

<R42-345-0>

# **SERVICE MANUAL**

**STEREO TAPE DECK**

**RT-1020L**  
**F**

<73D02F31F>

 **PIONEER®**



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# 1. SPECIFICATIONS

Operation ..... 3-motor, 3-head system, 4-track 2-channel recording, 4-track 4-channel playback operations

Heads ..... 4-track 4-channel playback head x 1  
4-track 2-channel recording head x 1  
4-track 2-channel erase head x 1

Motors ..... For reel; 6-pole inner rotor induction motor x 2  
For capstan; 4/8-pole hysteresis synchronous motor x 1

Tape speeds ..... 7 1/2 ips (19cm/s), 3 3/4 ips (9.5cm/s)

High speed wind times ..... 10-in. reel; 110 sec at 740m (2400 feet) tape  
7-in. reel; 90 sec at 370m (1200 feet) tape

Wow and flutter ..... 7 1/2 ips; 0.08% WRMS (0.10% RMS)  
3 3/4 ips; 0.10% WRMS (0.13% RMS)

Signal to noise ratio ..... More than 55 dB

Distortion ..... Less than 1%

Frequency response ..... 7 1/2 ips; 40Hz to 20,000Hz  $\pm$  3 dB  
3 3/4 ips; 40Hz to 12,000Hz  $\pm$  3 dB

Crosstalk ..... More than 60 dB

Stereo channel separation ..... More than 50 dB

Erase ratio ..... More than 60 dB

Recording bias frequency ..... 125 kHz

Inputs ..... Microphone; 0.25mV to 80mV/20k $\Omega$  (1mV reference)  
Line input; 50mV to 25V/100k $\Omega$  (316mV reference)  
DIN; 15mV to 1.5V/1.5k $\Omega$

Outputs ..... Line; 316mV/50k $\Omega$  load with output level control at max.  
Output impedance; 3.3k $\Omega$   
DIN; 316mV/50k $\Omega$  load with output level control at max.  
Output impedance; 3.3k $\Omega$

Headphone; 40mV/8 $\Omega$  with output level control at max.  
Load impedance; 4 to 16 $\Omega$

Subfunctions ..... 3-position bias selector  
2-position recording equalizer selector  
Pause lever (lock type)  
4-digit tape counter  
Tape monitor switches (L ch. and R ch.)  
4-channel front/rear select switch; for LEVEL METER and HEADPHONE  
Mic recording level control  
Line recording level control  
Output level control

Power requirements ..... AC. 110V, 120V, 130V, 220V and 240V (switchable)  
50Hz or 60Hz

Power consumption ..... 115W

Dimensions ..... 440(W) x 431(H) x 227(D)mm  
(including feet and reel shafts)  
17-5/16(W) x 17(H) x 8-15/16(D) in.  
Without package; 21kg (46 lb 3 oz)  
With package; 26kg (57 lb 3 oz)

Weight ..... 10-in. metal reel (Pioneer PR-100) 1  
10-in. reel adaptors (Pioneer PP-220) 2  
Reel adjusting sheets 2  
Connection cords 3  
Splicing tape 1  
Cleaning kit 1  
Cleaning ribbon 1  
AC power cord 1  
Fuse (2A) 1  
Operating instructions 1

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



## 2. PARTS IDENTIFICATION

### PAUSE SWITCH

For short interruptions of tape travel. In position ON, the tape is stopped while the unit remains in its previous—recording or playback—mode. At OFF, the tape resumes travel at normal speed. Note, however, that the PAUSE switch does not function during fast forward or rewind.

### POWER SWITCH

Push this button to turn the unit ON, push it again and release it to turn the power OFF.

### REEL SIZE SWITCH

Changes tape tension in accordance with reel size. For 7-inch (17cm) or smaller reels, push the button in. When using 10-inch (26cm) reels, release the button.  
**IMPORTANT!**  
ALWAYS USE TWO REELS OF THE SAME SIZE.

### TAPE SPEED SELECTOR

Pushbutton depressed: LO (low) tape speed.  
Pushbutton released: HI (high) tape speed.  
To switch from LO to HI, push the button lightly — it will return to released position.  
HI: 7-1/2 ips (19cm/s)  
LO: 3-3/4 ips (9.5cm/s)

### MIC RECORDING LEVEL CONTROL

Controls the recording level of live microphone recordings. Clockwise rotation increases the recording level. This control also governs the recording level when a recording is made through the REC./P.B. connector (DIN-type) on the rear panel.

### LEVEL METERS

Indicate the recording and playback signal levels.

### LINE RECORDING LEVEL CONTROL

Controls the recording level that the signal is fed into the INPUT (REC) jacks on the rear panel. Clockwise rotation increases the recording level.

#### NOTE:

The MIC and LINE recording level controls both consist of a pair of friction-coupled knobs; the inner knob controls the left channel, the outer ring, the right channel. Usually, knob and ring rotate together, but you can rotate one while holding the other in place with your other hand.

### OUTPUT LEVEL CONTROL

Controls the output level that recorded tape is played back. This is a friction-coupled type consisting of the inner and outer knobs.

INNER KNOB: FRONT (CH.1, CH.3)  
REAR (CH.2, CH.4)

OUTER KNOB: Usually, knob and ring rotate together, but you can rotate one while holding the other in place with your other hand.

### TAPE COUNTER

Before starting a recording, reset the TAPE COUNTER to "0000" by depressing the reset button. Use of the TAPE COUNTER will make it easy to locate the starting point of a recording.

### RECORDING INDICATORS

REC-L: Red light emitting diode lights up when the left channel is in recording mode.  
REC-R: Lights up when the right channel is in recording mode.

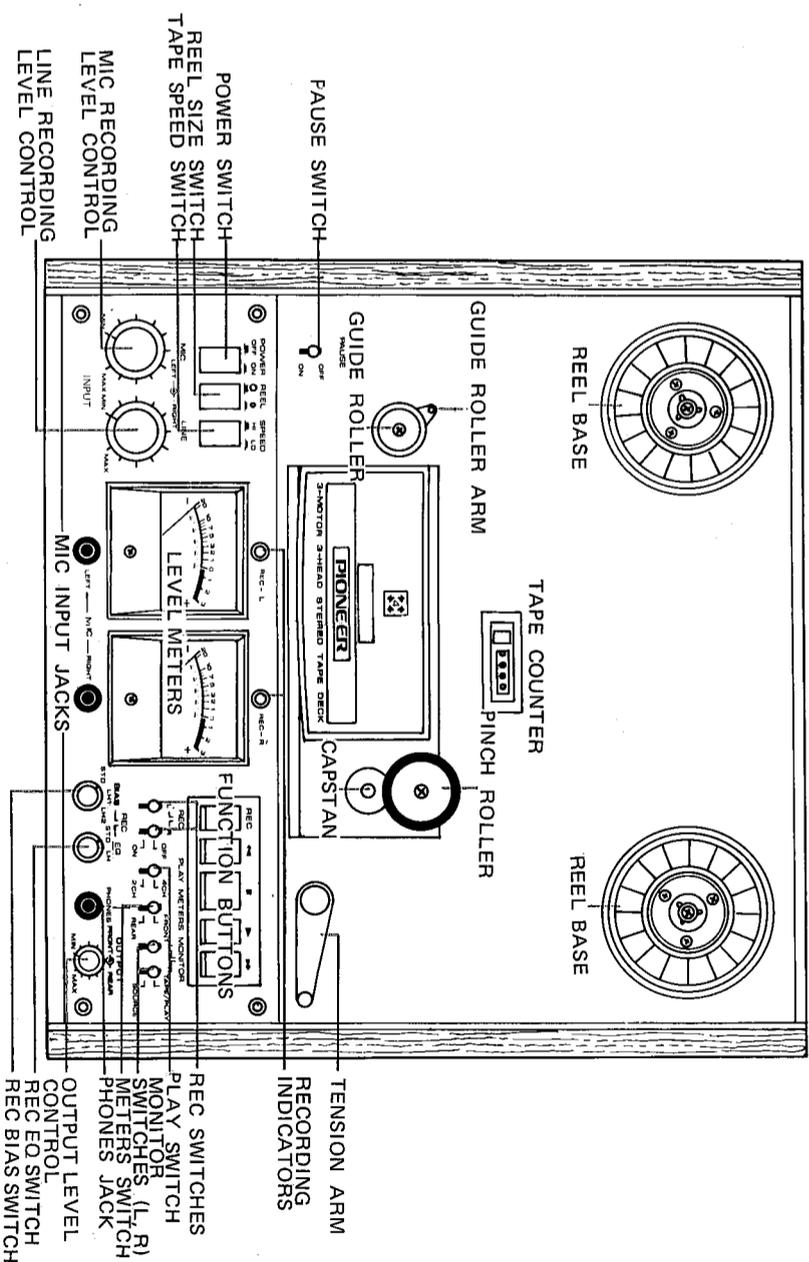
For stereo recordings, confirm that both indicators are lighted.

### MIC INPUT JACKS

Two microphones for stereo recording can be connected here. Low-impedance (600Ω) as well as high-impedance (10kΩ to 50kΩ) can be used, but the cables must have standard 6φmm plugs.

### TENSION ARM

Regulates tape tension, but also functions as an automatic shut-off sensor. If the tape is slack, breaks or runs out, the automatic shut-off mechanism stops the tape transport and returns all function buttons to neutral position.



### FUNCTION BUTTONS

- **STOP:** Stops tape travel from any mode, returns unit to neutral position.
- ▶ **PLAY:** Makes tape travel at selected speed. For playback, push this button. For recording, push this and the REC button.
- ▶ **FAST FORWARD:** Makes tape travel at high speed from left to right.
- ▶ **REWIND:** Makes tape travel at high speed from right to left.
- REC: Activates recording circuits. To start a recording, hold this button down while pushing the PLAY button.

#### NOTE:

Unlike inconvenience of some kinds of tape machines on the market, this model helps you switch from one mode of operation to another without pushing the STOP button. That is, there is no need to push the STOP button when switching from either FAST-FORWARD or REWIND mode to another, for instance, you can switch directly to PLAY. Note, however, that such switching operation always stops

**REC EQ SWITCH**

Selects the recording equalization characteristics in accordance with the type of tape to be used.

**STD:** For recording on normal, conventional tape.

**LH:** For recording on low-noise high-output tape.

This switch has no function in playback.

**REC BIAS SWITCH**

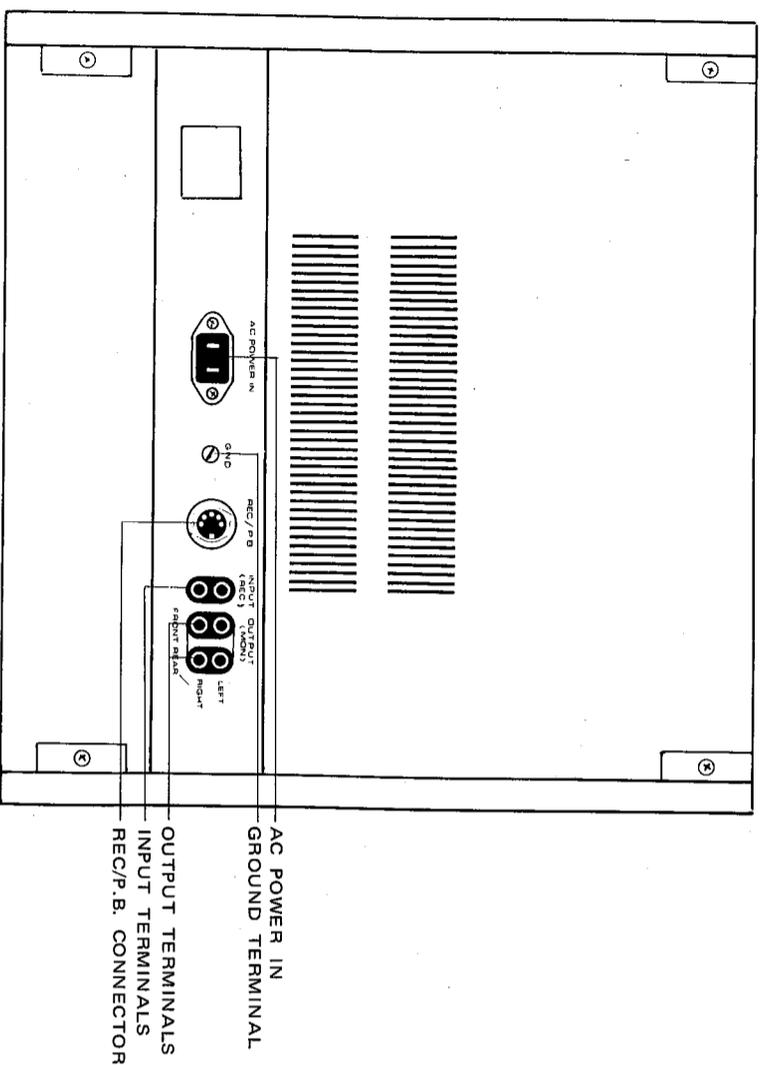
Selects the proper bias current in accordance with the type of tape to be used.

**STD:** For recording on normal tape. Smallest bias current.

**LH 1, LH2:** For recording on low-noise high-output tape.

**LH 2** gives the strongest bias current.

This switch has no function in playback.



the tape travel once, momentarily. A few seconds more, and it will soon run at normal speed.

Of a variety of magnetic tapes available on the market, thin tape in thickness, used for long hours of continuous playing, must be taken of care not to change the PLAY or STOP mode directly from the FAST-FORWARD mode, for example.

Push the PLAY or STOP button only when reel rotation becomes slow shortly after switching the REWIND mode from the FAST-FORWARD mode or vice versa.

**REC SWITCHES (L, R)**

To make a recording, one or both of these switches must be set at ON.

**L:** Recording on left channel

**R:** Recording on right channel

For stereophonic recordings, set both switches at ON.

**PLAY SWITCH**

Selects 4-channel or 2-channel playback mode.

**4 CH:** Playback of 4-channel recorded tapes

**2 CH:** Playback of 2-channel recorded tapes

**METERS SWITCH**

Selects the channels to be displayed by the level meters (and supplied to the headphones jack) when playing 4-channel recorded tapes.

**FRONT:** Front channels (CH. 1 = left, CH. 3 = right)

supplied to level meters and headphones.

**REAR:** Rear channels (CH. 2 = left, CH. 4 = right)

supplied to level meters and headphones.

**MONITOR SWITCHES (L, R)**

A recording in progress can be monitored (via speakers or headphones) in either of two ways — the original SOURCE sound, or the recorded TAPE sound as picked up by the playback head. By switching back and forth between positions SOURCE and TAPE/PLAY, you can compare the original sound quality with that of the recording and take corrective action if necessary.

The left switch controls the left channel, the right switch, the right channel.

**PHONES JACK**

Stereo headphones can be connected here for monitoring or private listening. The METERS switch selects the channels that you hear through the headphones.

**AC POWER IN**

Connect the AC power cord here.

**GROUND TERMINAL (GND)**

Grounding is not necessarily required, but in the case of hum or externally induced noise, the GND terminal on the amplifier, or directly to earth.

**REC./P.B. CONNECTOR**

A combined input and output, for 2-channel operation only. If your stereo amplifier has an identical REC./P.B. connector, you can establish all recording (INPUT), and playback (OUTPUT) connections with a single DIN cable (optional) available from your Pioneer dealer. Note that if connection is made to the REC./P.B. connector, the recording level must be controlled with the MIC recording level controls.

**INPUT (REC) TERMINALS**

For recording, connect these inputs to the TAPE REC or similar outputs of your stereo amplifier by means of the supplied phono cables. Be sure to connect left channel to LEFT, right to RIGHT.

**OUTPUT (MON) TERMINALS**

For playback, connect these outputs to the TAPE MONITOR, TAPE PLAYBACK or similar inputs on stereo or 4-channel amplifier.

With a 4-channel amplifier:

FRONT LEFT to FRONT LEFT (CH. 1) of amplifier

FRONT RIGHT to FRONT RIGHT (CH. 3) of amplifier

REAR LEFT to REAR LEFT (CH. 2) of amplifier

REAR RIGHT to REAR RIGHT (CH. 4) of amplifier

With a 2-channel amplifier:

### 3. CIRCUIT DESCRIPTION

The RT-1020L tape deck contains both 4-channel playback and 2-channel recording and playback. It employs four playback circuits, two recording circuits and one oscillator circuit. The left-channel front unit major circuitry is shown in Fig. 1.

#### 3.1 PLAYBACK CIRCUIT (Fig. 1)

1. The signal received by the playback head is amplified via the three-stage direct coupled amplifier consisting of Q201, Q205 and Q209.
2. The playback signal flat frequency response is obtained by negative feedback from the Q209 collector to the Q201 emitter through the equalizer elements (R241, C229, VR201, R245 and Q213). Playback characteristics can be adjusted to two different tape speeds by utilizing the internal resistance of FET (Q213) which varies according to gate voltage (0.6V for 7-1/2 ips, -10V for 3-3/4 ips). The signal from Q209 is fed to the Q301 via VR5 and VR9.
3. The Q301 works as the emitter follower and the playback output is provided at the LINE OUTPUT terminals.
4. The signal from VR9 is fed to the IC301 through the METERS switch (S4 . . . FRONT/REAR switch) and this provides the HEADPHONE output, indicated on the level meter.

#### 3.2 RECORDING CIRCUIT (Fig. 2)

1. The input signal from the MIC input jack is amplified via C103 by the two-stage direct coupled amplifier consisting of Q101 and Q103.

2. The output from Q103 is fed to Q105 after the MIC recording level control (VR1) is established. Then the input signal from the INPUT terminal (LINE) is fed to the Q105 through the LINE recording level control (VR3). When mixing recording with MIC and LINE, therefore, levels can be adjusted independently.

3. The signal amplified by Q105 and Q107 is fed to the Q109 base via VR101.
4. In Q109, Q111, the signal is amplified, supplying the signal current which is required at the recording head.

- In addition, the negative feedback from the Q111 collector is fed to the Q109 emitter through the equalizer for the low sound range via R153, C131, R155 (approx. +4dB at 20Hz).

5. In the high sound range, where compensation is made according to tape speeds, a switching circuit using diodes is employed.

- Assuming that LH tape is used at the speed of 7-1/2 ips (19cm/s), D101 and D103 are biased plus into causing to flow current, and the series resonance circuit using L101 and C141 are activated.

6. The signal from the Q111 is fed to the recording head through L401 and C401. These are tuned in the oscillator frequency to prevent bias leakage through Q111, Q109 circuit.

7. When operating the REC switches (S7 and S8), i.e., the stereo recording, the +B voltage is fed to the oscillator circuit and the current flows to the light-emitting diodes (D001, D002) through relays simultaneously and recording is indicated (Fig. 3).

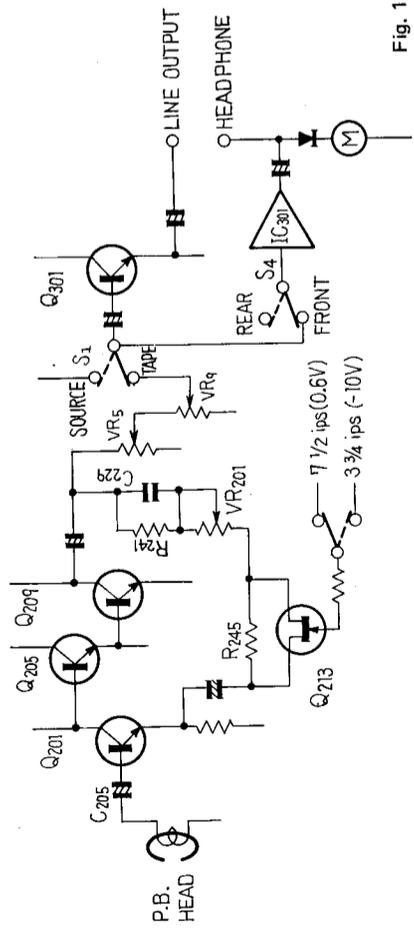


Fig. 1

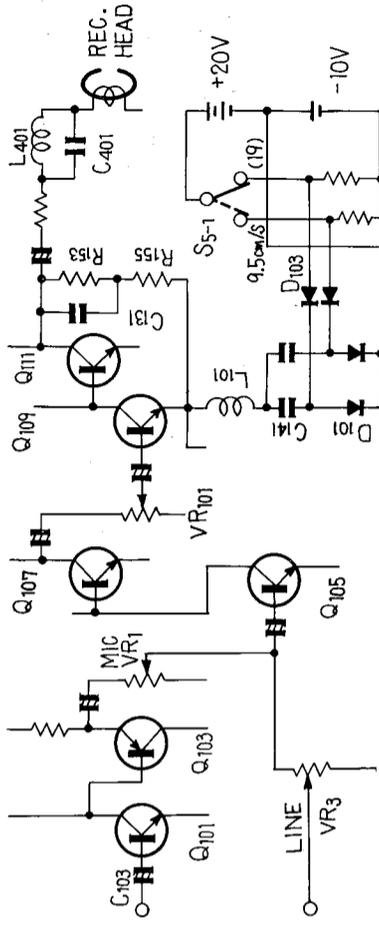


Fig. 2

#### 3.3 OSCILLATOR CIRCUIT (Fig. 3)

1. When the voltage, approx. 39V, is supplied to Q401 and Q402, the oscillation is activated by the positive feedback through the oscillator transformer (T401).
2. The oscillator output is supplied to recording head and erase head through the T401 secondary winding.
3. Part of the oscillator output is extracted through R410 and C411, and rectified by D401 and D402 to feed the VR405. The DC voltage from the VR405 is fed to the Q404 base.
4. The +B power is supplied to Q401 and Q402 through the Q403 emitter.
5. The DC voltage at the Q404 base controls the +B voltage supplies oscillator circuit with regulator Q403. In this way oscillator output is regulated constantly.
6. The switch S9 functions for a variety of recording tape bias currents, and the switch S5-4 for tape speeds.

#### 3.4 CONTROL CIRCUIT (Fig. 4)

The control circuit employs three relays whose functions are as follows:

RL601 . . . . functions during fast forward and rewind.

When operating the fast forward or rewind, the current flows through R606 ~ D603 ~ FR601 ~ RL601 ~ S17-2, (S16-2) and operates the relay.

RL602 . . . . functions during recording or playback.

When operating the recording or playback, the current flows through FR602 ~ RL602 ~ relay contact RL601 ~ S20 ~ S18-1 ~ S16-2 ~ S17-2.

When POWER switch S12 and shut-off switch S15 are ON, the current flows through D605 ~ R603 ~ RL603 ~ S18-1 ~ S16-2.

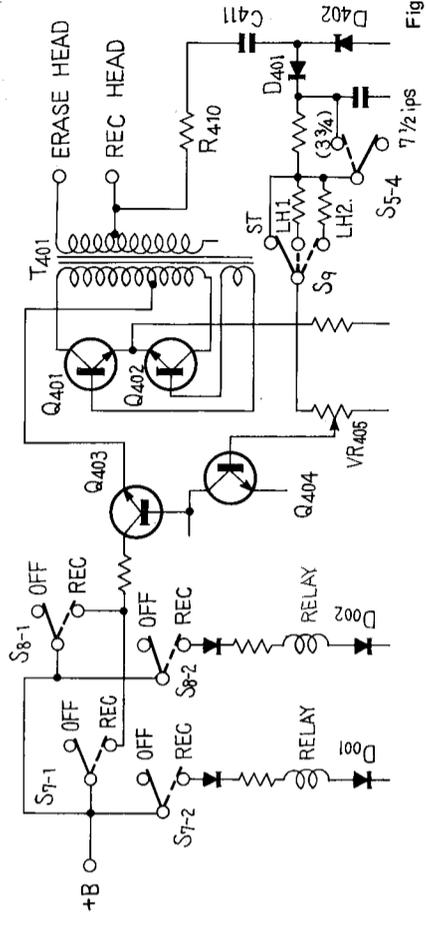


Fig. 3

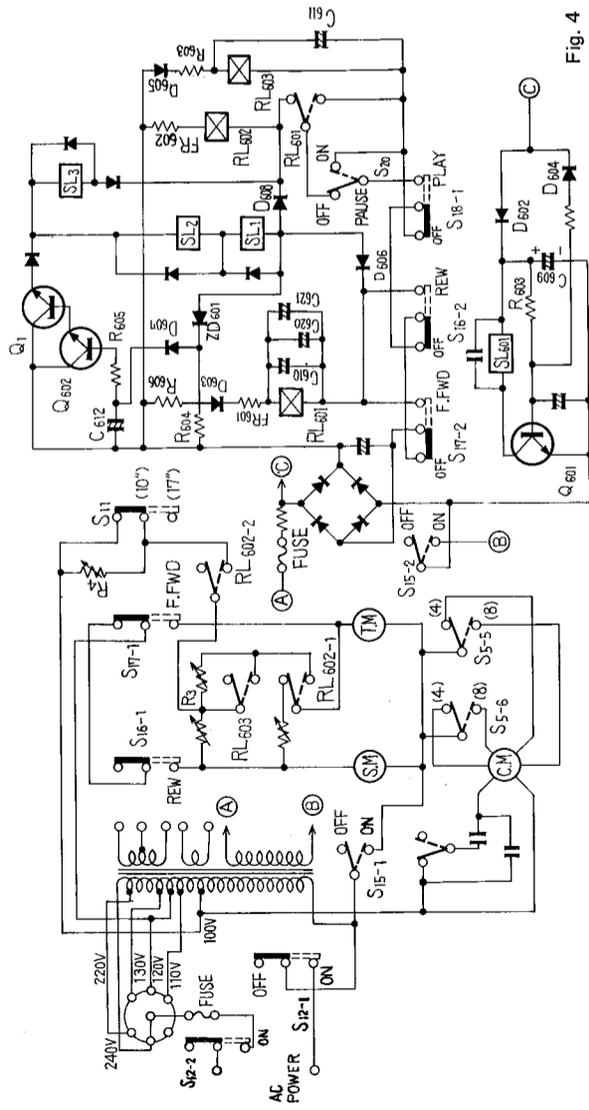
● Solenoid Voltage Control Circuit

When operating the tape deck (in playback, recording, fast forward and rewind), the solenoid starting current is increased so that the attracting force can be raised and then reduced to protect the solenoid from overheating after the operation.

