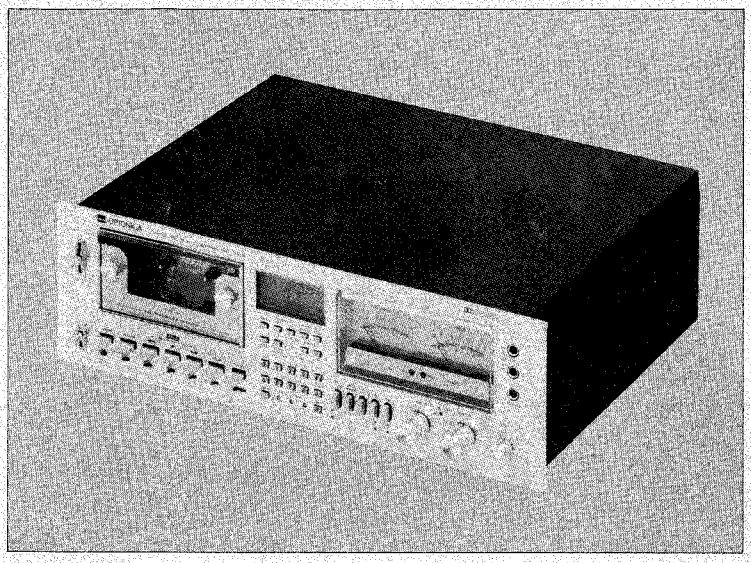
SHARP OPTONICA

SERVICE MANUAL

RT-3838HA
RT-3838HD



DOLBY SYSTEM ®

* "Dolby" and the "Double-D" symbols are trade mark of Dolby Laboratories.
* Manufactured under licence from Dolby Laboratories.

MODEL
RT-3838HA
(Silver Panel)
RT-3838HD
(Black Panel)

"In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used."

SPECIFICATIONS

Type:	4-track 2-channel stereo cassette tape recorder/player deck with built-in Dolby noise reduction system
Power source:	AC 110/220/240, 50/60 Hz
Power consumption:	18 Watts
Semi-conductors:	1-LSI (Large Scale Integrated Circuit) 5-IC (Integrated Circuit) 52-Transistor 29-Diode 2-LED (Light Emitting Diode)
Dimensions:	Width: 442 mm (17-3/8") Height: 144 mm (5-11/16") Depth: 357 mm (14-1/16")
Weight:	9 kg (19.9 lbs)
Tape:	Philips standard compact cassette tape
Wow & flutter	0.15% (DIN 45 500)
Frequency response:	30 ~ 13,000 Hz (DIN 45 500) (Use of normal tape) 30 ~ 16,000 Hz (DIN 45 500) (Use of Fe-Cr tape) 30 ~ 15,000 Hz (DIN 45 500) (Use of MAXELL UDXLII tape)
S/N ratio:	Better than 50dB (weighted), for normal Tape at LINE-IN, without Dolby Noise Reduction.
Dolby NR effect:	10 dB (at over 5kHz)
Input sensitivity and input impedance:	
Microphone	0.2 mV (6.8k ohms)
Line	50 mV (54k ohms)
Record/Playback Socket	0.1 mV (1k ohms)
Output level and loaded impedance:	
Headphones	89 mV ("0" VU), 8 ohm
Line	775 mV ("0" VU), 50k ohms
Record/Playback Socket	775 mV ("0" VU) 50k ohms

SHARP CORPORATION OSAKA, JAPAN

REMOVAL OF THE BOTTOM PLATE (See Figure 6)

Turn the set over and remove the three screws retaining the bottom plate. It is then possible to detach the bottom plate.

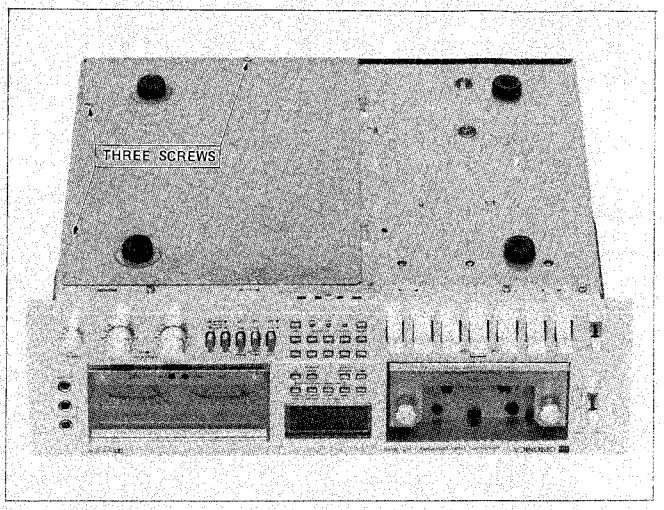


Figure 6

REMOVAL OF THE FRONT PANEL, VU METER AND CONTROL UNIT (See Figure 7 to 14)

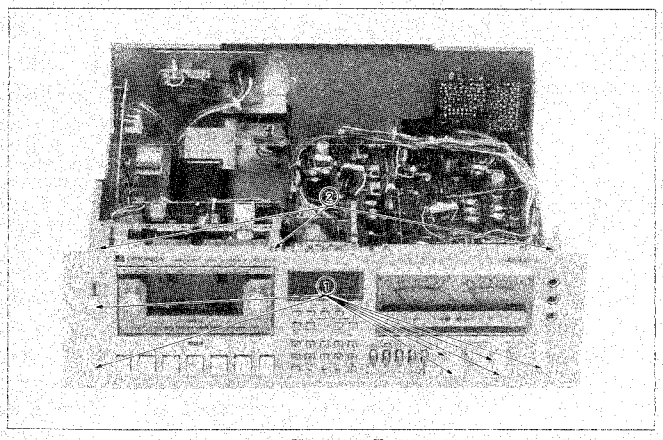


Figure 7

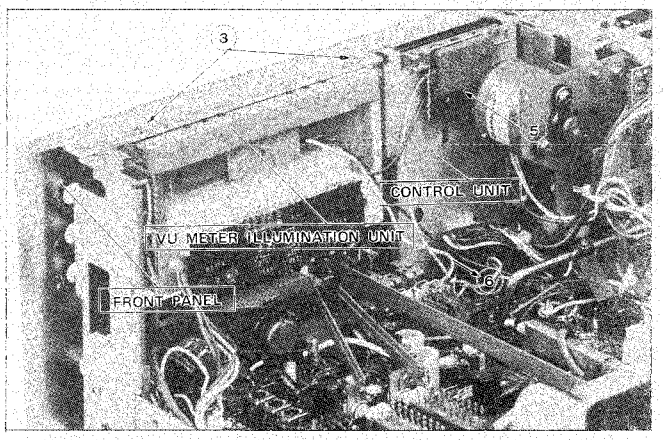


Figure 9

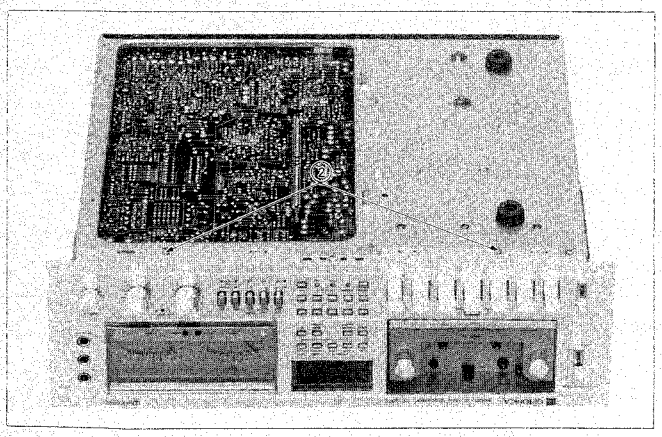


Figure 8

① Pull out the seven knobs in total — the power switch knob (x1), editor switch knob (x1), line record level control knobs (x2), microphone record level control knobs (x2) and output level control knob (x1).

② Remove the five screws retaining the front panel and it is then possible to detach the control unit and VU meter unit together with the front panel (See Figure 7 and 8).

③ Remove the two screws retaining the VU meter illumination unit and it is then possible to detach the meter illumination unit from the front panel.

BLOCK DIAGRAM

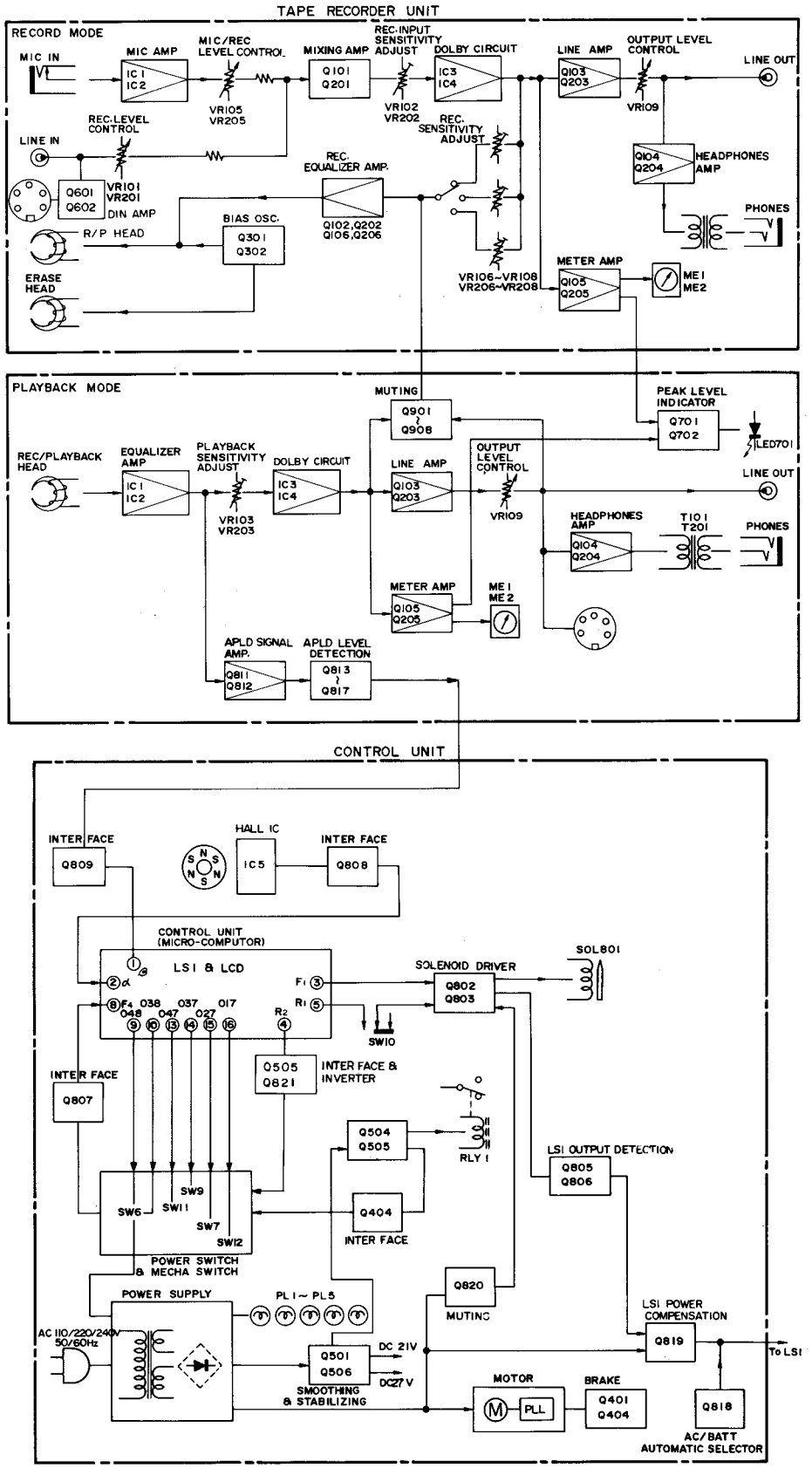


Figure 1

DISASSEMBLY

TO THE PERSONS IN CHARGE OF TROUBLE SHOOTING

Since this control unit (DUNTZ0285AF01) requires, when disassembled for the repairs, a very complicated, accurate technique and special instruments it is preferred for you not to engage in repairing it. Should the control unit get in trouble, please contact the Sharp Service Center, therefore.

In addition, avoid touching the adjusting holes located at the rear of the control unit, or the oscillation frequency will vary resulting in an increase of time error.

Note: Prior to disassembling the set, be sure to disconnect the power supply plug from a wall outlet. Further, remove all the connection cords located at the rear of the set and take the cassette out of cassette door.

For EX only

REMOVAL OF THE CABINET (See Figure 2 to 5)

Remove the eight screws retaining the side plate. (four each for the right and left of it)

Remove the two screws retaining the cabinet (one each for the right and left of it) and it is then possible to detach the cabinet.

For SEEG-SUK-SCA

REMOVAL OF THE CABINET (See Figure 4 and 5)

Remove the ten screws retaining the cabinet (five each for the right and left of it) and it is then possible to detach the cabinet.

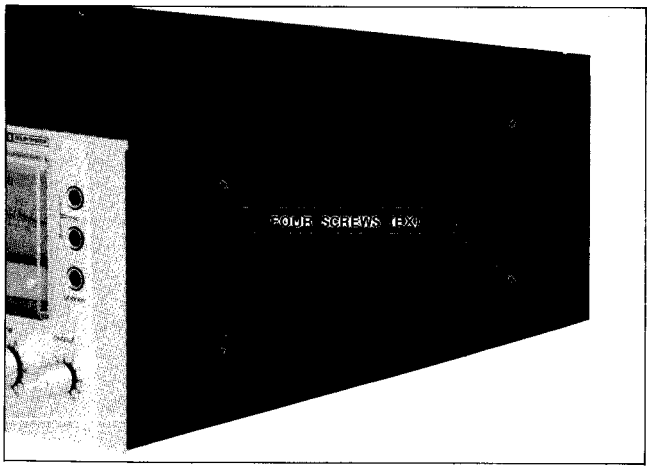


Figure 2

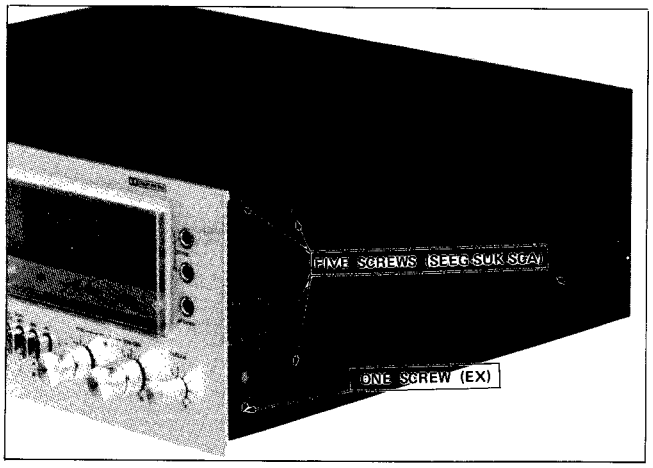


Figure 3

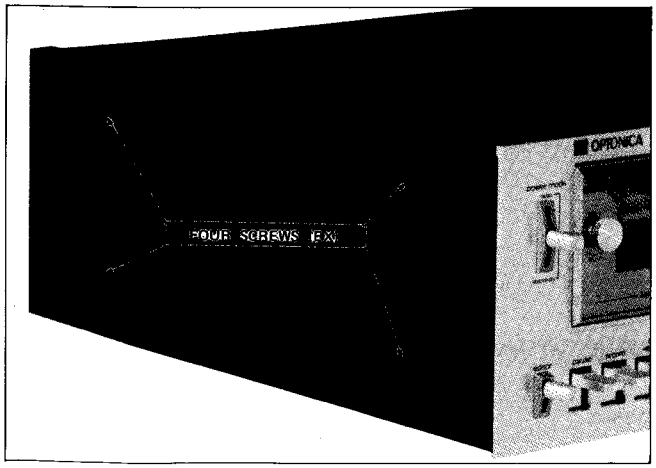


Figure 4

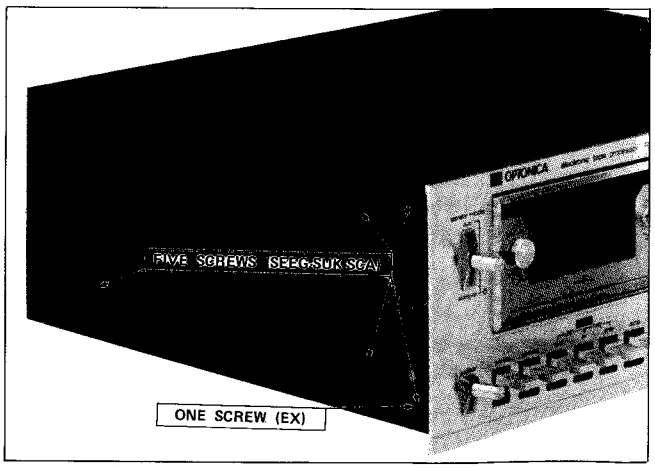


Figure 5

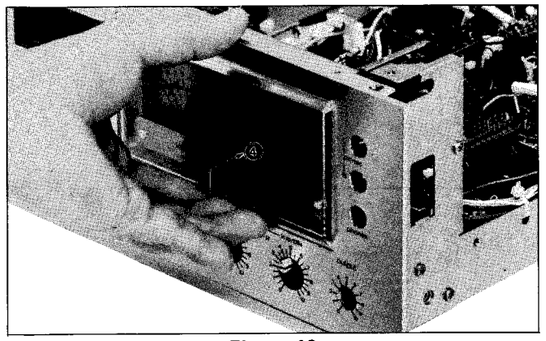


Figure 10

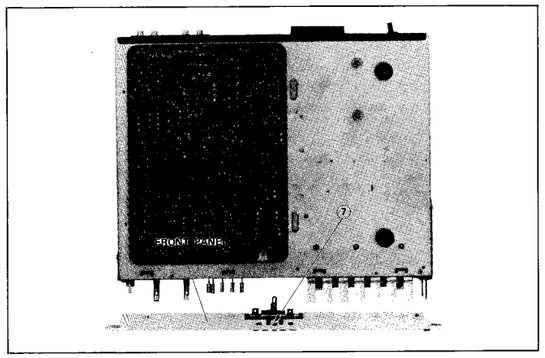


Figure 11

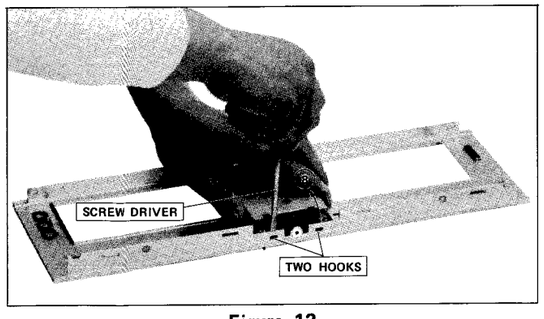


Figure 12

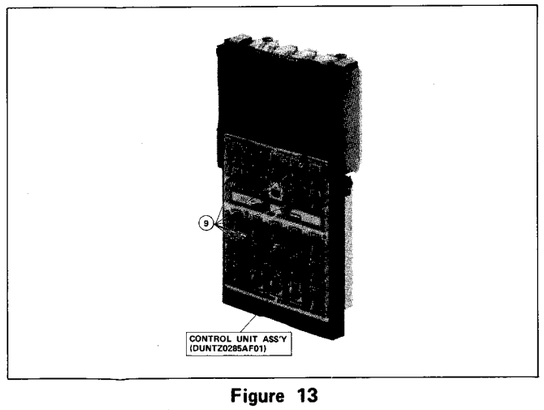


Figure 13

④ Hold a lower part of the VU meter to push it toward the inside of the set and it is then possible to detach the VU meter from the front panel.

⑤ Remove the one screw retaining the LCD illumination P.W.B. to the control unit and it is then possible to detach the P.W.B. from the control unit (See Figure 9).

⑥ Withdraw backward the flat cable connected to the control unit. (See Figure 9).
As a result, it becomes allowed to remove the front panel but in this case the control unit is still being attached to the front panel.

⑦ Remove the one screw retaining the control unit at a lower part of the front panel.

⑧ Turn the front panel over and use a screwdriver to lightly bend the two hooks provided at a lower part of the control unit. (If the hooks are given a strong force, they may be broken.)
Besides, there is an adhesive tape applied between the control unit and the front panel and detach them from each other by carefully removing the tape. In this way, the control unit and the front panel are separated from each other completely.

⑨ Remove the six screws retaining the control unit and it is then possible to detach the Key-block (JKNBZ 1330CCMM) from the control unit.

As to the control unit thus removed, since it includes C-MOS LSI which is not so resistive to static electricity and noise, be sure to cover its 16-pin terminals at its lower part with an aluminum foil for the purpose of storage.

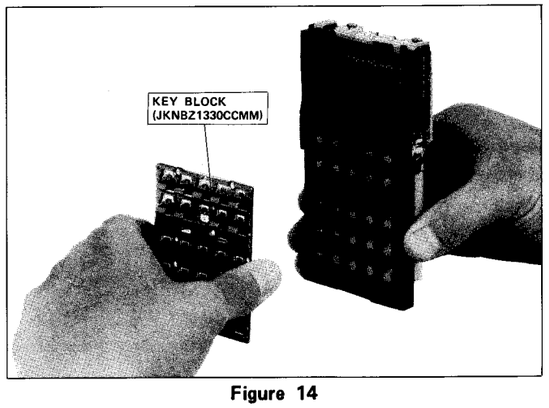
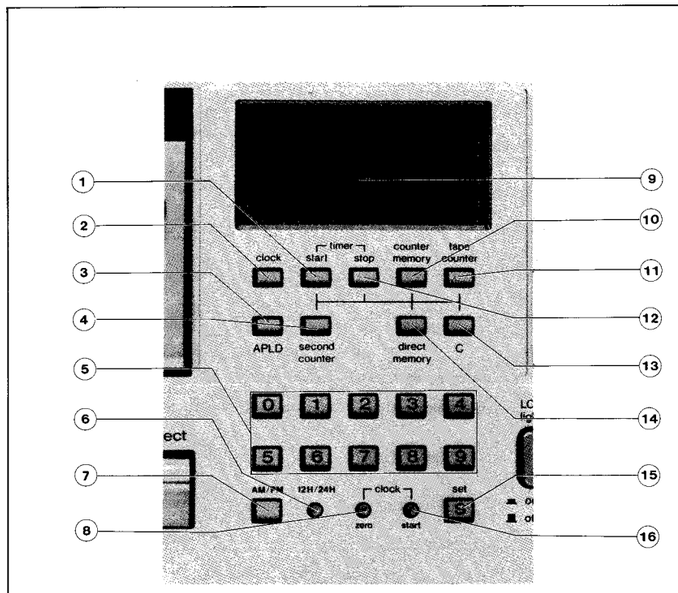


Figure 14

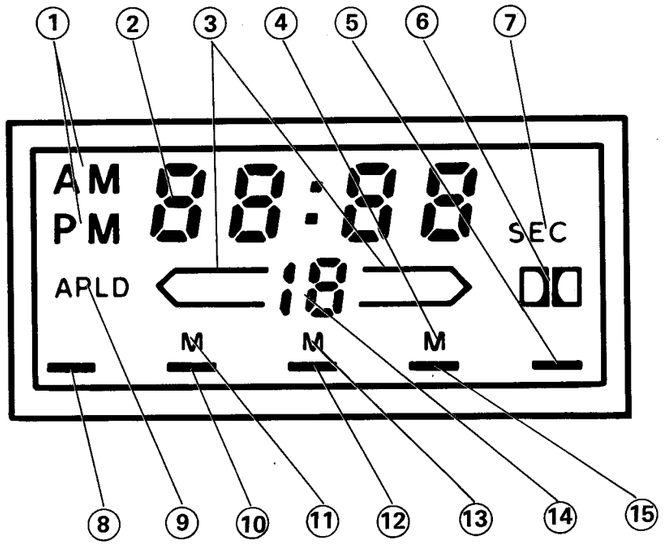
CONTROL UNIT LAY OUT



① Timer Start Key
② Clock Key
③ APLD Key
④ Second Counter Key
⑤ Number Input Key
⑥ 12/24-Hour Display Key
⑦ AM/PM Display Key
⑧ Clock Zero Key
⑨ LCD (See Figure 16).
⑩ Counter Memory Key
⑪ Tape Counter Key
⑫ Timer Stop Key
⑬ Clear Key
⑭ Direct Memory Key
⑮ Set Key
⑯ Clock Start Key

Figure 15

LCD LAY OUT



① AM/PM Indicator
② Time of Day/Tape Counter/Second Counter
③ Tape Running Indicators
④ Counter Memory Indicator
⑤ Tape Counter Mode Indicator
⑥ Dolby NR Indicator
⑦ Second Counter Mode Indicator
⑧ Clock Mode Indicator
⑨ APLD Function Indicator
⑩ Timer Start Mode Indicator
⑪ Timer Start Memory Indicator
⑫ Timer Stop Mode Indicator
⑬ Timer Stop Memory Indicator
⑭ APLD Number Indicator
⑮ Counter Memory Mode Indicator

Figure 16

CHECKING OF THE CONTROL UNIT

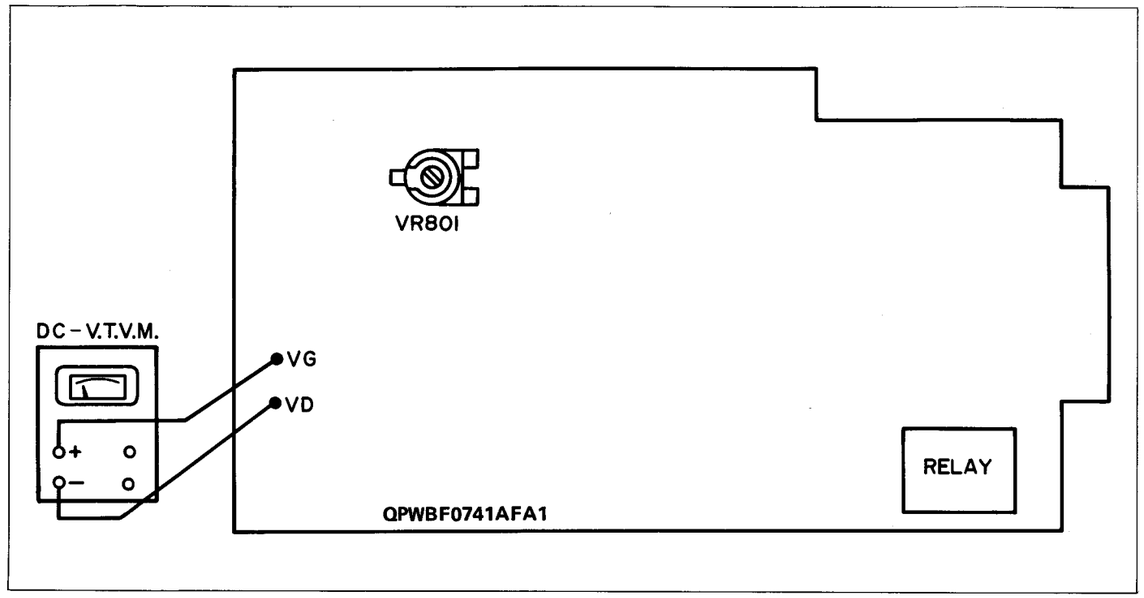


Figure 17

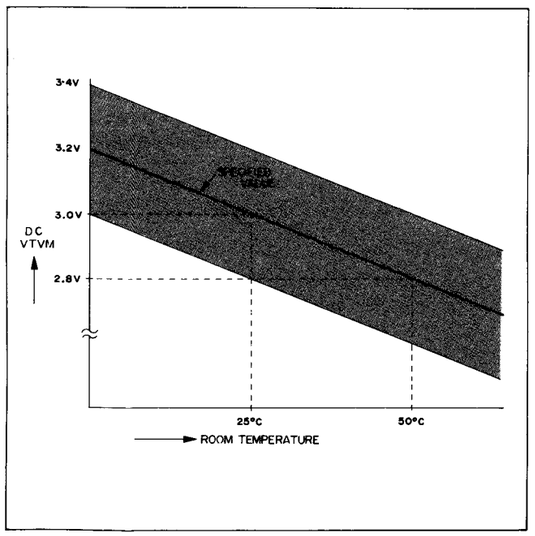


Figure 18

1. Prior to replacement of the control unit, be sure to check for its power supply source after disconnecting the flat cable. Insert the power supply plug into a wall outlet and use a DC-VTVM to measure a voltage between the terminals VG and VD of the power P.W.B. (QPWBF 0741AFA1). (See Figure 17)
   At the time make sure that the DC-VTVM is within the indication in Figure 18.
   (Figure 18 shows the relation between the room temperature (in the horizontal axis) and the voltage amount indicated by the VTVM (in the vertical axis). Referring to the figure, check that the measured voltage is within ± 0.2 V of the specified value.)
2. If the measured voltage is found to be beyond ± 0.2 V of the specified value, turn the LSI voltage Adjust Control (VR801) located at the power P.W.B. to adjust so that the DC-VTVM will read the specified value.
3. After taking the voltage adjustment in the steps 1 and 2 above, next proceed with the performance check for the control unit according to the "Performance Test Program" in the Tables 4 and 5. The Tables 4 and 5 are carried on the pages 33 to 36).
   If both the control unit and the set (RT-3838HA/HD) are found to meet the requirements in the "Performance Test Program", the remedial operation can be said to have been finished. However, there is something troublesome found as a result of the above operation, it becomes necessary to further located whether such trouble(s) lies in the control unit or other parts in the set.

