CASSETTE TAPE DECK

CT-F8282
CT-F8080

SERVICE MANUAL

PIONEER

MODEL CT-F8282 COMES IN TWO VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KCU	120V only	CSA (Canada) and UL (U.S.A) approved
D	120V, 220V, 240V (Switchable)	General export model

MODEL CT-F8080 COMES IN TWO VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
D	120V, 220V, 240V (Switchable)	General export model
HG	220V, 240V (Switchable)	SEMKO (Sweden), NEMKO (Norway), DEMKO (Denmark) and EI (Finland) approved

This service manual is applicable to the CT-F8282/KCU MODEL

CONTENTS

1. SPECIFICATIONS

Systems	Compact cassette, 2-channel stereo
Motors	Electronically-controlled DC motor (built-in generator) x 1; (4.8cm/s speed drive)
	DC torque motor x 1; (Fast forward and rewind drive)
Heads	"Ferrite Solid" recording/playback head x 1
	Ferrite erasing head x 1
Operation	Solenoid drive, direct switchable and time play presettable
Fast Winding Time	Approximately 65 seconds (C-60 tape)
Wow and Flutter	No more than 0.07% (WRMS)
Frequency Response	Standard, LH tapes: 20 to 16,000Hz (30 to 13,000Hz ±3dB)
	Chromium dioxide tape: 20 to 17,000Hz (30 to 15,000Hz ±3dB)
	Ferrichromium dioxide tape: 20 to 17,000Hz (30 to 15,000Hz ±3dB)
Signal-to-Noise Ratio	Dolby OFF: More than 53dB
	Dolby ON: More than 63dB (over 5kHz, standard, LH tapes)
	(When chromium dioxide tape is used, signal-to-noise ratio is further improved by 4.5dB over 5kHz)
Harmonic Distortion	No more than 1.5% (0dB)
Inputs (Reference level/Maximum allowable input/Impedance)	
	MIC x 2; 0.2mV/100mV/50kΩ, 6mmϕ jack
	(Reference MIC impedance; 250Ω to 50kΩ)
	LINE x 2 (2-channel stereo); 60mV/25V/100kΩ
	DIN (REC/PLAY) x 1; Input & Output, 5.5mV/3.6V/8.7kΩ, 5p jack (DIN standard)
Outputs (Reference level/Maximum level/Load impedance)	
	LINE x 2 (2-channel stereo); 450mV/660mV/50kΩ
	HEADPHONES x 1; 60 mV/98mV/8Ω
	DIN (REC/PLAY) 1; 450mV/660mV/50kΩ (DIN standard)
	• With output level controls
Semiconductors	
Amplifier Section	Transistors; 60, Diodes; 40, Zener Diodes; 4, FETs; 4 LEDs; 2, Hall element; 1
Motor Control Section	Transistors; 3, Diodes; 1
Subfunctions	• Dolby system (ON-OFF) with indicator lamp
	• Tape selector (STD/CrO_2/FeCr) with CrO_2 indicator lamp and Manual tape selector of independently BIAS/EQ (Ferri-chrome tape available)
	• Cassette compartment illumination
	• Memory stop mechanism (ON/OFF) with indicator lamp
	• Recording peak level indicator (Lightable level; 5dB)
	• AC Outlet (UNSWITCHED)
Power Requirements	AC120V, 60Hz
Power Consumption	49watts, Max.
Dimensions	452(W) x 193(H) x 342(D) mm. max.
	17-3/4 x 7-5/8 x 13-1/2 in.
Weight Without pacakage	12.2kg (26.9 lb)
Furnished parts	Stereo connecting cord with pin plugs; 2
	Head cleaning kit; 1
	Operating instructions; 1
	Polishing cloth; 1

NOTES:

1. Reference tape: standard, LH tapes are DIN no. 45513/BLATT6.
   : chrome tape is DIN no. 45513/BLATT7 (CrO_2).
2. Reference recording level: meter 0dB level (equivalent to 160 nwb/m).
3. Reference signal: 333Hz.
4. Wow & Flutter: at 3kHz
5. Frequency response: measured at −20dB level, DOLBY OFF, Level deviation is ±6dB without indication.
6. Signal-to-Noise ratio: measured at +4dB level (equivalent to 250 nwb/m with weighted IEC A curve.
7. Sensitivity: Input level (mV) for reference recording measured with input (recording) level control set at maximum position.
8. Maximum allowable input level: measured at the point where the output signal wave is clipped while gradually turning the input level control.
9. Reference output level: meter 0dB level.
10. Maximum output (playback) level: Output level to reference recording level, measured with output (playback) level control set at maximum position.

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

2. FRONT PANEL FACILITIES

POWER SWITCH

Press to turn power ON. Level meters and internal illuminating lamp will light. To turn power OFF, again press the button to release it.

CASSETTE DOOR

Open and close door gently by hand. To protect tape and transport from dust, keep door closed whenever possible.

REC INDICATOR

Lights red during recording.

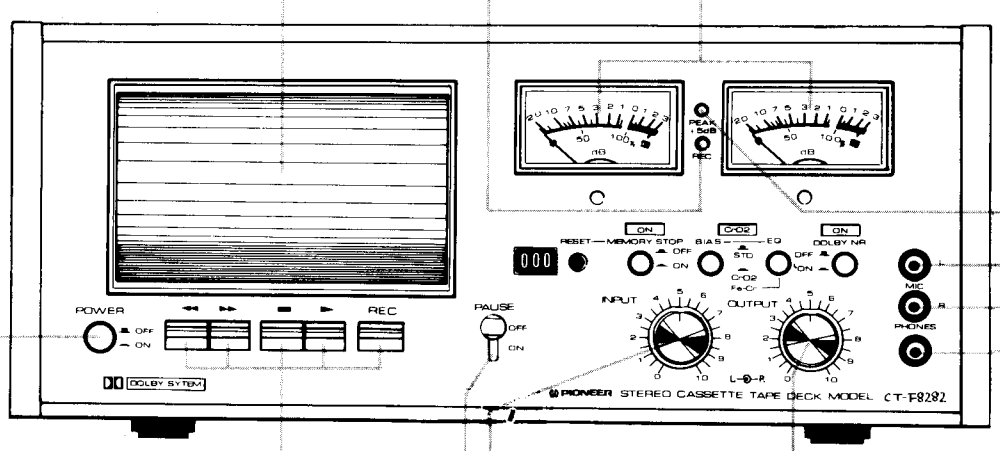
NOTE:
Be sure to confirm REC indicator lighting before proceeding to record.

PEAK +5 dB INDICATOR

Lights when recording peak level exceeds +5 dB. When recording, adjust INPUT controls so that this indicator does not light continuously.

LEVEL METERS

Display input level during recording and output level during playback.



OPERATING LEVERS

Rewind (◀◀):	Press to rewind tape (tape travels from right to left).
Fast Forward (▶▶):	Press for tape fast forward (tape travels from left to right).
Stop (■):	Press to stop tape and release other operating levers.
Play (▶):	Press to play tape. To record, press simultaneously with REC lever. (Tape travels from left to right).
Record (REC):	Press simultaneously with Play (▶) lever to perform recording.

NOTES:
1. *Avoid simultaneosuly pressing two or more levers (except for Play (▶) and Record levers during recording).*
2. *With the CT-F8282 it is not necessary to press the Stop (■) lever when switching between modes.*

PAUSE SWITCH

Set to ON to temporarily stop tape motion during recording or playback. Return it to OFF to resume tape motion. Normally set this switch to the OFF position.

OUTPUT LEVEL CONTROLS

Adjust the output signal level during playback. The outer knob controls the right (R) channel, while the inner knob controls the left (L) channel.

INPUT LEVEL CONTROLS

Adjust recording signal input level from LINE INPUT (REC), DIN REC/PLAY and MIC jacks. The outer knob controls the right (R) channel, while the inner knob controls the left (L) channel. Observe level meters and PEAK indicator when adjusting.

PHONES JACK

Output jack for stereo headphones. These can be used for monitoring recording conditions or private listening.

CAUTION:
Do not connect a microphone to this jack, as the microphone may be damaged.

MIC JACKS

Microphone input jacks for recording. Connect left channel microphone to L jack and right channel microphone to R jack.

NOTE:
Be sure to disconnect microphones when not recording. If connected, a source connected to the INPUT (REC) or DIN REC/PLAY jacks cannot be recorded.

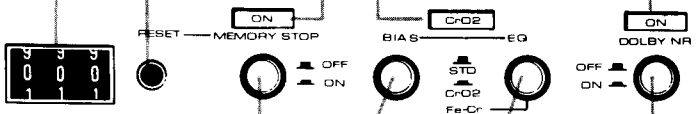
MEMORY STOP INDICATOR
Lights when memory stop function is being used.

RESET BUTTON
Press to reset tape counter digits to "000".

TAPE COUNTER
Indicates tape running position.

CrO_2 INDICATOR LAMP
Lights when chrome tape is being used, and when both EQ and BIAS buttons are depressed.

DOLBY INDICATOR LAMP
Lights to indicate Dolby recording or Dolby playback.



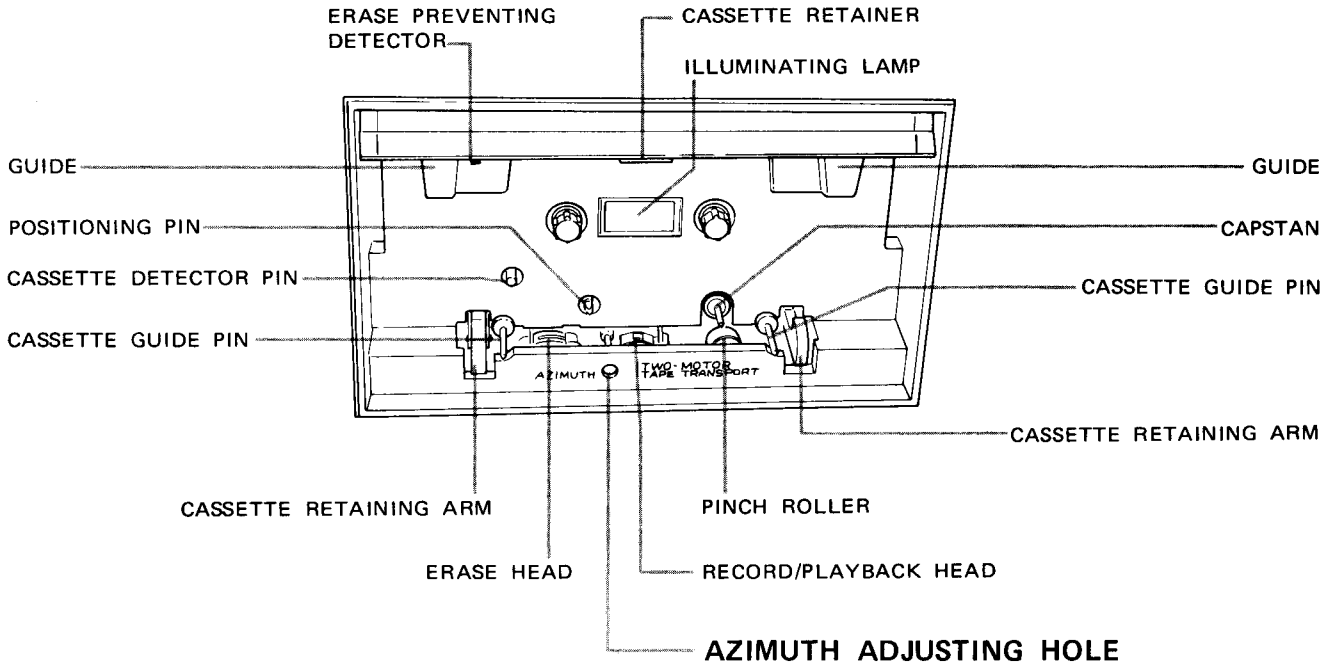
MEMORY STOP BUTTON
When set to ON (depressed), the tape running position during record or playback corresponding to "000" counter indication becomes registered. Employ in such situations as when desiring to again listen to the same program.

BIAS SELECTOR BUTTON
Set according to type of tape used for recording. Depress when using chrome tape.

DOLBY NR BUTTON
Depress to employ built-in Dolby system for recording or playback.

EQ SELECTOR BUTTON
Employ to select equalization according to the type of tape being used for recording or playback. Depress when using chrome (CrO_2) or ferrichrome (FeCr) tape. Set to STD (undepressed) to play chrome tape recorded to earlier specifications (120 μs).

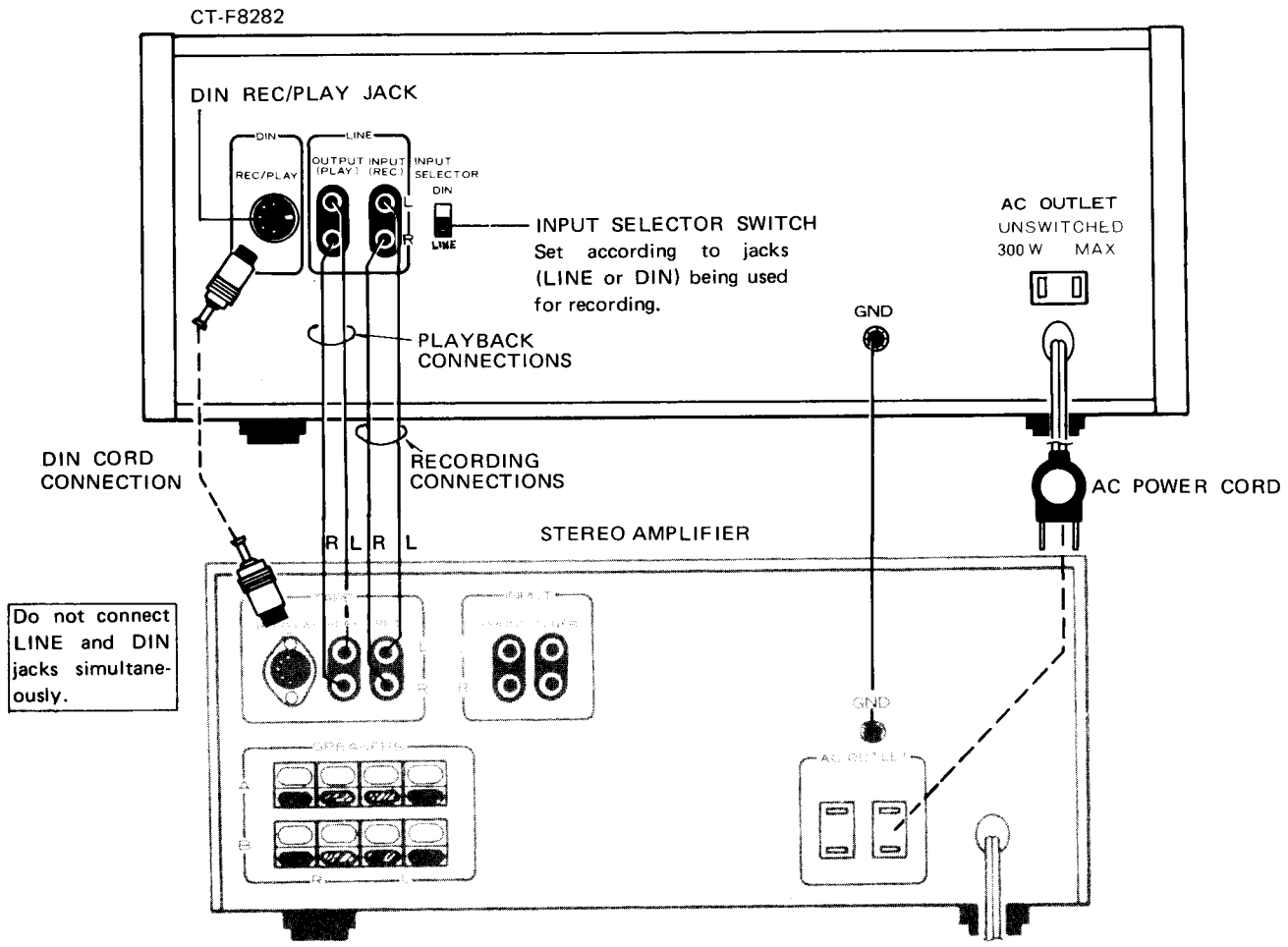
MAIN SECTIONS OF TAPE TRANSPORT



AZIMUTH ADJUSTING HOLE
Hole for adjusting angle of record/playback head. As special test instruments and test tapes are required, this adjustment should only be performed by a Pioneer Authorized Service Station. Precise adjustment has been performed at the factory prior to shipment.

*Manufactured under license from Dolby Laboratories Incorporated.
*Dolby and DD are trademarks of Dolby Laboratories Incorporated.

3. CONNECTION DIAGRAM



INPUT SELECTOR SWITCH OPERATION

Set switch according to program source to be recorded (Fig. 1).

LINE .....Use accessory cords to connect LINE (INPUT) jacks of CT-F8282 to recording output (TAPE REC) jacks of a stereo receiver (or amplifier), then set switch to this position for recording.

DIN.....Use separately sold DIN record/play cord to connect DIN REC/PLAY jack of CT-F8282 to the same type jack (if provided) on a stereo receiver (or amplifier). Then set switch to this position for recording.

NOTE:
If microphones are connected to front panel MIC jacks, a source connected to the LINE (INPUT) or DIN REC/PLAY jacks cannot be recorded.

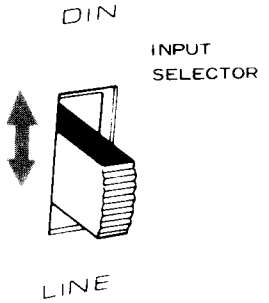
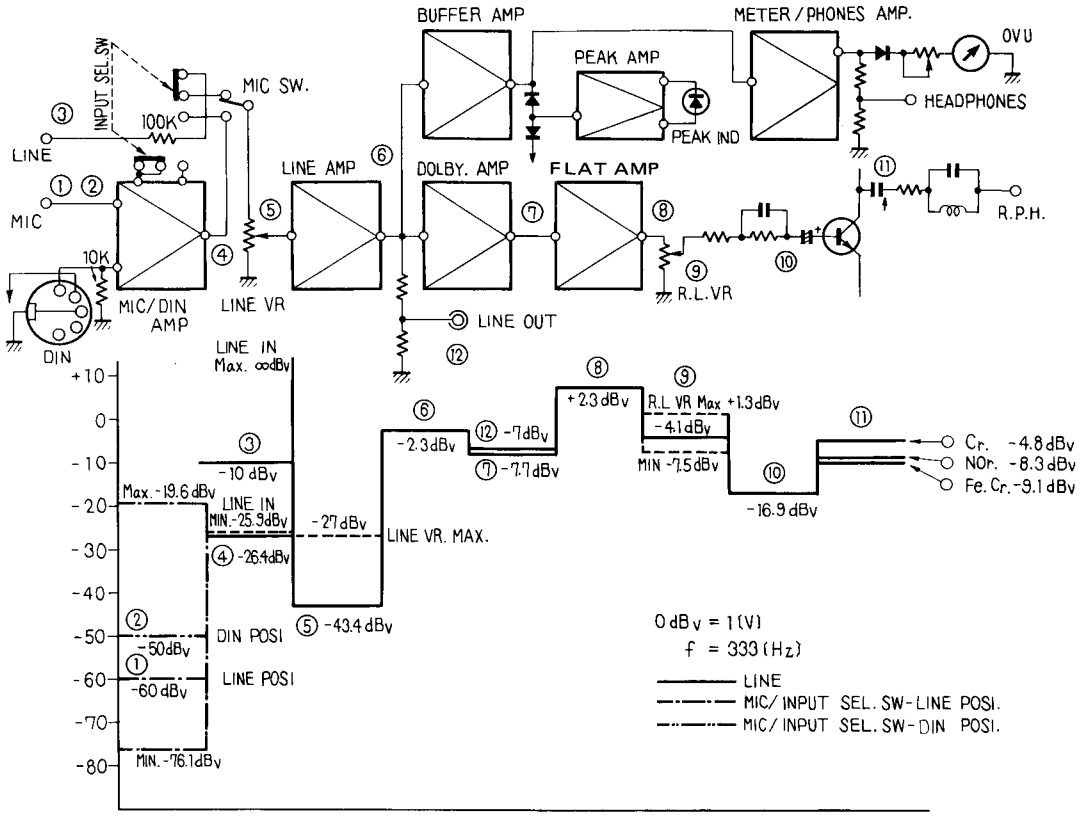


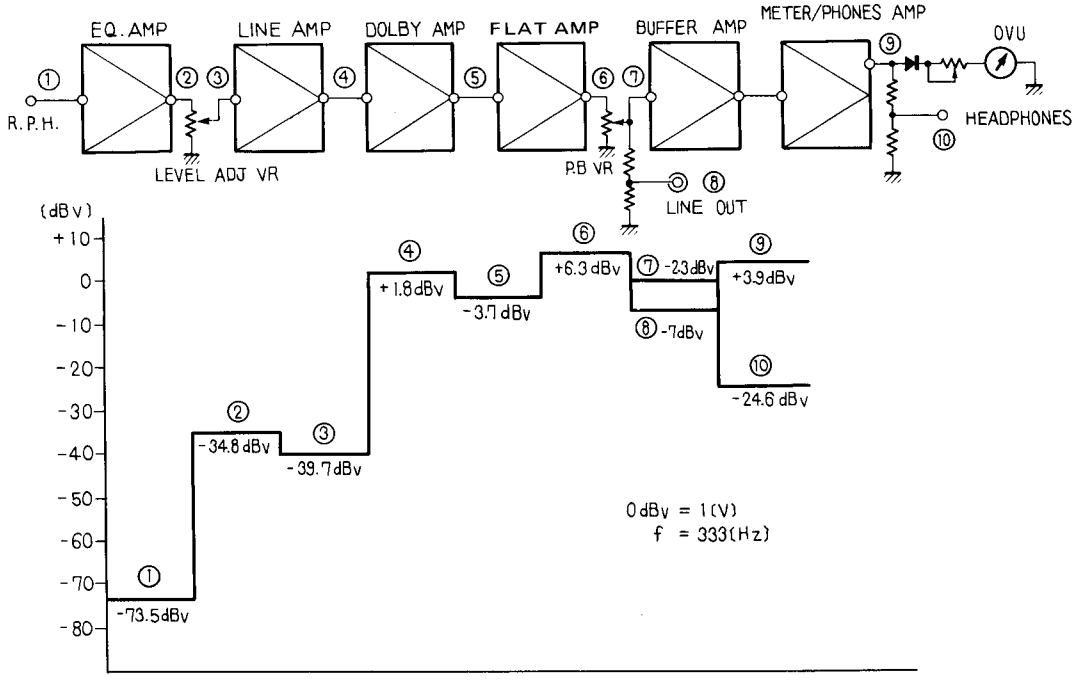
Fig. 1

4. LEVEL DIAGRAMS

RECORDING



PLAYBACK



5. OUTLINE OF OPERATION

5.1 BLOCK DIAGRAM (CONTROL SECTION)

This introduction to operation is centered around an explanation of the control section. Understanding should be based on the following circuit diagrams and explanations, etc.

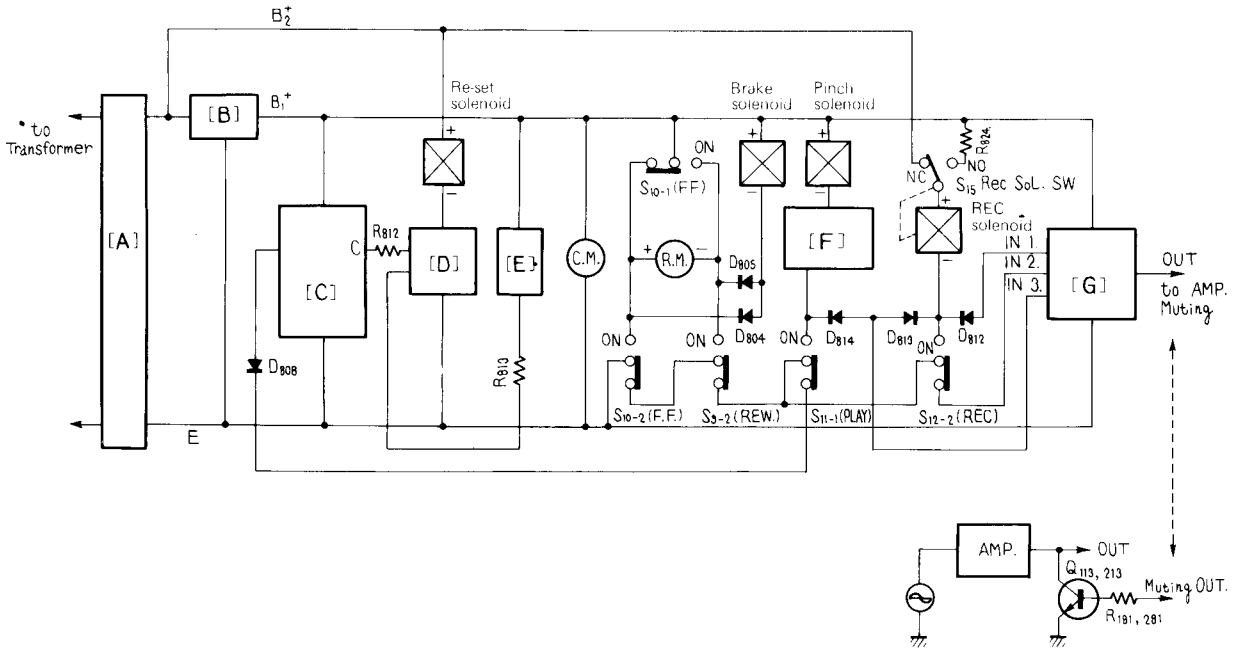


Fig. 2 Block diagram for Control section

(A) RECTIFIER SECTION

This section converts the AC into DC.

(B) VOLTAGE STABILIZER SECTION

This stabilizes the DC voltage and at the same time smoothes the ripple.

(C) TAPE-END DETECTOR CIRCUIT SECTION

This circuit generates a pulse signal some three seconds after the tape has run out. This circuit consists of an unstable multi-vibrator that generates pulses repeatedly until operating lever is released.

(D) RESET SOLENOID SWITCHING CIRCUIT SECTION

This section amplifies the pulse generated by Section (C), to operate the reset solenoid.

(E) MEMORY STOP CIRCUIT SECTION

When the counter reaches "999" during REWIND, a pulse is produced which is amplified by Section (D) and used to release the REW lever.

(F) PINCH SOLENOID SWITCHING CIRCUIT SECTION

When the PLAY levers depressed, a high voltage is applied for approximately 0.5 seconds to the pinch solenoid, which increases the force of attraction. After pull-in, this voltage returns to a lower potential: this reduces the amount of heat generated by the solenoid.

(G) MUTING CONTROL CIRCUIT SECTION

This circuit functions to bring the amplifier muting into operation. For about 0.5 seconds after the lever has been depressed for PLAY, REC, REC/PLAY, it reduces the output voltage to 0V (the muting voltage). In addition, it generates a positive pulse which mutes the amplifier for 0.3 seconds approximately when the REC lever is turned ON or OFF, whether the PLAY lever is itself ON or OFF.

5.2 OUTLINE OF OPERATION

(1) PLAY OPERATION

When the POWER switch is turned ON, the capstan motor (CM) starts to rotate. Then, if the PLAY lever is depressed, S11-1 goes ON, and the pinch solenoid switching circuit section is grounded. A current therefore flows through the pinch solenoid, which pulls in the plunger, so that tape transport begins. If the FF (S10-2) or REW (S9-2) lever is depressed, the pinch solenoid switching circuit will not be grounded and PLAY will not commence even if the PLAY lever is depressed. The FF condition has the highest priority, followed by REW, and PLAY or REC. Due to the operation of D814, when S11-1 (PLAY) is ON, this is detected by the muting control circuit, and some 0.5 seconds later, the muting control circuit (which held the output voltage at 0) ceases operation.

(2) FF OPERATION

When the FF lever is depressed, both S10-1 and S10-2 go ON, and the rapid transport motor (RM) has a positive potential applied to its negative terminal and a negative potential applied to its positive terminal. At the same time, due to the action of D804, a current flows through the braking solenoid, drawing in the plunger, releasing the brake from the reel base so that the FF mode is entered.

(3) REW OPERATION

When the REW lever is depressed, S9-2 goes ON, and the rapid transport motor (RM) has a positive potential applied to its positive terminal and a negative potential applied to its negative terminal. At the same time, due to the action of D805, a current flows through the braking solenoid, and the plunger operates to release the brake from the reel mount so that the REW mode is entered.

(4) REC OPERATION

When the REC lever is depressed, S12-2 goes ON, and one side of the REC solenoid is grounded so that a current flows through the REC solenoid via S15. The plunger is pulled in, and the amplifier recording/play back switch is set for REC.
Immediately after the plunger has been drawn in, the switch S15 which is linked with the plunger goes to the NO side. This causes the voltage applied to the solenoid to be dropped via R824, preventing the generation of excessive heat.
At the same time, due to the action of D813, the muting control circuit detects that the REC SW S12-2 is ON, and after a delay of approximately 0.5 seconds, the amplifier muting which had held the output at 0 volts, is released.

(5) REC/PLAY OPERATION

(1) Operation and (4) operation are combined.

(6) AUTO-STOP OPERATION

If either of the FF, REW, or PLAY levers are depressed, this action is detected when ground is removed from D808 and the tape-end detector circuit operates. After the tape has been fully wound out, the reset plunger releases the lever after approximately three seconds, so that the STOP condition is entered.
If by chance, or malfunction of the lever, the first reset operation does not give the required release, the plunger will operate repeatedly until the lever is released.

(7) MEMORY STOP

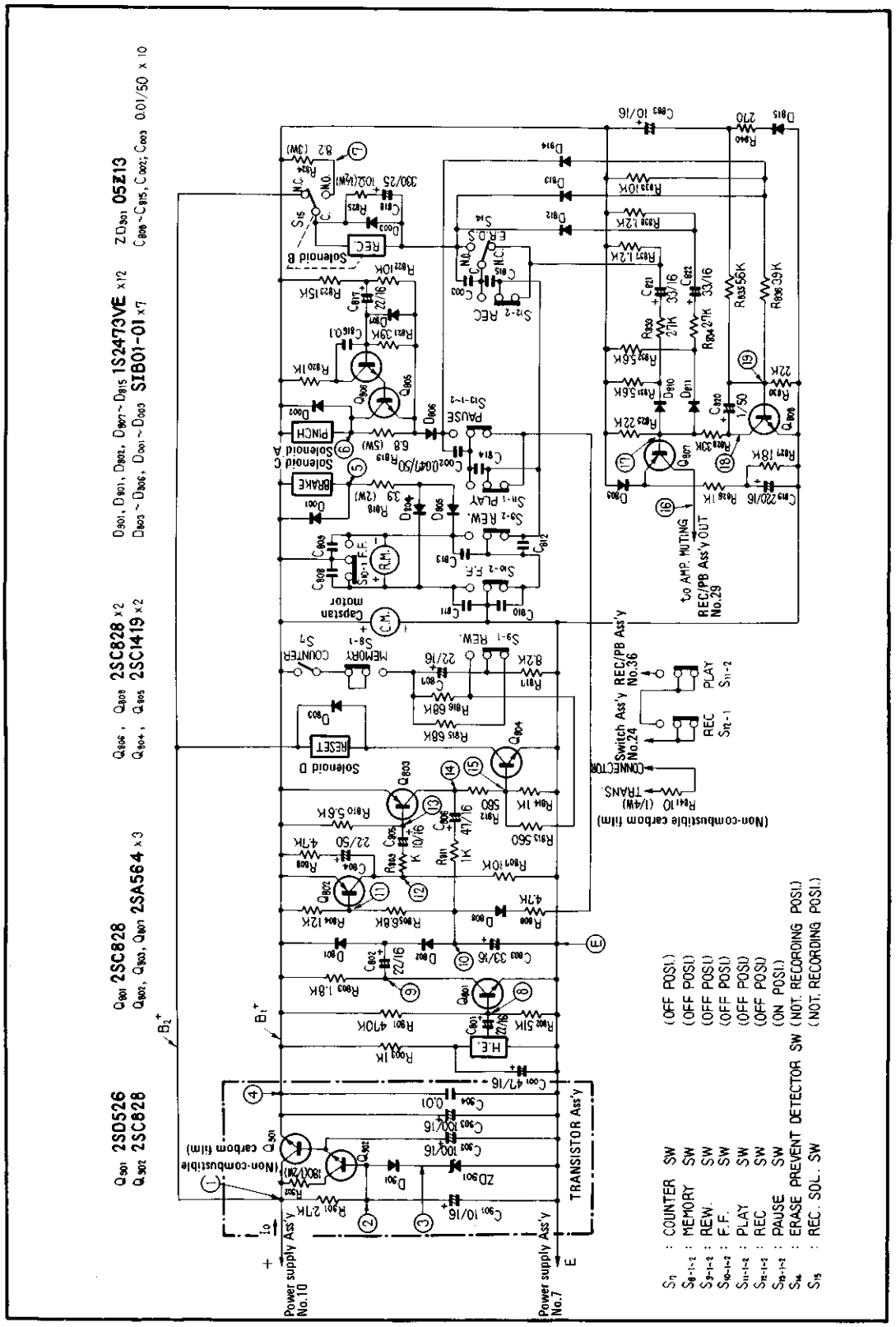
During REW, if the memory switch is ON, as soon as the counter reaches "999" the counter switch causes the memory stop circuit and the reset solenoid switching circuit to operate, so that the button is released by the reset plunger, and the STOP condition is entered.

(8) AUTO-START OPERATION

(For recordings made during an absence, and for "alarm clock" play back)
In the STAND-BY condition for PLAY or REC/PLAY, as soon as the electrical power is turned on, the solenoids all operate and tape transport is initiated. The muting control circuit ensures that for approximately 3.5 seconds after the electric power comes on, a positive voltage is generated which causes the amplifier muting to come ON so that there will be no output.

6. CIRCUIT DESCRIPTIONS

6.1 CIRCUIT DIAGRAM



6.2 VOLTAGE READINGS

Measurement Point	STOP	Rapid Transport	PLAY	REC	REC/PLAY
Current Drawn I_1 [mA]	90	585~685	1010→685	815→555	1610→1090
①—Ⓔ [V]	21.3	19.1	19.0	19.3	17.9
②—Ⓔ [V]	14.1	14.1	14.1	14.1	14.0
③—Ⓔ [V]	13.4	13.3	13.3	13.3	13.3
④—Ⓔ(B_1) [V]	13.0	12.7	12.7	12.7	12.5
⑤—Ⓔ [V]		2.7			
⑥—Ⓔ [V]			1→5.0		1→4.9
⑦—ⒺV_{REC} [V]				8.8	8.7
⑧—Ⓔ [V]	0.6	DC0.6V +AC60~1000mVp-p	Same as rapid transport		Same as rapid transport
⑨—Ⓔ [V]	0.5~6.5	DC0.5~6.5V +AC 2~10Vp-p	Same as rapid transport		Same as rapid transport
⑩—Ⓔ [V]	3.9	6~11.5	Same as rapid transport		Same as rapid transport
⑪—Ⓔ [V]	12.3	12.0	12.0	12.0	11.8
⑫—Ⓔ [V]	12.9	12.6	12.6	12.6	12.4
⑬—Ⓔ [V]	13.0	12.7	12.7	12.7	12.5
⑭—Ⓔ [V]	0	0	0	0	0
⑮—Ⓔ [V]	0	0	0	0	0
⑯—Ⓔ [V]	12.0	11.7	11.7→—1	11.7→—1	11.5→—1
⑰—Ⓔ [V]	11.8	11.5	11.5→12.7	11.5→12.7	11.3→12.5
⑱—Ⓔ [V]	0	0	0→12.7	0→12.7	0→12.5
⑲—Ⓔ [V]	0.7	0.7	0.7→0	0.7→0	0.7→0
④—⑤Vbrake		10.0			
④—⑥Vpinch			11.7→7.7		11.5→ 7.6

1. Potentials ①~⑤ should be measured when conditions have stabilized after the plunger has been drawn in.
2. I_1 is subject to variations of about 100mA depending on the amount of tape which has been wound on in the rapid transport mode. The → sign indicates the change from when the plunger is drawing in an after the plunger has been drawn in.
3. The → for ⑥ indicates the values when the plunger is drawing in an after the plunger has been drawn in.
4. ⑯ ~ ⑲ have potentials marked with → which indicates the changes until the muting is released.
5. The potential at ⑨ in the STOP condition is subject to fairly wide variations due to the h_{FE} of Q801 and the potential at ④.
6. The B_1+ voltage of ④ is subject to a variation of approximately ±0.8V about the potential shown, due to variations in ZD901. Further note that this variation also affects all other potentials.
7. The potential at ⑩ is subject to considerable variation due to the influence of the output voltage of H.E. and the h_{FE} of Q801.

6.3 A DESCRIPTION OF THE CIRCUITS FOR EACH BLOCK

(Refer to the Block Diagram on Page 10 and the Circuit Diagram on Page 12)

(A) RECTIFIER SECTION

This is a full-wave bridge-type single-phase rectifier with capacitor.

(B) STABILIZED VOLTAGE SUPPLY SECTION

This is a linear voltage stabilizing circuit in which Q901 and Q902 are Darlington connected, and C901 and C902 form a ripple filter. D901 gives the temperature compensation for the Zener potential of ZD901. The response time of this circuit is approximately 50 msec. This is a faster response for the same ripple content than conventional voltage stabilizer circuits (C901 is less than C902 so that the charge up time for C901 has been reduced). The object was increasing the reliability of the REC solenoid pull-in for absent recordings.

(C) TAPE-END DETECTOR CIRCUIT

This section may be broadly divided into four parts.

(1) Rotation Detector

The sensing switch uses a Hall effect element (H.E.), with the output derived from the coupling capacitor C801. Four pulses are generated by one rotation of the magnet. C001 is included to remove ripple in the power supply.

(2) Amplifier

Q801 amplifies the particular AC signal which is generated by the rotation detector.

(3) Rectifier Section

The signal which was amplified by Q801 is rectified by D801 and D802 and smoothed by C803.
The voltage on the plus side of C804 is always less than that of B_1+. Depending on the outputs of the H.E. and the gain of Q801, it will be from +6 to +11.5V approximately (B_1+ is approximately 12.5V).

(4) Unstable Multi-Vibrator Section

During the rotation, the difference between the voltage rectified in (3) and that of B_1+, causes a base current to flow through R805 in Q802, which is therefore ON, with Q803 OFF.
When the tape runs out, rotation ceases, and the positive potential on C803 rises until Q802 goes OFF, and at the same time, Q803 goes ON. This causes a positive collector potential on Q803. This condition continues until C805 has charged completely (during which time C806 discharges), and then returns to the initial state. In the above operation, the effect of D808 continues repeatedly until the potential on the positive side of C803 drops (when the button has been released and R806 is grounded).
C804 and R808, which are connected across C and E of Q802, are intended to prevent Q803 from going ON with a sudden drop in the collector potential of Q802, when the electrical power supply is cut off during rotation.

(D) RESET SOLENOID SWITCHING CIRCUIT

This is a transistor saturation switching circuit using Q804. When a positive potential appears on the collector of Q803, a base current flows through R812. This causes Q804 to go ON, and the reset plunger operates.
Similarly, in the MEMORY STOP mode too, a base current flows through R813, Q804 goes ON, and the reset plunger is caused to operate.

(E) MEMORY STOP CIRCUIT

When the REW SW S9-1 is ON, the differentiating circuit formed by C807 and R817 ensures that when the memory SW S8-2 and the counter SW S7 come ON, the potential across R817 (the differentiated waveform) is applied via R813 to Q804 so that a trigger current develops, which causes the reset solenoid to operate instantaneously.
When the counter switch S7 is OFF, R815 and R816 discharge C807.

(F) PINCH SOLENOID SWITCH CIRCUIT

This consists of a saturation switching circuit using Q805 and Q806, and a differentiation circuit formed by C817 and R823.
When the PLAY lever S11-1 is ON, and the PAUSE switch S13-12 goes OFF, the emitter of Q805 goes to ground potential via D806. A current flows through the base of Q806 via R823 and C817.
Further, a base current flows in Q805 through R820 and the collector and emitter of Q806. Q805 therefore goes ON, and a potential approximately equivalent to B_1+ is applied to the pinch solenoid so that the plunger is drawn in.
Then, after approximately 0.5 seconds, when C817 charges up, Q805 and Q806 go OFF, and the voltage applied to the pinch solenoid drops, through the action of R819, to the potential

required to hold the solenoid in. The potential at this time is some 7 to 8 Volts.
D807 and R822 form the discharge loop for C817. C816 is to ensure stability while Q806 is going from OFF to ON.

(G) MUTING CONTROL CIRCUIT

Click noise and various other kinds of noise are generated when the different operating switches are switched ON and OFF, the power is switched ON and OFF, and the tape recorder is switched from the recording to play back mode, etc.
In order to eliminate this noise, the noise (that is the signal) is shorted by appropriate biasing of the switching transistors Q113 and Q213 on the REC/PB amplifier assembly.

(1) When Power is ON (absent recording, and alarmclock reproduction)

For approximately 3.5 seconds after the power is switched ON (until C823 has charged up) C823 and R835 give rise to a base current in Q808 so that Q808 goes ON. Q807 goes ON due to R828, also goes on.
A potential approximately equal to B_1+ appears at the collector (the output terminal) of Q807. This causes Q113 and Q213 in the REC/PB amplifier assembly section to go ON so that the signal (noise) is shorted. Again, this operation occurs whenever any of the operational switches is switched ON or OFF.

(2) REC, PLAY, REC/PLAY (during normal operation)

A base current flows in Q808 through R839 and R836 continually during the STOP, FF and REW states. Q808 and Q807 and also Q113 and Q213 on the REC/PB amplifier assembly are all ON and the signal (noise) is shorted.

When the PLAY button is depressed, the cathode side of D814 goes to ground potential via S11-1 (pause switch OFF) and S13-1, S13-2. The current which flows to R839 is by-passed by D814 so that Q808 goes OFF. At this time, C820 and Q808 form an integrating circuit, so that the OFF condition is not entered immediately, but only some 0.3 to 0.5 seconds later.
In the REC state, D813 functions in the same manner instead of D814.
In playback, with the PAUSE switch ON, the PAUSE switch is in series with the PLAY switch, so that when Q808 is ON, the signal is shorted (in other words muting is effective), but when the PAUSE switch is set ON during recording, D813 is always grounded, so that the condition is exactly that for non-muting, and the signal can be monitored.