1. When S12 and S15 are ON, voltage is generated between A and B at the power transformer secondary winding.
2. If the deck is in the playback mode (S18 at PLAY), the AC voltage of the secondary winding is rectified and the charging current (Q602 base current) flows into C612 to make the Q602 in conduction.
3. The Q602 emitter current is identical with the Q1 base current to make the Q1 in conduction.

In this way, the brake solenoids (SL2, SL1) are operated by current flowing through it ~ D608 ~ relay contact RL601 ~ S20 ~ S18-1 ~ S16-2 ~ S17-2. The pinch roller solenoid (SL3) is operated simultaneously.

4. When the C612 is charged, the bias potential of Q602 is stabilized and turned back to its normal condition by R604 and zener diode (ZD601).
5. When operating the tape deck in the fast forward or rewind mode, the pinch roller solenoid does not work, since the S18-1 is out of PLAY. The D608, however, works as the reverse current protection diode.



● Take-up Torque Switching Control Circuit at Playback

In order to prevent tape slacking or hunting when the STOP mode is turned to playback, the take-up torque is at first reinforced, then allowed to adjust automatically.

1. While in the STOP mode, the RL603 relay is operating. Also, the relay contact (RL603) short-circuits both ends of R3.
2. While in the playback mode, the S18-1 is on PLAY and current to the RL603 is shut off. The relay, however, continues for a short time to be activated by the electric charge remaining in C611.

● Protection Circuit at Playback Immediately after Fast Forward (Rewind)

When operating the playback immediately after fast forward or rewind operation, the solenoid will not function for a certain period in order to protect the tape.

1. The RL601 operates in fast forward or rewind mode.
2. The playback mode turns S16-2 or S17-2 to the OFF position, thus shutting off the current now flowing in the relay. However, the relay remains activated for a short time by the discharging action of C620, C621. Relay contact RL601 is shown in Fig. 4 at the dotted line.
3. Since the RL601 is operating, the relay RL602 does not function.
4. When the RL601 is released, the current flows through FR602 ~ RL602 ~ relay contact RL601 ~ S20 ~ S18-1 ~ S16-2 ~ S17-2 and operates the RL602.

3.5 OPERATION BUTTONS RESET CIRCUIT (Fig. 4)

When tape is taken up or broken, the shut-off switch S15 is opened to reset the buttons.

1. The AC voltage is generated at A, B and C of the power transformer secondary winding when the power switches S12 and S15 are ON.
2. This voltage potential biases the Q601 base minus through D604, making the Q602 OFF.
3. Assuming that the S12 or the S15 is OFF, the AC voltage becomes zero and the minus bias from the D604 is shut off. For this reason, the discharging current from C609 is fed to the Q601 through R603, so that the Q601 is ON. The Q601, ON, activates the reset solenoid (SL601) to reset all buttons.
4. After the C609 is discharged, the Q601 is then OFF, and the SL601 is released.

3.6 TAPE SPEED SWITCHING (Fig. 4)

Tape speed is switched by alternating the number of poles in the motor with the SPEED switch S5.

- 7-1/2 ips (19cm/s) .....
- 3-3/4 ips (9.5cm/s) .....

## 4. DISASSEMBLY

### 4.1 BACK COVERS (Fig. 5)

1. Take out screws 1 ~ 7 and remove the back cover (A). This exposes the internal mechanism and permits examination.
2. Take out screws 8 ~ 13 and remove back cover (B). The amplifiers can then be adjusted.

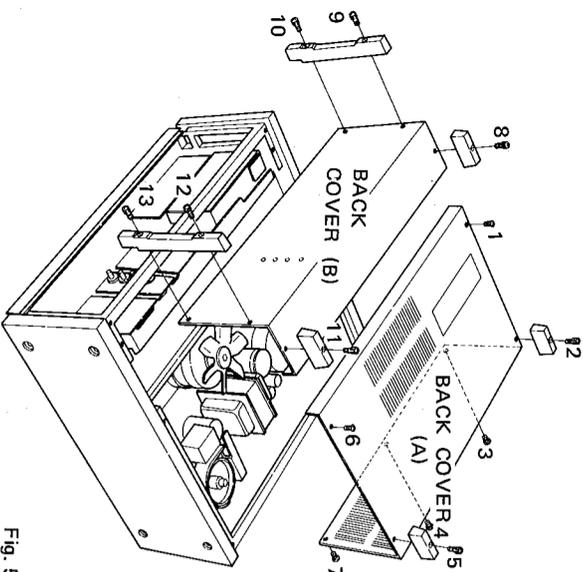


Fig. 5

### 4.2 SIDE BOARDS (Fig. 6)

1. Take out screws 1 ~ 8 and remove the side boards.

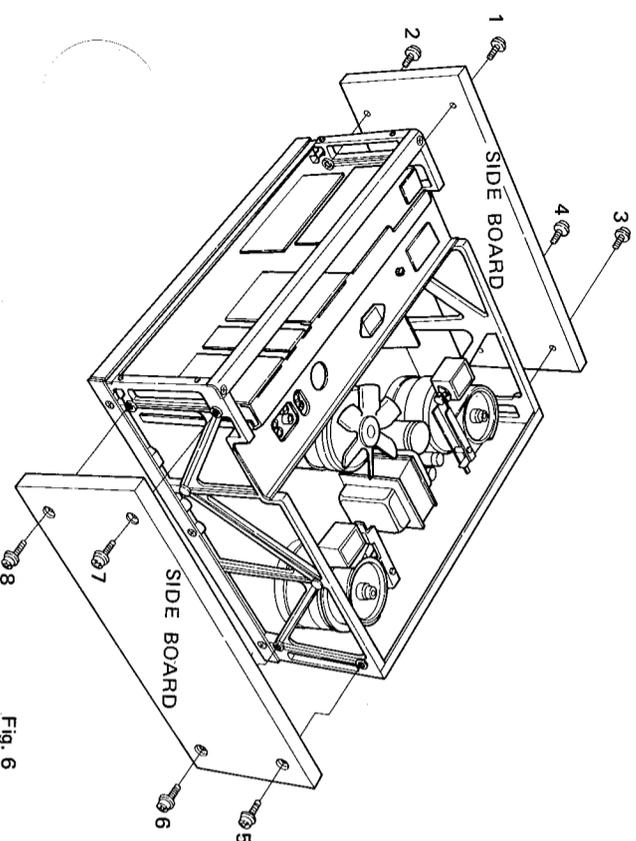


Fig. 6

### 4.3 AMPLIFIER PANEL (Fig. 7)

1. Remove all knobs.
2. Take out screws 1 ~ 4 and remove the amplifier panel. The level meters can then be replaced.

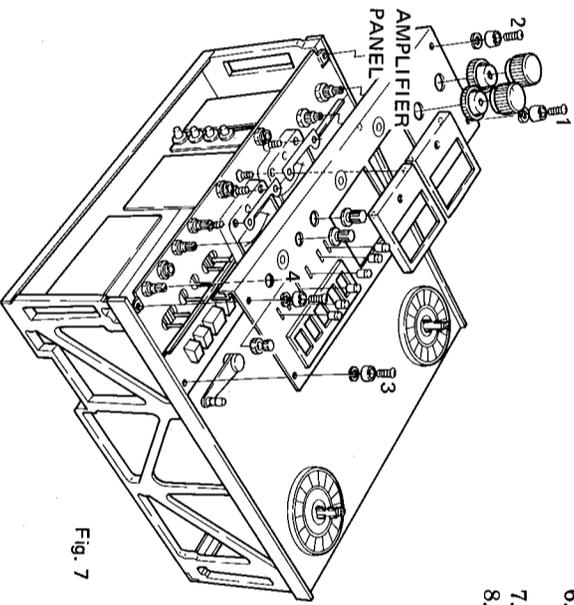


Fig. 7

### 4.4 MECHANICAL PANEL (Fig. 8)

1. Take out screws 1 ~ 2 and remove the head housing.
2. Take out screw 3 and remove pinch roller.
3. Take out screws 4 ~ 6 and remove head escutcheon by turning cap.
4. Take out screws 7 ~ 12 and remove the reel base.
5. Take out screws 13 ~ 15 and remove the guide roller.
6. Take out screw 16 and remove the tension arm.
7. Remove the PAUSE knob.
8. Take out screws 17 ~ 22 and remove the mechanical panel by lifting out the aluminum sashes.

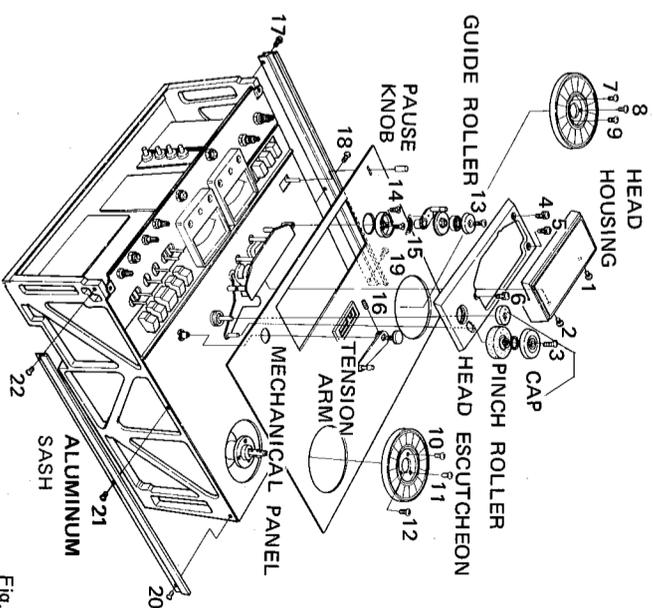


Fig. 8

## 5. TROUBLE SHOOTING

### 5.1 TRANSPORT MECHANISM AND CONTROL SYSTEM (1).

"Reel motor" refers to the take-up and supply motors. For further explanation, see section 5.2, Nos. 1 ~ 5.

#### ● Power supply and lamps.

Lack of Power ON. ————— See 5.2.1 "Power and lamps."

Lamp does not light. ————— See 5.2.1 "Power and lamps."

Control system does not function. ———— Burned-out fuse (F 5). ————— Replace.  
 ———— Defective shut-off switch. ————— Replace.

#### ● Playback function.

Take-up too weak or too strong. ———— Improperly positioned REEL size switch. ————— Correct position to match reel size.

————— Trouble in reel motors. ————— See 5.2.2 "Reel motors."

Insufficient tape speed. ———— Pinch roller slipping. ————— See 5.2.3 "Pinch roller."

————— Poor pinch roller pressure. ————— See 5.2.3 "Pinch roller."

————— Excessive back tension. ————— Re-adjust. See section 6.3.

————— Poor capstan motor torque. ————— See 5.2.4 "Capstan motor."

Defective tape speed switching. ———— Defective switch (S 5). ————— Replace.

Wow and flutter. ———— Dust on pinch roller and capstan. ————— Clean with absolute alcohol.

————— Defective pinch roller. ————— See 5.2.3 "Pinch roller."

————— Poor pinch roller pressure. ————— See 5.2.3 "Pinch roller."

————— Excessive friction or sticking of flywheel bearing. ————— Lubricate, clean or replace where necessary.

————— Excessive back tension. ————— Re-adjust. See section 6.3.

————— Trouble in capstan motor. ————— See 5.2.4 "Capstan motor."

(Take-up side)  
 Tape slackens at start of tape travel. ———— Abnormal take-up torque. ————— See 5.2.2 "Reel motor."

————— Relay RL603 released earlier. ————— Replace capacitor (C 611).

————— Poor back tension. ————— See 5.2.2 "Reel motor."

(Supply side)

Tape squeals. ———— Soiled tape guide. ————— Clean with absolute alcohol.

————— Damaged tape. ————— Replace.

## ● Fast forward and rewind.

Take-up delayed until end of tape travel. — Poor take-up motor torque. — See 5.2.2 "Reel motors."  
— Excessive back tension. — See 5.2.2 "Reel motors."

Tighten or loosen tape winding. — Abnormal back tension. — Re-adjust. See section 6.2.

Tape slackens at stop of the tape. — Difference in sizes of right and left reels. — Match reel sizes properly.  
— Brake timing trouble or mal-adjustment. — See 5.2.5 "Brake."

Mechanical noise during operation. — Defective reel motors. — Replace.  
— Defective guide roller. — Replace.

Short interval-time between fast forward or rewind to play. — Defective capacitors (C610, C620, C621). — Replace.

## 5.2 TRANSPORT MECHANISM AND CONTROL SYSTEM (2).

### 1. Power and lamps.

Lack of power input. — Loosened AC socket connection. — Check connection.  
— Burned-out fuse. — Replace.  
— Defective AC cord. — Replace.  
— Power switch failure. — Replace.  
— Defective power transformer. — Replace.

Meter lamp does not light. — Defective lamp. — Replace.  
— Burned-out fuse. — Replace.

**2. Reel motors** . . . . . Check to make sure line frequency switch is in proper position.

No voltage to motor. — Defective shut-off switch contact. — Replace.

OK

Motor failure despite apparent voltage. — Defective phase capacitor. — Replace.  
 — Stuck motor shaft. — Replace the motor.  
 — Defective motor coil. — Replace the motor.  
 — Brake does not clearance. — Re-adjust. See section 6.2.

Defective take-up at playback mode. — Defective wire wound resistor (R 3 or R 4). — Replace.  
 — Defective relay contact or relay (RL 602). — Replace  
 — Imperfect FUNCTION button contact. — Replace.

No back tension in playback mode. — Defective wire wound resistor (R 2). — Replace.

Defective fast forward. — Excessive back tension. — Re-adjust. See section 6.3.  
 — FUNCTION button contact failure. — Replace.

Defective rewind. — Excessive back tension. — Re-adjust. See section 6.3.  
 — Poor FUNCTION button contact. — Replace.

No back tension in fast forward mode. — Defective wire wound resistor (R 1). — Replace.

**3. Pinch roller** . . . . . Also check solenoid (SL 3).

Revolving sound squeaks. — Stuck bearing. — Clean and lubricate.

Dull rotation. — Stuck bearing excessive friction. — Clean or replace bearing, then lubricate.

Pinch roller slipping. — Dirty pinch roller. — Clean with absolute alcohol.

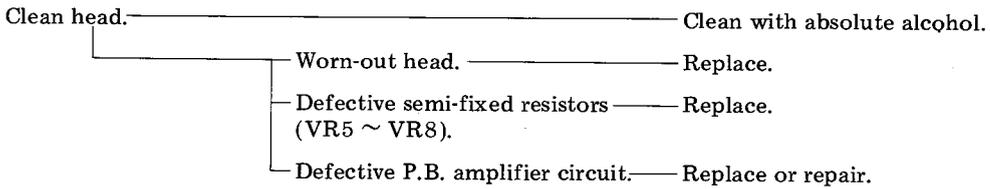
Defective solenoid function. — Defective transistors (Q1, Q602). — Replace.  
 — Defective diode (D609). — Replace.

OK

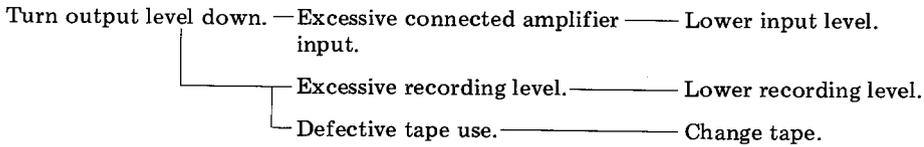
Insufficient attracting force. — Imperfect solenoid installation. — Re-adjust. See section 6.4.  
 — Defective control circuit. — Check circuit and make necessary repairs.



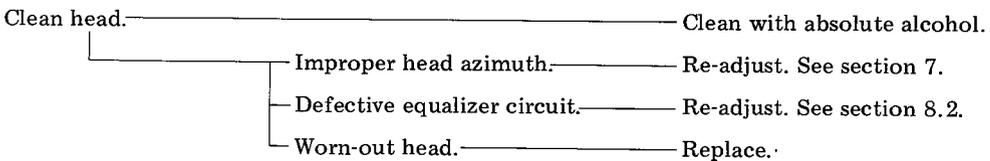
● **Insufficient sound.**



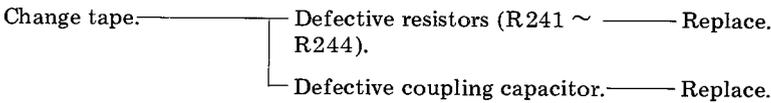
● **Sound distortion.**



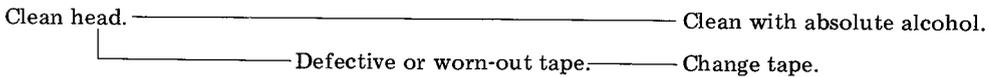
● **Poor treble.**



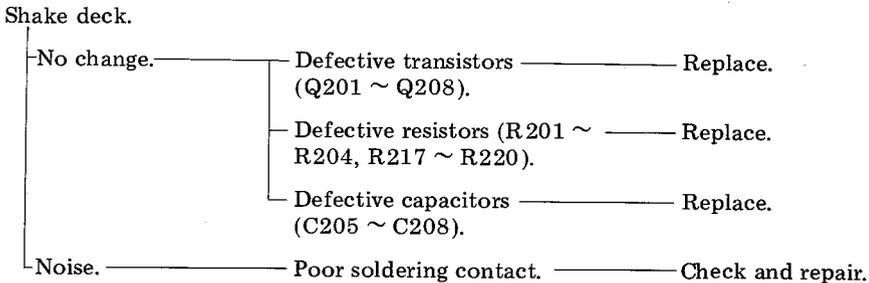
● **Poor bass.**



● **Sound drop-out.**



● **Excessive or occasional noise.**





## 6. MECHANICAL ADJUSTMENTS

For items 6.1 ~ 6.4 adjustments, never fail to place the tape deck in specified positions (6.1: horizontal, 6.2 ~ 6.4: vertical), otherwise, correct measuring value would not be obtained. With these things in mind, proceed as follows:

### 6.1 REEL BASE HEIGHT ADJUSTMENT

In the case of incorrect reel base height, or replacement of supply motor or take-up motor, sideboards are removed and reel base height must be adjusted.

1. Place the tape deck in a horizontal position and check to make sure the panel and chassis of the transport mechanism are firmly attached.
2. Loosen screw to allow a clearance of 2mm between the panel and reel base as in Fig. 9.
3. Adjust supply and take-up reel bases as above.

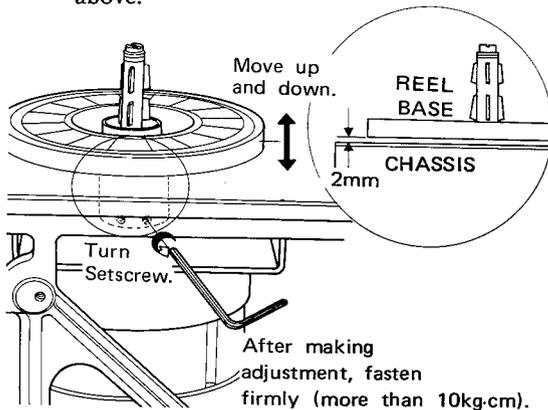


Fig. 9

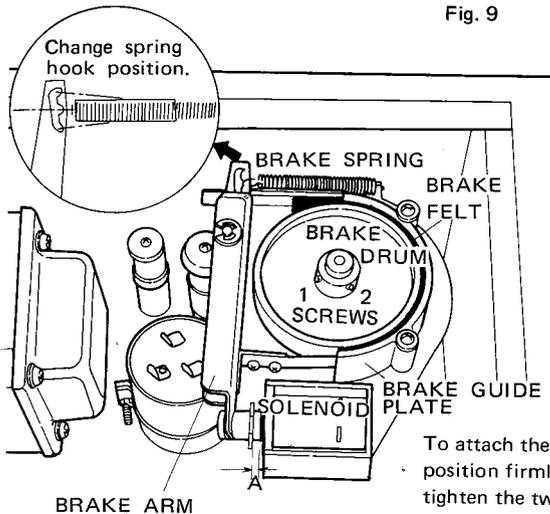


Fig. 10

### 6.2 BRAKE ADJUSTMENT

Required when tape slackens or when solenoid or motor is replaced.

First, place the tape deck in a vertical position and check the following:

- Is A in Fig.10 4mm when the solenoid is not operating?
- Can you rotate the motor smoothly with your hand while pressing the solenoid shaft?

#### ● Adjustment (Figs. 10, 11)

For adjusting the take-up reel, fast-forward it for about 2sec. once to minimize unstableness in measuring values, then push the STOP button to cause reel revolution to halt.

Should the reel be rotated before measuring, differences in measuring values would result. For adjusting the Supply reel, rewind it once, then make the adjustment.

These adjustments are made in (A) ~ (D) arrow-indicated directions.

With these things in mind, proceed as follows:

1. Load the 7-inch reel, fixing the string on the reel base.
2. Pull tension gauge to measure brake friction, pulling in B (C) direction until reel turns.
3. Adjust the brake spring hook position so that the gauge reads 300 ~ 450g (900 ~ 1350g-cm).
4. When the above adjustments fail to bring the desired results, check the following points:
  - Soiled brake drum
  - Soiled brake felt
  - Faulty brake guide plate
  - Unstable brake arm
5. Measure brake friction by pulling tension gauge in D (A) direction. Then, check ratio of brake friction to measured value of step 3. It should be 2.3:1 ~ 3.7:1.

#### NOTE:

When the value in B (C) direction indicates 400g, the value in D (A) direction is optimum at a range of 174 ~ 108g.

● **Confirmation After Adjustment**

1. When the prior adjustment is over, lower 10% power source voltage (down to 216V in 240V area, for example) in order to check up on fast-forward or rewind operation with the help of a 10-inch metal reel (long tape 150%).
2. While transporting the tape reels at high speed, push the PLAY button when the tape volume being now taken up in the take-up reel becomes increased more than that of the supply reel — when you see the taken-up volume show about  $10 \sim 40\phi$ .
3. Confirm that the tape speed runs normal after it stops completely.
4. If the specified condition in step 3 is found unsatisfactory, try to satisfy step 3 repeatedly even though a tension gauge does not read less than 300g.cm.

NOTE: C610 and C620 short of capacitance make condition in step 3 unsatisfactory.

**6.3 TAKE-UP AND BACK TENSION TORQUE ADJUSTMENT**

● **Back Tension Torque at Playback (Figs. 11, 12)**

1. Set REEL size switch at 10-inch reel position.
2. Set tape deck in vertical position in playback mode at 7-1/2 ips (19cm/s). Measure back tension of supply reel base by pulling tension gauge in B direction as shown in Fig. 11.

