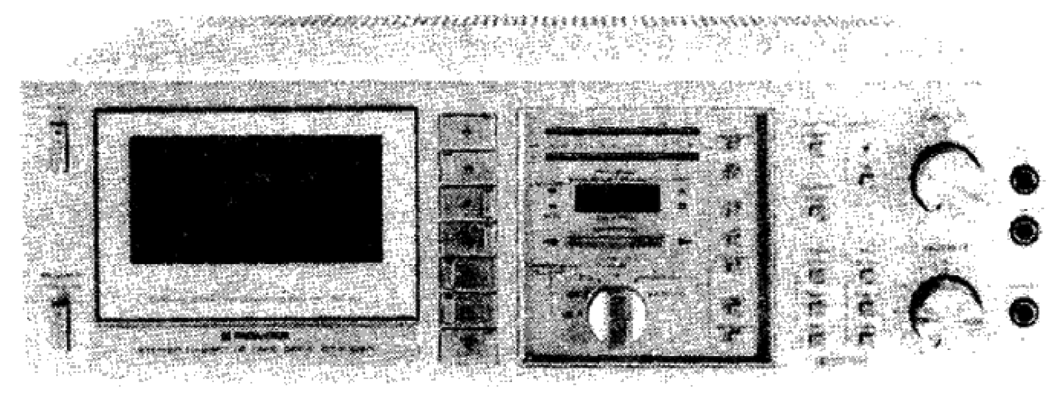
PIONEER®

Service Manual



ORDER NO.
ART-574-0

Auto-reverse/Random access music select
STEREO CASSETTE TAPE DECK

CT-F1050

MODEL CT-F1050 COMES IN TWO VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
D/G	120V, 220V and 240V (switchable)	U.S. Military model
D	120V, 220V and 240V (switchable)	General export model

This service manual is applicable to the D/G type. When repairing the D type, please see the additional service manual.

CONTENTS

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AUG. 1980 Printed in Japan

1. SPECIFICATIONS

Systems .... Compact cassette, 2-channel stereo
Motor .... DC servo motor x 1 (For driving the capstan)
DC high-torque motor x 1 (For driving the reel)
Heads .... "Sendust" recording/playback head x 1
Erasing head x 2
Fast Winding Time .... Approximately 90 seconds (C-60 tape)
Wow and Flutter .... No more than 0.045% (WRMS)
Frequency Response —20dB recording:
- Normal, LH tapes .... 20 to 15,000 Hz (25 to 14,000 Hz ±3 dB)
- Chromium dioxide tape .... 20 to 17,000 Hz (25 to 16,000 Hz ±3 dB) (0 dB recording; 25 to 8,000 Hz)
- Metal tape .... 20 to 19,000 Hz (25 to 18,000 Hz ±3 dB) (0 dB recording; 25 to 13,000 Hz)

Signal-to-Noise Ratio
- Dolby NR OFF .... More than 59 dB
- Dolby NR ON .... More than 69 dB (over 5 kHz)

Harmonic Distortion .... No more than 1.0% (0 dB)
Input (Sensitivity/Maximum allowable input/Impedance)
- MIC (L, R) ...... 0.3 mV/100 mV/10 kΩ, 6 mm diam. jack (Reference MIC impedance; 250 Ω to 10 kΩ)
- LINE (INPUT) x 2 .... 50 mV/20 V/100 kΩ, Pin jack

Output (Reference level/Maximum level/Load impedance)
- LINE (OUTPUT) x 2 ..... 450 mV/640 mV/50 kΩ, Pin jack
- Headphones .... 60 mV/85 mV/8 Ω, 6 mm diam. jack

Subfunctions

- Auto reverse, auto repeat functions
- Random access music select system
- PMS system
- REC muting switch (Auto space pause)
- Remote control
- Dolby NR system (ON/OFF) with LED indicator lamp
- Stand-by mechanism with unattended recording
- 3 position tape selector (NORM/CrO_2/METAL)
- Full automatic stop mechanism
- Memory stop function
- 2 color digital level meter
- 4 digit digital tape counter
- IC-based logic control
- Output level control
- Cassette compartment illumination

Miscellaneous

Power Requirements .... AC 120 V/220 V/240 V (switchable) 50/60 Hz
Power Consumption .... 53 watts
Dimensions .... 420 (W) x 130 (H) x 365.5 (D) mm
16-9/16 (W) x 5-1/8 (H) x 14 - 3/8 (D) in.
Weight (without package) .... 9.9 kg (21 lb 13 oz)

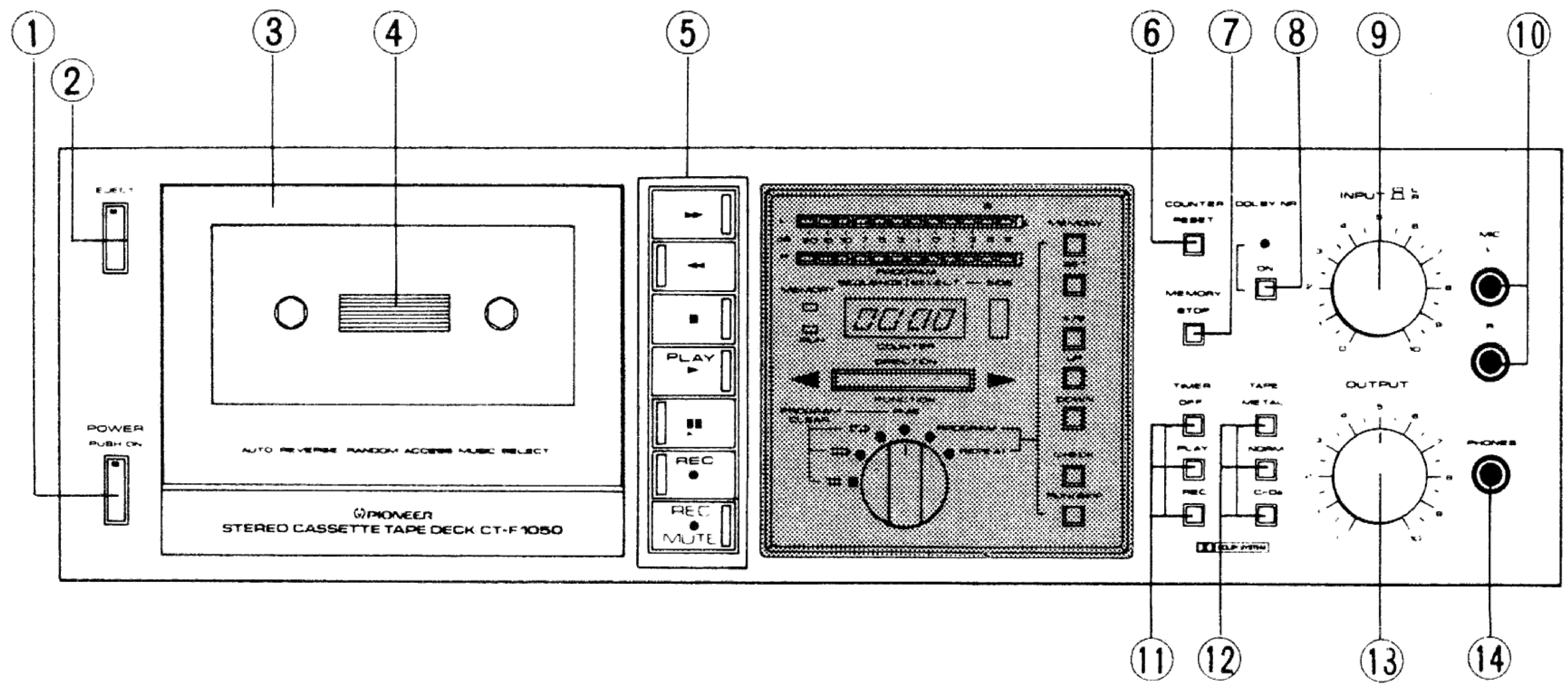
Furnished Parts

Remote control unit 1
Connection cord with pin plugs 2
Fuse .... 1 (1.5 A or 800 mA)
Operating instructions 1

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

NOTE:
1. Reference Tapes: Normal & LH: DIN 45513/BLATT6 or equiv.
   CrO_2 DIN 45513/BLATT7 (CrO_2) or equiv.
2. Rerefence Recording Level: Meter 0 dB indicating level (160 nwb/m magnetic level = Philips cassette reference level)
3. Reference Signal: 333 Hz
4. Wow & Flutter: • JIS [3 kHz, with acoustic compensation (weighted), rms value] DIN [3,150 Hz, with acoustic compensation (weighted) PEAK value]; DIN 45507
5. Frequency Response: • Measured at −20 dB level, DOLBY NR OFF, level deviation is ±6 dB 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 0 dB.
10. Maximum Output Level: Playback output level with respect to reference recording level when output (PLAY) level control is set to maximum.
11. This model doesn't employ a recording /playback connector (DIN-type).

2. FRONT PANEL FACILITIES



① POWER SWITCH (PUSH ON)

Power is supplied to the cassette deck when this switch is depressed (the light inside the cassette holder and the forward indicator of the DIRECTION selector both come on). When this switch is released, the power is turned off.

② EJECT SWITCH

The cassette holder moves out toward you when this switch is depressed.

③ CASSETTE HOLDER
④ CASSETTE TAPE LIGHTING LAMP
⑤ OPERATING SWITCHES

The following modes are set directly when each of the switches is depressed:

▶▶ (Fast forward): Depress this switch to send the tape forward at top speed from left to right.

◀◀ (Rewind): Depress this switch to send the tape rewind at top speed from right to left.

■ (Stop): Depress this switch to stop the tape run.

PLAY ▶ : Depress this switch to play back a tape or to record a tape.

❚❚ (Pause): Depress this switch to stop the tape temporarily during recording or playback. (It will not work during fast forward or rewind operations.) Depress the PLAY ▶ switch to release the pause or, alternatively, depress the stop switch.

REC ● : When recording on a tape, depress this switch together with the ❚❚ (Pause) switch and then depress the PLAY ▶ switch.

REC ● MUTE: While this switch is depressed (ON) during recording, blanks can be recorded on the tape since the input signals are not recorded.

All the operating switches are released (OFF) to stop mode when the POWER switch is turned off.

⑥ COUNTER RESET SWITCH

The display on the tape counter is reset to "0000" when this switch is depressed. This switch will not work when the FUNCTION selector is set to the PROGRAM or REPEAT position.

⑦ MEMORY STOP SWITCH

When this switch is depressed, the position at which the tape counter display was reset to "0000" by the counter reset switch during recording and playback is programmed. When the tape is fast forwarded or rewound by depression of the ▶▶ (Fast forward) or ◀◀ (Rewind) switch, the tape will stop at the "0000" position.

⑧ DOLBY* NR SWITCH

Depress this switch to the ON position when recording a tape using the Dolby noise reduction system or when playing back a tape recorded by the Dolby NR system. The indicator above the switch will then light.

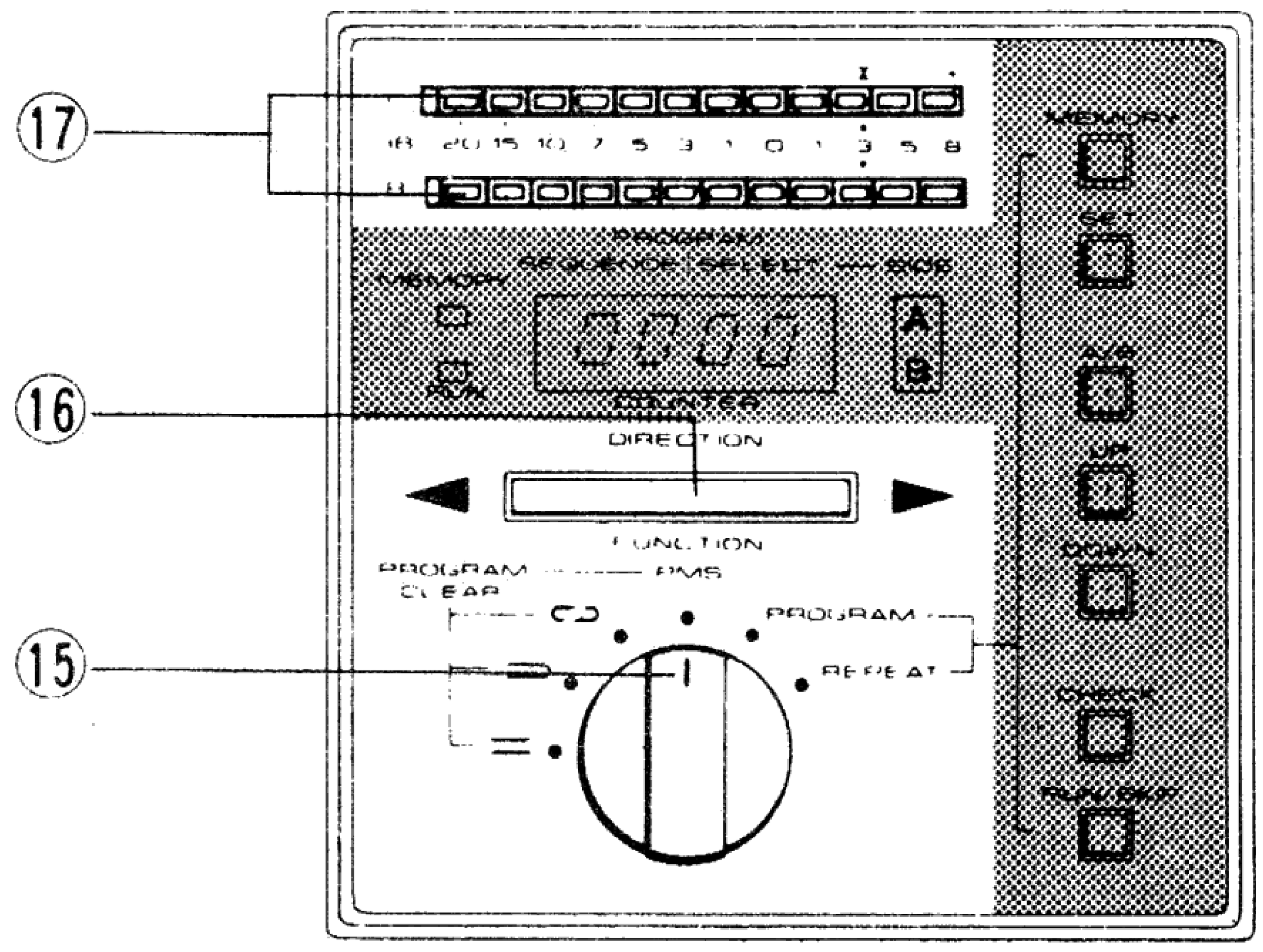
⑨ INPUT CONTROLS (Recording Level)

These are used to adjust the input level during recording. When the knobs are rotated clockwise, the input level is increased. The two knobs (L and R) are coupled and can be rotated together. It is also possible to use them independently, the forward knob being for the left (L) channel and the rear knob for the right (R) channel.

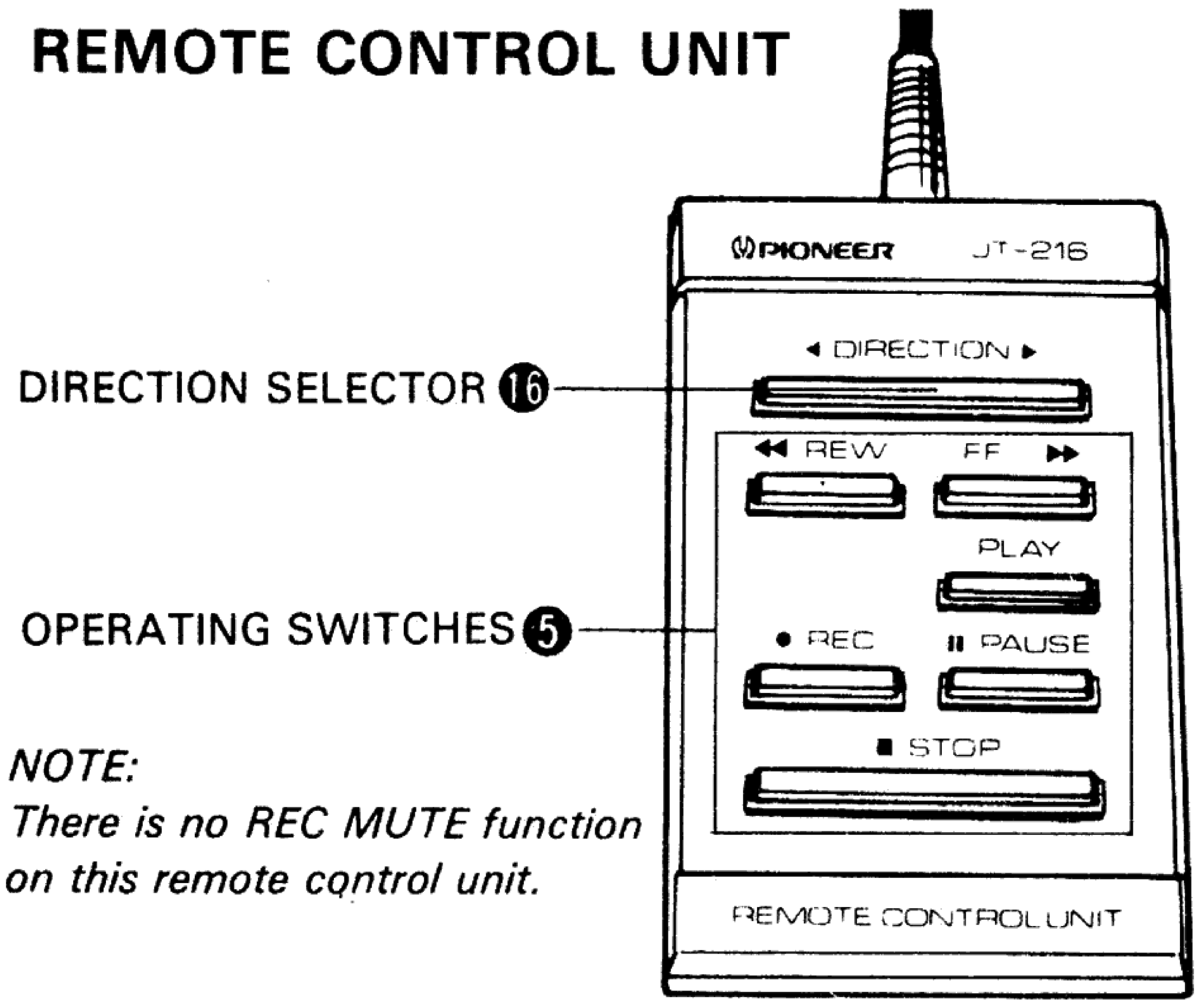
⑩ MIC JACKS (L-MIC-R)

Plug the microphones into these jacks for microphone recording. Check the left and right channels before connecting the microphones.

* The word "Dolby" and ⅅⅅ are trademark of Dolby Laboratories Licensing Corporation.



REMOTE CONTROL UNIT



NOTE:
There is no REC MUTE function on this remote control unit.

⑪ TIMER SWITCHES

Recording or playback can be controlled by the timer, in which case these switches are used.

OFF: Depress the switch to this position when you do not intend to use the timer.

PLAY: Depress this switch when automatically playing back a tape at the time set on the timer.

REC: Depress this switch when automatically recording a tape at the time set on the timer.

⑫ TAPE SELECTORS

Depress the switch that corresponds to the type of tape being used in the deck.

METAL: For metal tapes

NORM: For normal tapes or LH tapes

CrO_2: For chrome tapes

⑬ OUTPUT CONTROL (Playback Level)

This is used to adjust the output level. This level is increased when the knob is rotated clockwise (↻).

NOTE:
When this knob is rotated to its leftmost position during recording and playback, the sound from the headphones and speakers is muted.

⑭ HEADPHONES JACK

Plug your headphones into this jack to listen to tape play through your stereo headphones. The volume is controlled by the output control.

⑮ FUNCTION SELECTOR

This selector is used to select the mode for 2-way recording/playback and for repeated playback. It is also used to select the playback method (PMS system operation, random access music selection).

PROGRAM CLEAR (Green display)

═ : For recording or playing back a tape on one side only in the forward or reverse direction.

⊐ : For recording or playing back a tape on both sides starting with the forward direction.

⊂⊃ : For repeat playback.

PMS: For searching for a recorded program with the PMS function.

PROGRAM: (Red display)

When memorizing the program contents (designation of the order in which the programs are to be heard) or when performing playback (RUN) in line with the program contents with random access music selection.

REPEAT: (Red display)

For repeatedly playing back programs stored in the program memory.

NOTES:
- *The contents of the program memory are erased when the FUNCTION selector is set to any position other than PROGRAM or REPEAT.*
- *The program memory are erased when the power switch is set to OFF.*

⑯ DIRECTION SELECTOR

This is used to select the tape direction (during recording, playback and pause). When depressed, the tape direction is reversed and the lamp indicates the direction.

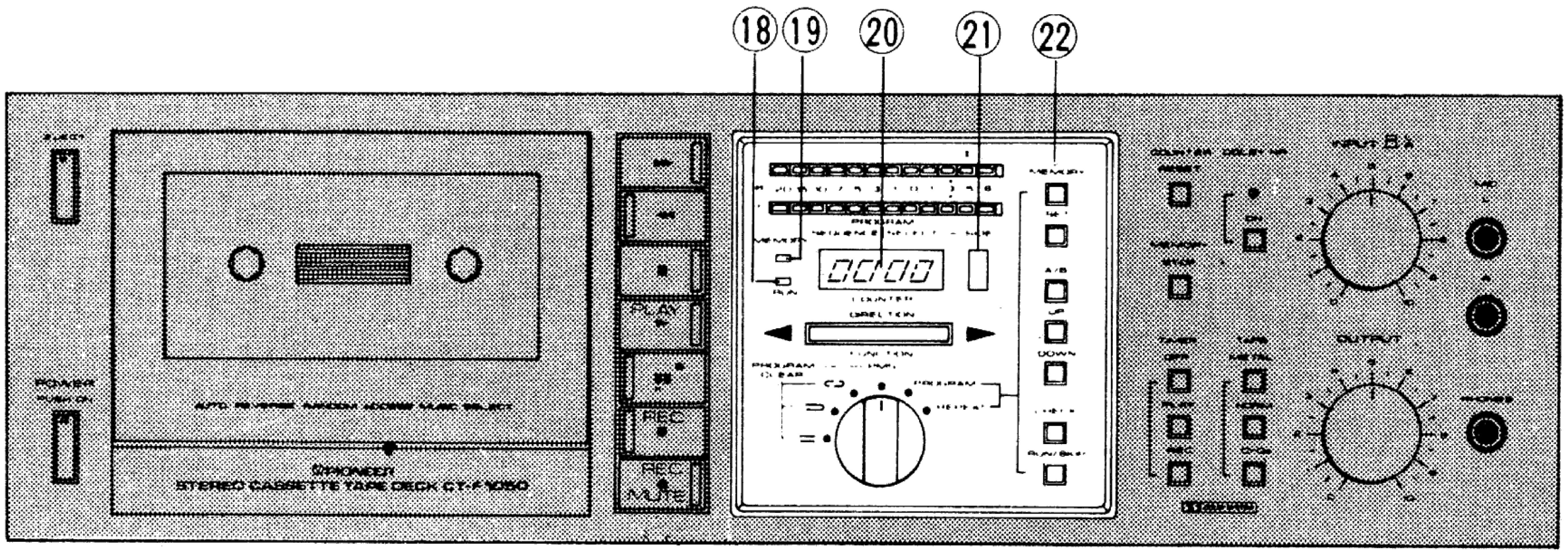
▷ : Indicates that tape is running in a forward direction (tape moves from left to right).

◁ : Indicates that tape is running in a reverse direction (tape moves from right to left).

NOTE:
When the power is switched on, priority is given to the forward motion of the tape even if the FUNCTION selector is set to the ═ ⊐ or ⊂⊃ position.

⑰ LEVEL METER (L, R)

This indicates the input signal level during recording and the output signal level during playback.



⑱ RUN INDICATOR

This lights or winks as follows with program playback:

Lights: When the RUN/SKIP switch is depressed and playback is performed in line with the program contents.

Winks: When the RUN/SKIP switch is depressed during program playback, the program being heard is skipped and the next program is played back.

⑲ MEMORY INDICATOR

This lights when the PROGRAM-MEMORY switch or CHECK switch is depressed.

⑳ COUNTER (TAPE-COUNTER or PROGRAM-SEQUENCE/SELECT)

This indicates the position of the tape run. The tape counter reverts to "0000" when the power is switched on.

When the function selector indicator lights up green, the tape position is indicated in 4 digits. When the function selector indicator lights up red, the "SEQUENCE" of the programs played ([1]) play sequence: indicates 1) and the "SELECT" of the program numbers recorded on the tape ([1]) first program on side A or B) are indicated.

㉑ SIDE INDICATOR

This lights or winks to indicate side A or side B in the following cases:

- When the A/B switch has been set (lights).
- When a program has been automatically searched and played back in line with the program contents (lights).
- When the program contents are checked and are corrected in accordance with the check switch (lights).
- The lamp winks to indicate an error when there are more than 19 programs on one side (A or B) of the tape.
- Both lamps A and B wink when the tape present position is not being designated upon completion of the storage of the program contents in the memory.

NOTE:
This indicator does not display except for random access music selection.

㉒ PROGRAM SWITCHES

These are used for random program selection programming.

MEMORY: Depress this switch when starting to program the random program selection and when completing the command of the program contents.

SET: Depress this when aligning the designated tape side (A or B) and the program number with the sequence of the programs to be played and when storing this information in the memory.

A/B: Depress this when selecting the side of the tape (side A or side B).

UP: Depress this when designating the program number. Every time this switch is depressed, the number increases and the number of the program on the tape is indicated on the right of the counter. When it is kept in the depressed position, the number changes continuously.

DOWN: When this is depressed in the same way as the UP switch, the number decreases.

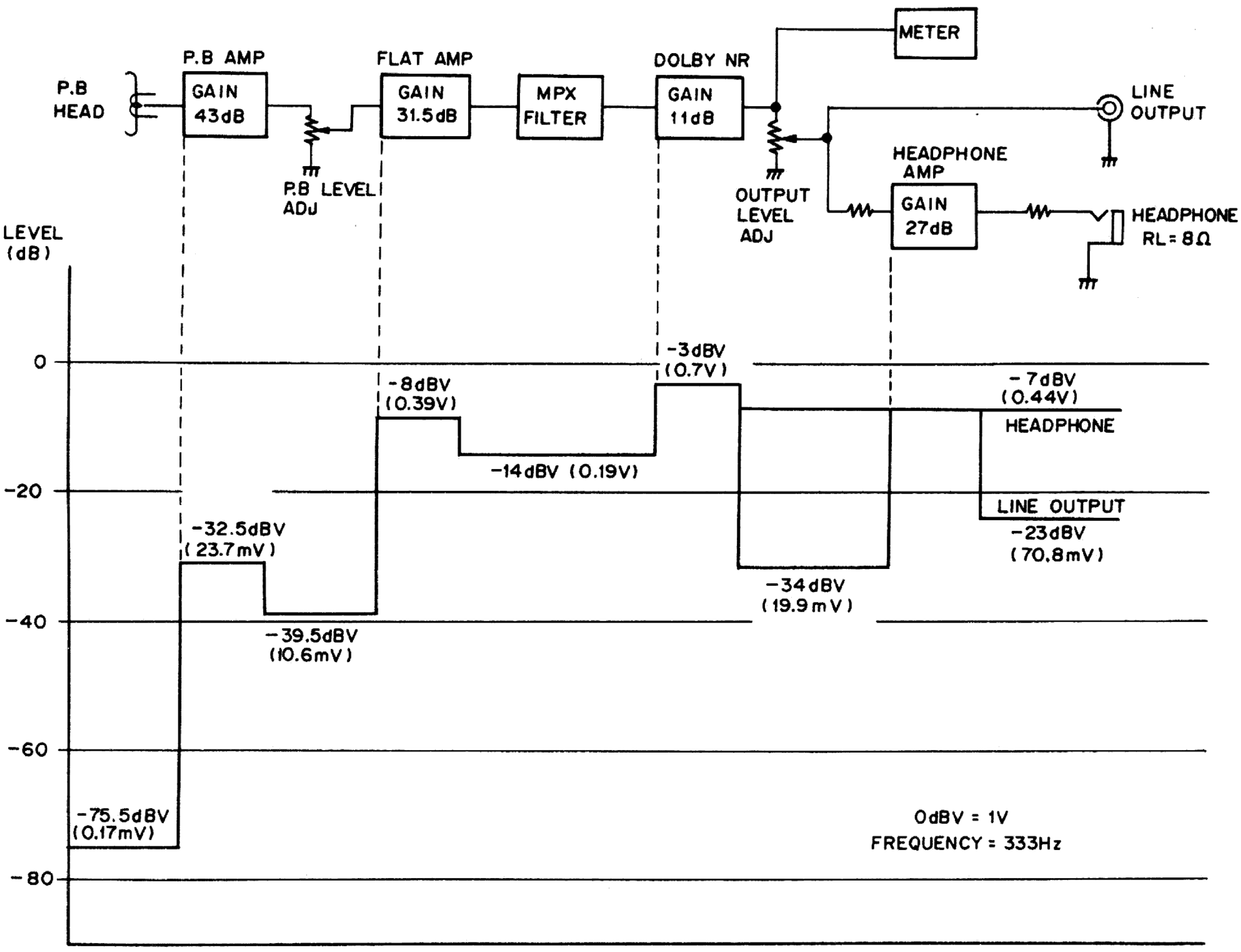
CHECK: Depress this switch to check the contents of the program. Every time it is depressed, the contents of the program are displayed on the counter in the programmed sequence.

RUN/SKIP: Depress this switch when starting tape playback in the programmed sequence and when you want to skip the program which you are now listening to during the program playback.

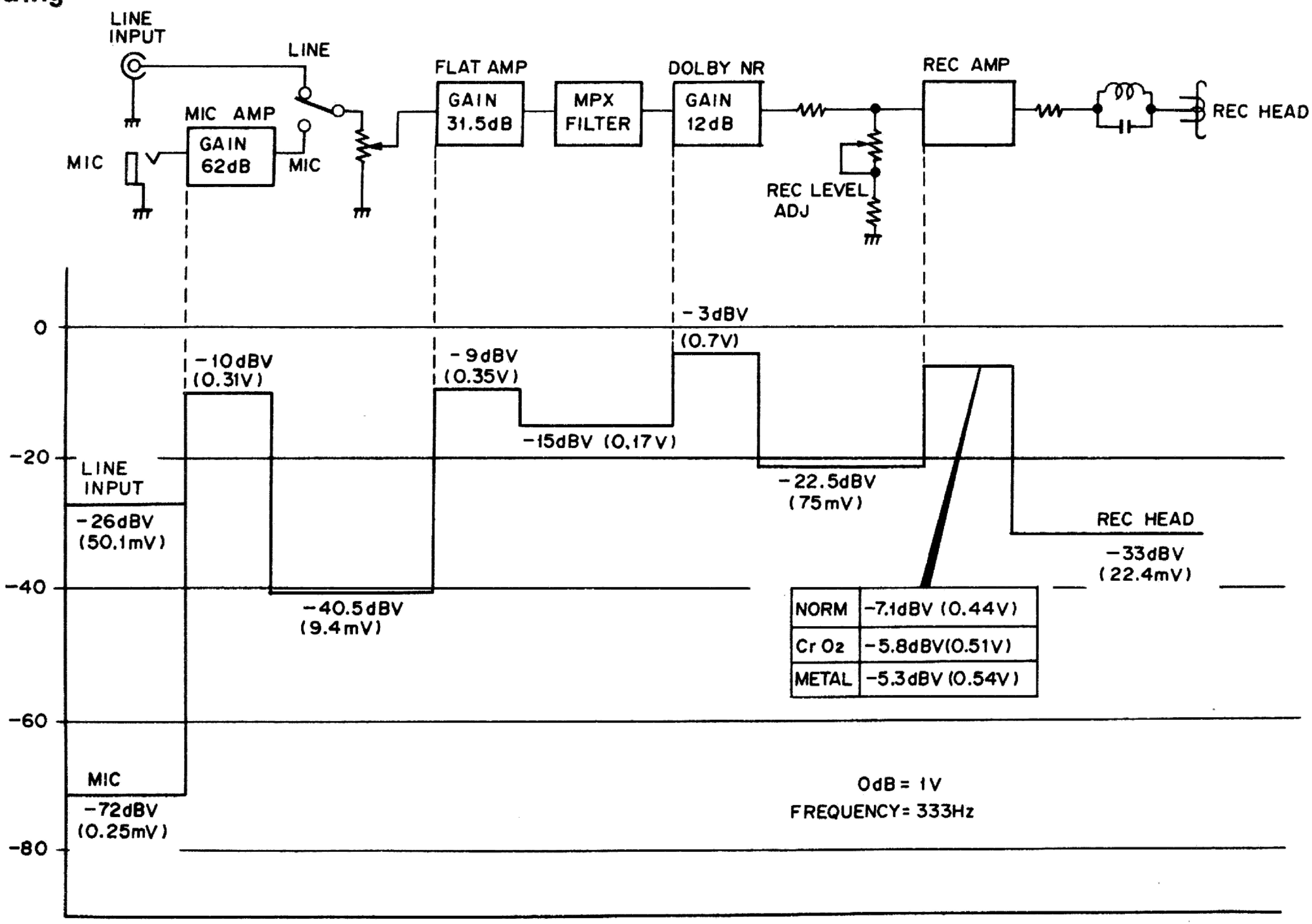
NOTE:
The contents of the program memory are erased when the power switch is set to OFF.

3. LEVEL DIAGRAM

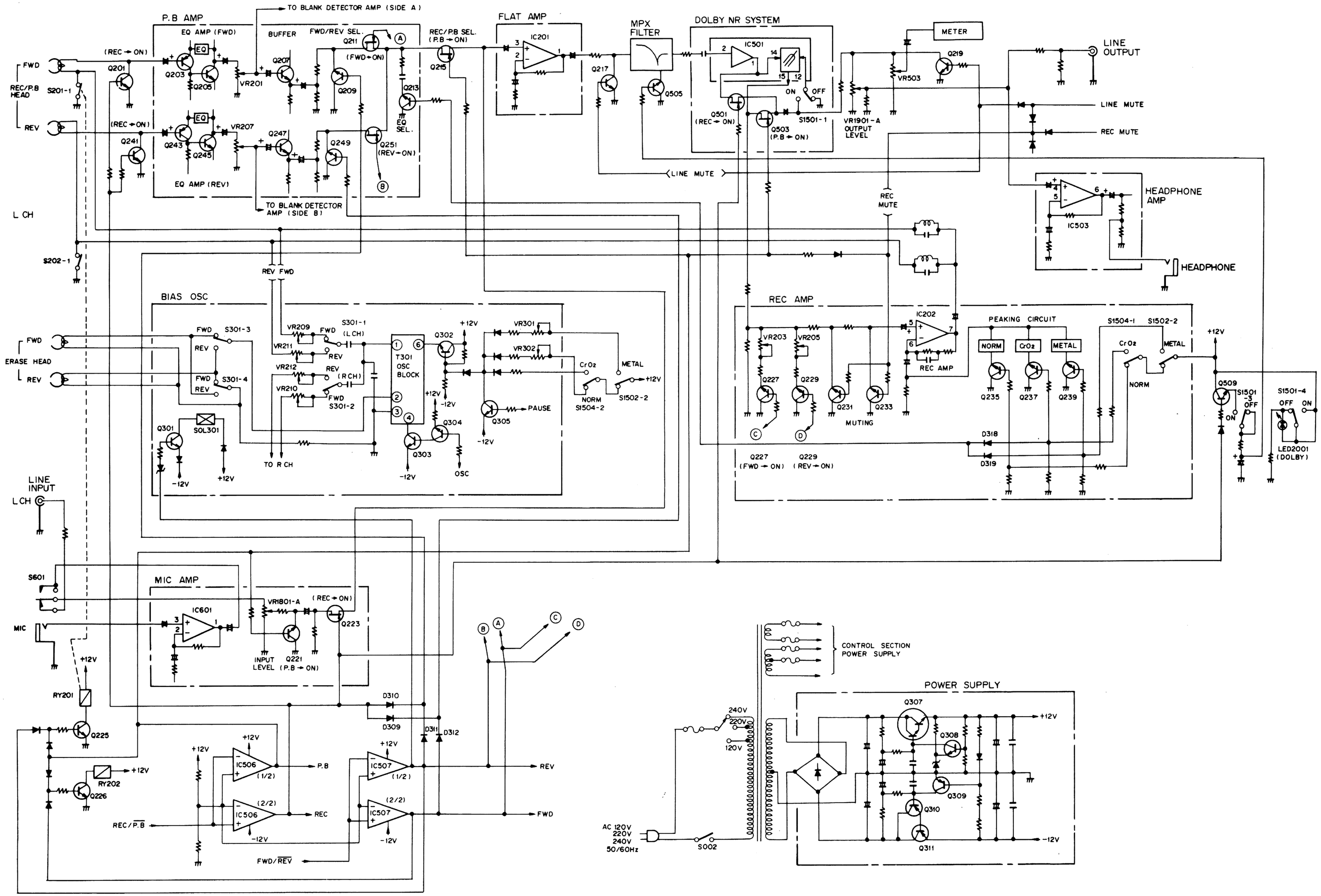
Playback



Recording



4. BLOCK DIAGRAM



5. DISASSEMBLY

Bonnet

Remove the four screws ❶ .

Mechanical Assembly

Remove the four screws ❷ .

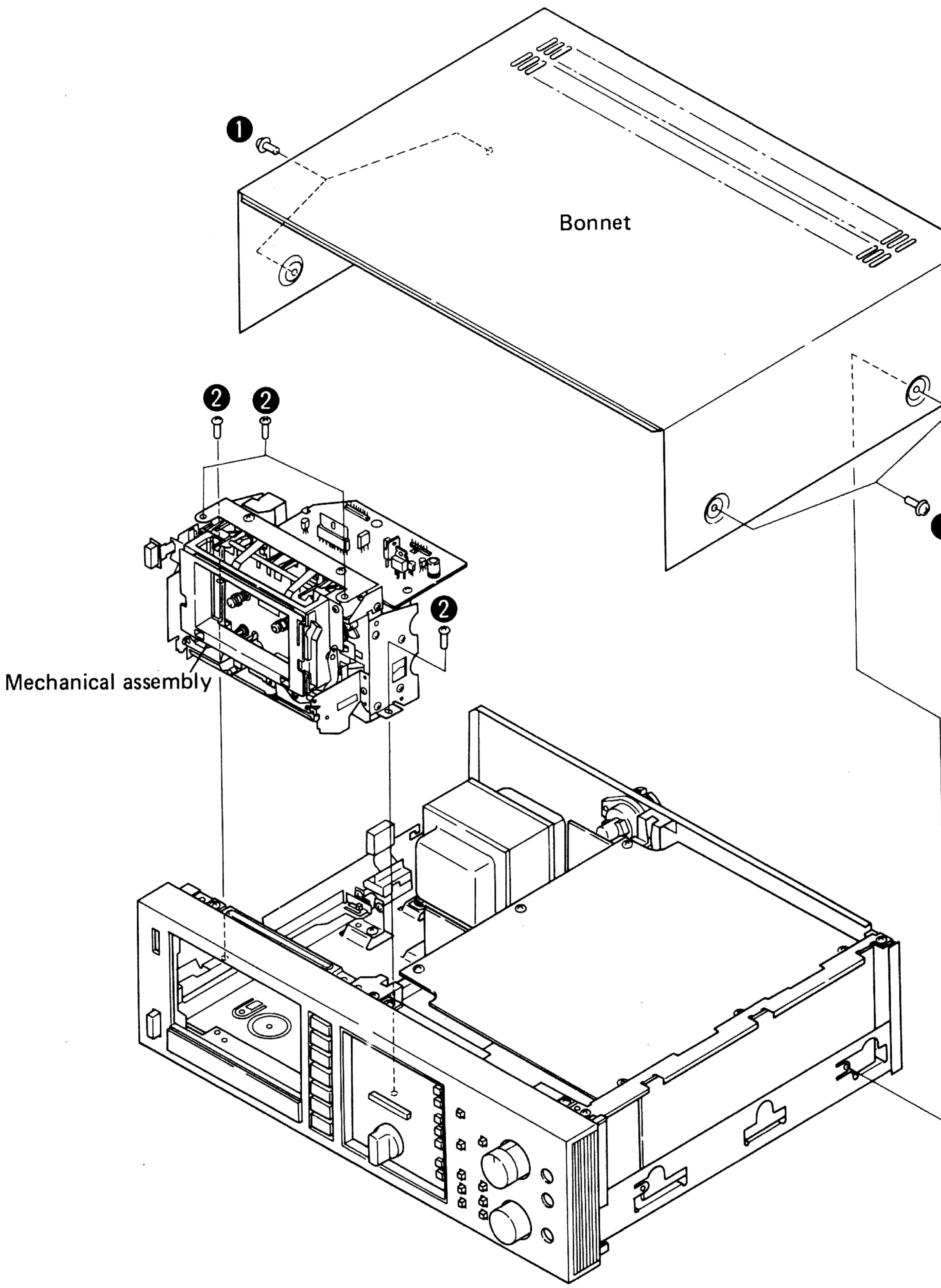


Fig. 5-1 Disassembly of exterior parts

Mechanical Assembly

1. Remove the erase head assembly by undoing nut ❶.
2. Remove the REC/PB head by undoing screws ❷.
3. Remove the head cord clamper by undoing screw ❸.
4. Remove the shaft and pinch pressure spring by undoing washer ❹.
5. Remove the pinch roller arm assembly by undoing washer ❺.

