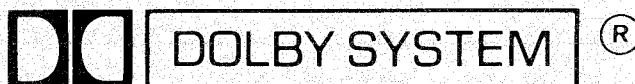
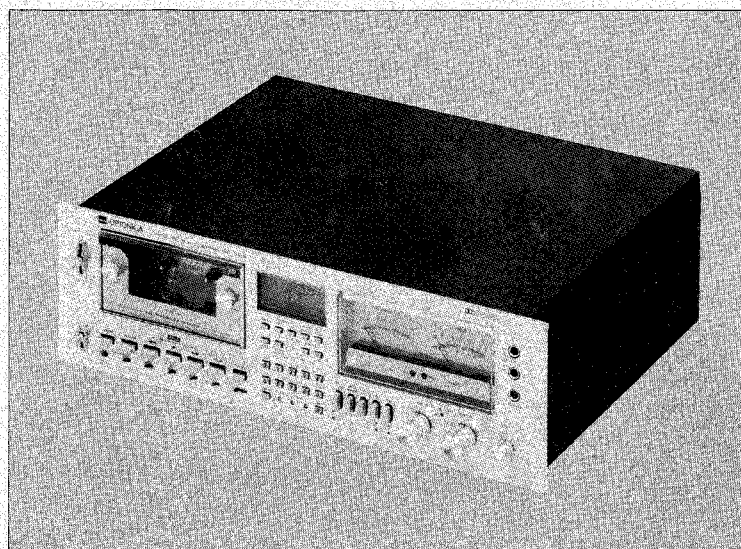




OPTONICA

SERVICE MANUAL

RT-3838HA
RT-3838HD



- "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	(Use of Fe-Cr tape) 30 ~ 15,000 Hz (DIN 45 500) (Use of MAXELL UDXLII tape)
Power source:	AC 110/220/240, 50/60 Hz	S/N ratio: Better than 50dB (weighted), for normal Tape at LINE-IN, without Dolby Noise Reduction.
Power consumption:	18 Watts	Dolby NR effect: 10 dB (at over 5kHz)
Semi-conductors:	1-LSI (Large Scale Integrated Circuit) 5-IC (Integrated Circuit) 52-Transistor 29-Diode 2-LED (Light Emitting Diode)	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)
Dimensions:	Width: 442 mm (17-3/8") Height: 144 mm (5-11/16") Depth: 357 mm (14-1/16")	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
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)	

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.

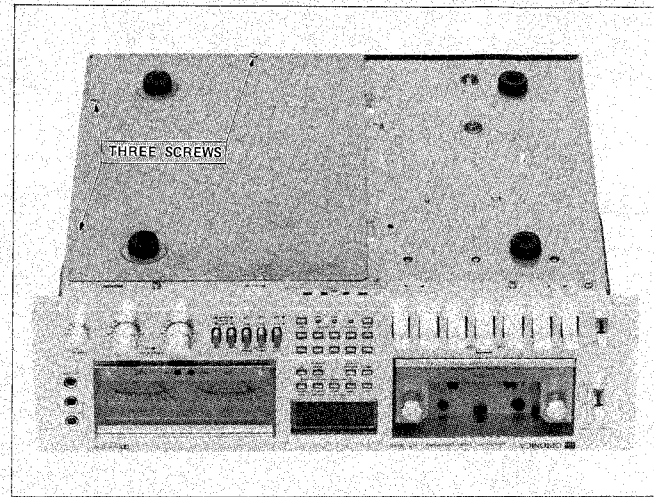


Figure 6

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

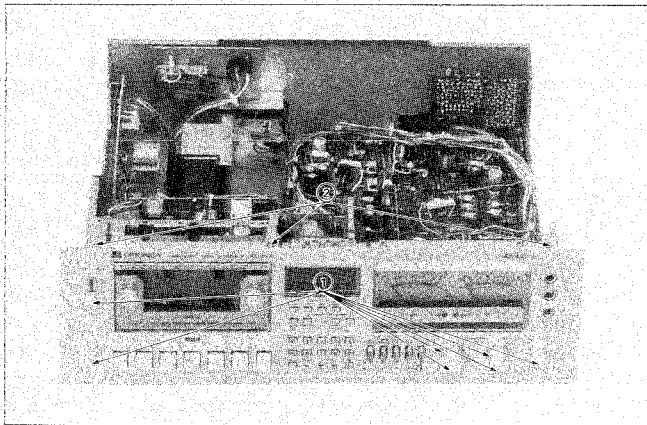


Figure 7

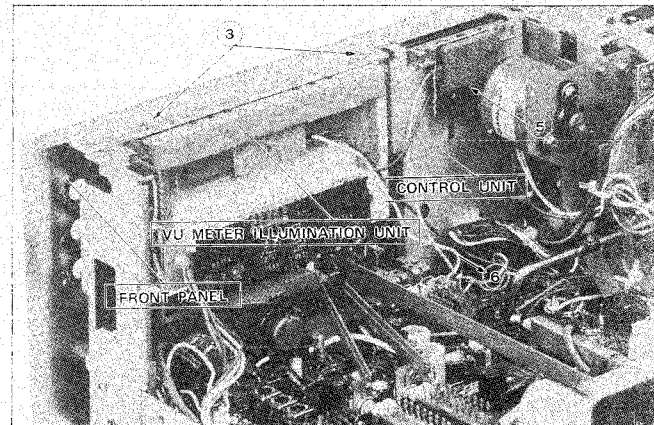


Figure 9

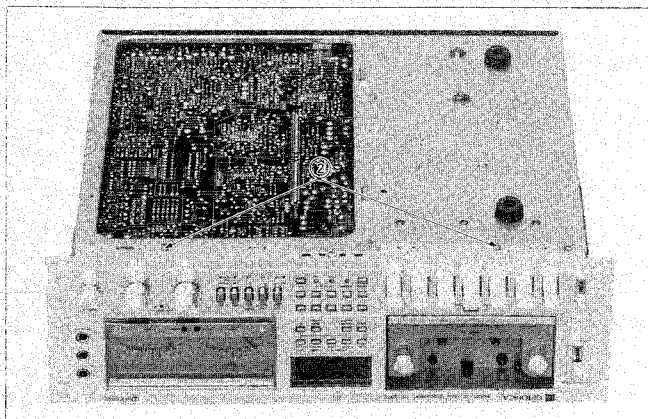


Figure 8

- 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

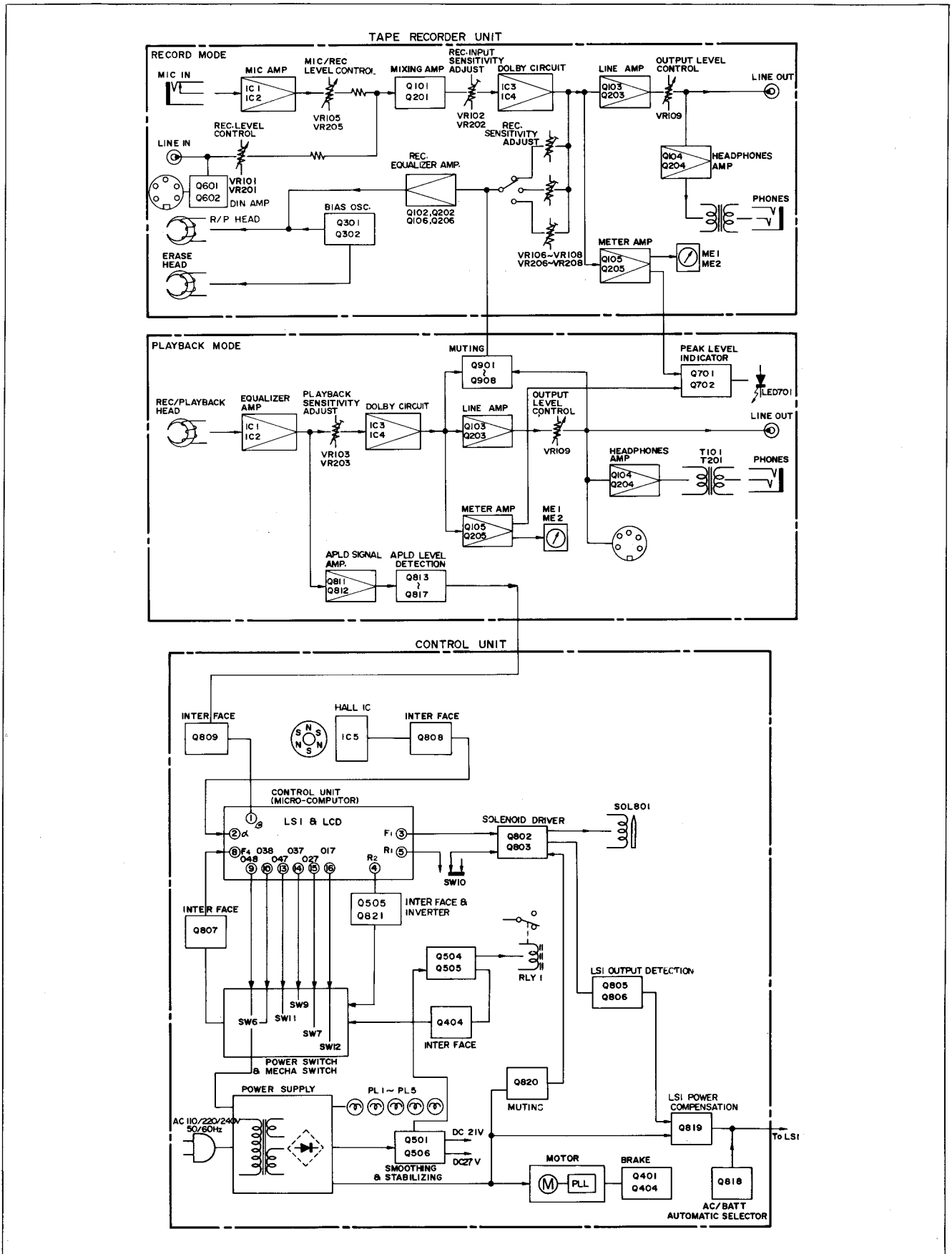


Figure 1

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.

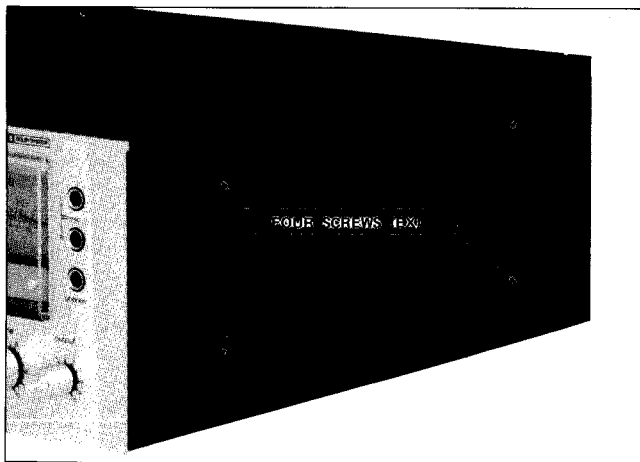


Figure 2

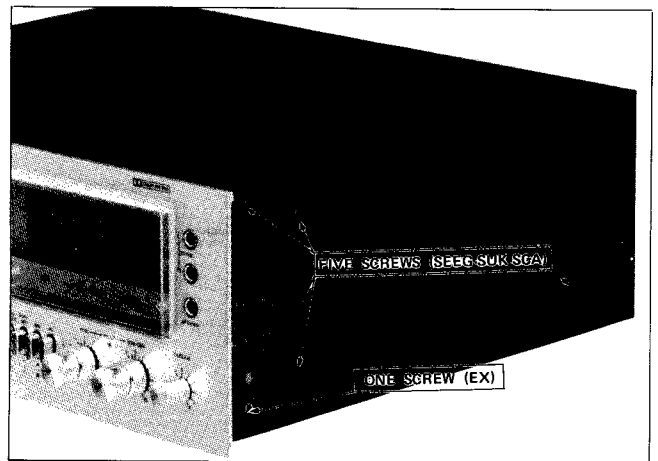


Figure 3

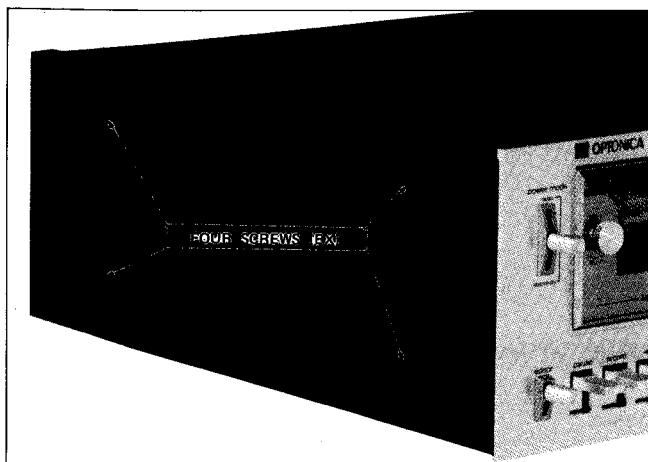


Figure 4

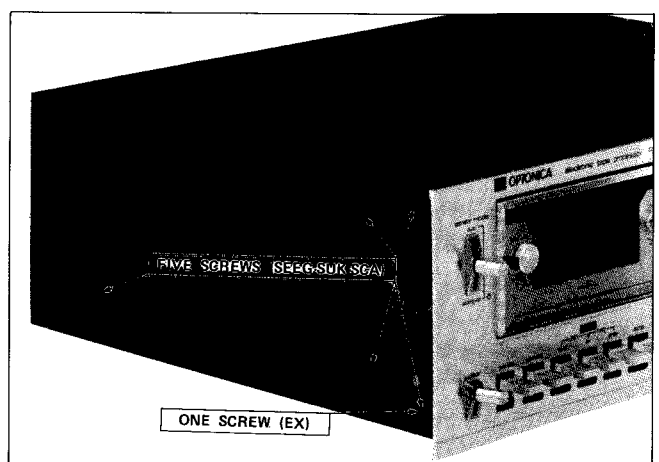


Figure 5

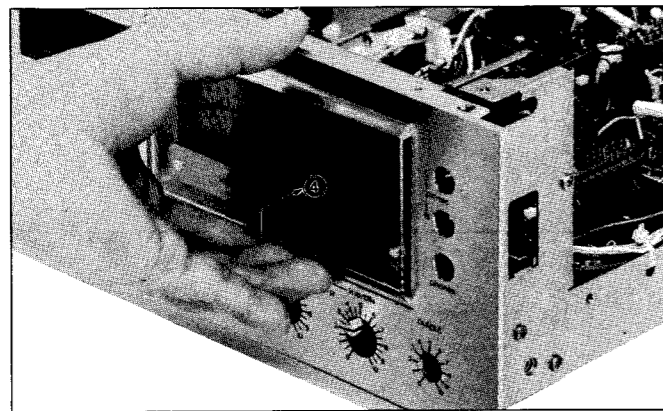


Figure 10

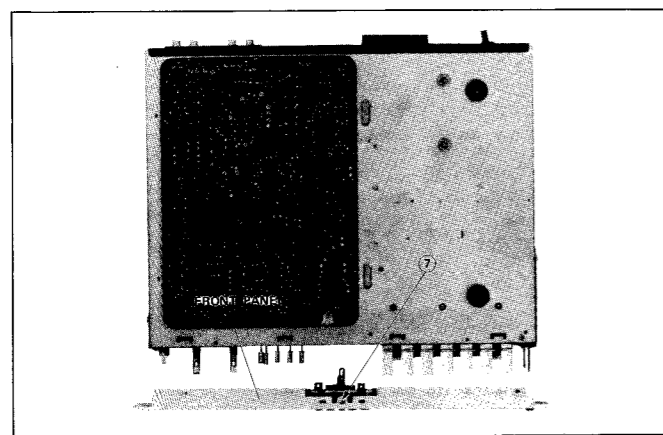


Figure 11

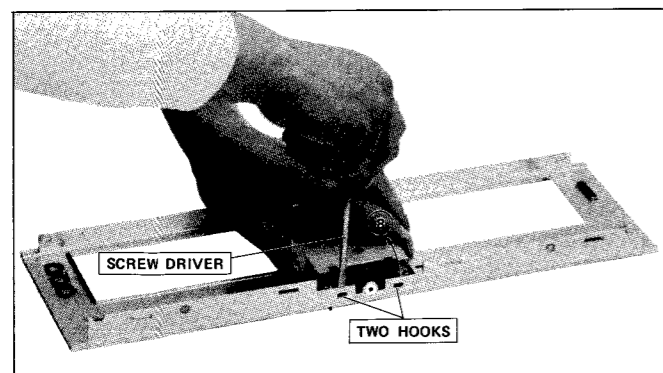


Figure 12

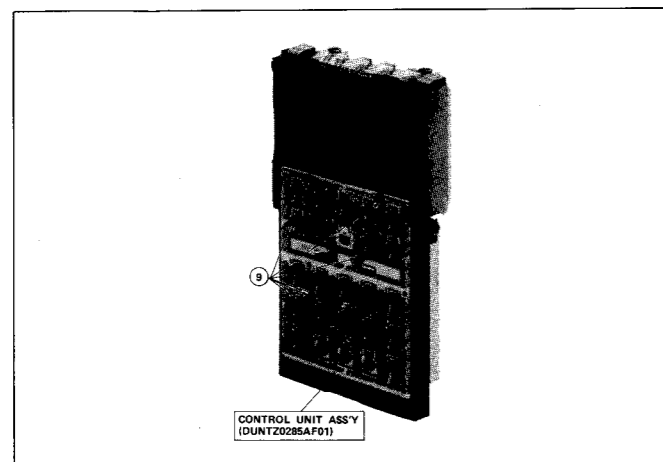


Figure 13

- 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.