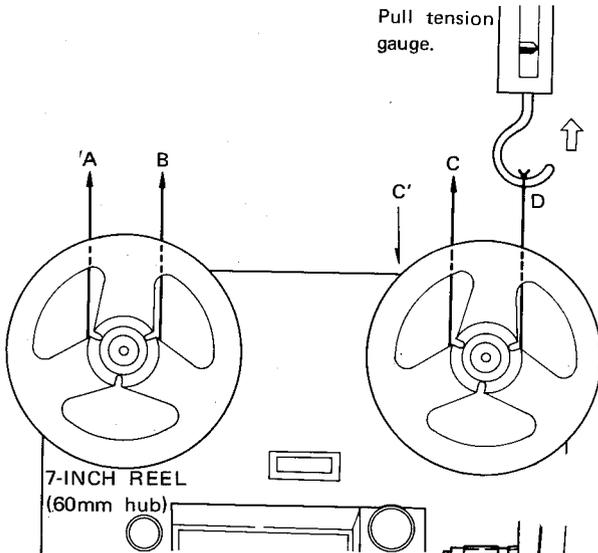


Fig. 11

3. Adjust slider ( $R_2$  500 $\Omega$ ) so that the gauge reads 93 ~ 110g (280 ~ 330g.cm) (Fig. 12).
4. Set REEL size switch at 7-inch reel position. Measure back tension as mentioned in step 2.
5. Adjust slider ( $R_4$  100 $\Omega$ ) so that the gauge reads 63 ~ 77g (190 ~ 230g.cm).
6. After adjustment, the slider screw must be firmly clamped.

● **Take-up Torque at Playback (Figs. 11, 12)**

1. Set REEL size switch at 10-inch reel position.
2. Set tape deck in vertical position and in playback mode at 7-1/2 ips (19cm/s). Measure take-up torque of take-up reel base (While moving tension gauge slowly in C' direction as shown in Fig.11, read value of the gauge.)
3. Adjust slider ( $R_3$  300 $\Omega$ ) so that the gauge reads 190 ~ 210g (570 ~ 630g.cm).

● **Back Tension Torque at Fast Forward (Figs. 11, 12)**

1. Set tape deck in vertical position in fast forward mode. Measure back tension of supply reel base (pull in B direction as shown in Fig. 11).
2. Adjust the slider ( $R_1$  2k $\Omega$ ) so that the gauge reads 35 ~ 45g (105 ~ 135g.cm).

NOTE:

When back tension of fast forward is adjusted, back tension of rewind is determined automatically, since the resistor  $R_1$  is used for both functions.

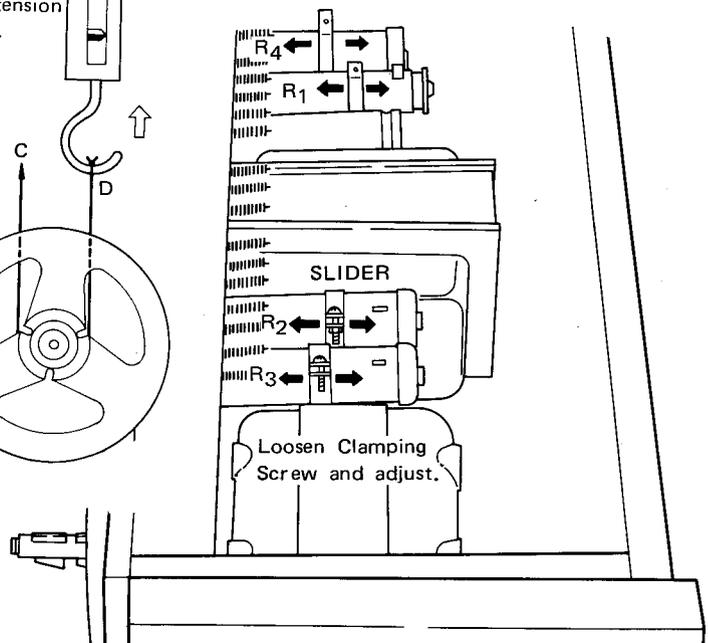


Fig. 12

## 6.4 PINCH ROLLER PRESSURE ADJUSTMENT (Figs. 13, 14)

When replacing pinch roller solenoid or pinch roller, check pressure of capstan as follows:

1. Set tape deck in vertical position with REEL size switch at 10-inch reel position.
2. Turn POWER switch and shut-off switch ON.  
Set deck in playback mode.
3. Make sure that the gap B shown in Fig. 13 is 1mm.
4. If the value is not correct, loosen the three bracket-held screws and adjust position of pinch roller solenoid.
5. Load Scotch No. 111, 10-inch metal reel (or similar product). Run tape fast forward until amount on take-up reel matches that on supply reel.
6. Play tape at constant speed (7-1/2 ips) hook tension gauge as in Fig. 14, then pull the gauge, and confirm the value when travel is stopped in 1.7kg ~ 2kg range.
7. When tape traveling is not stopped with in 1.7kg ~ 2kg, check the following:
  - Loosen pressure spring fastening
  - Defective pinch pressure spring
  - Soiled pinch roller
  - Soiled capstan

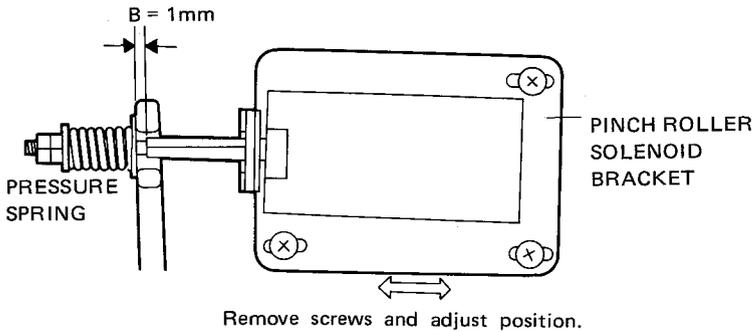


Fig. 13

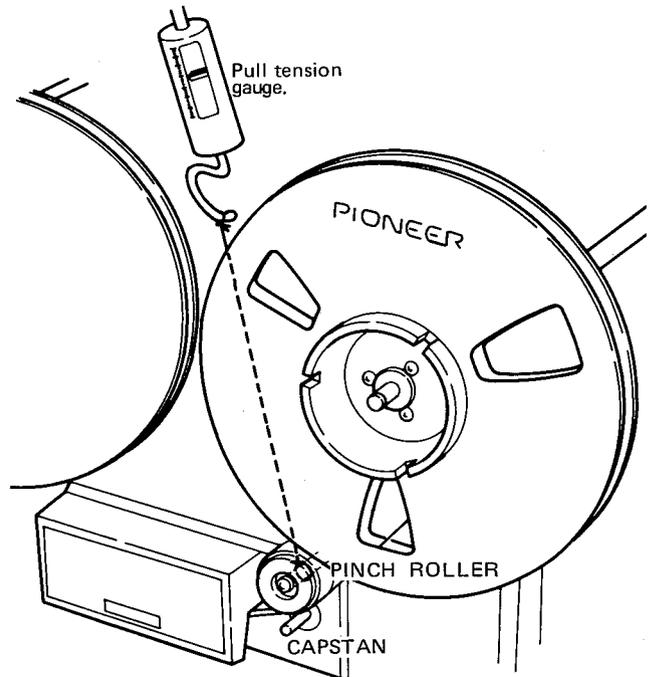


Fig. 14

# 7. TAPE HEAD ADJUSTMENTS

## 7.1 COARSE ADJUSTMENTS (Figs. 15, 16)

### ● Height

Adjust screws to proper relation dimension between tape and heads as shown in Fig. 15.

P.B. Head . . . . screws 1, 2, 3

REC Head . . . . screws 6, 7, 8

ERASE Head . . Use spacer.

When adjusting the erase head, make sure contact with the tape surface is flat.

### ● Tilt Angle

Adjust the following screws so that the head and tape touch evenly and flatly when tape is traveling.

P.B. Head . . . . screw 1

REC Head . . . . screw 6

### ● Azimuth

Adjust the following screws so that the head gap and tape surface are touching vertically.

P.B. Head . . . . screw 3

REC Head . . . . screw 8

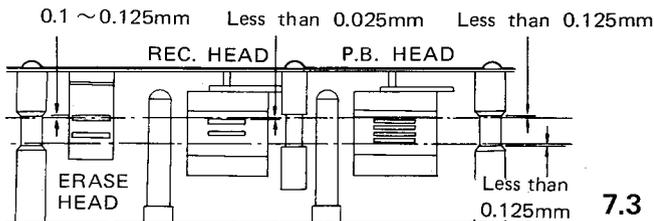


Fig. 15

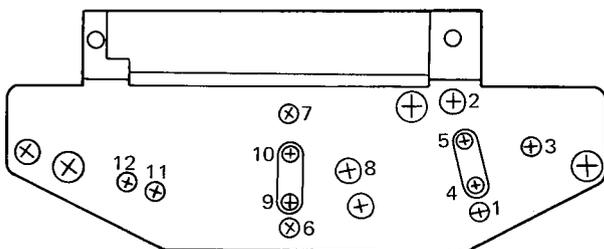


Fig. 16

## 7.2 P.B. HEAD ADJUSTMENT (Fig. 16)

1. Play the fifth band (15kHz, -10dB full track) of test tape at 7-1/2 ips (19cm/s).
2. Adjust the screw 3 for the maximum output level.  
A little output level difference between L- and R-channel is allowed in this adjustment.
3. During step 1, check to make sure the output level does not change, by pressing the tape slightly with your fingertip while it travels.
4. If the output levels change from step 3, screws 4 and 5 and adjust the head position by slightly moving it horizontally.

## 7.3 REC. HEAD ADJUSTMENT (Fig. 16)

1. Supply input signal of 500Hz, -10dBv (316mV) to the INPUT terminals. Load tape, then record above signal.
2. During recording, check playback level with MONITOR switch set to TAPE position.
3. Adjust the screws 6, 7 and 8 for the maximum playback level.
4. Set frequency to 15kHz and check playback output as above.  
Adjust screw 8 slightly for the maximum playback level.
5. During step 4, check to make sure that the output level does not vary, by pressing the tape slightly with your fingertip while it travels.
6. If output levels differ greatly, loosen the screws 9, 10 and adjust the head position by slightly moving the head horizontally.

## 8. CIRCUIT ADJUSTMENTS

The following measuring instruments are required for circuit adjustments:

- MILLI VOLTMETER
  - AUDIO OSCILLATOR
  - OSCILLOSCOPE
  - ATTENUATOR
  - FREQUENCY MEASURING INSTRUMENT (FREQUENCY COUNTER)
  - AC VOLTMETER (With probe)
- Controls are the tape deck as follows unless otherwise specified:
- Tape speed 7-1/2 ips (19cm/s)
  - REEL size switch 7-inch reel
  - REC BIAS switch STD
  - REC EQ switch STD
  - METER switch FRONT
  - REC switch STEREO
  - OUTPUT level MAX

Reference voltage level for measurements 50kΩ resistor to the LINE OUTPUT terminals.

### 8.1 PLAYBACK SENSITIVITY ADJUSTMENT (Fig. 17)

1. Connect milli voltmeter to LINE OUTPUT terminal.
2. Play back the third band (700Hz, 0dB full track) of test tape.
3. Adjust the following semi-fixed resistors so that the voltmeter reads -10dBv (316mV).  
 VR5 ..... FRONT L ch.  
 VR6 ..... FRONT R ch.  
 VR7 ..... REAR L ch.  
 VR8 ..... REAR R ch.

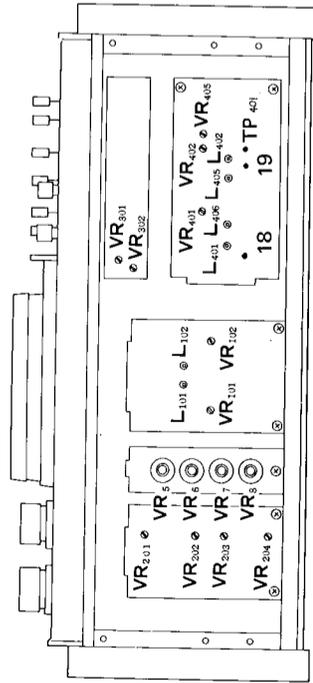


Fig. 17

### 8.2 PLAYBACK EQUALIZER ADJUSTMENT (Figs. 17, 18)

1. Connect milli voltmeter to LINE OUTPUT terminal.
2. Play back the second band (10kHz, -10dB full track) of test tape.
3. Adjust the following semi-fixed resistors so that the voltmeter reads -20dBv (100mV).  
 VR201 ..... FRONT L ch.  
 VR202 ..... FRONT R ch.  
 VR203 ..... REAR L ch.  
 VR204 ..... REAR R ch.
4. "PLAYBACK SENSITIVITY ADJUSTMENT" and "PLAYBACK EQUALIZER ADJUSTMENT" have related functions. Repeat these adjustments as several times as necessary.

### 8.3 PLAYBACK FREQUENCY RESPONSE CONFIRMATION

After the "PLAYBACK EQUALIZER ADJUSTMENT" is completed, playback the fifth band (15kHz) to the eleventh band (50 Hz) of the test tape. Check the output response to make sure that it is made in the proper sequence following playback frequency response as shown in Fig. 18.

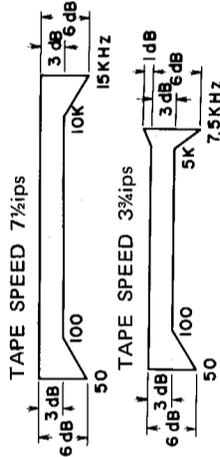


Fig. 18

### 8.4 BIAS OSCILLATOR AMPLITUDE ADJUSTMENT (Fig. 17)

1. Connect AC voltmeter with probe to the test point (TP401) of OSC circuit P.C. board and ground.
2. Without loading tape, set tape deck in recording mode.
3. Adjust the VR405 so that the oscillator voltage reads 22V.

NOTE:  
 Since the oscillator frequency is high (125kHz), handle the probe or connections carefully to avoid measurement errors.

### 8.5 BIAS-TRAP ADJUSTMENT (Fig. 17)

1. Connect oscilloscope to terminals 18 and 19 at OSC circuit P.C. board and ground.
2. Without loading tape, set the tape deck in recording mode.
3. Adjust the L401 (L ch.) and L402 (R ch.) for the minimum amplitude on the oscilloscope (less than 1V p-p).

### 8.6 RECORDING BIAS ADJUSTMENT (Fig. 17)

1. Connect milli voltmeter to LINE OUTPUT terminal. Apply the 1kHz, -10dBv (316mV) signal to INPUT terminal.
2. Record the signal on Scotch No. 111 tape and playback simultaneously.
3. Control the LINE recording level control to obtain the output level of -10dBv at OUTPUT terminal.
4. Allow tape to travel for approx. 30 seconds.
5. Adjust the semi-fixed resistors, VR401 (L ch.) and VR402 (R ch.) by rotating clockwise so that the playback level becomes 0.5dB down through the maximum value.
6. Repeat the adjustment in step 3 several times for both L- and R-channels.
7. After the step 3 adjustment is completed, set the recording bias to LH1 and LH2 in order.
8. Adjust the recording bias according to the procedure mentioned in step 1.
9. Assuming the value of step 3 (0.5dB down) to 0dB, confirm that the value at LH1 is 0.9 - 0.3 + 0.9 dB down and the value at LH2 is 2.2 - 0.4 dB down.

### 8.7 ERASE HEAD DUMMY ADJUSTMENT (Fig. 17)

1. Connect frequency counter to the test point (TP401) at OSC circuit P.C. board and the ground.
2. Set tape deck in L- and R- monophonic recording mode without loading tape. Adjust the L405 (R ch.) and L406 (L ch.) for oscillator frequency to obtain the identical value within stereo recording range.

### 8.8 LEVEL METER CALIBRATION (Fig. 17)

1. Connect milli voltmeter to LINE OUTPUT terminal.
2. Apply the 1kHz, -10dBv (316mV) input signal to INPUT terminal and turn MONITOR switch to SOURCE.
3. Control the LINE recording level control for the LINE output to obtain -10dBv (316mV).
4. Adjust the VR301 (L ch.) and VR302 (R ch.) so that the level meter indicates "0."

### 8.9 RECORDING SENSITIVITY ADJUSTMENT (Fig. 17)

1. Connect milli voltmeter to LINE OUTPUT terminal.
2. Apply the 1kHz, -10dBv (316mV) input signal to INPUT terminal. Record it on Scotch No. 111 tape and play back simultaneously.
3. Turn MONITOR switch to SOURCE. Control the LINE recording level control for the LINE output to obtain -10dBv (316mV).
4. Turn MONITOR switch to TAPE. Adjust the VR101 (L ch.) and VR102 (R ch.) for the LINE output to obtain the same value as in step 3.
5. Check to make sure that the recording level at L- and R- monophonic recording is within ±0.3dB as compared to stereo recording.

## 8.10 REC. AND P.B. FREQUENCY RESPONSE ADJUSTMENT (Figs. 17, 19)

To be made after "RECORDING BIAS ADJUSTMENT."

1. Connect milli voltmeter to LINE OUTPUT terminal.  
Apply the 1kHz, -10dBv (316mV) input signal to INPUT terminal, recording on Scotch No. 111 tape and playing back simultaneously.
2. Control the LINE recording level control for the output level to obtain -10dBv (316mV).
3. Keeping the LINE recording level control, attenuate the input level down to 20dB with attenuator to record the 1kHz and 15kHz and to play back simultaneously. The output level in step 3 must fall within the specified response range as shown in Fig. 19.
4. Adjust the L101 (L ch.) and L102 (R ch.) so that the level difference of 15kHz against 1kHz is made within  $\pm 1$ dB compared to the deviation between 1kHz and 15kHz at the "PLAYBACK FREQUENCY RESPONSE COMPIRMATION" step.  
If the level deviation is greater than  $\pm 3$ dB, readjust after "HEAD AZIMUTH ADJUSTMENT."
5. Apply following input signals as 50, 100, 250, 2.5k, 5k, 10k, 15k and 20kHz. Check to make sure the output levels are made within the specified response ranges as shown in Fig. 19 at simultaneous recording and playback.

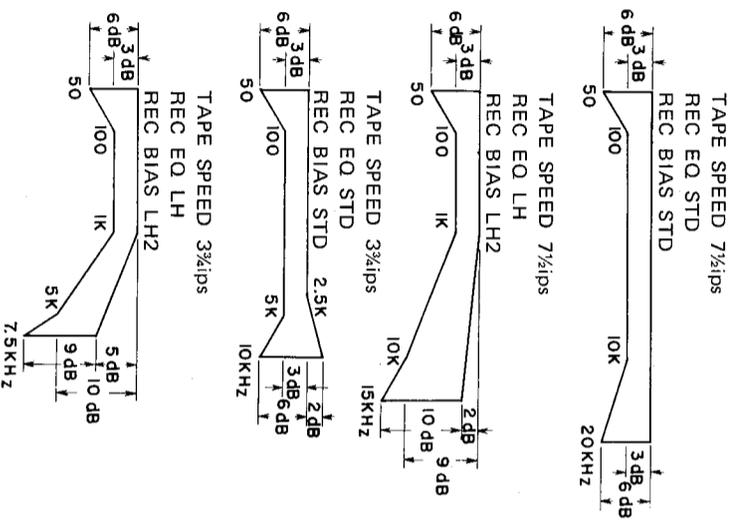


Fig. 19

## 9. SELECTION OF LINE FREQUENCY AND VOLTAGE

### 9.1 SELECTION OF LINE FREQUENCY (Figs. 20, 21)

1. Make sure power is OFF.
2. Remove back cover (A).
3. 50Hz to 60Hz:
  - Set drive belt on smaller diameter motor pulley.
  - Set switches to 60Hz.
4. 60Hz to 50Hz:
  - Set drive belt on larger diameter motor pulley.
  - Set switches to 50Hz.
5. When drive belt is set, make sure that the belt remains in its proper position as the flywheel is rotated by hand several times.
6. Clean any spots of oil that appear on the drive belt or flywheel with absolute alcohol.

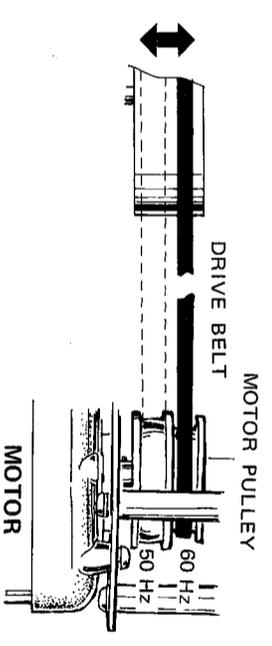


Fig. 20

### 9.2 SWITCHING LINE VOLTAGE SETTING AND FUSE (Figs. 21, 22)

1. Make sure power is OFF.
2. Remove back cover (A), then LINE VOLTAGE SELECTOR switch is easily accessible.
3. To remove fuse, turn fuse cap.
4. Remove fuse plug from unit.
5. Put fuse plug back so as to see proper line voltage marking through cut in edge of plug.
6. 1-ampere fuse: used in either 220V or 240V area.  
2-ampere fuse: used in 110V, 120V, or 130V area.

