

# *Service Manual*

CASSETTE TAPE DECK

# **CT-F750**

 **PIONEER**<sup>®</sup>

**MODEL CT-F750 COMES IN SIX VERSIONS DISTINGUISHED AS FOLLOWS:**

Type	Voltage	Remarks
KU	AC 120V only	U.S.A. model
KC	AC 120V only	Canada model
HE	AC 220V and 240V (Switchable)	Europe model
HB	AC 220V and 240V (Switchable)	United Kingdom model
D	AC 120V, 220V and 240V (Switchable)	General export model
D/G	AC 120V, 220V and 240V (Switchable)	U.S. Military model

- This service manual is applicable to the CT-F750/KU, KC for servicing of the other types, please refer to the additional service manuals.

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# 1. SPECIFICATIONS

Systems . . . . . Compact cassette, 2-channel stereo  
 Motor . . . . . High torque DC servo motor x 1  
 Heads . . . . . Recording/playback head x 1  
    Erasing head x 2  
 Fast Winding Time . . . . . Approximately 90 seconds  
    (C-60 tape)  
 Wow and Flutter . . . . . No more than 0.05% (WRMS)

## Frequency Response

### -20dB Recording:

Standard, LH tapes . . . . . 20 to 15,000Hz  
    (25 to 14,000Hz  $\pm$  3dB)  
 Ferrichrome tape . . . . . 20 to 17,000Hz  
    (25 to 16,000Hz  $\pm$  3dB)  
 Chromium dioxide tape . . . . . 20 to 17,000Hz  
    (25 to 16,000Hz  $\pm$  3dB)  
 Metal tape . . . . . 20 to 18,000Hz  
    (25 to 17,000Hz  $\pm$  3dB)

### 0dB Recording:

Chromium dioxide tape . . . . . 20 to 8,000Hz  
 Metal tape . . . . . 20 to 11,000Hz  
 Signal-to-Noise Ratio . . . . . Dolby NR OFF;  
    More than 59dB  
    Dolby NR ON; More than 69dB  
    (over 5kHz)

Harmonic Distortion . . . . . No more than 1.2% (0dB)

Inputs (Sensitivity/Maximum allowable input/Impedance)  
 MIC (L, R); 0.3mV/100mV/10 kilohms, 6mm diam. jack  
 (Reference MIC impedance; 250 ohms to 10 kilohms)  
 LINE x 2; 65mV/25V/56 kilohms Pin jack

Outputs (Reference level/Maximum level/Load impedance)  
 LINE x 2; 450mV/640mV/50 kilohms Pin jack  
 HEADPHONES x 1; 60mV/85mV/8 ohms, 6mm diam.  
 jack

## Semiconductors

Amplifier section . . . . . Transistors x 40  
    Diodes x 60, ICs x 16  
 Motor control section . . . . . IC x 1, Diode x 2

## Subfunctions

- Recording/Playback automatic reverse with Reverse mode selector
- Fluorescent display level meter with peak/average selector (-20 to +8dB)
- 4 position tape selector (STD/METAL/CrO<sub>2</sub>/Fe-Cr) with LED indicator lamp for metal tape
- Dolby NR system (ON/OFF) with LED indicator lamp
- REC muting function with LED indicator lamp
- Standby mechanism with unattended recording
- Output level controls with click-stop for reference playback level
- Cassette compartment illumination (Remaining tape marker)

Power Requirements . . . . . AC 120V 60Hz  
 Power Consumption . . . . . 34 watts  
 Dimensions . . . . . 420(W) x 150(H) x 335(D)mm Max.  
    16-9/16 x 5-15/16 x 13-3/16 in.  
 Weight . . . . . 7.8kg (17lb 3oz)  
 Furnished parts . . . . . Stereo connecting cords with  
    pin plugs x 2  
    Head cleaning swabs x 3  
    Operating instructions x 1

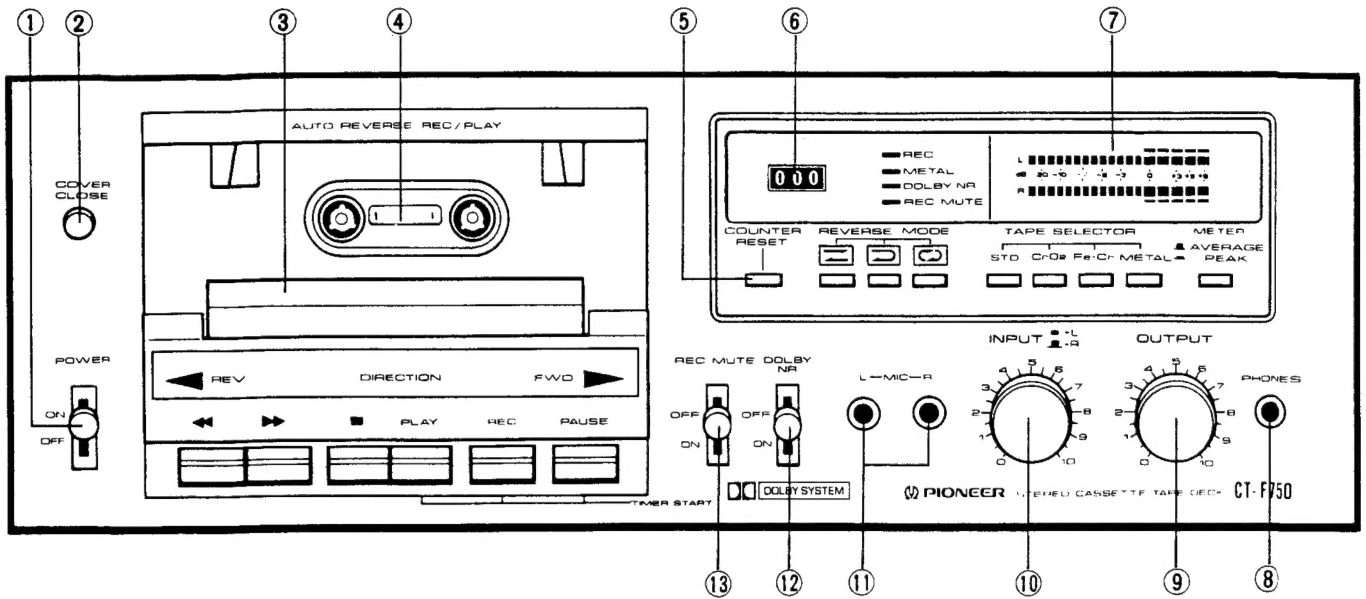
## NOTE:

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

## NOTES:

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

## 2. FRONT PANEL FACILITIES



### ① POWER SWITCH

Power is supplied to the deck when this switch is set to ON, and the level meter lights up.

### ② COVER CLOSE BUTTON

Depress this button when you want to close the dust cover.

### ③ DUST COVER

When you are not using the deck, always keep this cover in place to prevent dust and dirt from adhering to the head section and rotating parts.

### ④ REMAINING TAPE MARKER

If this marker is visible, it means that there is enough tape remaining for several minutes of recording or playback.

### ⑤ TAPE COUNTER RESET BUTTON

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

### ⑥ TAPE COUNTER

This indicates how far the tape has traveled. When the tape travels in a forward direction, the number on the counter increases but it decreases when the tape travels in the reverse direction.

### ⑦ LEVEL METERS

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

By operating the METER selector switch, it can be made to function as a peak meter, or as an average meter.

### ⑧ HEADPHONE JACK

This is the output jack for stereo headphones. Plug your headphones into this jack when you want to monitor the quality of a recording or when you want to listen to a tape privately.

#### NOTES:

- Use low-impedance headphones. If you use a high-impedance model, you will not be able to obtain sufficient volume.
- You will damage the microphone if you plug it into the HEADPHONE jack by mistake.

### ⑨ OUTPUT (PLAYBACK LEVEL) CONTROL

Use this control to adjust the output signal level during playback. Turning the control to the right increases the level.

When playing back a reference tape (160 nwb/m), a reference playback level (0dB) is obtained with this control set to the "6" click stop position.

### ⑩ INPUT (RECORDING LEVEL) CONTROLS

Use these to adjust the level of the input signals from the MIC jacks or rear panel INPUT jacks.

Turning these controls to the right increases the level.

The controls are coupled to the left and right channels, but you can also use them to adjust the right channel (rear) and the left channel (front) independently.

### ⑪ MIC JACKS

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


### ⑫ DOLBY NR SWITCH

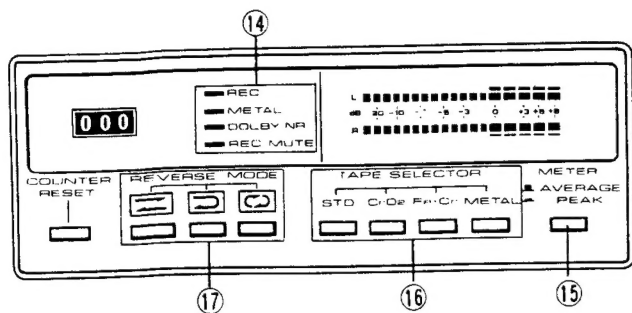
Set this switch to ON for recording with the built-in Dolby noise reduction system and for the playback of tapes which have been recorded using the Dolby NR system.

### ⑬ REC MUTE SWITCH

Depress this switch to create unrecorded sound blanks on the tape during recording. The REC MUTE indicator comes on while the switch is depressed and the tape continues to travel but no signals are recorded. Also, the level meter indicates the input signal level which can be monitored with the headphones or speakers.

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**14 INDICATORS**

**REC INDICATOR:**

This light comes on when the PLAY and REC levers are depressed together to indicate that the cassette deck is now set to the recording mode.

**METAL TAPE INDICATOR:**

This light comes on when the TAPE selector is set to METAL.

**DOLBY NR INDICATOR:**

This light comes on when the DOLBY NR switch is set to ON to indicate that the cassette deck is now set up for recording or playback using the Dolby NR system.

**REC MUTE INDICATOR:**

This indicator lights up when the REC MUTE lever is depressed for recording (also when the deck is set to the recording standby).

**15 METER SELECTOR SWITCH**

- PEAK:** When this switch is depressed to PEAK, the meter functions as a peak meter.
- AVERAGE:** When the switch is released to AVERAGE, the meter functions as an average meter.

**16 TAPE SELECTOR**

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

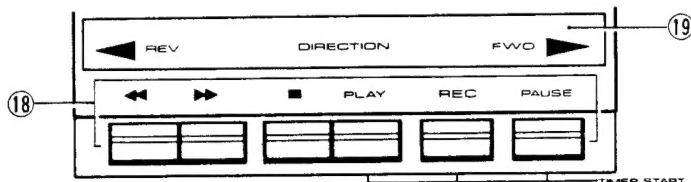
- STD:** For using ordinary or LH tapes
- CrO<sub>2</sub>:** For using chrome tapes
- Fe-Cr:** For using ferrichrome tapes
- METAL:** For using metal tapes

**17 REVERSE MODE SELECTORS**

These selectors can be operated for automatic two-way recording or playback or for continuous repeat playback.

- : Depress this selector for one-way recording or playback with the tape in the forward or reverse direction.
- : Depress this selector for two-way recording or playback.
- : Depress this selector for continuous repeat playback.

**NOTE:**  
Do not depress more than one of these selector buttons at a time.



**18 OPERATING LEVERS**

- . . . . . Depress this lever to rewind the tape. (The tape will travel at high speed from right to left.)
- . . . . . Depress this lever to send the tape forward at top speed. (The tape will travel from left to right.)
- (Fast forward)**
- . . . . . Depress this lever to stop the tape run and to release the operating levers.
- (Stop)**
- PLAY** . . . . . Depress this lever when playing back a tape. Use the DIRECTION SELECTORS to choose the tape run direction. Use the REVERSE MODE SELECTOR for return and repeat playback.
- REC** . . . . . Depress this lever together with the PLAY lever for recording. This lever will not work when a cassette is not loaded or when the erasure prevention tabs of a loaded cassette have been broken off.
- PAUSE** . . . . . Depress this lever to stop the tape temporarily during recording or playback. Depress it again to allow the tape to continue to travel as before.

**NOTES:**  
1. Apart from the PLAY, REC levers and pause operation, do not depress any of the levers simultaneously.  
2. The operating levers will not return to their original positions even when the power is switched OFF.

**19 DIRECTION SELECTOR**

This selector is used to select the tape travel direction during playback or recording. When depressed (and it may be depressed anywhere), one of the two lamps comes on to indicate the tape travel direction, and the tape travel is reversed.

- FWD** : The tape is traveling from left to right (forward direction).
- REV** : The tape is traveling from right to left (reverse direction).

With unattended recording and wake-up playback, the tape will start to travel in the FWD direction automatically no matter which mode is set before auto start.

**NOTES:**  
• Even when the deck is set to the playback recording or pause mode, the tape direction will be reversed when this selector is depressed.  
• This selector will not work when the deck is set to the rewind and fast forward modes.  
• When the POWER switch is set to ON, the forward indicator (FWD ) lights up no matter what the mode of the reverse mode selector, and the tape direction is set to forward. When the PLAY lever is depressed, the tape travels from left to right.

# 3. DISASSEMBLY

## External Covers

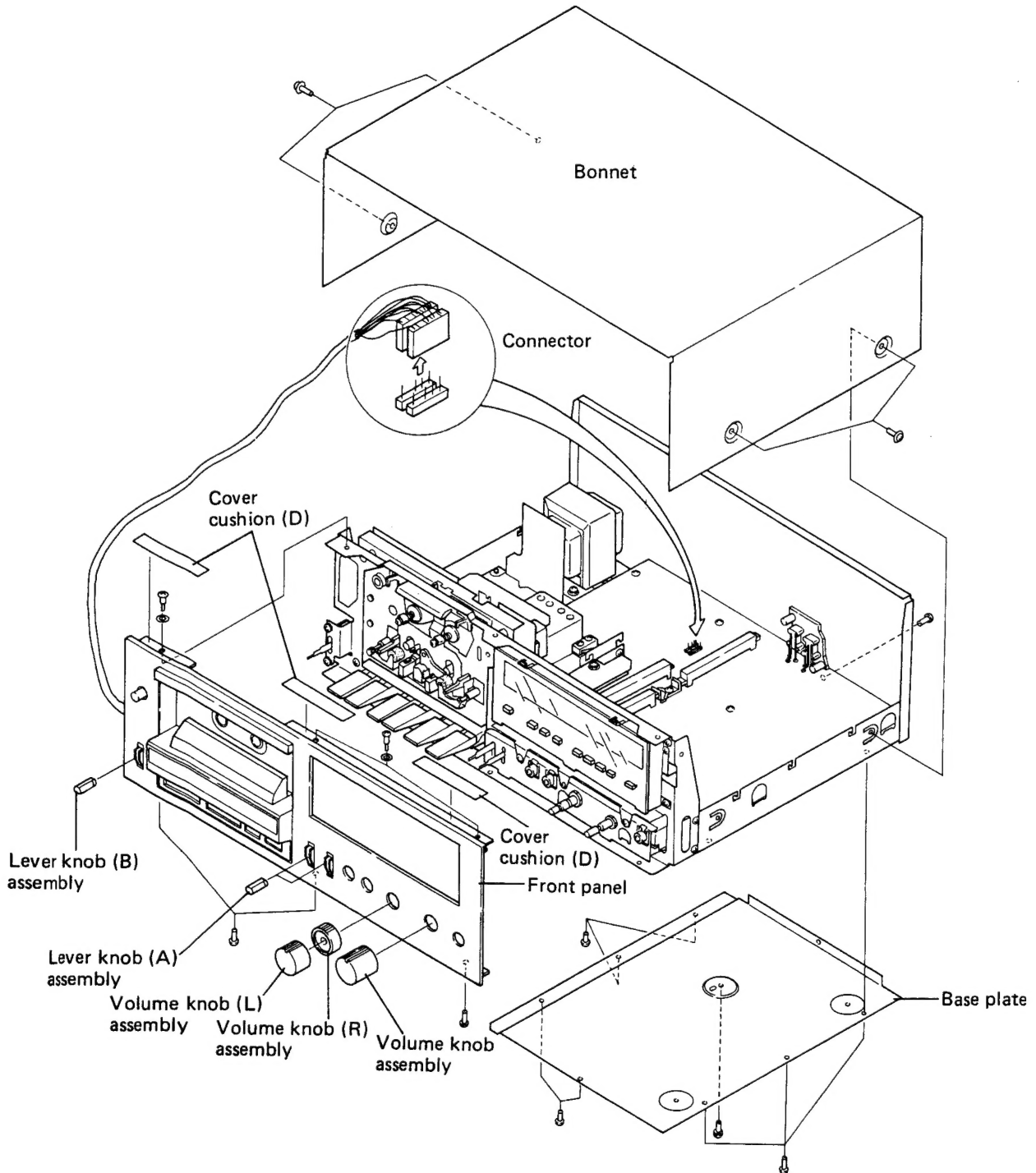


Fig. 3-1 Removal of panel stay and front panel

Mechanism

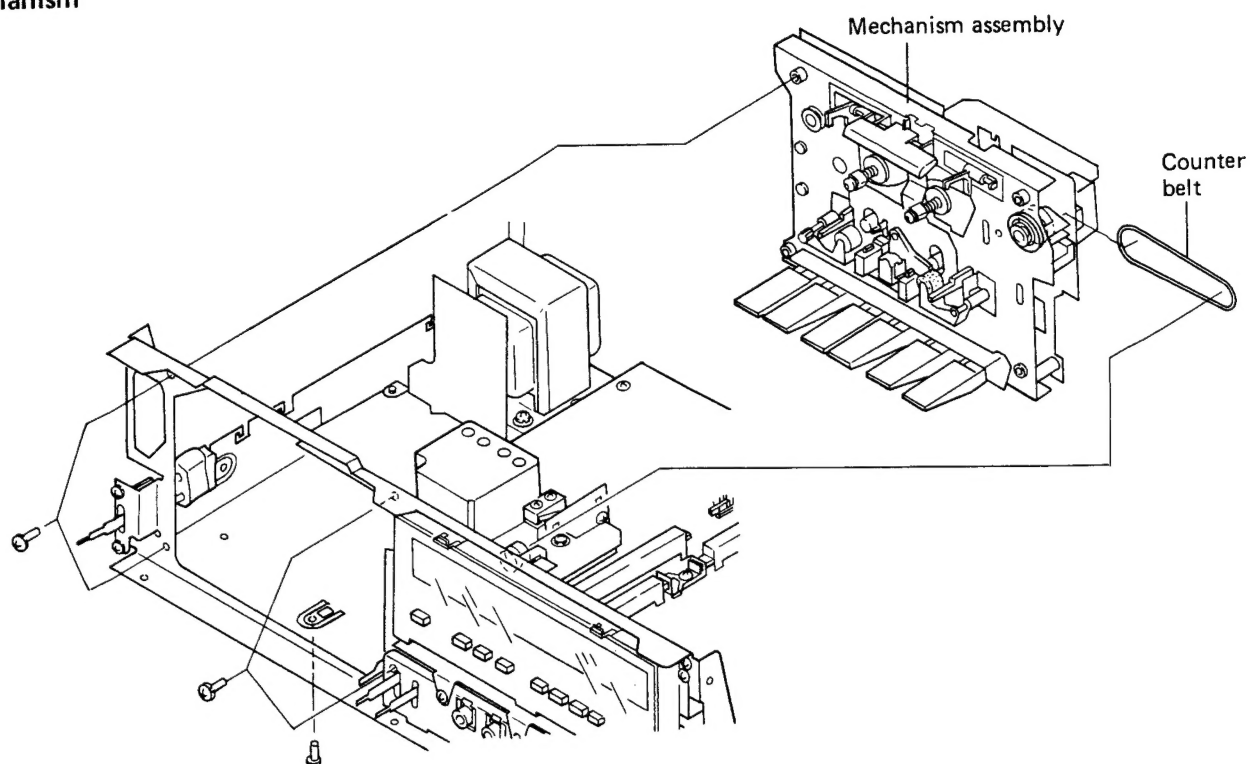


Fig. 3-2 Removal of mechanism assembly

Sub-head Base Assembly and Pinch Roller

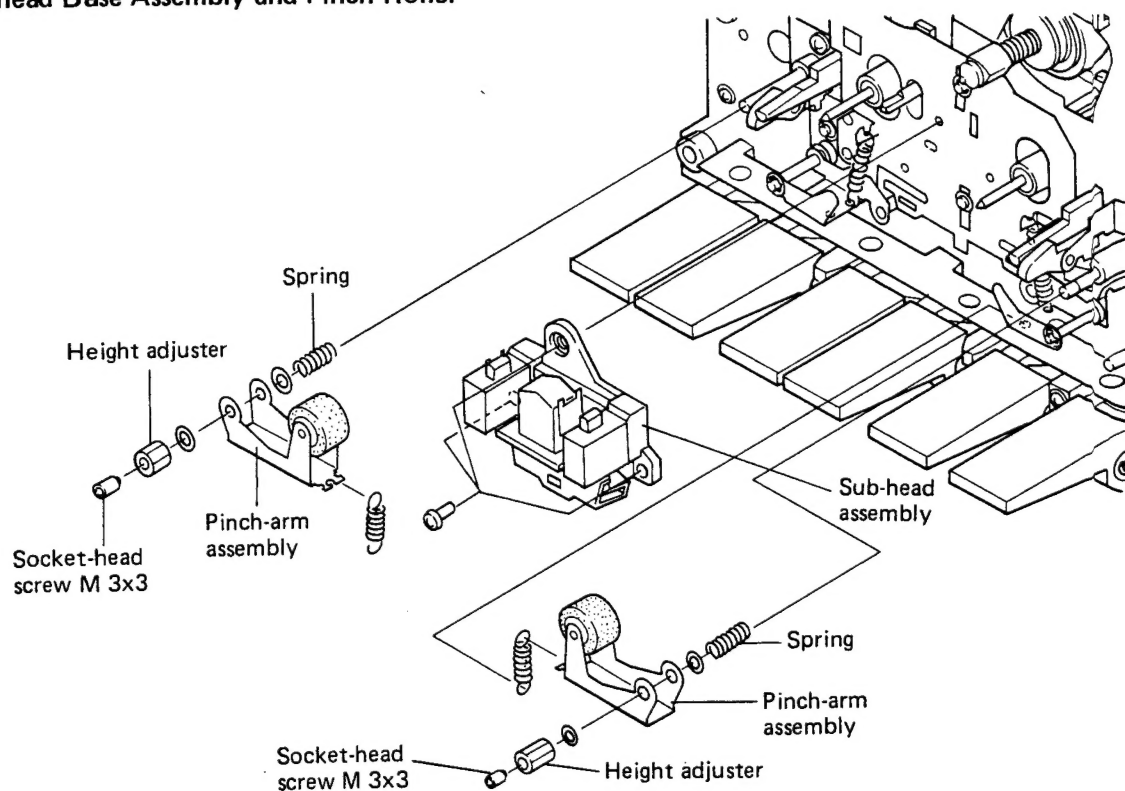


Fig. 3-3 Removal of sub-head base assembly and pinch roller

## Take-up Reel and Supply Reel

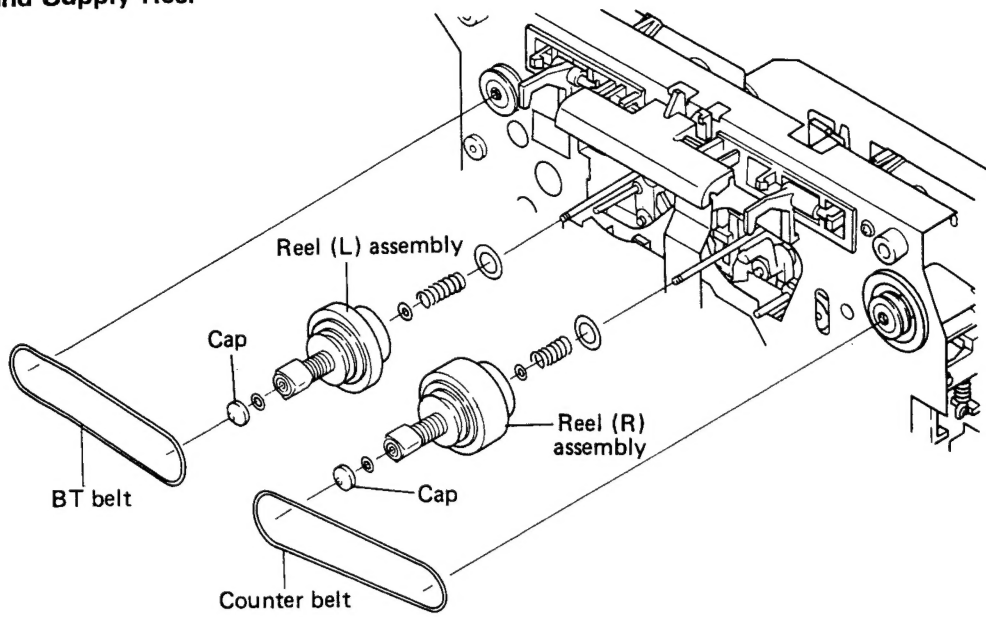


Fig. 3-4 Removal of take-up reel and supply reel

## Flywheel, Belt and Motor

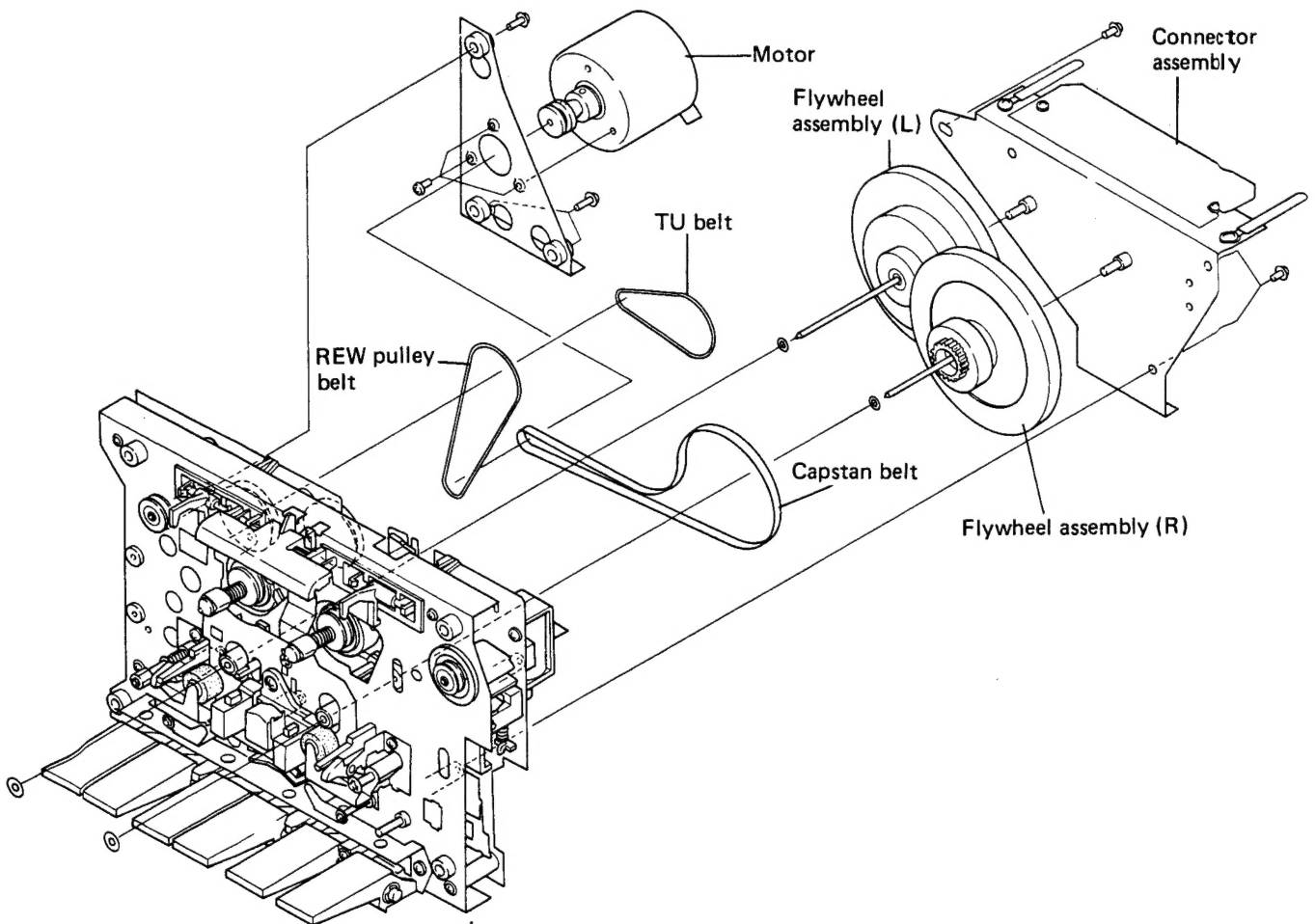
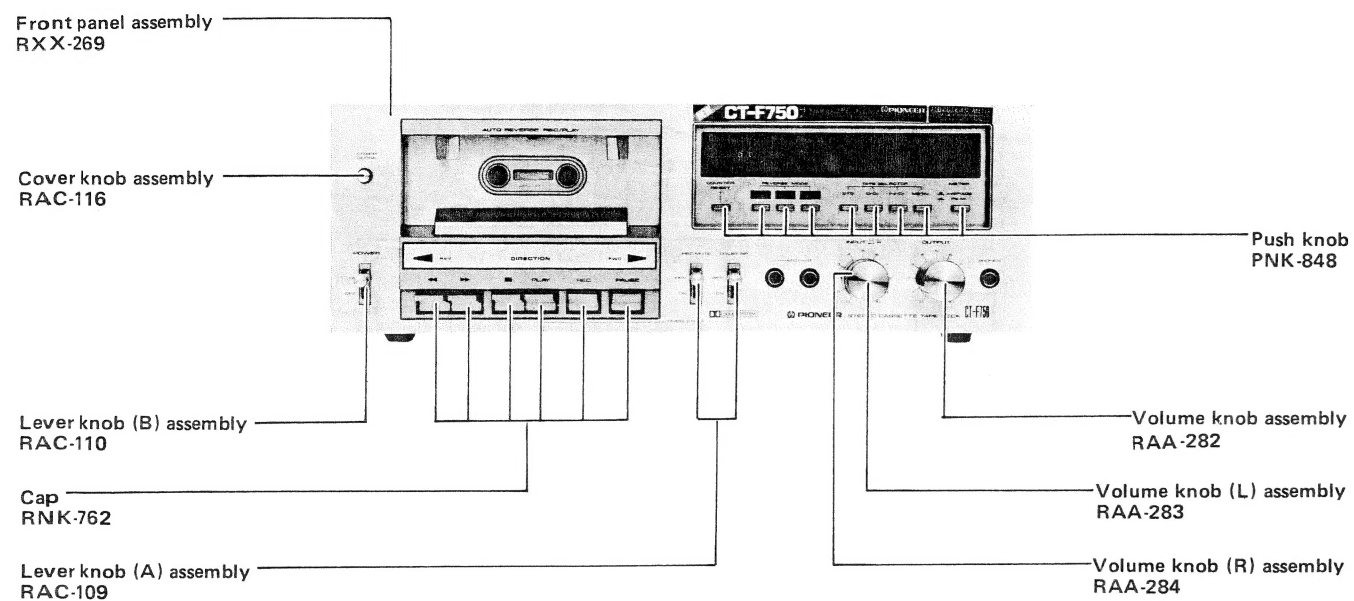