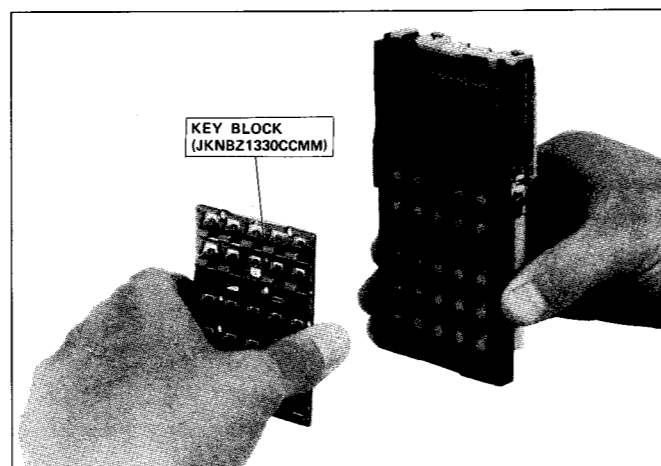


Figure 14

CONTROL UNIT LAY OUT

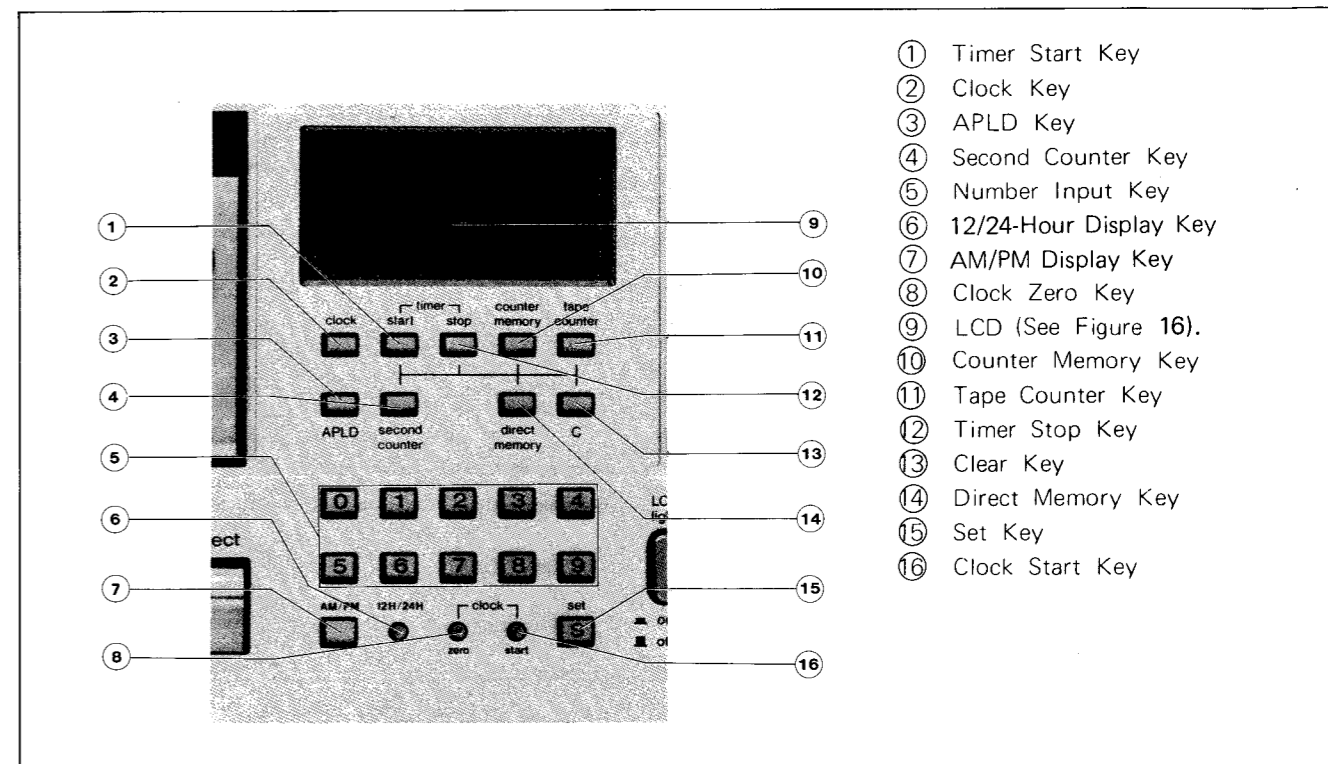


Figure 15

- 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

LCD LAY OUT

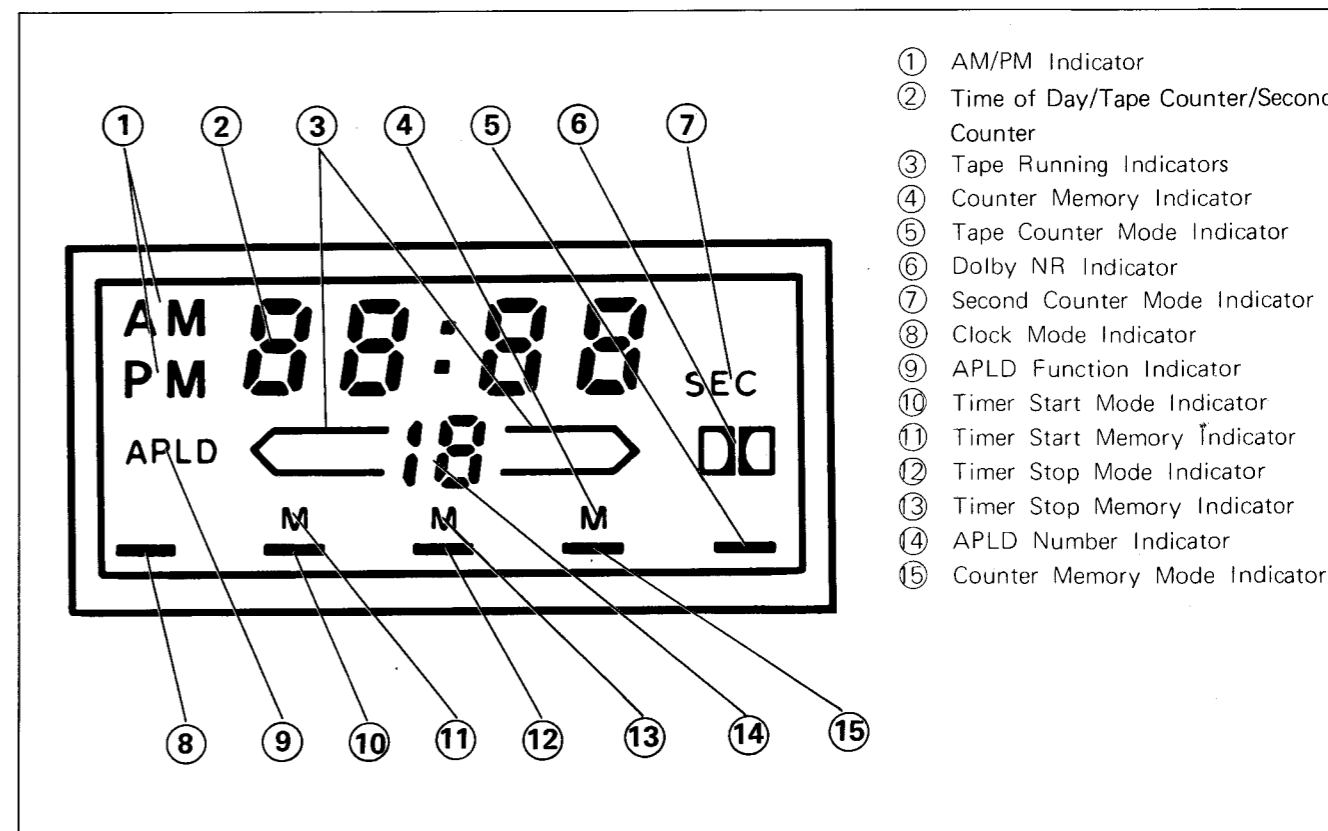


Figure 16

- 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

CHECKING OF THE CONTROL UNIT

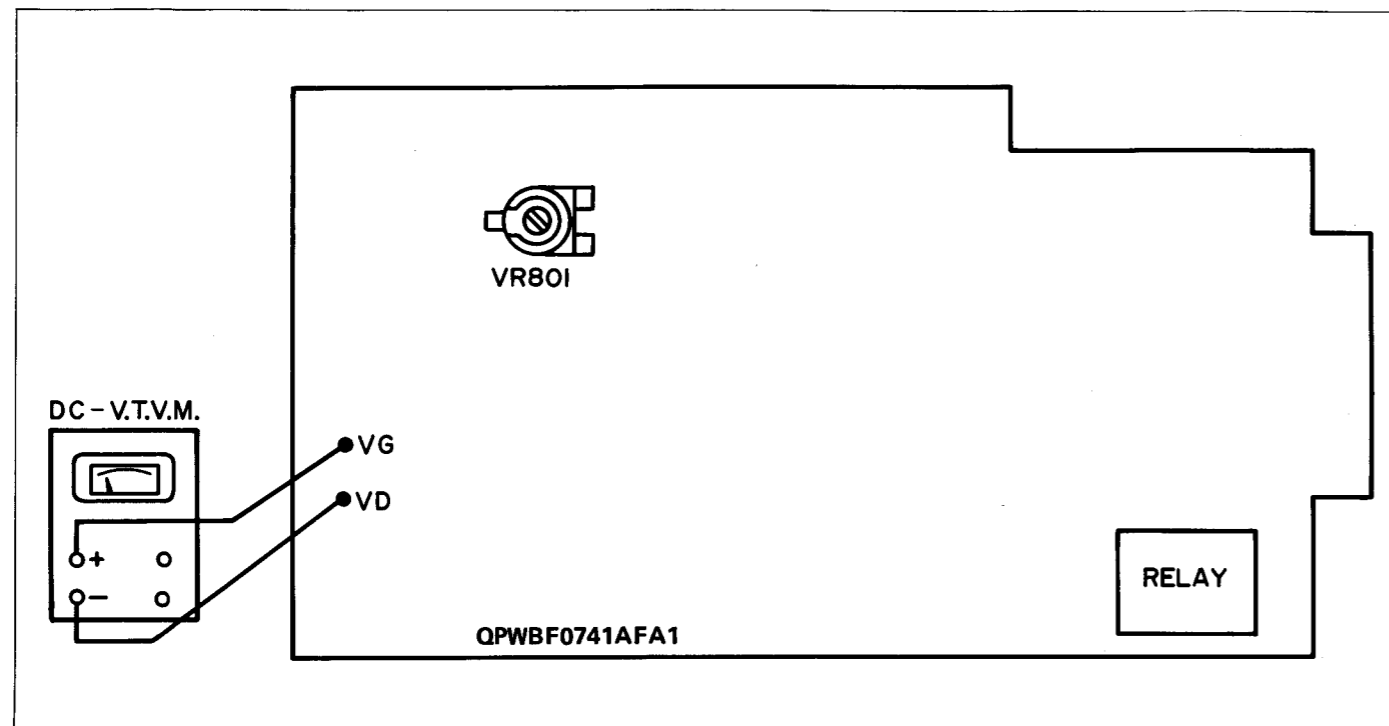


Figure 17

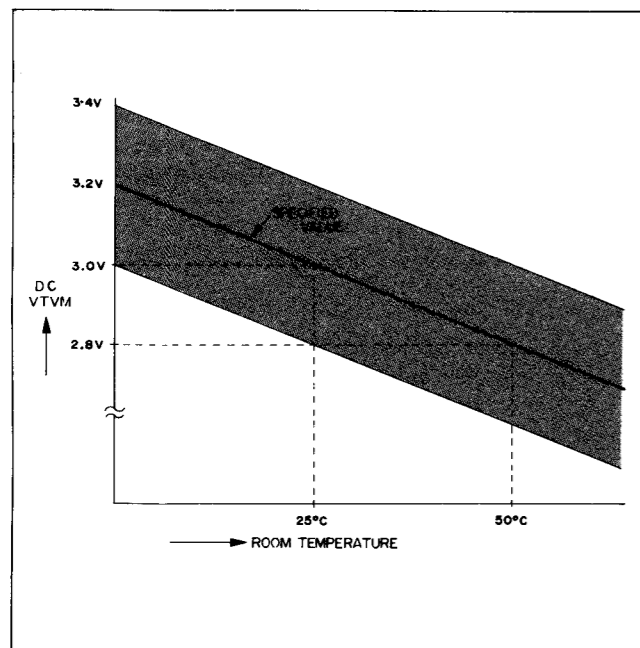


Figure 18

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. (QPWF0741AFA1). (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

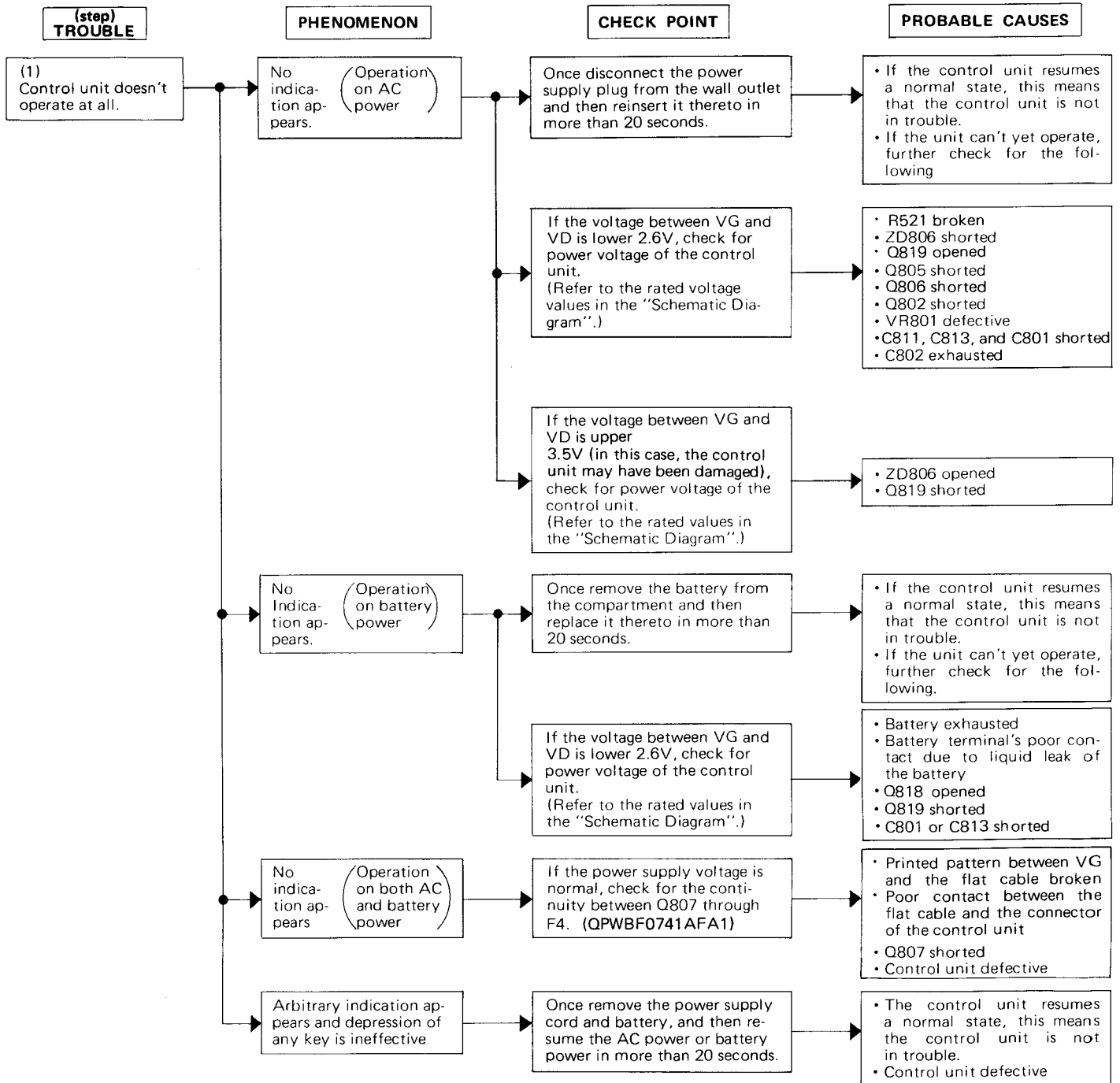
- (1) Prior to the voltage checking in the steps 1 and 2 above, be sure to insert the power supply plug into a wall outlet after disconnecting the flat cable. If dry batteries are instead used as a power source, the DC-VTVM tends to always indicate the battery potential (about 3 V) and it can't vary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

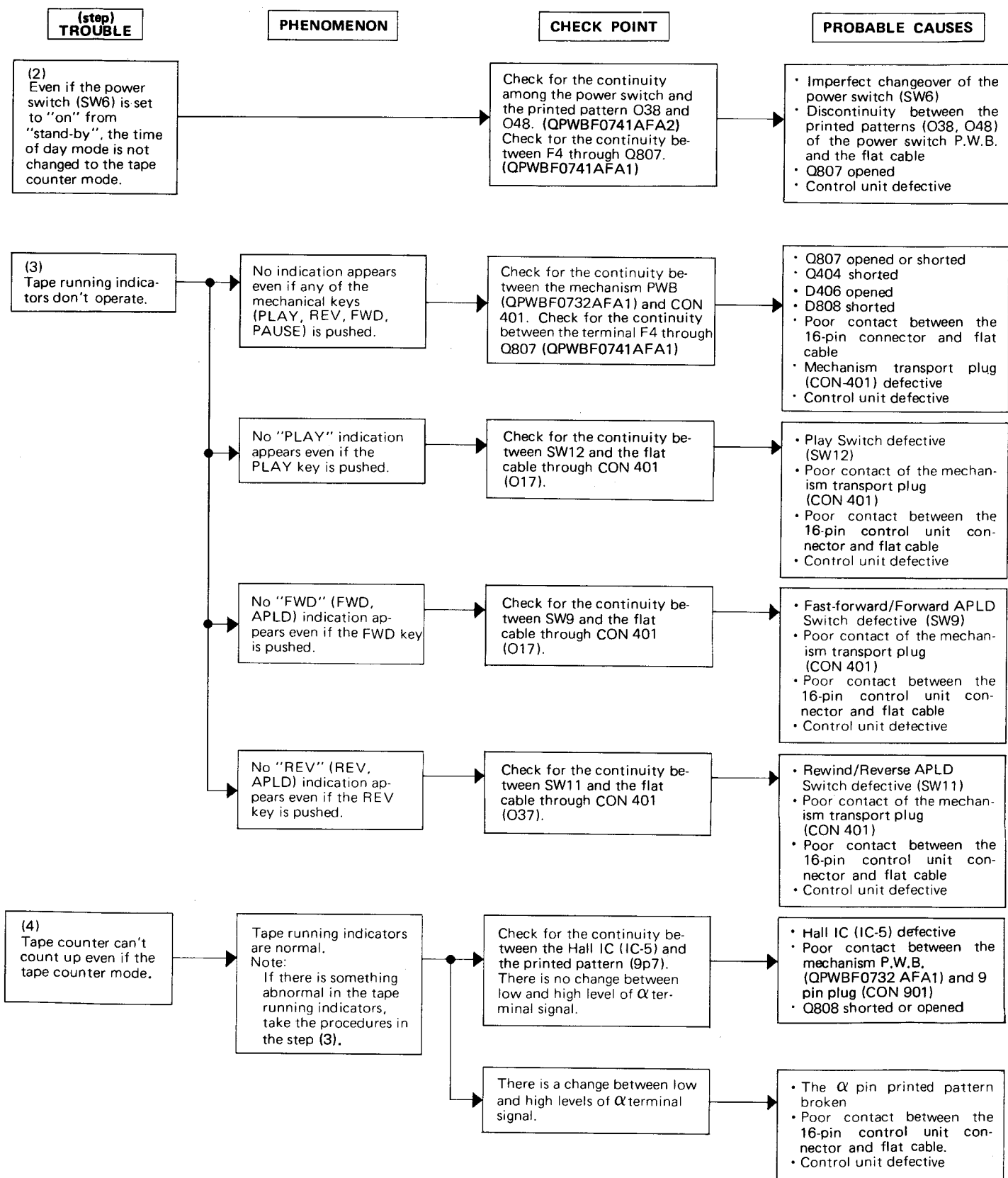
the condition without battery the power supply plug is once unplugged from the receptacle and then replaced thereto in less than 20 seconds, the control unit displays such unusual phenomena that it doesn't indicate at all or indicates too unexpected values. But this doesn't mean that the control unit 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.