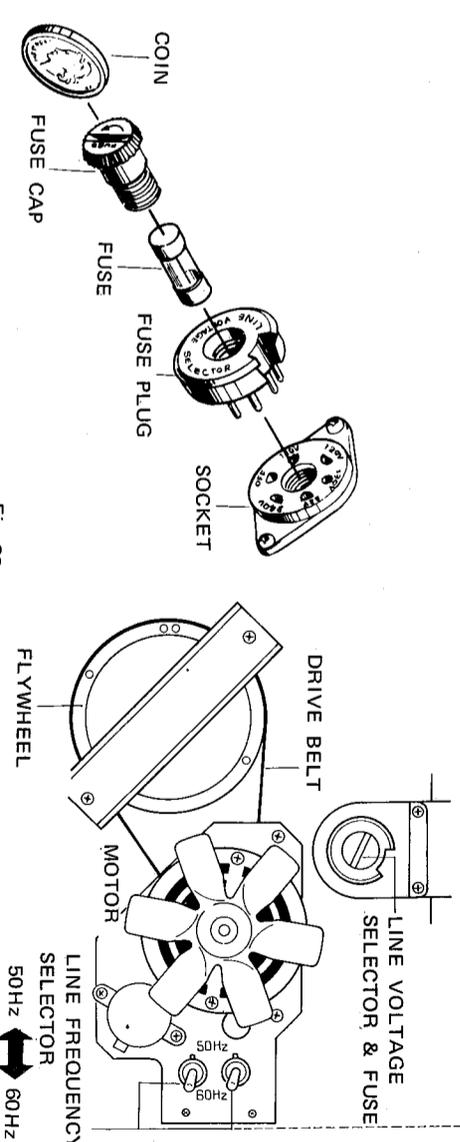


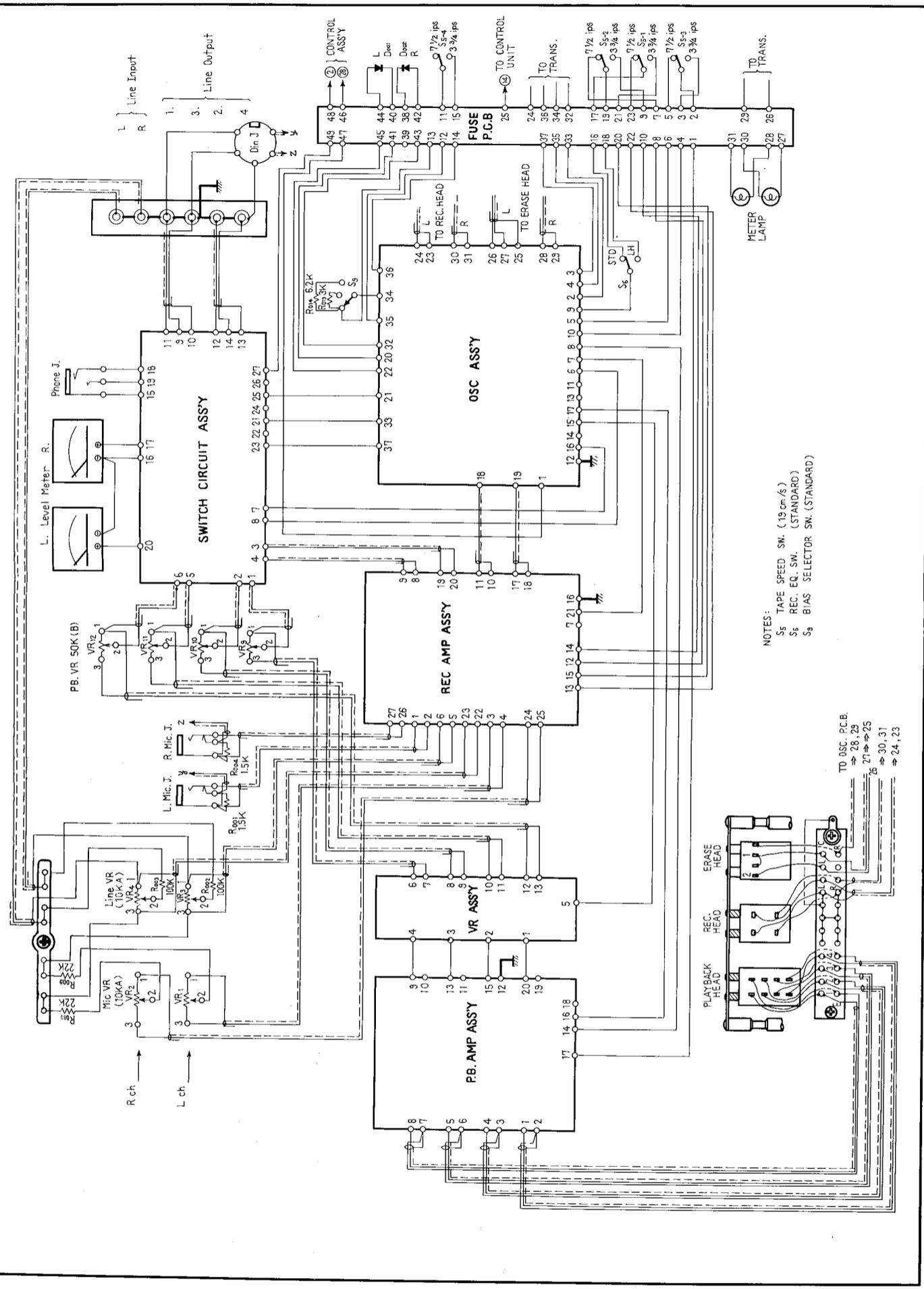
Fig. 22

Fig. 21

# 10. SCHEMATIC DIAGRAMS, P.C. BOARD PATTERNS AND PARTS LISTS

## 10. 1 CONNECTION DIAGRAM (AMPLIFIER)

**RT-1020L**

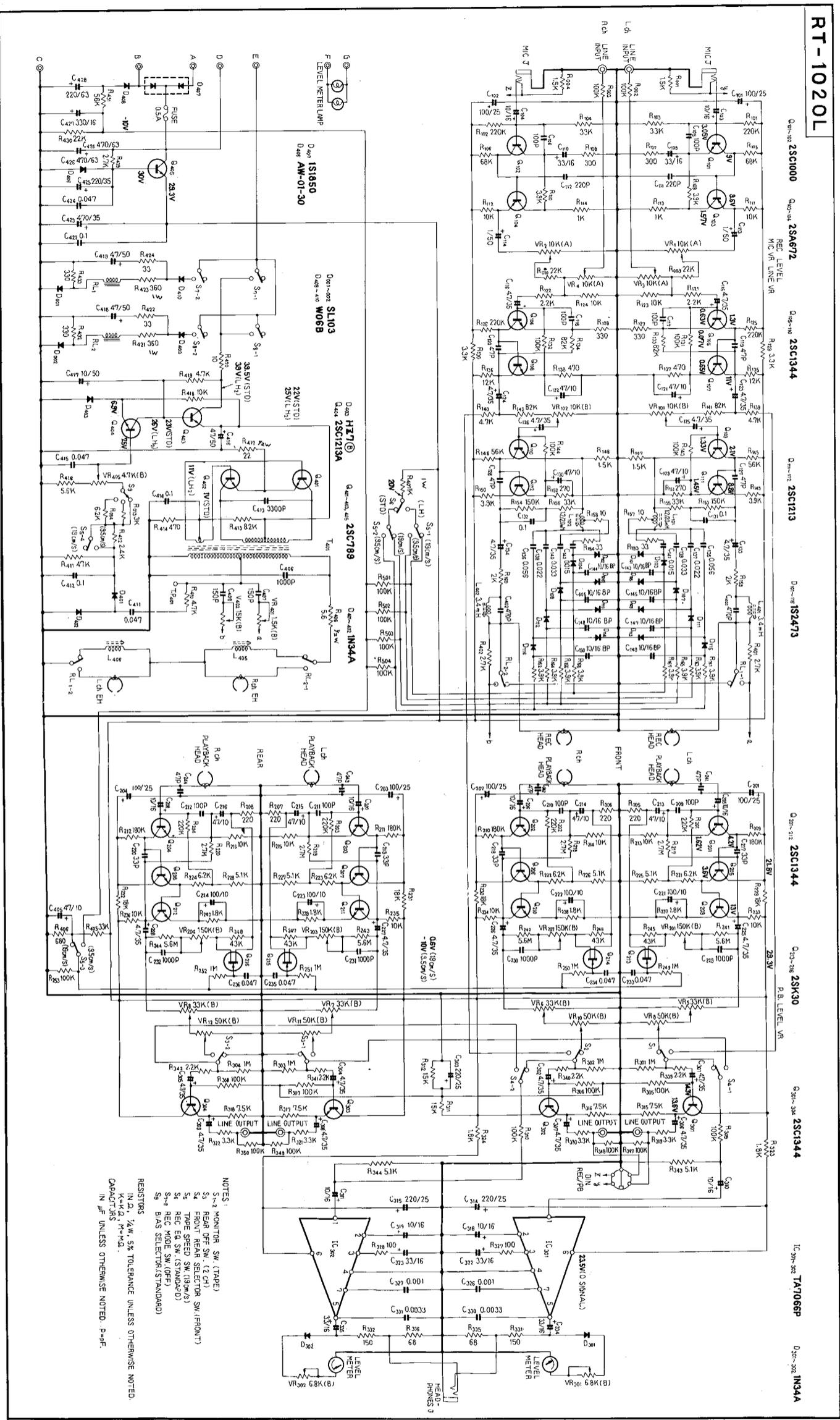


NOTES:  
 S<sub>5</sub> TAPE SPEED SM. (19 cm/s)  
 S<sub>6</sub> REC. EQ. SW. (STANDARD)  
 S<sub>7</sub> BIAS SELECTOR SW. (STANDARD)

TO OSC. P.C.B.  
 → 28, 29  
 → 27 → 25  
 → 30, 31  
 → 24, 23

10. 2 SCHEMATIC DIAGRAM (AMPLIFIER)

RT-1020L

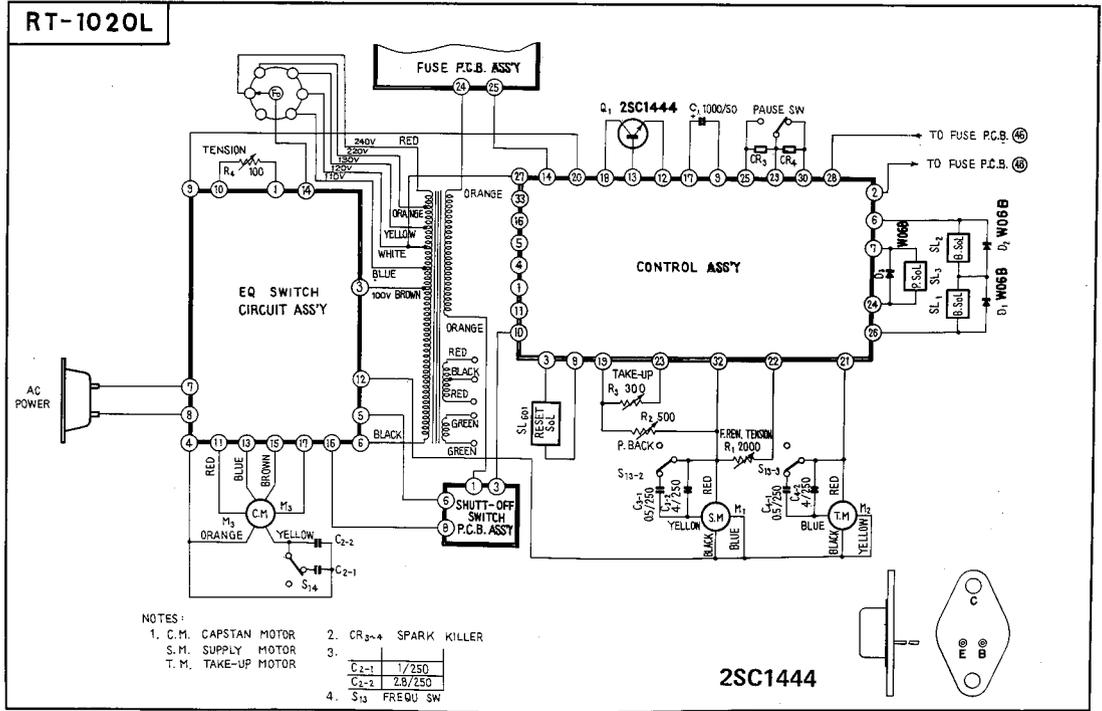


NOTES:  
 S1-7 MONITOR SW. (TAPE)  
 S2 REAR OFF SW. (ZCH)  
 S3 FRONT REAR SELECTOR SW. (FRONT)  
 S4 REAR SELECTOR SW. (REAR)  
 S5 REC. EQ SW. (STANDARD)  
 S6 REC. EQ SW. (STANDARD)  
 S7 BIAS SELECTOR SW. (STANDARD)  
 S8 BIAS SELECTOR SW. (STANDARD)

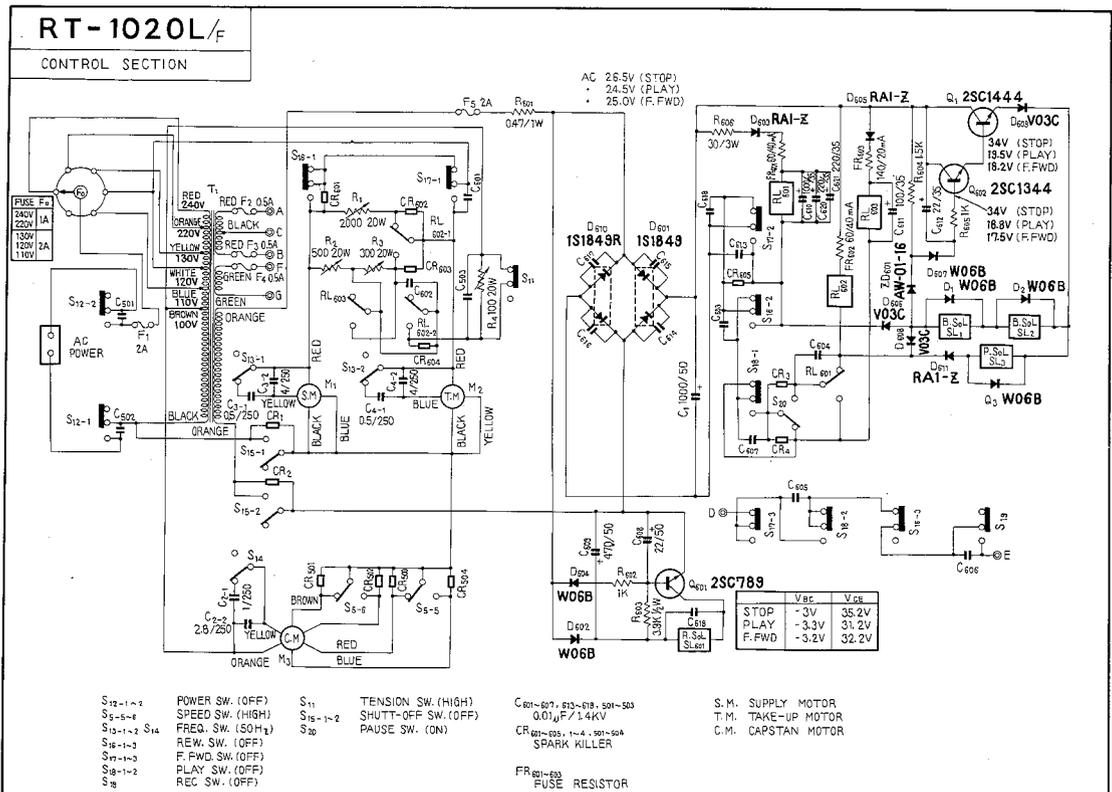
RESISTORS:  
 IN Ω, 1/4W, 5% TOLERANCE UNLESS OTHERWISE NOTED.  
 K=KΩ, M=MΩ.

CAPACITORS:  
 IN μF UNLESS OTHERWISE NOTED. P=PPF.

10. 3 CONNECTION DIAGRAM (CONTROL)



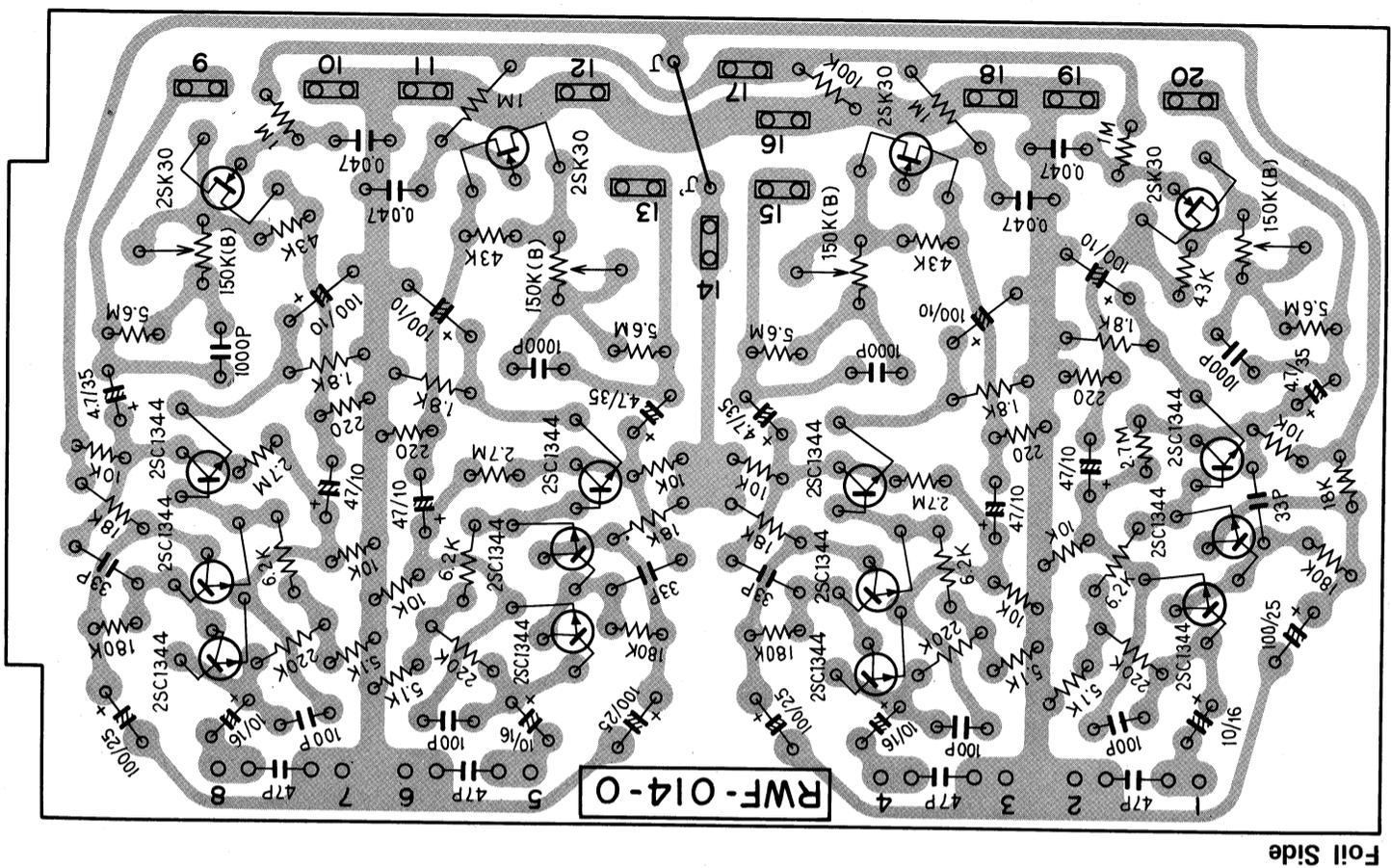
10. 4 SCHEMATIC DIAGRAM (CONTROL)



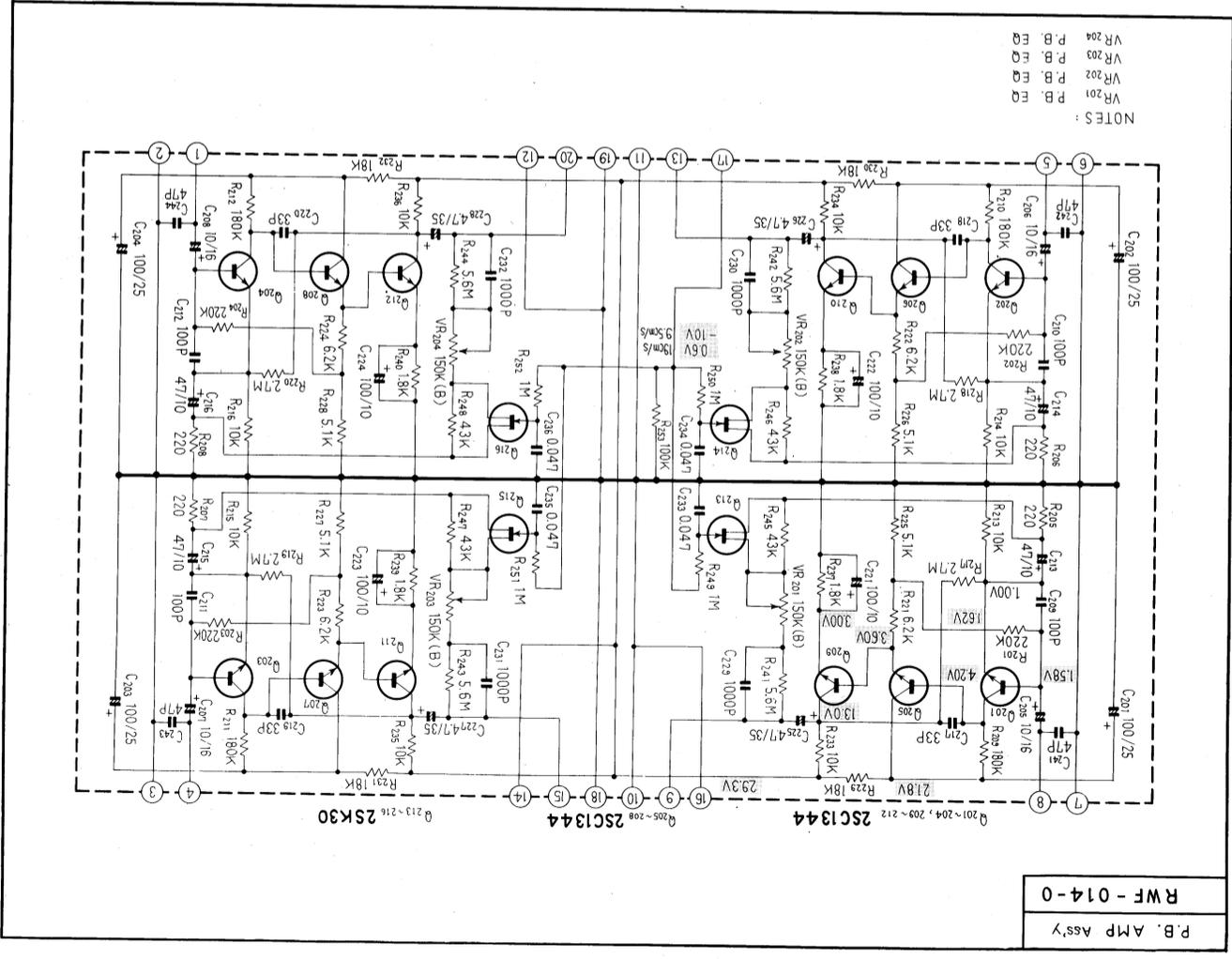
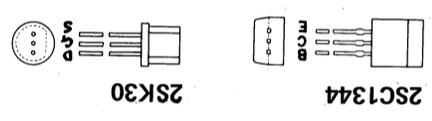
## 10. 5 ELECTRIC PARTS

| Symbol   | Description                                | Part No.     |
|----------|--|--------------|
|          | Head P. C. board assembly                  | RWX-035-O    |
|          | Control assembly                           | RWG-034-O    |
|          | E Q switch circuit assembly                | RWS-013-A    |
|          | REC lamp P. C. board assembly              | RWX-033-O    |
|          | P. B. amplifier assembly                   | RWF-014-O    |
|          | REC amplifier assembly                     | RWF-015-O    |
|          | SW circuit assembly                        | RWS-011-A    |
|          | VR assembly                                | RWX-040-O    |
|          | OSC assembly                               | RWA-008-A    |
|          | Fuse P. C. board assembly                  | RWX-036-A    |
|          | Shut-off switch P. C. board assembly       | RWX-038-O    |
| C.M.     | Capstan motor                              | RXM-012-O    |
| S.M, T.M | Reel motor                                 | RXM-015-O    |
| SL1, SL2 | Brake solenoid                             | RXP-012-A    |
| SL3      | Pinch solenoid                             | RXP-011-C    |
| SL601    | Reset solenoid                             | RXP-013-B    |
| T1       | Power transformer                          | RTT-039-A    |
|          | Erase head                                 | RPB-020-O    |
|          | Recording head                             | RPB-021-A    |
|          | Playback head                              | RPB-022-O    |
| C1       | Electrolytic capacitor 1,000 $\mu$ F 50V   | RCH-010-O    |
| C2       | MP capacitor (A) 1 + 2.8 $\mu$ F 250V      | RCL-013-O    |
| C3, C4   | Phase capacitor 0.5 + 4 $\mu$ F 250V       | RCL-010-O    |
| CR3, CR4 | Spark killer                               | RWX-030-O    |
| S13, S14 | Frequency switch                           | RSL-004-O    |
| S15      | Microswitch (SHUT-OFF)                     | RSF-007-O    |
| S20      | Lever switch (PAUSE)                       | RSK-021-B    |
|          | Line voltage selector switch (fuse holder) | AKR-001-O    |
|          | 1A fuse                                    | E21-004-A    |
| D1       | Diode W06B                                 |              |
| D2       | Diode W06B                                 |              |
| D3       | Diode W06B                                 |              |
| Q1       | Transistor 2SC1444-O or Y                  |              |
| R1       | Wire wound resistor (D) 2k $\Omega$ 20W    | RCN-014-O    |
| R2       | Wire wound resistor (C) 500 $\Omega$ 20W   | RCN-012-O    |
| R3       | Wire wound resistor (B) 300 $\Omega$ 20W   | RCN-011-O    |
| R4       | Wire wound resistor (A) 100 $\Omega$ 20W   | RCN-010-O    |
| R001     | Carbon film resistor 1.5k $\Omega$ 1/4W    | RD1/4PS 152J |
| R002     | Carbon film resistor 100k $\Omega$ 1/4W    | RD1/4PS 104J |
| R003     | Carbon film resistor 100k $\Omega$ 1/4W    | RD1/4PS 104J |
| R004     | Carbon film resistor 1.5k $\Omega$ 1/4W    | RD1/4PS 152J |
| R009     | Carbon film resistor 22k $\Omega$ 1/4W     | RD1/4PS 223J |
| R010     | Carbon film resistor 22k $\Omega$ 1/4W     | RD1/4PS 223J |
| R013     | Carbon film resistor 3k $\Omega$ 1/4W      | RD1/4PS 302J |
| R014     | Carbon film resistor 6.2k $\Omega$ 1/4W    | RD1/4PS 622J |
| VR1, VR2 | REC level 10k $\Omega$ -A                  | RCV-010-A    |
|          | P. B. level 50k $\Omega$ -B                | RCV-011-O    |
| S6       | EQ switch                                  | RSB-009-O    |
| S9       | Bias switch                                | RSB-008-O    |

10. 6 P.B. AMPLIFIER ASSEMBLY (RWF-014)