4. Make a normal set (RT-3838HA/HD) be available in your hands. From this set remove the control unit according to the procedures stated in the "Disassembly" in the pages 3 to 5. (This normal set is to be used as a checker.)
5. Remove the control unit from the set which seems to have got in trouble, in the same manner as in the step 4 above.
6. Attach the control unit which has been removed in the step 5, to the normal set whose control unit has been detached in the step 4. In this attachment of the control unit, it is necessary to use only the flat cable but not the screws.
7. Check for the control unit according to the "Performance Test Program" (Tables 4 and 5).
   (1) As a result of this check, if the checker-use set satisfies the requirements on the "Performance Check List", this means that the control unit is not in trouble but the set itself does so.
   (2) On the other hand, if the checker-use set doesn't meet some of the requirements in "Performance Test Program", this means that the control unit is in trouble. Therefore, replace the control unit with a new one.
8. In the case of the trouble stated in the step 7-(2) caused, attach a new control unit to the test set in the place of the defective control unit and make sure that the set can operate in compliance with the requirements in the "Performance Test Program". Then assemble them up taking the reverse procedures of those for the "Disassembly". The remedial operation is thus completed. In addition, as to the control unit once removed from the checker-use set, also assemble them up in the reverse steps of those for the "Disassembly".

CAUTIONS ON REPLACEMENT OF THE CONTROL UNIT

(1) Prior to the voltage checking in the steps 1 and 2 above, be sure to insert the power supply plug into a wall outlet after disconnecting the flat cable. If dry batteries are instead used as a power source, the DC-VTVM tends to always indicate the battery potential (about 3 V) and it can't vary even if the LSI voltage adjust control (VR801) is rotated.

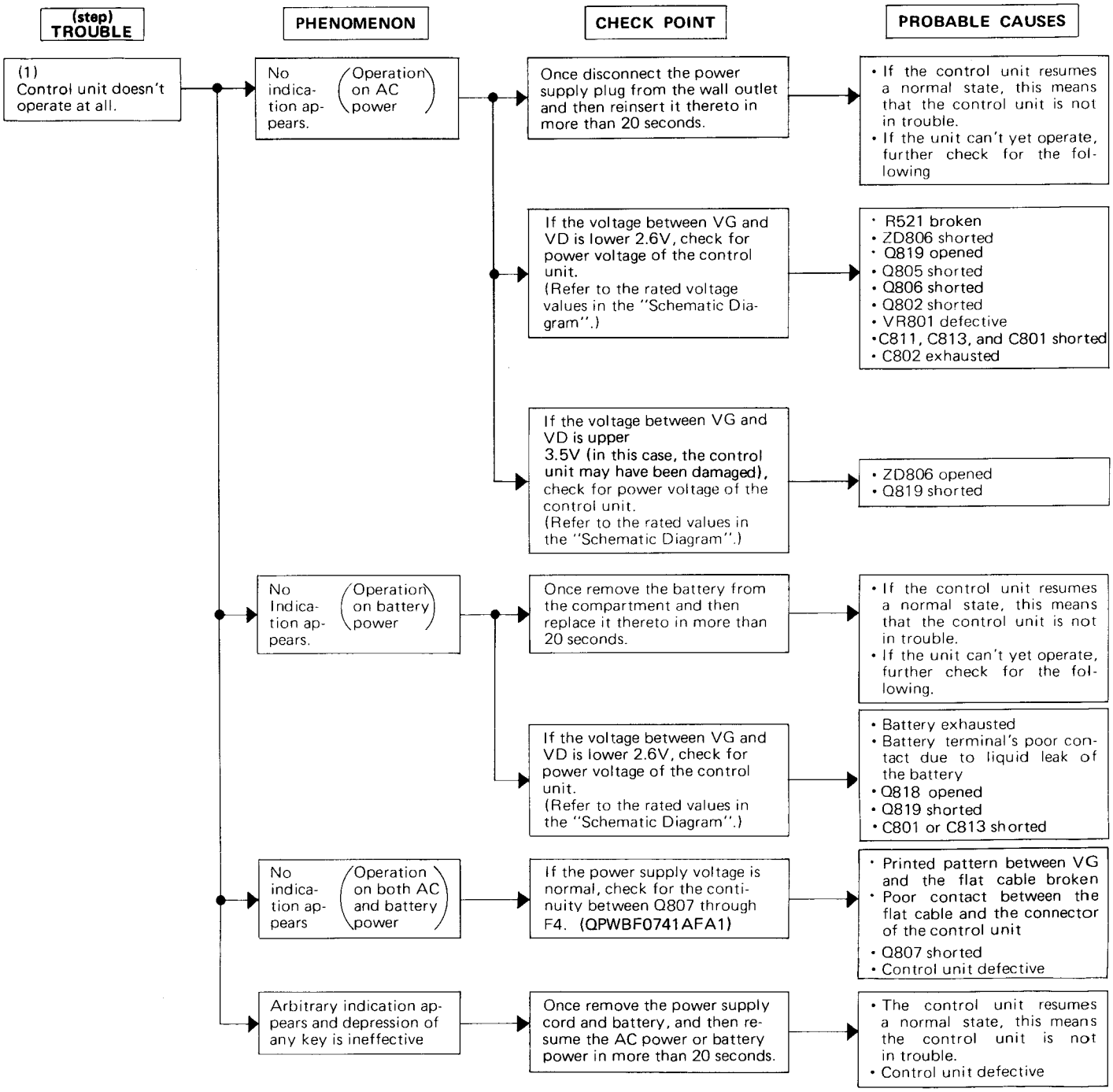
(2) With the power supply plug in connection (or with the battery placed), never attach the control unit to the set nor remove it, otherwise the control unit will be damaged.

(3) If a power supply to the control unit is cut for a short time (less than 20 seconds) — actually saying, if under the condition without battery the power supply plug is once unplugged from the receptacle and then replaced thereto in less than 20 seconds, the control unit displays such unusual phenomena that it doesn't indicate at all or indicates too unexpected values. But this doesn't means that the control unit is in trouble. If such occurs, wait for more than 20 seconds before inserting the power supply plug once withdrawn, into the wall outlet. Even in the case of the set operating on only the battery, also observe the above cautions — be sure to wait for more than 20 seconds before setting the battery once removed, in the compartment.

TROUBLE SHOOTING GUIDE

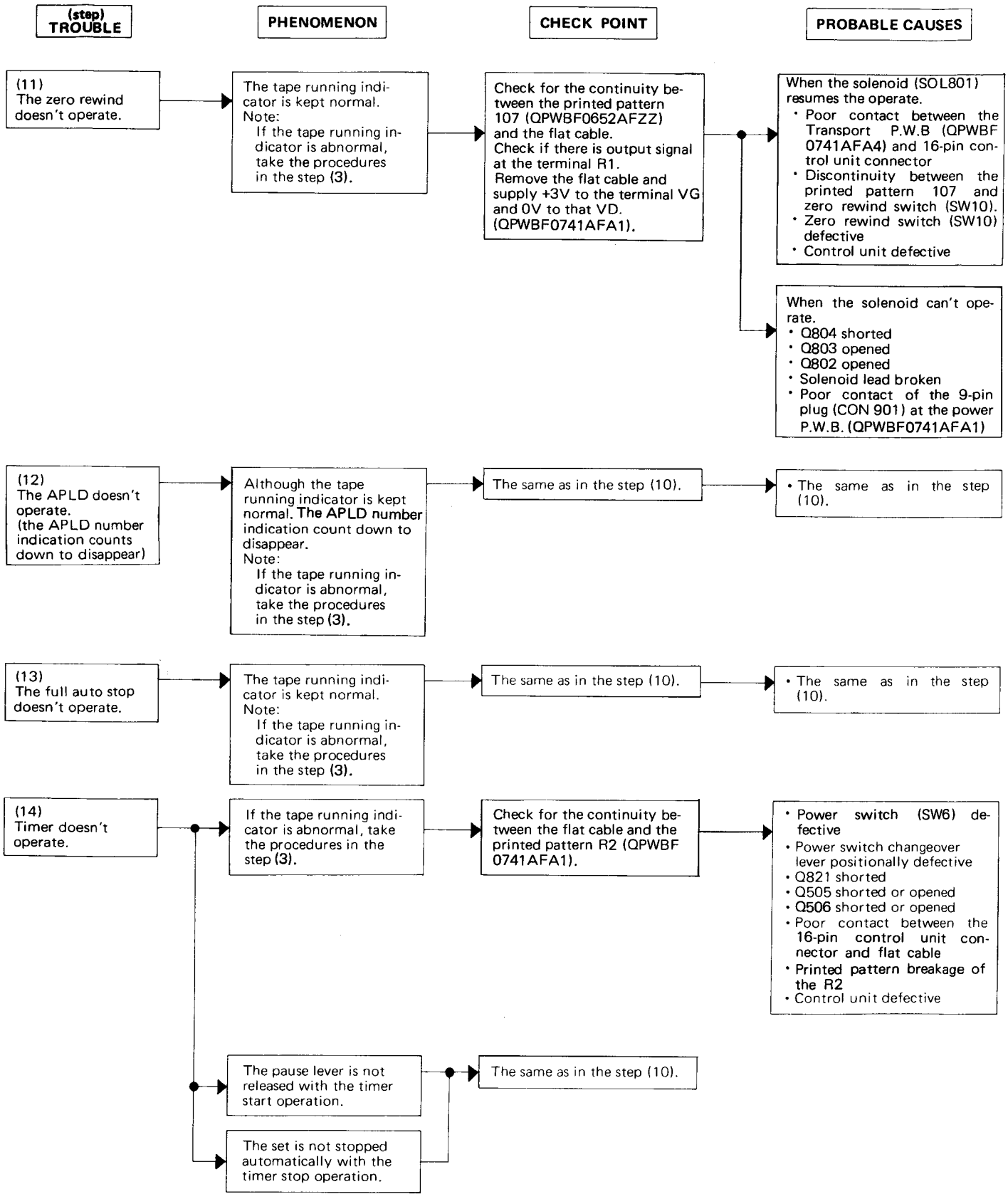
IMPORTANT KEY FOR THE TROUBLESHOOTING

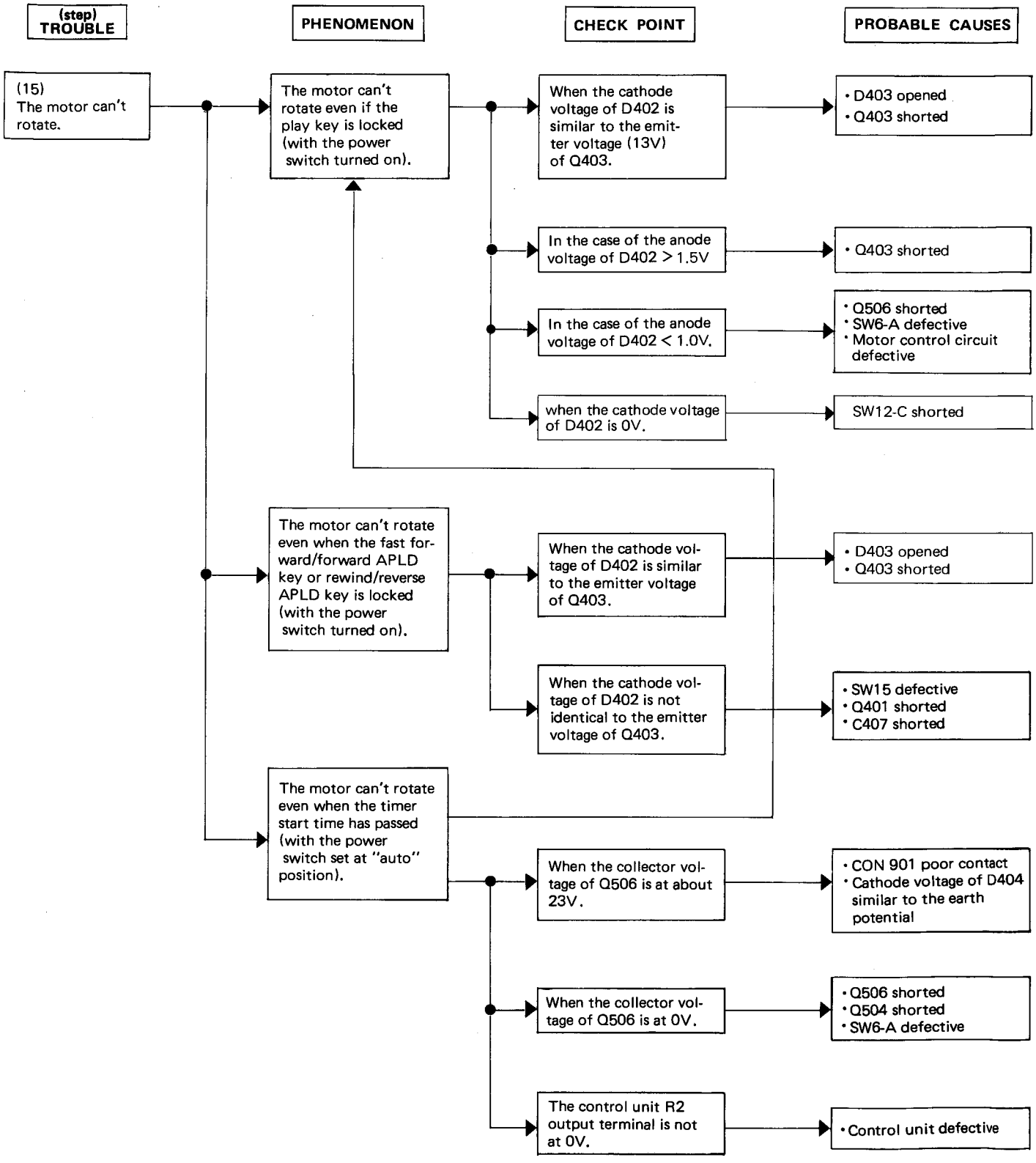
First of all, check whether the tape running indicators are normal or not and if there is something abnormal in them, this means that the entire of the set is not assured of its usual operation.

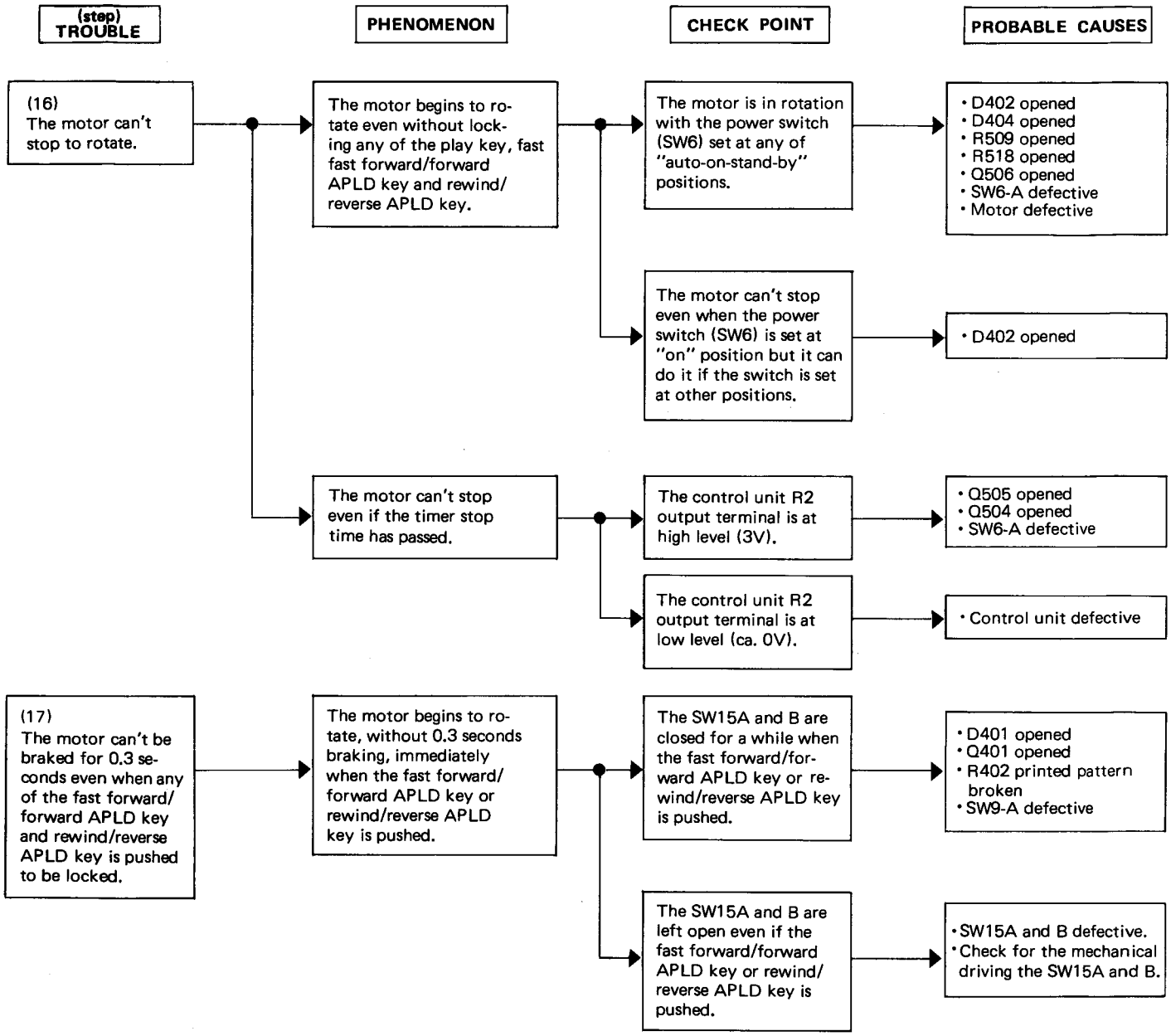


(step) TROUBLE	PHENOMENON	CHECK POINT	PROBABLE CAUSES
(2) Even if the power switch (SW6) is set to "on" from "stand-by", the time of day mode is not changed to the tape counter mode.		Check for the continuity among the power switch and the printed pattern O38 and O48. (QPWBF0741AFA2) Check for the continuity between F4 through Q807. (QPWBF0741AFA1)	• Imperfect changeover of the power switch (SW6) • Discontinuity between the printed patterns (O38, O48) of the power switch P.W.B. and the flat cable • Q807 opened • Control unit defective
(3) Tape running indicators don't operate.	No indication appears even if any of the mechanical keys (PLAY, REV, FWD, PAUSE) is pushed.	Check for the continuity between the mechanism PWB (QPWBF0732AFA1) and CON 401. Check for the continuity between the terminal F4 through Q807 (QPWBF0741AFA1)	• Q807 opened or shorted • Q404 shorted • D406 opened • D808 shorted • Poor contact between the 16-pin connector and flat cable • Mechanism transport plug (CON-401) defective • Control unit defective
	No "PLAY" indication appears even if the PLAY key is pushed.	Check for the continuity between SW12 and the flat cable through CON 401 (O17).	• Play Switch defective (SW12) • Poor contact of the mechanism transport plug (CON 401) • Poor contact between the 16-pin control unit connector and flat cable • Control unit defective
	No "FWD" (FWD, APLD) indication appears even if the FWD key is pushed.	Check for the continuity between SW9 and the flat cable through CON 401 (O17).	• Fast-forward/Forward APLD Switch defective (SW9) • Poor contact of the mechanism transport plug (CON 401) • Poor contact between the 16-pin control unit connector and flat cable • Control unit detective
	No "REV" (REV, APLD) indication appears even if the REV key is pushed.	Check for the continuity between SW11 and the flat cable through CON 401 (O37).	• Rewind/Reverse APLD Switch defective (SW11) • Poor contact of the mechanism transport plug (CON 401) • Poor contact between the 16-pin control unit connector and flat cable • Control unit defective
(4) Tape counter can't count up even if the tape counter mode.	Tape running indicators are normal. Note: If there is something abnormal in the tape running indicators, take the procedures in the step (3).	Check for the continuity between the Hall IC (IC-5) and the printed pattern (9p7). There is no change between low and high level of α terminal signal.	• Hall IC (IC-5) defective • Poor contact between the mechanism P.W.B. (QPWBF0732 AFA1) and 9 pin plug (CON 901) • Q808 shorted or opened
		There is a change between low and high levels of α terminal signal.	• The α pin printed pattern broken • Poor contact between the 16-pin control unit connector and flat cable. • Control unit defective

(step) TROUBLE	PHENOMENON	CHECK POINT	PROBABLE CAUSES
(5) APLD don't operate. (APLD number indication don't count down)	Both the tape running indicator and APLD function indicator are normal. Note: If there is something abnormal in tape running indicators, take the procedures in the step (3).	Check for the continuity between the APLD count pulse generator circuit through β input circuit. No high pusle appears at blank signal of β terminal.	• APLD blank signal detection circuit defective (during the equalizer amp. through Q817). • Q809 shorted or opened
		High pulse appears at blank signal of β terminal.	• Discontinuity between the β printed pattern on the power P.W.B. (QPWBF0741A FA1) and the flat cable • Poor contact of the 16-pin control unit connector and flat cable • Control unit defective
(6) Second counter can't count up even if the second counter mode.		No "PLAY" indication appears in the tape running indicators. Check for the continuity between SW7 through O27 (QPWBF0732AFA1). Take the procedures in the step (3).	• Pause Switch defective (SW7) • Poor contact between the flat. cable and mechanism transport plug (CON 401).
		The tape running indicators are normal.	• Poor contact between the 16-pin control unit connector and the flat cable • Control unit defective
(7) No correct number nor symbol appears when the key is pushed.	All keys can't be keyed in.	Take the procedures stated in the step (1).	
	Specially key can't be keyed in.		• Control unit defective • Keyblock defective
(8) No memory indicator "M" appears even if the S key is pushed under the mode of T·SA, T·SO, CM or D·IN.		Take the procedures stated in the step (2).	• Power switch (SW6) defective • Record/playback switch (SW1-P) defective • Poor changeover of the record/playback switch (SW1) • Control unit defective
(9) No Dolby NR indicator DD mark appears even if the Dolby NR switch (SW2) is turned on.		Check for the continuity between the Dolby NR switch (SW2) through O18.	• Dolby NR switch (SW2) defective • Poor contact between the 16-pin control unit connector and flat cable • Control unit defective
(10) Counter memory doesn't operate. (Direct memory doesn't operate.)	The plunger doesn't operate although the memory indication (M) disappears. The tape running indicator is kept normal Note: If the tape running indicator is abnormal, take the procedures in the step (3).	Check for the continuity between the printed pattern F1 and the flat cable. If there is output signal at the terminal F1, further check for the following (QPWBF0741AFA1)	• Poor contact between the flat cable and 16-pin control unit connector • Control unit defective • Q804 shorted • Q803 opened • Q802 opened • Solenoid broken (SOL801) • Poor contact of the 9-pin plug (CON 901) at the power P.W.B. (PWBF0741AFA1)


(step) TROUBLE
PHENOMENON
CHECK POINT
PROBABLE CAUSES
(11) The zero rewind doesn't operate.
The tape running indicator is kept normal. Note: If the tape running indicator is abnormal, take the procedures in the step (3).
Check for the continuity between the printed pattern 107 (QPWBF0652AFZZ) and the flat cable. Check if there is output signal at the terminal R1. Remove the flat cable and supply +3V to the terminal VG and 0V to that VD. (QPWBF0741AFA1).
When the solenoid (SOL801) resumes the operate.
• Poor contact between the Transport P.W.B (QPWBF 0741AFA4) and 16-pin control unit connector
• Discontinuity between the printed pattern 107 and zero rewind switch (SW10).
• Zero rewind switch (SW10) defective
• Control unit defective
When the solenoid can't operate.
• Q804 shorted
• Q803 opened
• Q802 opened
• Solenoid lead broken
• Poor contact of the 9-pin plug (CON 901) at the power P.W.B. (QPWBF0741AFA1)
(12) The APLD doesn't operate. (the APLD number indication counts down to disappear)
Although the tape running indicator is kept normal. The APLD number indication count down to disappear. Note: If the tape running indicator is abnormal, take the procedures in the step (3).
The same as in the step (10).
• The same as in the step (10).
(13) The full auto stop doesn't operate.
The tape running indicator is kept normal. Note: If the tape running indicator is abnormal, take the procedures in the step (3).
The same as in the step (10).
• The same as in the step (10).
(14) Timer doesn't operate.
If the tape running indicator is abnormal, take the procedures in the step (3).
Check for the continuity between the flat cable and the printed pattern R2 (QPWBF 0741AFA1).
• Power switch (SW6) defective
• Power switch changeover lever positionally defective
• Q821 shorted
• Q505 shorted or opened
• Q506 shorted or opened
• Poor contact between the 16-pin control unit connector and flat cable
• Printed pattern breakage of the R2
• Control unit defective
The pause lever is not released with the timer start operation.
The set is not stopped automatically with the timer stop operation.
The same as in the step (10).