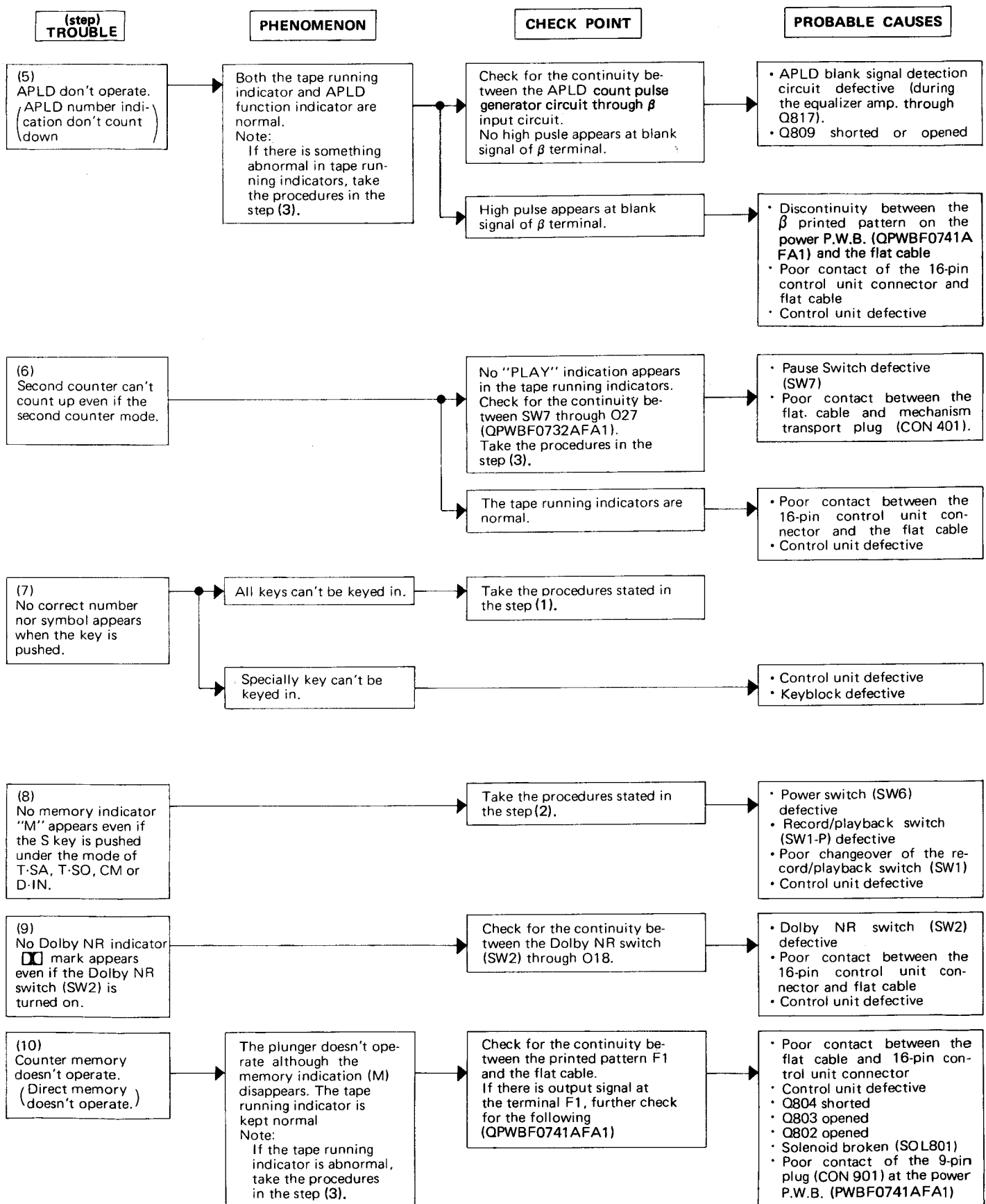
TROUBLE SHOOTING GUIDE

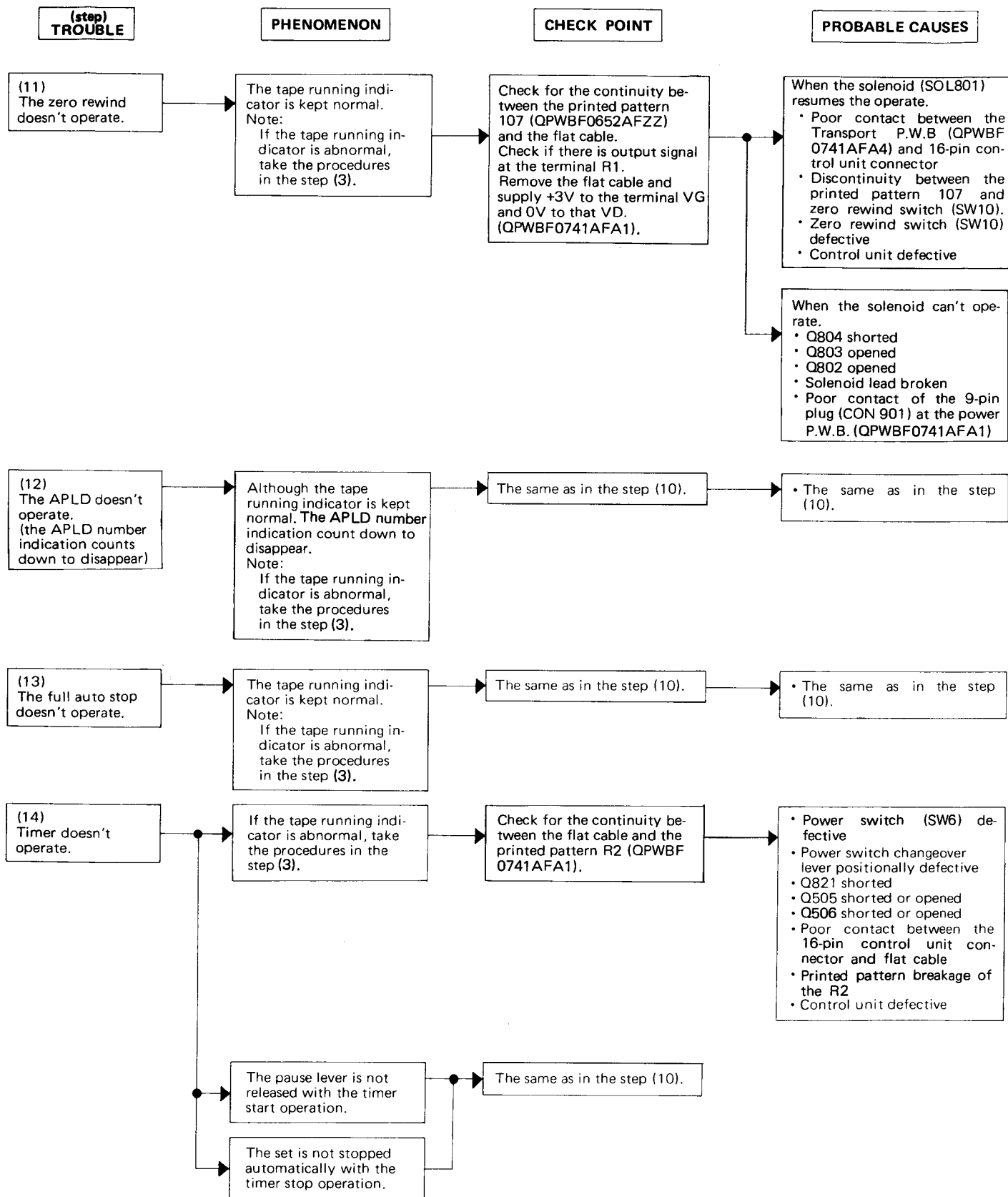
IMPORTANT KEY FOR THE TROUBLESHOOTING

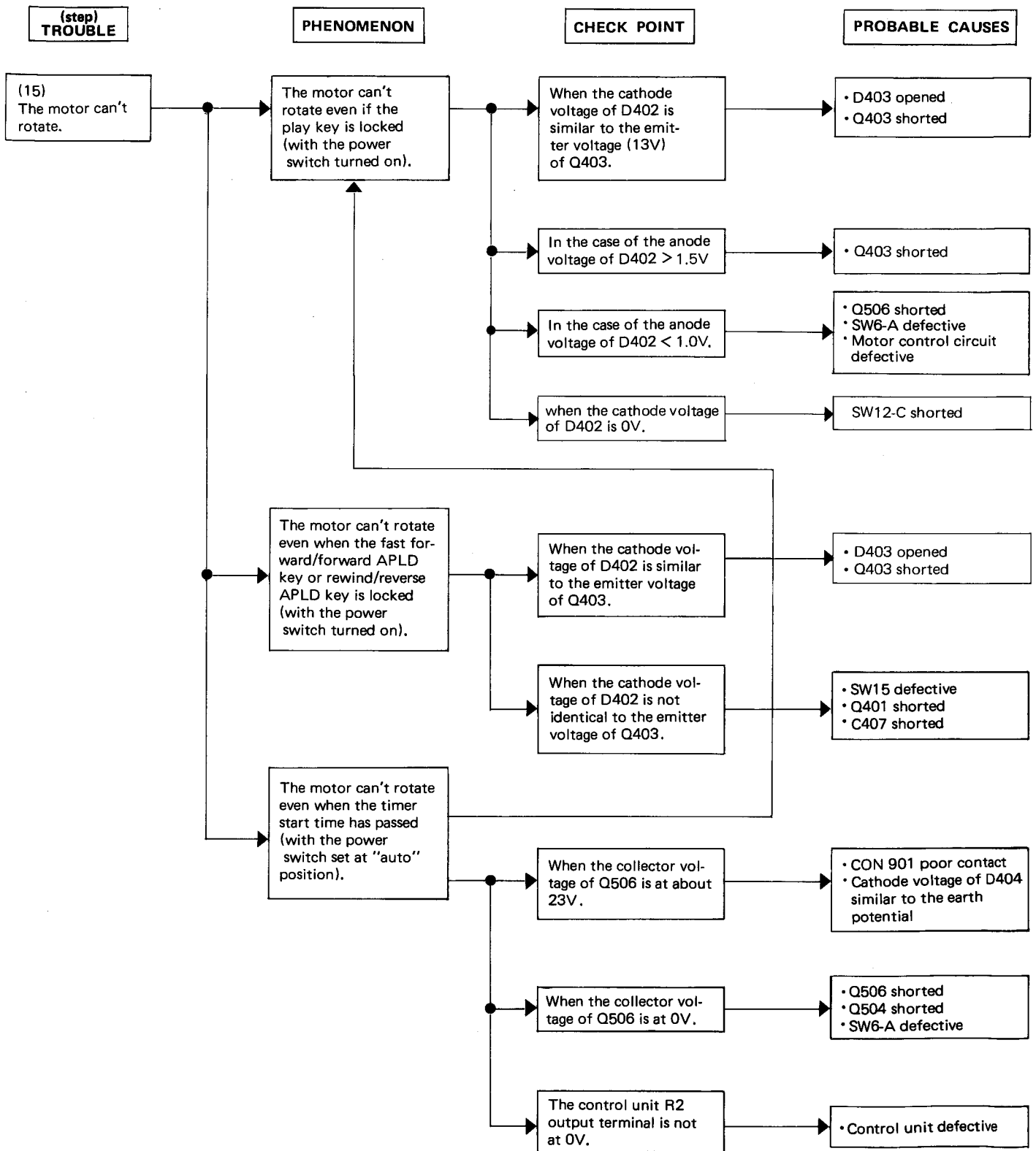
First of all, check whether the tape running indicators are normal or not and if there is something abnormal in them, this means that the entire of the set is not assured of its usual operation.

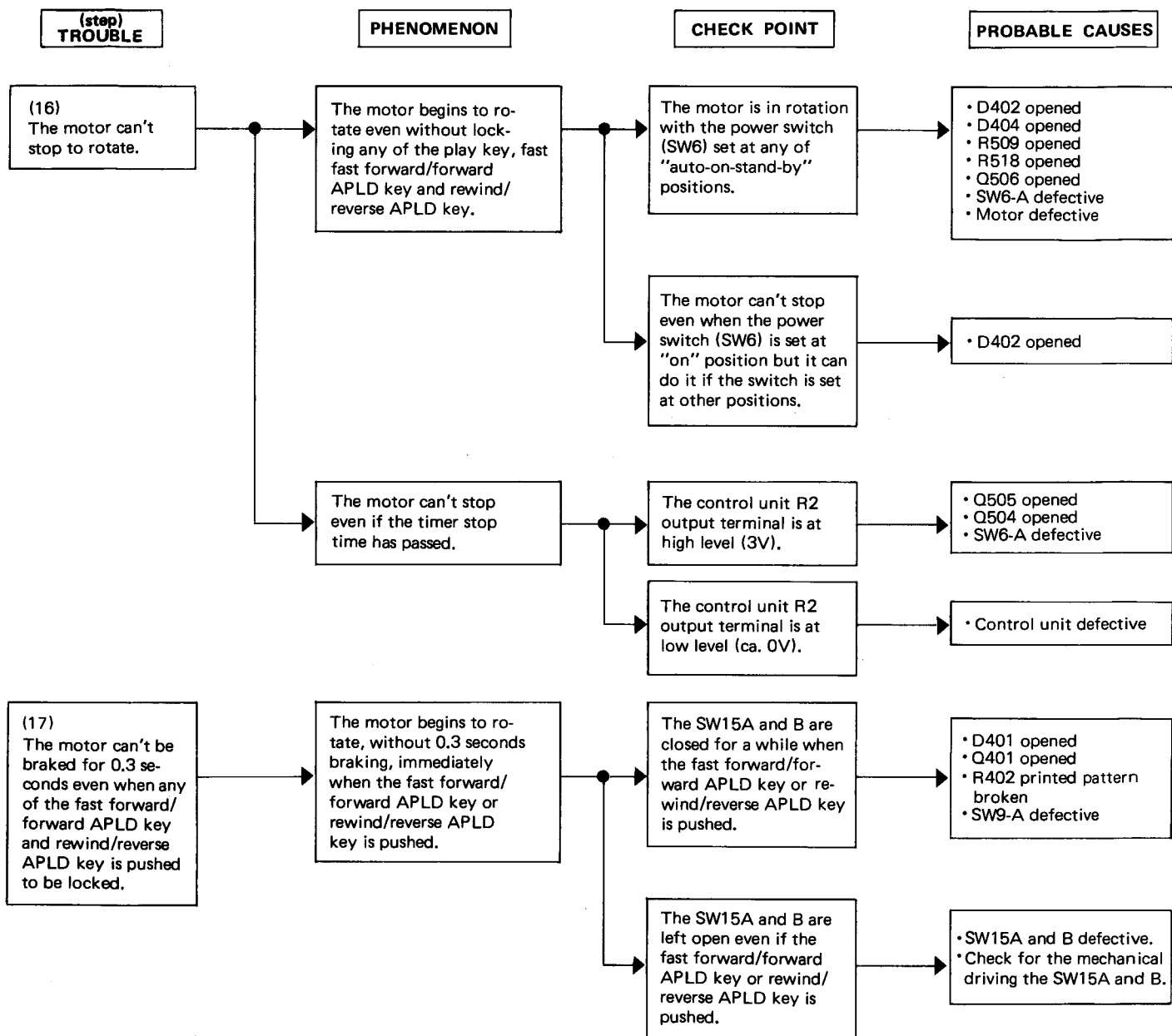












CIRCUIT DESCRIPTION

■ 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.

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.

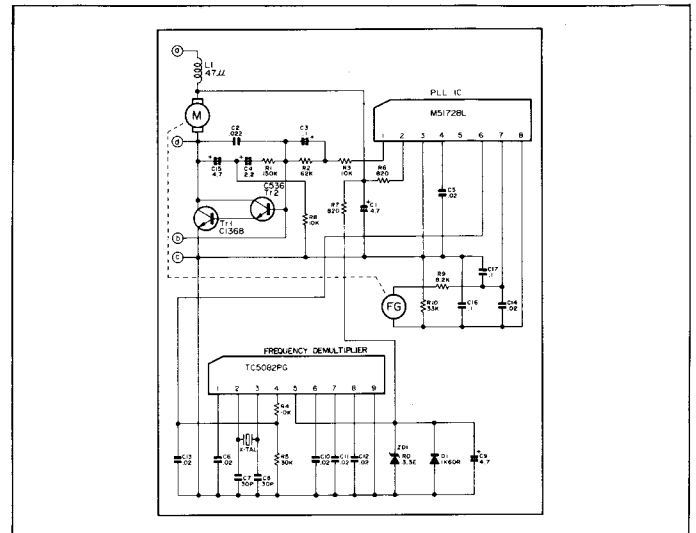


Figure 19

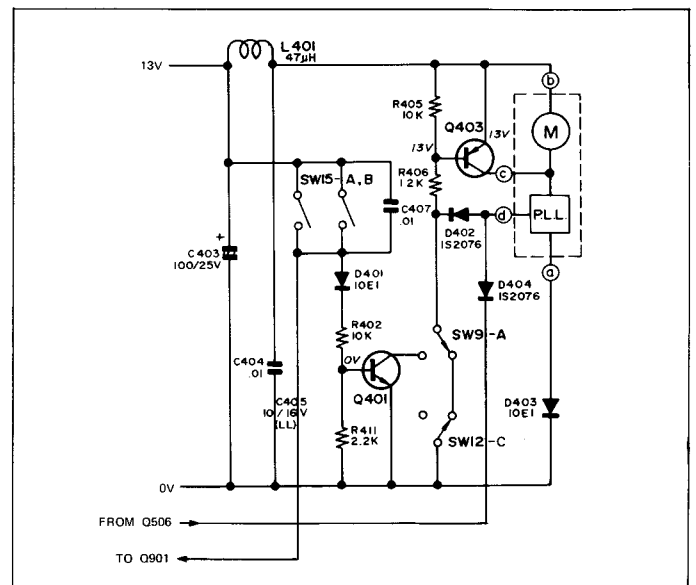


Figure 20

* 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.

■ 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 supplied 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 applied 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.

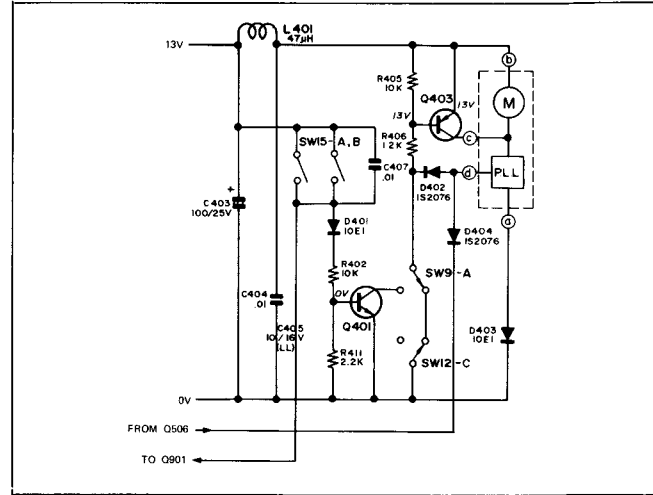


Figure 21

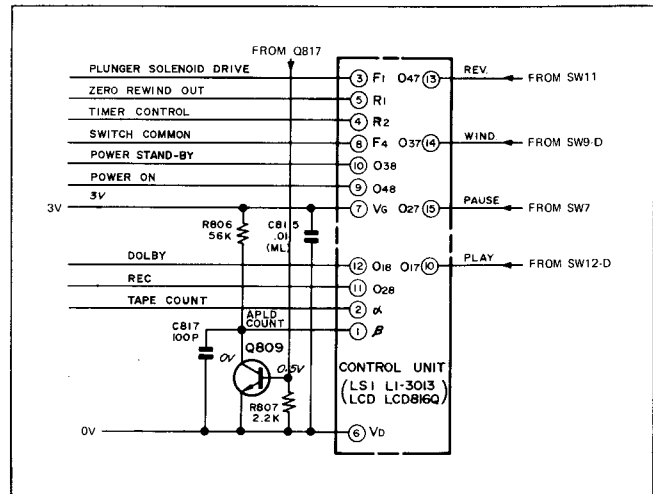


Figure 22

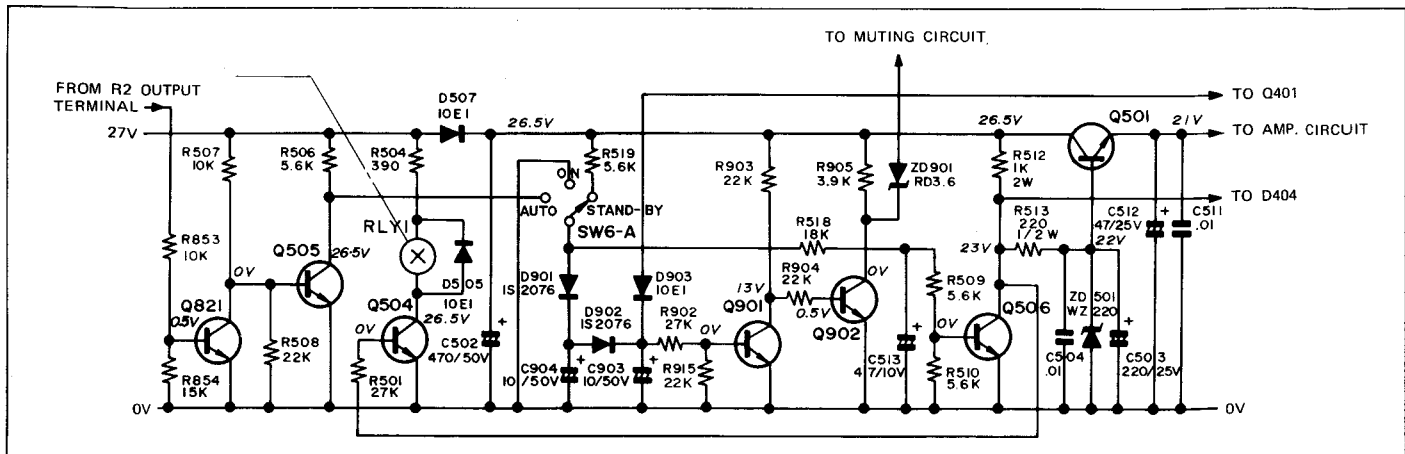


Figure 23

* 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.

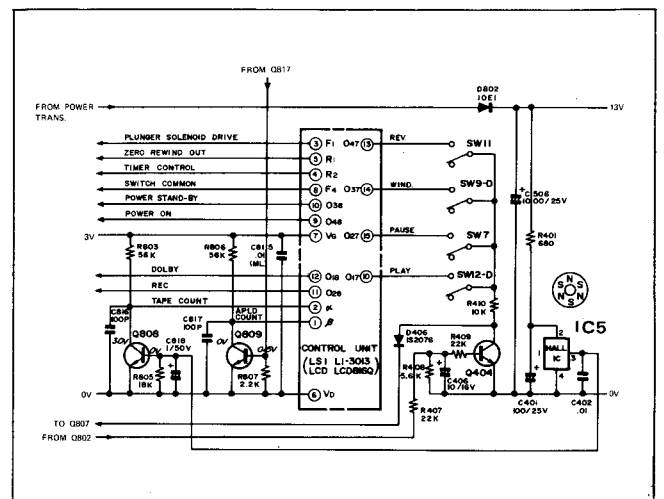


Figure 24

■ 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.

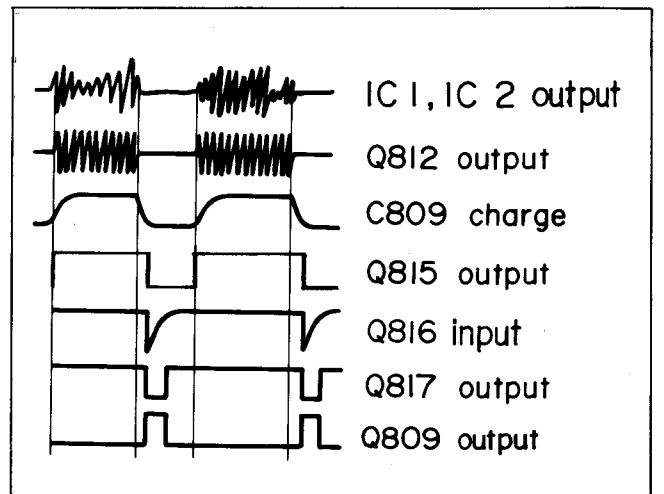


Figure 25

■ **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.

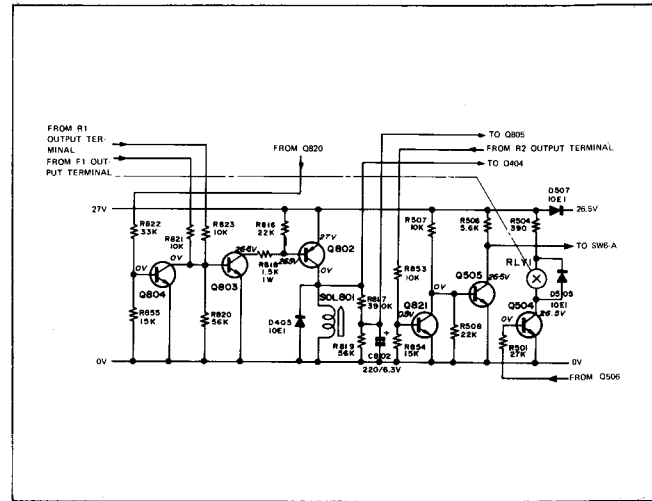


Figure 26

■ **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 (Q818) 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 (TH1) 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.

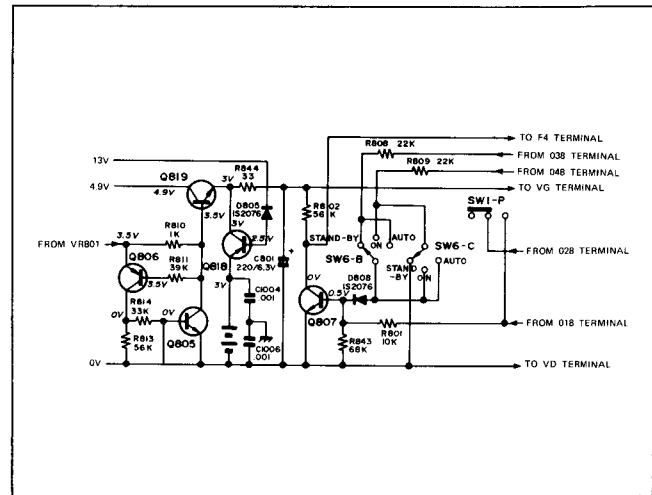


Figure 27

■ **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

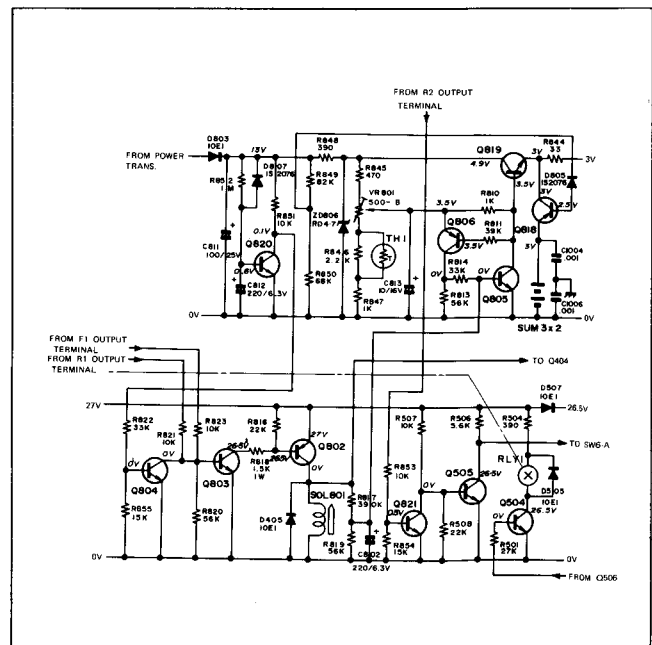


Figure 28

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

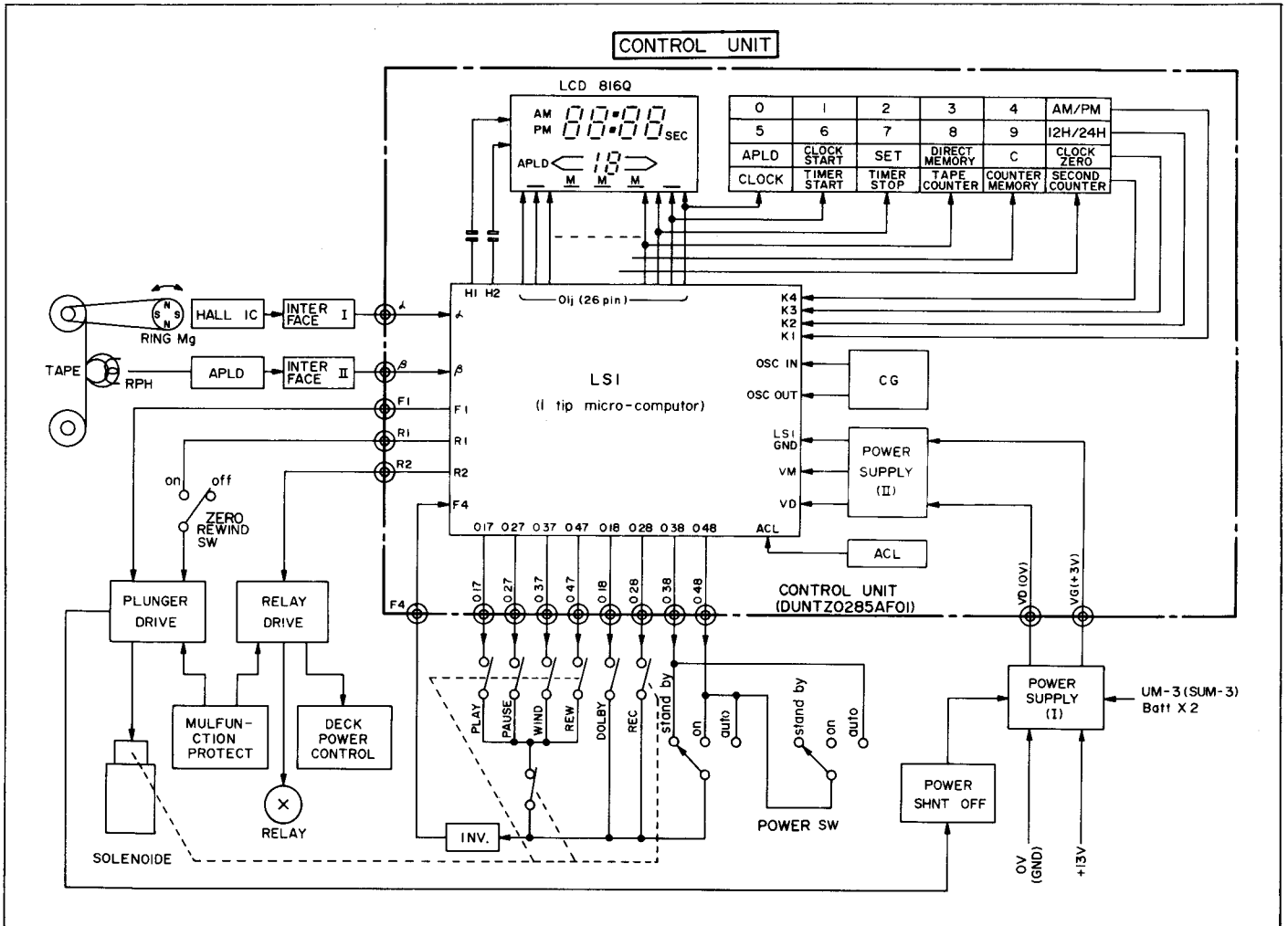


Figure 29

MECHANICAL ADJUSTMENT

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 clearance of 0.1 ~ 0.2 mm is produced.