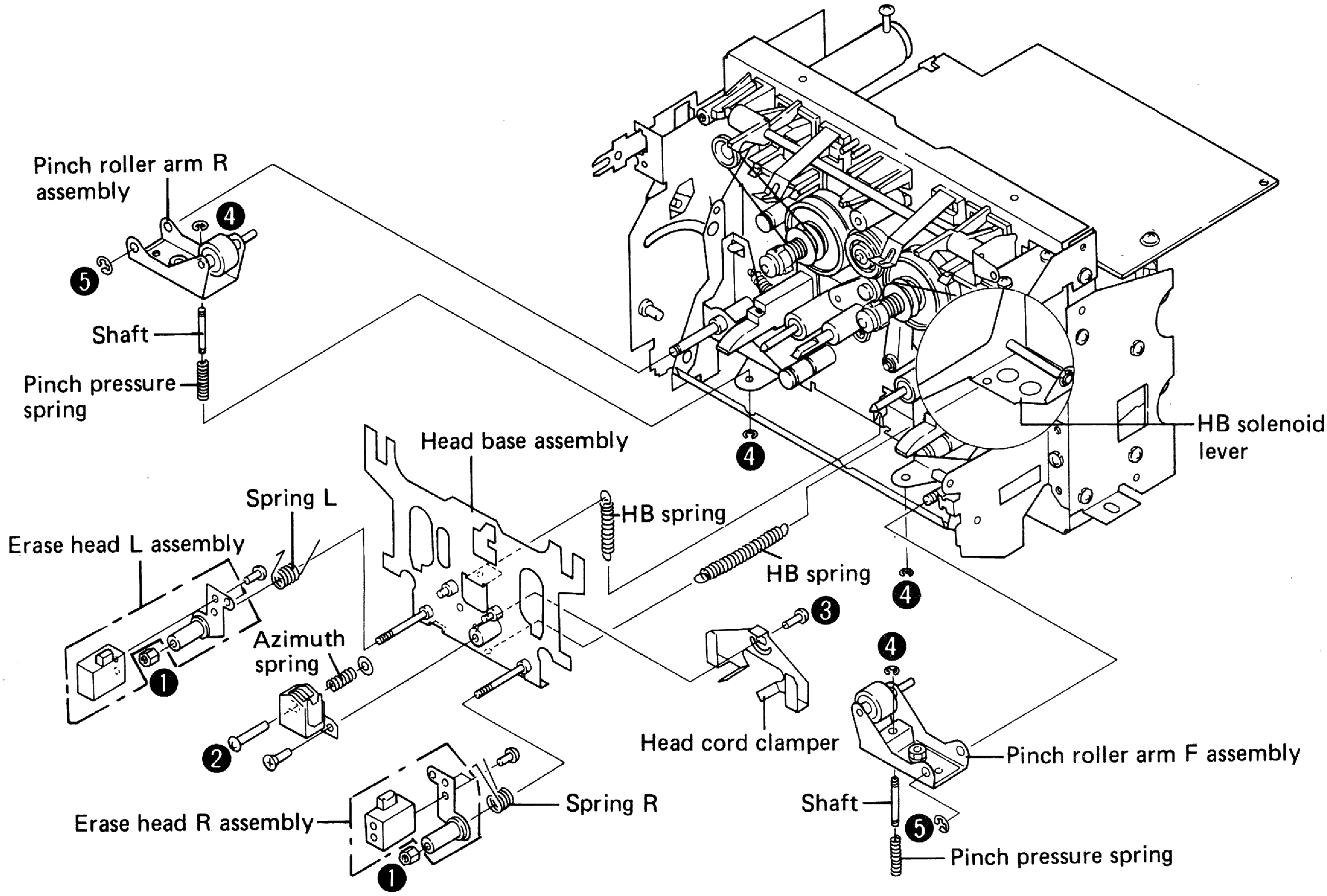


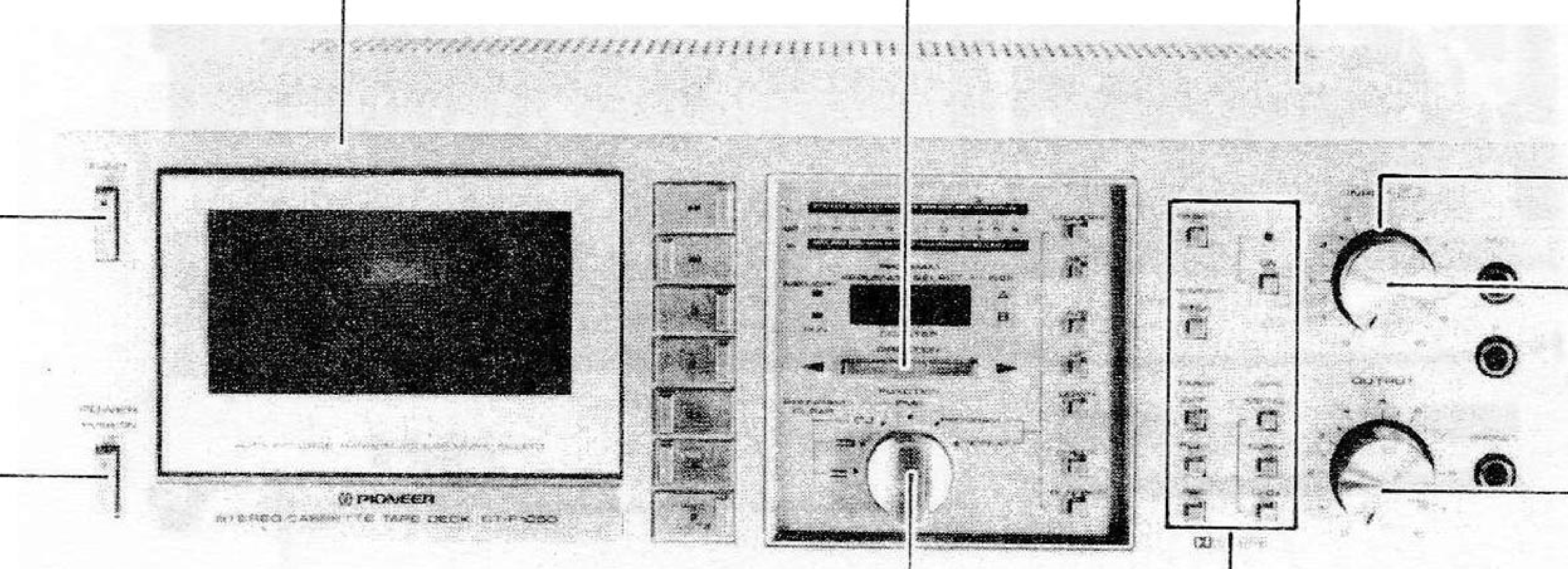
Fig. 5-2 Disassembly of mechanical assembly

6. PARTS LOCATION

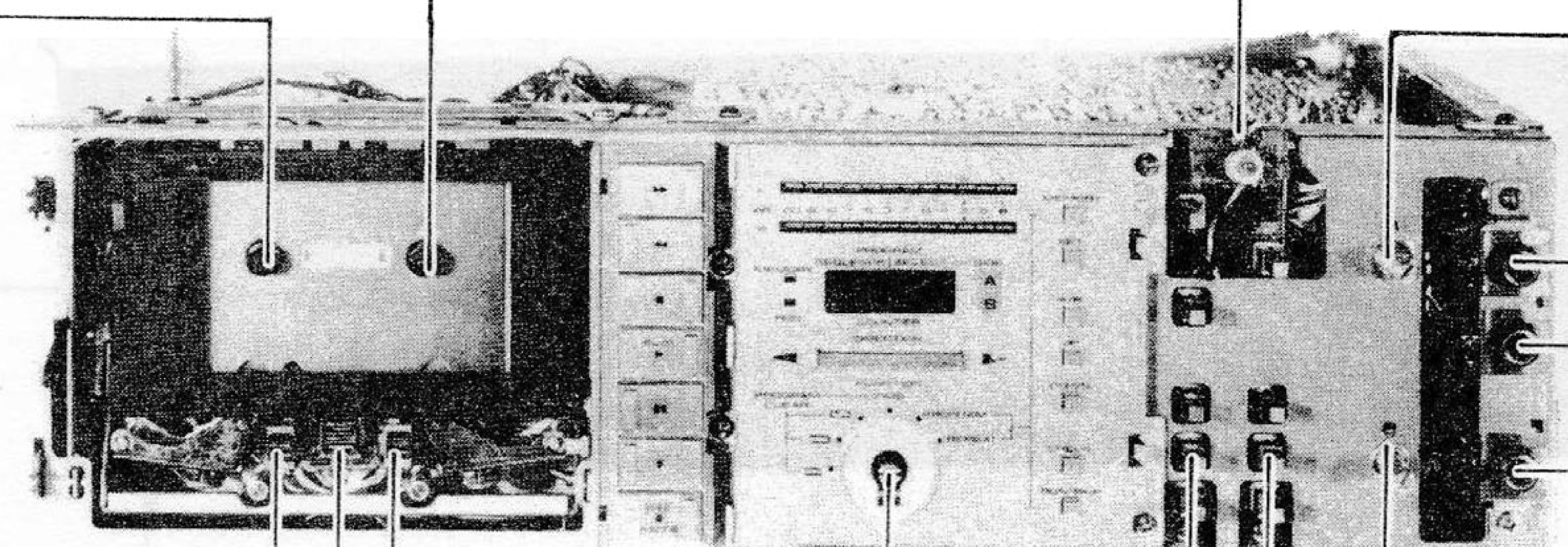
NOTES:

- *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 symbols ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model No., temperature, humidity, etc.

Front Panel View



Front View with Front Panel Removed



Top View with Bonnet Removed

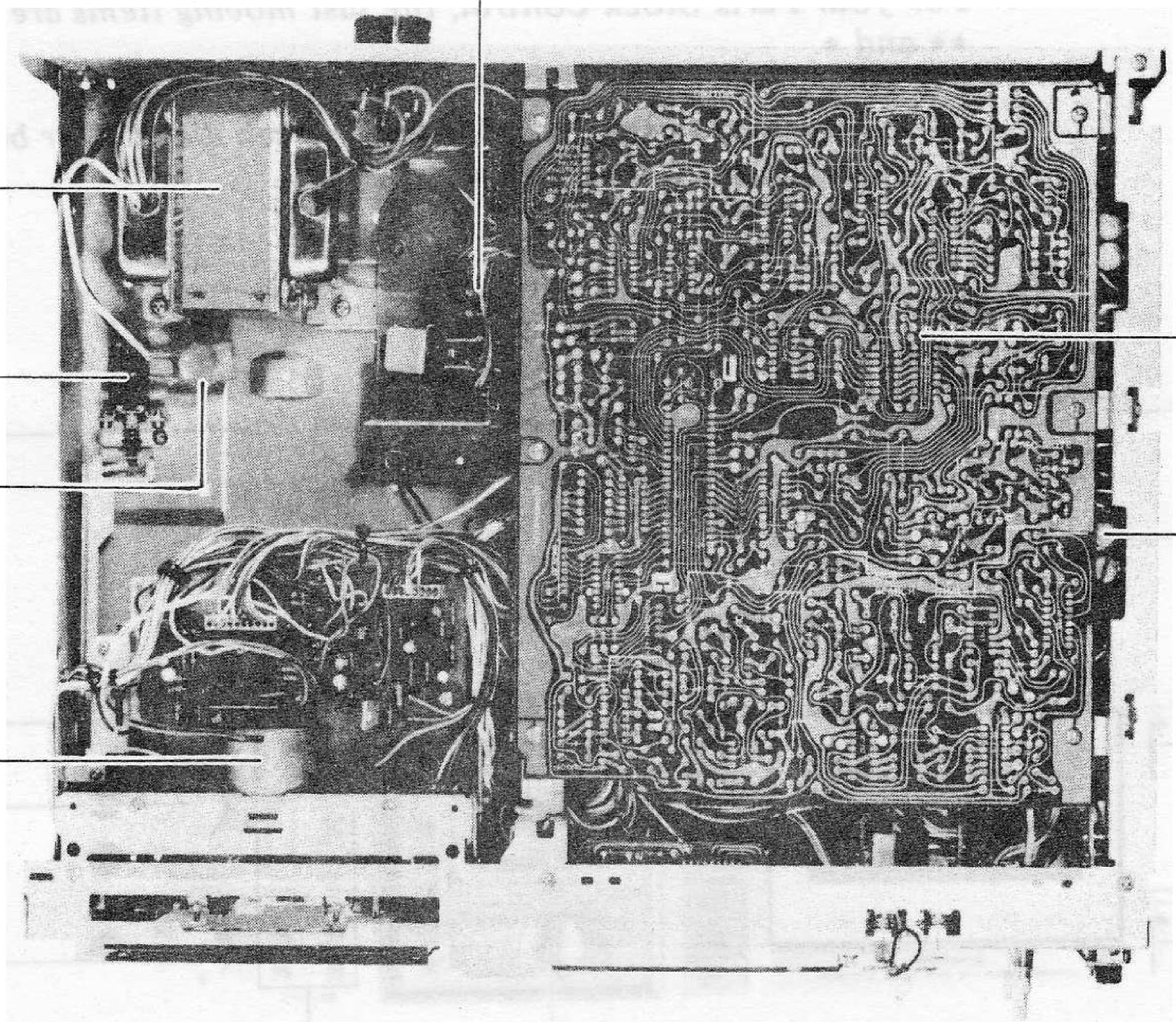
Power supply assembly

⚠ Power transformer
RTT-224

⚠ ★★ Power switch
RSA-034

⚠ ★★ Fuse (1.5A)
REK-063

Capstan motor assembly
RXX-302



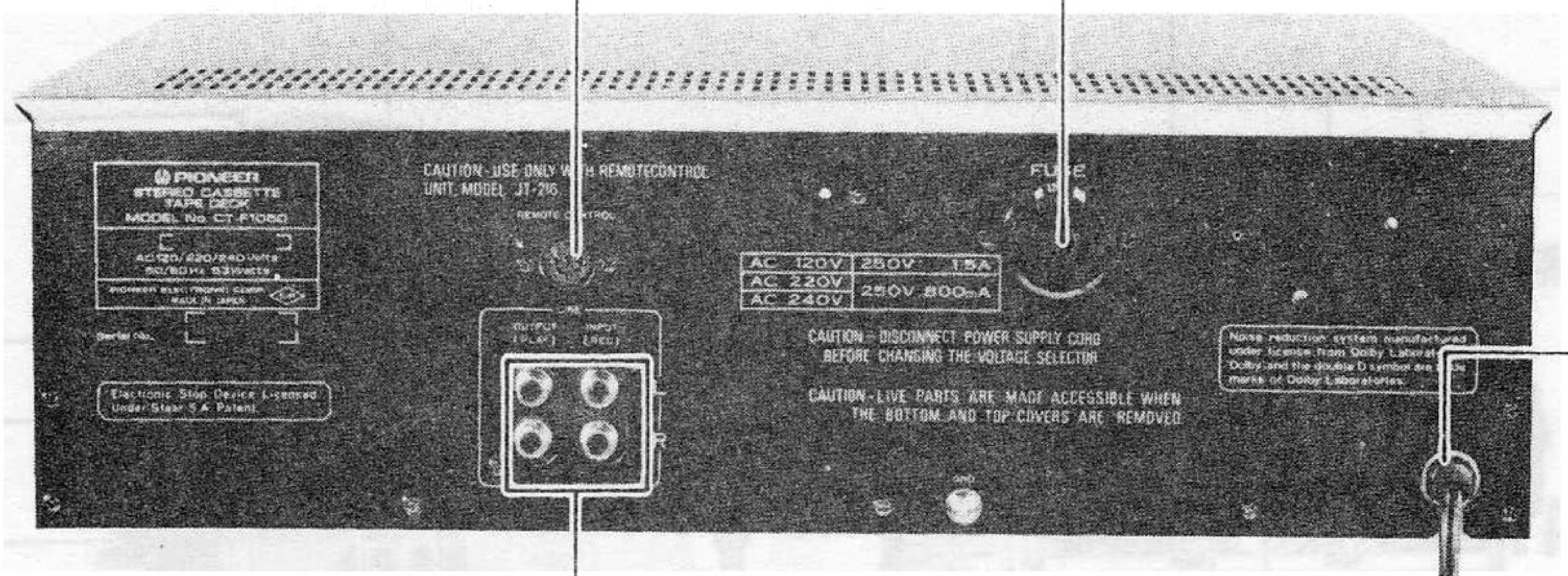
Control assembly

DOLBY assembly

Rear Panel View

Remote-control jack assembly

⚠ Line voltage selector
(switchable 3 positions)
RKR-020



⚠ Strain relief
REC-272

Terminal (OUTPUT, INPUT)
RKB-014
(RKB-016)

⚠ Power cord
RDG-024

7. CIRCUIT DESCRIPTIONS

7.1 PLAYBACK CIRCUIT

Tape Head Structure

The CT-F1050 has been designed to record and play back in both directions. The single recording/playback head is a 4-track 4-channel head designed to handle recording and playback in both the forward and reverse directions. This system includes two erase heads, one on each side of the recording/playback head.

Playback Equalizer Circuit

The CT-F1050 includes 4 pairs of playback equalizer amplifiers since these circuits are also used to detect the unrecorded blank sections of tape between tunes on recorded tapes. Since both directions (forward and reverse) are detected simultaneously, two pairs of amplifiers are required per channel (one for FWD and one for REV, or in other words, one for side A and one for side B of the cassette tape).

The left channel playback equalizer circuit is outlined in Fig. 7-2 (the right channel circuit being identical in composition). The equalizer amplifier used here is a 2-stage direct-coupled NFB circuit designed for playback equalization with normal (NORM) tapes. The buffer in the following stage is an emitter-follower amplifier. For playback equalization with chrome (CrO_2) and metal (METAL) tapes, Q213 is turned on to incorporate the RC network.

S201-1 and S202-1 are reed relay contacts which are closed during playback, and opened only on the operating mode side (FWD or REV) during recording. Q201 and Q241 are turned off during playback, and turned on during recording. Q211 and Q251 (FETs) together with Q209 and Q249 are used in output switching of the FWD (side A) and REV (side B) playback equalizer amplifier circuits.

Flat Amplifier

This amplifier stage uses an operational amplifier (IC) to obtain a gain of about 32dB and a flat frequency response. Furthermore, it is used for both recording and playback modes, Q215 and Q223 (FETs) serving as the input switching stage.

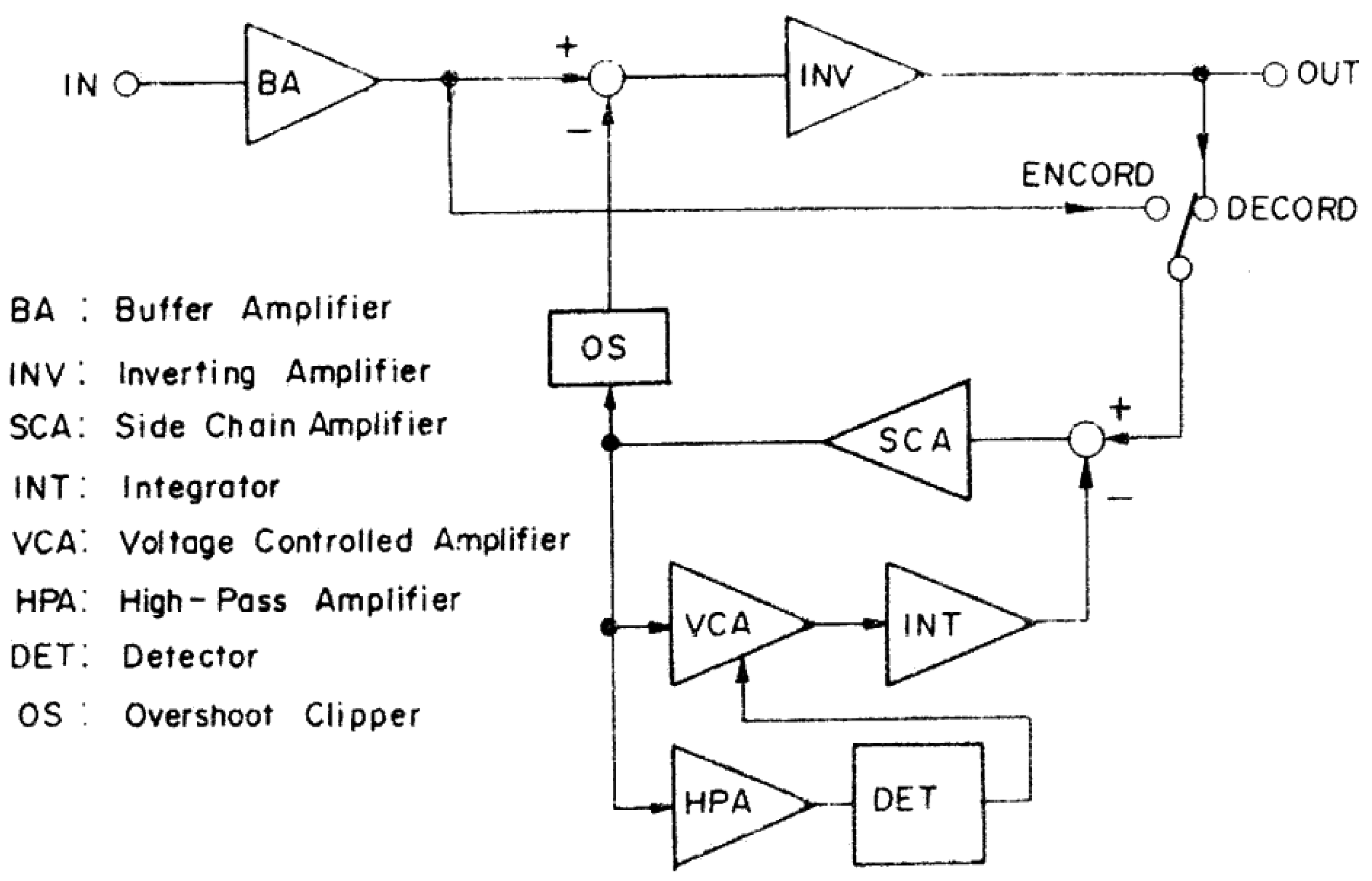


Fig. 7-1 PA4005 Dolby NR system

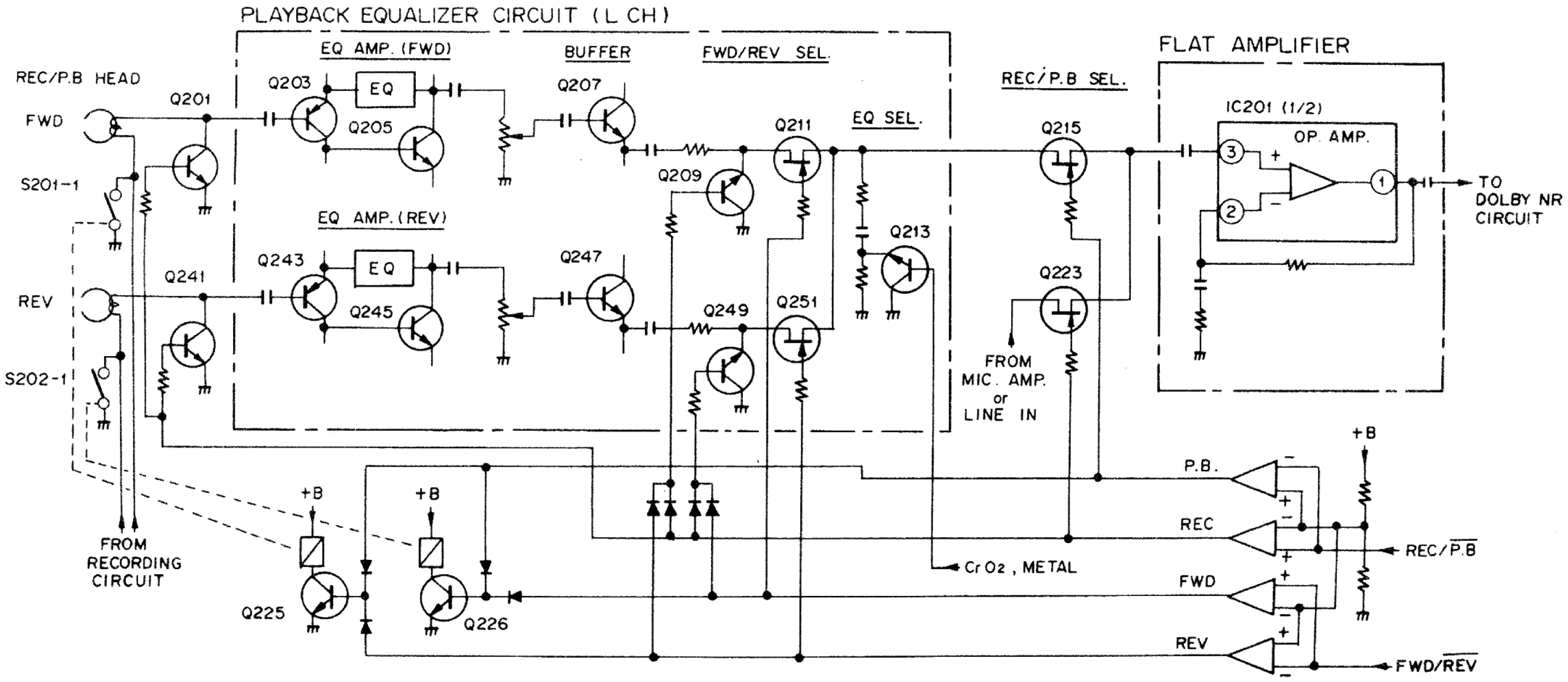


Fig. 7-2 Playback equalizer circuit

Dolby Noise Reduction System

The CT-F1050 features the B-type Dolby noise reduction system (where the S/N ratio is improved by up to 10dB above 5kHz) incorporated in a special Dolby IC (PA4005) developed by Pioneer. The main feature of this IC is the voltage controlled amplifier (VCA) and integrator (INT) used in place of the more conventional high-pass filter and FET in the feedback circuit of the side chain amplifier (SCA) in the side chain section. This PA4005 Dolby NR system is outlined in Fig. 7-1.

The Dolby NR circuit is outlined in Fig. 7-3. The encoding/decoding (recording/playback) switching involves the FETs Q501 and Q503. Since Q501 is turned on and Q503 turned off during recording mode, a non-encoded signal is applied to the monitor output (LINE OUTPUT).

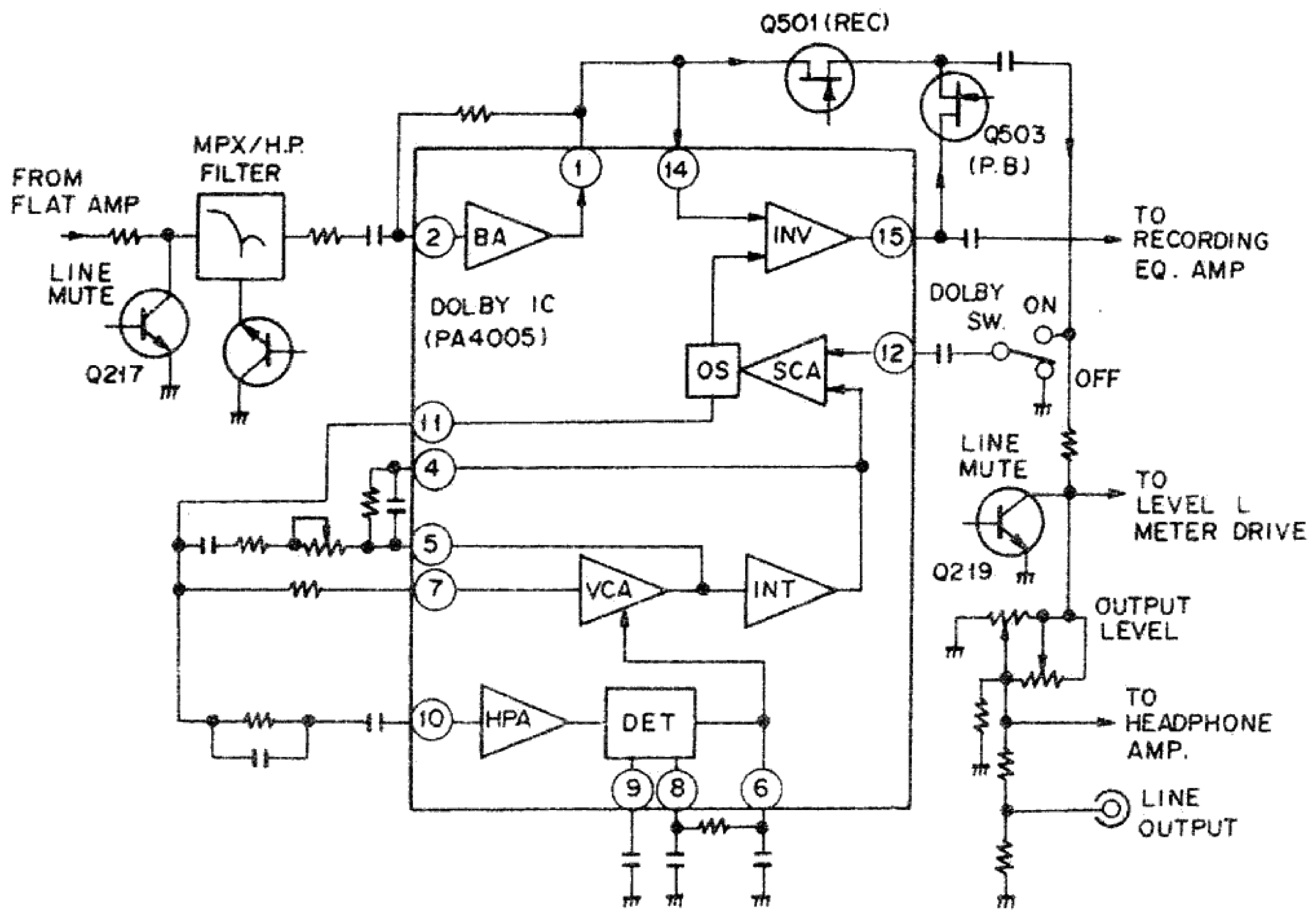


Fig. 7-3 Dolby NR circuit

7.2 RECORDING CIRCUIT

Microphone Amplifier

This low-noise operational amplifier (IC) has been designed to achieve a gain of approximately 32dB, and also a flat frequency response. When the microphone plug is plugged into the MIC jack, the amplifier is connected to the output circuit. Under these conditions, the LINE INPUT terminals cannot be used.

Recording Amplifier

The recording amplifier also employs an operational amplifier IC. Recording equalizer (peaking circuit) and gain switching is performed by electronic switching with transistors, while the recording head FWD/REV switching involves reed relays.

Oscillator

This push-pull circuit module supplies the erase head with the erase current, and the recording head with the recording bias current. The different recording bias levels for the different types of tape (NORM, CrO_2 and METAL) are switched by changing the oscillator power supply voltage which in turn varies the oscillating power. The oscillator itself is switched on and off by Q303 and Q304 connected to the emitter of the oscillator transistor. And in order to prevent the erase head temperature increasing during pause mode, Q305 is turned on to suppress oscillation.

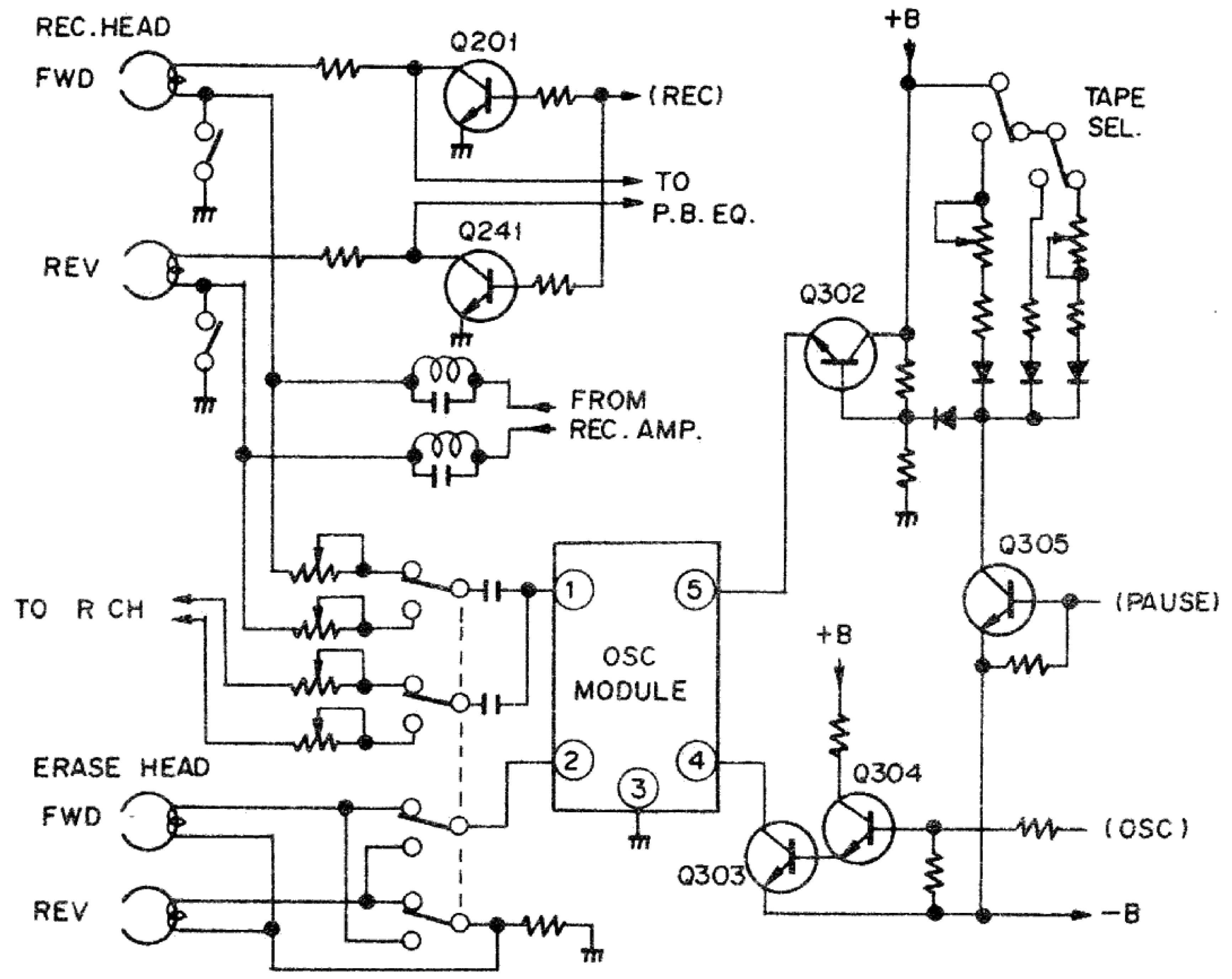


Fig. 7-4 Oscillator circuit

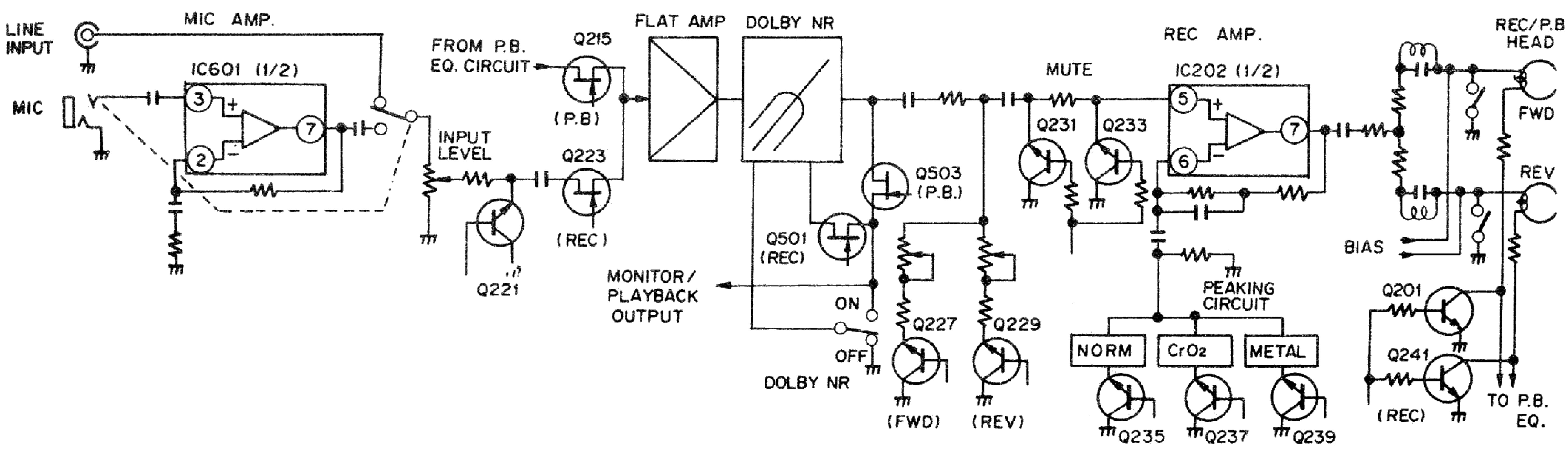


Fig. 7-5 Recording circuit

7.3 TAPE OPERATION CONTROL

By incorporating a logic control IC (BA843), operation mode switching in the CT-F1050 can be performed by "feather-touch" switching.

The BA843 pin arrangement is shown in Fig. 7-6, and the corresponding input/output truth table listed in Table 1. BA843 inputs are applied by switching to low level with negative logic. The BA843 input terminals are connected to the operation mode switches (with ground connection), the timer start circuit, REC MUTE circuit and the micro-processor LSI (automatic tune selection, tape counter, memory stop and tape end control). (See Fig. 7-7).

When the power is turned on, a STOP output signal appears at pin 19 of the micro-processor LSI (PD4009) for about 3.5 seconds. This signal is applied at low level to pin 2 of BA843 after being passed via the inverter (IC709/2-15) to inhibit all operation modes. C725 and R776 serve as a supplementary circuit until the micro-processor starts up, the voltage generated by the charge on C725 being used as the STOP signal during that period.

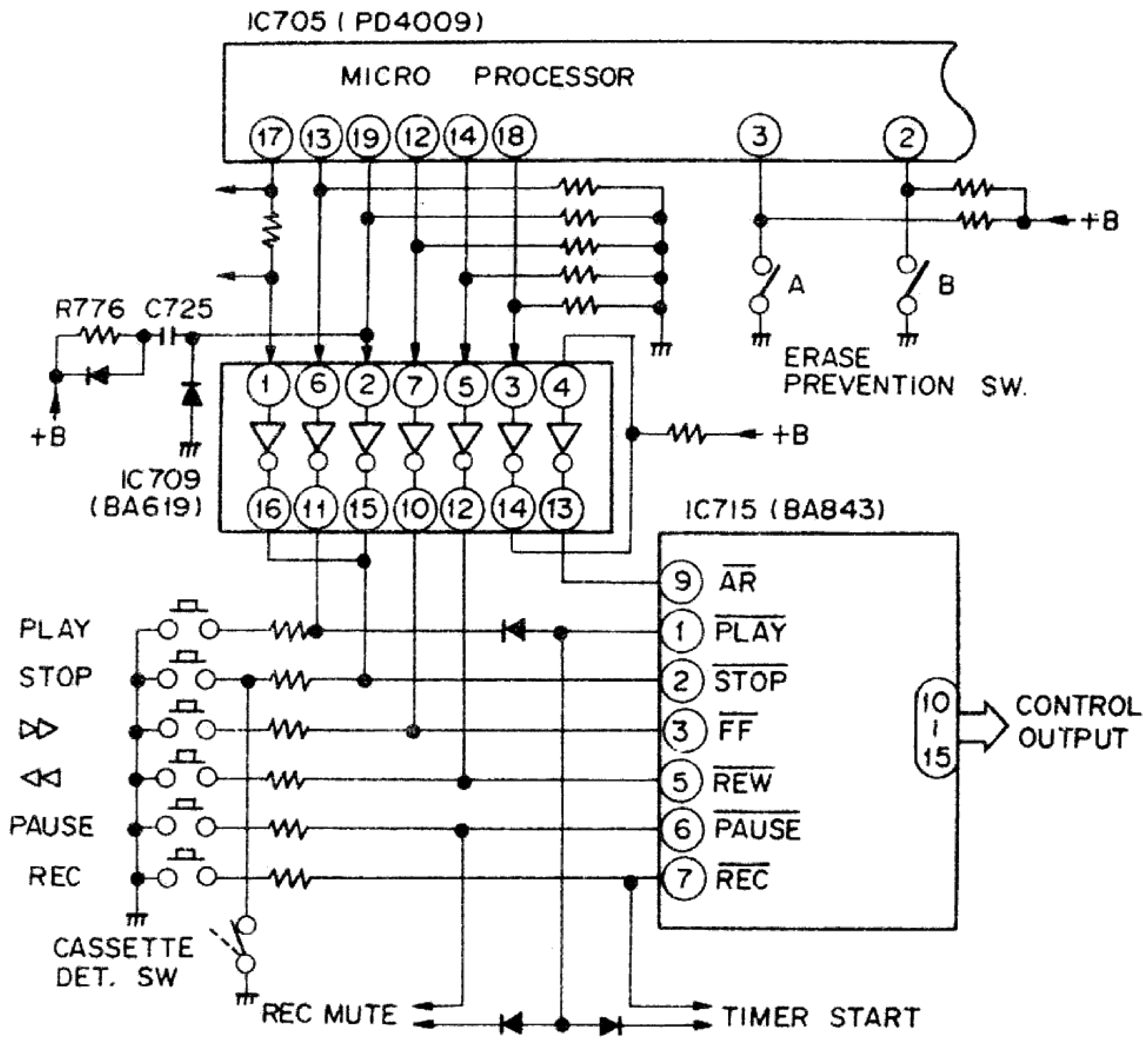


Fig. 7-7 Input circuit of BA843

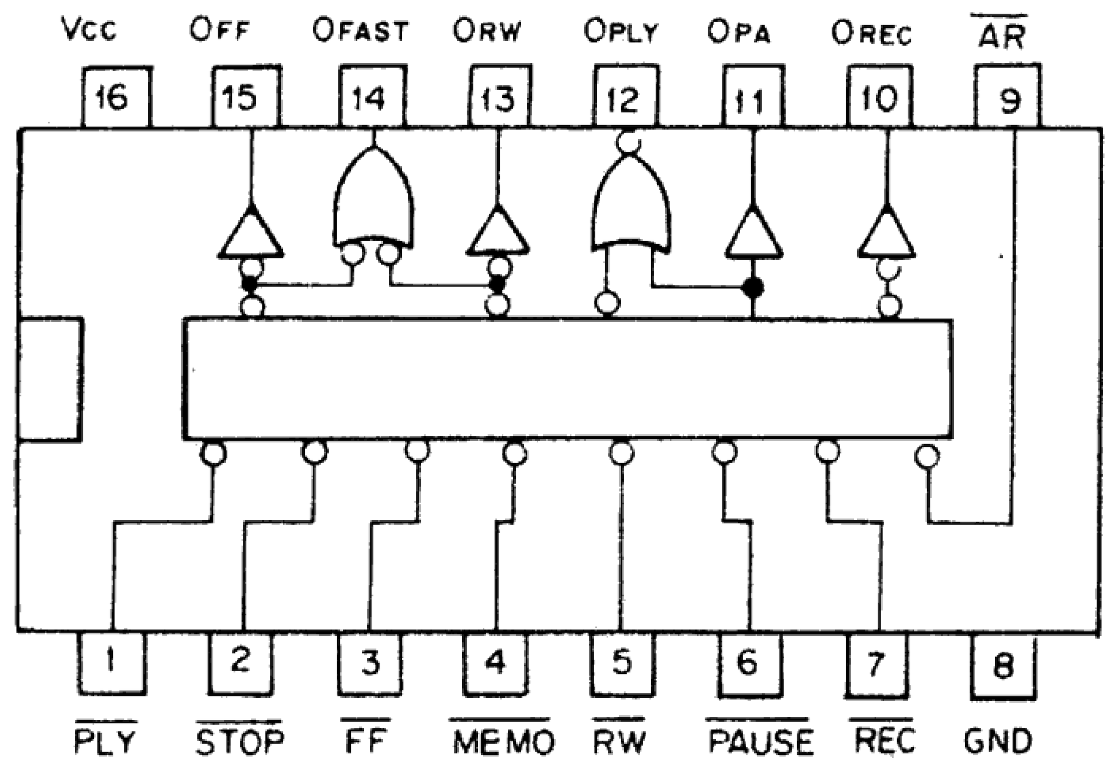


Fig. 7-6 Pin arrangement of BA843

Tape Transport Operation

Before describing the circuit operations during each tape mode in detail, the resultant status of the tape transport mechanism during these modes will be outlined in brief.

The CT-F1050 is a 2-motor tape deck containing a capstan motor and a reel motor. The capstan motor operates continually while the power switch remains on.

- During PLAY (REC) mode:

The two separate capstans are located opposite the left and right sides of the cassette half, each capstan rotating in the opposite direction to the other. During forward play mode (side A) the right hand pinch roller is pressed against the FWD capstan by the FWD solenoid. During reverse play mode (side B) the left hand pinch roller is pressed against the REV capstan by the REV solenoid. The tape heads are moved over to the tape by the head base solenoid. When the reel motor is rotated, the tape wound on to the take-up reel. Note that the reel motor rotates in the opposite directions for forward and reverse playback the driven reels being switched when the motor rotational direction is changed).

Table 1

Input signal	Output						Output mode
	0-FAST	0-FF	0-RW	0-REC	0-PAUSE	0-PLAY	
$\overline{\text{STOP}}$	L	L	L	L	L	L	STOP mode
$\overline{\text{FF}}$	H	H	L	L	L	L	FF mode
$\overline{\text{RW}}$	H	L	H	L	L	L	REW mode
$\overline{\text{PLAY}}$	L	L	L	L	L	H	PLAY mode
$\overline{\text{PAUSE}}$	L	L	L	L	H	L	PAUSE mode
$\overline{\text{REC/PLAY}}$	L	L	L	H	L	H	REC/PLAY mode
$\overline{\text{REC/PAUSE}}$	L	L	L	H	H	L	REC/PAUSE mode

■ During PAUSE mode:
The pinch roller is dropped back away from the capstan, but the tape heads are kept in contact with the tape due to the head base solenoid action. The reel motor stops rotating (since there is no power supply).

■ During fast forward mode:
The pinch roller is again moved away from the capstan, and the reel brake is released by the brake solenoid. The reel motor is rotated and the tape wound on to one of the reels. The tape heads are moved away from the tape except during automatic tune selection mode (when the head base solenoid keeps the heads against the tape—i.e. CUE and REVIEW modes).

Play Operation

When the PLAY switch shown in Fig. 7-8 is turned on, pin 12 of IC715 (BA843) is switched to high level (H level). This output is then applied to the inverter (IC718/4-13) via a buffer (IC713/14-3), resulting in the IC718/4-13 output being switched to low level (L level) and the PLAY indicator lamp lighting up. The pin 12 output is also passed via the buffer (IC713/14-3), OR gate (IC710/12-13-11), buffer (IC713/10-7), OR gate (IC710/6-5-4) and buffer (IC704/16-1) to the base of Q106, resulting in Q106 being turned on to activate the head base solenoid.