(step)
TROUBLE
PHENOMENON
CHECK POINT
PROBABLE CAUSES
(15)
The motor can't rotate.
The motor can't rotate even if the play key is locked (with the power switch turned on).
When the cathode voltage of D402 is similar to the emitter voltage (13V) of Q403.
• D403 opened
• Q403 shorted
In the case of the anode voltage of D402 > 1.5V
• Q403 shorted
In the case of the anode voltage of D402 < 1.0V.
• Q506 shorted
• SW6-A defective
• Motor control circuit defective
when the cathode voltage of D402 is 0V.
SW12-C shorted
The motor can't rotate even when the fast forward/forward APLD key or rewind/reverse APLD key is locked (with the power switch turned on).
When the cathode voltage of D402 is similar to the emitter voltage of Q403.
• D403 opened
• Q403 shorted
When the cathode voltage of D402 is not identical to the emitter voltage of Q403.
• SW15 defective
• Q401 shorted
• C407 shorted
The motor can't rotate even when the timer start time has passed (with the power switch set at "auto" position).
When the collector voltage of Q506 is at about 23V.
• CON 901 poor contact
• Cathode voltage of D404 similar to the earth potential
When the collector voltage of Q506 is at 0V.
• Q506 shorted
• Q504 shorted
• SW6-A defective
The control unit R2 output terminal is not at 0V.
• Control unit defective


(step)
TROUBLE
PHENOMENON
CHECK POINT
PROBABLE CAUSES
(16)
The motor can't stop to rotate.
The motor begins to rotate even without locking any of the play key, fast fast forward/forward APLD key and rewind/reverse APLD key.
The motor is in rotation with the power switch (SW6) set at any of "auto-on-stand-by" positions.
• D402 opened
• D404 opened
• R509 opened
• R518 opened
• Q506 opened
• SW6-A defective
• Motor defective
The motor can't stop even when the power switch (SW6) is set at "on" position but it can do it if the switch is set at other positions.
• D402 opened
The motor can't stop even if the timer stop time has passed.
The control unit R2 output terminal is at high level (3V).
• Q505 opened
• Q504 opened
• SW6-A defective
The control unit R2 output terminal is at low level (ca. 0V).
• Control unit defective
(17)
The motor can't be braked for 0.3 seconds even when any of the fast forward/forward APLD key and rewind/reverse APLD key is pushed to be locked.
The motor begins to rotate, without 0.3 seconds braking, immediately when the fast forward/forward APLD key or rewind/reverse APLD key is pushed.
The SW15A and B are closed for a while when the fast forward/forward APLD key or rewind/reverse APLD key is pushed.
• D401 opened
• Q401 opened
• R402 printed pattern broken
• SW9-A defective
The SW15A and B are left open even if the fast forward/forward APLD key or rewind/reverse APLD key is pushed.
• SW15A and B defective.
• Check for the mechanical driving the SW15A and B.

CIRCUIT DESCRIPTION

■ OUTLINE **(See Figure 19)**

The motor rotation is based on PLL (Phase Locked Loop) system by which a frequency caused by the frequency generator is phase-compared with a reference frequency (frequency-divided) produced by the crystal oscillator (X-TAL) so that the motor's rotation is locked in phase to such reference frequency: the effect of this facility is to permit the motor to display a stabilized rotation always. As a result of employment of the PLL system, the rotation of motor far less suffers load variation, temperature drift and voltage fluctuation, resulting in that the tape speed is much more stabilized.

When the fast forward/forward APLD key or rewind/reverse APLD key is pushed, it is so designed that the motor is left in a stop electrically for 0.3 second at least thereafter. This is for the purpose to prevent the LCD (Liquid Crystal Display) and the cassette tape from mutually dislocating in their timing when any of the mechanical keys has been pushed.

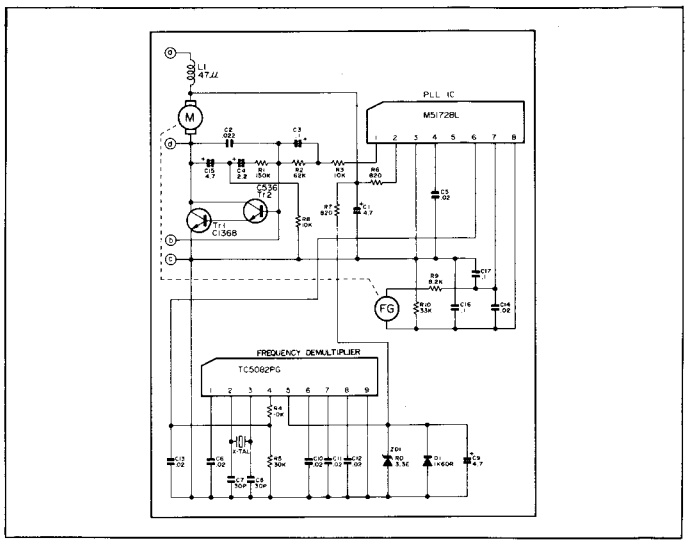


Figure 19

Note:

The PLL servo motor consists of motor control P.W.B and motor and these two are considered a pair (RMOTP0051AFZZ).

This assembly is composed by the following parts:

IC (PLL-IC), transistors (Tr 1, Tr 2), diode (D1), zener diode (ZD1), coil (L1), capacitors (C1 to C17), resistors (R1 to R10) and motor.

And these parts are not available for the servicing.

■ MOTOR CONTROL CIRCUIT(See Figure **20 and 23)**

The motor is stopped by the way that the anode voltage of the diode (D402) is decreased to the earth potential (ca. 0.6V) through the switches (SW9–A and SW12–C): the result is to stop a power supply to the motor. On the other hand, the motor can start to rotate when the diode (D402) is reverse-biased.

* **In the case of the power switch (SW6) being at "stand-by" position:**

When the power switch (SW6) is at " stand-by" position, the base voltage of the transistor (Q506) remains at high level, and therefore the transistor (Q506) is turned on and the diode (D404) is forward-biased; the result is that the keeping the motor in a stop.

* **In the case of the power switch (SW6) being set at "on" position:**

When the power switch is set at "on" position, the base voltage of transistor (Q506) becomes to the earth potential, and therefore the transistor (Q506) is turned off and the diode (D404) is reverse-biased so that the motor can start to rotate.

Now assume that the play key is pushed to be locked. Then the play switch (SW12-C) is turned off to make the diode (D402) be reverse-biased:

the result is that the motor can begin to rotate.

Then suppose that the Fast Forward/Forward APLD key or Rewind/Reverse APLD key is pushed to be locked. Then the switch (SW9-A) is electrically coupled to the collector of the transistor (Q401) the base voltage of which has been at the earth potential, so that the transistor (Q401) is turned off and the diode (D402) is reverse-biased: the result is that the base enabling rotation of the motor.

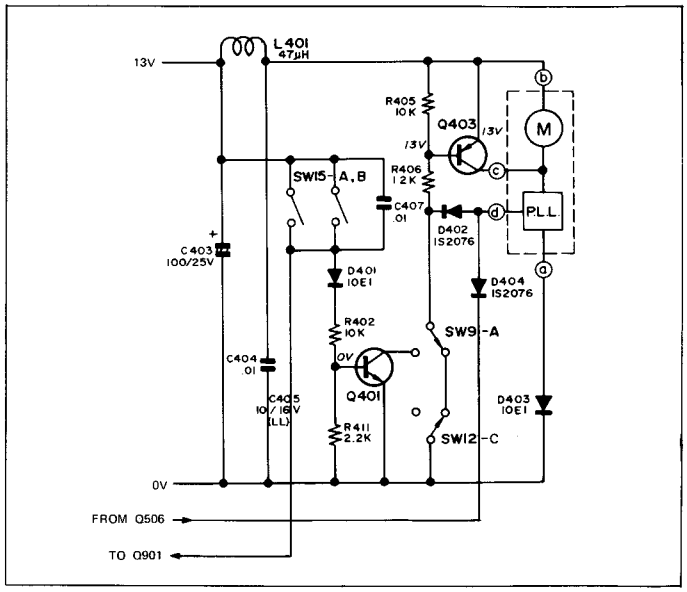


Figure 20

* **In the case of the power switch (SW6) being set at " auto" position:**

The circuit behavior in this case is the same as in the case of the power switch being set at "on" position.

During the time where the timer start operation at stand-by condition, since the R2 output terminal of the control unit is at high level, the transistors (Q505 and 504) are turned on so as to also turn on the transistor (Q506) with the assistance by the switch (SW6-A). Accordingly, the diode (D404) is forward-biased; resulting in that the motor is kept in a stop.

Meanwhile, when the start function gets alive, the R2 output terminal of the control unit becomes low level so that the transistors (Q505 and Q504) are turned off to also turn off the transistor (Q506) with the assistance by the switch (SW6-A). As a result, the diode (D404) is reverse-biased; enabling rotation of the motor. Speaking of the timer stop operation at stand-by condition behavior is exactly reverse to that for the timer start operation at stand-by condition.

■ BRAKE CIRCUIT (See Figure 21)

The most important element of the brake circuit is the brake/ muting switch (SW15) which is electrically interlocked with the mechanical keys (Play/Fast-Forward-Forward APLD/Rewind-Reverse APLD). When any of the mechanical keys is pushed, the switch (SW15) is turned on for an instant until such a key has been completely locked. With the transistor (Q401) turned on, the transistor (Q403) is turned on, making absorption of the counter electromotive force to apply a brake to the motor.

tant assured by this capacitor and resistors (R402 and R411), permitting the transistor (Q401) to be turned on for 0.3 seconds at least. With the transistor (Q401) turned on, the transistor (Q402) is turned off and simultaneously the transistor (Q403) is turned on, making absorption of the counter electromotive force to apply a brake to the motor.

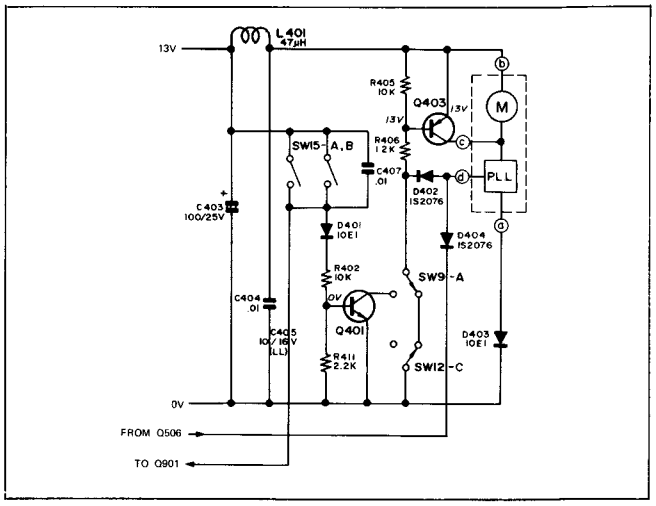


Figure 21

■ DECK POWER CONTROL AND RELAY DRIVE CIRCUIT (See Figures 22 and Figure 23)

The relay circuit consists of transistors (Q821, Q505, Q506 and Q504). When the power switch (SW6) is set to "auto" position, the output at the R2 output terminal, coming from the control unit, maintains the earth potential so that the transistor (Q821) is turned off, the transistor (Q505) turned on, the transistor (Q506) is turned off and the transistor (Q504) is turned on so as to have the relay (RLY1) be in a operate; this results in that an AC power is supplied to the Lamps (Cassette Chamber Lamp and VU Meter Illumination Lamp). When the power switch (SW6) is set to "on" position, the potential at the power switch (SW6-A) drops to the earth voltage and so the transistor (Q506) is turned off, the transistor (Q504) is turned on so as to have the relay (RLY1) be in a operate.

Meanwhile, when the power switch (SW6) is set to "stand-by" position, a power of 26.5V is supplyed to the power switch (SW6-A) and the transistor (Q504) is turned off so as to have the relay (RLY1) be in a stop; so that no AC power will be applyed to the Lamps (Cassette Chamber Lamp and VU meter Illumination lamp).

The deck power control, composed of transistor (Q505) and power switch (SW6-A), is to detect whether a power supply to the deck is present at the "stand-by" mode. The power switch (SW6-A) and transistor (Q506) are to judge whether a power supply to the amplifier circuit is present at the "stand-by", "on" or "auto" mode. Next is how it is judged whether a power supply to the amplifier circuit is present with the power switch being placed at either "stand-by", "on" or "auto" position.

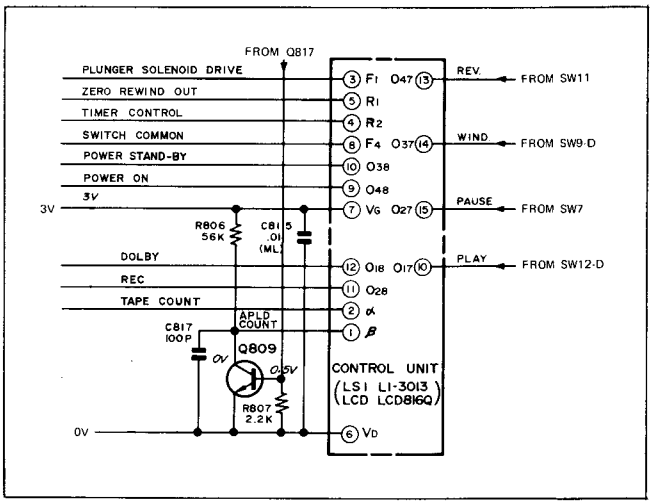


Figure 22

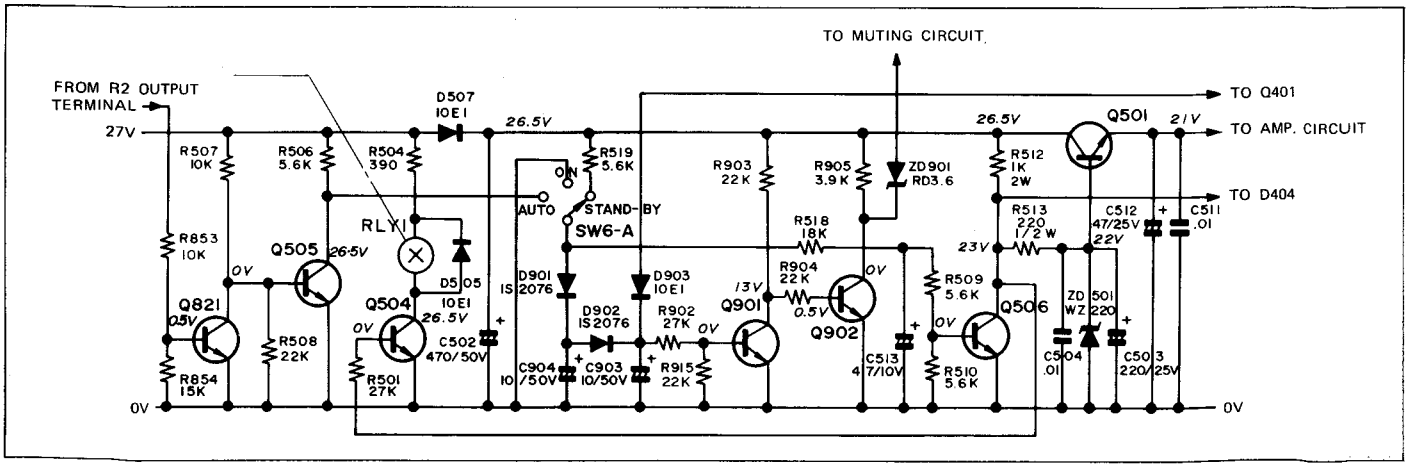


Figure 23

* **Where the power switch (SW6) is set to "stand-by"**
  A power of 27V is applied through the diodes (D501 to D504) to the power switch (SW6-A) so that the transistor (Q506) is turned on. As a result, the base current of the regulated power transistor is cut off and the transistor (Q501) is turned off so that no power is transferred to the amplifier circuit.
* **Where the power switch (SW6) is set to "on"**
  The potential at the power switch (SW6A) drops to the earth voltage and so the transistor (506) is turned off Therefore, a current runs via the resistors (R512 and R513) in the constant voltage transistor (Q501) which will be turned on. It is thus allowed for a +21V regulated power to be applied to the amplifier circuit.

* **Where the power switch (SW6) is set to " auto "**
  As the timer stop it operation, there is a potential of 2.5 V to 3.0 V present at the R2 output terminal of the control unit so that the transistor (Q821) is kept on. This results in that a power of 26.5 V is supplied to the power switch (SW6-A) and the transistor (Q506) is turned on and no power to the amplifier circuit As the timer start it operation, there appears an earth potential at the R2 output terminal of the control unit so as to make the transistor (Q821) be turned off. Subsequently the earth potential is applied to the power switch (SW6-A) and the transistor (Q506) is turned off, so that a regulated power is supplied to the amplifier circuit through the same process as with the power switch (SW6-A) set to "on" position.

■ TAPE COUNT PULSE GENERATOR CIRCUIT (See Figure 24)

Tape count pulses are produced by the way that the ring magnet which rotates synchronizing with the running of a cassette tape converts the motion of the tape into electrical pulses, with the assistance by the Hall IC (IC5); three pulses are produced each time the take-up turntable makes one rotation.

The pulse available in the Hall IC (IC5) is different from the input to the LSI inside the control unit is terms of their level and in order to make their level be the same, it becomes necessary to employ an interface circuit: this purpose is met by the transistor (Q808). The tape count pulse is applied to the transistor (Q808) where it is subjected to the level conversion and it is then supplied to the α input terminal ② of the control unit to be 1/5 frequency-divided, so that it appears as figure on the LCD (Liquid Crystal Display).

Besides, the full-auto stop circuit also utilizes the tape count pulse in such a way that: If a supply of the pulses to the α input terminal ② discontinues for 3 seconds or more, auto-stop signal develops at the F1 output terminal ③ of the control unit.

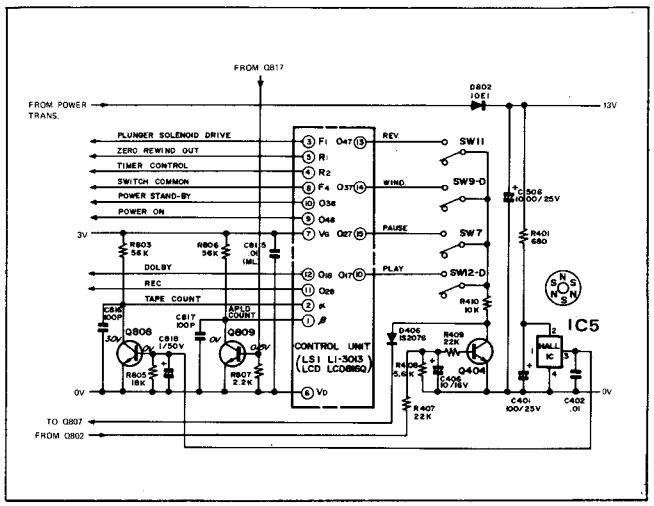


Figure 24

■ APLD COUNT PULSE GENERATOR CIRCUIT (See Figure 25)

This generator circuit consists of transistors (Q811 to Q817). APLD program space pulse developed at the transistor Q817 is applied to the β input terminal of the control unit through the intermediate between them, say, the interface transistor (Q809) which carries out the level conversion. The pulses thus applied to the β input terminal are coupled by the LSI inside the control unit: it is a count-down method by which the program having been designated by the use of the number input keys (0 to 9) are counted down from one to another. After the counting has been completed, the APLD output coming out of the F1 output terminal of the control unit is passed on through the transistor (Q803) to the solenoid (SOL 801) which can thus begin to operate.

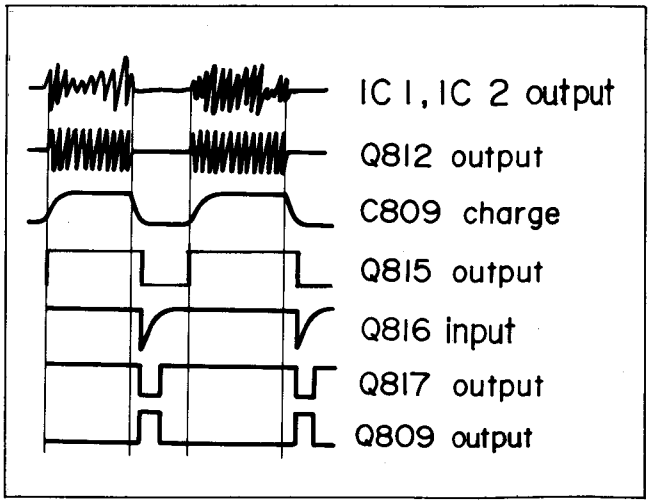


Figure 25

■ PLUNGER DRIVE CIRCUIT (See Figure 26)

The plunger drive circuit is composed of transistors and plunger and it is energized by various pulses which are available at the F1 output terminal and R1 output terminal of the control unit —— [there appear four function pulses say counter memory auto-stop, APLD and pause cancel (at the timer start mode) pulses at the F1 output terminal while zero rewind pulse at the R1 output terminal.].

If there develop positive pulses (+2.5V to +3V, 100mS to 200mS) at the said F1 output terminal or R1 output terminal of the control unit, the transistor (Q803 and Q802) is turned on to initiate the solenoid (SOL801). With the plunger in action, the mechanical key, according to the sorts of the pulses, begins to return to its original position.

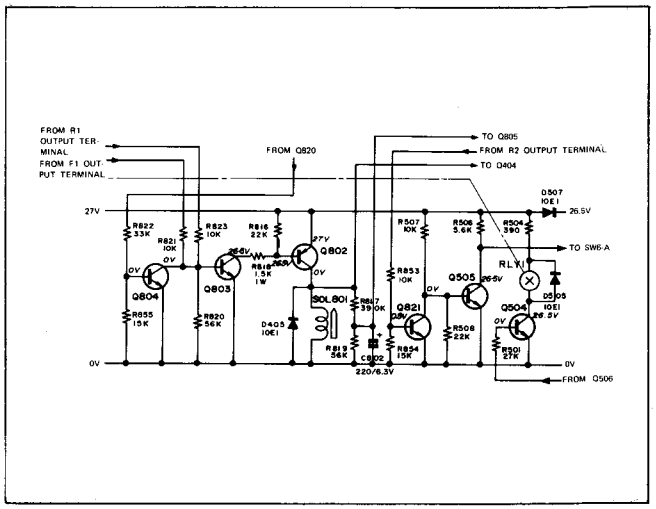


Figure 26

■ CONTROL UNIT POWER SUPPLY CIRCUIT (See Figure 27 and 28)

The control unit power supply circuit consists of a power regulated circuit (for the AC operation) which includes DC power supply circuit and temperature compensation facility (transistor Q819 and zener diode ZD806) and automatic changeover-to-battery operation transistor Q818 (to meet an AC power failure).

When the set is operated on AC power, a power of 13V is voltage-divided by the resistors (R849 and R850) to become 5.9 V and it is then applied to the base of the transistor (Q 818) so that the transistor (Q818) becomes turned off. Besides, a power of 13V is regulated in its potential by the resistor (R848) and zener diode (ZD806) and it is applied to the transistor (Q819) which is thus turned on; finally a power of approx. 3V is supplied via the transistor (Q819) to the VG terminal of the control unit.

If a power failure occurs during AC operation, a power supply of 13V is stopped and the transistor (Q818) is turned on, but, however, a battery power (DC3V) is, in turn, arisen to be applied to the VG terminal of the control unit. As seen from the foregoing, a power supply (DC3V) to the control unit is always present whether the set is operated on AC or DC power and even at the time of AC power failure.

The transistor (Q819) serves to change the supply voltage to the control unit as shown in Figure 18. This is for the purpose to make the LCD in the control unit visible normally always regardless of a temperature fluctuation in the room.

In effect, when the room temperature is lower, the LCD response speed may be inferior and in this case, the voltage is a little raised by the Thermistor (THI) to compensate for such a speed reduction.

On the other hand, a higher temperature of the room would cause even unnecessary segments of the LCD to light up but this can be eliminated by the same thermistor which tends then to lower the voltage.

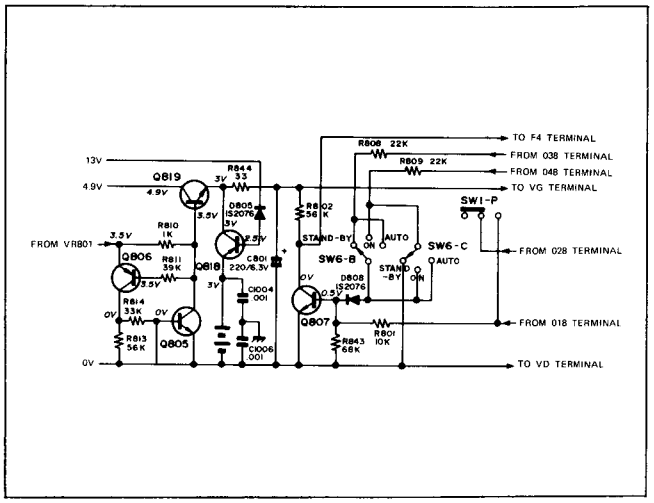


Figure 27

■ OUTPUT PROTECTOR CIRCUIT (See Figure 28)

The output protector circuit comprises transistors (Q804 and Q820) and it is designed to work for about 10 seconds after connecting the power supply cord to a wall outlet so that it prevents the outputs available at the F1, R1 and R2 output terminals of the control unit from being coupled to the plunger drive circuit.

When connecting the power supply cord to a wall outlet, a

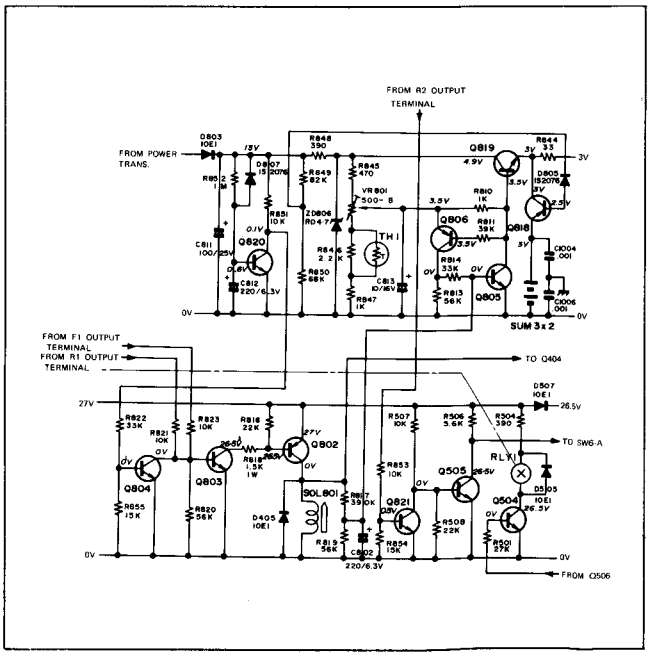


Figure 28

power supply of 13V is applied to the transistor (Q820) and in this connection, it is designed for this transistor to be kept off for about 10 seconds by the time constant assured by the capacitor (C812) and resistor (R852). With the said transistor being turned off, the transistor (Q804) are turned on so that the outputs appearing at the F1 R1 and R2 output terminals make the base potential of the transistor (Q803) to drop down to 0V: the result of the action is to prevent the solenoid (SOL801) from functioning.

This facility is provided for the reason why for about seven seconds after the power switch is turned on, the outputs available at the F1, R1 and R2 output terminals remains not stable so enough to be used for the succeeding operations.