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.)

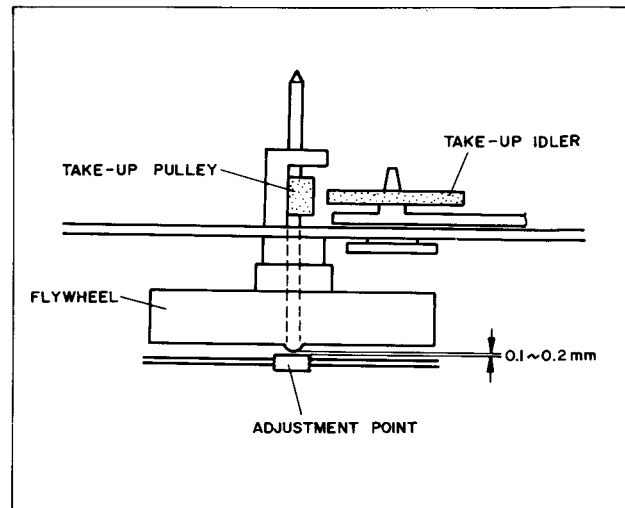


Figure 30

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

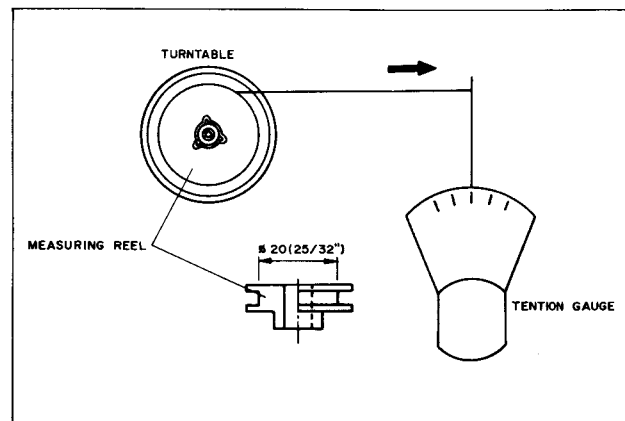


Figure 31

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

4. If the requirement in the step 4, adjust it by bending the part (A) of the pressure roller.

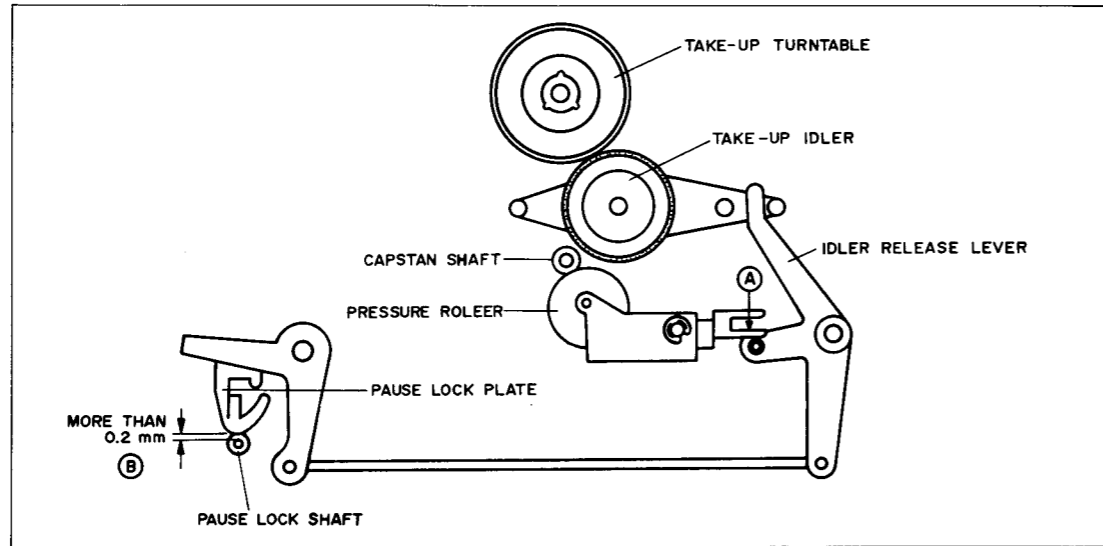


Figure 32

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 capstan 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.

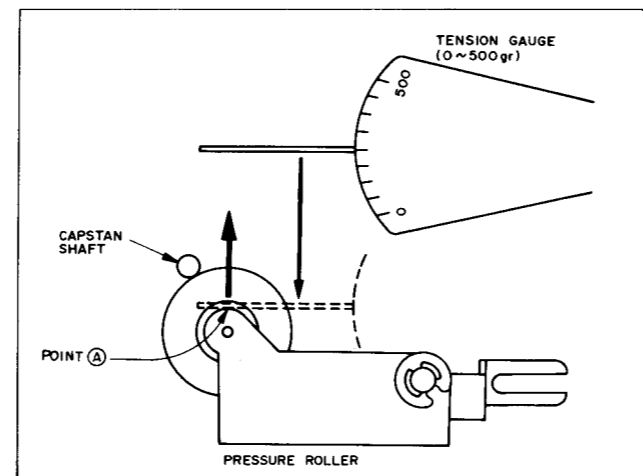


Figure 33

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). Place the set in fast forward (or rewind) mode.
5. Make sure that the lock release lever is in contact with the lock plate (2), and push the solenoid toward

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).

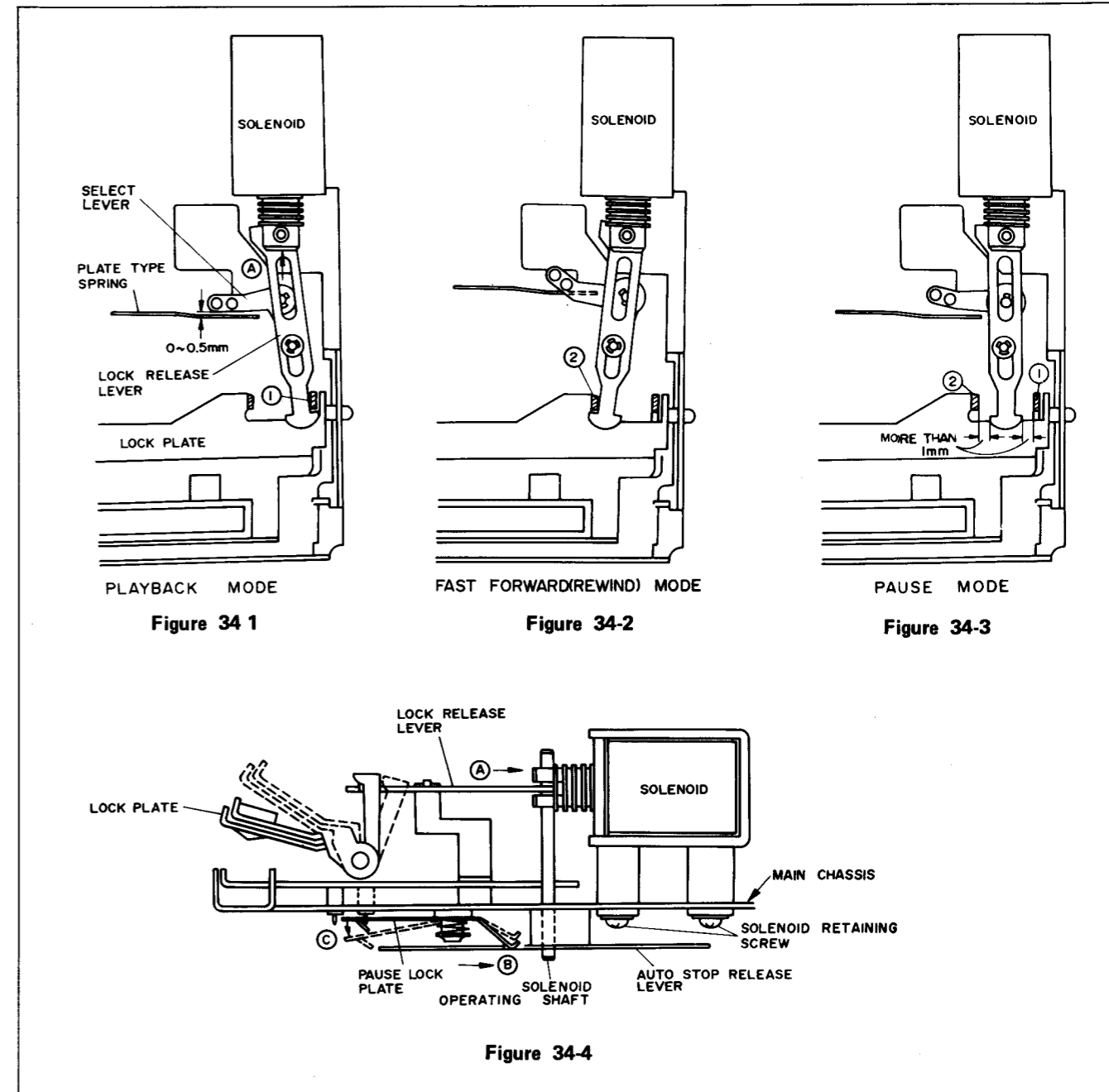


Figure 34

ALIGNMENT POINTS

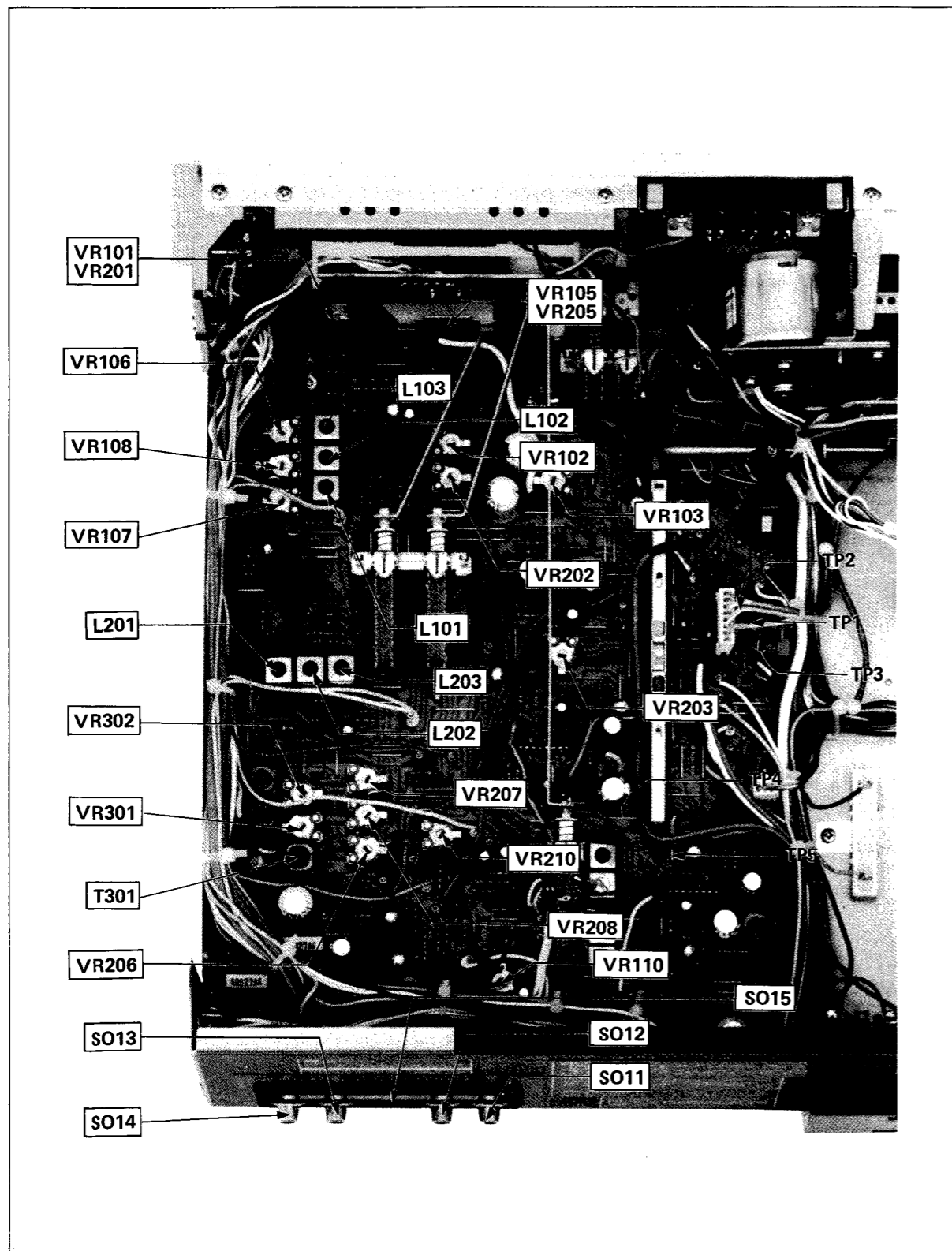


Figure 35

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 "CrO₂" position and bias selector switch (SW3) to "CrO₂" 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 ca.
7. When the equalization selector switch (SW4) to "CrO₂" position and the bias selector switch (SW3) are set to "CrO₂" position, make sure that the V.T.V.M. reads 45 to 53 mV.

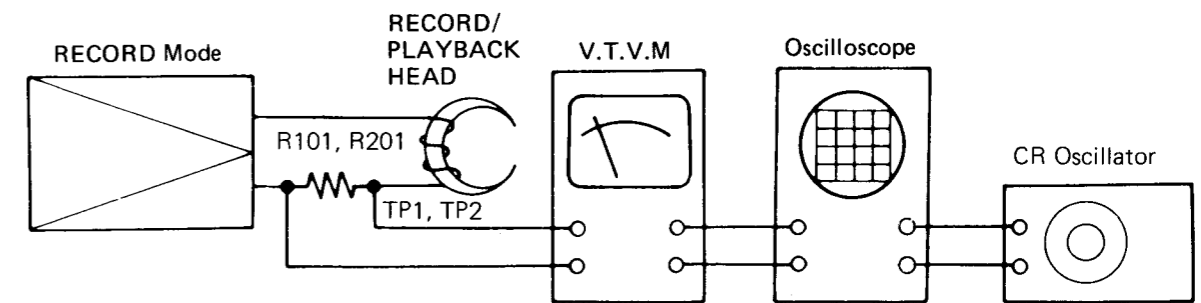


Figure 36

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 "CrO₂" position and bias selector switch (SW3) to "CrO₂" position.
5. Make sure that the V.T.V.M. indicates 50 to 100 mV.

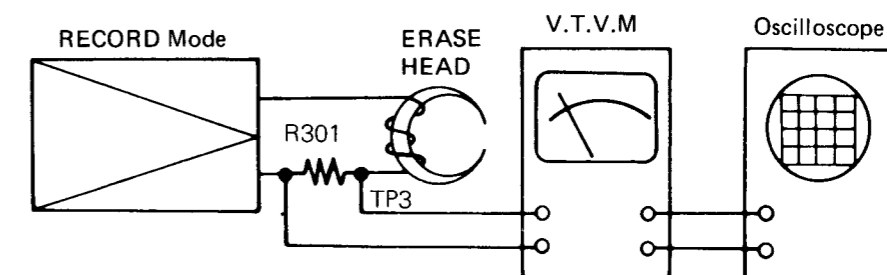


Figure 37

* 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 $\mu\text{W}_b/\text{mm}$ -10 dB recorded) and reproduce it. Then adjust the head azimuth adjusting screw so that the V.T.V.M. reaches its maximum value.

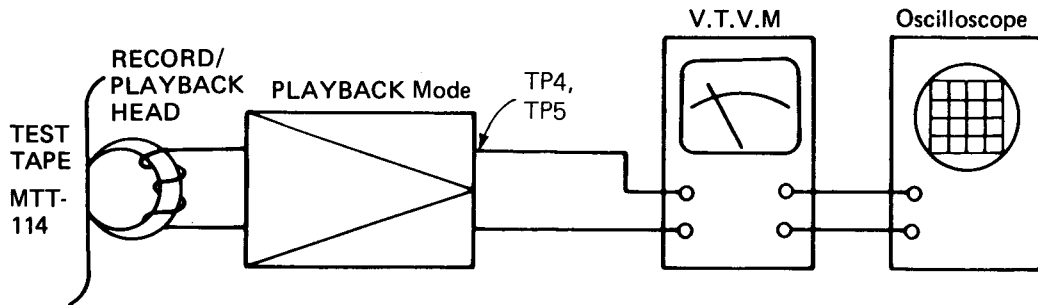


Figure 38

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).

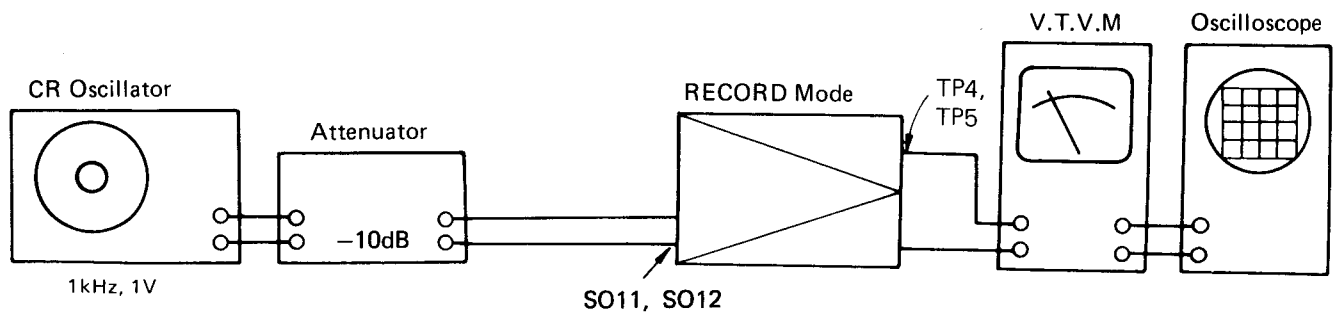


Figure 39

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).

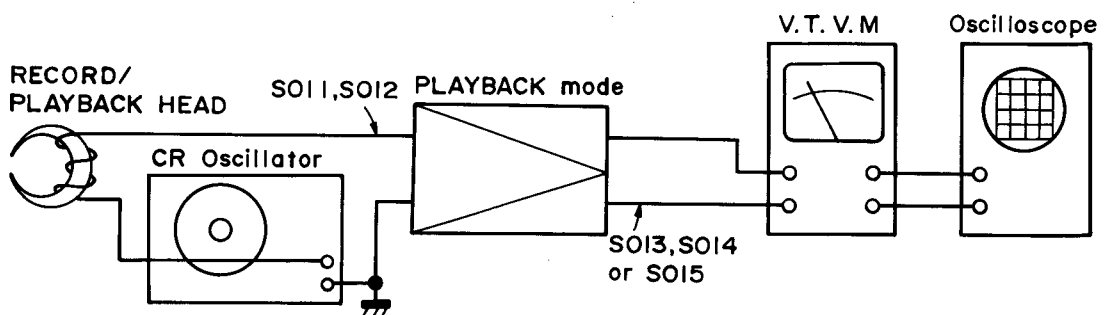


Figure 40

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 CrO₂ 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 CrO₂ 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 (CrO₂ and Fe-Cr) to be used.