Foil Side



NOTES:  
 VR201 P B EQ  
 VR202 P B EQ  
 VR203 P B EQ  
 VR204 P B EQ

Parts Lists of P. B. Amplifier Assembly

CAPACITORS

CAPACITORS: IN  $\mu$ F UNLESS OTHERWISE NOTED p: pF  
RESISTORS: IN  $\Omega$ ,  $\frac{1}{2}$ W UNLESS OTHERWISE NOTED K: K $\Omega$ , M: M $\Omega$

| Symbol | Description        | Part No.     |          |
|--------|--------------------|--------------|----------|
| C201   | Electrolytic 100   | CEA 101P 25  |          |
| C202   | Electrolytic 100   | CEA 101P 25  |          |
| C203   | Electrolytic 100   | CEA 101P 25  |          |
| C204   | Electrolytic 100   | CEA 101P 25  |          |
| C205   | Electrolytic 10    | CSZA 100M 16 | tantalum |
| C206   | Electrolytic 10    | CSZA 100M 16 | tantalum |
| C207   | Electrolytic 10    | CSZA 100M 16 | tantalum |
| C208   | Electrolytic 10    | CSZA 100M 16 | tantalum |
| C209   | Electrolytic 100p  | RCE-003-O    |          |
| C210   | Electrolytic 100p  | RCE-003-O    |          |
| C211   | Electrolytic 100p  | RCE-003-O    |          |
| C212   | Electrolytic 100p  | RCE-003-O    |          |
| C213   | Electrolytic 47    | CEA 470P 10  |          |
| C214   | Electrolytic 47    | CEA 470P 10  |          |
| C215   | Electrolytic 47    | CEA 470P 10  |          |
| C216   | Electrolytic 47    | CEA 470P 10  |          |
| C217   | Electrolytic 33p   | RCE-016-O    |          |
| C218   | Electrolytic 33p   | RCE-016-O    |          |
| C219   | Electrolytic 33p   | RCE-016-O    |          |
| C220   | Electrolytic 33p   | RCE-016-O    |          |
| C221   | Electrolytic 100   | CEA 101P 10  |          |
| C222   | Electrolytic 100   | CEA 101P 10  |          |
| C223   | Electrolytic 100   | CEA 101P 10  |          |
| C224   | Electrolytic 100   | CEA 101P 10  |          |
| C225   | Electrolytic 4.7   | CEA 4R7P 35  |          |
| C226   | Electrolytic 4.7   | CEA 4R7P 35  |          |
| C227   | Electrolytic 4.7   | CEA 4R7P 35  |          |
| C228   | Electrolytic 4.7   | CEA 4R7P 35  |          |
| C229   | Electrolytic 0.001 | RCE-011-O    |          |
| C230   | Electrolytic 0.001 | RCE-011-O    |          |
| C231   | Electrolytic 0.001 | RCE-011-O    |          |
| C232   | Electrolytic 0.001 | RCE-011-O    |          |
| C233   | MyIar 0.047        | COMA 473K 50 |          |
| C234   | MyIar 0.047        | COMA 473K 50 |          |
| C235   | MyIar 0.047        | COMA 473K 50 |          |
| C236   | MyIar 0.047        | COMA 473K 50 |          |
| C237   |                    |              |          |
| C238   |                    |              |          |
| C239   |                    |              |          |
| C240   |                    |              |          |
| C241   | StyroI 47p         | RCE-012-O    |          |
| C242   | StyroI 47p         | RCE-012-O    |          |
| C243   | StyroI 47p         | RCE-012-O    |          |
| C244   | StyroI 47p         | RCE-012-O    |          |
| C245   |                    |              |          |

RESISTORS, POTENTIOMETERS

| Symbol | Description      | Part No.                 |  |
|--------|------------------|--------------------------|--|
| R201   | Carbon film 220k | RD $\frac{1}{2}$ VS 224J |  |
| R202   | Carbon film 220k | RD $\frac{1}{2}$ VS 224J |  |
| R203   | Carbon film 220k | RD $\frac{1}{2}$ VS 224J |  |
| R204   | Carbon film 220k | RD $\frac{1}{2}$ VS 224J |  |
| R205   | Carbon film 220  | RD $\frac{1}{2}$ VS 221J |  |
| R206   | Carbon film 220  | RD $\frac{1}{2}$ VS 221J |  |
| R207   | Carbon film 220  | RD $\frac{1}{2}$ VS 221J |  |
| R208   | Carbon film 220  | RD $\frac{1}{2}$ VS 221J |  |
| R209   | Carbon film 180k | RD $\frac{1}{2}$ VS 184J |  |
| R210   | Carbon film 180k | RD $\frac{1}{2}$ VS 184J |  |
| R211   | Carbon film 180k | RD $\frac{1}{2}$ VS 184J |  |
| R212   | Carbon film 180k | RD $\frac{1}{2}$ VS 184J |  |
| R213   | Carbon film 10k  | RD $\frac{1}{2}$ VS 103J |  |
| R214   | Carbon film 10k  | RD $\frac{1}{2}$ VS 103J |  |
| R215   | Carbon film 10k  | RD $\frac{1}{2}$ VS 103J |  |
| R216   | Carbon film 10k  | RD $\frac{1}{2}$ VS 103J |  |
| R217   | Carbon film 2.7M | RD $\frac{1}{2}$ PS 275J |  |
| R218   | Carbon film 2.7M | RD $\frac{1}{2}$ PS 275J |  |
| R219   | Carbon film 2.7M | RD $\frac{1}{2}$ PS 275J |  |
| R220   | Carbon film 2.7M | RD $\frac{1}{2}$ PS 275J |  |
| R221   | Carbon film 6.2k | RD $\frac{1}{2}$ VS 622J |  |
| R222   | Carbon film 6.2k | RD $\frac{1}{2}$ VS 622J |  |
| R223   | Carbon film 6.2k | RD $\frac{1}{2}$ VS 622J |  |
| R224   | Carbon film 6.2k | RD $\frac{1}{2}$ VS 622J |  |
| R225   | Carbon film 5.1k | RD $\frac{1}{2}$ VS 512J |  |
| R226   | Carbon film 5.1k | RD $\frac{1}{2}$ VS 512J |  |
| R227   | Carbon film 5.1k | RD $\frac{1}{2}$ VS 512J |  |
| R228   | Carbon film 5.1k | RD $\frac{1}{2}$ VS 512J |  |
| R229   | Carbon film 18k  | RD $\frac{1}{2}$ VS 183J |  |
| R230   | Carbon film 18k  | RD $\frac{1}{2}$ VS 183J |  |
| R231   | Carbon film 18k  | RD $\frac{1}{2}$ VS 183J |  |
| R232   | Carbon film 18k  | RD $\frac{1}{2}$ VS 183J |  |
| R233   | Carbon film 10k  | RD $\frac{1}{2}$ VS 103J |  |
| R234   | Carbon film 10k  | RD $\frac{1}{2}$ VS 103J |  |
| R235   | Carbon film 10k  | RD $\frac{1}{2}$ VS 103J |  |
| R236   | Carbon film 10k  | RD $\frac{1}{2}$ VS 103J |  |
| R237   | Carbon film 1.8k | RD $\frac{1}{2}$ VS 182J |  |
| R238   | Carbon film 1.8k | RD $\frac{1}{2}$ VS 182J |  |
| R239   | Carbon film 1.8k | RD $\frac{1}{2}$ VS 182J |  |
| R240   | Carbon film 1.8k | RD $\frac{1}{2}$ VS 182J |  |
| R241   | Carbon film 5.6M | RD $\frac{1}{2}$ PS 565J |  |
| R242   | Carbon film 5.6M | RD $\frac{1}{2}$ PS 565J |  |
| R243   | Carbon film 5.6M | RD $\frac{1}{2}$ PS 565J |  |
| R244   | Carbon film 5.6M | RD $\frac{1}{2}$ PS 565J |  |
| R245   | Carbon film 43k  | RD $\frac{1}{2}$ VS 433J |  |
| R246   | Carbon film 43k  | RD $\frac{1}{2}$ VS 433J |  |
| R247   | Carbon film 43k  | RD $\frac{1}{2}$ VS 433J |  |
| R248   | Carbon film 43k  | RD $\frac{1}{2}$ VS 433J |  |
| R249   | Carbon film 1M   | RD $\frac{1}{2}$ VS 105J |  |
| R250   | Carbon film 1M   | RD $\frac{1}{2}$ VS 105J |  |

| Symbol | Description       | Part No.   |
|--------|-------------------|------------|
| R251   | Carbon film 1M    | RD¼VS 105J |
| R252   | Carbon film 1M    | RD¼VS 105J |
| R253   | Carbon film 100k  | RD¼VS 104J |
| VR201  | Semi-fixed 150k-B | C92-860-O  |
| VR202  | Semi-fixed 150k-B | C92-860-O  |
| VR203  | Semi-fixed 150k-B | C92-860-O  |
| VR204  | Semi-fixed 150k-B | C92-860-O  |

**SEMICONDUCTORS**

| Symbol | Description               | Part No. |
|--------|---------------------------|----------|
| Q201   | Transistor 2SC1344-E or D |          |
| Q202   | Transistor 2SC1344-E or D |          |
| Q203   | Transistor 2SC1344-E or D |          |
| Q204   | Transistor 2SC1344-E or D |          |
| Q205   | Transistor 2SC1344-D or E |          |
| Q206   | Transistor 2SC1344-D or E |          |
| Q207   | Transistor 2SC1344-D or E |          |
| Q208   | Transistor 2SC1344-D or E |          |
| Q209   | Transistor 2SC1344-E or D |          |
| Q210   | Transistor 2SC1344-E or D |          |
| Q211   | Transistor 2SC1344-E or D |          |
| Q212   | Transistor 2SC1344-E or D |          |
| Q213   | FET 2SK30-Y or O          |          |
| Q214   | FET 2SK30-Y or O          |          |
| Q215   | FET 2SK30-Y or O          |          |
| Q216   | FET 2SK30-Y or O          |          |





# Parts Lists of REC. Amplifier Assembly

## CAPACITORS

| Symbol | Description  |       |     | Part No.     |                      |
|--------|--------------|-------|-----|--------------|----------------------|
| C101   | Electrolytic | 100   | 25V | CEA 101P 25  | Tantalum<br>Tantalum |
| C102   | Electrolytic | 100   | 25V | CEA 101P 25  |                      |
| C103   | Electrolytic | 10    | 16V | CSZA 100M 16 |                      |
| C104   | Electrolytic | 10    | 16V | CSZA 100M 16 |                      |
| C105   | Styrol       | 100p  | 50V | RCE-003-O    |                      |
| C106   | Styrol       | 100p  | 50V | RCE-003-O    |                      |
| C107   |              |       |     |              |                      |
| C108   |              |       |     |              |                      |
| C109   | Electrolytic | 33    | 16V | CEA 330P 16  |                      |
| C110   | Electrolytic | 33    | 16V | CEA 330P 16  |                      |
| C111   | Styrol       | 220p  | 50V | RCE-006-O    |                      |
| C112   | Styrol       | 220p  | 50V | RCE-006-O    |                      |
| C113   | Electrolytic | 1     | 50V | CEA 010P 50  |                      |
| C114   | Electrolytic | 1     | 50V | CEA 010P 50  |                      |
| C115   | Electrolytic | 4.7   | 35V | CEA 4R7P 35  |                      |
| C116   | Electrolytic | 4.7   | 35V | CEA 4R7P 35  |                      |
| C117   | Styrol       | 100p  | 50V | RCE-003-O    |                      |
| C118   | Styrol       | 100p  | 50V | RCE-003-O    |                      |
| C119   | Styrol       | 47p   | 50V | RCE-012-O    |                      |
| C120   | Styrol       | 47p   | 50V | RCE-012-O    |                      |
| C121   | Electrolytic | 47    | 10V | CEA 470P 10  |                      |
| C122   | Electrolytic | 47    | 10V | CEA 470P 10  |                      |
| C123   | Electrolytic | 4.7   | 35V | CEA 4R7P 35  |                      |
| C124   | Electrolytic | 4.7   | 35V | CEA 4R7P 35  |                      |
| C125   | Electrolytic | 4.7   | 35V | CEA 4R7P 35  |                      |
| C126   | Electrolytic | 4.7   | 35V | CEA 4R7P 35  |                      |
| C127   | Styrol       | 47p   | 50V | RCE-012-O    |                      |
| C128   | Styrol       | 47p   | 50V | RCE-012-O    |                      |
| C129   | Electrolytic | 47    | 10V | CEA 470P 10  |                      |
| C130   | Electrolytic | 47    | 10V | CEA 470P 10  |                      |
| C131   | Mylar        | 0.1   | 50V | CQMA 104K 50 |                      |
| C132   | Mylar        | 0.1   | 50V | CQMA 104K50  |                      |
| C133   | Electrolytic | 4.7   | 35V | CEA 4R7P 35  |                      |
| C134   | Electrolytic | 4.7   | 35V | CEA 4R7P 35  |                      |
| C135   | Mylar        | 0.056 | 50V | CQMA 563K 50 |                      |
| C136   | Mylar        | 0.056 | 50V | CQMA 563K 50 |                      |
| C137   | Mylar        | 0.022 | 50V | CQMA 223K 50 |                      |
| C138   | Mylar        | 0.022 | 50V | CQMA 223K 50 |                      |
| C139   | Mylar        | 0.033 | 50V | CQMA 333K 50 |                      |
| C140   | Mylar        | 0.033 | 50V | CQMA 333K 50 |                      |
| C141   | Mylar        | 0.015 | 50V | CQMA 153K 50 |                      |
| C142   | Mylar        | 0.015 | 50V | CQMA 153K 50 |                      |
| C143   | Electrolytic | 10    | 16V | RCH-011-O    | Bi-polar             |
| C144   | Electrolytic | 10    | 16V | RCH-011-O    | Bi-polar             |
| C145   | Electrolytic | 10    | 16V | RCH-011-O    | Bi-polar             |

| Symbol | Description         | Part No.  |          |
|--------|---------------------|-----------|----------|
| C146   | Electrolytic 10 16V | RCH-011-O | Bi-polar |
| C147   | Electrolytic 10 16V | RCH-011-O | Bi-polar |
| C148   | Electrolytic 10 16V | RCH-011-O | Bi-polar |
| C149   | Electrolytic 10 16V | RCH-011-O | Bi-polar |
| C150   | Electrolytic 10 16V | RCH-011-O | Bi-polar |

## RESISTORS

| Symbol | Description      | Part No.                 |  |
|--------|------------------|--------------------------|--|
| R101   | Carbon film 220k | RD $\frac{1}{2}$ VS 224J |  |
| R102   | Carbon film 220k | RD $\frac{1}{2}$ VS 224J |  |
| R103   | Carbon film 33k  | RD $\frac{1}{2}$ VS 333J |  |
| R104   | Carbon film 33k  | RD $\frac{1}{2}$ VS 333J |  |
| R105   | Carbon film 68k  | RD $\frac{1}{2}$ VS 683J |  |
| R106   | Carbon film 68k  | RD $\frac{1}{2}$ VS 683J |  |
| R107   | Carbon film 300  | RD $\frac{1}{2}$ VS 301J |  |
| R108   | Carbon film 300  | RD $\frac{1}{2}$ VS 301J |  |
| R109   | Carbon film 3.9k | RD $\frac{1}{2}$ VS 392J |  |
| R110   | Carbon film 3.9k | RD $\frac{1}{2}$ VS 392J |  |
| R111   | Carbon film 10k  | RD $\frac{1}{2}$ VS 103J |  |
| R112   | Carbon film 10k  | RD $\frac{1}{2}$ VS 103J |  |
| R113   | Carbon film 1k   | RD $\frac{1}{2}$ VS 102J |  |
| R114   | Carbon film 1k   | RD $\frac{1}{2}$ VS 102J |  |
| R115   |                  |                          |  |
| R121   | Carbon film 2.2k | RD $\frac{1}{2}$ VS 222J |  |
| R122   | Carbon film 2.2k | RD $\frac{1}{2}$ VS 222J |  |
| R123   | Carbon film 10k  | RD $\frac{1}{2}$ VS 103J |  |
| R124   | Carbon film 10k  | RD $\frac{1}{2}$ VS 103J |  |
| R125   | Carbon film 220k | RD $\frac{1}{2}$ VS 224J |  |
| R126   | Carbon film 220k | RD $\frac{1}{2}$ VS 224J |  |
| R127   | Carbon film 330  | RD $\frac{1}{2}$ VS 331J |  |
| R128   | Carbon film 330  | RD $\frac{1}{2}$ VS 331J |  |
| R129   | Carbon film 3.3k | RD $\frac{1}{2}$ VS 332J |  |
| R130   | Carbon film 3.3k | RD $\frac{1}{2}$ VS 332J |  |
| R131   | Carbon film 100k | RD $\frac{1}{2}$ VS 104J |  |
| R132   | Carbon film 100k | RD $\frac{1}{2}$ VS 104J |  |
| R133   | Carbon film 82k  | RD $\frac{1}{2}$ VS 823J |  |
| R134   | Carbon film 82k  | RD $\frac{1}{2}$ VS 823J |  |
| R135   | Carbon film 12k  | RD $\frac{1}{2}$ VS 123J |  |
| R136   | Carbon film 12k  | RD $\frac{1}{2}$ VS 123J |  |
| R137   | Carbon film 470  | RD $\frac{1}{2}$ VS 471J |  |
| R138   | Carbon film 470  | RD $\frac{1}{2}$ VS 471J |  |
| R139   | Carbon film 4.7k | RD $\frac{1}{2}$ VS 472J |  |
| R140   | Carbon film 4.7k | RD $\frac{1}{2}$ VS 472J |  |
| R141   | Carbon film 82k  | RD $\frac{1}{2}$ VS 823J |  |
| R142   | Carbon film 82k  | RD $\frac{1}{2}$ VS 823J |  |
| R143   | Carbon film 100k | RD $\frac{1}{2}$ VS 104J |  |
| R144   | Carbon film 100k | RD $\frac{1}{2}$ VS 104J |  |
| R145   | Carbon film 56k  | RD $\frac{1}{2}$ VS 563J |  |

| Symbol | Description      | Part No.   |
|--------|------------------|------------|
| R146   | Carbon film 56k  | RD¼VS 563J |
| R147   | Carbon film 1.5k | RD¼VS 152J |
| R148   | Carbon film 1.5k | RD¼VS 152J |
| R149   | Carbon film 3.9k | RD¼VS 392J |
| R150   | Carbon film 3.9k | RD¼VS 392J |
| R151   | Carbon film 270  | RD¼VS 271J |
| R152   | Carbon film 270  | RD¼VS 271J |
| R153   | Carbon film 150k | RD¼VS 154J |
| R154   | Carbon film 150k | RD¼VS 154J |
| R155   | Carbon film 33k  | RD¼VS 333J |
| R156   | Carbon film 33k  | RD¼VS 333J |
| R157   | Carbon film 10   | RD¼VS 100J |
| R158   | Carbon film 10   | RD¼VS 100J |
| R159   | Carbon film 2k   | RD¼VS 202J |
| R160   | Carbon film 2k   | RD¼VS 202J |
| R161   | Carbon film 3.9k | RD¼VS 392J |
| R162   | Carbon film 3.9k | RD¼VS 392J |
| R163   | Carbon film 3.9k | RD¼VS 392J |
| R164   | Carbon film 3.9k | RD¼VS 392J |
| R165   | Carbon film 3.9k | RD¼VS 392J |
| R166   | Carbon film 3.9k | RD¼VS 392J |
| R167   | Carbon film 3.9k | RD¼VS 392J |
| R168   | Carbon film 3.9k | RD¼VS 392J |
| R183   | Carbon film 33   | RD¼VS 330J |
| R184   | Carbon film 33   | RD¼VS 330J |

## SEMICONDUCTORS

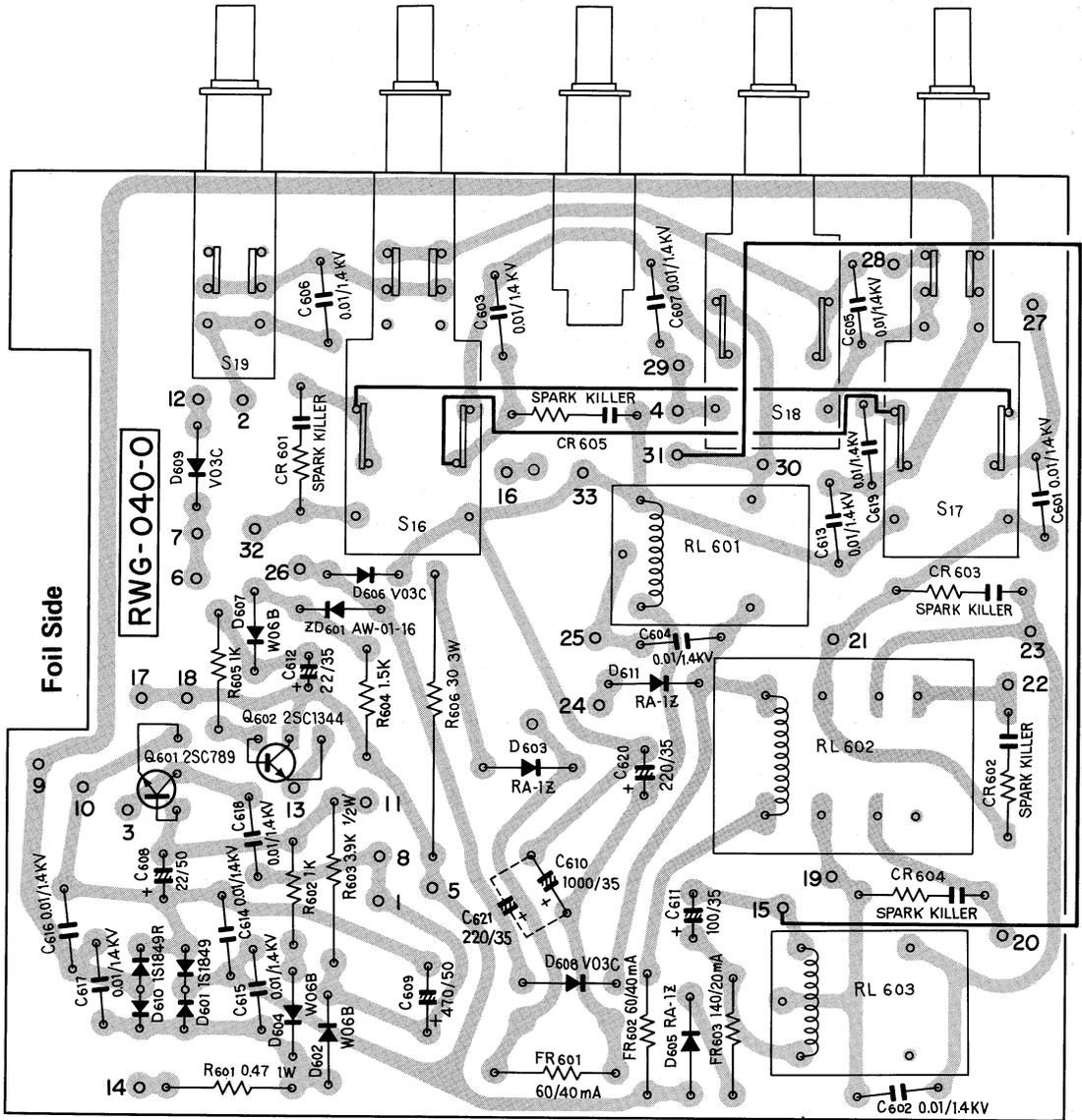
| Symbol | Description                 | Part No. |
|--------|-----------------------------|----------|
| Q101   | Transistor 2SC1000-GR or BL |          |
| Q102   | Transistor 2SC1000-GR or BL |          |
| Q103   | Transistor 2SA672-B or C    |          |
| Q104   | Transistor 2SA672-B or C    |          |
| Q105   | Transistor 2SC1344-E or D   |          |
| Q106   | Transistor 2SC1344-E or D   |          |
| Q107   | Transistor 2SC1344-D or E   |          |
| Q108   | Transistor 2SC1344-D or E   |          |
| Q109   | Transistor 2SC1344-D or E   |          |
| Q110   | Transistor 2SC1344-D or E   |          |
| Q111   | Transistor 2SC1213-B or C   |          |
| Q112   | Transistor 2SC1213-B or C   |          |
| D101   | Diode 1S2473VE              |          |
| D102   | Diode 1S2473VE              |          |
| D103   | Diode 1S2473VE              |          |
| D104   | Diode 1S2473VE              |          |
| D105   | Diode 1S2473VE              |          |
| D106   | Diode 1S2473VE              |          |
| D107   | Diode 1S2473VE              |          |
| D108   | Diode 1S2473VE              |          |
| D109   | Diode 1S2473VE              |          |
| D110   | Diode 1S2473VE              |          |

| Symbol | Description    | Part No. |
|--------|----------------|----------|
| D111   | Diode 1S2473VE |          |
| D112   | Diode 1S2473VE |          |
| D113   | Diode 1S2473VE |          |
| D114   | Diode 1S2473VE |          |
| D115   | Diode 1S2473VE |          |
| D116   | Diode 1S2473VE |          |