CONTROL UNIT AND PERIPHERY CIRCUIT BLOCK DIAGRAM

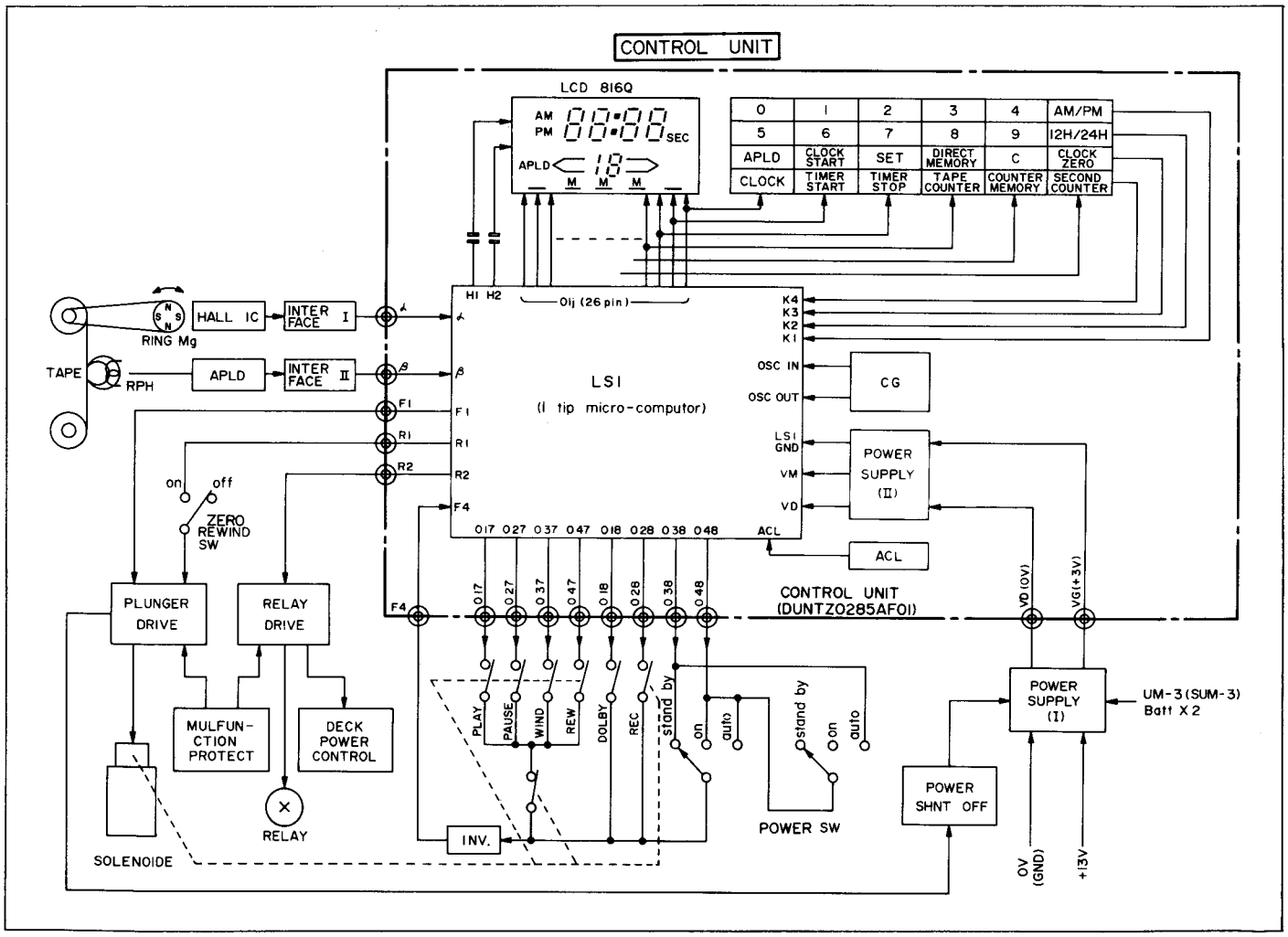


Figure 29

FLYWHEEL THRUST CLEARANCE ADJUSTMENT
(See Figure 30)

Slowly tighten the screw for flywheel thrust clearance until the thrust clearance becomes 0 (zero) and loosen the screw by 1/5 turn from this point. Since screw's pitch is 0.5mm. thrust clrarance of 0.1 ~ 0.2 mm is produced.

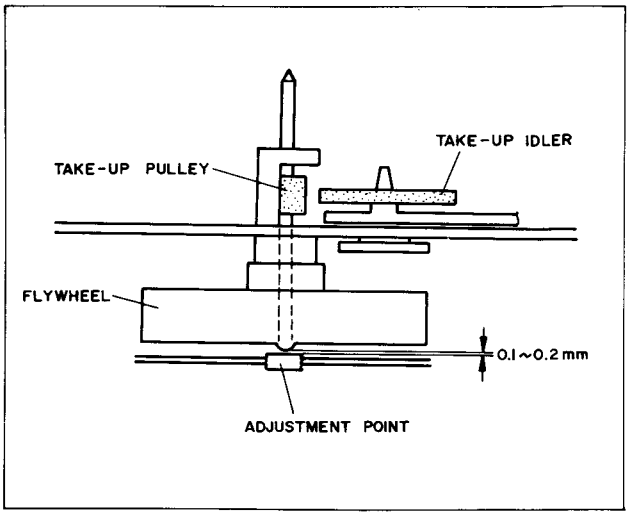


Figure 30

TAKE-UP PULLEY POSITION ADJUSTMENT
(See Figure 30)

1. Place the set in playback mode.
2. Check that the take-up pulley take-up idler touches the center of take-up pulley.
3. If it is not satisfied adjust the high height of take-up pulley on the capstan shaft. (This rubber-made take-up pulley is movable since it is not fixed to the capstan shaft.)

TORQUE CHECK (See Figure 31)

1. Set the tension measuring reel to the turntable (to the take-up side at PLAY or FAST FWD mode and to the supply side at REWIND mode).
2. Then, rotate the reel in the same direction as for turntable and read the torque value when the pointer is stabilized.

Mode	Torque Value
PLAY	35 ~ 60 gr.cm
FAST FWD	More than 70 gr.cm
REWIND	More than 70 gr.cm

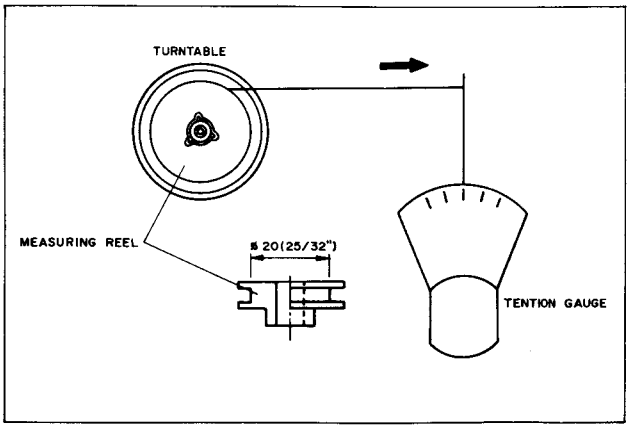


Figure 31

PAUSE MECHANISM ADJUSTMENT (See Figure 32)

1. Place the set in playback mode.
2. Slowly push the pause key and check that the pause lock shaft is completely locked at the pause lock plate.
3. Place the set in playback mode (actually, first place the set in playback mode and then reset the pause key gently) and check that the pause lock shaft and the pause lock plate (B) come more than 0.2 mm apart from each other, and that the pressure roller and take-up turntable support are stopped at a time.
4. If the requirement in the step 4, adjust it by bending the part (A) of the pressure roller.

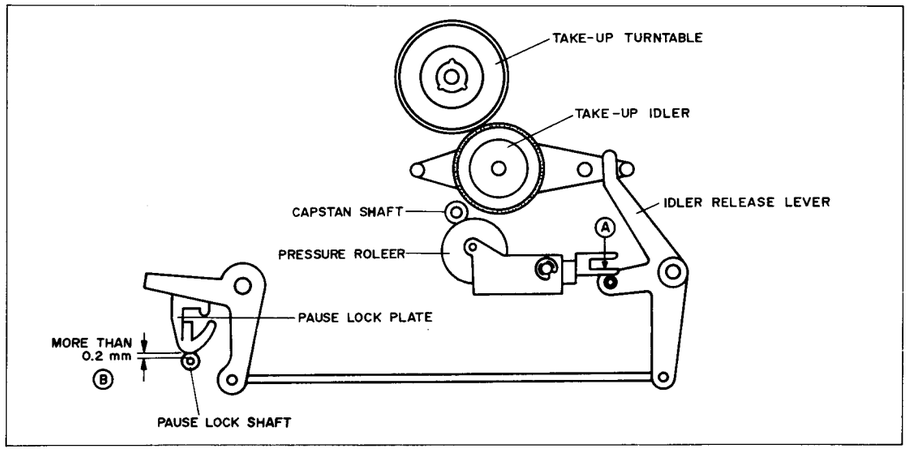


Figure 32

PRESSURE ROLLER PRESSURE ADJUSTMENT (See Figure 33)

1. Place the set in playback mode.
2. Use a tension gauge to push it to the point (A) of the pressure roller until the pressure roller moves off the capstain shaft.
3. Gradually release the pressure of the tension gauge toward the arrowed direction until the pinch roller begins to rotate --- it is good if the gauge reads 250 to 350 gr.
4. If the requirement in the step 3 is not met, adjust it by bending the pressure roller spring or replacing it.

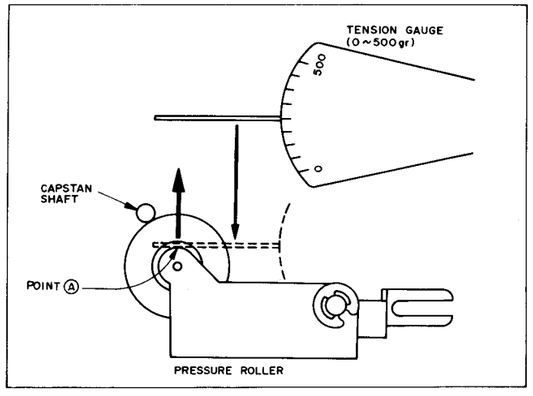
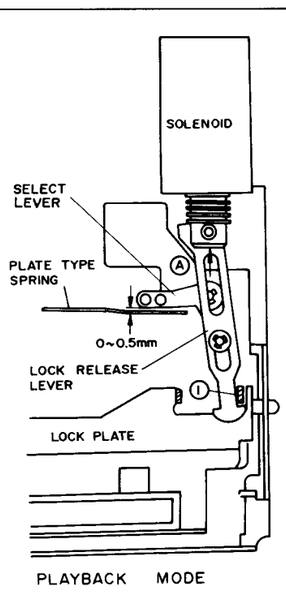


Figure 33

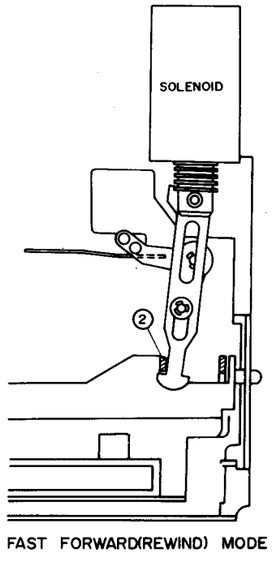
SOLENOID POSITION CHECK (See Figure 34-1 to 34-4)

1. Place the set in playback mode.
2. Adjust the solenoid retaining screw so that the play key will be able to be unlocked from the lock plate simultaneously when the solenoid is pushed toward the direction (A) . At the time make sure that the solenoid becomes in parallel with the main chassis. (See Figure 34-1 and Figure 34-4).
3. Check that the lock release lever is in contact with the lock plate (1) (See Figure 34-1).
4. Check that there is a clearance of 0 to 0.5 mm between the select lever and plate type spring (See Figure 34-1)
5. Place the set in fast forward (or rewind) mode.
6. Make sure that the lock release lever is in contact with the lock plate (2) , and push the solenoid toward the direction (A) to make sure that the fast forward /Forward APLD key is released in the middle of this pushing (See Figure 34-2 and Figure 34-4).
7. Place the set in pause mode.
8. Push the solenoid toward the direction (A) and check that, during the course of this pushing, the solenoid operating shaft can let the auto-stop release lever to move in the direction (B) so that the pause lock plate goes in the direction (C) , releasing the pause key. Note that at the time of pause mode, a clearance between the lock plate release lever and the lock plate (1) and/or (2) must be more than 1 mm (See Figure 34-3 and Figure 34-4).



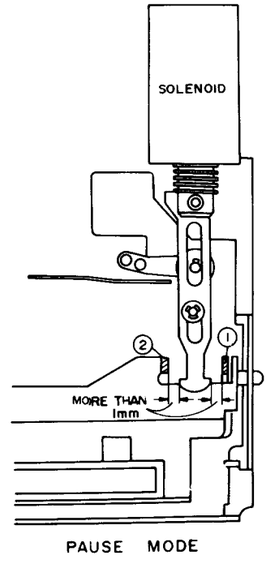
PLAYBACK MODE

Figure 34 1



FAST FORWARD(REWIND) MODE

Figure 34-2



PAUSE MODE

Figure 34-3

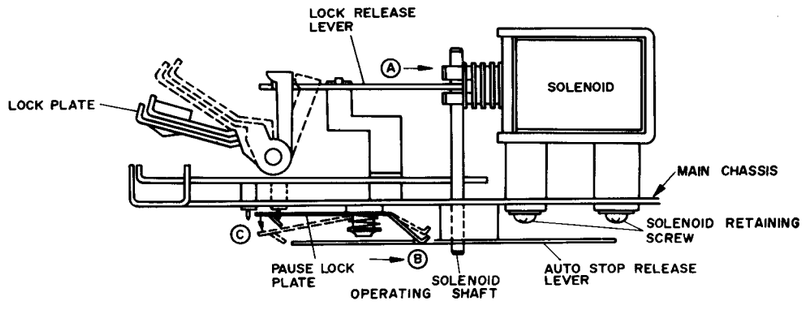


Figure 34-4

Figure 34

ALIGNMENT POINTS

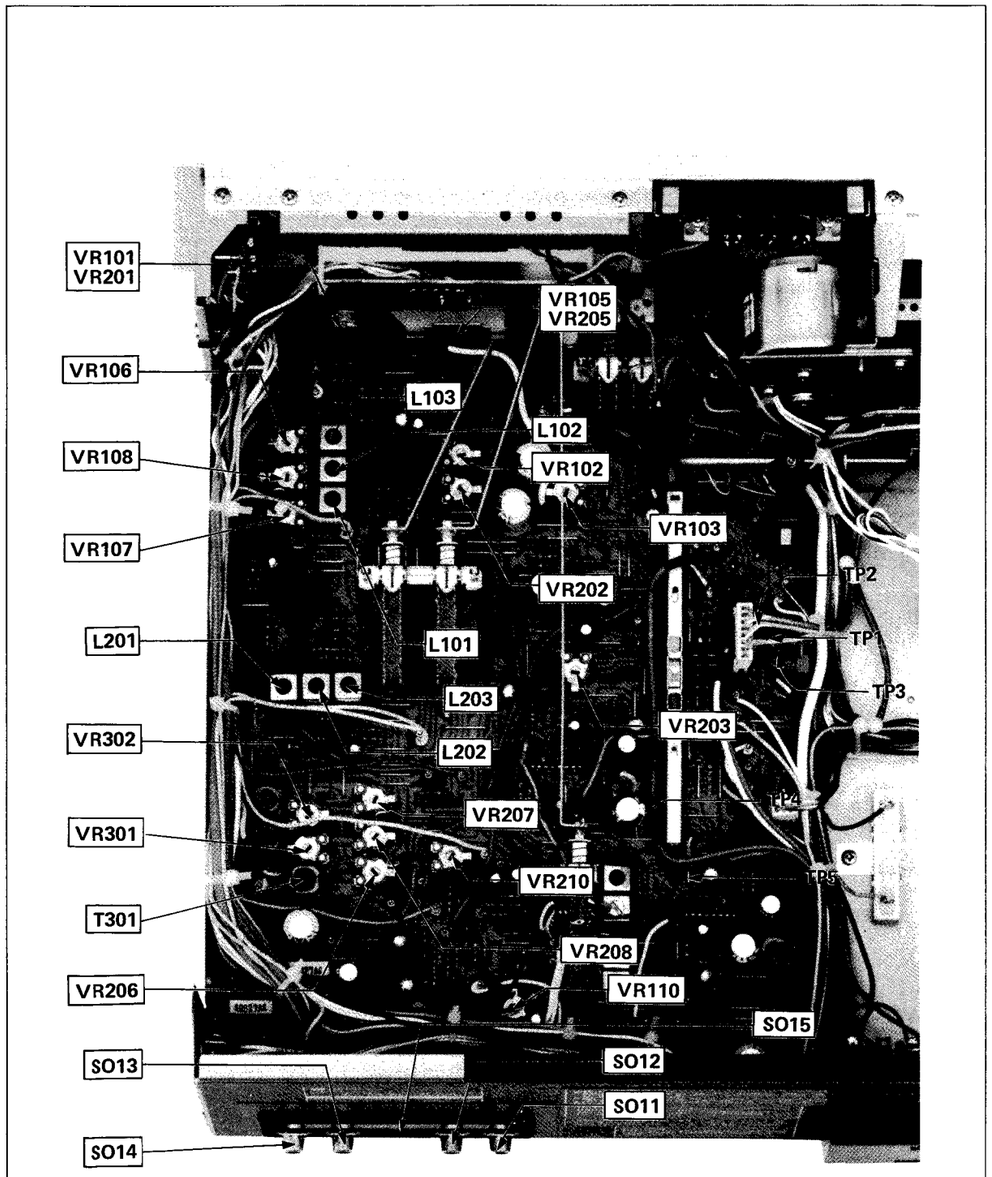


Figure 35

ELECTRICAL ADJUSTMENT

RECORD AMPLIFIER BIAS CURRENT/BIAS OSCILLATION FREQUENCY ADJUSTMENT (See Figure 36)

1. Connect a V.T.V.M. to both ends of the resistor (R101 or R201) on the record/playback PWB.
2. Set both the equalization selector switch (SW4) to "CrO_2" position and bias selector switch (SW3) to "CrO_2" position.
3. Connect the vertical input terminal of an oscilloscope to the output terminal of a V.T.V.M. and its horizontal input terminal to the output terminal of a CR oscillator.
4. Place the set in record mode and adjust the bias oscillator transformer (T301) so that there develops Lissajou's figure on the oscilloscope and that the bias oscillation frequency becomes 84 kHz.
5. Set both the equalization selector switch (SW4) to "norm" position and the bias selector switch (SW3) to "norm" position.
6. Adjust the bias current control (VR301 or VR302) so that the V.T.V.M. indicates 37 mV. * 25 mV eq.
7. When the equalization selector switch (SW4) to "CrO_2" position and the bias selector switch (SW3) are set to "CrO_2" position, make sure that the V.T.V.M. reads 45 to 53 mV.

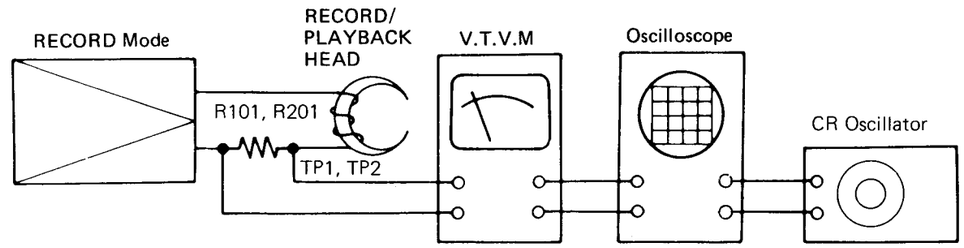


Figure 36

ERASE CURRENT CHECK (See Figure 37)

1. Connect a V.T.V.M. to both ends of the resistor (R301) in the record/playback PWB.
2. Set the equalization selector switch (SW4) to "norm" position and the bias selector switch (SW3) to "norm" position.
3. Place the set in record mode and make sure that the V.T.V.M. reads 40 to 85 mV.
4. Set the equalization selector switch (SW4) to "CrO_2" position and bias selector switch (SW3) to "CrO_2" position.
5. Make sure that the V.T.V.M. indicates 50 to 100 mV.

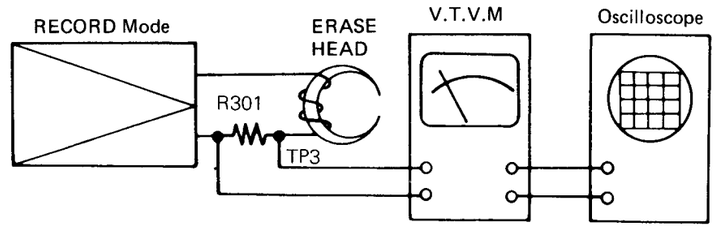


Figure 37

* Bei Abgleich auf „maxell" Cassetten

RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT (See Figure 38)

1. Connect a V.T.V.M. between the test point (TP4 or TP5) on the record/playback PWB and the ground.
2. Set the equalization selector switch (SW4) to "norm" position and the bias selector switch (SW3) to "norm" position.
3. Set the Dolby NR switch (SW2) to "off" position.
4. Load the set with a test tape (TIAC make MTT-114, 10 KHz, 250 pW_b/mm -10 dB recorded) and reproduce it. Then adjust the head azimuth adjusting screw so that the V.T.V.M. reaches its maximum value.

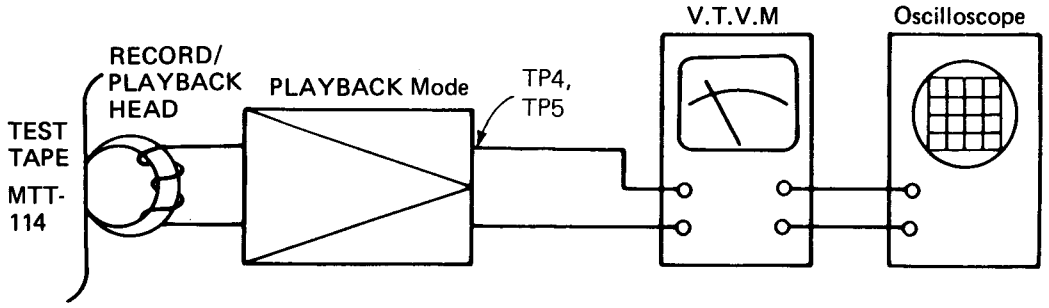


Figure 38

VU METER SENSITIVITY ADJUSTMENT (See Figure 39)

1. Connect a V.T.V.M. between the test point (TP4 or TP5) on the record/playback PWB and the ground.
2. Set the Dolby NR switch (SW2) to "off" position.
3. Connect a CR oscillator to the line input socket (SO11 or SO12) where will then be applied a signal of oscillation frequency 1 KHz, signal level -10 dB (0 dB = 1 V).
4. Place the set in record mode and adjust the record level control (VR101 or VR201) so that the V.T.V.M. reads 580 mV.
5. Adjust the VU meter sensitivity adjust control (VR110 or VR210) so that the VU meter (ME1 or ME2) indicates Dolby NR level (+3 VU).

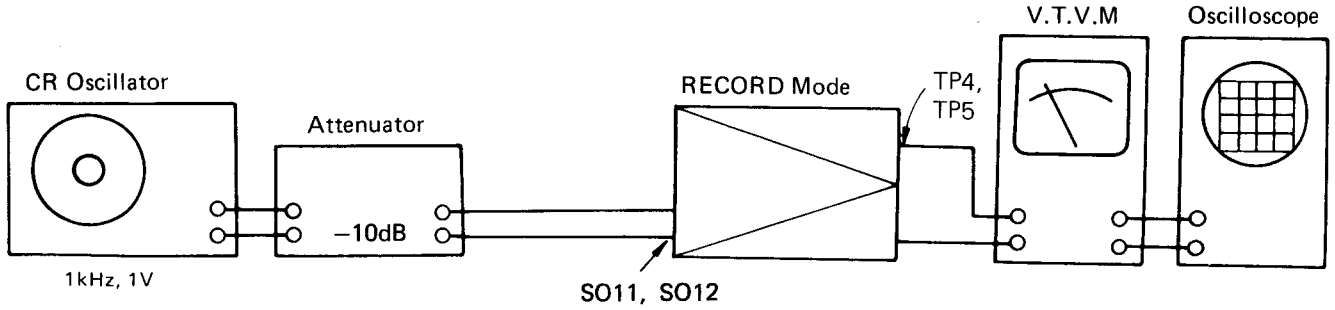


Figure 39

PLAYBACK AMPLIFIER FREQUENCY ADJUSTMENT (See Figure 40)

1. Connect a V.T.V.M. to the line input socket (SO11 or SO12) or to the REC/PB(DIN) socket (SO15).
2. Set the output level control (VR109A, B) to "10" position, the bias selector switch (SW3) to "norm" position, the equalization selector switch (SW4) to "norm" position, and Dolby NR switch (SW2) to "off" position.
3. Connect a CR oscillator to the earth terminal of the record/playback head and apply a signal [oscillation frequency 1 kHz, signal level −80 dB (0 dB = 1 V)].
4. Place the set in playback mode and adjust the output signal of the CR oscillator so that the V.T.V.M. read 77.5 mV.
5. Change the oscillation frequency from 1 kHz to 12.5 kHz and make sure that the reading of the V.T.V.M. is within the range of 40 mV to 63 mV.
6. Where the V.T.V.M. reads below 60 mV, adjust it to a proper value by using the playback sensitivity adjust control (VR104 or VR204).

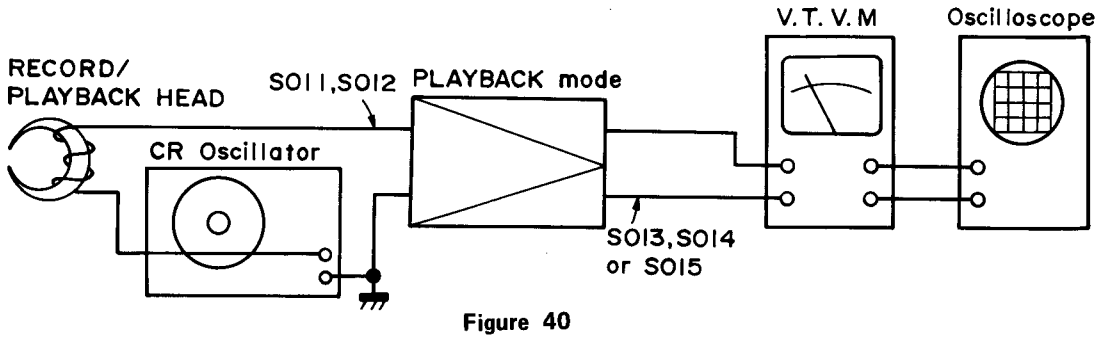


Figure 40

RECORD/PLAYBACK SENSITIVITY ADJUSTMENT (See Figure 41)

1. Connect a V.T.V.M. between the test point (TP4 or TP5) on the record/playback PWB and the ground.
2. Set the equalization selector switch (SW4) to "norm" position and the bias selector switch (SW3) to "norm" position.
3. Set the Dolby NR switch (SW4) to "off" position.
4. Load the set with a normal tape (non-recorded).
5. Connect a CR oscillator to the line input socket (SO11 or SO12) where will then be applied a signal of oscillation frequency 1 kHz, signal level -10 dB (0 dB = 1 V).
6. Place the set in record mode and adjust the line record level controls (VR101 or VR201) so that the V.T.V.M. reads 410 mV.
7. Reproduce the tape thus recorded in the step 6 and adjust the record sensitivity controls (VR107·VR207) so that the V.T.V.M. reads 410 mV.
8. Also for CrO_2 tape and Fe-Cr tape, take the same operations as in the steps 1 to 7 above and adjust so that the V.T.V.M. will reads 410 mV. (Use the record sensitivity control VR106 or VR206 for the CrO_2 tape and that VR108 or VR208 for the Fe-Cr tape.) It will be noted that both the equalization selector switch (SW4) and bias selector switch (SW3) must be changed over according to the tapes (CrO_2 and Fe-Cr) to be used.