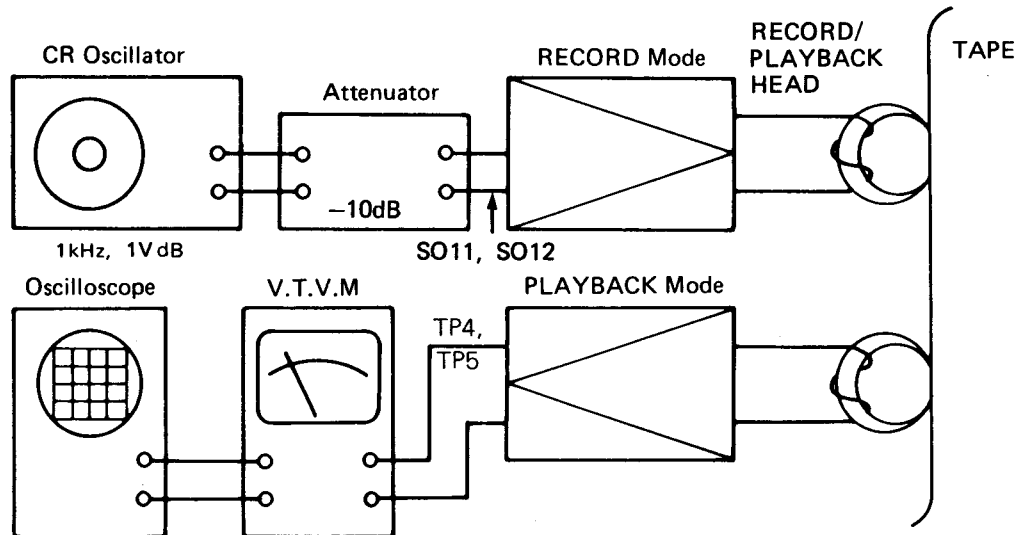


Figure 41

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.

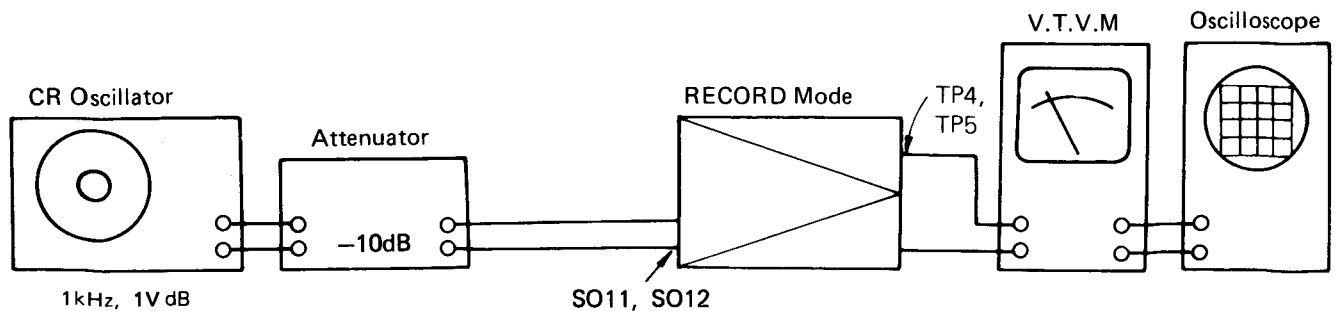


Figure 42

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

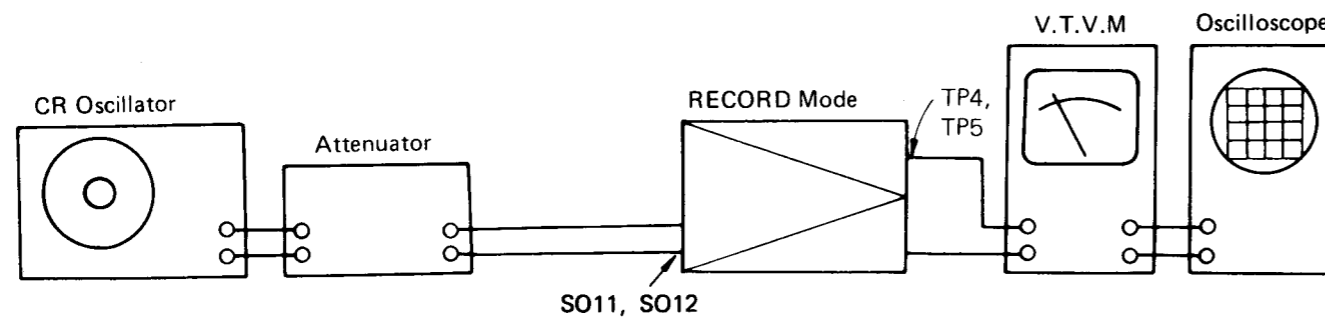


Figure 43

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.

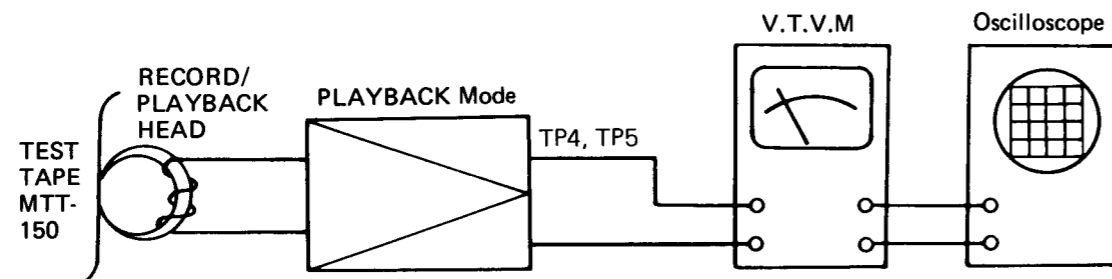


Figure 44

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 μ A \pm 40 μ A) 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 CrO₂ 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 CrO₂ 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 CrO₂ or Fe-Cr tape.

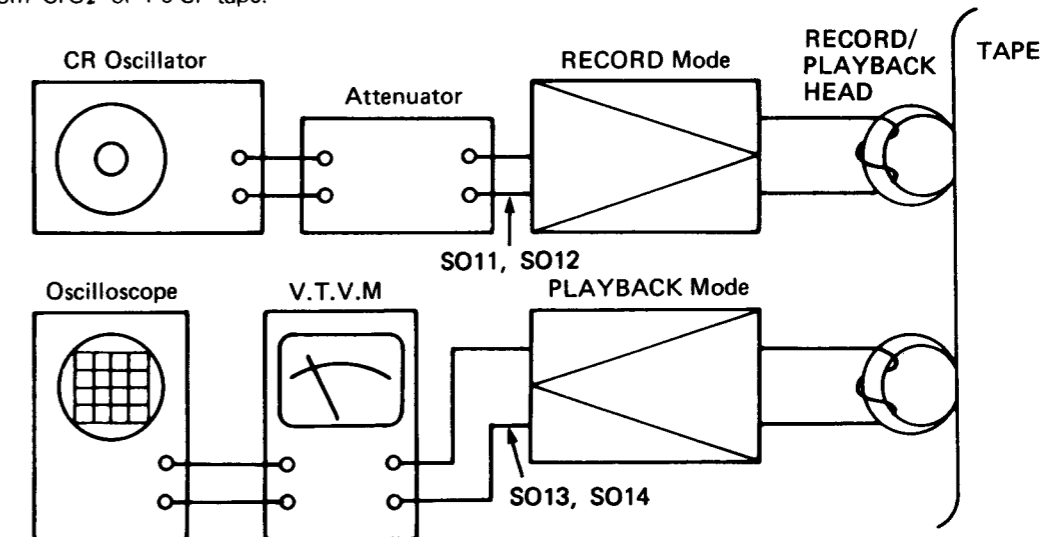


Figure 45

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

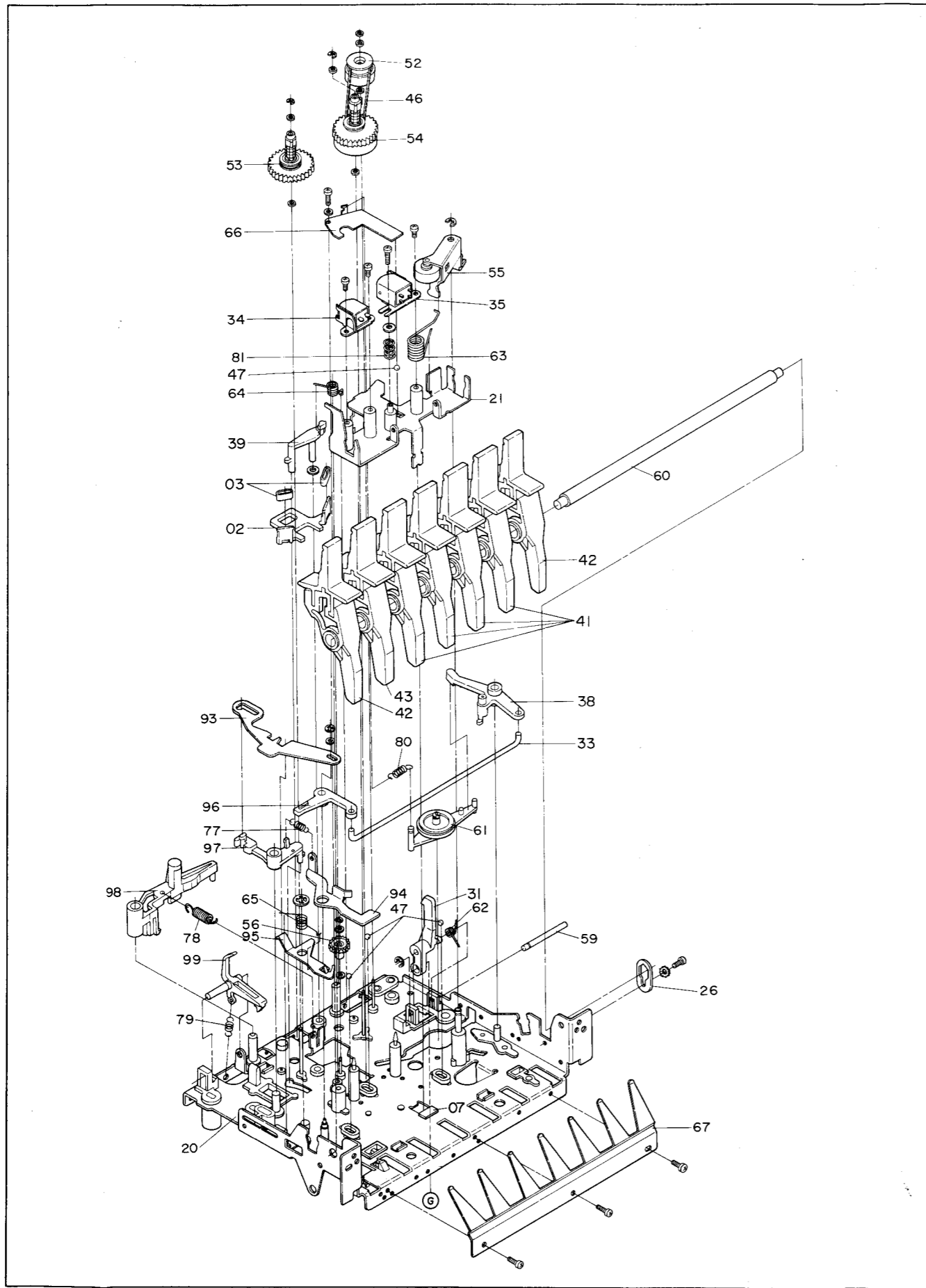


Figure 46 MECHANISM EXPLODED TOP VIEW

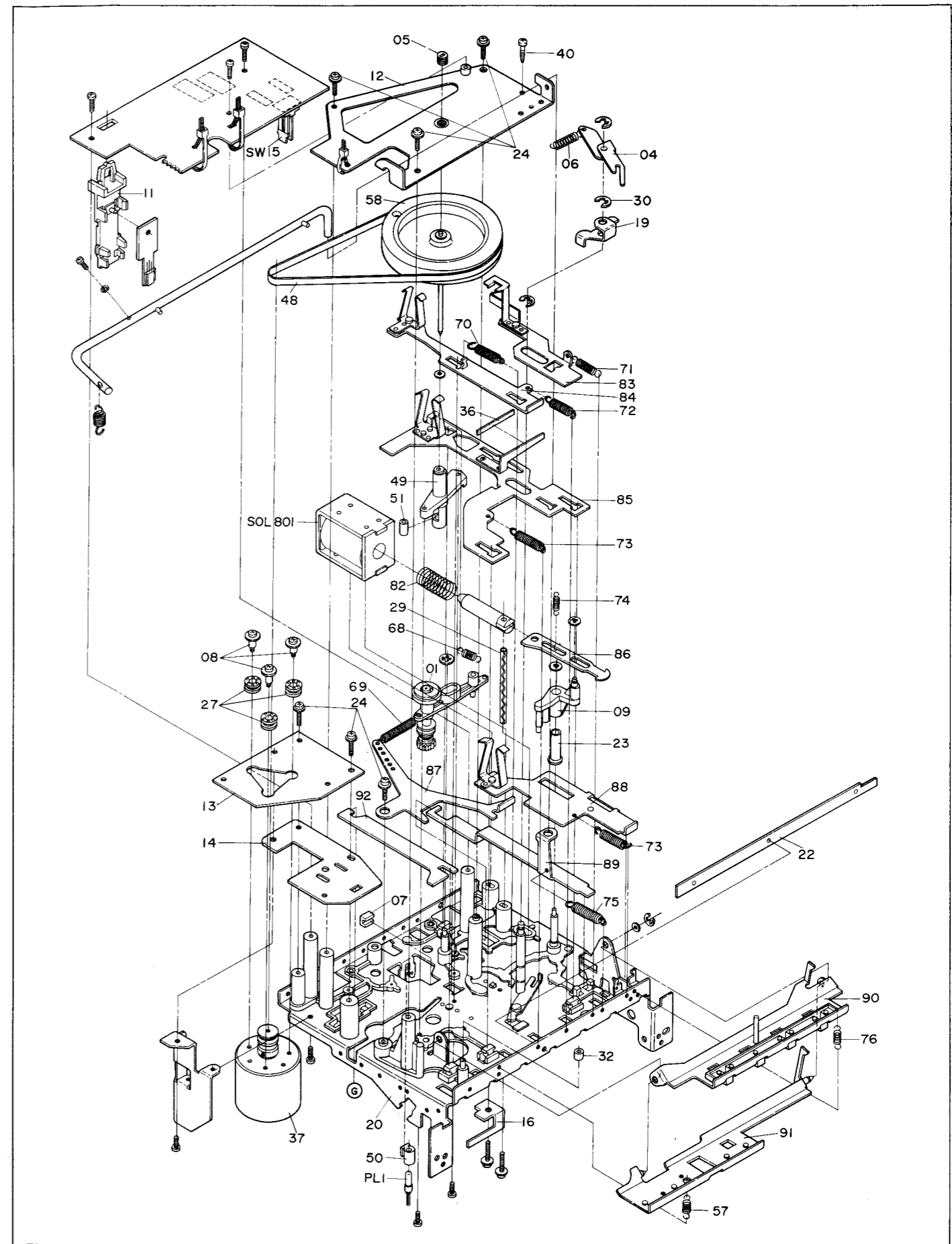


Figure 47 MECHANISM EXPLODED BOTTOM VIEW

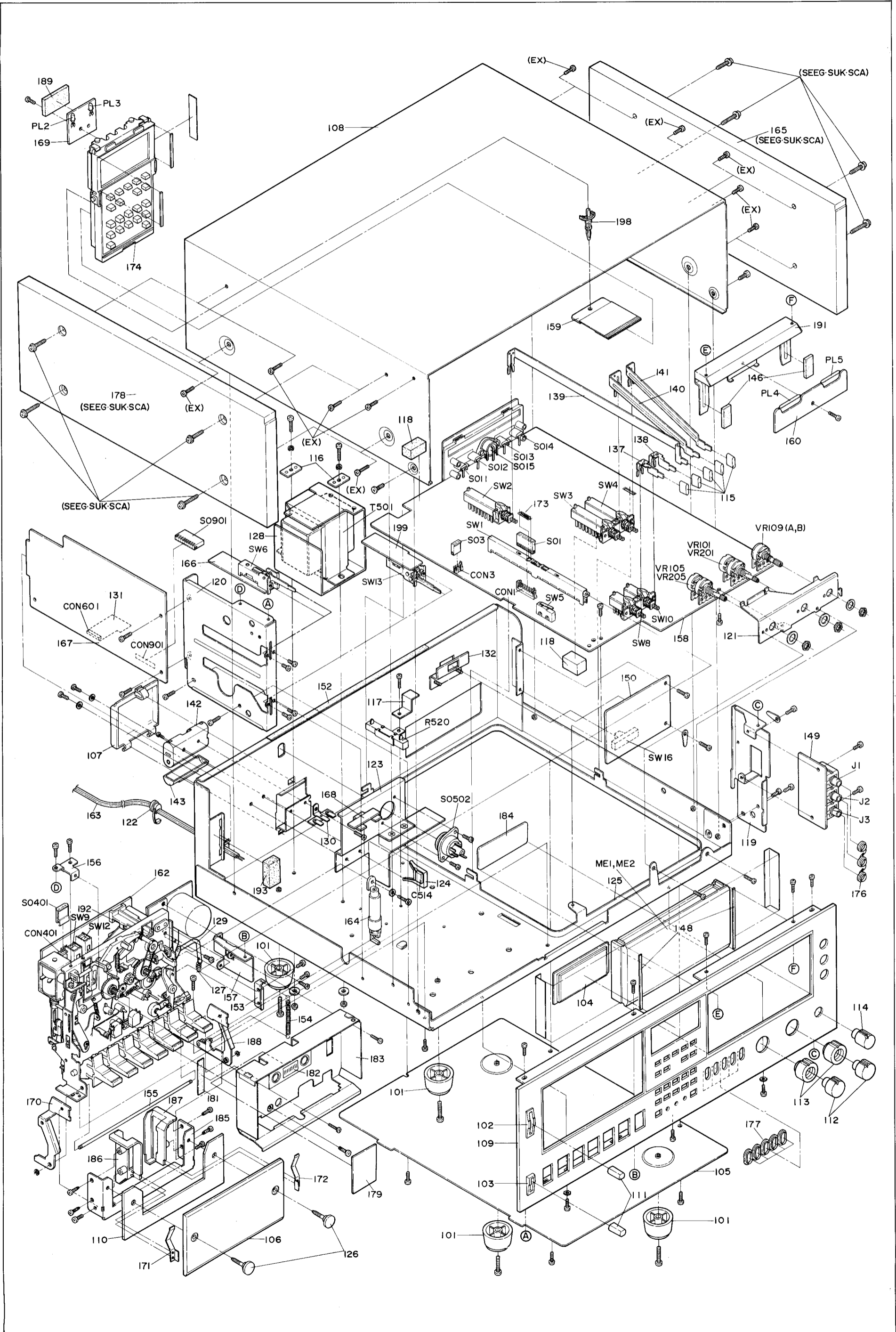



Figure 48 CABINET EXPLODED VIEW

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

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

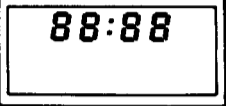
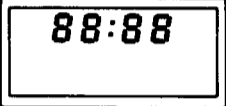
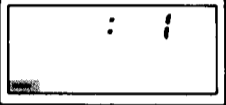

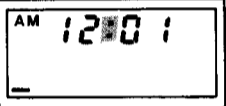
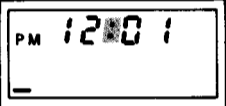
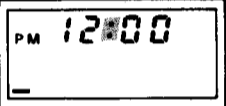
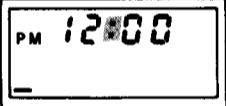

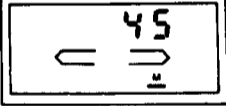
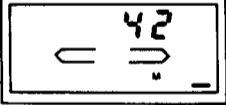
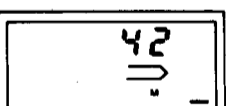
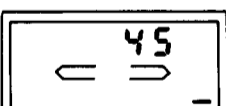
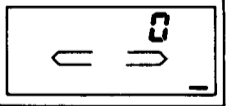
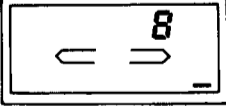
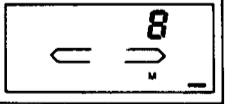
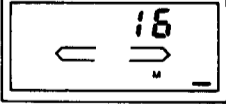
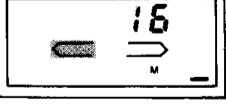
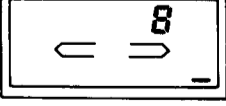
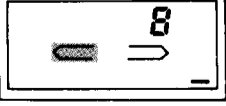
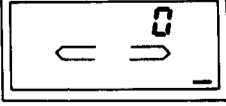
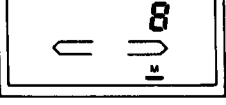
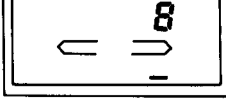
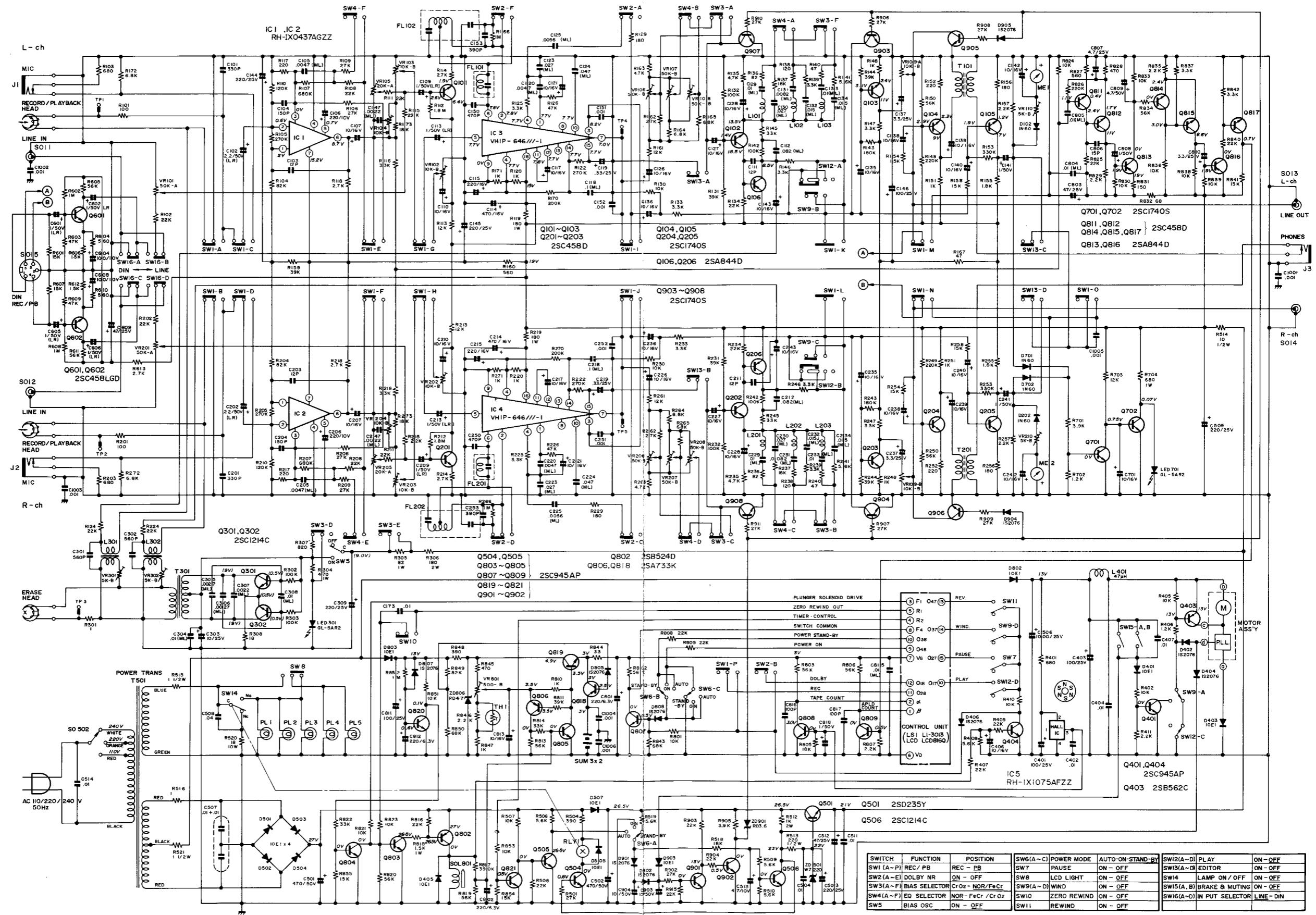
	Step	Power switch	Mechanical key operation	Control unit key operation	LCD		Mechanical behavior	Deck on/off	Remarks					
					Display before the (→) marked operation	Display after the (→) marked operation								
Clock operation	1	"stand-by"	"stop"	Insert the power supply plug into a wall outlet.		The indication is arbitrary for about 10 seconds.		"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			Same as above	The display should remain as before.			
	3	Same as step 1	Same as step 1	CLK	1	→	CS				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				Same as step 1			
	5	Same as step 1	Same as step 1	CZ						Same as step 1				
Auto-stop operation	6	Same as step 1	"play"							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"								"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				Same as above			
	9	Same as step 7	Same as step 7	TC	4	2	S				Same as step 7			
	10	Same as step 7	"play"								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					Same as step 7		
	12	Same as step 7	Same as above	D·IN	→	1	6	S					Same as step 7	
	13	Same as step 7	"REV"								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								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					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	S	T-SO	S	CM	S				"on"	
	30	"stand-by"	Same as above	APLD	5	S							"off"	The display (time of a day) varies every 1 minute.