Fig. 3-5 Removal of flywheel, belt and motor

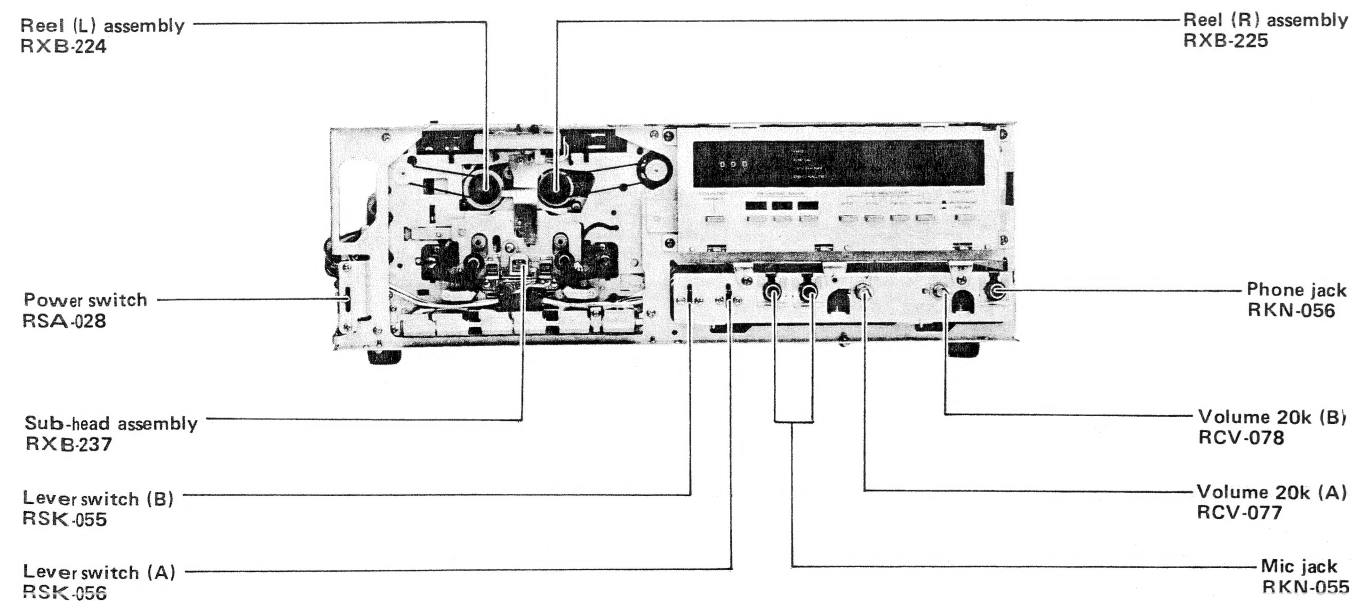


## 4. PARTS LOCATION

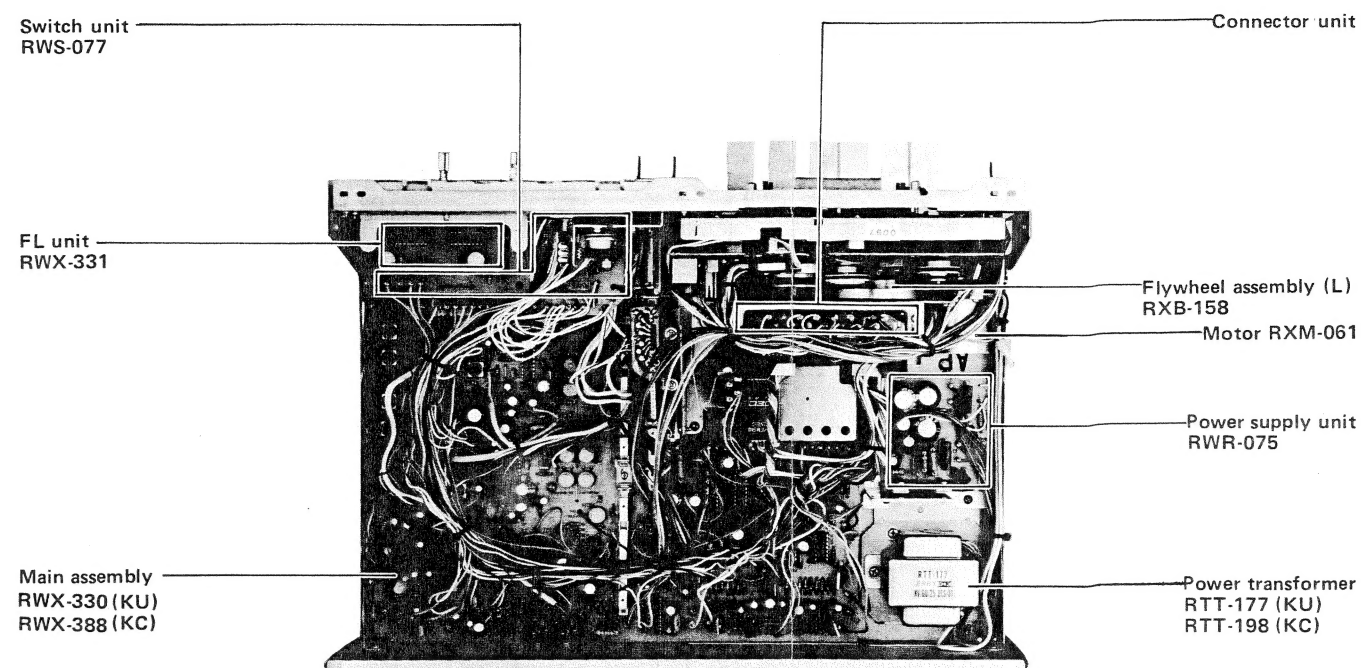
### FRONT PANEL VIEW



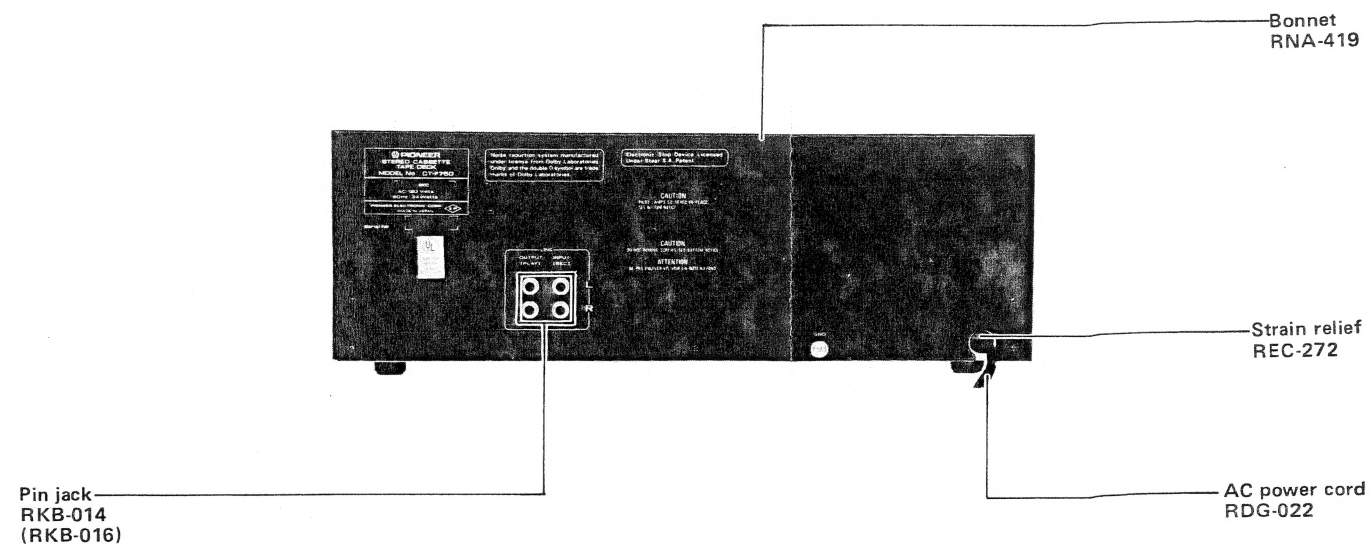
### FRONT VIEW WITH FRONT PANEL REMOVE



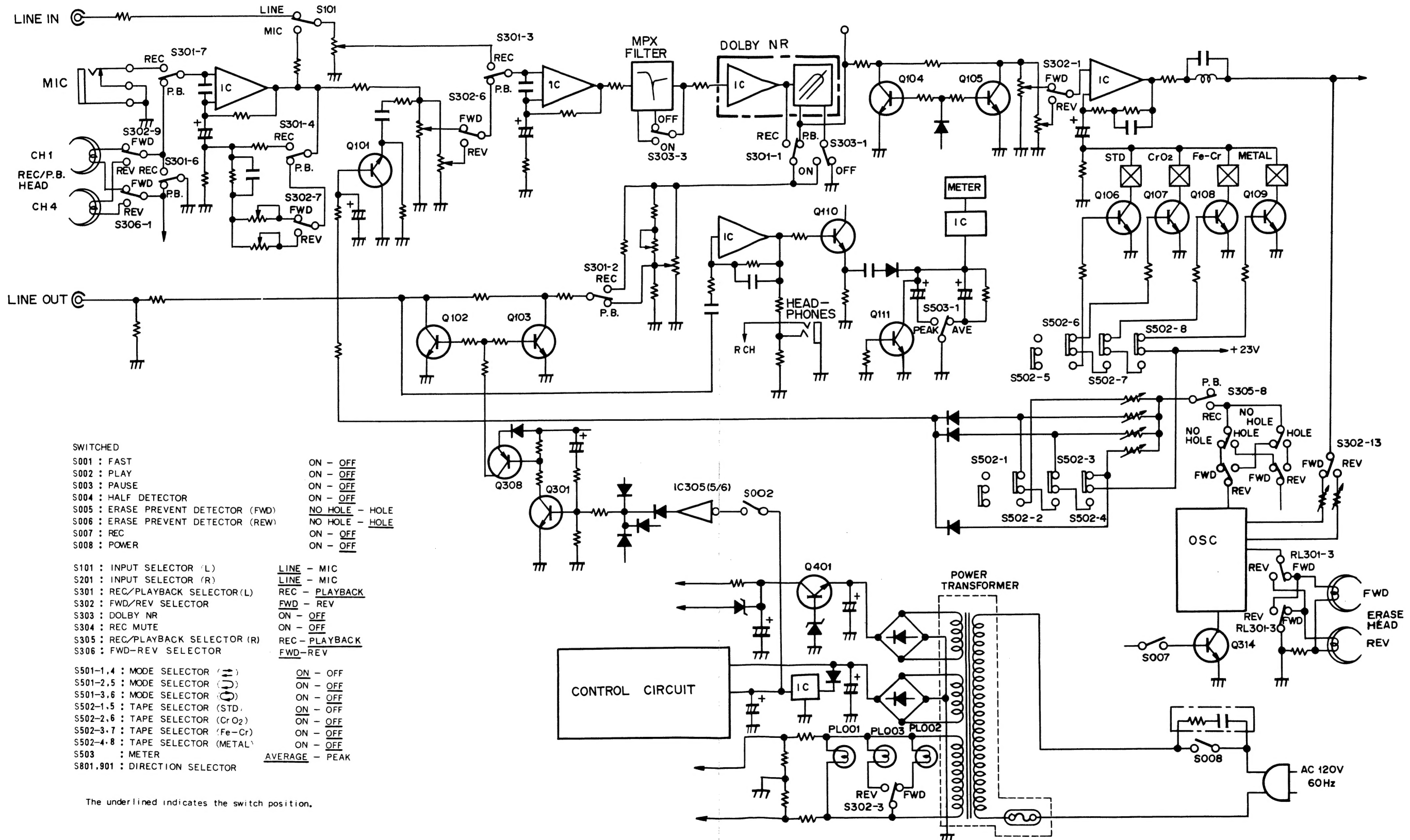
### TOP VIEW WITH BONNET REMOVED



### REAR PANEL VIEW



# 5. BLOCK DIAGRAM

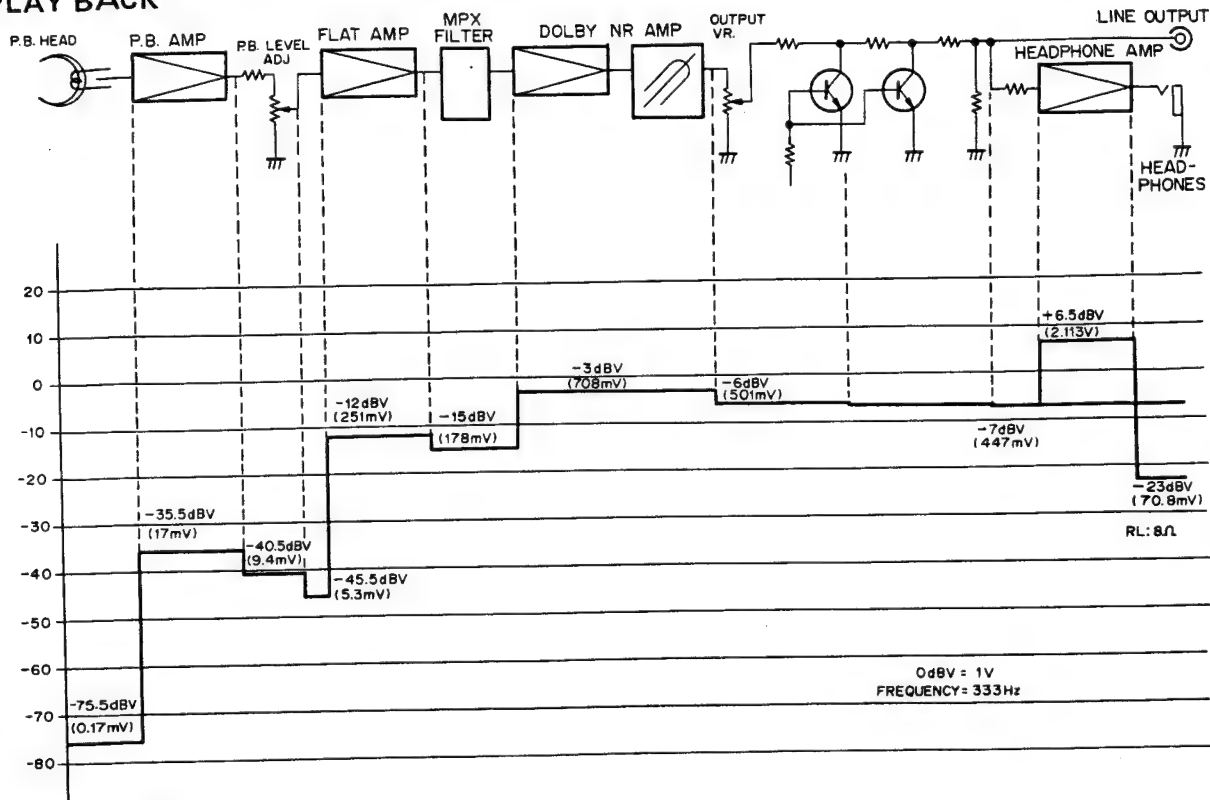


- SWITCHED
- S001 : FAST
  - S002 : PLAY
  - S003 : PAUSE
  - S004 : HALF DETECTOR
  - S005 : ERASE PREVENT DETECTOR (FWD)
  - S006 : ERASE PREVENT DETECTOR (REW)
  - S007 : REC
  - S008 : POWER
- ON - OFF  
ON - OFF  
ON - OFF  
ON - OFF  
NO HOLE - HOLE  
NO HOLE - HOLE  
ON - OFF  
ON - OFF
- S101 : INPUT SELECTOR (L)     LINE - MIC
- S201 : INPUT SELECTOR (R)     LINE - MIC
- S301 : REC/PLAYBACK SELECTOR(L)     REC - PLAYBACK
- S302 : FWD/REV SELECTOR     FWD - REV
- S303 : DOLBY NR     ON - OFF
- S304 : REC MUTE     ON - OFF
- S305 : REC/PLAYBACK SELECTOR (R)     REC - PLAYBACK
- S306 : FWD-REV SELECTOR     FWD-REV
- S501-1,4 : MODE SELECTOR (⊕)     ON - OFF
- S501-2,5 : MODE SELECTOR (⊖)     ON - OFF
- S501-3,6 : MODE SELECTOR (○)     ON - OFF
- S502-1,5 : TAPE SELECTOR (STD.)     ON - OFF
- S502-2,6 : TAPE SELECTOR (CrO<sub>2</sub>)     ON - OFF
- S502-3,7 : TAPE SELECTOR (Fe-Cr)     ON - OFF
- S502-4,8 : TAPE SELECTOR (METAL)     ON - OFF
- S503 : METER     AVERAGE - PEAK
- S801,901 : DIRECTION SELECTOR

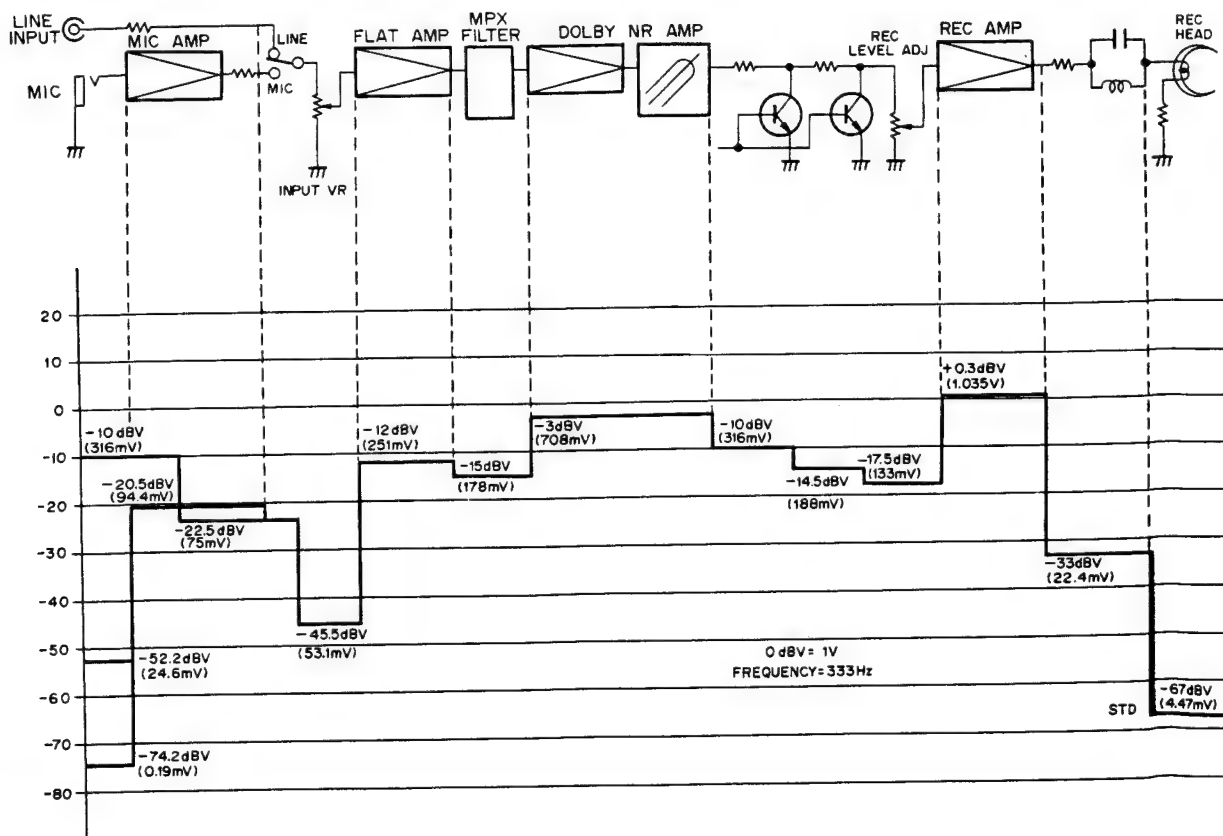
The underlined indicates the switch position.

# 6. LEVEL DIAGRAM

## PLAY BACK



## RECORDING



# 7. CIRCUIT DESCRIPTIONS

## 7.1 RECORDING AND PLAYBACK CIRCUITRY

The recording and playback circuitry is contained within a tape deck system IC (PA4001) developed by Pioneer. This 16-pin dual in-line type IC includes head amp, line amp, recording amp, and headphone amp circuitry. The PA4001 block diagram is shown in Figure 7-1.

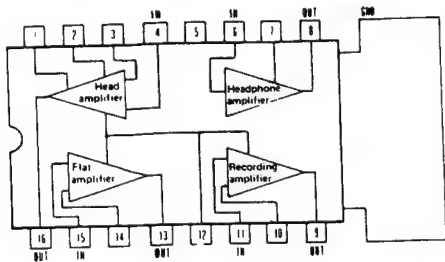


Fig. 7-1 Block diagram of PA4001

### • Equalizer Amp/Microphone Amp

Figure 7-2 shows the equalizer amp/microphone amp. The head amp circuitry of IC4001 is used for both purposes. During recording, NFB is switched in to obtain flat frequency response for microphone amp operation; during playback, the NFB circuit is used as a time constant circuit for equalizer amp operation.

For playback equalizer switching between STD (120μs) and Fe-Cr/CrO<sub>2</sub>/Metal (70μs) (2-position), the transistor switch Q101 controls the CR series circuit (R112, C110) at the equalizer amp output.

A 4-channel head is employed. Playback amp gain is 40dB and microphone amp gain is 32dB.

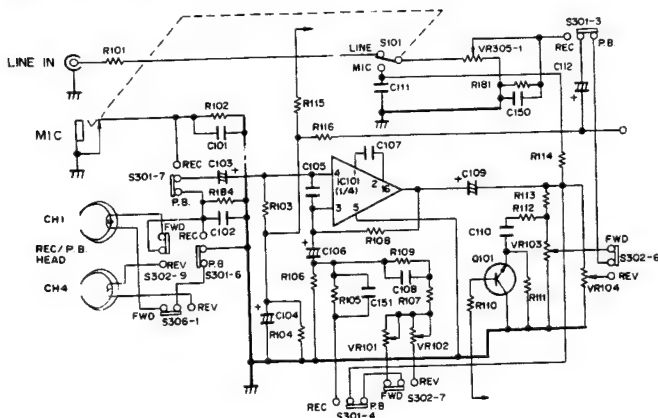


Fig. 7-2 Equalizer amp/Microphone amp circuit

### • Recording Amp

The recording amp is shown in Figure 7-3. The recording amp circuitry of IC4001 is used for this purpose.

The input stage is a differential amp and the output stage is complimentary. Within the NFB loop is a low-range compensation circuit and a bias trap to prevent recording bias current from entering the output circuitry.

High range peaking characteristics for STD, CrO<sub>2</sub>, Fe-Cr, and Metal tape types are determined by four electronic switches using NPN transistors.

As determined by the equalizer switch S502, +B is supplied to one of the transistors Q106 → Q109 to operate the appropriate peaking circuit. The peaking frequencies are approximately 15kHz for STD, 17kHz for CrO<sub>2</sub>, 17kHz for Fe-Cr, and 18.5kHz for metal.

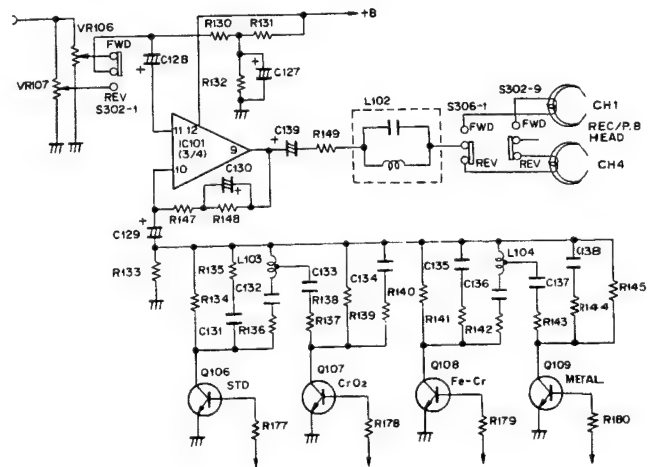


Fig. 7-3 Recording amp circuit

### • Flat Amp Section

The flat amp section of PA4001 is used.

The flat amp has flat frequency response and amplifies the equalizer amp output during playback. During recording, it amplifies the microphone amp output and line in signals. Gain is 33.5dB.

### • Headphone Amp

The headphone amp section of PA4001 is used.

This drives the level meters and headphones and is a complimentary amp having 13.5dB gain. Correct headphone output power is obtained by using a voltage divider.

### • Oscillator Circuit

Figure 7-4 shows the oscillator circuit.

This push-pull oscillator circuit supplies the recording bias current to the recording head and the erasure bias current to the erase head. (The oscillator frequency is approximately 85kHz.)

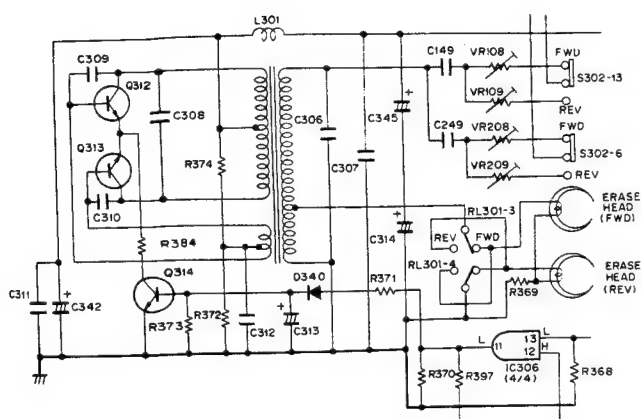


Fig. 7-4 Oscillator circuit

The push-pull oscillator circuit design allows reduction of even harmonic distortion to prevent linear tape magnetization and thereby reduce noise.

When a cassette tape with erasure prevention tabs intact is inserted in the tape compartment and the record and play buttons are pressed at the same time, the IC306 No.11 pin reaches H-level, bias current is applied to the Q317 base and oscillation begins.

With metal tape, 1.5 times the recording bias and erasure bias current is required as compared with CrO<sub>2</sub> tape.

Therefore the oscillator circuit on this deck is designed with the strength and stability needed to properly supply the amount of bias current needed for metal tape compatibility.

Since this is an auto-reverse deck using a 4-channel head, separate erase heads and recording heads are provided for forward and reverse. Adjustment circuitry is also separate to deal with differences in frequency response. Circuitry is also designed to deal with sharp rise and fall problems in the bias waveform when switching between REC/PLAY and REC/PLAY → STOP.

● Recording Bias Switching Circuit

Figure 7-5 shows the recording bias switching circuit. It allows switching between three levels to provide the correct bias for recording on STD

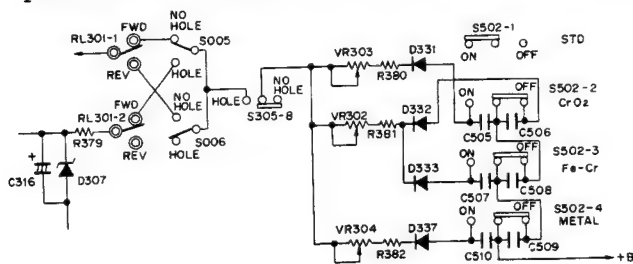


Fig. 7-5 Recording bias switching circuit

(Fe-Cr), CrO<sub>2</sub>, and Metal tape types. By switching bias oscillator voltage, the oscillation amplitude changes, and amount of bias current changes.