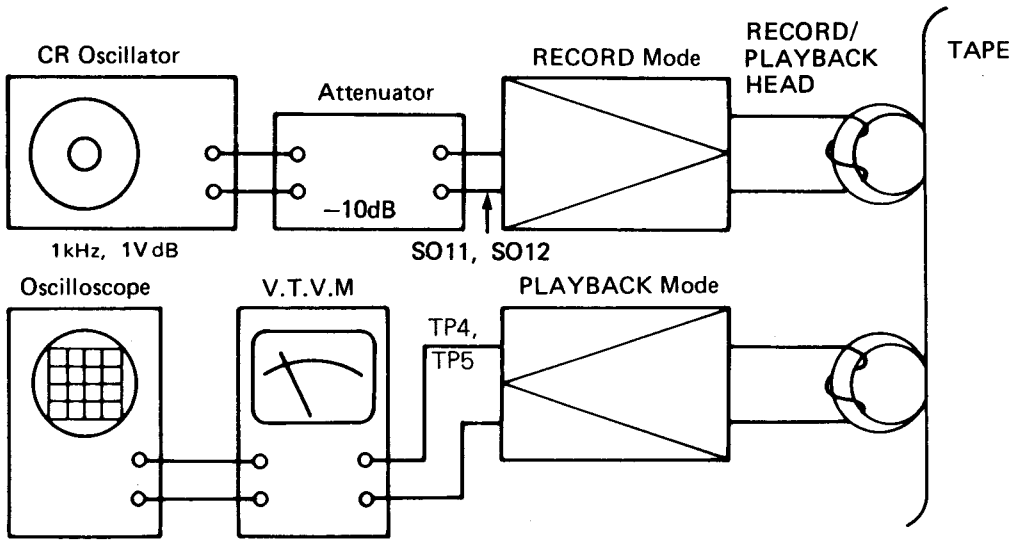


Figure 41

RECORD AMPLIFIER SENSITIVITY ADJUSTMENT (See Figure 42)

1. Connect a V.T.V.M. between the test point (TP4 or TP5) on the record/playback PWB and the ground.
2. Set the equalization selector switch (SW4) to "norm" position and the bias selector switch (SW3) to "norm" position.
3. Set the Dolby NR switch (SW2) to "off" position.
4. Load the set with a normal tape(non-recorded).
5. Connect a CR oscillator to the line input socket (SO11 or SO12) where will then be applied a signal of oscillation frequency 1 kHz, signal level -10 dB (0 dB = 1 V).
6. Rotate the record input sensitivity adjust control (VR102 or VR202) fully clockwise.
7. Place the set in record mode and adjust the line record level control (VR101 or VR201) so that the V.T.V.M. reads 410 mV.
   In fact, first rotate the (VR101 or VR201) to the same extent for both R-channel and L-channel signals. And readjust the (VR101 or VR201) so that the V.T.V.M. indicates 410 mV for one of the two signals available at the test point (TP4 or TP5) whichever may be smaller than the other in the output level.
8. For the other signal of which the output level is more than 410 mV (indicated by the V.T.V.M.), further adjust the record input sensitivity control (VR102 or VR202) to have the V.T.V.M. reads 410 mV.

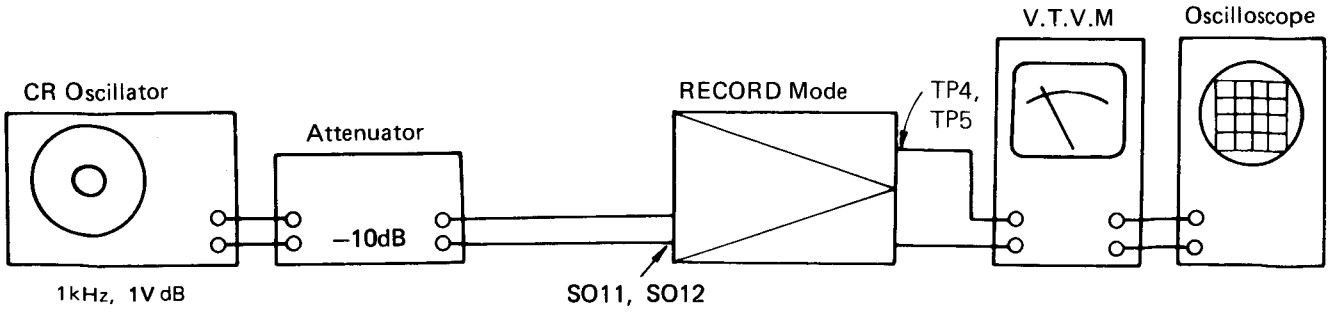


Figure 42

DOLBY NR CIRCUIT CHECK (See Figure 43)

1. Connect a V.T.V.M. between the test point (TP4 or TP5) on the record/playback PWB and the ground.
2. Set the equalization selector switch (SW4) to "norm" position and the bias selector switch (SW3) to "norm" position.
3. Set the Dolby NR switch (SW2) to "on" position.
4. Load the set with a normal tape (non-recorded).
5. Connect a CR oscillator to the line input socket (SO11 or SO12) where will then be applied a signal of oscillation frequency 100 Hz, signal level -35 dB (0 dB = 1 V).
6. Place the set in record mode, adjust the line record level control (VR101 or VR201) so that the V.T.V.M. indicates 32.6 mV.
7. Vary the oscillation frequency of the CR oscillator which has been connected to the line input socket (SO11 or SO12), over the range at 1 kHz, 10 kHz and 12.5 kHz and check that the reading of the V.T.V.M. is as specified for each of the frequencies. (Refer to the following Table 1.)
8. Change the oscillation frequency and signal level of the CR oscillator having been connected to the line input socket (SO11 or SO12), respectively to 100 Hz and -50dB (0 dB = 1 V), and adjust the line record level control (VR101 or VR201) so that the V.T.V.M. reads 5.8 mV.
9. In the same way as in the step 7, vary the oscillation frequency over the range at 1 kHz, 10 kHz and 12.5 kHz and check that the reading of the V.T.V.M. is as specified for each of the frequencies. (Refer to the following Table 2.)

Oscillator Frequency	1 KHz	10 KHz	12.5 KHz
VTVM READS	45.7 ~ 81 mV	44.5 ~ 70 mV	42.6 ~ 68.2 mV

Table 1

Oscillator Frequency	1 KHz	10 KHz	12.5 KHz
VTVM READS	8.2 ~ 16.4 mV	13.7 ~ 24.9 mV	13.5 ~ 23.4 mV

Table 2

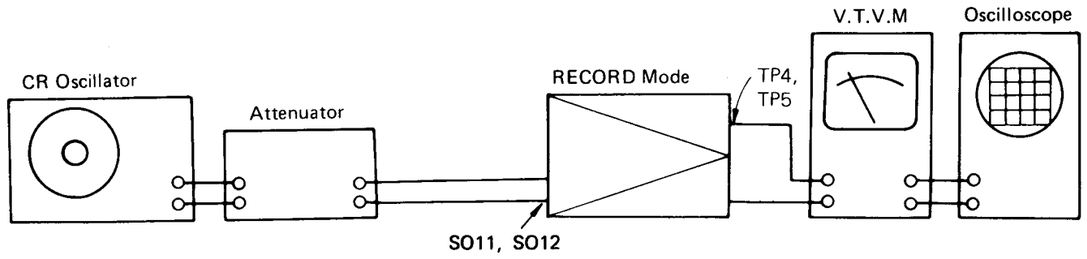


Figure 43

PLAYBACK SENSITIVITY ADJUSTMENT (See Figure 44)

1. Connect a V.T.V.M. between the test point (TP4 or TP5) on the record/playback PWB and the ground.
2. Set the equalization selector switch (SW4) to "norm" position and the bias selector switch (SW3) to "norm" position, and the Dolby NR switch (SW2) to "off" position.
3. Load the set with a test tape (TIAC make MTT-150, 400 Hz, 200 pW_b/mm recorded) and reproduce it.
4. Adjust the playback sensitivity adjust control (VR103 or VR203) so that the V.T.V.M. reads 580 mV.
5. Connect a resistor of 50 Kohm to the line output socket (SO13 or SO14) and check that there arises 950 to 1300 mV at both ends of this resistor.

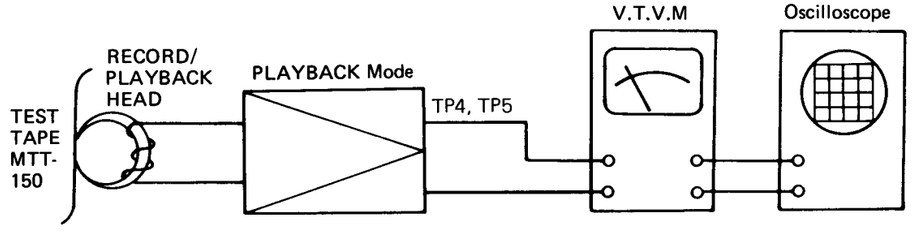


Figure 44

RECORD/PLAYBACK FREQUENCY CHARACTERISTIC ADJUSTMENT (See Figure 45)

1. Connect a V.T.V.M. to the line output socket (SO13 or SO14).
2. Set the equalization selector switch (SW4) to "norm" position and the bias selector switch (SW3) to "norm" position.
3. Set the Dolby NR switch (SW2) to "off" position.
4. Load the set with a normal tape (non-recorded).
5. Connect a CR oscillator to the line input socket (SO11 or SO12) where will then be applied a signal of oscillation signal 1 KHz, signal level -10 dB (0 dB = 1 V).
6. Place the set in record mode and adjust the line record level control (VR101 or VR201) so that the V.T.V.M. reads 775 mV.
   [Now it is needed to set the output level control (VR109 A, B) to "10" position.]
7. Close by 30 dB the attenuator coupled with the line input socket (SO11 or SO12). [Signal level -40 dB (0 dB = 1 V)].
8. Vary the oscillation frequency of the CR oscillator which has been connected to the line input socket (SO11 or SO12), over the range from 1 KHz to 40 Hz, 6KH or 13 KHz (14 KHz) and proceed with recording.
9. Reproduce the tape thus recorded in the step 8 and make sure that the reading by the V.T.V.M. is within a rated value for each of the frequencies. (Refer to Table 3).
10. If any of the checkings in the step 9 is found not satisfactory, adjust it by using the equalizer coil (L101 or L201) and bias current control (VR301 or VR302).
    * In the case of adjusting 6 KHz frequency characteristic:
      Use the bias current control (VR301 or VR302). Note that this is never done exceeding the allowable limit (370 μA ± 40 μA) of bias current.
    * In the case of adjusting 13 KHz frequency characteristic:
      Use the equalizer control (L101 or L201). If the bias current is varied, never forget to check for 13 KHz frequency characteristic.
    * It is impossible to adjust 40 Hz frequency characteristic.
11. Also for CrO_2 tape and Fe-Cr tape, take the same operations as in the steps 1 to 10 for adjusting their record/playback frequency characteristics. Here, it is, however, not permitted to adjust the bias current controls (VR301 or VR302).
    * For the CrO_2 tape, the equalizer coils to be used are L103 and L203.
    * For the Fe-Cr tape, the equalizer coils to be used are L102 and L202.

    Note: Be sure to do the above record/playback frequency characteristic adjustment starting from a normal tape but not from CrO_2 or Fe-Cr tape.

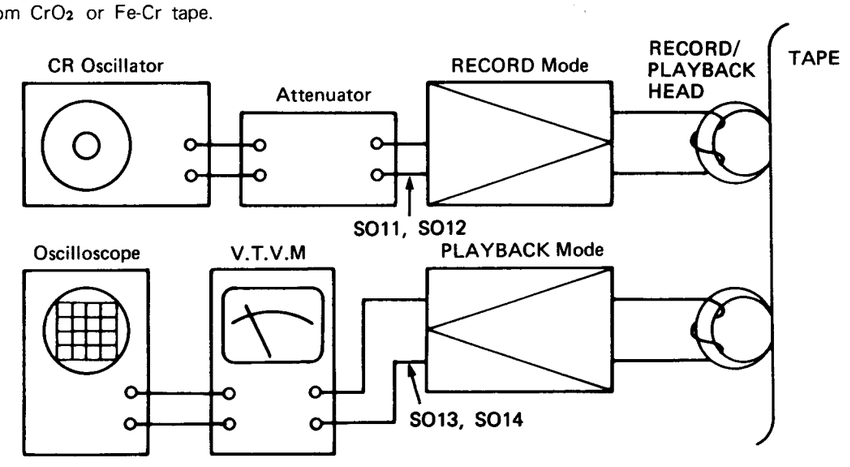


Figure 45

Oscillator Frequency		1 KHz	40 Hz	6 KHz	13 KHz	14 KHz
VTVM Reads	Normal Tape	24.5 mV	15.5 ~ 39 mV	19.5 ~ 31 mV	15.5 ~ 34.5 mV	—
	Fe-Cr Tape	24.5 mV	15.5 ~ 39 mV	19.5 ~ 31 mV	—	15.5 ~ 34.5 mV
	CrO_2 Tape	24.5 mV	15.5 ~ 39 mV	19.5 ~ 31 mV	—	15.5 ~ 34.5 mV

Table 3

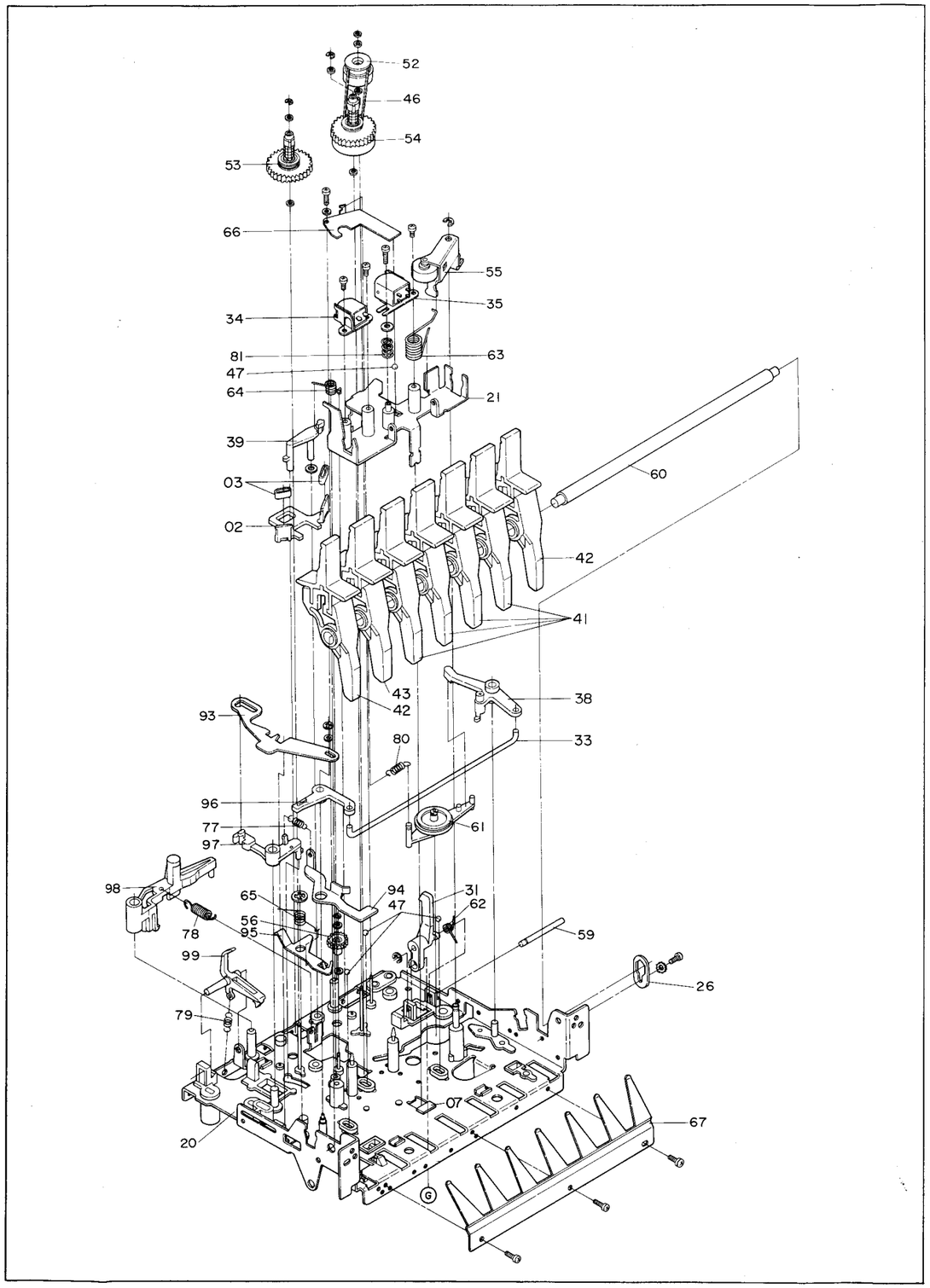


Figure 46 MECHANISM EXPLODED TOP VIEW

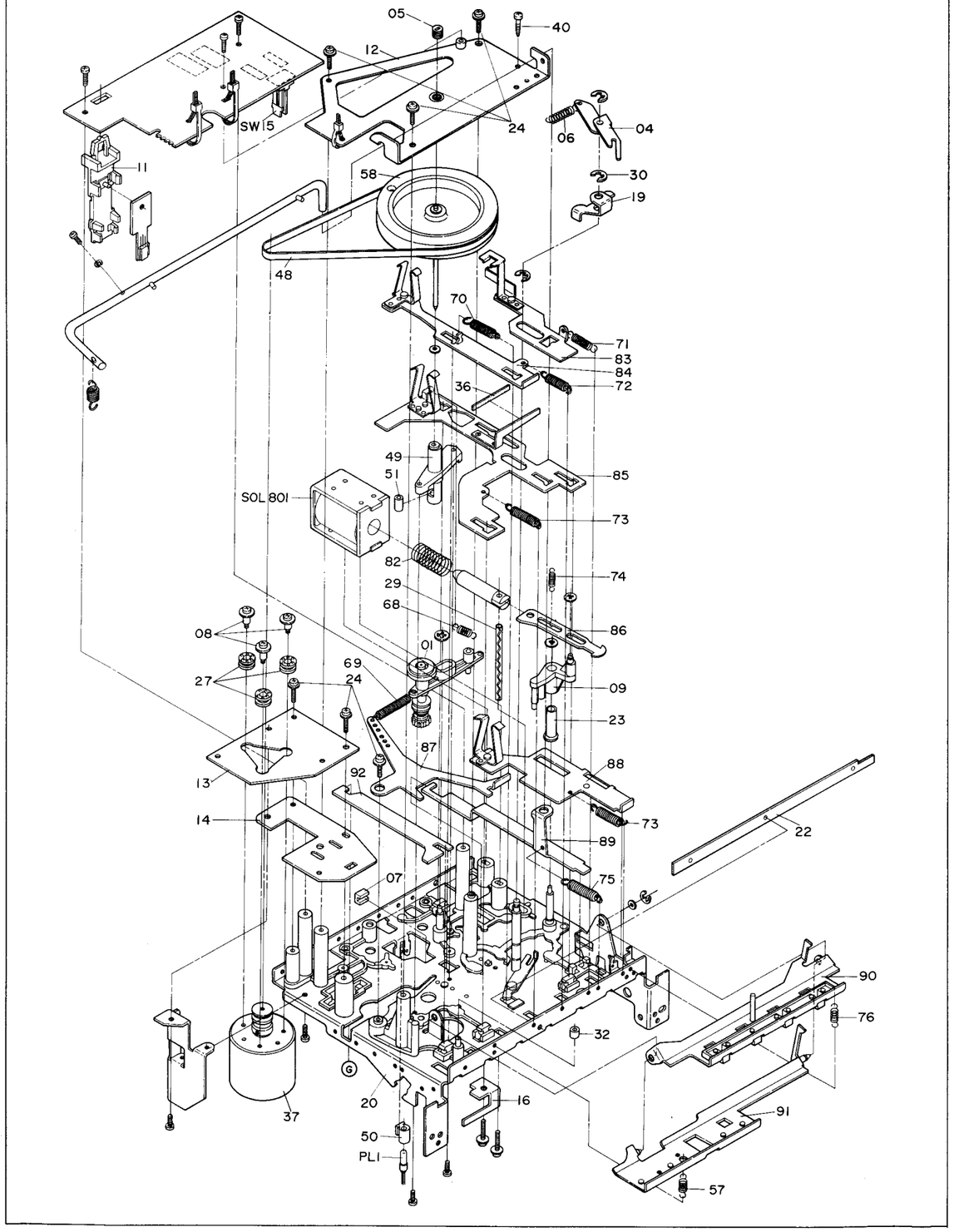


Figure 47 MECHANISM EXPLODED BOTTOM VIEW

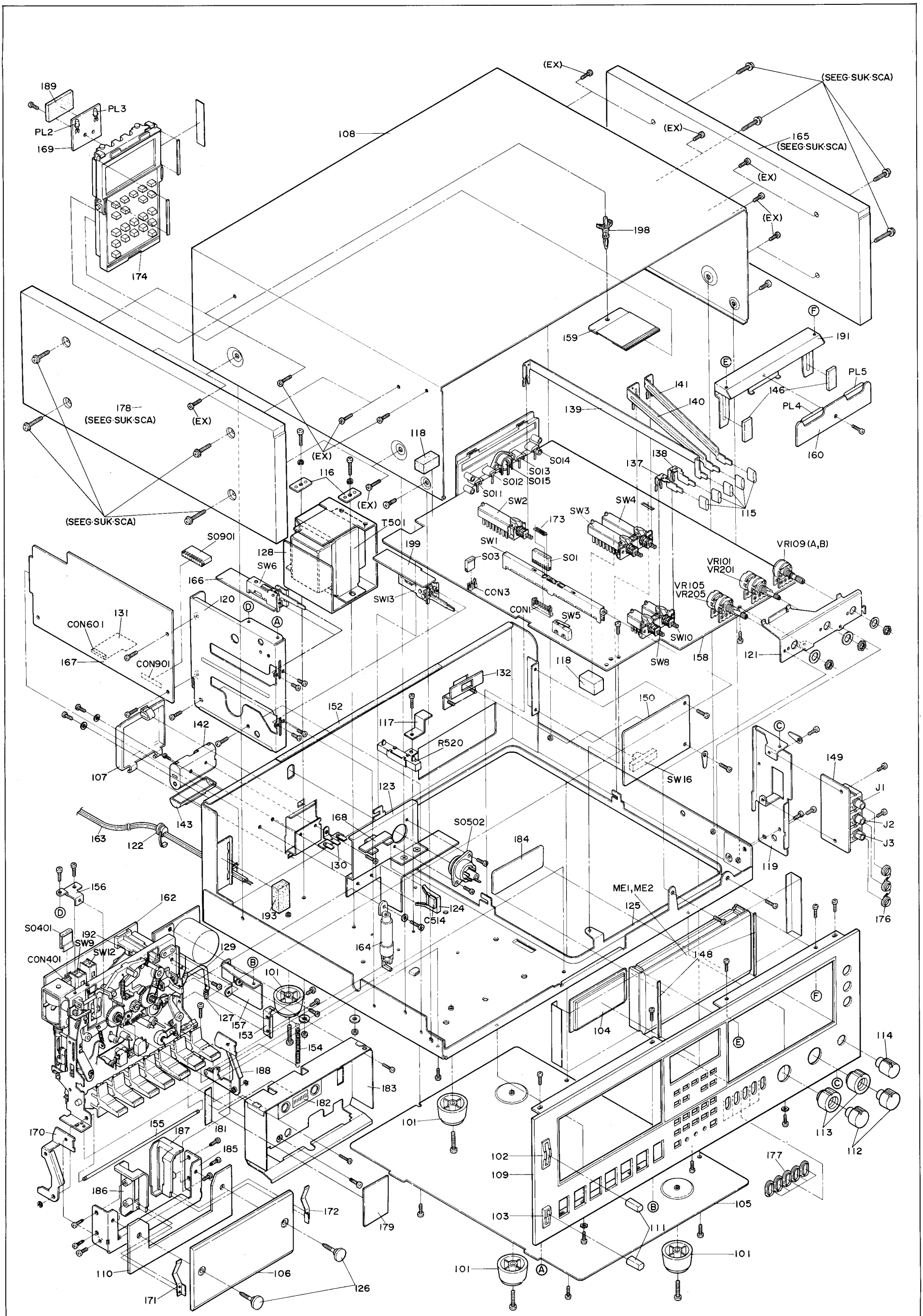


Figure 48 CABINET EXPLODED VIEW

PERFORMANCE TEST PROGRAM

Note: In this Performance Check List, the parts of the control unit are referred in their abbreviation but not in full spelling. For better understanding of this list, please first refer to the following.

CLK .....Clock key
T · SA ....Timer start key
T · SO ....Timer stop key
CM .....Counter memory key
CS .....Clock start key
C .....Clear key
TC .....Tape counter key
SC .....Second counter key
D · IN ....Direct memory key
CZ .....Clock zero key
S .....Set key
APLD ....APLD key

In addition the LCD display ▒▒▒ in this display mean that they are blink.

	Step	Power switch	Mechanical key operation	Control unit key operation						LCD: Display before the (→) marked operation	LCD: Display after the (→) marked operation	Mechanical behavior	Deck on/off	Remarks
Clock operation	1	"stand-by"	"stop"	Insert the power supply plug into a wall outlet.						The indication is arbitrary for about 10 seconds.	88:88		"off"	Before the display becomes "88 : 88", the relay and solenoid should not function.
	2	Same as above	Same as above	TC	APLD	0	5				88:88		Same as above	The display should remain as before.
	3	Same as step 1	Same as step 1	CLK	1	→	CS			: 1	0 0 1		Same as step 1	The display (time of a day) varies every 1 minute.
	4	Same as step 1	Same as step 1	12H/24H	→	AM/PM	CS			AM 12 0 1	PM 12 0 1		Same as step 1	
	5	Same as step 1	Same as step 1	CZ							PM 12 0 0		Same as step 1	
Auto-stop operation	6	Same as step 1	"play"								PM 12 0 0	The mechanism automatically stops in about 3 seconds after the play key operation.	Same as step 1	
Tape counter operation (Zero rewind, direct memory, counter memory)	7	"on"	"stop"								0		"on"	It may sometimes occur that the display doesn't become "0" if the take-up turntable has operated until the step 6
	8	Same as above	Same as above	CM	4	5	S				45		Same as above	
	9	Same as step 7	Same as step 7	TC	4	2	S				42		Same as step 7	
	10	Same as step 7	"play"							42	45	The mechanism automatically stops when the TC indicator becomes "45".	Same as step 7	This step requires no control unit key operation (the key operation in the steps 8 and 9 is necessary, however.) Pushing only the play key can provide the TC indication.
	11	Same as step 7	"stop"	C	→	8	S			0	8		Same as step 7	
	12	Same as step 7	Same as above	D·IN	→	1	6	S		8	16		Same as step 7	
	13	Same as step 7	"REV"							16	8	The mechanism automatically stops when the TC indicator becomes "8".	Same as step 7	This step requires no control unit key operation (the key operation in the steps 11 and 12 is necessary, however.) Pushing only the REV key can provide the TC indication.
	14	Same as step 7	Same as above							8	0	The mechanism automatically stops when the TC indicator becomes "0".	Same as step 7	The same as in the step 13 above. But, it is necessary to turn on the zero rewind switch before pushing the REV key.
	15	Same as step 7	"stop"	CM	S	→	C			8	8		Same as step 7	Turn off the zero rewind switch.