(3) PLAY → REC/PLAY (follow-up recording)

With the PLAY lever depressed, D814 acts so as to turn Q808 and Q807 OFF, so that when the REC lever is depressed with the muting still in the released (e.e. non-effective) state, the cathode side of D812 goes to ground potential, a charging current flows in C822, and even if Q808 is OFF, Q807 goes ON for approximately 0.3 seconds, with Q113 and Q213 ON, so that the signal (or noise) is shorted.

(4) REC/PLAY → PLAY (REC release)

With the REC and PLAY levers depressed, D813 and D814 ensure that when Q808 and Q807 are OFF and the REC lever is released with the muting still in the released state, a charging current flows in C821 so that even with Q808 OFF, Q807 goes ON for approximately 0.3 seconds, with Q113 and Q213 ON, and the signal (noise) is shorted.

TIMING CHARTS

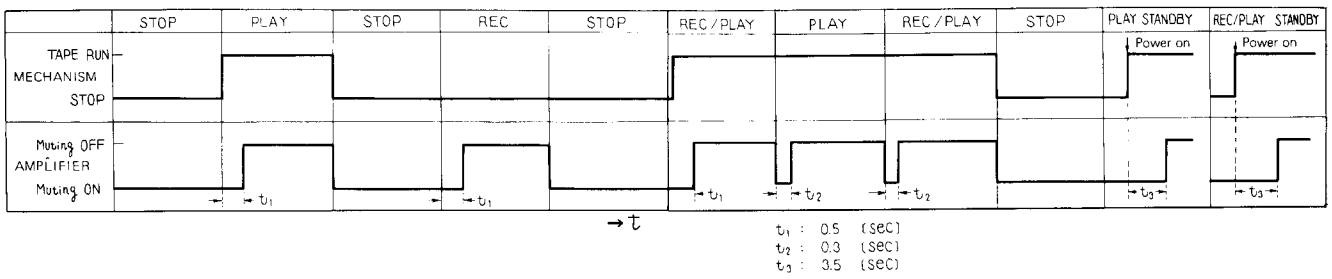


Fig. 3

(5) POWER Switch OFF

In REC, PLAY, and REC/PLAY states, Q807 and Q808 are of course OFF, and the muting is released. At this time, if the POWER is switched OFF, the B_1+ line voltage, decays with a time constant t_1 which depends upon the load.

However, the emitter of Q807 contains R826 and C819, which are normally charged by the line voltage B_1+. When the POWER goes OFF, and they discharge via D809, they do so at a rate which is independent of the B_1+ line.

If, however, under these circumstances, the time constant t_2 is such that $t_2 > t_1$, Q807 will come back ON immediately after the POWER is switched OFF. It follows that Q113 and Q213 go ON, and noise is shorted.

Further, an illustration is given below, for information, of a comparison between what happens with this circuit and what would happen without it.

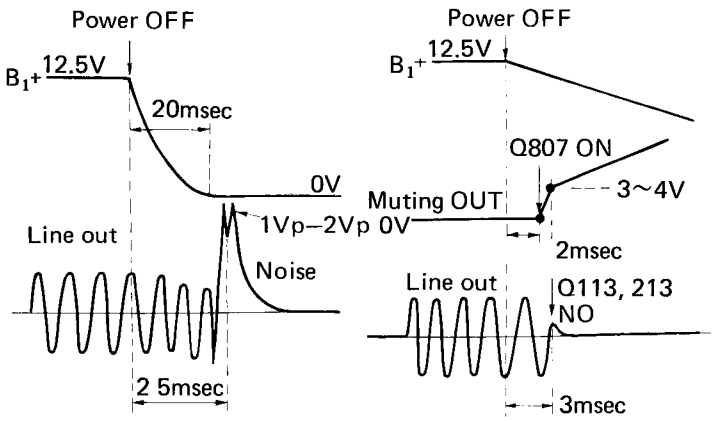


Fig. 4

6 4 EXPLANATION OF OTHER THAN BLOCK CIRCUITS

(1) Diode back-potential protection

The diodes concerned are D803, D001, D002 and D003, connected to the solenoids.

These are inserted to protect circuit elements.

(2) Prevention of diode reverse current

The diodes concerned are D804, D805, D806, D809 to D814, and D808.

AND gates are formed respectively by the diode pairs D804 and D805, D810 and D811, and D813 and D814. Further, Q807, D810 and D811, and Q808, D813 and D814, both form NAND gates, so that the essential signals to each are detected and appear at the output.

(3) Diode discharge loop configuration

D801, D807, and D815 are to discharge capacitors C802, C817, and C823 respectively.

Again, D801, with D802, also perform as rectifiers (in this case as voltage-doubling rectifiers).

(4) Diode temperature compensation

The diode concerned is D901. The forward voltage temperature coefficient of diodes is generally negative, whereas the temperature coefficient of the Zener potential of ZD901 is positive. These cancel out, so that the variation in output voltage with temperature is minimized.

(5) The function of C818 and R825

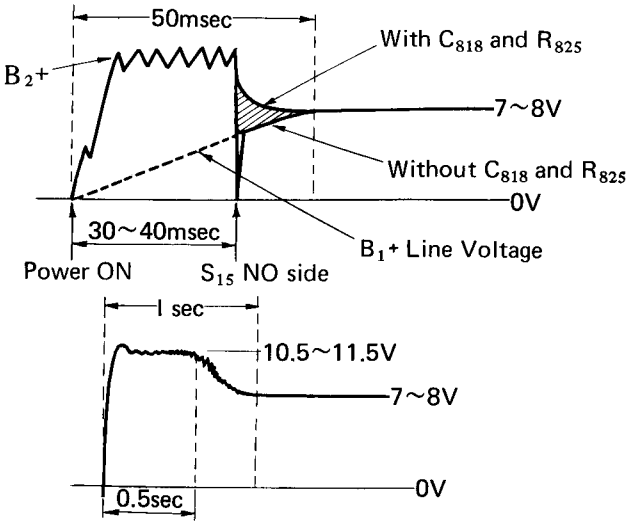
The function is particularly designed to be effective for absent recordings.

In REC/PLAY stand-by, when the POWER comes ON, initially, since S15 is on the NC side, B_2+ line voltage rises, and the REC plunger is accordingly pulled in.

At this time, the rise time for B_2+ line voltage is extremely short, so that the plunger is pulled in at virtually the same instant as the POWER comes ON.

However, as indicated previously, the B_1+ line voltage rise time is approximately 50 msec, so that even if the pull-in is followed by S15 changing over to the NO side, the plunger may fall back due to the voltage still being low at that time. In order to prevent this occurrence, C818 and R825 have been included. These charge from the B_2+ line, discharging through the solenoid when S15 changes over, ensuring reliable pull-in.

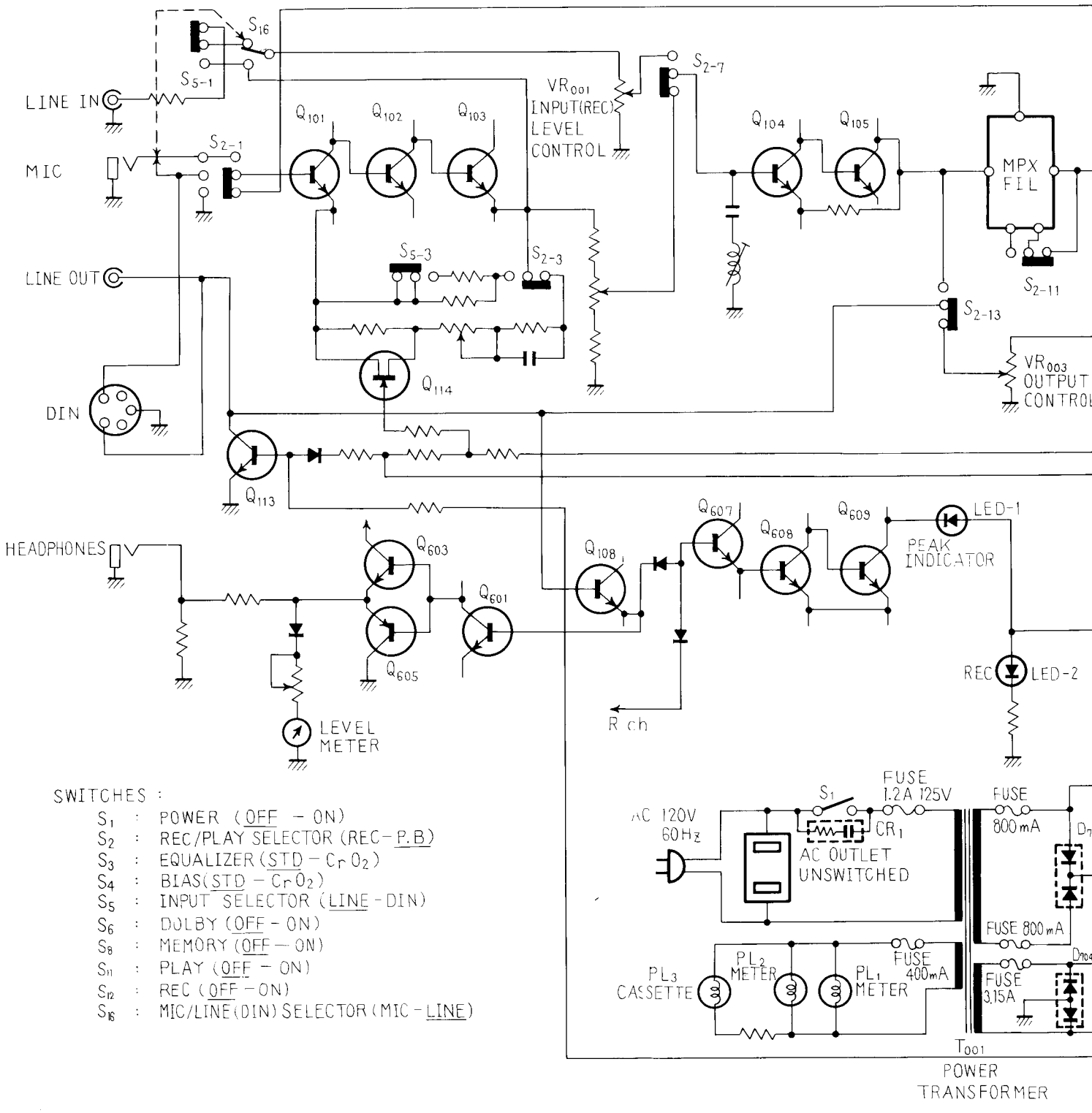
NOTE:
The following diagram illustrates the potential (voltage) waveform across the solenoid terminals.



Voltage Waveform Applied to the Pinch Solenoid

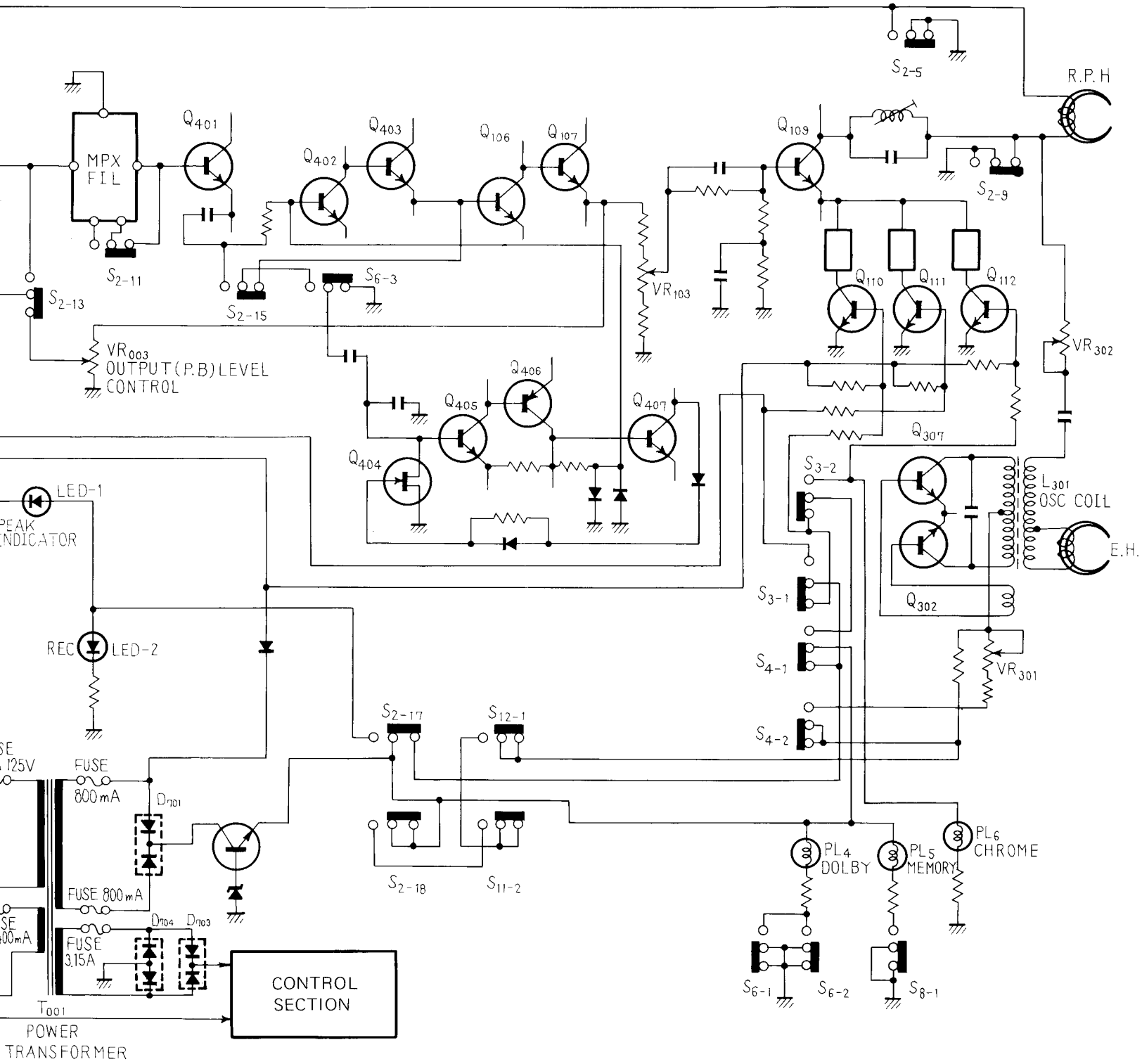
Fig. 5

7. BLOCK DIAGRAM



SWITCHES :

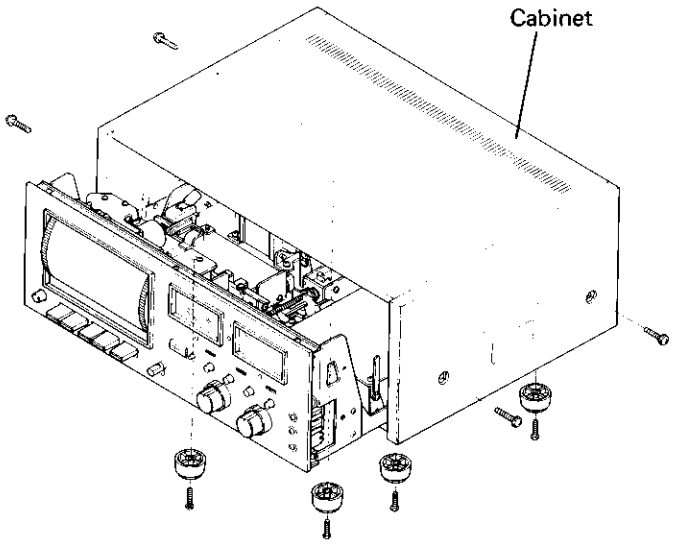
- S_1 : POWER (OFF – ON)
- S_2 : REC/PLAY SELECTOR (REC – P.B)
- S_3 : EQUALIZER (STD – $Cr O_2$)
- S_4 : BIAS (STD – $Cr O_2$)
- S_5 : INPUT SELECTOR (LINE – DIN)
- S_6 : DOLBY (OFF – ON)
- S_8 : MEMORY (OFF – ON)
- S_{11} : PLAY (OFF – ON)
- S_{12} : REC (OFF – ON)
- S_{16} : MIC/LINE(DIN) SELECTOR (MIC – LINE)


MPX FIL
Q401
Q402
Q403
Q106
Q107
Q109
Q110
Q111
Q112
Q404
Q405
Q406
Q407
Q307
Q302
S2-5
S2-9
S2-11
S2-13
S2-15
S6-3
S2-17
S2-18
S12-1
S11-2
S3-1
S3-2
S4-1
S4-2
S6-1
S6-2
S8-1
VR103
VR003
OUTPUT(P.B)LEVEL CONTROL
VR302
VR301
L301
OSC COIL
R.P.H
E.H.
LED-1
PEAK INDICATOR
REC
LED-2
125V
FUSE
800mA
FUSE 800mA
FUSE 3.15A
D701
D704
D703
T001
POWER TRANSFORMER
CONTROL SECTION
PL4 DOLBY
PL5 MEMORY
PL6 CHROME

8. DISASSEMBLY

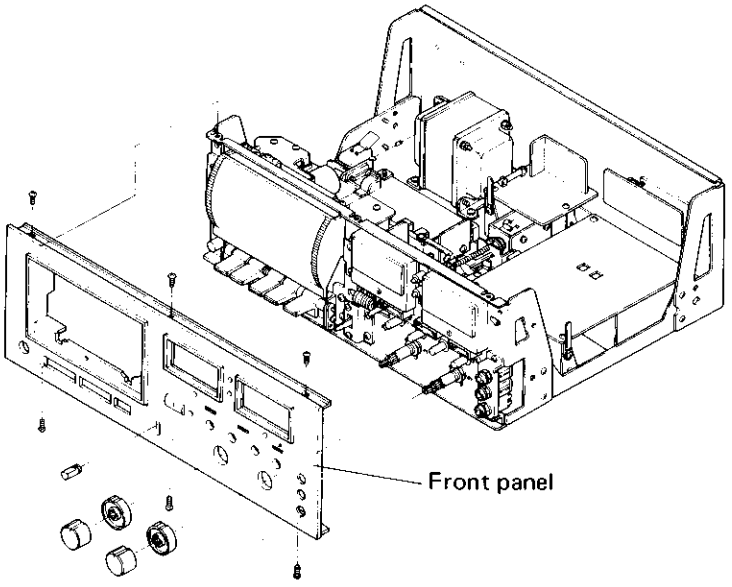
CABINET

The cabinet can be removed by taking out 4 cabinet retaining screws and the 4 foot pad retaining screws on the bottom plate. When reattaching it, ensure that there is no gap between the cabinet and the front panel.



FRONT PANEL

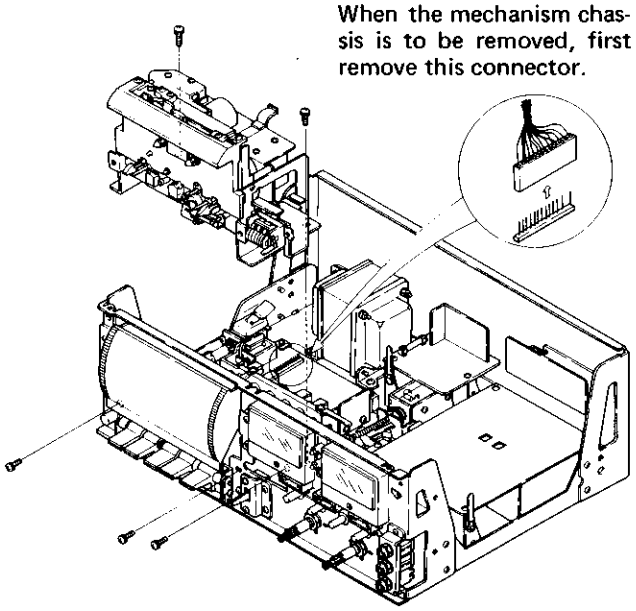
1. Pull off the knobs shown in the diagram and open the door.
2. The six retaining screws of the front panel are removed.
3. Remove the front panel gently, ensuring that it is not damaged or marked in the process.



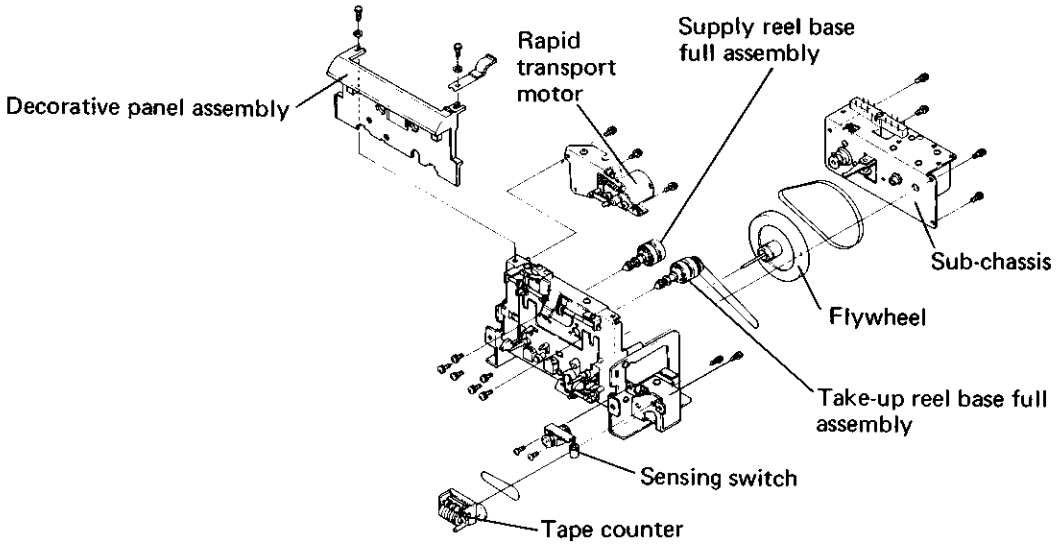
MECHANISM CHASSIS

1. Remove all connectors from the mechanism chassis.
2. The leads from the heads are soldered in place. These leads should not be removed unless heads are to be replaced.
- Slacken the cord-retaining clip which keeps the leads from the heads in place.
- Remove the door spring.

3. If the mechanism chassis retaining screws are removed, the mechanism chassis itself can be removed.

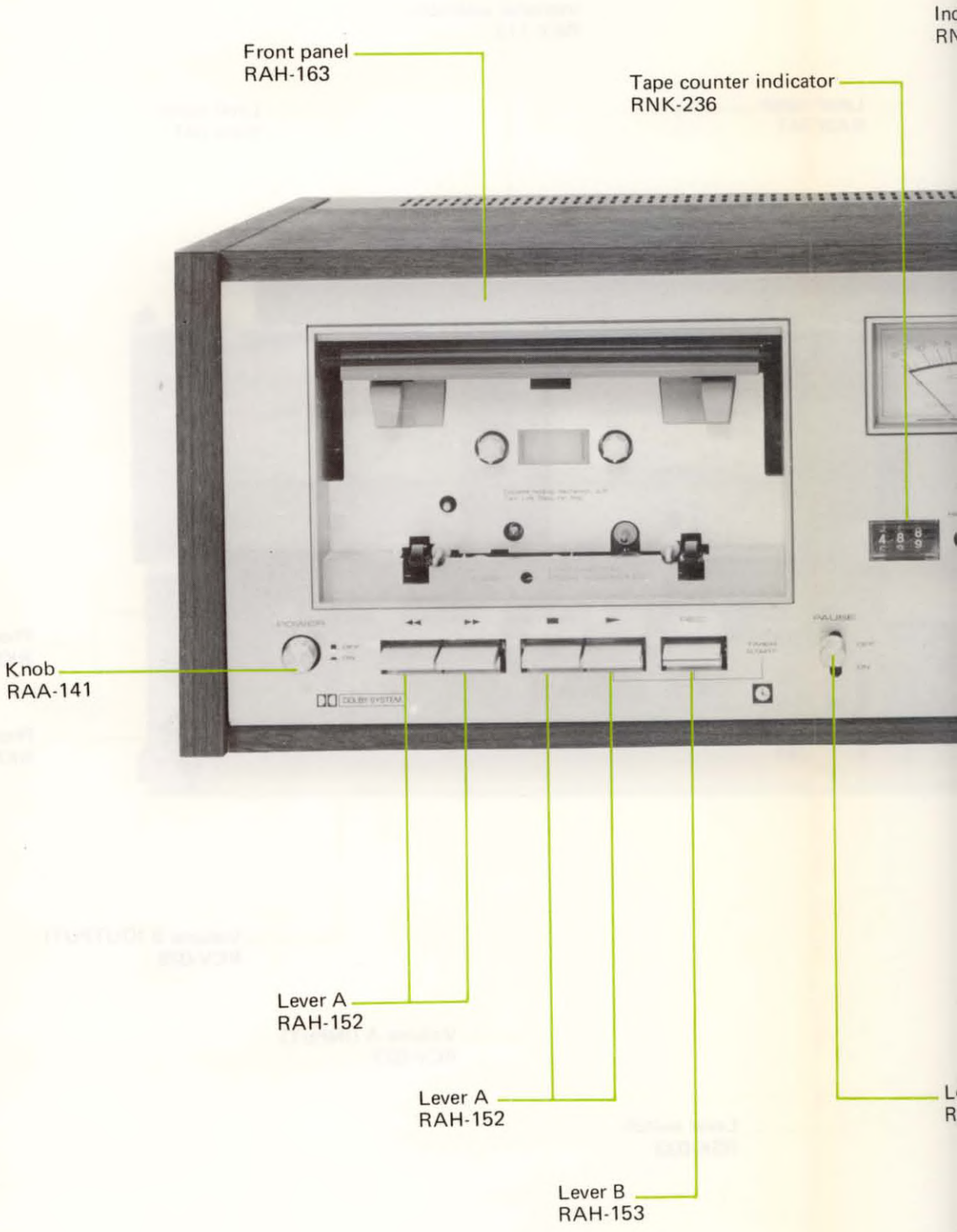


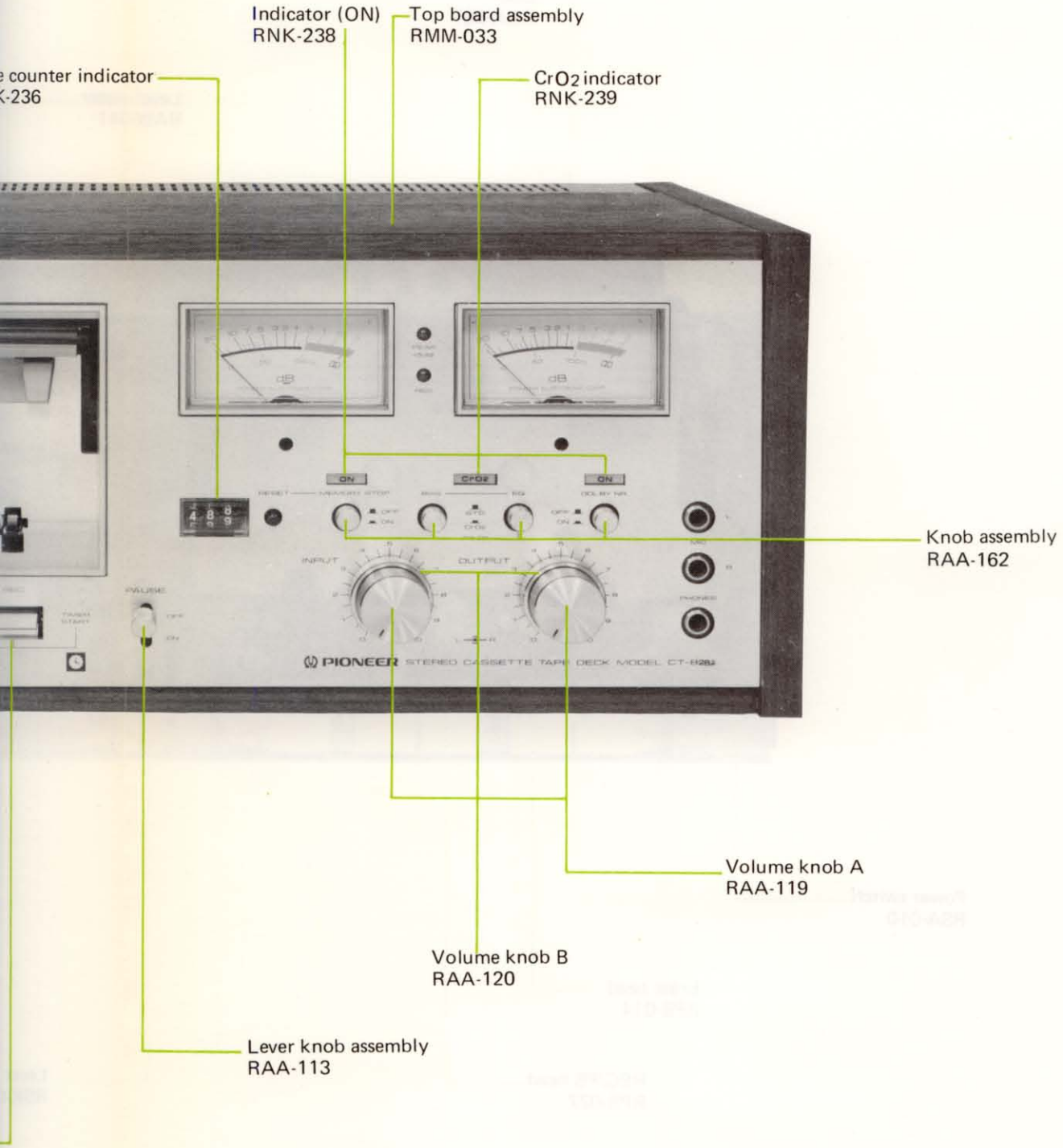
DISASSEMBLY OF THE MECHANISM CHASSIS



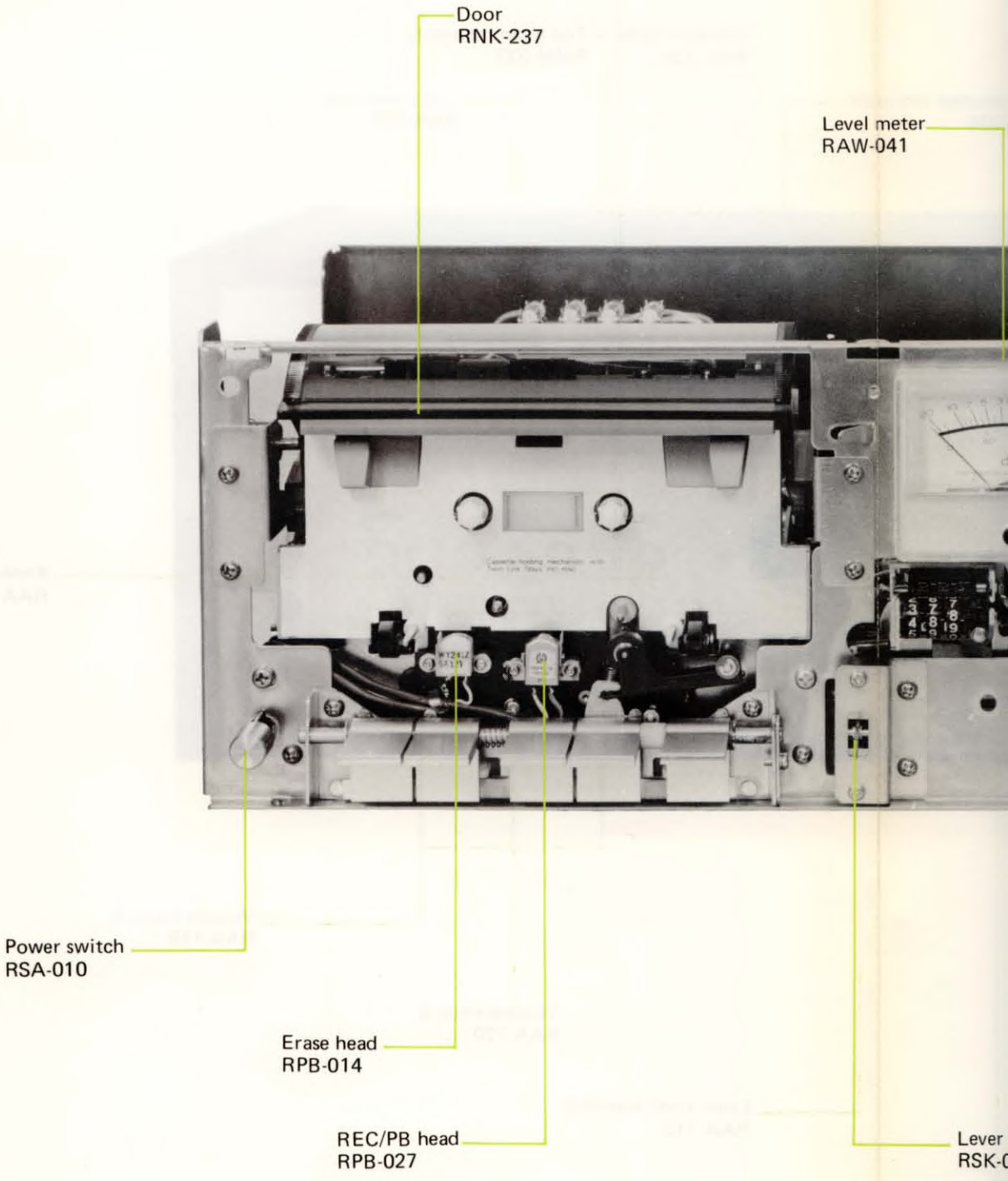
9. PARTS LOCATIONS

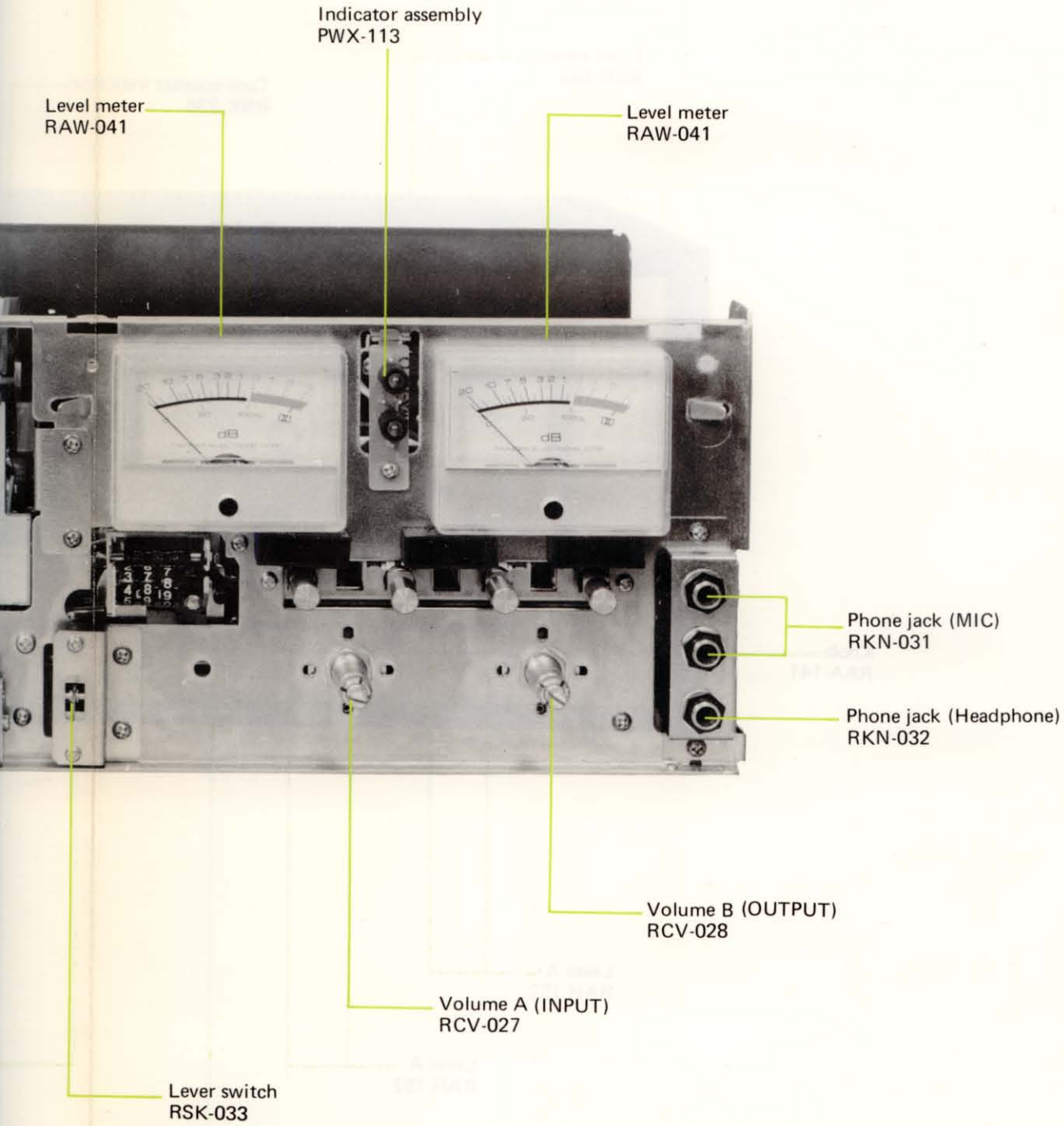
9.1 FRONT VIEW



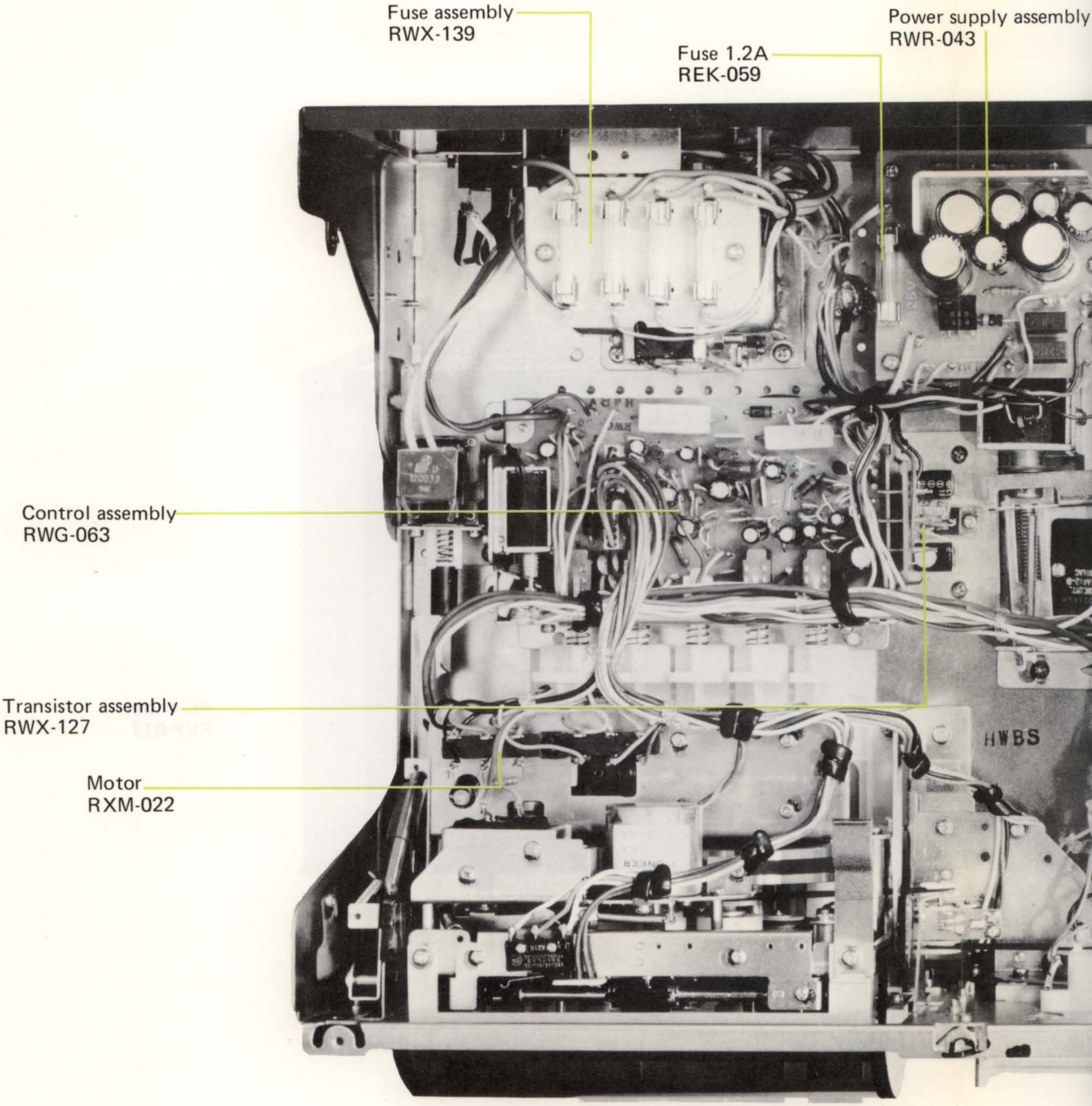

Indicator (ON)
RNK-238
Top board assembly
RMM-033
e counter indicator
K-236
CrO2 indicator
RNK-239
Knob assembly
RAA-162
Volume knob A
RAA-119
Volume knob B
RAA-120
Lever knob assembly
RAA-113

