

REALISTIC[®]

Service Manual

14-603

SCT-30
3 HEAD DUAL CAPSTAN
STEREO CASSETTE TAPE DECK
Catalog Number 14-603



CUSTOM MANUFACTURED FOR RADIO SHACK  A DIVISION OF TANDY CORPORATION

FOR A COMPLETE DESCRIPTION OF THE OPERATION OF THIS DECK,
PLEASE REFER TO THE OWNER'S MANUAL.

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SPECIFICATIONS

GENERAL SPECIFICATIONS

POWER SUPPLY	AC 120V, 60 Hz (U.S.A., CANADA) AC 220—240V, 50 Hz (EUROPE) AC 240V, 50 Hz (U.K., AUSTRALIA) AC 100V, 50/60 Hz (JAPAN)
POWER CONSUMPTION	17W
RECORDING SYSTEM	AC bias, 105 kHz
ERASING SYSTEM	AC erase, 105 kHz
INPUT IMPEDANCE	
MIC.	500—5K ohms
AUX IN	100K ohms
DIN	1.5K ohms

OUTPUT IMPEDANCE

PREAMP OUT	10K ohms
DIN	20K ohms
HEADPHONE	8 ohms
OUTPUT LEVEL	0.55V (adjustable) (DIN : 0.25V High, 0.1V Low)
TAPE	Cassette tape
TAPE SPEED	1-7/8 ips (4.75 cm/sec.) ±2%
DIMENSIONS	5-11/16" (H) × 17-15/16" (W) × 10" (D) (14.4 × 45.6 × 25.4 cm)
WEIGHT	16 lbs. 8 oz. (7.5 kg)

PERFORMANCE SPECIFICATIONS

FREQUENCY RESPONSE	Nominal	Limit
SUPERTAPE	30—15,000 Hz	40 Hz ⁺⁴ / ₋₆ dB—12 kHz ±5 dB
CrO₂ / FeCr	30—16,000 Hz	40 Hz ⁺⁴ / ₋₆ dB—14 kHz ⁺⁵ / ₋₆ dB
SIGNAL-TO-NOISE RATIO		
SUPERTAPE	55 dB (DOLBY NR IN)	45 dB
	51 dB (DOLBY NR OUT)	40 dB
CrO₂ / FeCr	57 dB (DOLBY NR IN)	49 dB
	(CrO ₂ , CCIR weighted : 61 dB)	
	53 dB (DOLBY NR OUT)	45 dB
ERASE RATIO	70 dB	60 dB
CROSS TALK	60 dB	55 dB
WOW AND FLUTTER	0.12% R.M.S. (0.06% W.R.M.S.)	0.22% R.M.S. (0.08% W.R.M.S.)
DISTORTION at 0 VU	0.9%	3%
CHANNEL SEPARATION	35 dB	27 dB
FAST FORWARD OR REWIND TIME (C-60)	100sec.	125sec.
INPUT SENSITIVITY		
MIC.	-68 dB m (0.3mV)	-68 dB m ⁺² / ₋₃ dB
AUX IN	-20 dB m (80mV)	-20 dB m ⁺² / ₋₃ dB
DIN	-68 dB m (0.3mV)	-68 dB m ⁺² / ₋₃ dB
OUTPUT LEVEL (1 kHz OVU)	0.55V	0.55V ±3 dB
HEADPHONE OUTPUT (TEST TAPE :		
TEAC MTT-150)	63mV	63mV ±3 dB (8Ω LOAD)
TAKE-UP TORQUE (PLAY)	50gr-cm	35~70gr-cm
TAKE-UP TORQUE (FF & REW)	90gr-cm	75~120gr-cm

NOTE : **Nominal** Specs represent the design specs ; all units should be able to approximate these. Some will exceed and some may drop slightly below these specs. **Limit** Specs represent the absolute worst condition which still might be considered acceptable ; in no case should a unit perform to less than within any Limit Spec.

BLOCK DIAGRAM

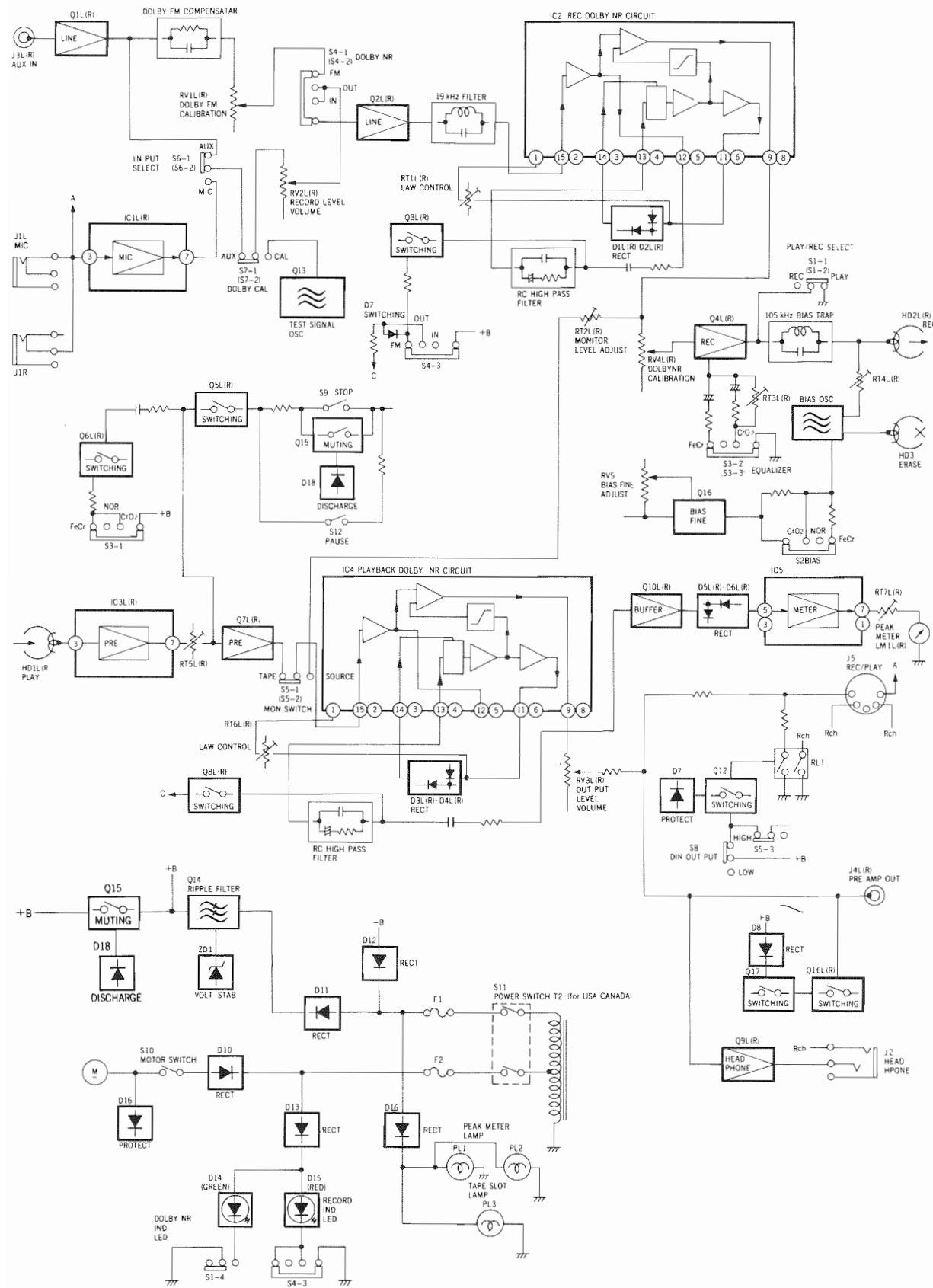


Figure 1

DOLBY NOISE REDUCTION SYSTEM

The REALISTIC SCT-30 incorporates a Dolby NR "B" system, which is designed to reduce noise and hiss by approximately 10 dB. In other words, to provide up to a 10 dB improvement in Signal-to-Noise ratio in the frequency spectrum responsible for noise. Before you attempt to service this unit, we suggest you read over the following introductory material, which is presented to aid you in understanding the principles of the Dolby NR system.

1. Principles of the Dolby NR System (Refer to Figure 2.)

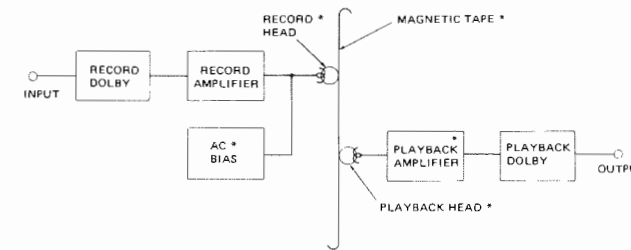


Figure 2

Figure 2 shows the block diagram of a tape recorder incorporating a Dolby NR circuit. "Hiss" noise (made up of predominantly high frequencies) is introduced into the system at the points noted with * (AC bias, record head, magnetic tape, playback head and playback amplifier).

This annoying noise can be reduced by passing the signal through a circuit with the characteristics shown in Figure 3 (a Dolby NR playback circuit). This illustration shows that high level and/or low frequencies (below approximately 1000 Hz) are not affected by the Dolby NR Playback circuit; however, low levels (where noise is most objectionable and noticeable) and high-frequencies (where noise components are) are suppressed by up to 10 dB at the lower levels and higher frequencies. Obviously, the result is an improvement in signal-to-noise ratio (and thus dynamic range also).

However, any original signal (music, etc.) also is modified by such a playback circuit—high frequency and low level signals are suppressed along with the noise components. Therefore, the original signal must be modified to the same extent in the opposite direction during the record function. That is, boost low levels and high frequencies by exactly the same amount as the playback circuit will suppress them. The end result is that the input signal will be boosted and suppressed (by equal amounts in the record and in the playback circuits) leaving the output signal an exact reproduction of the input signal, but the noise components (introduced into the circuit at the points noted with an*) are suppressed only. This produces up to a 10 dB improvement in Signal-to-Noise.

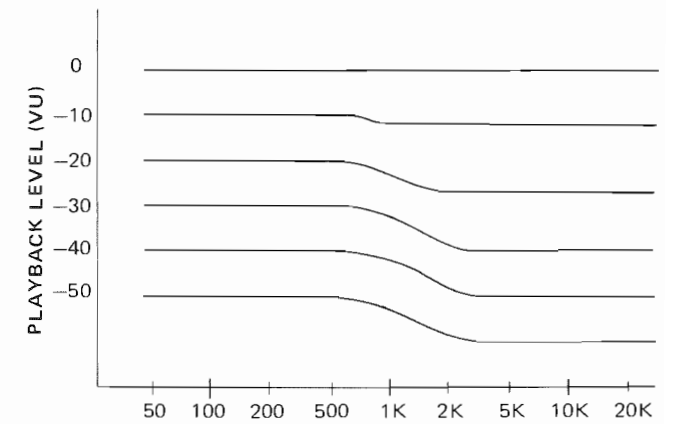


Figure 3

2. Record Circuit of SCT-30 (Refer to Figure 4.)

The record circuit consists of 7 sections : AUX IN amplifier, microphone amplifier, 19 kHz trap and high cut filter, record Dolby NR, record amplifier, phone monitor amplifier and bias oscillator.

2-1. AUX IN amplifier

This is an amplifier which amplifies input signals from AUX IN.

2-2. Microphone Amplifier

This is an amplifier with flat response over the entire audio spectrum, with a voltage gain of 30 dB.

2-3. 19 kHz Trap and High-cut Filter

This stage is incorporated to remove any 19 kHz pilot signal from an FM Multiplex broadcast and/or AC bias leakage. The presence of either of these signals would activate the Dolby NR circuit, thus upsetting the proper response characteristics of the Dolby NR function.

2-4. Figure 5 shows the frequency response characteristics of the circuit from AUX IN to C27.

[The noise level at C27 should be less than 5mV (including bias leakage, hum and noise) with all inputs disconnected. Such measurements are to be made for both positions of the Tape switch, with Record Level set at maximum.]

2-5. Recording Dolby NR Circuit

The output of Q2 is applied to terminals ② and ⑮ of IC2 via C27.

In IC2, this signal is amplified by 20 dB with flat amplification and is split into 2 signals. One signal is applied to the Adder and the other is input to terminals ④ and ⑬ via the RC high pass filter from terminals ⑤ / ⑫ .

This input is also split into 2 signals, passing through the ATT amplifier.

One portion of the signal is applied to the Adder via the Limiter, thus boosting the output of the Adder.

The ATT is controlled by a DC voltage obtained from terminals ③ / ⑭ .

A signal produced in Amplifier 1 is Amplified by Amplifier 2, and rectified by the rectifier/filter circuit (connecting C.R. to D1 & D2). Those circuits convert the signal to the DC voltage.

Also, this DC voltage is controlled by RT1; and ATT is controlled by the position of RT1. The boost amount and the Dolby operation point in the Adder are determined by this control.

In the Adder, the signal which passes through the Flat Amplifier, and the signal which passes through Amplifier 1 and the Limiter, are added (because the positions of 2 signals are same), and are supplied to terminals ⑧ / ⑨ .

When the Dolby NR switch is in FM or OUT, a voltage is applied to the base of Q3 via S4-3, turning Q3 ON and the signal from terminals ⑤ / ⑫ of IC2 goes to ground via the collector of Q3 from the RC high pass filter and thus is not applied to the Adder. Therefore, the only input to the Adder is the signal which passes through the Flat Amplifier (not boosted). Hence, it is not Dolby encoded.

