S2473 (US1040)	D605–D607

SWITCHES

Mark	Part No.	Symbol & Description
★★	RSG-131	S608 Push switch
★★	RSG-063	S601–S607 Function switch

OTHERS

Mark	Part No.	Symbol & Description
★★	REL-094	PL601, PL602 Lamp
★	PR5724S	LED601
★	BG5724S	LED602

DOLBY NR Switch Assembly

Mark	Part No.	Symbol & Description
★★	RSG-131	S102 Push switch

Timer Switch Assembly

Mark	Part No.	Symbol & Description
★★	RSH-064	S901 Slide switch

Volume Assembly

Mark	Part No.	Symbol & Description
★	RCV-099	VR801 Variable (20k-A) REC VR

Senser Assembly

Mark	Part No.	Symbol & Description
	RD½PM 162J	R701
	RD¼PM 201J	R702
	GP-411B	D701

Meter Assembly

CAPACITORS

Mark	Part No.	Symbol & Description
	CEB 100M 16	C501, C502, C505
	CEB 2R2M 50	C503, C504

RESISTORS

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

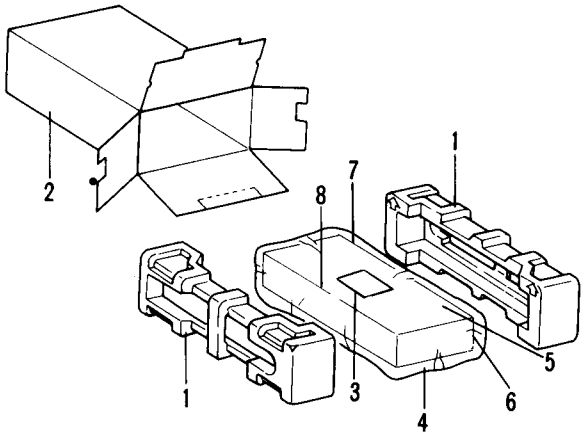
Mark	Part No.	Symbol & Description
	RD¼PM □□□J	R501–R508

OTHERS

Mark	Part No.	Symbol & Description
★	RAW-183	Level meter

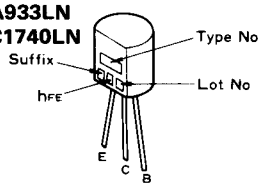
9. PACKING

Mark	No.	Part No.	Description
	1.	RHG-520	Packing case (KU type)
		RHG-521	(HE type)
		RHG-522	(HB, HP types)
		RHG-523	(D type)
	2.	RHA-244	Pad
	3.	RRB-177	Operating instructions (KU type)
		RRE-022	(HE type)
		RRB-178	(HB, HP, D types)
		RRD-058	(D type)
	4.	RHX-031	Sheet C
	5.		Sheet
	6.		Sheet
	7.	RDE-063	Connection cord assembly
		RDE-064	Connection cord B
		RDE-065	Connection cord A
	8.	RHC-138	Spacer

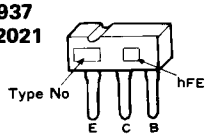


External Appearance of Transistors and ICs

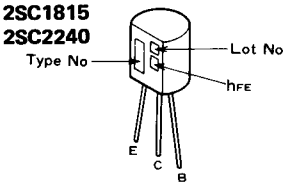
2SA933LN
2SC1740LN



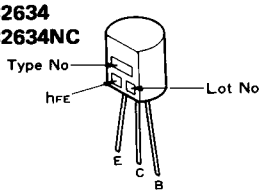
2SA937
2SC2021



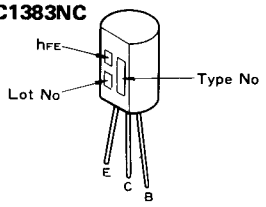
2SA1015
2SC1815
2SC2240



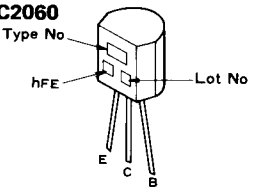
2SA1127NC
2SC2634
2SC2634NC



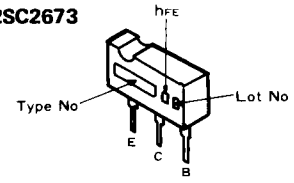
2SC1383NC



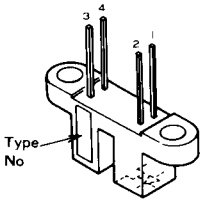
2SC2060



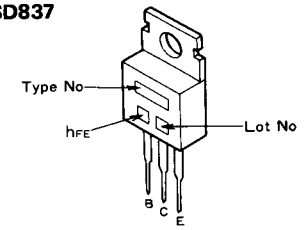
2SC2673



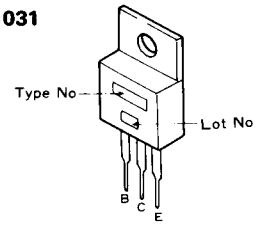
GP-411B



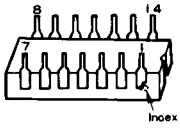
2SD837



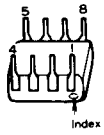
2SD1031



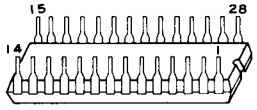
HD14011B
TC4011BP
MB84011BM
HD14066B
TC4066BP
MB84066BM