7.2 DOLBY NR PROCESSOR

The CT-F750 incorporates a type B Dolby noise reduction system where the noise reduction effect is obtained in the mid to high frequency region only. The improvement in S/N ratio above 5kHz is 10dB max.

This circuit employs a special Dolby NR processor IC (PA4005) developed by Pioneer. Unlike conventional Dolby NR ICs which employ variable resistor elements, the PA4005 features a voltage controlled variable gain circuit (VCA). An outline of the Dolby NR processor is shown in Fig. 7-6. The same processor circuit is used for both recording and playback.

Operation During Recording Mode

1. The inputs signal is applied to a buffer amplifier via an MPX filter where the FM filter where the FM pilot signal is eliminated. This filter also serves as an 85kHz bias trap to ensure against possible misoperation of the system.
2. The buffer amplifier output is divided into 2 signals. The main signal is applied directly to the adding amplifier, while the sub-signal is applied indirectly via the side chain amplifier and clipper. The 2 signals are recombined in the adding amplifier.
3. Besides being applied to the clipper, the side chain amplifier output is also applied to the voltage controlled variable gain circuit to be fed back to the input side via the integrating amplifier. This portion of the processor thus forms a variable filter circuit.
4. The side chain amplifier output is also applied to a high pass filter and a rectifier where the signals are converted into DC signals used to control the VCA circuit.
5. When the level of the signal applied to the high pass filter is low, the rectifier DC voltage will be reduced to almost zero, resulting in the turnover frequency of the variable filter reaching a minimum. Under these conditions, the level of the adding amplifier output will be 10dB (above 5kHz) above the level of the main signal, thereby constricting the dynamic range.
6. The clipper generates a time delay between the main signal and the signal applied to the voltage controlled variable gain circuit, and is unable to respond to any sudden changes in level. Consequently, no non-controlled signal is applied to the adding amplifier.

- When the level of the signal applied to the high pass filter is high, the rectifier DC voltage is increased, resulting in the variable filter turn-over frequency being shifted upwards. The level of the sub-signal will consequently be reduced to practically zero, thereby preventing in constriction of the dynamic range.

### Operation During Playback Mode

Although the operation of each section of the Dolby NR processor is the same during recording and playback modes, the sub-signal is obtained from the adding amplifier output during playback.

And since the adding amplifier is an inversion amplifier (output of opposite phase to the input), the sub-signal will be of opposite phase, thereby forming a "subtraction" NFB loop.

In type B Dolby NR systems, the dynamic range is constricted and expanded in the frequency range determined by the variable filter, but in order to ensure fully symmetrical operation, it has been necessary to establish a reference level for the operation point. This is called the "Dolby level" above which there is no constriction and expansion of the dynamic range.

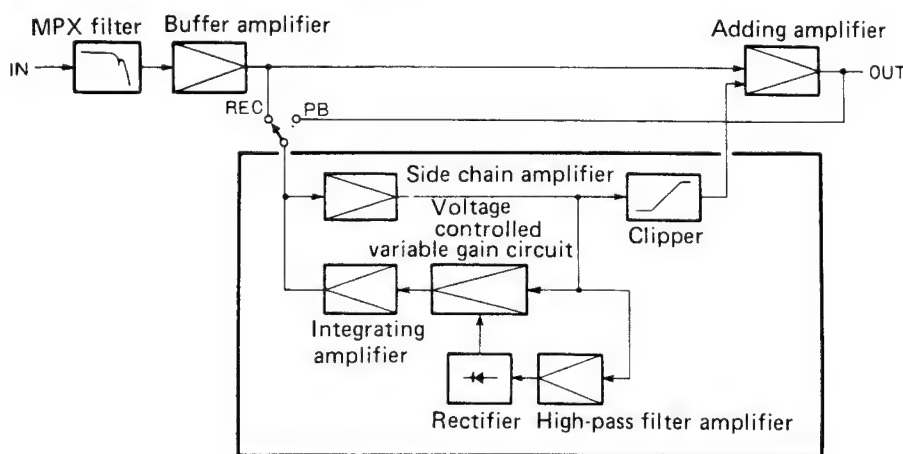


Fig. 7-6 Dolby NR circuit

### 7-3 MUTING CIRCUIT (Fig. 7-7)

#### ● Preventing Click Noise When Power is Turned On.

- When power is switched on, +B follows the route C321 → R311 so that it flows in the Q301 base, thereby turning on Q301.
- When Q301 is on, the Q301 collector voltage drops, thereby turning on Q308.
- When Q308 is on, +B follows the route D309 → Q308 → R326 → R165 (R166), to turn on Q102 (Q103).
- When Q102 and Q103 are on, the line out signal is grounded.
- Furthermore, Q104 and Q105 are turned on following the route D309 → Q308 → R326 → D388 → R175 (R176).
- When Q104 and Q105 are turned on, the rec amp input signal is grounded.
- After the time determined by the C321 and R311 time constant circuit has elapsed (approximately 4s), the Q301 base current stops and Q301 turns off.
- When Q301 turns off, Q308 turns off, as do Q102, Q103, Q104, and Q105. Therefore, the rec amp muting circuits and line out muting circuit is released from operation.

#### ● Preventing Click Noise When Power Is Turned Off.

- When the power is turned on, +B follows the route D309 → R316 and charges C323. Charge time is 3 ~ 5 seconds.
- When the power is turned off, +B (24V) drops very fast. However, the Q308 emitter holds a high voltage because of the C323 discharge current flow through R316. Therefore, Q308 turns on.
- When Q308 is on, the C323 charge performs the same operations as described in items 3 ~ 6 of the previous section on power-on click-noise prevention, so that the line out and rec amp signals are muted.

#### ● Stop Switching Muting

- When the power switch is on and the PLAY switch is off, play switch S002 will be in the off position as long as the PLAY lever is not depressed. Therefore, the IC305 No.11 pin will be at LOW level ("L" below) and the No.10 pin will be at HIGH level ("H" below).
- When the No.10 pin is at H level, current flows along the route D320 → R309 to the Q301 base, thereby turning on Q301.

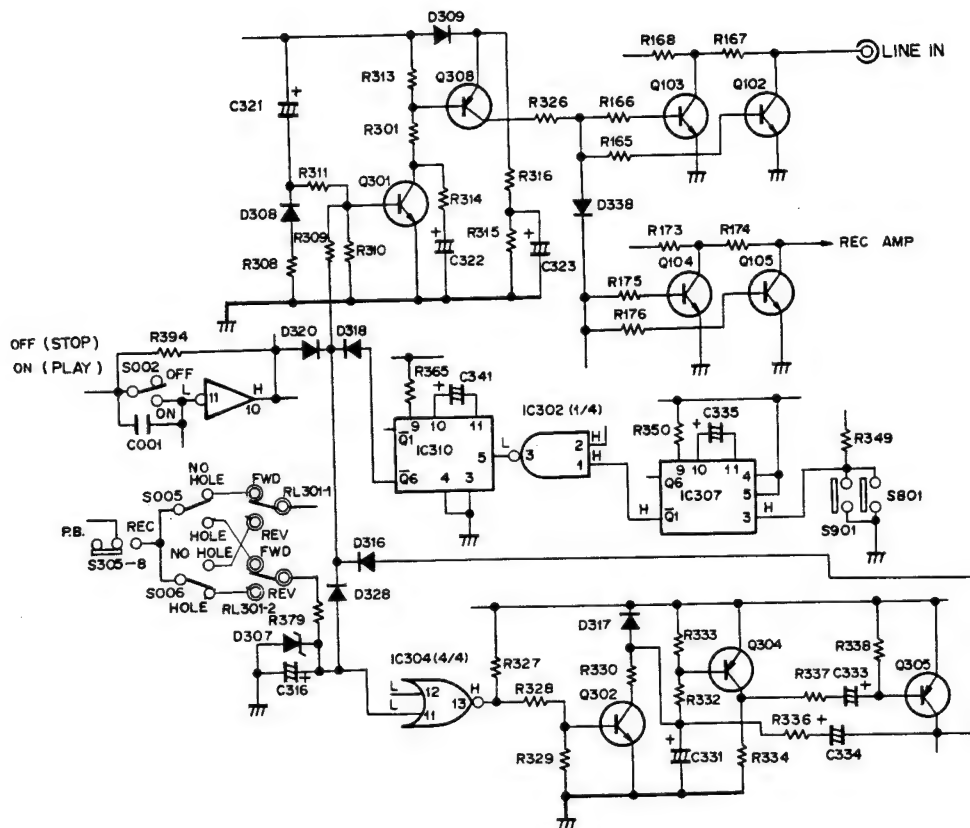


Fig. 7-7 Muting circuit

- When Q301 is on, the line out and rec amp signals are muted in the same way as described in items 3 ~ 6 of the section: "Preventing click noise when power is turned on".
- When the PLAY lever is depressed, the PLAY switch S002 turns on, the IC305 No.11 pin goes to H level, the No.10 pin goes to L level, so that the Q301 base current is cut off and the Q301 turns off.
- When Q301 turns off, Q102, Q103, Q104, and Q105 also turn off, thereby releasing the muting circuit from operation.

#### ● Direction Switch Muting

- The IC310 6pin is ordinarily (when the 5pin is at L level) at L level (during tape travel).
- When the direction switch is on and an input signal is applied to IC310 and the 5pin goes to H level, the 6pin goes to H level after the time determined by the C341 and R365 time constant circuit has elapsed (about 1 second).
- When the 6pin is at H level, current flows along the route D318 → R309 to reach the Q301 base and turn it on.
- When Q301 is on, the line amp and rec out signals are muted in the same way as described in items 3 ~ 6 of the section "Preventing click noise when power is turned on" above.

- About 1 second later, the 6pin goes to L level and current is cut off to the Q301 base to turn off Q308.
- When Q301 is off, Q102, Q103, Q104, and Q105 also turn off so that muting stops.

#### ● Accidental Erasure Prevention Muting

This deck is designed so that it is possible to mechanically depress the REC lever, whether the cassette's accidental erasure prevention tabs are intact or not. Therefore, accidental erasure is prevented by means of the following circuit.

- When the inserted cassette's accidental erasure prevention tab(s) have been broken off, and the REC lever depressed, a 5V charge is produced in C316 following the route S305-8 → S006(S005) → RL301.
- This causes a voltage to be applied to the Q301 base via D328 so that Q301 turns on and muting begins.
- At the same time, the multivibrator circuit IC304 11pin goes to H level and operates the auto-stop circuit.

#### ● Auto-stop Muting

During auto-stop and auto-reverse operation, the line out and rec out signals are muted in the manner described below.

1. When tape transport stops, the auto-stop detection circuitry operates so that the IC304 13pin goes to L level, base current stops flowing in Q302 so that Q302 turns off.
2. When Q302 turns off, Q304 also turns off. Also, although Q305 is normally off, when Q302 is off, this results in a drop in the Q305 base potential (via C333 → R337) so that Q305 turns on.
3. When Q305 turns on, the IC306 2pin goes to H level. Then current flows through the route D316 → R309 to the Q301 base to turn on Q301.
4. When Q301 is on, the line out and REC amp signals are muted.

#### 7.4 MULTIVIBRATOR CIRCUIT

1. The multivibrator circuit is shown in Figure 7-8. During tape transport, or when pause is on (during PLAY or REC/PLAY), or in the stop condition (when all control levers are released), the IC304 No.13 pin is at H level and the Q302 base potential is high so Q302 is on.
2. When Q302 is on, current flows through the route R333 → R332 → R330 → Q302 and Q304 turns on because the Q304 base potential is low.
3. When Q304 is on, the Q304 collector potential is high and Q305 turns off because the Q305 base potential is high.
4. When Q305 is off, the Q305 collector (the multivibrator output) is maintained at L level

- (grounded through R347) so no pulse is produced for stop or reverse operations.
5. The Q302 base potential drops and Q302 turns off when the end of the tape is reached in the PLAY, REC/PLAY, FF, or REW modes or when the accidental erasure prevention circuit operates.
6. When Q302 turns off, current flows through the route R333 → R332 → R336 → R347 and C334 and C331 are charged. When C334 and C331 have finished charging, current stops flowing and the Q304 base potential drops so Q304 turns off.
7. When Q304 turns off, current flows along the route R338 → R337 → R334 and C333 is charged. While C333 is charging, the Q305 base potential drops (below the emitter potential) and Q305 turns on. During this time, a nearly rectangular pulse is produced at the multivibrator output (the Q305 collector). (Pulse width is equivalent to the charging time of C333.)
8. When Q305 turns on, the C334 charge is discharged through D317, and Q305 turns off. C334 begins charging again as soon as the Q305 collector potential drops to L level. This begins again the cycle begun in item 6, above, so a pulse output is produced at regular intervals.
9. This cycle continues until stop or reverse (switching from FWD to REV) operations are completed and Q302 turns on.

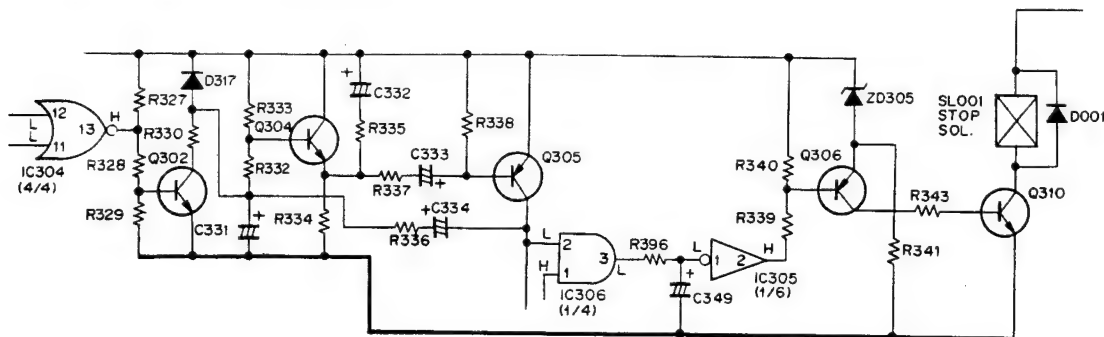


Fig. 7-8 Multivibrator circuit

#### 7.5 MODE SELECTOR CIRCUIT

##### • ⇌ POS (Fig. 7-9)

When S002 is on (PLAY), the IC304 No.8 pin rises to H level through D322 and H level is obtained at the IC306 No.1 pin. When the tape end detection signal enters the IC306 No.2 pin (when the No.2 pin rises to H level), the IC306 No.3 pin rises to H level and activates the stop circuit.

##### • ⊃ POS (Fig. 7-10)

1. In the forward direction, the IC302 No.10 pin rises to H level through S501-5 → S302-14

(FWD) → D324. Then, when the tape is wound to the end, the tape end detection signal raises the IC302 No.9 pin to H level.

2. When the IC302 No.9 pin and No.10 pin are at H level, the No.8 pin drops to L level.
3. When the No.8 pin reaches L level, the IC303 No.2 pin drops to L level. Since the IC303 No.1 pin is normally at H level, the No.3 pin will go to H level.
4. When a cassette tape is inserted, the IC303 No.5 pin is at H level. When the IC303 No.4 pin reaches H level due to H level at the No.3



- pin, the No.6 pin drops to L level due to H level at the No.5 and No.4 pins.
- The IC303 No.6 pin L level lowers the IC303 No.9 pin to L level. Since the IC303 No.10 pin is normally at H level, the No.8 pin rises to H level.
  - The IC303 No.8 pin H level raises the IC306 No.10 pin to H level. Since the IC306 No.9 pin is normally at H level, the No.8 pin rises to H level.
  - The IC306 No.8 pin H level causes the IC309 No.5 pin to rise to H level. When the IC309 No.5 pin reaches H level, the No.1 pin falls to L level.
  - When the IC309 No.1 pin is at L level, the Q307 base current is lowered and Q307 turns on. When Q307 is on, Q311 also turns on to activate TRIGGER SOL SL002.
  - In the reverse direction, the IC304 No.8 pin is raised to H level through S501-5 → S302-14 (REV) → D323. Thereafter, auto-stop operates through the same steps as described in ⊕ POS above.

● ⊖ POS (Fig. 7-10)

- During playback, the IC302 No.10 pin is at H level (via S501-6 → S305-7[P.B.]).
- The tape end detection signal from Q305 raises the No.9 pin to H level.
- When the IC302 No.10 pin and No.9 pin are at H level, the No.8 pin drops to L level. Thereafter, TRIGGER SOL SL002 is activated through the same steps as described in items 2 ~ 8 above.
- During recording, S305-7 is at the REC position. The signal from S501-6 raises the IC302 No.10 pin to H level via the route S501-6 → S305-7(REC) → S302-14(FWD) → D324.
- Thereafter, operation is the same as described in items 2 ~ 8, above. However, when TRIGGER SOL SL002 operates, S302-1 switches to the REV position, so that the signal from S501-6 is cut off and the IC302 No.10 pin drops to L level. At the same time, the IC304 No.8 pin rises to H level via D323 and activates STOP SOL SL001. (This prevents recording over the previously recorded material.)

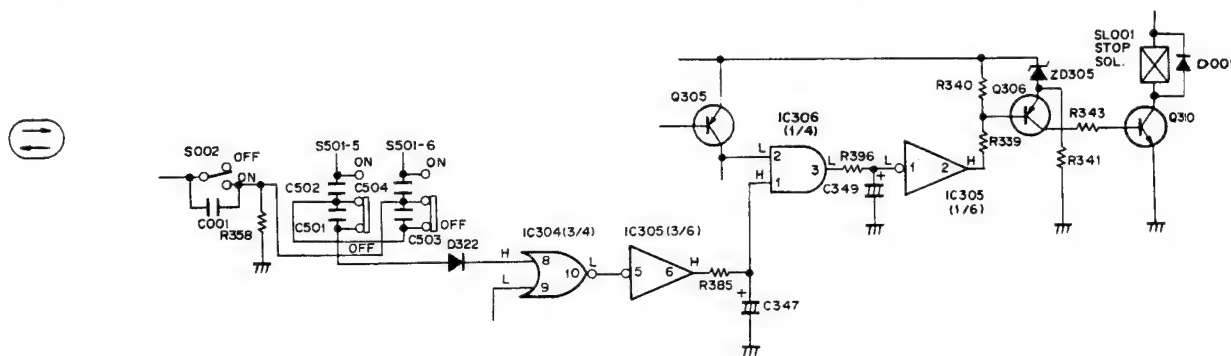


Fig. 7-9 ⊖ POS circuit

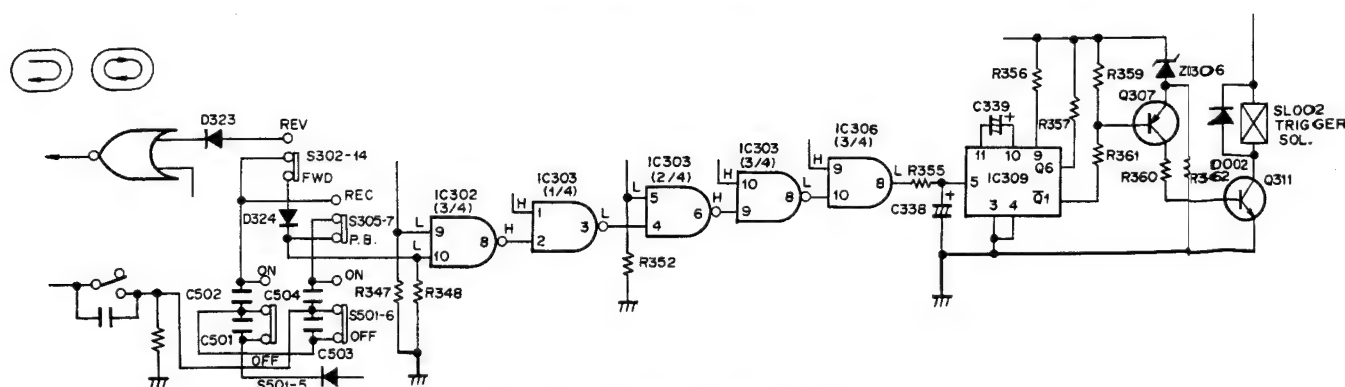


Fig. 7-10 ⊕ POS, ⊖ POS circuit

7.6 FWD PRIORITY CIRCUIT

- This circuit diagram is shown in Figure 7-11. When the FWD/REV selector is at the REV position, the IC304 No.12 pin goes to H level via the route S004 → R345 → S302-5.

- At the same time as the power is turned on, the IC303 No.13 pin rises to H level only for the period of time that C337 is charging.
- The IC303 No.12 pin and No.13 pin goes to H level and the No.11 pin to L level.

- The IC303 No.10 pin goes to L level, while the No.8 pin goes to H level. The IC306 No.10 pin goes to H level, while the No.8 pin also goes to H level.
- The IC309 No.5 pin rises to H level and the No.1 pin falls to L level. Q307 is on and Q311 turns on to activate TRIGGER SOL SLO02 (same operation as  $\supset$  POS).

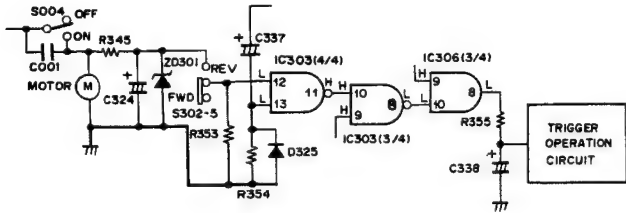


Fig. 7-11 FWD priority circuit

### 7.7 AUTO-STOP (DIRECTION CHANGE) SOLENOID ACTIVATION CIRCUIT

- The solenoid activation circuit is shown in Figure 7-10. The Q306 base is connected through R339 to the TTL IC (IC305) No.2 pin.
- Since ZD305 is a 2.7V Zener diode, Q306 will be off when the Q306 base potential is at H level (3.3V).
- Q306 turns on when the IC305 No.2 pin is at L level (0.2V). When Q306 is on, the Q310 base potential rises through R343 so that Q310 turns on.
- When Q310 is on, +B is applied to the stop solenoid to energise the coil and activate the plunger.

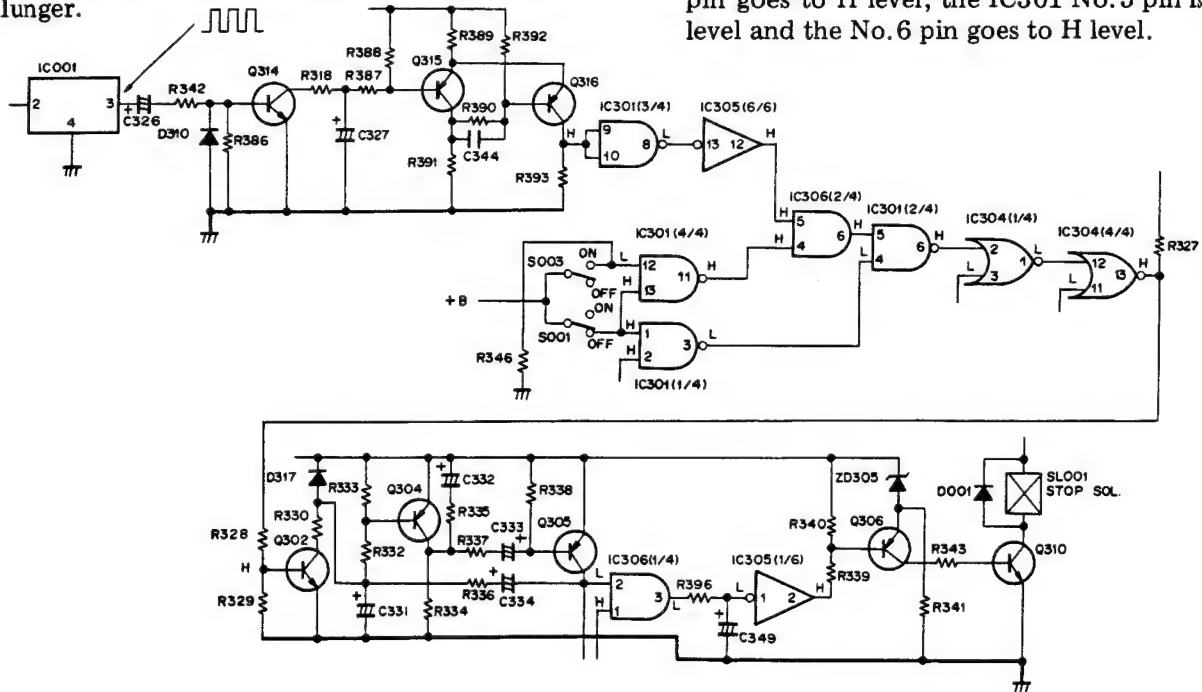


Fig. 7-12 Auto-stop detection circuit

### 7.8 AUTO-STOP DETECTION CIRCUIT

- The auto-stop detection circuit is shown in Figure 7-12. With the play lever depressed and the tape is being transported, the Hall IC (IC001) turns on and off repeatedly due to the action of the magnet attached to the counter, so that a rectangle wave (pulse) signal (as shown in Figure 7-12) is produced at the No.3 pin.
- Since this rectangle wave signal goes through C326  $\rightarrow$  R342 to the Q314 base, Q314 alternately turns on and off repetitively.
- C327 is charged through R388  $\rightarrow$  R387, but since Q314 is alternatively turning on and off, C327 also, in like fashion, alternately charges and discharges. Due to this, the Q315 base potential drops and Q315 turns on.
- With Q315 on, the Q316 base potential rises and Q316 turns off.
- When tape transport stops at the end of the tape, the IC001 No.3 pin output is cut off, Q314 turns off, C327 becomes charged, and the Q315 base potential rises so that Q315 turns off. At the same time, Q316 turns on, then, the IC301 No.9 and 10 pins rise to H level, while the No.8 pin drops to L level. On IC305, the No.13 pin goes to L level and the No.12 pin to H level. On IC306, the No.5 pin rises to H level.
- Meanwhile, with the PLAY lever depressed, the IC306 and IC301 No.4 pins are at H level, so the IC306 No.5 pin is at H level and the No.6 pin goes to H level; the IC301 No.5 pin is at H level and the No.6 pin goes to H level.

7. On IC304, the No.2 pin is L level, the No.3 pin is L level, so the No.1 pin goes to H level. Since the IC304 No.12 pin is at H level and the No.11 is normally at L level, the No.13 pin goes to L level.
8. When the IC304 No.13 pin becomes L level, the Q302 base potential drops through R328 and Q302 turns off. Because Q305 alternately turns on and off due to Q302 having turned off (see 7.4 multivibrator circuit description), the IC306 No.3 pin goes to H level when the IC306 No.2 and No.1 pins are at H level.
9. Because the IC305 No.1 pin is at H level and the No.2 pin is at L level, Q306 and Q310 turn on, STOP SOL SL001 operates and the deck is stopped.
10. Furthermore, if the IC306 No.1 pin is at L level due to the position of the mode selector, the STOP SOL SL001 will not operate even if Q305 turns on (see 7.5 mode selector circuit description).
11. The No.13 pin is at H level. When the PLAY lever is depressed and PAUSE is on, the IC301 No.12 pin goes to H level. Therefore, the No.11 pin goes to L level and the IC306 No.4 pin also goes to L level.
12. Even if end detector operates, the IC306 No.6 pin maintains L level, so the STOP SOL SL001 does not operate.
13. During FF or REW, whether PAUSE is on or off, the IC306 No.4 pin and the IC301 No.4 pin are at H level, so that when the tape stops and Q316 turns on, the IC301 No.6 pin goes to L level and the STP SOP SL001 operates to stop the deck.

### 7.9 TAPE SLACK PREVENTION CIRCUIT OPERATING DURING MODE SWITCHING FROM FF OR REW TO PLAY

If tape transport is switched from REW directly to PLAY when in the reverse position, the tape becomes slack and the deck stops electronically even if the tape is traveling. This protection circuit prevents this from happening. (The supply reel table stops due to tape slack, the counter stops, and the IC001 No.3 pin output is cut off.)

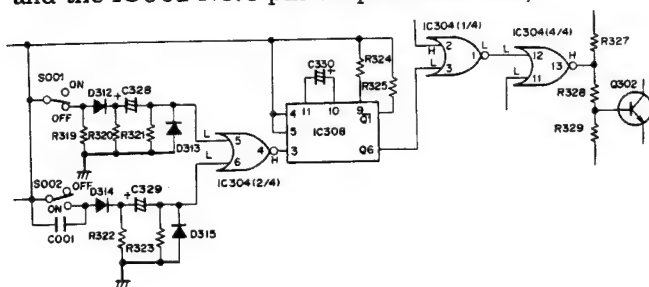


Fig. 7-13 Tape slack prevention circuit

1. When the PLAY switch S002 is turned on, the IC305 No.6 pin goes to H level during the time C329 is charging via the route D314 → C329.
2. With the IC304 No.6 pin at H level, the No.4 pin goes to L level regardless of the No.5 pin. The IC308 No.3 pin goes to L level and the No.6 pin goes to H level. IC308 is a monostable multivibrator: when the No.3 pin goes to L level, H level is obtained at the No.6 pin output. Operating time is about 5-seconds and is determined by C330 and R324.
3. On IC304 (1/4) the No.1 pin goes to L level because the No.3 pin is at H level, regardless of the No.2 pin. On IC304 (4/4) the No.12 pin and No.11 pin are at L level and the No.13 pin goes to H level.
4. With the IC304 No.13 pin at H level, the Q302 base potential drops through R328 and Q302 turns on. Therefore, the STOP SOL SL001 does not operate and the deck does not stop.