Refer to Figure 6 for the response characteristics of the Record Dolby NR circuit. The shaded area represents the amount of "boost" added when the Dolby NR switch is "IN". No "boost" is added when the Dolby NR switch is "out".

2-6. Record Amplifier

This amplifier consists of Q4 with associated components to compensate for record current requirements, boosting both high and low ends of the frequency range (commonly termed equalization).

High boost is obtained by the resonance of L3, C46, C51 and C50; low boost is obtained with R42 and C42. A section of the Tape switch is used to change components which alter the resonant frequency of the circuit and the gain of the amplifier—this provides optimum response for either Standard or Special tapes.

2-7. Bias Oscillator

A predetermined, fixed amount of bias current is applied to the Erase Head. But the Record Head receives higher or lower bias current depending on the position of the Tape switch (more for Special).

2-8. Phone Amplifier

The output of this amplifier is 0.5mW into 8Ω impedance when a test tape is played back.

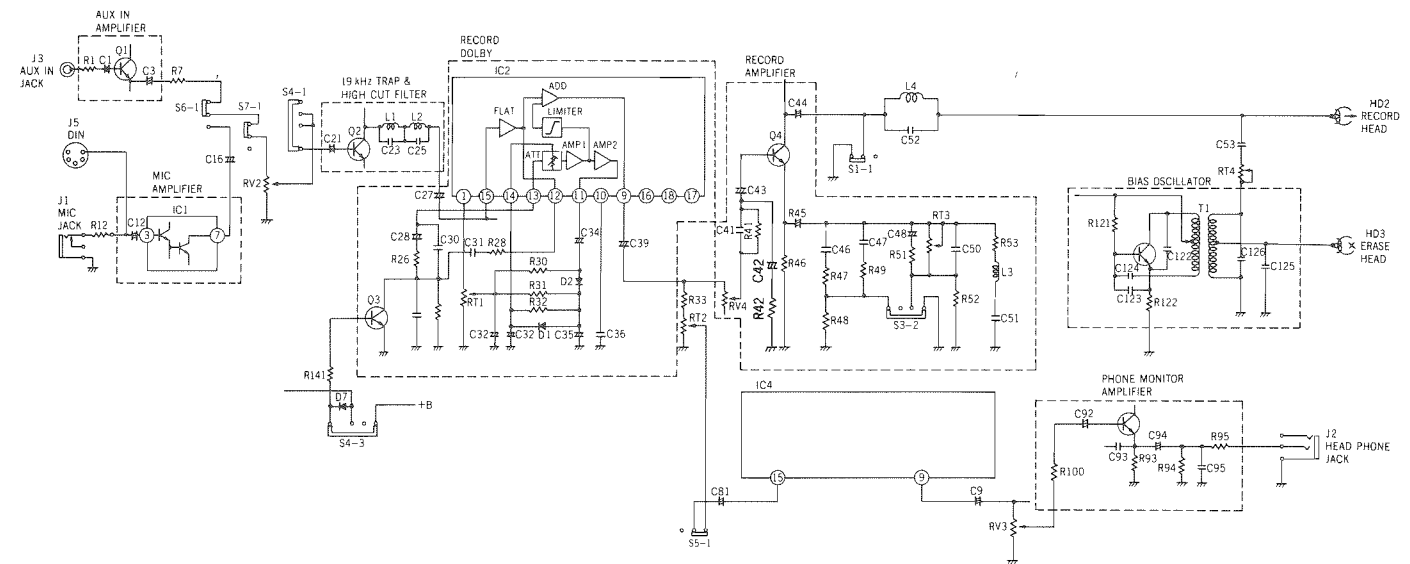


Figure 4

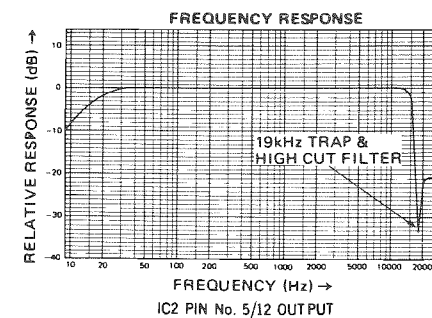


Figure 5

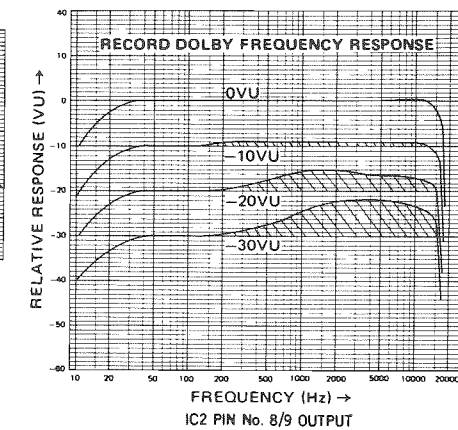


Figure 6

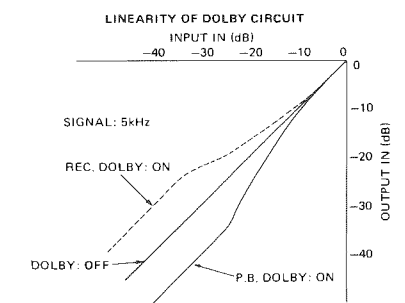


Figure 7

3. Playback Circuit of SCT-30 (Refer to Figure 8)

The playback circuit consists of 4 sections : playback equalization, 19 kHz trap & high cut filter, playback Dolby NR and phone amplifier.

3-1. Playback Equalization Circuit

This is the standard equalization circuit for cassette tapes, with 3180μ sec., 120μ sec. and 70μ sec. time-constants. The voltage gain at 400 Hz should be 53 dB.

3-2. 19 kHz Trap and High-cut Filter

This circuit operates exactly the same as that in the Record circuit, explained in 2-3.

3-3. Playback Dolby NR Circuit

The Playback Dolby NR circuit is the same as the Record Dolby NR circuit, except for the connection of the RC high pass filter.

During Playback, the signal (which is amplified in the flat amplifier) is output to terminals ⑧ / ⑨ via the adder without being divided, and is applied to terminals ④ / ⑬ via the RC high pass filter.

The Adder is provided with a function to

reverse the phase of the signal as it passes through this circuit. Therefore, the phase of the signal, which passes through the RC high pass filter (namely, the adder output) is shifted by 180°.

The phase of the signal which is applied to the Adder via the ATT, Amplifier 1 and Limiter, and the phase of the signal which passes through the Flat Amplifier, are reversed, so boosting is performed in the Adder during Record. but attenuation occurs during Playback. Thus, the output is boosted in the Record Dolby NR circuit and reduced in the Playback Dolby NR circuit.

In general, the level of the final output is not changed, but noise is decreased by the amount decreased during Playback.

3-4. Phone Amplifier

The output of this amplifier is 0.5mW into 8Ω impedance when a test tape is played back.

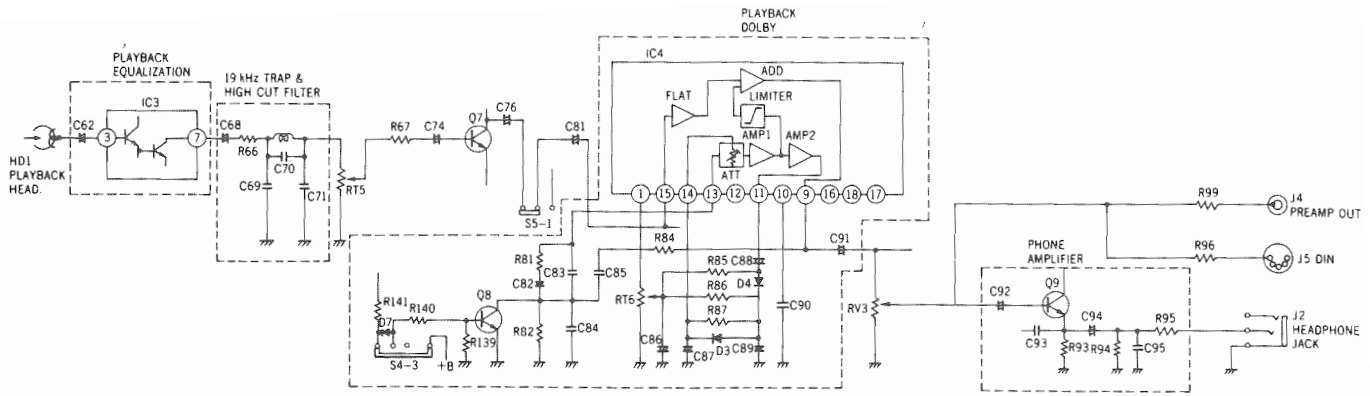


Figure 8

DOLBY FM

In conventional FM broadcasting, a signal having the characteristics shown in Figure 9 is transmitted to reduce noise during broadcasting.

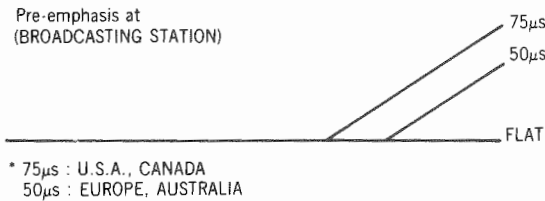


Figure 9

Such signals have characteristics of high-frequency emphasis due to the action of the respective time constants. When processed through a Receiver/Tuner with the correct de-emphasis time-constant (Figure 10), the resulting signal is essentially flat in frequency response (within the limitations of the FM broadcasting system).

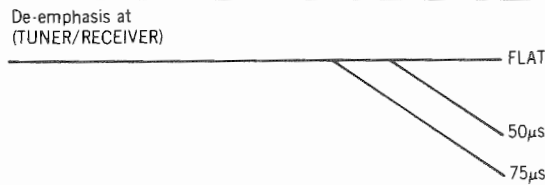


Figure 10

Since such a simple "noise reduction" system can be saturated easily, etc., the introduction of a DOLBY NOISE REDUCTION SYSTEM was considered for the FM Broadcast service: this is DOLBY FM.

DOLBY FM does not emphasize at 75µs or 50µs but emphasizes at only 25µs, and broadcast transmissions are with the DOLBY ENCODE superimposed.



Figure 11

A signal, which is transmitted with 25µs pre-emphasis must be received through a 25µs de-emphasized Tuner/Receiver. However, if the Tuner/Receiver still uses 75µs (50µs) de-emphasis, when a 25µs pre-emphasized broadcast is received, the resulting de-emphasis characteristic will be as shown in Figure 12.

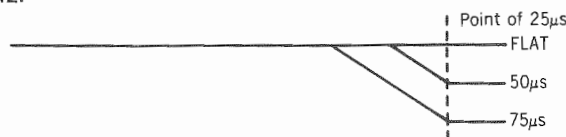


Figure 12

To make the de-emphasis characteristic flat, the signal must be passed through a circuit providing the characteristics shown in Figure 13.

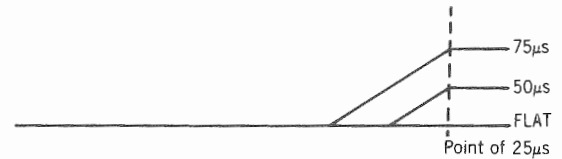
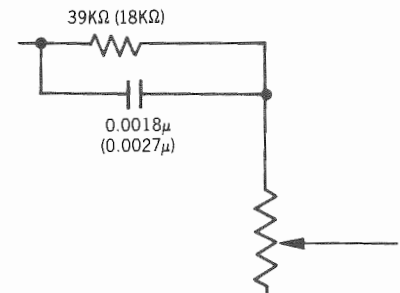


Figure 13

The SCT-30 incorporates the required de-emphasis characteristic as shown in Figure 13. This time-constant conversion circuit converts 75µs → 25µs (50µs → 25µs).



39kΩ, 0.0018µ : U.S.A., CANADA
18kΩ, 0.0027µ : EUROPE, AUSTRALIA
(TIME CONSTANT CONVERSION CIRCUIT)

With DOLBY NR, the audio level at the received end must match precisely with that at the transmission end. Even if these levels are matched initially, when Deck adjustments are changed, these levels would have to be re-matched.

A CALIBRATION CONTROL is provided on the SCT-30 to obtain this necessary re-adjustment.

Both 75µs (50µs) and 25µs de-emphasis are provided for in recent Tuners/Receivers; and use of 25µs is recommended for DOLBY FM.

A flat output is obtained when using a Tuner/Receiver with provision for 25µs de-emphasis; but when output from such a Tuner/Receiver is passed through the SCT-30, the frequency characteristic becomes as shown in Figure 12 by means of the time-constant conversion circuit previously described.