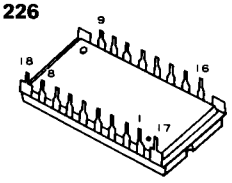
AN6552
BA4558
NJM4558D



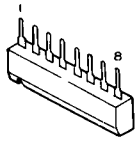
PM9002A



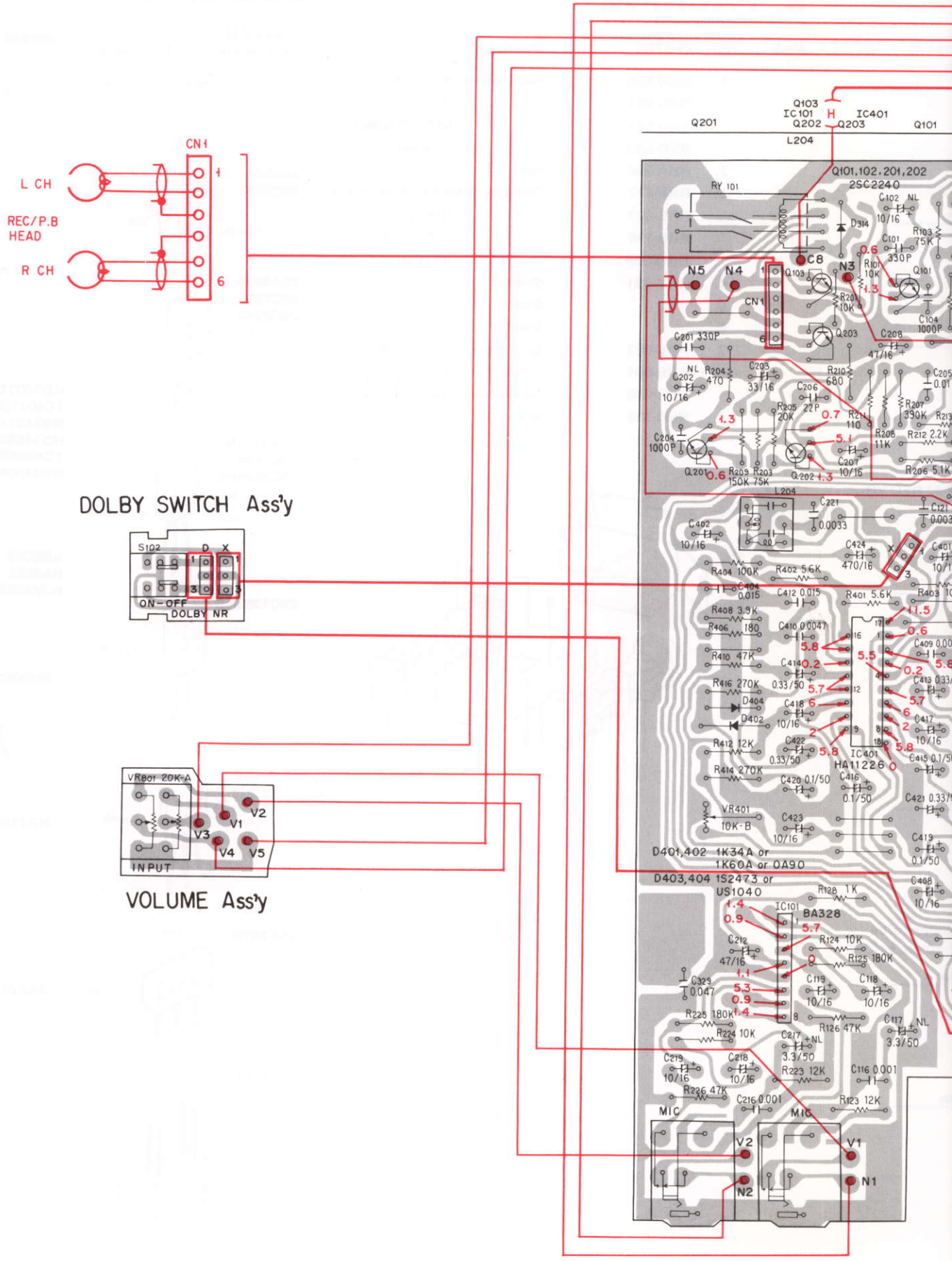
HA11226

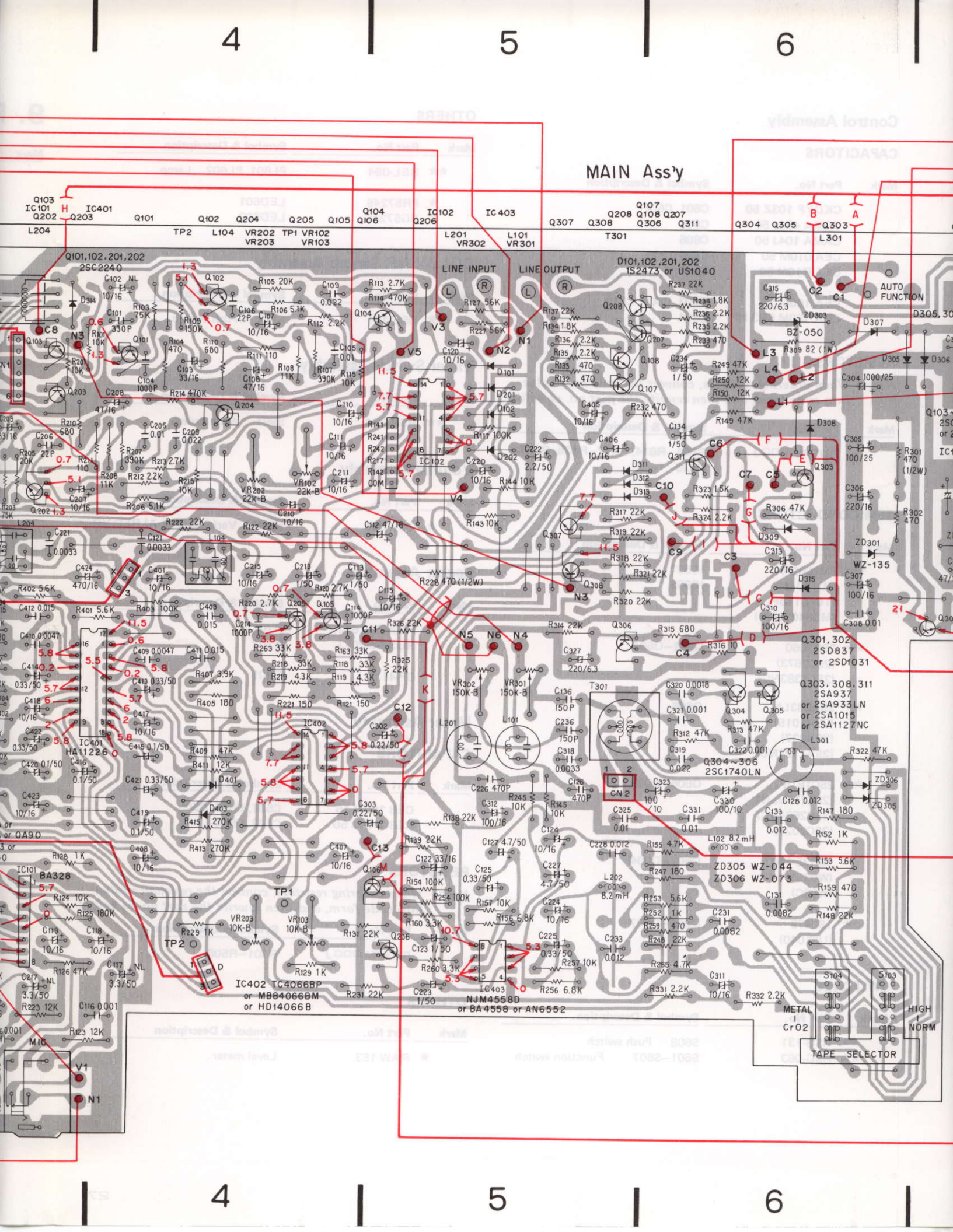


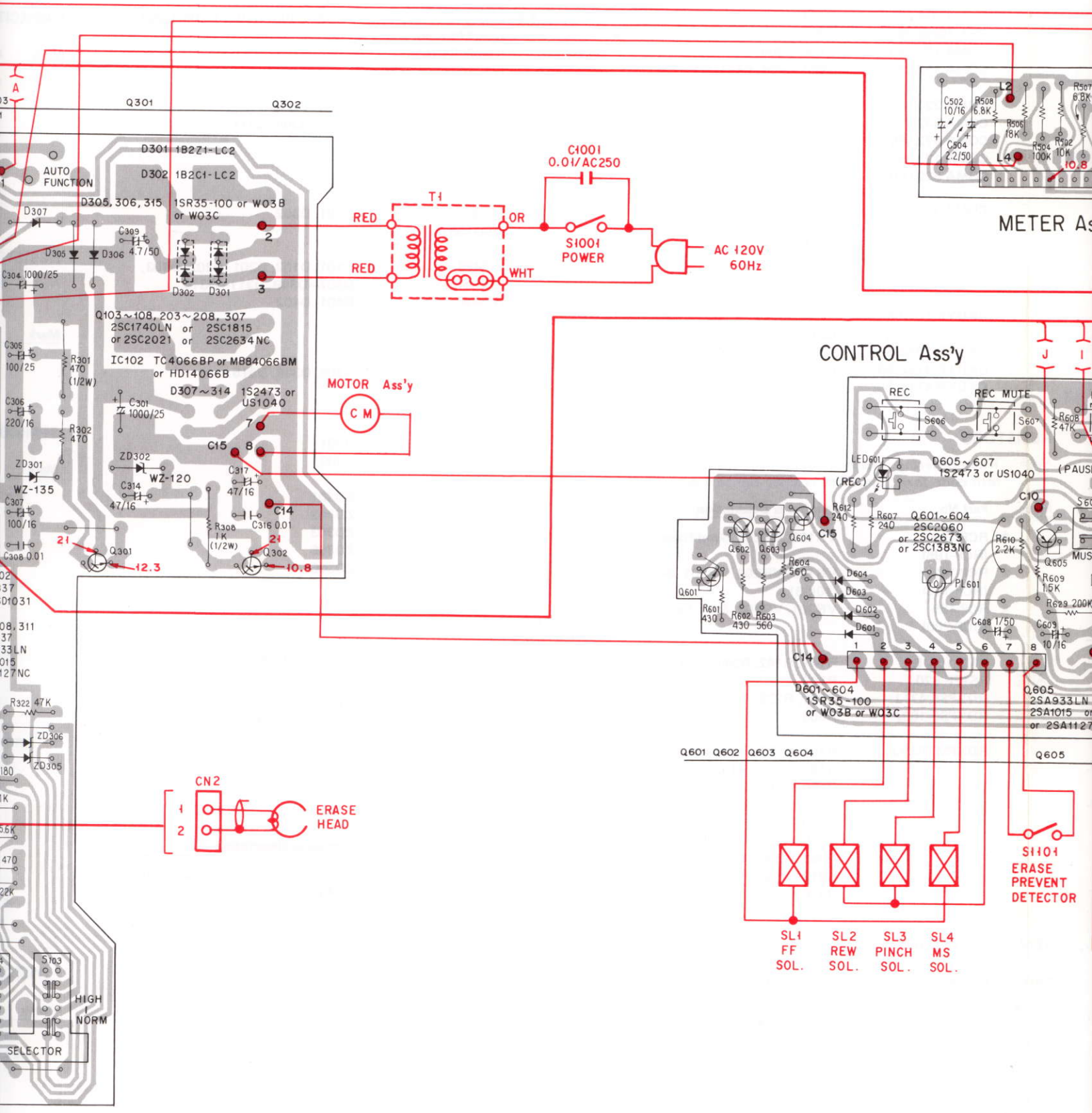
BA328

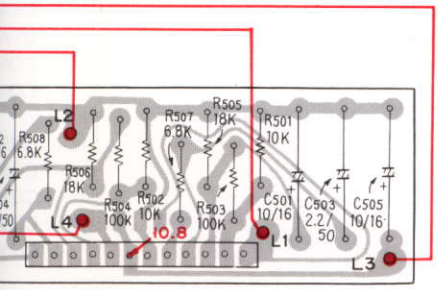


10. P.C.BOARDS CONNECTION DIAGRAM

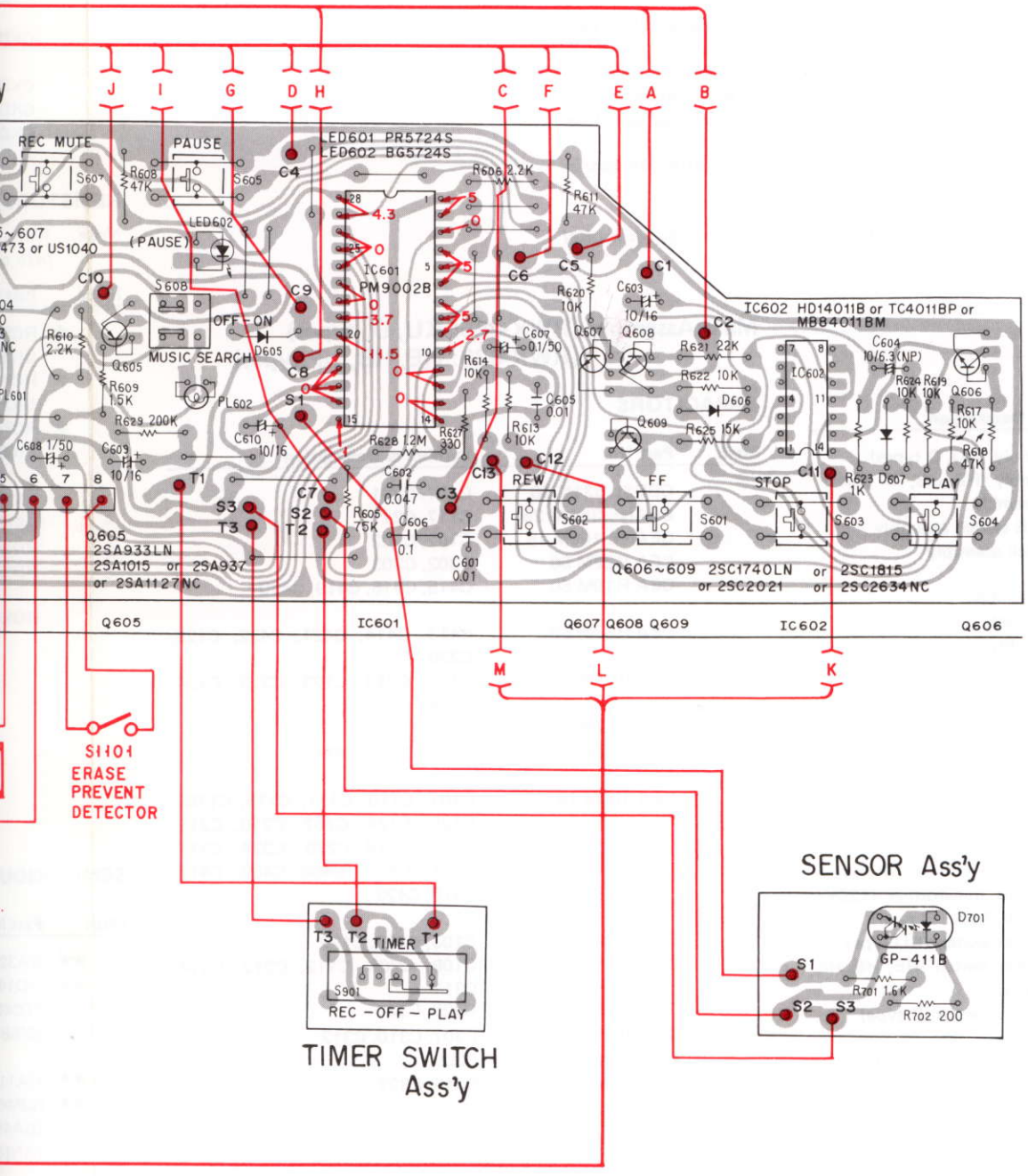



MAIN Ass'y
LINE INPUT
LINE OUTPUT
AUTO FUNCTION
TAPE SELECTOR
METAL
CrO2
HIGH
NORM
MIC
Q101,102,201,202
2SC2240
D101,102,201,202
1S2473 or US1040
Q301,302
2SD837
or 2SD1031
Q303,308,311
2SA937
or 2SA933LN
or 2SA1015
or 2SA1127NC
Q304~306
2SC1740LN
IC402 TC4066BP
or MB84066BM
or HD14066B
IC403
NJM4558D
or BA4558 or AN6552
IC101
BA328
IC401
HA11226
ZD305 WZ-044
ZD306 WZ-073

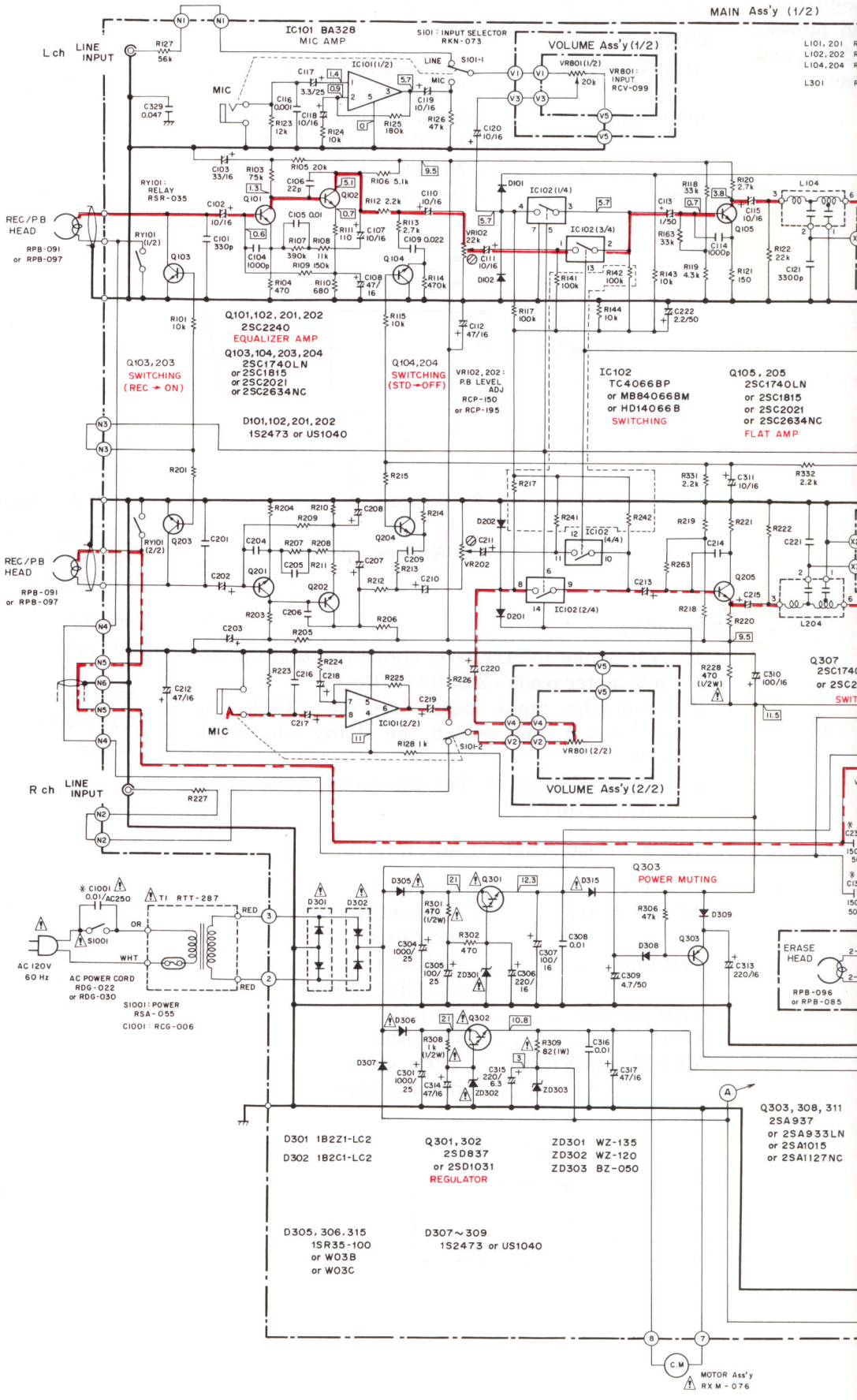

A
Q301
Q302
D301 1B2Z1-LC2
D302 1B2C1-LC2
AUTO FUNCTION
D305, 306, 315 1SR35-100 or W03B or W03C
D307
C309 4.7/50
D305
D306
C304 1000/25
D302
D301
2
3
RED
RED
T1
OR
WHT
C1001 0.01/AC250
S1001 POWER
AC 120V 60Hz
Q103~108, 203~208, 307 2SC1740LN or 2SC1815 or 2SC2021 or 2SC2634NC
IC102 TC4066BP or MB84066BM or HD14066B
D307~314 1S2473 or US1040
MOTOR Ass'y
C M
C305 100/25
R301 470 (1/2W)
C306 220/16
R302 470
C301 1000/25
7
C15
8
ZD301 WZ-135
ZD302 WZ-120
C314 47/16
C317 47/16
C307 100/16
C308 0.01
C316 0.01
C14
R308 1K (1/2W)
2
Q301
12.3
2
Q302
10.8
R322 47K
ZD306
ZD305
CN2
1
2
ERASE HEAD
S703
HIGH
NORM
SELECTOR
L2
L4
C502 10/16
R508 6.8K
R506 18K
C504 2.2/50
R504 100K
R502 10K
10.8
METER As
CONTROL Ass'y
J
I
REC
REC MUTE
S606
S607
R608 47K
LED601
(REC)
D605~607 1S2473 or US1040
C10
R612 240
C15
R607 240
Q601~604 2SC2060 or 2SC2673 or 2SC1383NC
Q604
Q602
Q603
R610 2.2K
Q605
R609 1.5K
Q601
R604 560
D604
D603
D602
D601
PL601
R601 430
R602 430
R603 560
C608 1/50
C603 10/16
R629 200K
C14
1 2 3 4 5 6 7 8
D601~604 1SR35-100 or W03B or W03C
Q605 2SA933LN 2SA1015 or 2SA1127
Q601 Q602 Q603 Q604
Q605
S1101 ERASE PREVENT DETECTOR
SL1 FF SOL.
SL2 REW SOL.
SL3 PINCH SOL.
SL4 MS SOL.


L2
R508 6.8K
R507 6.8K
R505 18K
R501 10K
R506 18K
R504 100K
R502 10K
R503 100K
C501 10/16
C503 2.2/50
C505 10/16
L4
10.8
L1
L3