TABLE 5



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

Figure 49 SCHEMATIC DIAGRAM

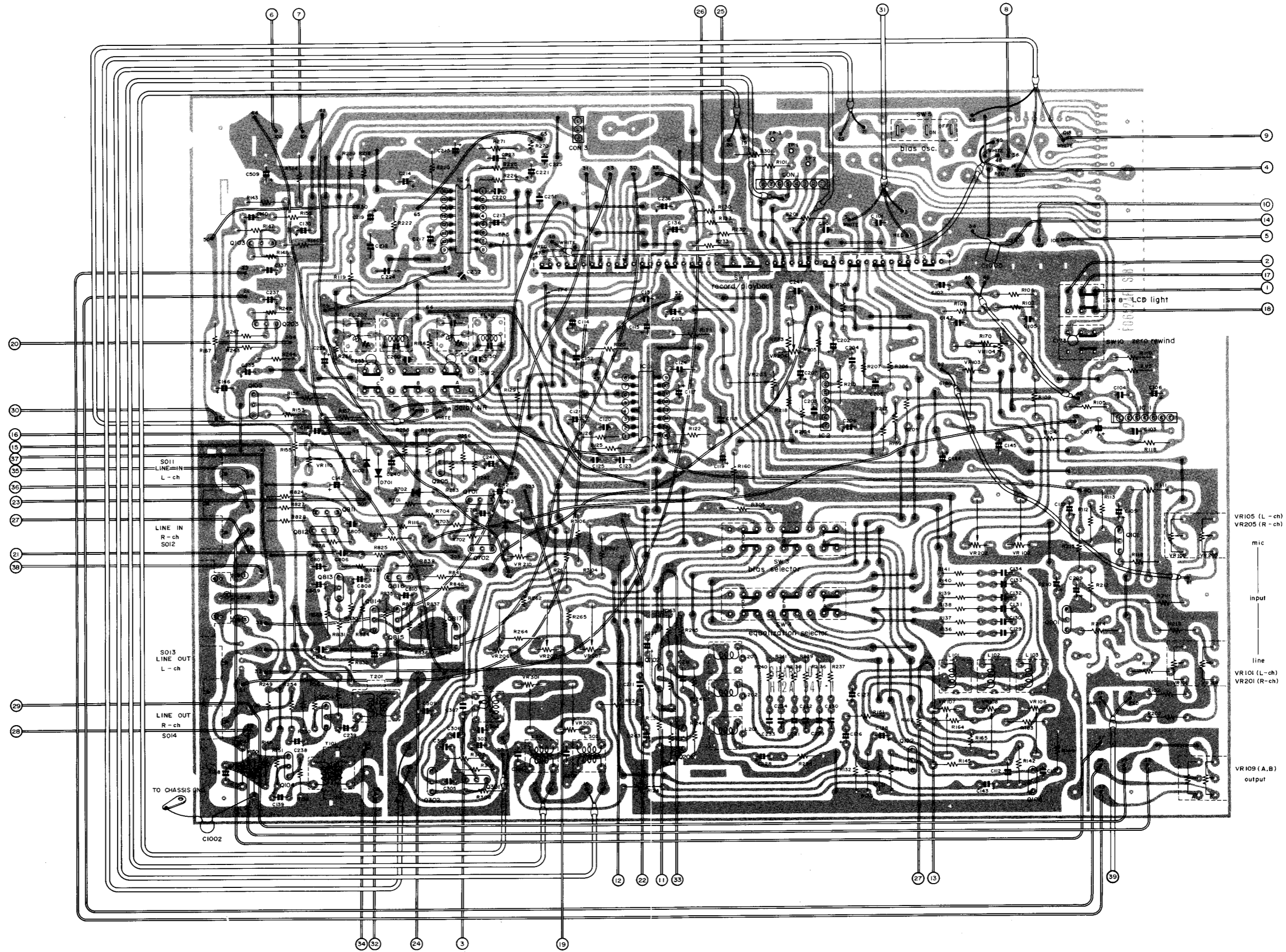


Figure 50 WIRING SIDE OF P.W. BOARD

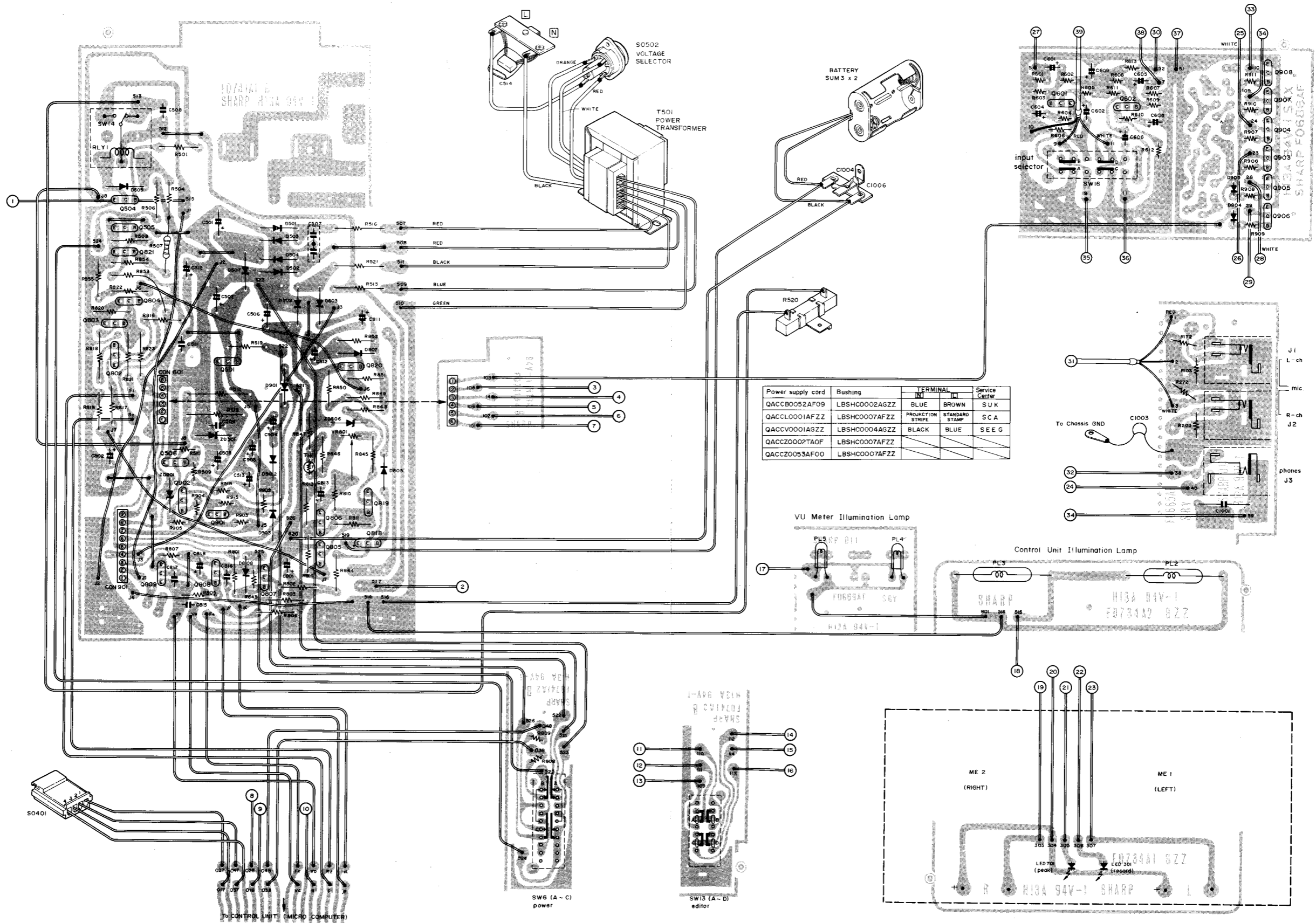


Figure 51 WIRING SIDE OF P.W. BOARD

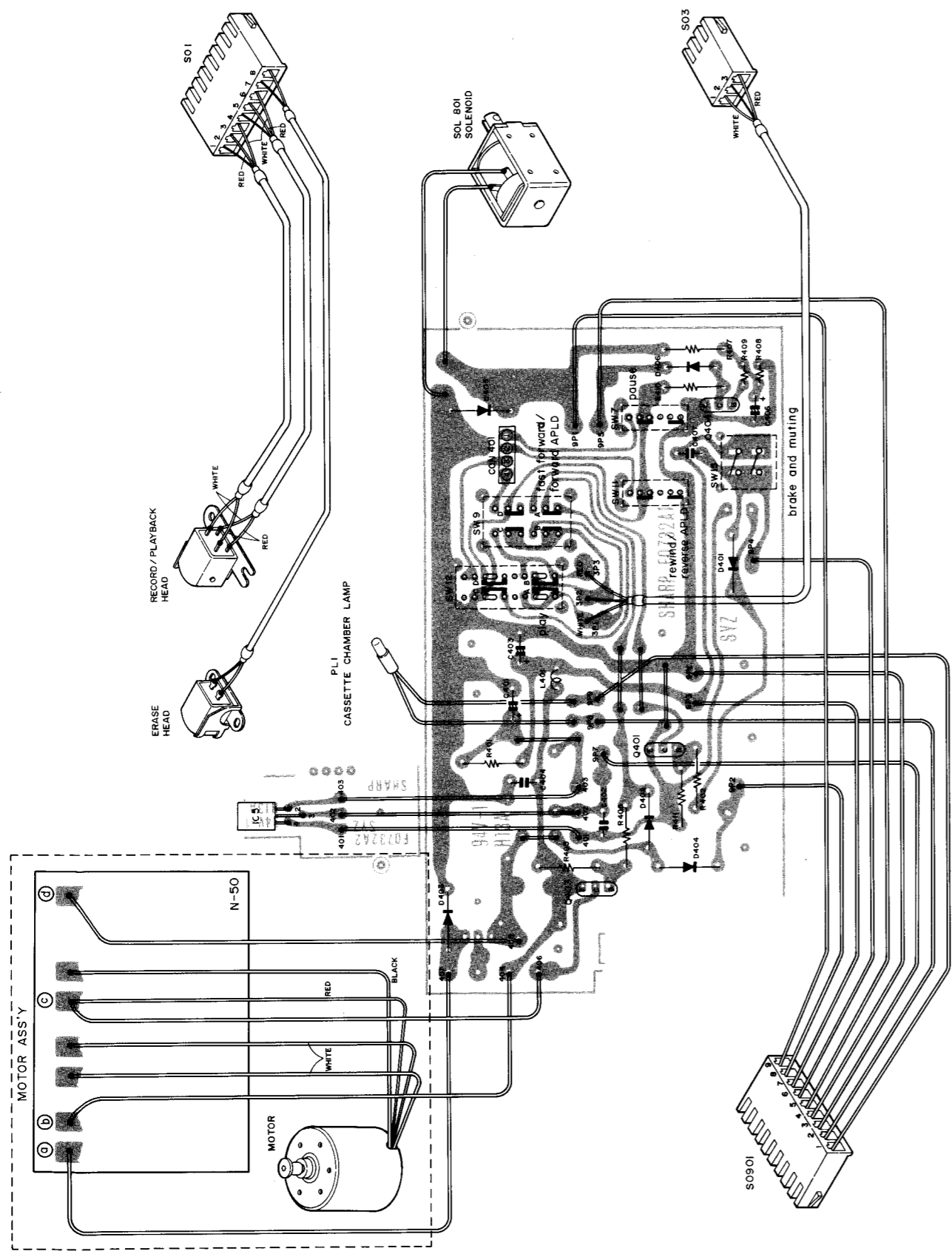


Figure 52 WIRING SIDE OF P.W. BOARD

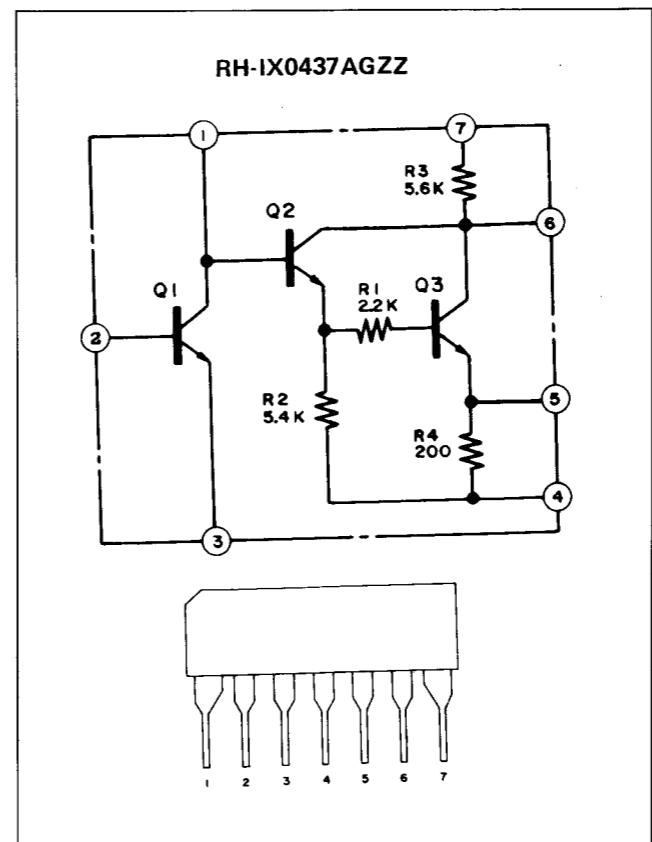


Figure 53 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUIT (IC1, IC2)

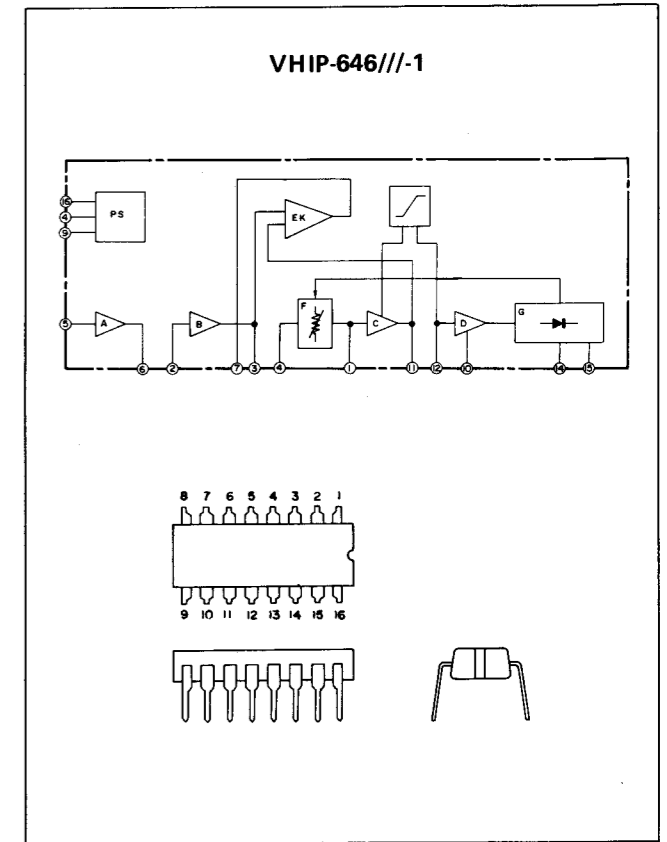


Figure 54 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUIT (IC3, IC4)

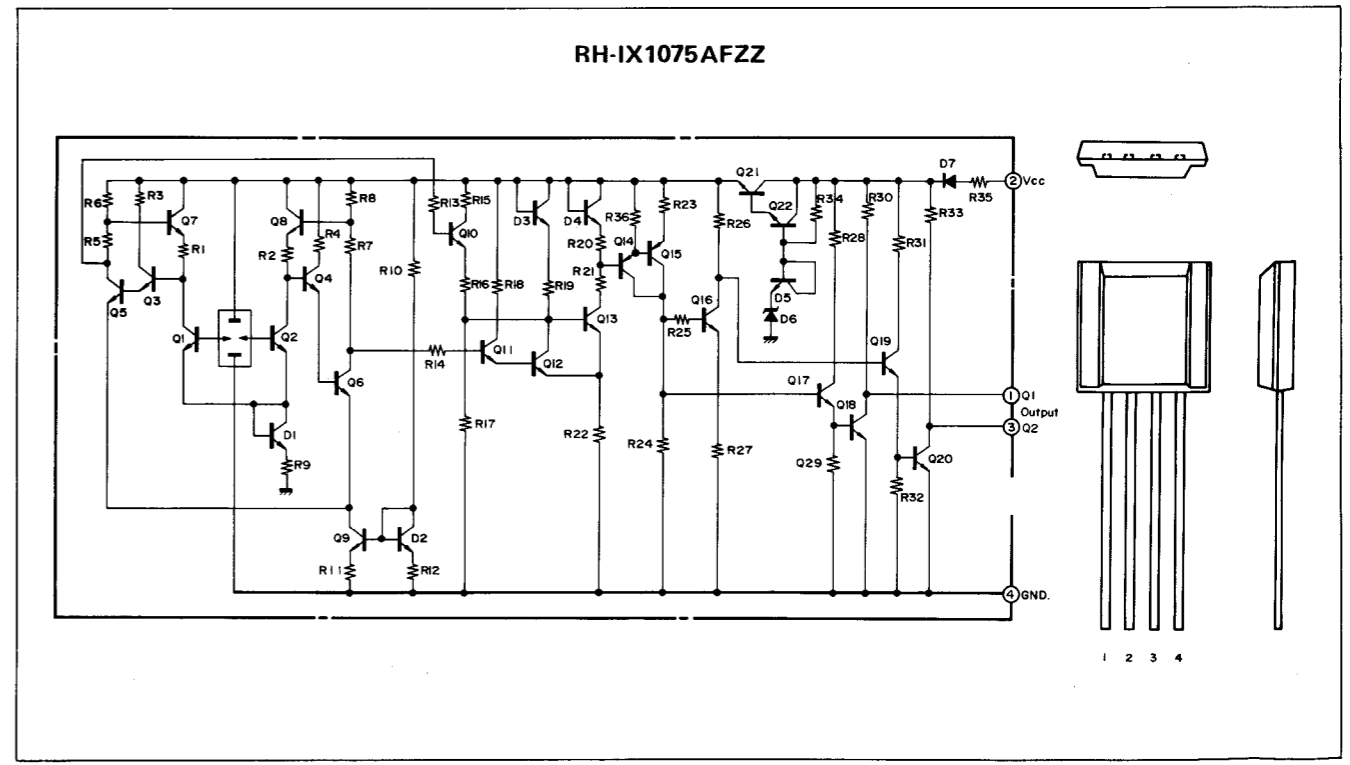


Figure 55 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUIT (IC5)