Thus, even with a Tuner/Receiver which incorporates the 25µs de-emphasis, **75µs (50µs) de-emphasis must be employed when using the SCT-30.**

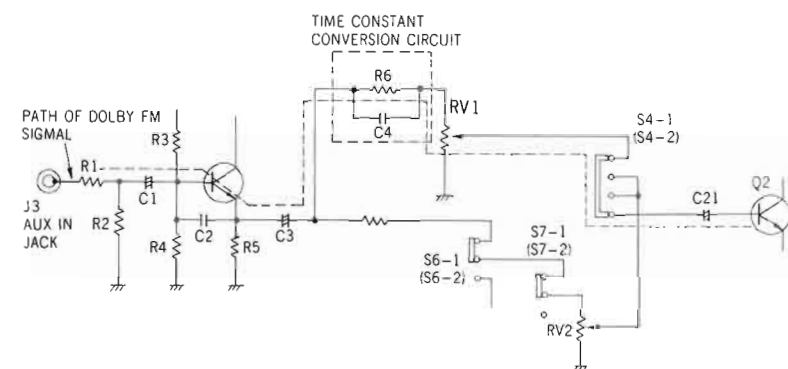


Figure 14

1. Calibration

When the Dolby NR switch S4 (S4-1—S4-3) is set to FM and MON switch S5 (S5-1—S5-3) is set to SOURCE, while the unit is in the Stop mode, the Dolby FM signal from AUX IN (J3), enters the amplifier via the time-constant conversion circuit and RV1L•R, S4-1•2.

Tune to the calibration signal from a Dolby FM broadcast station and adjust RV1L•R so that the pointer of the Level Meter is on the Dolby mark.

2. Dolby FM listen

Set the Dolby NR switch to FM and the MON switch to SOURCE in the STOP mode. Then, only the Dolby NR Playback circuit operates and the Dolby encoded signal (which is transmitted from the broad-

casting station) will be correctly decoded, and is output to the PRE AMP OUT as flat signals and the correct sound can be heard.

3. Dolby FM recording

In Dolby FM, the Dolby encoded signal at the broadcasting station is preemphasized for 25μs and then it is transmitted. Therefore, the recording is the same as for recording ordinary sound with the Dolby NR circuit operating while matching it to the customer's own tuner [converting 25μ to 75μ or 25μ to 50μ (For Europe)].

Prepare recordings with the Dolby NR switch set to FM and S1 to RECORD. Signals are output at the Pre Amp Out, and Dolby FM can be monitored while the recording is proceeding.

AUTO STOP MECHANISM

Auto-stop mechanism

1) Figure 15 shows the tape-end detector for the auto-stop mechanism.

In the recording, playback, fast forward and rewind modes, the Take-up belt, Pulley, Gears and Cam Gears rotate in the directions indicated by the arrows; and when the tape is not completely taken up, the Take-up reel rotates in the direction so that it will take-up the tape.

The Floating cam is provided on the same axis as the Take-up reel shaft, and it lightly touches the reel (by action of a spring). Utilizing the fact that when the Reel rotates, the floating cam faces in the direction of rotation, the floating movement of the Cam Gear and the Floating arm (which has its fulcrum at A) as shown in Figure 15) this movement is applied to this floating cam, to detect the end of the tape.

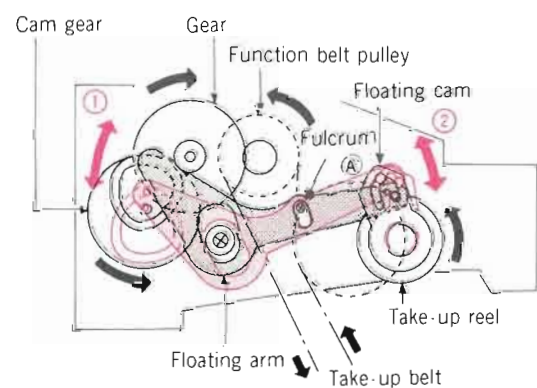


Figure 15

Method of detecting the tape-end

Shafts, which enter into the Cam of the Cam Gear and the shaft which in turn enters into the slide groove of the Floating cam, are provided at both ends of the Floating cam; the floating movement is carried out in the direction of arrow ① with its fulcrum at A) as shown in Figure 15, by means of the rotation of the Cam Gear.

The shaft of the Floating Arm, which enters into the groove on the Floating Cam, operates to slide and relieve the floating movement which is caused by the Cam Gear by means of this groove. When the Cam of the Cam Gear rotates to the position shown in color in Figure 15, the shaft of the Floating Arm on the Floating Cam side goes into the mode shown in A) of Figure 16.

Next, when the Cam Gear rotates to the position shown in black, the position of the shaft on the floating cam side goes into the mode shown in B) of Figure 16, during playback or fast forward, and C) during rewind. These slide grooves are determined by the direction of rotation of the reel.

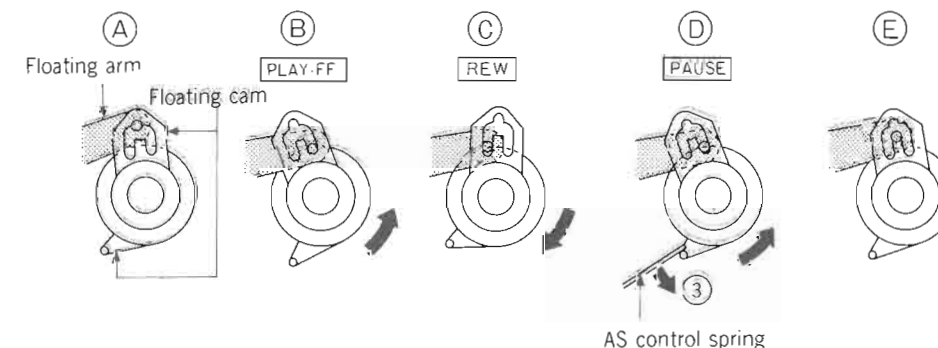


Figure 16

2) When the tape-end is detected and the Floating Arm slides, the AS Arm (as shown in Figure 17) slides in the direction of arrow ⑤ with its fulcrum at B).

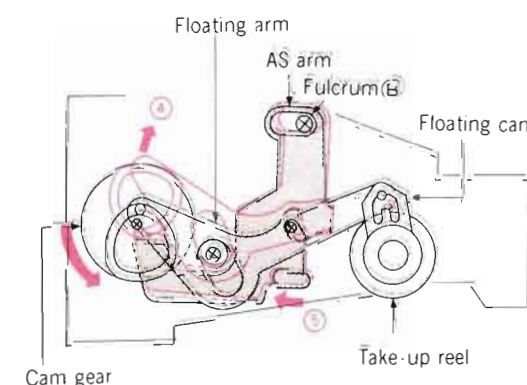


Figure 17

Incidentally, during Pause, since the reel is stopped, the auto-stop mechanism starts to operate. To prevent this, the Floating Cam is pressed in the direction of arrow ③ (take-up direction) by the auto-stop control spring as shown in D) of Figure 16, during Pause and Stop. (The AS (auto-stop) control spring is operated by the sliding of the Brake Plate; it is so designed that the AS control spring is released from one end of the Floating Cam and the Floating Cam faces in the direction of rotation of the reel, except during the Pause and Stop modes.) When the tape is finished and the reel stops, the Floating Cam side shaft of the Floating Arm slides between A) and E) in Figure 16. The width in which it slides is smaller than that between A) and B) or A) and C). When the Floating Arm slides up to point E) in Figure 16, the Floating Arm slides in the direction of arrow ④ in Figure 17 with the Floating Cam as the fulcrum. The tape-end is detected by means of this sliding of the Floating Arm.

- 3) When the AS Arm slides into the position shown in black in Figure 18, it engages with the AS cam under the Cam Gear and slides in the direction of arrow ⑥ .
- 4) When the AS Arm slides into the position shown in color, the AS Lever rotates in the direction of arrow ⑦ and makes the Lock Plate move in the direction of arrow ⑧ . This sliding of the Lock Plate causes the same conditions as when the Stop button is depressed, and each slider goes into the stop mode.

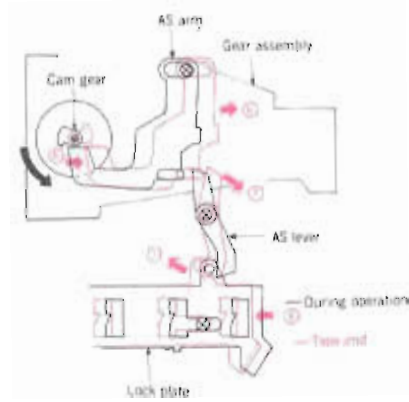


Figure 18

DISASSEMBLY

1. Removal of Case Top

- 1) Remove seven screws holding Case Top as shown in Figure 19.
- 2) Lift Case Top off.



Figure 19

2. Removal of Bottom Cover

- 1) Remove six screws holding Bottom Cover as shown in Figure 20.
- 2) Remove Bottom Cover.

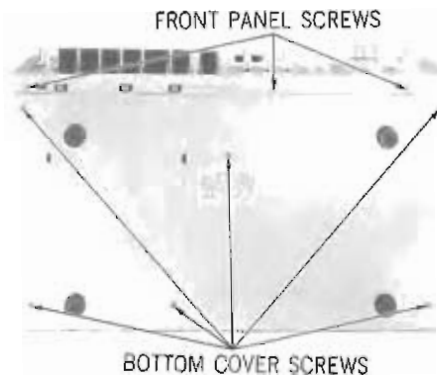
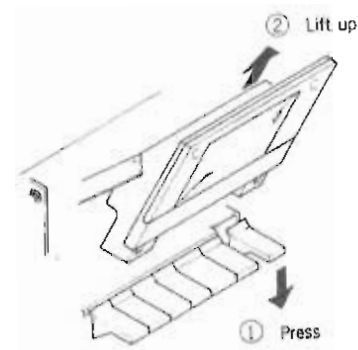


Figure 20

3. Removal of Front Panel

- 1) Remove seven knobs (Record/Output Level Control, DOLBY NR Calibration, BIAS, EQ, DOLBY NR).
- 2) Remove Cassette Lid.
 - ① Press the EJECT button and the cassette lid will open.
 - ② Lift up the cassette lid in the direction of arrow.



- 3) Remove seven screws holding Front Panel as shown in Figure 20 and 21.
- 4) Remove Front Panel.

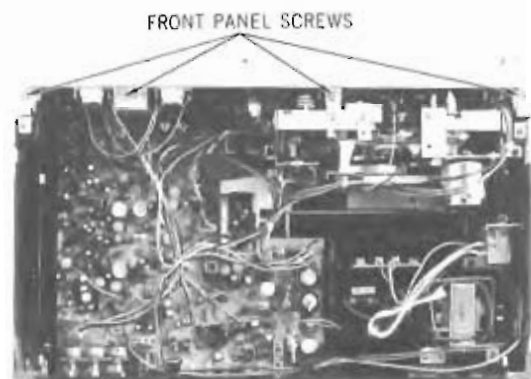


Figure 21

4. Removal of Main Circuit Board

Checking or replacement of the components can be done by removing the Bottom Cover. (Refer to Item 2, Bottom Cover).

When removing the printed circuit board, however, use the following procedure.

- 1) Remove BIAS FINE Knob.
- 2) Remove one screw holding Record Lever as shown in Figure 22.
- 3) Remove four screws holding Main Circuit Board as shown in Figure 22.
- 4) Unsolder the point shown in Figure 22.
- 5) Remove Main Circuit Board.

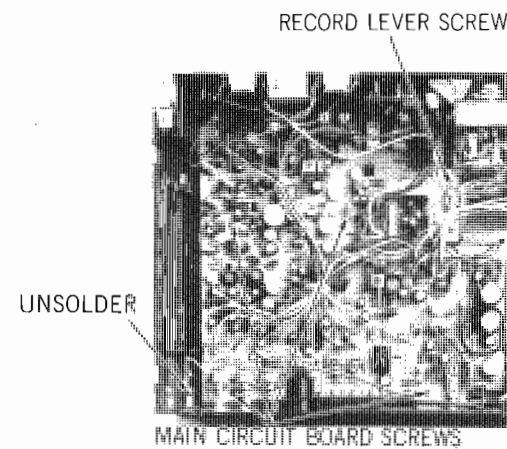


Figure 22

5. Removal of Chassis

Since the cassette deck chassis and the Main Circuit Board are interconnected with pin-connectors, remove the deck chassis after disconnecting these leads.

- 1) Remove two screws holding DOLBY CALIBRATE Circuit Board bracket.
- 2) Remove four screws holding Chassis as shown in Figure 23.
- 3) Remove Chassis.

DOLBY CALIBRATE CIRCUIT BOARD
BRACKET SCREWS

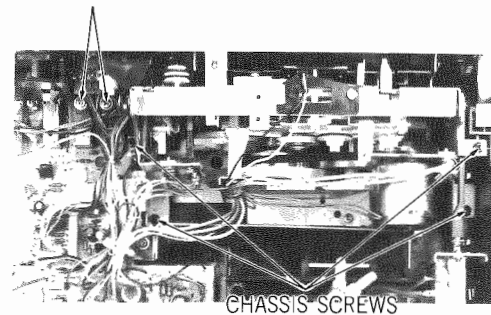


Figure 23

6. Removal of Cassette Holder

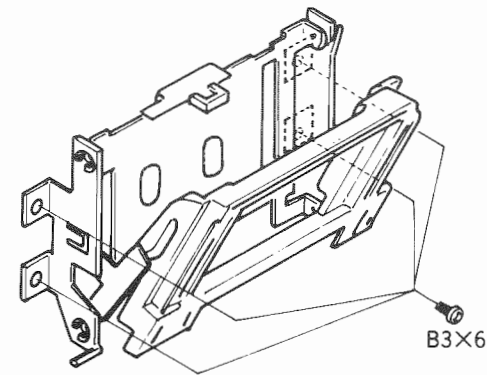


Figure 24

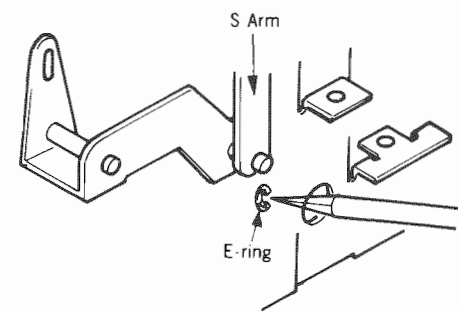


Figure 25

Installation of the Cassette Holder Assembly

Before installing the Cassette Holder Assembly, first check that the Eject slider, Eject arm and the Counter belt are as shown in the Figure 26.