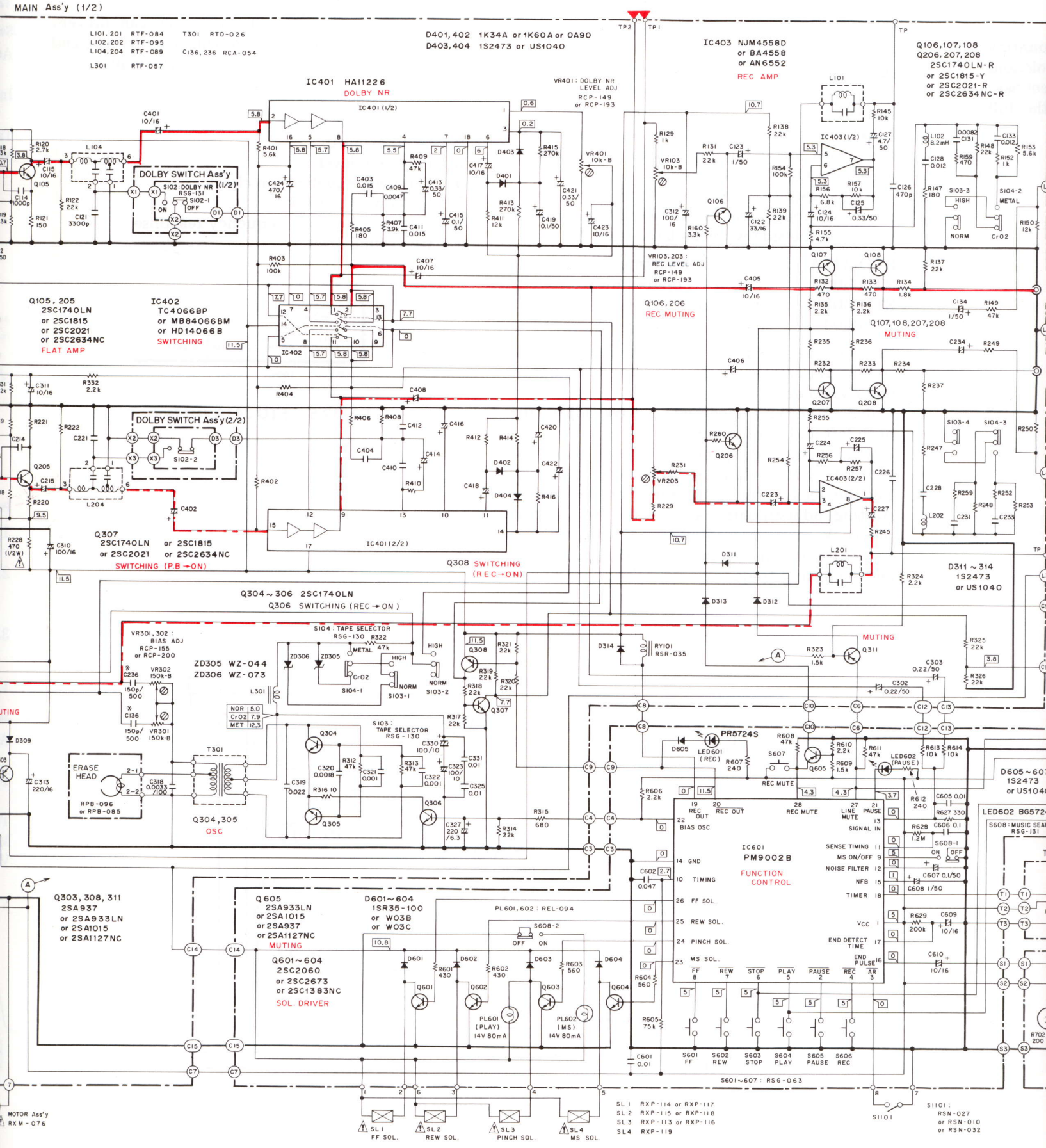
METER Ass'y

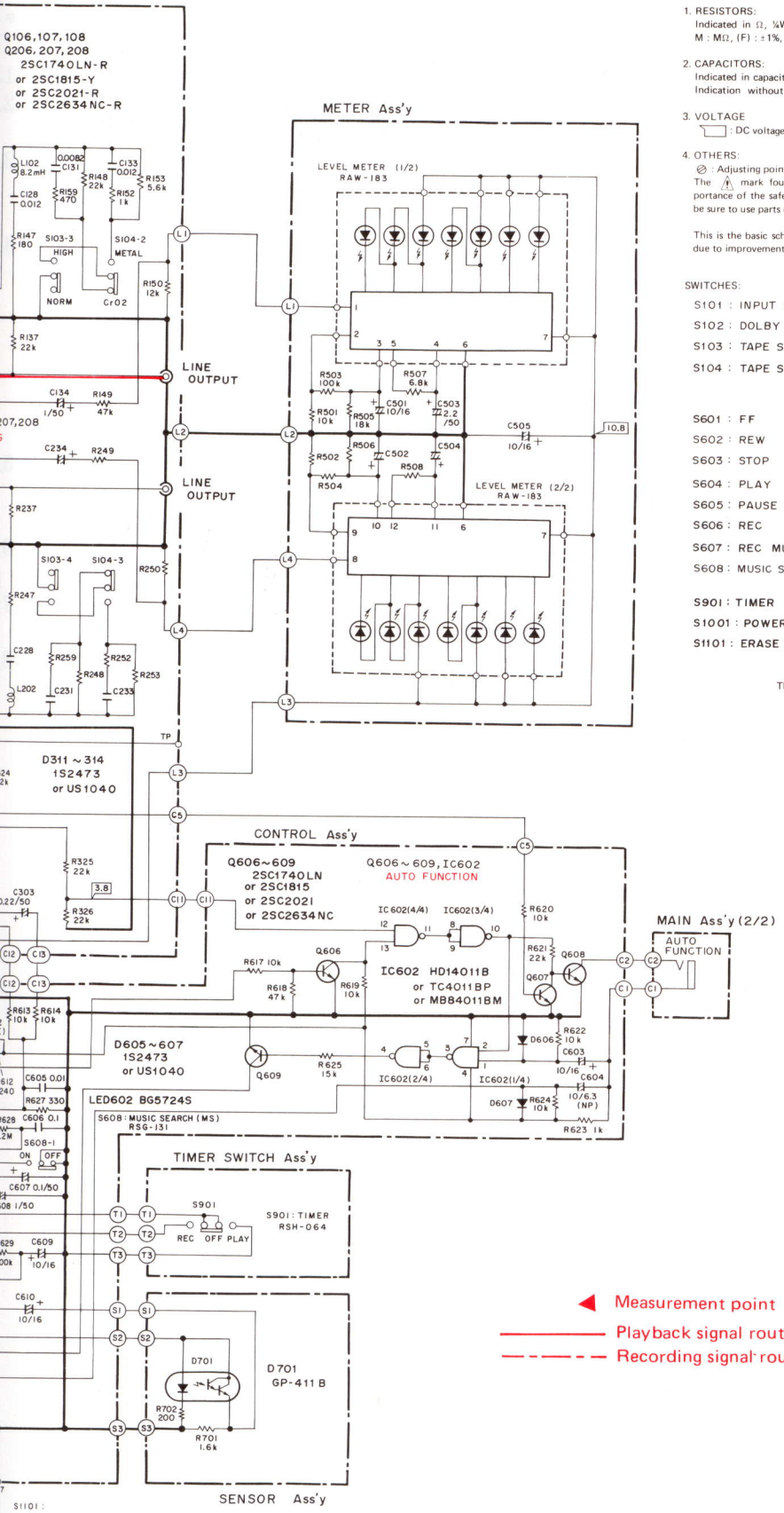

J I G D H C F E A B
REC MUTE
PAUSE
LED601 PR5724S
LED602 BG5724S
S607
S605
R608 47K
C4
R606 2.2K
R611 47K
LED602
(PAUSE)
607
473 or US1040
C10
S608
C9
C6
C5
C1
IC601
PM9002B
OFF-ON
D605
MUSIC SEARCH
C8
R620 10K
C603 10/16
C2
IC602 HD14011B or TC4011BP or MB84011BM
R610 2.2K
Q605
R609 1.5K
PL602
S1
C607 0.1/50
Q607
Q608
R621 22K
R622 10K
C604 10/16(NP)
R624 10K
R619 10K
Q606
R617 10K
R618 47K
D606
R625 15K
Q609
R623 1K
D607
C605 0.01
R614 10K
R613 10K
R628 1.2M
R627 330
C610 10/16
C608 1/50
C609 10/16
C602 0.047
C13
C12
REW
C11
STOP
PLAY
FF
S602
S601
S603
S604
T1
C7
C3
S3
S2
T3
T2
R605 75K
C606 0.1
C601 0.01
Q606~609 2SC1740LN or 2SC2021 or 2SC1815 or 2SC2634NC
Q605 2SA933LN 2SA1015 or 2SA937 or 2SA1127NC
Q605
IC601
Q607 Q608 Q609
IC602
Q606
M
L
K
SH01
ERASE PREVENT DETECTOR
T3 T2 TIMER T1
S901
REC -OFF- PLAY
TIMER SWITCH Ass'y
SENSOR Ass'y
D701
GP-411B
S1
R701 1.6K
S2 S3
R702 200

11. SCHEMATIC DIAGRAM



MAIN Ass'y (1/2)


L101, 201 RTF-084
L102, 202 RTF-095
L104, 204 RTF-089
L301 RTF-057
T301 RTD-026
C136, 236 RCA-054
D401, 402 1K34A or 1K60A or 0A90
D403, 404 1S2473 or US1040
IC401 HA11226
DOLBY NR
IC401 (1/2)
IC401 (2/2)
VR401 : DOLBY NR LEVEL ADJ
RCP-149 or RCP-193
IC403 NJM4558D or BA4558 or AN6552
REC AMP
IC403 (1/2)
IC403 (2/2)
Q106, 107, 108
Q206, 207, 208
2SC1740LN-R or 2SC1815-Y or 2SC2021-R or 2SC2634NC-R
DOLBY SWITCH Ass'y
SI02 : DOLBY NR RSG-131
SI02-1
SI02-2
Q105, 205
2SC1740LN or 2SC1815 or 2SC2021 or 2SC2634NC
FLAT AMP
IC402
TC4066BP or MB84066BM or HD14066B
SWITCHING
Q106, 206
REC MUTING
VR103, 203 : REC LEVEL ADJ
RCP-149 or RCP-193
Q107, 108, 207, 208
MUTING
SI03-3
SI04-2
HIGH
NORM
METAL
CrO2
Q307
2SC1740LN or 2SC1815 or 2SC2021 or 2SC2634NC
SWITCHING (P.B→ON)
Q308 SWITCHING (REC→ON)
D311 ~ 314
1S2473 or US1040
Q304 ~ 306 2SC1740LN
Q306 SWITCHING (REC→ON)
SI04 : TAPE SELECTOR RSG-130
SI03 : TAPE SELECTOR RSG-130
VR301, 302 : BIAS ADJ RCP-155 or RCP-200
ZD305 WZ-044
ZD306 WZ-073
MUTING
RY101 RSR-035
ERASE HEAD
RPB-096 or RPB-085
Q304, 305
OSC
PR5724S
LED601 (REC)
LED602 (PAUSE)
REC MUTE
IC601
PM9002B
FUNCTION CONTROL
BIAS OSC
REC OUT
SIGNAL IN
SENSE TIMING
MS ON/OFF
NOISE FILTER
NFB
TIMER
VCC
END DETECT TIME
END PULSE
FF SOL.
REW SOL.
PINCH SOL.
MS SOL.
Q303, 308, 311
2SA937 or 2SA933LN or 2SA1015 or 2SA1127NC
Q605
2SA933LN or 2SA1015 or 2SA937 or 2SA1127NC
MUTING
Q601 ~ 604
2SC2060 or 2SC2673 or 2SC1383NC
SOL. DRIVER
D601 ~ 604
1SR35-100 or W03B or W03C
PL601, 602 : REL-094
S608-2
PL601 (PLAY) 14V 80mA
PL602 (MS) 14V 80mA
S601 FF
S602 REW
S603 STOP
S604 PLAY
S605 PAUSE
S606 REC
S601 ~ 607 : RSG-063
SL1 RXP-114 or RXP-117
SL2 RXP-115 or RXP-118
SL3 RXP-113 or RXP-116
SL4 RXP-119
SL1 FF SOL.
SL2 REW SOL.
SL3 PINCH SOL.
SL4 MS SOL.
MOTOR Ass'y RXM-076
SI101 : RSN-027 or RSN-010 or RSN-032



1. RESISTORS:
Indicated in Ω, ¼W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10%, (M) : ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE
: DC voltage (V) at no input signal

4. OTHERS:
: Adjusting point.
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.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

S101 : INPUT SELECTOR	LINE — MIC
S102 : DOLBY NR	ON — OFF
S103 : TAPE SELECTOR	NORM — HIGH
S104 : TAPE SELECTOR	CrO2 — METAL
S601 : FF	ON — OFF
S602 : REW	ON — OFF
S603 : STOP	ON — OFF
S604 : PLAY	ON — OFF
S605 : PAUSE	ON — OFF
S606 : REC	ON — OFF
S607 : REC MUTE	ON — OFF
S608 : MUSIC SEARCH (MS)	ON — OFF
S901 : TIMER	REC — OFF — PLAY
S1001 : POWER	ON — OFF
S1101 : ERASE PREVENT DETECTOR	HOLE — NO HOLE

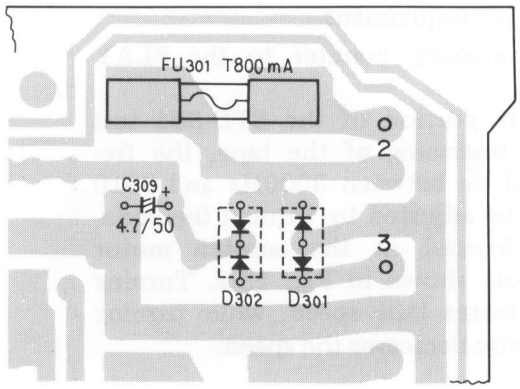
The underlined indicates the switch position.

◀ Measurement point
——— Playback signal route
— — — — Recording signal route

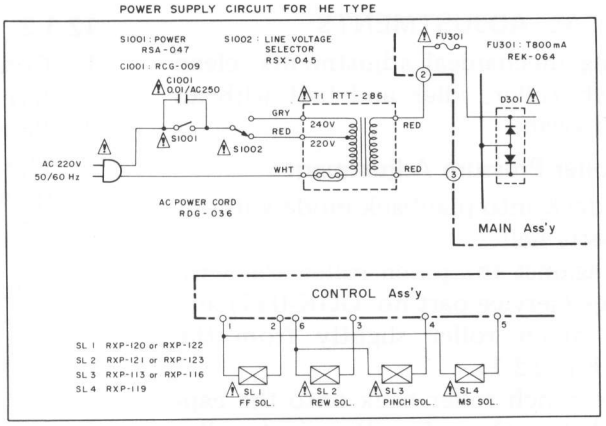
• For HE, H

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.

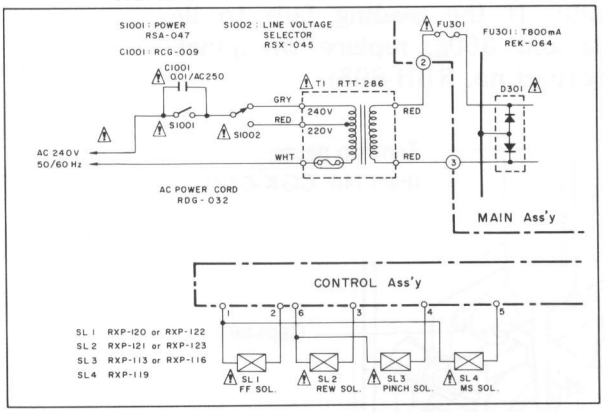
- **For HE, HB, HP types**



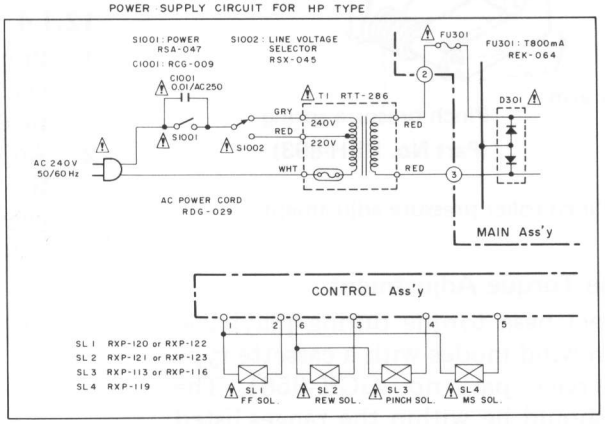
POWER SUPPLY CIRCUIT FOR HE TYPE



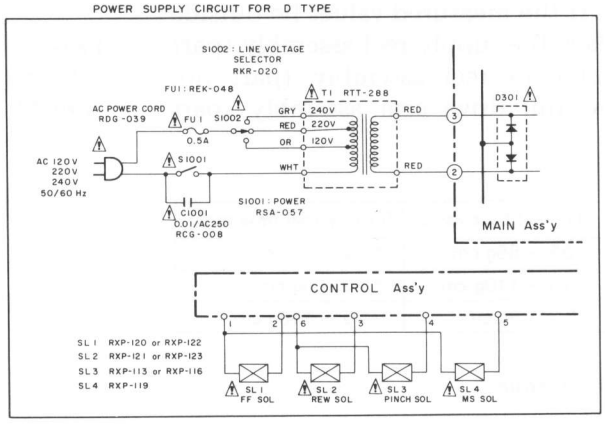
POWER SUPPLY CIRCUIT FOR HB TYPE



POWER SUPPLY CIRCUIT FOR HP TYPE



POWER SUPPLY CIRCUIT FOR D TYPE



12. ADJUSTMENTS

12.1 MECHANICAL ADJUSTMENTS

Prior to starting mechanical adjustments, clean the capstan, pinch roller, idler and belt with an alcohol moistened swab.

12.1.1 Pinch Roller Pressure Adjustment

1. Put the tape deck into playback mode without loading a cassette half.
2. Gently push against the pinch roller arm with a tension gauge (service part no. GGK-047) and separate the pinch roller slightly from the capstan. (See Fig. 12-1).
3. Then ease the pinch roller back onto the capstan, and read the value when the pinch roller starts to rotate. If the reading fails to lie between 200g and 350g, replace the pinch pressure spring (part no. RBH-893).

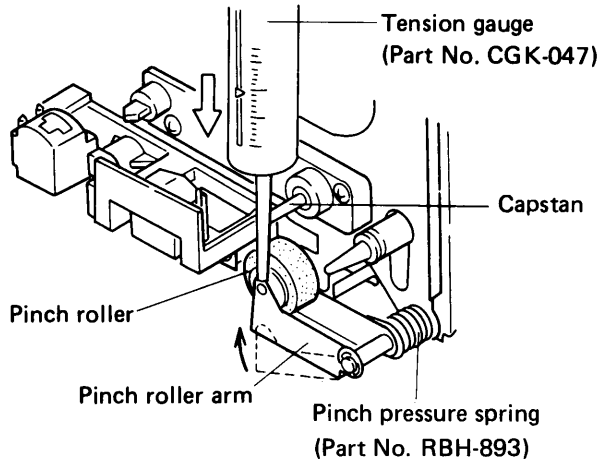


Fig. 12-1 Pinch roller pressure adjustment

12.1.2 Reel Base Torque Adjustment

Measure the reel base torque during playback, fast forward and rewind modes with a cassette type torque meter (service part no. GGK-056). The measured values should lie within the ranges listed below in Table 1. If the measured values lie outside these ranges, replace the supply reel assembly (part no. RXB-377), take-up reel assembly (part no. RXB-360) or the full drive arm assembly (part no. RXB-376).

Table 1

	TU reel base ass'y	Supply reel base ass'y
Playback mode	35 – 55g.cm	* 2 – 5g.cm
Farst forward mode	75 – 110g.cm	* 2 – 5g.cm
Rewind mode	* 2 – 5g.cm	75 – 110g.cm

NOTE:
** denotes back tension torque.*

12.1.3 Tape Speed Adjustment

1. Connect a frequency counter to the PLAY terminals.
2. Play the 3kHz portion of the STD-301 test tape. At the beginning of the tape, the frequency should lie between 3000Hz and 3010 Hz, and may be adjusted by turning the variable resistor located in the capstan motor adjustment hole shown in Fig. 12-2. Turning clockwise increases tape speed, while turning counterclockwise decreases the speed.

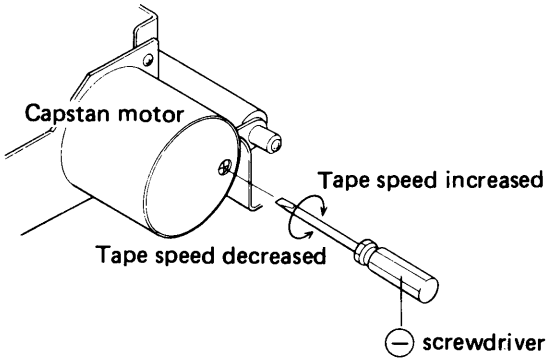


Fig. 12-2 Tape speed adjustment

12.1.4 REC Detector Switch Adjustment

1. Prepare a cassette half with the erasure prevention tabs intact, and one with the tabs broken off.
2. Adjust the record prevention lever (shown by the arrow in Fig. 12-3) by bending so that the lever switch is on when a half without tabs is loaded, and off when a half with tabs is loaded.