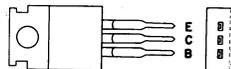
**COILS AND POTENTIOMETERS**

| Symbol | Description      | Part No.  |
|--------|------------------|-----------|
| L101   | Peaking coil     | RTF-007-O |
| L102   | Peaking coil     | RTF-007-O |
| VR101  | Semi-fixed 10k-B | C92-049-O |
| VR102  | Semi-fixed 10k-B | C92-049-O |

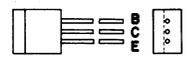




2SC789



2SC1344



## Parts Lists of Control Assembly

### CAPACITORS

| Symbol | Description  |      |          | Part No.    |
|--------|--------------|------|----------|-------------|
| C601   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C602   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C603   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C604   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C605   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C606   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C607   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C608   | Electrolytic | 22   | 50V      | CEA 220P 50 |
| C609   | Electrolytic | 470  | 50V      | CEA 471P 50 |
| C610   | Electrolytic | 1000 | 35V      | CEA 102P 35 |
| C611   | Electrolytic | 100  | 35V      | CEA 101P 35 |
| C612   | Electrolytic | 22   | 35V      | CEA 220P 35 |
| C613   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C614   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C615   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C616   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C617   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C618   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C619   | Ceramic      | 0.01 | DC 1.4kV | C43-003-O   |
| C620   | Electrolytic | 220  | 35V      | CEA 221P 35 |
| C621   | Electrolytic | 220  | 35V      | CEA 221P 35 |

### RESISTORS

| Symbol | Description |      |    | Part No.   |
|--------|-------------|------|----|------------|
| R601   | Wire wound  | 0.47 | 1W | PT1P R47K  |
| R602   | Carbon film | 1k   |    | RD½PS 102J |
| R603   | Carbon film | 3.9k | ½W | RD½PW 392J |
| R604   | Carbon film | 1.5k |    | RD½PS 152J |
| R605   | Carbon film | 1k   |    | RD½PS 102J |
| R606   | Metal oxide | 30   | 3W | RS3P 300J  |

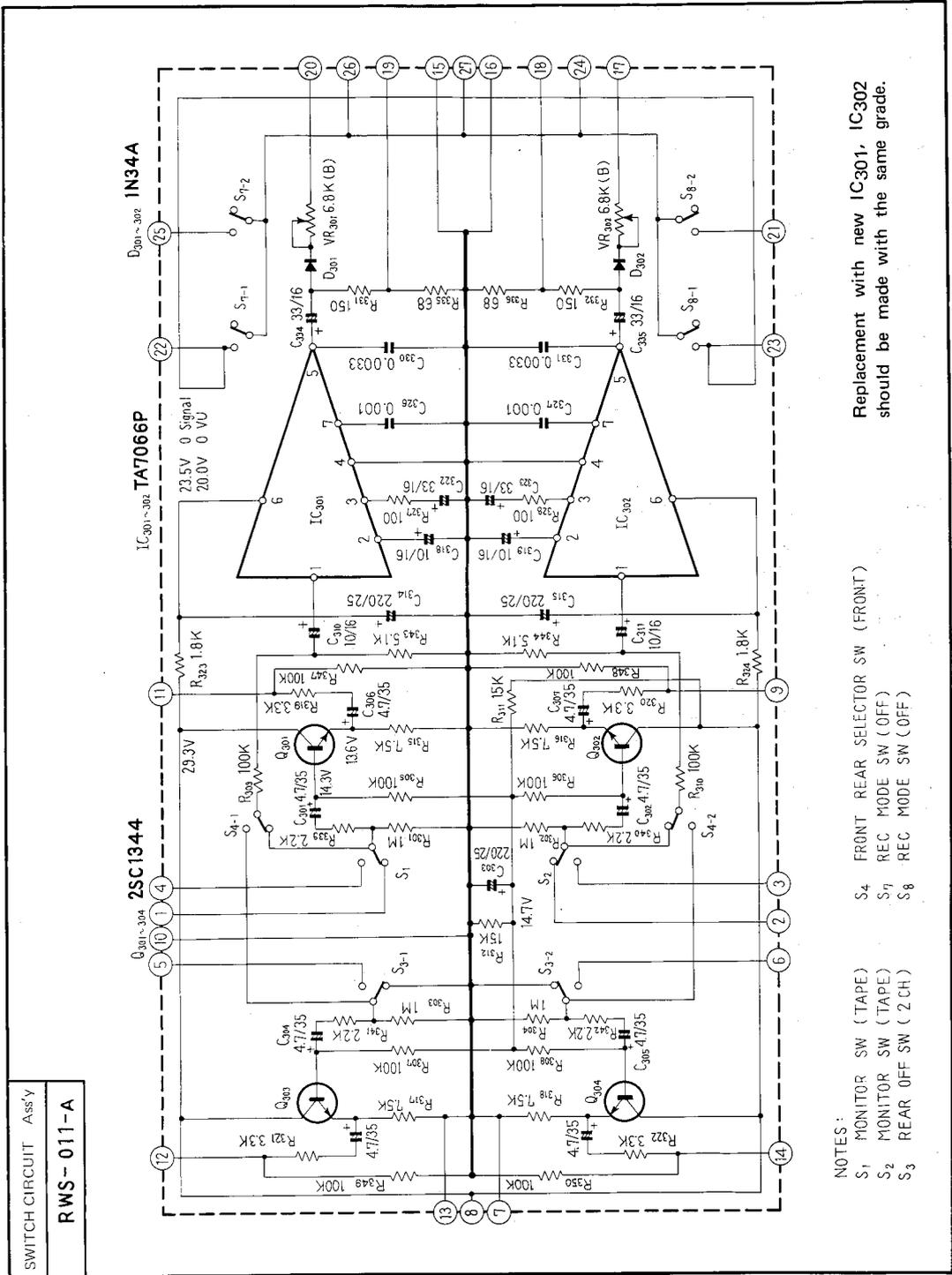
## SEMICONDUCTORS

| Symbol | Description | Part No.       |
|--------|-------------|----------------|
| Q601   | Transistor  | 2SC789-O or Y  |
| Q602   | Transistor  | 2SC1344-D or E |
| D601   | Diode       | 1S1849         |
| D602   | Diode       | W06B           |
| D603   | Diode       | RA1-Z          |
| D604   | Diode       | W06B           |
| D605   | Diode       | RA1-Z          |
| D606   | Diode       | V03C           |
| D607   | Diode       | W06B           |
| D608   | Diode       | V03C           |
| D609   | Diode       | V03C           |
| D610   | Diode       | 1S1849R        |
| D611   | Diode       | RA1-Z          |
| ZD601  | Zener diode | AW01-16        |

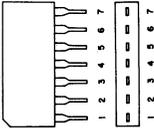
## OTHERS

| Symbol | Description                                 | Part No.  |
|--------|---|-----------|
| CR601  | Spark Killer                                | RWX-030-O |
| CR602  | Spark Killer                                | RWX-030-O |
| CR603  | Spark Killer                                | RWX-030-O |
| CR604  | Spark Killer                                | RWX-030-O |
| CR605  | Spark Killer                                | RWX-030-O |
| FR601  | Metal film fuse resistor 60 $\Omega$ /40mA  | REK-012-A |
| FR602  | Metal film fuse resistor 60 $\Omega$ /40mA  | REK-012-A |
| FR603  | Metal film fuse resistor 140 $\Omega$ /20mA | REK-013-A |
| S16    | Switch (REW)                                | RSG-013-A |
| S17    | Switch (F. FWD)                             | RSG-013-A |
| S18    | Switch (PLAY)                               | RSG-013-A |
| S19    | Switch (REC)                                | RSG-013-A |
| RL601  | Timing relay                                | RSR-015-A |
| RL602  | Relay                                       | RSR-016-O |
| RL603  | Timing relay                                | RSR-015-A |
|        | Capacitor sleeve (A)                        | REL-150-O |

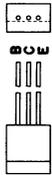
# 10. 9 SWITCH CIRCUIT ASSEMBLY (RWS-011)



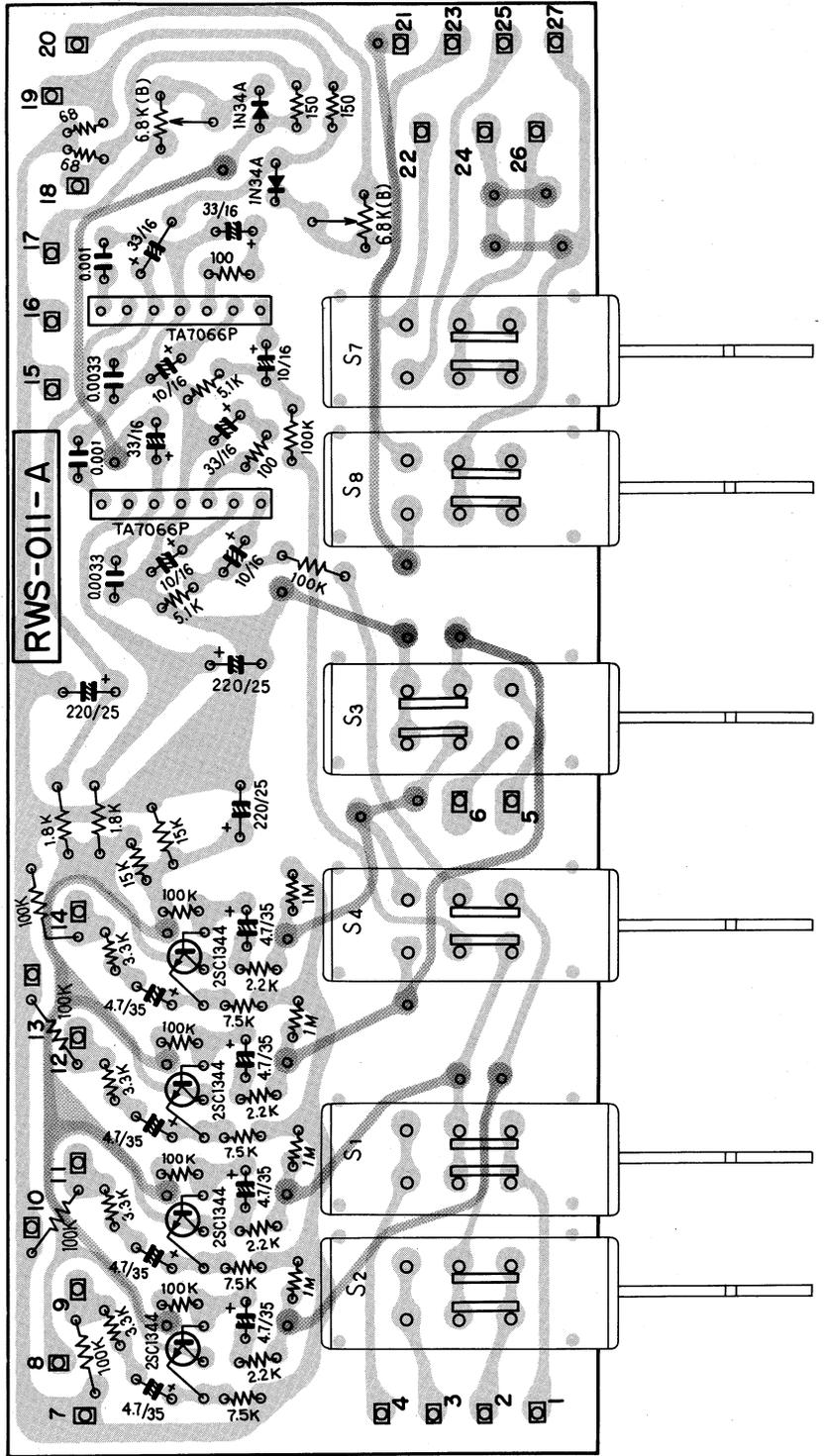
TA7066P



2SC1344



Foil Side



## Parts Lists of Switch Circuit Assembly

### CAPACITORS

| Symbol | Description  |        |     | Part No.    |
|--------|--------------|--------|-----|-------------|
| C301   | Electrolytic | 4.7    | 35V | CEA 4R7P 35 |
| C302   | Electrolytic | 4.7    | 35V | CEA 4R7P 35 |
| C303   | Electrolytic | 220    | 25V | CEA 221P 25 |
| C304   | Electrolytic | 4.7    | 35V | CEA 4R7P 35 |
| C305   | Electrolytic | 4.7    | 35V | CEA 4R7P 35 |
| C306   | Electrolytic | 4.7    | 35V | CEA 4R7P 35 |
| C307   | Electrolytic | 4.7    | 35V | CEA 4R7P 35 |
| C308   | Electrolytic | 4.7    | 35V | CEA 4R7P 35 |
| C309   | Electrolytic | 4.7    | 35V | CEA 4R7P 35 |
| C310   | Electrolytic | 10     | 16V | CEA 100P 16 |
| C311   | Electrolytic | 10     | 16V | CEA 100P 16 |
| C312   |              |        |     |             |
| C313   |              |        |     |             |
| C314   | Electrolytic | 220    | 25V | CEA 221P 25 |
| C315   | Electrolytic | 220    | 25V | CEA 221P 25 |
| C316   |              |        |     |             |
| C317   |              |        |     |             |
| C318   | Electrolytic | 10     | 16V | CEA 100P 16 |
| C319   | Electrolytic | 10     | 16V | CEA 100P 16 |
| C320   |              |        |     |             |
| C321   |              |        |     |             |
| C322   | Electrolytic | 33     | 16V | CEA 330P 16 |
| C323   | Electrolytic | 33     | 16V | CEA 330P 16 |
| C324   |              |        |     |             |
| C325   |              |        |     |             |
| C326   | Mylar        | 0.001  | 50V | CQMA102K 50 |
| C327   | Mylar        | 0.001  | 50V | CQMA102K 50 |
| C328   |              |        |     |             |
| C329   |              |        |     |             |
| C330   | Mylar        | 0.0033 | 50V | CQMA332K 50 |
| C331   | Mylar        | 0.0033 | 50V | CQMA332K 50 |
| C332   |              |        |     |             |
| C333   |              |        |     |             |
| C334   | Electrolytic | 33     | 16V | CEA 330P 16 |
| C335   | Electrolytic | 33     | 16V | CEA 330P 16 |

### RESISTORS

| Symbol | Description |      | Part No.                 |
|--------|-------------|------|--------------------------|
| R301   | Carbon film | 1M   | RD $\frac{1}{4}$ VS 105J |
| R302   | Carbon film | 1M   | RD $\frac{1}{4}$ VS 105J |
| R303   | Carbon film | 1M   | RD $\frac{1}{4}$ VS 105J |
| R304   | Carbon film | 1M   | RD $\frac{1}{4}$ VS 105J |
| R305   | Carbon film | 100k | RD $\frac{1}{4}$ VS 104J |

| Symbol | Description      | Part No.   |
|--------|------------------|------------|
| R306   | Carbon film 100k | RD½VS 104J |
| R307   | Carbon film 100k | RD½VS 104J |
| R308   | Carbon film 100k | RD½VS 104J |
| R309   | Carbon film 100k | RD½VS 104J |
| R310   | Carbon film 100k | RD½VS 104J |
| R311   | Carbon film 15k  | RD½VS 153J |
| R312   | Carbon film 15k  | RD½VS 153J |
| R313   |                  |            |
| R314   |                  |            |
| R315   | Carbon film 7.5k | RD½VS 752J |
| R316   | Carbon film 7.5k | RD½VS 752J |
| R317   | Carbon film 7.5k | RD½VS 752J |
| R318   | Carbon film 7.5k | RD½VS 752J |
| R319   | Carbon film 3.3k | RD½VS 332J |
| R320   | Carbon film 3.3k | RD½VS 332J |
| R321   | Carbon film 3.3k | RD½VS 332J |
| R322   | Carbon film 3.3k | RD½VS 332J |
| R323   | Carbon film 1.8k | RD½VS 182J |
| R324   | Carbon film 1.8k | RD½VS 182J |
| R325   |                  |            |
| R326   |                  |            |
| R327   | Carbon film 100  | RD½VS 101J |
| R328   | Carbon film 100  | RD½VS 101J |
| R329   |                  |            |
| R330   |                  |            |
| R331   | Carbon film 150  | RD½VS 151J |
| R332   | Carbon film 150  | RD½VS 151J |
| R333   |                  |            |
| R334   |                  |            |
| R335   | Carbon film 68   | RD½VS 680J |
| R336   | Carbon film 68   | RD½VS 680J |
| R337   |                  |            |
| R338   |                  |            |
| R339   | Carbon film 2.2k | RD½VS 222J |
| R340   | Carbon film 2.2k | RD½VS 222J |
| R341   | Carbon film 2.2k | RD½VS 222J |
| R342   | Carbon film 2.2k | RD½VS 222J |
| R343   | Carbon film 5.1k | RD½VS 512J |
| R344   | Carbon film 5.1k | RD½VS 512J |
| R345   |                  |            |
| R346   |                  |            |
| R347   | Carbon film 100K | RD½VS 104J |
| R348   | Carbon film 100K | RD½VS 104J |
| R349   | Carbon film 100K | RD½VS 104J |
| R350   | Carbon film 100K | RD½VS 104J |

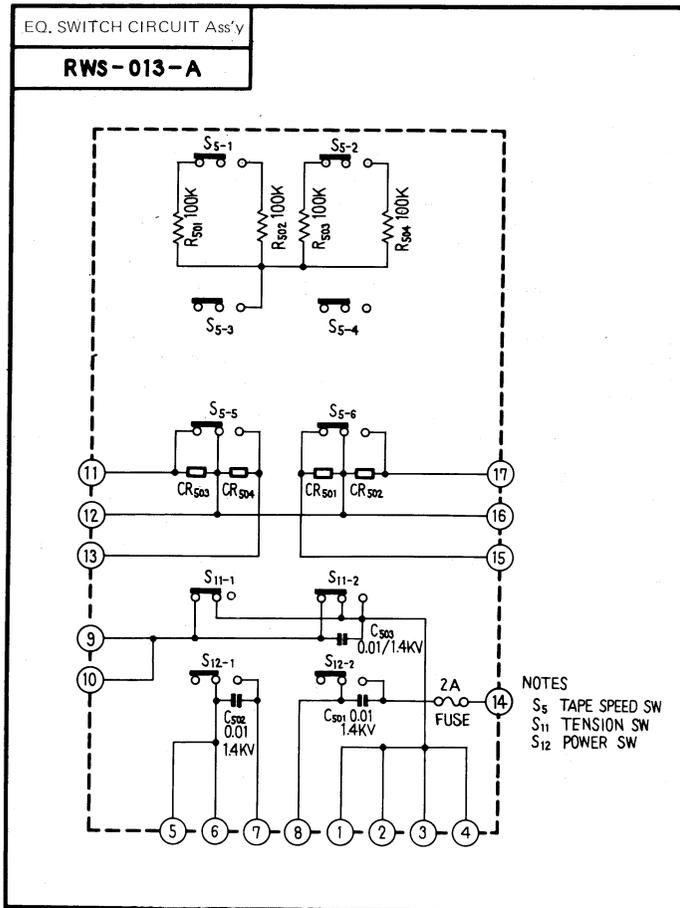
## SEMICONDUCTORS

| Symbol | Description               | Part No.  |
|--------|---------------------------|-----------|
| Q301   | Transistor 2SC1344-D or E |           |
| Q302   | Transistor 2SC1344-D or E |           |
| Q303   | Transistor 2SC1344-D or E |           |
| Q304   | Transistor 2SC1344-D or E |           |
| D301   | Diode 1N34A               |           |
| D302   | Diode 1N34A               |           |
| IC301  | IC TA7066P-B or A         | RYY-002-O |
| IC302  | IC TA7066P-B or A         | RYY-002-O |

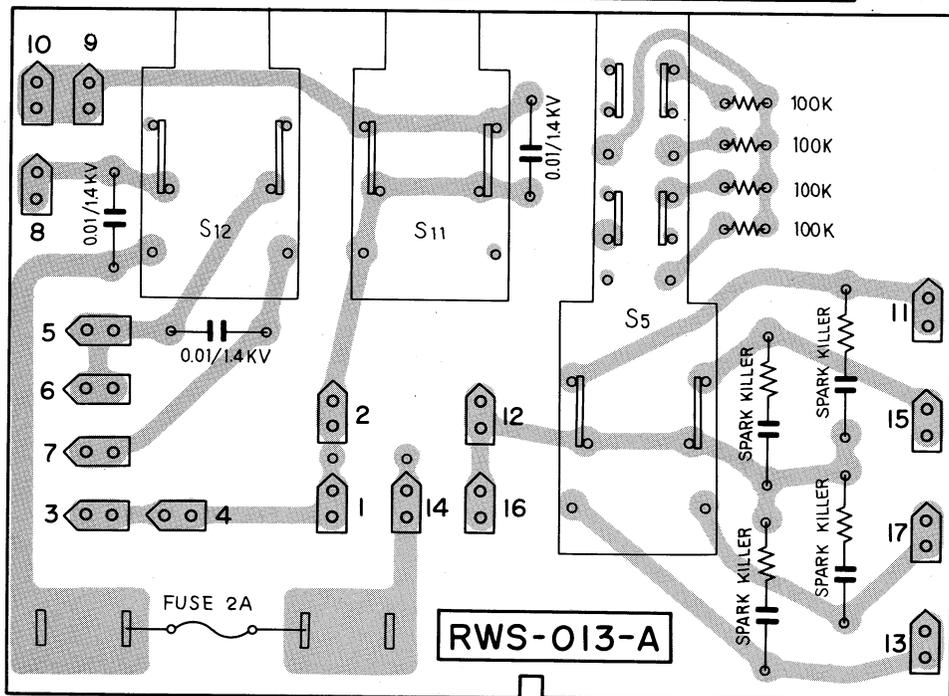
## OTHERS

| Symbol | Description       | Part No.  |
|--------|-------------------|-----------|
| VR301  | Semi-fixed 6.8k-B | RCP-001-O |
| VR302  | Semi-fixed 6.8k-B | RCP-001-O |
| S1     | Lever switch      | RSK-018-O |
| S2     | Lever switch      | RSK-018-O |
| S3     | Lever switch      | RSK-018-O |
| S4     | Lever switch      | RSK-018-O |
| S7     | Lever switch      | RSK-018-O |
| S8     | Lever switch      | RSK-018-O |

10.10 EQ. SWITCH CIRCUIT ASSEMBLY (RWS-013)



Foil Side



## Parts Lists of EQ Switch Circuit Assembly

### CAPACITORS

| Symbol | Description          | Part No.  |
|--------|----------------------|-----------|
| C501   | Ceramic 0.01 DC1.4kV | C43-003-O |
| C502   | Ceramic 0.01 DC1.4kV | C43-003-O |
| C503   | Ceramic 0.01 DC1.4kV | C43-003-O |