Note: If the Eject slider and Eject arm are not as shown in the figure, the Eject operation may not be smooth or the tape may touch the recording prevention arm, making the cassette holder not fit properly.

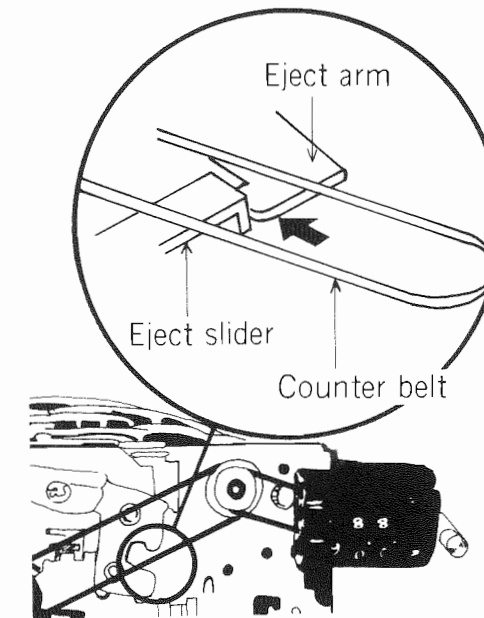


Figure 26

7. Flywheel & take-up belts

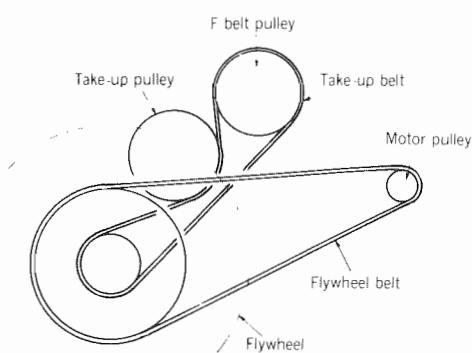


Figure 27

8. Removal of Gear Assembly

The Gear Assembly is composed of the gears, cams, clutches and reel, of the full auto-stop mechanism, Fast Forward/Rewind mechanism and take-up mechanism. It can be removed by removing the screws shown in Figure 28.

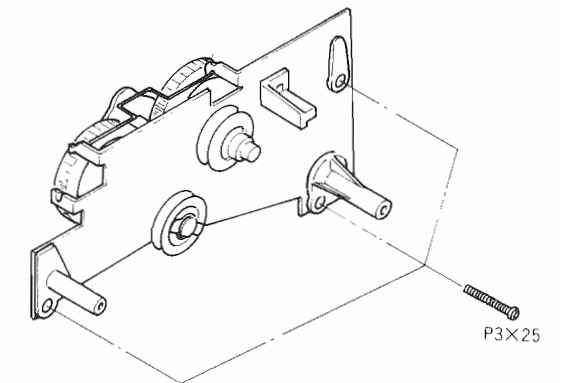


Figure 28

Installation of the Gear Assembly

Install the Gear Assembly after setting the chassis mechanism to the Fast Forward mode. Also, make sure the Gear Assembly is in the Fast Forward mode.

- ① Turn the F arm (shown in Figure 29) in the direction of the arrow ① until it touches the point shown by arrow ⑥ on the Take-up arm. The Reel, the Function gears and Function arm go into the mode shown in Figure 30.

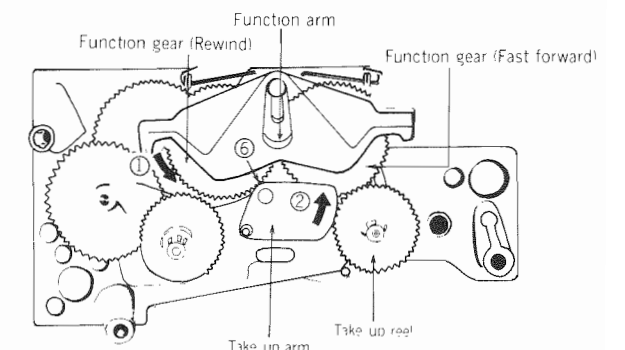


Figure 29

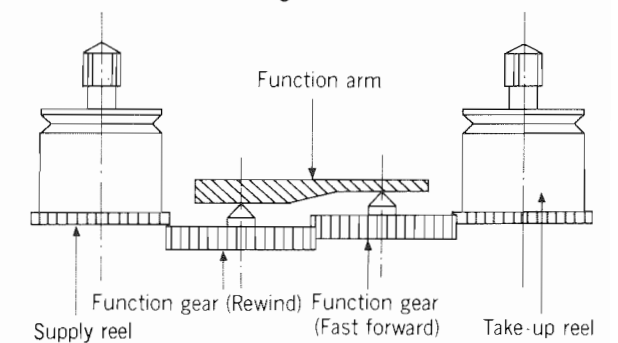


Figure 30

- ② Turn the Take-up Arm (shown in Figure 29) in the direction of the arrow ② until the Take-up Gear and Reel underneath separate from each other as shown in the Figure 31.

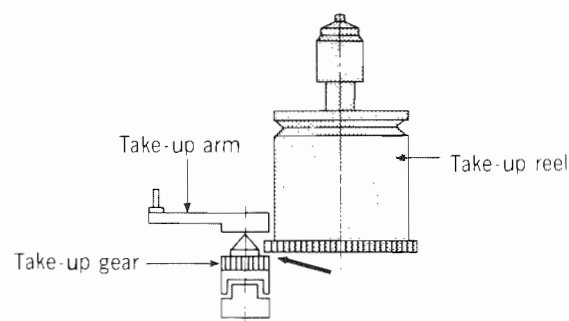


Figure 31

- ③ Lift out the Take-up Arm operating shaft (shown in Figure 31) from the hole on the Playback Plate as shown in Figure 32, and secure the Gear Assembly with screws.

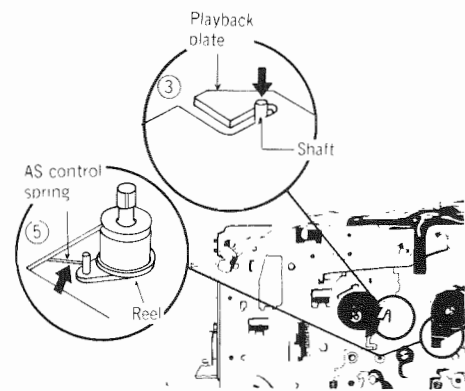


Figure 32

- ④ Place the Counter Belt onto the Reel (take-up side).
 ⑤ Press the STOP button to get it into the Stop mode, and check that the Auto-Stop control spring (shown in Figure 32) presses the Floating Cam under the Reel in the direction of the take-up side as shown in the Figure 32.

LUBRICATION

Before lubrication, thoroughly clean shafts and metallic parts of all rotating parts. During lubrication, be careful not to accidentally oil the tape contacting face of the Capstan, Belts and Idler. Thoroughly remove oil and grease from the Pressure Roller and Capstan by using trichlene

solution. One or two drops of machine oil may be applied to the points indicated by **P** (rotating parts) and grease may be applied to the points indicated by **W** (sliding surfaces) as shown in Figures 33, 34, 35, 36, 37 and 38.

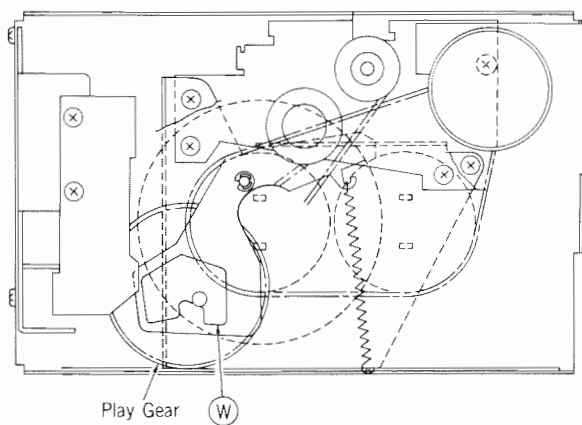


Figure 33

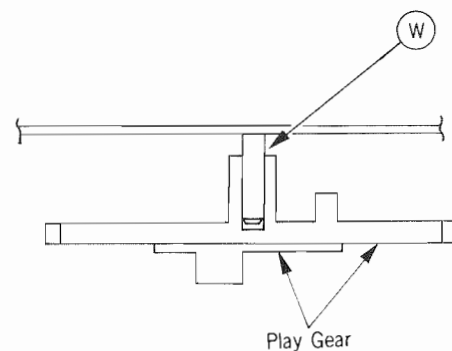


Figure 34

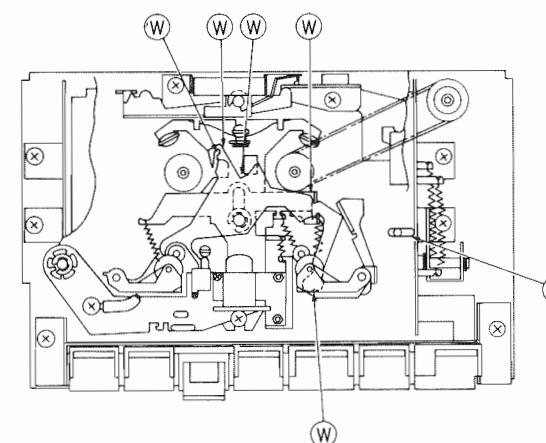


Figure 35

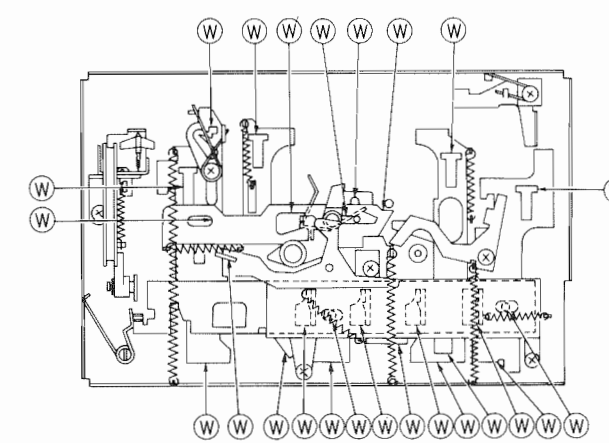


Figure 36

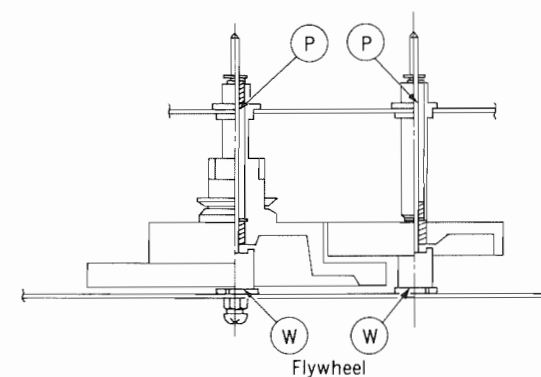


Figure 37

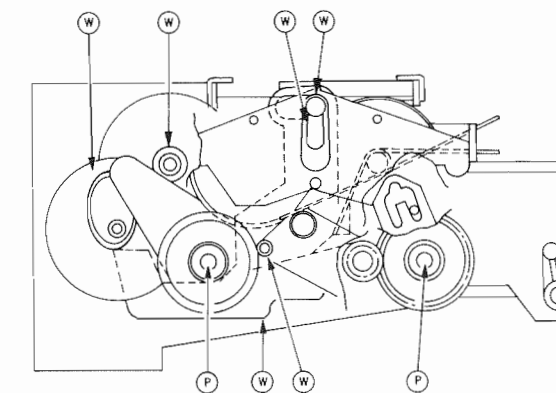


Figure 38

ADJUSTMENT OF ELECTRICAL PARTS

Set the Switches and Controls to the following positions (Unless otherwise specified).

RECORD LEVEL	: MAX
OUTPUT LEVEL	: MAX
INPUT select switch	: AUX.
MON switch	: TAPE
DOLBY NR switch	: OFF
TAPE select switch	
EQ switch	: Norm
BIAS switch	: 120 μ S
DIN OUTPUT switch	: LOW
BIAS FINE	: 0 (center)

Clean the Head and Pinch-Roller before making any adjustments.

1. Tape Speed Adjustment

Play back a tape speed test tape (TEAC MTT-111, etc. 3 kHz) and within 30 sec after doing this test, run for more than 20 minutes, adjusting the semifixed VR in the Motor so that frequency at the PRE AMP OUT (J4) terminal is 3000 Hz ± 10 Hz.

Note ; The tape is at the center.