### 7.10 AUTO-START CIRCUIT

This circuit automatically releases the pause lever when the power is turned on. The circuit is shown in Figure 7-14.

1. When the power is turned on, C317 and C318 charge rapidly, and the potential at point A rises quickly to a steady value. On the other hand, the potential at point B drops as C320 is charging, but it remains higher than point A while charging is taking place (1 ~ 3 seconds).
2. As long as the potential at point B is higher than point A, Q303 and Q309 are off and the START SOL SL003 will not operate.
3. As C320 charging progresses and point B potential drops below point A, C319 charging begins and Q303 turns on at the same time.
4. When Q303 turns on, the C318 charge becomes the Q309 base current so that Q309 turns on, the START SOL SL003 operates, and the pause lever lock is released.
5. When C318 has discharged, the potential at point A becomes approximately 0V, Q303 and Q309 turn off, and the START SOL SLO03 stops operating so that the pause lever can be operated.

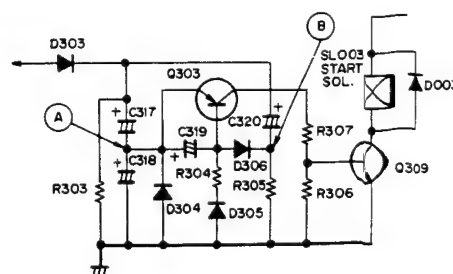


Fig. 7-14 Auto-start circuit

## 7.11 MANUAL DIRECTION SWITCHING CIRCUIT

- Figure 7-13 shows the manual direction switching circuit. When the direction selector switch S801 or S901 is pressed (turned on) the IC307 No.3 pin goes to L level. IC307 is a monostable multivibrator: when the No.3 pin changes to L level, the No.1 pin goes to L level and H level output is obtained from the No.6 pin. Operation time determined by C335 and R350 is about 1-second.
- The IC307 No.6 pin changes to H level, and the IC302 No.13 pin changes to H level when the S001, (Fast SW) is of, so the No.11 pin changes to L level. The IC303 No.1 pin is at L level and the No.2 pin is normally at H level, so the No.3 pin changes to H level.

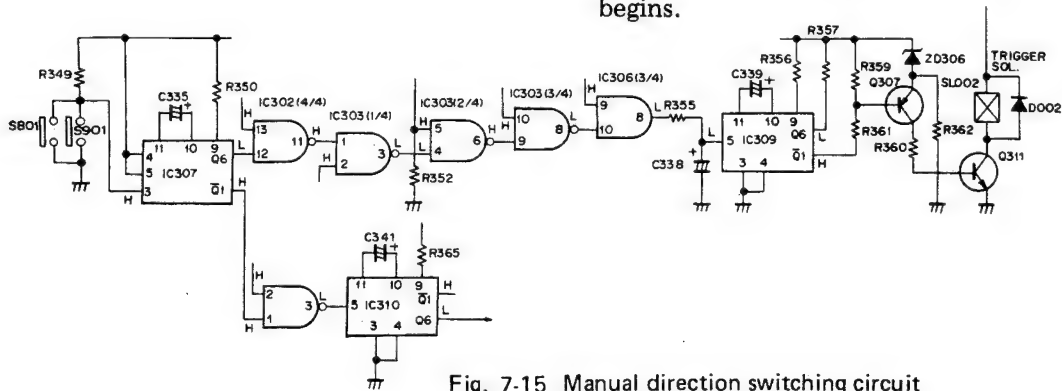


Fig. 7-15 Manual direction switching circuit

- The IC303 No.4 pin is at H level and the No.5 pin is at H level, so the No.6 pin changes to L level. The IC303 No.9 pin is at L level and the No.10 pin is normally at H level, so the No.8 pin changes to H level.
- The IC306 No.10 pin is at H level and the No.9 pin is normally at H level, so the No.8 pin changes to H level. This causes the IC309 No.5 pin to change to H level through R355, so the IC309 No.1 pin changes to L level.
- The Q307 base potential drops and Q307 turns on. Q311 also turns on and the TRIGGER SOL SL002 operates.
- During fast forward and rewind operation, the No.13 pin of IC302 is at L level so the TRIGGER SOL SL002 does not operate.
- Through IC302, the IC307 No.1 pin output activates the muting circuit IC310 so muting begins.

## 7.12 LEVEL METERS CIRCUIT

The headphone amplifier output is amplified by Q110, and rectified by D101 the DC portion being applied to the display driver IC (IC701). This IC contains 12 level display comparators used to drive the 12 level display segments (Note 1). +B is applied to one side of the comparators to supply the reference voltage.

The reference voltage applied to each comparator is set in a stepwise sequence, the lowest voltage

being applied to the low level display end. The DC portion rectified by D101 is compared with each reference voltage, the corresponding segment being lit up if the reference voltage is exceeded.

The level meters may be used as normal VU meters, or as peak meters, depending on the S3 position (For different response characteristics).

Note 1:

Pairs of level display segments light up at levels below 0dB.

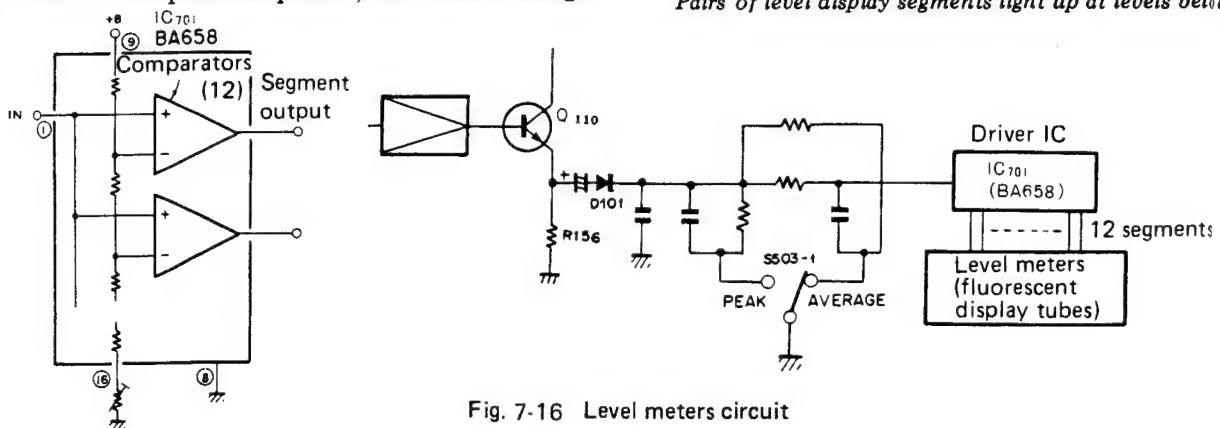
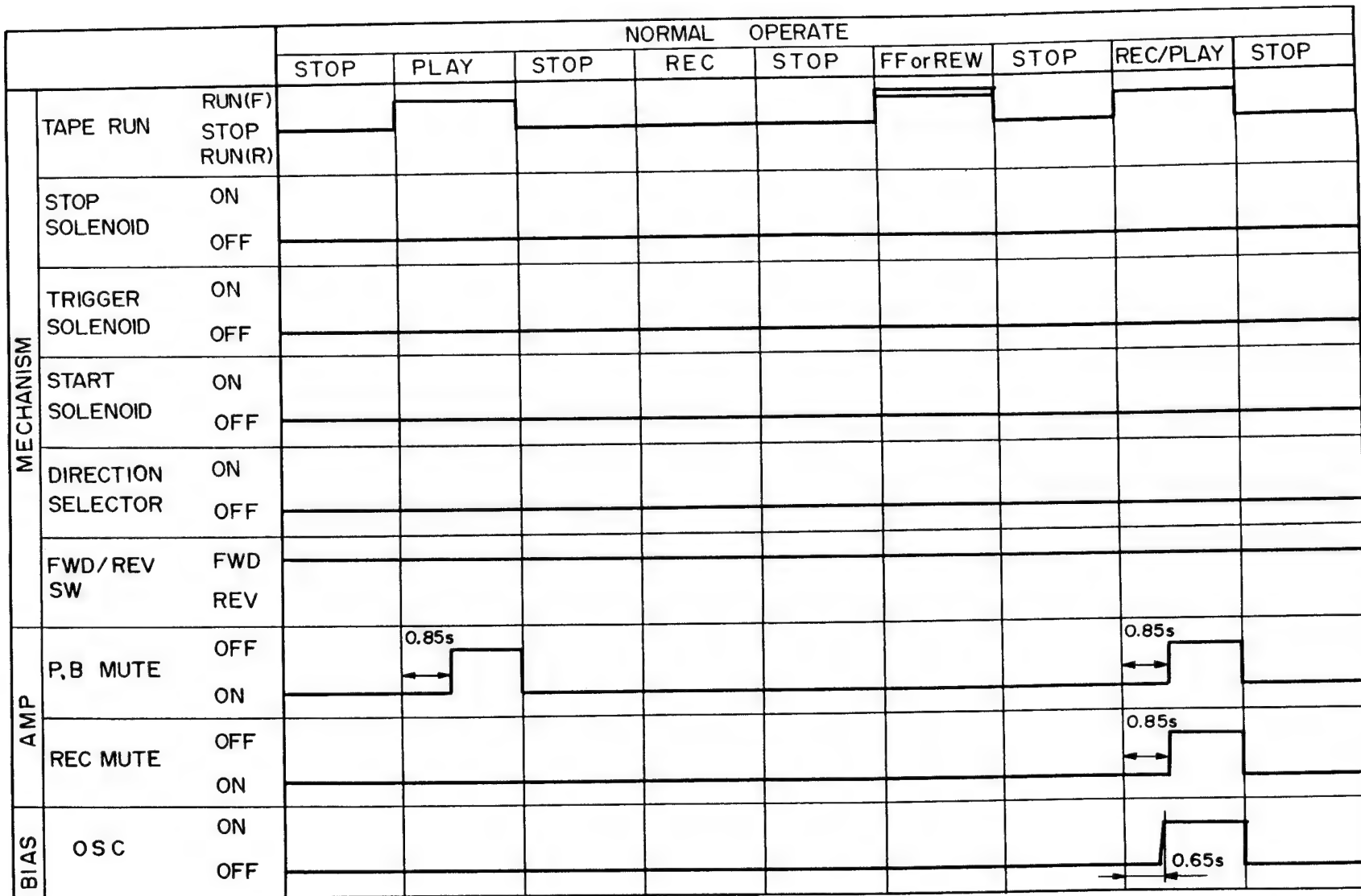
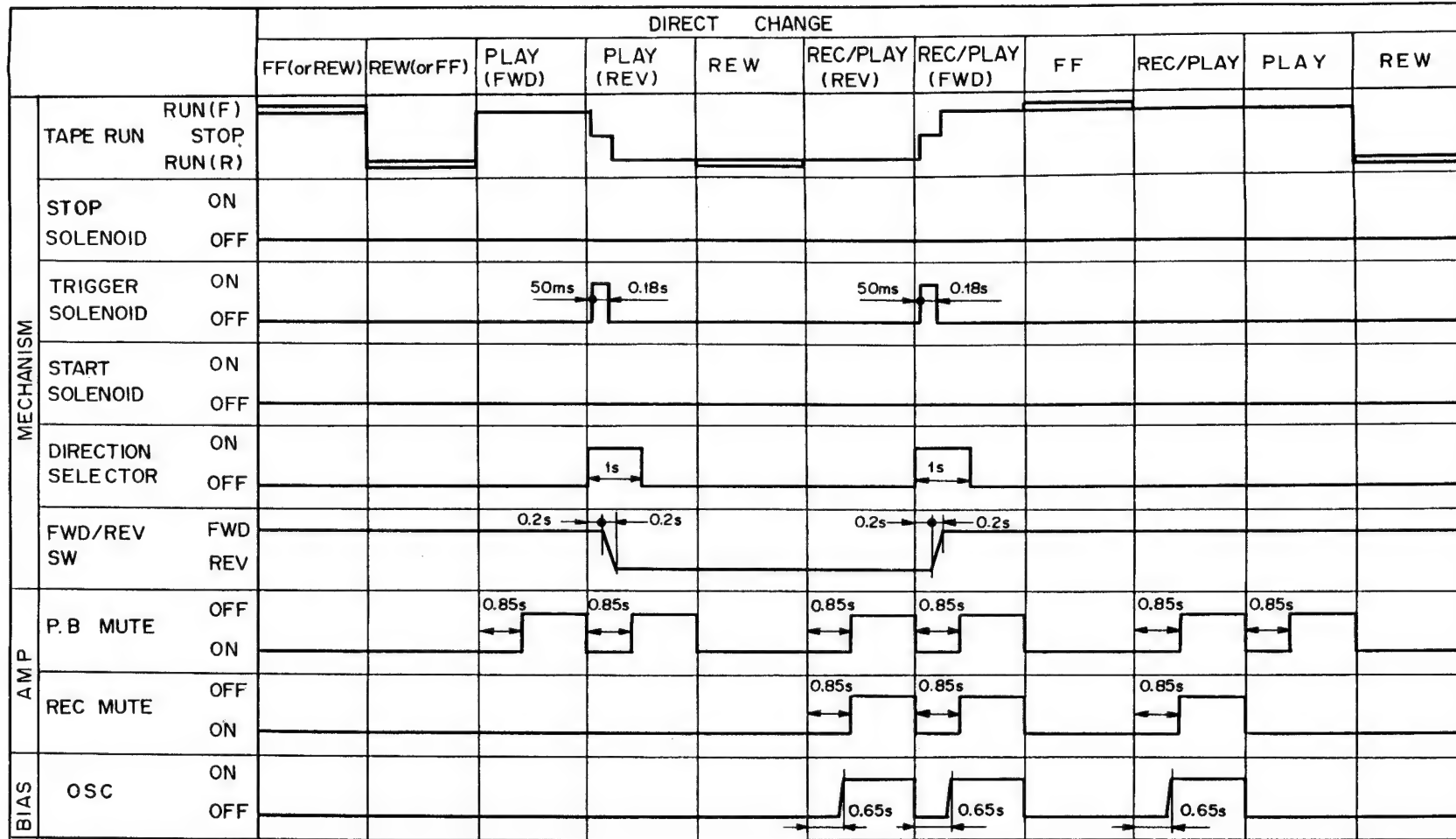


Fig. 7-16 Level meters circuit

Chart 1  
TIMING CHART



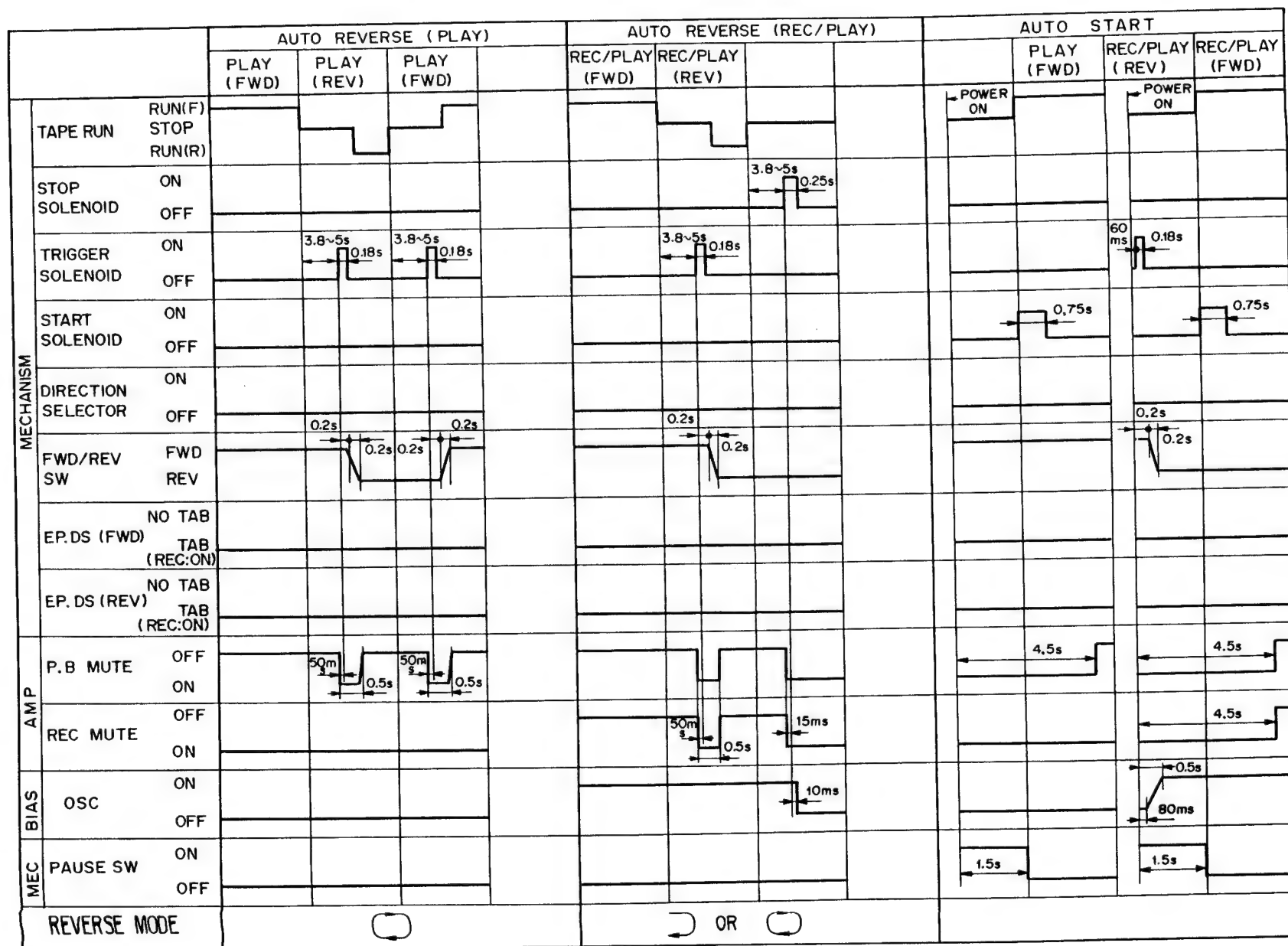
Note in dicates fast run. Conditions:  
 (1) PAUSE is OFF position.  
 (2) Cassette tape is loaded.  
 (3) Cassette tape is provided with erasure prevention tabs. (for recording)



Conditions:

- (1) PAUSE is OFF position.
- (2) Cassette tape is loaded.
- (3) Cassette tape is provided with erasure prevention tabs. (for recording)

Chart 3



Conditions:  
 (1) Cassette tape is loaded.

		PLAY	REC/PLAY	REW	STOP	REC/PLAY (FWD)	REC/PLAY (REV)
MECHANISM	TAPE RUN RUN(F) STOP RUN(R)						
	STOP SOLENOID ON OFF						
	TRIGGER SOLENOID ON OFF						
	START SOLENOID ON OFF						
	DIRECTION SELECTOR ON OFF						
	FWD/REV SW FWD REV						
	EP.DS (FWD) NO TAB TAB (REC:ON)						
	EP.DS (REV) NO TAB TAB (REC:ON)						
AMP	P.B MUTE OFF ON						
	REC MUTE OFF ON						
BIAS	OSC ON OFF						
		TAPE END	TAPE END	TAPE END			

Conditions:  
 (1) PAUSE is OFF position.  
 (2) Cassette tape is loaded.



## 8. MECHANICAL ADJUSTMENTS

### Caution:

- Do not let any oil come in contact with the reel holders, idler, or belts.
- Keep disassembly work to the minimum level possible.

### 8.1 ADJUSTMENT OF TAPE SPEED

1. Connect the frequency counter to the output terminals.
2. Play back the tape speed/wow & flutter test tape STD-301 of 3kHz.
3. Adjust the semi-fixed resistor in the motor so the frequency when the tape begins to move is 2.995Hz — 3.010Hz.
4. Rotate the semi-fixed resistor clockwise to increase tape speed and counterclockwise to decrease it (Fig. 8-1).

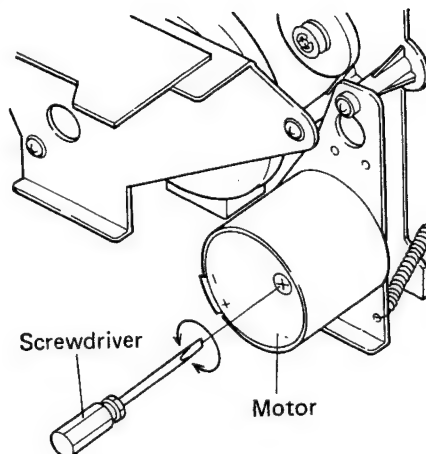


Fig. 8-1 Adjustment of tape speed

### 8.2 ADJUSTMENT OF SAFETY SWITCH (MOTOR SWITCH)

#### Adjustment Standard:

Adjust the motor switch so that, without a tape inserted, it switches ON when the PLAY key is pressed and switches OFF when the PLAY key is released.

#### Adjustment Method:

If the motor switch does not switch ON and OFF, adjust with a screwdriver, inserting the screwdriver in the grooved section shown in diagram 8-2.

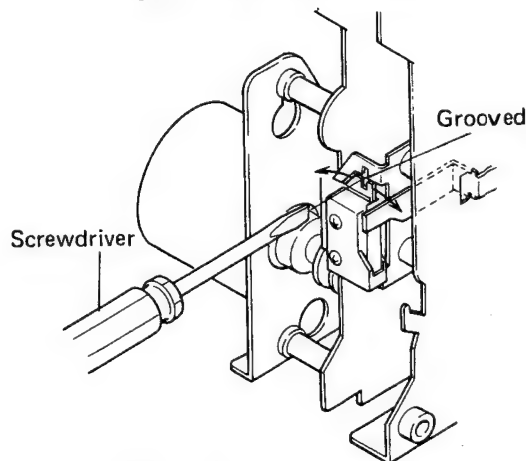


Fig. 8-2 Adjustment of safety switch

### 8.3 ADJUSTMENT OF MUTING SWITCH

#### Adjustment Standard:

Adjust so that in the STOP position, there is a gap of 1 — 3mm in the connection, and that there is a firm connection made when the unit is put in the PLAY position.

#### Adjustment Method:

Insert a screwdriver in the grooved section of the muting switch attachment section as shown in diagram 8-3,4 and adjust by moving the switch right or left until the correct gap is produced. Then adjust so the PLAY lever locks when the switch has moved 0.5 — 1.0mm after making contact.

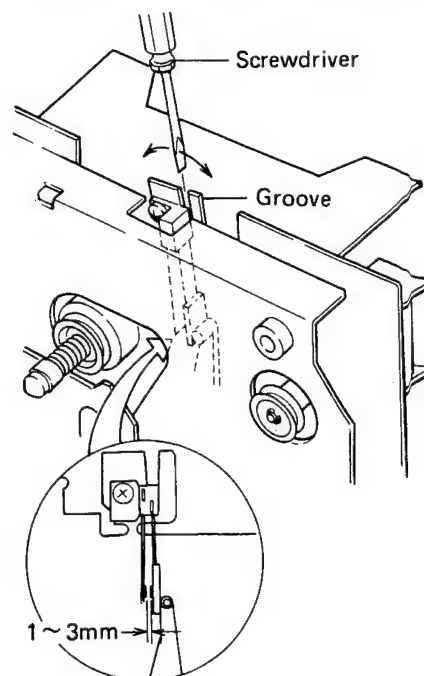


Fig. 8-3 Adjustment of muting switch

### 8.4 ADJUSTMENT OF PLAY TIMING

#### Adjustment Standard:

Adjust so the gap between the pinch roller and capstan is 0 – 0.5mm the moment after the PLAY key has been slowly depressed until the take-up reel begins rotating (in both FWD and REV).

#### Adjustment Method:

As shown in diagram 8-5, insert a screwdriver in the adjustment hole and bend the contact section of the pinch driving arm shaft until properly adjusted. Perform the same adjustment for the REV side.

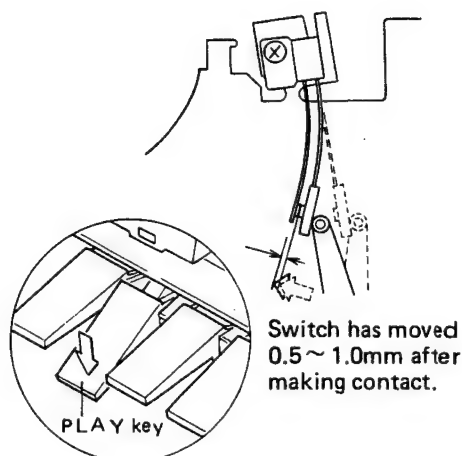


Fig. 8-4 Adjustment of muting switch

### 8.5 ADJUSTMENT OF PAUSE TIMING

#### Adjustment Standard:

Adjust so the reel holder and pinch roller begin rotating simultaneously when the PAUSE key is slowly released (unit is in PLAY mode with PAUSE key locked down).

If the reel holder begins to rotate first, a gap of 0 – 0.2mm is permissible between the pinch roller and capstan.

#### Adjustment Method:

##### FWD Side

As shown in diagram 8-6, insert a screwdriver in the adjustment hole and gently bend the section of pause arm B marked by the arrow until properly adjusted.

##### REV Side:

As shown in diagram 8-7, insert a screwdriver in the adjustment hole and bend the section of pause arm A marked by the arrow until properly adjusted.

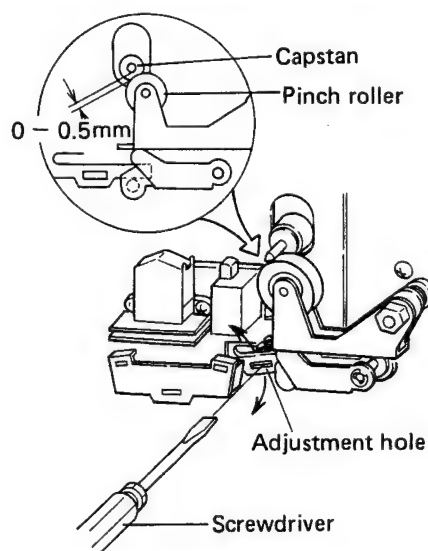


Fig. 8-5 Adjustment of play timing

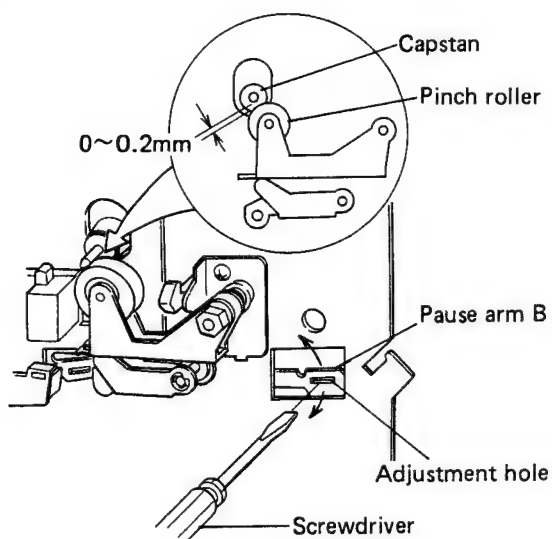


Fig. 8-6 Adjustment of pause timing

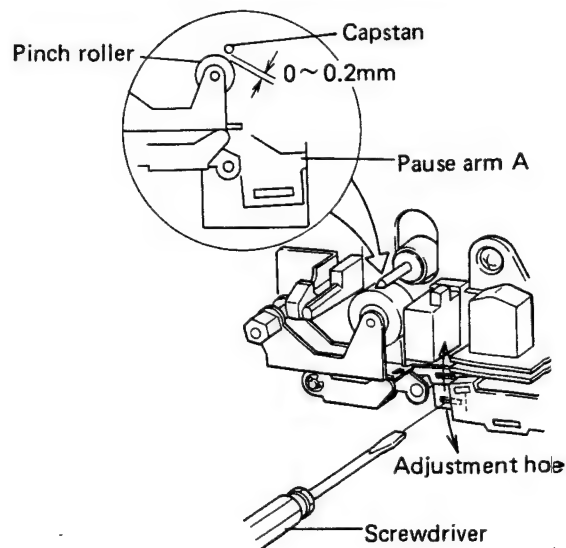


Fig. 8-7 Adjustment of pause timing

## 9. ELECTRICAL ADJUSTMENTS

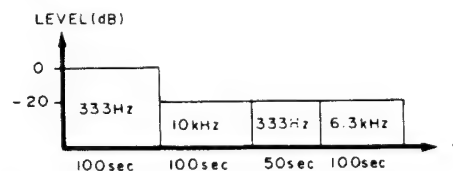
Before performing electrical adjustments, check the following items.