TABLE 4

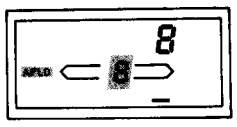
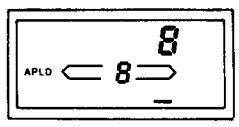
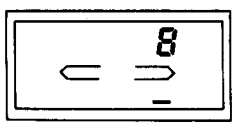
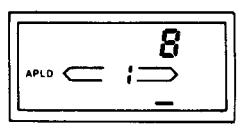
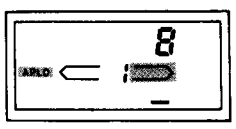
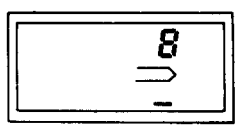
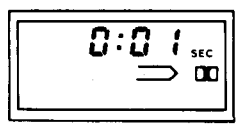
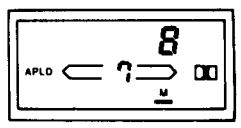
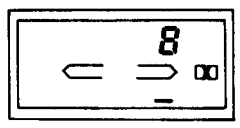
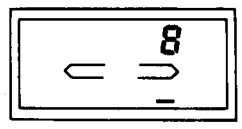
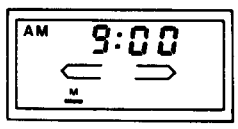
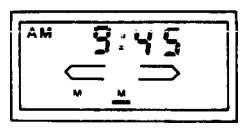
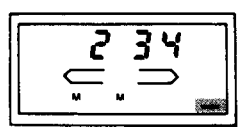
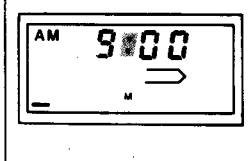
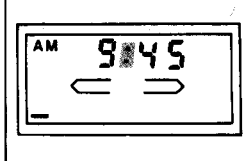
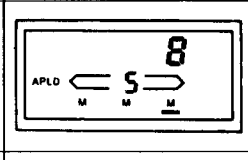
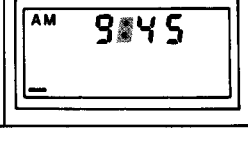
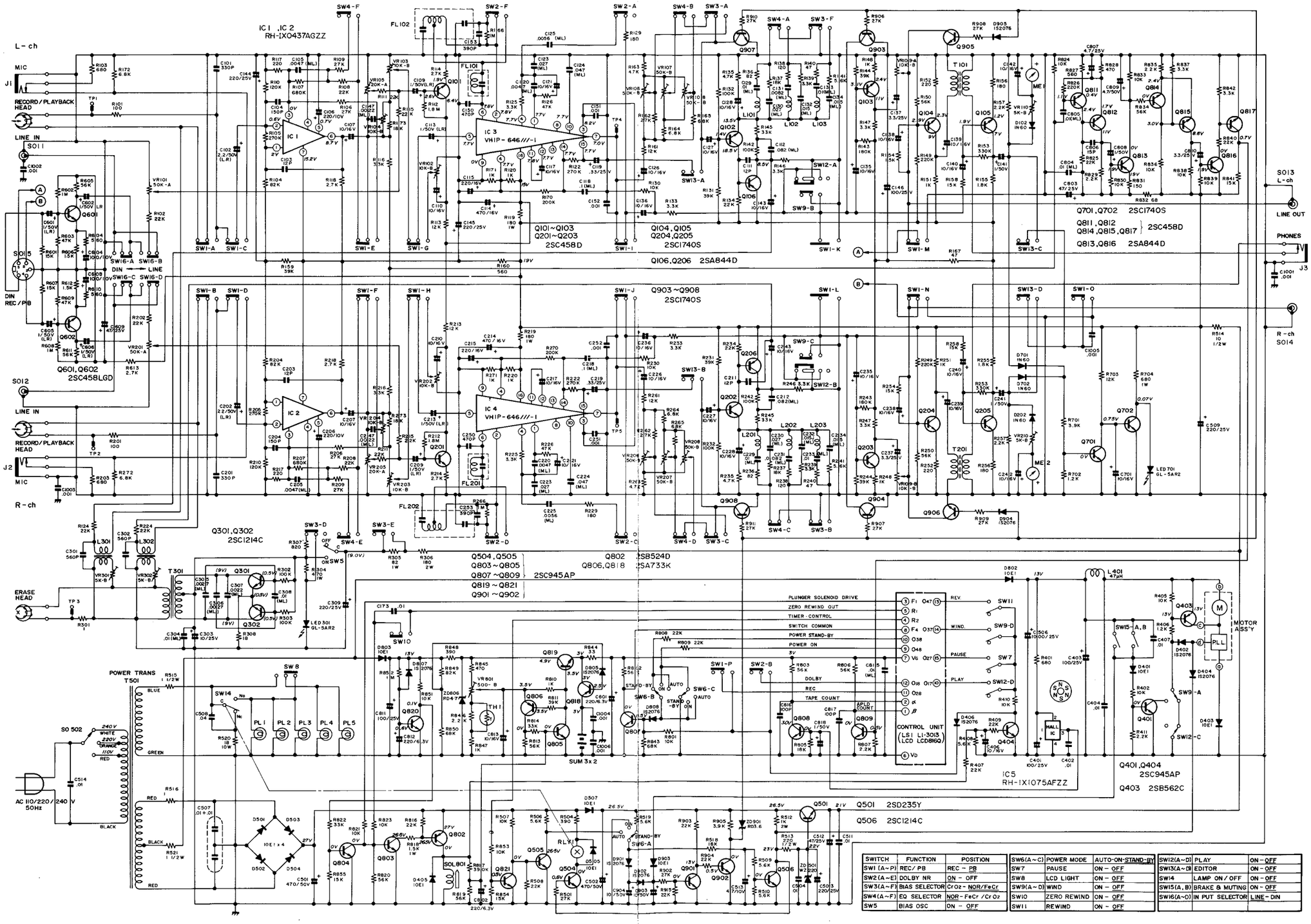
APLD operation	16	Same as step 7	Same as above	APLD	1	9	8	→	S				Same as step 7	
	17	Same as step 7	Same as step 15	APLD	0	→	APLD	1	S				Same as step 7	
	18	Same as step 7	"play and FWD"									The mechanism gets automatically in the play mode when the APLD number indication disappears.	Same as step 7	This step requires no control unit key operation (the key operation in the step 17 is necessary, however.)
Second counter operation	19	Same as step 7	"stop"	SC	C								Same as step 7	
	20	Same as step 7	"play"										Same as step 7	The display varies every 1 second. Turn on the Dolby NR switch.
Memory indication disappearance at record mode	21	Same as step 7	"stop"	APLD	7	S	CM	S					Same as step 7	
	22	Same as step 7	"record"										Same as step 7	This step requires no control unit key operation (the key operation in the step 21 is necessary, however.)
Timer (Auto) operation	23	Same as step 7	"stop"										Same as step 7	Turn off the Dolby NR switch (SW2).
	24	Same as step 7	"pause and play"	T·SA	9	0	0	S					Same as step 7	
	25	Same as step 7	Same as above	T·SO	9	4	5	S					Same as step 7	
	26	"auto"	Same as step 24	T·C	1	2	3	4					"off"	
	27	Same as above	Same as step 24	CLK	9	0	0	AM/PM	CS			As soon as the CS key is pushed, the power is energized. In 3 seconds after, the pause function will be released to have the mechanism get in the play mode.	"on"	The display (time of a day) varies every 1 minute.
	28	Same as step 26	(play)	9	4	5	CS					As soon as the CS key is pushed, the power is cut off and in 3 seconds after the mechanism will stop automatically.	"off"	
Memory indication disappearance with the power switch set in "Stand-by"	29	"on"	"stop"	T·SA APLD	S 5	T·SO S	S	CM	S				"on"	
	30	"stand-by"	Same as above										"off"	The display (time of a day) varies every 1 minute.

TABLE 5



SWITCH	FUNCTION	POSITION
SW1 (A~P)	REC/PB	REC ~ PB
SW2 (A~E)	DOLBY NR	ON ~ OFF
SW3 (A~F)	BIAS SELECTOR	CrO2 ~ NOR/FeCr
SW4 (A~F)	EQ SELECTOR	NOR ~ FeCr / CrO2
SW5	BIAS OSC	ON ~ OFF

SW6 (A~C)	POWER MODE	AUTO-ON-STAND-BY
SW7	PAUSE	ON ~ OFF
SW8	LCD LIGHT	ON ~ OFF
SW9 (A~D)	WIND	ON ~ OFF
SW10	ZERO REWIND	ON ~ OFF
SW11	REWIND	ON ~ OFF

SW12 (A~D)	PLAY	ON ~ OFF
SW13 (A~D)	EDITOR	ON ~ OFF
SW14	LAMP ON / OFF	ON ~ OFF
SW15 (A, B)	BRAKE & MUTING	ON ~ OFF
SW16 (A~D)	IN PUT SELECTOR	LINE ~ DIN

(Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.)

Figure 49 SCHEMATIC DIAGRAM

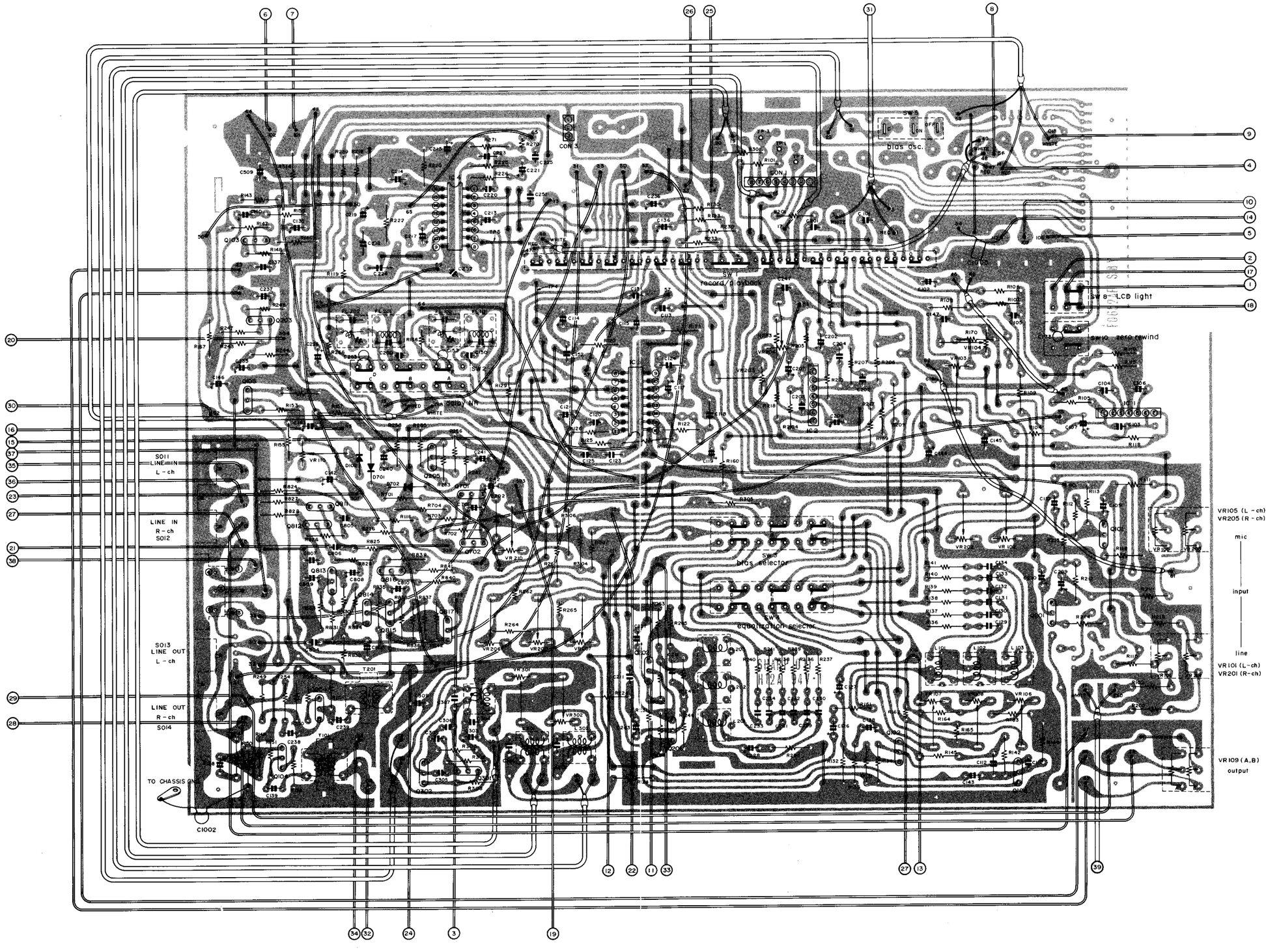
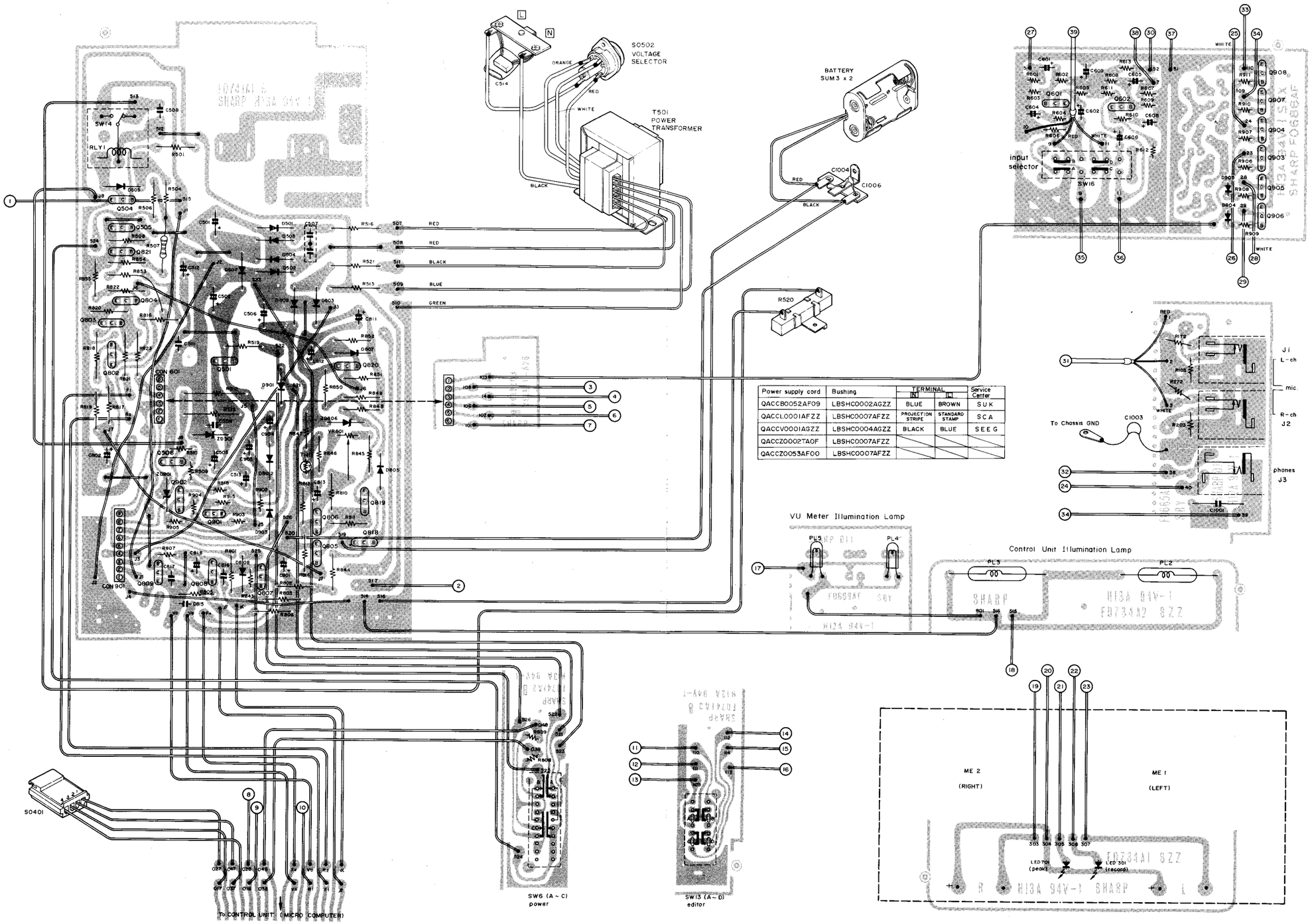


Figure 50 WIRING SIDE OF P.W. BOARD



Power supply cord	Bushing	TERMINAL N	TERMINAL L	Service Center
QACCB0052AF09	LBSHC0002AGZZ	BLUE	BROWN	SUK
QACCL0001AFZZ	LBSHC0007AFZZ	PROJECTION STRIPE	STANDARD STAMP	SCA
QACCV0001AGZZ	LBSHC0004AGZZ	BLACK	BLUE	SEEG
QACCZ0002TA0F	LBSHC0007AFZZ			
QACCZ0053AF00	LBSHC0007AFZZ			

Figure 51 WIRING SIDE OF P.W. BOARD

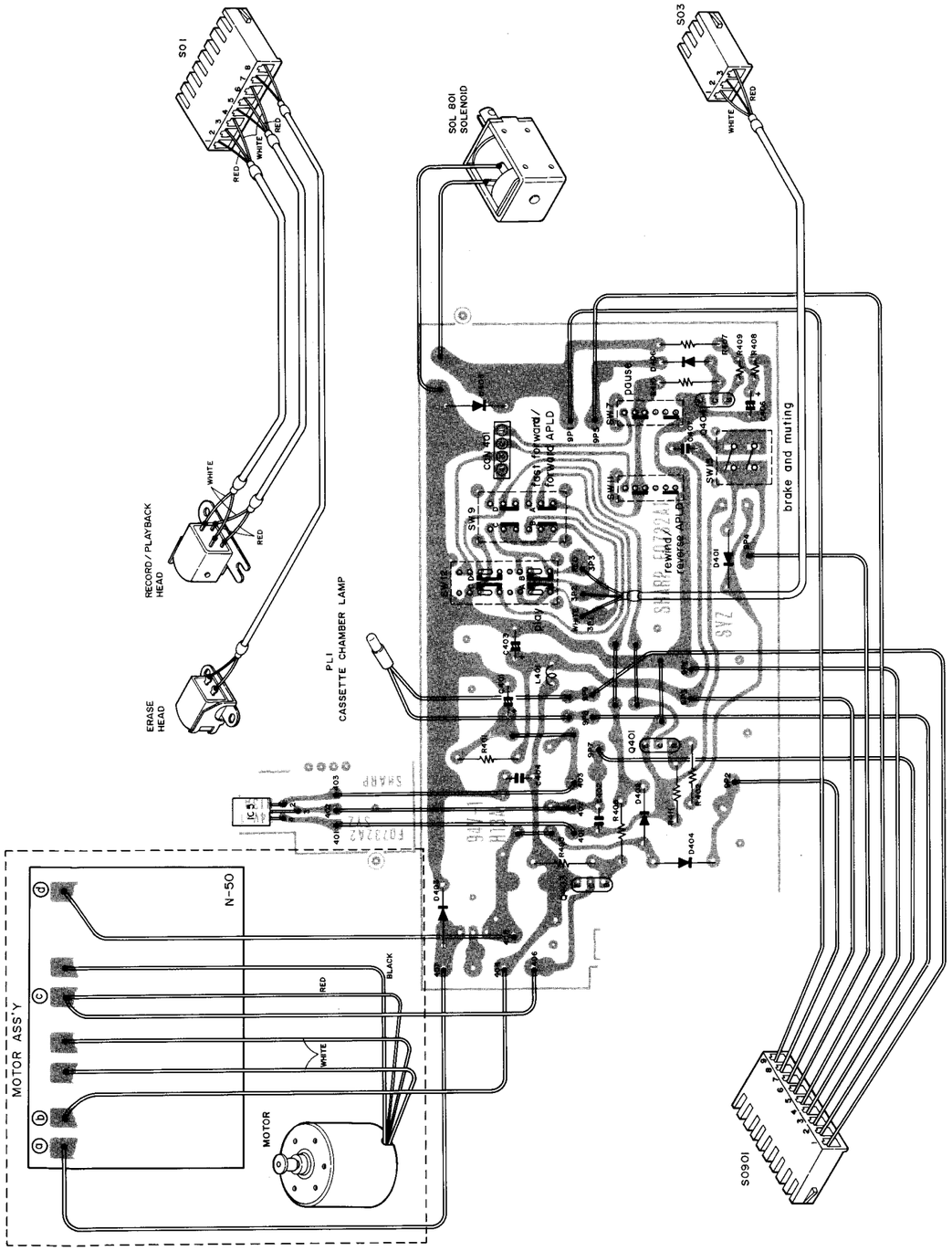


Figure 52 WIRING SIDE OF P.W. BOARD

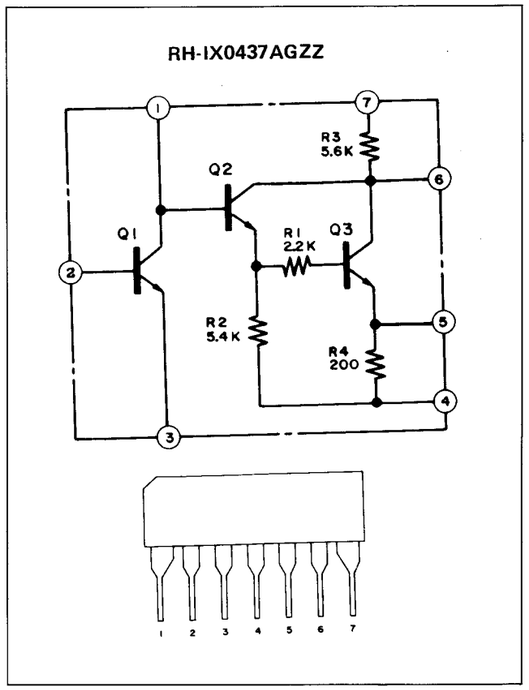


Figure 53 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUIT (IC1, IC2)

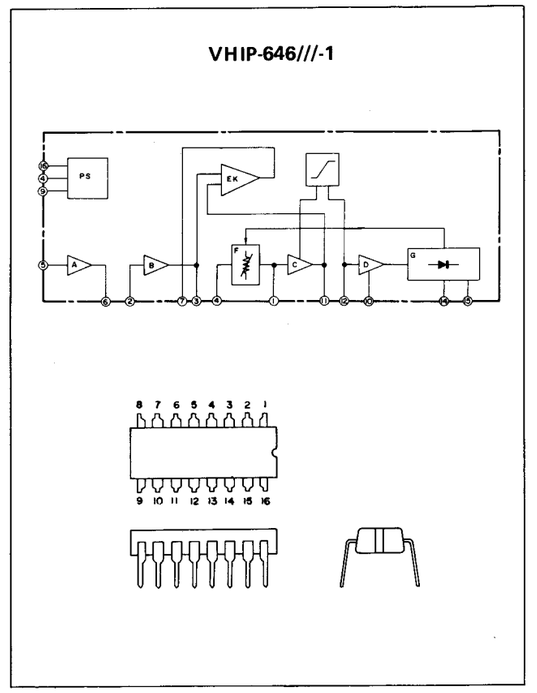


Figure 54 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUIT (IC3, IC4)

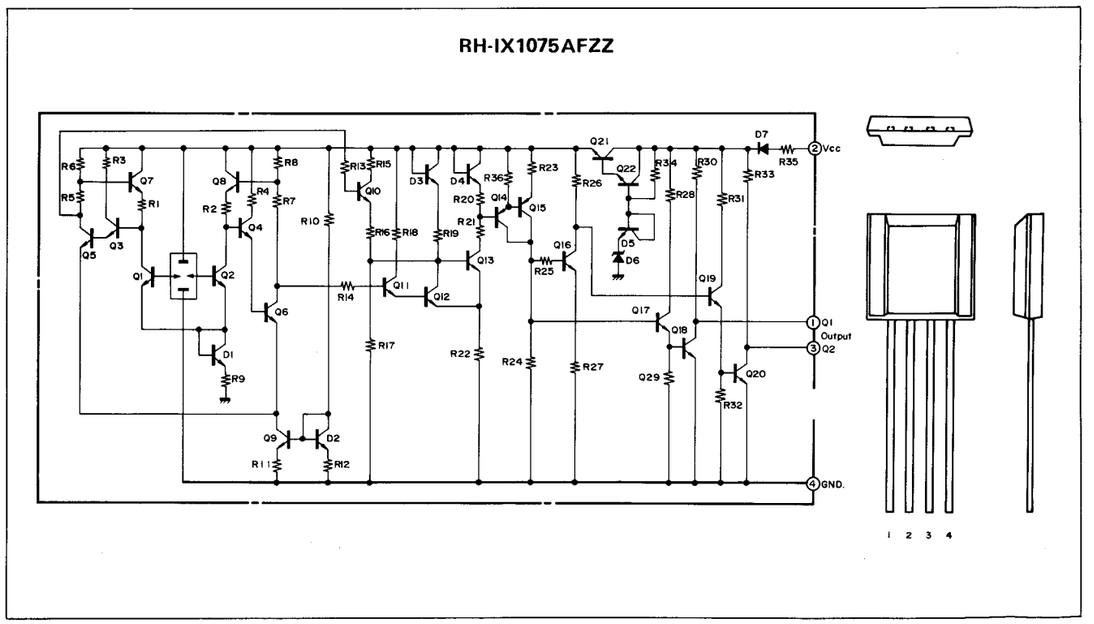
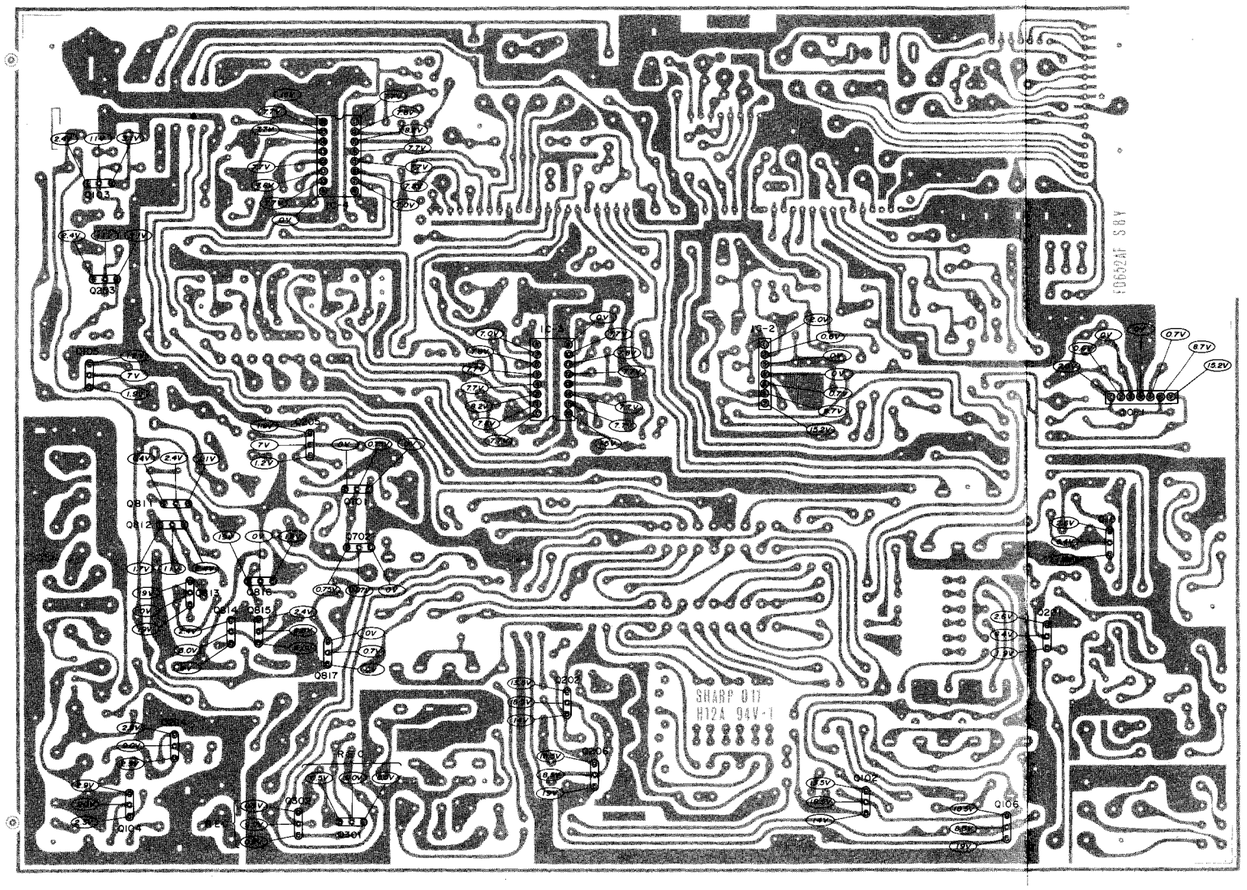