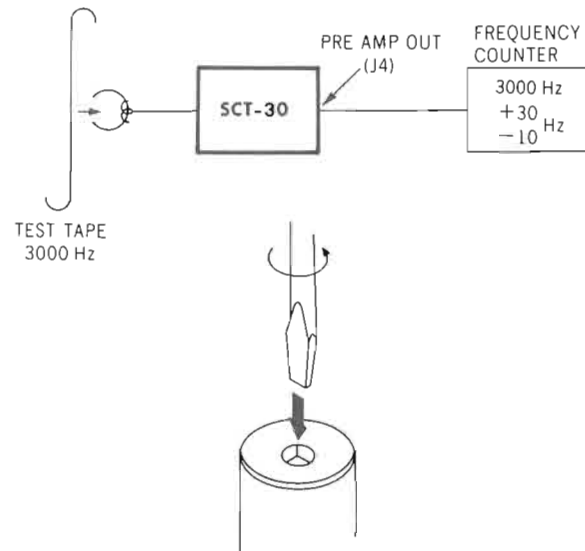
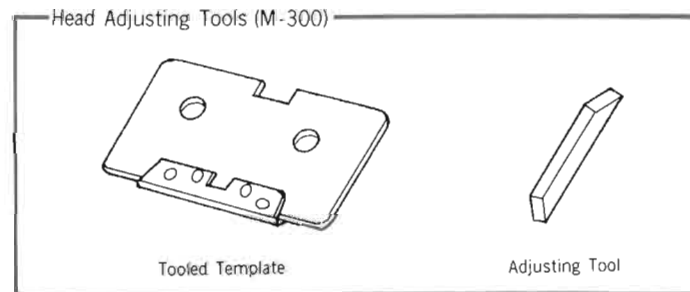


Figure 39

2. R & P Head Height Adjustment

Preparation

a. When adjust the height and tilt of the R & P head, use head adjusting tools (Information Terminals' M-300) as below.



b. Fix a metal or plastic sheet of which thickness is less than 0.2mm on the Tooled Template as shown in Figures A and B.

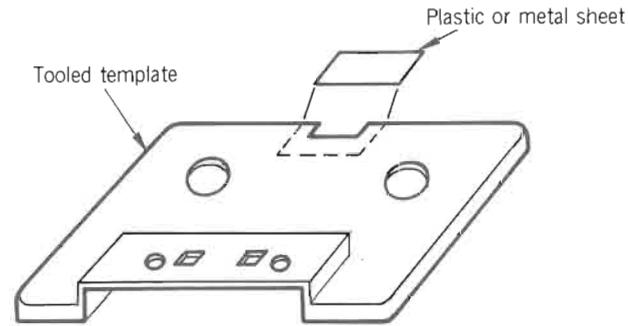


Figure A

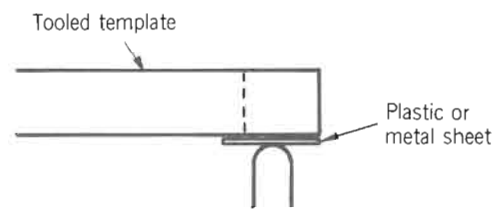


Figure B

c. All adjustments should be done in PLAY-BACK mode.
Move the Adjusting Tool carefully so that the front of the head is not damaged.

1) Height adjustment

Insert the Tooled Template, place the Adjusting Tool and adjust the Adjusting Nut (b) so that the Adjusting Tool enters into the tape guide of the R & P head smoothly.

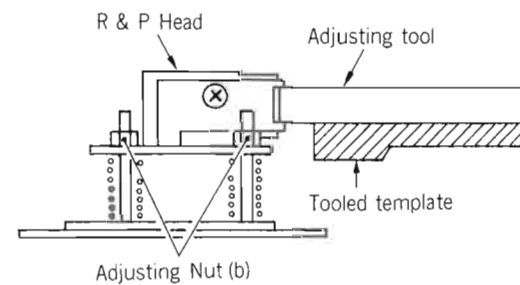


Figure 40

2) Tilt adjustment

Insert the Tooled Template and apply the Adjusting Tool to the front of the R & P head while placing the Adjusting Tool vertically, and perform adjustment using the Adjusting Nut (c) so that the lower part of the head closes tightly and the upper part closes with a gap of 0.2-0.3mm.

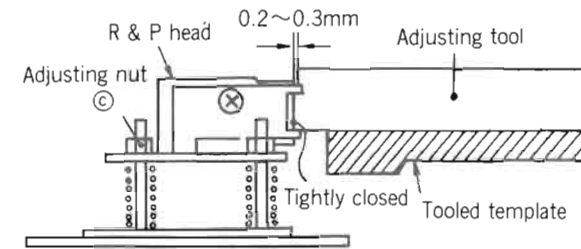


Figure 41

3) Azimuth adjustment

Playback the azimuth adjustment tape (TEAC MTT-116K or MTT-114, etc. 10 kHz) and adjust the screw so that the output is at a maximum.

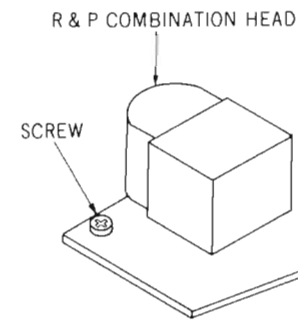
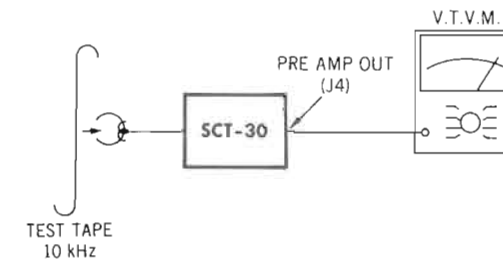


Figure 42

4) After completing adjustment of the above, check tape running using both A and B sides of C-120 cassette tape. When the tape is curled, adjust it again using adjusting screw and nut respectively.

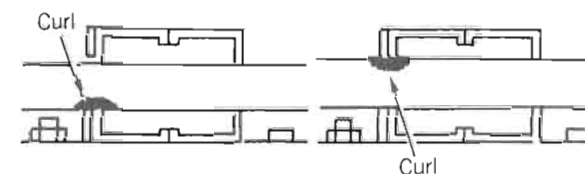


Figure 43

Note : Perform adjustment of the height within ± 0.3 mm (3/4 rotation of adjusting screw).

3. SOURCE Monitor Level Adjustment

Apply a 400 Hz signal to the AUX IN (J3) jacks from an Audio Oscillator and adjust the output of the Audio Oscillator L/R so that 0.775V is output at TP1 of IC2. Then set MON switch (S5) to SOURCE and adjust RT2 L/R so that 0.775V is output at TP3 of IC4.

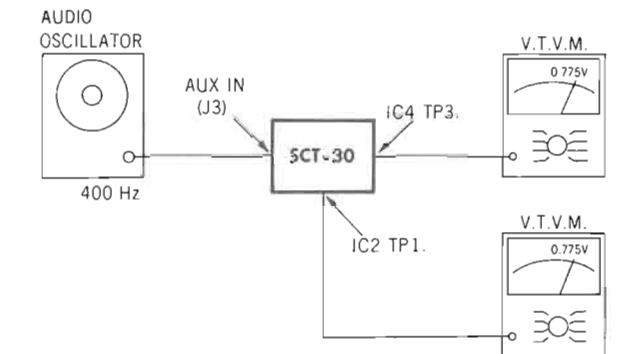


Figure 44

4. Playback Output Adjustment (Adjustment of meter)

After the SOURCE Monitor Level is adjusted, adjust RT7 L/R using the same connections so that the pointer of the L/R Meter is on the \square mark. Next, set MON switch to TAPE and playback a TEAC MTT-150 Test Tape and adjust RT5 L/R so that the pointer of the L/R Meter is on the \square mark.

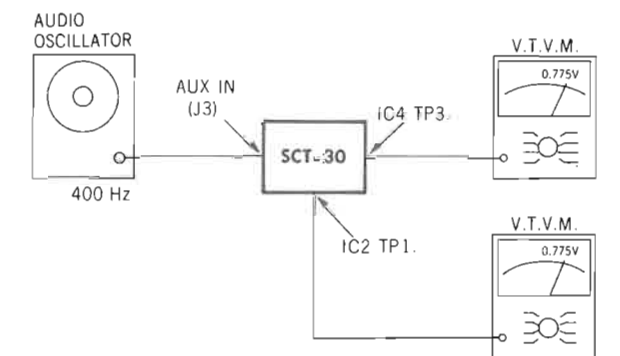


Figure 45

5. Bias Trap Adjustment

Set the Bias switch to CrO₂ in the recording mode.

Adjust L4 L/R so that bias leakage measured at the connection of R54 L/R and L4 L/R is at minimum.

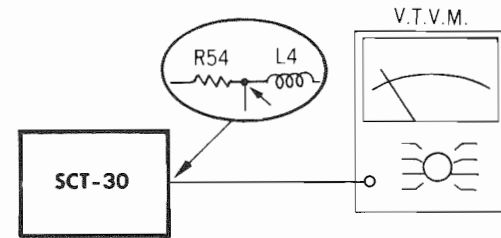


Figure 46

6. 19 kHz Trap Adjustment

Apply a 19 kHz ± 10 Hz signal to AUX IN (J3) from an Audio Oscillator and set MON switch to SOURCE. Adjust L2 L/R for a minimum output at TP1 of IC2.

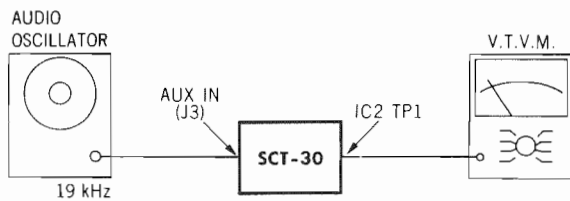


Figure 47

7. Adjustment of Bias Current and Recording Amp Gain

1) Set the Dolby calibration control (RV4 L/R) to the central position and the TAPE switch to NORM (BIAS switch : NORM EQ switch : 120 μ s).

Apply 1.2 kHz and 12 kHz signals (level on Peak level meter : -20 dB) alternately to AUX IN (J3) from the AUDIO Oscillator with MON switch set to SOURCE, and record them on tape (TEAC MTT-502 (C-90), Supertape Gold, UD-XL1C-90 (Maxell)

or other such top-quality "Standard" tape). Next, set MON switch to TAPE and adjust RT4 L/R so that the difference between the 2 frequency output levels is 0 dB ± 1.5 dB indicated VTVM.

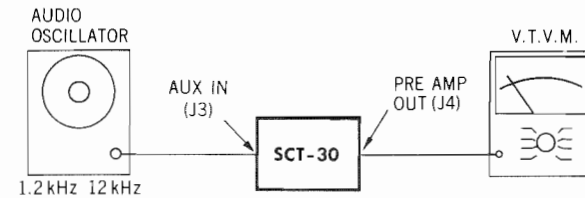


Figure 48

Next, set the MON switch to SOURCE and change the signal applied to AUX IN to 400 Hz (level on Peak level meter : 0 dB) and record it on the tape. Then set MON switch to TAPE and adjust RV4 L/R (Dolby Calibration controls) so that the peak level meters read 0 dB.

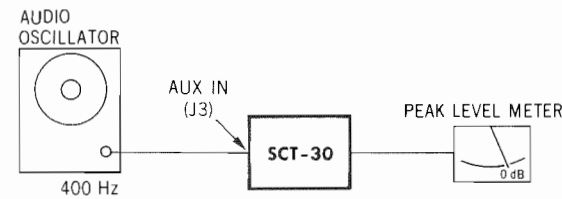


Figure 49

2) Set the TAPE switch to CrO₂ (Bias switch : CrO₂, EQ switch : upper 70 μ s) and the MON switch to SOURCE, and apply a 400 Hz signal (Peak level meter reading : 0 dB) to AUX IN (J3) from the Audio Oscillator and record it on CrO₂ tape BASF TP-18C401R (Realistic, UD-XL2C-90 (Maxell) or equivalent). Set MON switch to TAPE, and adjust RT3 L/R so that the peak level meters read 0 dB.

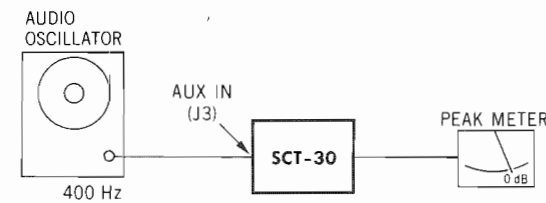


Figure 50

Next, set MON switch to SOURCE and apply a 1.4 kHz and 14 kHz signals (level on Peak level meter : -20 dB) to AUX IN (J3) from the Audio Oscillator and record them. Then set MON switch to TAPE and check that the difference between the 2 frequency output levels is 0 dB $\begin{matrix} +5 \\ -6 \end{matrix}$ dB.

If output levels are not within the specification, go back and adjust RT4 L/R so that it is within the range of the specification for "Standard" tape.

NOTE : If there is a difference in the output levels with the MON switch set to TAPE and SOURCE, readjust RT4 L/R, RV4 L/R and RT3 L/R.

8. Dolby NR Adjustment

1) Recording circuit

Apply a 2 kHz signal to AUX IN (J3) from the Audio Oscillator and adjust the level so that the output at TP1 of IC2 is -20 dB. Next, set the DOLBY NR switch to IN and adjust RT1 L/R so that the level at TP2 (\ominus side of C37) is -15.7 dB.