1. Ensure that all mechanical adjustments have been completed.
2. Adjust the measuring level to 0dBv = 1V, and place a 50k $\Omega$  (47k $\Omega$  to 52k $\Omega$ ) dummy resistor across the line output terminals.
3. Perform adjustments using the A-side (the side with the label) of the specified test tapes.
  - STD-331A : For overall replay
  - STD-341A : For replay adjustments
  - STD-601 : STD blank tape
  - STD-603 : CrO<sub>2</sub> blank tape
  - STD-604 : METAL blank tape
4. Obtain the following measuring instruments. Millivoltmeter, low frequency generator oscilloscope, attenuator.
5. Unless otherwise defined, the term "recording condition" as used in this manual shall mean the condition when a cassette shell is loaded, and both the PLAY and REC switches are pressed.
6. Unless otherwise specified, adjustments shall be performed on both L and R channels.
7. Clean the heads and also remove any residual magnetism using a head demagnetizer.
8. Always perform adjustments in the specified sequence. If the sequence is changed, the performance of the unit may be degraded.

### ADJUSTMENT SEQUENCE

1. Tape transport and head angle adjustment
2. Playback equalizer adjustment
3. Playback level adjustment
4. Line output level adjustment
5. Level meter 0dB adjustment
6. Recording current rough adjustment
7. Erasure bias current adjustment
8. Bias trap adjustment
9. Recording bias rough adjustment
10. Recording and playback frequency response adjustment
11. Dolby adjustment and check
12. Recording level adjustment

#### STD-341A



#### STD-331A

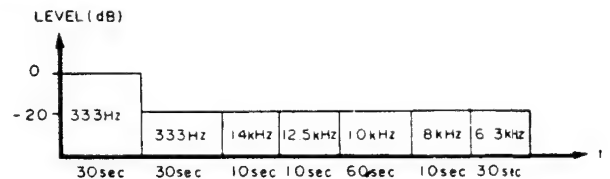


Fig. 9-1 Recorded contents of test tape

### 9.1 TAPE TRANSPORT AND HEAD ANGLE ADJUSTMENT

1. Connect a mV meter to the output terminals and set the tape selector switch to the STD position.
2. Turn the playback level adjustment screws VR103, VR203 (forward tape transport), VR104, and VR204 (reverse tape transport) all the way clockwise (to the maximum position).
3. Set CT-F750 to the FWD (forward) position. Play back the 10kHz signal on the STD-341A test tape and adjust the head angle (azimuth) adjustment screw (Figure 8-2), so that maximum output is obtained for both channels.
4. Adjust the pinch roller adjustment screw and check output level. If output level rises, repeat head angle adjustment.
5. Set CT-F750 to the reverse (REV) position and adjust the REV direction pinch roller adjustment screw (using side A of the test tape only). If output level rises, set to the forward position again, and repeat steps 3 and 4 above.

6. Repeat steps 3, 4, and 5 above, making sure that there is nothing faulty in the tape transport and the head angle is not off. After confirming that all adjustments have been properly completed, fix each of the adjustment screws in place with the recommended screw locking agent, (No. 300 screw-tight green).

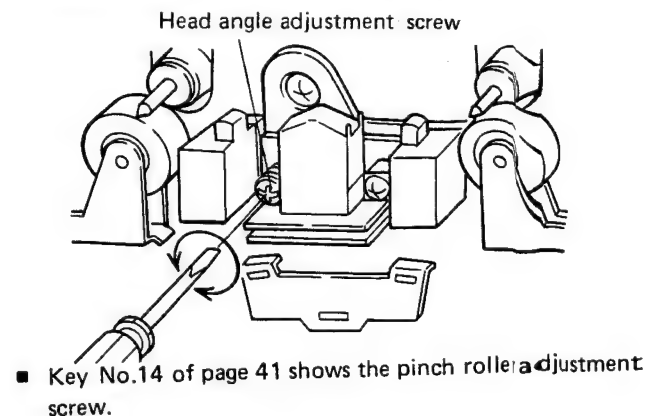


Fig. 8-2 Head angle adjustment

## 9.2 PLAYBACK EQUALIZER ADJUSTMENT

1. Connect a mV meter to the output terminals and set the tape selector to the STD position (for normal ferric tape).
2. Set the playback equalizer adjustment control screws VR101 (FWD L-channel), VR201 (FWD R-channel), VR102 (REV L-channel), and VR202 (REV R-channel) to their respective mechanical centers (approximately).
3. Set CT-F750 to the forward position and read the mV meter indication for playback of 333Hz at -20dB on the STD-341A test tape.
4. Adjust the playback equalizer adjustment screws VR101 (L-channel) and VR201 (R-channel) so that the mV meter reading for playback of the 6.3kHz at -20dB section of the test tape is +0.5dB as compared with the reading for playback of the previous 333Hz signal.
5. Set CT-F750 to the REV position and adjust the playback equalizer adjustment screws VR102 (L-channel) and VR202 (R-channel) so that the meter reading for 6.3kHz is +0.5dB as compared with 333Hz.
6. Repeat the test procedure for each of the other tape selector positions (Fe-Cr, CrO<sub>2</sub>, Metal) and check to see that the meter reading for 6.3kHz is -4dB within ±1dB as compared with the reading for 333Hz.

## 9.3 PLAYBACK LEVEL ADJUSTMENT

This important adjustment procedure determines playback Dolby level.

1. Connect a mV meter to the TP terminals on the deck.
2. Turn ON the Dolby NR switch and set the tape selector to the STD position.
3. Set CT-F750 to the FWD position and adjust VR103 (L-channel) and VR203 (R-channel) so that the mV meter reading is 1dBv (1.12V) for playback of 333Hz at 0dB on the test tape STD-341A.
4. Likewise, set CT-F750 to the REV position and adjust VR104 (L-channel) and VR204 (R-channel) so that the mV meter reading is 1dBv (1.12V) during playback of 333Hz at 0dB.

## 9.4 LINE OUTPUT LEVEL ADJUSTMENT

1. Connect an mV meter to the output terminals, set the Dolby NR switch to the off position, and set the tape selector to the STD position.
2. Set the output level control knob to the click-stop position (at No.6) and play back the 333Hz, 0dB signal on the test tape STD-341A.
3. Set CT-F750 to the FWD position and adjust VR105 (R-channel) and VR205 (L-channel) so that the mV meter indicates -3dBv (710mV).

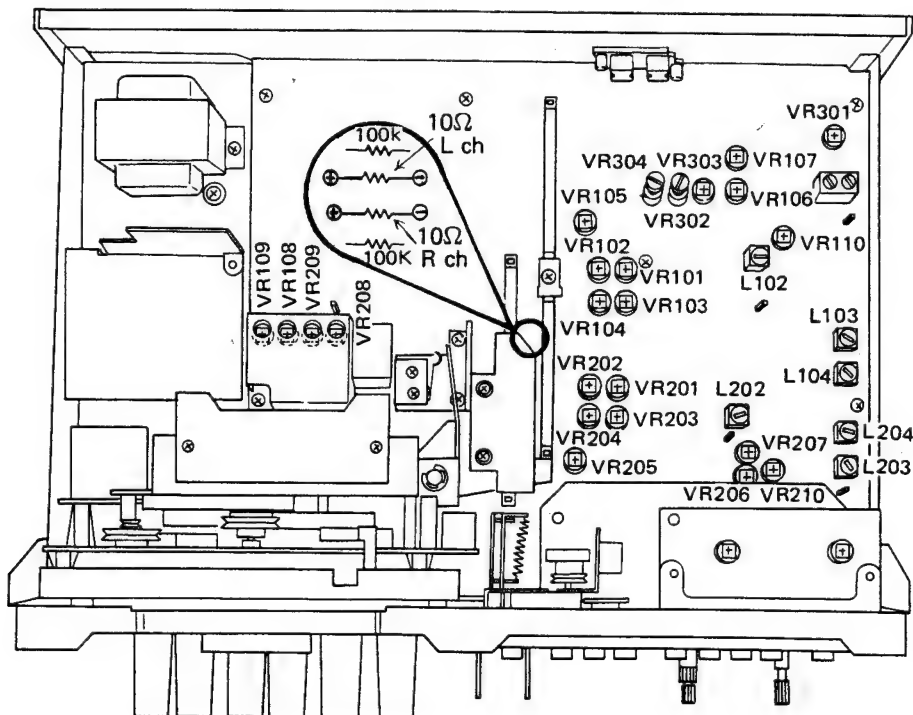


Fig. 8-3 Adjustment points

### 9.5 LEVEL METER 0dB ADJUSTMENT

1. Connect mV meter to the TP1 (L-channel) and TP2 (R-channel) terminals on the deck.
2. Set the meter switch to the average position and apply a 333Hz, -10dBv (316mV) signal to the line input terminals.
3. Set VR301 to its mechanical center point and adjust the recording level controls VR305-1 (L-channel) and VR305-2 (R-channel) so that the mV meter gives a -3dBv (710mV) reading.
4. With the deck adjusted as described above, adjust VR701 (L-channel) and VR702 (R-channel) so that the OVU segment on the level meters lights up. To do this, first turn both VR701 and VR702 all the way counterclockwise, then turn clockwise just far enough so that the 0dB segment lights on the meter.
5. Reduce the line input signal level (described in section 2 above) by 20dB and adjust VR301 so that none of the meter segments light up.
6. Repeat steps 4 and 5, above, several times and confirm that the OVU segment lights up for a -10dBv (316mV) input, and none of the segments light up for a -30dBv (31.6mV) input.

### 9.6 RECORDING CURRENT ROUGH ADJUSTMENT

1. Connect a mV meter to both emds off 10ohm resistor as shown in Figure 8-3.
  2. Short the base and earth of transistor Q317 on the surface of the circuit board.
  3. Press the STD tape selector button and turn off the Dolby NR switch.
  4. Apply a 333Hz, -10dBv (316mV) signal to the input terminals and put CT-F750 into the recording mode.
  5. Put CT-F750 into the forward position and adjust VR106 (L-channel) and VR206 (R-channel) so that the mV meter gives a 0.36mV (36 $\mu$ A) reading.
  6. In the same fashion, set to the REV position and adjust VR107 (L-channel) and VR207 (R-channel) so that the mV meter indicates 0.36mV (36 $\mu$ A).
- Since these adjustments are dealing with extremely low level signals, take adequate measures to avoid external induction noise.

### 9.7 ERASURE BIAS CURRENT ADJUSTMENT

1. Press the metal tape selector button, turn the input level controls down to the minimum positions and connect a mV meter between earth and TP5 on the main unit.

2. Put CT-F750 into the recording mode, without applying any input signal, so that no signal is being recorded on the tape. (Use an unrecorded tape.)
  3. Adjust VR304 so that the mV meter indicates 150mV (150mA).
- 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 bias current indications is 150mA.

### 9.8 BIAS TRAP ADJUSTMENT

1. Connect mV meter between TP3 and earth (L-channel) and TP4 and earth (R-channel) on the main unit.
2. Put CT-F750 into the recording mode.
3. Adjust L102 (L-channel) and L202 (R-channel) so that a minimum indication is obtained on the mV meter.

### 9.9 RECORDING BIAS ROUGH ADJUSTMENT

1. As was the procedure in 9.6, the section on recording current rough adjustment, connect a mV meter to both emds off 10ohm resistor as shown in Figure 8-3.
2. Press the metal tape selector button, and turn the Dolby switch off.
3. Put CT-F750 into the recording mode.
4. Set CT-F750 to the FWD position and adjust VR108 (L-channel) and VR208 (R-channel) so that the mV meter indicates 12mV (1.2mA).
5. In the same way, set the deck for REV operation, and adjust VR109 (L-channel) and VR209 (R-channel) so that the mV meter indicates 12mV (1.2mA).
6. Press the STD tape selector, connect the mV meter to both ends of 10 ohm resistor, and then adjust so that the mV meter indicates 6mV (600 $\mu$ A) (only adjust for FWD).
7. Press the CrO<sub>2</sub> tape selector button, connect the mV meter to both ends of 10 ohm resistor, and then adjust VR303 so that the mV meter indicates 9mA (900 $\mu$ A) (adjust for FWD only).

## 9.10 RECORDING AND PLAYBACK FREQUENCY RESPONSE ADJUSTMENT

1. Connect mV meter to output terminals, press the STD tape selector button, and turn off the Dolby switch.
2. Apply a 333Hz,  $-30\text{dBv}$  (31.6mV) signal to the input terminals and put the CT-F750 into the recording mode.
3. Adjust the input level controls so that the mV meter indicates  $-27\text{dBv}$  (44.6mV).
4. Put CT-F750 into the FWD position and record and play back 333Hz at  $-30\text{dBv}$  (31.6mV) and 6.3kHz at  $-30\text{dBv}$  (31.6mV) on test tape STD-601. Then adjust VR108 (L-channel) and VR208 (R-channel) so that the difference between the two reproduced signal output levels is 0.5dB at 6.3kHz.
5. Likewise, put the deck into the REV position and record and play back 333Hz at  $-30\text{dBv}$  (31.6mV) and 6.3kHz at  $-30\text{dBv}$  (31.6mV) on the test tape STD-601. Then adjust VR109 (L-channel) and VR209 (R-channel) so that the difference between the two outputs is 0.5dB at 6.3kHz.
6. Again, record and play back up to 12kHz as specified in the specifications and check to see that performance meets specifications. (Refer to page 34)
7. Press the metal tape selector button, put the deck into the forward position, record and play back 333Hz at  $-30\text{dBv}$  (31.6mV) and 6.3kHz at  $-30\text{dBv}$  (31.6mV) on the test tape STD-604. Then check to see that the difference between the two outputs is  $0.5\text{dB} \pm 1\text{dB}$  at 6.3kHz.
8. Again, record and play back up to 12kHz as listed in specifications and check to see that performance meets specifications. (Refer to page 34)
9. Press the CrO<sub>2</sub> tape selector button, put the deck in the FWD position, and record and play back 333Hz at  $-30\text{dBv}$  (31.6mV) and 6.3kHz at  $-30\text{dBv}$  (31.6mV). Then check to see that the difference between the two outputs is  $0.5\text{dB} \pm 1\text{dB}$  at 6.3kHz.
10. Again, record and play back up to 12kHz as specified in the specifications and confirm that performance meets specifications. (Refer to page 34)
11. Press the Fe-Cr tape selector button, put CT-F750 into the FWD position, and record and play back up to 12kHz on SONY Duad C-60 tape, as specified in the specifications and confirm that performance meets specifications. (Refer to page 34)

### • Caution:

1. Turn the Dolby switch on for each tape type and confirm performance for recording and playback up to 12kHz, as specified. (Refer to page 34)
2. For items 6 through 11, performance should also be checked and confirmed in the REV direction.

## 9.11 DOLBY ADJUSTMENT AND CHECK

1. Short the main unit transistor Q317 base and earth on the circuit board.
2. Press the STD tape selector button and turn off the Dolby NR switch.
3. Connect mV meter to TP1 (L-channel) and TP2 (R-channel) and apply a 1kHz,  $-10\text{dBv}$  (316mV) signal to the input terminals.
4. Adjust input level controls so that the mV meter indicates 0dBv (1V).
5. Turn ON the Dolby NR switch. Next, drop the input signal level to  $-50\text{dBv}$  (3.16mV), turn the Dolby NR switch on, and adjust VR110 (L-channel) and VR210 (R-channel) so that the mV meter indicates  $-34\text{dBv}$  (19.9mV).

## 9.12 RECORDING LEVEL ADJUSTMENT

1. Press the STD tape selector button, turn off the Dolby NR switch, and apply a 333Hz,  $-10\text{dBv}$  (316mV) signal to the input terminals.
  2. Connect mV meter to main unit TP terminals TP1 (L-channel) and TP2 (R-channel) and adjust input level controls so that the meter indicates  $-3\text{dBv}$  (710mV).
  3. Switch CT-F750 to FWD operation, turn the Dolby NR switch on, and record and play back the signal described in item 1 above on test tape STD-601.
  4. Adjust VR106 (L-channel) and VR206 (R-channel) so that the mV meter indicates  $-3\text{dBv}$  (710mV).
  5. Likewise, switch to the REV position and adjust VR107 (L-channel) and VR207 (R-channel) so that the mV meter indicates  $-3\text{dBv}$  (710mV).
  6. Confirm that the mV meter indicates  $-3\text{dBv}$  (710mV)  $\pm 1.5\text{dB}$  when you record and play back a 333Hz,  $-10\text{dBv}$  (316mV) signal at the CrO<sub>2</sub> tape selector position on test tape STD-603 and at the metal tape selector position on test tape STD-604, in the same way as described in step 3 above.
- Do the same for item 6 above in the REV position.

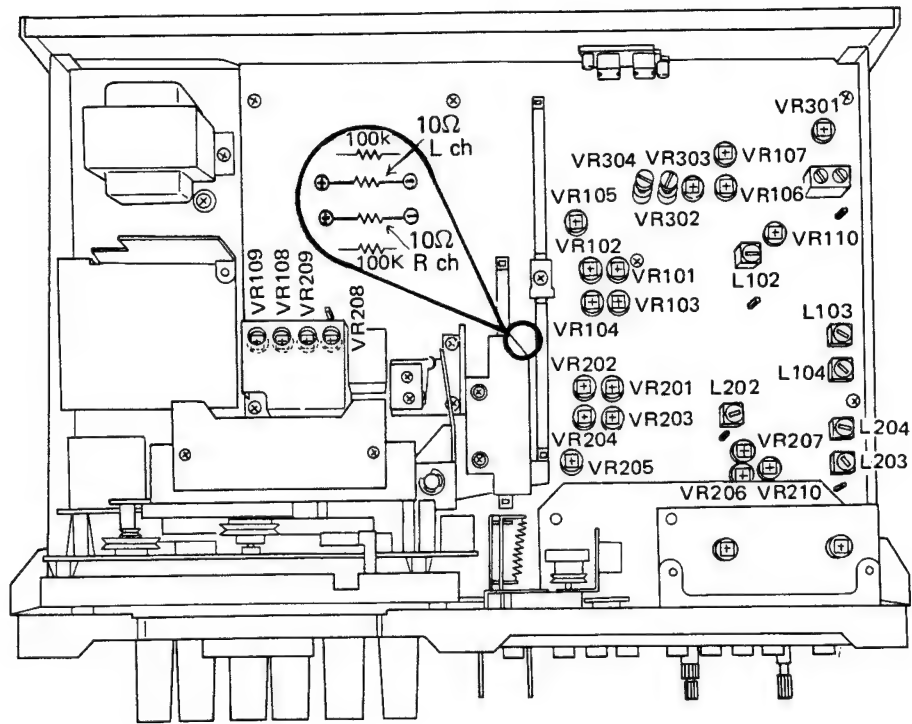
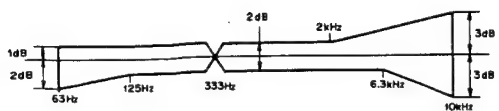


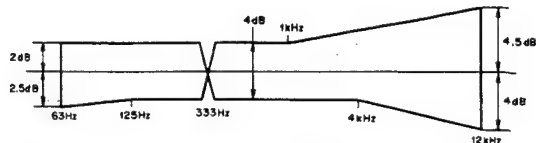
Fig. 8-4 Adjustment points



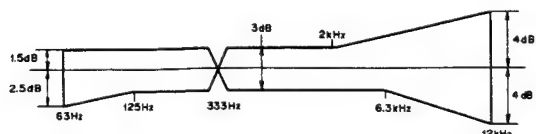
- Using STD-331A and the STD position, with DOLBY NR OFF.

*Note:*

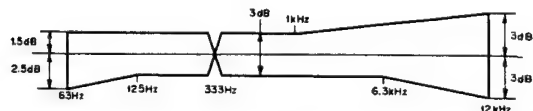
The frequency characteristics for the R channel shall be obtained by subtracting 1dB from the value indicated on the meter at 40Hz and 63Hz respectively.



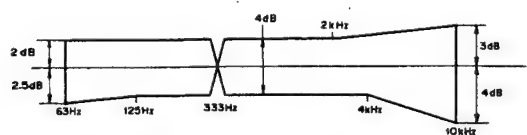
- Using SONY DUAD C-60 and the Fe-Cr position, with DOLBY NR ON.



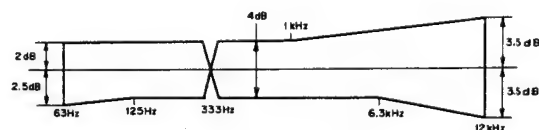
- Using STD-601 and the STD position, with DOLBY NR OFF.



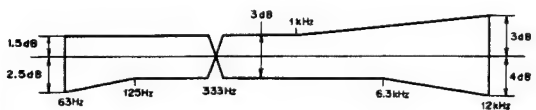
- Using STD-604 and the METAL position, with DOLBY NR OFF.



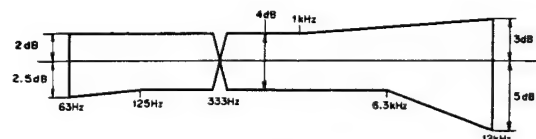
- Using STD-601 and the STD position, with DOLBY NR ON.



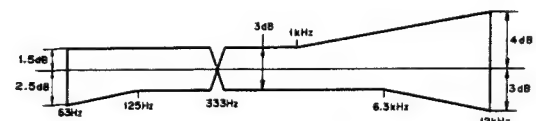
- Using STD-604 and the METAL position, with DOLBY NR ON.



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



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



- Using SONY DUAD C-60 and the Fe-Cr position, with DOLBY NR OFF.



# 10. EXPLODED VIEWS

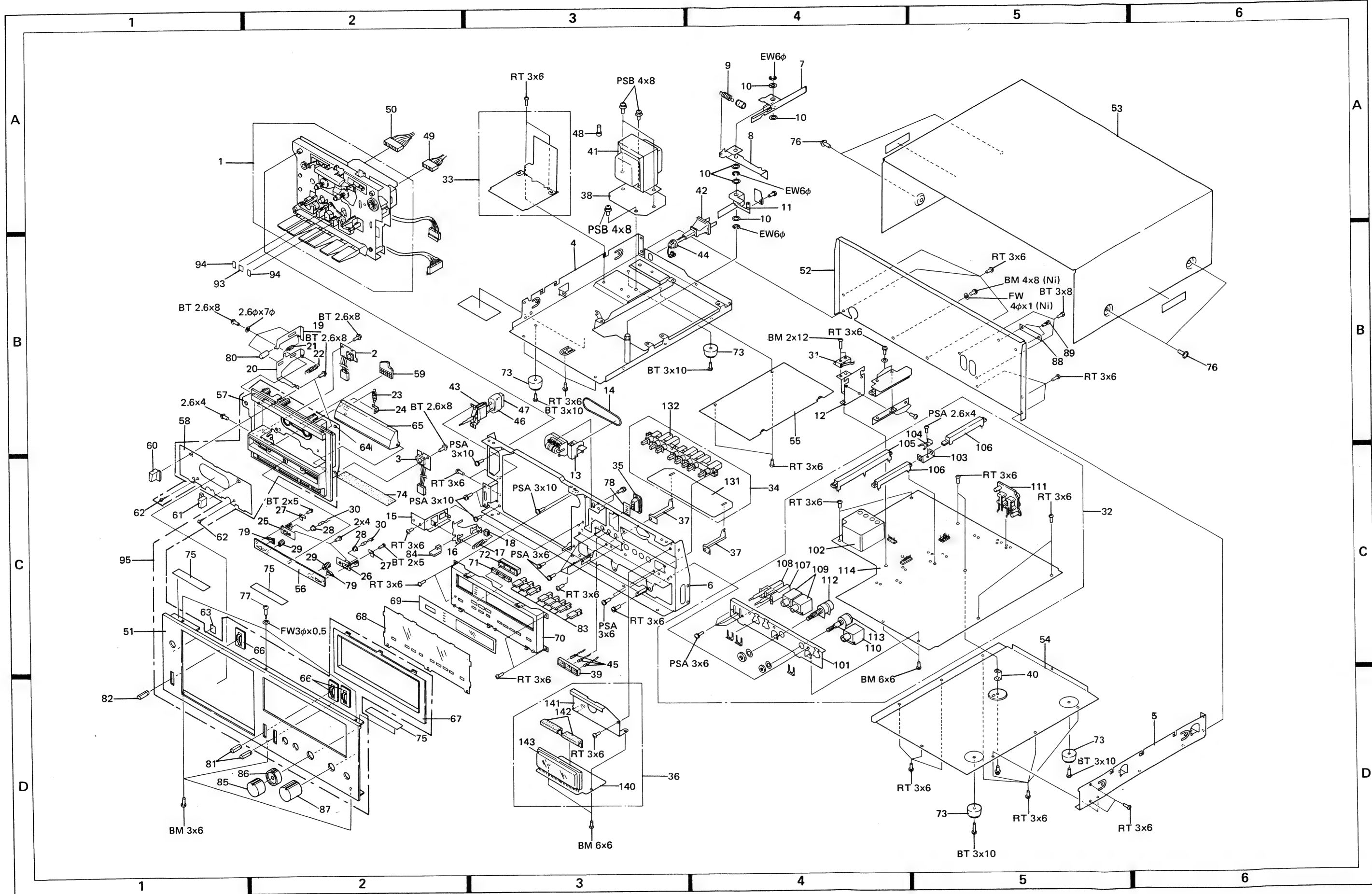
## 10.1 EXTERIOR

• Parts without part number cannot be supplied.