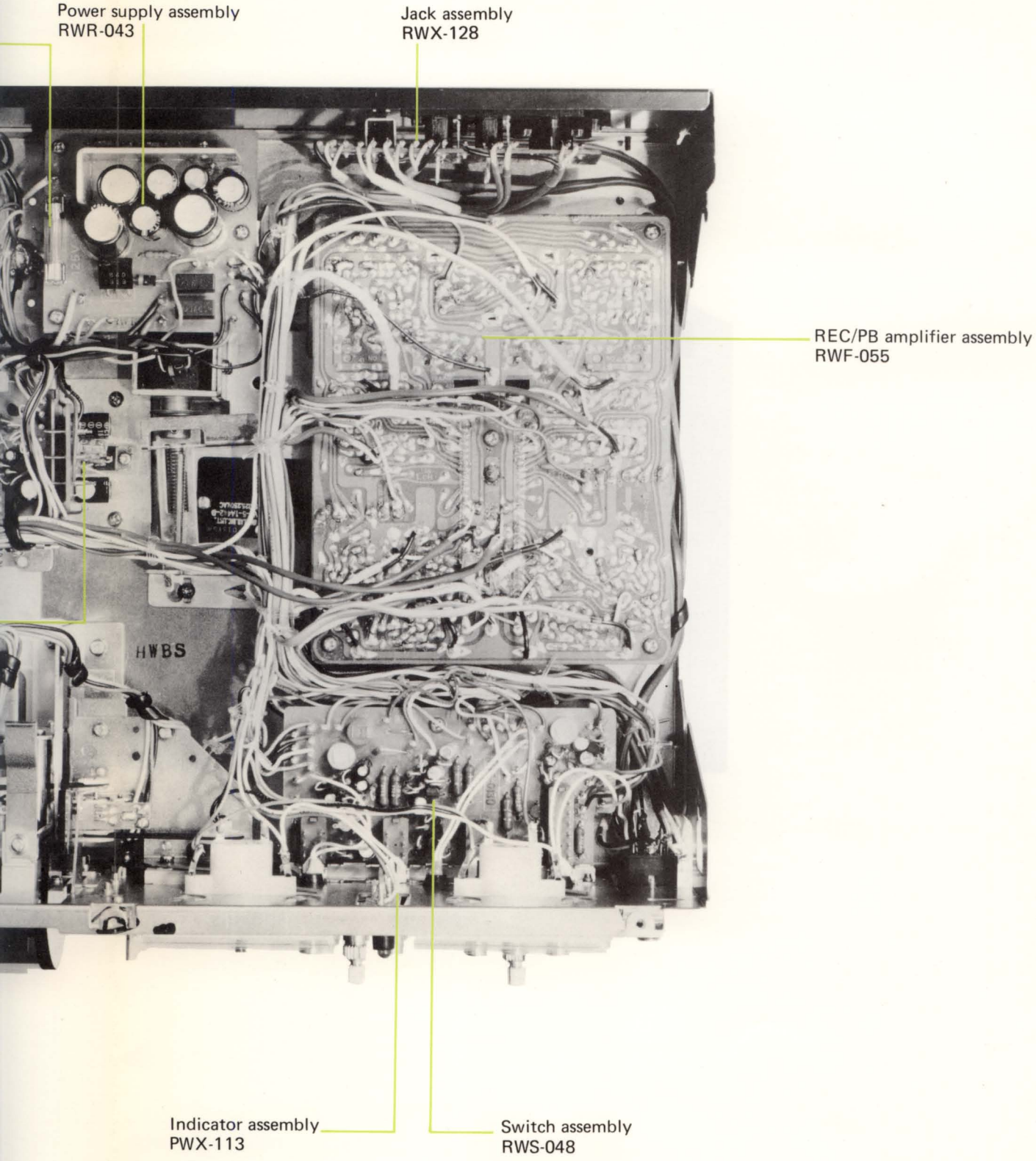
9.2 FRONT VIEW WITH PANEL REMOVED



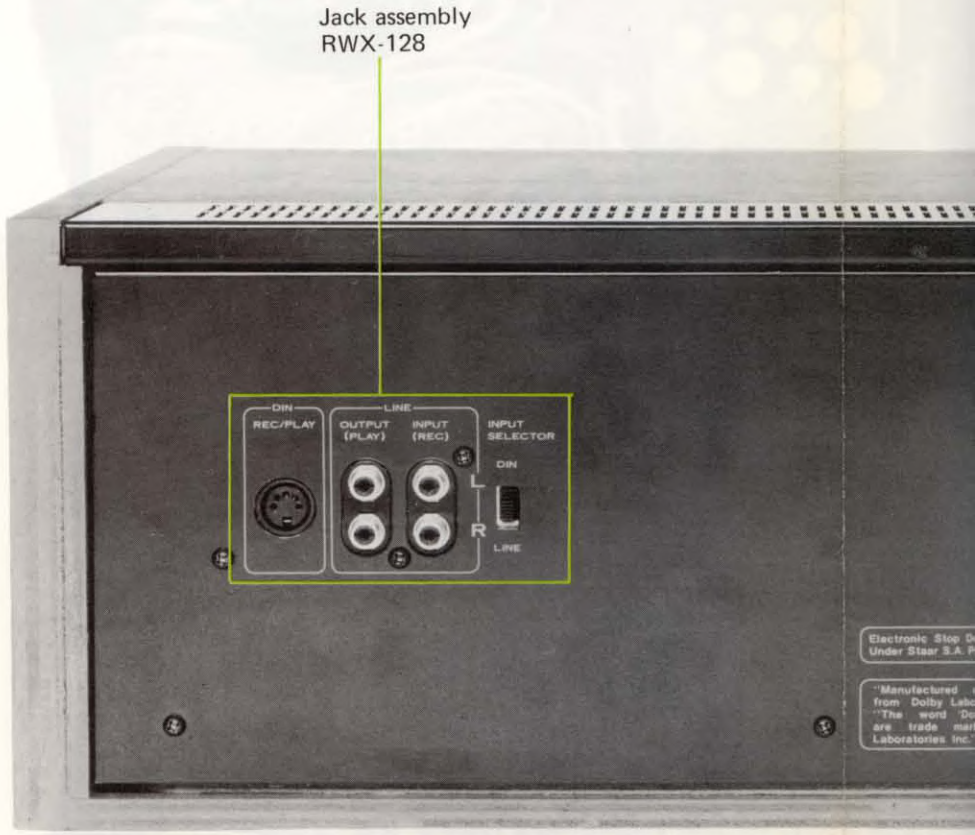

Indicator assembly
PWX-113
Level meter
RAW-041
Level meter
RAW-041
Phone jack (MIC)
RKN-031
Phone jack (Headphone)
RKN-032
Volume B (OUTPUT)
RCV-028
Volume A (INPUT)
RCV-027
Lever switch
RSK-033

9.3 TOP VIEW


Fuse assembly
RWX-139
Fuse 1.2A
REK-059
Power supply assembly
RWR-043
Control assembly
RWG-063
Transistor assembly
RWX-127
Motor
RXM-022
HWBS
Indicato
PWX-11


Power supply assembly
RWR-043
Jack assembly
RWX-128
REC/PB amplifier assembly
RWF-055
Indicator assembly
PWX-113
Switch assembly
RWS-048

9.4 REAR VIEW



Binding p
B11-012

AC outlet
RKP-017

Binding post
B11-012

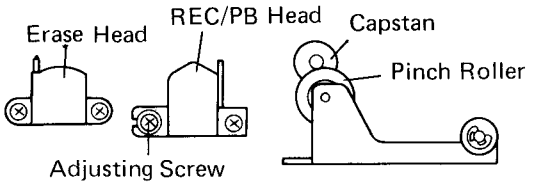
Power cord
RDG-013

10. ELECTRICAL ADJUSTMENTS

There are two series of adjustments to be followed: those for the reproduction system, and those for the recording system. For reproduction (playback) adjustments, use the special adjustment-setting tape STD-341, and for recording system adjustments, use the recording-adjustment tape STD-601.
Please refer to pages 31, 32 for locations of the semi-fixed resistors and coils used in carrying out adjustments.

HEAD AZIMUTH ADJUSTMENT

1. Set the OUTPUT volume (VR003, 004) to maximum, and attach a millivoltmeter to the OUTPUT terminals.
2. Set the EQ SELECTOR to STD. Play back the 10kHz signal on the adjustment-tape (STD-341), and adjust the head azimuth (angle) for maximum output from both L and R channels.
3. Be sure to fasten the screw with locktight after completing this adjustments.



PLAYBACK EQUALIZATION ADJUSTMENT

1. Set the EQ SELECTOR to STD, and turn the semi-fixed resistor VR101, 201, to their maximum positions.
2. Play back STD-341 (333Hz/−20dB), and adjust the OUTPUT volume (VR003, 004) so that the OUTPUT terminal levels are −30dBv (31.6mV).
3. Next, play back the 6.3kHz/−20dB section on STD-341, and adjust the semi-fixed resistor VR102, 202, so that the output level is −29.5dBv (33.5mV).
4. Finally, with the EQ SELECTOR set to CHROME, check that playback level of the 6.3kHz/−20dB signal is within −36dBv to −33dBv (15.9mV to 22.4mV) range.

PLAYBACK LEVEL ADJUSTMENT

1. Set the EQ SELECTOR to STD, attach a millivoltmeter to the output terminals (No. 102, 103) of the REC/PB amplifier assembly. Any convenient setting of the OUTPUT volume control may be used.
2. Turn the DOLBY NR switch ON. Play back the 333Hz/0dB section of STD-341, and adjust VR101, 201 to provide a meter reading of −3.7dBv (653mV).

NOTE:
This setting determines the Dolby level, so it must be performed accurately.

ADJUSTMENT FOR 0 VU

1. Apply a 333Hz/−10dBv (316mV) signal to the INPUT terminals, and switch the unit to the recording mode.
2. Adjust the INPUT VOLUME controls VR001, 002 so that the output level at the output terminals (No. 102, 103) of the REC/PB amplifier assembly is −7.7dBv (412mV).
3. Next, adjust VR602, 603 so that the level meter indication becomes 0 VU.

RECORDING CURRENT ROUGH ADJUSTMENT

1. Apply a 333Hz/−10dBv (316mV) signal to the INPUT terminals, and switch the unit to the recording mode.
2. Adjust the INPUT volume until −7dBv (447mV) signal appears at the OUTPUT terminals.
3. Connect a millivoltmeter between terminals No. 15 and 19, and No. 16 and 20, on the REC/PB amplifier assembly.
4. Disconnect the wire from the No. 44 terminal.
5. With the EQ SELECTOR set to STD, adjust VR103, 203, so that the meter reads 0.4mV.
6. Reconnect the wire to the same terminal (No. 44).

BIAS TRAP ADJUSTMENT

1. With the unit in the recording mode, turn the INPUT VOLUME to maximum. Connect a millivoltmeter and an oscilloscope to the test point TP-2 on the REC/PB amplifier assembly, and tune L102 and L202 for minimum waveform amplitude.
2. With the BIAS SELECTOR set for CHROME, and the INPUT SELECTOR switched to DIN, connect a millivoltmeter to the OUTPUT terminals.
3. Tune L101 and L201 for minimum bias leakage level. Finally, check that the bias leakage is always less than 17.5mV at any position of the INPUT VOLUME.

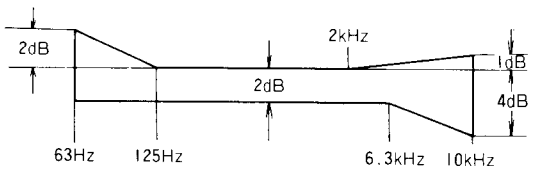
RECORDING CURRENT ROUGH ADJUSTMENT

1. With the unit in the recording mode, turn the INPUT VOLUME to minimum.
2. Switch the EQ SELECTOR to STD.
3. Connect a millivoltmeter between terminals No. 15 and 19, and No. 16 and 20 on the REC/PB amplifier assembly. Adjust VR301, 302 so that the meter indication becomes 1.6 mV.

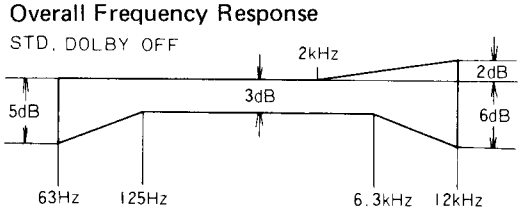
ADJUSTMENT OF REC/PB FREQUENCY RESPONSE

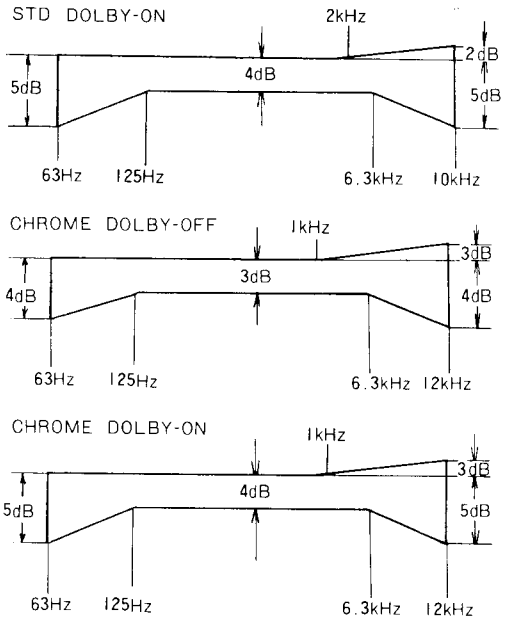
1. Set the BIAS and EQ SELECTOR at STD, the DOLBY NR is switched OFF.
2. Apply a 333Hz/−30dBv (31.6mV) signal to the INPUT terminals, and set the unit in the recording mode. Adjust the INPUT VOLUME control to provide −27dBv (44.7mV) at the OUTPUT terminals.
3. Record the 333Hz signal on the STD-601 tape.
4. Next, record a 6.3kHz/−30dBv (31.6mV) signal, and adjust VR301, 302 so that any deviation in the playback output level from the level for 333Hz in the previous section is within ±1dB.
5. Further, record and playback at frequencies up to 12kHz, checking that response is within the specified limits.
6. With the BIAS and EQ SELECTOR at CHROME, record similar 333Hz and 6.3kHz signals on tape STD-602, and adjust VR601 on the switch assembly (RWS-048) so that the difference in playback level for 6.3kHz with respect to that for 333Hz is 1dB ±1dB.

Playback Frequency Response



Overall Frequency Response





RECORDING LEVEL ADJUSTMENT

1. Set the BIAS and EQ SELECTOR at STD, switch the DOLBY NR OFF.
2. Apply a 333Hz/−10dBv (316mV) signal to the INPUT terminals, and connect a millivoltmeter to the DOLBY-OUT terminals (No. 102, 103) on the REC/PB amplifier assembly. Adjust the INPUT VOLUME to provide −7.7dBv (412mV) output.
3. Record the 333Hz/−10dBv (316mV) signal on tape STD-601, and adjust VR103, 203 to provide −7.7dBv (412mV) output from the DOLBY OUT terminals (No. 102, 103) on the REC/PB amplifier assembly.
4. With the BIAS and EQ SELECTOR set to CHROME, record and playback the 333Hz/−10dBv (316mV) signal on tape STD-602, and check that the output from the DOLBY OUT terminals (No. 102, 103) on the REC/PB amplifier assembly is −6.2dBv ~ −9.2dBv (490mV ~ 347mV).

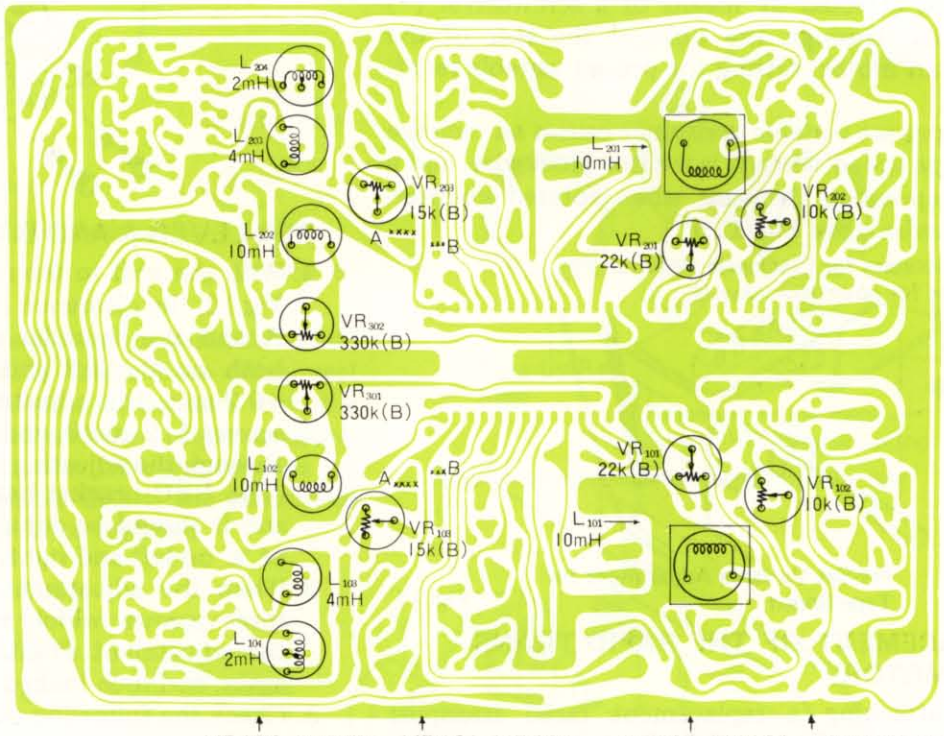
CHECK OF PEAK INDICATOR OPERATION

1. With the unit in the recording state, apply a 333Hz/−10dBv (316mV) signal to the INPUT terminals, and turn the INPUT VOLUME down to minimum.
2. Operating with the L-channel alone, check that the PEAK INDICATOR lamp illuminates when the L-channel output is −3dBv ~ −1dBv (708mV ~ 891mV).
3. After having checked the L channel, check both the operation of the R channel alone, and L and R channels together.

DOLBY ADJUSTMENT

1. Connect a millivoltmeter to the REC/PB amplifier assembly terminals No. 102 (L channel) and No. 103 (R channel).
2. Turn the DOLBY NR switch ON.
3. Turn VR401 (for L and R channel) on the Dolby circuit board to maximum.
4. Apply a 5kHz signal to the INPUT terminals, and set the unit into the recording mode.
5. Adjust the INPUT LEVEL control until the meter reading is −4.7dBv (582mV).
6. Reduce the INPUT terminal signal level from that of (5) by 40dB.
7. Adjust VR402 (for L and R channel) until the millivoltmeter reading becomes −34.7dBv (18.4mV).
8. Raise the INPUT signal level from that of (6) by 10dB.
9. Adjust VR401 (for L and R channel) until the millivoltmeter reading becomes −26.7dBv (46.2mV).

REC/PB Amplifier Assembly Points of Adjustment



※
Response Compensation Adj.
(A), (B) REC/PB Frequency

L102, L202
Bias Trap Adjustment

VR301, VR302
Bias Current
Adjustment

VR103, VR203
REC Level
Adjustment

VR101, VR201
PB Level
Adjustment

VR102, VR202
PB Equalization
Adjustment

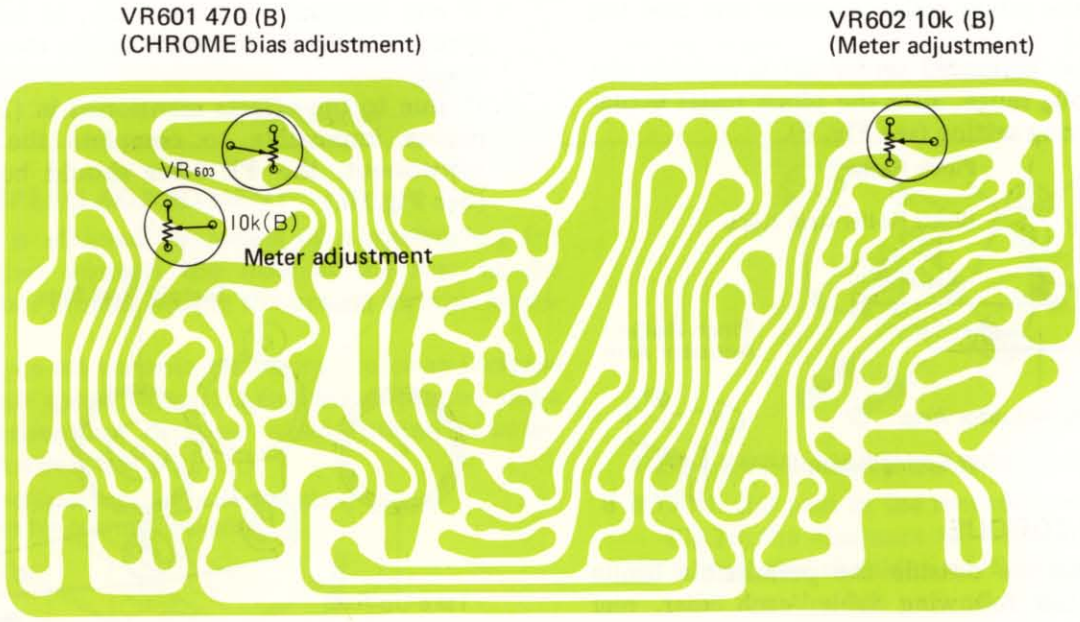
L101, L201 Bias Trap
(Leakage) Adjustment

※

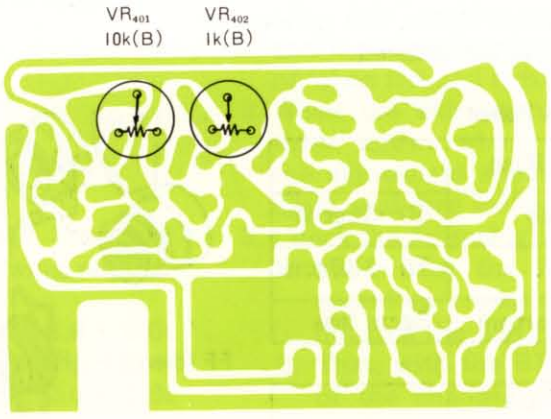
NOTE:
(A) and (B) have been adjusted at the factory before shipment to have the optimum equalization for the REC/PB heads fitted.
Their effects upon the REC/PB static response are as shown in the table.

A	B	Effect (at 6.3kHz for all POSITIONS)
Soldered	Soldered	+1.2[dB]
Soldered	Isolated	0[dB] (standard)
Isolated	Isolated	−2.0[dB]

Adjustment Points on the Switch Assembly



Dolby Assembly Adjustment Points



11. MECHANICAL ADJUSTMENTS

PINCH ROLLER PRESSURE

1. Refer to page 20 for the method of disassembly of the various parts, and remove the mechanism chassis assembly. Attach the connector between unit and mechanism chassis assembly so that mechanism assembly will be able to be operated.
2. In the PLAY mode, insert a 500g tension gauge at the measuring point, and separate the pinch roller from the capstan by approximately 1 to 2 mm. Check that when motion subsequently begins with the pinch roller pressing against the capstan, the reading is between 350 and 450g. (At the same time, check that there is a gap between the pinch roller actuator arm and the head base.)
3. If the value measured under (2) is outside the 350 to 450g range, alter the pinch roller actuator arm spring setting (see Fig. 8).

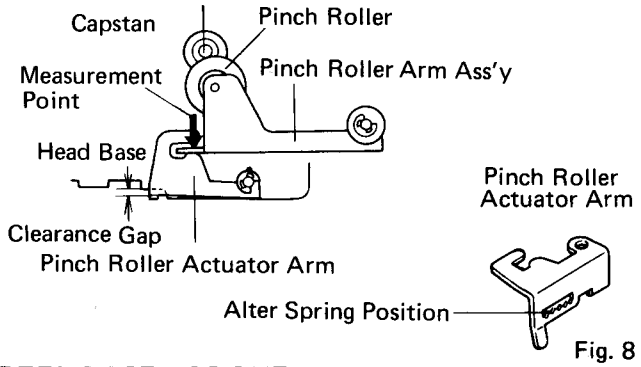


Fig. 8

REEL BASE TORQUE

If the torques lie outside the permissible limits detailed in the following table, each idler, reel base, and other components in contact with the rollers should be cleaned and the torque measurement repeated. If, even after this, the torques are still outside the permissible limits, the take-up or supply reel affected should be replaced.

Trque Values for Reel Bases

Take-up Reel Base	
PLAY Take-Up Torque	40—65gcm
FF Take-Up Torque	75—130gcm
REW Back-Tension Torque	8gcm less

Supply Reel Base	
PLAY Back-Tension Torque	4—8gcm
REW Tape-Up Torque	75—130gcm

ADJUSTMENT OF THE FF/REW REVERSING FORCE

The mechanism for changing over from FF to REW does not only change the direction of rotation of the rapid transport motor, but also reverses the FF idler.

This reversing force is adjusted, as shown in Fig. 9, by means of the FF reverse spring.

When the reverse spring is re-located in the direction of the arrow, it increases the force available to effect the reverse.

1. After adjusting the spring, always be sure to alternate several times between FF and REW. If any unusual vibration, etc., is noticed, the spring should be returned to the standard location.
2. If, due to the effects mentioned in (1) above, it proves impossible to complete the necessary adjustment, the FF idler should be replaced. (See Fig.10.)

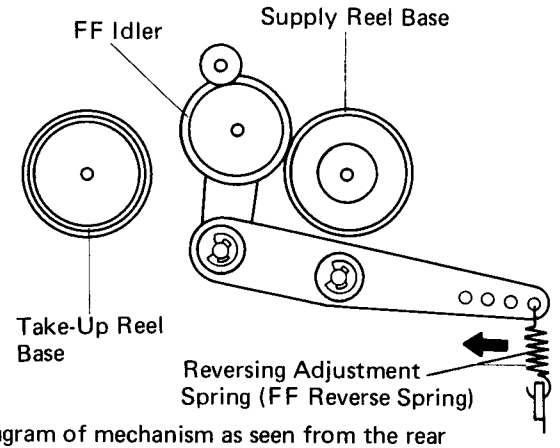


Diagram of mechanism as seen from the rear

Fig. 9

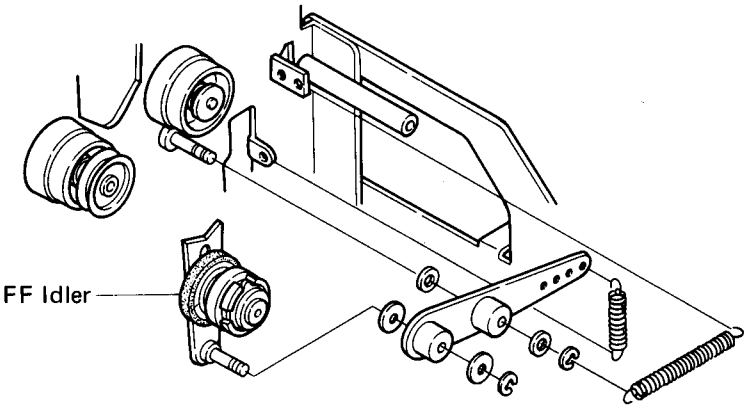
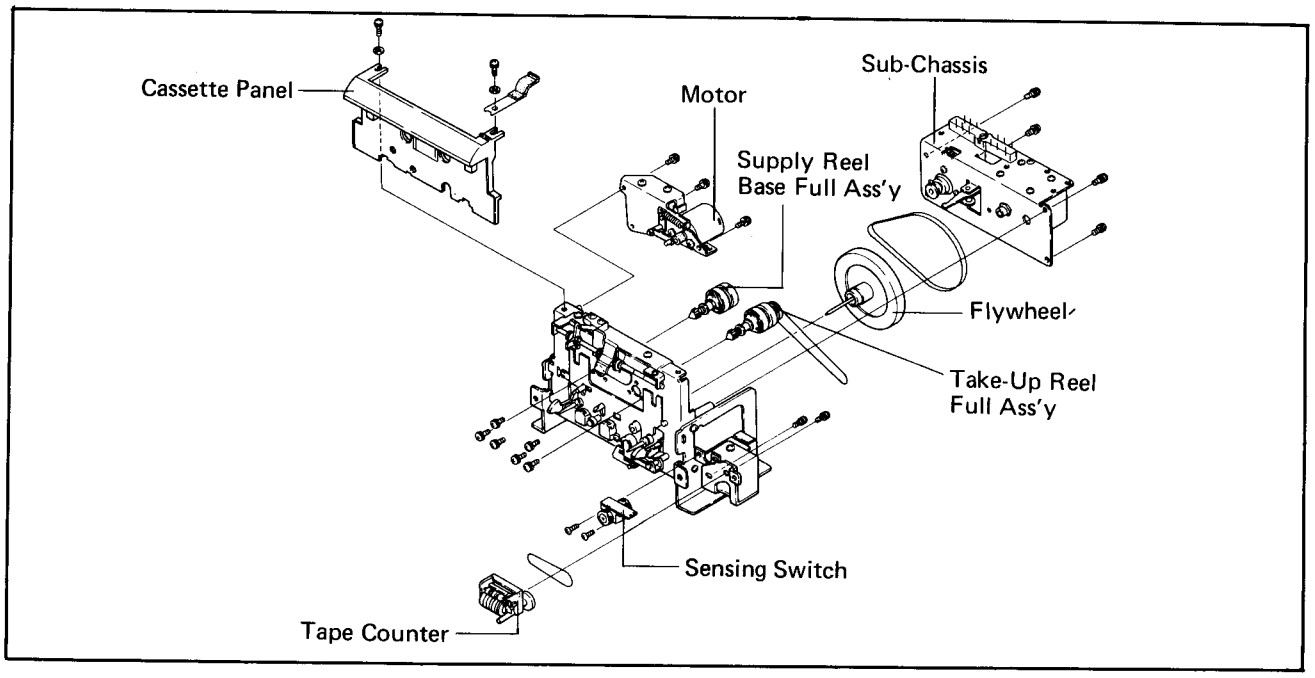
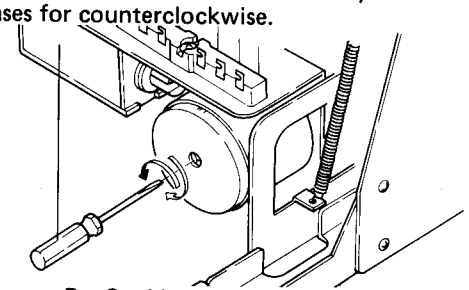


Fig. 10



TAPE SPEED ADJUSTMENT

1. This is effected by means of a screwdriver (−) inserted through the hole at the rear of the capstan motor, setting the pre-set variable resistance.
2. The pre-set variable resistance causes an increase in tape speed when it is rotated clockwise, and a corresponding decrease when rotated counterclockwise. (See Fig. 11.)



Pre-Set Variable Adjustment for Tape Speed Fig. 11

REPLACEMENT OF THE RAPID TRANSPORT MOTOR

When attaching a replacement rapid transport motor, screws which satisfy the following requirements should be obtained and used:

1. When 2.6 x 3 screws are being used, 2.6 x 0.6t spring washers should be inserted (See Fig. 12)
2. When 2.6 x 4 screws are being used, 2.6 x 0.6t spring washers and 2.5 x 0.5t flat washers should be inserted. The motor will be destroyed if screws are used which do not satisfy the above conditions.

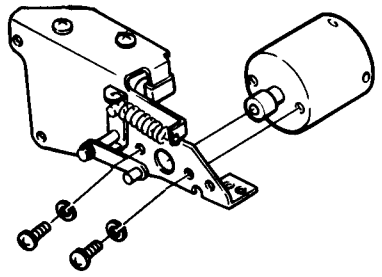


Fig. 12

REC LEVER A AND B ADJUSTMENT

1. With the unit in the recording state, as shown in Fig.13, the clearance (a) between recording lever A and the shoulder of B should be the same both on the left and on the right, at 0.5 mm ± 0.2 mm. This adjustment is made by slackening screws 1, 2 and 3, and inserting a (−) screwdriver through the adjusting hole.
   (The REC bracket has some freedom to rotate, and it should be adjusted to give the same volue of 'a' on left and right.)
2. When the adjustment has been completed, all three screws which were slackened to permit the adjustment should be tightened back down again, and then locked.
3. Check the following points after the adjustment:
   A. That, with the REC solenoid in the non-operating condition, the REC lever A does not foul the REC/PB changeover switch.
   B. That, with the REC solenoid operating, both of the changeover switch are entered positively.
   C. That, with the REC solenoid operating, the REC lever B gives positive changeover of the microswitch.

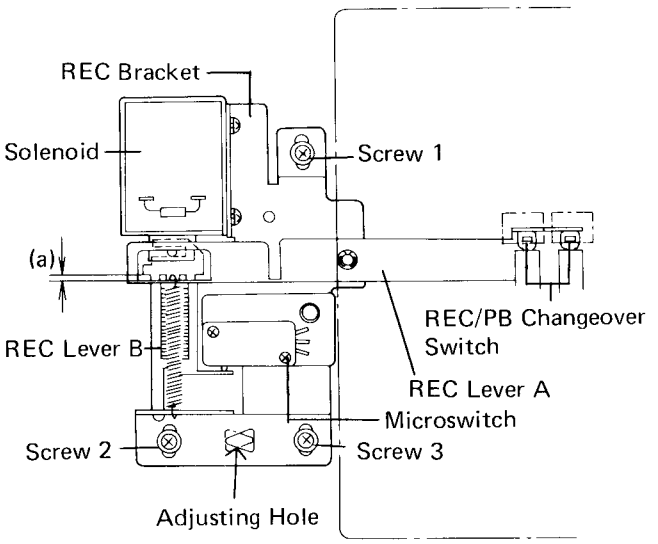


Fig. 13

REPLACEMENT OF THE DOOR

1. Remove the bonnet and front panel.
2. Remove the door spring which tends to hold door open.
3. The four screws which secure the door supports at both sides of the door, in front of the panel stay, are slackened (See Fig.14).
4. With the door in the shut position, the door may be pulled forward and detached when the supports mentioned in (3) above are displaced to the side (outwards).
5. Door installation is carried out in the reverse order.

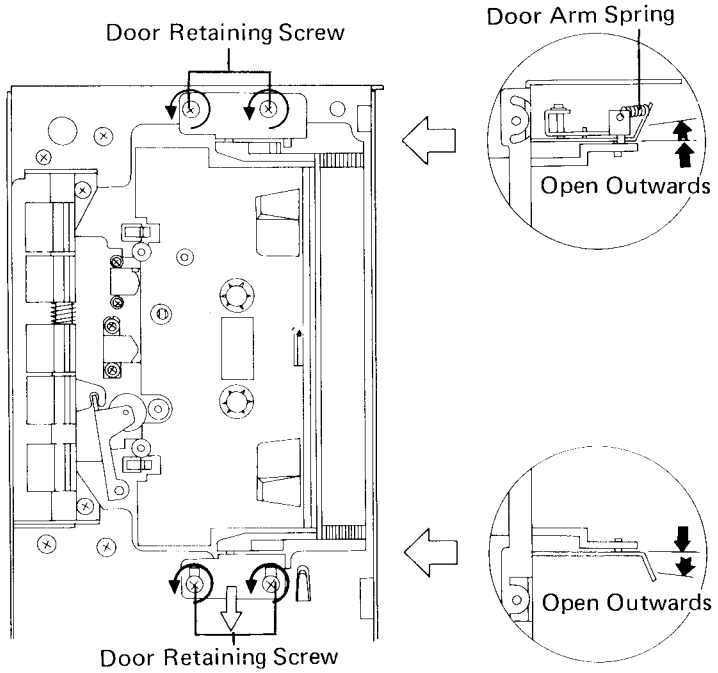


Fig. 14

LEVEL METER 'PLAY'

1. The degree of 'play' in the attachment of the level meters should be adjusted with reference to Fig. 15.
2. If the bending angle is too freat, the meter may be damaged, so particular care is called for when tightening front panel screws so that meter is not held excessively tight by panel springs.

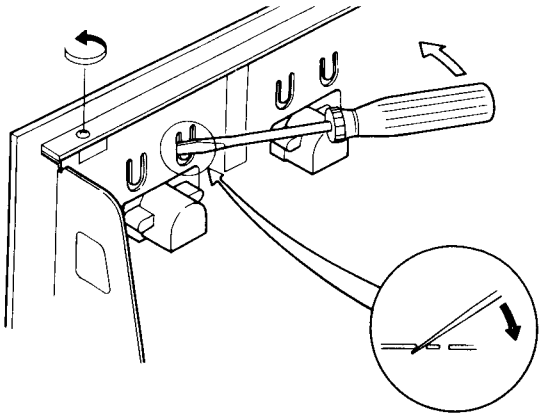


Fig. 15

CONCERNING WOW AND FLUTTER

The wow and flutter figure for the CT-F8282, at 0.07% WRMS, put this unit in the high performance class. If uneven rotation is indicated by wow and flutter, the following points should be checked. Based on this, the appropriate action (cleaning, adjustment, or replacement of parts) should be taken.

1. Capstan deformation, vibration or dirt.
2. Play in the flywheel slide.
3. Dirt or deterioration in the capstan belt.
4. Dirt or unsuitable contact pressure in the pinch roller.
5. Dirt, eccentiricity, or unsuitable contact pressure in the take-up idler.
6. Uneven torque in the take-up reel base torque.
7. Unsuitable or uneven back tension.
8. Torque unevenness arising from sensing switch or counter.
9. Defective cassette (tape).

11.10 MICROSWITCH ADJUSTMENT

The microswitch which is turned ON or OFF by the cassette case is to prevent mistaken erasure. When it has been replaced, insert a cassette case and check that it works positively.