Pin 15 of the micro-processor (PD4009) obtains the signal which designates the direction of tape transport (FWD: L level, REV: H level). This signal is switched every time the DIRECTION switch connected to pin 40 is turned on (single push-button operation). The pin 15 output is turned into a 2-phase signal by the pair of inverters (IC711/5-4 and 3-2) for use in switching the selector circuit by two AND gates, thereby activating either the FWD solenoid or the REV solenoid. At the same time, the AND gate outputs are applied to the reel motor control IC (BA6109), thereby deciding which way the reel motor will rotate. (See "Reel Motor Control Circuit" for further details).

Pause Operation

When the PAUSE switch is pressed during either playback or recording modes, pin 11 of BA843 is switched to H level. This output is applied via a buffer (IC713/15-2) to an inverter (IC718/2-15) where it is changed to an L level signal, resulting in the PAUSE indicator lamp being turned on. Since pin 12 is at L level, either the FWD or REV solenoid will be released. But since the pin 11 output is also applied to an OR gate (IC710/13-12-11) via a buffer (IC713/15-2), the head base solenoid remains activated. The reel motor is stopped because the control input is no longer applied to the reel motor control IC (BA6109).

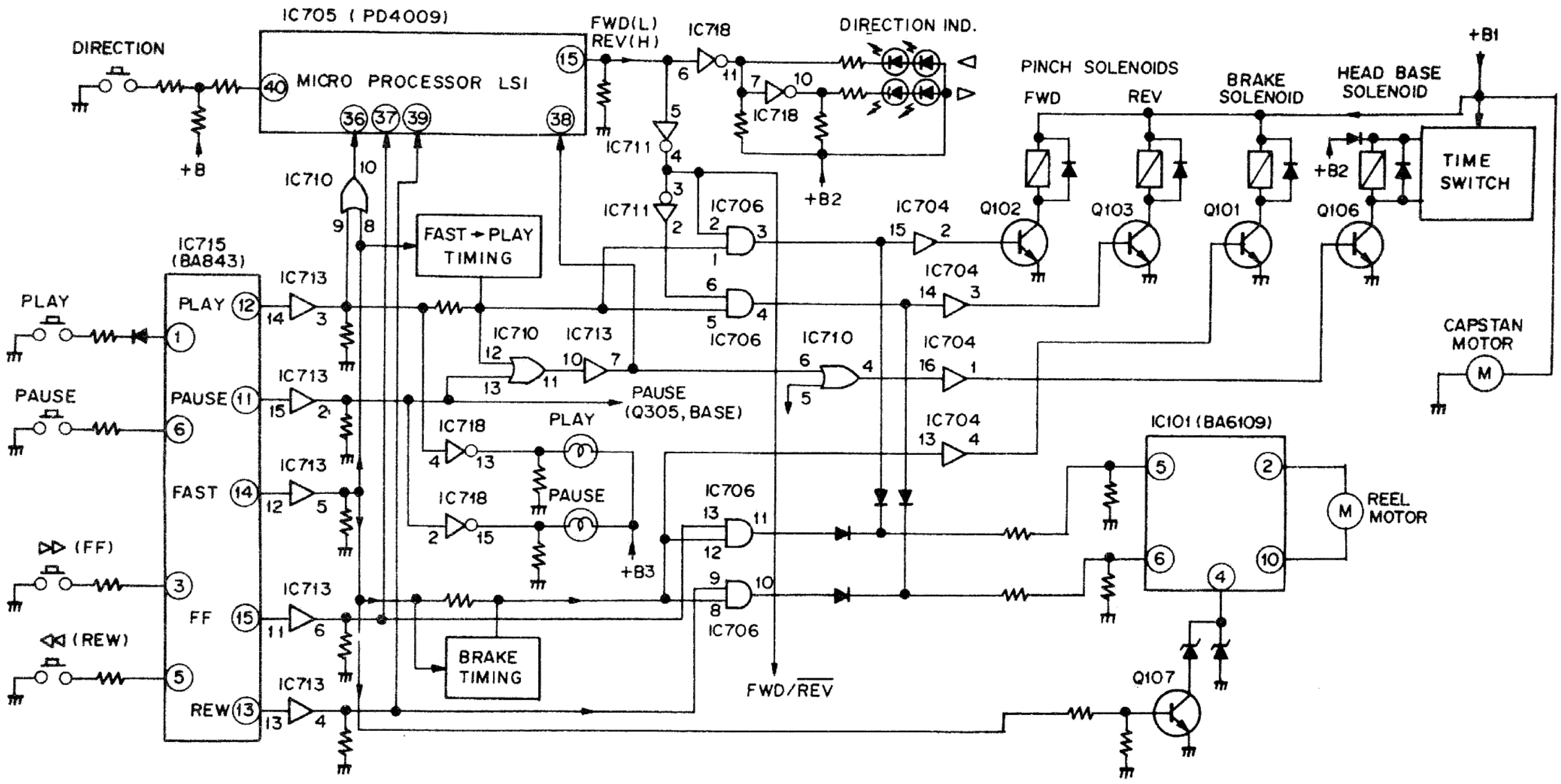


Fig. 7-8 Tape operation control

Fast Forward Mode

When the ▸▸ (FF) switch shown in Fig. 7-8 is turned on, pin 15 of IC715 (BA843) is switched to H level. This output is then applied to an AND gate (IC706/13-12-11) via a buffer (IC713/11-6). If, on the other hand, the ◂◂ (REW) switch is turned on, pin 13 is switched to H level instead, and the pin 13 output is applied to another AND gate (IC706/ 9-8-10) via a different buffer (IC713/13-4). The pin 13 and pin 15 OR output is applied to pin 14, resulting in the pin 14 output being passed to a timing adjustment circuit via a buffer (IC713/ 12-5), and Q101 subsequently being turned on at a suitable time via buffer IC713/13-4. The brake release solenoid is then activated, thereby releasing the reel brake. The AND gates IC706/13-12-11 and 9-8-10 are used to match the brake release solenoid activation with the reel motor operation timing, the AND gate output being applied to the reel motor control IC (BA6109) to determine the direction of reel motor rotation.

Reel Motor Control Circuit

The input/output truth table for the reel motor control IC (BA6109) is listed in Table 2. The rotational status of the reel motor is determined according to input combination. Note that the voltage applied to the reel motor during playback mode differs from that applied during fast forward mode. A voltage of approximately 6.5V is applied during playback and fast forward.

Table 2

Input terminal		Output terminal		Reel motor
pin 5	pin 6	pin 2	pin 10	
L	L	Open	Open	Stop
L	H	L	H	Clockwise
H	L	H	L	Counter-clockwise

Recording Operation

Refer to Fig. 7- 9 for an outline of the relevant circuit. When the REC switch is turned on, pin 10 of IC715 (BA843) is switched to H level. This output is applied via buffer IC713/16-1 to inverter IC718/1-16, and in addition to lighting up the REC indicator lamp, is also used as the REC switching signal (REC/$\overline{\text{P.B.}}$) for suitably timed switching, and as the oscillator switch-on signal (OSC. ON/$\overline{\text{OFF}}$).

Solenoid Voltage Control

The head base solenoid requires a much larger voltage than the other solenoids. But because of over-heating dangers, the applied voltage is dropped back to a lower hold voltage once the solenoid has been activated.

When the head base solenoid is activated as a result of Q106 being turned on (see Fig.7-10), Q105 is turned on by the C104 charge current. As a result, the Q104 base voltage is reduced, and Q104 thus turned on. The +13V power line is thereby connected, and approximately +12.5V is applied to the solenoid. Q105 is turned off once C104 is fully charged, resulting in Q104 also being turned off. A +6V power supply is then passed via D102 with approximately +5V being applied to the solenoid. The corresponding time chart for this operational sequence is outlined in Fig. 7-11.

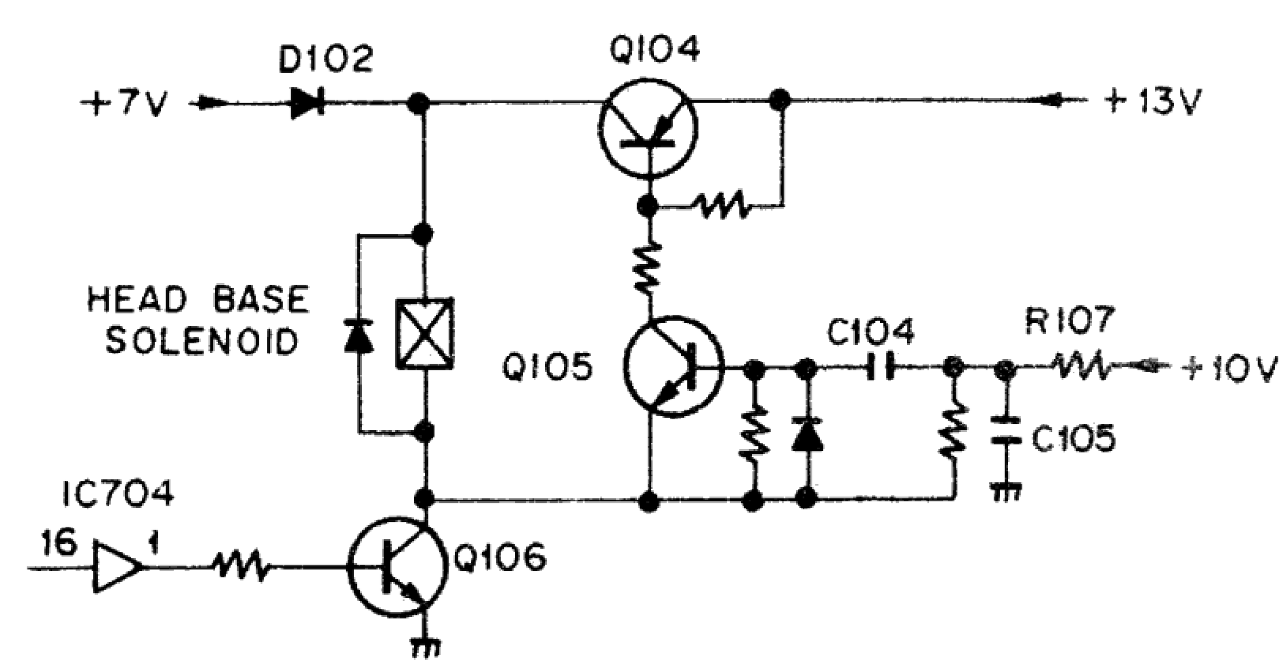


Fig. 7-10 Solenoid voltage control

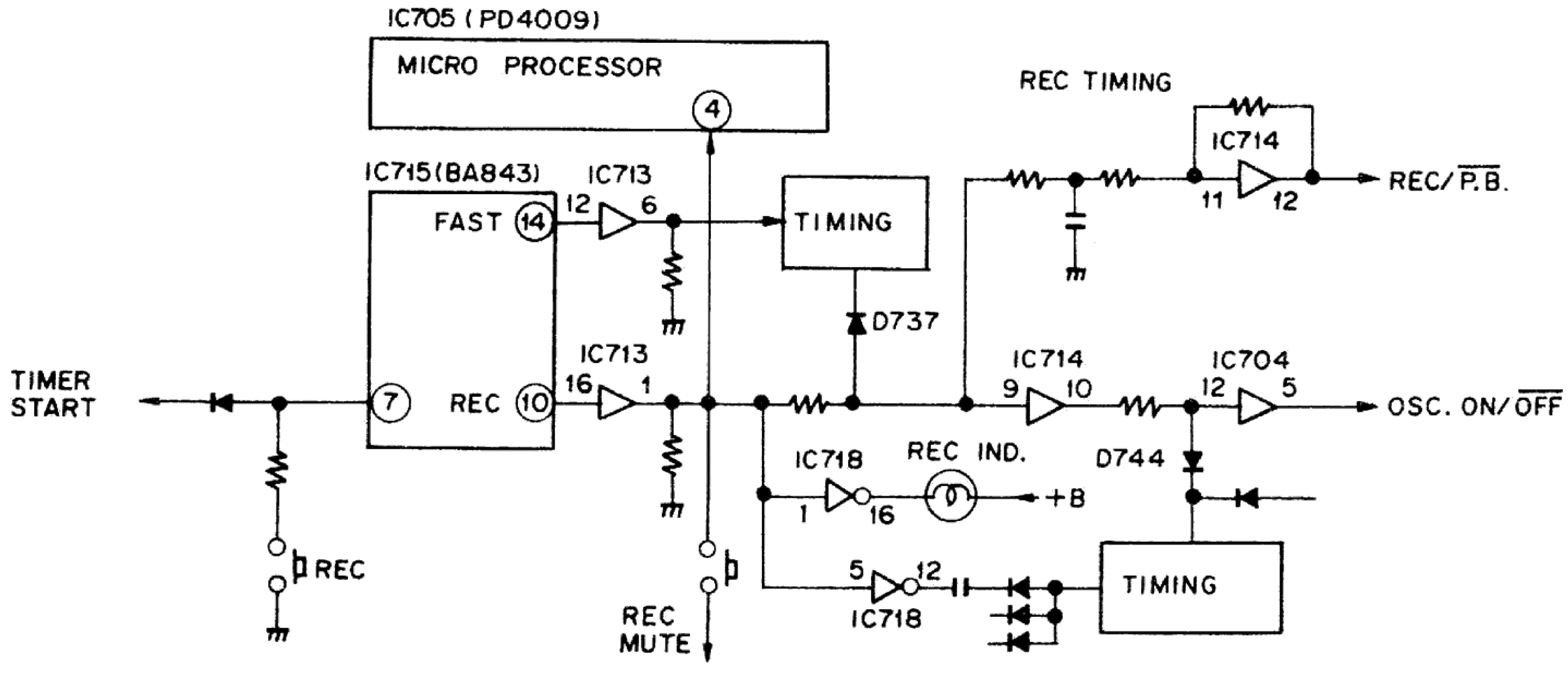


Fig. 7-9 Recording operation control

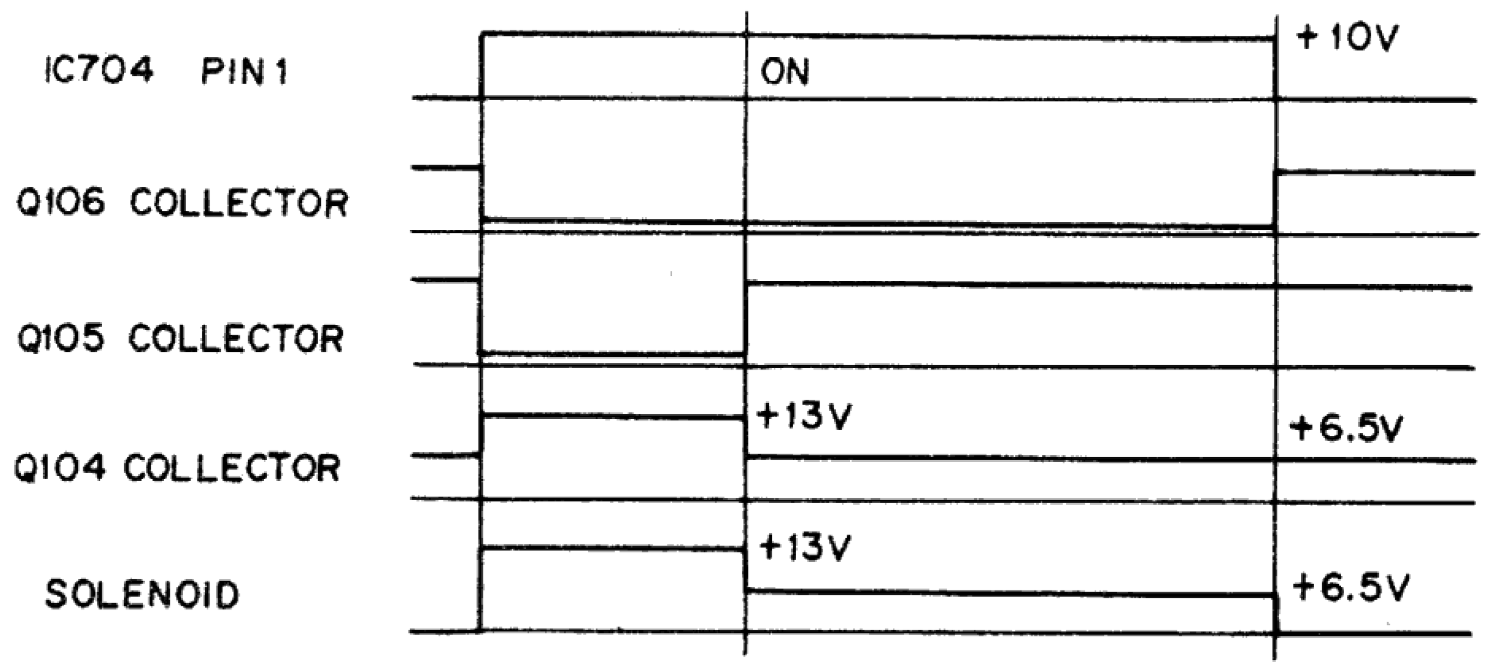


Fig. 7-11 Time chart

Timer Start Operation

■ Timer Playback

When the power is switched on, Q704 is turned on for about 8 seconds by the C727 charging current (see Fig. 7-12). If, then, the TIMER PLAY switch (S1404) has already been turned on, the PLAY terminal (pin 1) of the tape operation control IC (BA843) is switched to L level (play mode command) via D722, S1404, S1403 and Q704. But since the micro-processor LSI (PD4009) generates a STOP signal during the first 3.5 seconds (approx.) after the power is switched on and applies this output signal to the STOP terminal (pin 2) of BA843, the tape deck will remain in stop mode during this initial period. After the STOP signal is cancelled 3.5 seconds later, however, the CT-F1050 is switched over to playback mode (see Fig. 7-13).

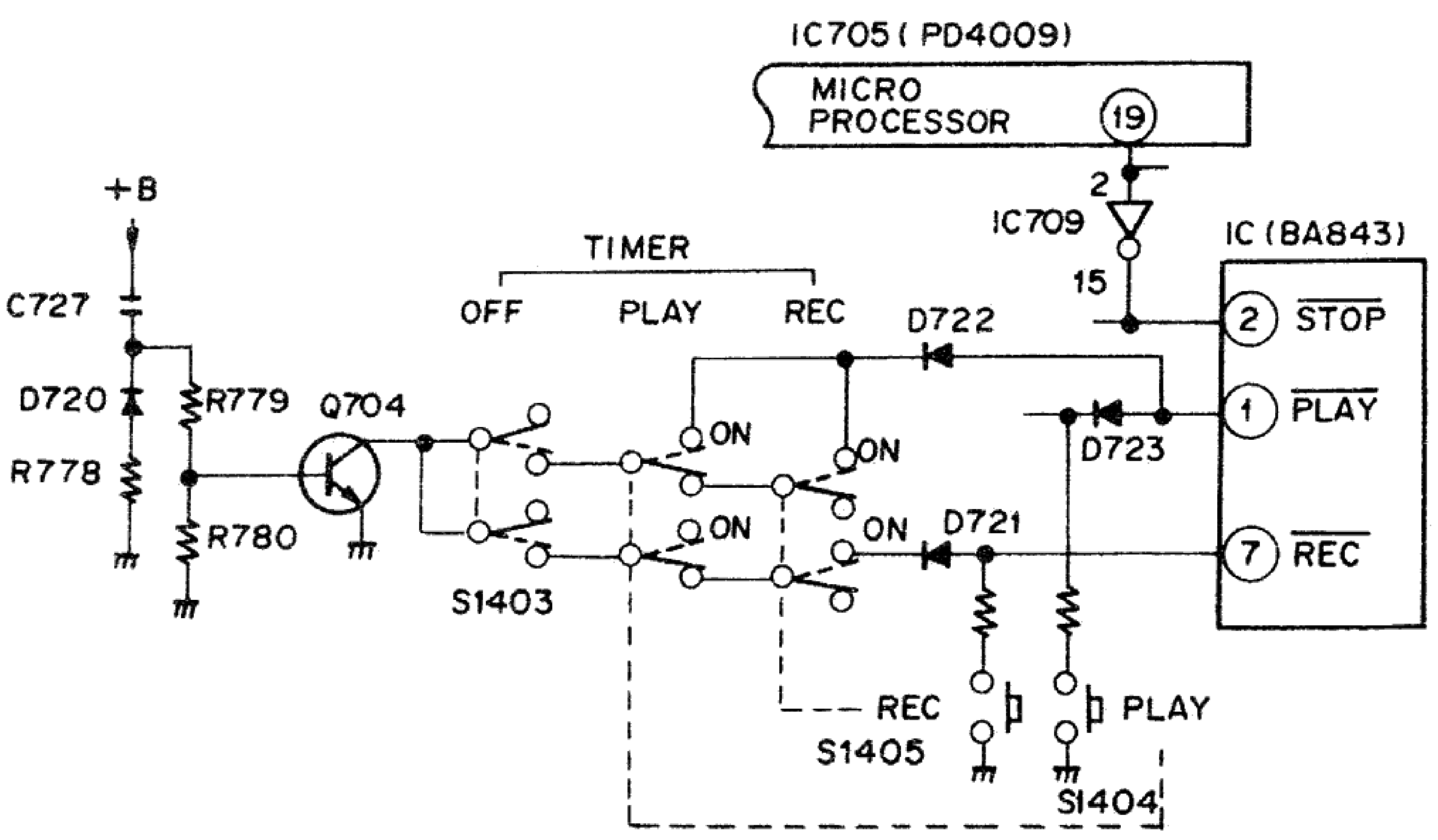


Fig. 7-12 Timer start operation

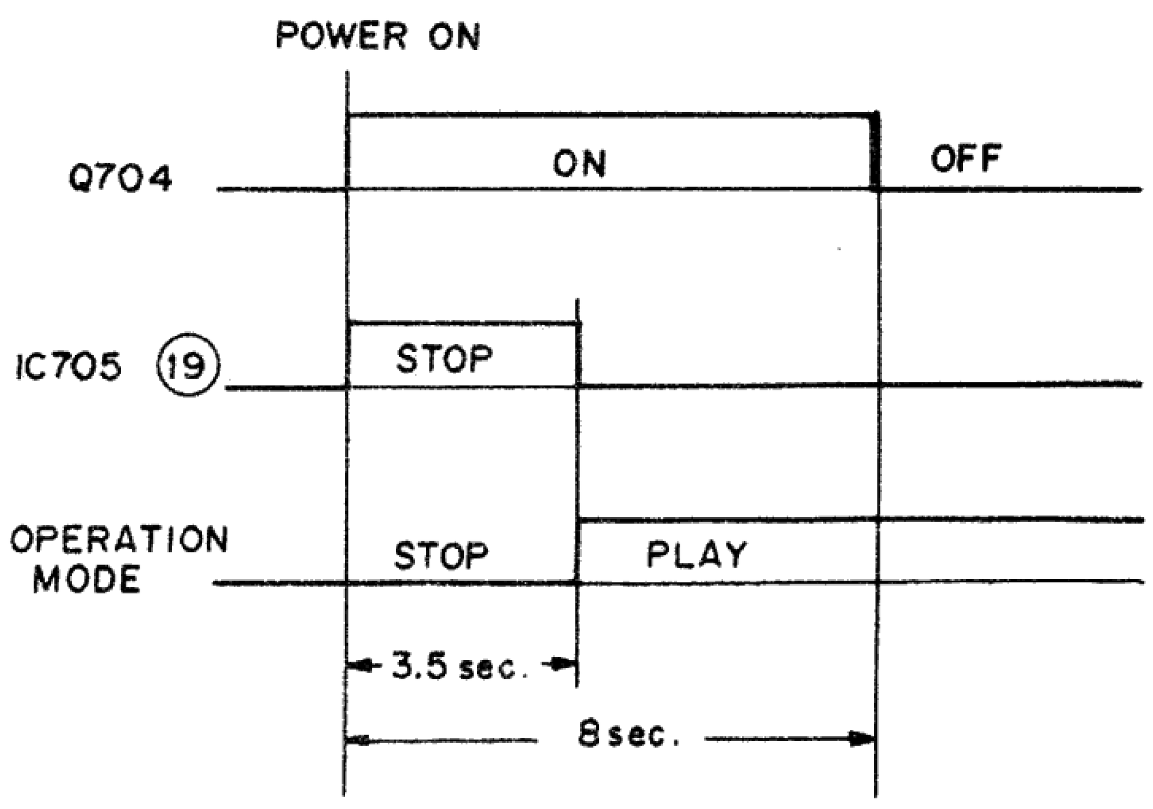


Fig. 7-13 Time chart

■ Timer Recording

In this case, too, Q704 is turned on for about 8 seconds when the power is switched on. And if the TIMER REC switch (S1405) has already been turned on, the BA843 PLAY terminal (pin 1) is switched to L level via D722, S1405, S1404, S1403 and Q704, and the REC terminal (pin 7) is also switched to L level, but by the D721, S1405, S1404, S1403 and Q704 route. The STOP signal ceases 3.5 seconds after the power is switched on, resulting in the CT-F1050 being switched over to recording mode.

7.4 LINE MUTING CIRCUIT

The line muting circuit in the CT-F1050 is used in the following four situations in order to prevent the output of unwanted noise.

1. When power switch is turned on and off.
2. When the tape transport direction is reversed during either recording or playback modes.
3. At the very beginning of recording mode.
4. During all other modes apart from recording and playback.

The signal line is connected to ground by the muting gate via the transistors Q217 ~ Q220 (see Fig. 7-14).

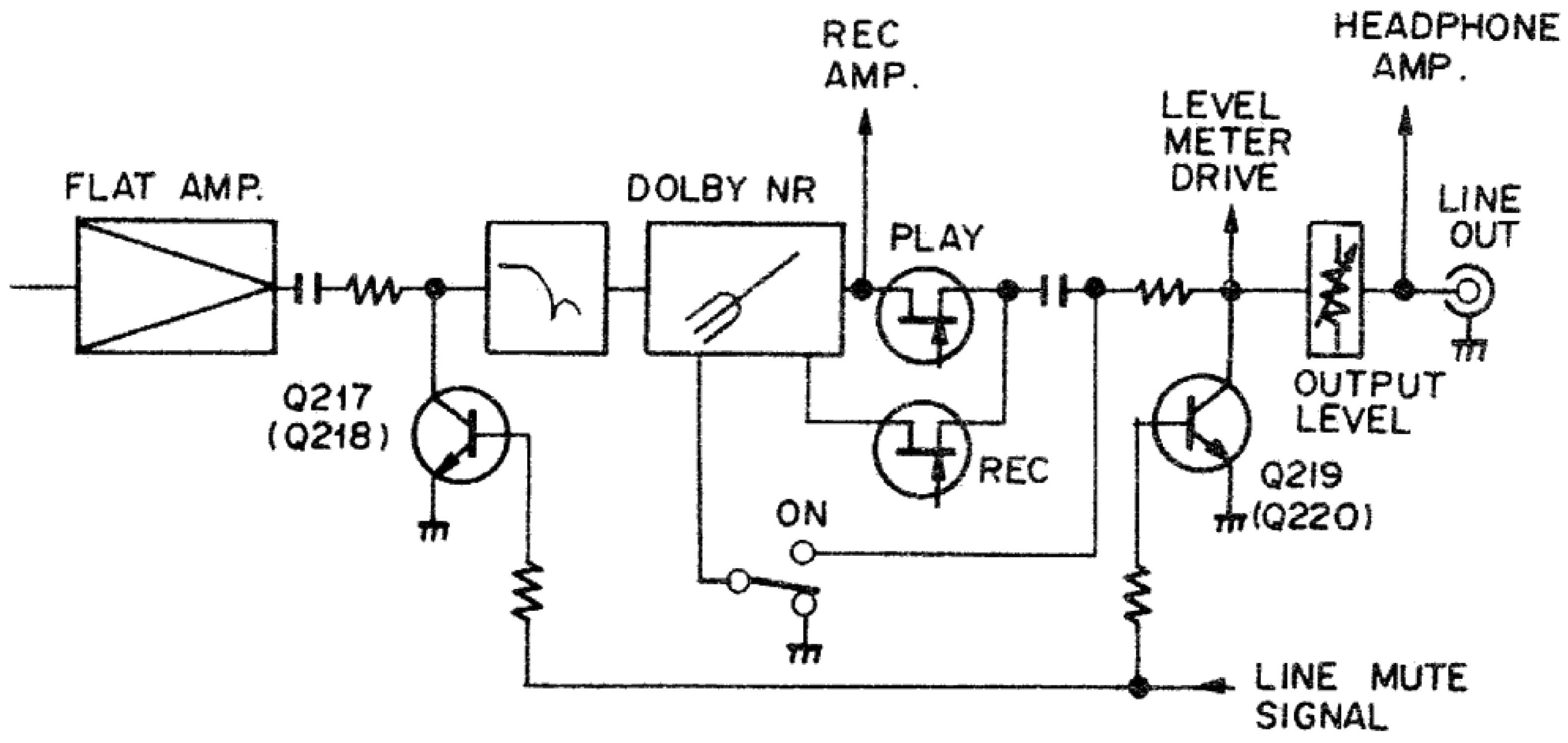


Fig. 7-14 Line muting gate

Power Switch Turned On/Off

■ When power switch is turned on

The +B2 line in Fig. 7-15 is a rapid-rise power line which means that a voltage is applied early to the emitter of Q710 via D746. And since Q710 is turned on by the C747 charging current, +B2 will be applied as the muting signal to the muting gate transistors (Q217 ~ Q220).

■ When power switch is turned off

A signal from the reset circuit (a circuit used to generate micro-processor resetting signals) is applied to the base of Q709 via D909 to turn Q709 on. This results in Q710 also being turned on for +B1 (a power line where the voltage drops slowly when the power is switched off) to be applied as the muting signal to the muting gate transistors.

Reversal of Tape Transport Direction during Recording or Playback

Switching of the tape transport direction during recording and playback modes is detected by the tape direction indicator drive circuit. Pin 12 of IC715 (BA843) (see Fig. 7-15) is kept at H level during recording and playback modes, and this means that Q708 will remain on due to the forward biasing. The IC718/6-11 and IC718/7-10 outputs used to drive the direction indicators are of opposite levels (one at H and the other at L level), and these levels are inverted when the transport direction is reversed. These reciprocal level changes are detected by C752 and C754 as pulses, and the positive pulses obtained from D735 and D757 are applied to Q711. During this period, Q711 is turned on and the Q708 base bias is subsequently cut. As a result, Q708 is turned off, and Q709 turned on by forward biasing via R826 and D748. Q710 is thus turned on, thereby producing a muting output signal.

At the Start of Recording Mode

At the start of recording mode, pin 10 of IC715 (BA843) is switched to H level and the IC718/5-12 inverter output switched to L level. This output level change is detected as a pulse by C753, resulting in a positive pulse (obtained by D756 when switching to recording mode from any other mode) being applied to Q711. Q710 is then turned on to obtain the muting output signal in the same way as described above in section 2.

During All Other Modes Apart from Recording and Playback

- Stop and fast forward modes

Since pins 10 and 12 of IC715 (BA843) are switched to L level, the IC713/10-7 output will also be switched to L level. Q708 is thus turned off and Q709 turned on by forward biasing via R826 and D748. As a result, Q710 is also turned on to provide the muting signal output.

- Pause Mode

With pin 11 of IC715 (BA843) at H level the IC713/10-7 output is also switched to H level, resulting in Q708 being turned on, and Q709 and Q710 being turned off. The H level IC713/15-2 output is then passed as the muting signal via R418, D322, R416, ZD303, and D320. And since Q306 is on during recording mode pause, there will be no muting output signal.

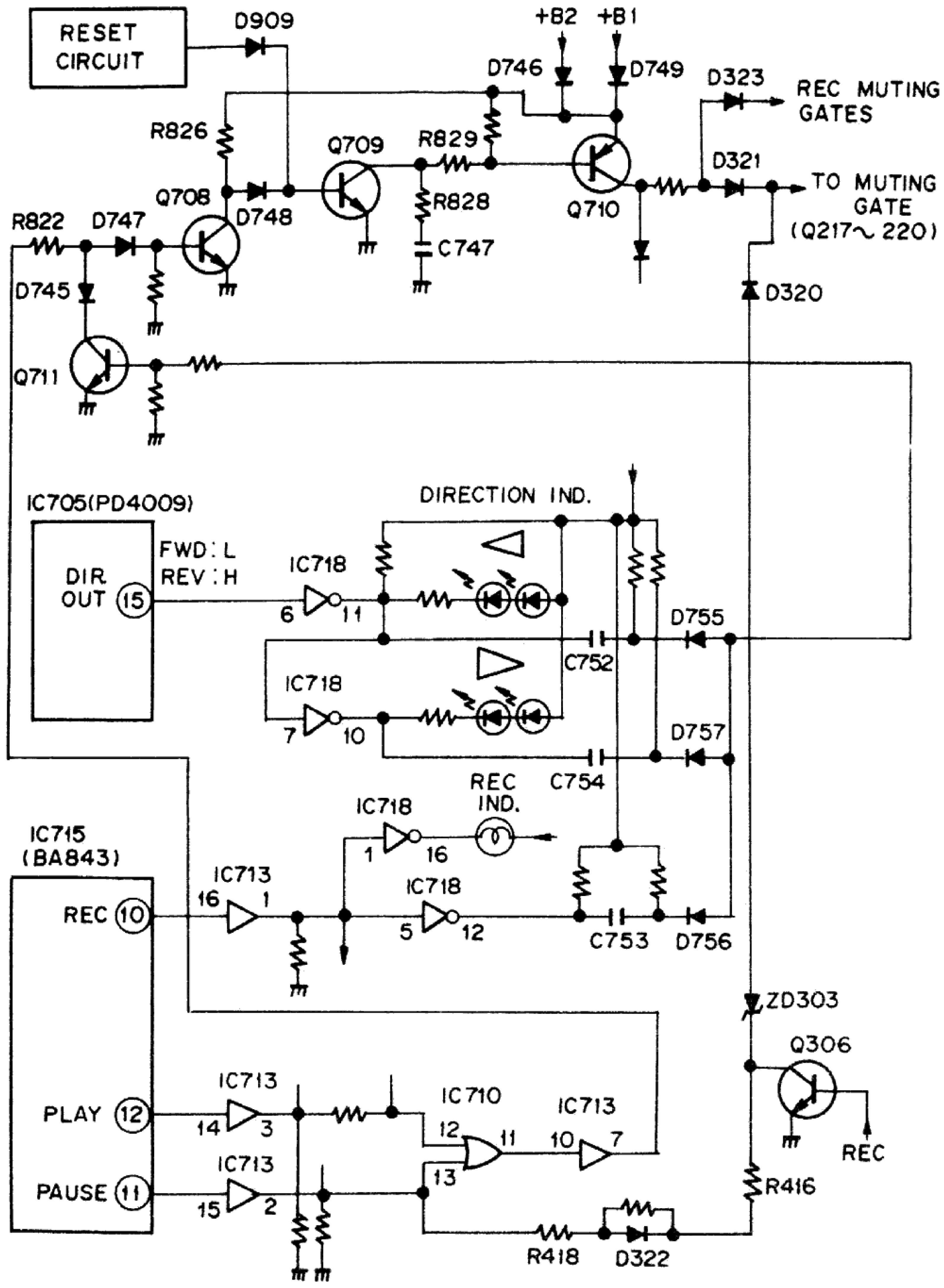


Fig. 7-15 Line muting circuit

7.5 MUTE RECORDING CIRCUIT

This circuit is used in forming blank sections of unrecorded tape during recording mode (see Fig. 7-17).

Basic Operation (Formation of 4-second Blank Sections)

During recording mode, the IC713/16-1 output is at H level. If the REC MUTE switch is then turned on, Q707 is turned on and a negative pulse subsequently applied via C737 to pin 5 of IC720. When a negative trigger pulse is applied to the monostable mutivibrator IC720 (BA222), a positive output appears at pin 6 for four seconds. This output switches the IC704/10-7 output to H level, which in turn switches the muting gate transistors (Q331 ~ 334) on via ZD702 and D324 to prevent any signals from being recorded.

When the IC704 output is switched from H back to L level four seconds later, a negative pulse passed via C740 is applied to the pause terminal (pin 6) of IC715 (tape operation control IC) for resumption of normal recording mode. Fig. 7-16A is the time chart for "basic operation".

Shorter Blank Sections (Less than 4 Seconds)

If the PLAY switch is pressed during the formation of the 4-second blank section of tape described above, the Q705 base voltage is reduced via D726, resulting in Q705 and Q706 being turned on. The IC720 (monostable multivibrator) reset terminal (pin 7) is thus switched back to L level to cancel the IC720 operation mode (i.e. output returned to L level) for resumption of normal recording mode.

If, on the other hand, the PAUSE or STOP switch is pressed during the basic operation mode (4-second blank formation), Q705 is turned on via D724 or D725, and followed by Q706 also being turned on, thereby cancelling the IC720 operation mode. Or, if either of the fast forward switches (▶▶ or ◀◀) is pressed during basic mode, pin 14 of IC715 is switched to H level, resulting in Q706 being turned on via IC713/12-6 and D727 to again cancel the IC720 operation mode. In these latter cases, however, the deck is not switched back to normal recording mode, but to the mode designated by the depressed mode switch. The corresponding time chart is shown in Fig. 7-16B.

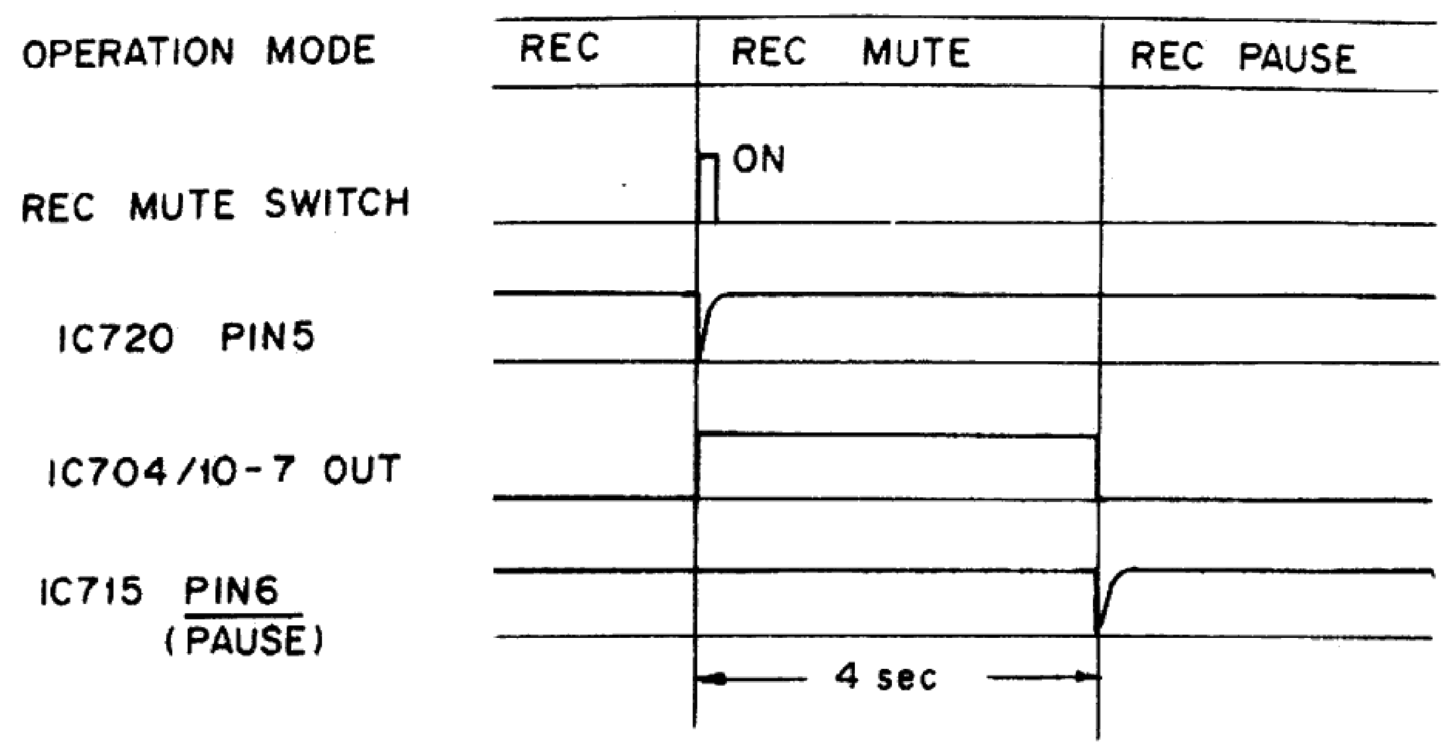


Fig. 7-16A Time chart

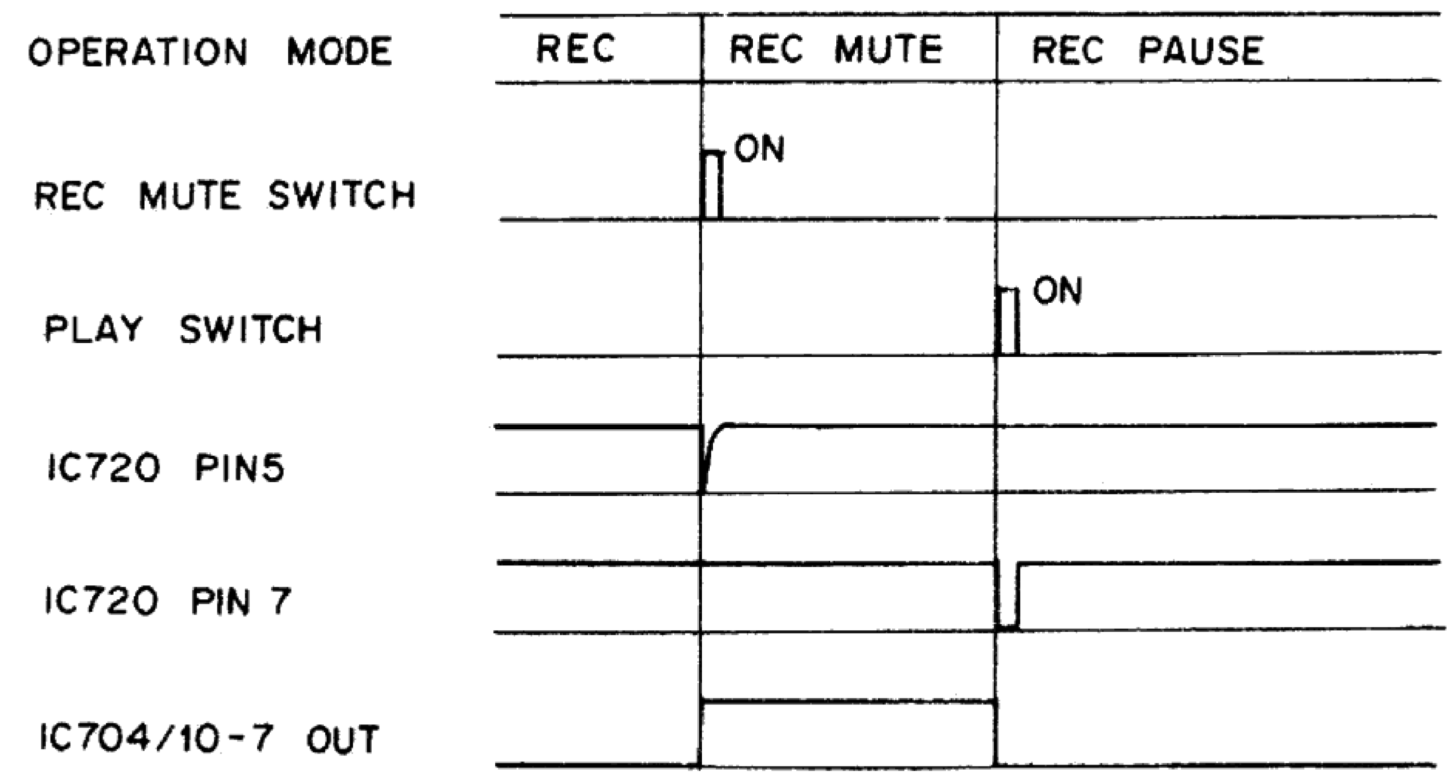


Fig. 7-16B Time chart

Extended Blank Sections (Greater Than 4 Seconds)

When the REC MUTE switch is turned on, the IC704 input is switched to H level via D731, thereby resulting in the output also being switched to H level. And although the IC720 output is switched to L level at the end of the 4 second period, the IC704 output will remain at H level if REC MUTE switch remains depressed, resulting in an extension of the blank section of tape being formed. When the REC MUTE switch is then turned off again, the CT-F1050 will be reverted to recording pause mode. See Fig. 7-16C for the corresponding time chart.