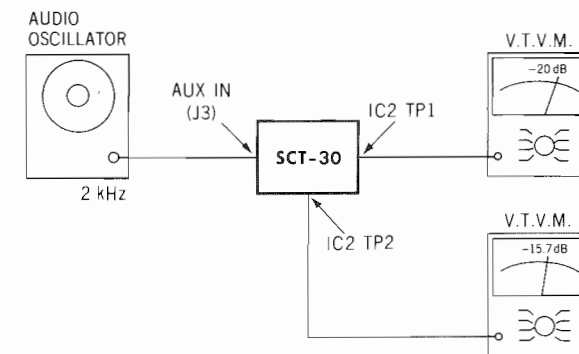


Figure 51

2) Playback circuit

Set the MON switch to TAPE and apply a 2 kHz signal to the \ominus side of C74 and adjust the level so that the output at TP3 of IC4 is -15.7 dB.

Next, set the DOLBY NR switch to IN and adjust RT6 L/R so that the level at PRE AMP OUT (J4) is -20 dB.

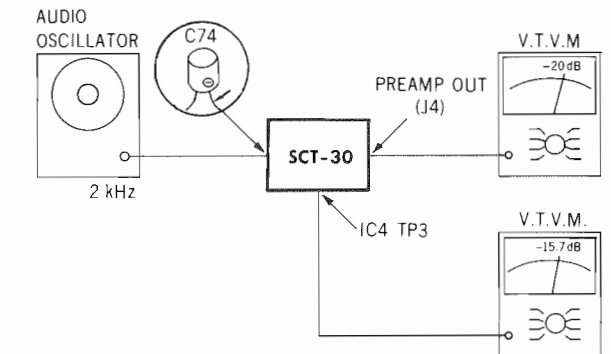


Figure 52

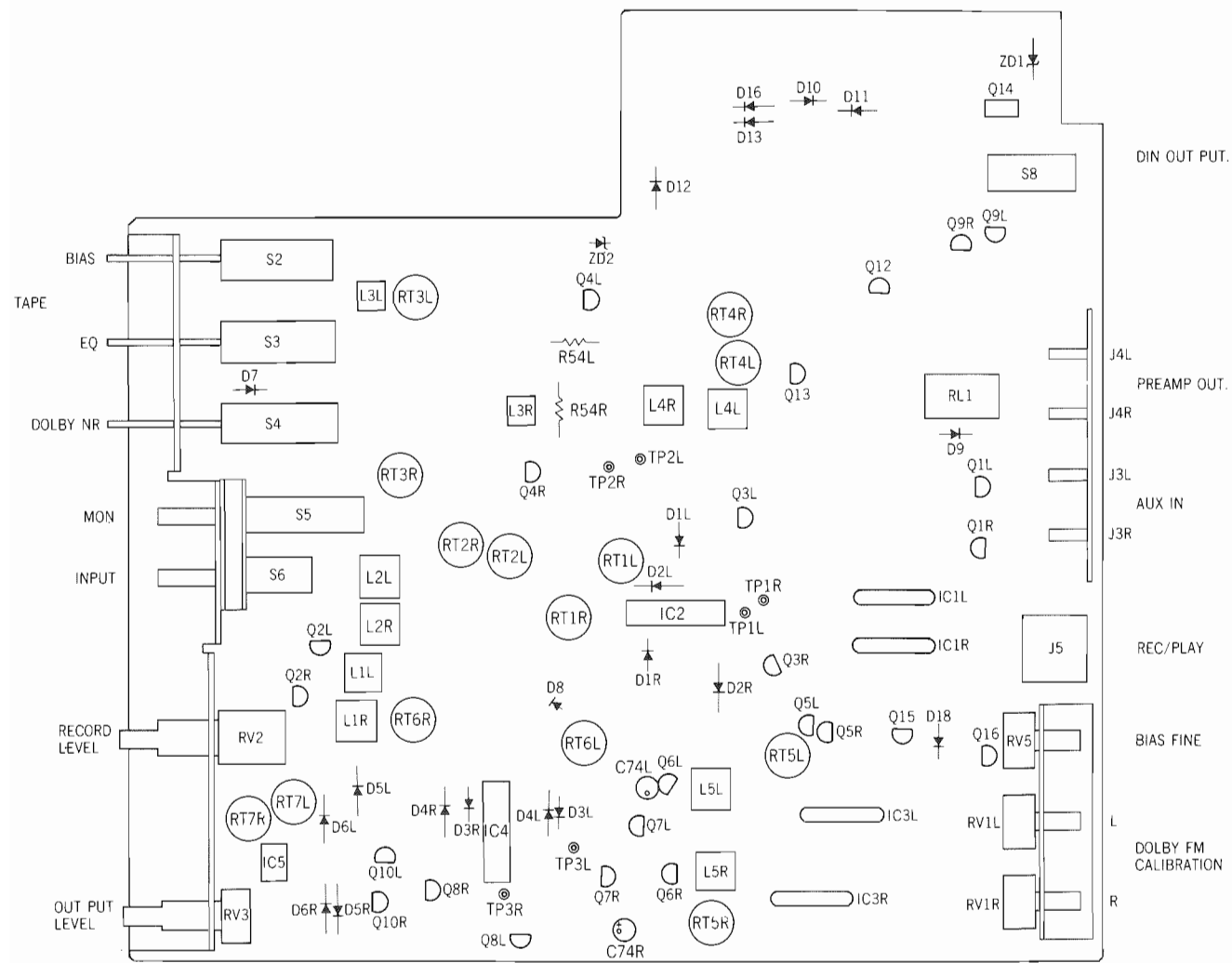


Figure 53

ADJUSTMENT OF MECHANICAL PARTS

1. Force and Torque

A. In playback

1. Pressure of pressure roller :

Take-up side : 280—450gr

Supply side : 280—410gr (See Figure 54.)

Measurement Method : With the Deck set to Playback function, apply a tension gauge and obtain the reading when the pressure roller just separates from the flywheel shaft.

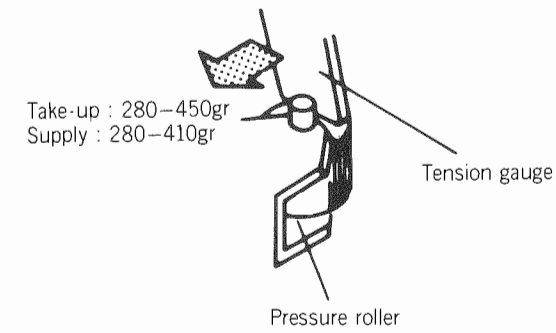


Figure 54

2. Take-up torque : 35—70g-cm

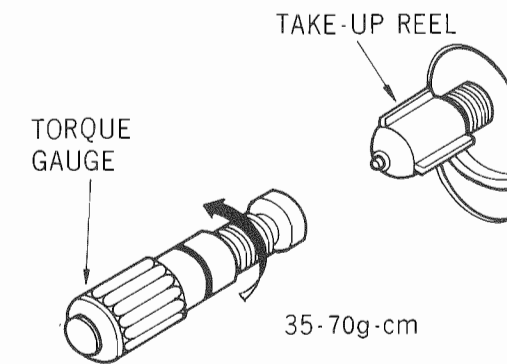


Figure 55

3. Supply reel back tension : 8—12g-cm

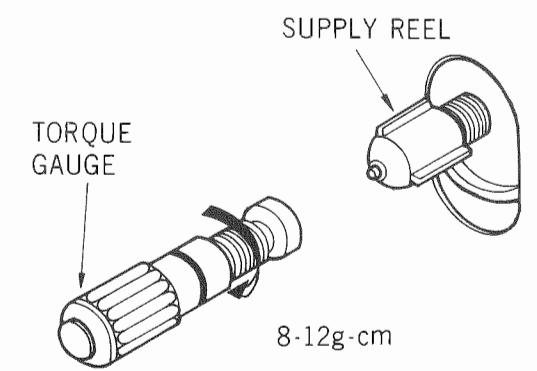


Figure 56

B. In rewind

1. Rewind torque : 75—120g-cm

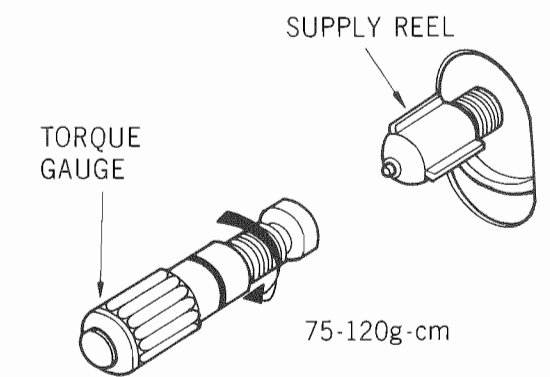


Figure 57

2. Take-up reel back tension : 4g-cm or less

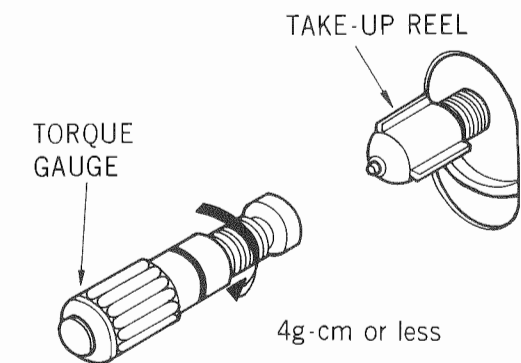


Figure 58

C. In fast forward

Fast forward torque : 75—120g-cm

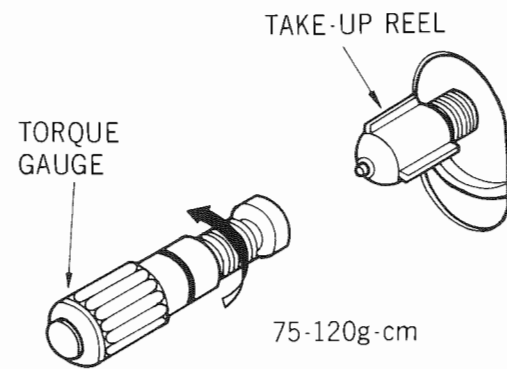


Figure 59

2. Operating force of keys

Measure at the tip of key

STOP.....	800gr or less
F.FWD	800gr or less
PAUSE.....	1.2kgr or less
PLAY.....	800gr or less
REC.....	800gr or less
REWIND	800gr or less
EJECT	800gr or less

TROUBLESHOOTING

SYMPTOM	CAUSE	REMEDY
Capstan does not revolve.	Belt is broken. Power switch is broken. Bearing is binding. Motor does not operate.	Replace belt. Replace power switch. Clean bearing and lubricate. Check the motor circuit wiring and replace motor.
Tape cuts, tears and jams.	Misalignment of erase head	Adjust erase head.
Tape does not wind properly.	Take-up torque is too low. Pressure of take-up roller is improper. The cassette is defective.	Replace take-up mechanism. Clean oil and dirt from turntable and take-up roller. Check whether spring is unhooked. Try a good cassette.
Tape speed is unstable.	Head position is misaligned.	Adjust head position.
Tape speed is too slow.	Belt is slipping.	Clean or replace belt.
Wow	Cassette is defective (worn). Pressure roller and capstan shaft are dirty. Take-up torque is too high. Belt is dirty. Belt is twisted. Belt is worn. Flywheel bearing needs lubricating. Pressure of pressure roller is improper.	Use a good cassette. Clean pressure roller and capstan shaft. Replace take-up mechanism. Clean belt with alcohol. Straighten belt or replace. Replace belt. Lubricate. Adjust for normal pressure of Take-up side : 280—450gr Supply side : 280—410gr
Rewind speed is slow.	Slipping at the roller and belt	Clean oil from driving surfaces.
Motor operates, but tape does not wind up.	Rewind torque is too low.	Clean oil from turntable or roller, and clean or replace belt. If the pressure is not sufficient, replace the spring.
Motor does not operate.	No contact at leaf switch	Check and adjust switch position.
Motor operates, but the tape does not wind up in fast-forward.	Fast forward torque is not sufficient.	Clean oil from turntable on the fast-forward roller and/or replace belt. If the pressure of the fast-forward is not sufficient, replace the spring.
No sound, only noise comes from speaker	R & P head open	Replace.
No sound or noise from speaker	Coupling capacitor open in input of some stage Defective transistors or bias resistors	Replace. Check bias voltage and replace defective components.
Weak sound	R & P head dirty Defective transistors or bias resistors	Clean head. Check bias voltages and replace defective components.
Auto Stop Mechanism does not operate.	Belt is broken. Auto stop block is broken.	Replace belt for auto stop. Replace auto stop block assembly.
Auto Stop Mechanism trips before end of tape.	Auto stop block is broken.	Replace auto stop block assembly.