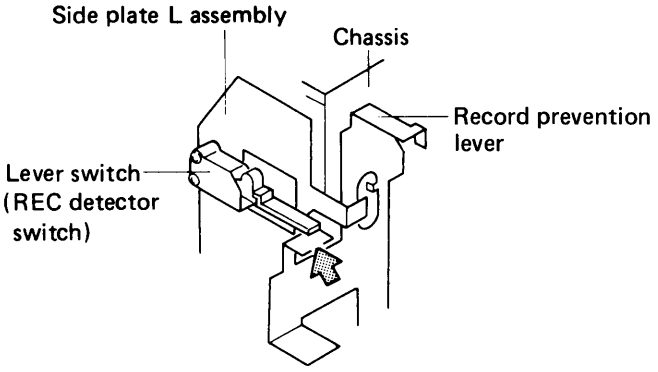


Fig. 12-3 REC detector switch adjustment

12.1.5 FF Solenoid Adjustment

1. Put the deck into fast forward mode.
2. Loosen screw ❶ and adjust the mounting position of the FF solenoid (plunger solenoid F) so that the square hole in the full reel base assembly is flush against the boss of the full drive arm assembly. (See Fig. 12-4)

12.1.6 REW Solenoid Adjustment

1. Put the deck into rewind mode.
2. Loosen screw ❷ and adjust the mounting position of the REW solenoid (plunger solenoid R) so that the square hole in the full reel base assembly is flush against the boss of the full drive arm assembly. (See Fig. 12-4).

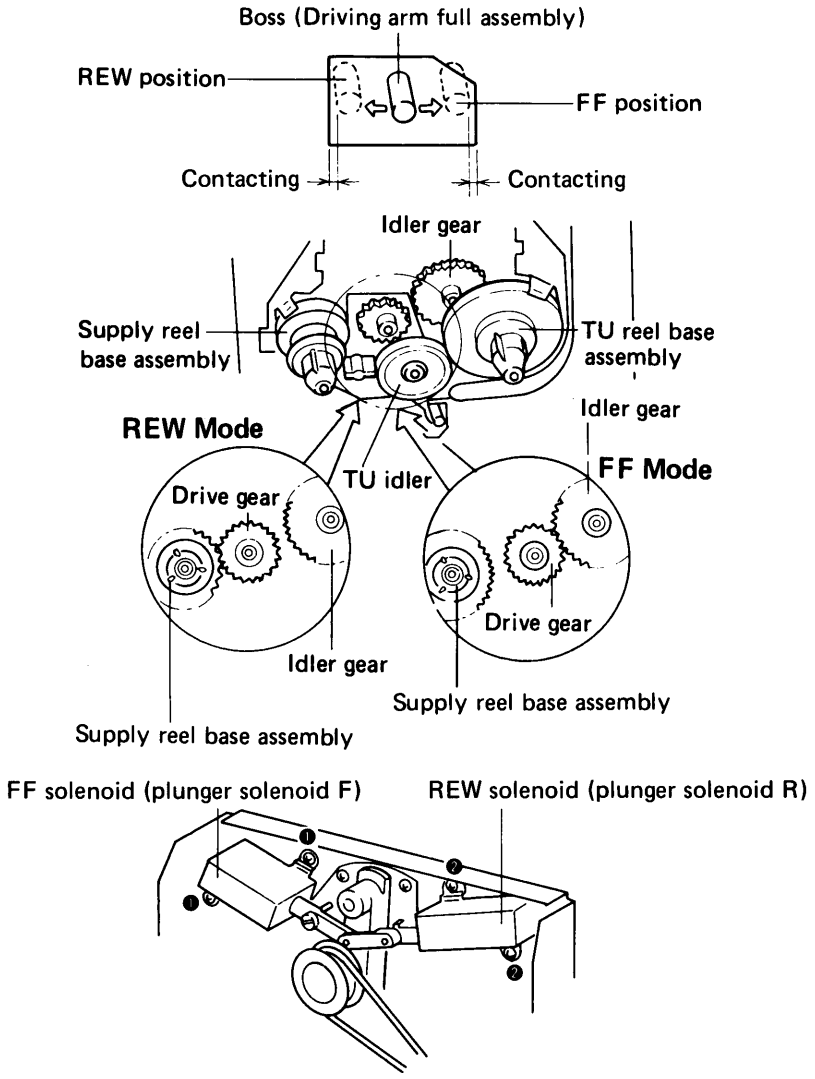


Fig. 12-4 FF and REW solenoid adjustment

12.2 ELECTRICAL ADJUSTMENT

- Check the following points before starting any electrical adjustments.

1. All mechanical adjustments must be completed.
2. Clean the heads and demagnetize the erase head.
3. Level measurements are based on 0dBv = 1V. Connect a 50kΩ dummy resistor (47k~52kΩ) across the OUTPUT terminals.
4. Use the specified test tapes for each adjustment. Although test tapes have both A and B sides, use the side with the lable (side A).

   STD-341A : Playback adjustments
   STD-608A : NORMAL blank tape
   STD-603 : CrO_2 blank tape
   STD-604 : METAL blank tape

5. Prepare the following measuring equipment. AC millivoltmeter, audio oscillator, attenuator, and oscilloscope.
6. Unless otherwise specified, always adjust for both left and right channels.
7. Unless otherwise specified, adjust with the DOLBY NR switch in the OFF position.
8. Let the deck warm up for a few minutes before starting adjustments. Also leave the deck in playback and recording mode respectively for 3 to 5 minutes before starting playback and recording frequency response adjustments.
9. Proceed according to the specified adjustmen sequence. Changing the sequence can preven proper adjustments from being carried out, an subsequently result in loss of performance.

Adjustment sequence

1. DOLBY NR level.
2. Head azimuth
3. Playback level
4. Playback equalization check
5. Level meter check
6. Record/playback frequency response
7. Recording level

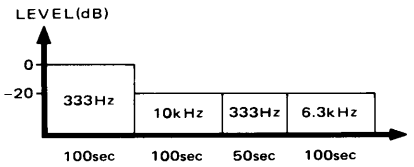


Fig. 12-5 STD-341A test tape

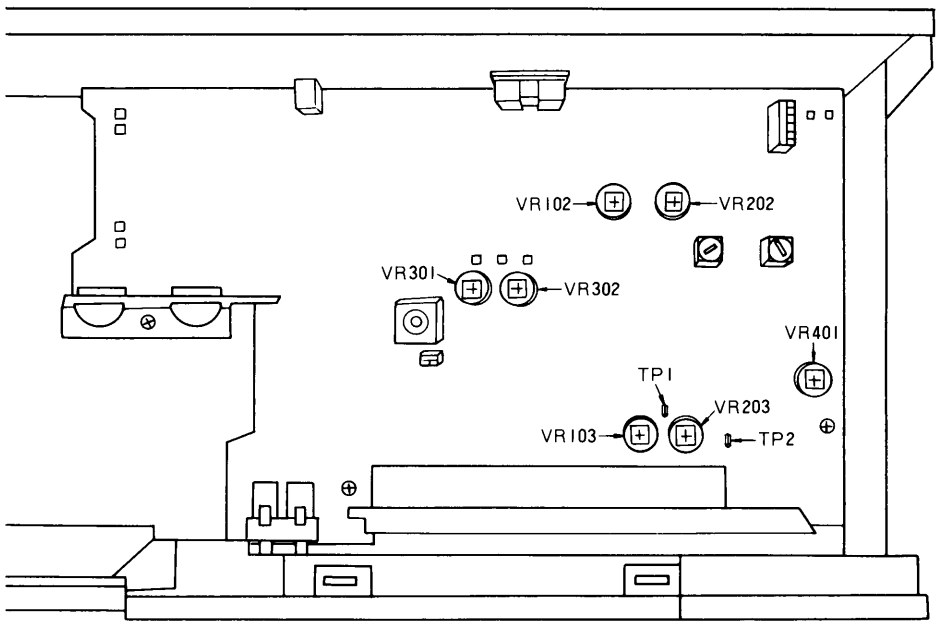


Fig. 12-6 Adjustment points

12.2.1 DOLBY NR Level Adjustment

Settings

AC mV meter ..... Connect to TP1 (L ch) and TP2 (R ch)
Input signal ..... 2kHz, -10dBv (316mV) to LINE INPUT
Tape selector ..... NORM
Mode ..... Record

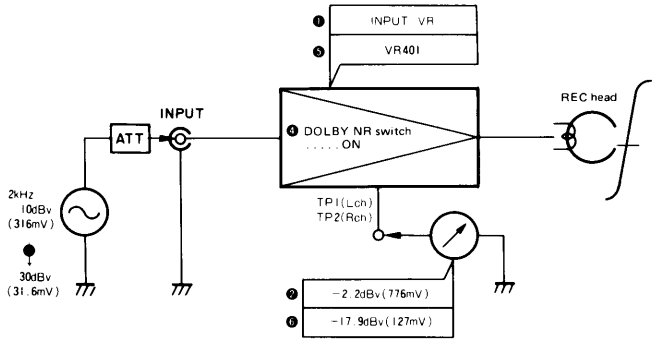


Fig. 12-7 DOLBY NR level adjustment

Procedure

1. Adjust the INPUT level control so that the AC mV meter reads -2.2dBv (776mV).
2. Drop the input signal level to -30dBv by attenuator, and switch the Dolby NR switch ON.
3. Adjust VR401 so that the meter reads -17.9 dBv (127mV).

12.2.2 Head Azimuth Adjustment

Settings

AC mV meter ..... Connect to OUTPUT terminals
Test tape ..... STD-341A (10kHz, -20dB)
Tape selector ..... NORM
Mode ..... Playback
VR102 and VR202 ..Turn clockwise to maximum position

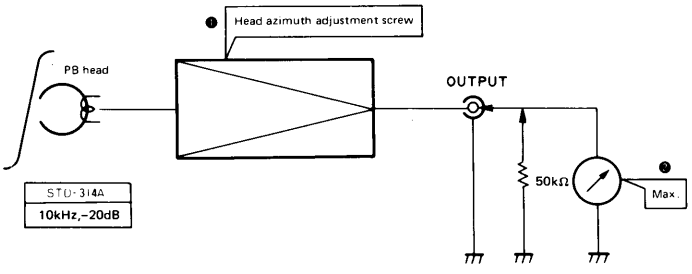


Fig. 12-8 Head azimuth adjustment

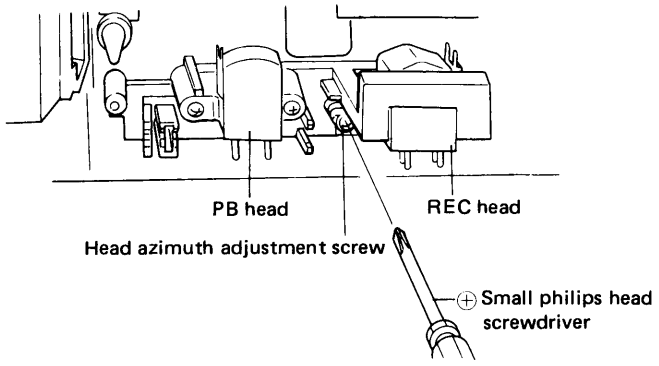


Fig. 12-9 Head azimuth adjustment

Procedure

Adjust the azimuth adjustment screw for maximum AC mV meter reading. (Lock the screws with screw lock after completing the adjustment).

12.2.3 Playback Level Adjustment

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

Settings

AC mV meter ..... Connect to TP1 (L ch) and TP2 (R ch)
Test tape STD-341A (333Hz, 0dB)
Tape selector ..... NORM
Mode ..... Playback

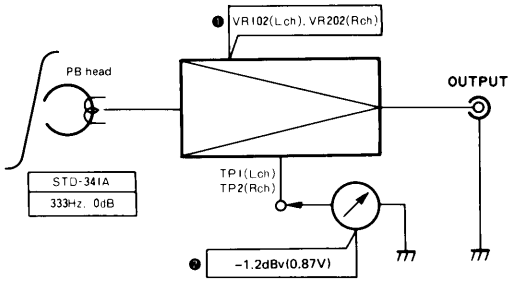


Fig. 12-10 Playback level adjustment

Procedure

Adjust VR102 (L ch) and VR202 (R ch) so that the meter reads of -1.2dBv (0.87V).

12.2.4 Playback Equalization Check

Settings

AC mV meter ..... Connect to OUTPUT terminals
Test tape ..... STD-341A (333Hz, -20dB) (6.4kHz, -20dB)
Tape selector ..... NORM
Mode ..... Playback

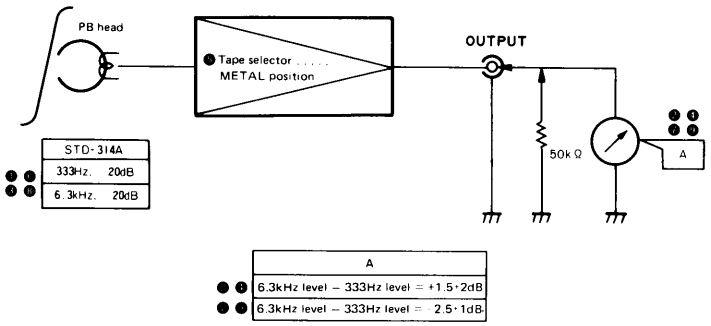


Fig. 12-11 Playback equalization check

Procedure

1. Play the 333Hz, -20dB portion and record the AC mV meter reading.
2. Then play the 6.3kHz, -20dB portion, and check that the meter reading lies within +1.5 ±2dB of the reading obtained in step 1 above.
3. Switch the tape selector to METAL, play the 333Hz, -20dB portion again, and record the meter reading.
4. Then play the 6.3kHz, -20dB portion again, and check that the meter reading lies within -2.5±1dB of the reading obtained in step 3.

12.2.5 Level Meter Check

Settings

AC mV meter ..... Connect to TP1 (L ch) and TP2 (R ch)
Input signal ..... 333Hz, -10dBv (316mV) to INPUT terminals
Mode ..... Record

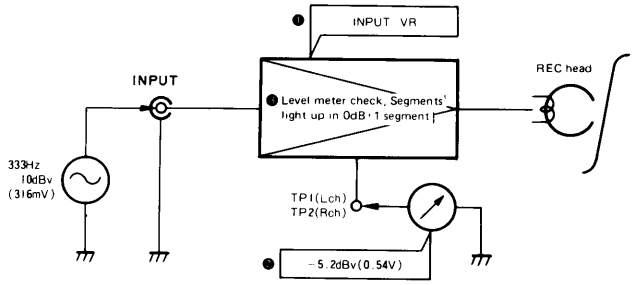


Fig. 12-12 Level meter check

Procedure

Adjust the INPUT level control so that the meter reads of -5.2dBv (0.54V), and check that the level meter segments light up in a 0dB±1 segment range.

12.2.6 Record/Playback Frequency Response Adjustment

Settings

AC mV meter ..... Connect to OUTPUT terminals
Input signal ..... 333Hz, -30dBv (31.6mV) to LINE INPUT terminals
Test tape STD-608A (STD-603, STD-604)
Tape selector ..... NORM (CrO_2, METAL)
Mode ..... Record

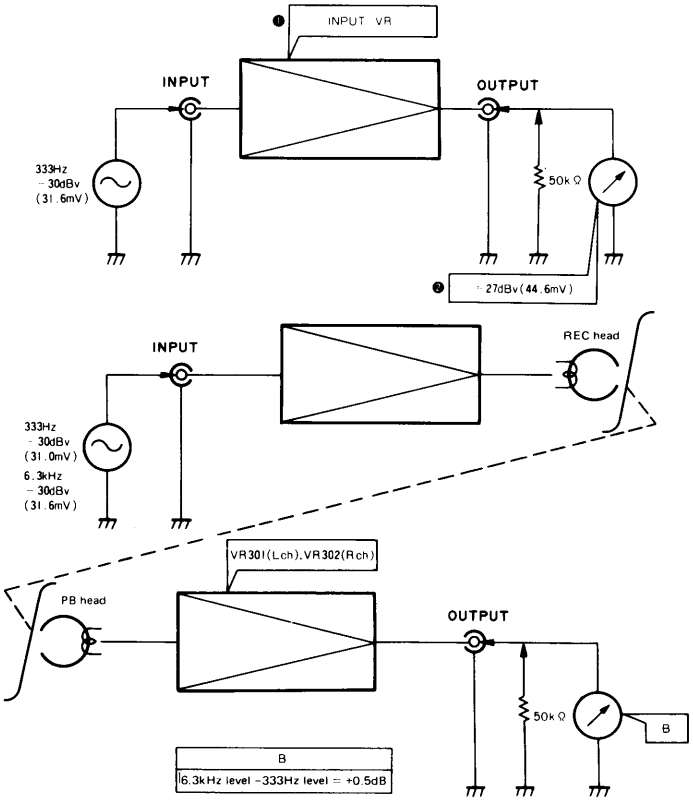


Fig. 12-13 Record/playback frequency response adjustment

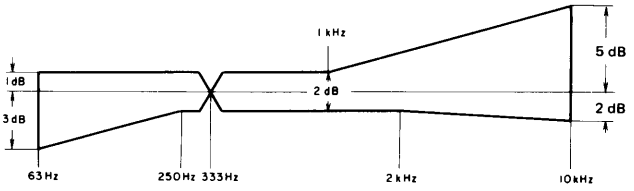
Procedure

1. Adjust the INPUT level control so that the meter reads 27dBv (44.6mV).
2. Record the 333Hz, -30dBv and 6.3kHz, -30dBv signals, and adjust VR301 (L ch) and VR302 (R ch) so that the difference in the playback output signal level with the 333Hz level as the reference level is +0.5dB.
3. Change the tape selector and DOLBY NR switch positions (See Fig. 13-10), and check that the frequency response is satisfactory.