Figure 55 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUIT (IC5)



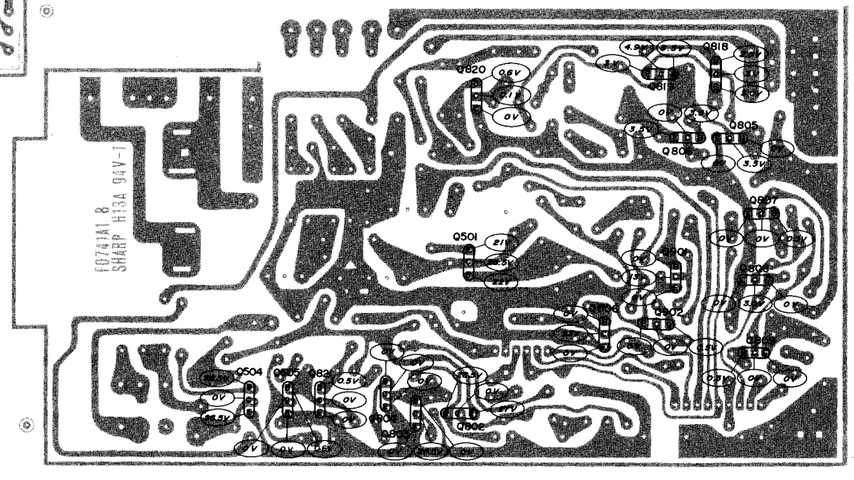


Figure 54 VOLTAGE GUIDE OF P.W. BOARD

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

REF. NO.	PART NO.	DESCRIPTION	CODE
	INTEGRATED CIRCUIT		
IC1, IC2	RH-IX0437AGZZ	Record/Playback (MIC.) Amp.	AH
IC3, IC4	VHIP-646///-1	Dolby	AS
IC5	RH-IX1075AFZZ	Detection, Auto Stop (Hall IC)	AL
	TRANSISTORS		
Q101, Q201	VS2SC458-D/-1	Mixing Amp. (2SC458D)	AC
Q102, Q202	VS2SC458-D/-1	Record Equalizer Amp. (2SC458D)	AC
Q103, Q203	VS2SC458-D/-1	Line Amp (2SC458D)	AC
Q104, Q204	VS2SC1740S/-1	Headphones Amp. (2SC1740S)	AC
Q105, Q205	VS2SC1740S/-1	VU Meter Amp. (2SC1740S)	AC
Q106, Q206	VS2SA844-D/-1	Record Equalizer Amp. (2SA844D)	AD
Q301, Q302	VS2SC1214-C-1	Bias Oscillation (2SC1214C)	AD
Q401	VS2SC945AP/-1	Motor Brake (2SC945AP)	AC
Q403	VS2SB562-C/-1	Motor Brake (2SB562C)	AE
Q404	VS2SC945AP/-1	Interface (2SC945AP)	AC
Q501	VS2SD235-Y/-1	Constant Voltage (2SD235Y)	AG
Q504	VS2SC945AP/-1	Relay Drive (2SC945AP)	AC
Q505	VS2SC945AP/-1	Relay Malfunction Protector (2SC945AP)	AC
Q506	VS2SC1214-C-1	Power(26V) Switching (2SC1214C)	AD
Q601, Q602	VS2SC458LGD-1	DIN Amp. (2SC458LGD)	AC
Q701, Q702	VS2SC1740S/-1	Peak Level Indicator (2SC1740S)	AC
Q802	VS2SB524-D/-1	Solenoid Drive (2SB524D)	AF
Q803	VS2SC945AP/-1	Solenoid Drive (2SC945AP)	AC
Q804	VS2SC945AP/-1	Solenoid Drive (2SC945AP)	AC
Q805	VS2SC945AP/-1	LSI Output Detection (2SC945AP)	AC
Q806	VS2SA733-K/-1	LSI Output Detection (2SA733K)	AC
Q807, Q808, Q809	VS2SC945AP/-1	Level Interface (2SC945AP)	AC
Q811, Q812	VS2SC458-D/-1	APLD Signal Amp. (2SC458D)	AD
Q813	VS2SA844-D/-1	APLD Switching (2SA844D)	AC
Q814	VS2SC458-D/-1	APLD Level Detection (2SC458D)	AC
Q815	VS2SC458-D/-1	Comparator (2SC458D)	AC
Q816	VS2SA844-D/-1	APLD Blank Signal Detection (2SA844D)	AD
Q817	VS2SC458-D/-1	APLD Blank Signal Detection (2SC458D)	AC
Q818	VS2SA733-K/-1	AC/Battery Automatic Changeover (2SA733K)	AC
Q819	VS2SC945AP/-1	LSI Power Compensation (2SC945AP)	AC
Q820	VS2SC945AP/-1	Solenoid and Relay Muting (2SC945AP)	AC
Q901, Q902	VS2SC945AP/-1	Muting (2SC945AP)	AC
Q903, Q904, Q905, Q906, Q907, Q908	VS2SC1740S/-1	Muting (2SC1740S)	AC
	DIODES		
D102, D202	VHD1N60////-1	VU Meter Rectifier (1N60)	AB
LED301	VHPGL-5AR2/-1	LED, Record Indicator Lamp (GL-5AR2)	AD
D401	RH-DX1006AFZZ	Brake (10E1)	AC
D402	VHD1S2076//-1	Brake (1S2076)	AG
D403	RH-DX1006AFZZ	Motor Drive (10E1)	AC
D404	VHD1S2076//-1	Motor Drive (1S2076)	AG
D405	RH-DX1006AFZZ	Solenoid Back Electromotive (10E1)	AC
D406	VHD1S2076//-1	Switching (1S2076)	AG
D501, D502, D503, D504	VHD10E1////-1	Power Rectifier (10E1)	AC
D505	VHD10E1////-1	Relay (10E1)	AC
D507	VHD10E1////-1	Power Stabilizer (10E1)	AC
D701, D702	VHD1N60////-1	Peak Level Indicator Switching (1N60)	AB
LED701	VHPGL-5AR2/-1	LED, Peak Level Indicator (GL-5AR2)	AD
D802	VHD10E1////-1	Motor Circuit Rectifier (10E1)	AC
D803	VHD10E1////-1	AC Power Switching (10E1)	AC
D805	VHD1S2076//-1	Battery Switching (1S2076)	AG
D807	VHD1S2076//-1	Capacitor Discharge (1S2076)	AG
D808	VHD1S2076//-1	Level Interface (1S2076)	AG
D901, D902	VHD1S2076//-1	Muting (1S2076)	AG
D903	VHD10E1////-1	Muting (10E1)	AC
D904, D905	VHD1S2076//-1	Muting (1S2076)	AG

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
	ZENER DIODES		
ZD501	VHEWZ220///-1	Voltage Stabilizer (WZ220)	AD
ZD806	VHERD4R7EC/-1	Control Unit, Voltage Stabilizer (RD4·7)	AC
ZD901	VHERD3R6EC/-1	Muting (RD3·6)	AC
	COILS		
L101, L102, L103, L201, L202, L203	RCILZ0058AFZZ	Equalizer	AE
L301, L302	RCILB0376AFZZ	Bias Trap	AE
L401	RCILF0014AGZZ	Motor	AC
	TRANSFORMERS		
T101, T201	RTRNS0027AGZZ	Headphones	AE
T301	RCILB0086AGZZ	Bias Oscillator	AF
T501	RTRNP0554AFZZ	Power	—
	FILTERS		
FL101, FL201	RCILL0053AFZZ	Bias Trap	AF
FL102, FL202	RCILL0054AFZZ	MPX Filter	AG
	CONTROLS		
VR101, VR201	RVR-A0117AFZZ	50K ohm (A), Line Record Level	AP
VR102, VR202	RVR-M0127AFZZ	10K ohm (B), Record Input Sensitivity Adjust	AC
VR103, VR203	RVR-M0127AFZZ	10K ohm (B), Playback Sensitivity Adjust	AC
VR104, VR204	RVR-M0127AFZZ	10K ohm (B), Playback Amplifier Frequency Adjust	AC
VR105, VR205	RVR-A0124AFZZ	20K ohm (A), Mic. Record Level	AN
VR106, VR206	RVR-M0130AFZZ	50K ohm (B),,Record Sensitivity Adjust	AC
VR107, VR207	RVR-M0130AFZZ	50K ohm (B), Record Sensitivity Adjust	AC
VR108, VR208	RVR-M0130AFZZ	50K ohm (B), Record Sensitivity Adjust	AC
VR109 (A, B)	RVR-B0151AFZZ	10K ohm (B), Output Level	AH
VR110, VR210	RVR-M0126AFZZ	5K ohm (B), VU Meter Sensitivity Adjust	AC
VR301, VR302	RVR-M0126AFZZ	5K ohm (B), Bias Current Adjust	AC
VR801	RVR-M0122AFZZ	500 ohm (B), LSI Voltage Adjust	AC
	THERMISTOR		
TH1	VHH31D26///-1	1K ohm, 15%	AB
	PACKAGED CIRCUITS		
C507	RMPTE0001AFZZ	.01 MFD x 2, 250V (DC), +80 —20%, Ceramic	AB

REF. NO.	PART NO.	DESCRIPTION	CODE
	RESISTORS (Unless otherwise specified resistors are 1/4W, ±5%, Carbon type)		
R101	VRD-ST2EE101J	100 ohm	AA
R102	VRD-ST2EE223J	22K ohm	AA
R103	VRD-ST2EE681J	680 ohm	AA
R104	VRD-ST2EE823J	82K ohm	AA
R105	VRD-ST2EE274J	270K ohm	AA
R106	VRD-ST2EE273J	27K ohm	AA
R107	VRD-ST2EE684J	680K ohm	AA
R108	VRD-ST2EE223J	22K ohm	AA
R109	VRD-ST2EE273J	27K ohm	AA
R110	VRD-ST2EE124J	120K ohm	AA
R111	VRD-ST2EE223J	22K ohm	AA
R112	VRD-ST2EE185J	1.8 Meg ohm	AA
R113	VRD-ST2EE123J	12K ohm	AA
R114	VRD-ST2EE272J	2.7K ohm	AA
R115	VRD-ST2EE223J	22K ohm	AA
R116	VRD-ST2EE333J	33K ohm	AA
R117	VRD-ST2EE221J	220 ohm	AA
R118	VRD-ST2EE272J	2.7K ohm	AA
R119	VRD-PT3AB181K	180 ohm, 1W, ±10%, Carbon	AB
R120	VRD-ST2EE102J	1K ohm	AA
R122	VRD-ST2EE274J	270K ohm	AA
R124	VRD-ST2EE223J	22K ohm	AA
R125	VRD-ST2EE332J	3.3K ohm	AA
R126	VRD-ST2EE473J	47K ohm	AA
R129	VRD-ST2EE181J	180 ohm	AA
R130	VRD-ST2EE103J	10K ohm	AA
R131	VRD-ST2EE393J	39K ohm	AA
R132	VRD-ST2EE104J	100K ohm	AA
R133	VRD-ST2EE332J	3.3K ohm	AA
R134	VRD-ST2EE223J	22K ohm	AA
R135	VRD-ST2EE472J	4.7K ohm	AA
R136	VRD-ST2EE820J	82 ohm	AA
R137	VRD-ST2EE183J	18K ohm	AA
R138	VRD-ST2EE121J	120 ohm	AA
R139	VRD-ST2EE332J	3.3K ohm	AA
R140	VRD-ST2EE470J	47 ohm	AA
R141	VRD-ST2EE562J	5.6K ohm	AA
R142	VRD-ST2EE104J	100K ohm	AA
R143	VRD-ST2EE184J	180K ohm	AA
R144	VRD-ST2EE393J	39K ohm	AA
R145	VRD-ST2EE333J	33K ohm	AA
R146	VRD-ST2EE332J	3.3K ohm	AA
R147	VRD-ST2EE332J	3.3K ohm	AA
R148	VRD-ST2EE102J	1K ohm	AA
R149	VRD-ST2EE224J	220K ohm	AA
R150	VRD-ST2EE563J	56K ohm	AA
R151	VRD-ST2EE102J	1K ohm	AA
R152	VRD-ST2EE221J	220 ohm	AA
R153	VRD-ST2EE334J	330K ohm	AA
R154	VRD-ST2EE153J	15K ohm	AA
R155	VRD-ST2EE182J	1.8K ohm	AA
R156	VRD-ST2EE181J	180 ohm	AA
R157	VRD-ST2EE222J	2.2K ohm	AA
R158	VRD-ST2EE153J	15K ohm	AA
R159	VRD-ST2EE393J	39K ohm	AA
R160	VRD-ST2EE561J	560 ohm	AA
R161	VRD-ST2EE123J	12K ohm	AA
R162	VRD-SU2EY273J	27K ohm	AA
R163	VRD-ST2EE472J	4.7K ohm	AA
R164	VRD-ST2EE682J	6.8K ohm	AA
R165	VRD-SU2EY683J	68K ohm	AA

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R166	VRD-SU2EY105J	1Meg ohm	AA
R167	VRG-ST2EA470J	47 ohm, 1/4W, ±5%, Fusible	—
R170	VRD-ST2EE204J	200K ohm	
R171	VRD-ST2EE102J	1K ohm	
R172	VRD-ST2EE682J	6.8K ohm	
R173	VRD-ST2EE183J	18K ohm	
R201	VRD-ST2EE101J	100 ohm	
R202	VRD-ST2EE223J	22K ohm	
R203	VRD-ST2EE681J	680 ohm	
R204	VRD-ST2EE823J	82K ohm	
R205	VRD-ST2EE274J	270K ohm	AA
R206	VRD-ST2EE273J	27K ohm	
R207	VRD-ST2EE684J	680K ohm	
R208	VRD-ST2EE223J	22K ohm	
R209	VRD-ST2EE273J	27K ohm	
R210	VRD-ST2EE124J	120K ohm	
R211	VRD-ST2EE223J	22K ohm	
R212	VRD-ST2EE185J	1.8Meg ohm	
R213	VRD-ST2EE123J	12K ohm	
R214	VRD-ST2EE272J	2.7K ohm	
R215	VRD-ST2EE223J	22K ohm	
R216	VRD-ST2EE333J	33K ohm	
R217	VRD-ST2EE221J	220 ohm	
R218	VRD-ST2EE272J	2.7K ohm	
R219	VRS-PT3AB181K	180 ohm, 1W, ±10%, Carbon	AB
R220	VRD-ST2EE102J	1K ohm	
R222	VRD-ST2EE274J	270K ohm	
R224	VRD-ST2EE223J	22K ohm	
R225	VRD-ST2EE332J	3.3K ohm	
R226	VRD-ST2EE473J	47K ohm	
R229	VRD-ST2EE181J	180 ohm	
R230	VRD-ST2EE103J	10K ohm	
R231	VRD-ST2EE393J	39K ohm	
R232	VRD-ST2EE104J	100K ohm	
R233	VRD-ST2EE332J	3.3K ohm	
R234	VRD-ST2EE223J	22K ohm	
R235	VRD-ST2EE472J	4.7K ohm	
R236	VRD-ST2EE820J	82 ohm	
R237	VRD-ST2EE183J	18K ohm	
R238	VRD-ST2EE121J	120 ohm	
R239	VRD-ST2EE332J	3.3K ohm	
R240	VRD-ST2EE470J	47 ohm	
R241	VRD-ST2EE562J	5.6K ohm	
R242	VRD-ST2EE104J	100K ohm	
R243	VRD-ST2EE184J	180K ohm	
R244	VRD-ST2EE393J	39K ohm	AA
R245	VRD-ST2EE333J	33K ohm	
R246	VRD-ST2EE332J	3.3K ohm	
R247	VRD-ST2EE332J	3.3K ohm	
R248	VRD-ST2EE102J	1K ohm	
R249	VRD-ST2EE224J	220K ohm	
R250	VRD-ST2EE563J	56K ohm	
R251	VRD-ST2EE102J	1K ohm	
R252	VRD-ST2EE221J	220 ohm	
R253	VRD-ST2EE334J	330K ohm	
R254	VRD-ST2EE153J	15K ohm	
R255	VRD-ST2EE182J	1.8K ohm	
R256	VRD-ST2EE181J	180 ohm	
R257	VRD-ST2EE222J	2.2K ohm	
R258	VRD-ST2EE153J	15K ohm	
R261	VRD-ST2EE123J	12K ohm	
R262	VRD-SU2EY273J	27K ohm	
R263	VRD-ST2EE472J	4.7K ohm	
R264	VRD-ST2EE682J	6.8K ohm	
R265	VRD-SU2EY683J	68K ohm	
R266	VRD-SU2EY105J	1Meg ohm	
R270	VRD-ST2EE204J	200K ohm	AA
R271	VRD-ST2EE102J	1K ohm	AA
R272	VRD-ST2EE682J	6.8K ohm	AA
R273	VRD-ST2EE183J	18K ohm	AA
R301	VRD-ST2EE1R0J	1 ohm	AA
R302	VRD-ST2EE104J	100K ohm	AA
R303	VRD-ST2EE104J	100K ohm	AA
R304	VRS-PT3AB471K	470 ohm, 1W, ±10%, Oxide Film	AB
R305	VRS-PT3AB820K	82 ohm, 1W, ±10%, Oxide Film	AB
R306	VRS-PT3DB181K	180 ohm, 2W, ±10%, Oxide Film	AB
R307	VRD-ST2EE821J	820 ohm	
R308	VRD-ST2EE180J	18 ohm	
R401	VRD-ST2EE681J	680 ohm	
R402	VRD-ST2EE103J	10K ohm	
R405	VRD-ST2EE103J	10K ohm	
R406	VRD-ST2EE122J	1.2K ohm	
R407	VRD-ST2EE223J	22K ohm	
R408	VRD-SU2EY562J	5.6K ohm	
R409	VRD-SU2EY223J	22K ohm	AA
R410	VRD-ST2EE103J	10K ohm	
R411	VRD-ST2EE222J	2.2K ohm	
R501	VRD-ST2EE273J	27K ohm	
R504	VRD-ST2EE391J	390 ohm	
R506	VRD-ST2EE562J	5.6K ohm	
R507	VRD-ST2EE103J	10K ohm	
R508	VRD-ST2EE223J	22K ohm	
R509	VRD-SU2EY562J	5.6K ohm	
R510	VRD-SU2EY562J	5.6K ohm	
R512	VRS-PT3DB102K	1K ohm, 2W, ±10%, Oxide Film	AB
R513	VRC-MT2HG221J	220 ohm, 1/2W, ±5%, Carbon	AA
R514	VRG-ST2HA100J	10 ohm, 1/2W, ±5%, Fusible	AB
R515	VRG-ST2HA1R0J	1 ohm, 1/2W, ±5%, Fusible	AB
R516	VRD-ST2EE1R0J	1 ohm	AB
R518	VRD-SU2EY183J	18K ohm	AA
R519	VRD-ST2EE562J	5.6K ohm	AA
R520	RR-WZ1003AFZZ	18 ohm, 10W, ±10%, Cement	AC
R521	VRG-ST2HA1R0J	1 ohm, 1/2W, ±5%, Fusible	AB
R601	VRD-ST2EE153J	15K ohm	
R602	VRD-SU2EY105J	1 Meg ohm	
R603	VRD-SU2EY473J	47K ohm	
R604	VRD-SU2EY561J	560 ohm	
R605	VRD-SU2EY563J	56K ohm	
R606	VRD SU2EY152J	1.5K ohm	
R607	VRD-SU2EY153J	15K ohm	AA
R608	VRD-SU2EY105J	1 Meg ohm	
R609	VRD-SU2EY473J	47K ohm	
R610	VRD-SU2EY561J	560 ohm	
R611	VRD-SU2EY563J	56K ohm	
R612	VRD-SU2EY152J	1.5K ohm	
R613	VRD-SU2EY272J	2.7K ohm	
R701	VRD-ST2EE392J	3.9K ohm	AA
R702	VRD-ST2EE122J	1.2K ohm	AA
R703	VRD-ST2EE123J	12K ohm	AA
R704	VRS-PT3AB681K	680 ohm, 1W, ±10%, Oxide Film	AB
R801	VRD-ST2EE103J	10K ohm	
R802	VRD-ST2EE563J	56K ohm	
R803	VRD-ST2EE563J	56K ohm	
R805	VRD-ST2EE183J	18K ohm	
R806	VRD-ST2EE563J	56K ohm	AA
R807	VRD-SU2EY222J	2.2K ohm	
R808	VRD-SU2EY223J	22K ohm	
R809	VRD-SU2EY223J	22K ohm	
R810	VRD-ST2EE102J	1K ohm	
R811	VRD-ST2EE393J	39K ohm	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R813	VRD-ST2EE563J	56K ohm	
R814	VRD-ST2EE333J	33K ohm	
R816	VRD-ST2EE223J	22K ohm	AA
R817	VRD-ST2EE394J	390K ohm	
R818	VRS-PT3AB152K	1.5K ohm, 1W, ±10%, Oxide Film	AB
R819	VRD-ST2EE563J	56K ohm	
R820	VRD-ST2EE563J	56K ohm	
R821	VRD-ST2EE103J	10K ohm	
R822	VRD-ST2EE333J	33K ohm	
R823	VRD-ST2EE103J	10K ohm	
R824	VRD-ST2EE103J	10K ohm	
R825	VRD-ST2EE223J	22K ohm	
R826	VRD-ST2EE224J	220K ohm	
R827	VRD-ST2EE561J	560 ohm	
R828	VRD-ST2EE471J	470 ohm	
R829	VRD-ST2EE222J	2.2K ohm	
R830	VRD-ST2EE103J	10K ohm	
R831	VRD-ST2EE151J	150 ohm	
R832	VRD-ST2EE680J	68 ohm	
R833	VRD-ST2EE103J	10K ohm	
R834	VRD-ST2EE563J	56K ohm	
R835	VRD-ST2EE222J	2.2K ohm	
R836	VRD-ST2EE103J	10K ohm	
R837	VRD-ST2EE332J	3.3K ohm	
R838	VRD-ST2EE103J	10K ohm	
R839	VRD-ST2EE103J	10K ohm	
R840	VRD-ST2EE223J	22K ohm	
R841	VRD-ST2EE153J	15K ohm	
R842	VRD-ST2EE332J	3.3K ohm	
R843	VRD-SU2EY683J	68K ohm	AA
R844	VRD-ST2EE330J	33 ohm	
R845	VRD-ST2EE471J	470 ohm	
R846	VRD-ST2EE222J	2.2K ohm	
R847	VRD-ST2EE102J	1K ohm	
R848	VRD-ST2EE391J	390 ohm	
R849	VRD-ST2EE823J	82K ohm	
R850	VRD-ST2EE683J	68K ohm	
R851	VRD-ST2EE103J	10K ohm	
R852	VRD-ST2EE105J	1Meg ohm	
R853	VRD-ST2EE103J	10K ohm	
R854	VRD-ST2EE153J	15K ohm	
R855	VRD-ST2EE153J	15K ohm	
R902	VRD-SU2EY273J	27K ohm	
R903	VRD-SU2EY223J	22K ohm	
R904	VRD-SU2EY223J	22K ohm	
R905	VRD-SU2EY392J	3.9K ohm	
R906	VRD-SU2EY273J	27K ohm	
R907	VRD-SU2EY273J	27K ohm	
R908	VRD-SU2EY273J	27K ohm	
R909	VRD-SU2EY273J	27K ohm	
R910	VRD-SU2EY273J	27K ohm	
R911	VRD-SU2EY273J	27K ohm	
R915	VRD-SU2EY223J	22K ohm	

ELECTROLYTIC CAPACITORS

(Unless otherwise specified Capacitors are 16V, +50 –10%, type)

C102	VCEALA1HC225M	2.2 MFD, 50V, ±20%	AC
C106	VCEAAU1AW227Y	220 MFD, 10V, +50 –10%	AC
C107	VCEAAA1CW106Y	10 MFD	AB
C109	VCEALA1HC105M	1 MFD, 50V, ±20%	AC
C110	VCEAAA1CW106Y	10 MFD	AB
C113	VCEALA1HC105M	1 MFD, 50V, ±20%	AC
C114	VCEAAU1CW477Y	470 MFD	AD
C115	VCEAAU1CW227Y	220 MFD	AC
C117	VCEAAA1CW106Y	10 MFD	AB
C119	VCAAAU1EB334K	.33 MFD, 25V, ±10%, Aluminum	AC
C121	VCEAAA1CW106Y	10 MFD	
C126	VCEAAA1CW106Y	10 MFD	
C127	VCEAAA1CW106Y	10 MFD	
C128	VCEAAA1CW106Y	10 MFD	
C135	VCEAAA1CW106Y	10 MFD	
C136	VCEAAA1CW106Y	10 MFD	
C137	VCEAAA1EW335A	3.3 MFD, 25V, +75 –10%	AB
C138	VCEAAA1CW106Y	10 MFD	
C139	VCEAAA1CW106Y	10 MFD	
C140	VCEAAA1CW106Y	10 MFD	
C141	VCEAAA1HW105A	1 MFD, 50V, +75 –10%	
C142	VCEAAA1CW106Y	10 MFD	
C143	VCEAAA1CW106Y	10 MFD	
C144	VCEAAU1EW227Y	220 MFD, 25V, +50 –10%	AC
C145	VCEAAU1EW227Y	220 MFD, 25V, +50 –10%	AC
C146	VCEAAU1EW107Y	100 MFD, 25V, +50 –10%	AC
C202	VCEALA1HC225M	2.2 MFD, 50V, ±20%	AC
C206	VCEAAU1AW227Y	220 MFD, 10V, +50 –10%	AC
C207	VCEAAA1CW106Y	10 MFD	AB
C209	VCEALA 1HC105M	1 MFD, 50V, ±20%	AC
C210	VCEAAA1CW106Y	10 MFD	AB
C213	VCEALA1HC105M	1 MFD, 50V, ±20%	AC
C214	VCEAAU1CW477Y	470 MFD	AD
C215	VCEAAU1CW227Y	220 MFD	AC
C217	VCEAAA1CW106Y	10 MFD	AB
C219	VCAAAU1EB334K	.33 MFD, 25V, ±10%, Aluminum	AC
C221	VCEAAA1CW106Y	10 MFD	
C226	VCEAAA1CW106Y	10 MFD	
C227	VCEAAA1CW106Y	10 MFD	
C228	VCEAAA1CW106Y	10 MFD	
C235	VCEAAA1CW106Y	10 MFD	
C236	VCEAAA1CW106Y	10 MFD	
C237	VCEAAA1EW335A	3.3 MFD, 25V, +75 –10%	AB
C238	VCEAAA1CW106Y	10 MFD	
C239	VCEAAA1CW106Y	10 MFD	
C240	VCEAAA1CW106Y	10 MFD	
C241	VCEAAA1HW105A	1 MFD, 50V, +75 –10%	
C242	VCEAAA1CW106Y	10 MFD	
C243	VCEAAA1CW106Y	10 MFD	
C303	VCEAAA1EW106Y	10 MFD, 25V, +50 –10%	
C309	VCEAAU1EW227Y	220 MFD, 25V, +50 –10%	AC
C401	VCEAAU1EW107Y	100 MFD, 25V, +50 –10%	AC
C403	VCEAAU1EW107Y	100 MFD, 25V, +50 –10%	AC
C406	VCEAAA1CW106Y	10 MFD	AB
C501	VCEAAU1HW477Y	470 MFD, 50V, +50 –10%	AG
C502	VCEAAU1HW477Y	470 MFD, 50V, +50 –10%	AG
C503	VCEAAU1EW227Y	220 MFD, 25V, +50 –10%	AC
C506	VCEAAU1EW108Y	1000 MFD, 25V, +50 –10%	AF
C509	VCEAAU1EW227Y	220 MFD, 25V, +50 –10%	AC
C512	VCEAAU1EW476Y	47 MFD, 25V, +50 –10%	AC
C513	VCEAAU1AW476Y	47 MFD, 10V, +50 –10%	AB
C601	VCEALA1HC105M	1MFD, 50V, ±20%	AC
C602	VCEALA1HC105M	1MFD, 50V, ±20%	AC
C604	VCEAAU1AW107Y	100MFD, 10V, +50–10%	AC
C605	VCEALA1HC105M	1MFD, 50V, ±20%	AC
C606	VCEALA1HC105M	1MFD, 50V, ±20%	AC
C608	VCEAAU1AW107Y	100MFD, 10V, +50–10%	AC
C609	VCEAAU1EW476Y	47MFD, 25V, +50–10%	AB
C701	VCEAAA1CW106Y	10 MFD	AB