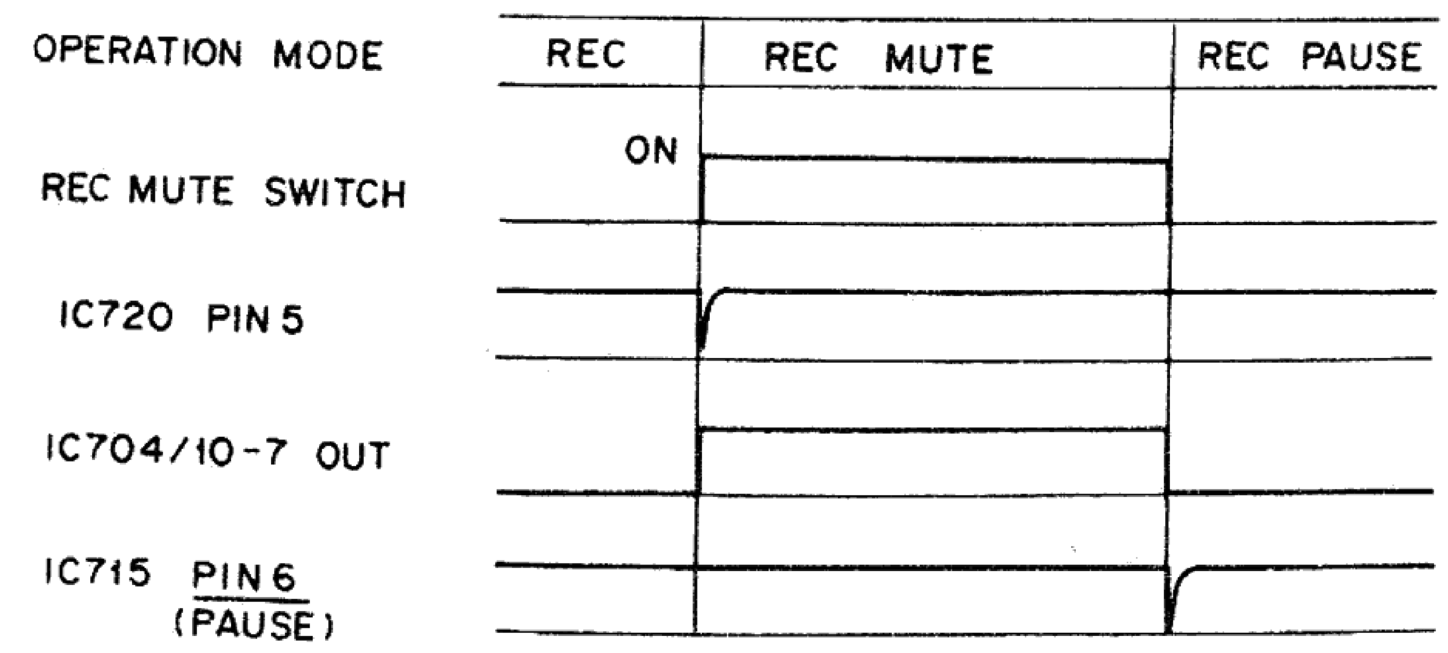


Fig. 7-16C Time chart

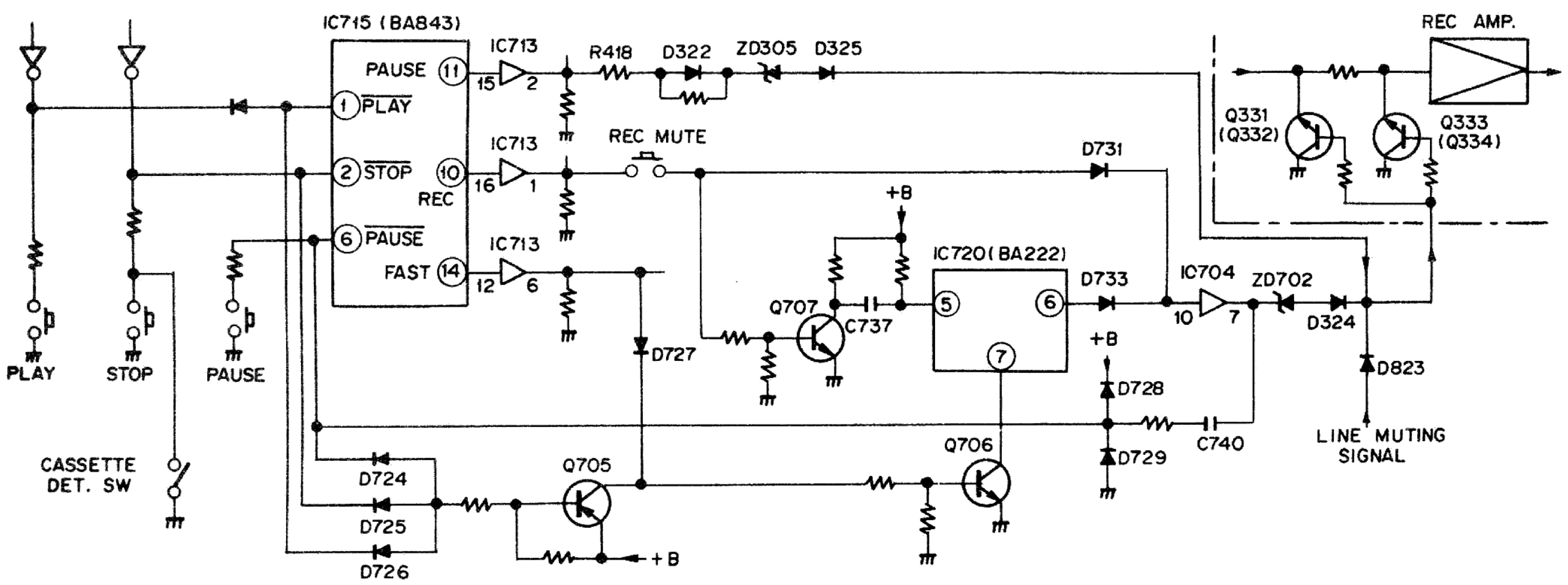


Fig. 7-17 Mute recording circuit

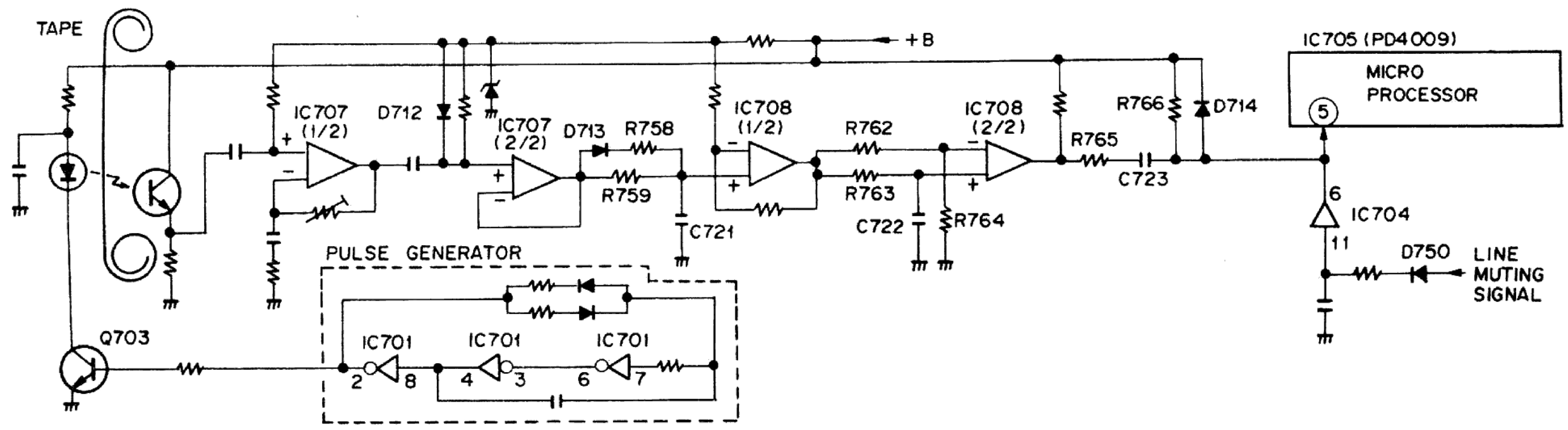


Fig. 7-18 Leader tape detector circuit

7.6 LEADER TAPE DETECTOR

The cassette tape end is detected by this circuit when the magnetic tape changes to leader tape, the resultant data then being sent to the microprocessor. Detection of the change from magnetic tape to leader tape is based on the change in infra-red transmissivity. An infra-red LED serves as the light source which is passed through the tape and applied to a photo-sensitive transistor. In order to reduce the effects of external extraneous light sources, this LED is designed to generate pulse signals. The frequency of this pulse signal is about 2kHz, while the duty cycle is 1/3.

Q703 shown in Fig. 7-18 is turned on and off according to a pulse generator output, resulting in the LED generating pulse signals. This pulsating beam is passed through the tape and converted into electric signals by the photo-sensitive transistor. These signals are amplified by IC707-1/2, clamped by D712 (shift in DC level), and applied to a buffer (IC707-2/2). This buffer output is then integrated (smoothed) by C721 and R578 or R579. C722 is charged up quickly by D713 and R578, and discharged slowly via R759. The voltage produced by the charge on C722 is amplified by about 9dB by the DC amplifier (IC708-1/2), the resultant output is then applied to the inverting input (−) of a voltage comparator (IC708-2/2) via a voltage dividing circuit (R762 and R764), and also to the non-inverting input (+) via a time constant circuit (R763 and C722). As long as the tape infra-red transmissivity remains constant, there will not be very much variation in the voltage comparator inputs, and the inverting input (−) via the voltage dividing circuit will be lower in level than the non-inverting input (+) via the time constant circuit. The voltage comparator (IC708-2/2) output will thus be an H level output.

When the leader tape of the cassette tape is reached, the infra-red transmissivity is greatly increased, resulting in a much larger wave height of the photo-sensitive transistor output signal. The charge on C721 is thereby increased, as is the corresponding voltage. The input voltage of the comparator (IC708) inverting input (−) is likewise increased, but a similar increase in the non-inverting input (+) voltage is delayed by the time constant circuit. This means that the inverting input (−) voltage will temporarily be higher than the non-inverting input (+) voltage (although the non-inverting input voltage will finally be the higher voltage). During this period, the comparator (IC708-2/2) output level is switched to L level, and this output level is subsequently differentiated by R765, C723 and R766 for detection of a negative pulse. The change from L to H level is absorbed by a clipper (D714).

Hence, when the leader tape is reached, a negative pulse is applied to pin 5 of the microprocessor LSI (PD4009), thereby informing the microprocessor that the end of the tape has been reached. The waveforms at each section of the circuit are shown in Fig. 7-19.

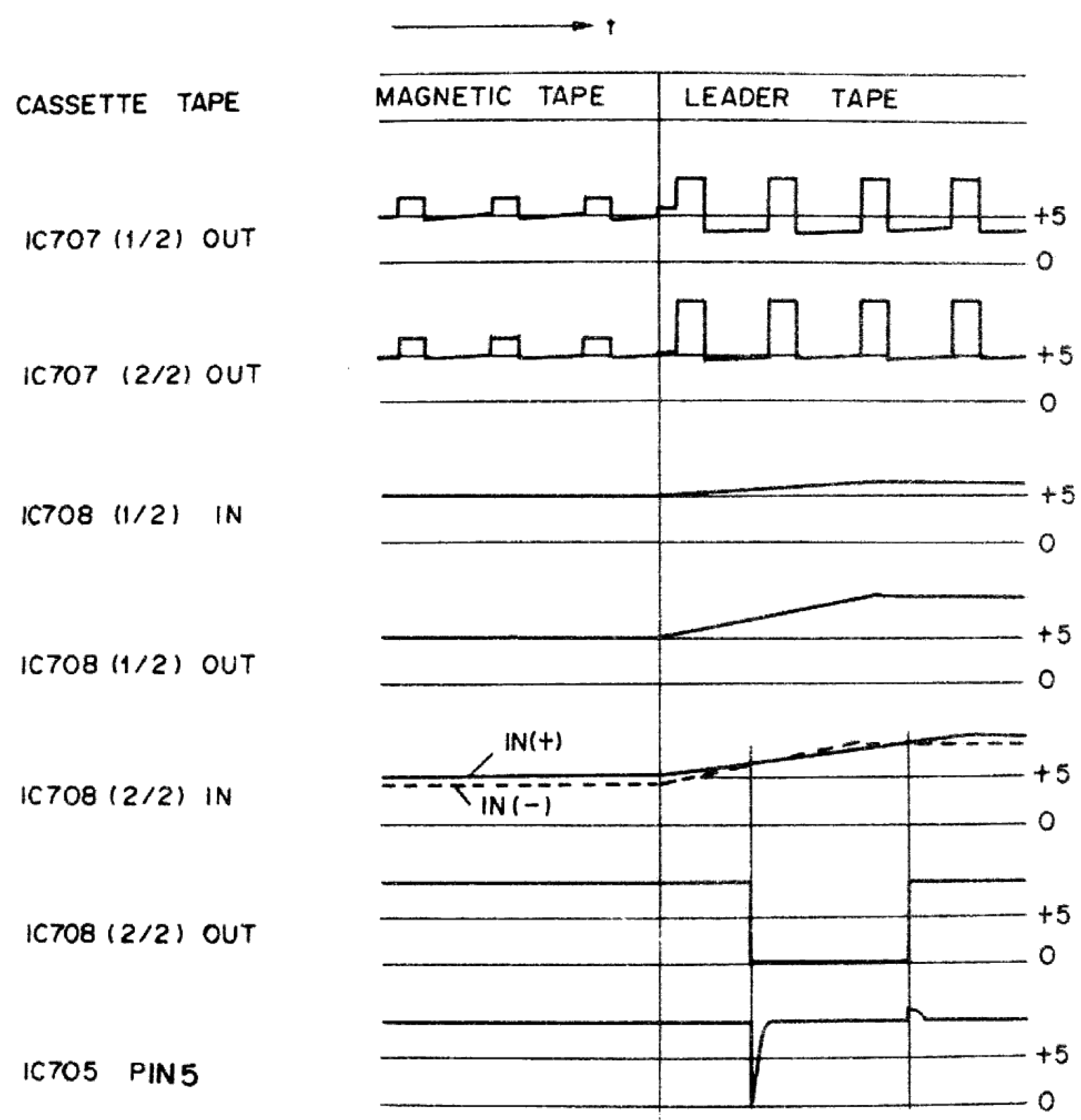


Fig. 7-19 Waveforms at detector circuit

7.7 TAPE TRAVEL DETECTOR

This circuit detects tape travel and passes the corresponding data to the microprocessor. When tape transport commences, a fan is rotated to generate counter pulses by a photo-interrupter. These counter pulses are then shaped by a Schmitt trigger circuit consisting of a pair of inverters (IC701/11-12, 14-15), and the shaped pulses are subsequently differentiated by C714 and R742, and C715 and R743. The positive pulses are combined by D710 and D711, and the result then converted to negative pulses by an inverter (IC701/9-10).

Hence, the negative pulses generated during tape transport are applied continuously to pin 6 of the microprocessor LSI (PD4009).

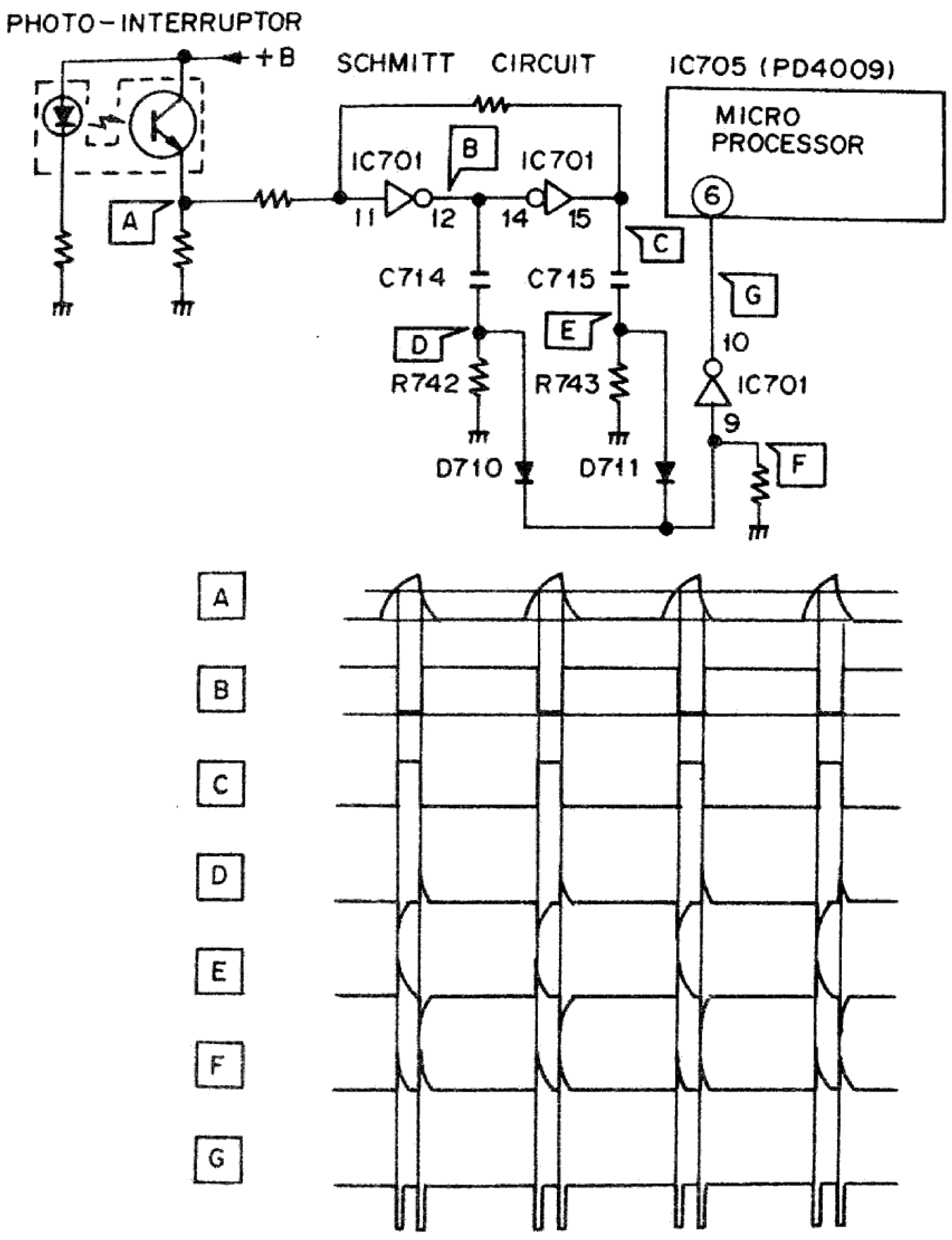


Fig. 7-20 Tape travel detector circuit

7.8 UNRECORDED BLANK DETECTOR

This circuit detects the blank sections of tape between tunes of a recorded cassette tape, and passes the corresponding data to the microprocessor (Fig. 7-21).

The CT-F1050 has been equipped with a 4-track playback head, and is capable of detecting signals in all 4 tracks irrespective of FWD/REV direction by means of 4 pairs of playback equalizer amplifiers. And since the tape also makes contact (note 1) with the head during FAST mode (fast forward mode) with the FUNCTION selector in the PMS, PROGRAM, and REPEAT (note 5) positions, detection is also possible during these operations. The signal detected by the playback head is amplified by a playback equalizer amplifier, and then after mixing left and right channels, amplified again.

The CT-F1050 incorporates 2 pairs of detector circuits, one for side A and the other for side B of the cassette tape. Since the basic operation is the same for both circuits, the side A circuit only need be described.

Q507 is involved in switching PLAY/FAST gain and the filter characteristics. The change in characteristics due to Q507 on/off switching is outlined in Fig. 7-22. In Fig. 7-21, if the detected and amplified signal exceeds the prescribed level, Q702 is switched on, resulting in the C707 charge (note 2) being discharged via R717, R709 and Q702. The level of the non-inverting input (pin 5) of the voltage comparator (IC717-2/4) is thus reduced, resulting in the output (pin 2) being switched to L level, followed by the side A data input (pin 8) of the microprocessor LSI (PD4009) also being switched to L level.

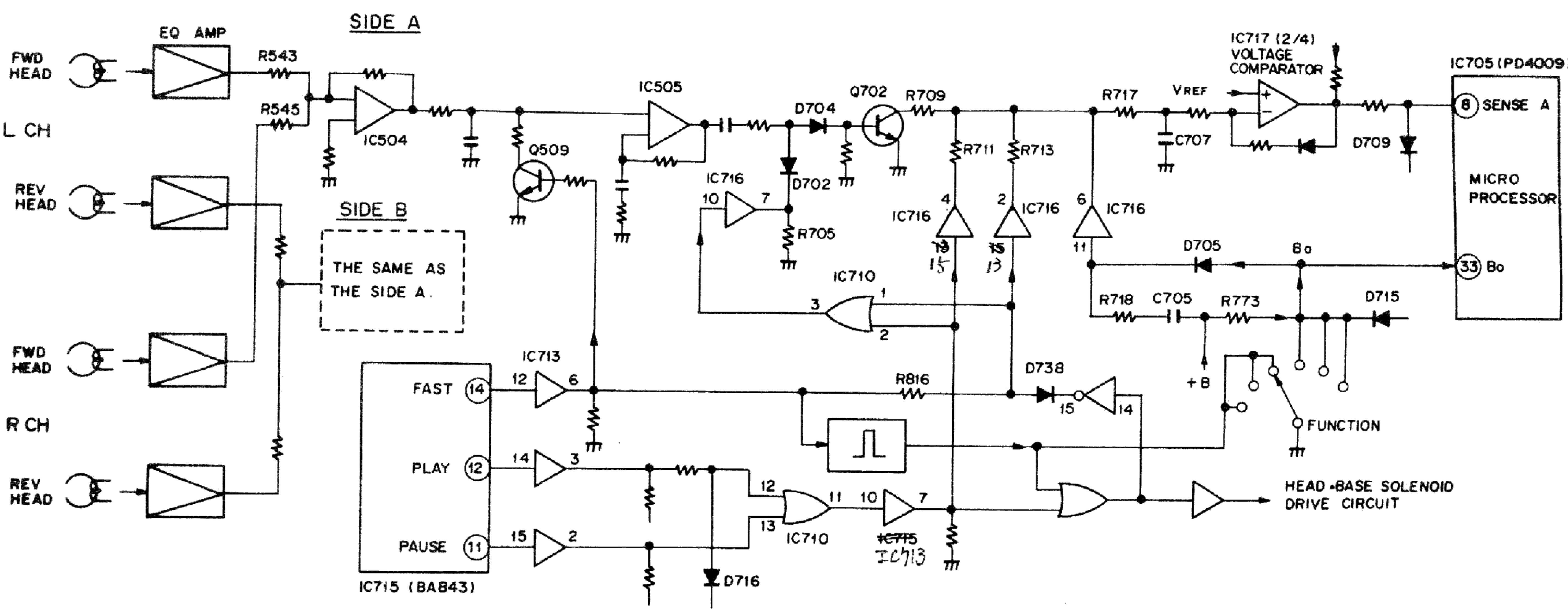


Fig. 7-21 Unrecorded blank detector circuit

When an unrecorded blank section of tape is reached, no signal will be detected, resulting in Q702 being turned off. Since IC716/13-4 is an H level output (note 3) during playback mode, C707 will be charged up via R711 and R717 when Q702 is turned off. If the voltage produced by the C707 charge increase exceeds the threshold voltage (about 5.5V) of the voltage comparator (IC717-2/4), the comparator output (pin 2) is switched to H level, resulting in pin 8 of the microprocessor LSI (PD4009) also being switched to H level. This change of pin 8 input level from L to H serves to inform the microprocessor that a blank section of tape has been reached. During playback mode, the change from L to H level actually occurs about 3 seconds after the blank section has been reached.

When Q702 is turned off upon reaching a blank section by the H level output of IC716/15-2 during FAST mode (fast forward), C707 is charged up via R713 and R717. When the C707 voltage exceeds 5.5V, the comparator output is switched to H level, thereby informing the microprocessor that a blank section of unrecorded tape has been reached. During fast mode, the microprocessor is informed about 120ms after the blank section has actually been reached (note 4).

During STOP operation mode, the IC716/7-10 output is switched to open status, and the detector circuit is grounded by a current passed from D702 via R705. When the operation mode is switched to playback or fast forward (▶▶, ◀◀), the IC716/7-10 input and output become H level, resulting in D702 being cut off.

When the FUNCTION selector is in any of the PROGRAM CLEAR positions (⊏⊐, ⊐, ⊏⊃), the B0 signal (note 5) will be H level, resulting in IC716/11-6 output also being switched to H level. C707 is thus charged up via R717 irrespective of whether Q702 is on or off. The blank section detector signal will not, therefore, be passed to the microprocessor.

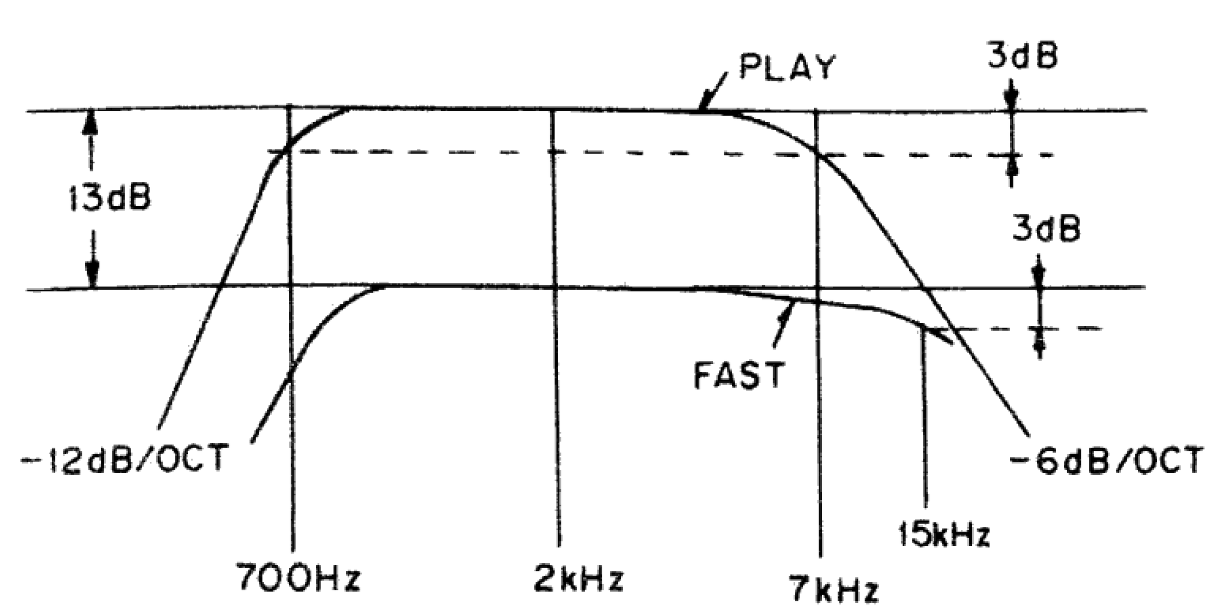


Fig. 7-22 Characteristics due to Q507 on/off switching

NOTE 1
During fast forward mode with the FUNCTION selector in the PMS, PROGRAM or REPEAT (note 5) positions, the head base solenoid is temporarily activated and the head moved over to the tape before being released again. But because the brake solenoid is also activated at this time, the head base is locked with the head still in contact with the tape.

NOTE 2
Immediately after the power is switched on, IC 716/6-11 is turned on via C705 and R718 to be thereby switched to an H level output (note 3). C707 is consequently charged up via R717.

NOTE 3
IC716 (BA618) incorporates 7 non-inverting buffers. The output is an open emitter circuit, which means a +B output is obtained when the input is at H level. The output is open when the input is at L level.

NOTE 4
The difference in time taken to inform the microprocessor that a blank has been reached during playback and fast forward modes is due to the difference in the C707 charge up time constant, which in this case is due to the difference between R711 and R713.

NOTE 5
REPEAT here refers to repeat of the programmed playback order. For repeat of the full tape, the FUNCTION selector must be put into the ⊏⊃ position.

NOTE 5
B0 ~ B2 are signals which designate the operation mode of the microprocessor. The circuit pulled up by +B is grounded by the FUNCTION selector switches, and the operation mode thus determined according to the level combination.

Prevention of Detection Error (1)

Approximately 3 seconds is required for the microprocessor to learn that a blank section of unrecorded tape has been reached during playback mode, while approximately 120msec is required during fast forward mode. So during these initial periods, the microprocessor awareness does not match the actual status. And if the tape direction is then switched during these periods, it is possible that the microprocessor may mis-detect the blank section.

When the blank section is reached, Q702 is turned off, and C707 starts to charge up. If the tape direction is then changed before the C707 voltage reaches the comparator (IC717-2/4) threshold voltage, the threshold voltage may still be reached by redetection of the same side signal (see Fig. 7-23(B)). That is, the side A blank section not detected during FWD travel may be detected during REV travel, thereby resulting in error.

The circuit sown in Fig. 7-24 is designed to prevent the generation of this kind of error. After a blank section has been reached, the IC717-2/4 output becomes H level. And if tape travel is reversed during that time, a positive output pulse will appear at pin 17 of the microprocessor LSI (PD4009), but since the IC712/2-13 output is at L level (note 6), the pin 17 output will be absorbed, thereby blocking any change in the detector circuit.

Q702 is turned on when a recorded section of tape is reached, and the IC717-2/4 output is switched to L level, resulting in IC712/2-13 becoming open (note 6). If tape travel is then reversed, a positive pulse output appears on pin 17 of the mocroprocessor LSI (PD4009). Although this results in the IC712/4-14 output being switched to L level, the detector circuit is not effected because Q702 is on and C707 already discharged. When a blank section of unrecorded tape is then reached, Q702 is turned off and C707 charged up again. Under these conditions, the comparator (IC717-2/4) output is switched to L level and IC712/2-13 opened. If the tape travel direction is then reversed at this point of time, a positive output pulse appears at pin 17 of the microprocessor, resulting in the IC712/4-14 output level being switched to L level and C707 being discharged again. (See Fig. 7-25). In this way, the blank detected with side A in the foward direction will be the same as the blank detected in the reverse direction, thereby preventing the generation of error.

NOTE 6
IC712 (M5417P) is a Darlington array of NPN transistors incorporating 7 inverting buffers. Since the output is an open collector circuit, the output will be grounded (L level) when the input is an H level input. When the input is an L level input, the output will be opened.

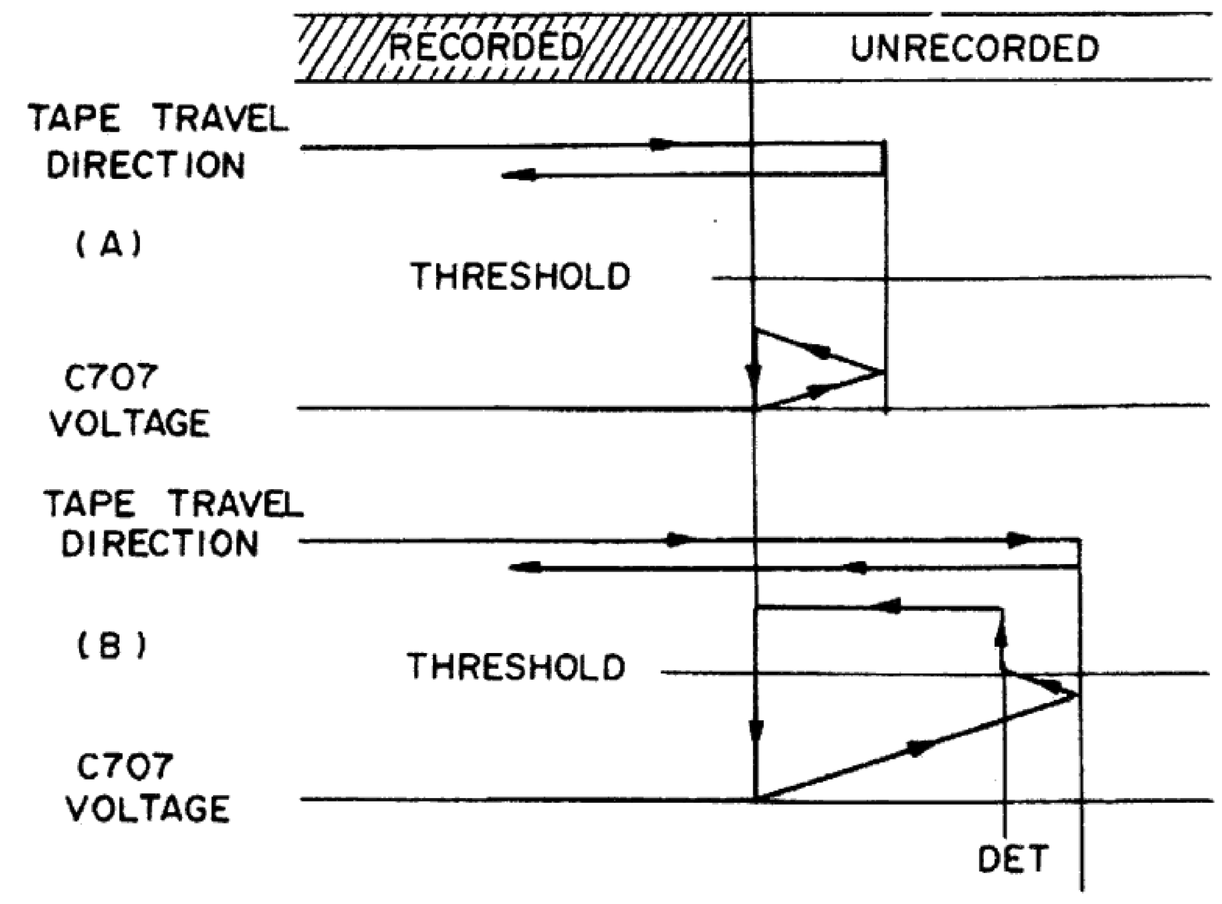


Fig. 7-23 Threshold voltage

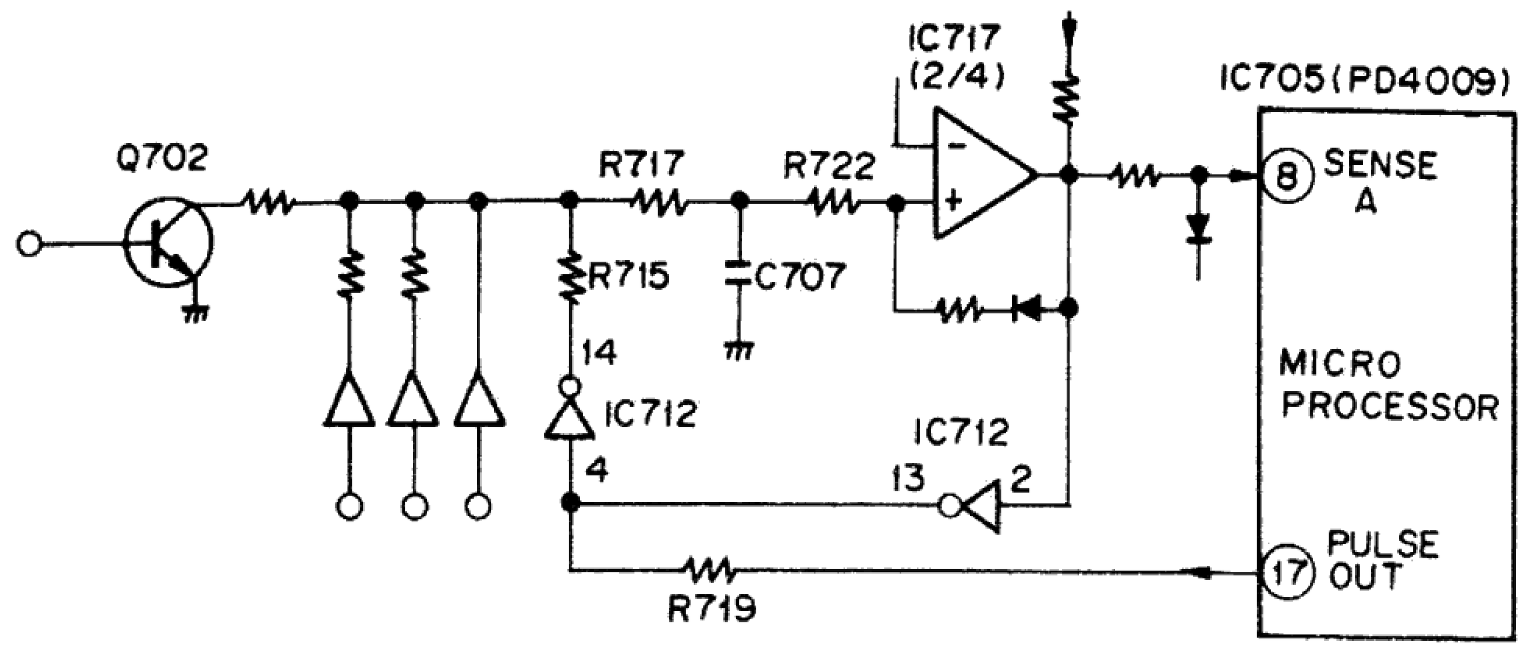


Fig. 7-24 Prevention detection error circuit

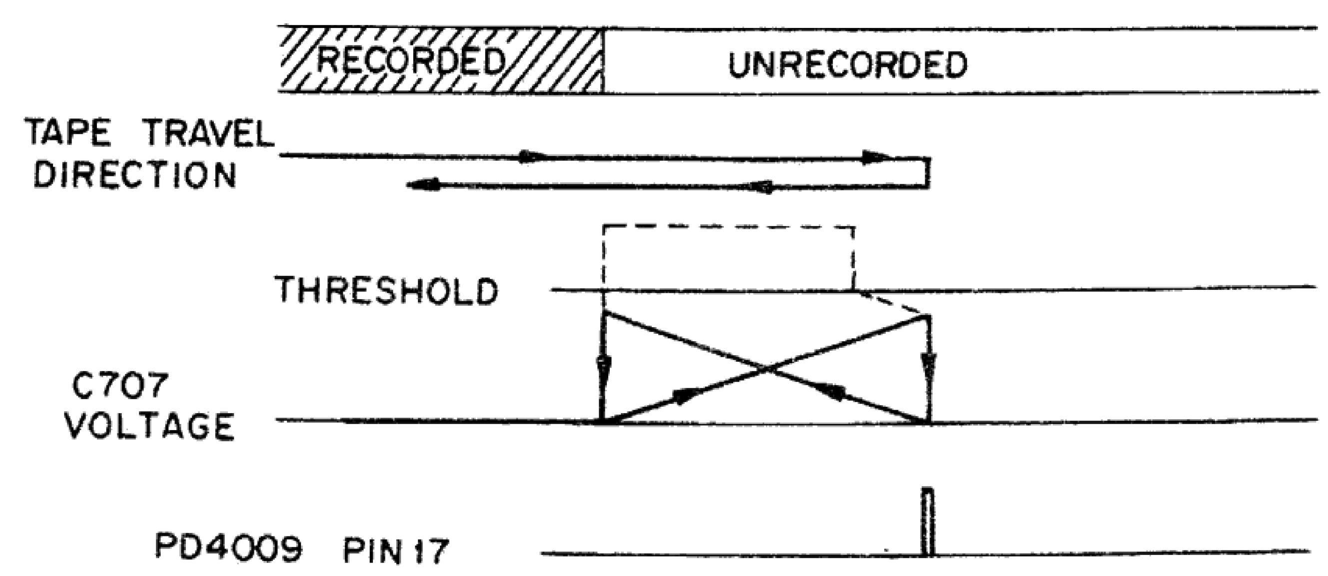


Fig. 7-25 Threshold voltage

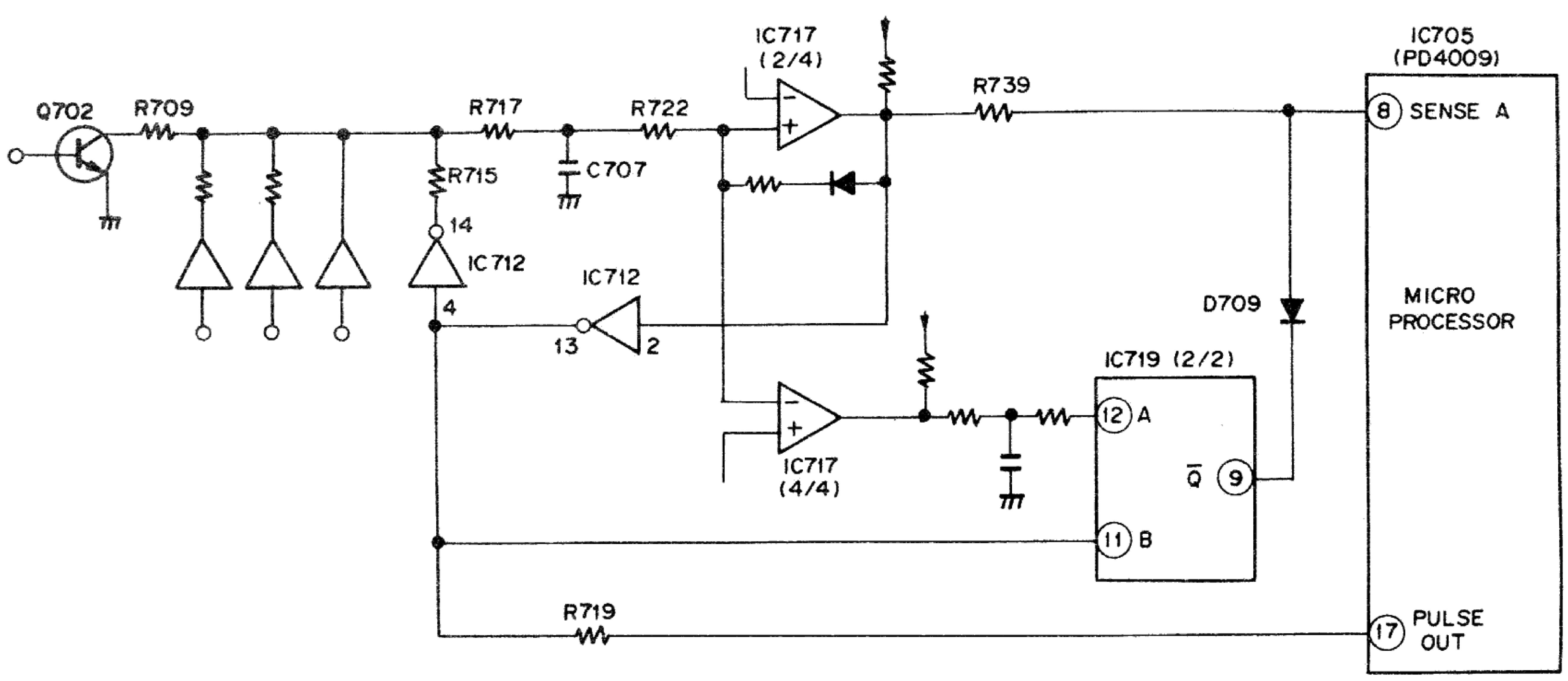


Fig. 7-26 Prevention detection error circuit

Prevention of Detection Error (2)

When an unrecorded blank section of tape is detected during playback of side A, and the tape then rewound, it is possible for a blank section of tape to be reached on side B soon after a blank section has been reached on side A. In this case, when the microprocessor recognizes the side A blank section, resulting in rewinding of the tape (or fast forward for side B), the tape will be reversed in fast forward mode before the microprocessor is notified of the side B blank section. The side B blank detector circuit C706 (corresponding to C707 for side A) will be discharged by the positive output pulse from the microprocessor when tape travel is reversed. However, since the time constant for C706 charging when a blank section is reached during fast forward is small, it is possible for the comparator threshold voltage to be reached before C706 is discharged upon redetection of the side B recorded signal.

If the C706 voltage exceeds the comparator threshold voltage, the comparator output will be switched from L to H level, resulting in the microprocessor being informed that a side B blank section of tape has been reached. The side B blank section detection will thus differ during forward and reverse travel, resulting in the generation of an error. And since this is the same as rewinding from playback mode upon reaching a blank section on side B, a circuit capable of preventing this action will be required. When C707 (C706) voltage exceeds a certain value, and a blank section identifying output signal appears immediately after tape travel direction is reversed, such a circuit will have to able to block that signal.