Playback Frequency Response

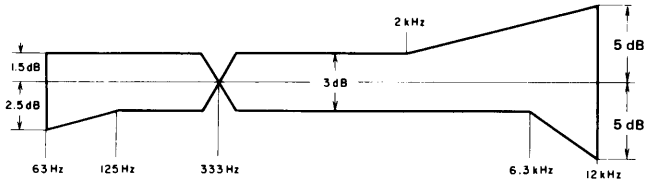
Test tape STD-341A
Tape selector ..... NORM
Dolby NR switch .....OFF

NOTE:
Due to "edge effect", compensate the right channel by -0.5dB at 125Hz and -1dB at 63Hz.

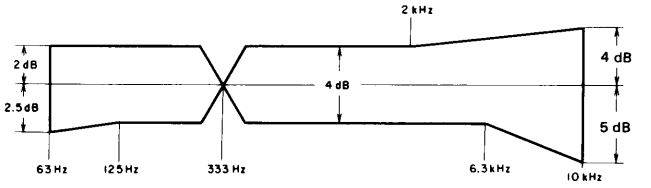


Overall Frequency Response

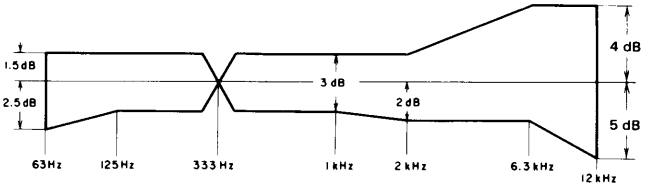
Tast tape STD-608A
Tape selector ..... NORM
DOLBY NR switch ..... OFF



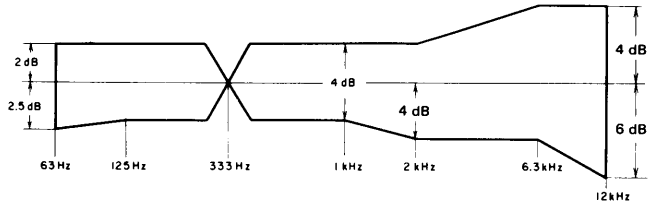
Tast tape STD-608A
Tape selector ..... NORM
DOLBY NR switch ..... ON



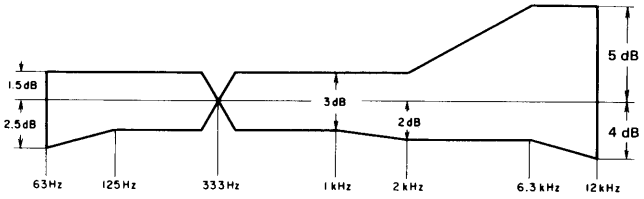
Tast tape STD-603
Tape selector ..... CrO_2
DOLBY NR switch ..... OFF



Tast tape STD-603
Tape selector ..... CrO_2
DOLBY NR switch ..... ON



Tast tape STD-604
Tape selector ..... METAL
DOLBY NR switch ..... OFF



Tast tape STD-604
Tape selector ..... METAL
DOLBY NR switch ..... ON

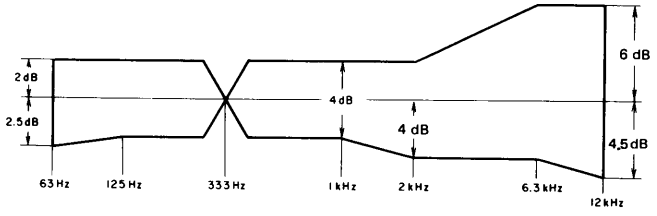


Fig. 12-14 Frequency response

12.2.7 Recording Level Adjustment

Settings

AC mV meter ..... Connect to TP1 (L ch) and TP2 (R ch)
Input signal ..... 333Hz, -10dBv (316mV) to LINE INPUT terminals
Test tape STD-608A (STD-603, STD-604)
Tape selector ..... NORM (CrO_2, METAL)
Mode ..... Record

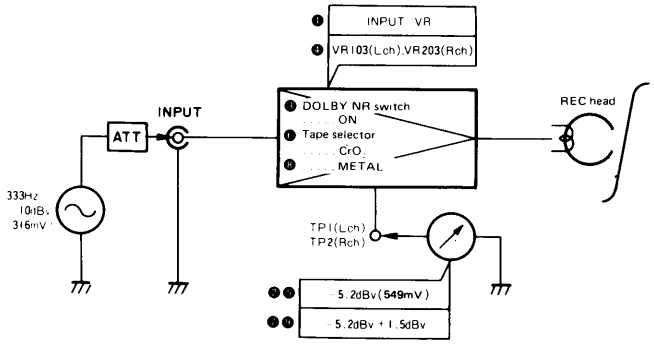


Fig. 12-15 Recording level adjustment

Procedure

1. Adjust the INPUT level control so that the meter reads -5.2dBv (549mV).
2. Switch the DOLBY NR switch ON.
3. Record the 333Hz, -10dBv signal on the STD-608A test tape. Then adjust VR103 (L ch) and VR203 (R ch) so that the meter reads of -5.4dBv (549mV) when the recorded signal is played back.
4. Switch the tape selector to the CrO_2 position and repeat step 3 using the STD-603 test tape. The playback output level should lie within -5.2dBv±1.5dB.
5. Then switch to the METAL position and repeat using the STD-604 test tape. The playback output level should again lie within the -5.2dBv ±1.5dBv range.

12. RÉGLAGE

12.1 RÉGLAGES MÉCANIQUES

Avant de commencer le réglage mécanique, nettoyer l'entraîneur, le rouleau de serrage, le pignon libre et la courroie à l'aide d'un tampon imbibé d'alcool.

12.1.1 Réglage de la pression du rouleau de serrage

1. Faire marcher le magnétophone en mode de lecture sans insérer de cassette.
2. Pousser doucement contre le bras du rouleau de serrage avec un étalon de tension (élément d'entretien No. GGK-047) et éloigner un peu le rouleau de l'entraîneur. (voir Fig. 12.1).
3. Puis relâcher le rouleau de serrage vers l'entraîneur, et lire l'indication lorsque le rouleau se met à tourner. Si la lecture n'atteint pas entre 200 et 350 gr, remplacer le ressort de serrage (élément No. RBH-893).

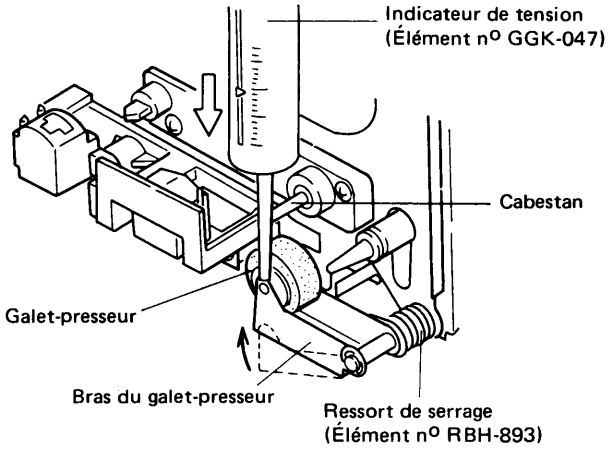


Fig. 12.1 Réglage de la pression du rouleau de serrage.

12.1.2 Réglage du couple de torsion à la base du rouleau

Mesurer le couple de torsion à la base du rouleau dans le mode lecture et dans le mode enroulement et déroulement rapides à l'aide d'un mesureur de couple de tension en forme de cassette (élément No GGK-056). La valeur mesurée devrait se situer à l'intérieur des normes de la liste ci-dessous, table 1. Si les valeurs dépassent ou sont inférieures, remplacer l'ensemble du rouleau d'alimentation (élément No. RXB-377), enlever l'ensemble de rouleau (élément No. RXB-360) ou l'ensemble du bras d'entraînement (élément No. RXB-376).

Tableau 1

	Ensemble support de bobine TU (réception)	Ensemble support de bobine débitrice
Mode de lecture	35 – 55g.cm	* 2 – 5g.cm
Mode d'avance rapide	75 – 110g.cm	* 2 – 5g.cm
Mode de rebobinage	* 2 – 5g.cm	75 – 110g.cm

REMARQUE:
**montre un couple de tension de retour.*

12.1.3 Réglage de la vitesse de défilement de la bande

1. Brancher un mesureur de fréquence aux bornes de PLAY.
2. Faire lire la portion de 3kHz de la bande d'essai STD-301. Au commencement de la bande, la fréquence devrait être de 3.000 et 3.010Hz; elle peut être réglée en tournant la résistance variable qui se trouve dans le moteur d'entraînement lequel est équipé d'un trou pour le réglage (voir Fig. 12.2). En tournant vers la droite, la vitesse de défilement est accrue, vers la gauche elle est diminuée.

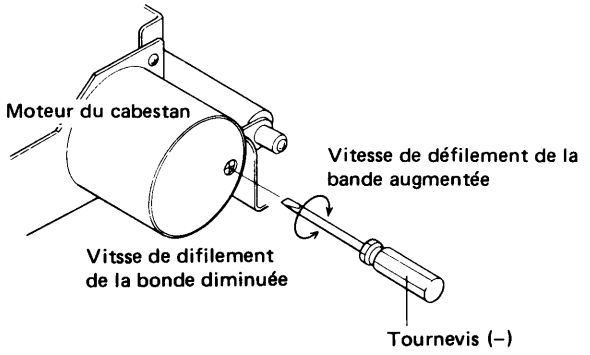


Fig. 12.2 Réglage de la vitesse de défilement de la bande

12.1.4 Réglage du commutateur de détection REC

1. Préparer une cassette munie de son onglet, et une autre où les onglets interdisant l'effacement ont été cassés.
2. Régler le levier interdisant l'effacement (montré par une flèche sur la Fig. 12-3) en le pliant de telle sorte que le contact soit ON lorsque l'onglet est enlevé, et que le contact soit OFF lorsque l'onglet existe.

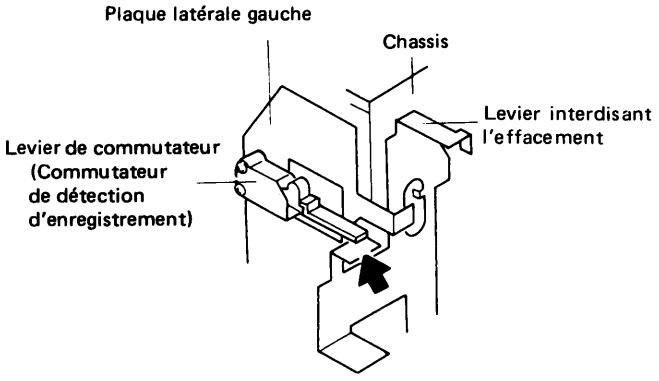


Fig. 12-3 Réglage du commutateur de détection REC

12.1.5 Réglage du solenoïde FF

1. Mettre le magnétophone en mode déroulement rapide.
2. Dévisser la vis 1 et régler la position de montage du solénoïde FF (solénoïde de plongeur F) de telle sorte que le trou carré de l'ensemble du rouleau de base touche l'embossement de l'ensemble du bras d'entraînement. (voir Fig. 12.4)

12.1.6 Réglage du solenoïde de REW

1. Mettre le magnétophone en mode de rembobinage.
2. Désserrer la vis 2 et régler la position de montage du solénoïde de REW (solénoïde de plongeur R) de telle sorte que le trou carré de l'ensemble de rouleau de base touche l'embossement de l'ensemble du bras d'entraînement. (voir Fig. 12.4).

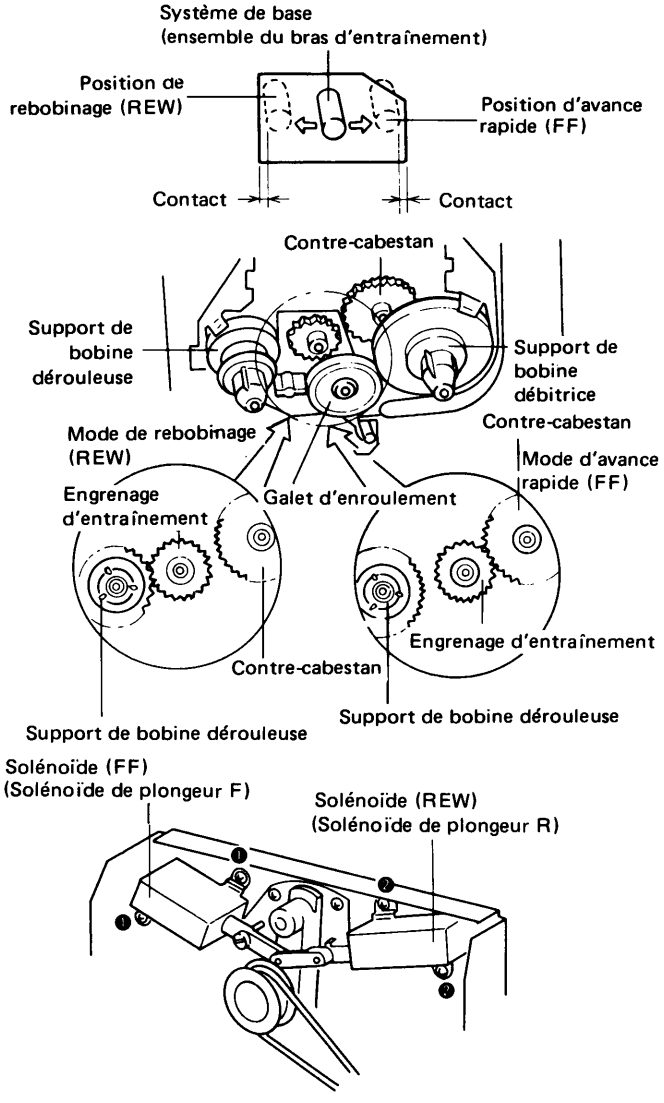


Fig. 12-4 Réglage du solénoïde FF et REW

12.2 RÉGLAGES ÉLECTRIQUES

- Vérifier les points suivants avant de faire aucun réglage électrique.

1. Tous les réglages mécaniques doivent être terminés.
2. Nettoyer les têtes et démagnétiser la tête d'effacement.
3. Les mesures de niveau sont basées sur 0dBv = 1V. Brancher une fausse résistance de 50kΩ (47k~52kΩ) sur les bornes de sortie.
4. Utiliser les bandes d'essai spécifiées pour chaque réglage. Bien que ces bandes aient deux côtés, A et B, utiliser le côté identifié par A.

   STD-341A : Réglage de lecture (PLAYBACK)
   STD-608A : Bande vierge NORMALE
   STD-603 : Bande vierge CrO_2
   STD-604 : Bande vierge MÉTAL
5. Préparer les instruments de mesure suivants: Millivoltmètre AC, oscillateur audio, atténuateur et oscilloscope.
6. Sauf indication contraire, régler toujours les canaux droite et gauche.
7. Sauf indication contraire, régler avec le bouton DOLBY NR en position OFF.
8. Laisser chauffer le magnétophone pendant quelques minutes avant de faire un réglage. Également, faire marcher le magnétophone en mode lecture et enregistrement respectivement de 3 à 5 minutes avant d'opérer les réglages de réponse de fréquence de lecture et d'enregistrement.
9. Procéder en suivant la séquence spécifiée de réglage. Un changement dans la séquence peut empêcher un réglage correct d'être fait et peut produire, par la suite, une perte de qualité.