12. SCHEMATIC DIAGRAMS P.C, BOARD PATTERN AND PART LISTS

12.1 MISCELLANEOUS-PARTS

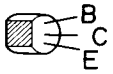
NOTE:
- Capacitors: in μF unless otherwise noted P:PF
- Resistors: in Ω, ¼W unless otherwise noted K:kΩ, M:MΩ

Symbol	Description	Part No.
R001	Carbon film 10k	RD¼PS 103J
R002	Carbon film 10k	RD¼PS 103J
VR001	INPUT LEVEL Control 20k(A)	RCV-027
VR002	INPUT LEVEL Control 20k(A)	RCV-027
VR003	OUTPUT LEVEL Control 20k(B)	RCV-028
VR004	OUTPUT LEVEL Control 20k(B)	RCV-028
S13	Lever switch (PAUSE)	RSK-033
S15	Micro switch	RSF-019
D003	Diode	SIB01-01 or W03B
T001	Power transformer	RTT-101
CR1	Spark killer	RWX-109
PL4	Lamp (DRLBY)	REL-026
PL5	Lamp (MEMORY)	REL-026
PL6	Lamp (CHROME)	REL-026

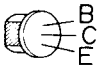
Description	Part No.
AC outlet	RKP-017
Level meter	RAW-041
MIC jack	RKN-031
HEADPHONES jack	RKN-032
Solenoid (REC)	RXP-031
REC/PB amplifier assembly	RWF-055
Dolby processer assembly	RWX-129
Control assembly	RWG-063
Switch assembly	RWS-048
Transistor assembly	RWX-127
Jack assembly	RWX-128
Power supply assembly	RWR-043
Indicator assembly	RWX-113
Fuse assembly	RWX-139

External Appearance of Transistors

2SC1327
2SA564
2SC828
2SC1318
2SC1684
2SC644

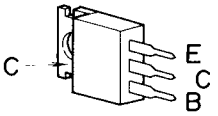


2SA562

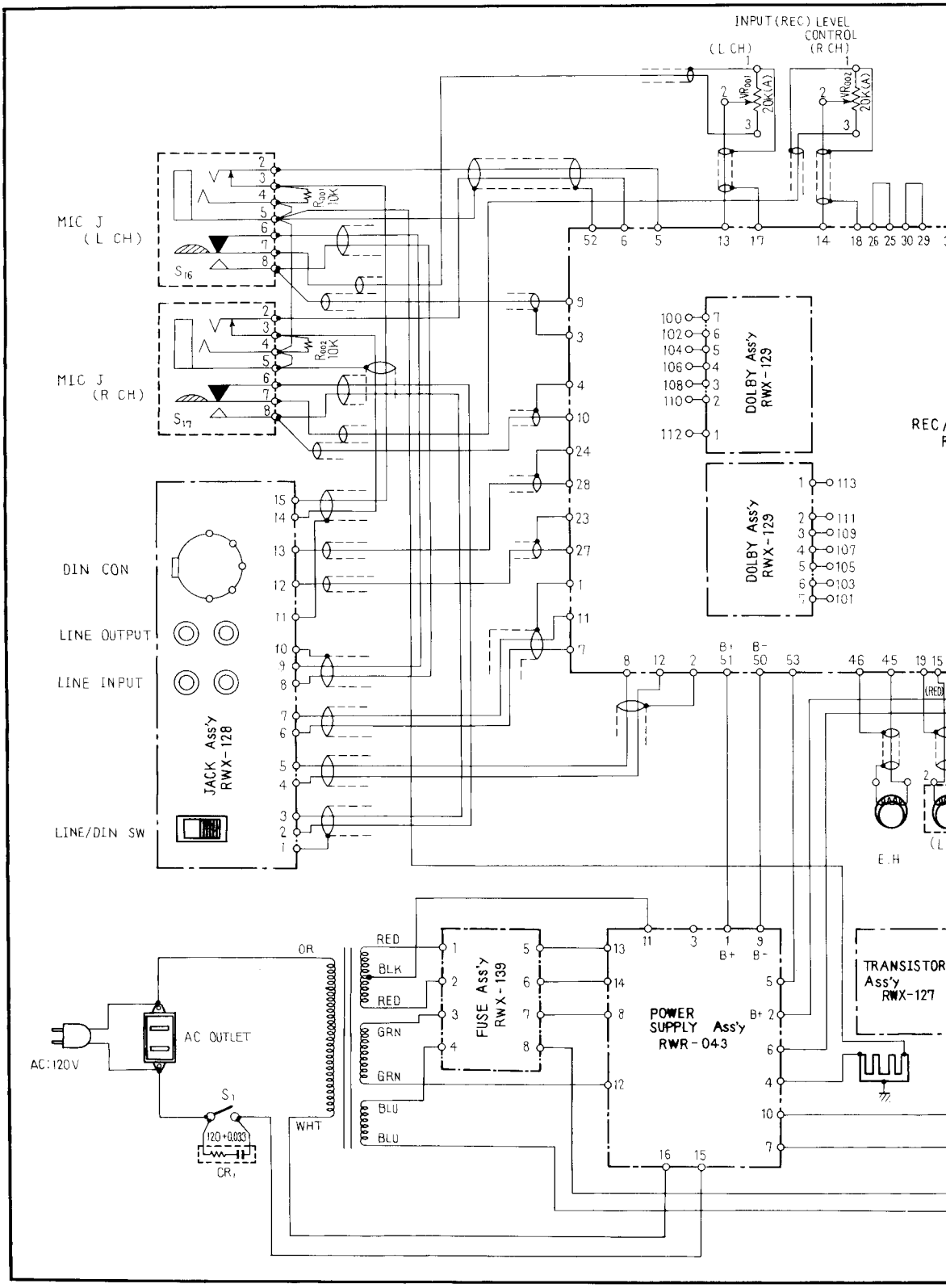


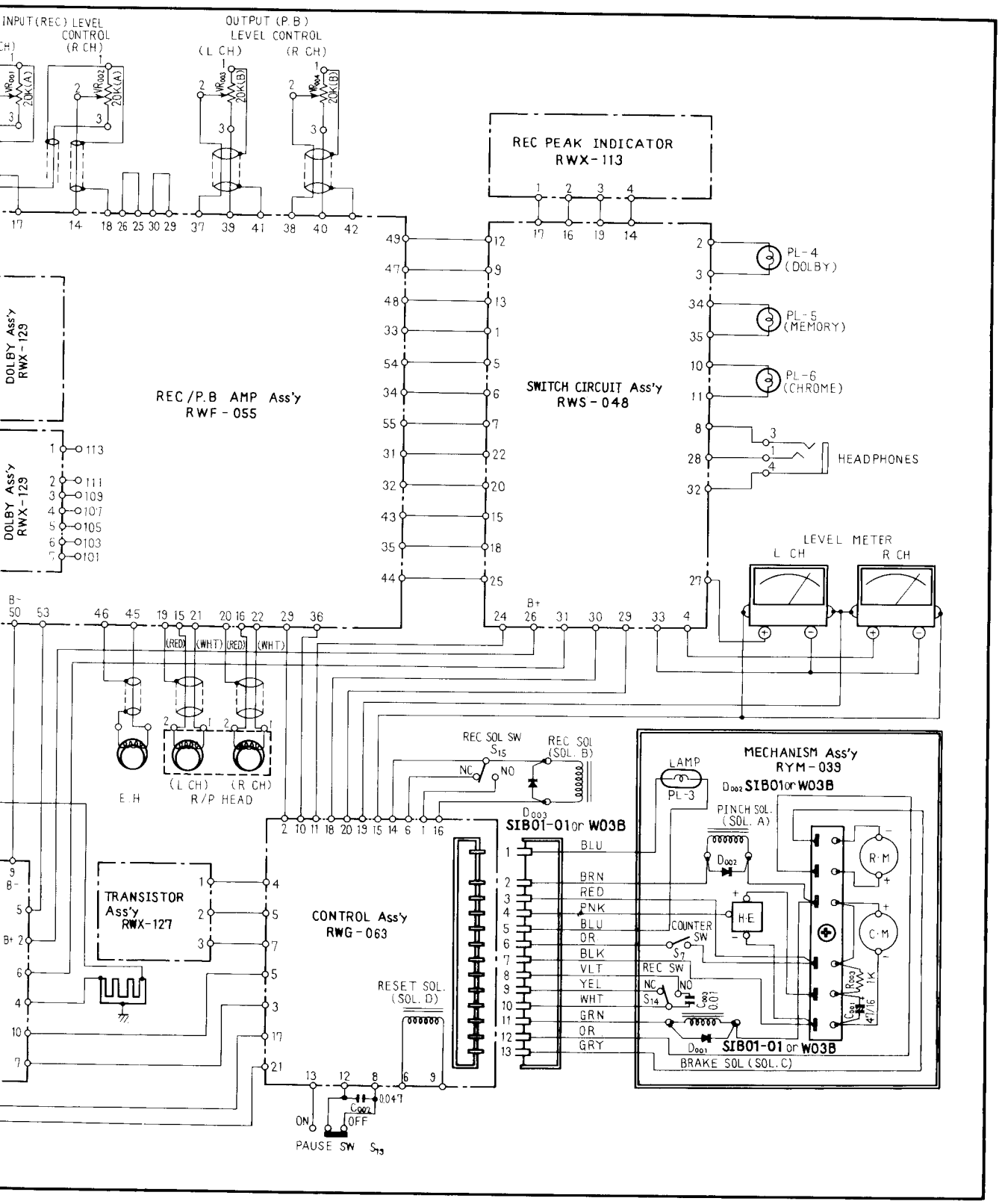
2SK30A

2SC790
2SD526
2SD234
2SC1419

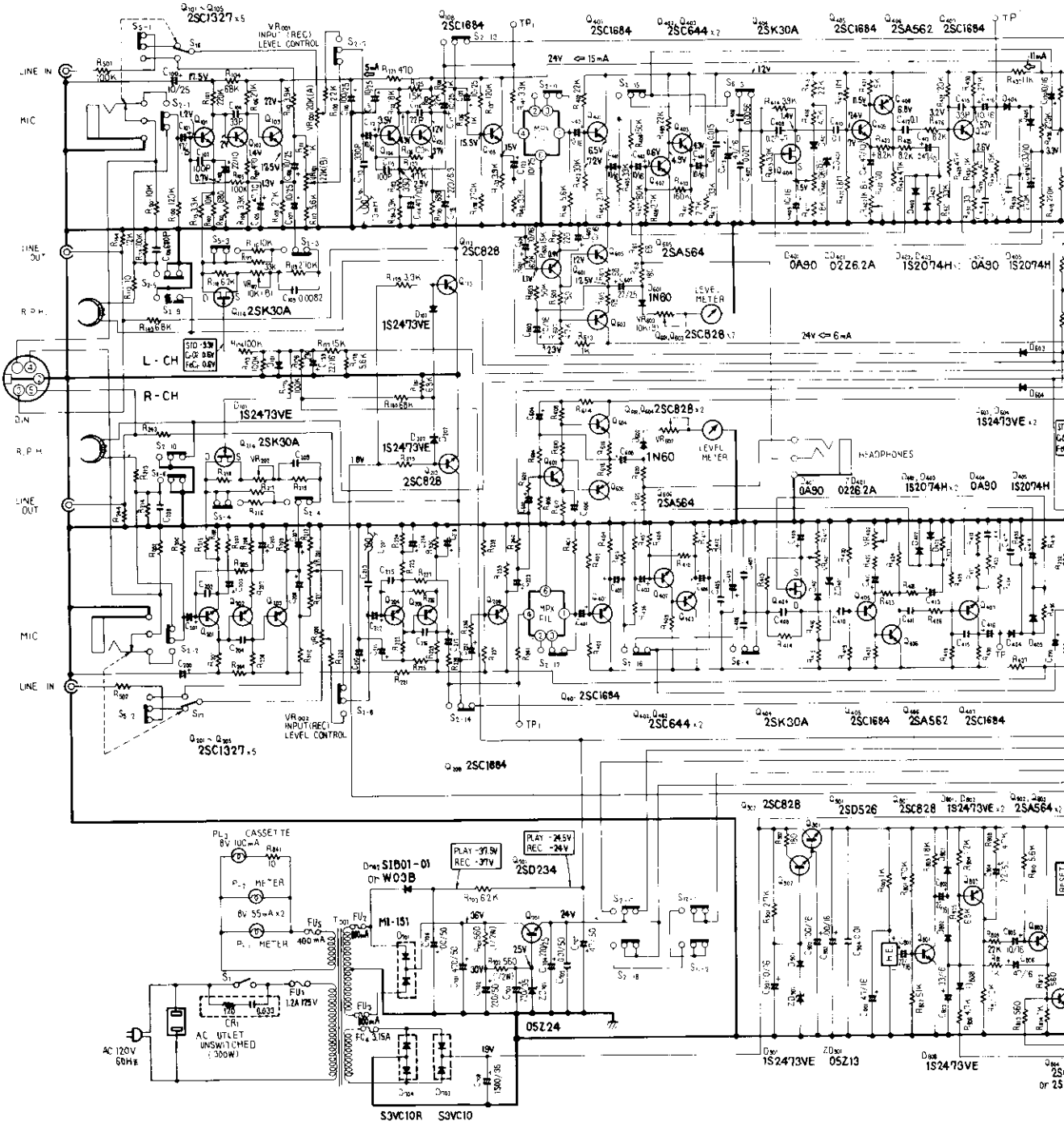


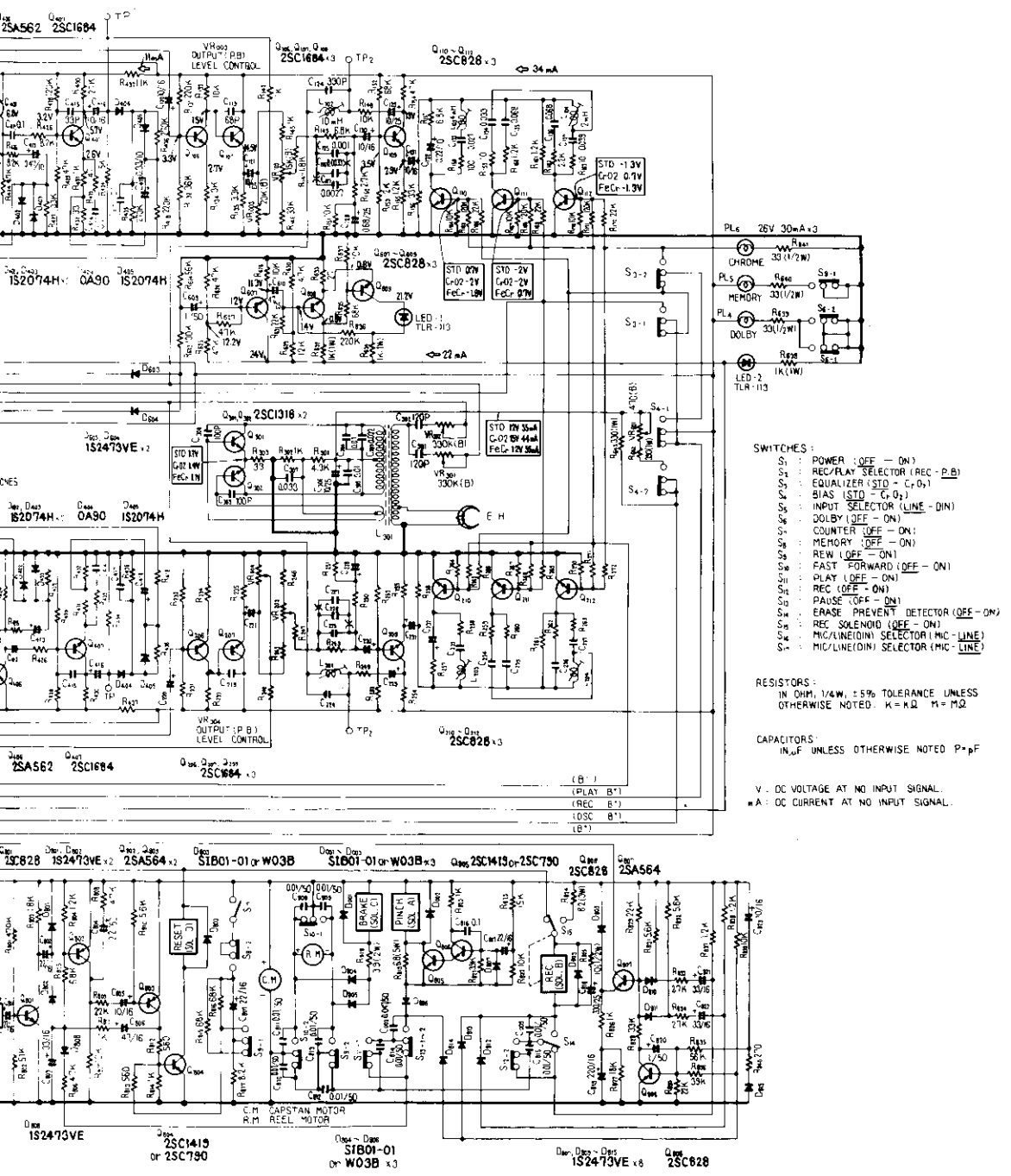
12.2 CIRCUIT OUTLINE




INPUT (REC) LEVEL CONTROL (R CH)
OUTPUT (P.B) LEVEL CONTROL (L CH) (R CH)
REC PEAK INDICATOR RWX-113
DOLBY Ass'y RWX-129
REC/P.B AMP Ass'y RWF-055
SWITCH CIRCUIT Ass'y RWS-048
PL-4 (DOLBY)
PL-5 (MEMORY)
PL-6 (CHROME)
HEADPHONES
LEVEL METER L CH R CH
E.H
(L CH) (R CH) R/P HEAD
REC SOL SW S15
REC SOL (SOL. B)
SIB01-01 or W03B
MECHANISM Ass'y RYM-039
LAMP PL-3
PINCH SOL. (SOL. A)
COUNTER SW S7
REC SW S14
BRAKE SOL (SOL. C)
TRANSISTOR Ass'y RWX-127
CONTROL Ass'y RWG-063
RESET SOL. (SOL. D)
PAUSE SW S13
BLU
BRN
RED
PNK
BLU
OR
BLK
VLT
YEL
WHT
GRN
OR
GRY

12.3 SCHEMATIC DIAGRAM





SWITCHES:

- S_1 : POWER (OFF — ON)
- S_2 : REC/PLAY SELECTOR (REC - P.B)
- S_3 : EQUALIZER (STD - $Cr O_2$)
- S_4 : BIAS (STD - $Cr O_2$)
- S_5 : INPUT SELECTOR (LINE - DIN)
- S_6 : DOLBY (OFF — ON)
- S_7 : COUNTER (OFF — ON)
- S_8 : MEMORY (OFF — ON)
- S_9 : REW (OFF — ON)
- S_{10} : FAST FORWARD (OFF — ON)
- S_{11} : PLAY (OFF — ON)
- S_{12} : REC (OFF — ON)
- S_{13} : PAUSE (OFF — ON)
- S_{14} : ERASE PREVENT DETECTOR (OFF — ON)
- S_{15} : REC SOLENOID (OFF — ON)
- S_{16} : MIC/LINE(DIN) SELECTOR (MIC - LINE)
- S_{17} : MIC/LINE(DIN) SELECTOR (MIC - LINE)

RESISTORS:
IN OHM, 1/4W, ±5% TOLERANCE UNLESS OTHERWISE NOTED. K = kΩ M = MΩ

CAPACITORS:
IN μF UNLESS OTHERWISE NOTED P = pF

V : DC VOLTAGE AT NO INPUT SIGNAL.
mA : DC CURRENT AT NO INPUT SIGNAL.

12.4 REC/PB AMPLIFIER ASSEMBLY (RWF-055)

Parts List

SEMICONDUCTORS

Symbol	Description	Part No.
Q101	Transistor	2SC1327-T or U
Q102	Transistor	2SC1327-T or U
Q103	Transistor	2SC1327-T or U
Q104	Transistor	2SC1327-T or U
Q105	Transistor	2SC1327-T or U
Q106	Transistor	2SC1684-R or S
Q107	Transistor	2SC1684-R or S
Q108	Transistor	2SC1684-R or S
Q109	Transistor	2SC1684-R or S
Q110	Transistor	2SC828-R or S
Q111	Transistor	2SC828-R or S or Q
Q112	Transistor	2SC828-R or S or Q
Q113	Transistor	2SC828-R or S or Q
Q114	Transistor	2SK30A-O or Y
Q201	Transistor	2SC1327-T or U
Q202	Transistor	2SC1327-T or U
Q203	Transistor	2SC1327-T or U
Q204	Transistor	2SC1327-T or U
Q205	Transistor	2SC1327-T or U
Q206	Transistor	2SC1684-R or S
Q207	Transistor	2SC1684-R or S
Q208	Transistor	2SC1684-R or S
Q209	Transistor	2SC1684-R or S
Q210	Transistor	2SC828-R or S or Q
Q211	Transistor	2SC828-R or S or Q
Q212	Transistor	2SC828-R or S or Q
Q213	Transistor	2SC828-R or S or Q
Q214	Transistor	2SK30A-O or Y
Q301	Transistor	2SC1318-R or S
Q302	Transistor	2SC1318-R or S
D101	Diode	1S2473VE
D102	Diode	1S2473VE
D103	Diode	1S2473VE

RESISTORS

Symbol	Description	Part No.
VR101	Semi-fixed 22k (B)	C92-857
VR102	Semi-fixed 10k (B)	C92-049
VR103	Solid semi-fixed 15k (B)	RCP-006
VR201	Semi-fixed 22k (B)	C92-857
VR202	Semi-fixed 10k (B)	C92-049
VR203	Solid-semi-fixed 15k (B)	RCP-006
VR301	Semi-fixed 330k (B)	RCP-021
VR302	Semi-fixed 330k (B)	RCP-021

Symbol	Description	Part No.
R100	Carbon film 120k	RD¼VS 124J
R101	Carbon film 220k	RD¼VS 224J
R102	Carbon film 10k	RD¼VS 103J
R103	Carbon film 680	RD¼VS 681J
R104	Carbon film 68k	RD¼VS 683J
R105	Carbon film 100k	RD¼VS 104J
R106	Carbon film 27k	RD¼VS 273J
R107	Carbon film 470	RD¼VS 471J
R108	Carbon film 3.9k	RD¼VS 392J
R109	Carbon film 2.7k	RD¼VS 272J
R110	Carbon film 3.9k	RD¼VS 392J
R111	Carbon film 1k	RD¼VS 102J
R112	Carbon film 5.6k	RD¼VS 562J
R113	Carbon film 10	RD¼VS 100J
R114	Carbon film 100k	RD¼VS 104J
R115	Carbon film 3.3k	RD¼VS 332J
R116	Carbon film 10k	RD¼VS 103J
R117	Carbon film 33k	RD¼VS 333J
R118	Carbon film 6.2k	RD¼VS 622J
R119	Carbon film 270k	RD¼VS 274J
R120	Carbon film 2.2k	RD¼VS 222J
R121	Carbon film 470	RD¼VS 471J
R122	Carbon film 18k	RD¼VS 183J
R123	Carbon film 330	RD¼VS 331J
R124	Carbon film 3.3k	RD¼VS 332J
R125	Carbon film 15k	RD¼VS 153J
R126	Carbon film 120k	RD¼VS 124J
R127	Carbon film 47k	RD¼VS 473J
R128	Carbon film 1k	RD¼VS 102J
R129	Carbon film 2.2k	RD¼VS 222J
R130	Carbonffilm 680	RD¼VS 681J
R131	Carbon film 220k	RD¼VS 224J
R132	Carbon film 36k	RD¼VS 363J
R133	Carbon film 10k	RD¼VS 103J
R134	Carbon film 3k	RD¼VS 302J
R135	Carbon film 3.3k	RD¼VS 332J
R136	Carbon film 1k	RD¼VS 102J
R137	Carbon film 120k	RD¼VS 124J
R138	Carbon film 270k	RD¼VS 274J
R139	Carbon film 3.9k	RD¼VS 392J
R140	Carbon film 33k	RD¼VS 333J
R141	Carbon film 3.3k	RD¼VS 332J
R142	Carbon film 1k	RD¼VS 102J
R143	Carbon film 6.8k	RD¼VS 682J
R144	Carbon film 12k	RD¼VS 123J
R145	Carbon film 1k	RD¼VS 102J
R146	Carbon film 33k	RD¼VS 333J
R147	Carbon film 1.8k	RD¼VS 182J

Symbol	Description		Part No.
R148	Carbon film	10k	RD¼VS 103J
R149	Carbon film	6.8k	RD¼VS 682J
R150	Carbon film	2.7k	RD¼VS 272J
R151	Carbon film	10k	RD¼VS 103J
R152	Carbon film	68k	RD¼VS 683J
R153	Carbon film	12k	RD¼VS 123J
R154	Carbon film	4.7k	RD¼VS 472J
R155	Carbon film	1.2k	RD¼VS 122J
R156	Carbon film	33k	RD¼VS 333J
R157	Carbon film	6.8k	RD¼VS 682J
R158	Carbon film	100	RD¼VS 101J
R159	Carbon film	10	RD¼VS 100J
R160	Carbon film	1.2k	RD¼VS 122J
R161	Carbon film	1.2k	RD¼VS 122J
R162	Carbon film	2.2k	RD¼VS 222J
R163	Carbon film	10	RD¼VS 100J
R164	Carbon film	10k	RD¼VS 103J
R165	Carbon film	120k	RD¼VS 124J
R166	Carbon film	22k	RD¼VS 223J
R167	Carbon film	10k	RD¼VS 103J
R168	Carbon film	120k	RD¼VS 124J
R169	Carbon film	22k	RD¼VS 223J
R170	Carbon film	10k	RD¼VS 103J
R171	Carbon film	120k	RD¼VS 124J
R172	Carbon film	22k	RD¼VS 223J
R173	Carbon film	100k	RD¼VS 104J
R174	Carbon film	100k	RD¼VS 104J
R175	Carbon film	100k	RD¼VS 104J
R176	Carbon film	27k	RD¼VS 273J
R177	Carbon film	15k	RD¼VS 153J
R178	Carbon film	5.6k	RD¼VS 562J
R179	Carbon film	3.3k	RD¼VS 332J
R180	Carbon film	68k	RD¼VS 683J
R181	Carbon film	6.8k	RD¼VS 682J
R200	Carbon film	120k	RD¼VS 124J
R201	Carbon film	220k	RD¼VS 224J
R202	Carbon film	10k	RD¼VS 103J
R203	Carbon film	680	RD¼VS 681J
R204	Carbon film	68k	RD¼VS 683J
R205	Carbon film	100k	RD¼VS 104J
R206	Carbon film	27k	RD¼VS 273J
R207	Carbon film	470	RD¼VS 471J
R208	Carbon film	3.9k	RD¼VS 392J
R209	Carbon film	2.7k	RD¼VS 272J
R210	Carbon film	3.9k	RD¼VS 392J
R211	Carbon film	1k	RD¼VS 102J
R212	Carbon film	5.6k	RD¼VS 562J
R213	Carbon film	10	RD¼VS 100J
R214	Carbon film	100k	RD¼VS 104J
R215	Carbon film	3.3k	RD¼VS 332J
R216	Carbon film	10k	RD¼VS 103J
R217	Carbon film	33k	RD¼VS 333J

Symbol	Description		Part No.
R218	Carbon film	6.2k	RD¼VS 622J
R219	Carbon film	270k	RD¼VS 274J
R220	Carbon film	2.2k	RD¼VS 222J
R221	Carbon film	470	RD¼VS 471J
R222	Carbon film	18k	RD¼VS 183J
R223	Carbon film	330	RD¼VS 331J
R224	Carbon film	3.3k	RD¼VS 332J
R225	Carbon film	15k	RD¼VS 153J
R226	Carbon film	120k	RD¼VS 124J
R227	Carbon film	47k	RD¼VS 473J
R228	Carbon film	1k	RD¼VS 102J
R229	Carbon film	2.2k	RD¼VS 222J
R230	Carbon film	680	RD¼VS 681J
R231	Carbon film	220k	RD¼VS 224J
R232	Carbon film	36k	RD¼VS 363J
R233	Carbon film	10k	RD¼VS 103J
R234	Carbon film	3k	RD¼VS 302J
R235	Carbon film	3.3k	RD¼VS 332J
R236	Carbon film	1k	RD¼VS 102J
R237	Carbon film	120k	RD¼VS 124J
R238	Carbon film	270k	RD¼VS 274J
R239	Carbon film	3.9k	RD¼VS 392J
R240	Carbon film	33k	RD¼VS 333J
R241	Carbon film	3.3k	RD¼VS 332J
R242	Carbon film	1k	RD¼VS 102J
R243	Carbon film	6.8k	RD¼VS 682J
R244	Carbon film	12k	RD¼VS 123J
R245	Carbon film	1k	RD¼VS 102J
R246	Carbon film	33k	RD¼VS 333J
R247	Carbon film	1.8k	RD¼VS 182J
R248	Carbon film	10k	RD¼VS 103J
R249	Carbon film	6.8k	RD¼VS 682J
R250	Carbon film	2.7k	RD¼VS 272J
R251	Carbon film	10k	RD¼VS 103J
R252	Carbon film	68k	RD¼VS 683J
R253	Carbon film	12k	RD¼VS 123J
R254	Carbon film	4.7k	RD¼VS 472J
R255	Carbon film	1.2k	RD¼VS 122J
R256	Carbon film	33k	RD¼VS 333J
R257	Carbon film	6.8k	RD¼VS 682J
R258	Carbon film	100	RD¼VS 101J
R259	Carbon film	10	RD¼VS 100J
R260	Carbon film	1.2k	RD¼VS 122J
R261	Carbon film	1.2k	RD¼VS 122J
R262	Carbon film	2.2k	RD¼VS 222J
R263	Carbon film	10	RD¼VS 100J
R264	Carbon film	10k	RD¼VS 103J
R265	Carbon film	120k	RD¼VS 124J
R266	Carbon film	2.2k	RD¼VS 223J
R267	Carbon film	10k	RD¼VS 103J
R268	Carbon film	120k	RD¼VS 124J
R269	Carbon film	22k	RD¼VS 223J

Symbol	Description		Part No.
R270	Carbon film	10k	RD¼VS 103J
R271	Carbon film	120k	RD¼VS 124J
R272	Carbon film	22k	RD¼VS 223J
R279	Carbon film	3.3k	RD¼VS 332J
R301	Carbon film	4.3k	RD¼VS 432J
R302	Carbon film	1k	RD¼VS 102J
R303	Carbon film	33	RD¼VS 330J

CAPACITORS

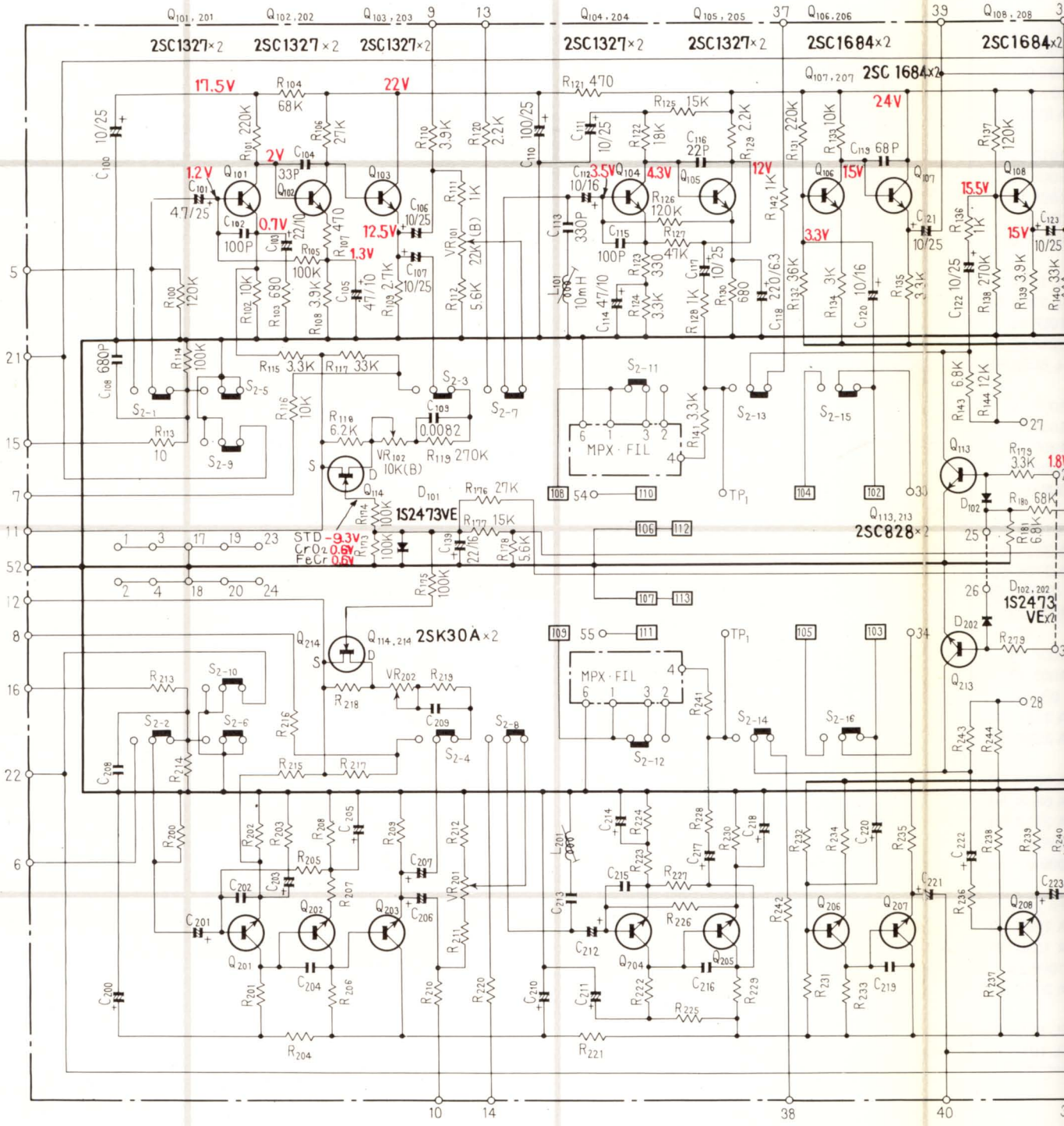
Symbol	Description			Part No.
C100	Electrolytic	10	25V	CEA 100P 25
C101	Electrolytic	4.7	25V	RCH-017-0
C102	Ceramic	100p	50V	CCDSL 101K 50
C103	Electrolytic	22	10V	CEA 220P 10
C104	Ceramic	33p	50V	CCDSL 330K 50
C105	Electrolytic	47	10V	CEA 470P 10
C106	Electrolytic	10	25V	CEA 100P 25
C107	Electrolytic	100	25V	RCH-011-0
C108	Polystyrene	680p	50V	RCE-021-0
C109	Mylar	0.0082	50V	CQMA 822K 50
C110	Electrolytic	100	25V	CEA 101P 25
C111	Electrolytic	10	25V	CEA 100P 25
C112	Electrolytic	10	16V	CEA 100P 16
C113	Polystyrene	330p	50V	RCE-008-0
C114	Electrolytic	47	10V	CEA 470P 10
C115	Ceramic	100p	50V	CCDSL 101K 50
C116	Ceramic	22p	50V	CCDSL 220K 50
C117	Electrolytic	10	25V	CEA 100P 25
C118	Electrolytic	220	6.3V	CEA 221P 6R3
C119	Ceramic	68p	50V	CCDSL 680K 50
C120	Electrolytic	10	16V	CEA 100P 16
C121	Electrolytic	10	25V	CEA 100P 25
C122	Electrolytic	10	25V	CEA 100P 25
C123	Electrolytic	10	25V	CEA 100P 25
C124	Polystyrene	330p	50V	RCE-008-0
C125	Mylar	0.001	50V	CQMA 102K 50
C126	Mylar	0.0033	50V	CQMA 332K 50
C127	Mylar	0.0027	50V	CQMA 272K 50
C128	Electrolytic	0.68	25V	CSSA 0R68M 25
C129	Electrolytic	10	25V	CEA 100P 25
C130	Electrolytic	10	16V	CEA 100P 16
C131	Electrolytic	10	16V	CEA 100P 16
C132	Electrolytic	0.22	10V	CSSA 0R22M 10
C133	Mylar	0.027	50V	CQMA 273K 50
C134	Mylar	0.033	50V	CQMA 333K 50
C135	Mylar	0.068	50V	CQMA 683K 50
C136	Mylar	0.068	50V	CQMA 683K 50
C137	Mylar	0.039	50V	CQMA 393K 50
C138	.....			.....
C139	Electrolytic	22	16V	CEA 220P 16

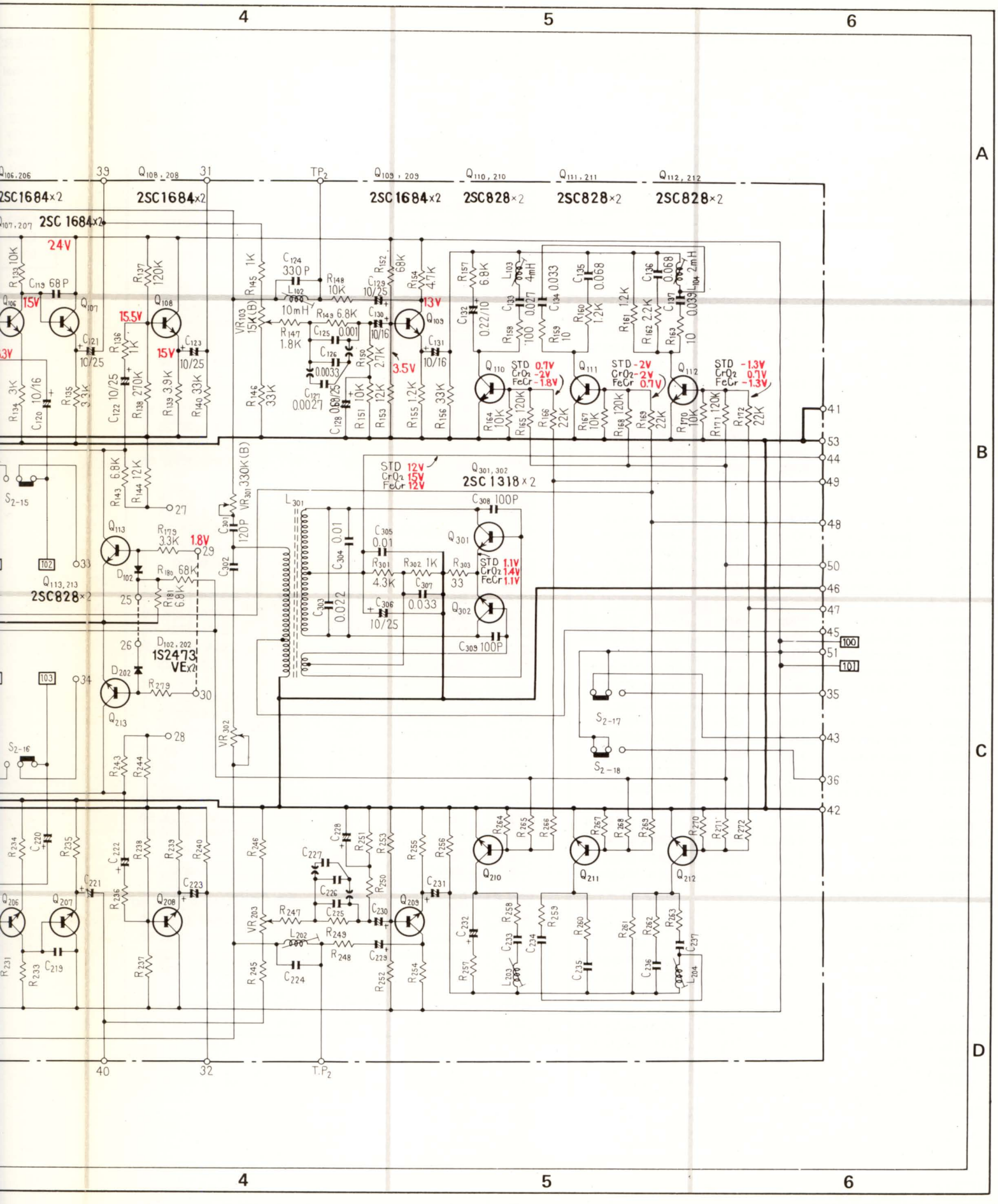
Symbol	Description			Part No.
C200	Electrolytic	10	25V	CEA 100P 25
C201	Electrolytic	4.7	25V	RCH-017-0
C202	Ceramic	100p	50V	CCDSL 101K 50
C203	Electrolytic	22	10V	CEA 220P 10
C204	Ceramic	33p	50V	CCDSL 330K 50
C205	Electrolytic	47	10V	CEA 470P 10
C206	Electrolytic	10	25V	CEA 100P 25
C207	Electrolytic	100	25V	RCH-022-0
C208	Polystyrene	680p	50V	RCE-021-0
C209	Mylar	0.0082	50V	CQMA 822K 50
C210	Electrolytic	100	25V	CEA 101P 25
C211	Electrolytic	10	25V	CEA 100P 25
C212	Electrolytic	10	16V	CEA 100P 16
C213	Polystyrene	330p	50V	RCE-008-0
C214	Electrolytic	47	10V	CEA 470P 10
C215	Ceramic	100p	50V	CCDSL 101K 50
C216	Ceramic	22p	50V	CCDSL 220K 50
C217	Electrolytic	10	25V	CEA 100P 25
C218	Electrolytic	220	6.3V	CEA 221P 6R3
C219	Ceramic	68p	50V	CCDSL 680K 50
C220	Electrolytic	10	16V	CEA 100P 16
C221	Electrolytic	10	25V	CEA 100P 25
C222	Electrolytic	10	25V	CEA 100P 25
C223	Electrolytic	10	25V	CEA 100P 25
C224	Polystyrene	330p	50V	RCE-008-0
C225	Mylar	0.001	50V	CQMA 102K 50
C226	Mylar	0.003	50V	CQMA 332K 50
C227	Mylar	0.0027	50V	CQMA 272K 50
C228	Electrolytic	0.68	25V	CSSA 0R68M 25
C229	Electrolytic	10	25V	CEA 100P 25
C230	Electrolytic	10	16V	CEA 100P 16
C231	Electrolytic	10	16V	CEA 100P 16
C232	Electrolytic	0.22	10V	CSSA 0R22M 10
C233	Mylar	0.027	50V	CQMA 273K 50
C234	Mylar	0.033	50V	CQMA 333K 50
C235	Mylar	0.068	50V	CQMA 683K 50
C236	Mylar	0.068	50V	CQMA 683K 50
C237	Mylar	0.039	50V	CQMA 393K 50
C301	Mylar	120p		RCE-009-0
C302	Mylar	120p		RCE-009-0
C303	Mylar	0.023	50V	CQMPA 233K 50
C304	Mylar	0.01	50V	CQMA 103K 50
C305	Mylar	0.01	50V	CQMA 103K 50
C306	Electrolytic	10	25V	CEA 100P 25
C307	Mylar	0.033	50V	CQMA 333K 50
C308	Ceramic	100p	50V	CCDSL 101K 50
C309	Ceramic	100p	50V	CCDSL 101K 50

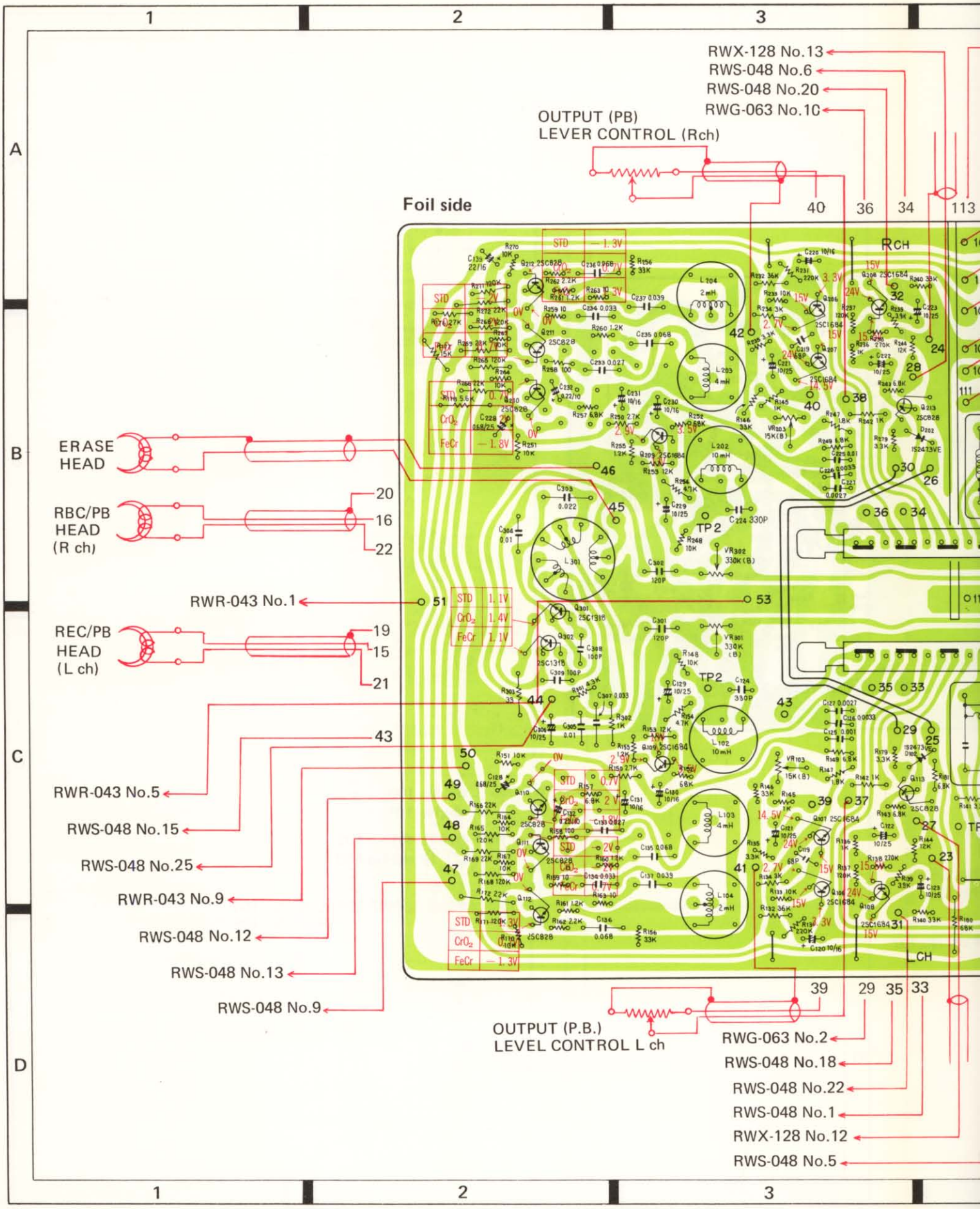
OTHERS

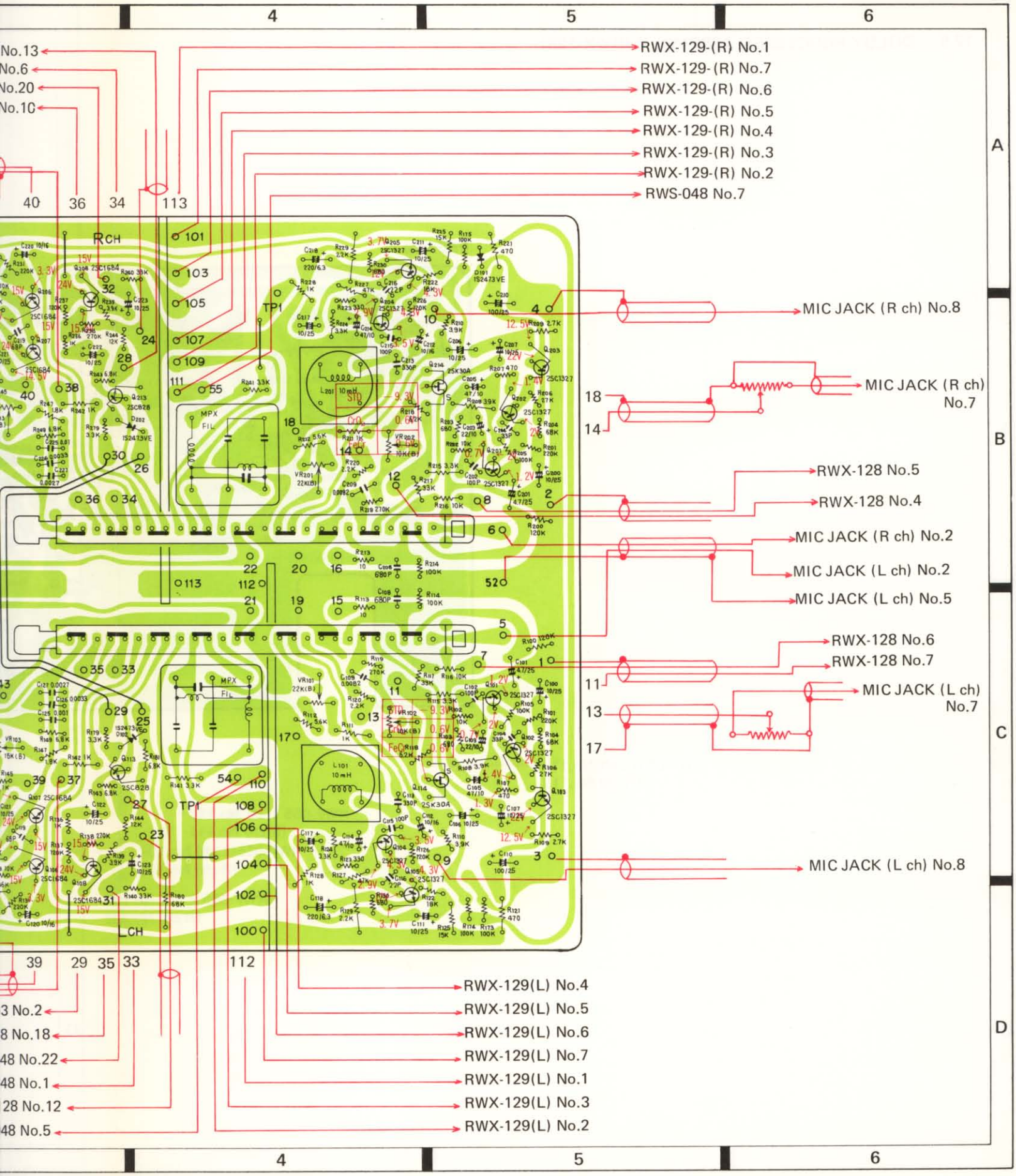
Symbol	Description	Part No.
L101	Trap coil	T84-401
L102	Trap coil	T84-401
L103	Peaking coil	RTF-001
L104	Peaking coil	RTF-007
L201	Trap coil	T84-401
L202	Trap coil	T84-401
L203	Peaking coil	RTF-001
L204	Peaking coil	RTF-007
L301	Oscillator coil	T64-001