If the C707 voltage (Fig. 7-26) exceeds 3V, the voltage comparator (IC717-4/4) output will be switched to L level, and this output then applied to input A (pin 12) of a monostable multivibrator (IC719-2/2). When the C707 voltage is still below 5.5V, the voltage comparator (IC717-2/4) output will be at L level, and the IC712/2-13 output open. Consequently, while the C707 charged voltage remains in the 3V to 5.5V range, the input A of the monostable multivibrator (IC719-2/2) will be at L level. If the tape transport direction is then reversed and a positive output pulse generated at pin 17 of the microprocessor, that output will be applied to input B of the multivibrator. In the monostable multivibrator input/output truth table shown in Table 3, this status corresponds to mode 4 operation where a negative pulse is generated at the $\overline{Q}$ output (pin 9). This $\overline{Q}$ output has been set to switch to L level for a period of only about 1.0 seconds, and during this period the blank section detector signal is absorbed via D709. If the C707 voltage is in excess of 5.5V, the IC717-2/4 output will be an H level output. The pulse applied to input B of the monostable multivibrator will thus be absorbed by IC712/2-13, thereby preventing this circuit from operating.

Table 3

	INPUT		OUTPUT	
	A	B	Q	$\overline{Q}$
1	↑	H	⊓	⊔
2	↑	L	L	H
3	H	↓	L	H
4	L	↓	⊓	⊔

7.9 MICROPROCESSOR

The PD4009 microprocessor detects the various tape states and presence of blank sections of unrecorded tape by means of data passed from detector circuits, and subsequently controls the CT-F1050 operational modes on the basis of the built-in program and the operation key input playback sequence program.

Program Playback (Random Selection)

For playback in accordance to the previously keyed-in playback tune sequence program, tape travel direction, playback, fast forward (rewind) and stop output signals are applied to the tape operation control circuit. If the FUNCTION selector is in the REPEAT position, the programmed selection of tunes will be played repeatedly.

Program Input

The PD4009 playback program inputs are dynamic inputs with the time divided into 5 portions. The time sharing dynamic output signals (D1 — D5) are obtained from pins 22 to 25 and pin 16 of PD4009. And by applying inputs to pins 10 and 11 in synchronization with these outputs, input of the playback program is possible. The different input meanings differ with each timing (D1 — D4) as shown in Table 4.

Table 4

INPUT \ TIMING	D1 (pin 22)	D2 (pin 23)	D3 (pin 24)	D4 (pin 25)
KEY RETURN 1 (pin 10)	UP	DOWN	A/B	SET
KEY RETURN 2 (pin 11)	CHECK	MEMORY	RUN	RESET

Tape Counter Function

Input pulses applied to pin 6 by the tape travel detector are counted in two minute cycles, and displayed in a 4-digit LED display. When the FUNCTION selector is in one of the program positions, the tape counter is not displayed.

Display Output

The PD4009 pin 26 – 32 (a – g) outputs are dynamic outputs divided into 5 portions. The tape counter LED display is a 7-segment (a – g) 4-digit display with the 1st digit display in synchronization with the D1 dynamic signal, the 2nd digit displayed at D2, the 3rd at D3, and the 4th at D4. The D5 timing is the program indicators output with b for side A, d for side B, e for MEMORY, and f for RUN displays.

Memory Stop Function

When the FUNCTION selector is in the ⇄, ⊐, or ⊂⊃ position, and the tape is rewound to 「0000」 on either side (side A or B), a pulse is obtained from pin 17 of PD4009 (see Table 5). And if the MEMORY STOP switch has been set to the ON position, this pulse signal will serve as a stop indicator signal applied via an inverter to the tape operation control IC (B843), thereby resulting in the tape transport being stopped (see Fig. 7-27).

Tape End Detector Function

When input pulses are applied to pin 5 of PD4009 from the leader tape detector circuit, or when tape counter pulses from the tape travel detector are no longer applied to pin 6 at 4 second intervals, the microprocessor is informed that the end of the tape has been reached. The operational mode indications consisting of FUNCTION selector and DIRECTION switch position combinations (as shown in Table 6) are passed to the tape operation control circuit.

Initialization Function

The following fixed status is also achieved when the power is first switched on.

1. "0000" tape counter reading.
2. FWD tape direction setting.
3. Stop output signal generated for 3.5 seconds.

FUNCTION Selector Settings

The microprocessor LSI (PD4009) functions are determined according to combinations of the input levels (L or H) applied to pins 33 to 35 (B0, B1 and B2). (See Table 7). The required combinations are obtained by operation of the FUNCTION selector.

Table 5

	DIRECTION	FAST	PULSE OUT
SIDE A	▷	▷▷	—
	▷	◁◁	_⊓_
SIDE B	◁	◁◁	—
	◁	▷▷	_⊓_

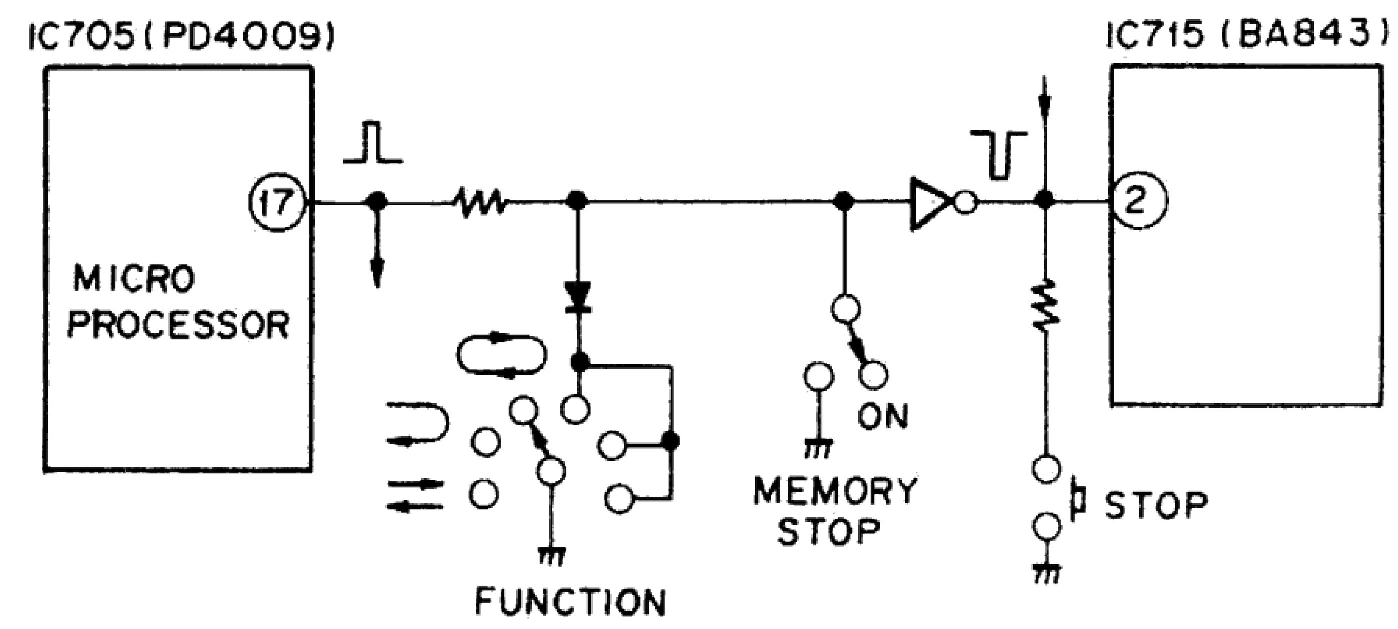


Fig. 7-27 Memory stop function

Table 6

DIRECTION \ FUNCTION		⇄	⊐	⊂⊃
▷	FWD	STOP	◁ REV	◁ REV
◁	REV	STOP	STOP	▷ FWD
(▷▷)	FAST	STOP	STOP	STOP
(◁◁)	FAST	STOP	STOP	STOP

Table 7

INPUT \ FUNCTION	⇄	⊐	⊂⊃	PMS	PRO-GRAM	RE-PEAT
B_0 (pin 33)	H	H	H	L	L	L
B_1 (pin 34)	H	L	L	H	H	L
B_2 (pin 35)	L	H	L	H	L	H

Microprocessor Resetting Circuit

This circuit generates a pulse signal which resets the microprocessor when the power is switched on and off (see Fig. 7-28).

When the power is switched on, a fast-rise power line (+B) is obtained via D903, D904 and C912. Q903 is turned on by the C913 charge-up current, resulting in a reset signal being applied to the microprocessor. And once C913 has been fully charged up, Q903 is turned off again.

When the power is switched off, C912 and C913 are discharged rapidly via R902, resulting in Q903 being turned on again. And since the +B2 line is a slow decay line, this slow decrease serves as a reset output pulse signal.

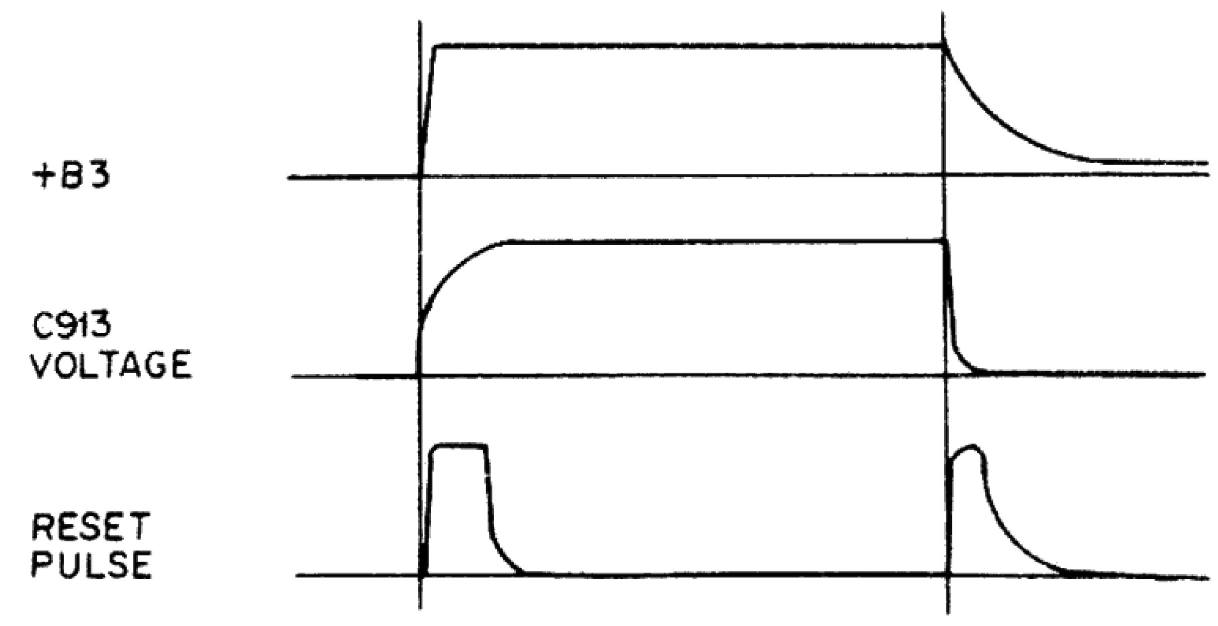


Fig. 7-29 Time chart

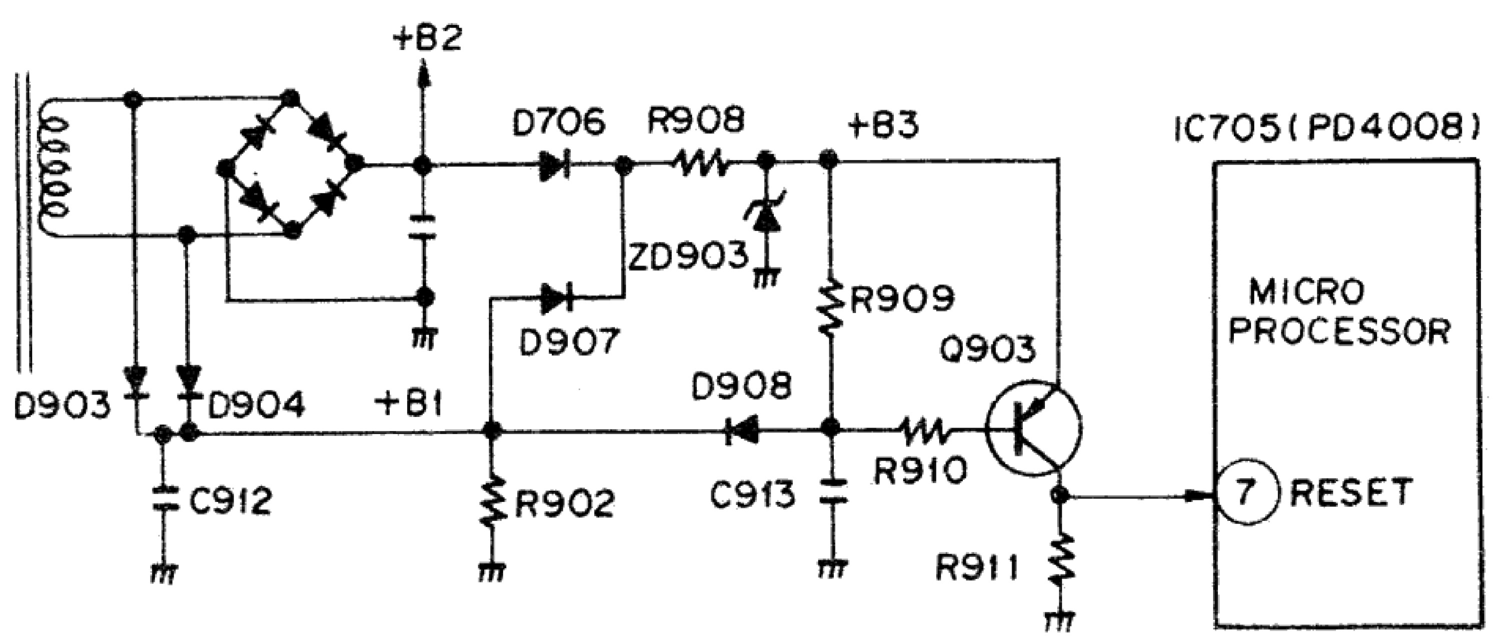


Fig. 7-28 Microprocessor resetting circuit

8. MECHANICAL ADJUSTMENTS

8.1 TAPE SPEED ADJUSTMENT

Setting:

Mode	Playback (FWD and REV)
Test Tape	STD-301, 3kHz portion
Frequency counter	OUTPUT

Procedure:

Adjust the semi-fixed resistor located in the capstan motor so that the frequency when the tape begins to move is 2090-3010Hz.

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

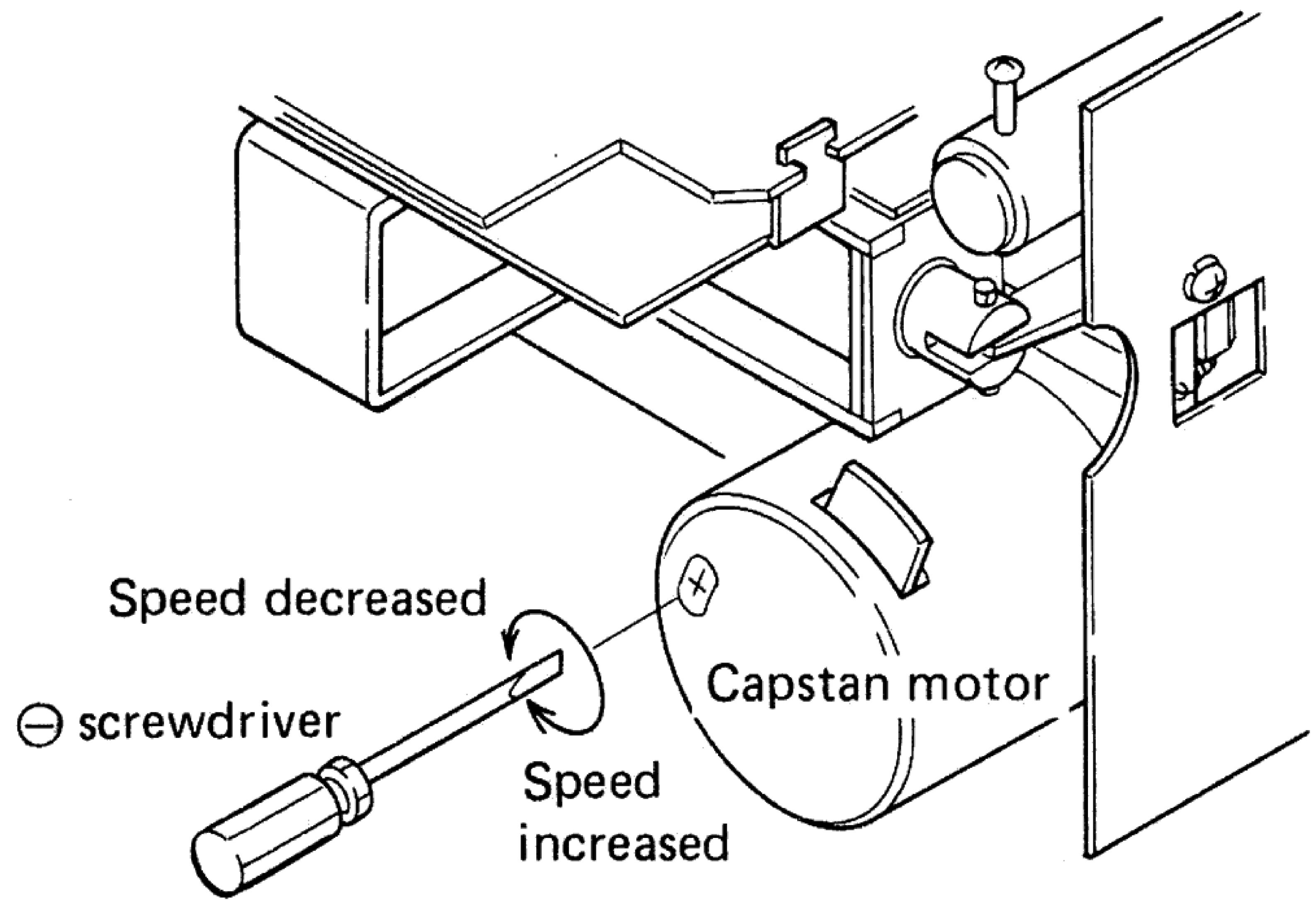


Fig. 8-1 Tape speed adjustment

8.2 FWD AND REV TAPE TRANSPORT ADJUSTMENTS

Adjustment Criteria

The outer edges of the tape should show no tendency to curl up when passing the rec/play head guide and erase head guide during playback mode. Furthermore, when switching the tape transport direction (FWD ⇄ REV), the tape should pass over the center of the rec/play head, and also maintain more or less the same position for travel in both directions.

Procedure

Load a mirror-equipped cassette half and play in both FWD and REV directions. If the tape tends to curl up at the rec/play head guide or erase head guide, adjust the height of the rec/play head or the erase head (Fig. 8-2).

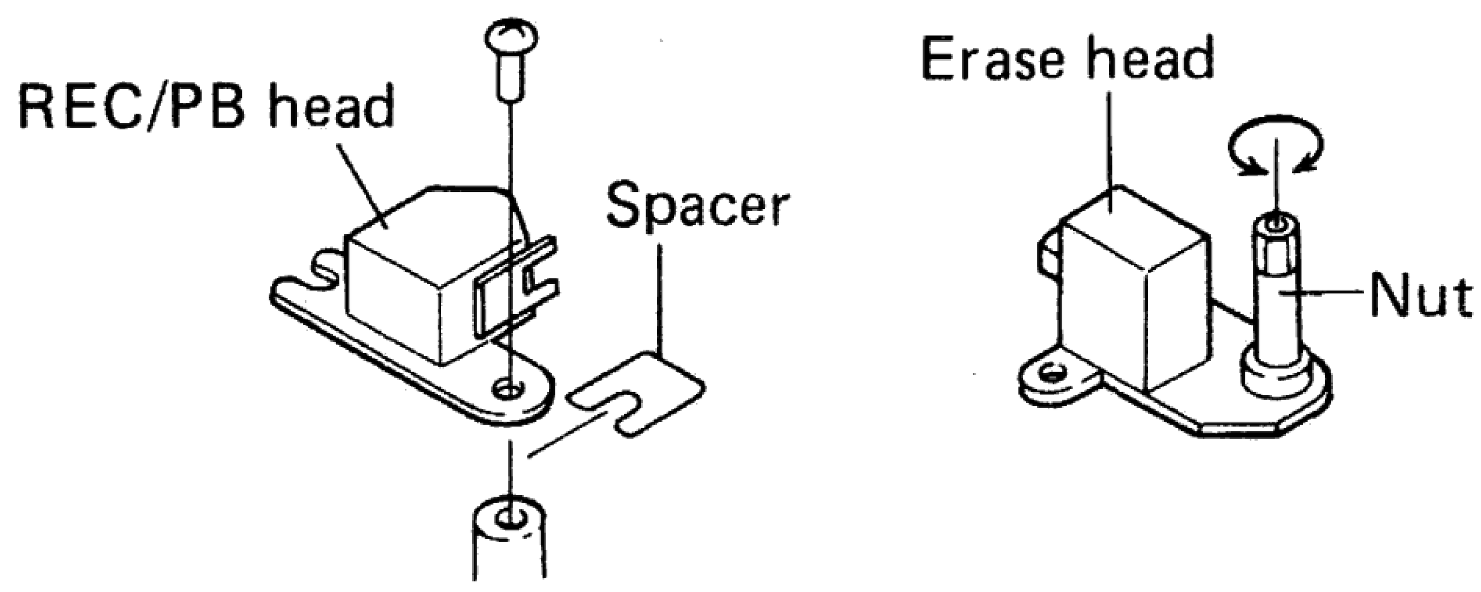


Fig. 8-2 Rec/Play and erase head adjustment

8.3 HB SOLENOID STROKE ADJUSTMENT

Adjustment Criteria

The head base must move all the way, and the left and right stopper must make proper contact with the half guide during playback mode as shown in Fig. 8-3.

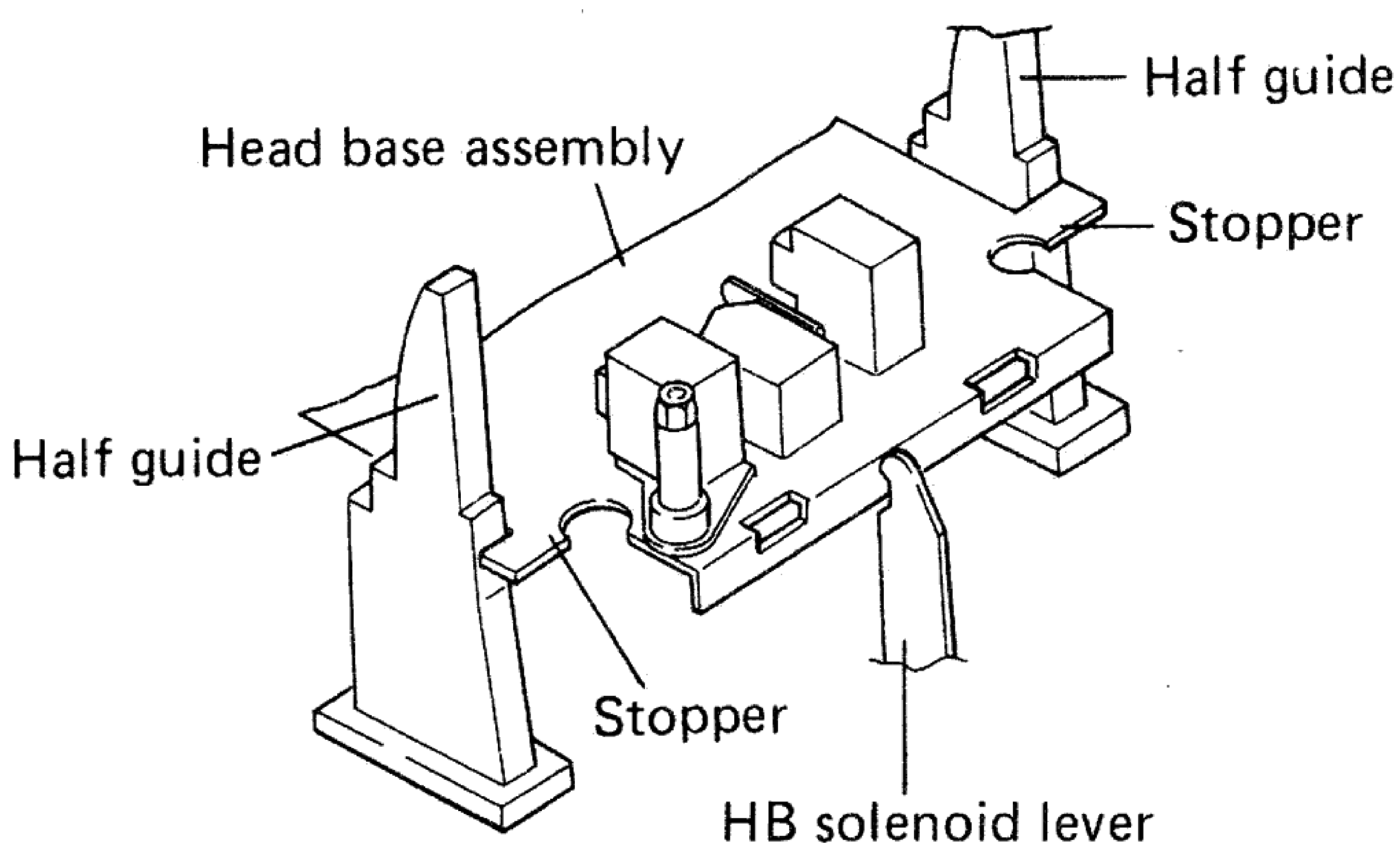


Fig. 8-3 Head base half guide stopper section

Procedure

Start the CT-F1050 in playback mode (FWD or REV), and adjust screw 1 holding the HB solenoid as shown in Fig. 8-4 to ensure that the above adjustment criteria are satisfied.

After this adjustment, switch back and forth several times between playback and stop modes, and check that both the left and right stoppers make proper contact with the half guide during playback.

To complete the procedure seal the screw with screw-lock.

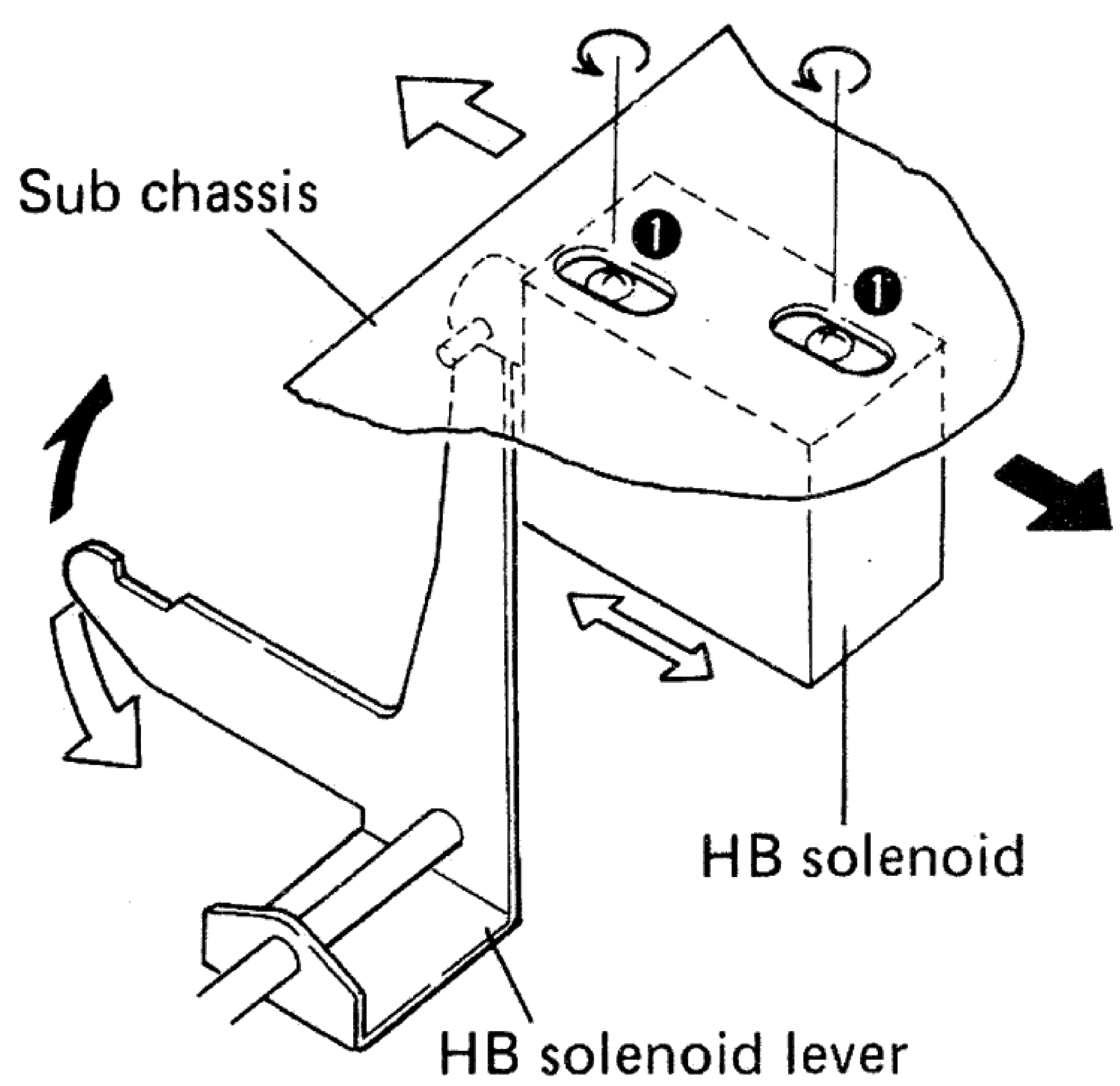


Fig. 8-4 HB solenoid stroke adjustment

8.4 AIR DAMPER ADJUSTMENT

Adjustment Criteria

The cassette compartment door must open and close smoothly without getting stuck in any way.

Procedure

1. Adjust height A of the sealing adjustment screw to 4mm as shown in Fig. 8-5.
2. Load a cassette half which has the erasure prevention tabs already snapped off, and open and close the door several times. If the eject operation fails to proceed smoothly, switch to the next pocket arm return spring attachment hole in the clockwise direction as shown in Fig. 8-6.
3. If the eject operation has a little too much power, on the other hand, change the pocket arm return spring to the next attachment hole in the counter-clockwise direction. (Fig. 8-6).
4. If the door opens a little too quickly, turn the adjustment screw clockwise. If, however, the door is a little too slow in opening, turn the adjustment screw counter-clockwise.

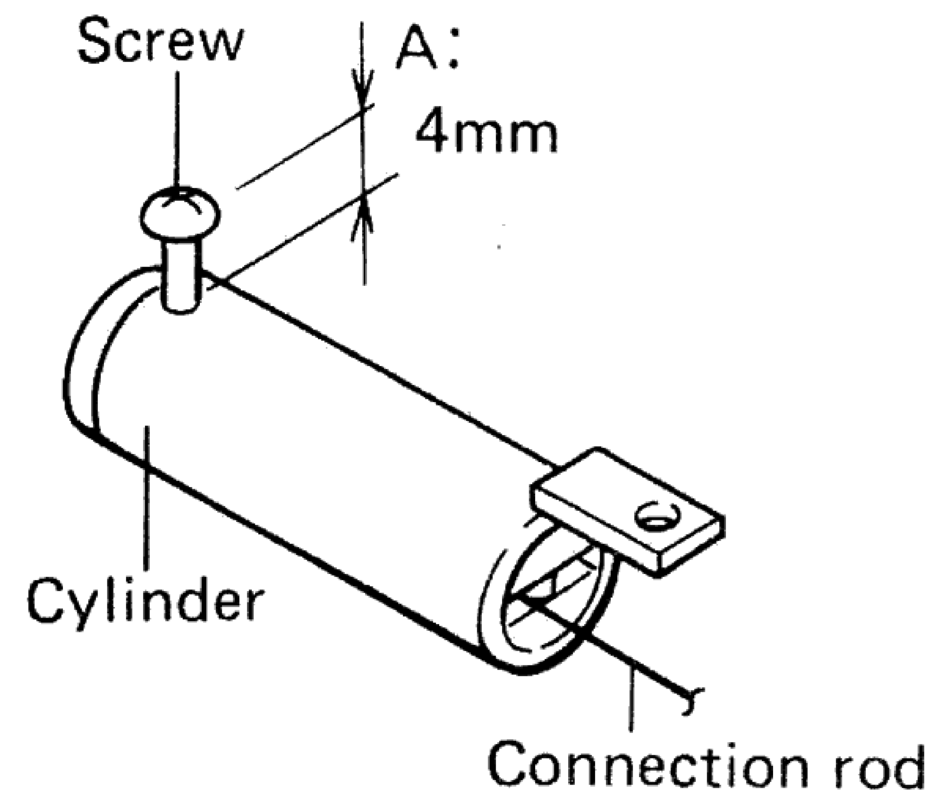


Fig. 8-5 Adjustment screw height

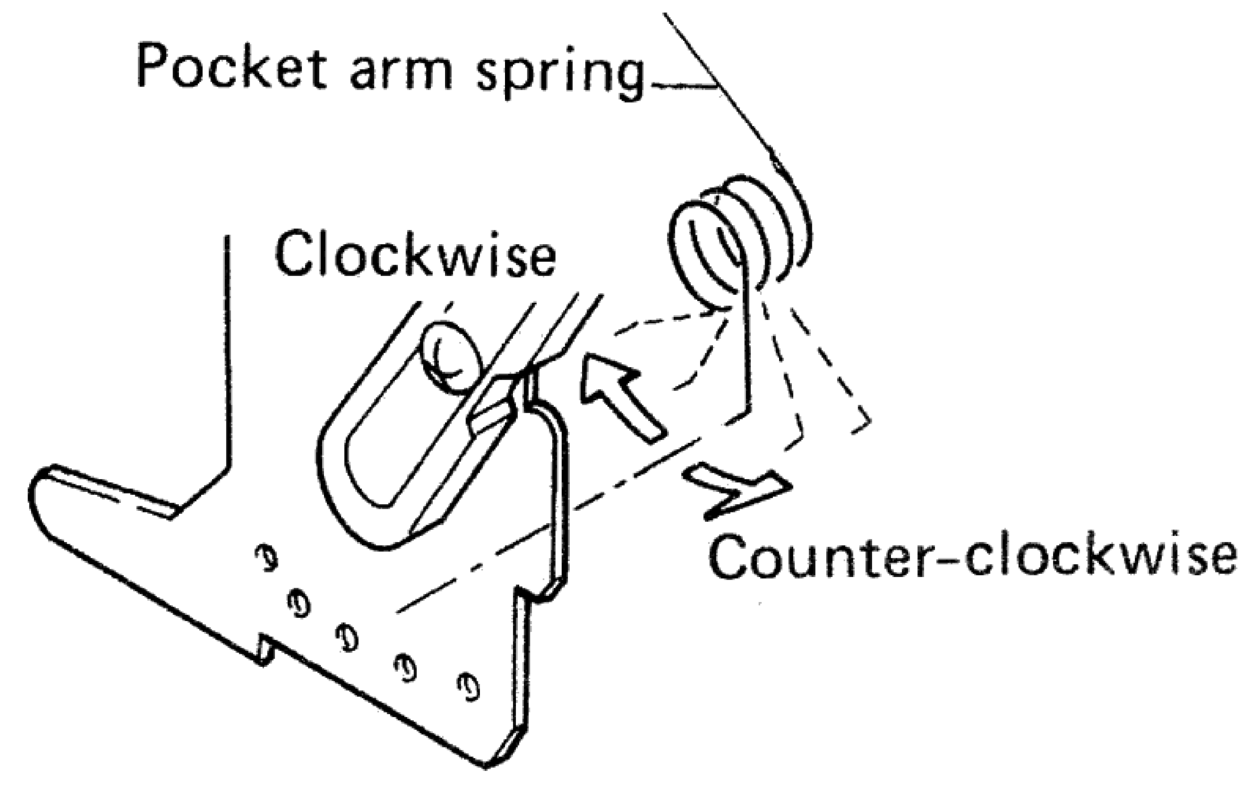


Fig. 8-6 Pocket return spring attachment adjustment

9. ELECTRICAL ADJUSTMENTS

Precaution

1. Mechanical adjustment should be completed.
2. Clean the following parts with an alcohol moistened swab: Record/Playback head, Pinch roller, Erase head, Rubber belts and Capstan.
3. Demagnetize record/playback head with a head demagnetizer.
4. Do not use magnetized screwdriver for adjustments.
5. Adjustments and measurements should be performed for both L ch and R ch with rated power supply voltage.
6. Adjustments should be performed in the order given in this service manual. Altering the order can hinder proper adjustments, resulting in loss of performance.
7. Level during measurements are based on 0dBv = 1V. Connect a 50kΩ dummy resistor across the OUTPUT terminals.
8. Let the CT-F1050 warm up (aging) for a few minutes before proceeding with the adjustment.
9. Set the DOLBY NR switch to OFF unless directed otherwise.

Test Equipments/Tools Required;

1. Test tape
   STD-341A........ For playback adjustment
   STD-601 .... NORMAL blank tape
   STD-603 .... CrO_2 blank tape
   STD-604 .... METAL blank tape
2. Audio oscillator
3. AC millivoltmeter (AC mV)
4. Attenuator
5. Oscilloscope
6. Resistor 50kΩ (¼ W)

STD–341A

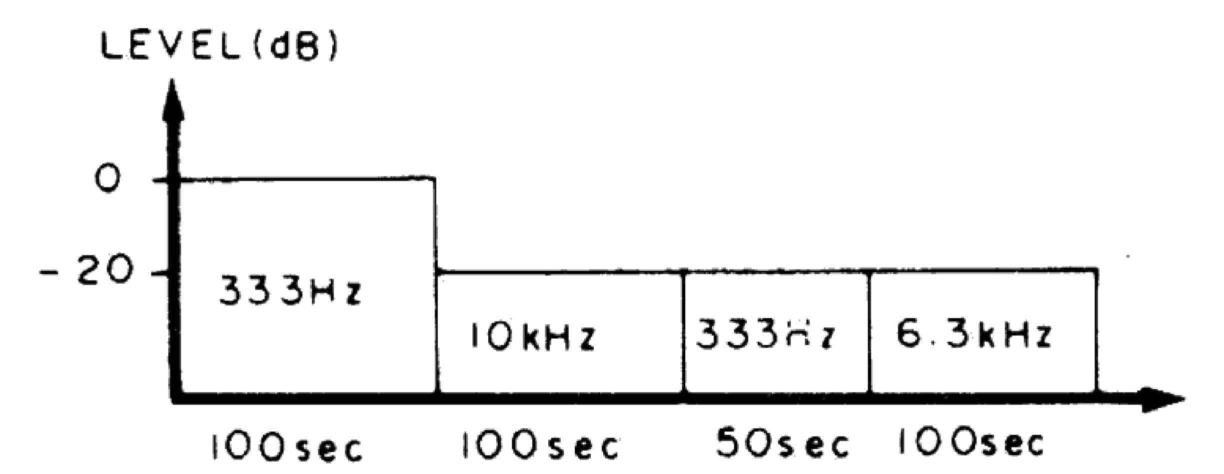


Fig. 9-1 Contents of STD-341A

9.1 HEAD AZIMUTH ADJUSTMENT

Setting

Mode................	Playback (FWD and REV)
TAPE SELECTOR	NORM
Test Tape	STD-341A, 10kHz portion
AC mV Meter	No.14 (FWD-Rch) and ground of the main assembly No.16 (REV-Rch) and ground of the main assembly
OUTPUT level control ..	Max.

Procedure

Play a tape in both forward and reverse directions. Adjust the head azimuth screw to the position of maximum output level and also minimum difference (no more than 1.5dB) between output levels during forward and reverse directions.

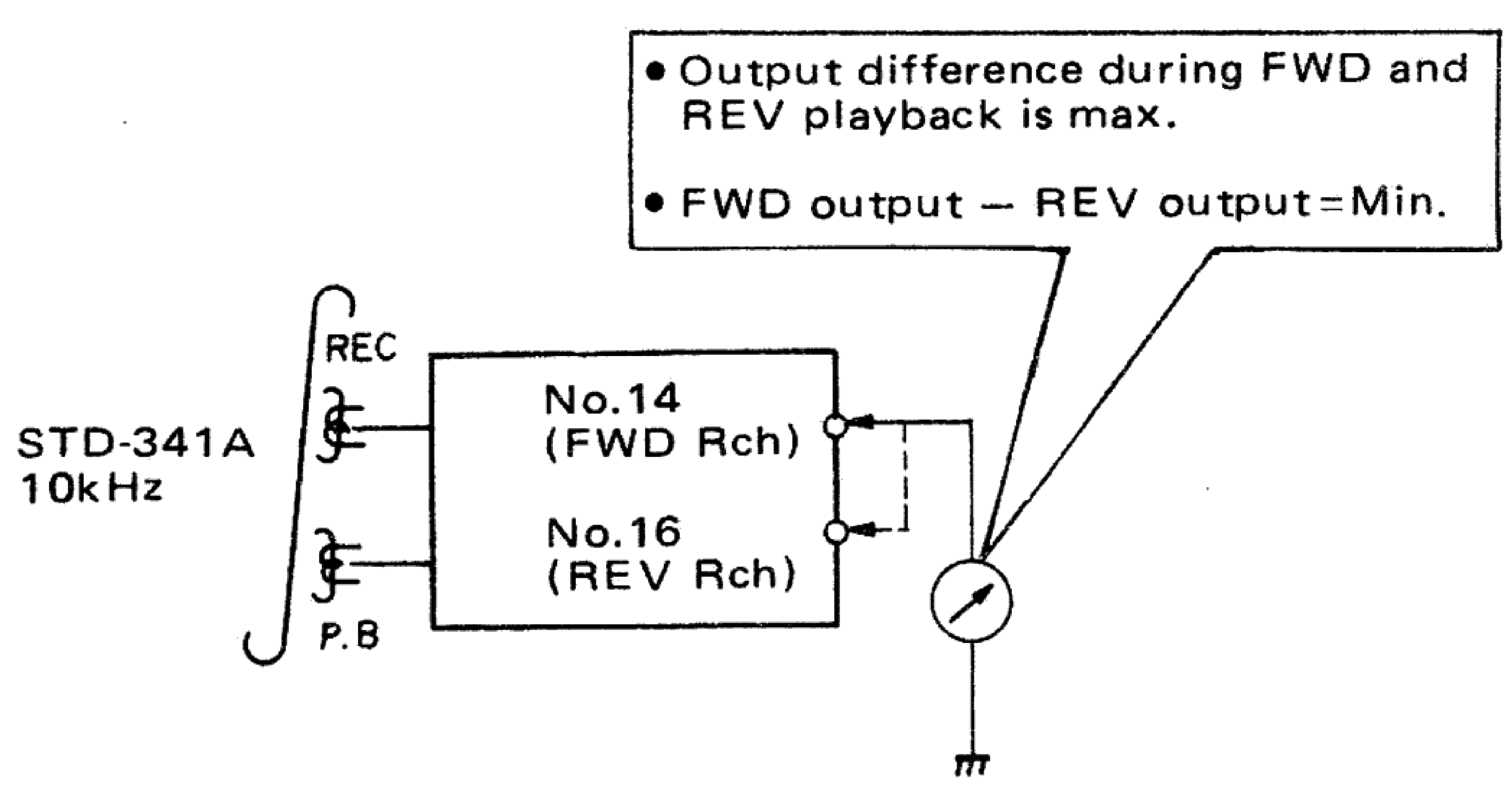


Fig. 9-2 Head azimuth adjustment

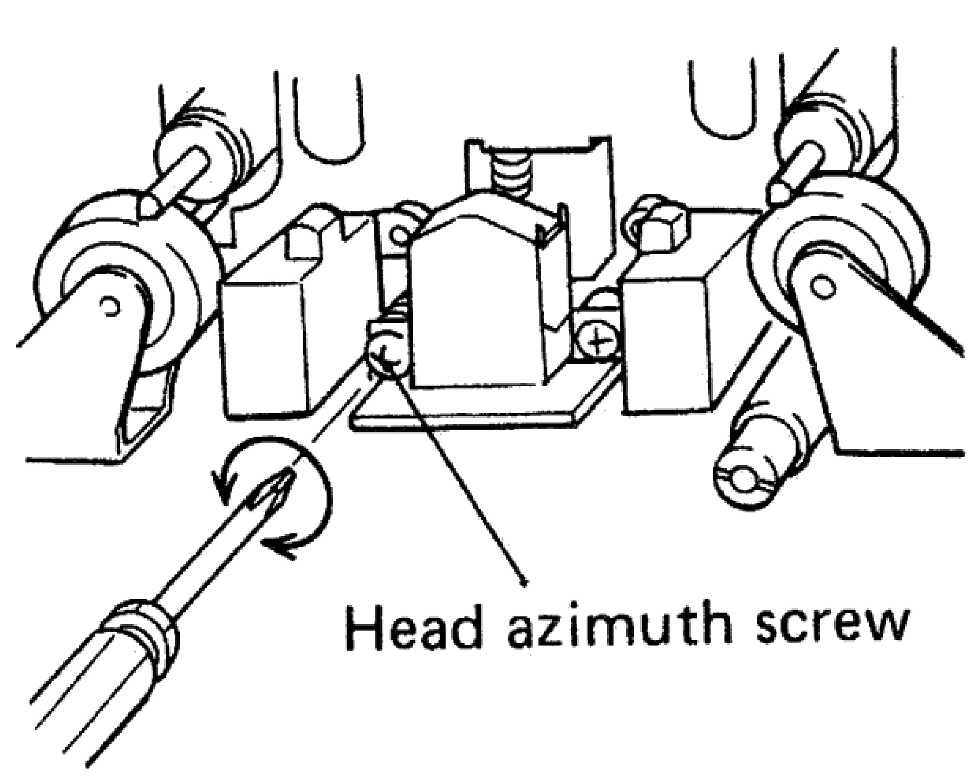


Fig. 9-3 Head azimuth adjustment

9.2 TAPE TRANSPORT ADJUSTMENT

Setting

Mode	Playback (FWD and REV)
TAPE SELECTOR	NORM
Test Tape	STD-341A, 10kHz portion
AC mV Meter	No.14 (FWD-Rch) and ground of the main assembly No.16 (REV-Rch) and ground of the main assembly
OUTPUT level control	Max.