Séquence de réglage

1. Niveau de DOLBY NR
2. Azimuth de têtes
3. Niveau de lecture
4. Vérification du filtrage de lecture
5. Vérification du niveau de mesureur
6. Réponse de fréquence enregistrement/lecture
7. Niveau d'enregistrement

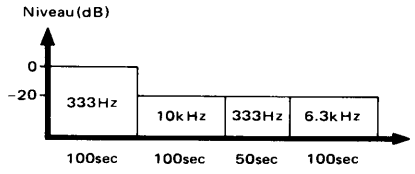


Fig. 12-5 Bande d'essai STD-341A

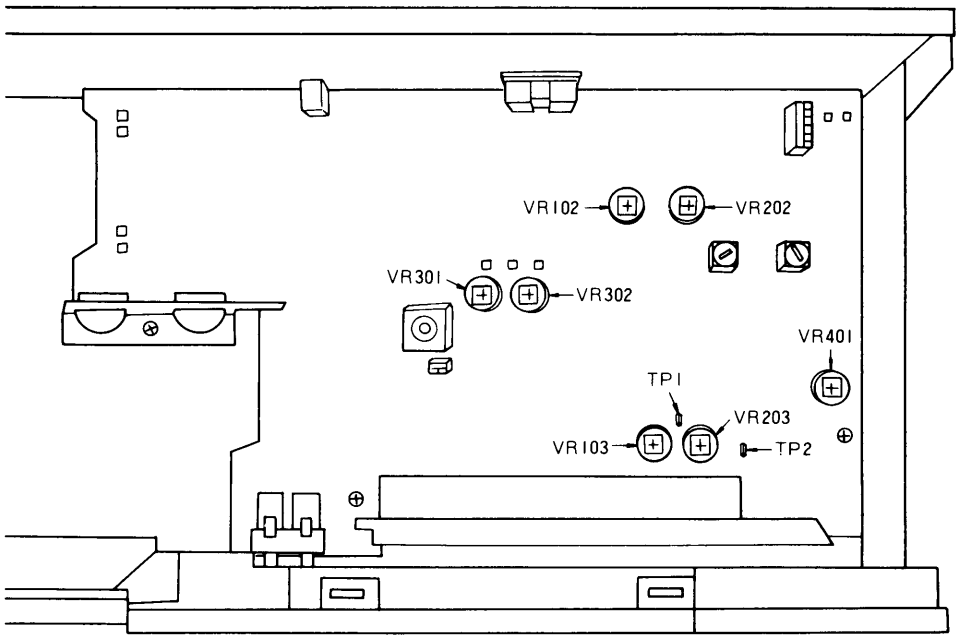


Fig. 12.6 Points de réglage

12.2.1 Réglage du niveau de DOLBY NR.

Positions

Millivoltmètre AC . . . Brancher sur TP1 (canal gauche) et TP2 (canal droite)
Signal d'entrée . . . . . 2kHz, - 10dBv (316mV) sur LINE INPUT
Sélecteur de bande . . NORM
Mode . . . . . Enregistrement

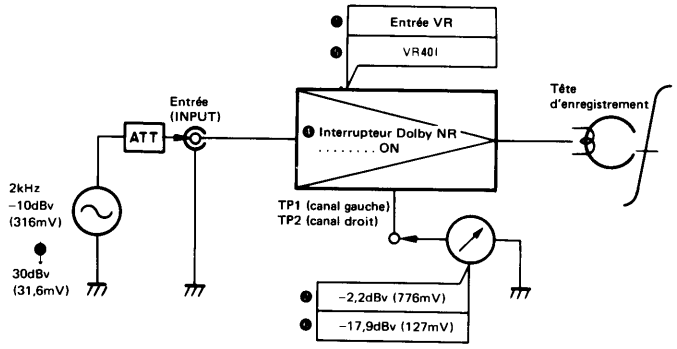


Fig. 12.7 Réglage du niveau de DOLBY NR

Marche à suivre

1. Ajuster le contrôle de niveau d'entrée de telle sorte que le millivoltmètre AC indique - 2,2dBv (776mV).
2. Faire descendre le niveau de signal d'entrée à - 30dBv au moyen de l'atténuateur, et positionner le commutateur de DOLBY NR sur ON.
3. Régler VR401 de telle sorte que le mesureur indique - 17,9dBv (127mV).

12.2.2 Réglage de l'azimuth de têtes

Positions

Millivoltmètre AC . . . Brancher sur les bornes de sortie
Bande d'essai . . . . . STD-341A (10kHz, - 20dB)
Sélecteur de bande . . NORM
Mode . . . . . Lecture
VR102 et VR202 . . . Tourner vers la droite pour position maximum

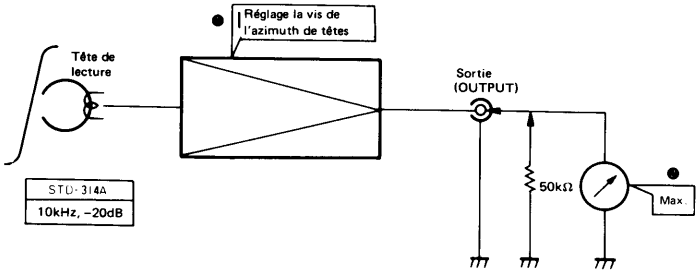


Fig. 12.8 Réglage de l'azimuth de têtes

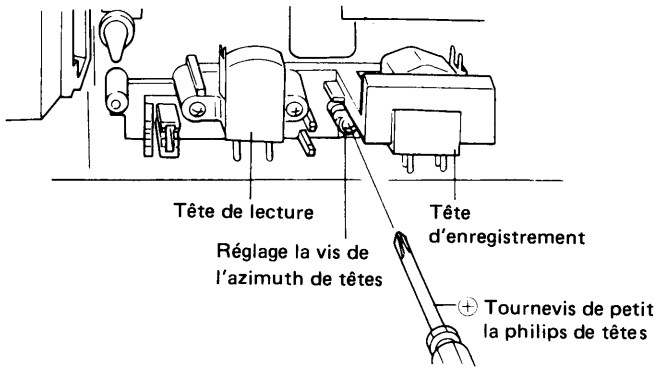


Fig. 12.9 Réglage de l'azimuth de têtes

Marche à suivre

Régler la vis de réglage d'azimuth pour une indication maximum du millivoltmètre AC. (Bloquer les vis avec du vernis de blocage une fois le réglage terminé.)

12.2.3 Réglage du niveau de lecture

Comme ce réglage détermine le niveau du DOLBY NR pendant la lecture, il doit être fait avec précision.

Positions

Millivoltmètre AC . . . Brancher sur TP1 (canal gauche) et TP2 (canal droite)
Bande d'essai STD-341A (333Hz, 0dB)
Sélecteur de bande . . NORM
Mode . . . . . Lecture

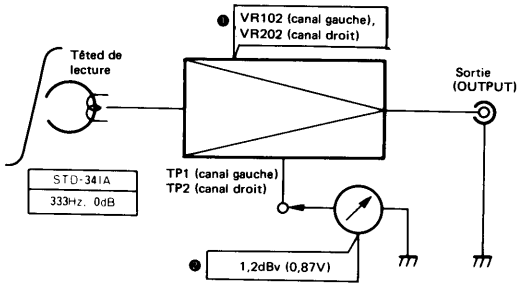


Fig. 12.10 Réglage de niveau de lecture

Marche à suivre

Régler VR102 (canal gauche) et VR202 (canal droite) de telle sorte que le mesureur indique - 1,2dBv (0,87V).

12.2.4 Vérification du filtre de lecture

Positions

Millivoltmètre AC . . . Brancher les sur bornes de sortie
Bande d'essai . . . . . STD-341A (333Hz, -20dB) (6,4kHz, -20dB)
Sélecteur de bande . . NORM
Mode . . . . . Lecture

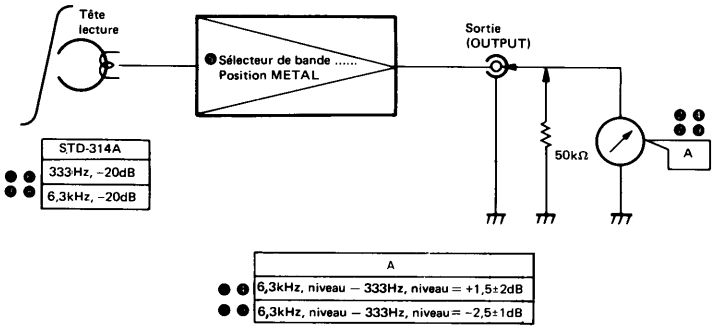


Fig. 12.11 Vérification du filtre de lecture

Marche à suivre

1. Faire marcher la portion de 333Hz, -20dB et enregistrer les lectures du millivoltmètre AC.
2. Ensuite, faire marcher la portion de 6,3kHz, -20dB, et vérifier que les indications du mesureur sont proches de +1,5 ±2dB de la lecture faite en 1 ci-dessus.
3. Commuter le sélecteur de bande à METAL, faire marcher à nouveau la portion 333Hz, -20dB et enregistrer l'indication du mesureur.
4. Ensuite, repasser la portion 6,3kHz, -20dB et vérifier que les indications du mesureur sont proches de -2,5±1dB de la lecture faite en 3 ci-dessus.

12.2.5 Vérification du niveau de mesureur

Positions

Millivoltmètre AC . . . Brancher sur TP1 (canal gauche) et TP2 (canal droite)
Signal d'entrée . . . . . 333Hz, -10dBv (316mV) aux bornes d'entrée
Mode . . . . . Enregistrement

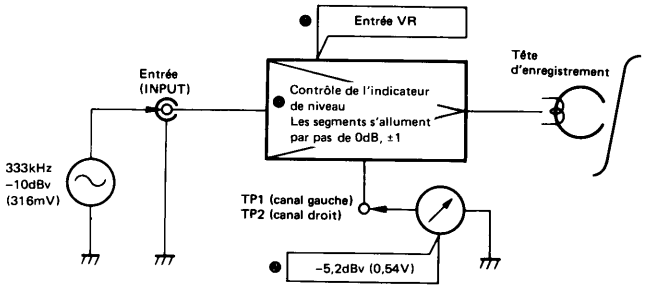


Fig. 12-12 Vérification du niveau de mesureur

Marche à suivre

Ajuster le contrôle de niveau d'entrée de telle sorte que le mesureur indique -5,2dBv (0,54V) et vérifier que le segment du mesureur de niveau s'allume dans la bande de 0dB±1.

12.2.6 Réglage de réponse de fréquence enregistrement/lecture

Positions

Millivoltmètre AC . . . Brancher sur les bornes de sortie
Signal d'entrée . . . . . 333Hz, -30dBv (31,6mV) aux bornes de LINE INPUT
Bande d'essai STD-608A (STD-603, STD-604)
Sélecteur de bande . . NORM (CrO_2, METAL)
Mode . . . . . Enregistrement

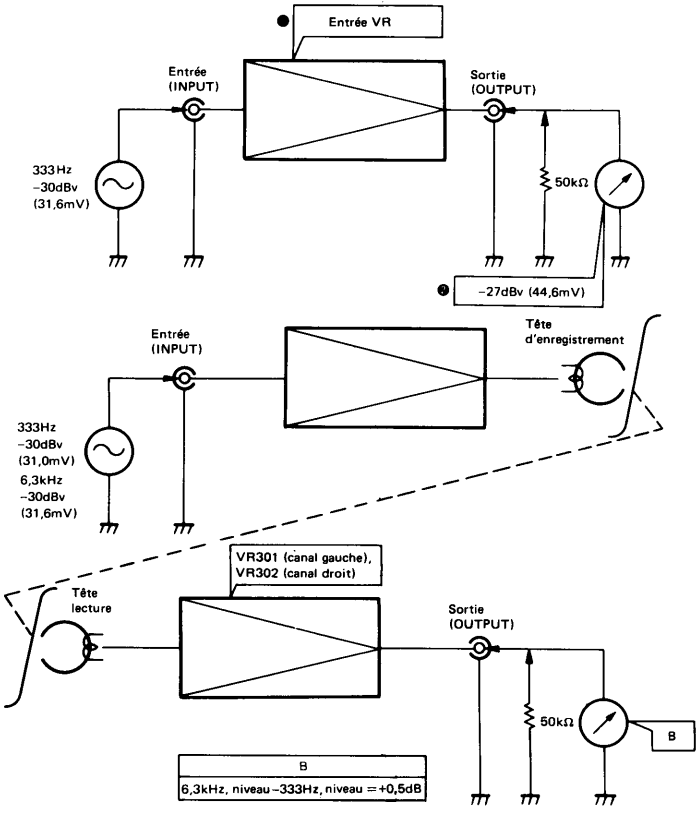


Fig. 12-13 Réglage de réponse de fréquence enregistrement/lecture

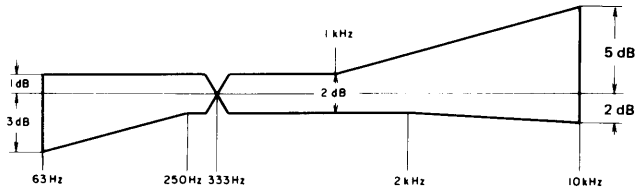
Marche à suivre

1. Ajuster le contrôle de niveau d'entrée de telle sorte que le mesureur indique 27dBv (44,6 mV).
2. Enregistrer les signaux de 333Hz, -30dBv et 6,3kHz, -30dBv et ajuster le VR301 (canal gauche) et le VR302 (canal droite) de telle sorte que la différence du niveau du signal de sortie avec le niveau de 333Hz pris comme référence est de +0,5dB.
3. Changer les positions de comutateurs de sélecteur de bande et de DOLBY NR, et vérifier que la réponse de fréquence est satisfaisante.

Réponse de fréquence de lecture

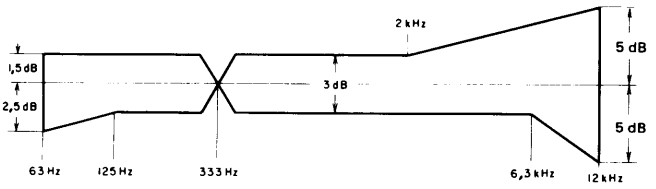
Bande d'essai STD-341A
Bande d'essai . . . . . NORM
Commutateur de DOLBY NR . . . . . OFF

REMARQUE:
En raison d'un effet d'émoussement, compenser le canal droit par -0,5dB à 125Hz et -1dB à 63Hz.