REC/PB Amplifier Assembly (RWF-055)



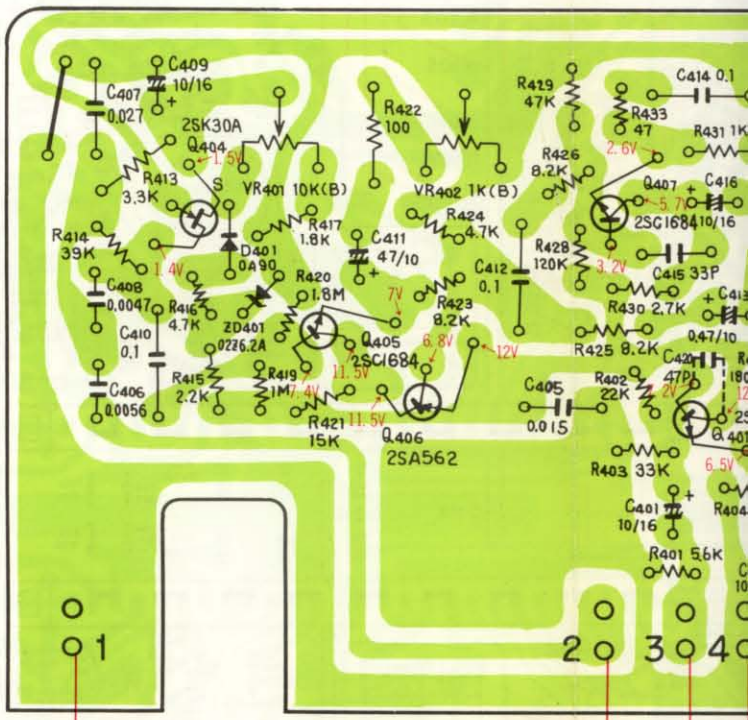

4
5
6
A
B
C
D
Q106,206 2SC1684×2
Q107,207 2SC1684×2
Q108,208 2SC1684×2
Q109,209 2SC1684×2
Q110,210 2SC828×2
Q111,211 2SC828×2
Q112,212 2SC828×2
Q113,213 2SC828×2
Q301,302 2SC1318×2
D102,202 1S2473 VE×2
TP2
T.P2
24V
15V
15.5V
13V
3.5V
STD 0.7V CrO2 -2V FeCr -1.8V
STD -2V CrO2 -2V FeCr 0.7V
STD -1.3V CrO2 0.7V FeCr -1.3V
STD 12V CrO2 15V FeCr 12V
STD 1.1V CrO2 1.4V FeCr 1.1V
1.8V
S2-15
S2-16
S2-17
S2-18
L102 10mH
L103 4mH
L104 2mH
L202
L203
L204
L301
VR103 15K(B)
VR203
VR301 330K(B)
VR302


1
2
3
A
B
C
D
Foil side
RWX-128 No.13
RWS-048 No.6
RWS-048 No.20
RWG-063 No.10
OUTPUT (PB)
LEVER CONTROL (Rch)
40
36
34
113
RCH
ERASE
HEAD
RBC/PB
HEAD
(R ch)
20
16
22
RWR-043 No.1
51
53
REC/PB
HEAD
(L ch)
19
15
21
43
RWR-043 No.5
RWS-048 No.15
RWS-048 No.25
RWR-043 No.9
RWS-048 No.12
RWS-048 No.13
RWS-048 No.9
OUTPUT (P.B.)
LEVER CONTROL L ch
39
29
35
33
RWG-063 No.2
RWS-048 No.18
RWS-048 No.22
RWS-048 No.1
RWX-128 No.12
RWS-048 No.5
LCH


4
5
6
A
B
C
D
No.13
No.6
No.20
No.10
40
36
34
113
RWX-129-(R) No.1
RWX-129-(R) No.7
RWX-129-(R) No.6
RWX-129-(R) No.5
RWX-129-(R) No.4
RWX-129-(R) No.3
RWX-129-(R) No.2
RWS-048 No.7
RCH
LCH
TP1
MPX
FIL
MIC JACK (R ch) No.8
MIC JACK (R ch) No.7
RWX-128 No.5
RWX-128 No.4
MIC JACK (R ch) No.2
MIC JACK (L ch) No.2
MIC JACK (L ch) No.5
RWX-128 No.6
RWX-128 No.7
MIC JACK (L ch) No.7
MIC JACK (L ch) No.8
RWX-129(L) No.4
RWX-129(L) No.5
RWX-129(L) No.6
RWX-129(L) No.7
RWX-129(L) No.1
RWX-129(L) No.3
RWX-129(L) No.2
3 No.2
8 No.18
48 No.22
48 No.1
28 No.12
48 No.5
39
29
35
33
112

12.5 DOLBY PROCESSER ASSEMBLY (RWX-129)

Foil side

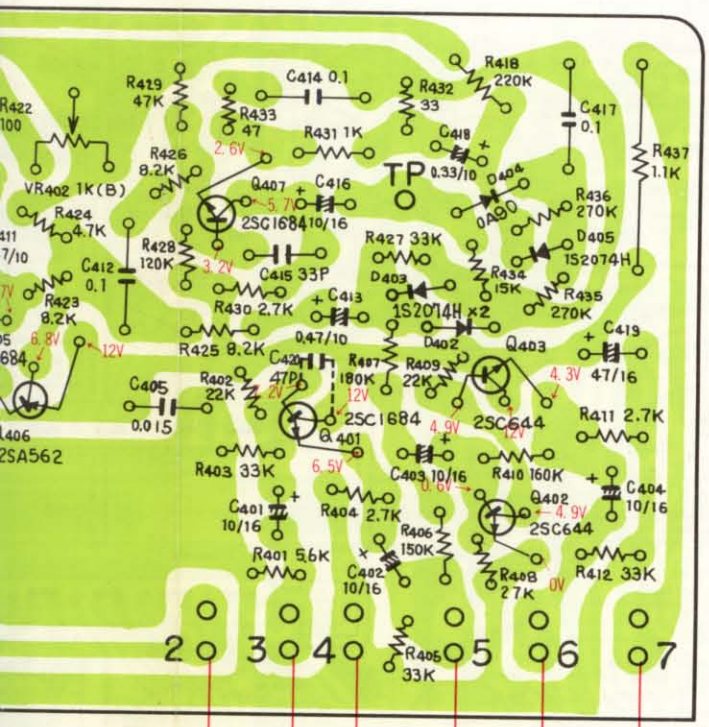


RWF-055 (L ch) No.112
(R ch) No.113

RWF-055 L ch No.110
(R ch) No.111

RWF-055 (L ch) No.108
(R ch) No.109

RWF-055 (L ch) No.106
(R ch) No.107



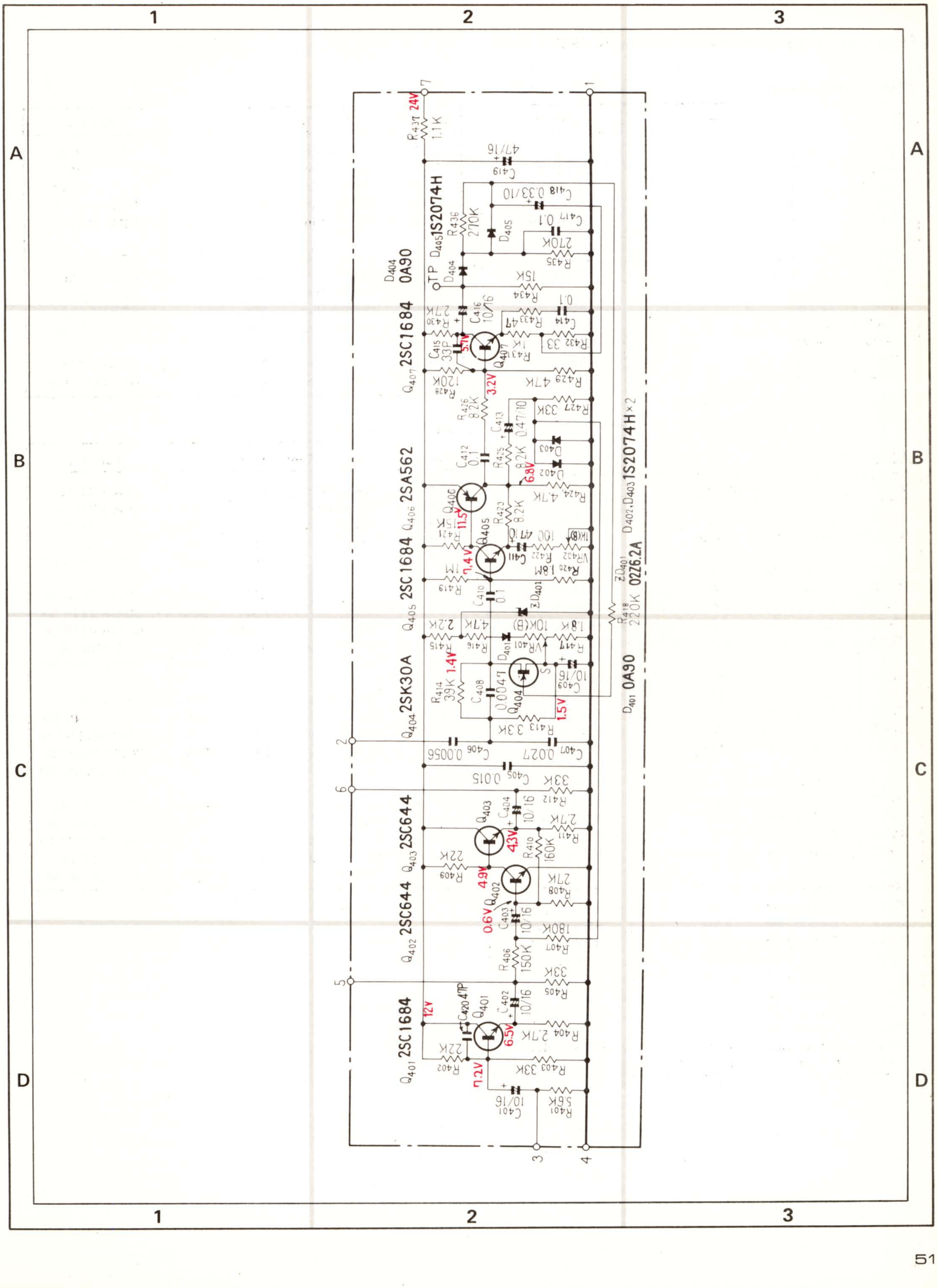
RWF-055 (L ch) No.100
(R ch) No.101

RWF-055 (L ch) No.102
(R ch) No.103

RWF-055 (L ch) No.104
(R ch) No.105

lo.110
No.111
(L ch) No.108
R ch) No.109

-055 (L ch) No.106
(R ch) No.107


Q401 2SC1684
Q402 2SC644
Q403 2SC644
Q404 2SK30A
Q405 2SC1684
Q406 2SA562
Q407 2SC1684
D404 0A90
D405 1S2074H
D401 0A90
ZD401 0Z6.2A
D402, D403 1S2074H×2

Parts List of Dolby Processer Assembly (RWX-129)

SEMICONDUCTORS

Symbol	Description	Part No.
Q401	Transistor	2SC1648-R or S
Q402	Transistor	2SC644-S
Q403	Transistor	2SC644-S
Q404	Transistor	2SK30A – (D-2)
Q405	Transistor	2SC1684-R or S
Q406	Transistor	2SA562 – O
Q407	Transistor	2SC1684-R or S
D401	Diode	OA90
D402	Diode	1S2074H
D403	Diode	1S2074H
D404	Diode	OA90
D405	Diode	1S2074H
ZD401	Zener diode	02Z6.2A

RESISTORS

Symbol	Description		Part No.
VR401	Semi-fixed	10k (B)	RCP-032
VR402	Semi-fixed	1k (B)	RCP-033
R401	Carbon film	5.6k	RD¼VS 562J
R402	Carbon film	22k	RD¼VS 223J
R403	Carbon film	33k	RD¼VS 333J
R404	Carbon film	2.7k	RD¼VS 272J
R405	Carbon film	33k	RD¼VS 333J
R406	Carbon film	150k	RD¼VS 154J
R407	Carbon film	180k	RD¼VS 184J
R408	Carbon film	27k	RD¼VS 273J
R409	Carbon film	22k	RD¼VS 223J
R410	Carbon film	160k	RD¼VS 164J
R411	Carbon film	2.7k	RD¼VS 272J
R412	Carbon film	33k	RD¼VS 333J
R413	Carbon film	3.3k	RD¼VS 332J
R414	Carbon film	39k	RD¼VS 393J
R415	Carbon film	2.2k	RD¼VS 222J
R416	Carbon film	4.7k	RD¼VS 472J
R417	Carbon film	1.8k	RD¼VS 182J
R418	Carbon film	220k	RD¼VS 224J
R419	Carbon film	1M	RD¼VS 105J
R420	Carbon film	1.8M	RD¼VS 185J
R421	Carbon film	15k	RD¼VS 153J
R422	Carbon film	100	RD¼VS 101J
R423	Carbon film	8.2k	RD¼VS 822J
R424	Carbon film	4.7k	RD¼VS 472J
R425	Carbon film	8.2k	RD¼VS 822J
R426	Carbon film	8.2k	RD¼VS 822J
R427	Carbon film	33k	RD¼VS 333J
R428	Carbon film	120k	RD¼VS 124J
R429	Carbon film	47k	RD¼VS 473J
R430	Carbon film	2.7k	RD¼VS 272J
R431	Carbon film	1k	RD¼VS 102J
R432	Carbon film	33	RD¼VS 330J
R433	Carbon film	47	RD¼VS 470J
R434	Carbon film	15k	RD¼VS 153J
R435	Carbon film	270k	RD¼VS 274J
R436	Carbon film	270k	RD¼VS 274J
R437	Carbon film	1.1k	RD¼PSF 112J

CAPACITORS

Symbol	Description			Part No.
C401	Electrolytic	10	16V	CEA 100P 16
C402	Electrolytic	10	16V	CEA 100P 16
C403	Electrolytic	10	16V	CEA 100P 16
C404	Electrolytic	10	16V	CEA 100P 16
C405	Mylar	0.015	50V	CQMA 153K 50
C406	Mylar	0.0056	50V	CQMA 562K 50
C407	Mylar	0.027	50V	CQMA 273K 50
C408	Mylar	0.0047	50V	CQMA 472K 50
C409	Electrolytic	10	16V	CEA 100P 16
C410	Mylar	0.1	50V	CQMA 104K 50
C411	Electrolytic	47	10V	CEA 470P 10
C412	Mylar	0.1	50V	CQMA 104K 50
C413	Electrolytic	0.47	10V	CSSA 0R47M 10
C414	Mylar	0.1	50V	CQMA 104K 50
C415	Ceramic	33p	50V	CCDSL 330K 50
C416	Electrolytic	10	16V	CEA 100P 16
C417	Mylar	0.1	50V	CQMA 104K 50
C418	Electrolytic	0.33	10V	CSSA 0R33M 10
C419	Electrolytic	47	16V	CEA 470P 16
C420	Ceramic	47p	50V	CCDSL470K 50

12.6 CONTROL ASSEMBLY (RWG-063)

Parts List

SEMICONDUCTORS

Symbol	Description	Part No.
Q801	Transistor	2SC828-S
Q802	Transistor	2SA564-R or S
Q803	Transistor	2SA564-R or S
Q804	Transistor	2SC1419-C 2SC790-O or Y
Q805	Transistor	2SC1419-C 2SC790-O or Y
Q806	Transistor	2SC828-R or S
Q807	Transistor	2SA564-R or S
Q808	Transistor	2SC828-R or S
D801	Diode	1S2473VE
D802	Diode	1S2473VE
D803	Diode	SIB01-01 or W03B
D804	Diode	SIB01-01 or W03B
D805	Diode	SIB01-01 or W03B
D806	Diode	SIB01-01 or W03B
D807	Diode	1S2473VE
D808	Diode	1S2473VE
D809	Diode	1S2473VE
D810	Diode	1S2473VE
D811	Diode	1S2473VE
D812	Diode	1S2473VE
D813	Diode	1S2473VE
D814	Diode	1S2473VE
D815	Diode	1S2473VE

RESISTORS

Symbol	Description			Part No.
R801	Carbon film	470k		RD¼VS 474J
R802	Carbon film	51k		RD¼VS 513J
R803	Carbon film	1.8k		RD¼VS 182J
R804	Carbon film	12k		RD¼VS 123J
R805	Carbon film	6.8k		RD¼VS 682J
R806	Carbon film	4.7k		RD¼VS 472J
R807	Carbon film	10k		RD¼VS 103J
R808	Carbon film	4.7k		RD¼VS 472J
R809	Carbon film	22k		RD¼VS 223J
R810	Carbon film	5.6k		RD¼VS 562J
R811	Carbon film	1k		RD¼VS 102J
R812	Carbon film	560		RD¼VS 561J
R813	Carbon film	560		RD¼VS 561J
R814	Carbon film	1k		RD¼VS 102J
R815	Carbon film	68k		RD¼VS 683J
R816	Carbon film	68k		RD¼VS 683J
R817	Carbon film	8.2k		RD¼VS 822J
R818	Wire wound	3.9	2W	RCN-026-0
R819	Wire wound	6.8	5W	RCN-028-0
R820	Carbon film	1k		RD¼VS 102J
R821	Carbon film	39k		RD¼VS 393J
R822	Carbon film	10k		RD¼VS 103J
R823	Carbon film	15k		RD¼VS 153J
R824	Wire wound	8.2	3W	RCN-027-0
R825	Metal oxide	10		RS¼PSF 100J
R826	Carbon film	1k		RD¼VS 102J
R827	Carbon film	18k		RD¼VS 183J
R828	Carbon film	33k		RD¼VS 333J
R829	Carbon film	22k		RD¼VS 223J
R830	Carbon film	22k		RD¼VS 223J
R831	Carbon film	5.6k		RD¼VS 562J
R832	Carbon film	5.6k		RD¼VS 562J
R833	Carbon film	2.7k		RD¼VS 272J
R834	Carbon film	2.7k		RD¼VS 272J
R835	Carbon film	56k		RD¼VS 563J
R836	Carbon film	39k		RD¼VS 393J
R837	Carbon film	1.2k		RD¼VS 122J
R838	Carbon film	1.2k		RD¼VS 122J
R839	Carbon film	10k		RD¼VS 103J
R840	Carbon film	270		RD¼VS 271J
R841	Carbon film	10		RD¼PSF 100J

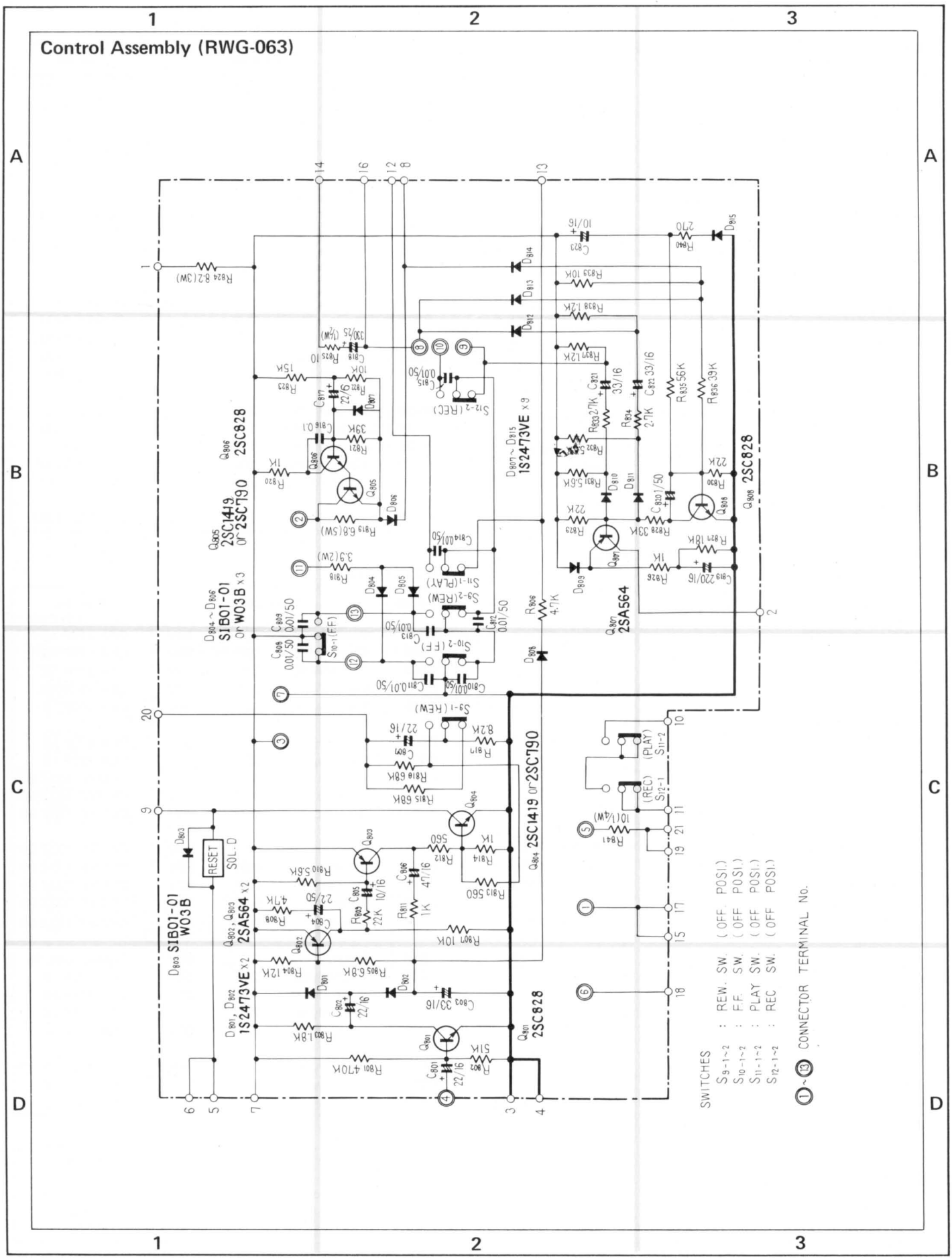
CAPACITORS

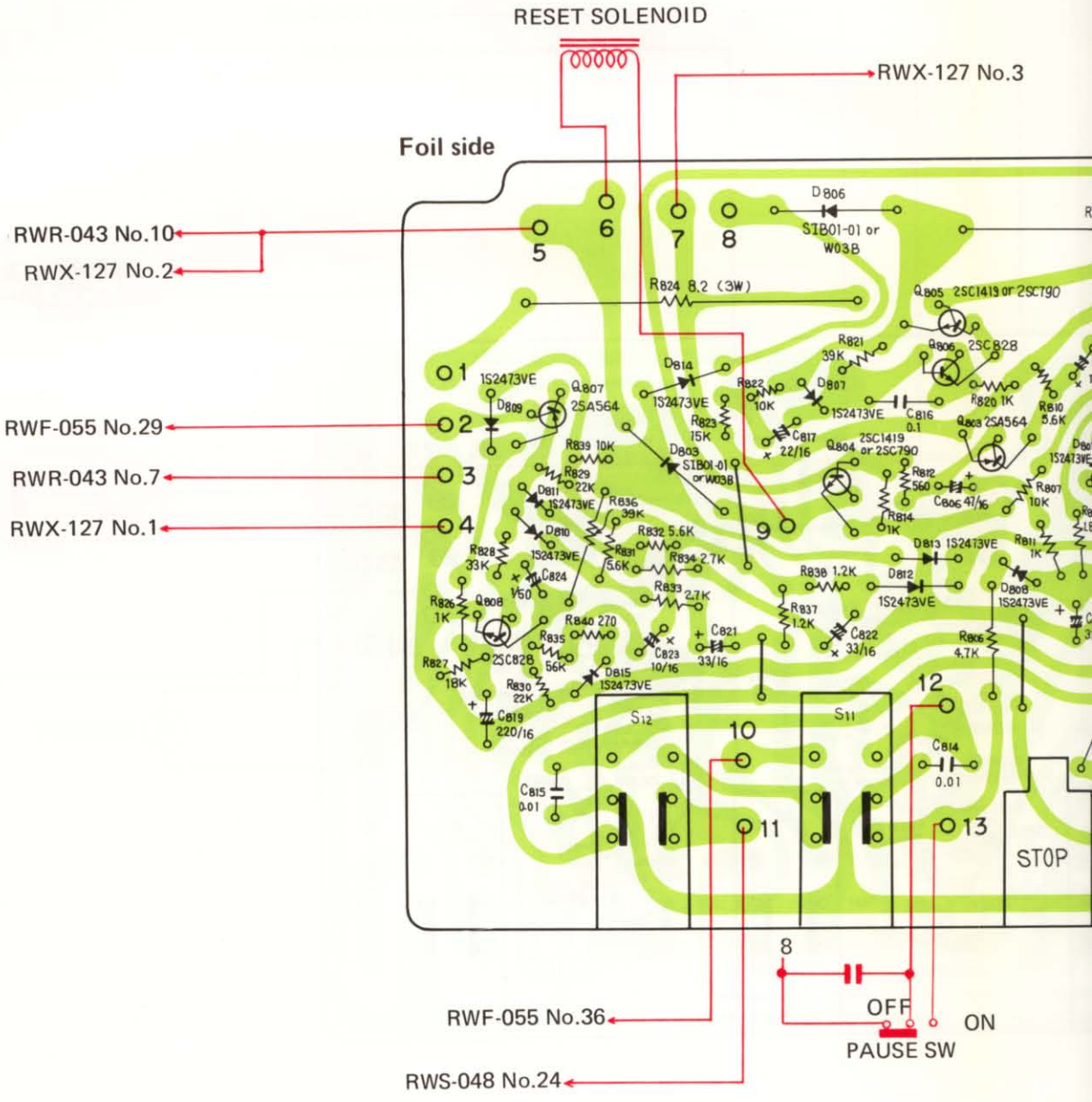
Symbol	Description			Part No.
C801	Electrolytic	22	16V	CEA 220P 16
C802	Electrolytic	22	16V	CEA 220P 16
C803	Electrolytic	33	16V	CEA 330P 16
C804	Electrolytic	2.2	50V	CEA 2R2P 50
C805	Electrolytic	10	16V	CEA 100P 16
C806	Electrolytic	47	16V	CEA 470P 16
C807	Electrolytic	22	16V	CEA 220P 16
C808	Ceramic	0.01	50V	CKDYF 103Z 50
C809	Ceramic	0.01	50V	CKDYF 103Z 50
C810	Ceramic	0.01	50V	CKDYF 103Z 50
C811	Ceramic	0.01	50V	CKDYF 103Z 50
C812	Ceramic	0.01	50V	CKDYF 103Z 50
C813	Ceramic	0.01	50V	CKDYF 103Z 50
C814	Ceramic	0.01	50V	CKDYF 103Z 50
C815	Ceramic	0.01	50V	CKDYF 103Z 50
C816	Mylar	0.1	50V	CQMA 104K 50
C817	Electrolytic	22	16V	CEA 220P 16
C818	Electrolytic	330	25V	CEA 331P 25
C819	Electrolytic	220	16V	CEA 221P 16
C820	Electrolytic	1	50V	CEA 010P 50
C821	Electrolytic	33	16V	CEA 330P 16
C822	Electrolytic	33	16V	CEA 330P 16
C823	Electrolytic	10	16V	CEA 100P 16

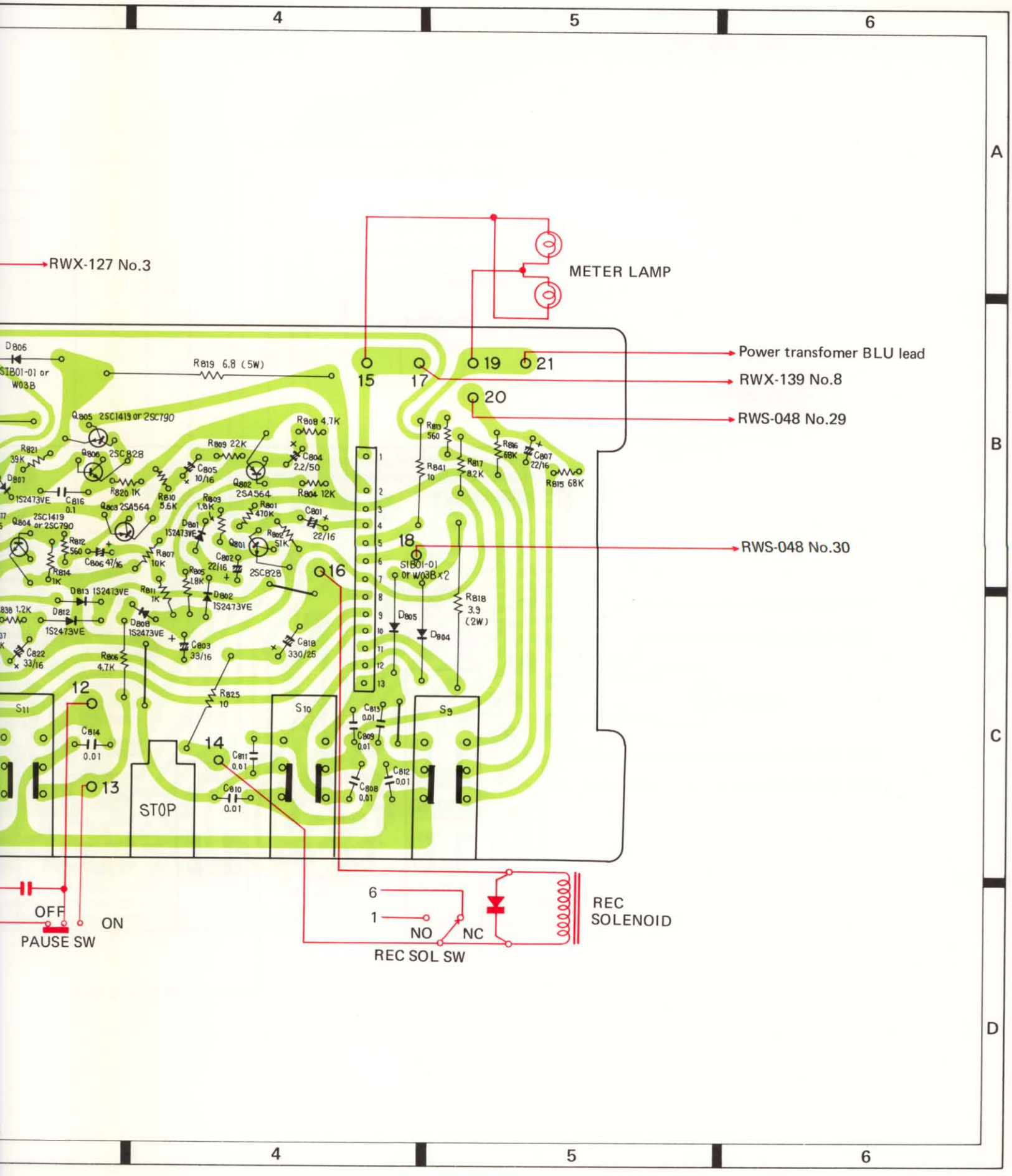
OTHERS

Symbol	Description	Part No.
	Solenoid (D)	RXP-032
	Function switch	RSG-046
	Connector	RKP-016

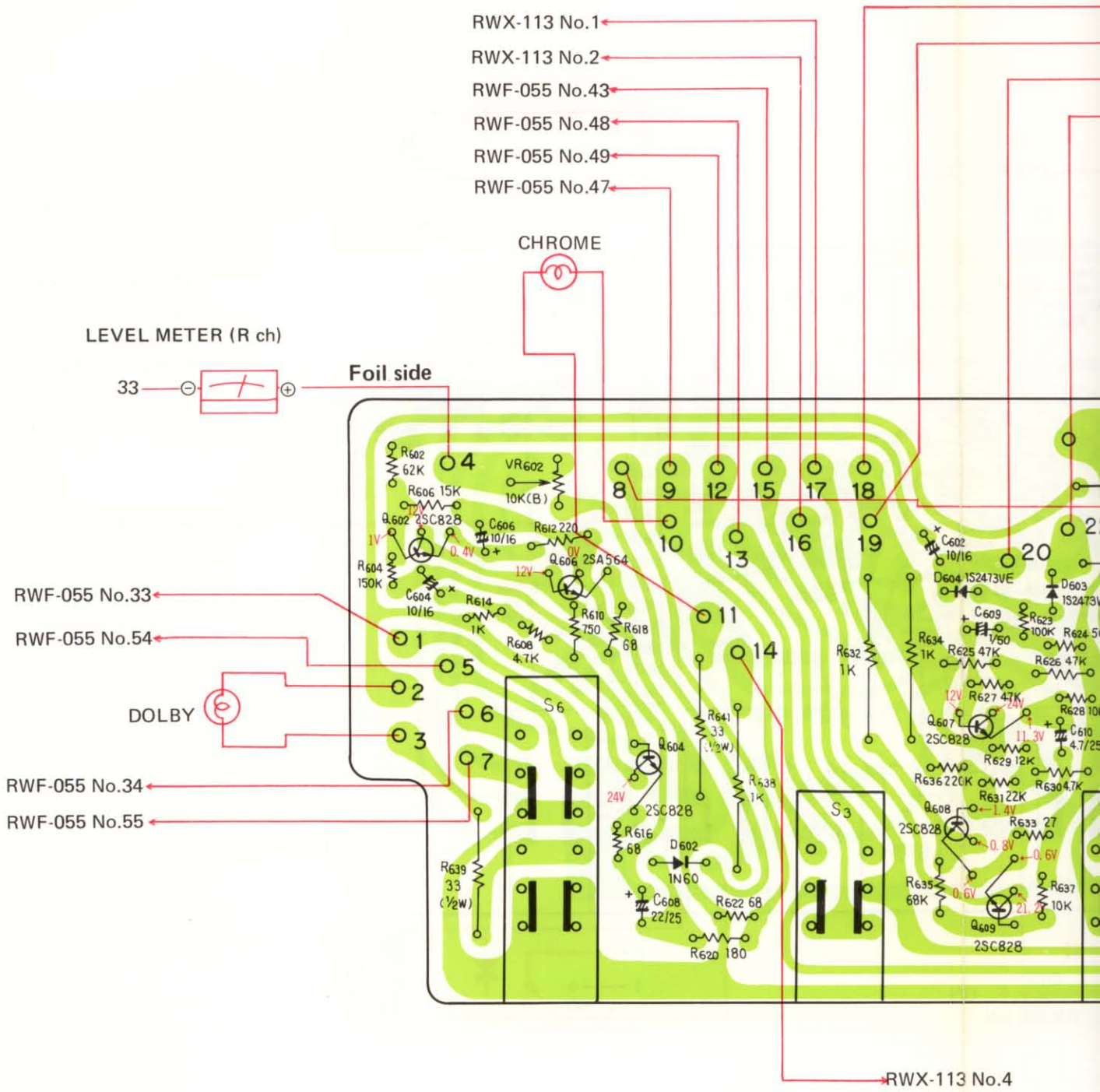
Control Assembly (RWG-063)