### Parts List

Key No.	Part No.	Description	Key No.	Part No.	Description
1.		Mechanical assembly	45.	REL-076	Lamp PL004, PL005, PL006
2.		FR switch assembly (L)	46.	REC-250	Capacitor cover
3.		FR switch assembly (R)	47.	RWX-109	Spark killer (KU)
4.		Main chassis		RWX-150	Spark killer (KC)
5.		Side frame	48.	RBM-004	Wire nut
6.		Panel stay	49.	RKP-138	Connector assembly 7P
7.		REC lever A assembly	50.	RKP-139	Connector assembly 10P
8.		REC lever B	51.		Front panel
9.	RBH-636	Spring	52.		Rear panel
10.		Washer 8.2φx12φx0.5t	53.	RNA-419	Bonnet
11.		FR lever assembly	54.		Bottom plate A
12.		Switch holder	55.		Bottom plate B
13.	RAW-127	Tape counter	56.	RAH-290	FR key
14.	REB-350	Counter belt	57.		Escutcheon
15.		Angle	58.		Cassette plate
16.		Plate	59.	RNK-837	Illuminating plate
17.	RBH-637	Spring	60.	RNK-794	Cassette guide (L)
18.	REB-241	Door stopper	61.	RNK-795	Cassette guide (R)
19.		Door open plate (A)	62.		Cover stopper
20.		Door open plate (B)	63.		Stopper
21.	RBH-638	Spring	64.	RED-175	Cover cushion
22.	RBH-639	Spring	65.	RNK-849	Head cover
23.	RBH-640	Spring	66.		Switch escutcheon
24.		Spring holder	67.		Meter escutcheon
25.	RNK-840	Lamp holder L	68.	RNK-845	Meter cover
26.	RNK-841	Lamp holder R	69.	RNK-846	Meter lens
27.		Holder	70.	RNK-847	Meter panel
28.		Lamp cushion	71.		Indicator
29.	RBH-641	Spring	72.		Indicator holder
30.	REL-075	Lamp PL002, PL003	73.	RXB-133	Foot assembly
31.	RSF-026	Micro switch S007	74.	REB-344	Cover cushion
32.	RWX-330 (KU)	Main unit	75.	REB-223	Cover cushion (D)
	RWX-388 (KC)		76.		Screw 4x8 (black)
33.	RWR-075	Power supply unit	77.	RBA-046	Screw
34.	RWS-077	Switch unit	78.	RED-168	Mask
35.		LED unit	79.	RNK-838	FR indicator
36.	RWX-331	FL unit	80.	RAC-116	Cover knob assembly
37.		Angle	81.	RAC-109	Lever knob (A) assembly
38.		Plate	82.	RAC-110	Lever knob (B) assembly
39.		Lamp holder	83.	RNK-848	Push knob
40.		Angle	84.	RNK-843	Knob
41.	RTT-177	Power transformer (KU)	85.	RAA-283	Volume knob (L) assembly
	RTT-198	Power transformer (KC)	86.	RAA-284	Volume knob (R) assembly
42.	RDG-022	AC power cord	87.	RAA-282	Volume knob assembly
43.	RSA-028	Power switch S008	88.		Label
44.	REC-272	Strain relief			

Key No.	Part No.	Description
89.		Nylon rivet
90.		Label
91.		Label (KC)
92.		Label (KU)
93.	RRW-082	R/P head label
94.	RRW-118	E head label
95.	RXX-269	Front panel assembly
96.		
97.		
98.		
99.		
100.		
101.		Frame
102.		Shield cover
103.		Switch joint A
104.		Switch joint B
105.	RSH-043	Slide switch
106.	RSH-048	Slide switch
107.	RSK-056	Lever switch (A)
108.	RSK-055	Lever switch (B)
109.	RKN-055	MIC jack
110.	RKN-056	Phone jack
111.	RKB-014 (RKB-016)	Pin jack
112.	RCV-077	Volume 20K (A)
113.	RCV-078	Volume 20K (B)
114.		Main assembly P.C. board
131.		Switch assembly P.C. board
132.	RSG-090	Push switch assembly
140.		Indicator assembly P.C. board
141.		Indicator lamp holder
142.		Meter cushion
143.	BG-30	Indicator



## 10.2 MECHANISM ASSEMBLY

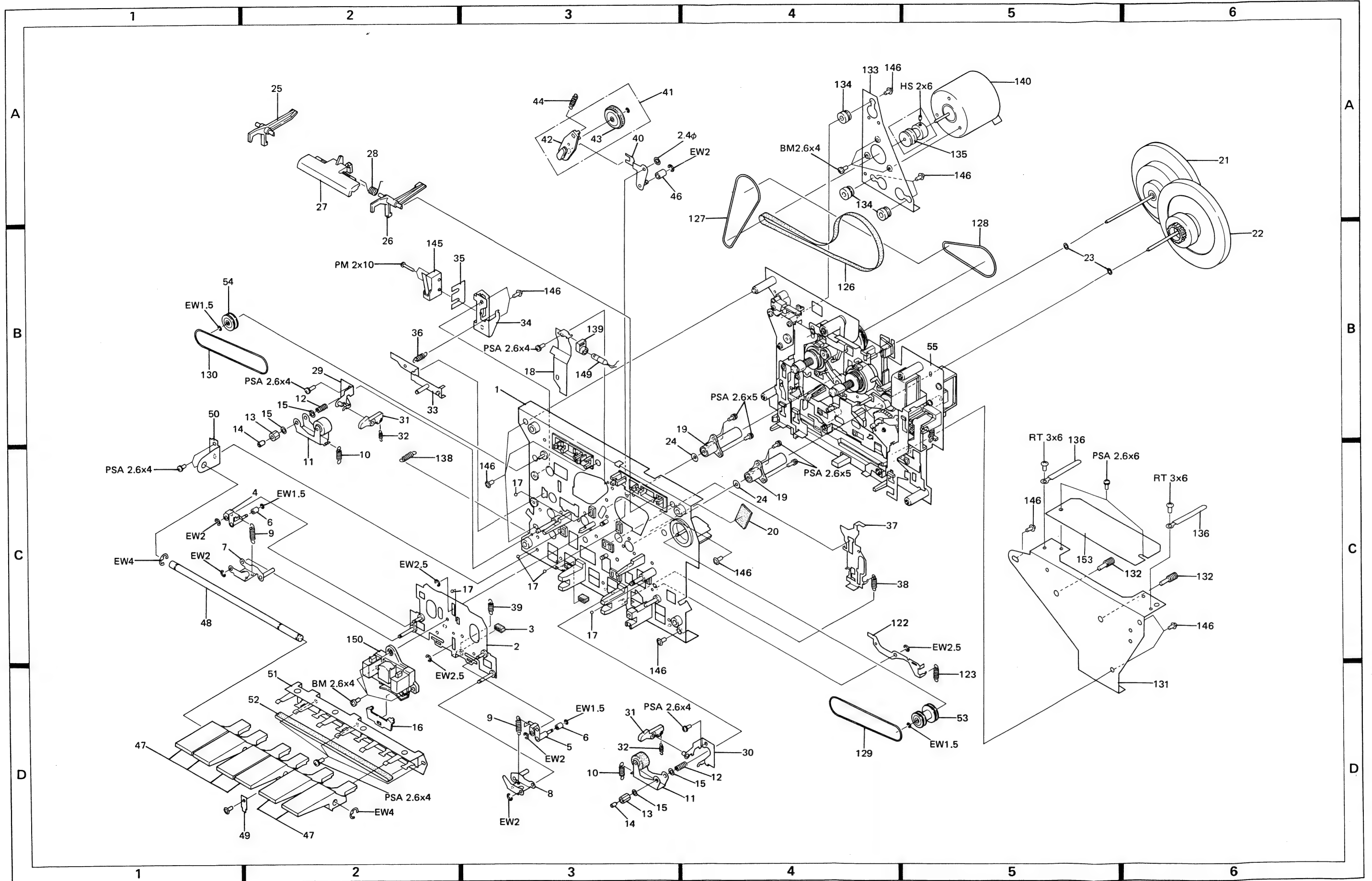
### Parts list

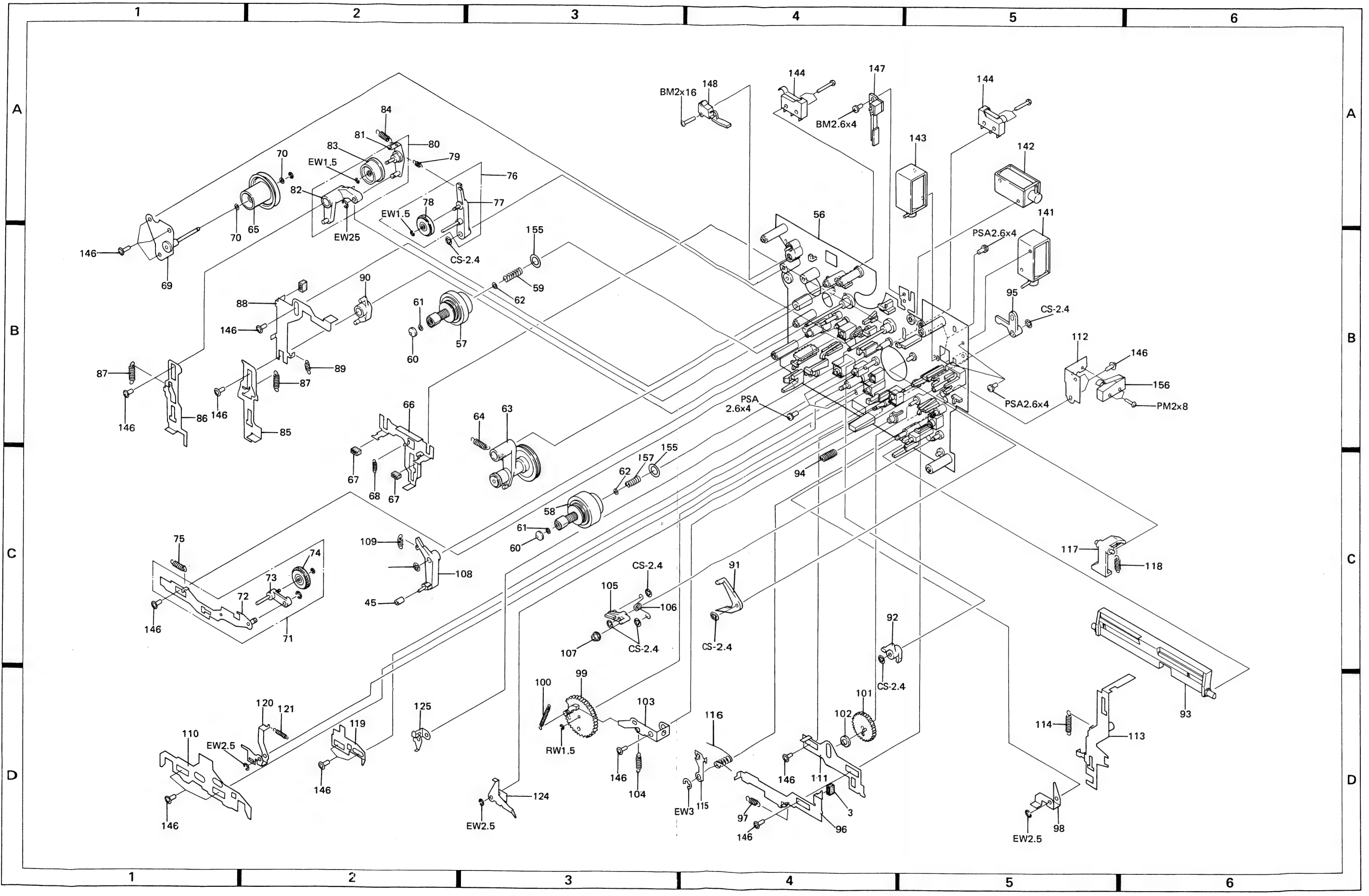
Key No.	Part No.	Description
1.		Fast chassis assembly
2.		Head base assembly
3.	REB-187	Brake rubber shoe
4.	RXB-155	Pinch spring arm L assembly
5.	RXB-156	Pinch spring arm R assembly
6.	RNK-308	Roller
7.		Pinch arm L assembly
8.		Pinch arm R assembly
9.	RBH-592	Spring
10.	RBH-593	Spring
11.	RXB-157	Pinch-arm assembly
12.	RBH-374	Spring
13.	RLB-166	Height adjuster
14.		Socket-head screw M3x3
15.		Washer 3.1φx5.4φx0.25t
16.	RNK-810	Head cord cover
17.	RBH-013	Steel ball
18.		Spring
19.	RXB-160	Holder assembly
20.		Arm cushion
21.	RXB-158	Flywheel assembly (L)
22.	RXB-159	Flywheel assembly (R)
23.		Washer 2.6φx4.7φx0.25t
24.	RBH-030	Washer
25.		REC lever L
26.		REC lever R
27.	RNK-804	Lever
28.	RBH-643	Spring
29.		Half holder bracket L assembly
30.		Half holder bracket R assembly
31.	RNK-802	Half holder arm
32.	RBH-594	Spring
33.		Lever assembly
34.		Switch spacer
35.	REC-278	Switch spacer
36.	RBH-595	Spring
37.		HB operation plate
38.	RBH-596	HB spring
39.	RBH-597	Spring
40.		TU idler operation assembly
41.	RXB-221	TU arm full assembly
42.		TU arm assembly
43.		TU idler
44.	RBH-598	Spring
45.	RNK-808	Roller (B)

Key No.	Part No.	Description
46.	RLB-152	Roller (C)
47.	RNK-762	Cap
48.		Shaft
49.		Shaft holder (A)
50.		Shaft holder (B)
51.	RXB-222	Spring bracket assembly
52.	REB-341	Stopper
53.	RXB-223	Pulley assembly
54.	RNK-292	BT pulley
55.		Chassis full assembly
56.		Chassis assembly
57.	RXB-224	Reel L assembly
58.	RXB-225	Reel R assembly
59.		Spring
60.	RNK-815	Reel cap (B)
61.		Washer 1.7φx3.2φx0.25t
62.		Washer 2.1φx4φx0.13t
63.	RXB-150	TU operation pulley assembly
64.		Spring
65.	RXB-226	REW pulley assembly
66.		Brake plate
67.		Brake shoe
68.	RBH-603	Spring
69.		REW pulley bracket assembly
70.		Washer 2.6φx4.7φx0.25t
71.	RXB-229	Fast operation full assembly
72.		Fast operation assembly
73.		FF arm assembly
74.		FF idler
75.	RBH-604	Spring
76.	RXB-230	REW arm full assembly A
77.		REW arm assembly A
78.		REW idler A
79.	RBH-605	REW spring A
80.	RXB-232	REW arm full assembly B
81.		REW arm B assembly
82.		REW operation arm
83.		REW idler B
84.	RBH-606	REW spring B
85.		FF operation plate
86.		REW operation plate
87.	RBH-607	Spring
88.		Brake plate
89.	RBH-623	Spring
90.		FF operation arm
91.	RNK-750	Switch arm A
92.	RNK-751	Switch arm B
93.	RNK-764	Button stopper
94.	RBH-608	Spring
95.		Lever

Key No.	Part No.	Description
96.		REC operation plate
97.	RBH-609	Spring
98.		REC lever
99.	RXB-146	Gear A assembly
100.	RBH-610	Spring
101.	RNK-749	Gear B
102.	RLB-217	Gear roller
103.		Gear stopper
104.	RBH-611	Spring
105.		Lever
106.	RBH-669	Spring
107.	RLB-162	Roller
108.		Lever assembly
109.	RBH-613	Spring
110.		Operation plate A
111.		Operation plate B
112.		Pause plate bracket
113.		Pause operation assembly
114.	RBH-614	Spring
115.		Latchet plate
116.	RBH-615	Spring
117.		Pause arm
118.	RBH-616	Spring
119.		Plate
120.		Pause arm A
121.	RBH-617	Spring
122.		Pause arm B
123.	RBH-618	Spring
124.		Pause lever
125.	RNF-601	Lever
126.	REB-352	Capstan belt
127.	REB-353	REW pulley belt
128.	REB-354	TU belt
129.	REB-350	Counter belt
130.	REB-398	BT belt
131.		Bearing
132.	RNK-761	Screw
133.		Motor bracket
134.	REB-335	Rubber
135.	RLB-165	Pulley
136.		Cord clamper
137.		Cord clamper
138.	RBH-642	Spring
139.	REB-297	Lamp holder
140.	RXM-061	Motor
141.	RXP-072	Pulunger solenoid SL003
142.	RXP-073	Pulunger solenoid SL001
143.	RXP-074	Pulunger solenoid SL002
144.	RSF-022	Micro switch S005, S006
145.	RSF-024	Micro switch (B) S004

Key No.	Part No.	Description
146.		Screw 2.6φx6
147.	RSN-028	Switch S002
148.	RSN-027	Lever switch S001
149.	REL-072	Lamp PL001
150.	RXB-237 (RXB-285)	Sub-head assembly
151.	RKP-144	Connector assembly (E)
152.	RKP-117	Connector assembly (B)
153.		Connector assembly
154.		Head assembly P.C. board
155.		Washer 6φx9.5φx0.25t
156.	RSF-025	Micro switch S003





# 11. SCHEMATIC DIAGRAMS, P.C. BOARD PATTERNS AND PARTS LIST

**NOTES:**

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	56 × 10 <sup>1</sup>	561	RD¼PS	561J
47kΩ	47 × 10 <sup>3</sup>	473	RD¼PS	473J
0.5Ω	0R5		RN2H	05K
1Ω	010		RSIP	010K

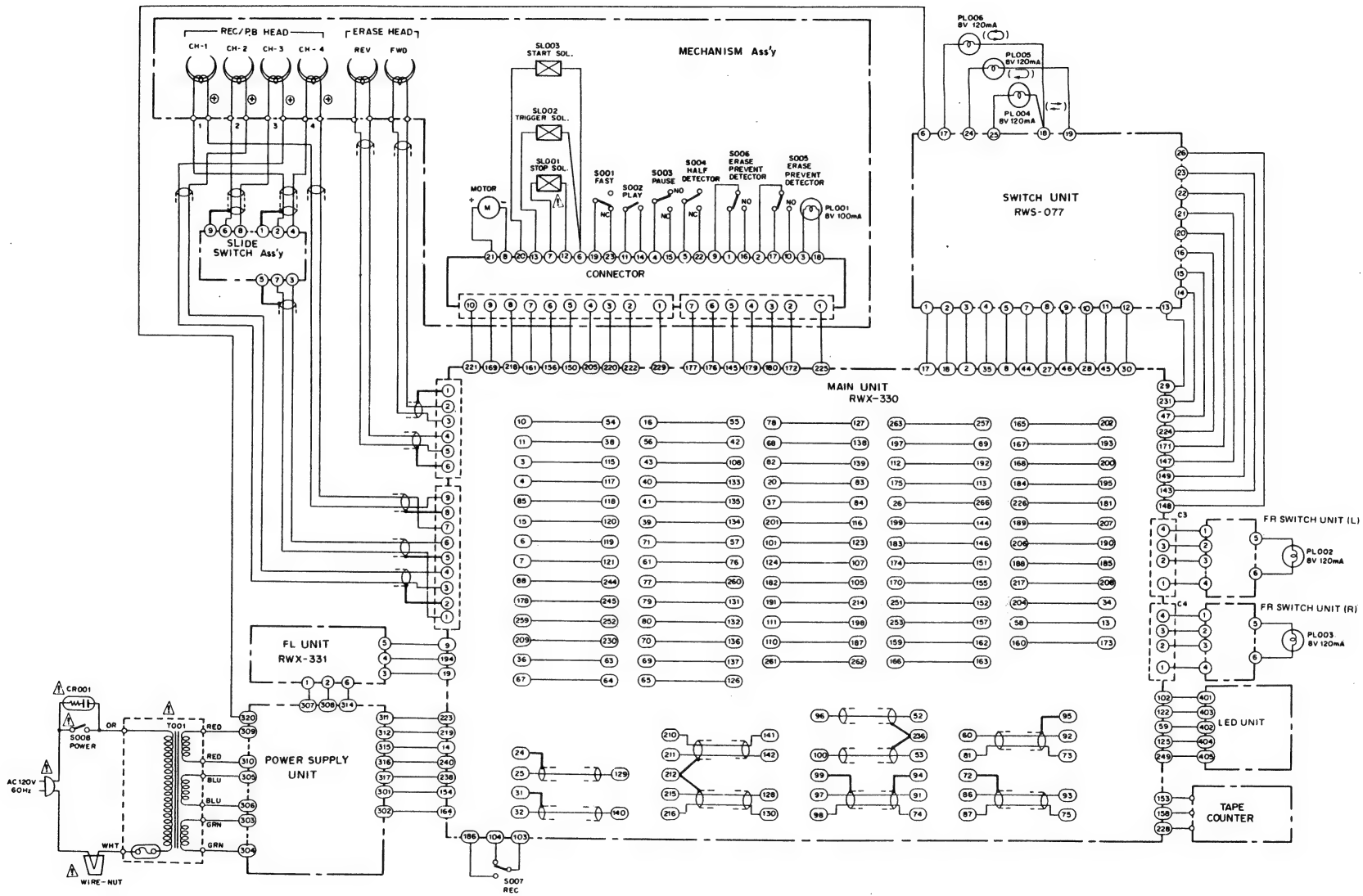
Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	562 × 10 <sup>1</sup>	5621	RN¼SR	5621F
--------	-----------------------	------	-------	-------

## 11.1 MISCELLANEOUS PARTS LIST

UNIT		OTHERS	
Part No.	Description	Part No.	Symbol & Description
RWX-330 (KU)	Main unit	RDG-022	Power cord
RWX-388 (KC)		RWX-109	CR001 Spark killer (KU)
RWR-075	Power supply unit	RWX-150	CR001 Spark killer (KC)
RWS-077	Switch unit	RKP-138	Connector 7P
RWX-331	FL unit	RKP-139	Connector 10P
<b>SWITCHES</b>		RXM-061	M001 Motor
Part No.	Symbol & Description	RXP-072	SL003 Start solenoid
RSF-026	S007 Microswitch	RXP-073	SL001 Stop solenoid
RSA-028	S008 Power switch	RXP-074	SL002 Trigger solenoid
RSF-022	S005, S006 Microswitch	RXB-237	Sub-head base ass'y
RSF-024	S004 Microswitch (B)	(RXB-285)	
RSF-025	S003 Microswitch		
RSN-028	S002 Leaf switch		
RSN-027	S001 Lever switch		
<b>TRANSFORMER</b>			
Part No.	Symbol & Description		
RTT-177	T001 Power transformer (KU)		
RTT-198	T001 Power transformer (KC)		
<b>LAMPS</b>			
Part No.	Symbol & Description		
REL-075	PL002, PL003 Lamp		
REL-076	PL004, PL005, PL006 Lamp		
REL-072	PL001 Lamp		

11.2 CONNECTION DIAGRAM





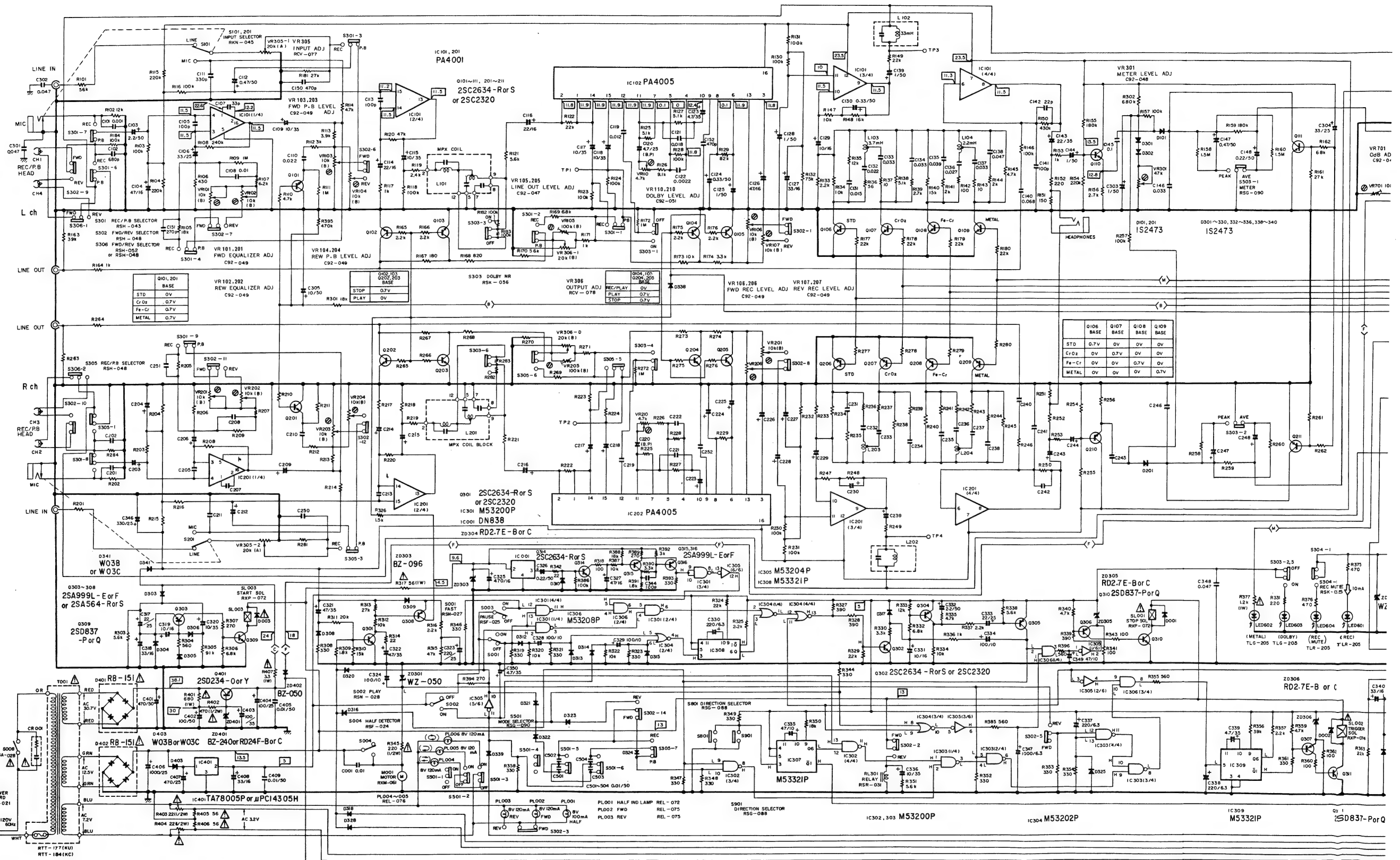
11.3 SCHEMATIC DIAGRAM

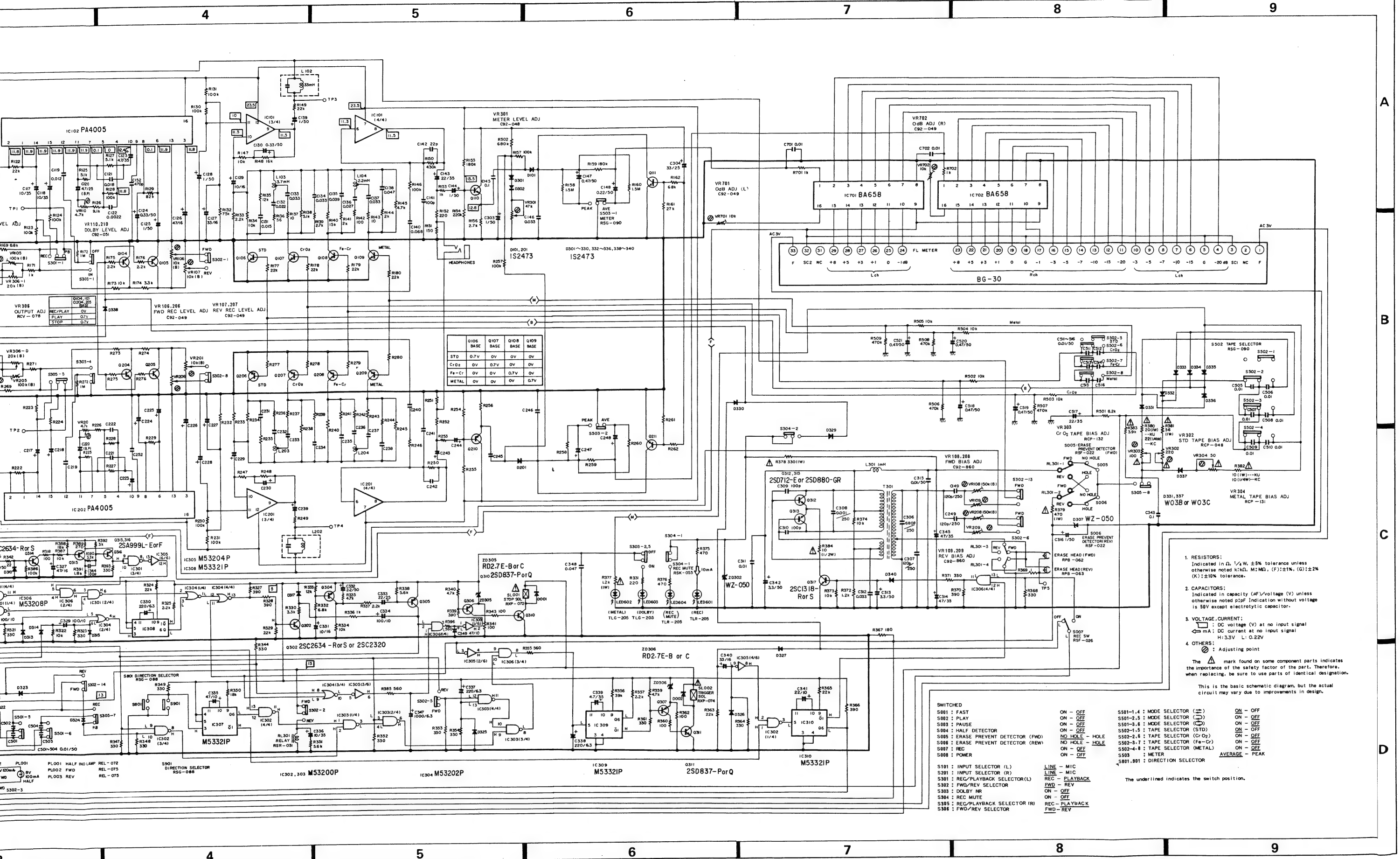
A

B

C

D





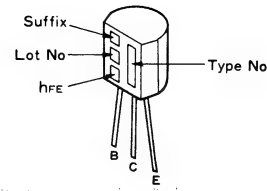
Q106	Q107	Q108	Q109
BASE	BASE	BASE	BASE
STD	0.7V	0V	0V
Cr-O2	0V	0.7V	0V
Fa-Cr	0V	0V	0.7V
METAL	0V	0V	0.7V

- RESISTORS:**  
Indicated in Ω, 1/4W, ±5% tolerance unless otherwise noted (k): M: 1/2W, (F): ±1%, (G): ±2% (K): ±10% tolerance.
  - CAPACITORS:**  
Indicated in capacity (pF/voltage (V) unless otherwise noted p/pF Indication without voltage is 50V except electrolytic capacitor.
  - VOLTAGE, CURRENT:**  
↔ DC voltage (V) at no input signal  
↔ mA: DC current at no input signal  
H: 1.33V L: 0.22V
  - OTHERS:**  
⊗: Adjusting point  
⚠: The mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

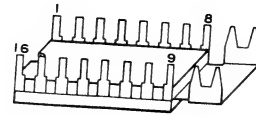
- SWITCHED**
- |                                    |                |                                 |                |
|------------------------------------|----------------|---------------------------------|----------------|
| S001: FAST                         | ON - OFF       | S501-1,4: MODE SELECTOR ( )     | ON - OFF       |
| S002: PLAY                         | ON - OFF       | S501-2,5: MODE SELECTOR ( )     | ON - OFF       |
| S003: PAUSE                        | ON - OFF       | S501-3,6: MODE SELECTOR ( )     | ON - OFF       |
| S004: HALF DETECTOR                | ON - OFF       | S501-5,6: MODE SELECTOR ( )     | ON - OFF       |
| S005: ERASE PREVENT DETECTOR (FWD) | NO HOLE - HOLE | S502-1,6: TAPE SELECTOR (STD)   | ON - OFF       |
| S006: ERASE PREVENT DETECTOR (REW) | NO HOLE - HOLE | S502-2,6: TAPE SELECTOR (Cr-O2) | ON - OFF       |
| S007: REC                          | ON - OFF       | S502-3,7: TAPE SELECTOR (Fa-Cr) | ON - OFF       |
| S008: POWER                        | ON - OFF       | S502-4,8: TAPE SELECTOR (METAL) | ON - OFF       |
|                                    |                | S503: METER                     | AVERAGE - PEAK |
|                                    |                | S801-001: DIRECTION SELECTOR    |                |
- The underlined indicates the switch position.