Procedure

1. Load a mirror-equipped cassette half and play it in both directions. Check for the absence of curling tendencies at this time.
2. If there is any tendency for the tape to curl, adjust the erase head angle. For further details, refer to the erase head height adjustment procedure on page 28. If the head height is also adjusted in this case, adjust the head angle a second time.
3. Play the 10kHz portion of the STD-341A test tape first in reverse and then forward. Check that the difference between the two output levels does not exceed 1.5dB.

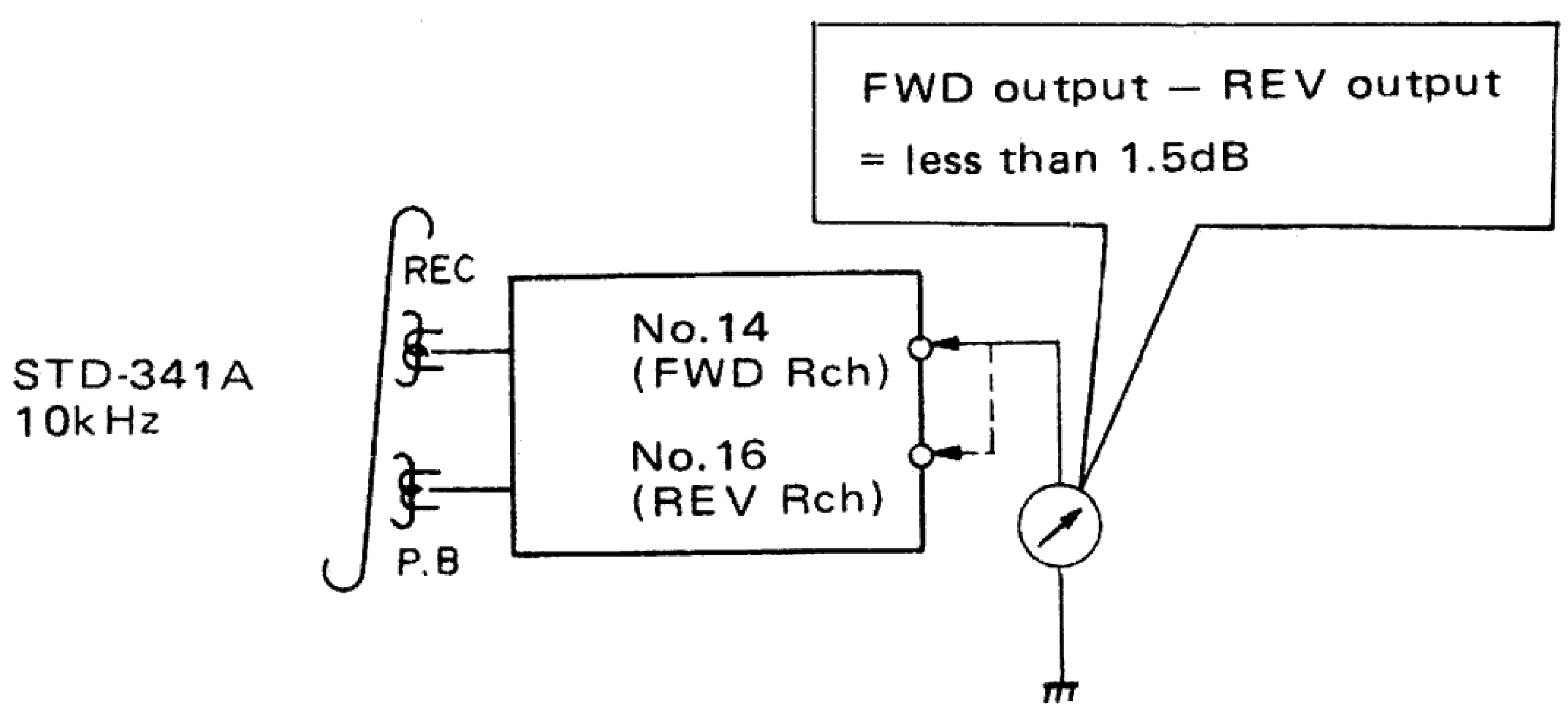


Fig. 9-4 Tape transport adjustment

9.3 PLAYBACK EQUALIZER CHECK AND ADJUSTMENT

Setting

Mode	Playback
TAPE SELECTOR	NORM − CrO_2 − METAL
Test Tape	STD-341A 333Hz and 6.3kHz portions
AC mV Meter	OUTPUT terminals

Procedure

1. Set the TAPE SELECTOR to NORM, and play the 333Hz and 6.3kHz portions of the test tape. Check that the difference between the two output levels does not exceed $^{+1.5}_{-0}$dB.
2. If 1dB is exceeded, bridge the sections shown in Fig. 9-6 by soldering in order to reduce the level difference.
3. If the level is below 0dB, however, cut the circuit pattern at the positions shown in Fig. 9-6 in order to raise the level.
4. Next set the TAPE SELECTOR to the CrO_2 (METAL) position. Play the 333Hz and 6.3kHz portions again, and check that the difference in output level between the two is −4dB ± 1dB.

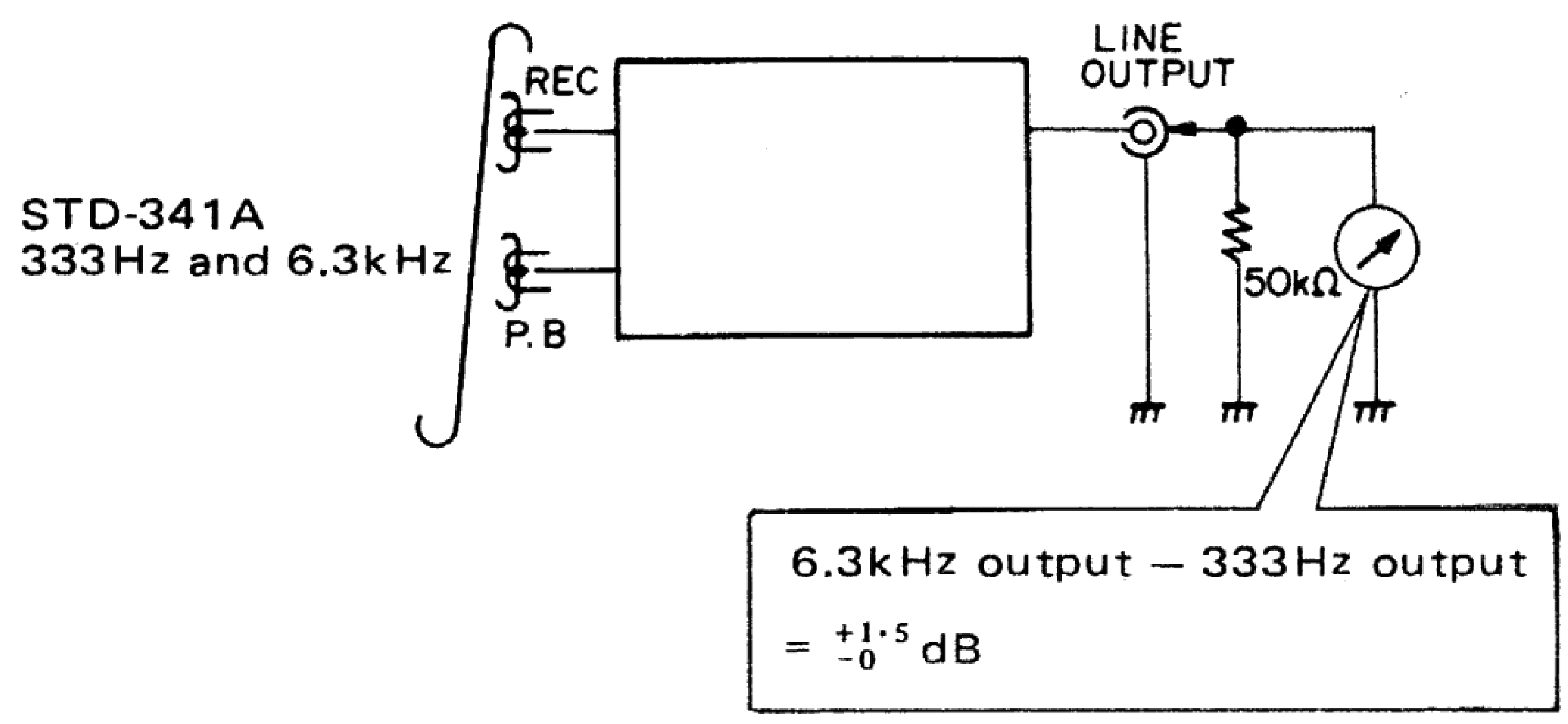
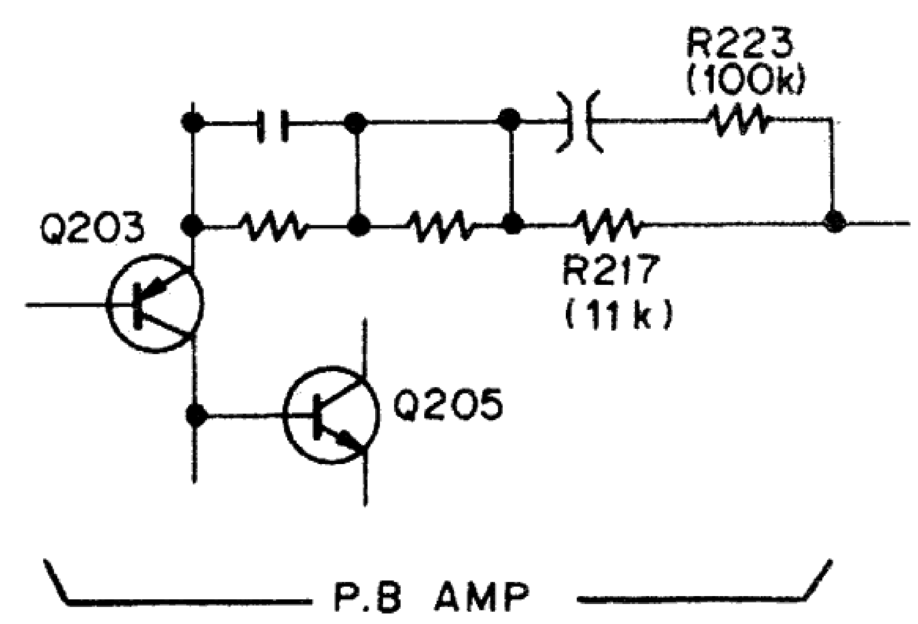


Fig. 9-5 Playback equalizer adjustment



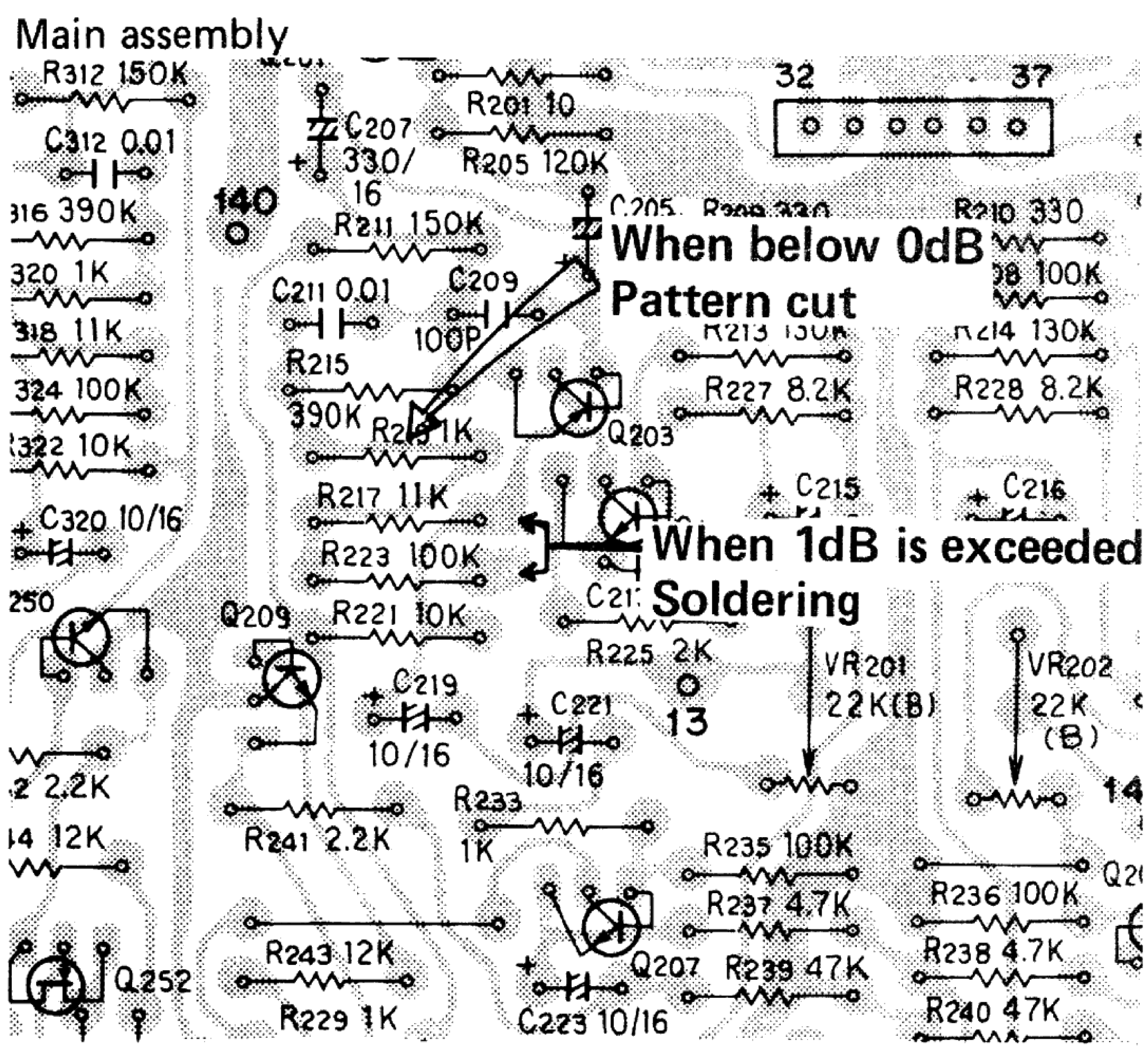


Fig. 9-6 Playback equalizer adjustment

9.4 PLAYBACK LEVEL ADJUSTMENT

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

Setting:

Mode . . . . Playback (FWD and REV)
TAPE SELECTOR . . . . . NORM
Test Tape . . . . STD-341A, 333Hz 0dB portion
AC mV meter . . . . TP1 (L ch) and TP2 (R ch) of the DOLBY assembly

Procedure:

1. Set the CT-F1050 to the FWD position. Adjust the VR201 (L ch) and VR202 (R ch) so that the AC mV meter reads 1dBv (1.12V).
2. Set the CT-F1050 to the REV position. Adjust the VR207 (L ch) and VR208 (R ch) so that the AC mV meter reads 1dBv (1.12V).

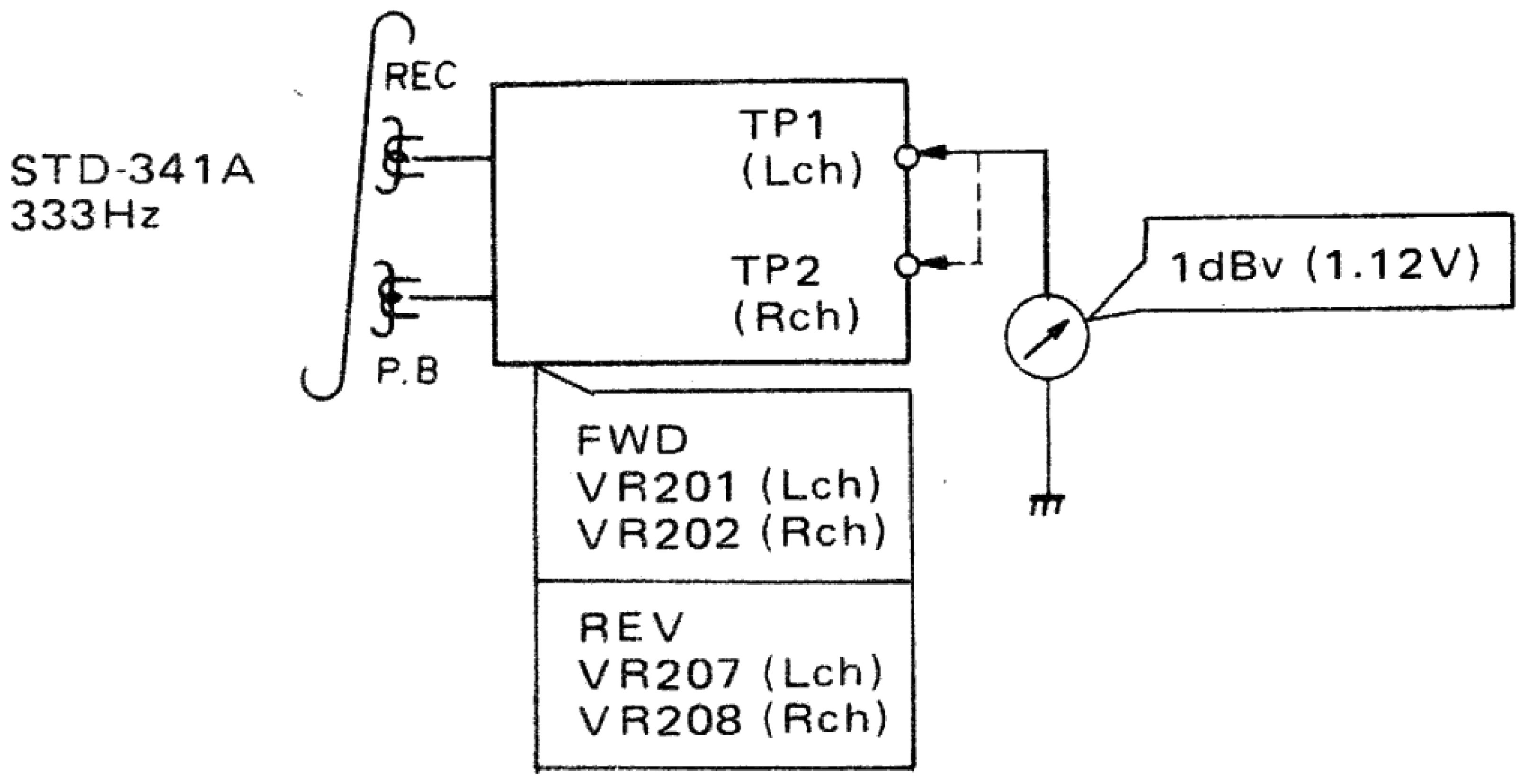


Fig. 9-7 Playback level adjustment

9.5 METER INDICATION ADJUSTMENT

Setting:

Mode . . . . Recording
Input Signal . . . . 333Hz, −10dBv
(from INPUT) (316mV)
AC mV meter . . . . TP1 (L ch) and TP2 (R ch) of the DOLBY assembly

Procedure:

1. Adjust the VR1801-A (L ch) and VR1801-B (R ch) so that the AC mV meter reads −3dBv (710mV).
2. Adjust the VR603 (L ch) and VR604 (R ch) so that the 0dB segment on the level meter lights up. To do this, first turn both the VR603 and VR604 all the way counter-clockwise, then turn clockwise just far enough so that the 0dB segment lights on the meter.
3. While turning the INPUT level control up gradually from minimum position, check that the AC mV meter gives the following reading at the corresponding level meter position.

Table 1

Level Meter	AC mV Meter
−20dB	-23^{+4}_{-2} dBv (56mV − 110mV)
+5dB	2±2dBv (1V − 1.58V)

If the above ranges are not satisfied, repeat steps 2 and 3 several times to readjust.

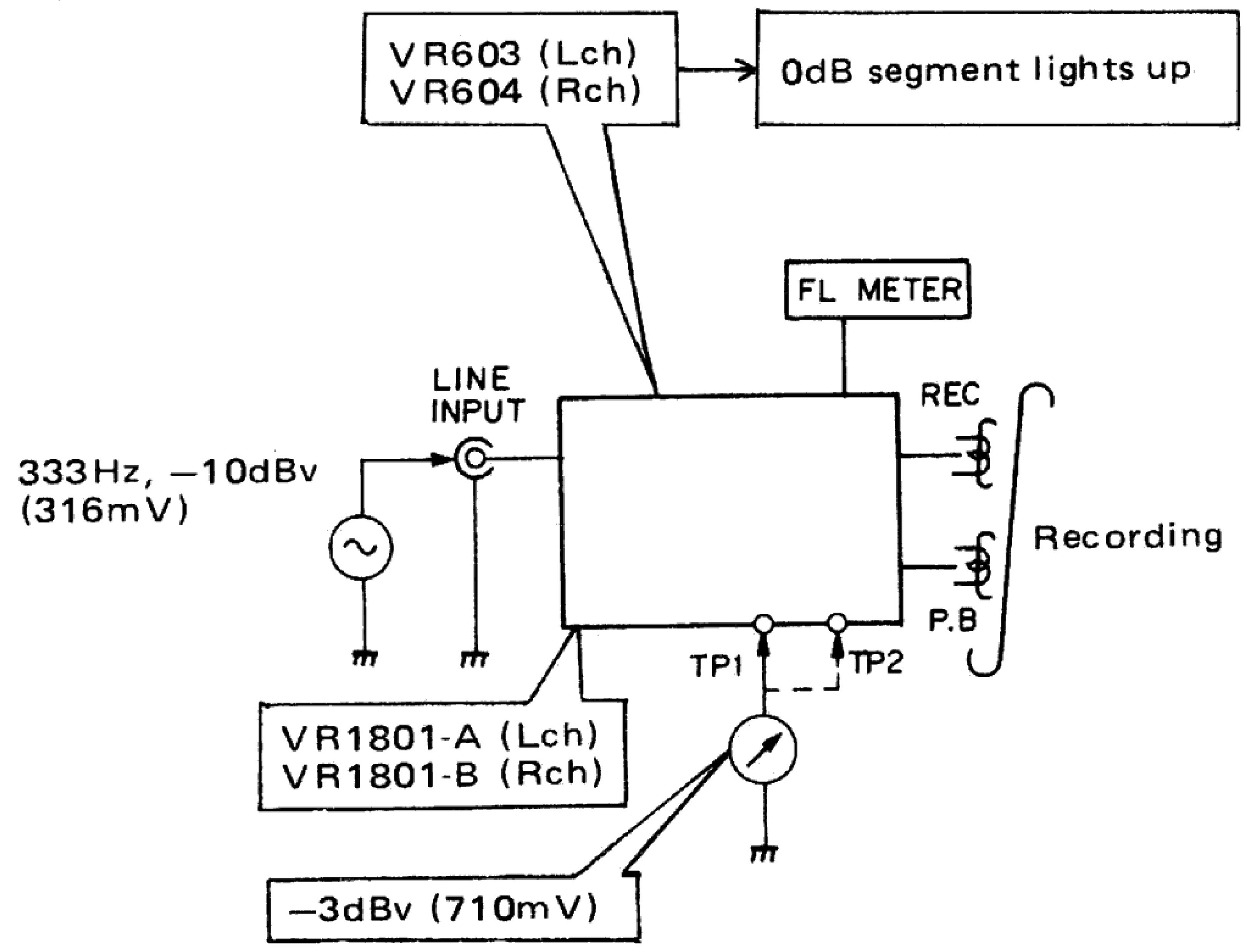


Fig. 9-8 Meter indication adjustment

9.6 DOLBY NR ADJUSTMENT

Setting:

Mode . . . . Recording
Input Signal . . . . 1kHz, −10dBv (316mV)
(from INPUT) and 1kHz, −50dBv (3.16mV)
DOLBY NR Switch . . . . . OFF → ON
AC mV meter . . . . TP1 (L ch) and TP2 (R ch) of the DOLBY assembly

Procedure:

1. Adjust the INPUT level control so that the AC mV meter reads 0dBv (1V).
2. Next change the input signal level to −50dBv (3.16mV) and DOLBY NR switch to ON. Confirm that readings outside the specified value (−34dBv), adjust the VR501 (L ch) and VR502 (R ch).

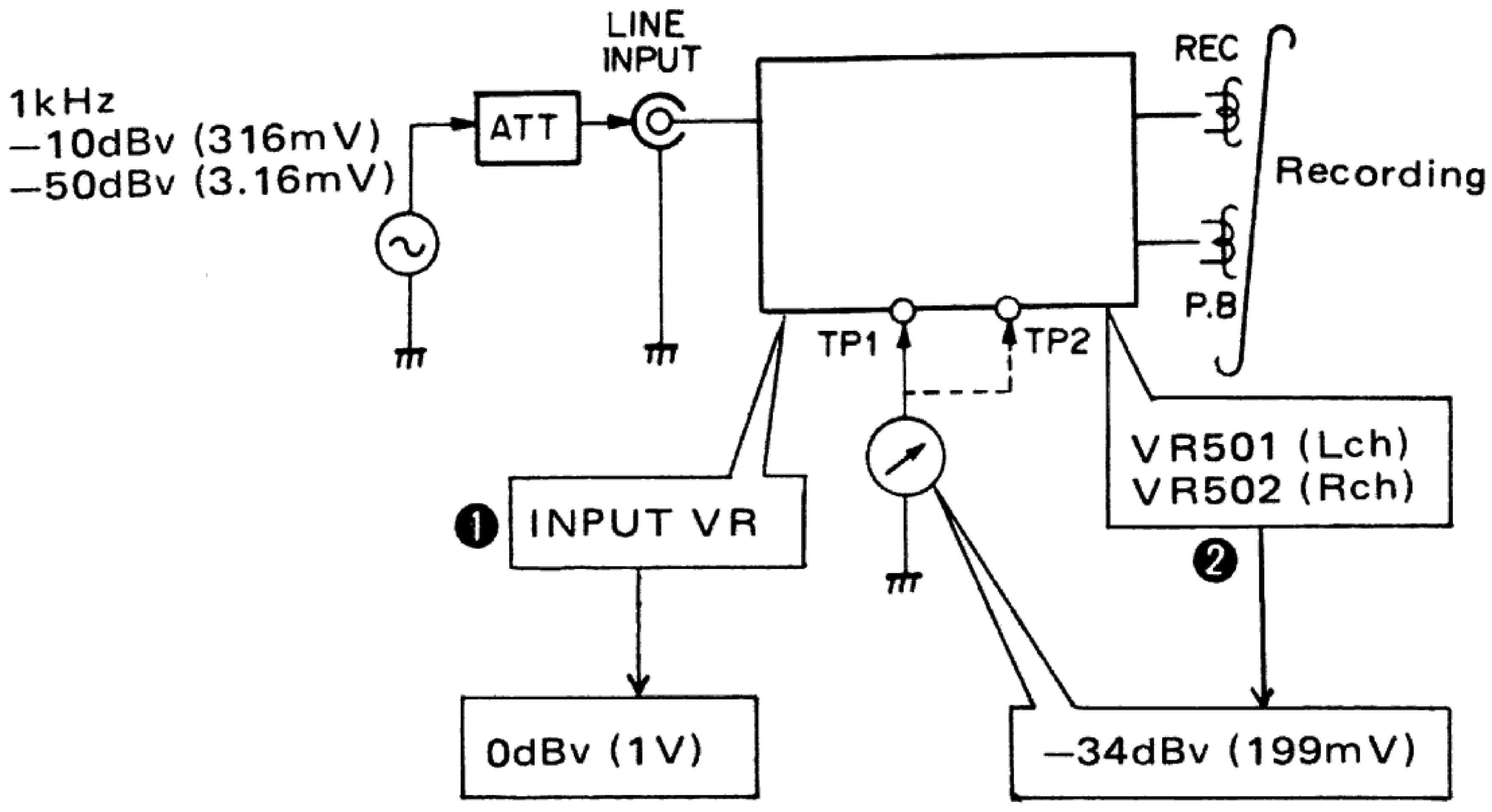


Fig. 9-9 Dolby NR adjustment

9.7 RECORDING CURRENT ROUGH ADJUSTMENT

Since the level is extremely low, be perticulary careful to avoid external induction noise during this adjustment.

Setting:

Mode . . . . Recording
TAPE SELECTOR . . . . . NORM
Input Signal . . . . 333Hz, −10dBv
(from INPUT) (316mV)

Procedure:

1. Connect the AC mV meter to the TP1 (L ch) and TP2 (R ch) of the DOLBY assembly and short the base of Q304 and −B line on the surface of the circuit board. Adjust the INPUT level control so that the AC mV meter reads −3dBv (710mV).
2. Connect the AC mV meter to both end of R402 (10kΩ) resistor of the main assembly as shown in Fig. 9-11.
3. Set the CT-F1050 to the FWD position and adjust the VR203 (L ch) and VR204 (R ch) so that the AC mV meter reads 0.36mV (36 μA).
4. Set the CT-F1050 to the REV position and adjust the VR205 (L ch) and VR206 (R ch) so that the AC mV meter reads 0.36mV (36 μA).

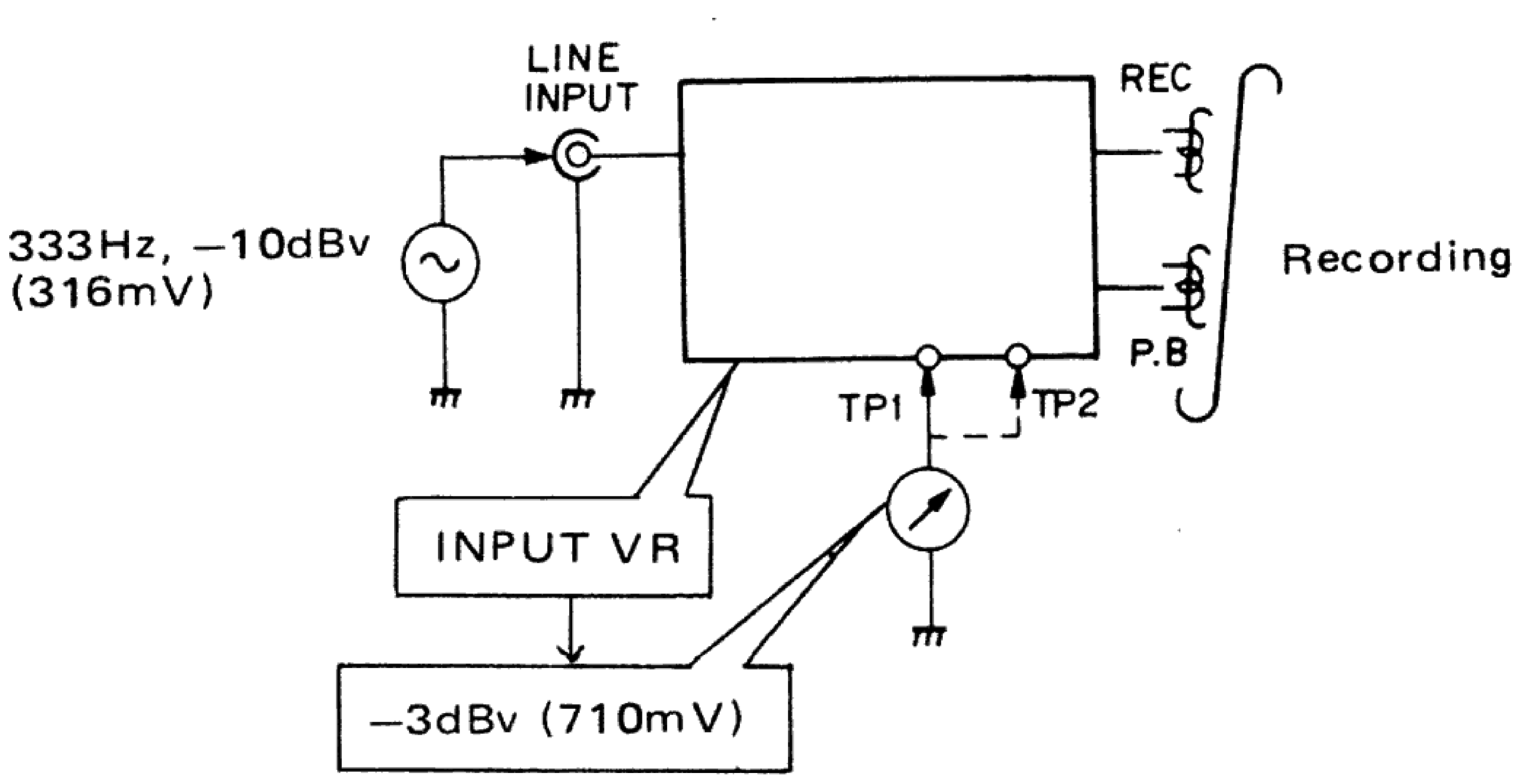


Fig. 9-10 Recording current rough adjustment 1

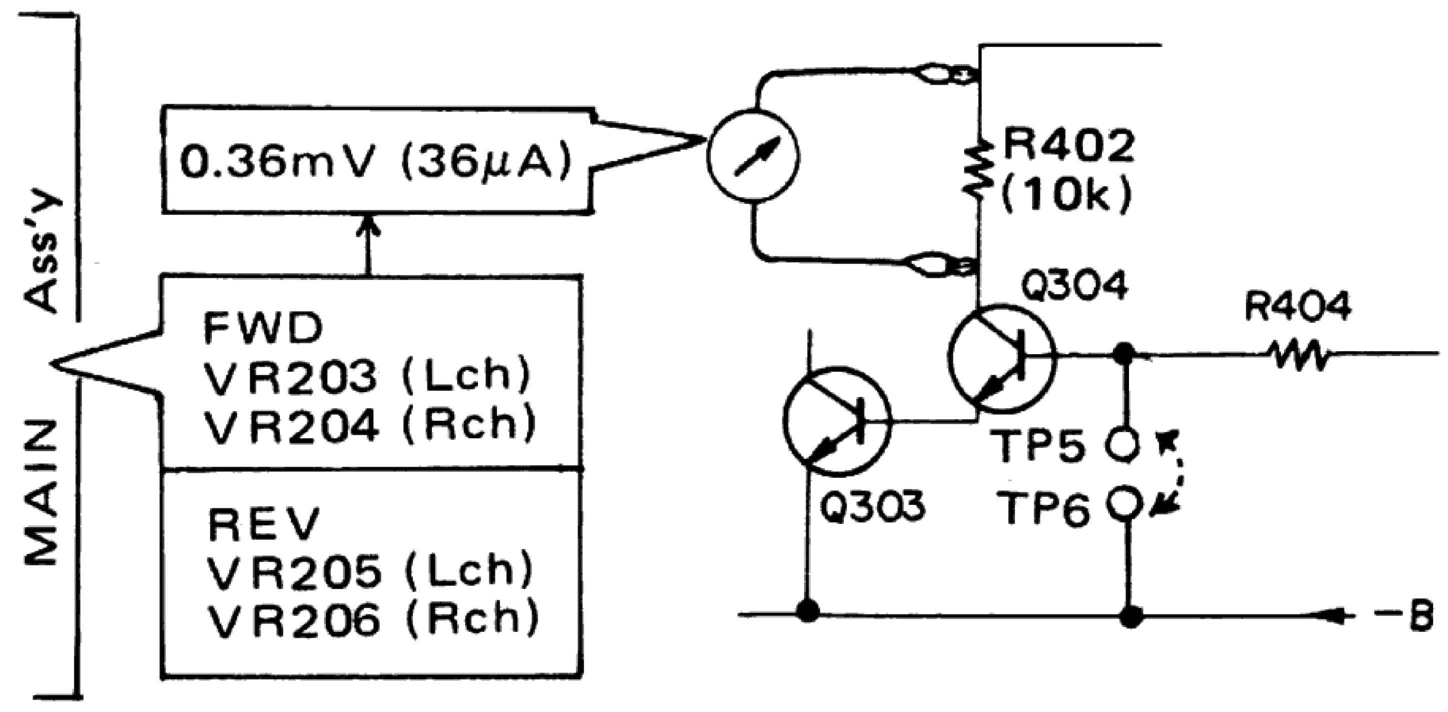


Fig. 9-11 Recording current rough adjustment 2

9.8 ERASURE CURRENT ADJUSTMENT

The adjustment procedure is the same for both the FWD and REV directions, but if there is a difference between the two indications, adjust so that the lower of the two erasure current indications is 150mA.

Setting:

Mode . . . . Recording
INPUT Level Control . . . Min.
TAPE SELECTOR . . . . . METAL
AC mV meter . . . . TP3 (No.66) and ground of the main assembly
OTHER . . . . Disconnect the base of Q304 from −B line

Procedure:

Adjust the VR301 so that the AC mV meter reads 150mV (150mA).

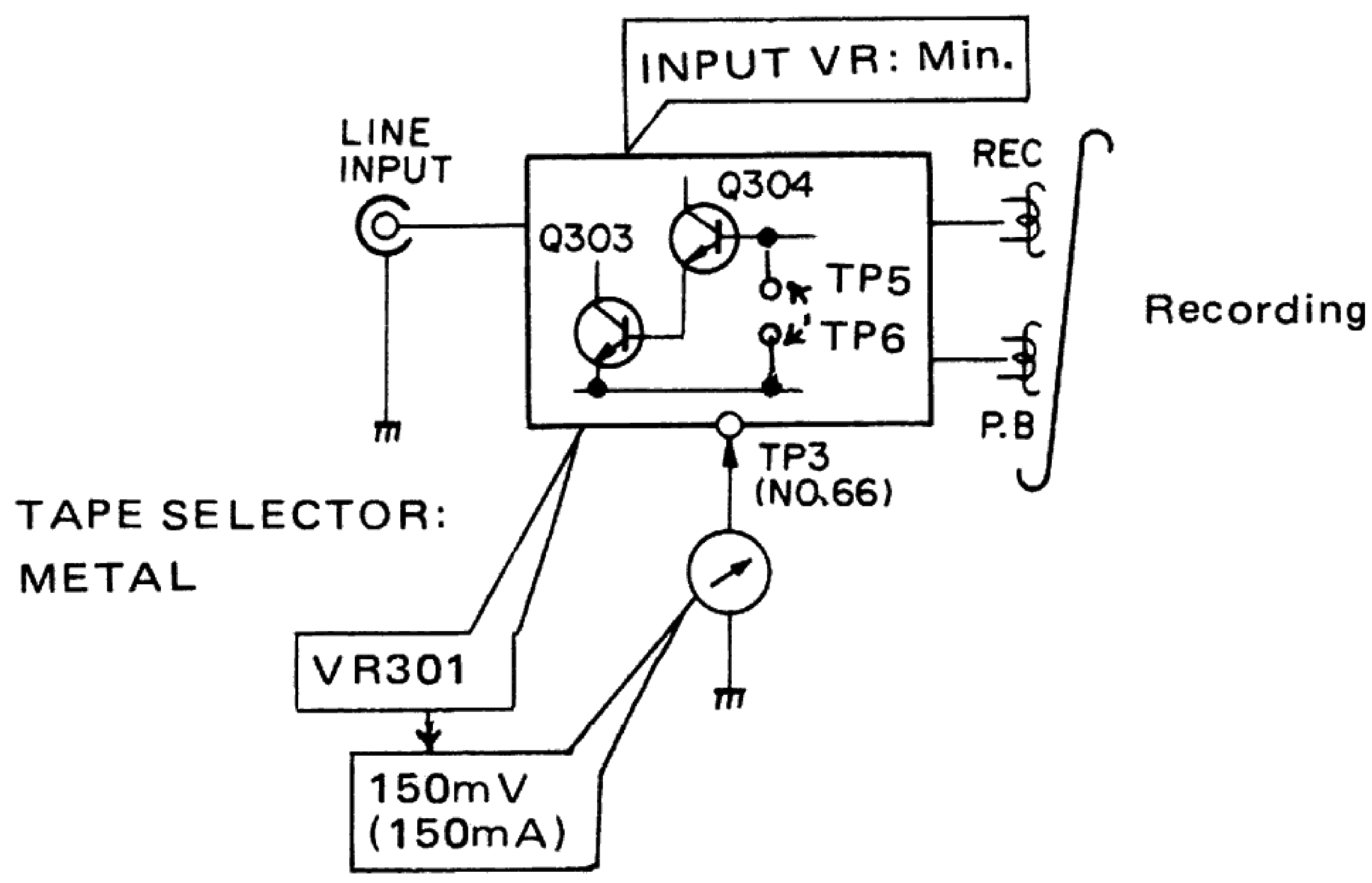


Fig. 9-12 Erase current adjustment

9.9 BIAS TRAP ADJUSTMENT

Setting:

Mode . . . . Recording
TAPE SELECTOR . . . . . METAL
INPUT Level Control . . . Min.
AC mV meter . . . . See Fig. 9-13

Procedure:

1. Set the CT-F1050 to the FWD position, and adjust the L201 (L ch) and L202 (R ch) so that the AC mV meter reads minimum.
2. Set the CT-F1050 to the REV position, and adjust the L203 (L ch) and L204 (R ch) so that the AC mV meter reads minimum.