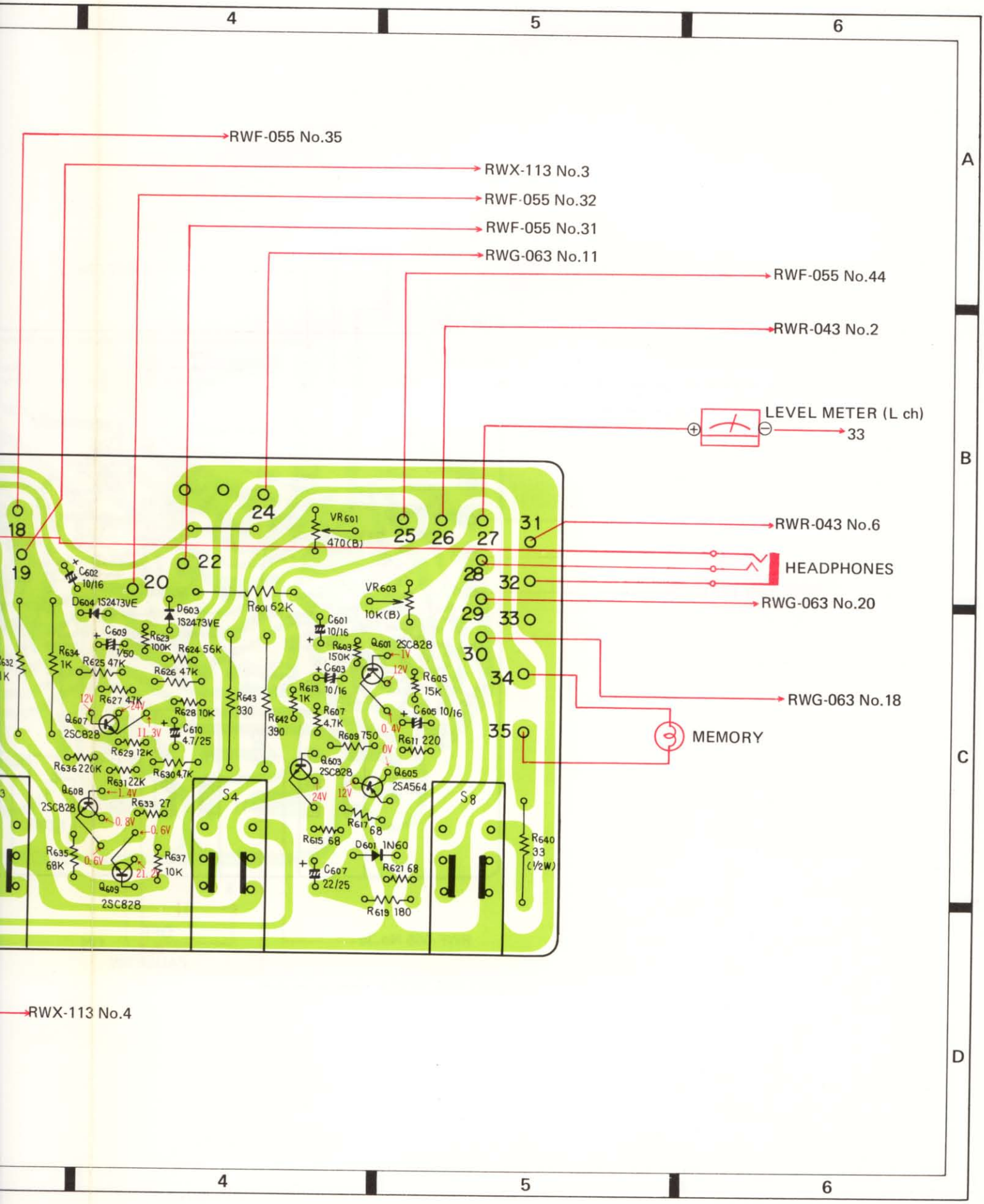


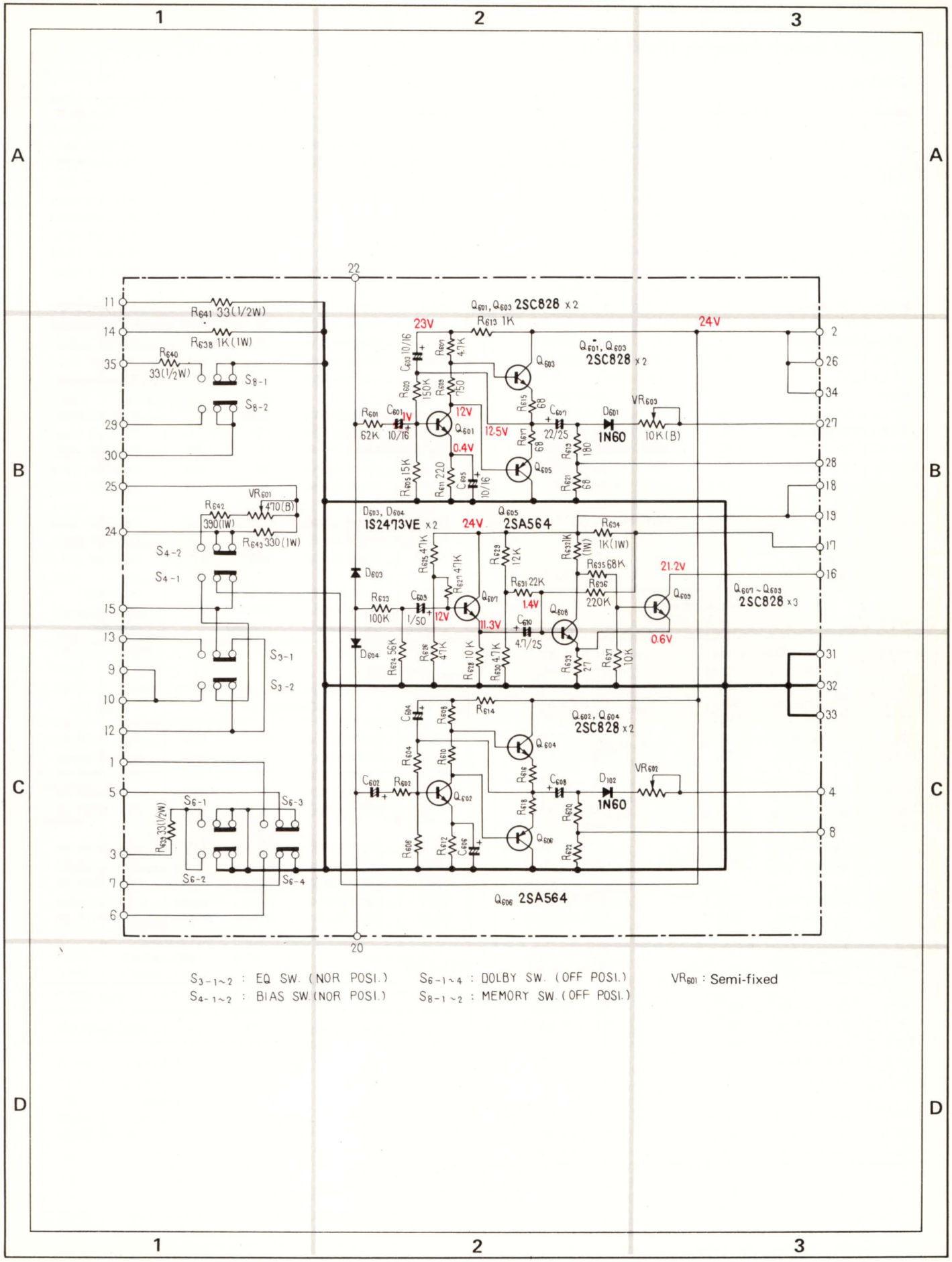

RESET SOLENOID
RWX-127 No.3
Foil side
RWR-043 No.10
RWX-127 No.2
RWF-055 No.29
RWR-043 No.7
RWX-127 No.1
RWF-055 No.36
RWS-048 No.24
OFF
ON
PAUSE SW
STOP
1S2473VE
2SA564
2SC1419 or 2SC790
2SC828
SIB01-01 or W03B


4
5
6
A
B
C
D
RWX-127 No.3
METER LAMP
Power transfomer BLU lead
RWX-139 No.8
RWS-048 No.29
RWS-048 No.30
15
17
19
21
20
18
16
12
13
14
6
1
NO
NC
OFF
ON
PAUSE SW
REC SOL SW
REC SOLENOID
STOP
S11
S10
S9
D806
S1B01-01 or W03B
R819 6.8 (5W)
Q805 2SC1419 or 2SC790
R821 39K
Q806 2SC828
D807 1S2473VE
C816 0.1
R820 1K
R810 5.6K
Q803 2SA564
Q804 2SC1419 or 2SC790
R812 560
C806 47/16
R814 1K
R807 10K
D813 1S2473VE
D812 1S2473VE
R838 1.2K
C822 33/16
R806 4.7K
D808 1S2473VE
C803 33/16
R808 4.7K
C804 2.2/50
R809 22K
C805 10/16
Q802 2SA564
R804 12K
R803 1.6K
D801 1S2473VE
R801 470K
Q801
R802 51K
C801 22/16
C802 22/16
2SC828
R805 1.8K
D802 1S2473VE
R811 1K
C818 330/25
R825 10
C814 0.01
C811 0.01
C810 0.01
C813 0.01
C809 0.01
C808 0.01
C812 0.01
R813 560
R841 10
R817 8.2K
R816 68K
C807 22/16
R815 68K
S1B01-01 or W03B x2
D805
D804
R818 3.9 (2W)

12.7 SWITCH ASSEMBLY (RWS-048)




4
5
6
A
B
C
D
RWF-055 No.35
RWX-113 No.3
RWF-055 No.32
RWF-055 No.31
RWG-063 No.11
RWF-055 No.44
RWR-043 No.2
LEVEL METER (L ch)
33
RWR-043 No.6
HEADPHONES
RWG-063 No.20
RWG-063 No.18
MEMORY
RWX-113 No.4
18
19
20
22
24
25
26
27
28
29
30
31
32
33
34
35
VR601 470(B)
VR603 10K(B)
C602 10/16
D604 1S2473VE
D603 1S2473VE
C609 1/50
R623 100K
R624 56K
R626 47K
R634 1K
R625 47K
R627 47K
R628 10K
Q607 2SC828
C610 4.7/25
R629 12K
R636 220K
R631 22K
R630 4.7K
Q608 2SC828
R633 27
R635 68K
R637 10K
Q609 2SC828
R601 62K
R643 330
R642 390
S4
C601 10/16
R603 150K
Q601 2SC828
C603 10/16
R613 1K
R607 4.7K
R609 750
Q603 2SC828
R615 68
C607 22/25
D601 1N60
R621 68
R619 180
C605 10/16
R605 15K
R611 220
Q605 2SA564
R617 68
S8
R640 33 (1/2W)
12V
24V
11.3V
1V
0.4V
0V
1.4V
0.8V
0.6V
0.6V
21.2V



$S_{3-1\sim2}$: EQ SW. (NOR POSI.)
$S_{4-1\sim2}$: BIAS SW. (NOR POSI.)
$S_{6-1\sim4}$: DOLBY SW. (OFF POSI.)
$S_{8-1\sim2}$: MEMORY SW. (OFF POSI.)
VR_{601} : Semi-fixed

Parts List of Switch Assembly (RWS-048)

SEMICONDUCTORS

Symbol	Description	Part No.
Q601	Transistor	2SC828-R
		2SC828-S
Q602	Transistor	2SC828-R
		2SC828-S
Q603	Transistor	2SC828-R
		2SC828-S
Q604	Transistor	2SC828-R
		2SC828-S
Q605	Transistor	2SA564-R
		2SA564-S
Q606	Transistor	2SA564-R
		2SA564-S
Q607	Transistor	2SA828-R
		2SA828-S
Q608	Transistor	2SA828-R
		2SA828-S
Q609	Transistor	2SA828-R
		2SA828-S
D601	Diode	1N 60
D602	Diode	1N 60
D603	Diode	1S2473VE
D604	Diode	1S2473VE

RESISTORS

Symbol	Description		Part No.
R601	Carbon film	62k	RD¼VS 623J
R602	Carbon film	62k	RD¼VS 623J
R603	Carbon film	150k	RD¼VS 154J
R604	Carbon film	150k	RD¼VS 154J
R605	Carbon film	15k	RD¼VS 153J
R606	Carbon film	15k	RD¼VS 153J
R607	Carbon film	4.7k	RD¼VS 472J
R608	Carbon film	4.7k	RD¼VS 472J
R609	Carbon film	750	RD¼VS 751J
R610	Carbon film	750	RD¼VS 751J
R611	Carbon film	220	RD¼VS 221J
R612	Carbon film	220	RD¼VS 221J
R613	Carbon film	1k	RD¼VS 102J
R614	Carbon film	1k	RD¼VS 102J
R615	Carbon film	68	RD¼VS 680
R616	Carbon film	68	RD¼VS 680J
R617	Carbon film	68	RD¼VS 680J
R618	Carbon film	68	RD¼VS 680J
R619	Carbon film	180	RD¼VS 181J
R620	Carbon film	180	RD¼VS 181J
R621	Carbon film	68	RD¼VS 680J
R622	Carbon film	68	RD¼VS 680J
R623	Carbon film	100k	RD¼VS 104J

Symbol	Description			Part No.
R624	Carbon film	56k		RD¼VS 563J
R625	Carbon film	47k		RD¼VS 473J
R626	Carbon film	47k		RD¼VS 473J
R627	Carbon film	47k		RD¼VS 473J
R628	Carbon film	10k		RD¼VS 103J
R629	Carbon film	12k		RD¼VS 123J
R630	Carbon film	4.7k		RD¼VS 472J
R631	Carbon film	22k		RD¼VS 223J
R632	Metal oxide	1k	1W	RS1PSF 102J
R633	Carbon film	27		RD¼VS 270J
R634	Metal oxide	1k	1W	RS1PSF 102J
R635	Carbon film	68k		RD¼VS 683J
R636	Carbon film	220k		RD¼VS 224J
R637	Carbon film	10k		RD¼VS 103J
R638	Metal oxide	1k	1W	RS1PSF 102J
R639	Metal oxide	33	½W	RS½PSF 330J
R640	Metal oxide	33	½W	RS½PSF 330J
R641	Metal oxide	33	½W	RS½PSF 330J
R642	Metal oxide	390	1W	RS1PSF 391J
R643	Metal oxide	330	1W	RS1PSF 331J
VR601	Semi-fixed	470 (B)		RCP-022
VR602	Semi-fixed	10k (B)		C92-049
VR603	Semi-fixed	10k (B)		C92-049

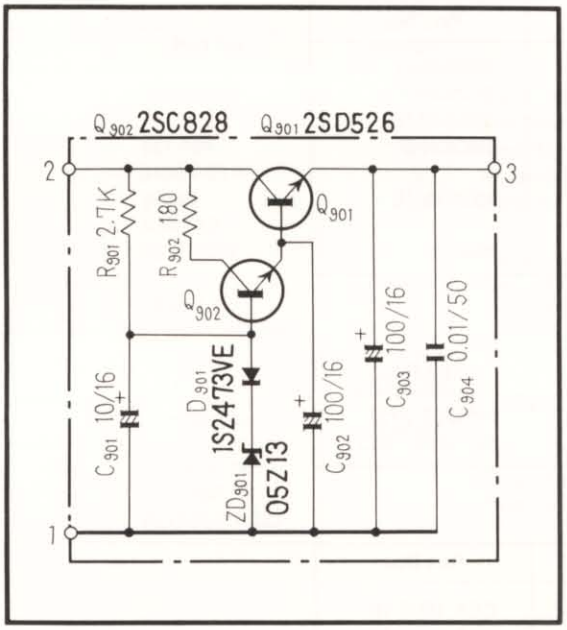
CAPACITORS

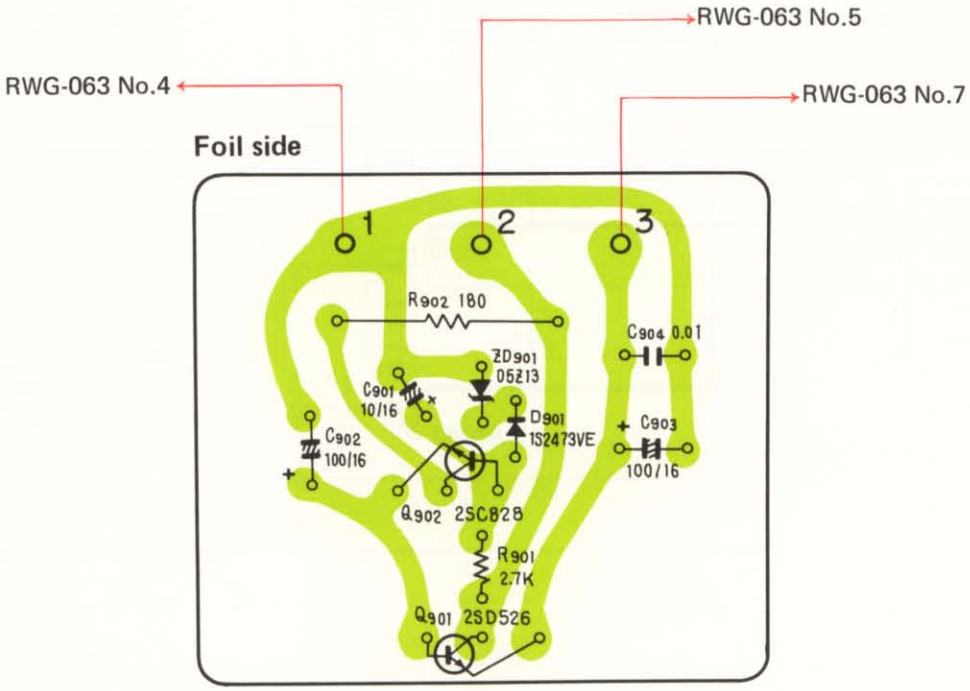
Symbol	Description			Part No.
C601	Electrolytic	10	16V	CEA 100P 16
C602	Electrolytic	10	16V	CEA 100P 16
C603	Electrolytic	10	16V	CEA 100P 16
C604	Electrolytic	10	16V	CEA 100P 16
C605	Electrolytic	10	16V	CEA 100P 16
C606	Electrolytic	10	16V	CEA 100P 16
C607	Electrolytic	22	25V	CEA 220P 25
C608	Electrolytic	22	25V	CEA 220P 25
C609	Electrolytic	1	50V	CEA 010P 50
C610	Electrolytic	4.7	25V	CEA 4R7P 25

OTHERS

Symbol	Description	Part No.
	Push switch	RSG-045

12.8 TRANSISTOR ASSEMBLY (RWX-127)





Parts List of Transistor Assembly (RWX-127)

SEMICONDUCTORS

Symbol	Description	Part No.
Q901	Transistor	2SD526-O 2SD526-Y
Q902	Transistor	2SC828-R 2SC828-S
D901	Diode	1S2473VE
ZD901	Zener diode	05Z13

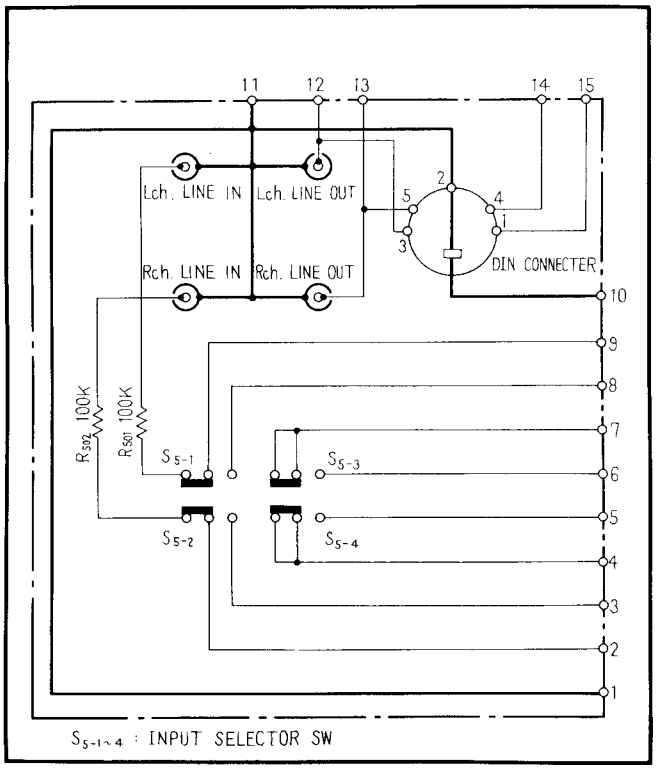
RESISTORS

Symbol	Description		Part No.
R901	Carbon film	2.7k	RD¼VS 272J
R902	Carbon film	180	RD¼PSF 181J

CAPACITORS

Symbol	Description			Part No.
C901	Electrolytic	10	16V	CEA 100P 16
C902	Electrolytic	100	16V	CEA 101P 16
C903	Electrolytic	100	16V	CEA 101P 16
C904	Ceramic	0.01	50V	CKDYF 103Z 50

12.9 JACK ASSEMBLY (RWX-128)



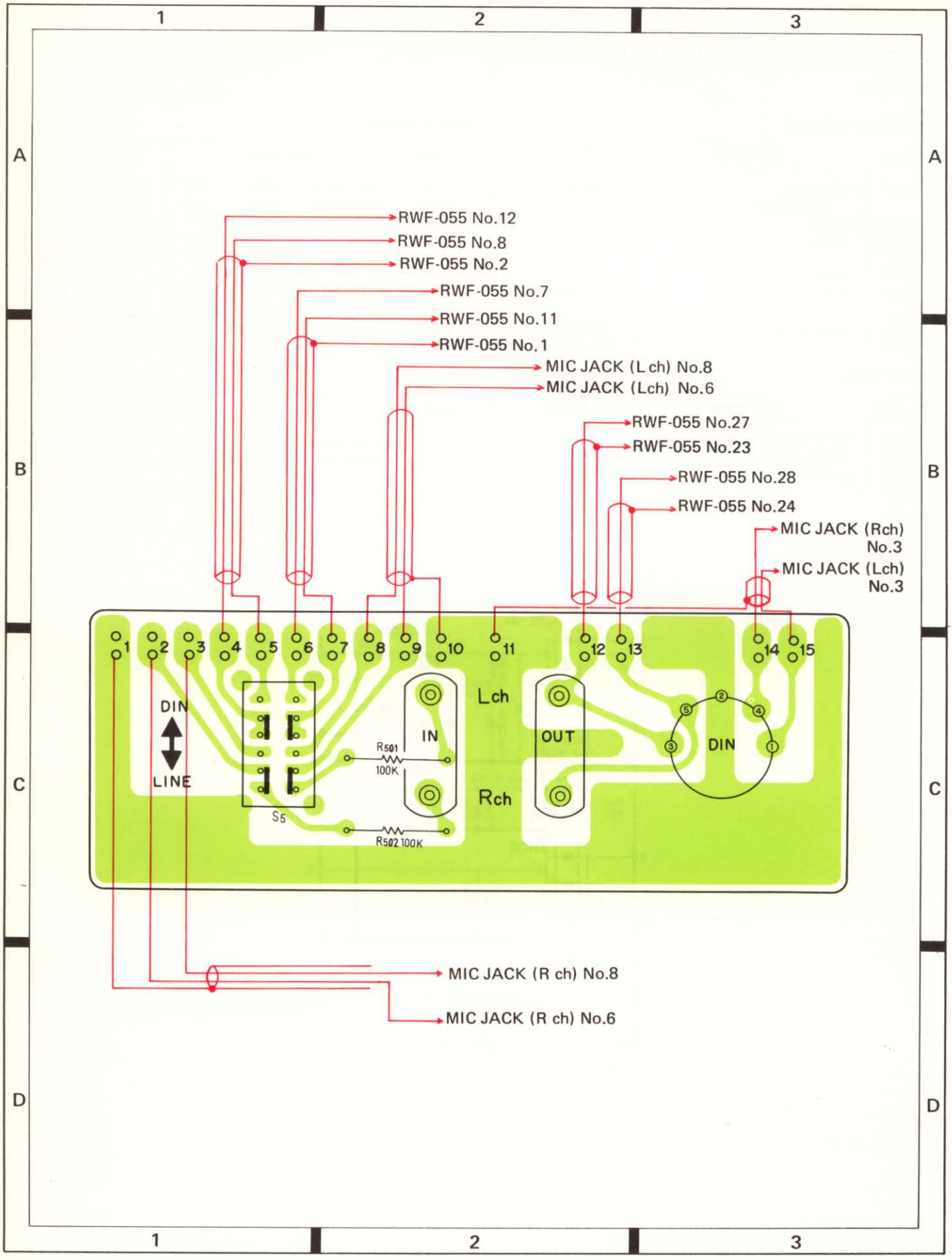
Parts List

RESISTORS

Symbol	Description	Part No.
R501	Carbon film 100k	RD¼PS 104J
R502	Carbon film 100k	RD¼PS 104J

OTHERS

Symbol	Description	Part No.
	Jack assembly	RKB-010
	Switch	RSH-021


1
2
3
A
B
C
D
RWF-055 No.12
RWF-055 No.8
RWF-055 No.2
RWF-055 No.7
RWF-055 No.11
RWF-055 No.1
MIC JACK (L ch) No.8
MIC JACK (Lch) No.6
RWF-055 No.27
RWF-055 No.23
RWF-055 No.28
RWF-055 No.24
MIC JACK (Rch) No.3
MIC JACK (Lch) No.3
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
DIN
LINE
S5
R501 100K
IN
Lch
Rch
OUT
DIN
R502 100K
MIC JACK (R ch) No.8
MIC JACK (R ch) No.6

12.10 POWER SUPPLY ASSEMBLY (RWR-043)

Parts List

SEMICONDUCTORS

Symbol	Description	Part No.
Q701	Transistor	2SD234-O
D701	Diode	MI-151
D702	Diode	SIB01-01 or W03B
D703	Diode	S3VC10
D704	Diode	S3VC10R
ZD701	Zener diode	05Z24

CAPACITORS

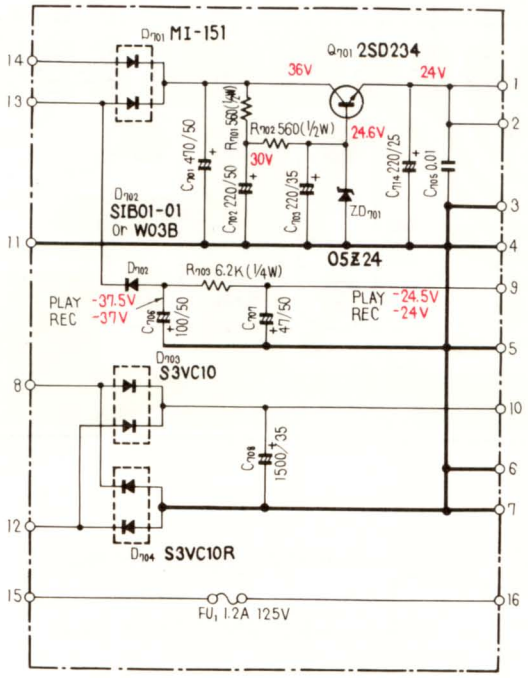
Symbol	Description			Part No.
C701	Electrolytic	470	50V	CEA 471P 50
C702	Electrolytic	220	50V	CEA 221P 50
C703	Electrolytic	220	35V	CEA 221P 35
C704	Electrolytic	220	25V	CEA 221P 25
C705	Ceramic	0.01	50V	CKDYF 103Z 50
C706	Electrolytic	10	50V	CEA 100P 50
C707	Electrolytic	47	50V	CEA 470P 50
C708	Electrolytic	1,500	35V	CEA 152P 35

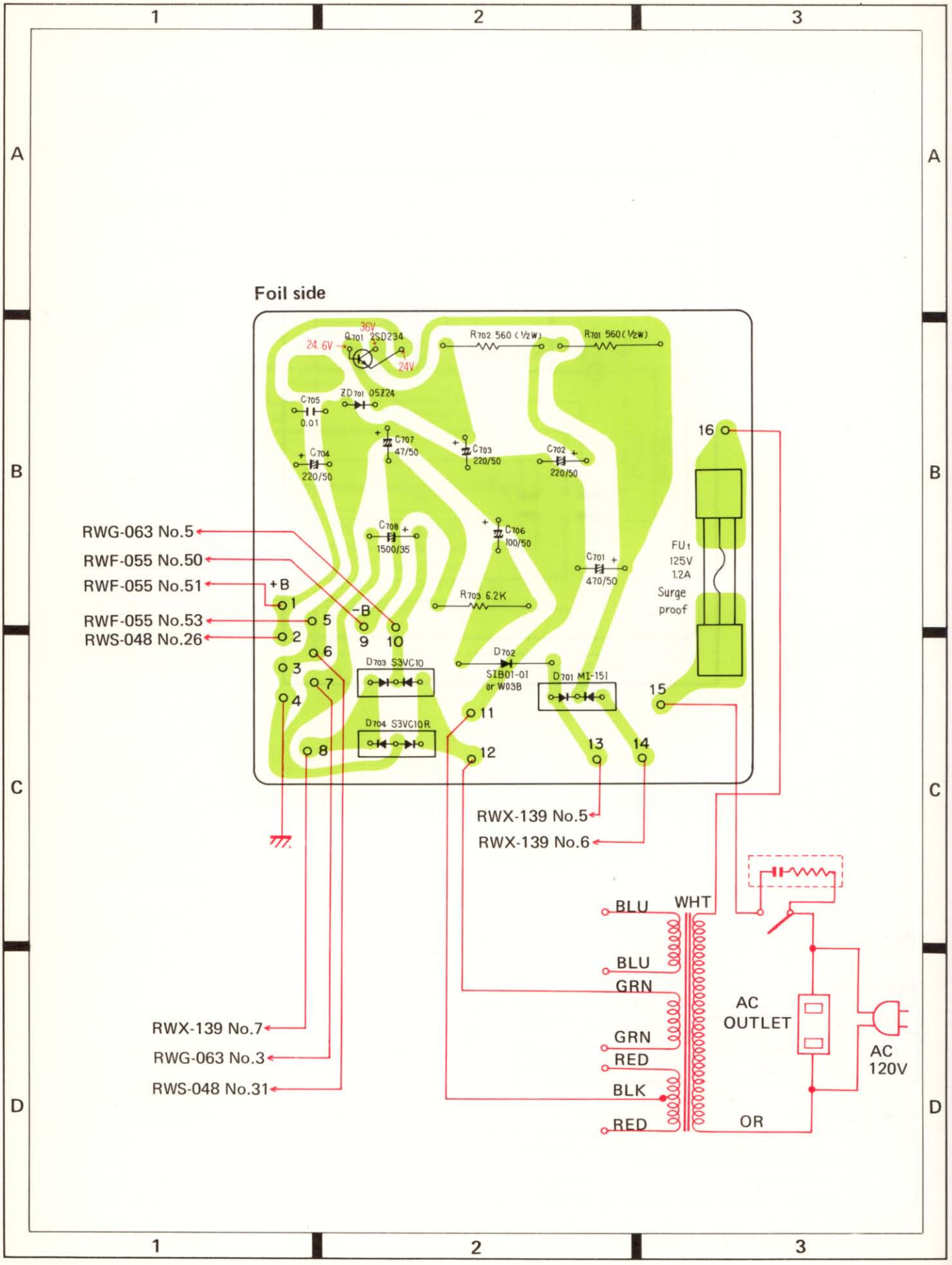
RESISTORS

Symbol	Description			Part No.
R701	Metal oxide	560	½W	RS½PSF 561J
R702	Metal oxide	560	½W	RS½PSF 561J
R703	Carbon film	6.2k		RD¼PSF 622J

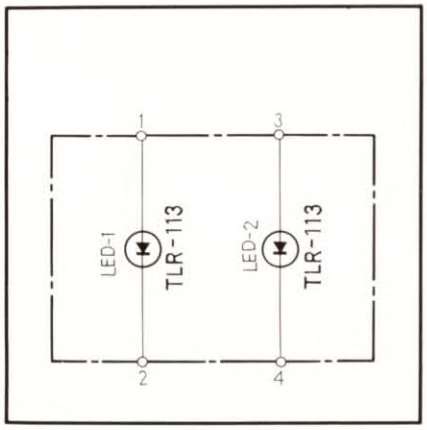
OTHERS

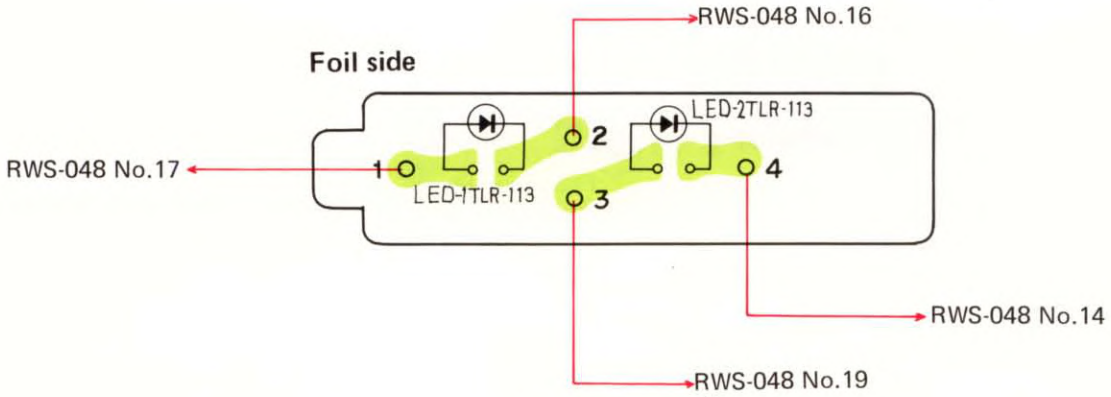
Symbol	Description	Part No.
F1	Fuse clip (C) Fuse 1.2A	RKR-017 REK-059




1
2
3
A
B
C
D
Foil side
36V
Q701 2SD234
24.6V
24V
R702 560 (1/2W)
R701 560 (1/2W)
ZD701 05Z24
C705 0.01
C707 47/50
C704 220/50
C703 220/50
C702 220/50
C708 1500/35
C706 100/50
C701 470/50
R703 6.2K
FU1 125V 1.2A Surge proof
16
15
D702 SIB01-01 or W03B
D701 MI-151
D703 S3VC10
D704 S3VC10R
RWG-063 No.5
RWF-055 No.50
RWF-055 No.51
RWF-055 No.53
RWS-048 No.26
+B
-B
1
2
3
4
5
6
7
8
9
10
11
12
13
14
RWX-139 No.5
RWX-139 No.6
RWX-139 No.7
RWG-063 No.3
RWS-048 No.31
BLU
WHT
BLU
GRN
GRN
RED
BLK
RED
OR
AC OUTLET
AC 120V

12.11 INDICATOR ASSEMBLY (RWX-113)

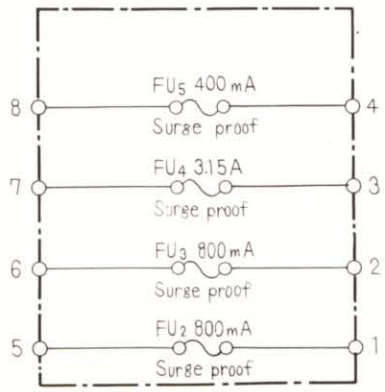


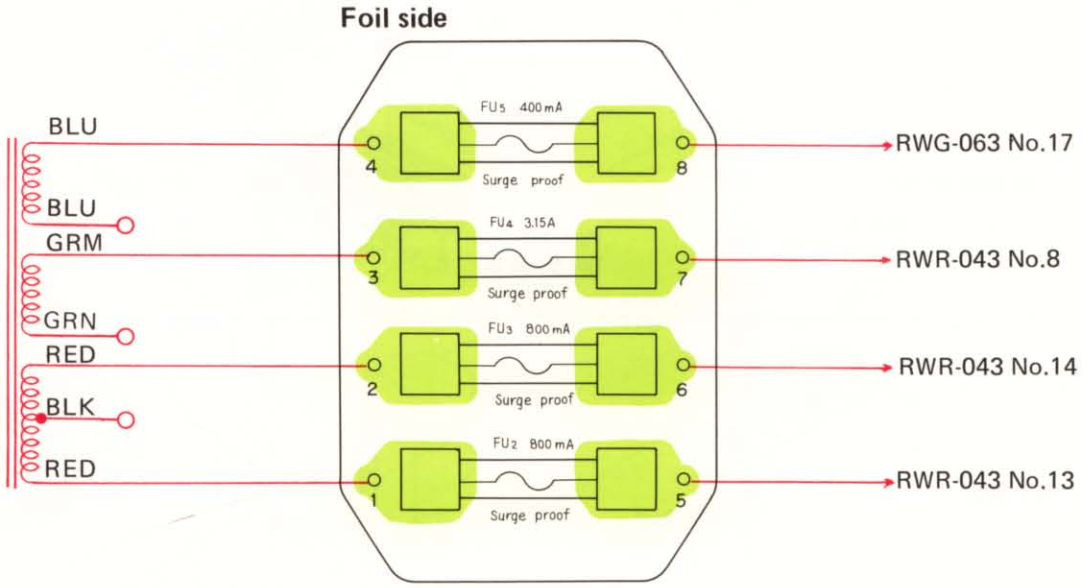


Parts List

Symbol	Description	Part No.
LED-1	TLR-113P	
LED-2	TLR-113P	
	Diode holder	REB-179-A

12.12 FUSE ASSEMBLY (RWX-139)





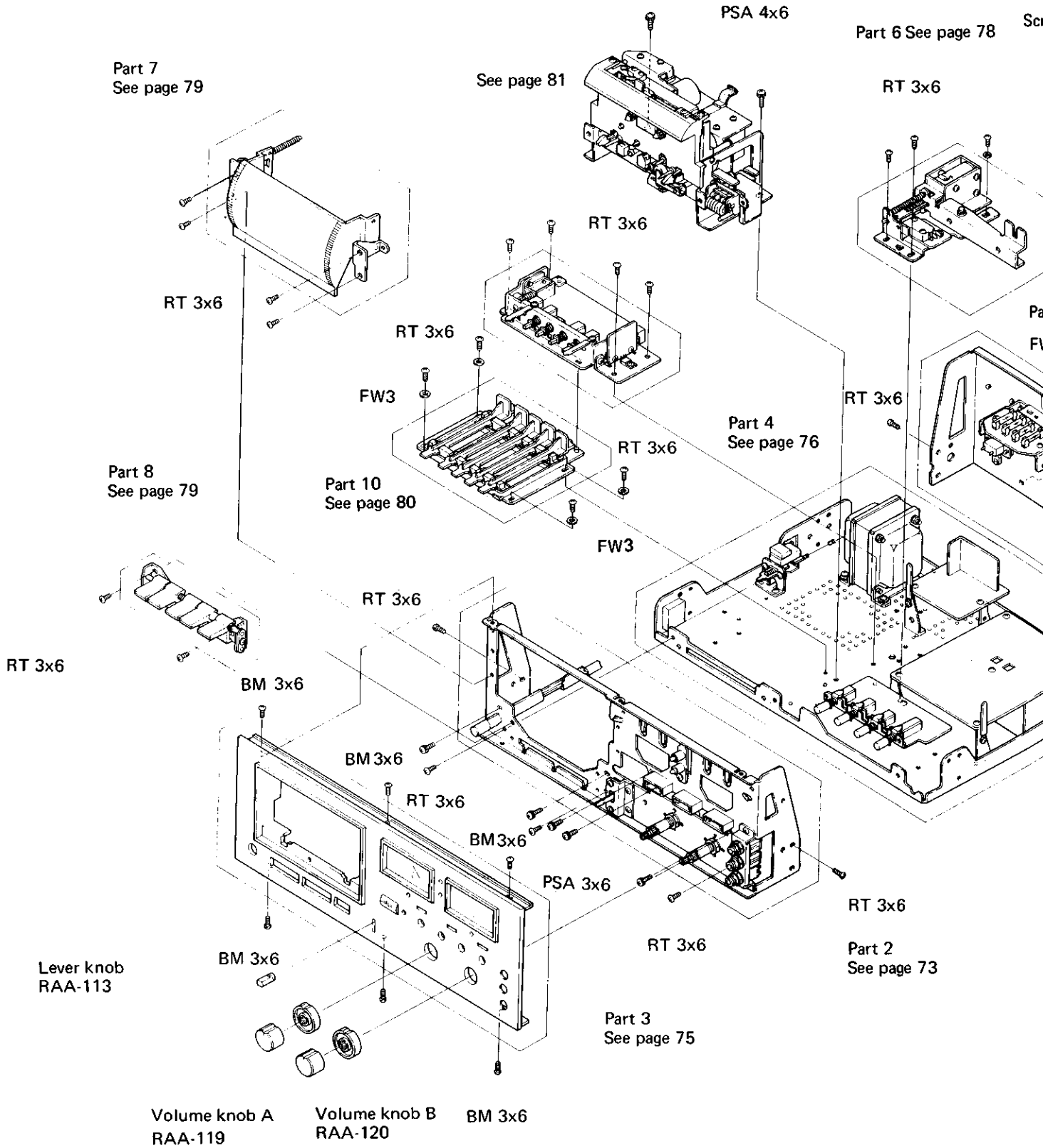
Parts List

FUSES

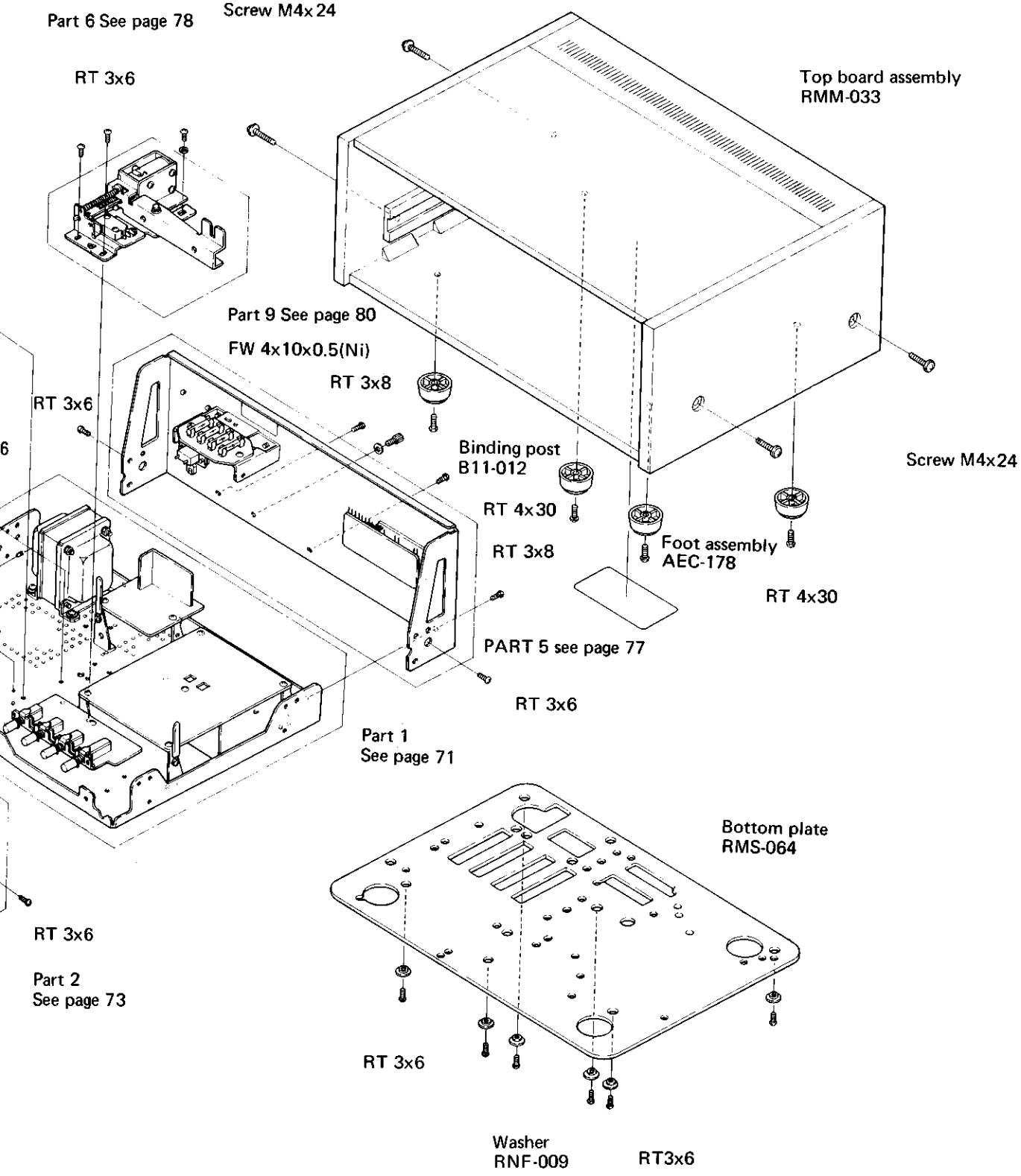
Symbol	Description	Part No.
F2	Fuse (800mA)	REK-058
F3	Fuse (800mA)	REK-058
F4	Fuse (3.15A)	REK-044
F5	Fuse (400mA)	REK-057
	Fuse crip	RKR-017

13. EXPLODED VIEWS

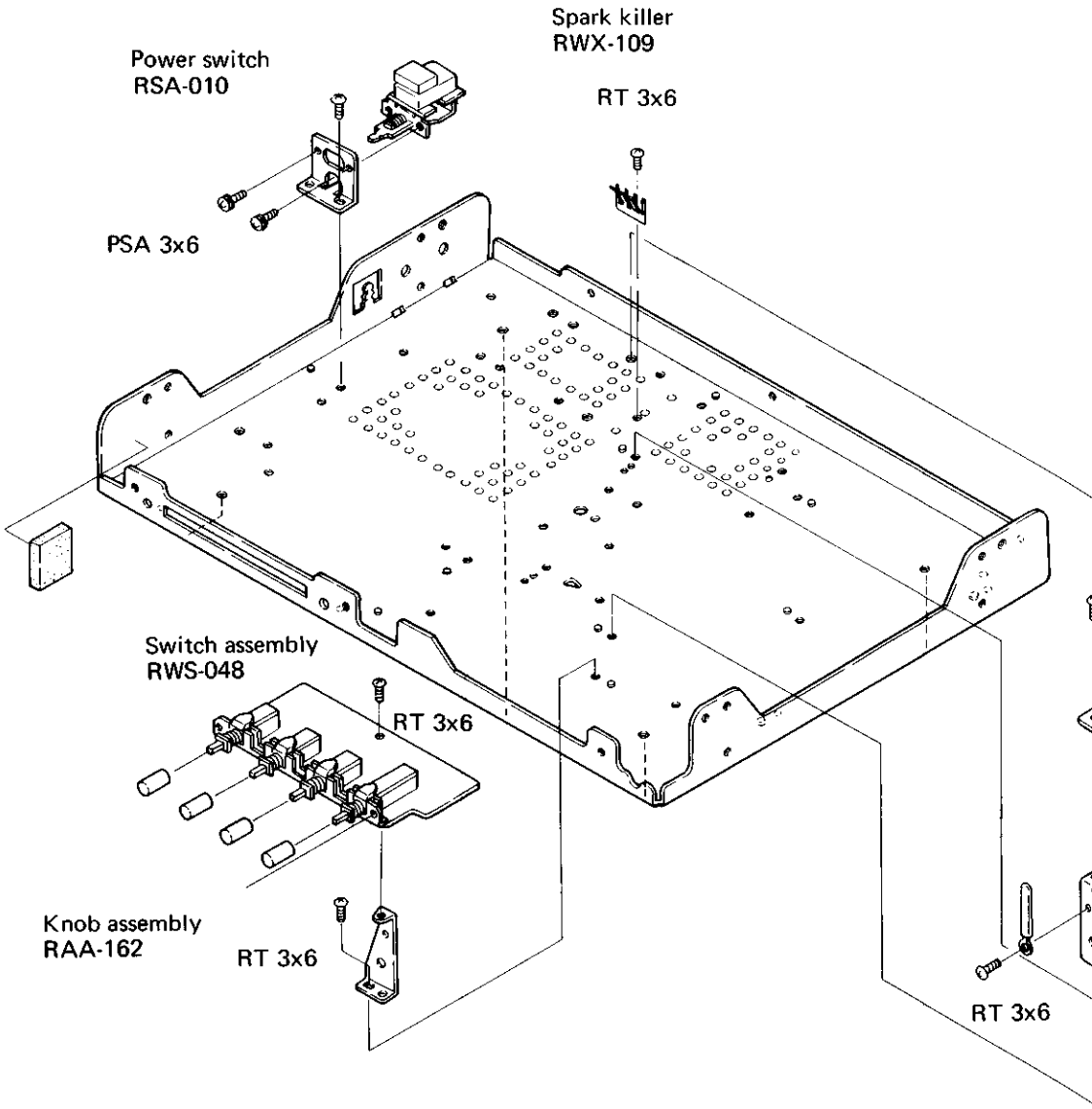
13.1 EXTERIOR



NOTE:
Parts indicated in green type cannot be supplied.