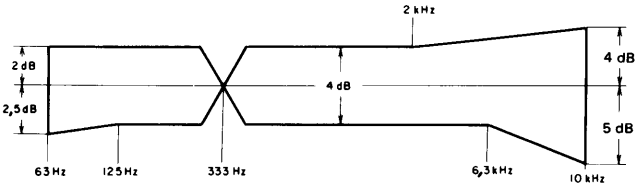


Réponse de fréquence générale

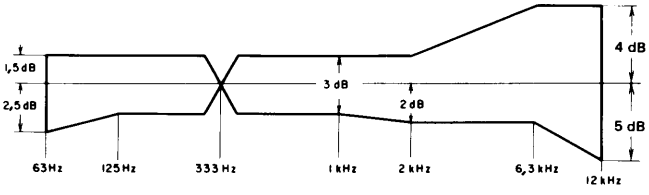
Bande d'essai STD-608A
Sélecteur de bande . . . . . NORM
Commutateur de DOLBY NR . . . . . OFF



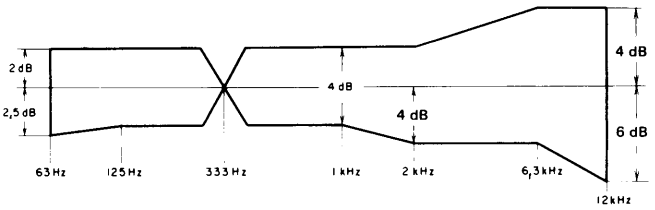
Bande d'essai STD-608A
Sélecteur de bande . . . . . NORM
Commutateur de DOLBY NR . . . . . ON



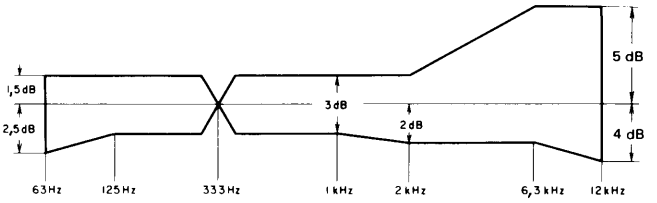
Bande d'essai STD-603
Sélecteur de bande . . . . . CrO_2
Commutateur de DOLBY NR . . . . . OFF



Bande d'essai STD-603
Sélecteur de bande ..... CrO_2
Commutateur de DOLBY NR ..... ON



Bande d'essai STD-604
Sélecteur de bande ..... METAL
Commutateur de DOLBY NR ..... OFF



Bande d'essai STD-604
Sélecteur de bande ..... METAL
Commutateur de DOLBY NR ..... ON

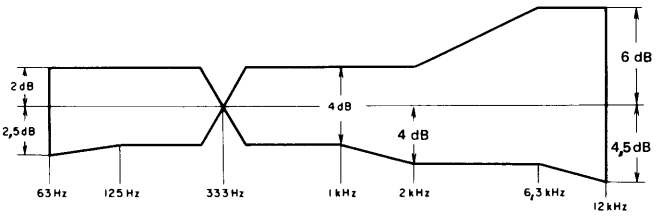


Fig. 12-14 Réponse de fréquence

12.2.7 Réglage du niveau d'enregistrement

Positions

Millivoltmètre AC ... Brancher sur TP1 (canal gauche) et TP2 (canal droite)
Signal d'entrée ..... 333Hz, -10dBv (316mV) sur bornes LINE INPUT
Bande d'essai STD-608A (STD-603, STD-604)
Sélecteur de bande .. NORM (CrO_2, METAL)
Mode ..... Enregistrement

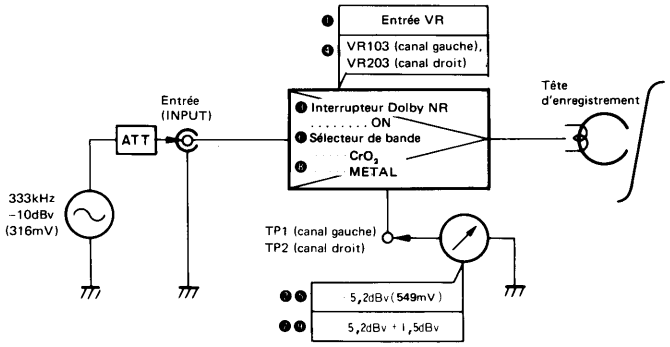


Fig. 12-15 Réglage du niveau d'enregistrement

Marche à suivre

1. Ajuster le contrôle de niveau d'entrée de telle sorte que le mesureur indique -5,2dBv (549 mV).
2. Commuter le DOLBY NR. (ON).
3. Enregistrer le signal de 333Hz, -10dBv sur la bande STD-608A. Puis ajuster VR103 (canal gauche) et VR203 (canal droite) de telle sorte que le mesureur indique -5,4dBv (549mV) quand le signal enregistré est passé en lecture.
4. Commuter le sélecteur de bande sur la position CrO_2 et répéter le No. 3 en utilisant la bande d'essai STD-603. Le niveau de sortie de lecture devrait se trouver proche de -5,2dBv±1,5dB.
5. Puis, commuter à la position METAL et répéter l'opération en utilisant la bande d'essai STD-604. Le niveau de sortie de lecture devrait se trouver proche de -5,3dBv±1,5dBv.

12. AJUSTE

12.1 AJUSTES MECÁNICOS

Antes de iniciar los ajustes mecánicos, limpiar el eje de arrastre, rodillo de presión, polea loca y correa con un palillo de algodón humecido en alcohol.

12.1.1 Ajuste del rodillo de presión

1. Establecer el magnetófono en el modo de reproducción sin cargar ningún casete.
2. Presionar con cuidado el brazo del rodillo de presión con un calibrador de tensión (parte de servicio no. GGK-047) y separar ligeramente el rodillo de presión del eje de arrastre. (ver la Fig. 12-1.)
3. Entonces, aflojar el rodillo de presión al eje de arrastre y leer el valor cuando el rodillo de presión empieza a girar. Si la lectura indica entre 200g y 350g, reemplazar el muelle de presión del rodillo (parte no. RBH-893).

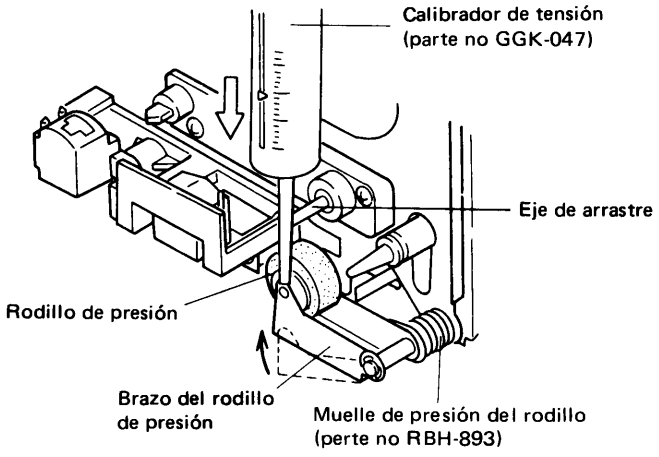


Fig. 12-1 Ajuste del rodillo de presión

12.1.2 Ajuste del par de torsión de la base del carrete

Medir el par de torsión de la base del carrete durante la reproducción, avance rápido y rebobinado con un medidor del par torsor tipo casete (parte de servicio no. GGK-056). Los valores medidores deben indicar dentro de los márgenes enumerados a continuación en la tabla 1. Si los valores medidos indican dentro de estos márgenes, reemplazar el ensamble del carrete suministrador (parte no. RXB-377), ensamble del carrete de arrastre (parte no. RXB-360) o ensamble del brazo impulsor (parte no. RXB-376).

Tabla 1

	Conjunto de la base del carrete de arrestre	Conjunto de la base del carrete de suministro
Modo de de reproducción	35 – 55g.cm	* 2 – 5g.cm
Modo de de avance rápido	75 – 110g.cm	* 2 – 5g.cm
Modo de de rebobinado	* 2 – 5g.cm	75 – 110g.cm

NOTA:

** indica par de torsión de contratensión.*

12.1.3 Ajuste de la velocidad de la cinta

1. Conectar un frecuencímetro a los terminales de reproducción (PLAY).
2. Reproducir la parte de 3kHz de la cinta de pruebas STD-301. Al principio de la cinta, la frecuencia debe de ser de 3000Hz a 3010Hz, y podrá ajustarse girando el resistor variable, situado en el orificio de ajuste del motor del eje de arrastre mostrado en la figura 12-2. Al girarlo hacia la derecha se aumenta la velocidad de la cinta, y al girarlo hacia la izquierda se reduce.

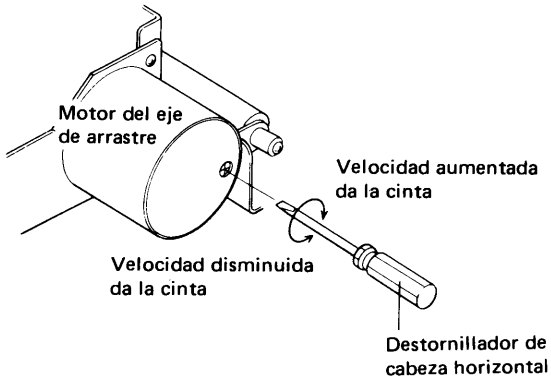


Fig. 12-2 Ajuste de la velocidad de la cinta

12.1.4 Ajuste del detector de grabación (REC)

1. Preparar un casete con las lengüetas protectoras contra borrado intactas, y otro con las lengüetas rotas.
2. Ajustar la palanca autiborrado (mostrada por la flecha en la figura 12-3) doblándola de modo que el interruptor de la palanca esté activado cuando se carga el casete sin lengüetas, y desactivado cuando se carga el casete con lengüetas.

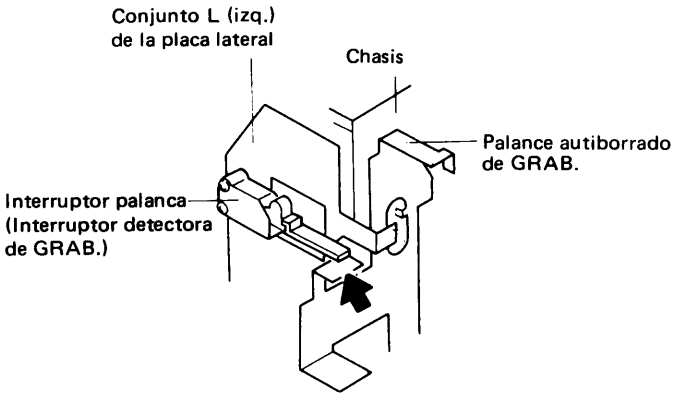


Fig. 12-3 Ajuste del detector de grabación (REC)

12.1.5 Ajuste del solenoide de avance rápido (FF)

1. Establecer el magnetófono en el modo de avance rápido.
2. Aflojar el tornillo 1 y ajustar la posición de montaje del solenoide de FF (solenoide de núcleo móvil F) de modo que el orificio cuadrado del ensamble de la base del carrete quede empotrada en el saliente del ensamble del brazo impulsor. (ver Fig. 12-4)

12.1.6 Ajuste del solenoide de rebobinado (REW)

1. Establecer el magnetófono en el modo de rebobinado.
2. Aflojar el tornillo 2 y ajustar la posición de montaje del solenoide de REW (solenoide de núcleo móvil R) de modo que el orificio cuadrado del ensamble de la base del carrete quede empotrada en el saliente del ensamble del brazo impulsor. (ver la Fig. 12-4)

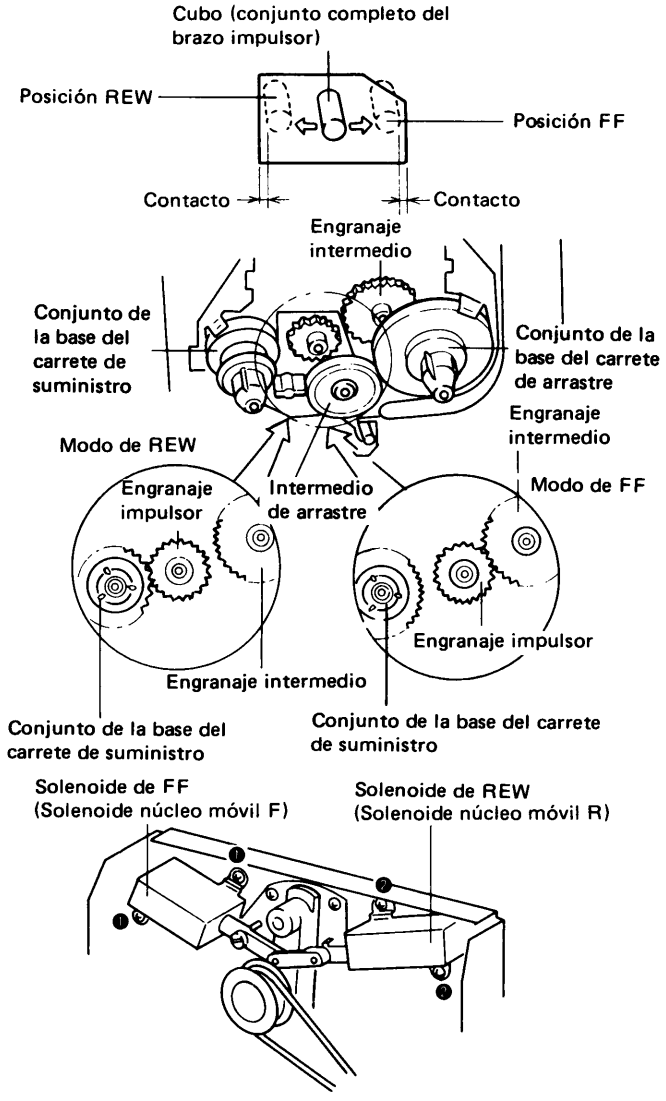


Fig. 12-4 Ajuste de los solenoides de FF y REW

12.2 AJUSTES ELÉCTRICOS

- Comprobar los puntos siguientes antes de empezar los ajustes eléctricos.

1. Deben estar terminados todos los ajustes mecánicos.
2. Limpiar las cabezas y desmagnetizar la cabeza de borrado.
3. Las mediciones de nivel se basan en 0dBv = 1V. Conectar un resistor ficticio de 50K ohmios (47K~52K ohmios) entre los terminales de salida (OUTPUT).
4. Emplear las cintas de pruebas especificadas para cada ajuste. Aunque las cintas de pruebas tienen los lados A y B, utilizar el lado de la etiqueta (lado A).

   STD-341 : Ajustes de la reproducción
   STD-608A : Cinta en blanco NORMAL
   STD-603 : Cinta en blanco de CrO_2
   STD-604 : Cinta en blanco de METAL
5. Preparar el siguiente equipo de medición: Un milivoltímetro de CA, oscilador de audio, atenuador, y un osciloscopio.
6. A menos que se especifique lo contrario, ajustar siempre los canales izquierdo y derecho.
7. A menos que se especifique lo contrario, efectuar el ajuste con el interruptor DOLBY NR en la posición OFF.
8. Dejar precalentar el magnetófono durante algunos minutos antes de iniciar los ajustes. Dejar también el magnetófono en los modos de reproducción y de grabación, respectivamente, durante 3 a 5 minutos antes de iniciar los ajustes de la respuesta en frecuencia de reproducción y de grabación.
9. Proceder de acuerdo con la secuencia de ajuste especificada. Si se cambia la secuencia se puede ocasionar el ajuste incorrecto, dando como resultado en una pérdida del rendimiento.

Secuencia de ajuste

1. Nivel Dolby NR
2. Acimut de la cabeza
3. Nivel de reproducción
4. Comprobación de la ecualización en reproducción
5. Comprobación del medidor del nivel
6. Respuesta en frecuencia de grabación/reproducción
7. Nivel de grabación

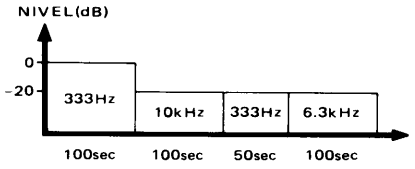


Fig. 12-5 Cinta de prueba STD-341A

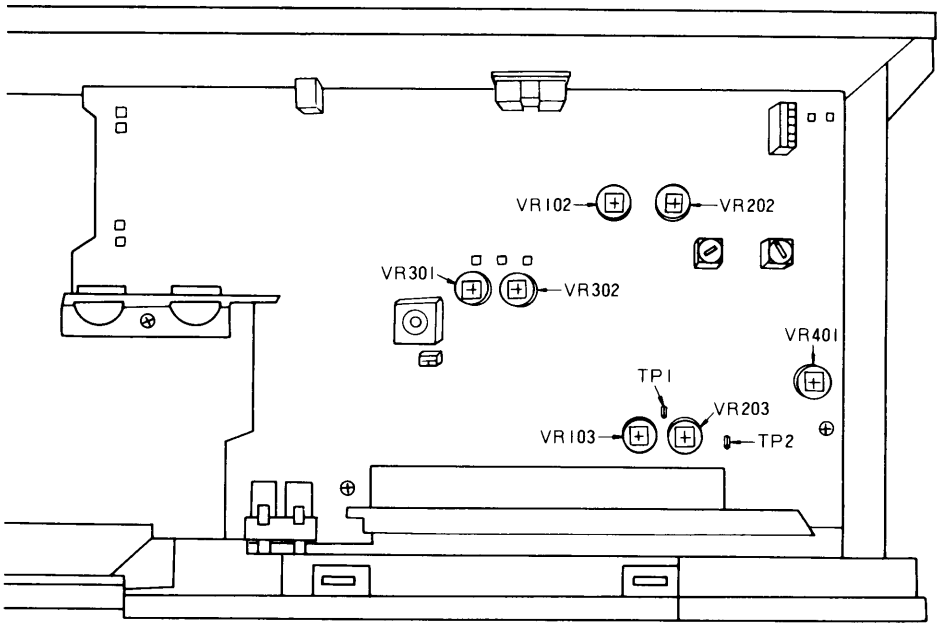


Fig. 12-6 Puntos de ajuste

12.2.1 Ajuste del nivel Dolby NR

Ajustes

Milivoltímetro de CA .. Conectar a TP1 (canal izq.) y a TP2 (canal der.)
Señal de entrada ..... 2kHz, -10dBv (316mV) a LINE INPUT
Selector de cintas ..... NORM
Modo ..... Grabación

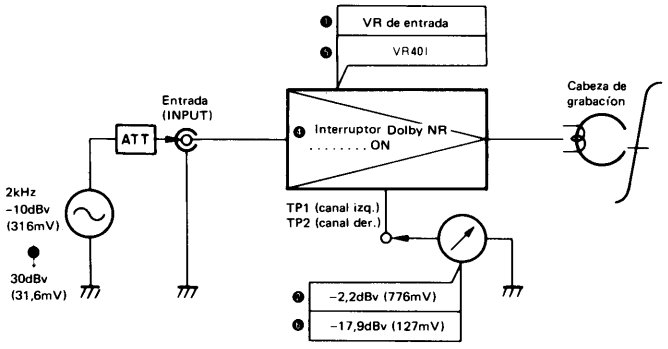


Fig. 12-7 Ajuste del nivel DOLBY NR

Procedimiento

1. Ajustar el control del nivel de entrada (INPUT) de modo que el milivoltímetro de CA indique -2,2dBv (776mV).
2. Reducir el nivel de la señal de entrada a -30 dBv con el atenuador, y poner el interruptor del sistema Dolby NR en la posición ON.
3. Ajustar el VR401 de modo que el voltímetro indique -17,9dBv (127mV).