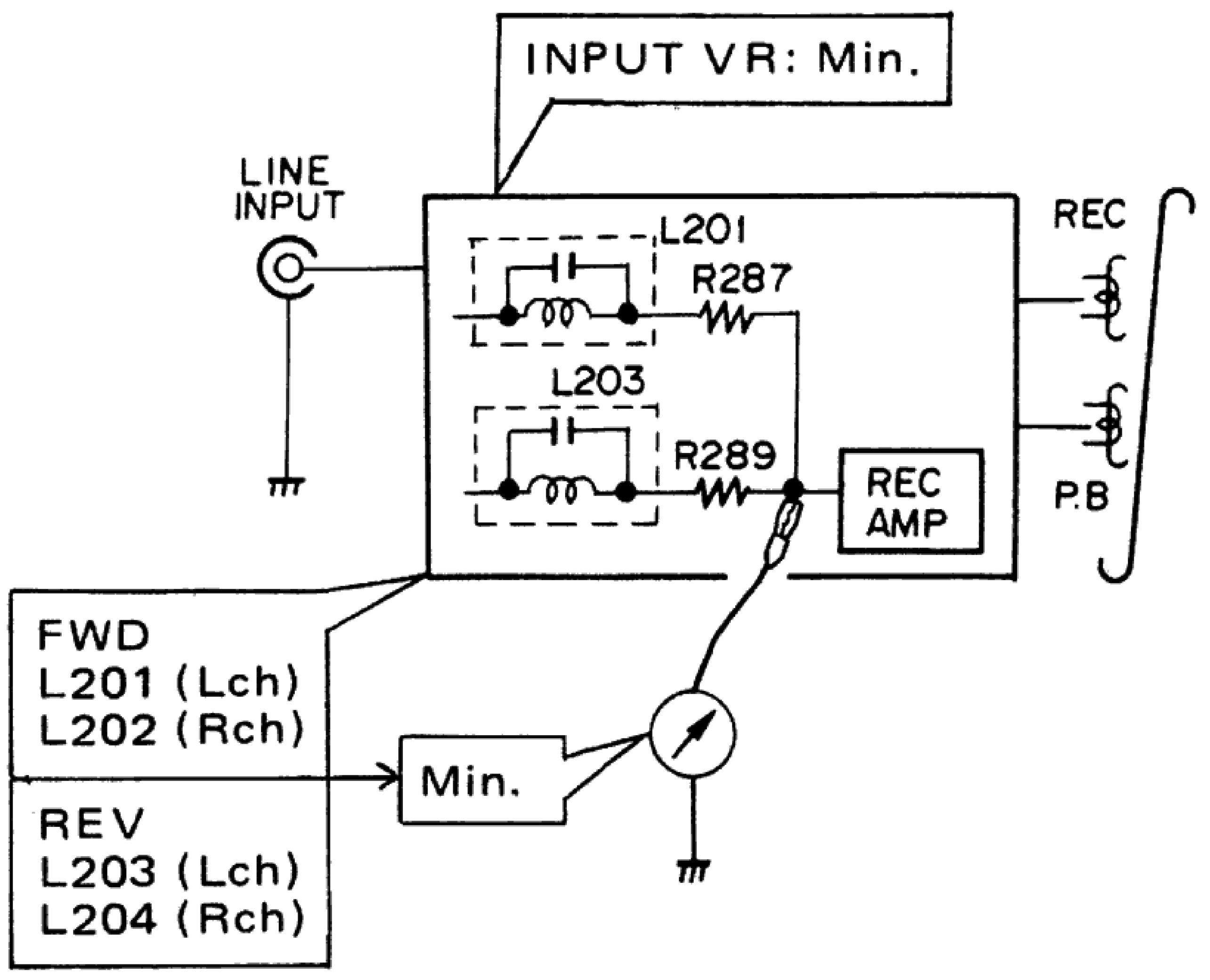


Fig. 9-13 Bias trap adjustment

9.10 RECORDING BIAS ROUGH ADJUSTMENT

Setting:

Mode	Recording
TAPE SELECTOR	METAL → NORM → CrO_2
INPUT Level Control	Min.
AC mV meter	To both end of R402 (10kΩ) resistor of the main assembly as shown in Fig. 9-14

Procedure:

1. Set the TAPE SELECTOR to the METAL position.
2. Set the CT-F1050 to the FWD position, and adjust the VR209 (L ch) and VR210 (R ch) so that the AC mV meter reads 12mV (1.2mA).
3. Set the CT-F1050 to the REV position, and adjust the VR211 (L ch) and VR212 (R ch) so that the AC mV meter reads 120mV (1.2mA).
4. Set the CT-F1050 to the FWD position (adjust for FWD only) and the TAPE SELECTOR to the NORM position. Adjust the VR302 so that the AC mV meter reads 6mV (600 μA).
5. Set the CT-F1050 to the FWD position (adjust for FWD only) and the TAPE SELECTOR to the CrO_2 position. Confirm that the AC mV meter reads 900± 50mV.

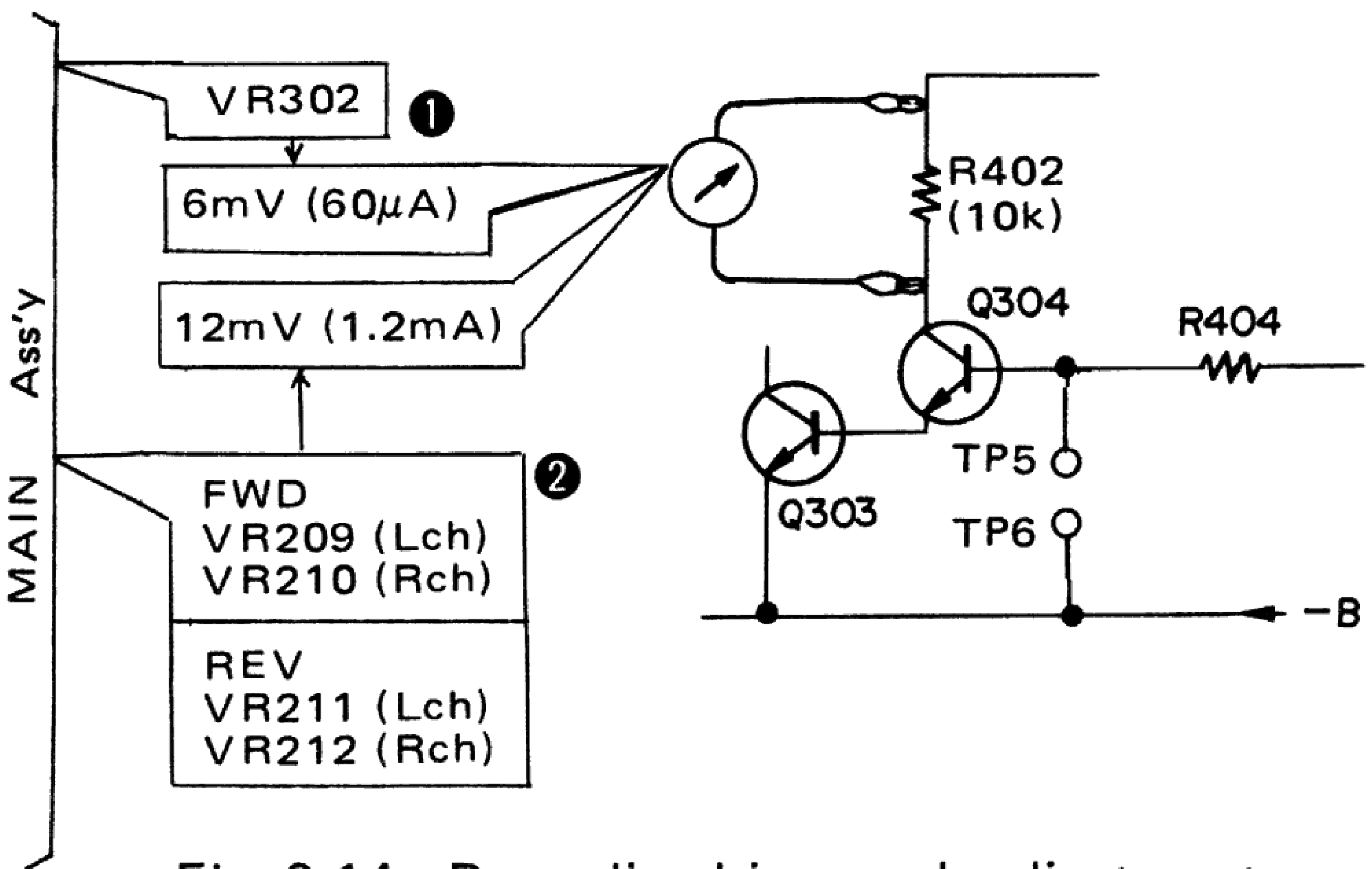


Fig. 9-14 Recording bias rough adjustment

9.11 RECORDING/PLAYBACK FREQUENCY RESPONSE ADJUSTMENT

Setting:

Mode	Record, Recording → Playback
TAPE SELECTOR	METAL → NORM
Input Signal (from INPUT)	333Hz, −30dBv (31.6mV)
	6.3kHz, −30dBv (31.6mV)
AC mV meter	OUTPUT
Test Tape	STD-604 (METAL), STD-601 (NORM)

Procedure:

1. Set the TAPE SELECTOR to the METAL position. Adjust the INPUT level control so that the AC mV meter reads −27dBv (44.6mV).
2. Set the CT-F1050 to the FWD position and record and playback the input signals (333Hz and 6.3kHz) onto the STD-604. Adjust the VR209 (L ch) and VR210 (R ch) so that the difference between two is 0.5dB at 6.3kHz.
3. Likewise, set the CT-F1050 to the REV position and record and play back the input signals (333Hz and 6.3kHz) onto the STD-604. Then adjust the VR211 (L ch) and VR212 (R ch) so that the difference two outputs is 0.5dB at 6.3kHz.
4. Set the TAPE SELECTOR to the NORM position. Set the CT-F1050 to the FWD position and record and play back the input signals (333Hz and 6.3kHz) onto the STD-601. Then check to see that the difference between the two outputs is 0.5dB±1dB at 6.3kHz. Again, record and play back up to 12kHz as listed in the specifications and check to see that performance meets specifications.

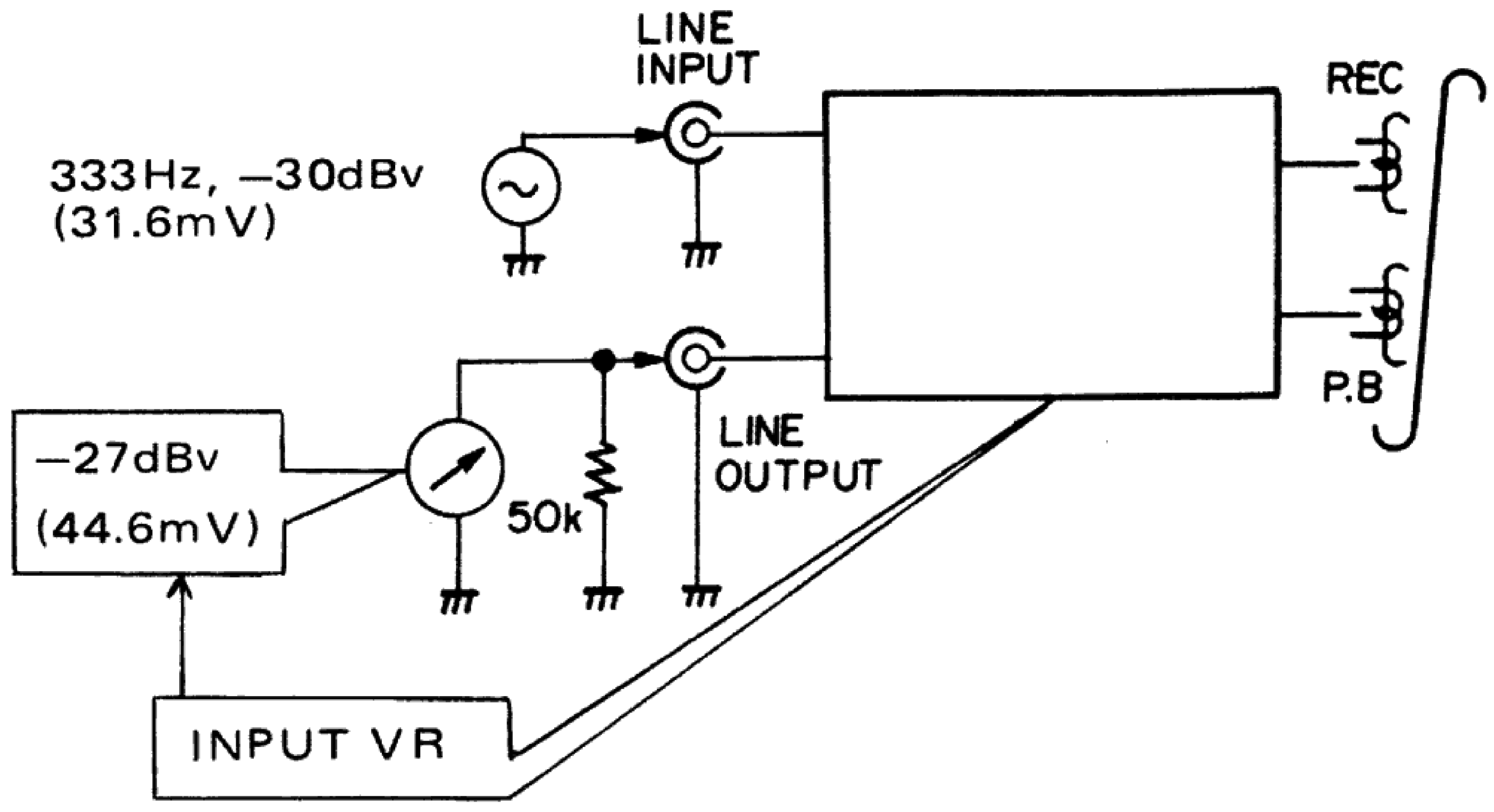


Fig. 9-15 Recording/Playback frequency response adjustment 1

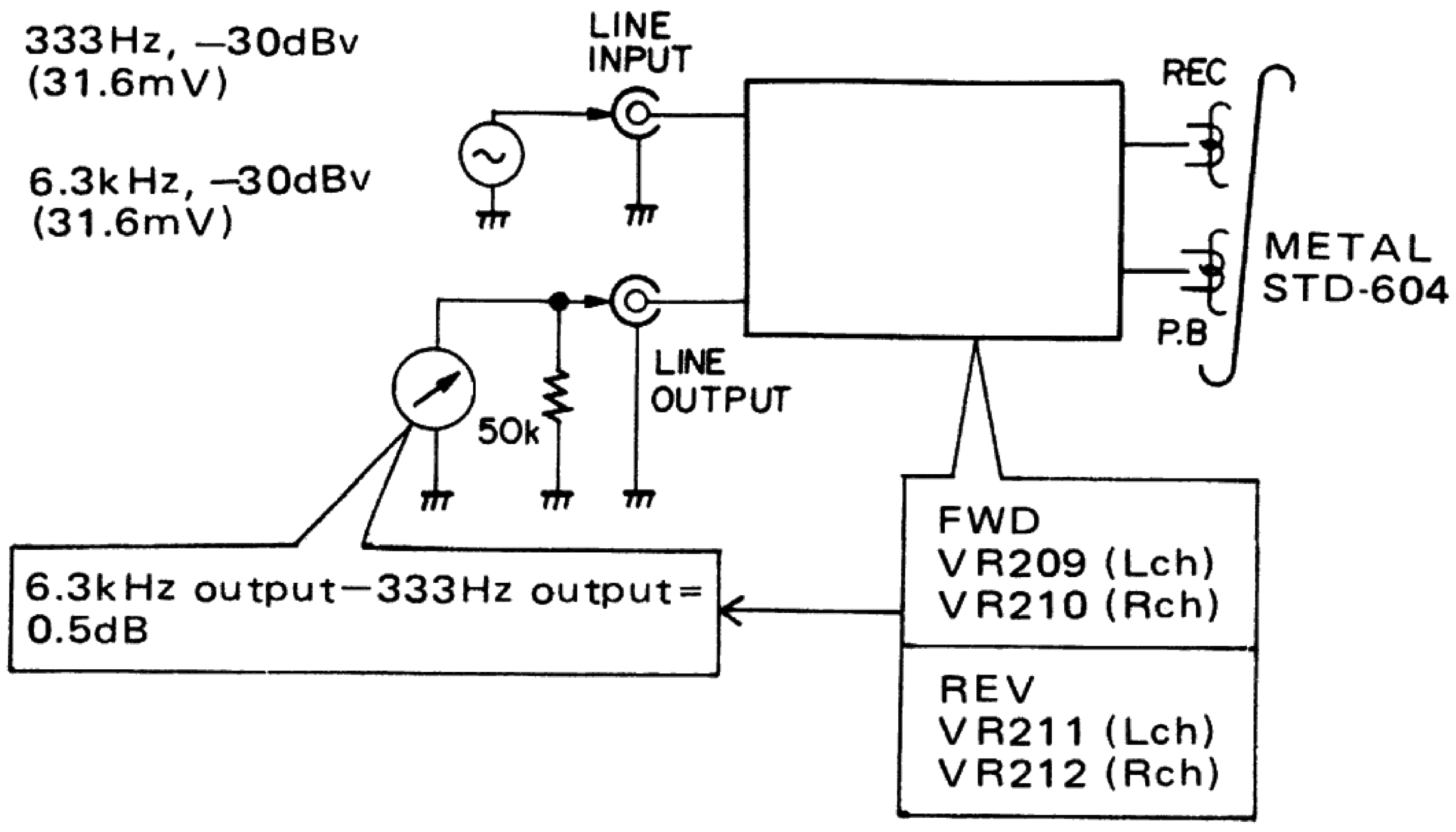


Fig. 9-16 Recording/Playback frequency response adjustment 2

9.12 RECORDING LEVEL ADJUSTMENT

Setting:

Mode . . . . Recording, Recording / Playback
TAPE SELECTOR . . . . . NORM → METAL → CrO_2 → NORM
Input Signal (from INPUT) . . . . 333Hz, −10dBv (316mV)
Test Tape . . . . STD-601 (NORM), STD-603 (CrO_2), STD-604 (METAL)
DOLBY NR Switch . . . . . OFF → ON
AC mV meter . . . . TP1 (L ch) and TP2 (R ch) of the DOLBY assembly

Procedure:

1. Set the TAPE SELECTOR to the NORM and DOLBY NR switch to the OFF position. Adjust the INPUT level control so that the AC mV meter reads −3dBv (710mV).
2. Set the TAPE SELECTOR to the METAL position and DOLBY NR switch to ON position. Set the CT-F1050 to the FWD position and record and play back the input signal onto the STD-604. Adjust the VR203 (L ch) and VR204 (R ch) so that the AC mV meter reads −3dBv (710mV). Next set the CT-F1050 to the REV position and adjust the VR205 (L ch) and VR206 (R ch) so that the AC mV meter reads −3dBv (710mV).
3. Set the TAPE SELECTOR to the CrO_2 and DOLBY NR switch to the ON position and record and play back the input signal onto the STD-603. Confirm that the AC mV meter reads −3dBv (710mV) ± 1.5dB.
4. Set the TAPE SELECTOR to the NORM and DOLBY NR switch to the ON position and record and play back the input signal onto the STD-601. Confirm that the AC mV meter reads −3dBv (710mV) ± 1.5dB.

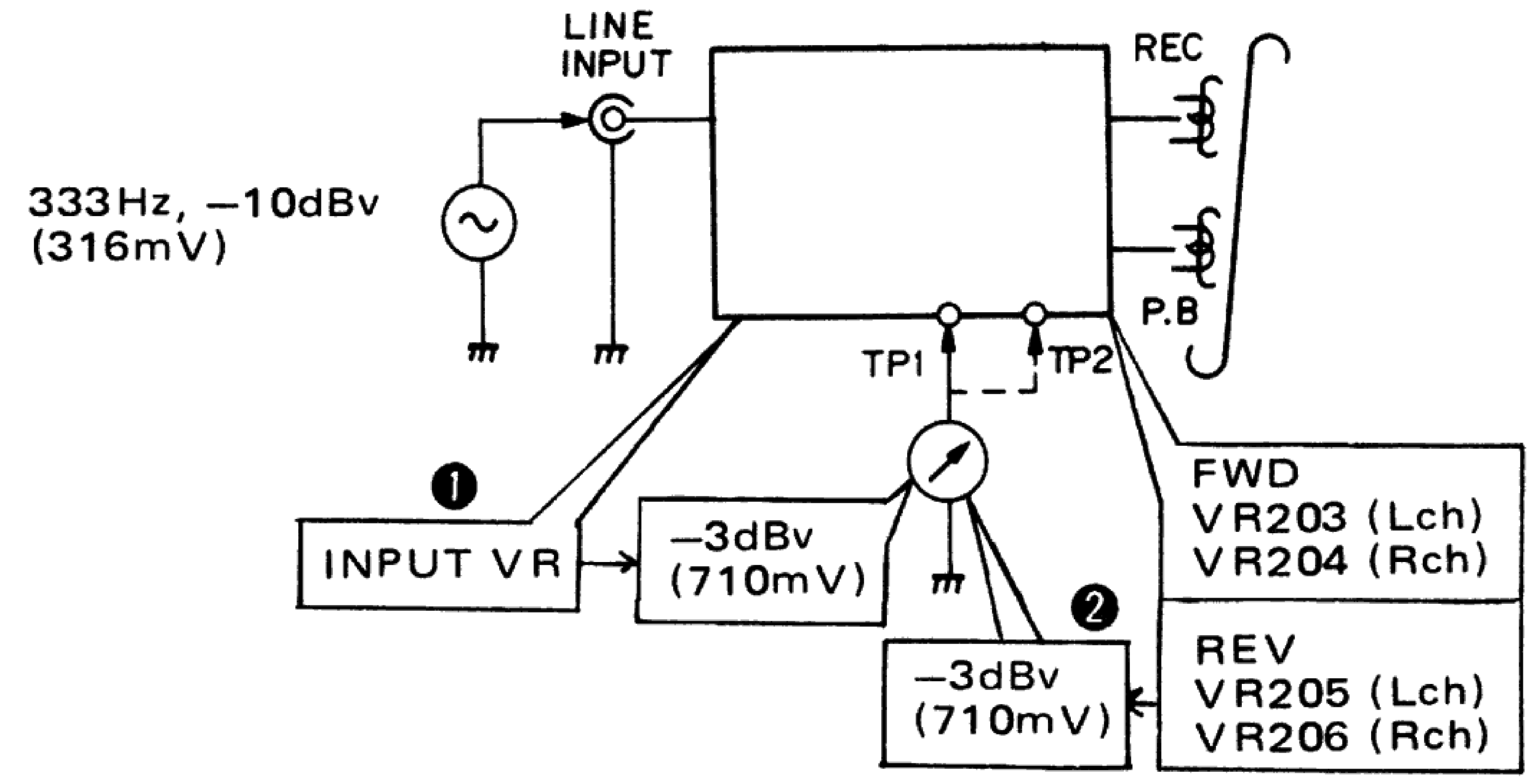


Fig. 9-17 Recording level adjustment

9.13 TAPE END DETECTOR ADJUSTMENT

Setting:

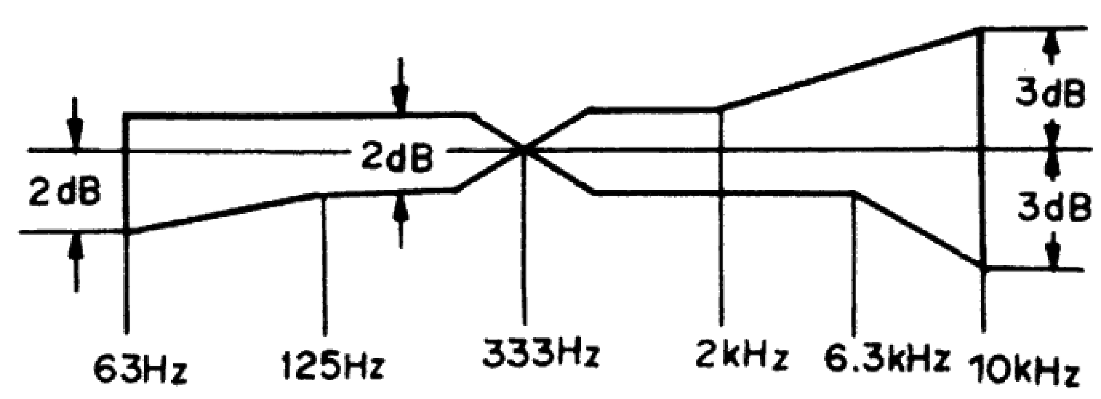
Mode . . . . Playback (without cassette half)
DC V meter . . . . TP terminal of the control assembly

Procedure:

Adjust the VR701 so that the AC mV meter reads 8.5V.

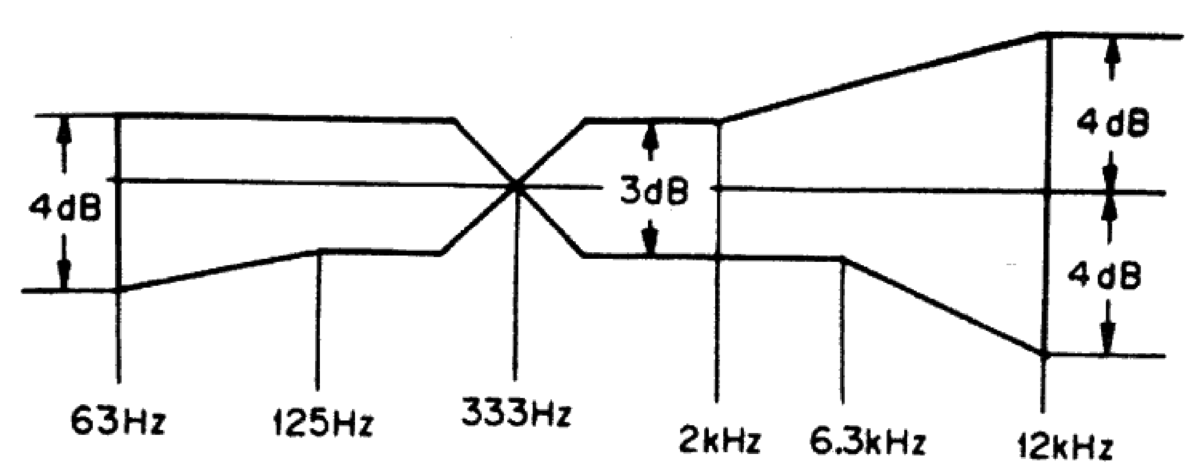
Frequency Response

Using STD-331A and the TAPE SELECTOR NORM position, with DOLBY NR OFF
However, the right channel is compensated by −1dB at 63Hz, and −0.5dB at 125Hz because of the insulation effect.



Overall Frequency Response

Using STD-601 and TAPE SELECTOR NORM position, with DOLBY NR OFF



Using STD-601 and TAPE SELECTOR NORM position, with DOLBY NR ON

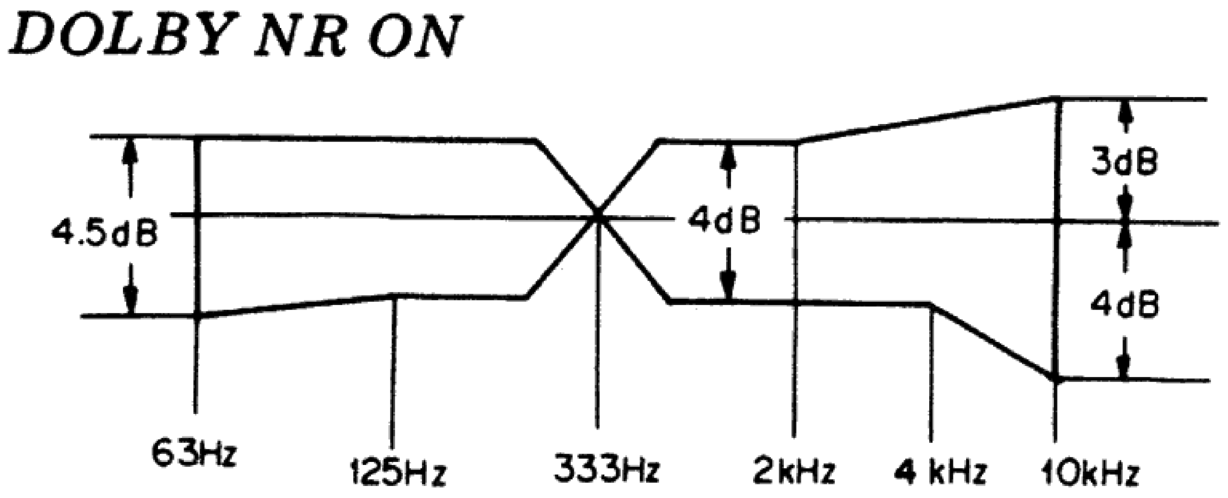
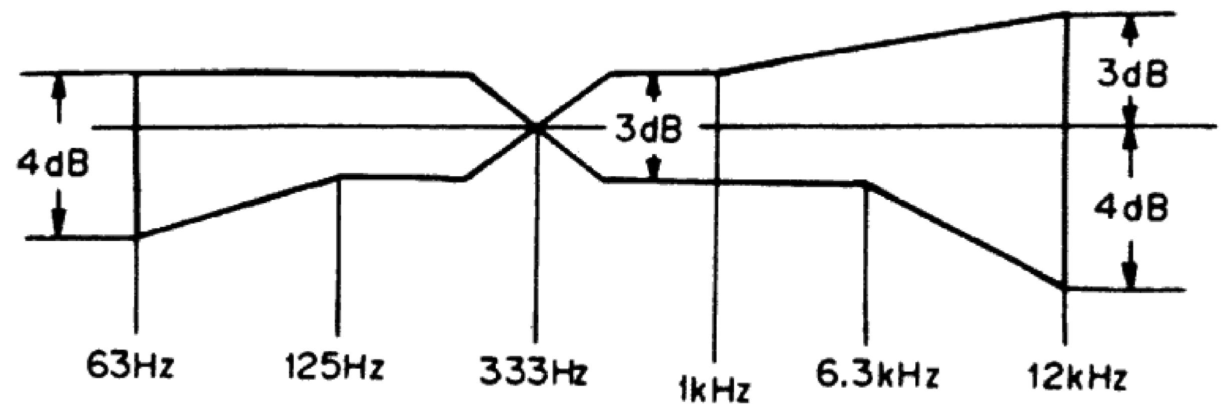
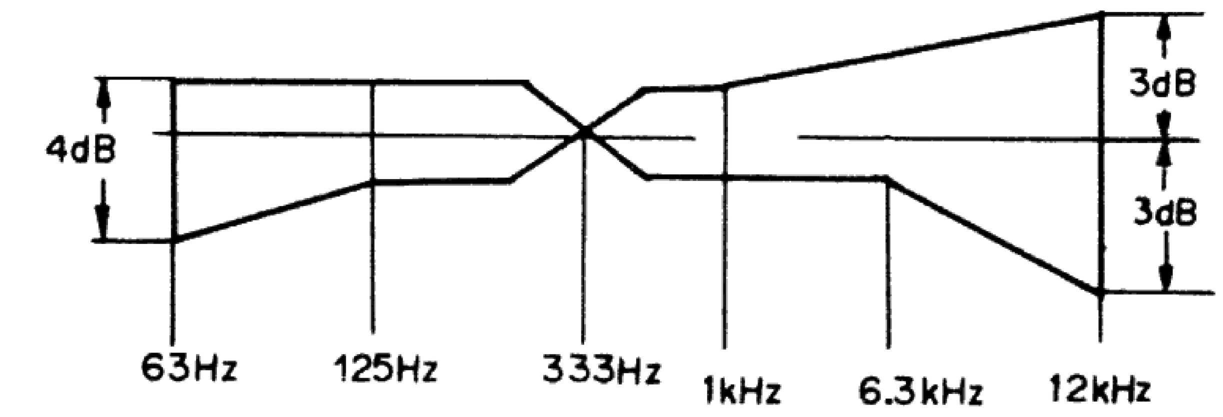


Fig. 9-18 Frequency response

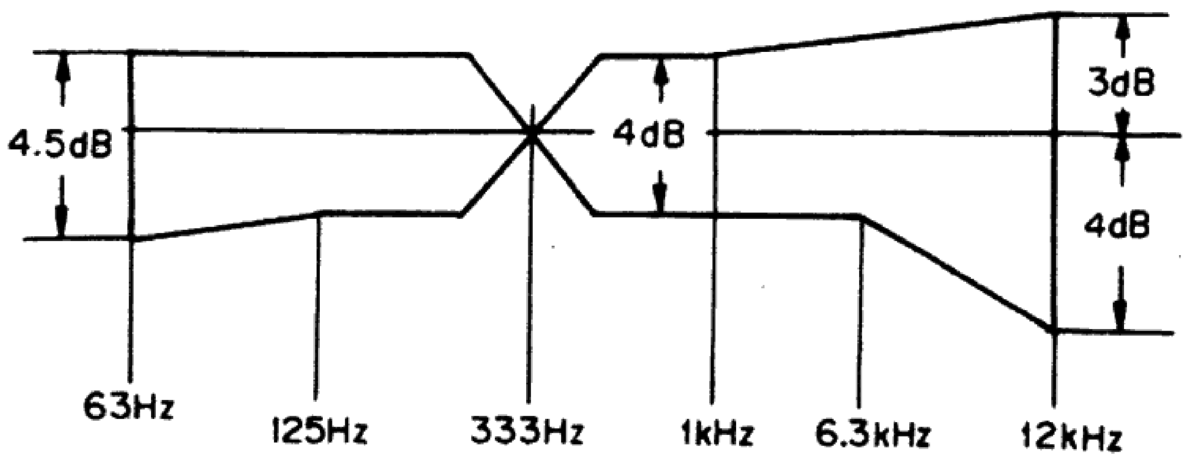
Using STD-603 and TAPE SELECTOR CrO_2 position, with DOLBY NR OFF



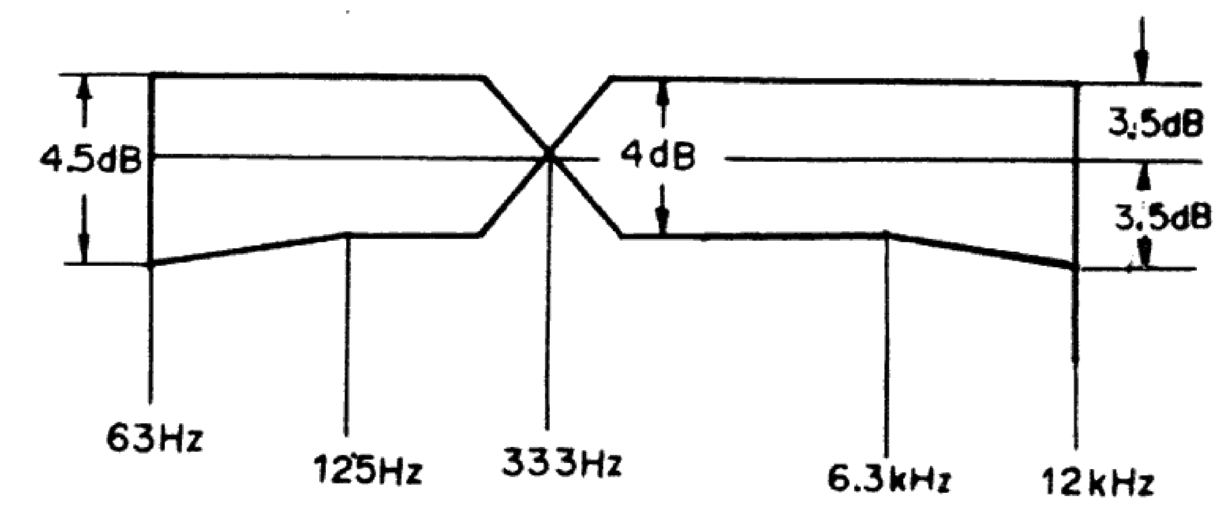
Using STD-604 and TAPE SELECTOR METAL position, with DOLBY NR OFF



Using STD-603 and TAPE SELECTOR CrO_2 position, with DOLBY NR ON



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



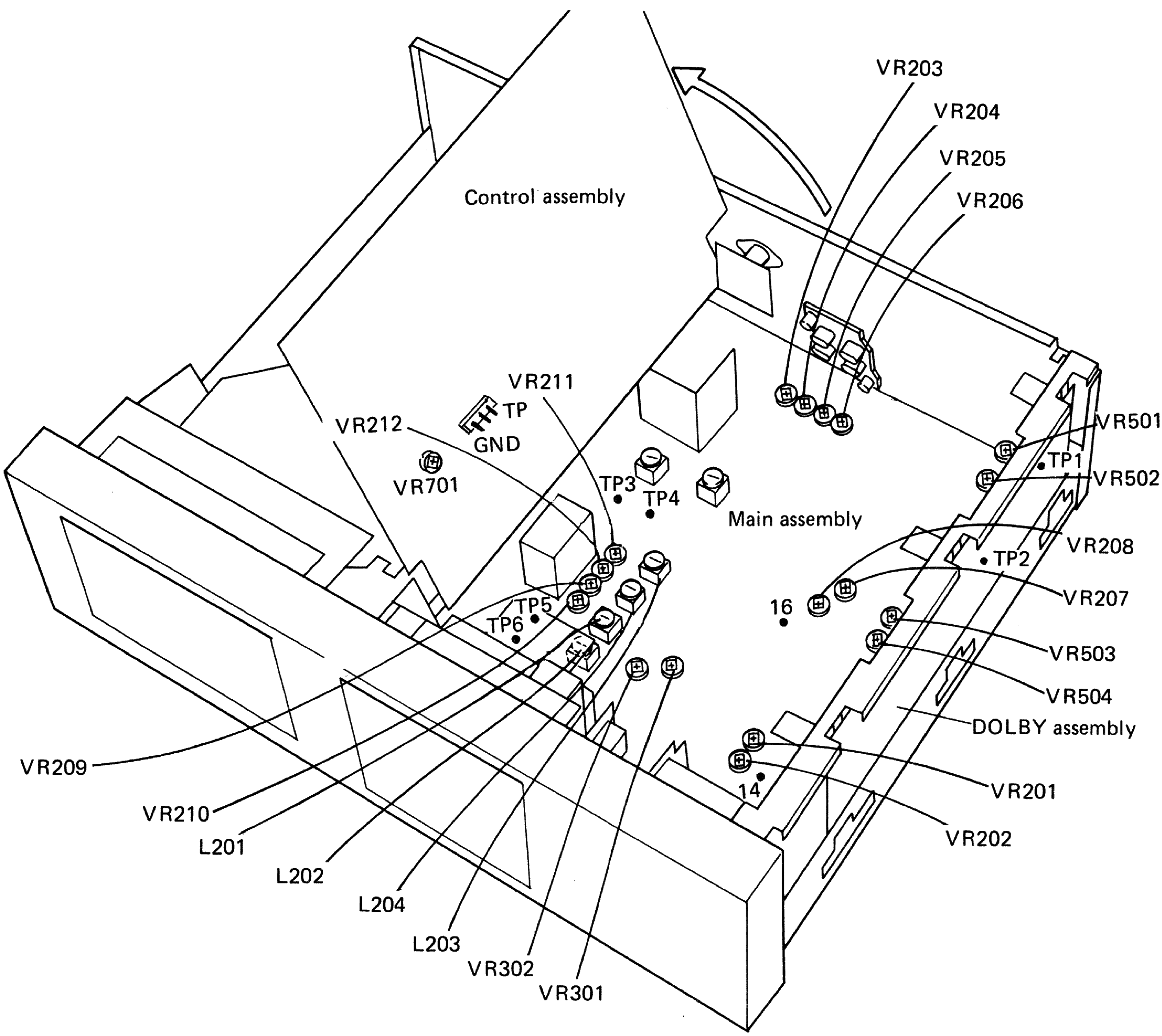


Fig. 9-19 Adjustment points

10. SCHEMATIC DIAGRAM

Playback signal route
Recording signal route

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

SWITCHES:

S002:	POWER	ON — OFF
S003:	LINE VOLTAGE SELECTOR	120V — 220V — 240V
S301:	PLUNGER	FWD — REV
S601:	MIC/LINE SELECTOR (L)	MIC — LINE
S602:	MIC/LINE SELECTOR (R)	MIC — LINE
S1501:	DOLBY NR	ON — OFF
S1502:	TAPE (METAL)	ON — OFF
S1503:	TAPE (NORM)	ON — OFF
S1504:	TAPE (CrO2)	ON — OFF

The underlined indicates the switch position.

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

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

SWITCHES:

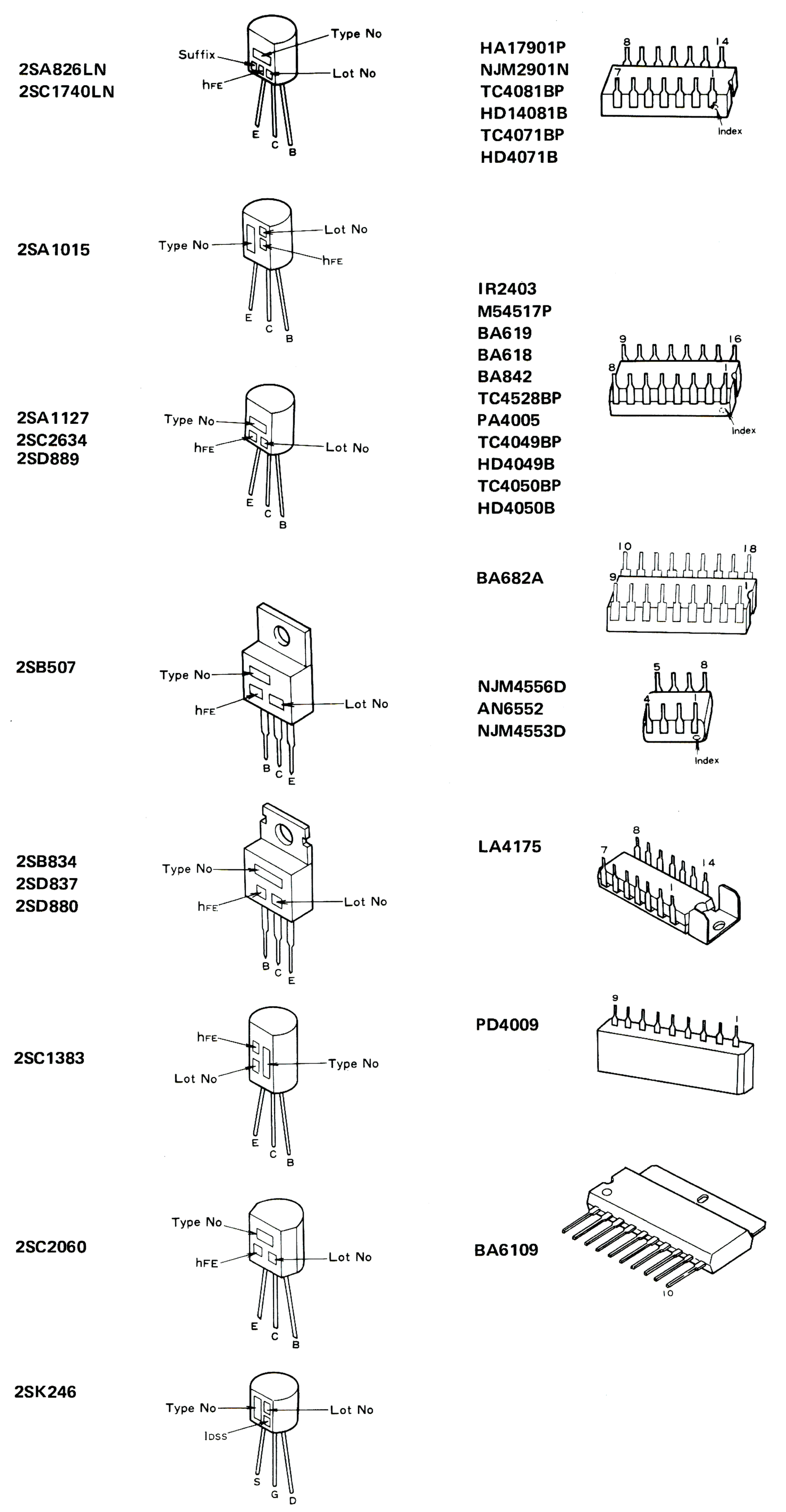
S001 :	CASSETTE HALF	ON – OFF
S101 :	REC SENSOR (A)	ON – OFF
S102 :	REC SENSOR (B)	ON – OFF
S1001 :	DIRECTION	FWD – REV
S1301 :	FF	ON – OFF
S1302 :	REW	ON – OFF
S1303 :	STOP	ON – OFF
S1304 :	PLAY	ON – OFF
S1305 :	PAUSE	ON – OFF
S1306 :	REC	ON – OFF
S1307 :	REC MUTE	ON – OFF
S1401 :	RESET	ON – OFF
S1402 :	MEMORY STOP	ON – OFF
S1403 :	TIMER START (OFF)	ON – OFF
S1404 :	TIMER START (PLAY)	ON – OFF
S1405 :	TIMER START (REC)	ON – OFF
S1601 :	MODE SELECTOR ⇄ – ⊃ – ⊂⊃ – PMS – PROGRAM – REPEAT	
S1701 :	MEMORY	ON – OFF
S1702 :	SET	ON – OFF
S1703 :	A/B	ON – OFF
S1704 :	UP	ON – OFF
S1705 :	DOWN	ON – OFF
S1706 :	CHECK	ON – OFF
S1707 :	RUN/SKIP	ON – OFF

The underlined indicates the switch position.

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

13. P.C. BOARD CONNECTION DIAGRAM

External Appearance of Transistors and ICs



12. 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* $\boxed{5}\boxed{6}\boxed{1}$ *J*
47kΩ	*47 x 10³*	*473 . . . .*	*RD¼PS* $\boxed{4}\boxed{7}\boxed{3}$ *J*
0.5Ω	*0R5 . . . .*		*RN2H* $\boxed{0}\boxed{R}\boxed{5}$ *K*
1Ω	*010 . . . .*		*RS1P* $\boxed{0}\boxed{1}\boxed{0}$ *K*

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

5.62kΩ	*562 x 10¹*	*5621. . . . .*	*RN¼SR* $\boxed{5}\boxed{6}\boxed{2}\boxed{1}$ *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 symbols ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model No., temperature, humidity, etc.