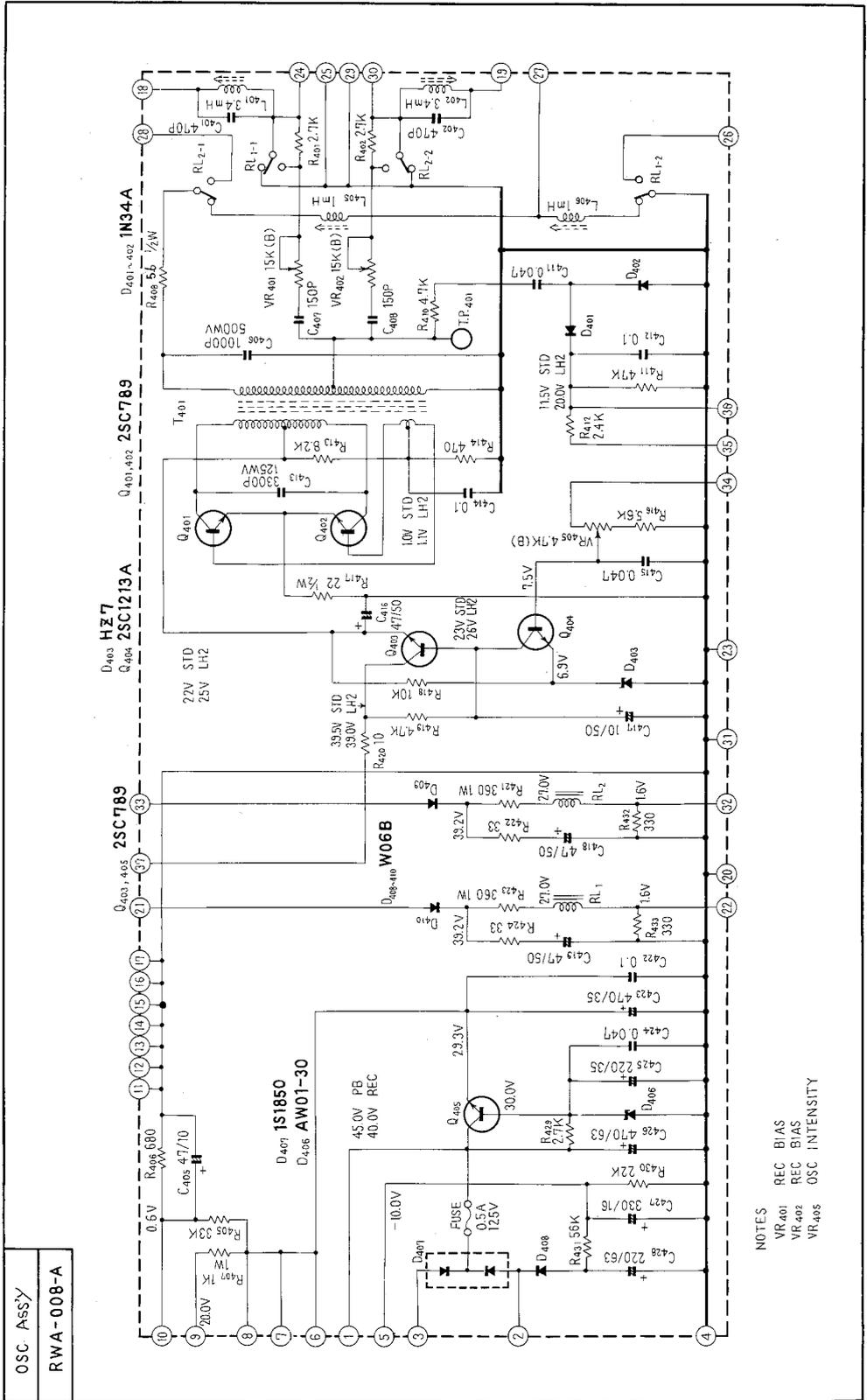
### RESISTORS

| Symbol | Description      | Part No.   |
|--------|------------------|------------|
| R501   | Carbon film 100k | RD½VS 104J |
| R502   | Carbon film 100k | RD½VS 104J |
| R503   | Carbon film 100k | RD½VS 104J |
| R504   | Carbon film 100k | RD½VS 104J |

### OTHERS

| Symbol | Description          | Part No.  |
|--------|----------------------|-----------|
| CR501  | Spark Killer         | RWX-030-O |
| CR502  | Spark Killer         | RWX-030-O |
| CR503  | Spark Killer         | RWX-030-O |
| CR504  | Spark Killer         | RWX-030-O |
|        | Push switch          | RSG-014-O |
|        | Fuse (2A)            | E21-005-A |
|        | Capacitor sleeve (A) | REC-150-O |

# 10.11 OSC. ASSEMBLY (RWA-008)





## Parts Lists of OSC. Assembly

### CAPACITORS

| Symbol | Description  |        |      | Part No.      |
|--------|--------------|--------|------|---------------|
| C401   | Styrol       | 470p   | 50V  | RCE-014-O     |
| C402   | Styrol       | 470p   | 50V  | RCE-014-O     |
| C403   |              |        |      |               |
| C404   |              |        |      |               |
| C405   | Electrolytic | 47     | 10V  | CEA 470P 10   |
| C406   | Styrol       | 0.001  | 500V | CQSA 102J 500 |
| C407   | Styrol       | 150p   | 50V  | RCE-007-O     |
| C408   | Styrol       | 150p   | 50V  | RCE-007-O     |
| C409   |              |        |      |               |
| C410   |              |        |      |               |
| C411   | Mylar        | 0.047  | 50V  | CQMA 473K 50  |
| C412   | Mylar        | 0.1    | 50V  | CQMA 104K 50  |
| C413   | Styrol       | 0.0033 | 125V | CQSA 332J 125 |
| C414   | Mylar        | 0.1    | 50V  | CQMA 104K 50  |
| C415   | Mylar        | 0.047  | 50V  | CQMA 473K 50  |
| C416   | Electrolytic | 47     | 50V  | CEA 470P 50   |
| C417   | Electrolytic | 10     | 50V  | CEA 100P 50   |
| C418   | Electrolytic | 47     | 50V  | CEA 470P 50   |
| C419   | Electrolytic | 47     | 50V  | CEA 470P 50   |
| C420   |              |        |      |               |
| C421   |              |        |      |               |
| C422   | Mylar        | 0.1    | 50V  | CQMA 104K 50  |
| C423   | Electrolytic | 470    | 35V  | CEA 471P 35   |
| C424   | Mylar        | 0.047  | 50V  | CQMA 473K 50  |
| C425   | Electrolytic | 220    | 35V  | CEA 221P 35   |
| C426   | Electrolytic | 470    | 63V  | CEA 471P 63   |
| C427   | Electrolytic | 330    | 16V  | CEA 331P 16   |
| C428   | Electrolytic | 220    | 63V  | CEA 221P 63   |

### OTHERS

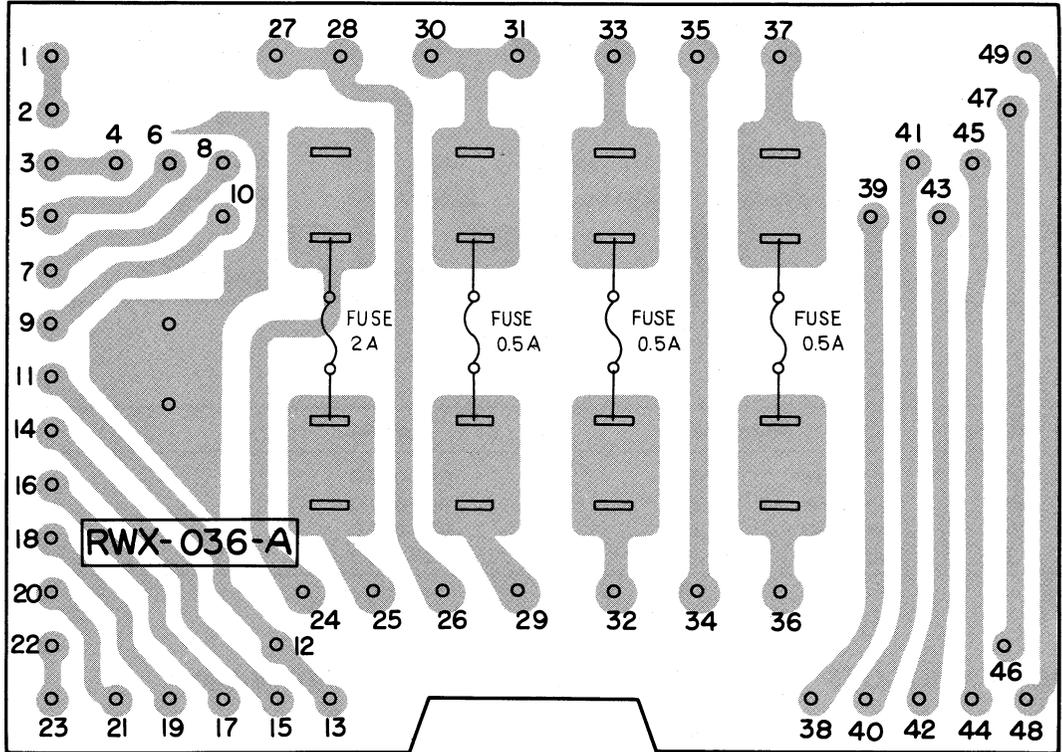
| Symbol | Description |        | Part No.  |
|--------|-------------|--------|-----------|
| RL-1   | Relay       |        | RSR-012-O |
| RL-2   | Relay       |        | RSR-012-O |
| L401   | Trap coil   |        | RTF-006-O |
| L402   | Trap coil   |        | RTF-006-O |
| L405   | Dummy coil  |        | RTD-008-O |
| L406   | Dummy coil  |        | RTD-008-O |
| T401   | Osc coil    |        | RTD-007-O |
| VR401  | Semi-fixed  | 15k-B  | RCP-006-O |
| VR402  | Semi-fixed  | 15k-B  | RCP-006-O |
| VR405  | Semi-fixed  | 4.7k-B | C92-051-O |
|        | Fuse (0.5A) |        | E21-007-O |

## RESISTORS AND SEMICONDUCTORS

| Symbol | Description                     | Part No.                 |
|--------|---------------------------------|--------------------------|
| R401   | Carbon film 2.7k                | RD $\frac{1}{4}$ VS 272J |
| R402   | Carbon film 2.7k                | RD $\frac{1}{4}$ VS 272J |
| R403   |                                 |                          |
| R404   |                                 |                          |
| R405   | Carbon film 33k                 | RD $\frac{1}{4}$ VS 333J |
| R406   | Carbon film 680                 | RD $\frac{1}{4}$ VS 681J |
| R407   | Carbon film 1k 1W               | RD1PW 102J               |
| R408   | Carbon film 5.6 $\frac{1}{2}$ W | RD $\frac{1}{2}$ PW 5R6J |
| R409   |                                 |                          |
| R410   | Carbon film 4.7k                | RD $\frac{1}{4}$ VS 472J |
| R411   | Carbon film 47k                 | RD $\frac{1}{4}$ VS 473J |
| R412   | Carbon film 2.4k                | RD $\frac{1}{4}$ VS 242J |
| R413   | Carbon film 8.2k                | RD $\frac{1}{4}$ VS 822J |
| R414   | Carbon film 470                 | RD $\frac{1}{4}$ VS 471J |
| R415   |                                 |                          |
| R416   | Carbon film 5.6k                | RD $\frac{1}{4}$ VS 562J |
| R417   | Carbon film 22 $\frac{1}{2}$ W  | RD $\frac{1}{2}$ PW 220J |
| R418   | Carbon film 10k                 | RD $\frac{1}{4}$ VS 103J |
| R419   | Carbon film 4.7k                | RD $\frac{1}{4}$ VS 472J |
| R420   | Carbon film 10                  | RD $\frac{1}{4}$ VS 100J |
| R421   | Carbon film 360 1W              | RD1PW 361J               |
| R422   | Carbon film 33                  | RD $\frac{1}{4}$ VS 330J |
| R423   | Carbon film 360 1W              | RD1PW 361J               |
| R424   | Carbon film 33                  | RD $\frac{1}{4}$ VS 330J |
| R425   |                                 |                          |
| R426   |                                 |                          |
| R427   |                                 |                          |
| R428   |                                 |                          |
| R429   | Carbon film 2.7k                | RD $\frac{1}{4}$ VS 272J |
| R430   | Carbon film 22k                 | RD $\frac{1}{4}$ VS 223J |
| R431   | Carbon film 56k                 | RD $\frac{1}{4}$ VS 563J |
| R432   | Carbon film 330                 | RD $\frac{1}{4}$ VS 331J |
| R433   | Carbon film 330                 | RD $\frac{1}{4}$ VS 331J |
| Q401   | Transistor 2SC789-O             |                          |
| Q402   | Transistor 2SC789-O             |                          |
| Q403   | Transistor 2SC789-O or Y        |                          |
| Q404   | Transistor 2SC1213A-B or C      |                          |
| Q405   | Transistor 2SC789-O or Y        |                          |
| D401   | Diode 1N34A                     |                          |
| D402   | Diode 1N34A                     |                          |
| D403   | Zener Diode HZ-7 B              |                          |
| D404   |                                 |                          |
| D405   |                                 |                          |
| D406   | Zener diode AW01-30             |                          |
| D407   | Diode 1S1850                    |                          |
| D408   | Diode W06B                      |                          |
| D409   | Diode W06B                      |                          |
| D410   | Diode W06B                      |                          |

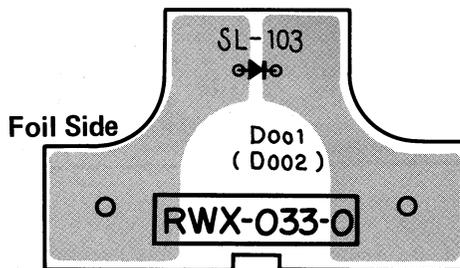
10.12 FUSE P.C. BOARD ASSEMBLY (RWX-036)

Foil Side



| Symbol | Description | Part No.  |  |
|--------|-------------|-----------|--|
|        | 0.5A Fuse   | E21-007-O |  |
|        | 2A Fuse     | E21-005-A |  |

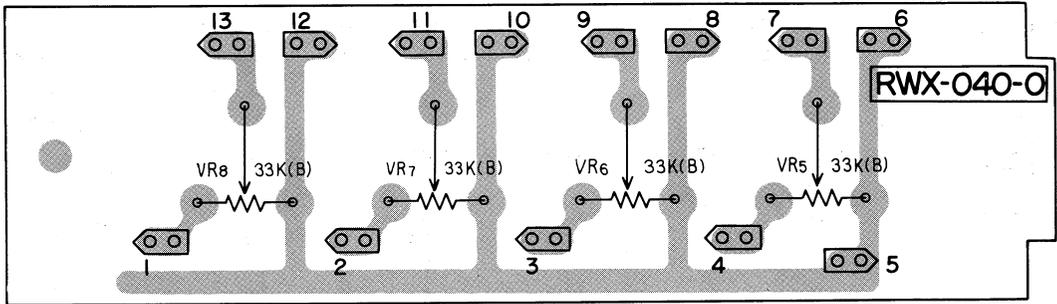
10.13 REC. LAMP P.C. BOARD ASSEMBLY (RWX-033)



| Symbol | Description          | Part No. |  |
|--------|----------------------|----------|--|
|        | Light-emitting diode | SL-103   |  |

## 10.14 VR ASSEMBLY (RWX-040)

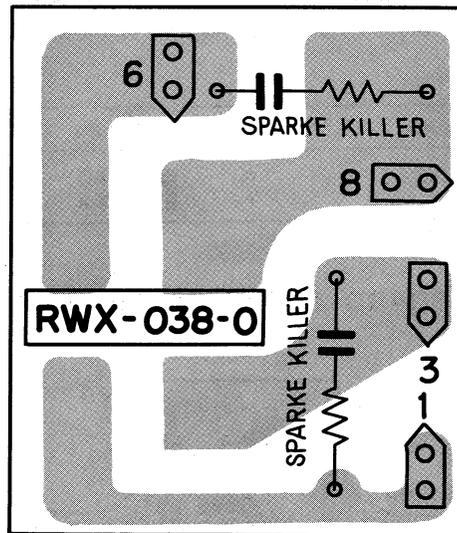
Foil Side



| Symbol | Description      | Part No.  |  |
|--------|------------------|-----------|--|
| VR5    | Semi-fixed 33k-B | RCP-016-O |  |
| VR6    | Semi-fixed 33k-B | RCP-016-O |  |
| VR7    | Semi-fixed 33k-B | RCP-016-O |  |
| VR8    | Semi-fixed 33k-B | RCP-016-O |  |

## 10.15 SHUT-OFF SWITCH P.C. BOARD ASSEMBLY (RWX-038)

Foil Side



| Symbol | Description  | Part No.  |  |
|--------|--------------|-----------|--|
|        | Spark killer | RWX-030-O |  |

# 11. EXPLODED VIEWS AND PARTS LISTS

The following symbols stand for screws, nuts, washers, etc. as shown in EXPLODED VIEWS on pp. 65 ~ 76.

|    |                          |    |                               |
|----|--------------------------|----|-------------------------------|
| P  | : Pan head screw         | T  | : Tapping screw               |
| B  | : Binding head screw     | E  | : Retaining washer E-type     |
| C  | : Countersunk head screw | SW | : Spring washer               |
| TS | : Truss head screw       | N  | : Hexagonal nut               |
| PS | : Pan head sems screw    | OC | : Oval countersunk head screw |
| S  | : Setscrew               |    |                               |

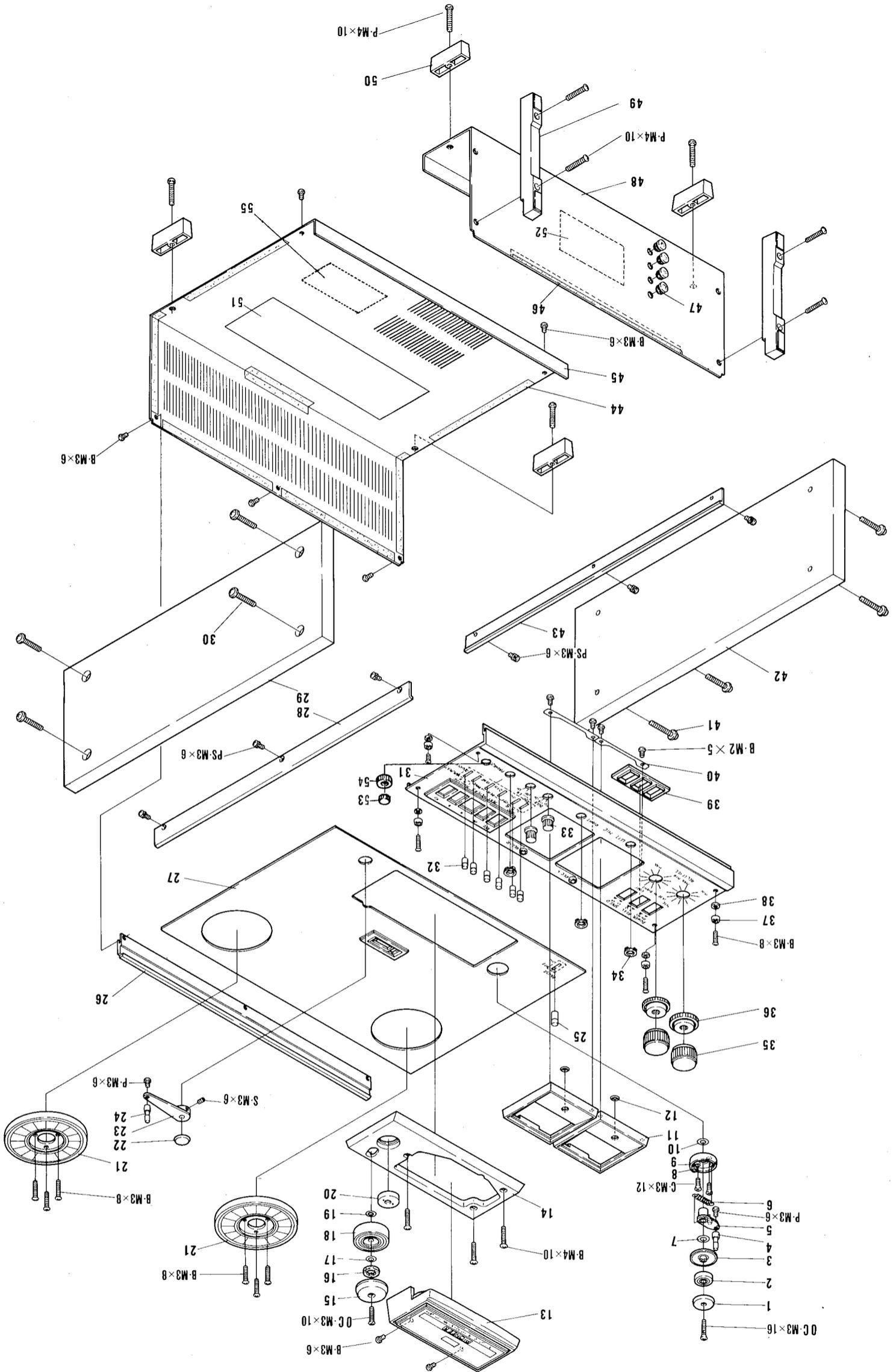
## 11. 1 PANEL AND BACK COVER

NOTICE: Any parts asterisked (\*) are subject to being not supplied.

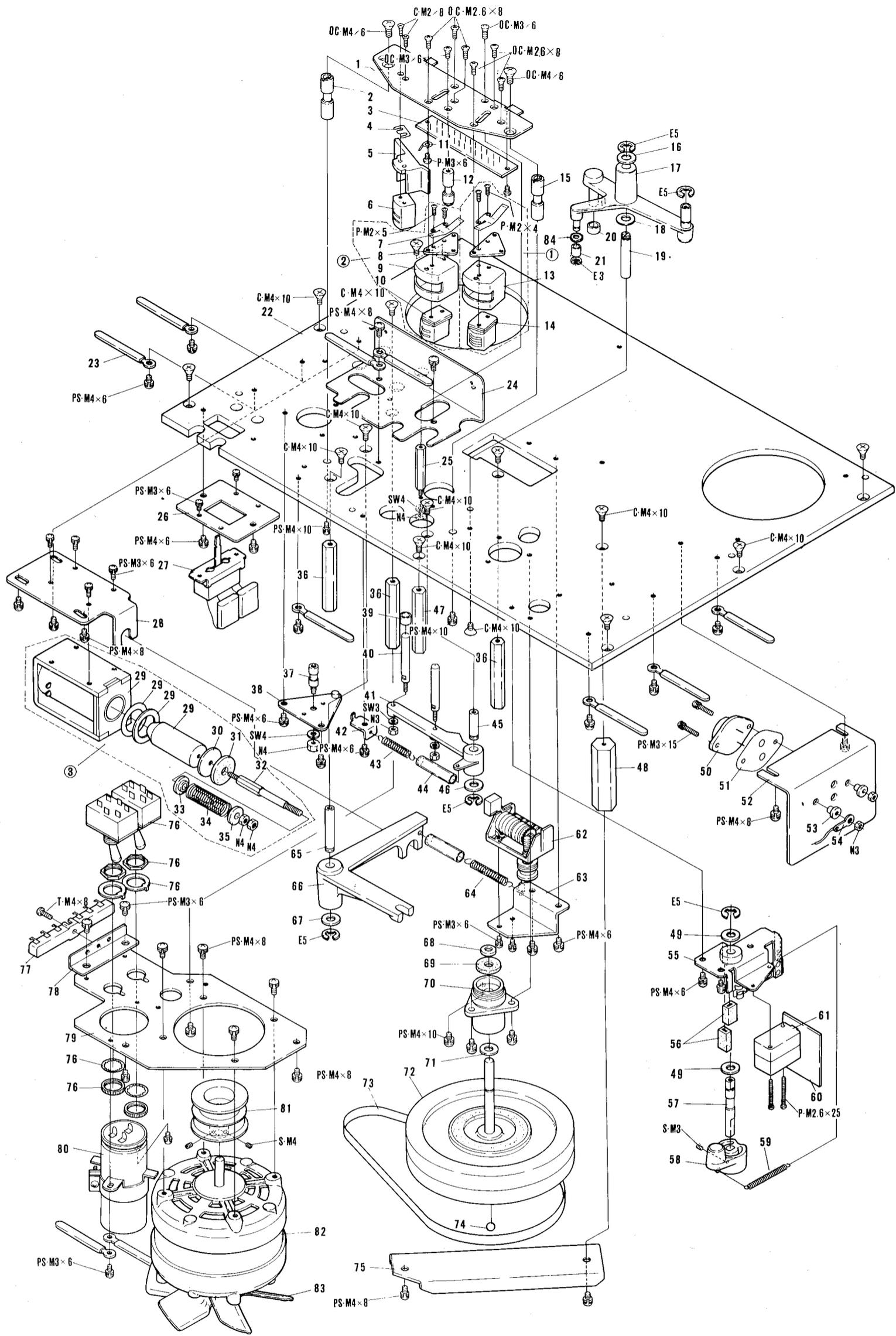
| Key No. | Description                    | Part No.  |                       |
|---------|--------------------------------|-----------|-----------------------|
| 1       | Roller cover (A)               | RAH-092-O |                       |
| 2       | Ball bearing                   | RNX-003-O |                       |
| 3       | Roller cover (B)               | RAH-093-O |                       |
| 4       | Roller arm guide               | RLA-317-O |                       |
| 5       | Roller arm assembly            | RXA-311-A |                       |
| 6       | Spring (roller arm)            | RBH-148-A |                       |
| 7       | Washer 6φ BN 1                 | B22-426-O |                       |
| 8       | Roller arm damper              | RED-060-B |                       |
| 9       | Roller guide assembly          | RXX-109-O | Including 8           |
| 10      | Washer 6φ BN 1                 | B22-426-O |                       |
| 11      | Meter Escutcheon               | RAP-043-A |                       |
| 12      | Shading washer                 | REB-091-O |                       |
| 13      | Head cover (L) assembly        | RXX-128-O |                       |
| 14      | Center base                    | RAX-008-B |                       |
| 15      | Cap (pinch roller)             | RAT-002-A |                       |
| 16      | Felt (pinch roller)            | RED-053-O |                       |
| 17      | Washer 6φ BN 1                 | B22-426-O |                       |
| 18      | Pinch roller assembly          | RXA-309-O |                       |
| 19      | Washer 6φ BN1                  | B22-426-O |                       |
| 20      | Cap (bearing)                  | RAT-003-O |                       |
| 21      | Reel base assembly             | RXA-400-O |                       |
| 22      | Spin screw                     | RAH-079-A |                       |
| 23      | Tension arm assembly           | RXA-310-C |                       |
| 24      | Tape guide (C)                 | RLA-309-A |                       |
| 25      | Lever switch knob (B) assembly | RAA-062-B |                       |
| 26      | Frame (A)                      | RAP-035-O |                       |
| 27      | Mech. panel assembly           | RXX-115-O |                       |
| 28      | Sash (B)                       | RAP-036-B |                       |
| 29      | Side board                     | RMS-021-O |                       |
| 30      | Special screw M4 x 26          | ABA-011-O |                       |
| 31      | Amp. panel (L) assembly        | RXX-129-O | Including 11, 34, 40. |
| 32      | Lever switch knob (A) Assembly | RAA-060-D |                       |
| 33      | Knob (REC BIAS, REC EQ)        | RAA-063-O |                       |
| 34      | Escutcheon (jack)              | REC-115-A |                       |
| 35      | Double knob inner (REC LEVEL)  | RAA-065-A |                       |