12.2.2 Ajuste del acimut de la cabeza

Ajustes

Milivoltímetro de CA .. Conectar a los terminales OUTPUT
Cinta de prueba ..... STD-341A (10kHz, -20dB)
Selector de cintas ..... NORM
Modo ..... Reproducción
VR102 y VR202 ..... Girar hacia la derecha a la posición máxima

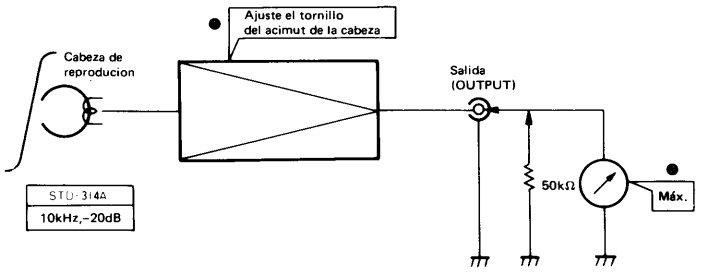


Fig. 12-8 Ajuste del acimut de la cabeza

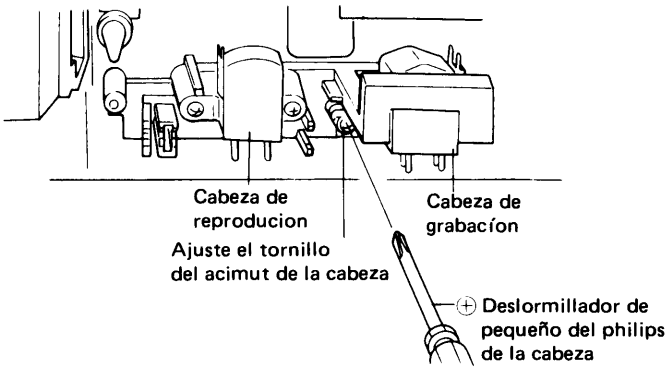


Fig. 12-9 Ajuste del acimut de la cabeza

Procedimiento

Ajustar el tornillo de ajuste del acimut para la indicación máxima del milivoltímetro de CA. (Enclavar los tornillos con el enclavamiento de tornillo después de haber completado el ajuste.)

12.2.3 Ajuste del nivel de reproducción

Puesto que este ajuste determina el nivel de DOLBY NR durante la reproducción, deberá efectuarse con precisión.

Ajustes

Milivoltímetro de CA .. Conectar a TP1 (canal izq.) y TP2 (canal der.)
Cinta de prueba STD-341A (333Hz, 0dB)
Selector de cintas ..... NORM
Modo ..... Reproducción

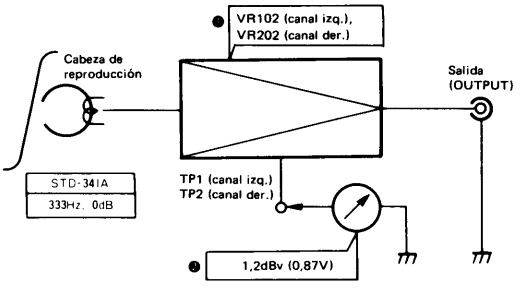


Fig. 12-10 Ajuste del nivel de reproducción

Procedimiento

Ajustar el VR102 (canal izq.) y el VR202 (canal der.) de modo que el voltímetro indique -1,2 dBv (0,87V).

12.2.4 Comprobación del ecualización de reproducción

Ajustes

Milivoltímetro de CA . . Conectar a los terminales OUTPUT
Cinta de prueba ..... STD-341A (333Hz, -20 dB) (6,4kHz, -20dB)
Selector de cintas ..... NORM
Modo ..... Reproducción

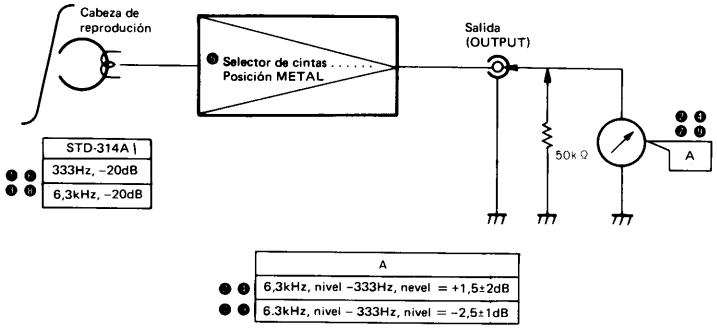


Fig. 12-11 Comprobación del ecualización de reproducción

Procedimiento

1. Reproducir la parte de 333Hz, -20dB y registrar la indicación del voltímetro de CA.
2. Entonces, reproducir la parte de 6,3kHz, -20dB y comprobar que la indicación del voltímetro esté entre +1,5 a ±2dB de la indicación obtenida en el paso 1 anterior.
3. Poner el selector de cintas en la posición de METAL, reproducir la parte de 333Hz, -20dB de nuevo y registrar la indicación del voltímetro.
4. Entonces reproducir de nuevo la parte de 6,3 kHz, -20dB, y comprobar que la indicación del voltímetro esté entre -2,5±1dB de la indicación obtenida en el paso 3.

12.2.5 Comprobación del medidor de nivel

Ajustes

Milivoltímetro de CA . . Conectar a TP1 (canal izq.) y TP2 (canal der.)
Señal de entrada ..... 333Hz, -10dBv (316mV) a los terminales INPUT
Modo ..... Grabación

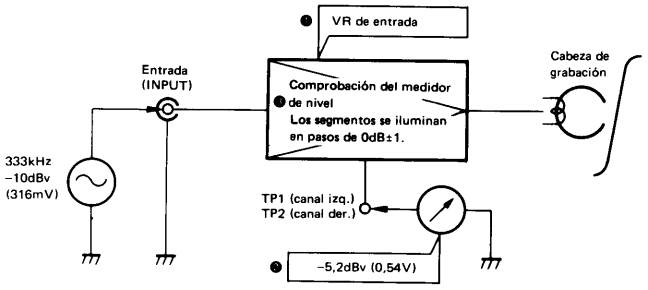


Fig. 12-12 Comprobación del medidor de nivel

Procedimiento

Ajustar el control del nivel de entrada (INPUT) de modo que el voltímetro indique -5,2dBv (0,54V), y comprobar que los segmentos del medidor de nivel se iluminan en un margen de segmento de 0dB±1.

12.2.6 Ajuste de la respuesta en frecuencia de grabación/reproducción

Ajustes

Milivoltímetro de CA .. Conectar a los terminales OUTPUT
Señal de entrada ..... 333Hz, - 30dBv (31,6mV) a los terminales LINE INPUT
Cinta de prueba STD-608 (STD-603, STD-604)
Selector de cintas ..... NORM (CrO_2, METAL)
Modo ..... Grabación

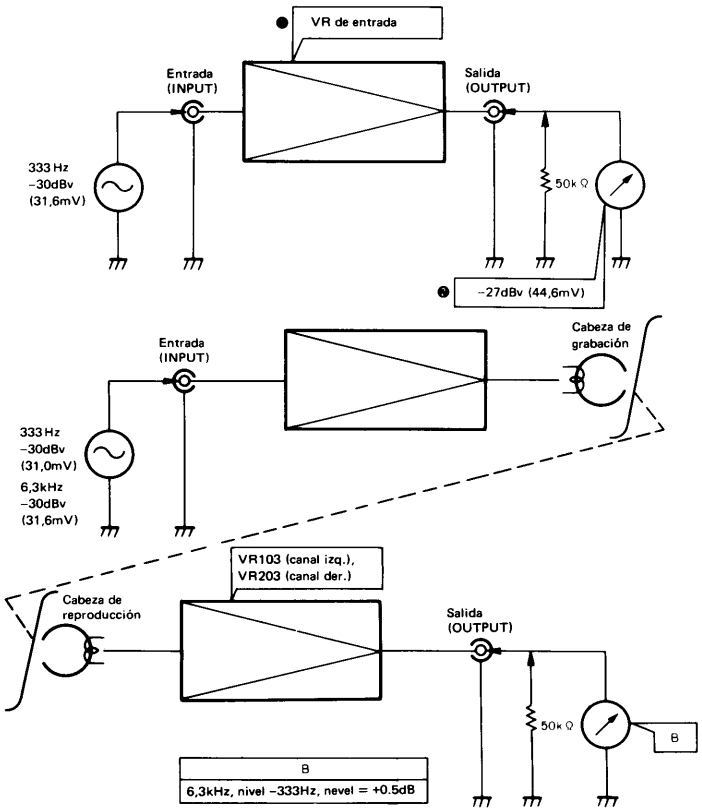


Fig. 12-13 Ajuste de la respuesta en frecuencia de grabación/reproducción

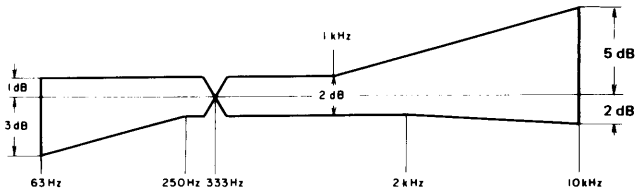
Procedimiento

1. Ajustar el control del nivel de entrada (INPUT) de modo que el voltímitro indique 27dBv (44,6mV).
2. Grabar las señales de 333Hz, - 30dBv y 6,3kHz, - 30dB, y ajustar el VR301 (canal izq.) y VR302 (canal der.) de modo que la diferencia en el nivel de la señal de salida de reproducción con el nivel de 333Hz como nivel de referencia sea +0,5dB.
3. Cambiar las posiciones del selector de cintas e interruptor DOLBY NR (ver la figura 13-10), y comprobar que la respuesta en frecuencia sea satisfactoria.

Respuesta en frecuencia de reproducción

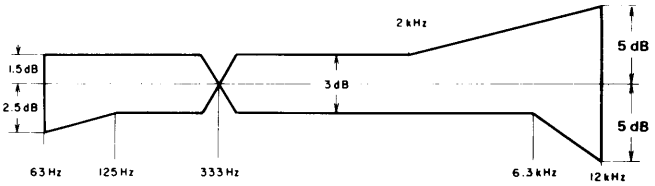
Cinta de preuba STD-341A
Selector de cintas ..... NORM
Interruptor DOLBY NR ..... OFF

NOTA:
Debido al efecto de borde, compensar el canal derecho en -0,5dB a 125Hz y -1dB a 63Hz.

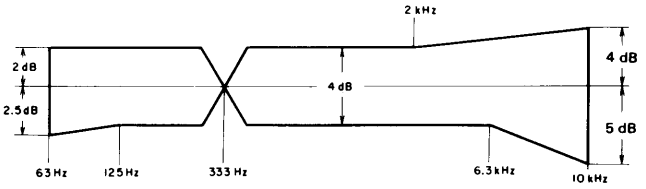


Respuesta en frecuencia global

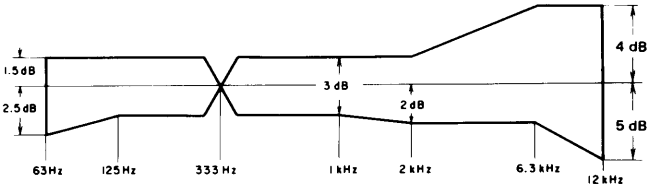
Cinta de prueba STD-608A
Selector de cintas ..... NORM



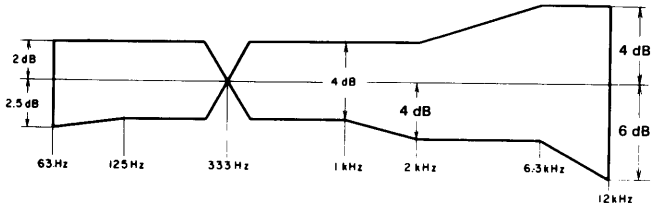
Cinta de prueba STD-608A
Selector de cintas ..... NORM
Interruptor DOLBY NR ..... ON



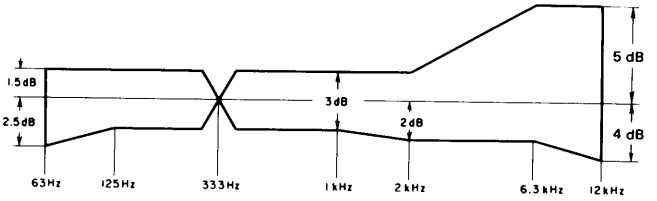
Cinta de prueba STD-603
Selector de cintas ..... CrO_2
Interruptor DOLBY NR ..... OFF



Cinta de prueba STD-603
Selector de cintas ..... CrO_2
Interruptor DOLBY NR ..... ON



Cinta de prueba STD-604
Selector de cintas ..... METAL
Interruptor DOLBY NR ..... OFF



Cinta de prueba STD-604
Selector de cintas ..... METAL
Interruptor DOLBY NR ..... ON

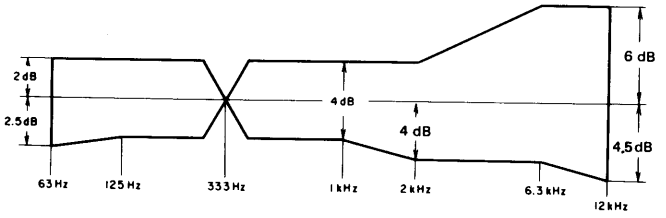


Fig. 12-14 Respuesta en frecuencia

12.2.7 Ajuste del nivel de grabación

Ajustes

Milivoltímetro de CA .. Conectar a TP1 (canal izq.) y TP2 (canal der.)
Señal de entrada ..... 333Hz, -10dBv (316mV) a los terminales LINE INPUT
Cinta de prueba STD-608A (STD-603, STD-604)
Selector de cintas ..... NORM (CrO_2, METAL)
Modo ..... Grabación

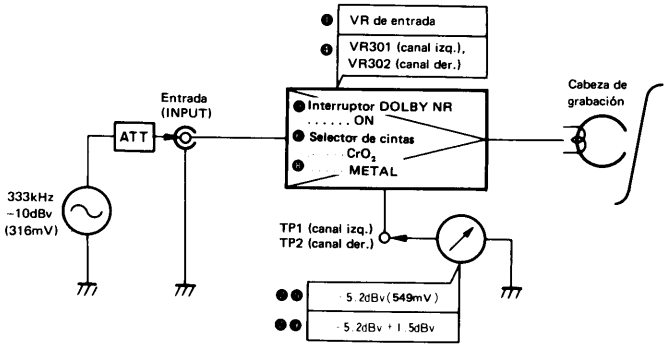


Fig. 12-15 Ajuste del nivel de grabación

Procedimiento

1. Ajustar el control del nivel de entrada (INPUT) de modo que el voltímetro indique -5,2dBv (549mV).
2. Poner el interruptor DOLBY NR en la posición ON.
3. Grabar la señal de 333Hz, -10dBv en la cinta de prueba STD-608A. Entonces, ajustar el VR103 (canal izq.) y VR203 (canal der.) de modo que el voltímetro indique -5,4dBv (549mV) cuando la señal grabada se reproduzca.
4. Poner el selector de cintas en la posición de CrO_2 y repetir el paso 3 empleando la cinta de prueba STD-603. El nivel de salida de reproducción deberá estar entre -5,2dBv± 1,5dB.
5. Entonces, ponerlo en la posición de METAL y repetir el paso empleando la cinta de prueba STD-604. El nivel de salida de reproducción deberá estar de nuevo entre -5,2dBv±1,5dBv.