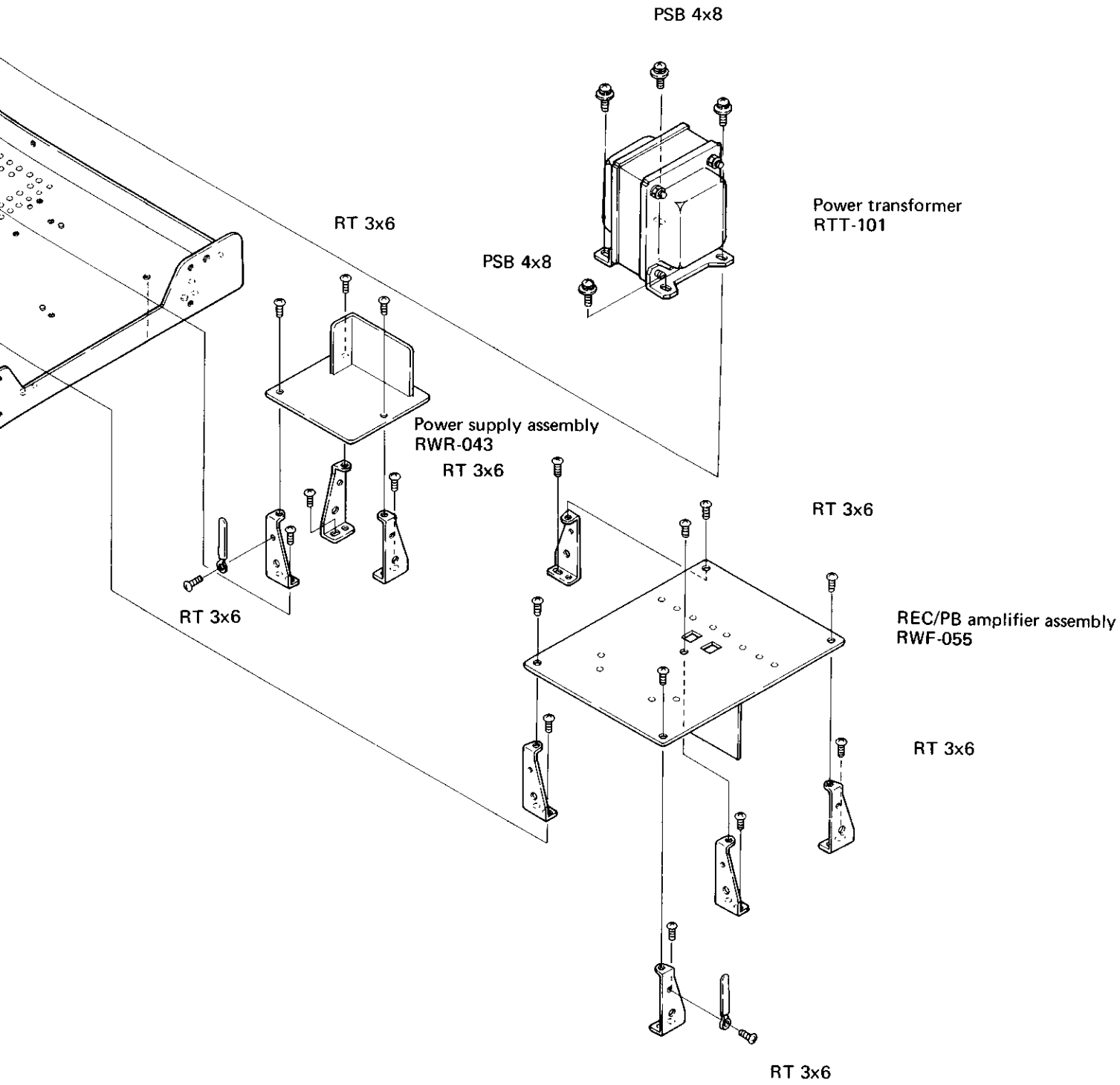


13.2 PART 1 MAIN CHASSIS



4 5 6

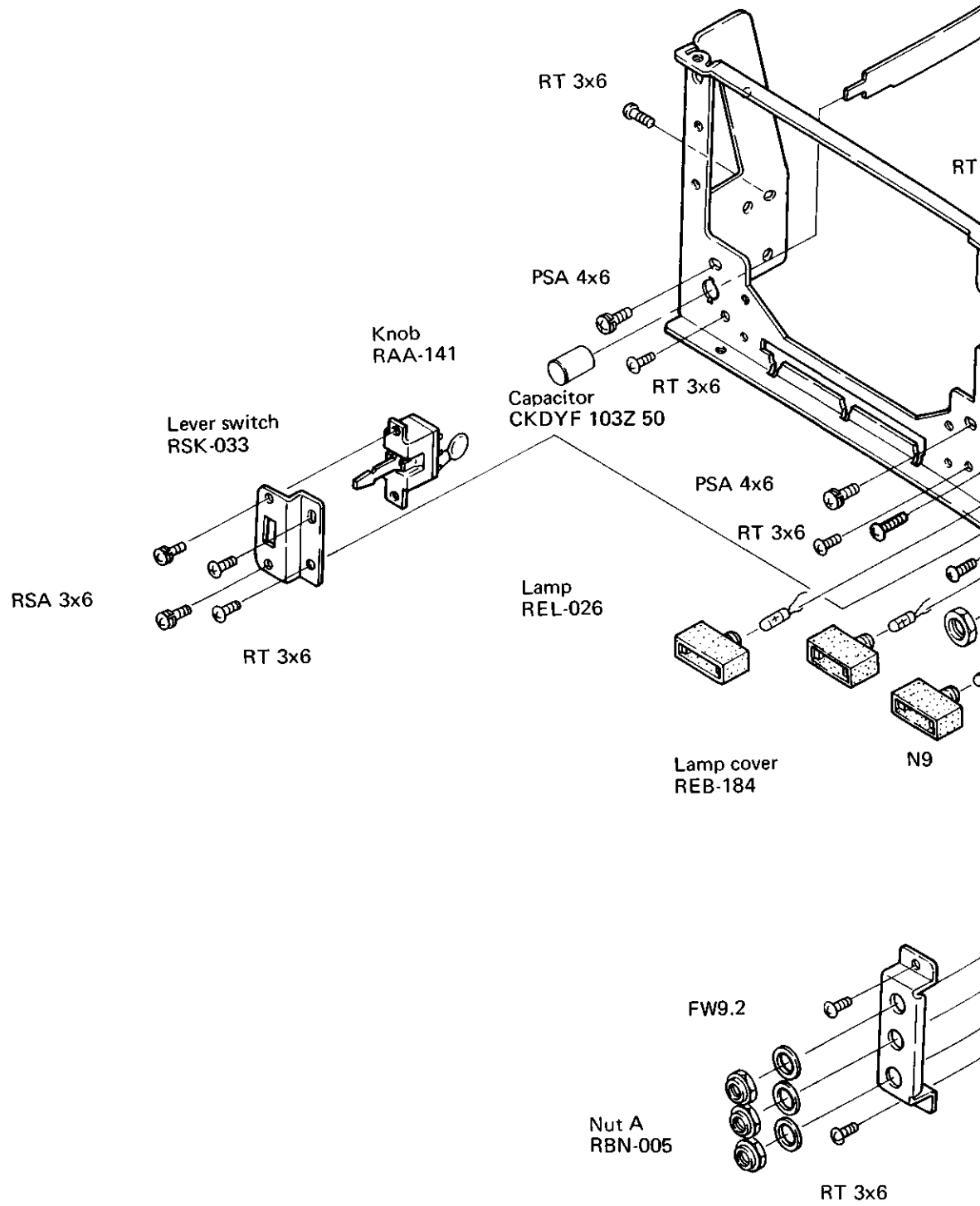
NOTE:
Parts indicated in green type cannot be supplied.



A B C D

4 5 6

13.3 PART 2 PANEL STAY



NOTE:
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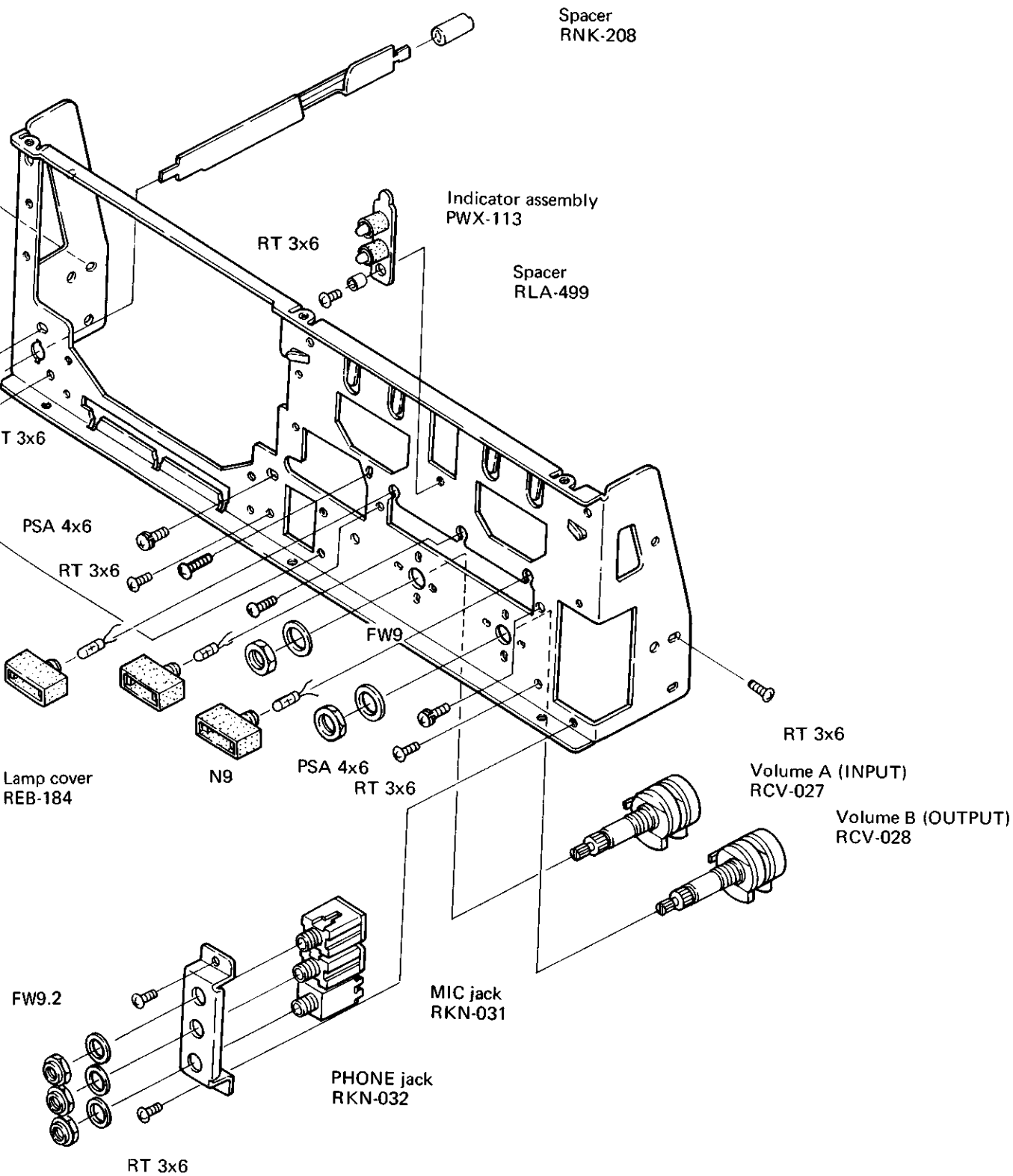
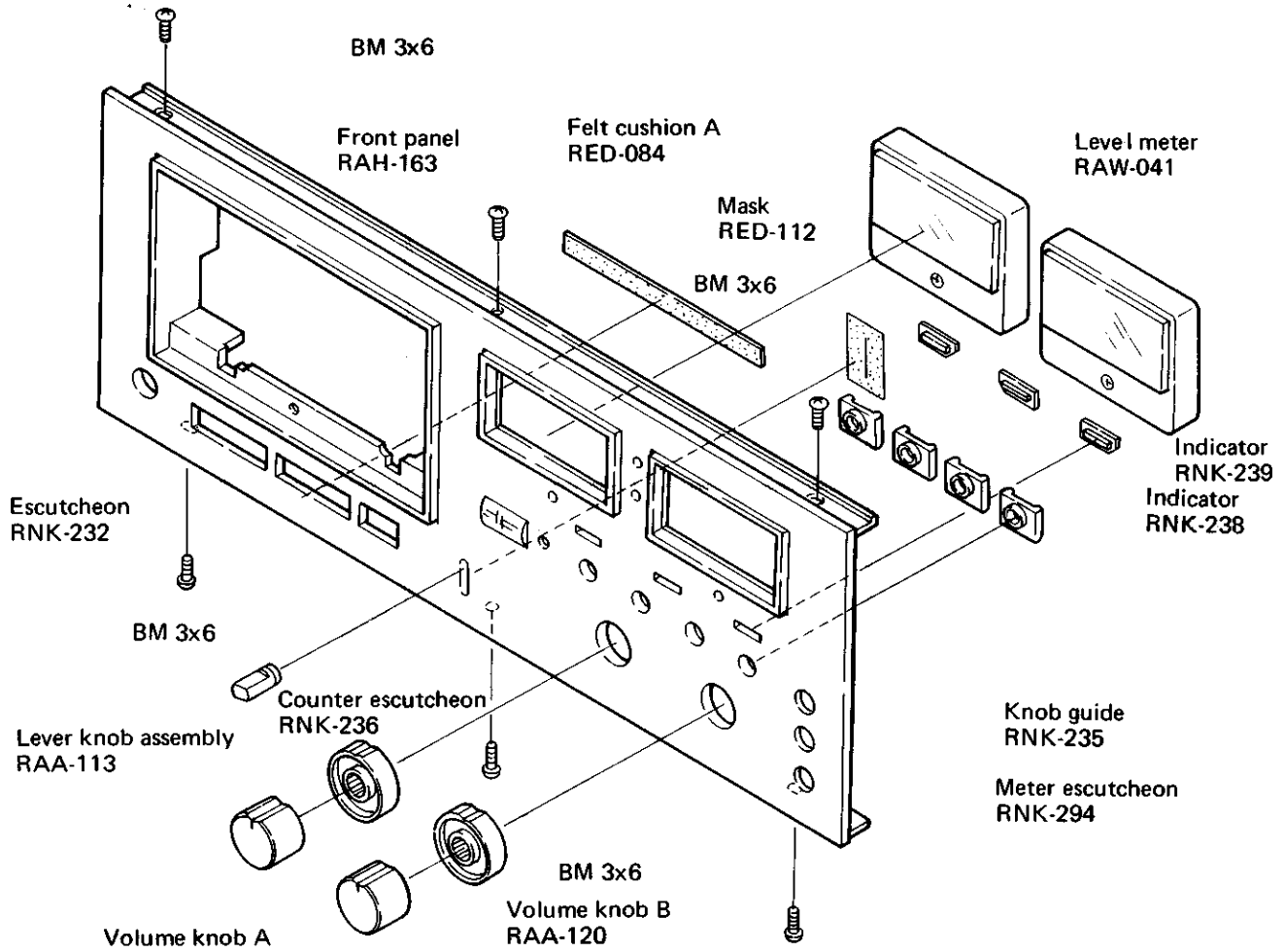


13.4 PART 3 FRONT PANEL

NOTE:
Parts indicated in green type cannot be supplied.



13.5 PART 4 CONTROL ASSEMBLY

NOTE:
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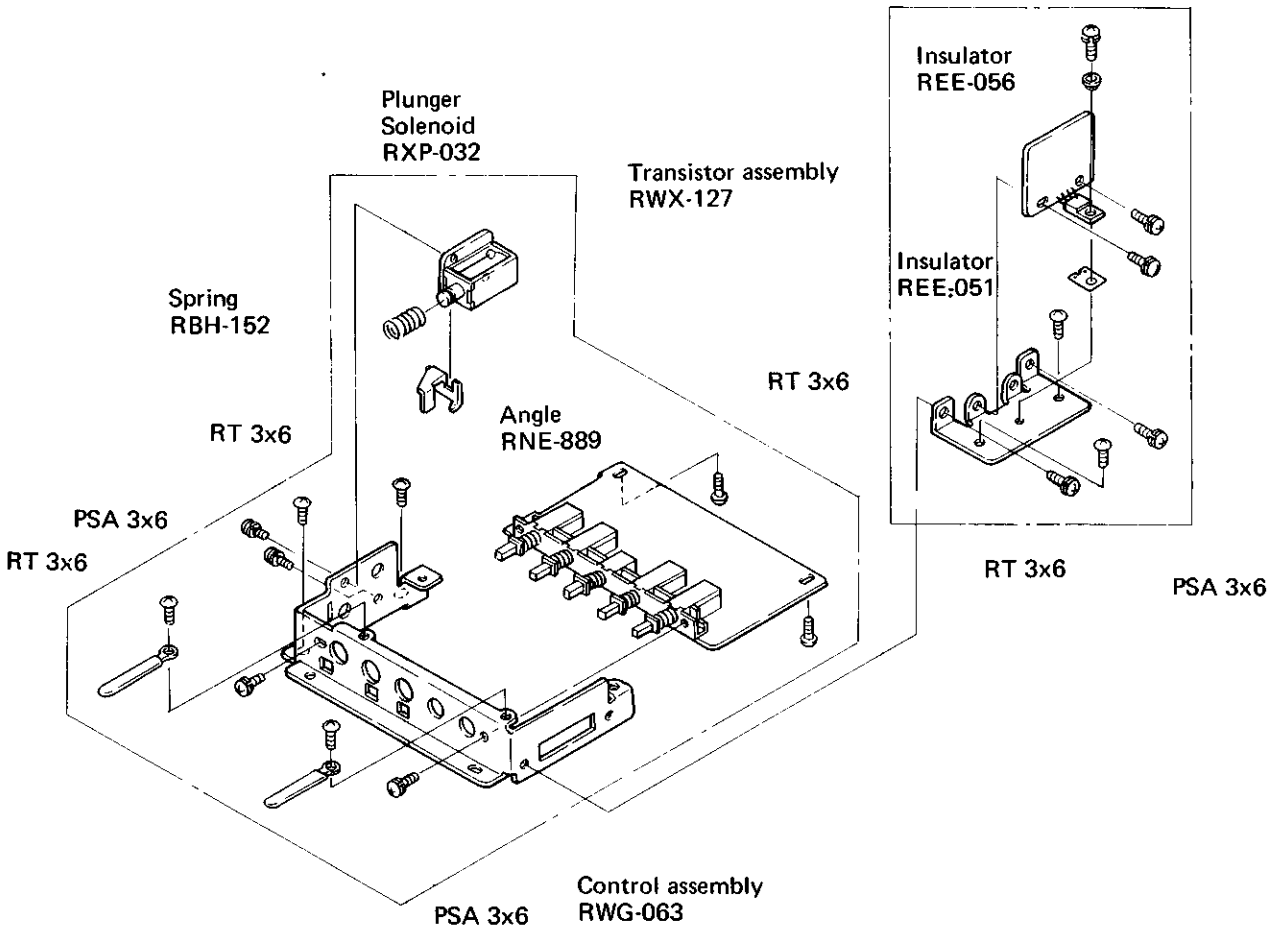

13.6 PART 5 REAR PANEL

NOTE:
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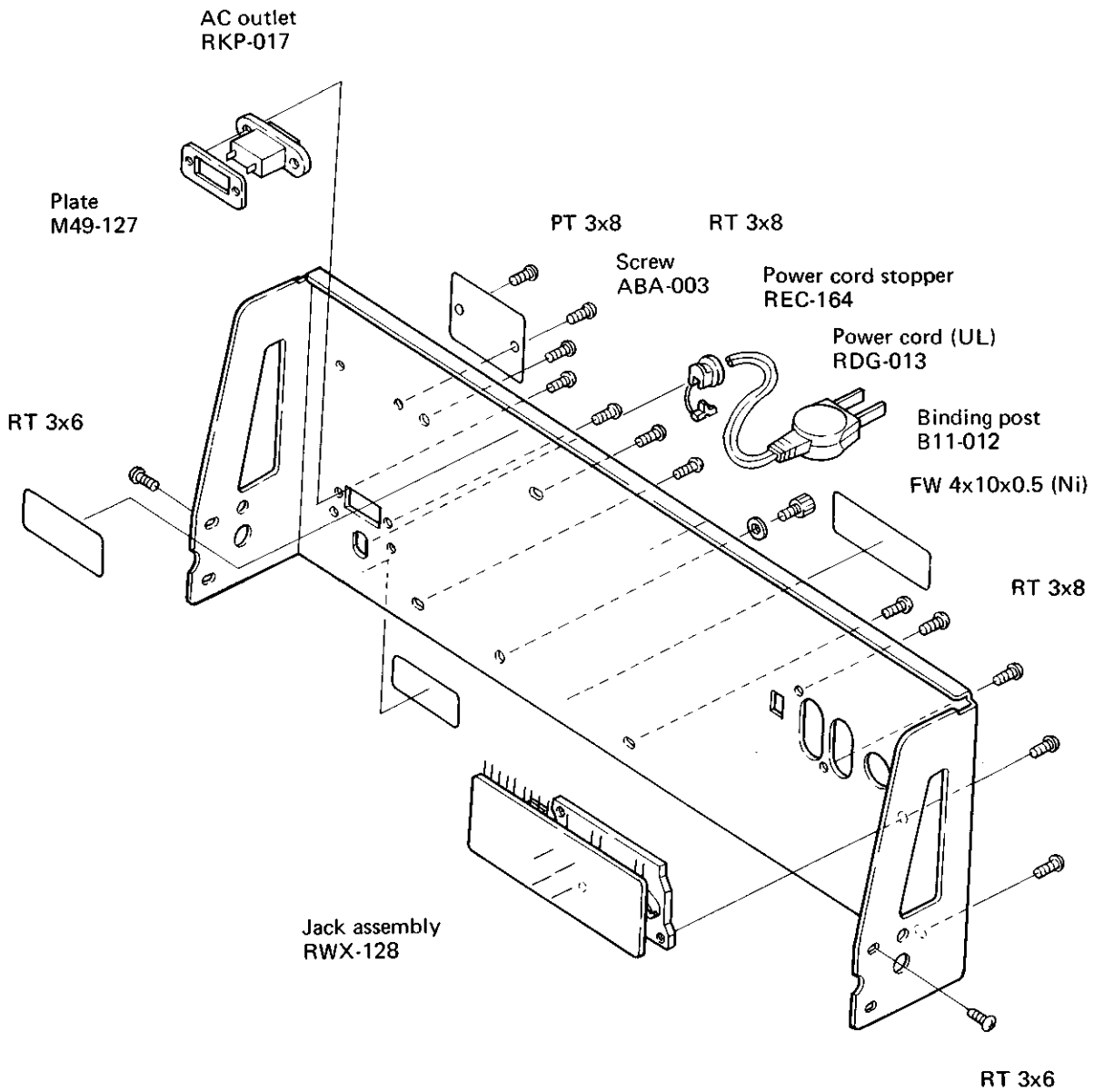

13.7 PART 6

NOTE:
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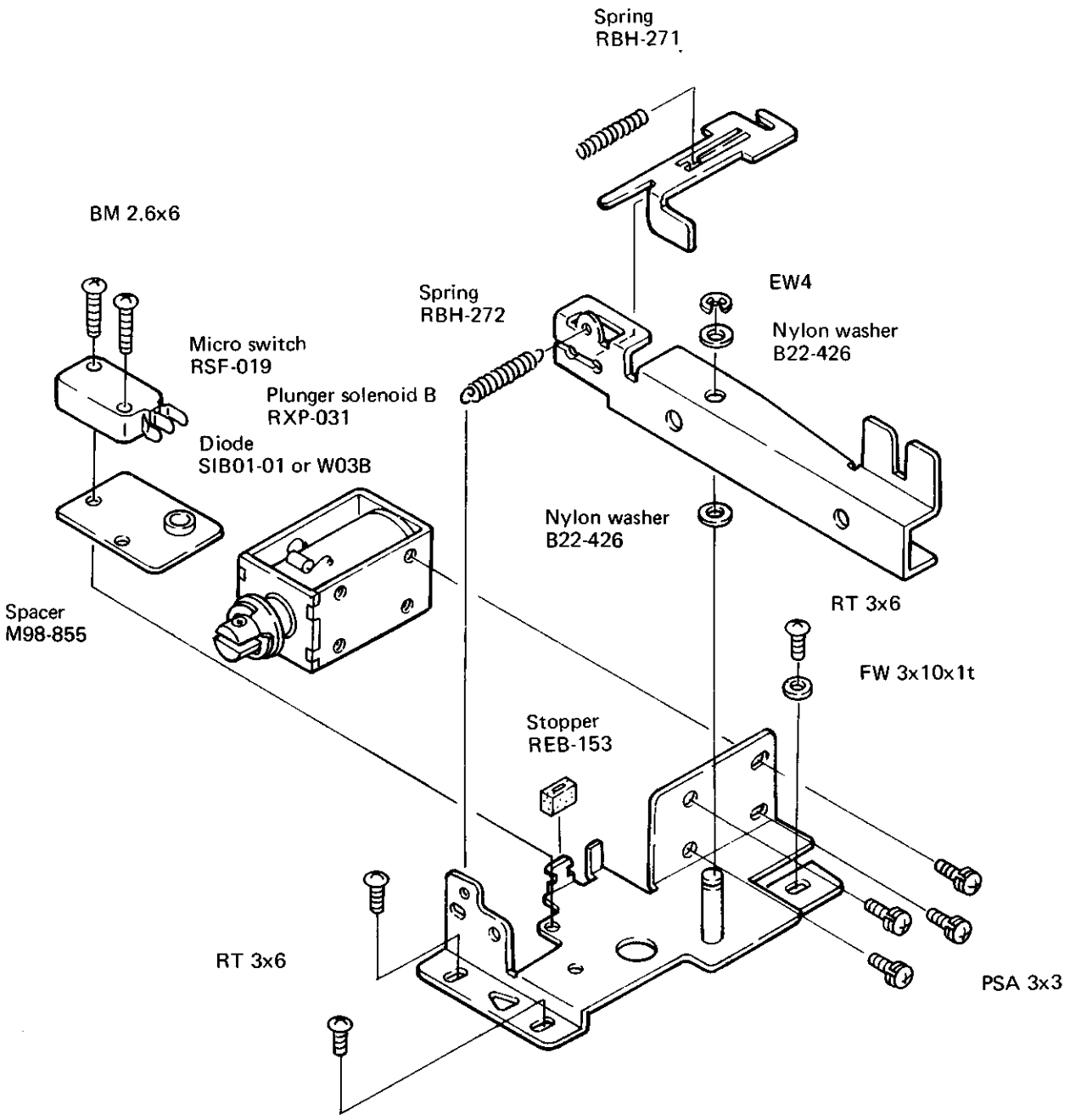
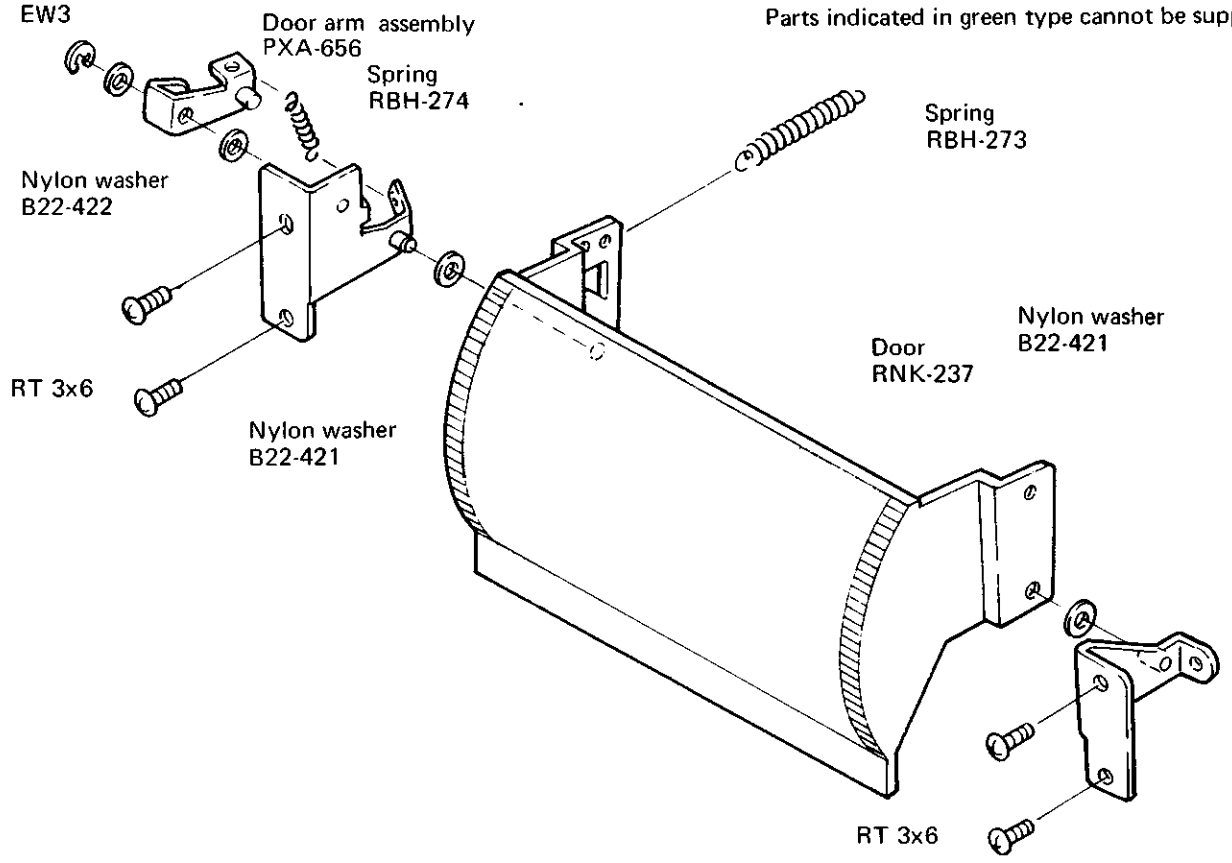
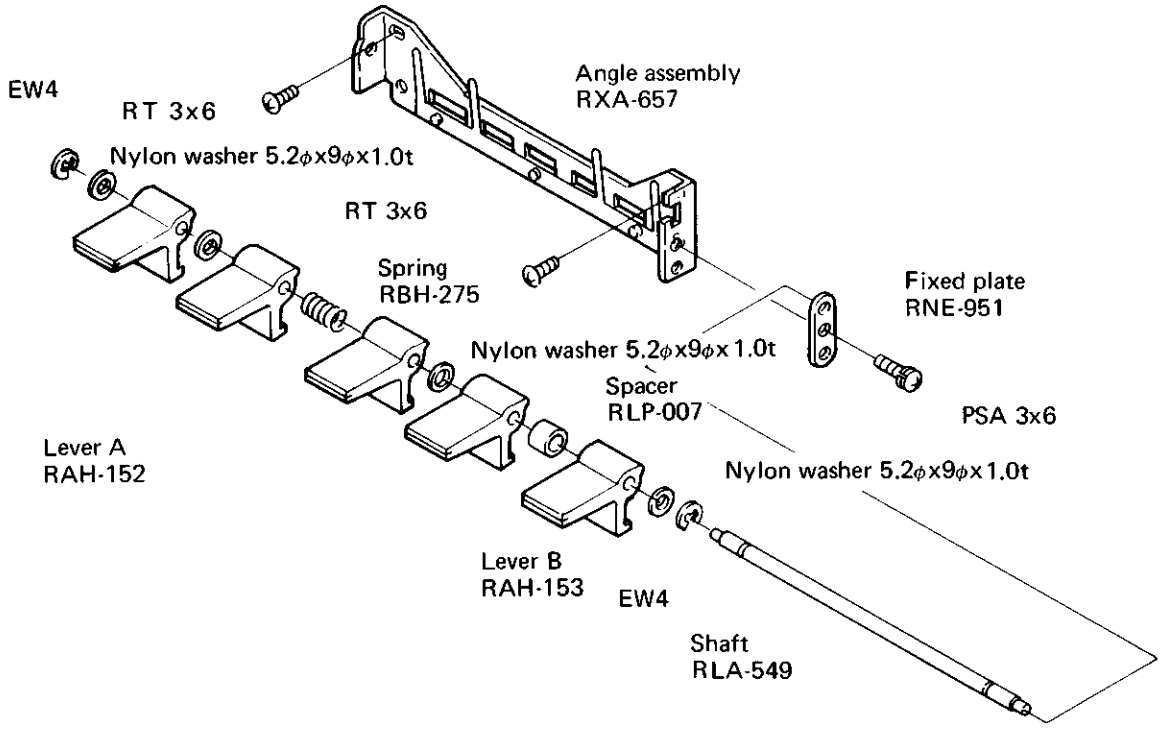


13.8 PART 7 DOOR

NOTE:
Parts indicated in green type cannot be supplied.

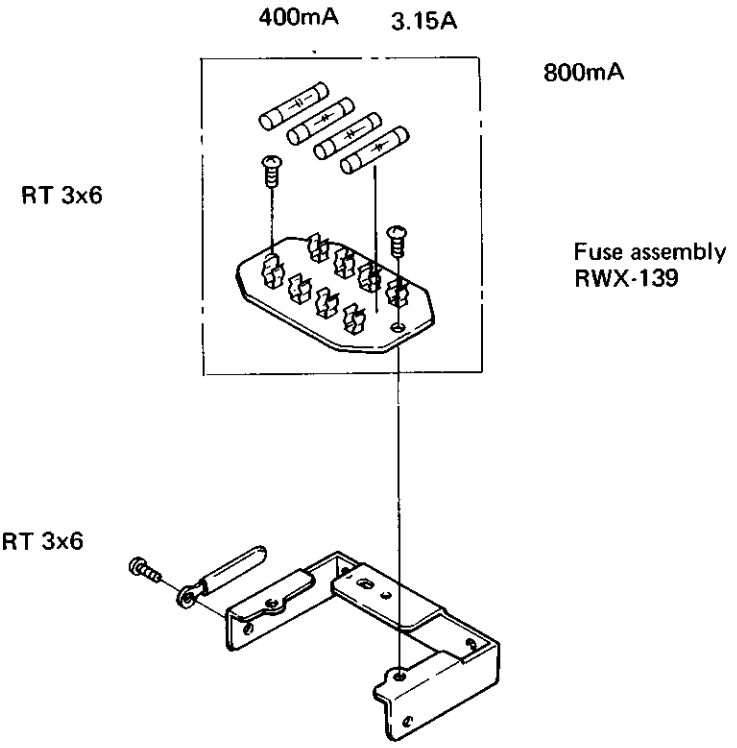


13.9 PART 8 FUNCTION LEVER

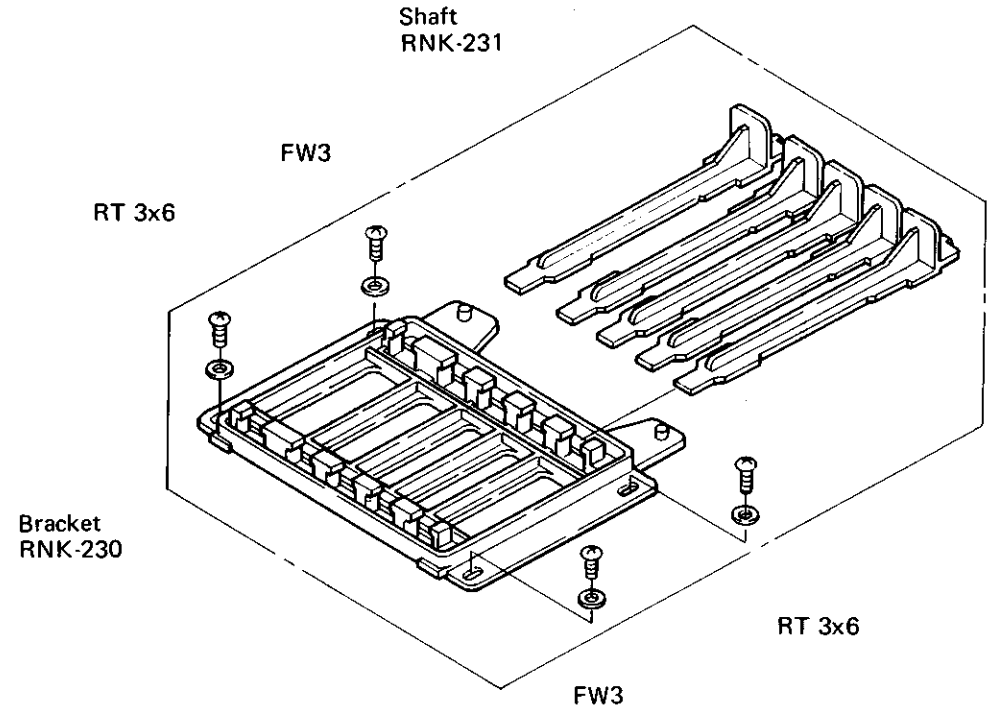


13.10 PART 9 FUSE ASSEMBLY

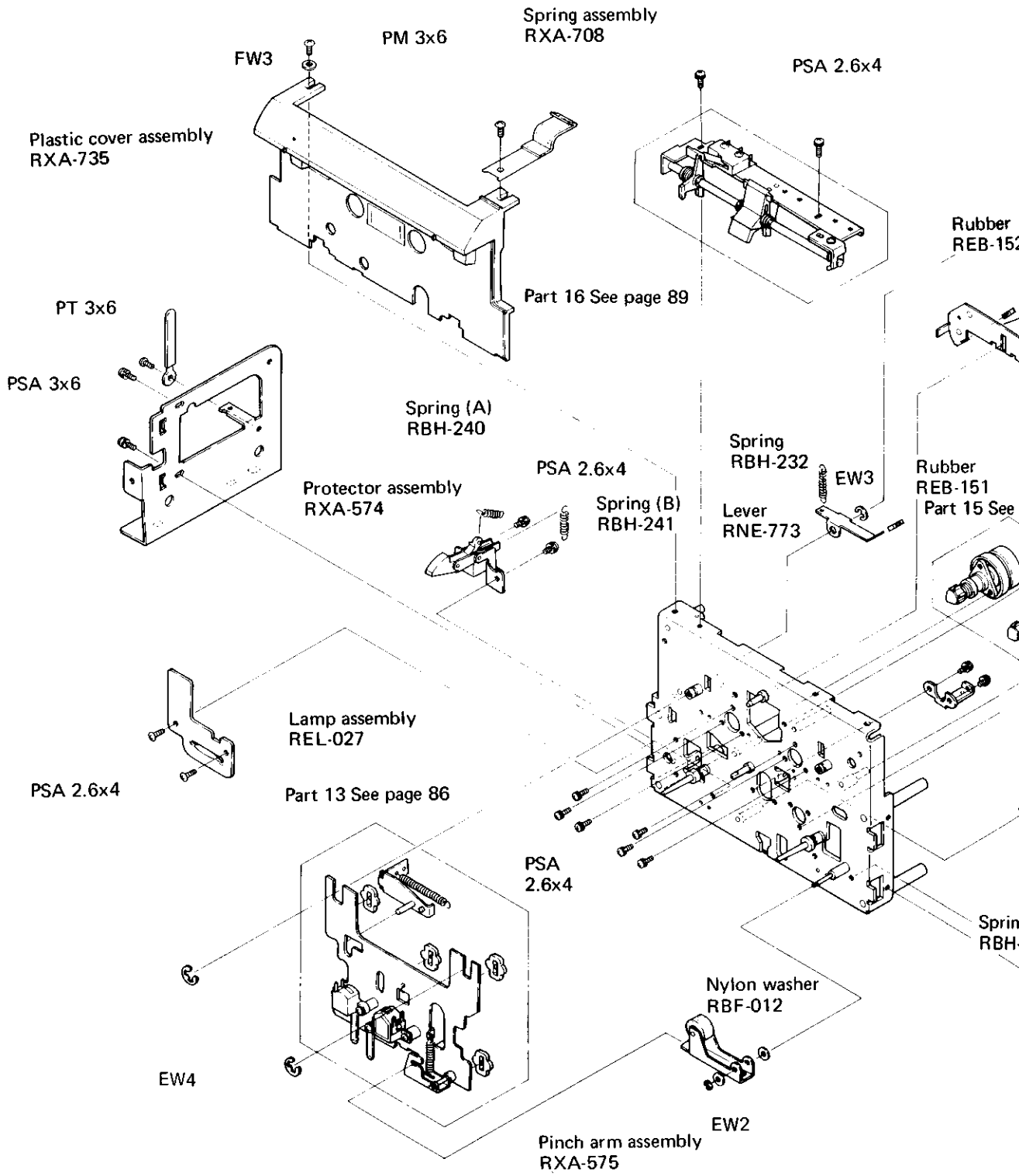
NOTE:
Parts indicated in green type cannot be supplied.