Appearance of Transistors and ICs

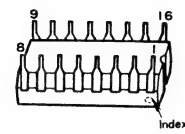
2SA999L  
2SC2320L



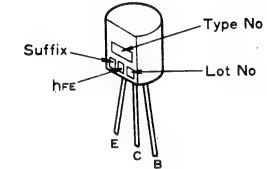
PA4001



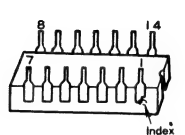
PA4005  
BA658



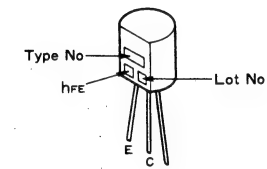
2SA564



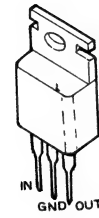
M5320P  
M5320P  
M5320P  
M5320P  
M5321P



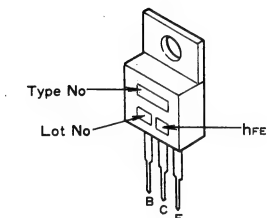
2SC2634  
2SC1318



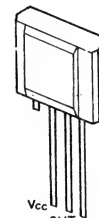
TA78005P



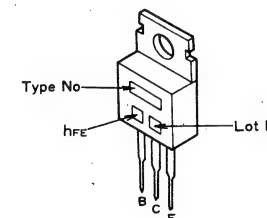
2SD712



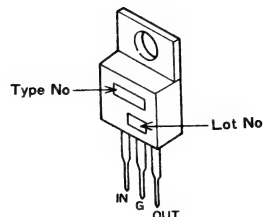
DN838



2SD837  
2SD234



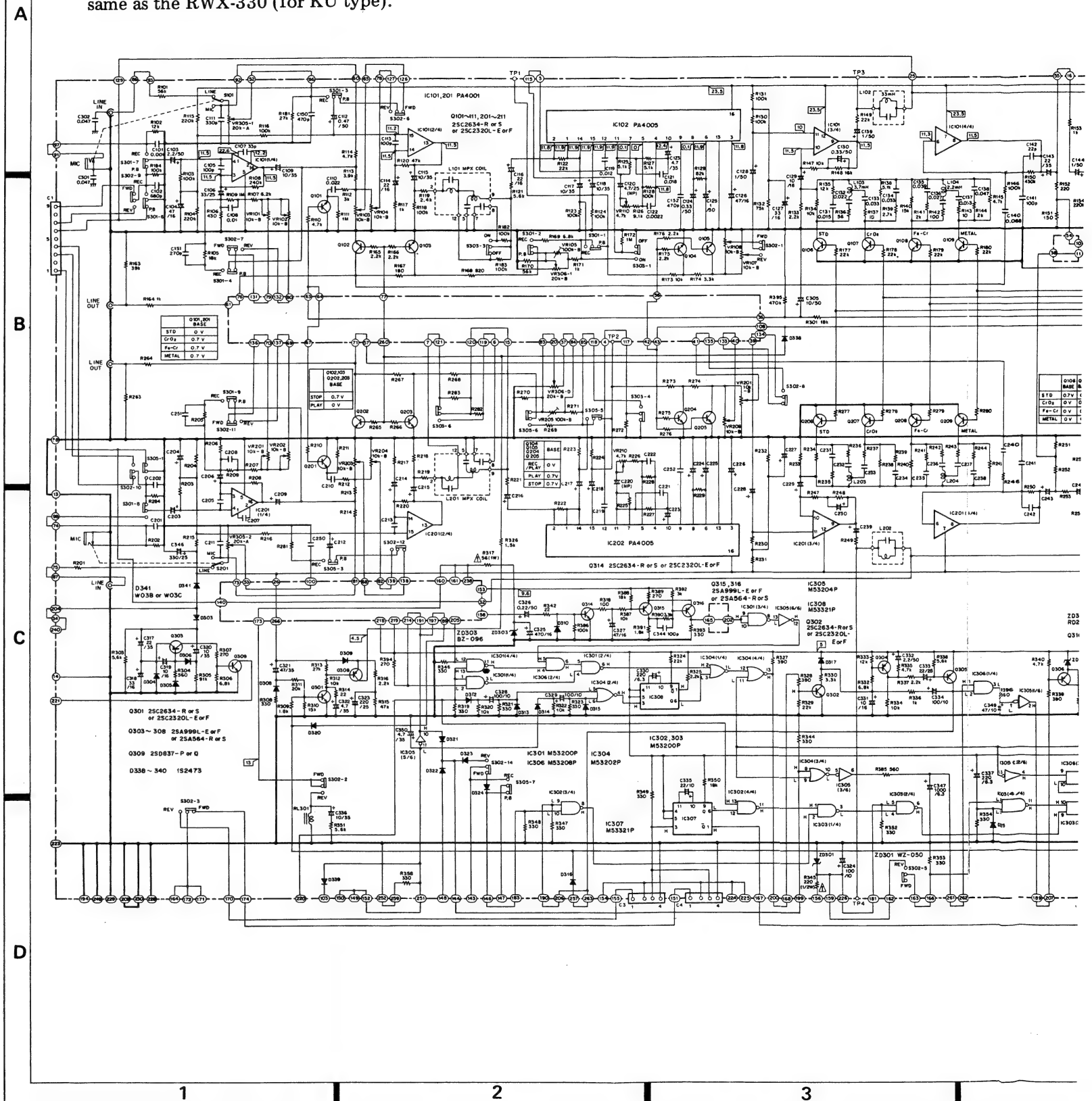
μPC14305H



11.4 MAIN UNIT (RWX-330)

Main Unit (RWX-388)

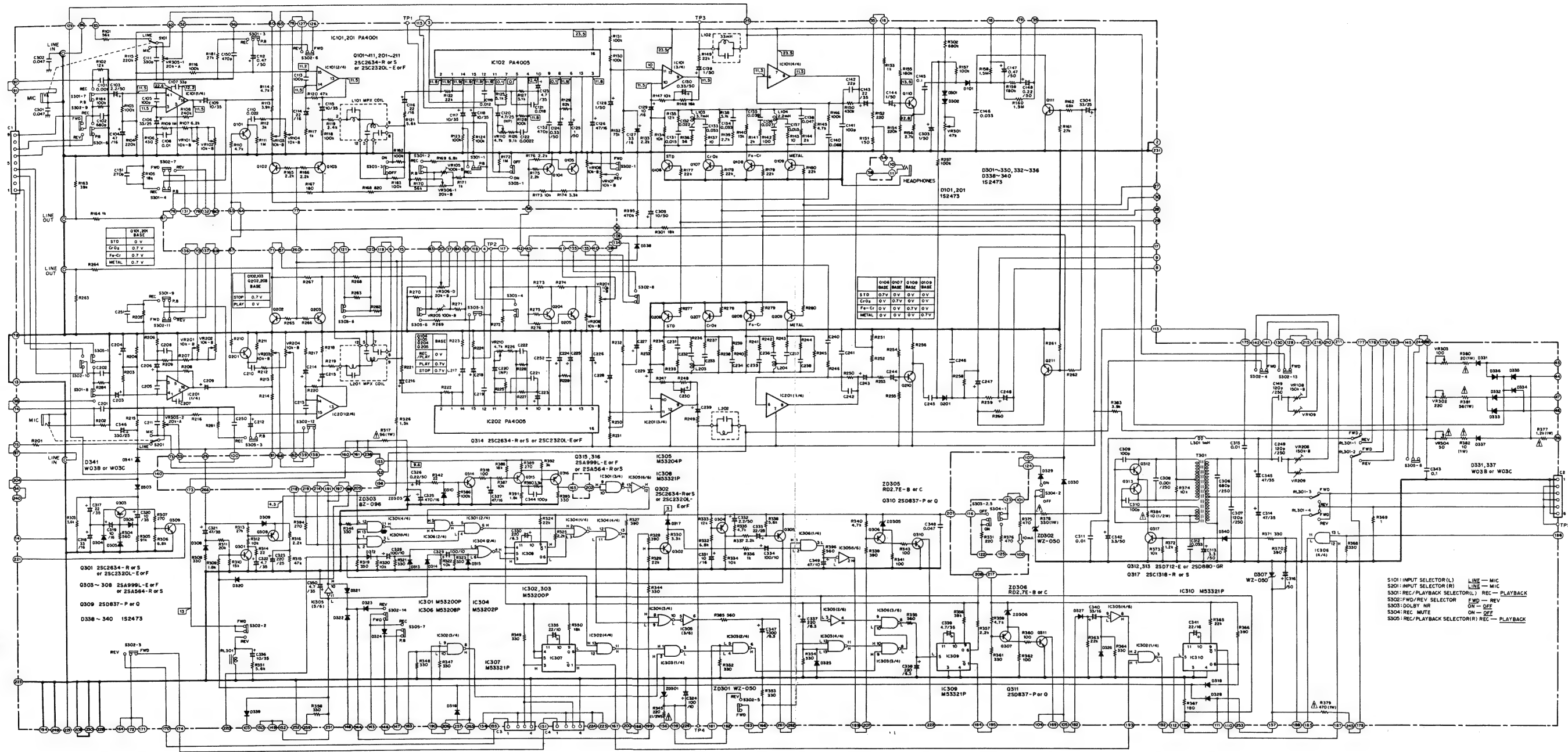
The circuitry of the Main unit RWX-388 is the same as the RWX-330 (for KU type).

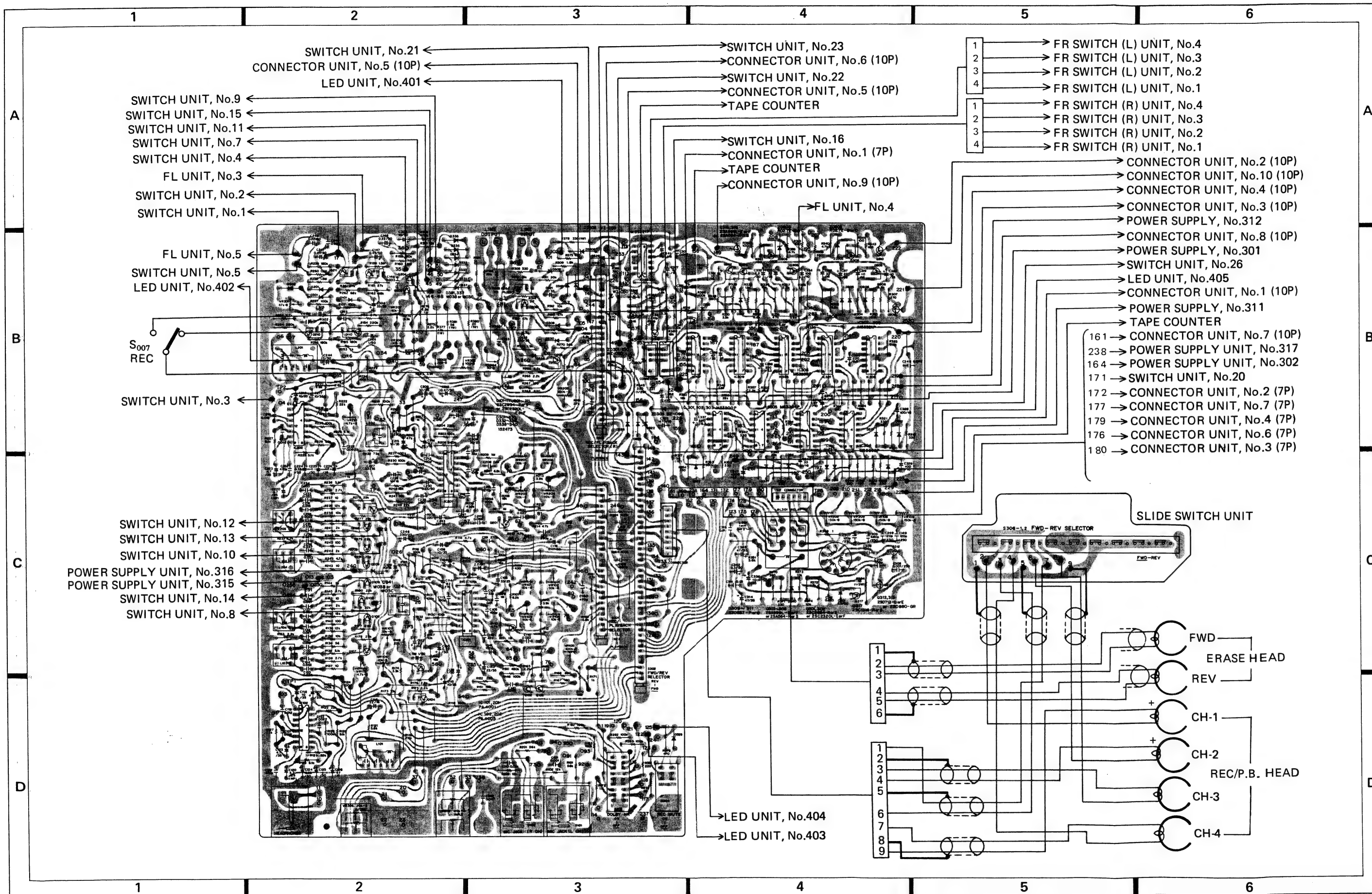


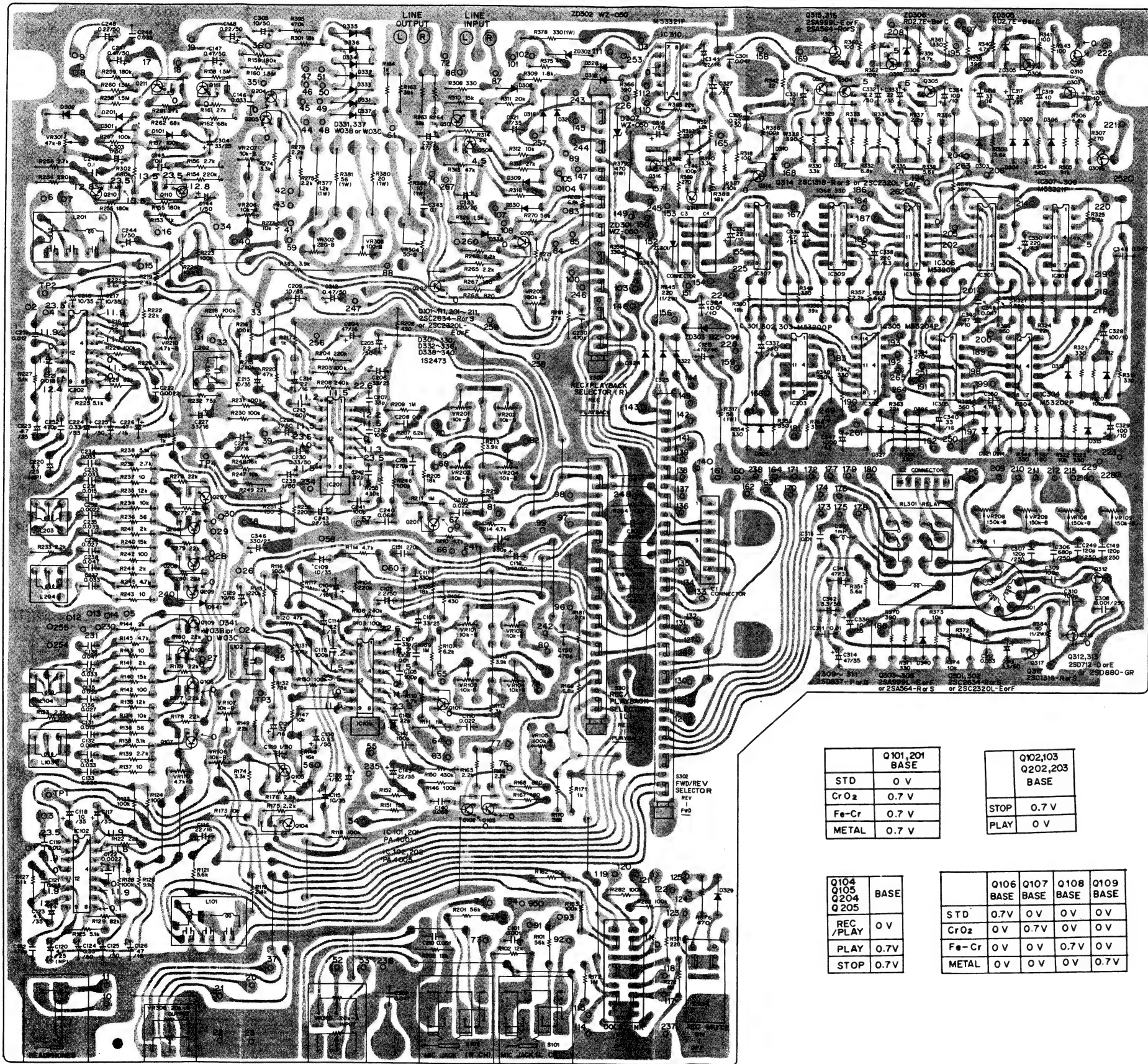
# 11.4 MAIN UNIT (RWX-330)

## Main Unit (RWX-388)

The circuitry of the Main unit RWX-388 is the same as the RWX-330 (for KU type).







	Q101,201 BASE
STD	0 V
CrO <sub>2</sub>	0.7 V
Fe-Cr	0.7 V
METAL	0.7 V

	Q102,103 BASE
STOP	0.7 V
PLAY	0 V

Q104 Q105 Q204 Q205	BASE
REC/PLAY	0 V
PLAY	0.7 V
STOP	0.7 V

	Q106 BASE	Q107 BASE	Q108 BASE	Q109 BASE
STD	0.7 V	0 V	0 V	0 V
CrO <sub>2</sub>	0 V	0.7 V	0 V	0 V
Fe-Cr	0 V	0 V	0.7 V	0 V
METAL	0 V	0 V	0 V	0.7 V

S302  
FWD/REV  
SELECTOR  
REV  
1  
FWD

## Main Unit (RWX-330) of Parts List

## CAPACITORS

Part No.	Symbol & Description
CCDSL 102K 50	C101, C201
CEANL 2R2P 50	C103, C203
CEANL 330P 25	C106, C206
CEANL R47M 50	C112, C212
CEA R33M 50	C124, C130, C224, C230
CEA R22M 50	C148, C248, C326
CEA R47M 50	C147, C247
CEA 010M 50	C125, C128, C139, C144, C225, C228, C239, C244, C303, C316 C332
CEA 2R2P 50	C313, C342
CEA 3R3P 50	
CEA 100P 50	C305
CEA 4R7P 35	C123, C223, C322, C339, C350
CEA 100P 35	C109, C115, C117, C118, C209, C215, C217, C218, C320, C336
CEA 220P 35	C143, C317, C243
CEA 330P 25	C304
CEA 470P 35	C314, C321, C345
CEA 221P 25	C323
CEA 331P 25	C346
CEA 100P 16	C129, C229, C319, C331
CEA 220P 16	C114, C116, C214, C216
CEA 330P 16	C127, C227, C318, C340
CEA 470P 16	C104, C126, C204, C226, C327
CEA 471P 16	C325
CEA 101M 10	C334
CEA 220P 10	C341
CEA 470P 10	C349, C335
CEA 101P 10	C324, C328, C329
CEA 221P 6R3	C330, C338, C337
CEA 4R7M 25NP	C120, C220
CQSA 331K 50	C111, C211
CQSA 681K 50	C102, C202
CQSA 121J 250	C307
CQSA 681J 250	C306
CQSA 102J 250	C308
CCDSL 271K 50	C151, C251
CCDSL 220K 50	C142, C242
CCDSL 330K 50	C107, C207
CCDSL 101K 50	C105, C113, C141, C205, C213, C241, C309, C310, C344
CKDYF 473Z 50	C301, C302, C348
CQMA 222K 50	C122, C222
CQMA 103K 50	C108, C208
CQMA 123K 50	C119, C219
CQMA 153K 50	C131, C231
CQMA 183K 50	C121, C221
CQMA 223K 50	C110, C210, C132, C232
CEA 220M 25	C333
CEA 102M6R3	C347
CQSA 121K 250	C307, C149, C249

Part No.	Symbol & Description
CQMA 333K 50	C137, C133, C134, C136, C146, C237 C233, C234, C236, C246, C312
CQMA 104K 50	C343, C145, C245
CCDSL 103K 50	C311, C315
CCDSL 471K 50	C152, C252, C150, C250
CQMA 273K 50	C136, C236
CQMA 393K 50	C135, C235
CQMA 473K 50	C138, C238
CQMA 683K 50	C140, C240

## SWITCH

Part No.	Symbol & Description
RSH-043	S301 Slide switch
RSH-048	S302, S305 Slide switch
RSK-056	S303 Lever switch (A)
RSK-055	S304 Lever switch (B)

## COILS

Part No.	Symbol & Description
RTF-040	L101, L201 MPX coil
RTF-055	L102, L202 Trap coil
RTF-065	L103, L203 Peaking coil (A)
RTF-066	L104, L204 Peaking coil (B)
RTF-057	L301 Line coil
RTD-023	T301 OSC coil

## SEMICONDUCTORS

Part No.	Symbol & Description
2SC2634 (2SC2320L)	Q101-Q111, Q201-Q211, Q301, Q302, Q314
2SA999L (2SA564)	Q303-Q308, Q315, Q316
2SD712 (2SD880)	Q312, Q313
2SD837	Q309-Q311
2SC1318	Q317
1S2473	D101, D201, D301-D306, D308-D310, D312-D318, D320-D330, D332-D336, D338-D340
W03B (W03C)	D331, D337, D341
WZ-050	ZD301, ZD302, ZD307
BZ-096	ZD303
RD.2.7E	ZD305, ZD306
PA4001	IC101, IC201
PA4005	IC102, IC202
M53200P	IC301-IC303
M53202P	IC304
M53204P	IC305
M53208P	IC306
M53321P	IC307-IC310

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

## RESISTORS

Part No.	Symbol & Description
C92-049	VR101–VR104, VR106, VR107 VR201–VR204, VR206, VR207 Semi-fixed 10K (B)
C92-051	VR110, VR210 Semi-fixed 4.7K (B)
C92-047	VR105, VR205 Semi-fixed 100K (B)
C92-860	VR108, VR109, VR208, VR209 Semi-fixed 150K (B)
C92-048	VR301 Semi-fixed 47K (B)
RCP-048	VR302 Semi-fixed 220 (B)
RCP-132	VR303 Semi-fixed 1W 100 (B)
RCP-131	VR304 Semi-fixed 1W 50 (B)
RCV-077	VR305 Volume 20K (A)
RCV-078	VR306 Volume 20K (B)
RD½PM □□□ J	R101–R184, R201–R284, R301–R316, R318–R344, R346–R376, R383, R385–R396
RS1PF □□□ J	R377–R382, R317
RD¼PSF □□□ J	R345, R384

## OTHERS

Part No.	Symbol & Description
RSR-031	RL301 Relay
RKN-055	S101, S201 MIC jack
RKN-056	Headphone jack
RKB-014	Pin jack (4P)
(RKB-016)	

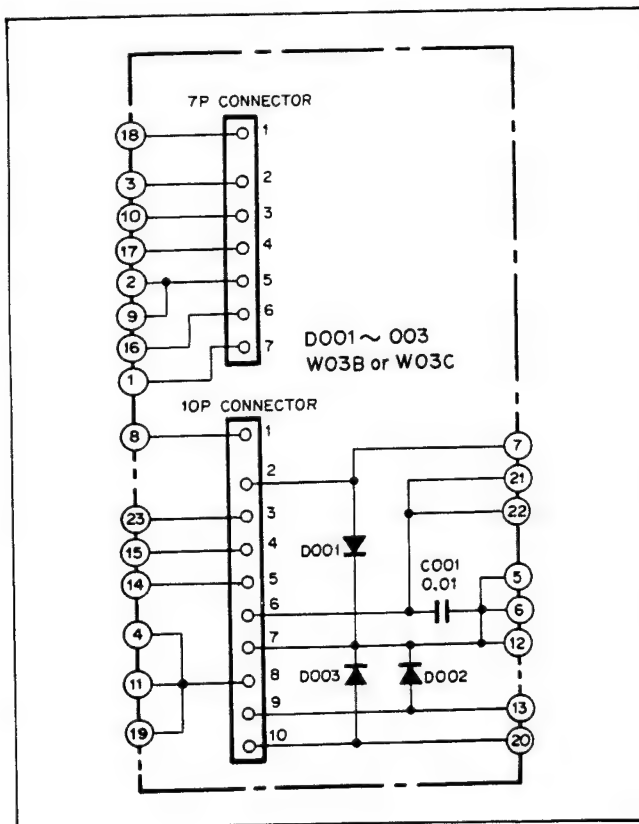
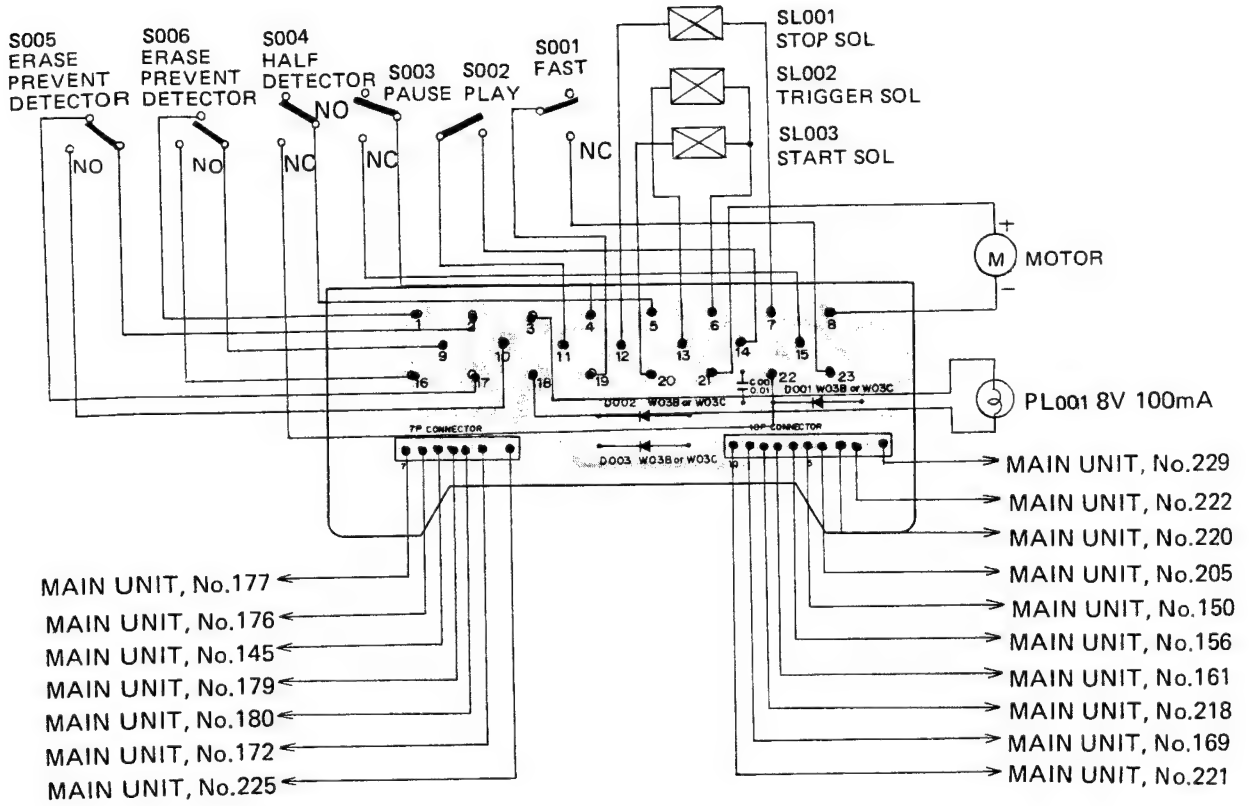
## Main Unit (RWX-388)

The parts of Main unit (RWX-388) are the same as RWX-330 (for KU type) except for following sections;

Part No.	Symbol & Description
RD1¼PSF 220J	R380
RS1PF 560J	R381
RD¼PSF 100J	R381
RBF-041	Ceramic tube
RBF-042	Ceramic tube