SYMPTOM	Cause	Remedy
POWER-ASSISTED CONTROL MECHANISM		
Pressure roller does not rotate.	Spring for pressure roller has been disconnected or faulty.	Check the spring. Attach or replace it, if required.
Head plate and pressure roller arm do not operate (Power-assisted control mechanism does not operate).	1) Motor does not rotate.	1) Check the power switch for motor ; replace it, if required.
	2) Drive-belt has been detached or is faulty.	2) Check the drive-belt. Attach or replace it, if required
	3) Spring for gear-drive arm has been detached or is faulty.	3) Check the spring. Attach or replace it, if required.
	4) Rotation angle of gear-drive arm is short.	4) Check the cause of shortage of rotation. Lubricate it or replace spring.
	5) Gears of playback section have been damaged.	5) Replace playback gear.
	6) Shaft (A) or (B) of playback gear is damaged.	6) Replace playback gear.
	7) Playback gear is caught on chassis.	7) Correct.
	8) Connection with playback plate of playback arm has been disconnected, or damaged.	8) Check the connection. Connect or replace the playback arm.
	9) Playback arm has been deformed.	9) Replace the playback arm.
	10) Playback arm touches chassis or lever.	10) Correct.
	11) The press-in section of the shaft which connects to the playback arm of the playback plate is damaged.	11) Replace the playback plate.
	12) Wiring of the head is crimped or broken.	12) Correct wiring.
	13) Playback plate is hung-up on chassis.	13) Correct and/or lubricate.
	14) Head plate is hung-up on chassis.	14) Correct and/or lubricate.
Head plate & pressure roller are not locked, but repeat stop & playback.	1) Spring of the playback plate has been detached, or is faulty.	1) Check spring. Attach or replace it, if required.
	2) Playback lock plate is hung-up on chassis.	2) Correct and/or lubricate.
	3) Faulty locking of the playback lock plate and shaft of playback plate.	3) Lubricate the sliding section of chassis & playback lock plate or replace spring.
	4) Playback plate has been deformed.	4) Replace the playback arm.
Occasionally the unit goes into stop mode during record or playback, and returns to playback by means of the power-assisted control mechanism.	Faulty locking of the playback lock plate & shaft of playback plate.	Lubricate the sliding section of chassis & playback lock plate or replace the spring.

STOP MECHANISM		
Stop mode is not activated by pressing stop button while the unit is operating.	1) Contact section of stop button with the lock plate is damaged.	1) Replace the button assembly.
	2) Lock plate and chassis are touching.	2) Correct and/or lubricate the section.
	1) Playback lock plate & chassis are touching.	1) Correct and/or lubricate the section.
	2) The stop arm has been detached from playback lock plate & lock plate, or damaged.	2) Check stop arm. Attach or replace it, if required.
Every operation button returns to stop mode, but head plate & pressure roller do not return.	3) Spring of the playback arm has been detached or faulty.	3) Check the spring. Attach or replace it, if required.
	4) The shaft for playback arm is hung-up on the playback plate.	4) Correct the section hung-up on playback plate. Lubricate the L-type groove.
PAUSE MECHANISM		
Pause mechanism does not operate.	1) The contact point of pause button to the pause slider has been damaged.	1) Replace the button assembly.
	2) The pause slider is caught by chassis.	2) Correct the section caught by chassis or lubricate it.
	3) The playback plate is hung-up on chassis.	3) Replace the pause slider.
	4) The shaft, which makes the playback lock plate of the pause slider slide, is damaged.	4) Replace the pause slider.
When Pause button is pressed, during record or playback, the head & pinch roller go through stop mode once, but immediately return to playback or record mode (faulty operation of the power assisted mechanism).	1) The operation tab, which drives the gear-drive arm of pause slider is damaged.	1) Replace the pause slider.
	2) The operation tab (which drives the gear-drive arm of pause slider) and gear-drive are not engaged.	2) Check the engaging section or repair it.
Pause button does not lock.	The pause lock plate or pause spring is disconnected.	Correct the pause lock plate or pause spring.
TAKE-UP MECHANISM		
The power-assisted mechanism operates properly but the take-up mechanism does not operate.	1) Shaft of take-up arm has been removed from the L-type groove.	1) Detach the cassette holder assembly to insert the shaft into the L-type groove.
	2) Shaft of take-up arm is damaged.	2) Replace the gear assembly.
	3) The take-up arm is hung-up on chassis.	3) Repair the take-up arm.

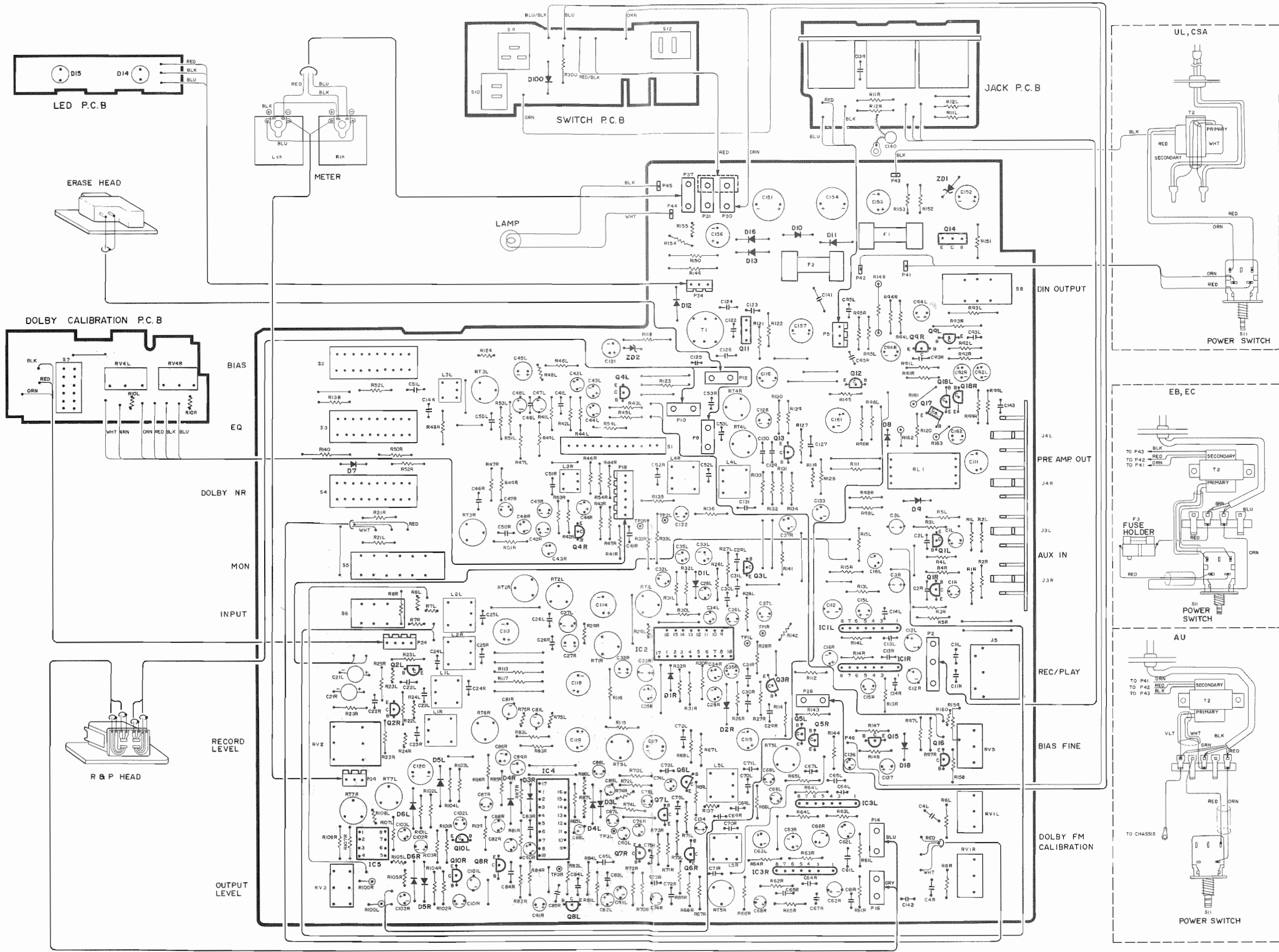
SYMPTOM	Cause	Remedy	
	4) Gears of take-up gear are damaged.	4) Replace the gear assembly.	
	5) Gear section of take-up reel is damaged.	5) Replace the gear assembly.	
	6) The spring, which lifts up the take-up gear, is weak.	6) Replace the spring.	
	7) The take-up belt is disconnected or faulty.	7) Attach the belt or replace it, if required.	
	8) The clutch mechanism of the take-up pulley has become loose, and the pulley is slipping.	8) Replace the gear assembly.	
	Take-up operation is unstable (stops or delays occasionally).	1) Engagement of take-up gear and the gear of reel is incomplete or part of gears is damaged.	1) Check the take-up mechanism or replace the gear assembly.
		2) Take-up pulley and take-up belt are slipping.	2) Replace the take-up belt, or clean with alcohol.
		3) The clutch mechanism of take-up pulley has become loose causing slippage.	3) Replace the gear assembly.
FAST FORWARD/REWIND MECHANISM			
Playback functions, but can not Fast Forward or Rewind.	1) The section where the button and the slider contact, is damaged.	1) Replace the button assembly.	
	2) Take-up belt is disconnected or faulty.	2) Attach take-up belt or replace it.	
	3) F gear (R) does not rotate by means of the slip mechanism of F belt pulley.	3) Replace the gear assembly.	
	4) F gear (R) is slipped out from the F belt pulley.	4) Position F gear (R) to the F belt pulley.	
	5) The operation of F arm is incomplete and the F gear (R) or (F) does not engage the gear section of the reel.	5) Check the operation of F arm.	
	6) Gears of the F gear (R) or (F) are damaged.	6) Check gear assembly.	
	7) Gear section of the reel is damaged.	7) Replace the gear assembly.	
	8) The spring, which lifts up the gear (R) or (F) is weak and is not engaged with the reel.	8) Replace the gear assembly.	
	9) Rewind or fast forward slider is hung-up on chassis and does not slide.	9) Correct and/or lubricate.	
When Stop button is pressed during fast forward or rewind mode, stop mode will not activate.	1) F arm is caught and stop mode is not restored.	1) Check and correct F arm.	
	2) The spring for F arm is disconnected or weak.	2) Connect the spring for F arm or replace the gear assembly.	

AUTOSTOP MECHANISM		
Auto-stop does not function.	1) The take-up belt is slipping or faulty.	1) Attach the take up belt or replace it.
	2) Teeth of small & large gear sections of F belt pulley are damaged.	2) Replace the gear.
	3) The teeth of the gear (large) and cam gear are damaged.	3) Replace the gear assembly.
	4) The shaft, which enters into the cam groove of the cam gear on the floating arm, is out of the cam or damaged.	4) Check the floating arm.
	5) The floating arm is deformed and the AS arm and the cam do not engage each other when the tape reaches its end.	5) Check the floating arm.
	6) The spring for the AS arm is off position or faulty.	6) Attach the spring or replace the gear assembly.
	7) The AS control spring is detached from the brake plate and presses the floating cam toward the take-up direction.	7) Remove the cassette holder assembly to attach the AS control spring.
	8) Contact of the AS arm and AS lever is incomplete.	8) Correct the AS lever.
	9) Contact of the AS lever and lock plate is incomplete.	9) Correct the AS lever.
	10) The cam of the AS arm and the cam of the cam gear are not engaging each other or are faulty.	10) Check the cam gear or replace the gear assembly.
When the Pause button is pressed during record or playback, the "clicking" sound is heard.	1) The AS control spring is off the floating cam, or hung-up on chassis and does not press the floating cam toward the take-up direction.	1) Remove the cassette holder assembly and correct the installation condition of the AS control spring.
	1) The spring for the floating arm is disconnected or faulty.	1) Connect the spring or replace it, if required.
The auto-stop mechanism operates improperly during playback, fast forward and rewind.	2) The floating arm is hung-up.	2) Check the floating cam.
	EJECT MECHANISM	
The air-damper mechanism does not operate. When Eject button is pressed, the cassette lid opens abruptly.	1) The rubber plate, which is attached to the S arm of the air damper mechanism is weak.	1) Replace the rubber plate.
	2) Contact of the gears of the air damper mechanism and the rubber plate is insufficient.	2) Replace the spring which makes gear and rubber plate contact.