13.11 PART 10



13.12 TRANSPORT



4 5 6

NOTE:
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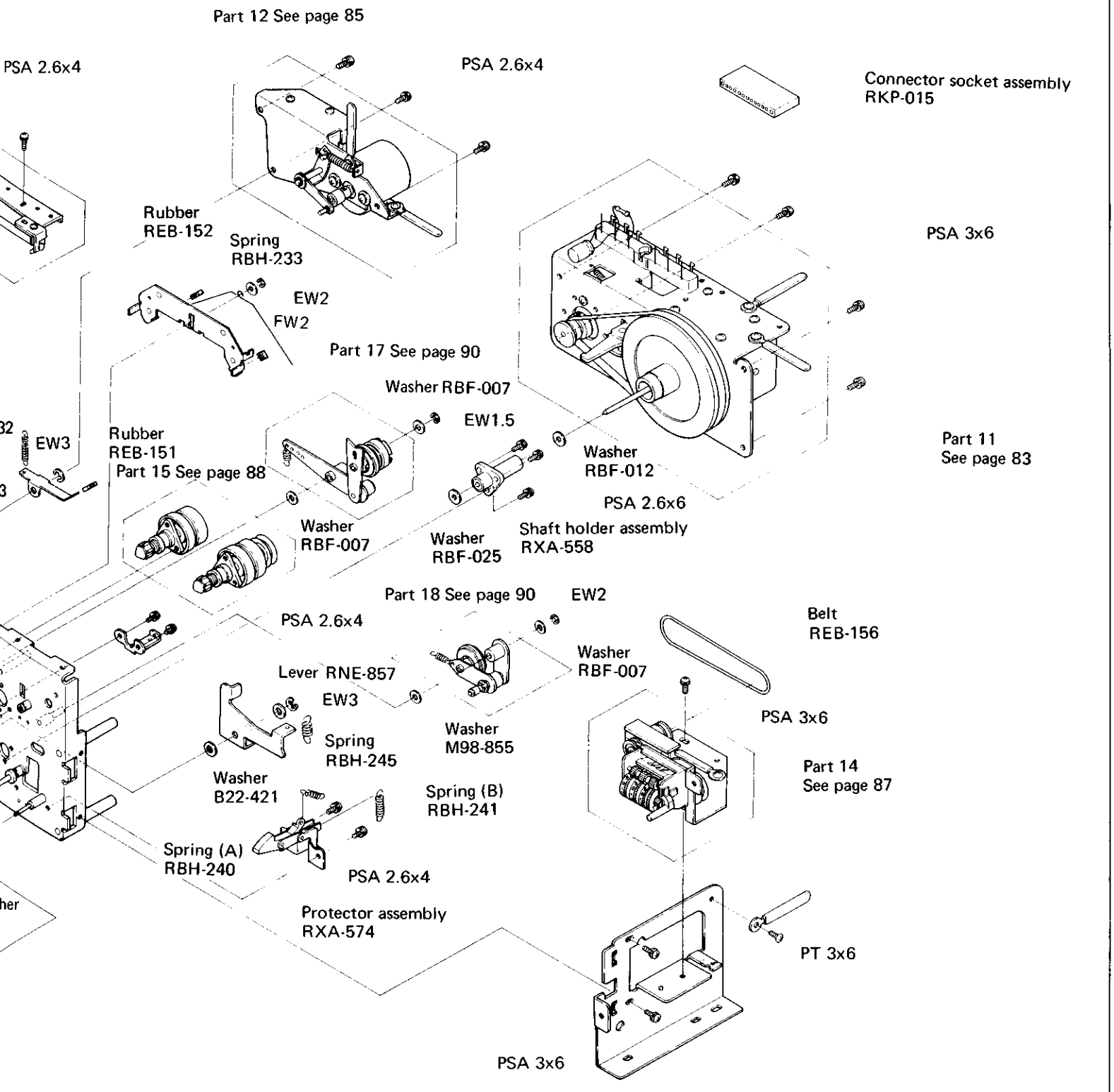
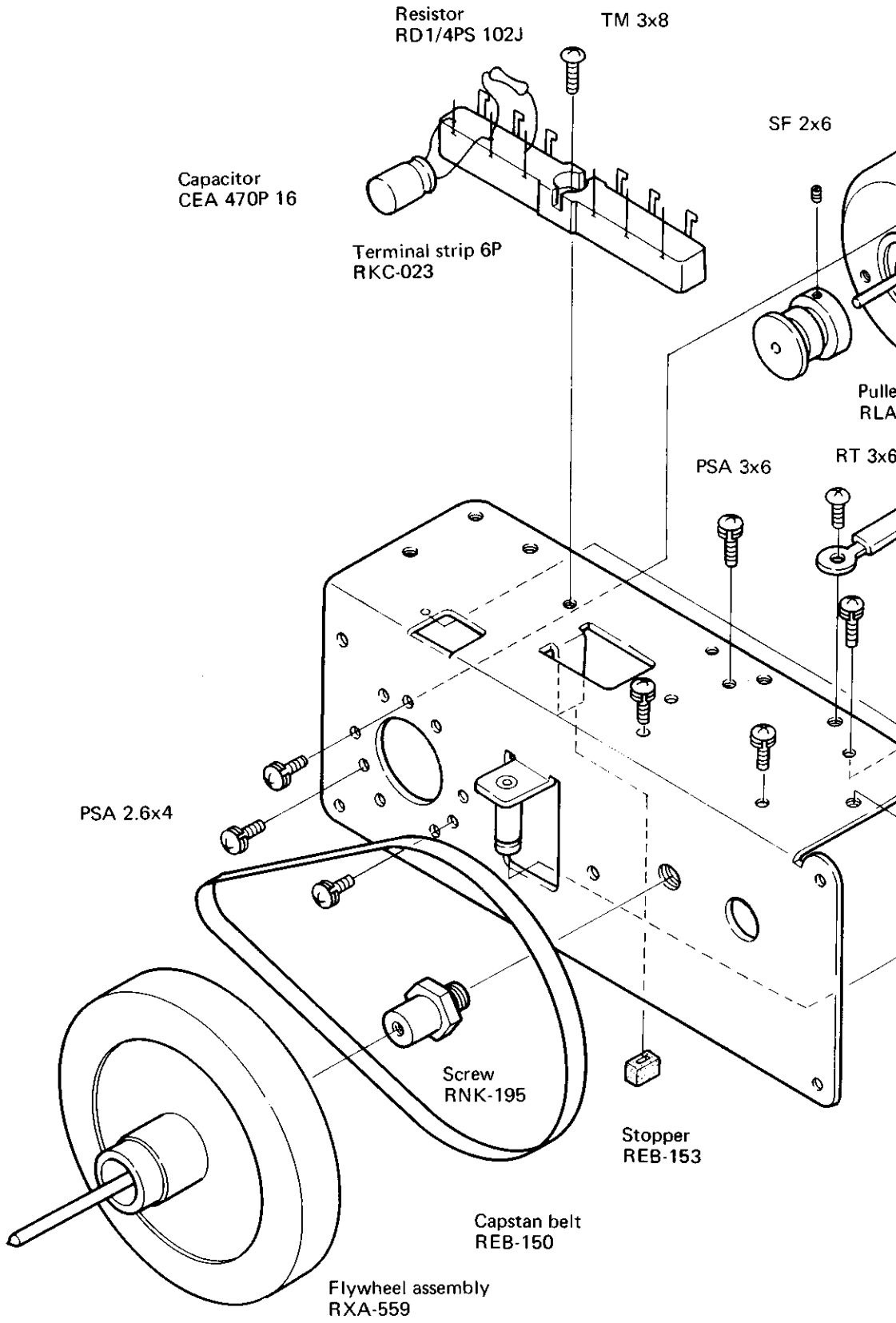


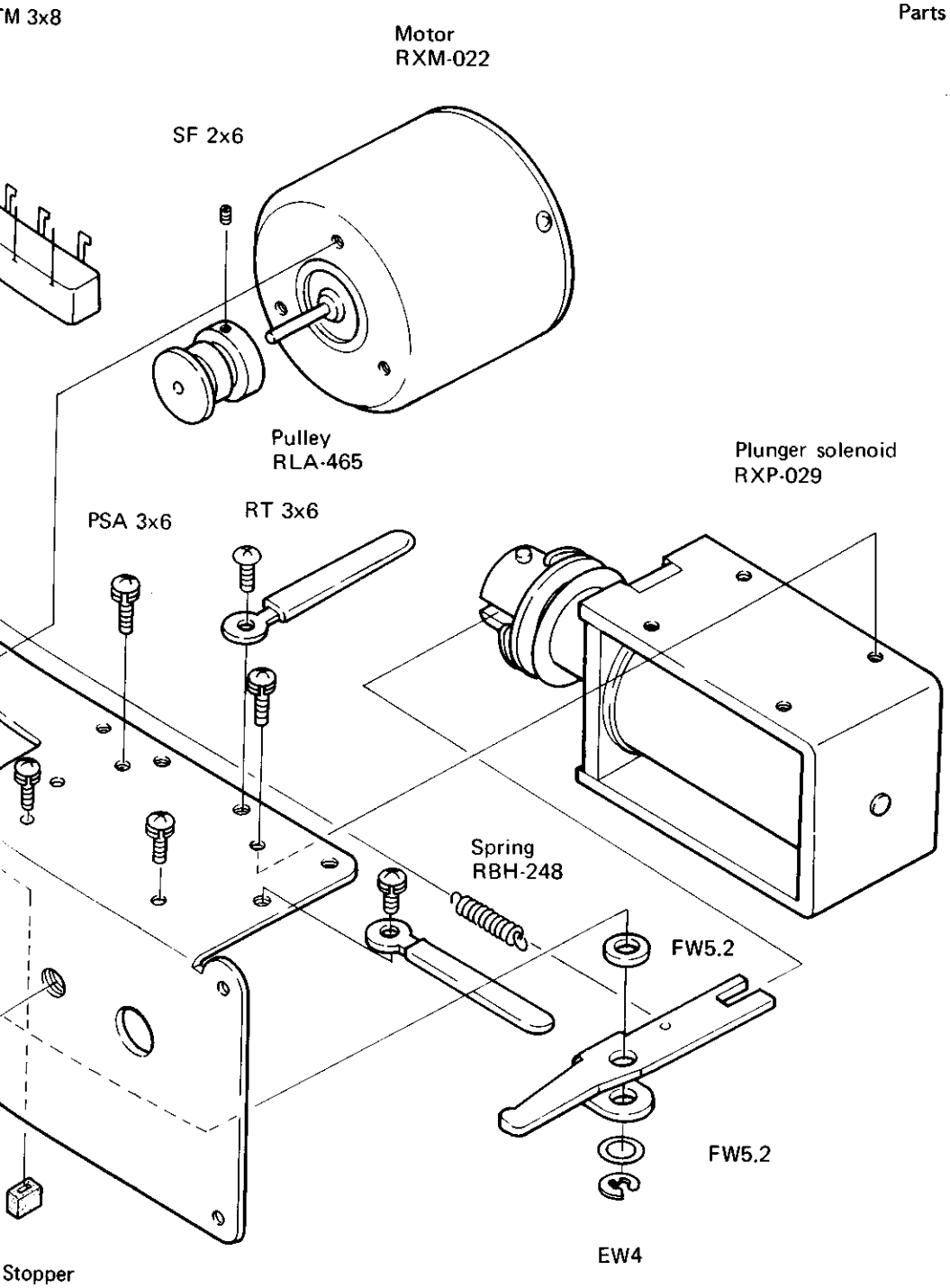
A B C D

4 5 6

13.13 PART 11 SUB CHASSIS



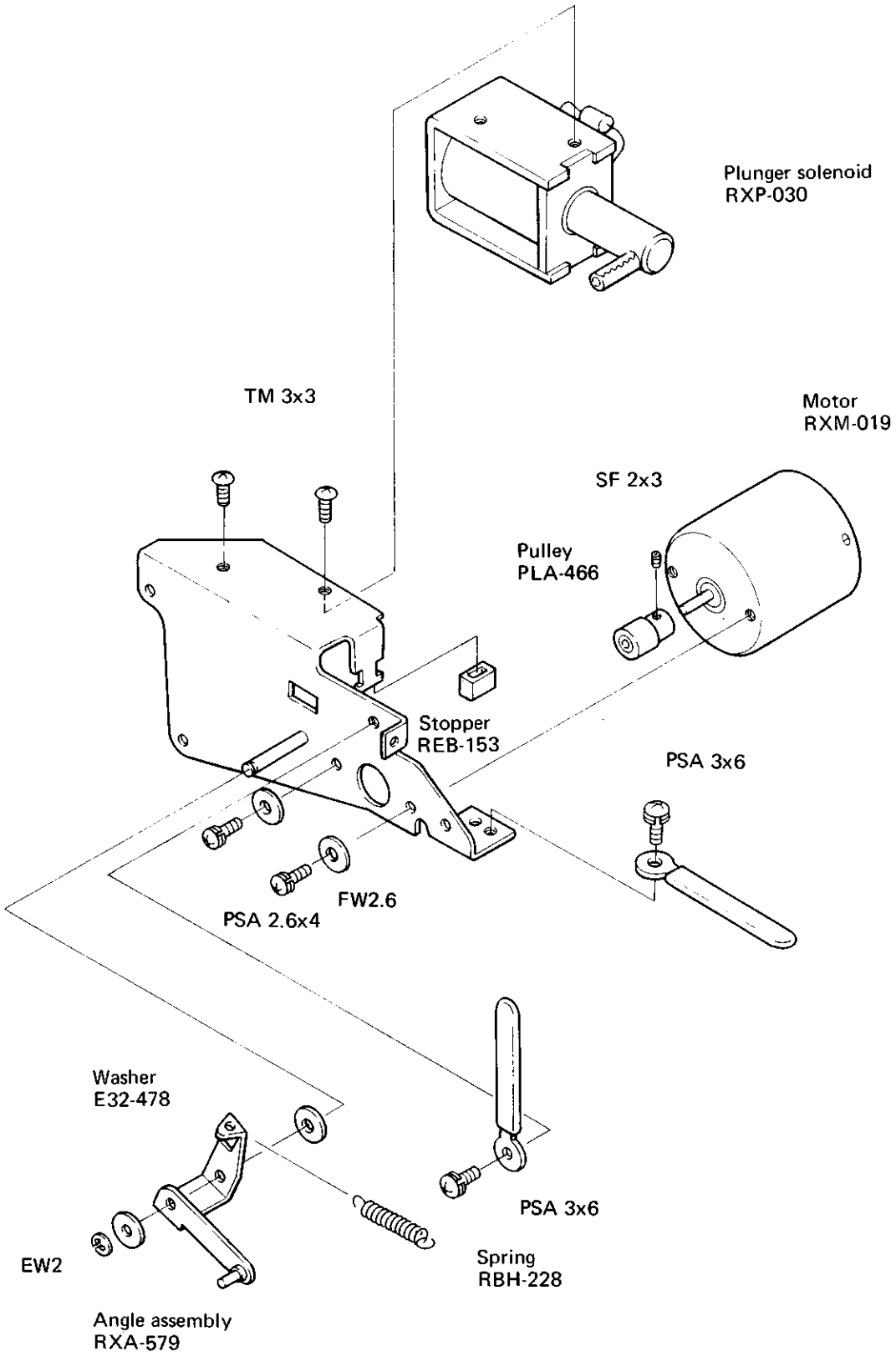
NOTE:
Parts indicated in green type cannot be supplied.



A
B
C
D

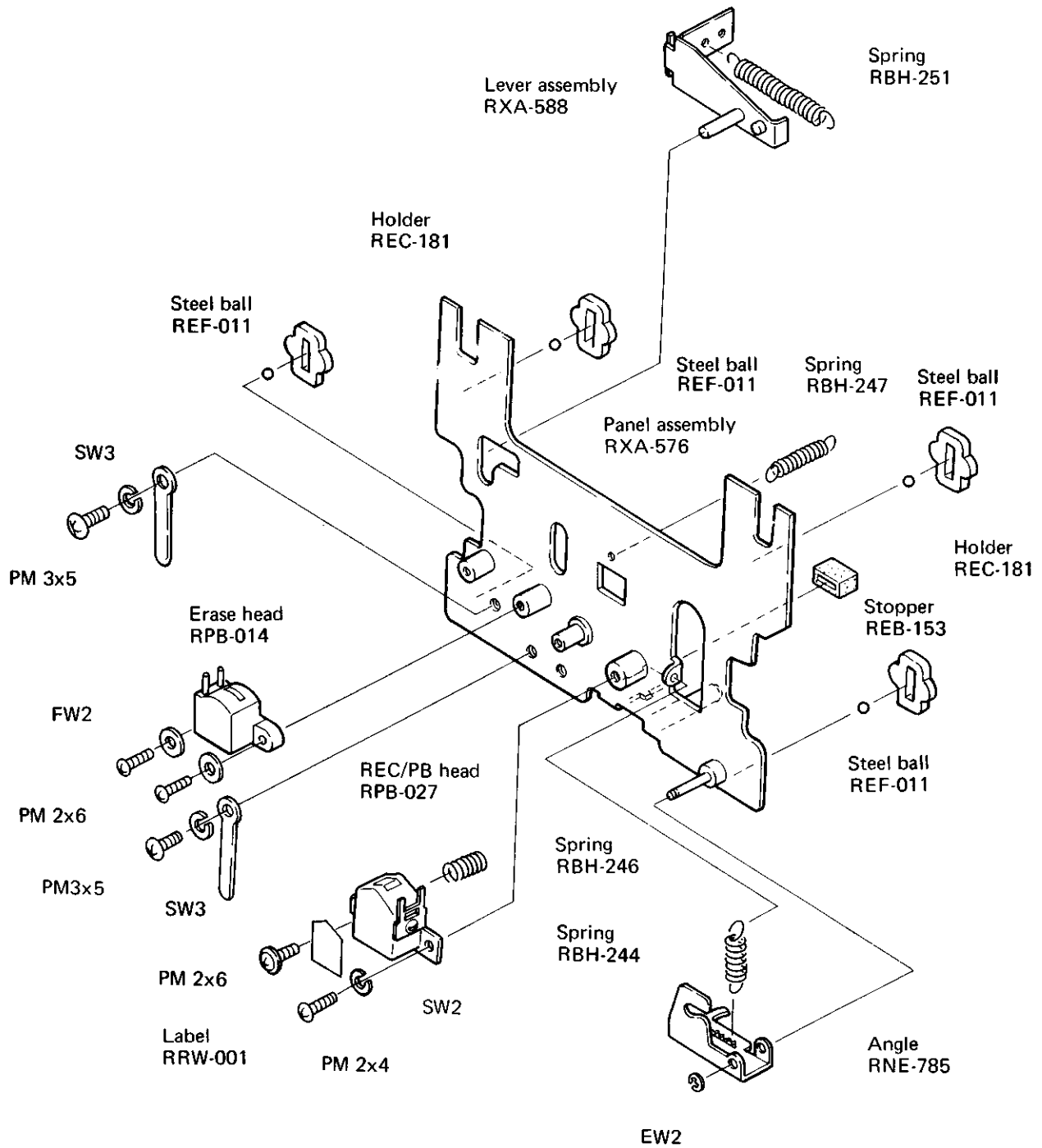
13.14 PART 12 MOTOR

NOTE:
Parts indicated in green type cannot be supplied.



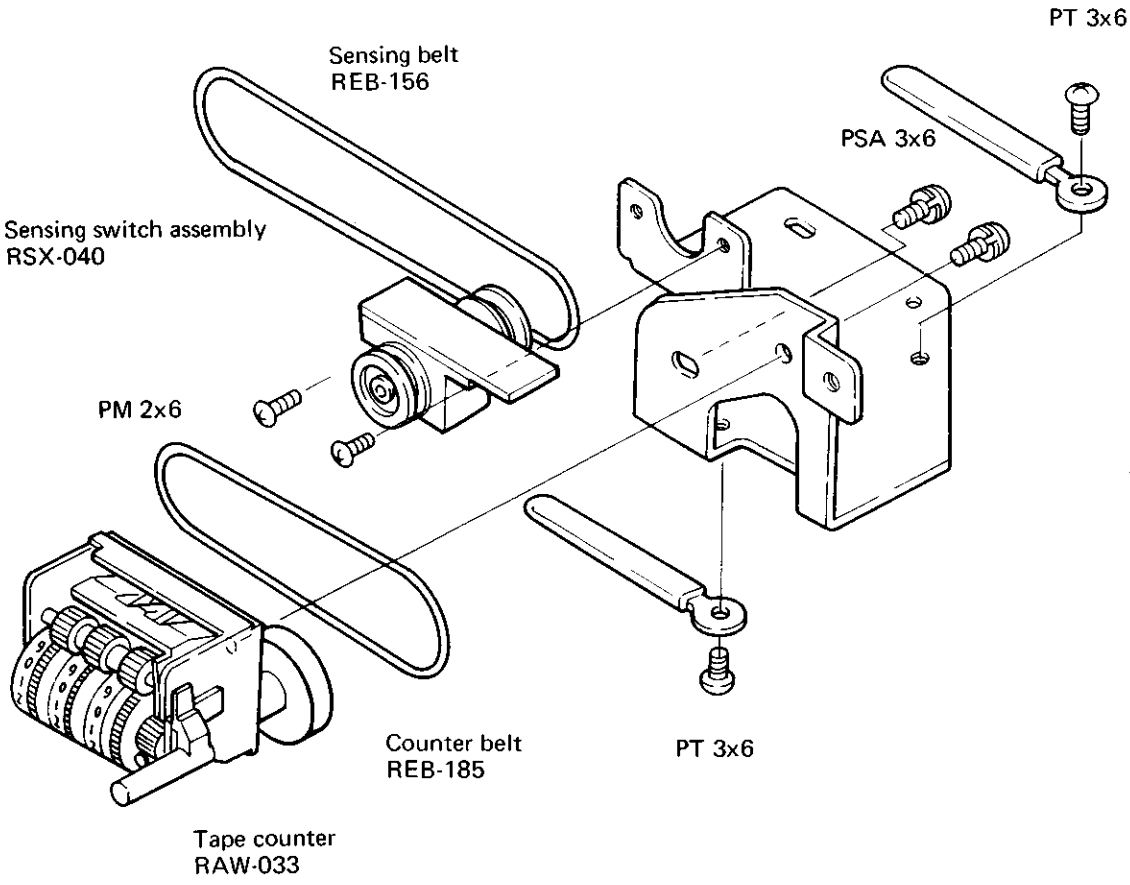
13.15 PART 13

NOTE:
Parts indicated in green type cannot be supplied.



13.16 PART 14 TAPE COUNTER

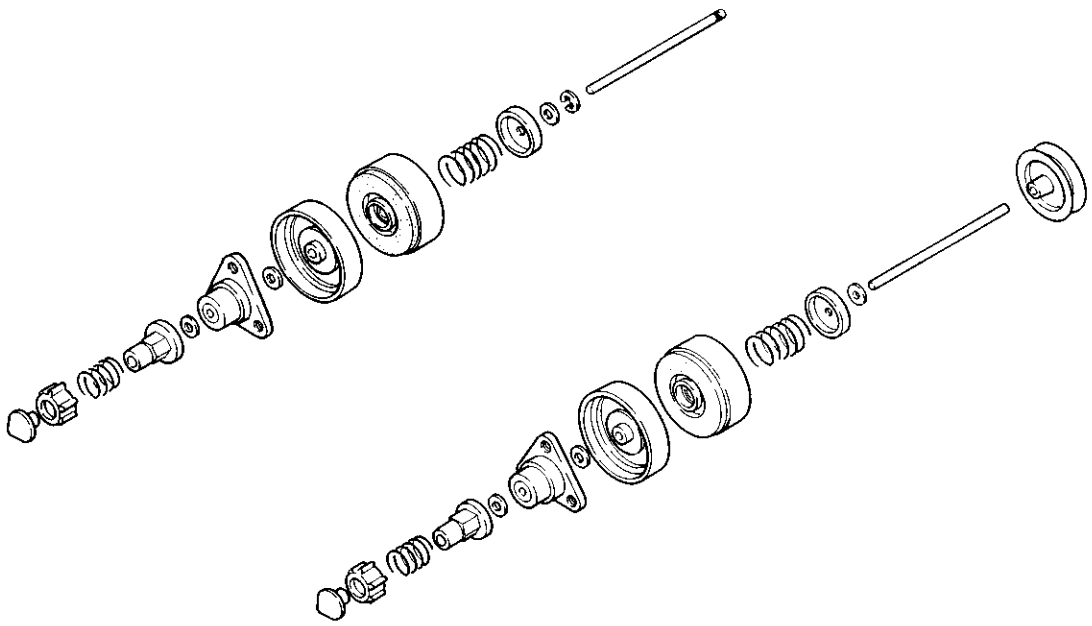
NOTE:
Parts indicated in green type cannot be supplied.



13.17 PART 15 REEL SHAFT

NOTE:
Parts indicated in green type cannot be supplied.

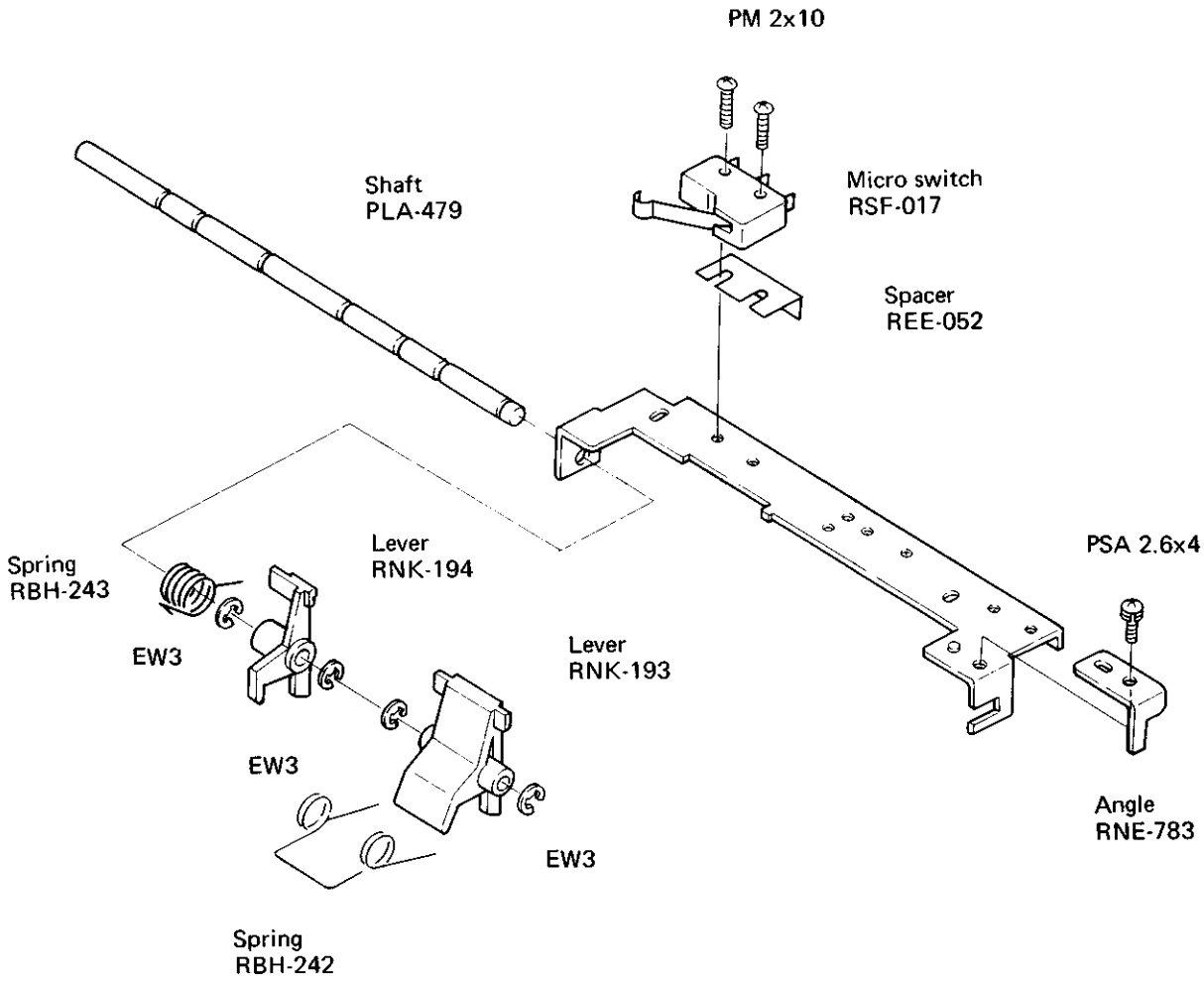
Supply reel full assembly
RXA-563



Take up reel full assembly
RXA-560

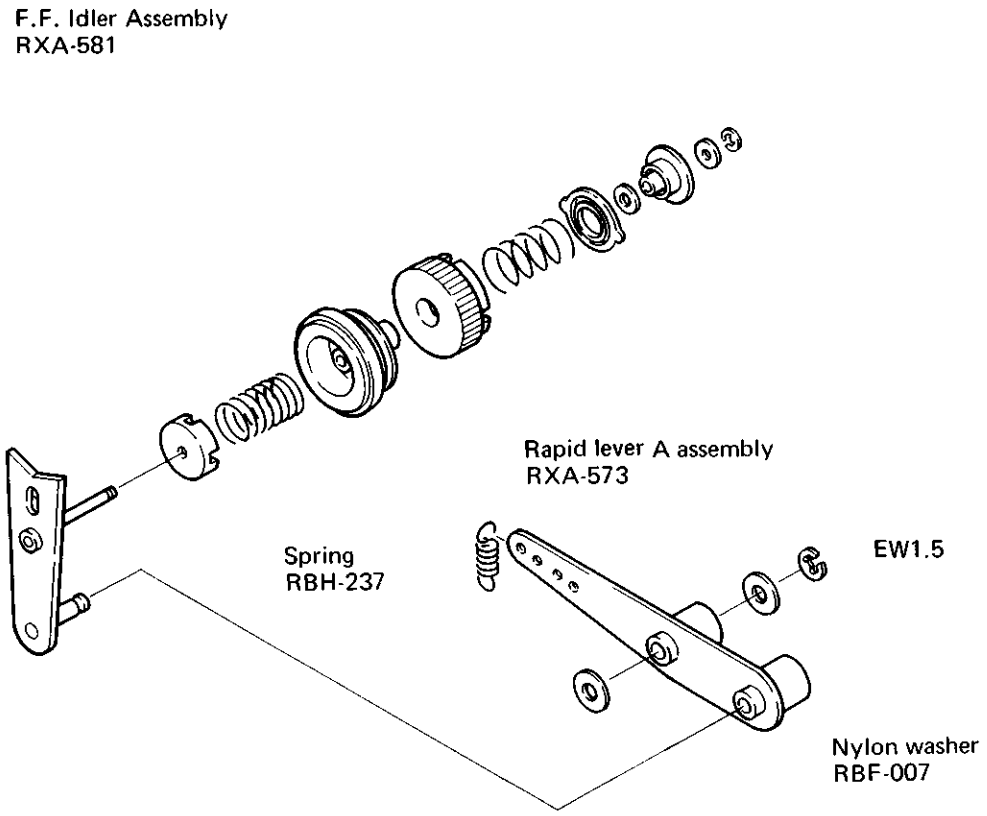
13.18 PART 16 PAUSE LEVER

NOTE:
Parts indicated in green type cannot be supplied.

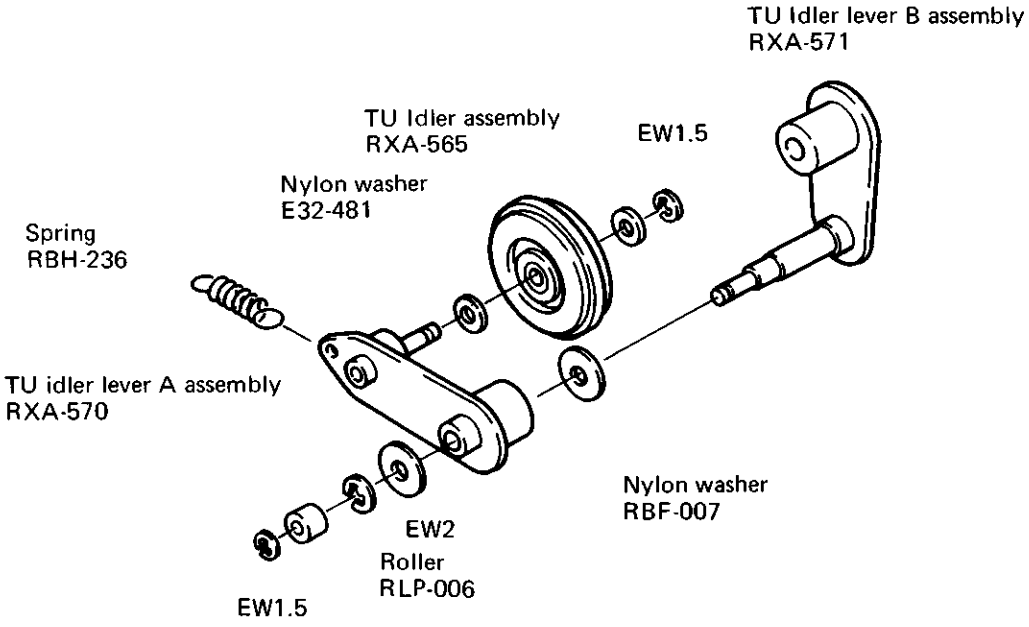


13.19 PART 17 F.F. IDLER

NOTE:
Parts indicated in green type cannot be supplied.



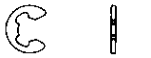
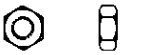
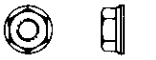
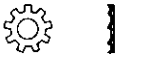
13.20 PART 18 TU IDLER



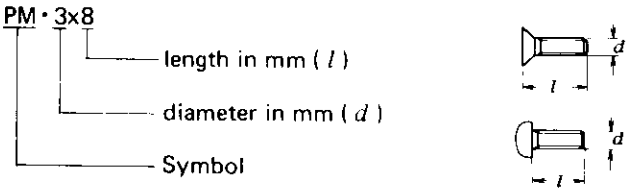
13.21 NOMENCLATURE OF SCREWS, WASHERS AND NUTS

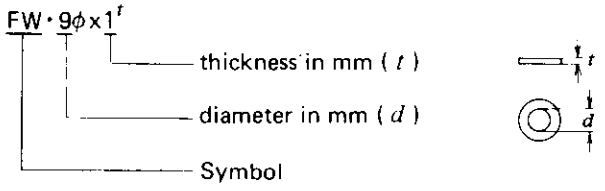
The following symbols stand for screws, washers and nuts as shown in exploded view.

Symbol	Description	Shape
RT	Brazier head tapping screw	
PT	Pan head tapping screw	
BT	Binding head tapping screw	
CT	Countersunk head tapping screw	
TT	Truss head tapping screw	
OCT	Oval countersunk head tapping screw	
PM	Pan head machine screw	
CM	Countersunk head machine screw	
OCM	Oval countersunk head machine screw	
TM	Truss head machine screw	
BM	Binding head machine screw	
PSA	Pan head screw with spring lock washer	
PSB	Pan head screw with spring lock washer and flat washer	
PSF	Pan head screw with flat washer	

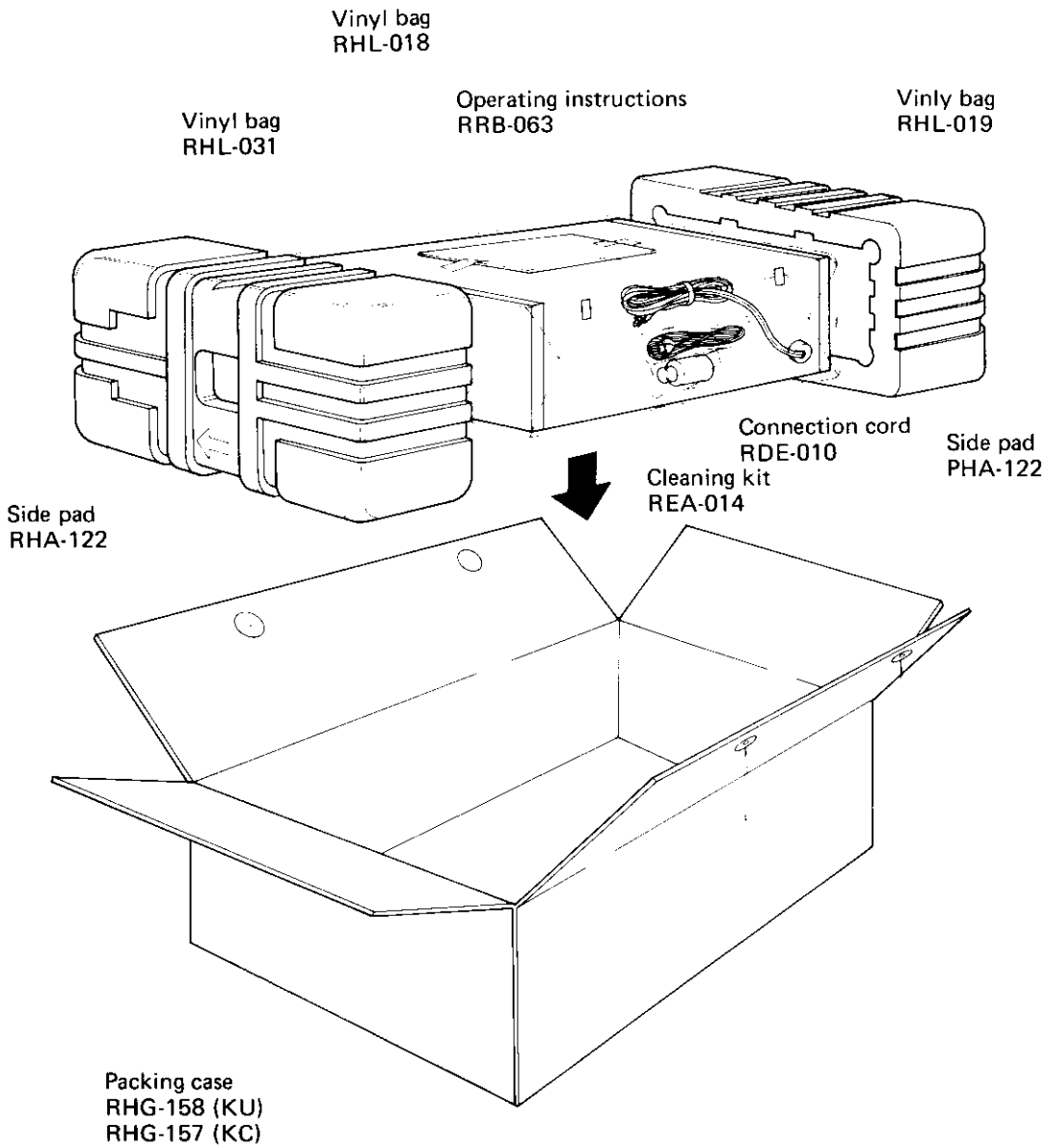
Symbol	Description	Shape
EW	E type washer	
FW	Flat washer	
SW	Spring lock washer	
N	Nut	
WN	Washer faced nut	
ITW	Internal toothed lock washer	
OTW	Outernal toothed lock washer	
SC	Slotted set screw (Cone point)	
SF	Slotted set screw (Flat point)	
HS	Hexagon socket headless set screw	
OCW	Oval countersunk head wood screw	
CW	Countersunk head wood screw	
RW	Round head wood screw	

EXAMPLE





14. PACKING


Vinyl bag
RHL-018
Vinyl bag
RHL-031
Operating instructions
RRB-063
Vinly bag
RHL-019
Connection cord
RDE-010
Side pad
PHA-122
Cleaning kit
REA-014
Side pad
RHA-122
Packing case
RHG-158 (KU)
RHG-157 (KC)

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