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
19	LANGA0060AFFW	Bracket, APLD Operation Proof	—
20	LCHSM0268AFZZ	Main Chassis	—
21	LCHSS0128AFZZ	Sub Chassis	—
22	PCUSG0078AF00	Cushion, Mechanical Key (Shock-proof)	AC
23	LSLVM0073AFFW	Sleeve, Select Lever	—
24	LX-HZ0056AFFD	Screw	—
26	LSTPF0052AFFW	Stopper, Mechanical Key Shaft	AB
27	LBSHS0001AG00	Cushion, Motor	AA
28	LBSHZ0050AFZZ	Stopper, Select Lever	AA
29	LPINB0051AFFW	Shaft, Solenoid Operating	—
31	MLEVP0093AFZZ	Lever, Cassette Holder Lock	AB
32	PCUSG0079AF00	Cushion, Main Lock Plate	AB
33	MRODM0058AFFD	Rod, Pause Connecting	AB
34	RHEDA0050AFZZ	Erase Head	AN
35	RHEDH0062AFZZ	Record/Playback Head	AY
36	PFLT-0329AF00	Felt, Fast forward/Rewind Lever	AA
37	RMOTP0051AFZZ	PLL Servo Motor Assembly	BG
38	MLEVP0091AFZZ	Lever, Idler Returning	AC
39	MLEVP0086AFZZ	Lever, Brake Returning	AB
40	NPLYC0101AFFD	Stopper, Record/Playback Switch Rod	AA
41	JKNBR0108AFSA	Key, Play/Stop/Fast forward-Forward APLD/Rewind-Reverse APLD (RT-3838HA)	AH
	JKNBR0108AFSD	Key, Play/Stop/Fast forward-Forward APLD/Rewind-Reverse APLD (RT-3838HD)	—
42	JKNBR0109AFSA	Key, Pause/Cassette Eject (RT-3838HA)	AH
	JKNBR0109AFSB	Key, Pause/Cassette Eject (RT-3838HD)	—
43	JKNBR0108AFSB	Key, Record (RT-3838HA)	AH
	JKNBR0108AFSD	Key, Record (RT-3838HD)	—
46	NBLTK0116AFZZ	Belt, Take-up Turntable	AB
47	NBALS0004AGFJ	Ball (ϕ3)	AA
48	NBLTH0057AFZZ	Belt, Flywheel	AD
49	NBRGC0059AFZZ	Bearing, Capstan	AG
50	LHLDP3017AF00	Holder, Cassette Chamber Lamp (PL1)	—
51	NPLYR0050AFZZ	Pulley, Take-up Turntable	AB
52	NPLYR0059AFZZ	Pulley, Take-up	AE
53	NDAIR0122AFSA	Turntable, Supply	AE
54	NDAIR0121AFSA	Turntable, Take-up	AG
55	NROLY0011AFZZ	Pressure Roller	AF
56	NROLX0003AFZZ	Roller, Rewind	AB
57	MSPRT0537AFFJ	Spring, Play Lock Lever	—
58	NFLYC0068AFZZ	Flywheel	AT
59	NSFTT0106AFFD	Shaft, Cassette Holder Lock Lever	AA
60	NSFTT0120AFFP	Shaft, Mechanical Key	AF
61	NIDR-0057AFZZ	Idler, Take-up	AF
62	MSPRD0162AFFJ	Spring, Cassette Holder Lock Lever	AA
63	MSPRD0161AFFJ	Spring, Pressure Roller	AB
64	MSPRD0163AFFJ	Spring, Cassette Holder Lock Lever	AA
65	MSPRD0164AFFJ	Spring, Pause Lock Plate	AA
66	MSPRP0157AFFJ	Plate Type Spring, Sub Chassis	AC
67	MSPRP0156AFFJ	Spring, Mechanical Key Returning	AE
68	MSPRT0472AFFJ	Spring, Fast forward/ Rewind Roller	AA
69	MSPRT0471AFFJ	Spring, Fast forward/Rewind Roller	AA
70	MSPRT0465AFFJ	Spring, Over Stroke	AA
71	MSPRT0477AFFJ	Spring, Rewind Lever Returning	AA
72	MSPRT0506AFFJ	Spring, Over Stroke Lever Returning	AA
73	MSPRT0467AFFJ	Spring, Pause Lever Returning	AA
74	MSPRT0517AFFJ	Spring, Main Lock Plate Returning	—
75	MSPRT0467AFFJ	Spring, Record Lever Returning	AA
76	MSPRT0470AFFJ	Spring, Main Lock Plate	AA
77	MSPRT0469AFFJ	Spring, Record Prevention Lever	AA
78	MSPRT0474AFFJ	Spring, Cassette Tape Settle Lever	AA
79	MSPRT0463AFFJ	Spring, Record Safety Lever	AA
80	MSPRT0464AFFJ	Spring, Take-up Idler	AY
81	MSPRC0031AGMN	Spring, Record/Playback Head Azimuth	AA
82	MSPRC0123AFFJ	Spring, Solenoid	AA
83	MLEVF0736AFZZ	Lever, Rewind	AE
84	MLEVF0729AFZZ	Lever, Over Stroke	AE
85	MLEVF0734AFZZ	Lever, Fast forward/Rewind	AG
86	MLEVF0735AFFW	Lever, Lock Release	AC
87	MLEVF0737AFFW	Lever, Fast forward	AD
88	MLEVF0739AFZZ	Lever, Pause	AF
89	MLEVF0732AFFW	Lever, Record	AD
90	MLEVF0741AFZZ	Main Lock Plate	AF
91	MLEVF0740AFZZ	Lever, Play Lock	AG
92	MLEVF0731AFFW	Lever, Eject	AB
93	MLEVF0730AFFW	Lever, Pause Returning	AC
94	MLEVF0738AFFW	Lever, Record Prevention	AC
95	MLEVF0733AFFW	Pause Lock Plate	AC
96	MLEVP0089AFZZ	Lever, Pause Connecting Lever	AB
97	MLEVP0088AFZZ	Lever, Auto Start Returning	AC
98	MLEVP0090AFZZ	Lever, Cassette Tape Settle	AC
99	MLEVP0087AFZZ	Lever, Record Safety	AC

MISCELLANEOUS

REF. NO.	PART NO.	DESCRIPTION	CODE
101	GLEGP0061AFZZ	Leg	AC
102	GCOVA1093AFSA	Cover, Power Switch (RT-3838HA)	AD
	GCOVA1093AFSB	Cover, Power Switch (RT-3838HD)	—
103	GCOVA1094AFSA	Cover, Editor Switch (RT-3838HA)	AE
	GCOVA1094AFSB	Cover, Editor Switch (RT-3838HD)	—
104	GCOVA1096AFSA	Transparent Plate, Control Unit	AD
105	GFTAU3070AFZZ	Bottom Plate	AH
106	GFTAF1003FASA	Cassette Door (Transparent Plate)	AG
107	GFTAB1106AFSA	Lid, Battery Compartment	AE
108	GCAB-3050AFSA	Cabinet	AX
109	HPNLC3311AFSA	Front Panel (RT-3838HA)	BB
	HPNLC3311AFSB	Front Panel (RT-3838HD)	—

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
C801	VCEAAU0XW227Y	220 MFD, 6.0V, +50 −10%	AC
C802	VCEAAU0XW227Y	220 MFD, 6.0V, +50 −10%	AC
C803	VCEAAU1EW476Y	47 MFD, 25V, +50 −10%	AC
C807	VCEAAA1EW475A	4.7 MFD, 25V, +75 −10%	AB
C808	VCEAAA1HW105A	1 MFD, 50V, +75 −10%	AB
C809	VCEALA1HC475M	4.7 MFD, 50V, ±20%	AC
C810	VCEAAA1EW335A	3.3 MFD, 25V, +75 −10%	AB
C811	VCEAAU1EW107Y	100 MFD, 25V, +50 −10%	AC
C812	VCEAAU0XW227Y	220 MFD, 6.0V, +50 −10%	AC
C813	VCEAAA1CW106Y	10 MFD,	AB
C818	VCEAAU1HW105A	1 MFD, 50V, +75 −10%	AB
C903	VCEAAU1HW106Y	10 MFD, 50V, +50 −10%	AC
C904	VCEAAU1HW106Y	10 MFD, 50V, +50 −10%	AC

CAPACITORS

(Unless otherwise specified capacitors are 50V, ±5%, Mylar type)

C101	VCCSPU1HL331K	330 pF, 50V, ±10%, Ceramic	AB
C103	VCCSPU1HL120K	12 pF, 50V, ±10%, Ceramic	AA
C104	VCCSPU1HL151K	150 pF, 50V, ±10%, Ceramic	AA
C105	VCQYKU1HM472J	.0047MFD	AC
C111	VCCSPU1HL120K	12 pF, 50V, ±10%, Ceramic	AA
C112	VCQYKU1HM823K	.082 MFD, 50V, ±10%, Mylar	AC
C118	VCQYKU1HM104K	.1 MFD, 50V, ±10%, Mylar	AC
C120	VCQYKU1HM472J	.0047 MFD	AC
C123	VCQYKU1HM273J	.027 MFD	AC
C124	VCQYKU1HM473J	.047 MFD	AC
C125	VCQYKU1HM562J	.0056 MFD	AC
C129	VCQYKU1HM103J	.01 MFD	AB
C130	VCQYKU1HM273K	.027 MFD, 50V, ±10%, Mylar	AB
C131	VCQYKU1HM822J	.0082 MFD	AC
C132	VCQYKU1HM153K	.015 MFD, 50V, ±10%, Mylar	AB
C133	VCQYKU1HM103J	.01 MFD	AB
C134	VCQYKU1HM153K	.015 MFD, 50V, ±10%, Mylar	AB
C147	VCQYKU1HM222K	.0022MFD, 50V, ±10%, Mylar	AB
C150	VCCSPU1HL471K	470 pF, 50V, ±10%, Ceramic	AB
C151	VCKZPU1HF102Z	.001 MFD, 50V, +80 −20%, Ceramic	AA
C152	VCKZPU1HF102Z	.001 MFD, 50V, +80 −20%, Ceramic	AA
C153	VCKYPU1HB391K	390 pF, 50V, ±10%, Ceramic	AB
C173	VCKZPU1EF103Z	.01MFD, 25V, +80−20%, Ceramic	AA
C201	VCCSPU1HL331K	330 pF, 50V, ±10%, Ceramic	AB
C203	VCCSPU1HL120K	12 pF, 50V, ±10%, Ceramic	AA
C204	VCCSPU1HL151K	150 pF, 50V, ±10%, Ceramic	AA
C205	VCQYKU1HM472J	.0047 MFD	AC
C211	VCCSPU1HL120K	12 pF, 50V, ±10%, Ceramic	AA
C212	VCQYKU1HM823K	.082 MFD, 50V, ±10%, Mylar	AC
C218	VCQYKU1HM104K	.1 MFD, 50V, ±10%, Mylar	AC
C220	VCQYKU1HM472J	.0047 MFD	AC
C223	VCQYKU1HM273J	.027 MFD,	AC
C224	VCQYKU1HM473J	.047 MFD	AC
C225	VCQYKU1HM562J	.0056 MFD	AC
C229	VCQYKU1HM103J	.01 MFD	AB
C230	VCQYKU1HM273K	.027 MFD, 50V, ±10%, Mylar	AB
C231	VCQYKU1HM822J	.0082 MFD	AC
C232	VCQYKU1HM153K	.015 MFD, 50V, ±10%, Mylar	AB
C233	VCQYKU1HM103J	.01 MFD	AB
C234	VCQYKU1HM153K	.015 MFD, 50V, ±10%, Mylar	AB
C247	VCQYKU1HM222K	.0022MFD, 50V, ±10%, Mylar	AC
C250	VCCSPU1HL471K	470 pF, 50V, ±10%, Ceramic	AA
C251	VCKZPU1HF102Z	.001 MFD, 50V, +80 −20%, Ceramic	AA
C252	VCKZPU1HF102Z	.001 MFD, 50V, +80 −20%, Ceramic	AA
C253	VCKYPU1HB391K	390 pF, 50V, ±10%, Ceramic	AA
C301	VCCSPU1HL561K	560 pF, 50V, ±10%, Ceramic	AA
C302	VCCSPU1HL561K	560 pF, 50V, ±10%, Ceramic	AA
C304	VCQYKU1HM103M	.01 MFD, 50V, ±20%, Mylar	AB
C305	VCQYKU1HM272K	.0027 MFD, 50V, ±10%, Mylar	AB
C306	VCQYKU1HM272K	.0027 MFD, 50V, ±10%, Mylar	AB
C307	VCQYKU1HM223J	.022 MFD	AC
C308	VCQYKU1HM103M	.01 MFD, 50V, ±20%, Mylar	AB
C402	VCKZPU1HF103Z	.01 MFD, 50V, +80 −20%, Ceramic	AA
C404	VCKZPU1HF103Z	.01 MFD, 50V, +80 −20%, Ceramic	AA
C407	VCKZPU1HF103Z	.01 MFD, 50V, +80 −20%, Ceramic	AA
C504	VCKZPU1HF103Z	.01 MFD, 50V, +80 −20%, Ceramic	AA
C508	VCKZPU1HF403Z	.04 MFD, 50V, +80 −20%, Ceramic	AB
C511	VCKZPU1HF103Z	.01 MFD, 50V, +80 −20%, Ceramic	AA
C514	RC-HZ053CAFZZ	.01 MFD, 250V, (AC), ±20%, Metalized Paper	AG
C804	VCQYKU1HM103M	.01 MFD, 50V, ±20%, Mylar	AB
C805	VCQYKU1HM103K	.01 MFD, 50V, ±10%, Mylar	AB
C806	VCCSPU1HL150J	15 pF	AA
C815	VCQYKU1HM103J	.01 MFD	AB
C816	VCCSPU1HL101K	100 pF, 50V, ±10%, Ceramic	AA
C817	VCCSPU1HL101K	100 pF, 50V, ±10%, Ceramic	AA
C1001	VCKZPU1HF102Z	.001 MFD, 50V, +80 −20%, Ceramic	AA
C1002	VCKZPU1HF102Z	.001 MFD, 50V, +80 −20%, Ceramic	AA
C1003	VCKZPU1HF102Z	.001 MFD, 50V, +80 −20%, Ceramic	AA
C1004	VCKZPU1HF102Z	.001 MFD, 50V, +80 −20%, Ceramic	AA
C1005	VCQYKU1HM102M	.001 MFD, 50V, ±20%, Mylar	AA
C1006	VCKZPU1HF102Z	.001 MFD, 50V, +80 −20%, Ceramic	AA

MECHANICAL PARTS

01	NROLW0004AFZZ	Roller, Fast Forward/Rewind	AK
02	MLEVP0094AFZZ	Lever, Brake	AB
03	PCUSG0086AF00	Cushion, Brake Lever	—
04	MLEVF0800AFZZ	Lever, Brake and Muting Switch	—
05	LX-BZ0214AFZZ	Screw, Flywheel Thrust Adjust	AB
06	MSPRT0532AFFJ	Spring, Brake and Muting Switch Lever	—
07	PCUSG0062AF00	Cushion, Sub Chassis	AA
08	LX-BZ0219AFFD	Screw, Motor	AA
09	MLEVP0092AFZZ	Lever, Select	AC
11	LHLDZ1071AFZZ	Holder, Mechanism IC P.W. Board	AB
12	LANGF0399AFZZ	Bracket, Flywheel	—
13	LANGF0398AFFW	Bracket, Motor	—
14	LANGF0419AFZZ	Bracket, Motor (Shock-proof)	—
16	LANGA0061AFFW	Bracket, Solenoid Settle	—

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
110	HDECB0067AFSA	Cassette Door (Decoration Plate)	AL
111	JKNBP0079AFSA	Knob, Power Switch/Editor Switch (RT-3838HA)	AF
	JKNBP0079AFSB	Knob, Power Switch/Editor Switch (RT-3838HD)	—
112	JKNBN0348AFSA	Knob, Line Record Level Control/Mic. Record Level Control (RT-3838HA)	AH
	JKNBN0348AFSB	Knob, Line Record Level Control/Mic. Record Level Control (RT-3838HD)	—
113	JKNBK0164AFSA	Knob, Line Record Level Control/Mic. Record Level Control (RT-3838HA)	AH
	JKNBK0164AFSB	Knob, Line Record Level Control/Mic. Record Level Control (RT-3838HD)	—
114	JKNBN0349AFSA	Knob, Output Level Control (RT-3838HA)	AH
	JKNBN0349AFSB	Knob, Output Level Control (RT-3838HD)	—
115	JKNBP0078AFSA	Knob, LCD Light Switch/Zero Rewind Switch/Dolby NR Switch/Bias Selector Switch (RT-3838HA)	AE
	JKNBP0078AFSB	Knob, LCD Light Switch/Zero Rewind Switch/Dolby NR Switch/Bias Selector Switch (RT-3838HD)	—
116	LANGF0412AFZZ	Bracket, Power Transformer	AA
117	LANGH0114AFZZ	Bracket, Record/Playback P.W. Board	—
118	PCUSG0083AF00	Cushion, Record/Playback P.W. Board	AC
119	LANGQ0526AFZZ	Bracket, Headphones Jack/ Microphone Jacks	AD
120	LANGT0696AFZZ	Bracket, Power Switch/Editor Switch	—
121	LANGT0643AFZZ	Bracket, Level Controls	AC
122	LBSHC0004AGZZ	Bushing, AC Supply Cord (SEEG)	AC
	LBSHC0002AGZZ	Bushing, AC Supply Cord (SUK)	AB
	LBSHC0007AFZZ	Bushing, AC Supply Cord (SCA, EX)	AB
123	LANGQ0566AFZZ	Bracket, Voltage Selector Socket	AC
124	PCOVP1160AFZZ	Cover, Capacitor (C514)	—
125	LCHSM0286AFZZ	Main Chassis	—
126	LX-BZ0238AFSA	Screw, Decoration	AF
127	MSPRT0482AFFJ	Spring, Record/Playback Switch	AA
128	PSLDC3066AFZZ	Shield Plate, Power Transformer	AF
129	MRODM0059AFZZ	Rod, Record/Playback Switch	AE
130	QLUGL0201AGZZ	Lug Terminal	AB
131	QPWBF0741AFA4	P.W. Board, Transport	N.A.
132	LANGQ0572AFZZ	Bracket, Input Selector Switch	AB
137	MLEVF0753AFZZ	Lever, LCD Light Switch	AA
138	MLEVF0754AFZZ	Lever, Zero Rewind Switch	AA
139	MLEVF0755AFZZ	Lever, Dolby NR Switch	AC
140	MLEVF0756AFZZ	Lever, Bias Selector Switch	AA
141	MLEVF0757AFZZ	Lever, Equalization Selector Switch	AA

REF. NO.	PART NO.	DESCRIPTION	
142	PCASB0053AFSA	Battery Case	AF
143	PCOVM1052AF00	Cover, Liquid Leak Equipment	AC
146	PCUSS0104AFZZ	Cushion, VU Meter	AA
148	PSHEZ0064AFZZ	Spacer, VU Meter	AA
149	QPWBF0665AFZZ	P.W. Board, Headphones Jack/ Microphone Jacks	N.A.
150	QPWBF0686AFZZ	P.W. Board, Muting	N.A.
152	PSHEF0048AG00	Sheet, Cabinet (Shock Proof)	AA
153	LANGF0422AFZZ	Bracket, Cassette Holder Returning Spring	—
154	MSPRT0483AFFJ	Spring, Cassette Lifter	AB
155	MRODM0060AFZZ	Rod, Cassette Holder	AC
156	LANGF0405AFZZ	Bracket, Mechanism Settle (Left)	AC
157	LANGF0406AFZZ	Bracket, Mechanism Settle (Right)	AB
158	QPWBF0652AFZZ	P.W. Board, Record/Playback	N.A.
159	QCNW-0315AFZZ	Flat Cable	—
160	QPWBF0734AFA2	P.W. Board, VU Meter Illumination	N.A.
162	QPWBF0732AFA1	P.W. Board, Mechanism	N.A.
163	QACCB0052AF09	AC Supply Cord (SUK)	AM
	QACCL0001AFZZ	AC Supply Cord (SCA)	AR
	QACCV0001AGZZ	AC Supply Cord (SEEG)	AP
	QACCZ0002TA0F	AC Supply Cord (EX)	AF
	QACCZ0053AF00	AC Supply Cord (EX)	AK
164	MLIFP0001AFZZ	Lifter, Cassette	—
165	GITAS0022AFSA	Side Plate, Cabinet (EX)	AT
166	QPWBF0741AFA2	P.W. Board, Power Switch	N.A.
167	QPWBF0741AFA1	P.W. Board, Power	N.A.
168	PLUGL0250AFZZ	Lug Terminal	AC
169	QPWBF0669AFZZ	P.W. Board, LCD Illumination	N.A.
170	MARMM0058AFZZ	Arm, Cassette Holder (Left)	AD
171	MSPRP0178AFZZ	Spring, Cassette Compartment (Left)	AB
172	MSPRP0164AFZZ	Spring, Cassette Compartment (Right)	AB
173	MSPRC0154AFZZ	Spring, Record/Playback	—
174	DUNTZ0285AF01	Control Unit Assembly	—
176	PSPAS0057AFZZ	Spacer, Headphones Jack/ Microphone Jacks	AB
177	PSPAS0058AFZZ	Spacer, LCD Light Switch/ Zero Rewind Switch/ Dolby NR Switch/Bias Selector Switch/ Equalization Selector Switch	AB
178	GITAS0023AFSA	Side Plate, Cabinet (EX)	AT
179	PCOVU7112AFZZ	Film, Tape Illumination Cover	AA
181	PSHEF0118AF00	Sheet, Tape Illumination Cover	AA
182	GCOVA1095AFSA	Cover, Tape Illumination	AE
183	HDECA0282AFSA	Decoration Plate, Cassette Compartment	AK
184	QPWBF0734AFA1	P.W. Board, VU Meter	N.A.
185	LHLDX3055AFZZ	Cassette Holder	AE
186	GFTAC3055AF00	Cassette Compartment (Left)	AC
187	GFTAC3056AF00	Cassette Compartment (Right)	AC
188	MARMM0059AFZZ	Arm, Cassette Holder (Right)	AE
189	PCUSS0105AFZZ	Cushion, LCD Illumination P.W. Board	AA
191	LANGT0697AFZZ	Bracket, VU Meter	—
192	QPWBF0732AFA2	P.W. Board, Mechanism IC	N.A.
193	PCUSS0103AF00	Cushion, Power P.W. Board	AC

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
198	LHLDF1210AFZZ	Wire Holder	—
199	QPWBF0741AFA3	P.W. Board, Editor Switch	N.A.
SW1 (A~P)	QSW-S0207AFZZ	Switch, Record/Playback	AN
SW2 (A~E)	QSW-P0154AFZZ	Switch, Dolby NR	AH
SW3 (A~F), SW4 (A~F)	QSW-P0155AFZZ	Switch, Bias Selector/ Equalization Selector	AM
SW5	QSW-M0015AGZZ	Switch, Bias Oscillator	AH
SW6 (A~C)	QSW-B0096AFZZ	Switch, Power	AH
SW7	QSW-S0188AFZZ	Switch, Pause	AE
SW9 (A~D)	QSW-S0219AFZZ	Switch, Fast-forward/ Forward APLD	AE
SW8, SW10	QSW-P0156AFZZ	Switch, LCD Light/ Zero Rewind	AH
SW11	QSW-S0188AFZZ	Switch, Rewind/Reverse APLD	AE
SW12 (A~D)	QSW-S0185AFZZ	Switch, Play	AG
SW13 (A~D)	QSW-B0097AFZZ	Switch, Editor	AH
SW15	QSW-F0122AFZZ	Switch, Brake and Muting	AF
SW16	QSW-S0215AFZZ	Switch, Input Selector	AG
PL1	RLMPM0073AFZZ	Lamp, Cassette Chamber	AD
PL2, PL3	RLMPM0074AFZZ	Lamp, Control Unit Illumination	AD
PL4, PL5	RLMPM0072AFZZ	Lamp, VU Meter Illumination	AE
ME1, ME2	RMTRL0145AFZZ	VU Meter	BC
SO11, SO12, SO13, SO14, SO15	QSOCZ2476AFZZ	Socket, Line Input/Line Output/ REC/PB (DIN)	AK

REF. NO.	PART NO.	DESCRIPTION	
CON3	QCNCM172CAFZZ	Plug, 3 pin	AB
SO3	QCNW-0311AFZZ	Socket, 3 pin	AE
SO1	QCNW-0262AFZZ	Socket, 8 pin	AH
CON1	QCNCM177HAFZZ	Plug, 8 pin	AC
SO901	QCNW-0310AFZZ	Socket, 9 pin	AF
CON901	QCNCM178JAFZZ	Plug, 9 pin	AC
	QCNCM195FAFZZ	Plug, 6 pin	AC
SOL801	RPLU-0071AFZZ	Solenoid	AR
RLY1 SW14	RRLYZ0059AFZZ	Relay	AN
	PRDAR0153AFZZ	Heat Sink	AC
J1, J2	QJAKZ0066AFZZ	Jacks, Microphone	AE
J3	QJAKJ0059AFZZ	Jack, Headphones	AE
CON601	QCNCM195FAFZZ	Plug, Transport P.W. Board	AC
SO401	QCNCW091DAFZZ	Socket, 4 pin	AB
CON401	QCNCM199DAFZZ	Plug, 4 pin (Mechanism Transport)	AC
SO502	QSOCE0410AGZZ	Socket, Voltage Selector	AH
	QCNW-0117AFZZ	Audio Cables	AL
	SPAKA0505AFZZ	Packing Add.	AF
	SPAKC1138AFZZ	Packing Case (RT-3838HA)	—
	SPAKC1139AFZZ	Packing Case (RT-3838HD)	—
	SPAKX0171AFZZ	Packing Add.	AB
	SSAKA0021AGZZ	Polyethylene Bag	AC
	SSAKA0024AFZZ	Polyethylene Bag	AA
	SPAKX0173AFZZ	Packing Add.	AC

ASSEMBLY PARTS

174	DUNTZ0285AF01	Control Unit Assembly	—
●	JKNBZ1330CCMM	Key-block	—
37	RMOTP0051AFZZ	PLL Servo Motor Assembly	BG
	RCRSA0051AFZZ	Crystal (3579.545kHz)	AM
●	RH-IX1076AFZZ	IC, Frequency Demultiplier (874Hz)	AR