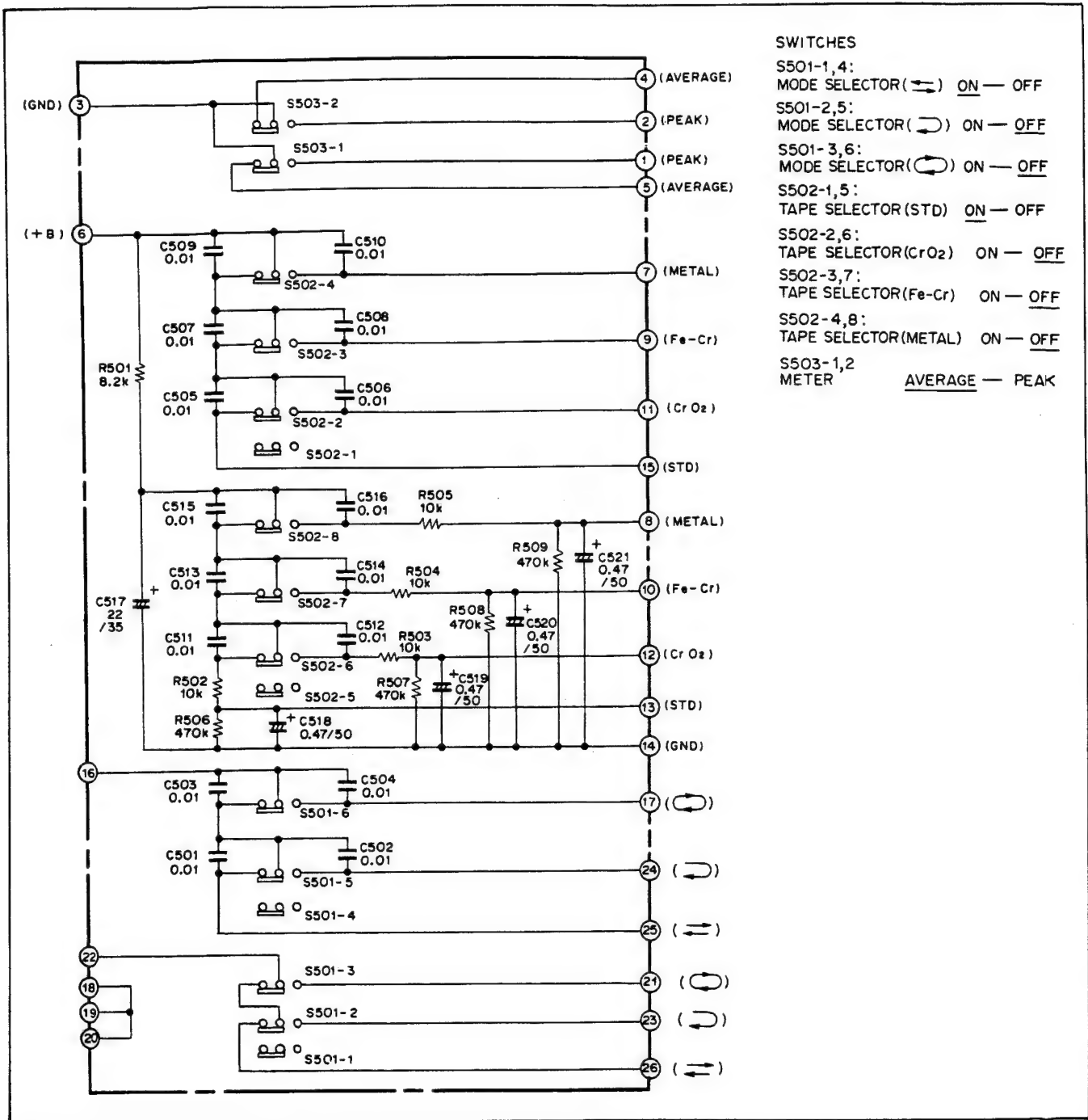
11.5 CONNECTOR UNIT



Parts List

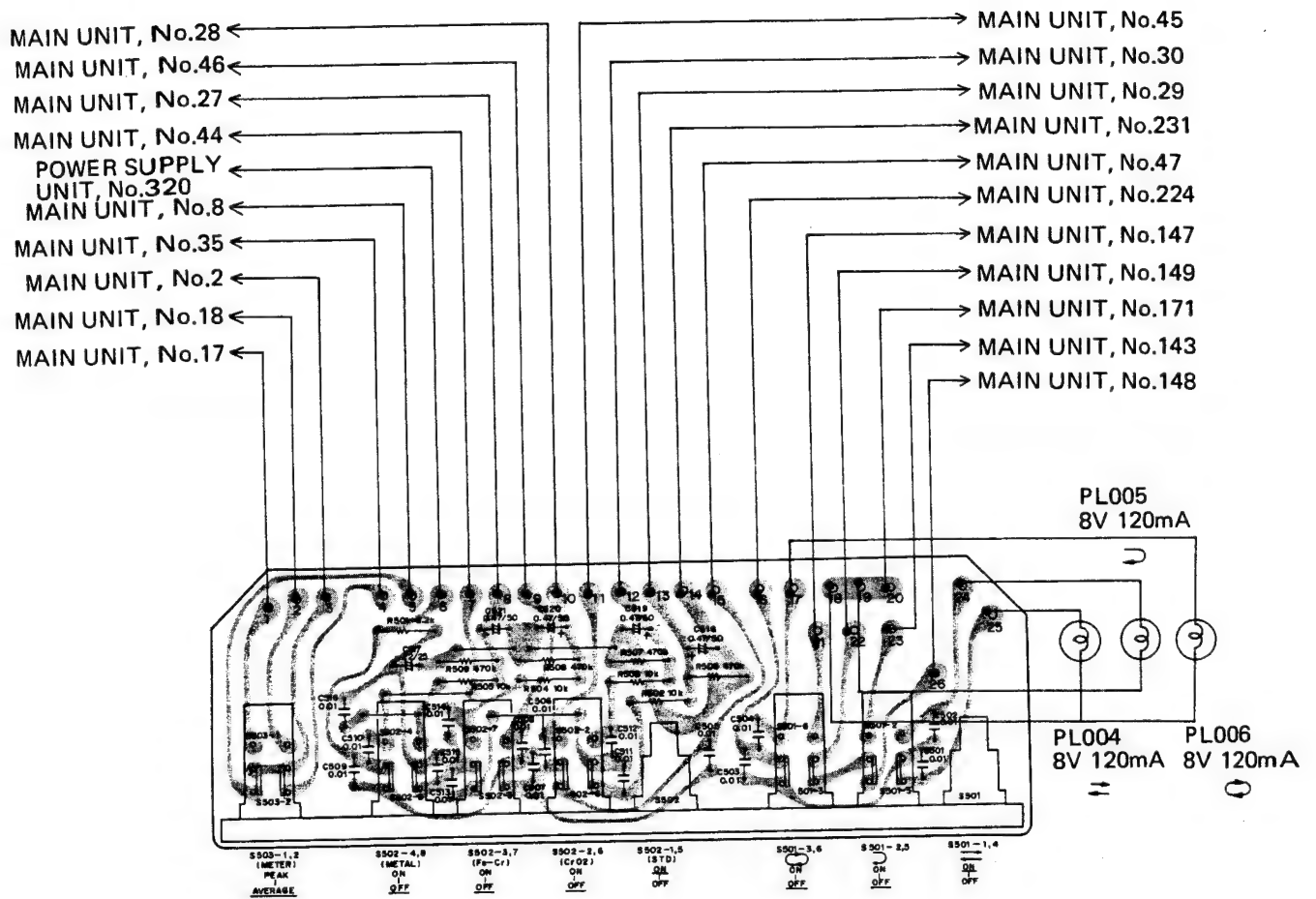
Part No.	Symbol & Description
CKDYF 103Z 50	C001
W03B (W03C)	D001-D003

## 11.6 SWITCH UNIT (RWS-077)

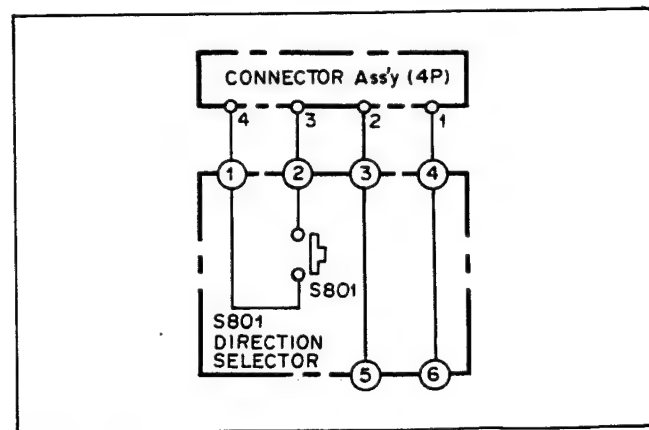
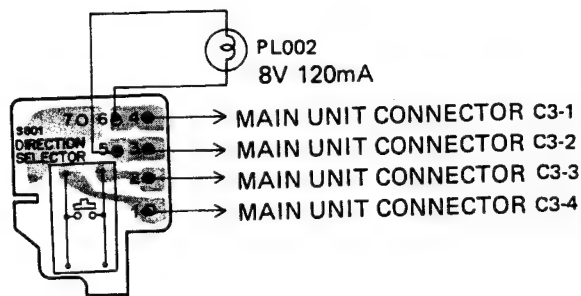


### Parts List

Part No.	Symbol & Description
RSG-090	S501-S503 Push switch assembly
CKDYF 103Z 50	C501-C516
CEA 220P 25	C517
CEA R47P 50	C518-C521
RD¼PM □□□ J	R501-R509



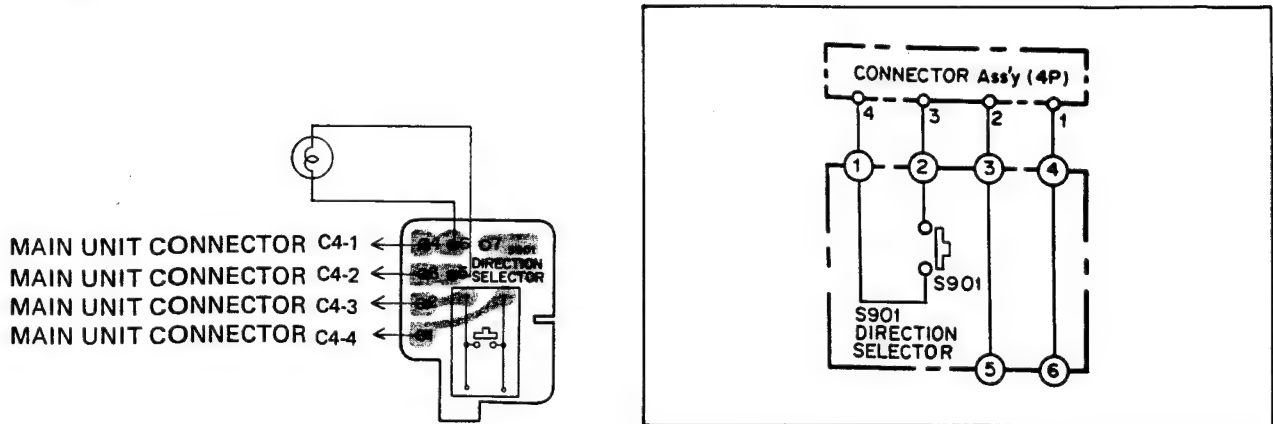
11.7 FR SWITCH UNIT L



Parts List

Part No.	Symbol & Description
RSG-088 RKP-140	S801 Push switch Connector assembly (4P) A

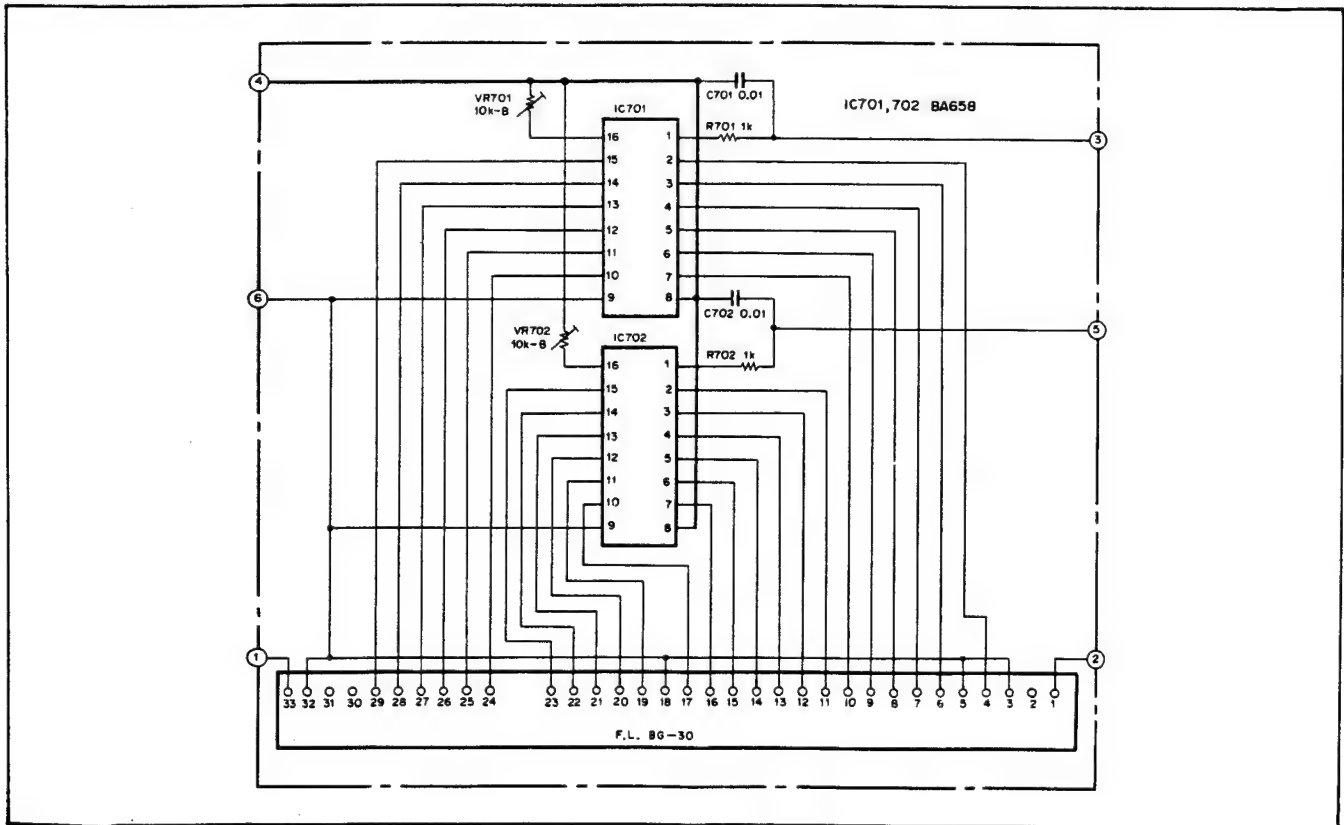
## 11.8 FR SWITCH UNIT R

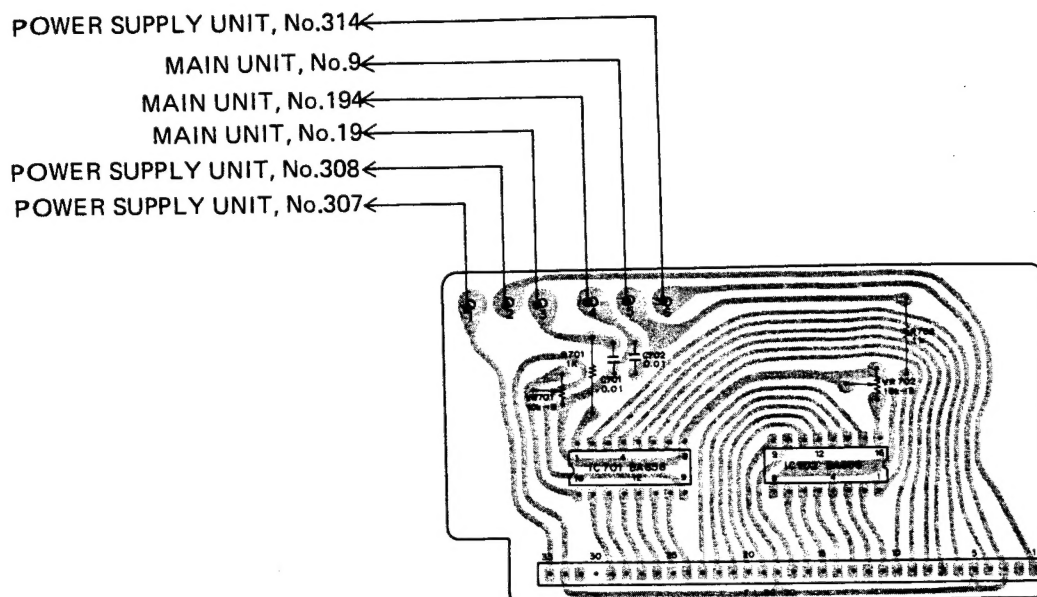


### Parts List

Part No.	Symbol & Description
RSG-088	S901 Push switch
RKP-141	Connector assembly(4P) B

## 11.9 FL UNIT (RWX-331)

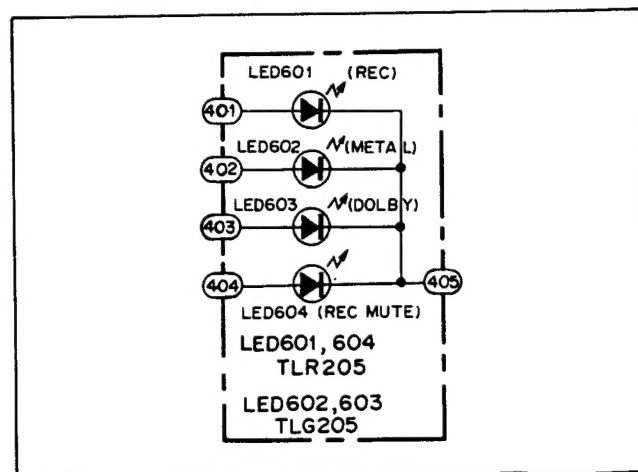
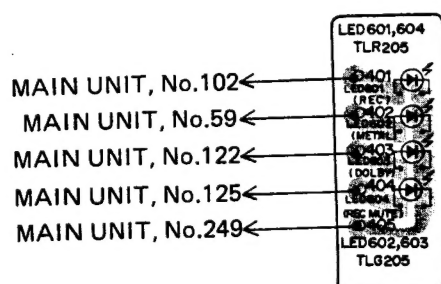




Parts List

Part No.	Symbol & Description	Part No.	Symbol & Description
BG-30	Level meter	C92-049	VR701, VR702 Semi-fixed 10K (B)
BA658	IC701, IC702	RD4PS 102J	R701, R702
CKDYF 103Z 50	C701, C702		

11.10 LED UNIT



Parts List

Part No.	Symbol & Description
TLR205	LED601, LED604
TLG205	LED602, LED603

# 11.11 POWER SUPPLY UNIT (RWR-075)

## Parts List

### CAPACITORS

Part No.	Symbol & Description
CEA 471P 50	C401
CEA 101P 50	C402
CEA 101P 35	C403
CEA 101P 25	C404
CKDYF 103Z 50	C405, C409
CEA 102P 25	C406
CEA 471P 25	C407
CEA 330P 16	C408

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

### RESISTORS

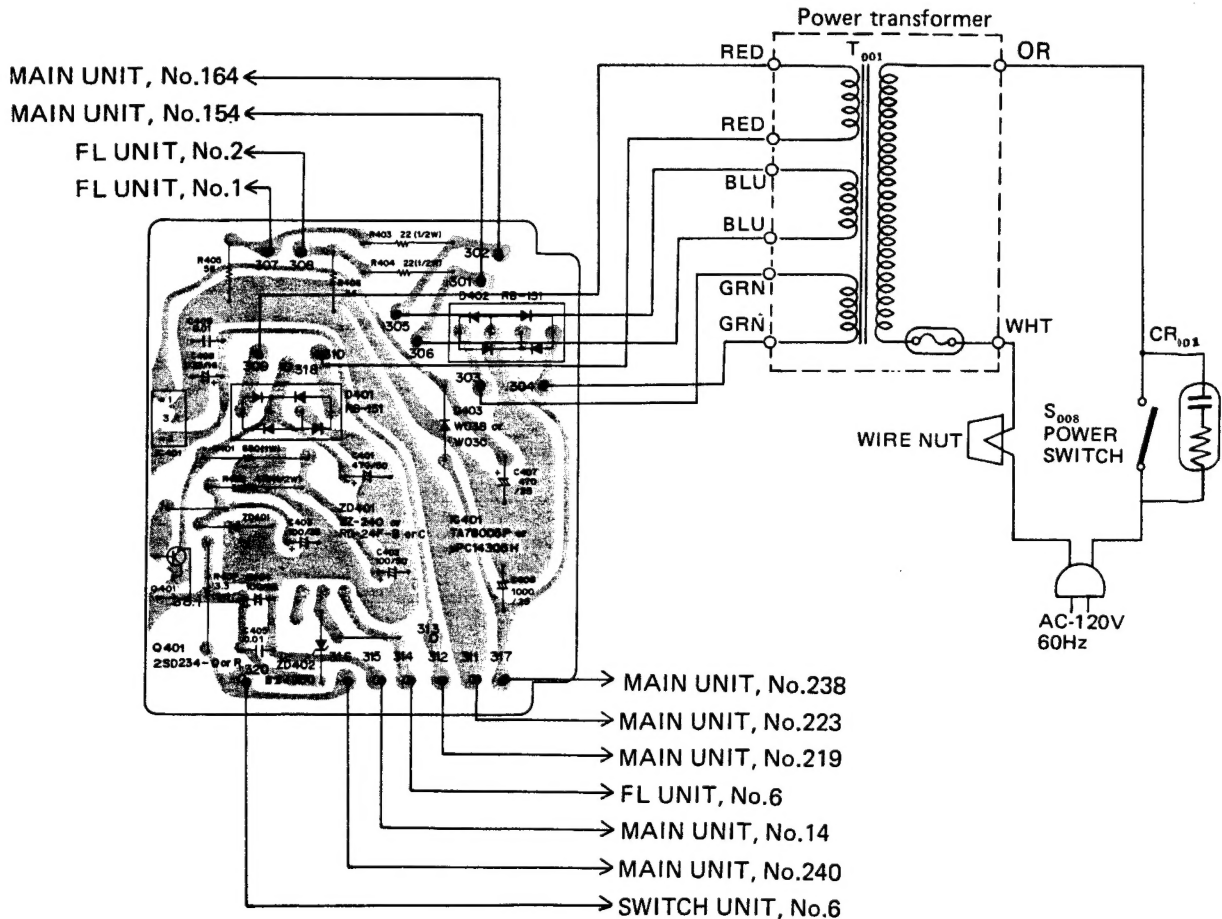
Part No.	Symbol & Description
RD $\frac{1}{2}$ PSF $\square\square\square$ J	R402-R404
RS1PSF 681J	R401
RS1PF 3R3J	R407
RD $\frac{1}{2}$ PM 560J	R405, R406

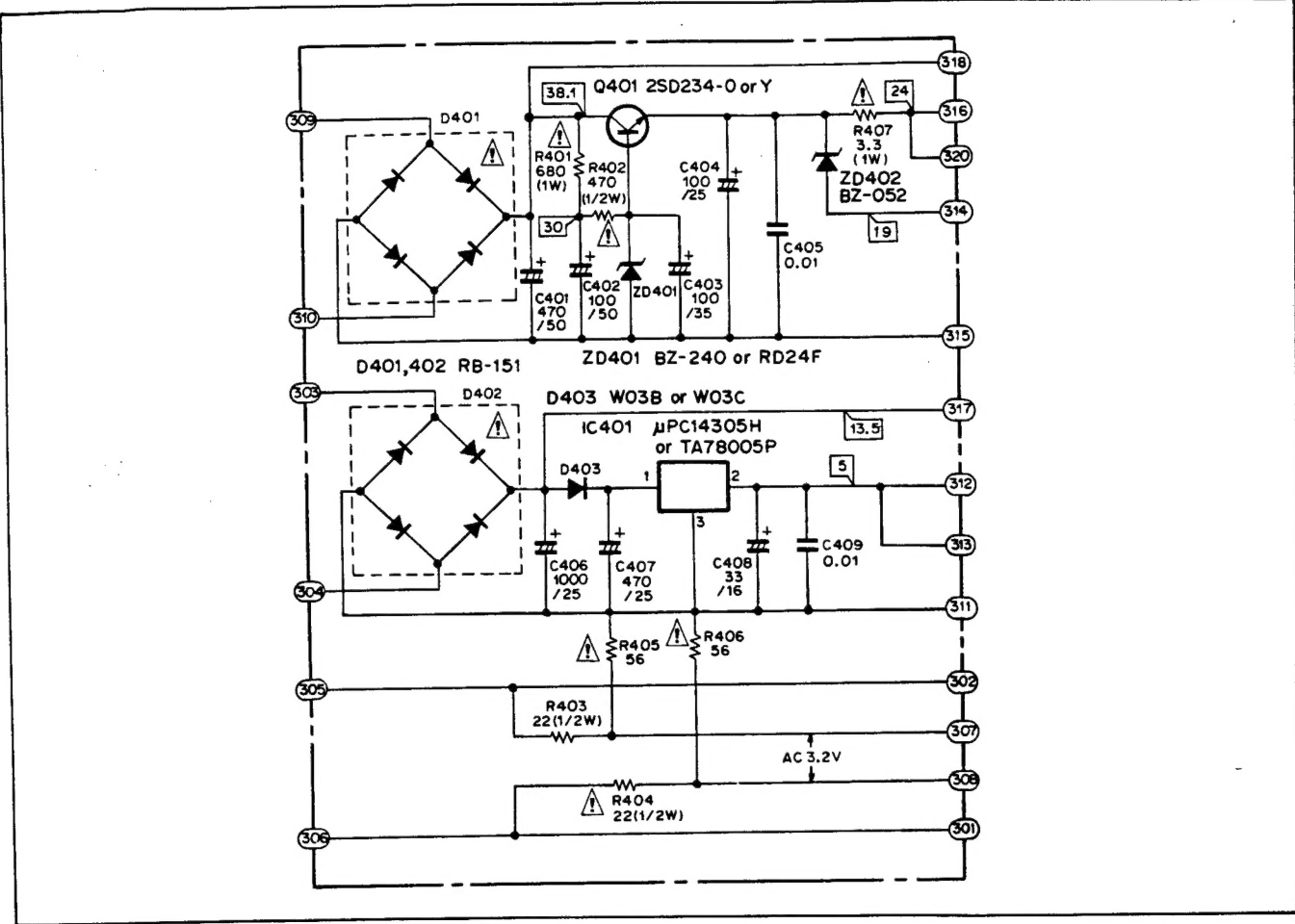
### SEMICONDUCTORS

Part No.	Symbol & Description
2SD234	Q401
$\mu$ PC14305H (TA78005P)	IC401
RB-151	D401, D402
W03B (W03C)	D403
BZ-240 (RD24F)	ZD401
BZ-050	ZD402

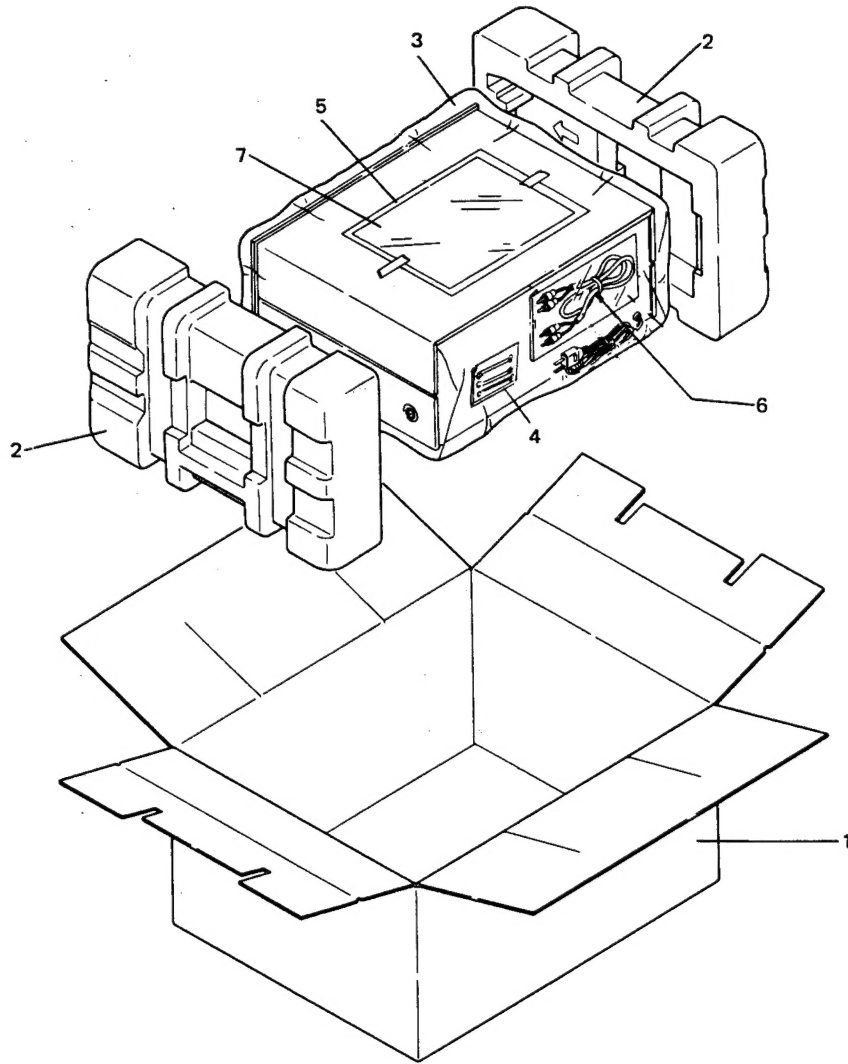
### OTHERS

Part No.	Symbol & Description
RKH-005	Insulator
REE-051	Insulator
RBA-039	Screw





# 12. PACKING



## Parts List

Key No.	Part No.	Description	Key No.	Part No.	Description
1.	RHG-292	Packing case (KU)	5.	RHL-018	Vinyl bag
	RHG-291	Packing case (KC)	6.	RDE-031	Cord assembly
2.	RHA-185	Side protector		(RDE-028)	
3.	RHL-041	Vinyl bag		(RDE-032)	
4.	REA-021	Head cleaning kit assembly	7.	RRB-108	Operating instruction