Miscellaneous Parts List

P.C. BOARD ASSEMBLIES

Mark	Part No.	Symbol & Description	
			Main assembly
			DOLBY assembly
			MIC assembly
			Volume assembly A
			Volume assembly B
			Switch assembly A
			Switch assembly B
			DOLBY indicator assembly
			Control assembly
			Mode switch assembly
			Program key assembly
			Power supply assembly
			Remote-control jack assembly
			Indicator assembly
			Function switch assembly
			Connector assembly
			Micro switch A assembly
			Micro switch B assembly
			LED assembly
			Level meter assembly A
			Level meter assembly B

Mark	Part No.	Symbol & Description	
⚠	RKR-020	S003	Line voltage selector (switchable 3 positions; 110V, 220V and 240V)
⚠ ★★	REK-063	FU1	Fuse (1.5A)
⚠ ★★	REK-058	FU1	Fuse (800mA)
	RXX-305		Front panel assembly
	RXP-096	SL001, SL002	P solenoid
	RXP-097	SL003	B solenoid
	RXP-098	SL004	HB solenoid
	W03B	D001-D004	Diode
	RSH-058	S001	Slide switch
	RXX-302		Capstan motor assembly
	RXX-303		Reel motor assembly
	RXB-451		Erase head (L) assembly
	RXB-452		Erase head (R) assembly
	RPB-090		REC/PB head (4ch)

OTHERS

Mark	Part No.	Symbol & Description	
⚠	RTT-224	T001	Power transformer
⚠ ★★	RSA-034	S002	Power switch
⚠	RDG-024		Power cord
⚠	C43-003	C001	Capacitor
⚠	REC-272		Strain relief

Main Assembly

COILS AND TRANSFORMER

Mark	Part No.	Symbol & Description	
	RTX-009	T301	Oscillator block
	RTF-055	L201-L204	Trap coil
	RTF-088	L205, L206	Peaking coil
	RTF-057	L301, L302	Line coil

CAPACITORS

Mark	Part No.	Symbol & Description
	CQSA 471K 50	C201, C202, C301, C302
	CEA 221M 6.3	C215, C216, C315, C316
	CEA 100M 16	C219-C224, C319-C324, C359
	CEANL 100M 16	C205, C206, C305, C306
	CEA 220M 16	C239, C240, C358
	CEA 330M 25	C354-C357, C360
	CEA 470M 16	C203, C217, C229, C230, C233, C234, C245, C246, C303, C317
	CEA 100M 16NP	C231, C232, C235, C236, C243, C244
	CEA 331M 16	C207, C208, C307, C308
	CEA 221M 25	C371, C372
	CEA 101M 35	C367, C368
	CEA 102M 35	C365, C366
	CEA R33M 50	C241, C242
	CEA 010M 50	C361-C364
	CEA 010M 50NP	C227, C228, C237, C238
	CQMA 222J 50	C247, C248
	CQMA 103J 50	C211, C212, C311, C312
	CQMA 393J 50	C251–C254, C257, C258
	CQMA 223J 50	C225, C226
	CQMA 273J 50	C249, C250
	CQMA 333J 50	C255, C256
	CKDYF 103Z 50	C352, C353, C373, C374
	CKDYF 473Z 50	C375
	CCDSL 220K 50	C213, C214, C313, C314
	CCDSL 101K 50	C209, C210, C309, C310, C369, C370
	CQSA 121J 250	C350, C351

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-195 (RCP-150)	VR201-VR208	Semi-fixed 22k-B
★	RCP-199 (RCP-154)	VR209-VR212	Semi-fixed 100k-B
★	RCP-191 (RCP-147)	VR301	Semi-fixed 4.7k-B
★	RCP-197 (RCP-152)	VR302	Semi-fixed 47k-B
	RD¼PM □□□ J	R201-R229, R231, R233-R270, R273-R294, R301-R329, R331, R333-R418	
⚠	RD1PF □□□ J	R419, R409	

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SD889	Q201, Q202, Q221, Q222, Q227-Q230, Q241, Q242, Q306
★★	2SC1740LN (2SC2634)	Q205-Q210, Q213, Q214, Q217-Q220, Q231-Q240, Q245-Q250, Q305, ⚠ Q308, Q225, Q226
★★	2SA826LN	Q203, Q204, Q243, Q244
★★	2SK246	Q211, Q212, Q215, Q216, Q223, Q224, Q251, Q252
⚠ ★★	2SD880	Q301, Q302
★★	2SC2060-Q	Q303
★★	2SC1740LN-R (2SC2634-R)	Q304
⚠ ★★	2SD837	Q307
⚠ ★★	2SA1015 (2SA1127) (2SA826)	Q309, Q310
⚠ ★★	2SB834 (2SB507)	Q311
★★	NJM4556D	IC201, IC202
★	W03B	D301-D303, D328, D329
★	1S2473	D304-D325, D327
⚠ ★	RB151	D326
⚠ ★	WZ056 (05Z5.6)	ZD301, ZD302
★	WZ-050	ZD303, ZD305
★	WZ-130	ZD304

OTHERS

Mark	Part No.	Symbol & Description	
	RKB-014 (RKB-016)		4P terminal
★	RSX-050	SL301	Plunger slide-switch
★★	RSR-035	RY201, RY202	Relay
	RKH-005		Insulator spacer
	REE-051		Insulator spacer
	RBA-039		Tapping screw
	RKP-225		Connector assembly (3)

DOLBY Assembly

COILS

Mark	Part No.	Symbol & Description
	RTF-083	L501, L502 MPX filter block

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 100M 16NP	C501, C502, C523-C526, C531, C532
	CEA R22M 50	C552, C553
	CEA 4R7M 50	C511, C512, C527, C528, C539, C540, C554
	CEA 100M 16	C541
	CEA 470M 16	C519-C522, C533, C534, C537, C542, C543
	CEA 330M 16	C538
	CEA 4R7M 25NP	C505, C506
	CEA R33M 50	C515, C516
	CEA 010M 50	C517, C518
	CKDYF 103Z 50	C535, C536, C555, C556
	CKDYB 471K 50	C513, C514
	CCDSL 101K 50	C529, C530
	CQMA 332K 50	C546, C547
	CQMA 222K 50	C509, C510
	CQMA 123K 50	C503, C504
	CQMA 183K 50	C507, C508
	CQMA 273K 50	C548, C549

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-038	VR501, VR502 Semi-fixed 4.7k-B
★	RCP-009	VR503, VR504 Semi-fixed 22k-B
	RD¼PM □□□ J	R501-R541, R543-R569

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SK246	Q501-Q504
★★	2SC1740LN (2SC2634)	Q505-Q509
★★	PA4005	IC501, IC502
★★	LA4175	IC503
★★	AN6552 (NJM4558D)	IC504-IC507
★	1S2473	D501

OTHERS

Mark	Part No.	Symbol & Description
	RKP-235	Connector assembly (13)
	RKP-236	Connector assembly (14)

MIC Assembly

CAPACITORS

Mark	Part No.	Symbol & Description
	CCDSL 471K 50	C601, C602
	CEA R68M 50	C603, C604
	CEA 100M 16	C605, C606
	CEA 100M 16NP	C607, C608
	CEA 470M 16	C609, C610
	CKDYF 473Z 50	C611

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

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	NJM4558DD (AN6552F)	IC601

OTHERS

Mark	Part No.	Symbol & Description
	RKN-069	S601, S602 MIC jack
	RKN-070	Headphones jack

Volume Assembly A

Mark	Part No.	Symbol & Description
★	RCV-091	VR1801 Volume 20k-A

Volume Assembly B

Mark	Part No.	Symbol & Description
★	RCV-092	VR1901 Volume 20k-B

Switch Assembly A

Mark	Part No.	Symbol & Description
★★	RSG-106	S1401-S1405 Push switch (A)

Switch Assembly B

Mark	Part No.	Symbol & Description
★★	RSG-107	S1501-S1504 Push switch B

DOLBY Indicator Assembly

Mark	Part No.	Symbol & Description	
★	SLC-26GG5	LED2001	LED
	RKP-239		Connector assembly (17)

Mode Switch Assembly

Mark	Part No.	Symbol & Description	
★★	RSB-027	S1601	Rotary slide-switch
	RKP-231		Connector assembly (9)

Program Key Assembly

Mark	Part No.	Symbol & Description	
★★	RSG-063	S1701-S1707	Function switch
	RKP-229		Connector assembly (7)

Remote-Control Jack Assembly

Mark	Part No.	Symbol & Description	
	RKP-222		Remote-control socket

Level Meter Assembly A

CAPACITORS

Mark	Part No.	Symbol & Description
	CEB 2R2M 50	C1101, C1102

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	R1101-R1103

SEMICONDUCTORS

Mark	Part No.	Symbol & Description	
★★	BA682A	IC1101	
★	RAW-156	LED 1101	12-LED network

OTHERS

Mark	Part No.	Symbol & Description	
	RKP-233		Connector assembly (11)

Level Meter Assembly B

CAPACITORS

Mark	Part No.	Symbol & Description
	CEB 2R2M 50	C1201, C1202

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	R1201-R1203

SEMICONDUCTORS

Mark	Part No.	Symbol & Description	
★★	BA682A	IC 1201	
★	RAW-156	LED	12-LED network

OTHERS

Mark	Part No.	Symbol & Description	
	RKP-234		Connector assembly (12)

Function Switch Assembly

SWITCHES

Mark	Part No.	Symbol & Description	
★★	RSG-099	S1301-S1307	Push switch

OTHERS

Mark	Part No.	Symbol & Description	
	REL-089	PL1301-PL1304	Lamp
	RKP-232		Connector assembly (10)

Micro Switch A Assembly

Mark	Part No.	Symbol & Description	
★★	RSF-024	S101	Micro switch B

Micro Switch B Assembly

Mark	Part No.	Symbol & Description	
★★	RSF-024	S102	Micro switch B

Indicator Assembly

SWITCHES

Mark	Part No.	Symbol & Description	
**	RSG-108	S1001	Push switch

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

RESISTORS

Mark	Part No.	Symbol & Description
	RD¼PM □□□ J	R1001-R1004

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★	LN543GK	LED 1001
★	LT-9002N	LED 1002, LED 1003
★	GL-9PR4	LED 1004-LED 1007
★	SLC-26GG5	LED 1008-LED 1011
★	SLC-26UR5	LED 1012, LED 1013

OTHERS

Mark	Part No.	Symbol & Description
	RKP-226	Connector assembly (4)
	RKP-228	Connector assembly (6)
	RKP-230	Connector assembly (8)
	RKP-237	Connector assembly (15)
	RKP-238	Connector assembly (16)

Power Supply Assembly

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 332M 25	C901
	CEA 222M 16	C902
	CEA 102M 35	C904
	CEA 101M 16	C908
	CEA 471M 25	C903
	CEA 470M 10	C907
	CEA 470M 35	C905
	CEA 100M 50	C910, C912, C913
	CKDYF 473Z 50	C909, C911
	CCDSL 101K 50	C906

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
⚠	RS 1PF □□□ J	R901
⚠	RD½PSF □□□ J	R902
	RD¼PM □□□ J	R903-R912

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
⚠ **	2SD837	Q901
⚠ **	2SC1740LN (2SC2634)	Q902
⚠ **	2SA1015 (2SA1127) (2SA826LN)	Q903
⚠ ★	S4VB10	D901
⚠ ★	W03B	D902-D904, D910
⚠ ★	RB-151	D905
★	1S2473	D906-D909
⚠ ★	WZ-050	ZD901, ZD902
⚠ ★	WZ-100	ZD903

OTHERS

Mark	Part No.	Symbol & Description
	RKH-005	Insulator spacer
	REE-051	Insulator spacer
	RBA-039	Tapping screw

Control Assembly

COIL

Mark	Part No.	Symbol & Description	
	RTD-015	L701	Oscillator coil

CAPACITORS

Mark	Part No.	Symbol & Description
	RSB305YF 104Z 6L5	C701, C702, C713, C734, C737, C757, C759
	CEANL 100M 16	C706, C707
	CEA 010M 50NP	C740
	CEA 010M 50	C708-C711, C717, C720, C741, C742
	CEA 2R2M 50	C743, C758, C747, C752-C754
	CEA 4R7M 50	C744, C745
	CEA 100M 16	C705, C725, C750
	CEA 220M 25	C723
	CEA 330M 16	C738
	CEA 470M 10	C755
	CEA 470M 16	C712, C721, C727, C735, C761
	CEA 101M 10	C716, C746
	CEA 101M 16	C722, C756
	CEA 221M 10	C718, C719
	CEA 222M 16	C749
	CKDYF 103Z 50	C726, C728-C733, C736, C739, C748
	CKDYF 473Z 50	C714, C715
	CCDSL 102K 50	C724
	CQMA 473K 50	C751

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-199 (RCP-154)	VR701	Semi-fixed 100k-B
	RCX-003 (RCX-004)	R858	8-resistor network (22k)
	RCX-005	R857	7-resistor network (10k)
	RD¼PM □□□ J	R701-R754, R756-R845, R847-R854, R856	

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SC1740LN (2SC2634)	Q701-Q704, Q706-Q709, Q711
★★	2SA1015 (2SA1127) (2SA826 LN)	Q705, Q710
★★	TC4049BP ~~(HD14049B)~~ HD14049BP	IC701-IC711
★★	M54517P (IR2403)	IC702, IC712
★★	BA618	IC703, IC704, IC713, IC716
★★	PD4009	IC705
★★	TC4081BP (~~HD14081B~~) HD14081BP	IC706
★★	AN6552 (NJM4558D)	IC707, IC708
★★	BA619	IC709, IC718
★★	TC4071BP ~~(HD14071B)~~ HD14071BP	IC710
★★	TC4050BP ~~(HD14050B)~~ HD14050BP	IC714
★★	BA843	IC715
★★	NJM2901N (HA17901P)	IC717
★★	TC4528BP	IC719
★★	BA222	IC720
★	1S2473	D701-D720, D724-D729, D731-D745, D747, D748, D750-D758
★	1K60A	D721-D723, D730
★	W03B	D746, D749
★	WZ-050	ZD701, ZD702
★	WZ-130	ZD703

OTHERS

Mark	Part No.	Symbol & Description
	RKP-227	Connector assembly (5)

LED Assembly

Mark	Part No.	Symbol & Description
★	LN62S	LED101 LED

Connector Assembly

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 100M 25	C101, C106
	CEA 101M 10	C102, C103
	CEA 4R7M 50	C105
	RSB305YF 104Z 6L5	C109
	CKDYF 103Z 50	C110
	CEA 100M 50	C111
	CEA 220M 16	C104

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
⚠	RD½PSF □□□ J	R111
	RD¼PM □□□ J	R101, R103, R105, R110, R112, R115, R117
	RD¼PM □□□ J	R102, R104, R106, R107-R109, R113, R114, R116, R118, R119

SEMICONDUCTORS

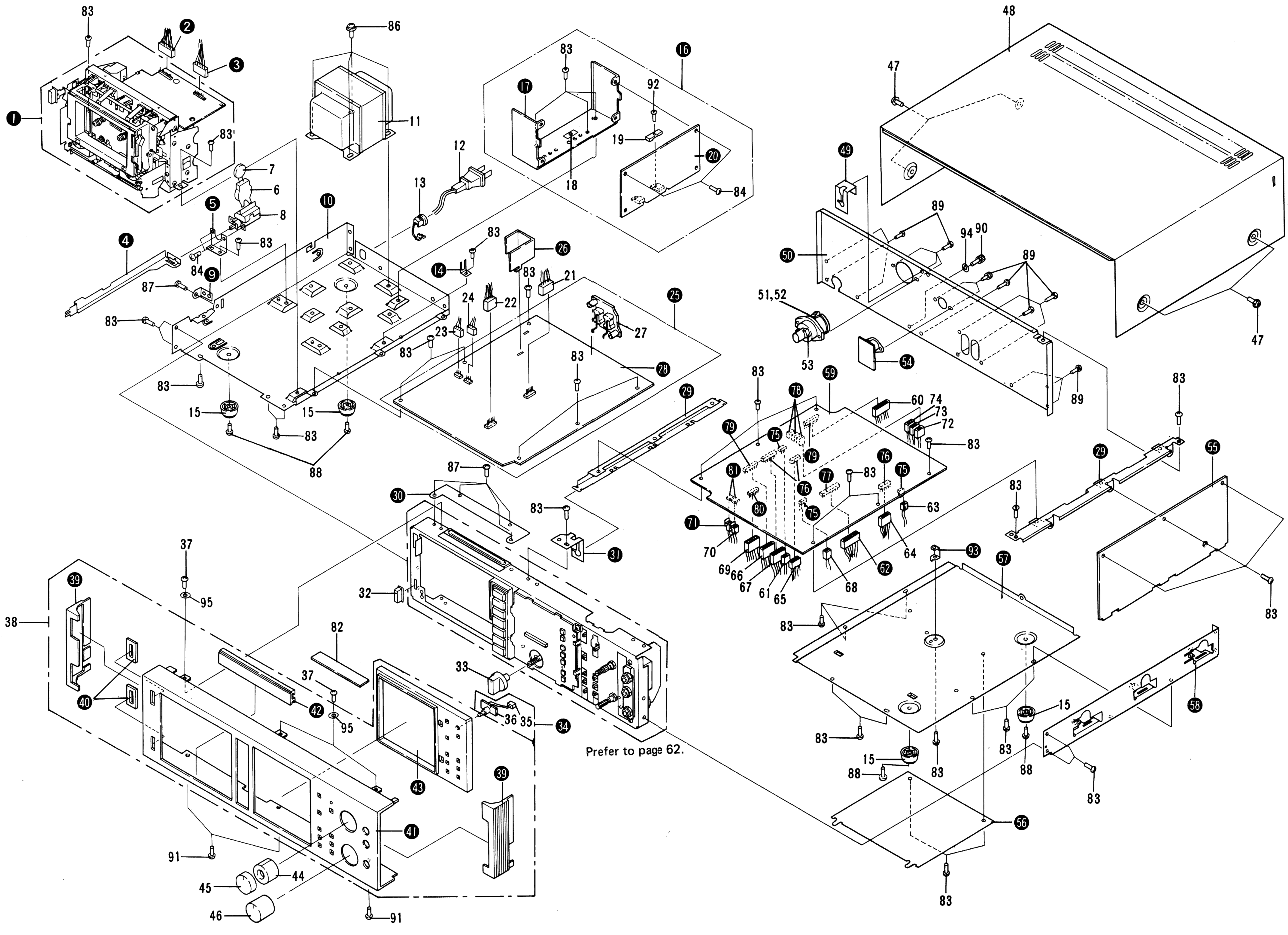
Mark	Part No.	Symbol & Description
⚠ ★★	2SC1383	Q101-Q103
⚠	(2SC2655)	
⚠ ★★	2SB834	Q104
⚠	(2SB507)	
⚠ ★★	2SC1740LN	Q105
⚠	(2SC2634)	
⚠ ★★	2SD880	Q106
⚠ ★★	BA6109	IC101
⚠ ★	1S2473	D101
⚠ ★	W03B	D102
⚠ ★	05Z7.5	ZD101

Photo interruptor Assembly

Mark	Part No.	Symbol & Description	
	GP-411B	LED102	Photointerruptor

13. EXPLODED VIEWS AND PARTS LIST

13.1 EXTERIOR



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 symbols ** and *.*
  ***: GENERALLY MOVES FASTER THAN *.*
  This classification shall be adjusted by each distributor because it depends on model No., temperature, humidity, etc.

Parts List

Mark	No.	Part No.	Description
	1		Mechanism assembly
	2		Connector assembly (1)
	3		Connector (5)
	4		Power switch joint
	5		Power switch holder
	6	REC-287	Capacitor cover
⚠	7	C43-003	Capacitor (0.01/1.4k)
⚠ **	8	RSA-034	Power switch
	9		REC lever bracket
	10		Main chassis
⚠	11	RTT-224	Power transformer (120V, 220V and 240V)
⚠	12	RDG-024	Power cord
	13	REC-272	Strain relief
	14		2P terminal (GND)
	15	RXB-134	Foot assembly
	16	[illegible]	Power supply assembly
	17		Heat sink
	18	REE-051	Insulator
	19	RKH-005	Insulator
	20		Power supply P.C.B.
	21	RKP-218	6P connector assembly B
	22	RKP-217	6P connector socket assembly A
	23	RKP-220	3P connector assembly B
	24	RKP-219	3P connector assembly A
	25	[illegible]	Main assembly
	26		Heat sink
	27	RKB-014 (RKB-016)	Terminal (OUTPUT, INPUT)
	28		Main P.C.B.
	29		P.C.B. holder A
	30		Holder
	31		Hinge A
	32	RNL-148	Knob (POWER)
	33	RNL-152	Knob (FUNCTION)
	34		DOLBY indicator assembly
	35	RKP-239	Connector assembly (17)
	36	SLC-26GG5	LED
	37	RBA-046	Screw
	38	RXX-305	Front panel assembly
	39		Side escutcheon
	40		Knob escutcheon

Mark	No.	Part No.	Description
	41		Front panel
	42		Dressing plate
	43		Indicator escutcheon
	44	RAA-352	Volume knob R assembly
	45	RAA-351	Volume knob L assembly
	46	RAA-353	Volume knob assembly
	47	FBT40P080FNi	Screw
	48	RNA-528	Bonnet
	49		Hinge B
	50		Rear panel
⚠ **	51	REK-063	Fuse 1.5A (for 120V)
⚠ **	52	REK-058	Fuse 800mA (for 220V or 240V)
⚠	53	RKR-020	Line voltage selector
	54		Remote-control jack assembly
	55	[illegible]	DOLBY assembly
	56		Shield plate
	57		Bottom plate
	58		Side stay
	59	[illegible]	Control assembly
	60	RKP-225	Connector assembly (3)
	61	RKP-237	Connector assembly (15)
	62		Connector assembly (2)
	63	RKP-238	Connector assembly (16)
	64	RKP-232	Connector assembly (10)
	65	RKP-231	Connector assembly (9)
	66	RKP-226	Connector assembly (4)
	67	RKP-230	Connector assembly (8)
	68	RKP-236	Connector assembly (14)
	69	RKP-229	Connector assembly (7)
	70	RKP-213	2P connector assembly (B)
	71		2P connector assembly (A)
	72	RKP-233	Connector assembly (11)
	73	RKP-235	Connector assembly (13)
	74	RKP-234	Connector assembly (12)
	75		Connector (2P)
	76		Connector (5P)
	77		Connector
	78		Connector
	79		Connector
	80		Connector

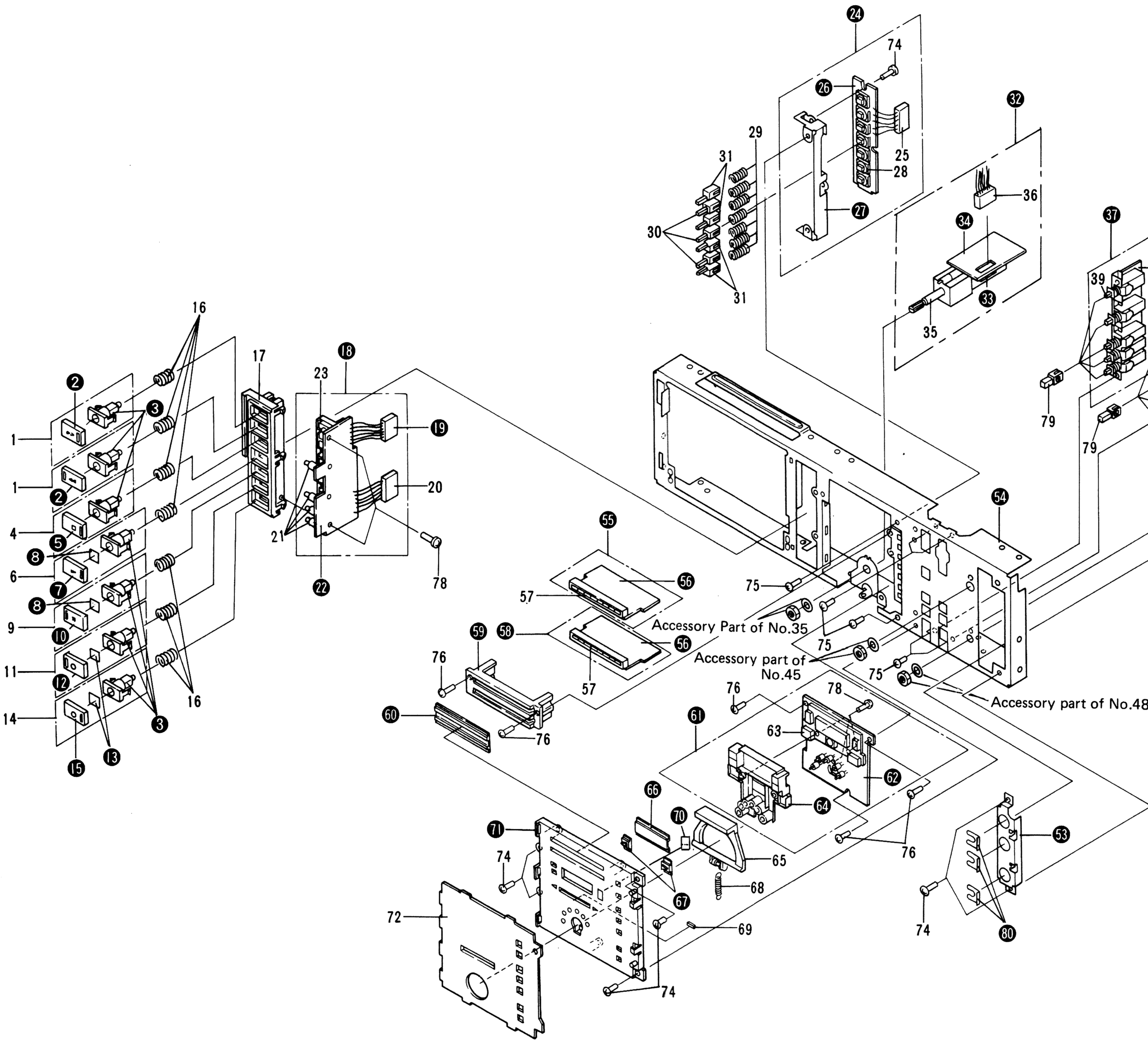
Mark	No.	Part No.	Description
	81		Connector 2P
	82		Cover cushion D
	83	VCZ30P060FMC	Screw
	84	PMA30P060FMC	Screw
	85	BMZ26P060FMC	Screw
	86	PMB40P080FMC	Screw
	87	BCZ30P060FMC	Screw
	88	VBZ30P080FMC	Screw
	89	VCZ30P080FZK	Screw
	90	BMZ40P080FNi	
	91	BMZ30P060FMC	Screw
	92	RBA-026	Screw
	93		P.C.B. holder
	94	WB40FNi	Washer
	95	WB30FMC	Washer

13.2 PANEL STAY

Parts List

Mark	No.	Part No.	Description
	1	RXX-313	FAST button assembly
	2		FAST button cap
	3		Function button
	4	RXX-312	STOP button assembly
	5		STOP button
	6	RXX-308	PLAY button assembly
	7		PLAY button cap
	8		PLAY button lens
	9	RXX-309	PAUSE button assembly
	10		PAUSE button cap
	11	RXX-310	REC button assembly
	12		REC button cap
	13		REC button lens
	14	RXX-311	MUTE button assembly
	15		MUTE button cap
	16	RBH-824	Button spring
	17	RNL-174	Button holder
	18	RWX-442	Function switch assembly
	19		Connector assembly (2)
	20	RKP-232	Connector assembly (10)
**	21	REL-089	Lamp
	22		Function switch P.C.B.
**	23	RSG-099	Push switch
	24	RWS-109	Program key assembly
	25	RKP-229	Connector assembly (7)
	26		Program key P.C.B.
	27		P.C.B. holder
**	28	RSG-063	Function switch
	29	RBH-825	Knob earth spring
	30	RNL-149	Knob A
	31	RNL-150	Knob B
	32	RWS-108	Mode switch assembly
	33		Connector U type (6)
	34		Mode switch P.C.B.
**	35	RSB-027	Rotary slide switch
	36	RKP-228	Connector assembly (6)
	37	RWS-106	Switch assembly A
	38		Switch P.C.B. A
**	39	RSG-106	Push switch A
	40	RWS-107	Switch assembly B
**	41	RSG-107	Push switch B
	42		Switch P.C.B. B
	43		Volume assembly A
	44		Volume P.C.B.
*	45	RCV-091	Volume (INPUT)
	46		Volume assembly B
	47		Volume P.C.B. B
*	48	RCV-092	Volume (OUTPUT)
	49	RWF-093	MIC assembly
	50		MIC P.C.B.
	51	RKN-069	MIC jack
	52	RKN-070	Headphones jack
	53		Jack holder
	54		Panel stay
	55	RWX-441	Level meter assembly A
	56		Level meter P.C.B.
*	57	RAW-156	LED array
	58	RWX-445	Level meter assembly B
	59		Level meter holder
	60		Level meter lens
	61	RWX-446	Indicator assembly
	62		Indicator P.C.B.
**	63	RSG-108	Push switch
	64		LED holder A
	65	RNL-151	Knob (DIRECTION)
	66		Counter lens
	67		Direction indicator lens
	68	RBH-797	Earth spring
	69	REB-372	Lock cushion
	70		AB panel
	71		Indicator panel
	72	RNL-155	Indicator lens
	73	....	
	74	VCZ30P060FMC	Screw
	75	PMA30P060FMC	Screw
	76	BMZ26P060FMC	Screw
	77	....	
	78	ARZ26P060FMC	Screw
	79	RNL-58	Push knob
	80		Spacer
	81	PMA26P050FMC	Screw

Panel Stay



Accessory Part of No.35
Accessory part of No.45
Accessory part of No.48

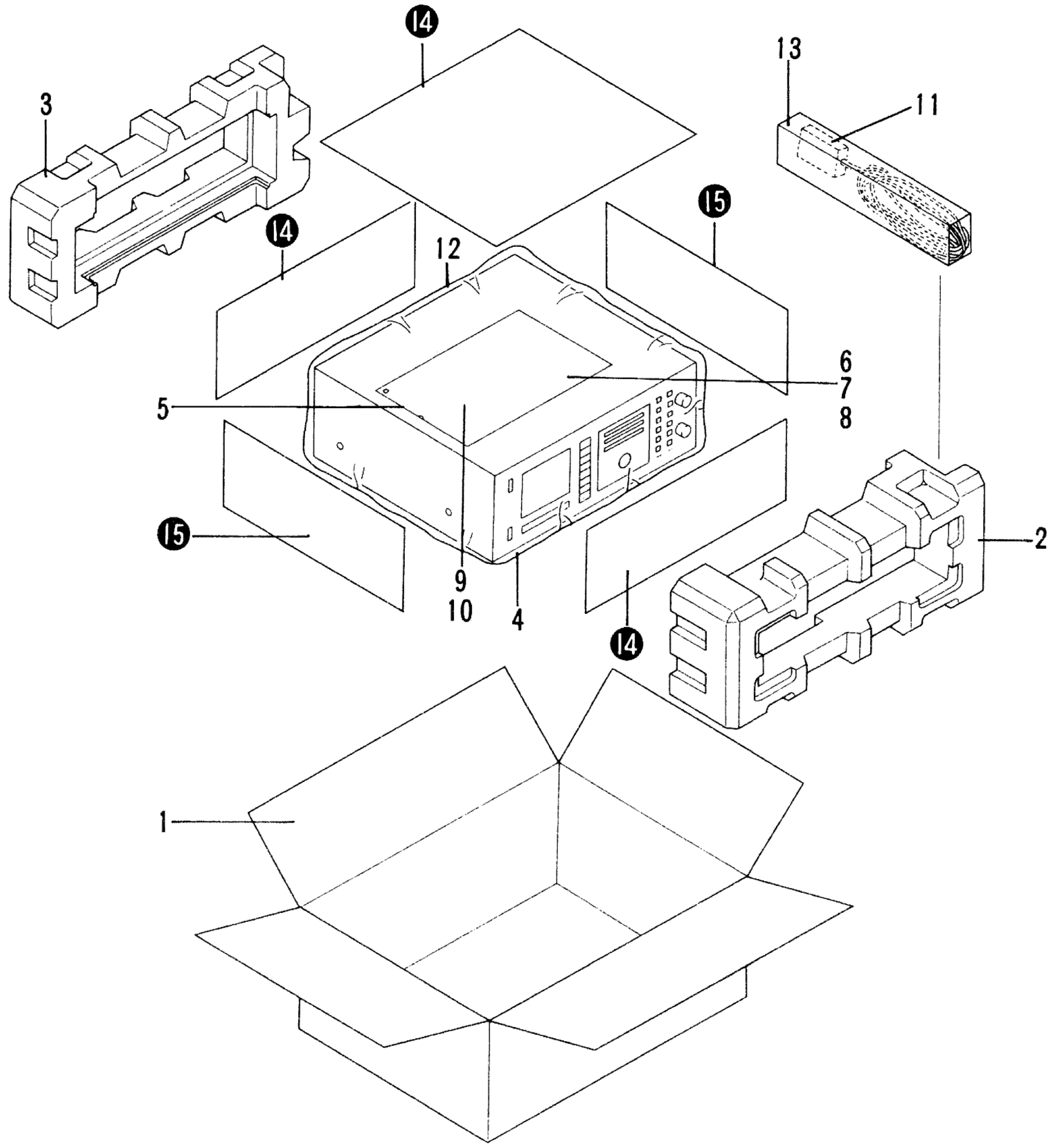
13.3 MECHANISM ASSEMBLY

Parts List

Mark	No.	Part No.	Description
	1		Eject lever
	2	RBH-783	Eject lever spring
	3	RNL-147	Knob (EJECT)
	4	RNL-135	Eject arm
	5	RNL-138	Lock arm
	6	RBH-786	Lock arm spring
	7	RNL-136	Arm fulcrum
**	8	RSH-058	Slide switch
	9	RBH-811	Pocket arm spring
	10	RNL-137	Arm
	11		Pocket arm assembly
	12		Holder L assembly
	13	RNL-010	Cylinder
	14	REB-275	O ring
	15	RNL-208	Piston
	16	RBH-810	Connection rod
	17	KNL-139	Half pocket
	18	RBK-161	Pocket spring
	19		Stopper
	20	....	
	21	....	
	22	....	
	23	RXB-483	Head base assembly
	24	RBH-769	Spring L
*	25	RXB-451	Erase head L assembly
	26	RBN-009	Nylon nut
	27	RBH-771	Azimuth spring
**	28	RPB-090	REC/PB head (4ch)
	29	....	
*	30	RXB-452	Erase head R assembly
	31	RBH-770	Spring R
	32	RBH-808	HB spring
	33		Detector arm shaft
	34	RNL-207	Detector arm L
	35	RNL-206	Detector arm R
	36		Bracket
	37		Photo interruptor assembly
	38	RXX-304	Cassette plate assembly
**	39	REL-088	Lamp
	40		Lamp holder
	41		Lens
	42		Cassette plate
	43	RBK-160	Half spring
	44		Mechanism chassis assembly
**	45	REB-436	BT belt
	46	RXB-442	BT pulley assembly
	47		Micro switch A assembly
**	48	RSF-024	Micro switch B
	49	RNL-118	Reference pole
	50		LED assembly
	51	RBH-765	Pinch arm spring
	52		Pinch arm R
	53		Pressure plate
**	54	RXB-448	Pinch roller arm R assembly
	55	RLB-374	Shaft
	56	RBH-766	Pinch pressure spring
	57	RXB-488	Arm assembly
	58	RNF-974	Head cord clamper
	59	RXB-438	Reel base R assembly
	60	~~RKN~~-815 RNK-815	Cap
**	61	REB-435	Detector belt
	62	RNL-126	Idler cam
	63		Brake plate
	64	REB-429	Stopper
	65		Plate
	66	RXB-436	Idler arm full assembly
	67	RNL-127	Spring cup
	68		Spring
**	69	RNL-123	Idler (17)
	70		Felt
	71		Idler arm A assembly
	72		Idler arm B assembly
	73	RBH-763	Idler spring
	74	RBH-768	Release spring
	75	RBH-809	Brake spring
**	76	RXB-447	Pinch roller arm F assembly
	77	RLB-374	Shaft
	78	RXB-482	Reel base F assembly
	79	....	
	80		Pinch arm F
	81	REB-429	Stopper
	82		Pocket arm holder assembly
	83		Holder R
	84		Micro switch B assembly
	85	RXB-439	Detector pulley assembly
	86		Motor bracket
**	87	RXX-303	Reel motor assembly
	88		Reel pulley
	89		Reel motor
	90		Motor bracket
	91	RBA-064	Step screw
	92	REB-408	Rubber cushion
**	93	RXX-302	Capstan motor assembly
	94		Motor pulley
	95		Capstan motor
	96	RBF-030	Oil stopper
	97	RXB-441	Metal frange assembly
	98	RBH-764	Spring
**	99	REB-428	Capstan belt
	100	REC-359	Washer

Mark	No.	Part No.	Description
	101	RXB-444	Flywheel R assembly
	102	RXB-443	Flywheel F assembly
	103	RWX-430	Connector assembly
	104	RXP-096	P solenoid
★	105	RXP-098	HB solenoid
★	106	RXP-097	B solenoid
★	107	W03B	Diode
	108		PR solenoid lever
	109	RBH-774	Lever spring
	110	REB-429	Stopper
	111		Sub chassis
	112		Lever pin (20)
	113		Lever pin (29)
	114		Flywheel holder
	115		PF solenoid lever
	116		BK solenoid lever
	117	....	
	118	....	
	119		HB solenoid lever
	120	RBH-773	HB spring
	121	....	
	122		UL cord clamper
	123	ARZ26P060FMC	Screw
	124	AMZ26P050FMC	Screw
	125	PMZ26P030FMC	Screw
	126	YE15FUC	Washer
	127	VCZ26P100FMC	Screw
	128	YE30FUC	Washer
	129	YE25FUC	Washer
	130	PMA30P050FMC	Screw
	131	VCZ30P060FMC	Screw
	132	VCZ26P080FMC	Screw
	133	CMZ26P040FMC	Screw
	134	WA21D040D025	Washer
	135	WA17D035D025	Washer
	136	YE40FUC	Washer
	137	PMA26P050FMC	Screw
	138	WA25D047D025	Washer
	139	BMZ26P060FMC	Screw
	140	CMZ26P060FMC	Screw
	141	PMZ26P080FMC	Screw
	142	BMZ26P100FMC	Screw
	143	BMZX2P040FMC	Screw
	144	PMZ20P060FMC	Screw
	145		Al rivet 3x4

14. PACKING

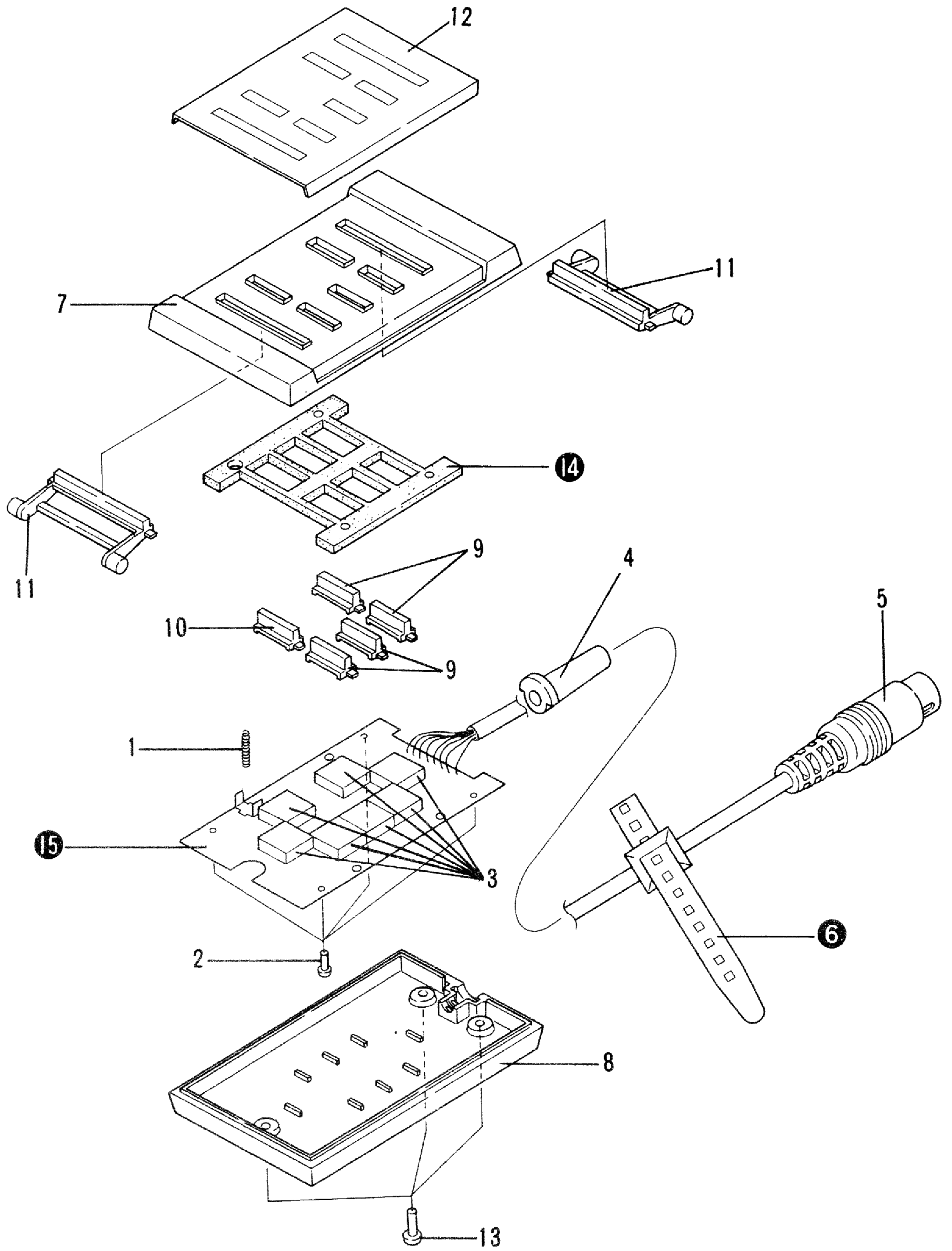


Parts List

Mark	No.	Part No.	Description
	1	RHG-376	Packing case
	2	RHA-226	Pad A
	3	RHA-227	Pad B
	4	RHL-041	Vinyl bag (for cassette deck)
	5	RHL-018	Vinyl bag (for operating instructions)
	6	H46-854	Vinyl bag C (for fuse)
	7	REK-063	Fuse 1.5A (for 220V or 240V)
	8	REK-058	Fuse 800mA (for 120V)
	9	RRB-143	Operating instructions
	10	RRG-020	Operating guide

Mark	No.	Part No.	Description
	11	JT-216	Wired remote-control
	12	RDE-039 (RDE-032) (RDE-028) (RDE-033) (RDE-029)	Connection cord assembly
	13	RHC-121	Sheet
	14		Spacer B
	15		Spacer C

15. WIRED REMOTE CONTROL



Parts List

Mark	No.	Part No.	Description
	1	RBH-777	Spring
	2	BRZ20P060FZN	Tapping screw
	3	RSG-105	MT switch
	4	REC-360	Cord bush
	5	RDE-047	Cord with 8P plug
	6		Clamper M
	7	RNL-141	Upper case
	8	RNL-142	Lower case
	9	RNL-143	Key top
	10	RNL-144	Key top A

Mark	No.	Part No.	Description
	11	RNL-145	Key top B
	12	RNA-526	Panel
	13	BTZ26P080FNi	Tapping screw
	14		Sheet
	15		P.C. Board

ADDITIONAL

Service Manual

PIONEER

Auto-reverse/Random access music select

STEREO CASSETTE TAPE DECK

CT-F1050 D

This additional service manual is applicable to the D type. The basic performance is the same as the D/G type, please refer to the D/G type service manual (p.2-p.70).

CONTRAST OF MISCELLANEOUS PARTS

The parts for D type are the same as the D/G type except for following sections;

PACKING AND FURNISHED PARTS

Mark	Symbol & Description	Part No.		Remarks
		D/G type	D type	
	Packing case	RHG-376	RHG-380	
	Vinyl bag	RHL-041	....	
	Sheet B	....	RHX-030	