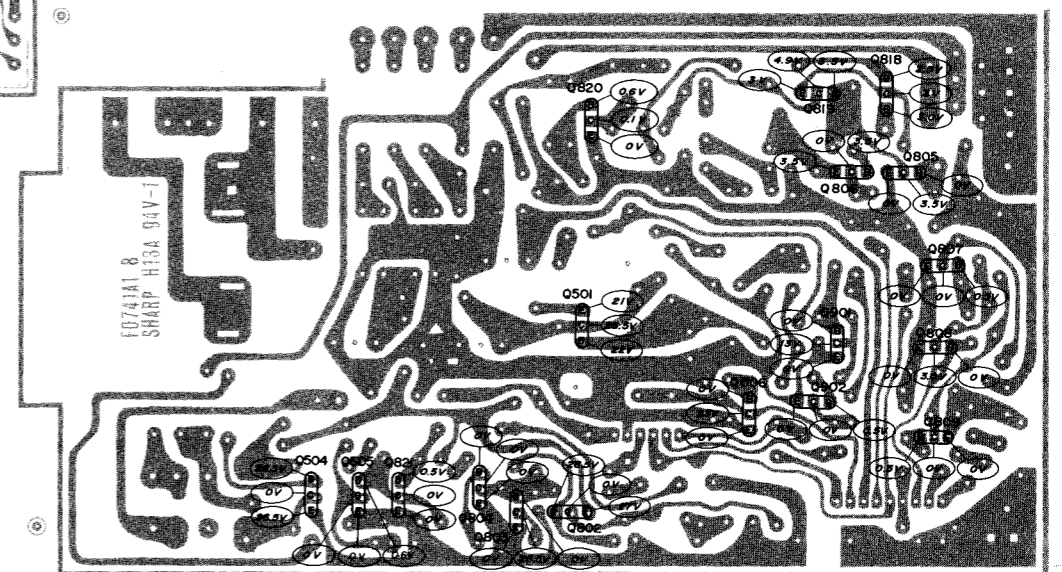
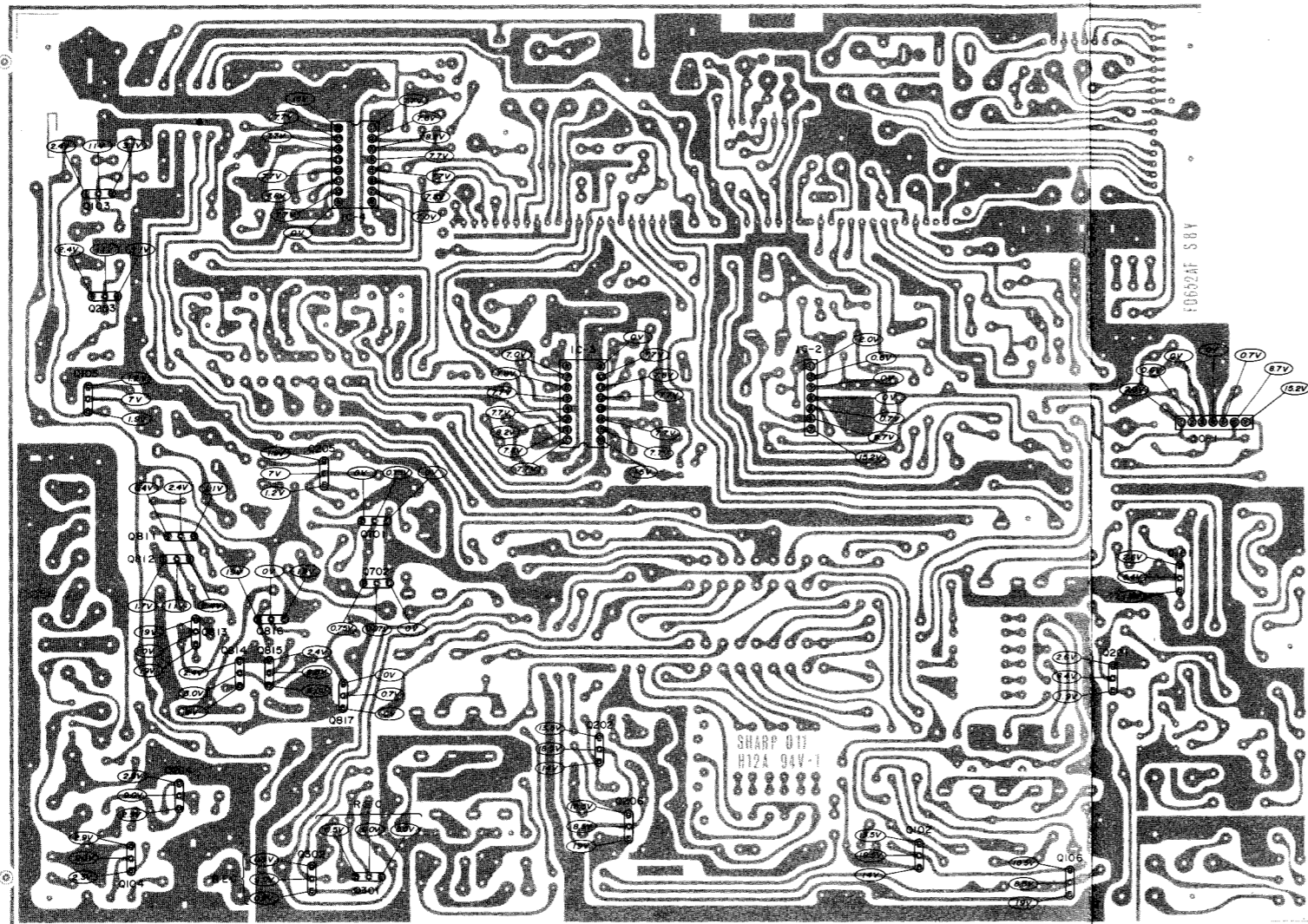


Figure 54 VOLTAGE GUIDE OF P.W. BOARD

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	REF. NO.	PART NO.	DESCRIPTION	CODE	
INTEGRATED CIRCUIT								
IC1, IC2	RH-1X0437AGZZ	Record/Playback (MIC.) Amp.	AH	Q816	VS2SA844-D/-1	APLD Blank Signal Detection (2SA844D)	AD	
IC3, IC4	VHIP-646///-1	Dolby	AS	Q817	VS2SC458-D/-1	APLD Blank Signal Detection (2SC458D)	AC	
IC5	RH-1X1075AFZZ	Detection, Auto Stop (Hall IC)	AL	Q818	VS2SA733-K/-1	AC/Battery Automatic Changeover (2SA733K)		
TRANSISTORS								
Q101, Q201	VS2SC458-D/-1	Mixing Amp. (2SC458D)	AC	Q819	VS2SC945AP/-1	LSI Power Compensation (2SC945AP)		
Q102, Q202	VS2SC458-D/-1	Record Equalizer Amp. (2SC458D)		Q820	VS2SC945AP/-1	Solenoid and Relay Muting (2SC945AP)		
Q103, Q203	VS2SC458-D/-1	Line Amp (2SC458D)		Q901, Q902	VS2SC945AP/-1	Muting (2SC945AP)	AC	
Q104, Q204	VS2SC1740S/-1	Headphones Amp. (2SC1740S)		Q903, Q904, Q905, Q906, Q907, Q908	VS2SC1740S/-1	Muting (2SC1740S)		
Q105, Q205	VS2SC1740S/-1	VU Meter Amp. (2SC1740S)		DIODES				
Q106, Q206	VS2SA844-D/-1	Record Equalizer Amp. (2SA844D)		AD	D102, D202	VHD1N60///-1	VU Meter Rectifier (1N60)	AB
Q301, Q302	VS2SC1214-C-1	Bias Oscillation (2SC1214C)		AD	LED301	VHPGL-5AR2/-1	LED, Record Indicator Lamp (GL-5AR2)	AD
Q401	VS2SC945AP/-1	Motor Brake (2SC945AP)		AC	D401	RH-DX1006AFZZ	Brake (10E1)	AC
Q403	VS2SB562-C/-1	Motor Brake (2SB562C)	AE	D402	VHD1S2076//1	Brake (1S2076)	AG	
Q404	VS2SC945AP/-1	Interface (2SC945AP)	AC	D403	RH-DX1006AFZZ	Motor Drive (10E1)	AC	
Q501	VS2SD235-Y/-1	Constant Voltage (2SD235Y)	AG	D404	VHD1S2076//1	Motor Drive (1S2076)	AG	
Q504	VS2SC945AP/-1	Relay Drive (2SC945AP)	AC	D405	RH-DX1006AFZZ	Solenoid Back Electromotive (10E1)	AC	
Q505	VS2SC945AP/-1	Relay Malfunction Protector (2SC945AP)	AC	D406	VHD1S2076//1	Switching (1S2076)	AG	
Q506	VS2SC1214-C-1	Power (26V) Switching (2SC1214C)	AD	D501, D502, D503, D504	VHD10E1///-1	Power Rectifier (10E1)	AC	
Q601, Q602	VS2SC458LGD-1	DIN Amp. (2SC458LGD)	AC	D505	VHD10E1///-1	Relay (10E1)	AC	
Q701, Q702	VS2SC1740S/-1	Peak Level Indicator (2SC1740S)	AC	D507	VHD10E1///-1	Power Stabilizer (10E1)	AC	
Q802	VS2SB524-D/-1	Solenoid Drive (2SB524D)	AF	D701, D702	VHD1N60///-1	Peak Level Indicator Switching (1N60)	AB	
Q803	VS2SC945AP/-1	Solenoid Drive (2SC945AP)		LED701	VHPGL-5AR2/-1	LED, Peak Level Indicator (GL-5AR2)	AD	
Q804	VS2SC945AP/-1	Solenoid Drive (2SC945AP)		D802	VHD10E1///-1	Motor Circuit Rectifier (10E1)	AC	
Q805	VS2SC945AP/-1	LSI Output Detection (2SC945AP)		D803	VHD10E1///-1	AC Power Switching (10E1)	AC	
Q806	VS2SA733-K/-1	LSI Output Detection (2SA733K)	AC	D805	VHD1S2076//1	Battery Switching (1S2076)	AG	
Q807, Q808, Q809	VS2SC945AP/-1	Level Interface (2SC945AP)	AD	D807	VHD1S2076//1	Capacitor Discharge (1S2076)	AG	
Q811, Q812	VS2SC458-D/-1	APLD Signal Amp. (2SC458D)		AC	D808	VHD1S2076//1	Level Interface (1S2076)	AG
Q813	VS2SA844-D/-1	APLD Switching (2SA844D)	AD	D901, D902	VHD1S2076//1	Muting (1S2076)	AG	
Q814	VS2SC458-D/-1	APLD Level Detection (2SC458D)	AC	D903	VHD10E1///-1	Muting (10E1)	AC	
Q815	VS2SC458-D/-1	Comparator (2SC458D)	AC	D904, D905	VHD1S2076//1	Muting (1S2076)	AG	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
ZENER DIODES							
ZD501	VHEWZ220///-1	Voltage Stabilizer (WZ220)	AD	RESISTORS			
ZD806	VHERD4R7EC/-1	Control Unit, Voltage Stabilizer (RD4-7)	AC	(Unless otherwise specified resistors are 1/4W, ±5%, Carbon type)			
ZD901	VHERD3R6EC/-1	Muting (RD3-6)	AC	R101	VRD-ST2EE101J	100 ohm	
COILS							
L101, L102, L103, L201, L202, L203	RCILZ0058AFZZ	Equalizer	AE	R102	VRD-ST2EE223J	22K ohm	
L301, L302	RCILB0376AFZZ	Bias Trap	AE	R103	VRD-ST2EE681J	680 ohm	
L401	RCILF0014AGZZ	Motor	AC	R104	VRD-ST2EE823J	82K ohm	
TRANSFORMERS							
T101, T201	RTRNS0027AGZZ	Headphones	AE	R105	VRD-ST2EE274J	270K ohm	
T301	RCILB0086AGZZ	Bias Oscillator	AF	R106	VRD-ST2EE273J	27K ohm	
T501	RTRNP0554AFZZ	Power	-	R107	VRD-ST2EE684J	680K ohm	
FILTERS							
FL101, FL201	RCILL0053AFZZ	Bias Trap	AF	R108	VRD-ST2EE223J	22K ohm	
FL102, FL202	RCILL0054AFZZ	MPX Filter	AG	R109	VRD-ST2EE273J	27K ohm	
CONTROLS							
VR101, VR201	RVR-A0117AFZZ	50K ohm (A), Line Record Level	AP	R110	VRD-ST2EE124J	120K ohm	
VR102, VR202	RVR-M0127AFZZ	10K ohm (B), Record Input Sensitivity Adjust	AC	R111	VRD-ST2EE223J	22K ohm	
VR103, VR203	RVR-M0127AFZZ	10K ohm (B), Playback Sensitivity Adjust	AC	R112	VRD-ST2EE185J	1.8 Meg ohm	
VR104, VR204	RVR-M0127AFZZ	10K ohm (B), Playback Amplifier Frequency Adjust	AC	R113	VRD-ST2EE123J	12K ohm	
VR105, VR205	RVR-A0124AFZZ	20K ohm (A), Mic. Record Level	AN	R114	VRD-ST2EE272J	2.7K ohm	
VR106, VR206	RVR-M0130AFZZ	50K ohm (B), Record Sensitivity Adjust	AC	R115	VRD-ST2EE223J	22K ohm	
VR107, VR207	RVR-M0130AFZZ	50K ohm (B), Record Sensitivity Adjust	AC	R116	VRD-ST2EE333J	33K ohm	
VR108, VR208	RVR-M0130AFZZ	50K ohm (B), Record Sensitivity Adjust	AC	R117	VRD-ST2EE221J	220 ohm	
VR109 (A, B)	RVR-B0151AFZZ	10K ohm (B), Output Level	AH	R118	VRD-ST2EE272J	2.7K ohm	
VR110, VR210	RVR-M0126AFZZ	5K ohm (B), VU Meter Sensitivity Adjust	AC	R119	VRD-PT3AB181K	180 ohm, 1W, ±10%, Carbon	AB
VR301, VR302	RVR-M0126AFZZ	5K ohm (B), Bias Current Adjust	AC	R120	VRD-ST2EE102J	1K ohm	
VR801	RVR-M0122AFZZ	500 ohm (B), LSI Voltage Adjust	AC	R122	VRD-ST2EE274J	270K ohm	
THERMISTOR							
TH1	VHH31D26///-1	1K ohm, 15%	AB	R124	VRD-ST2EE223J	22K ohm	
PACKAGED CIRCUITS							
C507	RMPTE0001AFZZ	.01 MFD x 2, 250V (DC), +80 -20%, Ceramic	AB	R125	VRD-ST2EE332J	3.3K ohm	
				R126	VRD-ST2EE473J	47K ohm	
				R129	VRD-ST2EE181J	180 ohm	
				R130	VRD-ST2EE103J	10K ohm	
				R131	VRD-ST2EE393J	39K ohm	
				R132	VRD-ST2EE104J	100K ohm	
				R133	VRD-ST2EE332J	3.3K ohm	
				R134	VRD-ST2EE223J	22K ohm	
				R135	VRD-ST2EE472J	4.7K ohm	
				R136	VRD-ST2EE820J	82 ohm	
				R137	VRD-ST2EE183J	18K ohm	
				R138	VRD-ST2EE121J	120 ohm	
				R139	VRD-ST2EE332J	3.3K ohm	
				R140	VRD-ST2EE470J	47 ohm	
				R141	VRD-ST2EE562J	5.6K ohm	
				R142	VRD-ST2EE104J	100K ohm	
				R143	VRD-ST2EE184J	180K ohm	
				R144	VRD-ST2EE393J	39K ohm	
				R145	VRD-ST2EE333J	33K ohm	AA
				R146	VRD-ST2EE332J	3.3K ohm	
				R147	VRD-ST2EE332J	3.3K ohm	
				R148	VRD-ST2EE102J	1K ohm	
				R149	VRD-ST2EE224J	220K ohm	
				R150	VRD-ST2EE563J	56K ohm	
				R151	VRD-ST2EE102J	1K ohm	
				R152	VRD-ST2EE221J	220 ohm	
				R153	VRD-ST2EE334J	330K ohm	
				R154	VRD-ST2EE153J	15K ohm	
				R155	VRD-ST2EE182J	1.8K ohm	
				R156	VRD-ST2EE181J	180 ohm	
				R157	VRD-ST2EE222J	2.2K ohm	
				R158	VRD-ST2EE153J	15K ohm	
				R159	VRD-ST2EE393J	39K ohm	
				R160	VRD-ST2EE561J	560 ohm	
				R161	VRD-ST2EE123J	12K ohm	
				R162	VRD-SU2EY273J	27K ohm	
				R163	VRD-ST2EE472J	4.7K ohm	
				R164	VRD-ST2EE682J	6.8K ohm	
				R165	VRD-SU2EY683J	68K ohm	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
19	LANGA0060AFFW	Bracket, APLD Operation Proof	—	68	MSPRT0472AFFJ	Spring, Fast forward/ Rewind Roller	AA
20	LCHSM0268AFZZ	Main Chassis	—	69	MSPRT0471AFFJ	Spring, Fast forward/Rewind Roller	AA
21	LCHSS0128AFZZ	Sub Chassis	—	70	MSPRT0465AFFJ	Spring, Over Stroke	AA
22	PCUSG0078AF00	Cushion, Mechanical Key (Shock-proof)	AC	71	MSPRT0477AFFJ	Spring, Rewind Lever Returning	AA
23	LSLVM0073AFFW	Sleeve, Select Lever	—	72	MSPRT0506AFFJ	Spring, Over Stroke Lever Returning	AA
24	LX-HZ0056AFFD	Screw	—	73	MSPRT0467AFFJ	Spring, Pause Lever Returning	AA
26	LSTPF0052AFFW	Stopper, Mechanical Key Shaft	AB	74	MSPRT0517AFFJ	Spring, Main Lock Plate Returning	—
27	LBSHS0001AG00	Cushion, Motor	AA	75	MSPRT0467AFFJ	Spring, Record Lever Returning	AA
28	LBSHZ0050AFZZ	Stopper, Select Lever	AA	76	MSPRT0470AFFJ	Spring, Main Lock Plate	AA
29	LPINB0051AFFW	Shaft, Solenoid Operating	—	77	MSPRT0469AFFJ	Spring, Record Prevention Lever	AA
31	MLEV0093AFZZ	Lever, Cassette Holder Lock	AB	78	MSPRT0474AFFJ	Spring, Cassette Tape Settle Lever	AA
32	PCUSG0079AF00	Cushion, Main Lock Plate	AB	79	MSPRT0463AFFJ	Spring, Record Safety Lever	AA
33	MRODM0058AFFD	Rod, Pause Connecting	AB	80	MSPRT0464AFFJ	Spring, Take-up Idler	AY
34	RHEDA0050AFZZ	Erase Head	AN	81	MSPRC0031AGMN	Spring, Record/Playback Head Azimuth	AA
35	RHEDH0062AFZZ	Record/Playback Head	AY	82	MSPRC0123AFFJ	Spring, Solenoid Lever, Rewind	AA
36	PFLT-0329AF00	Felt, Fast forward/Rewind Lever	AA	83	MLEVF0736AFZZ	Lever, Rewind	AE
37	RMOTP0051AFZZ	PLL Servo Motor Assembly	BG	84	MLEVF0729AFZZ	Lever, Over Stroke	AE
38	MLEV0091AFZZ	Lever, Idler Returning	AC	85	MLEVF0734AFZZ	Lever, Fast forward/Rewind	AG
39	MLEV0086AFZZ	Lever, Brake Returning	AB	86	MLEVF0735AFFW	Lever, Lock Release	AC
40	NPLYC0101AFFD	Stopper, Record/Playback Switch Rod	AA	87	MLEVF0737AFFW	Lever, Fast forward	AD
41	JKNBR0108AFSA	Key, Play/Stop/Fast forward-Forward APLD/Rewind-Reverse APLD (RT-3838HA)	AH	88	MLEVF0739AFZZ	Lever, Pause	AF
	JKNBR0108AFSD	Key, Play/Stop/Fast forward-Forward APLD/Rewind-Reverse APLD (RT-3838HD)	—	89	MLEVF0732AFFW	Lever, Record	AD
42	JKNBR0109AFSA	Key, Pause/Cassette Eject (RT-3838HA)	AH	90	MLEVF0741AFZZ	Main Lock Plate	AF
	JKNBR0109AFSB	Key, Pause/Cassette Eject (RT-3838HD)	—	91	MLEVF0740AFZZ	Lever, Play Lock	AG
43	JKNBR0108AFSB	Key, Record (RT-3838HA)	AH	92	MLEVF0731AFFW	Lever, Eject	AB
	JKNBR0108AFSD	Key, Record (RT-3838HD)	—	93	MLEVF0730AFFW	Lever, Pause Returning	AC
46	NBLTK0116AFZZ	Belt, Take-up Turntable	AB	94	MLEVF0738AFFW	Lever, Record Prevention	AC
47	NBALS0004AGFJ	Ball (φ 3)	AA	95	MLEVF0733AFFW	Pause Lock Plate	AC
48	NBLTH0057AFZZ	Belt, Flywheel	AD	96	MLEVP0089AFZZ	Lever, Pause Connecting Lever	AB
49	NBRGC0059AFZZ	Bearing, Capstan	AG	97	MLEVP0088AFZZ	Lever, Auto Start Returning	AC
50	LHLDP3017AF00	Holder, Cassette Chamber Lamp (PL1)	—	98	MLEVP0090AFZZ	Lever, Cassette Tape Settle	AC
51	NPLYR0050AFZZ	Pulley, Take-up Turntable	AB	99	MLEVP0087AFZZ	Lever, Record Safety	AC
52	NPLYR0059AFZZ	Pulley, Take-up	AE	MISCELLANEOUS			
53	NDAIR0122AFSA	Turntable, Supply	AE	101	GLEGP0061AFZZ	Leg	AC
54	NDAIR0121AFSA	Turntable, Take-up	AG	102	GCOVA1093AFSA	Cover, Power Switch (RT-3838HA)	AD
55	NROLY0011AFZZ	Pressure Roller	AF		GCOVA1093AFSB	Cover, Power Switch (RT-3838HD)	—
56	NROLX0003AFZZ	Roller, Rewind	AB	103	GCOVA1094AFSA	Cover, Editor Switch (RT-3838HA)	AE
57	MSPRT0537AFFJ	Spring, Play Lock Lever	—		GCOVA1094AFSB	Cover, Editor Switch (RT-3838HD)	—
58	NFLYC0068AFZZ	Flywheel	AT	104	GCOVA1096AFSA	Transparent Plate, Control Unit	AD
59	NSFTT0106AFFD	Shaft, Cassette Holder Lock Lever	AA		105	GFTAU3070AFZZ	Bottom Plate
60	NSFTT0120AFFP	Shaft, Mechanical Key	AF	106	GFTAF1003FASA	Cassette Door (Transparent Plate)	AG
61	NIDR-0057AFZZ	Idler, Take-up	AF	107	GFTAB1106AFSA	Lid, Battery Compartment	AE
62	MSPRD0162AFFJ	Spring, Cassette Holder Lock Lever	AA		108	GCAB-3050AFSA	Cabinet
63	MSPRD0161AFFJ	Spring, Pressure Roller	AB	109	HPNLC3311AFSA	Front Panel (RT-3838HA)	BB
64	MSPRD0163AFFJ	Spring, Cassette Holder Lock Lever	AA		HPNLC3311AFSB	Front Panel (RT-3838HD)	—
65	MSPRD0164AFFJ	Spring, Pause Lock Plate	AA				
66	MSPRP0157AFFJ	Plate Type Spring, Sub Chassis	AC				
67	MSPRP0156AFFJ	Spring, Mechanical Key Returning	AE				