NOTICE: Any parts asterisked (\*) are subject to being not supplied.

| Key. No | Description                      | Part No.  |                       |
|---------|----------------------------------|-----------|-----------------------|
| 36      | Double knob outer (REC LEVEL)    | RAA-066-B |                       |
| 37      | Rosette washer                   | RAP-041-O |                       |
| 38      | Nylon washer                     | RBF-007-O |                       |
| 39      | Button guard                     | REC-145-B |                       |
| 40      | Meter clamper                    | RNC-073-O |                       |
| 41      | Special screw M4 x 26            | ABA-011-O |                       |
| 42      | Side board                       | RMS-021-O |                       |
| 43      | Sash (B)                         | RAP-036-B |                       |
| 44*     | Cover cushion (A)                | REB-099-O |                       |
| 45      | Back cover (L) assembly          | RXX-124-O | Including 44, 51, 55. |
| 46*     | Cover cushion (B)                | REB-100-O |                       |
| 47      | Rubber grommet                   | REB-094-O |                       |
| 48      | Back cover (B) assembly          | RXX-113-O | including 46, 47, 52. |
| 49      | Foot (A)                         | REC-116-A |                       |
| 50      | Foot (B)                         | REC-119-A |                       |
| 51*     | Label (mechanism adj.)           | RRH-001-O |                       |
| 52*     | Label (amp. adj.)                | RRH-002-O |                       |
| 53      | Double knob inner (FRONT OUTPUT) | RAA-070-O |                       |
| 54      | Double knob outer (REAR OUTPUT)  | RAA-071-O |                       |
| 55*     | Label (voltage selector)         | RRW-016-O |                       |



11. 2 MECHANISM (DRIVE MOTOR, HEAD)



NOTICE: Any parts asterisked (\*) are subject to being not supplied.

| Key No. | Description               | Part No.  |
|---------|---------------------------|-----------|
| 1*      | Head base                 | RNE-415-D |
| 2       | Tape guide (A)            | RLA-300-A |
| 3       | Head P.C. board assembly  | RWX-035-O |
| 4       | E.H. adj. spacer (B)      | REF-005-O |
| 5       | Spacer (erase head)       | REC-122-A |
| 6       | Erase head                | RPB-020-O |
| 7       | Head adj. spring          | RBK-060-B |
| 8*      | Head mounting metal       | RNK-391-O |
| 9*      | Shield case (B)           | RNA-096-A |
| 10      | Recording head            | RPB-021-A |
| 11*     | Solder lug 3φ             |           |
| 12      | Tape guide (B)            | RLA-301-O |
| 13*     | Shield case (A)           | RNA-095-A |
| 14      | Playback head             | RPB-022-O |
| 15      | Tape guide (A)            | RLA-300-A |
| 16      | Washer 6φ BN 1            | B22-426-O |
| 17      | Pinch arm (A) assembly    | RXA-399-O |
| 18      | Washer 6φ BN 1            | B22-426-O |
| 19*     | Pinch arm shaft           | RLA-307-O |
| 20      | Pinch arm damper          | REB-078-O |
| 21*     | Shifter roller            | RLP-004-O |
| 22*     | Mechanism chassis         | RNB-030-F |
| 23*     | Cord fixer (B)            | RNE-513-O |
| 24*     | Shield plate              | RNE-403-C |
| 25*     | Hex. pole (head assembly) | RLA-311-O |
| 26*     | Switch mounting plate     | RNE-393-O |
| 27      | Lever switch              | RSK-021-B |
| 28*     | Solenoid bracket          | RNE-386-B |
| 29      | Pinch solenoid            | RXP-011-C |
| 30*     | Rubber washer             | RNE-392-O |
| 31      | Felt                      | RED-054-A |
| 32*     | Solenoid shaft            | RLA-305-B |
| 33      | Stepped washer            | RLA-304-A |
| 34      | Pinch pressure spring     | RBH-146-O |
| 35      | Stepped washer            | RLA-304-A |
| 36*     | Hex. pole (motor)         | RLA-296-A |
| 37*     | Roller arm shaft          | RLA-302-O |
| 38*     | Roller bracket            | RNE-389-B |
| 39      | Shifter damper            | REB-109-O |
| 40      | Shifter pole              | RLA-298-O |
| 41*     | Shifter arm               | RNG-053-O |
| 42*     | Spring hook               | RNE-406-O |
| 43      | Shifter spring            | RBH-169-O |
| 44*     | Vinyl tube                |           |
| 45*     | Shifter arm shaft         | RLA-297-O |
| 46      | Washer 6φ BN 1            | B22-426-O |
| 47*     | Flywheel shaft (B)        | RLA-295-A |
| 48*     | Flywheel shaft (A)        | RLA-294-A |
| 49      | Washer 6φ BN 1            | B22-426-O |
| 50      | Transistor 2SC1444-O or Y |           |

| Key No. | Description                           | Part No.  |
|---------|---------------------------------------|-----------|
| 51      | Insulate bushing                      | REE-043-O |
| 52*     | Heat sink                             | RNE-407-E |
| 53      | Insulate bushing                      | REE-042-O |
| 54*     | Solder lug                            |           |
| 55*     | Tension arm bracket assembly          | RXA-382-A |
| 56      | Tension arm damper                    | REB-103-A |
| 57*     | Tension arm shaft                     | RLA-308-O |
| 58*     | Tension arm cam assembly              | RXA-360-A |
| 59      | Tension arm spring                    | RBH-149-A |
| 60      | Shut-off switch P.C. board assembly   | RWX-038-O |
| 61      | Microswitch (shut-off switch)         | RSF-007-O |
| 62      | Counter                               | RAW-017-O |
| 63*     | Counter bracket                       | RNE-394-O |
| 64      | Backward spring                       | RBH-170-O |
| 65*     | Pinch arm shaft                       | RLA-307-O |
| 66*     | Pinch arm (B)                         | RNG-031-A |
| 67      | Washer 6φ BN 1                        | B22-426-O |
| 68      | Rubber washer (A)                     | REB-052-O |
| 69      | Felt                                  | RED-069-O |
| 70      | Capstan bearing assembly              | RXA-307-O |
| 71      | Washer 6φ BN 2                        | B22-425-O |
| 72      | Flywheel assembly                     | RXX-105-O |
| 73      | Flywheel belt                         | N28-417-O |
| 74      | Nylon ball                            | N23-608-A |
| 75*     | Flywheel bracket                      | RNE-475-O |
| 76      | Snap switch (frequency change switch) | RSL-004-O |
| 77      | Terminal strip 6P                     | RKC-013-O |
| 78*     | Terminal strip mounting metal         | RNE-479-O |
| 79*     | Motor chassis                         | RNE-474-B |
| 80      | MP capacitor (A) 2.8 + 1μF 250V       | RCL-013-O |
| 81      | Drive pulley                          | RLA-346-O |
| 82      | Capstan motor                         | RXM-012-O |
| 83      | Motor fan (A)                         | RNC-072-O |
| 84      | Washer 6φ BN 1                        | B22-426-O |
| ①       | Playback head assembly                | RXX-107-O |
| ②       | Recording head assembly               | RXX-108-O |
| ③       | Pinch solenoid assembly               | RXX-106-O |

Note 2

NOTE 1:  
There are three different kinds in thickness of erase head-adjustable spacer as follows:

- REF-004-O E.H. adj. spacer (A) t = 0.1 mm
- REF-005-O E.H. adj. spacer (B) t = 0.2 mm
- REF-006-O E.H. adj. spacer (C) t = 0.3 mm

NOTE 2:  
Tape speed-adjustable drive pulley is available in three different kinds as follows:

- RLA-345-O slightly small drive pulley in diam.
- RLA-346-O standard-size drive pulley in diam. (standard speeds)
- RLA-347-O slightly large drive pulley in diam.



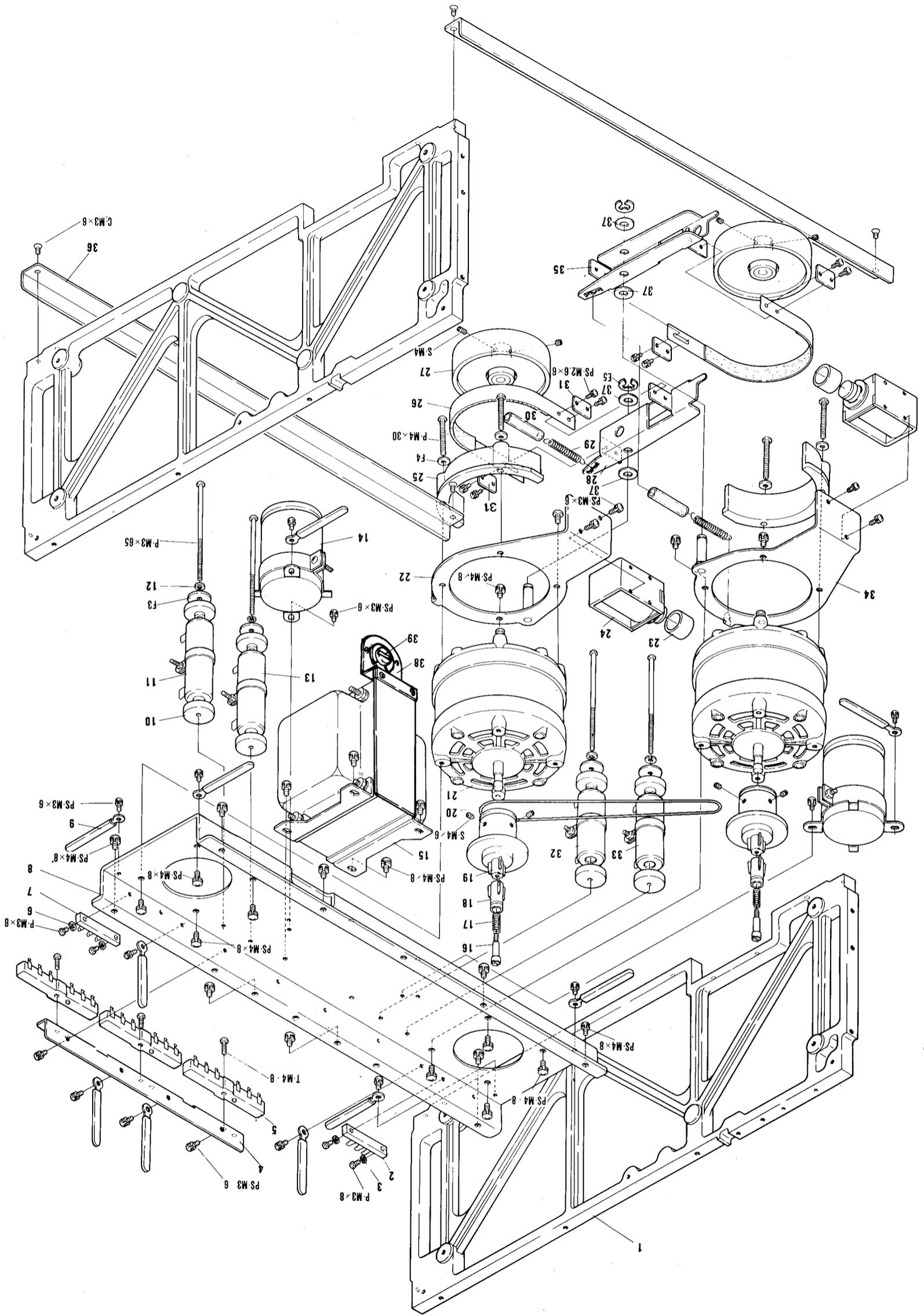
NOTICE: Any parts asterisked (\*) are subject to being not supplied.

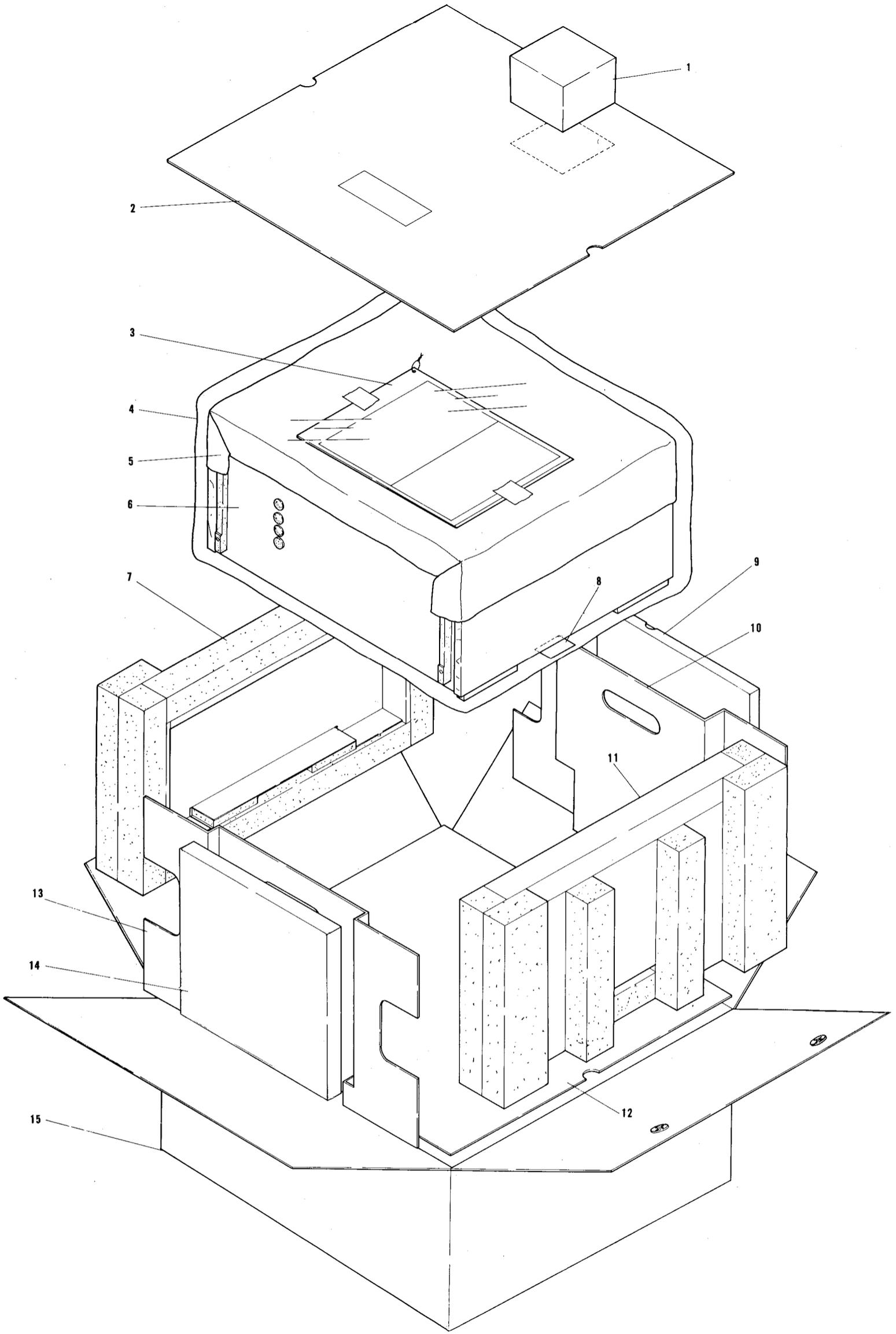
| Key No. | Description                              | Part No.  |
|---------|--|-----------|
| 1       | Level meter                              | RAW-018-O |
| 2*      | P. C. board holder                       | RNE-537-A |
| 3       | REC lamp P.C. board assembly             | RWX-033-O |
| 4*      | Control chassis                          | RNB-032-C |
| 5       | Buffer felt                              | RED-052-O |
| 6       | Knob (POWER, REEL, SPEED)                | RAC-004-A |
| 7       | EQ switch circuit assembly               | RWS-013-A |
| 8*      | Cord fixer (B)                           | RNE-513-O |
| 9       | Insulate washer                          | E34-004-O |
| 10      | Electrolytic capacitor 1,000 $\mu$ F 35V | RCH-010-O |
| 11      | Fuse P. C. board assembly                | RWX-036-A |
| 12*     | Function button shaft                    | RLA-310-A |
| 13      | Button spring assembly                   | RXA-316-A |
| 14*     | Button frame                             | RNE-409-A |
| 15*     | Button spacer (B)                        | RLP-003-A |
| 16      | Function button (REC)                    | RAC-003-B |
| 17      | Function button (REW)                    | RAC-002-A |
| 18      | Function button (STOP)                   | RAC-001-A |
| 19      | Function button (PLAY)                   | RAC-002-A |
| 20      | Function button (FAST)                   | RAC-002-A |
| 21*     | Button spacer (A)                        | RLP-002-O |
| 22*     | Function switch bracket                  | RNE-412-A |
| 23*     | Release plate                            | RNE-404-B |
| 24      | Release spring                           | RBH-152-O |
| 25      | Reset solenoid                           | RXP-013-O |
| 26      | Control assembly                         | RWG-040-O |
| 27      | AC socket                                | RKP-003-A |
| 28*     | Amp chassis                              | RNB-043-O |
| 29      | REC level volume 10k $\Omega$ -A         | RCV-010-A |
| 30      | Terminal strip 4P                        | AKC-013-O |
| 31      | Insulate washer                          | E32-045-O |
| 32      | MIC jack                                 | K72-024-O |
| 33      | BIAS switch                              | RSB-008-O |
| 34      | EQ switch                                | RSB-009-O |
| 35      | Headphone jack (A)                       | RKN-002-A |
| 36      | P. B. amplifier assembly                 | RWF-014-O |
| 37      | VR assembly                              | RWX-040-O |
| 38      | REC amplifier assembly                   | RWF-015-O |
| 39      | SW circuit assembly                      | RWS-011-A |
| 40      | OSC assembly                             | RWA-008-A |
| 41*     | Shield cover                             | RNE-543-O |
| 42      | 6P pin jack (INPUT/OUTPUT)               | AKB-008-O |
| 43*     | Pin jack mounting bracket                | RNE-413-B |
| 44      | DIN socket                               | K93-003-B |
| 45*     | Rear panel                               | RNA-098-C |
| 46      | Screw (GND)                              | B11-012-A |
| 47*     | Model plate                              | RAL-092-O |
| 48      | P. B. level volume 50k $\Omega$ -B       | RCV-011-O |

## 11. 4 MECHANISM (REEL MOTOR)

NOTICE: Any parts asterisked (\*) are subject to being not supplied.

| Key No. | Description                                   | Part No.  |
|---------|---|-----------|
| 1*      | Chassis frame                                 | RNG-036-C |
| 2       | Molded terminal T-type 3P                     | K15-402-O |
| 3       | Special spring washer 3φ                      |           |
| 4*      | Terminal mounting plate                       | RNE-478-O |
| 5       | Terminal strip 6P                             | RKC-013-O |
| 6       | Special spring washer 3φ                      |           |
| 7       | Molded terminal T-type 3P                     | K15-402-O |
| 8*      | Reel chassis                                  | RNB-042-O |
| 9*      | Cord fixer (B)                                | RNE-513-O |
| 10      | Bushing                                       | B23-405-A |
| 11      | Wire wound resistor (A) 100Ω 20W              | RCN-010-O |
| 12      | Special spring washer 3φ                      |           |
| 13      | Wire wound resistor (D) 2kΩ 20W               | RCN-014-O |
| 14      | Phase capacitor 0.5+4μF 250V                  | RCL-010-O |
| 15      | Power transformer                             | RTT-039-A |
| 16      | Reel base screw                               | RLA-321-O |
| 17      | Reel base spring                              | RBH-162-O |
| 18      | Reel feather shaft                            | RNG-051-O |
| 19      | Reel base                                     | RNG-055-O |
| 20      | Counter belt                                  | REB-077-O |
| 21      | Reel motor                                    | RXM-015-O |
| 22*     | Brake plate (R) assembly                      | RXA-314-A |
| 23      | Brake arm damper                              | REB-098-O |
| 24      | Brake solenoid                                | RXP-012-A |
| 25*     | Brake guide                                   | RNK-111-B |
| 26      | Brake band assembly                           | RXX-111-O |
| 27      | Brake dram assembly                           | RXX-110-O |
| 28*     | Brake arm (R)                                 | RNE-400-B |
| 29      | Brake spring                                  | RBH-173-O |
| 30*     | Vinyl tube                                    |           |
| 31      | Plate   | RNE-401-O |
| 32      | Wire wound resistor (C) 500Ω 20W              | RCN-012-O |
| 33      | Wire wound resistor (B) 300Ω 20W              | RCN-011-O |
| 34*     | Brake plate (L) assembly                      | RXA-313-A |
| 35*     | Brake arm (L)                                 | RNE-399-B |
| 36*     | Stiffen angle                                 | RNC-068-O |
| 37      | Washer 6φ BN 1                                | B22-426-O |
| 38*     | Switch mounting plate                         | RNE-554-O |
| 39      | Line voltage selector switch<br>(fuse holder) | AKR-001-O |





NOTICE: Any parts asterisked (\*) are subject to being not supplied.

| Key No. | Description                | Part No.  |   |
|---------|----------------------------|-----------|---|
| 1*      | Buffer block               | RHA-049-O |   |
| 2*      | Cardboard                  | RHA-045-B |   |
| 3       | Operating instructions     | RRB-021-O |   |
| 4       | Vinyl bag                  | RHL-007-O |   |
| 5*      | Styrene paper              | RHC-023-O |   |
| 6*      | RT-1020L                   |           |   |
| 7*      | Cushion (L)                | RHA-043-C |   |
| 8*      | Silica gel                 | H46-856-O |   |
| 9*      | Empty reel (RP-100)        |           |   |
| 10*     | Frame for accessory reel   | RHA-046-A |   |
| 11*     | Cushion (R)                | RHA-042-C |   |
| 12*     | Cardboard                  | RHA-045-B |   |
| 13*     | Frame for accessory box    | RHA-047-B |   |
| 14      | Accessory box              | RHX-019-O |   |
| 15*     | Packing case               | RHA-044-A |   |
|         | Packing case assembly      | RHK-102-O | Including<br>1, 2, 7, 10, 11, 12, 13, 15. |
|         | Connection cord            | D53-851-O |   |
|         | Power cord                 | RDG-003-O |   |
|         | Head cleaning ribbon       | E33-856-O |   |
|         | Splicing tape              | P45-851-O |   |
|         | Head cleaning kit          | REA-005-O |   |
|         | *10" reel adaptor (PP-220) |           |   |

# 12. LEVEL DIAGRAMS