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
C801	VCEAAU0XW227Y	220 MFD, 6.0V, +50 -10%	AC	C251	VCKZPU1HF102Z	.001 MFD, 50V, +80 -20%, Ceramic	AA
C802	VCEAAU0XW227Y	220 MFD, 6.0V, +50 -10%	AC	C252	VCKZPU1HF102Z	.001 MFD, 50V, +80 -20%, Ceramic	AA
C803	VCEAAU1EW476Y	47 MFD, 25V, +50 -10%	AC	C253	VCKYPU1HB391K	390 pF, 50V, ±10%, Ceramic	AA
C807	VCEAAA1EW475A	4.7 MFD, 25V, +75 -10%	AB	C301	VCCSPU1HL561K	560 pF, 50V, ±10%, Ceramic	AA
C808	VCEAAA1HW105A	1 MFD, 50V, +75 -10%	AB	C302	VCCSPU1HL561K	560 pF, 50V, ±10%, Ceramic	AA
C809	VCEALA1HC475M	4.7 MFD, 50V, ±20%	AC	C304	VCQYKU1HM103M	.01 MFD, 50V, ±20%, Mylar	AB
C810	VCEAAA1EW335A	3.3 MFD, 25V, +75 -10%	AB	C305	VCQYKU1HM272K	.0027 MFD, 50V, ±10%, Mylar	AB
C811	VCEAAU1EW107Y	100 MFD, 25V, +50 -10%	AC	C306	VCQYKU1HM272K	.0027 MFD, 50V, ±10%, Mylar	AB
C812	VCEAAU0XW227Y	220 MFD, 6.0V, +50 -10%	AC	C307	VCQYKU1HM223J	.022 MFD	AC
C813	VCEAAA1CW106Y	10 MFD,	AB	C308	VCQYKU1HM103M	.01 MFD, 50V, ±20%, Mylar	AB
C818	VCEAAU1HW105A	1 MFD, 50V, +75 -10%	AB	C402	VCKZPU1HF103Z	.01 MFD, 50V, +80 -20%, Ceramic	AA
C903	VCEAAU1HW106Y	10 MFD, 50V, +50 -10%	AC	C404	VCKZPU1HF103Z	.01 MFD, 50V, +80 -20%, Ceramic	AA
C904	VCEAAU1HW106Y	10 MFD, 50V, +50 -10%	AC	C407	VCKZPU1HF103Z	.01 MFD, 50V, +80 -20%, Ceramic	AA
CAPACITORS							
(Unless otherwise specified capacitors are 50V, ±5%, Mylar type)							
C101	VCCSPU1HL331K	330 pF, 50V, ±10%, Ceramic	AB	C508	VCKZPU1HF403Z	.04 MFD, 50V, +80 -20%, Ceramic	AB
C103	VCCSPU1HL120K	12 pF, 50V, ±10%, Ceramic	AA	C511	VCKZPU1HF103Z	.01 MFD, 50V, +80 -20%, Ceramic	AA
C104	VCCSPU1HL151K	150 pF, 50V, ±10%, Ceramic	AA	C514	RC-HZ053CAFZZ	.01 MFD, 250V, (AC), ±20%, Metalized Paper	AG
C105	VCQYKU1HM472J	.0047MFD	AC	C804	VCQYKU1HM103M	.01 MFD, 50V, ±20%, Mylar	AB
C111	VCCSPU1HL120K	12 pF, 50V, ±10%, Ceramic	AA	C805	VCQYKU1HM103K	.01 MFD, 50V, ±10%, Mylar	AB
C112	VCQYKU1HM823K	.082 MFD, 50V, ±10%, Mylar	AC	C806	VCCSPU1HL150J	15 pF	AA
C118	VCQYKU1HM104K	.1 MFD, 50V, ±10%, Mylar	AC	C815	VCQYKU1HM103J	.01 MFD	AB
C120	VCQYKU1HM472J	.0047 MFD	AC	C816	VCCSPU1HL101K	100 pF, 50V, ±10%, Ceramic	AA
C123	VCQYKU1HM273J	.027 MFD	AC	C817	VCCSPU1HL101K	100 pF, 50V, ±10%, Ceramic	AA
C124	VCQYKU1HM473J	.047 MFD	AC	C1001	VCKZPU1HF102Z	.001 MFD, 50V, +80 -20%, Ceramic	AA
C125	VCQYKU1HM562J	.0056 MFD	AC	C1002	VCKZPU1HF102Z	.001 MFD, 50V, +80 -20%, Ceramic	AA
C129	VCQYKU1HM103J	.01 MFD	AB	C1003	VCKZPU1HF102Z	.001 MFD, 50V, +80 -20%, Ceramic	AA
C130	VCQYKU1HM273K	.027 MFD, 50V, ±10%, Mylar	AB	C1004	VCKZPU1HF102Z	.001 MFD, 50V, +80 -20%, Ceramic	AA
C131	VCQYKU1HM822J	.0082 MFD	AC	C1005	VCQYKU1HM102M	.001 MFD, 50V, ±20%, Mylar	AA
C132	VCQYKU1HM153K	.015 MFD, 50V, ±10%, Mylar	AB	C1006	VCKZPU1HF102Z	.001 MFD, 50V, +80 -20%, Ceramic	AA
C133	VCQYKU1HM103J	.01 MFD	AB	MECHANICAL PARTS			
C134	VCQYKU1HM153K	.015 MFD, 50V, ±10%, Mylar	AB	01	NROLW0004AFZZ	Roller, Fast Forward/Rewind	AK
C147	VCQYKU1HM222K	.0022MFD, 50V, ±10%, Mylar	AB	02	MLEVP0094AFZZ	Lever, Brake	AB
C150	VCCSPU1HL471K	470 pF, 50V, ±10%, Ceramic	AB	03	PCUSG0086AF00	Cushion, Brake Lever	—
C151	VCKZPU1HF102Z	.001 MFD, 50V, +80 -20%, Ceramic	AA	04	MLEVF0800AFZZ	Lever, Brake and Muting Switch	—
C152	VCKZPU1HF102Z	.001 MFD, 50V, +80 -20%, Ceramic	AA	05	LX-BZ0214AFZZ	Screw, Flywheel Thrust Adjust	AB
C153	VCKYPU1HB391K	390 pF, 50V, ±10%, Ceramic	AB	06	MSPRT0532AFFJ	Spring, Brake and Muting Switch Lever	—
C173	VCKZPU1EF103Z	.01MFD, 25 V, +80-20%, Ceramic	AA	07	PCUSG0062AF00	Cushion, Sub Chassis	AA
C201	VCCSPU1HL331K	330 pF, 50V, ±10%, Ceramic	AB	08	LX-BZ0219AFFD	Screw, Motor	AA
C203	VCCSPU1HL120K	12 pF, 50V, ±10%, Ceramic	AA	09	MLEVP0092AFZZ	Lever, Select	AC
C204	VCCSPU1HL151K	150 pF, 50V, ±10%, Ceramic	AA	11	LHLDZ1071AFZZ	Holder, Mechanism IC P.W. Board	AB
C205	VCQYKU1HM472J	.0047 MFD	AC	12	LANGF0399AFZZ	Bracket, Flywheel	—
C211	VCCSPU1HL120K	12 pF, 50V, ±10%, Ceramic	AA	13	LANGF0398AFFW	Bracket, Motor	—
C212	VCQYKU1HM823K	.082 MFD, 50V, ±10%, Mylar	AC	14	LANGF0419AFZZ	Bracket, Motor (Shock-proof)	—
C218	VCQYKU1HM104K	.1 MFD, 50V, ±10%, Mylar	AC	16	LANGA0061AFFW	Bracket, Solenoid Settle	—
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				

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION		
110	HDECB0067AFSA	Cassette Door (Decoration Plate)	AL	142	PCASB0053AFSA	Battery Case	AF
	JKNBP0079AFSA	Knob, Power Switch/Editor Switch (RT-3838HA)	AF	143	PCOVM1052AF00	Cover, Liquid Leak Equipment	AC
111	JKNBP0079AFSB	Knob, Power Switch/Editor Switch (RT-3838HD)	—	146	PCUSS0104AFZZ	Cushion, VU Meter	AA
	JKNBN0348AFSA	Knob, Line Record Level Control/Mic. Record Level Control (RT-3838HA)	AH	148	PSHEZ0064AFZZ	Spacer, VU Meter	AA
112	JKNBN0348AFSB	Knob, Line Record Level Control/Mic. Record Level Control (RT-3838HD)	—	149	QPWBF0665AFZZ	P.W. Board, Headphones Jack/ Microphone Jacks	N.A.
	JKNBK0164AFSA	Knob, Line Record Level Control/Mic. Record Level Control (RT-3838HA)	AH	150	QPWBF0686AFZZ	P.W. Board, Muting	N.A.
	JKNBK0164AFSB	Knob, Line Record Level Control/Mic. Record Level Control (RT-3838HD)	—	152	PSHEF0048AG00	Sheet, Cabinet (Shock Proof)	AA
113	JKNBN0349AFSA	Knob, Output Level Control (RT-3838HA)	AH	153	LANGF0422AFZZ	Bracket, Cassette Holder	—
	JKNBN0349AFSB	Knob, Output Level Control (RT-3838HD)	—	154	MSPRT0483AFFJ	Returning Spring	AB
	JKNBP0078AFSA	Knob, LCD Light Switch/Zero Rewind Switch/Dolby NR Switch/Bias Selector Switch (RT-3838HA)	AE	155	MRODM0060AFZZ	Spring, Cassette Lifter	AB
114	JKNBP0078AFSB	Knob, LCD Light Switch/Zero Rewind Switch/Dolby NR Switch/Bias Selector Switch (RT-3838HD)	—	156	LANGF0405AFZZ	Rod, Cassette Holder	AC
	LANGF0412AFZZ	Bracket, Power Transformer	AA	157	LANGF0406AFZZ	Bracket, Mechanism Settle (Left)	AC
116	LANGH0114AFZZ	Bracket, Record/Playback P.W. Board	—	158	QPWBF0652AFZZ	Bracket, Mechanism Settle (Right)	AB
117	PCUSG0083AF00	Cushion, Record/Playback P.W. Board	AC	159	QCNW-0315AFZZ	P.W. Board, Record/Playback Flat Cable	N.A.
118	LANGQ0526AFZZ	Bracket, Headphones Jack/ Microphone Jacks	AD	160	QPWBF0734AFA2	P.W. Board, VU Meter Illumination	N.A.
119	LANGT0696AFZZ	Bracket, Power Switch/Editor Switch	—	162	QPWBF0732AFA1	P.W. Board, Mechanism	N.A.
120	LANGT0643AFZZ	Bracket, Level Controls	AC	163	QACCB0052AF09	P.W. Board, Mechanism	N.A.
	LBSHC0004AGZZ	Bushing, AC Supply Cord (SEEG)	AC		QACCL0001AFZZ	AC Supply Cord (SUK)	AM
121	LBSHC0002AGZZ	Bushing, AC Supply Cord (SUK)	AC		QACCV0001AGZZ	AC Supply Cord (SCA)	AR
122	LBSHC0007AFZZ	Bushing, AC Supply Cord (SCA, EX)	AB		QACCZ0002TA0F	AC Supply Cord (SEEG)	AP
	LANGQ0566AFZZ	Bracket, Voltage Selector Socket	AC		QACCZ0053AF00	AC Supply Cord (EX)	AF
123	PCOVP1160AFZZ	Cover, Capacitor (C514)	—	164	MLIFP0001AFZZ	AC Supply Cord (EX)	AK
124	LCHSM0286AFZZ	Main Chassis	—	165	GITAS0022AFSA	Lifter, Cassette	—
125	LX-BZ0238AFSA	Screw, Decoration	AF	166	QPWBF0741AFA2	Side Plate, Cabinet (EX)	AT
126	MSPRT0482AFFJ	Spring, Record/Playback Switch	AA	167	QPWBF0741AFA1	P.W. Board, Power	N.A.
127	PSLDC3066AFZZ	Shield Plate, Power Transformer	AF	168	PLUGL0250AFZZ	P.W. Board, Power	N.A.
128	MRODM0059AFZZ	Rod, Record/Playback Switch	AE	169	QPWBF0669AFZZ	Lug Terminal	AC
129	QLUGL0201AGZZ	Lug Terminal	AB	170	MARMM0058AFZZ	P.W. Board, LCD Illumination	N.A.
130	QPWBF0741AFA4	P.W. Board, Transport	N.A.	171	MSPRP0178AFZZ	Arm, Cassette Holder (Left)	AD
131	LANGQ0572AFZZ	Bracket, Input Selector Switch	AB	172	MSPRP0164AFZZ	Spring, Cassette Compartment	AB
132	MLEVF0753AFZZ	Lever, LCD Light Switch	AA	173	MSPRC0154AFZZ	Spring, Cassette Compartment (Left)	AB
133	MLEVF0754AFZZ	Lever, Zero Rewind Switch	AA	174	DUNTZ0285AF01	Spring, Cassette Compartment (Right)	AB
134	MLEVF0755AFZZ	Lever, Dolby NR Switch	AC	175	PSPAS0057AFZZ	Spring, Record/Playback Control Unit Assembly	—
135	MLEVF0756AFZZ	Lever, Bias Selector Switch	AA	176	PSPAS0058AFZZ	Control Unit Assembly	—
136	MLEVF0757AFZZ	Lever, Equalization Selector Switch	AA	177	PSPAS0058AFZZ	Spacer, Headphones Jack/ Microphone Jacks	AB
137	PCOVM1052AF00	Cover, Liquid Leak Equipment	AC	178	GITAS0023AFSA	Spacer, LCD Light Switch/ Zero Rewind Switch/ Dolby NR Switch/Bias Selector Switch/ Equalization Selector Switch	AB
138	LX-BZ0238AFSA	Screw, Decoration	AF	179	PCOVU7112AFZZ	Side Plate, Cabinet (EX)	AT
139	MSPRT0482AFFJ	Spring, Record/Playback Switch	AA	180	PSHEF0118AF00	Film, Tape Illumination Cover	AA
140	PSLDC3066AFZZ	Shield Plate, Power Transformer	AF	181	GCOVA1095AFSA	Cover, Tape Illumination	AE
141	MRODM0059AFZZ	Rod, Record/Playback Switch	AE	182	HDECA0282AFSA	Sheet, Tape Illumination Cover	AA
142	QLUGL0201AGZZ	Lug Terminal	AB	183	GPWBF0734AFA1	Cover, Tape Illumination	AE
143	QPWBF0741AFA4	P.W. Board, Transport	N.A.	184	LHLDX3055AFZZ	Decorations Plate, Cassette Compartment	AK
144	LANGQ0572AFZZ	Bracket, Input Selector Switch	AB	185	GFTAC3055AF00	Cassette Holder	N.A.
145	MLEVF0753AFZZ	Lever, LCD Light Switch	AA	186	GFTAC3056AF00	Cassette Compartment (Left)	AE
146	MLEVF0754AFZZ	Lever, Zero Rewind Switch	AA	187	MARMM0059AFZZ	Cassette Compartment (Right)	AC
147	MLEVF0755AFZZ	Lever, Dolby NR Switch	AC	188	PCUSS0105AFZZ	Cassette Compartment (Right)	AC
148	MLEVF0756AFZZ	Lever, Bias Selector Switch	AA	189	LANGT0697AFZZ	Arm, Cassette Holder (Right)	AE
149	MLEVF0757AFZZ	Lever, Equalization Selector Switch	AA	190	QPWBF0732AFA2	Cushion, LCD Illumination	AA
150	PCASB0053AFSA	Battery Case	AF	191	PCUSS0103AF00	P.W. Board	—
151	PCOVM1052AF00	Cover, Liquid Leak Equipment	AC	192	QPWBF0732AFA2	Bracket, VU Meter	—
152	PCUSS0104AFZZ	Cushion, VU Meter	AA	193	PCUSS0103AF00	P.W. Board, Mechanism IC	N.A.
153	PSHEZ0064AFZZ	Spacer, VU Meter	AA			Cushion, Power P.W. Board	AC
154	QPWBF0665AFZZ	P.W. Board, Headphones Jack/ Microphone Jacks	N.A.				
155	QPWBF0686AFZZ	P.W. Board, Muting	N.A.				
156	PSHEF0048AG00	Sheet, Cabinet (Shock Proof)	AA				
157	LANGF0422AFZZ	Bracket, Cassette Holder	—				
158	MSPRT0483AFFJ	Returning Spring	AB				
159	MRODM0060AFZZ	Spring, Cassette Lifter	AB				
160	LANGF0405AFZZ	Rod, Cassette Holder	AC				
161	LANGF0406AFZZ	Bracket, Mechanism Settle (Left)	AC				
162	QPWBF0652AFZZ	Bracket, Mechanism Settle (Right)	AB				
163	QCNW-0315AFZZ	P.W. Board, Record/Playback Flat Cable	N.A.				
164	QPWBF0734AFA2	P.W. Board, VU Meter Illumination	N.A.				
165	QPWBF0732AFA1	P.W. Board, Mechanism	N.A.				
166	QACCB0052AF09	P.W. Board, Mechanism	N.A.				
167	QACCL0001AFZZ	AC Supply Cord (SUK)	AM				
168	QACCV0001AGZZ	AC Supply Cord (SCA)	AR				
169	QACCZ0002TA0F	AC Supply Cord (SEEG)	AP				
170	QACCZ0053AF00	AC Supply Cord (EX)	AF				
171	MLIFP0001AFZZ	AC Supply Cord (EX)	AK				
172	GITAS0022AFSA	Lifter, Cassette	—				
173	QPWBF0741AFA2	Side Plate, Cabinet (EX)	AT				
174	QPWBF0741AFA1	P.W. Board, Power	N.A.				
175	PLUGL0250AFZZ	P.W. Board, Power	N.A.				
176	QPWBF0669AFZZ	Lug Terminal	AC				
177	MARMM0058AFZZ	P.W. Board, LCD Illumination	N.A.				
178	MSPRP0178AFZZ	Arm, Cassette Holder (Left)	AD				
179	MSPRP0164AFZZ	Spring, Cassette Compartment	AB				
180	MSPRC0154AFZZ	Spring, Cassette Compartment (Left)	AB				
181	DUNTZ0285AF01	Spring, Cassette Compartment (Right)	AB				
182	PSPAS0057AFZZ	Spring, Record/Playback Control Unit Assembly	—				
183	PSPAS0058AFZZ	Control Unit Assembly	—				
184	GITAS0023AFSA	Side Plate, Cabinet (EX)	AT				
185	PSHEF0118AF00	Film, Tape Illumination Cover	AA				
186	GCOVA1095AFSA	Cover, Tape Illumination	AE				
187	HDECA0282AFSA	Sheet, Tape Illumination Cover	AA				
188	GPWBF0734AFA1	Cover, Tape Illumination	AE				
189	LHLDX3055AFZZ	Decorations Plate, Cassette Compartment	AK				
190	GFTAC3055AF00	Cassette Holder	N.A.				
191	GFTAC3056AF00	Cassette Compartment (Left)	AE				
192	MARMM0059AFZZ	Cassette Compartment (Right)	AC				
193	PCUSS0105AFZZ	Cassette Compartment (Right)	AC				
	LANGT0697AFZZ	Arm, Cassette Holder (Right)	AE				
	QPWBF0732AFA2	Cushion, LCD Illumination	AA				
	PCUSS0103AF00	P.W. Board	—				
	QPWBF0732AFA2	Bracket, VU Meter	—				
	PCUSS0103AF00	P.W. Board, Mechanism IC	N.A.				
		Cushion, Power P.W. Board	AC				

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION		
198	LHLDF1210AFZZ	Wire Holder	—	CON3	QCNCM172CAFZZ	Plug, 3 pin	AB
199	QPWBF0741AFA3	P.W. Board, Editor Switch	N.A.	SO3	QCNCW-0311AFZZ	Socket, 3 pin	AE
SW1 (A~P)	QSW-S0207AFZZ	Switch, Record/Playback	AN	SO1	QCNCW-0262AFZZ	Socket, 8 pin	AH
SW2 (A~E)			QSW-P0154AFZZ	Switch, Dolby NR	CON1	QCNCM177HAFZZ	Plug, 8 pin
SW3 (A~F)	QSW-P0155AFZZ	Switch, Bias Selector/ Equalization Selector	AH	SO901	QCNCW-0310AFZZ	Socket, 9 pin	AF
SW4 (A~F)			CON901	QCNCM178JAFZZ	Plug, 9 pin	AC	
SW5	QSW-M0015AGZZ	Switch, Bias Oscillator	AM	SOL801	RPLU-0071AFZZ	Solenoid	AR
SW6 (A~C)	QSW-B0096AFZZ	Switch, Power	AH	RLY1 SW14	RRLYZ0059AFZZ	Relay	AN
SW7	QSW-S0188AFZZ	Switch, Pause	AH	PRDAR0153AFZZ	Heat Sink	AC	
SW9 (A~D)	QSW-S0219AFZZ	Switch, Fast-forward/ Forward APLD	AH	J1, J2	QJAKZ0066AFZZ	Jacks, Microphone	AE
SW8, SW10	QSW-P0156AFZZ	Switch, LCD Light/ Zero Rewind	AE	J3	QJAKJ0059AFZZ	Jack, Headphones	AE
SW11	QSW-S0188AFZZ	Switch, Rewind/Reverse APLD	AE	CON601	QCNCM195FAFZZ	Plug, Transport P.W. Board	AC
SW12 (A~D)	QSW-S0185AFZZ	Switch, Play	AH	SO401	QCNCW091DAFZZ	Socket, 4 pin	AB
SW13 (A~D)	QSW-B0097AFZZ	Switch, Editor	AH	CON401	QCNCM199DAFZZ	Plug, 4 pin (Mechanism Transport)	AC
SW15	QSW-F0122AFZZ	Switch, Brake and Muting	AF	SO502	QSOCE0410AGZZ	Socket, Voltage Selector	AH
SW16	QSW-S0215AFZZ	Switch, Input Selector	AG	QCNCW-0117AFZZ	Audio Cables	AL	
PL1	RLMPM0073AFZZ	Lamp, Cassette Chamber	AD	SPAKA0505AFZZ	Packing Add.	AF	
PL2, PL3	RLMPM0074AFZZ	Lamp, Control Unit Illumination	AD	SPAKC1138AFZZ	Packing Case (RT-3838HA)	—	
PL4, PL5			RLMPM0072AFZZ	Lamp, VU Meter Illumination	AH	SPAKC1139AFZZ	Packing Case (RT-3838HD)
ME1, ME2	RMTRL0145AFZZ	VU Meter	AE	SPAKX0171AFZZ	Packing Add.	AB	
SO11, SO12, SO13, SO14, SO15	QSOCZ2476AFZZ	Socket, Line Input/Line Output/ REC/PB (DIN)	BC	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	