AUTOSTOP MECHANISM	
Auto-stop does not function.	<p>1) The take-up belt is slipping or faulty.</p> <p>2) Teeth of small & large gear sections of F belt pulley are damaged.</p> <p>3) The teeth of the gear (large) and cam gear are damaged.</p> <p>4) The shaft, which enters into the cam groove of the cam gear on the floating arm, is out of the cam or damaged.</p> <p>5) The floating arm is deformed and the AS arm and the cam do not engage each other when the tape reaches its end.</p> <p>6) The spring for the AS arm is off position or faulty.</p> <p>7) The AS control spring is detached from the brake plate and presses the floating cam toward the take-up direction.</p> <p>8) Contact of the AS arm and AS lever is incomplete.</p> <p>9) Contact of the AS lever and lock plate is incomplete.</p> <p>10) The cam of the AS arm and the cam of the cam gear are not engaging each other or are faulty.</p>
When the Pause button is pressed during record or playback, the "clicking" sound is heard.	<p>1) The AS control spring is off the floating cam, or hung-up on chassis and does not press the floating cam toward the take-up direction.</p> <p>2) The spring for the floating arm is disconnected or faulty.</p> <p>3) The floating arm is hung-up.</p>
The auto-stop mechanism operates improperly during playback, fast forward and rewind.	<p>1) The spring for the floating arm is disconnected or faulty.</p> <p>2) The floating arm is hung-up.</p>
EJECT MECHANISM	
The air-damper mechanism does not operate. When Eject button is pressed, the cassette lid opens abruptly.	<p>1) The rubber plate, which is attached to the S arm of the air damper mechanism is weak.</p> <p>2) Contact of the gears of the air damper mechanism and the rubber plate is insufficient.</p>

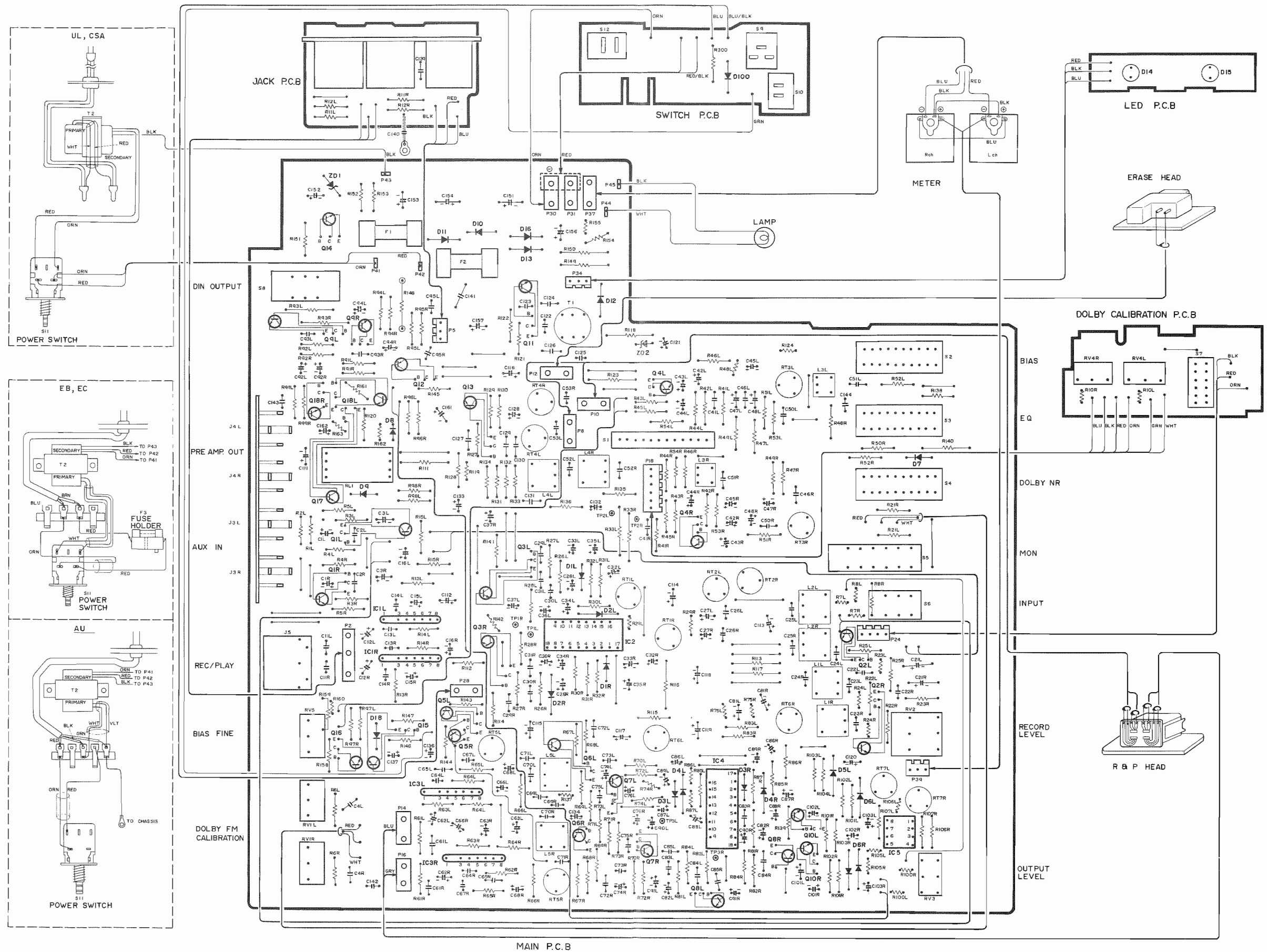
SYMPTOM	Cause	Remedy
The cassette lid does not open when the Eject button is pressed.	<p>3) Engagement of the gear of the air damper mechanism and the pinion gear of the mold is incomplete or they are damaged.</p> <p>4) Contact of the gear of the mold of the air damper mechanism and the worm gear of the wind-wheel is incomplete or they are damaged.</p> <p>5) Securing screw of the governor (air damper assembly) is loose.</p>	<p>3) Replace the governor (air damper assembly).</p> <p>4) Replace the governor (air damper assembly).</p> <p>5) Tighten the screw.</p>
The cassette lid cannot be closed.	<p>1) The head plate or mechanical section is completely stopped.</p> <p>2) The contact section of the Eject button to the eject slider is damaged.</p> <p>3) The spring for eject has slipped off or is faulty.</p> <p>4) The eject slider and chassis are touching.</p> <p>5) The air damper is hung-up on chassis.</p>	<p>1) Turn on the power and press the eject button after the stop button is pressed.</p> <p>2) Replace the button assembly.</p> <p>3) Attach the spring or replace it.</p> <p>4) Correct and/or lubricate.</p> <p>5) Correct.</p>
The cassette lid cannot be locked.	<p>1) The cassette tape is inserted in reverse.</p> <p>2) The recording prevention arm is caught by the tape.</p> <p>3) The head is in playback mode.</p>	<p>1) Take out the cassette tape, and insert in again with its surface facing the head side.</p> <p>2) Check installation of the recording prevention arm. And, check that the recording prevention arm is released from the recording prevention groove of the tape when the cassette lid opened. If it is not released, check the installation of the eject slider and eject arm.</p>
The cassette lid cannot be locked.	<p>1) The spring for the eject slider is not in position or is faulty.</p> <p>2) The eject slider and chassis are touching.</p>	<p>3) Turn on the power and close the cassette lid after pressing Stop button.</p> <p>1) Position the spring correctly or replace it, if required.</p> <p>2) Correct and/or lubricate.</p>

CIRCUIT BOARD DIAGRAM (TOP VIEW)

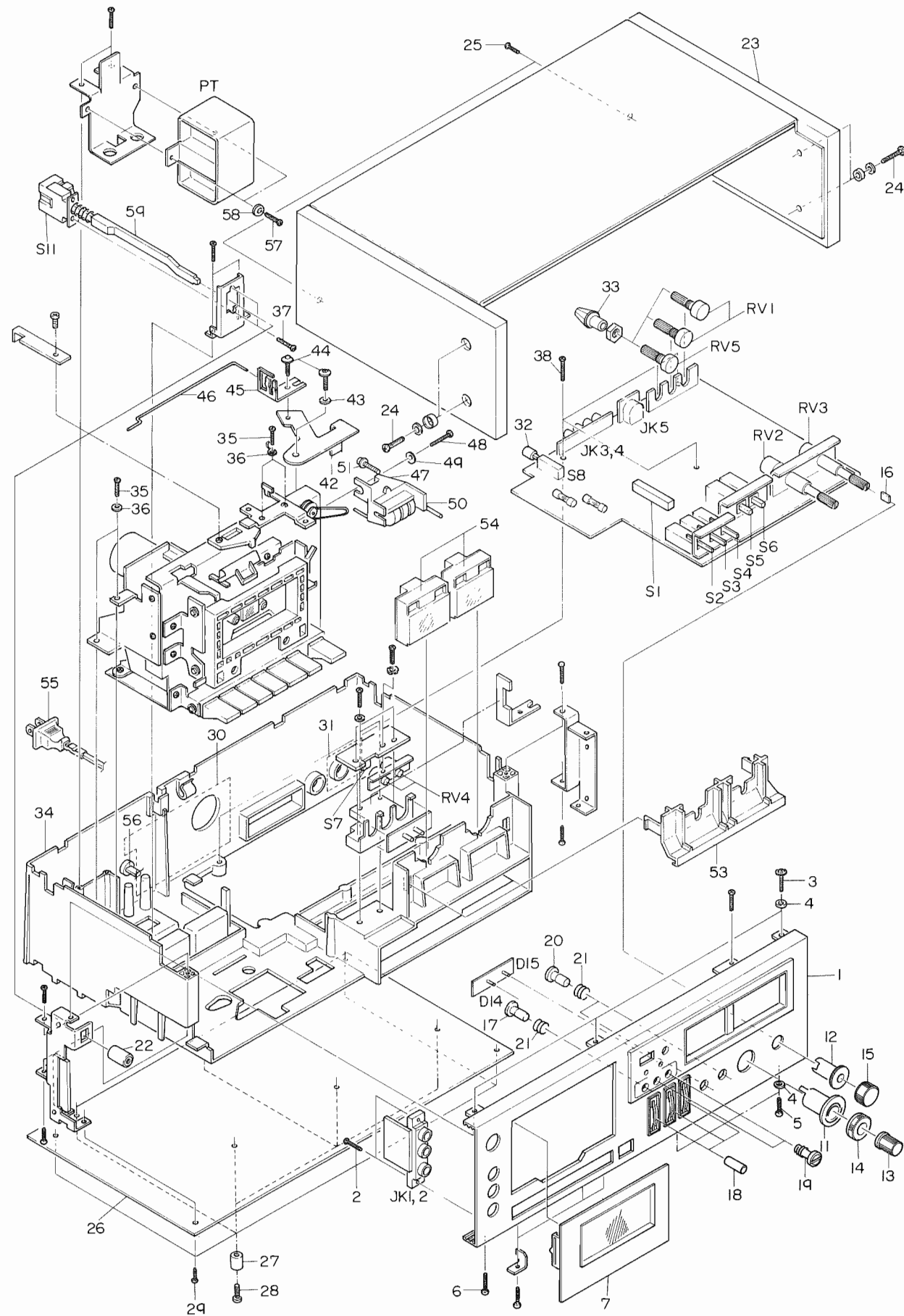


MAIN P.C.B

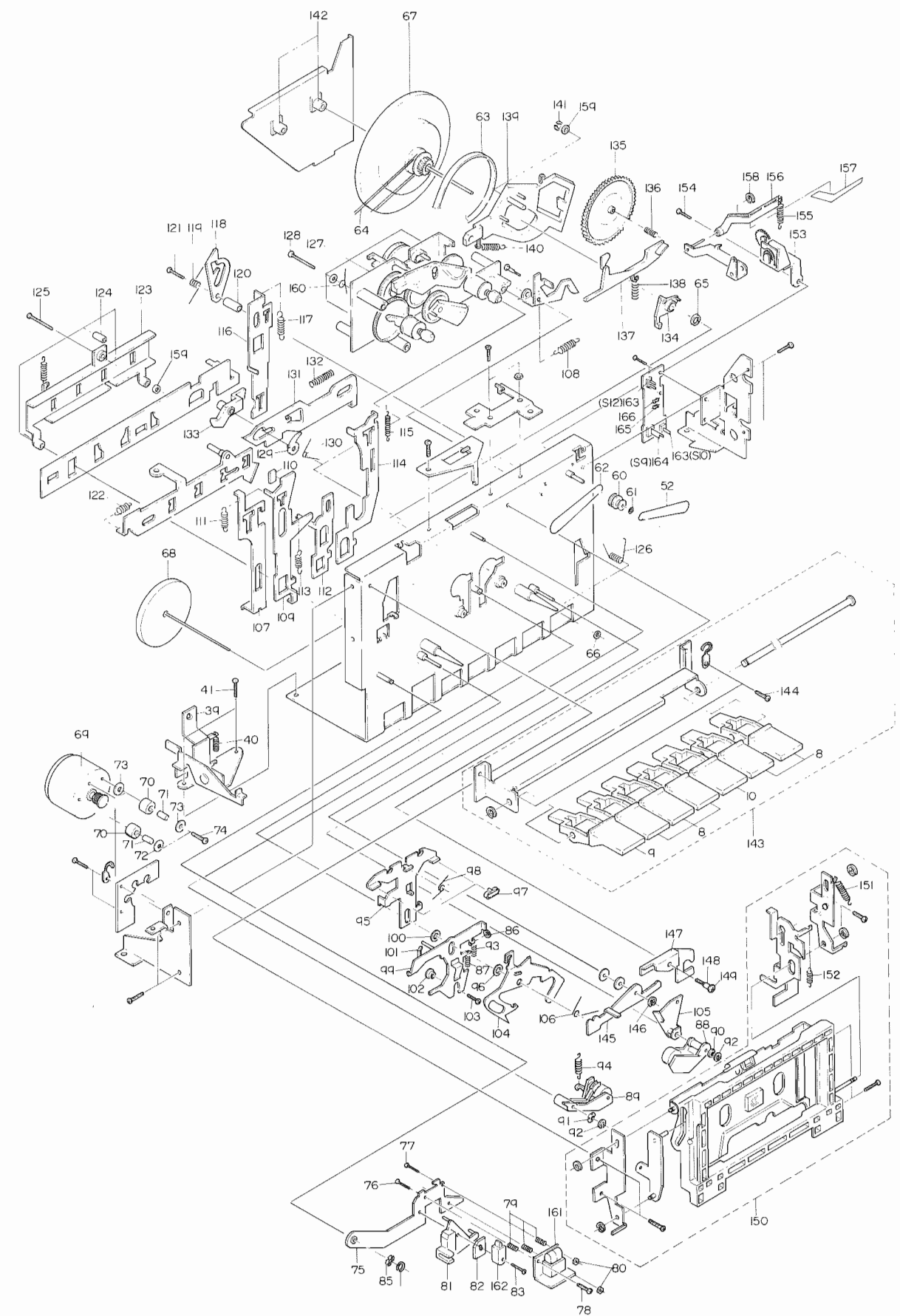
CIRCUIT BOARD DIAGRAM (BOTTOM VIEW)



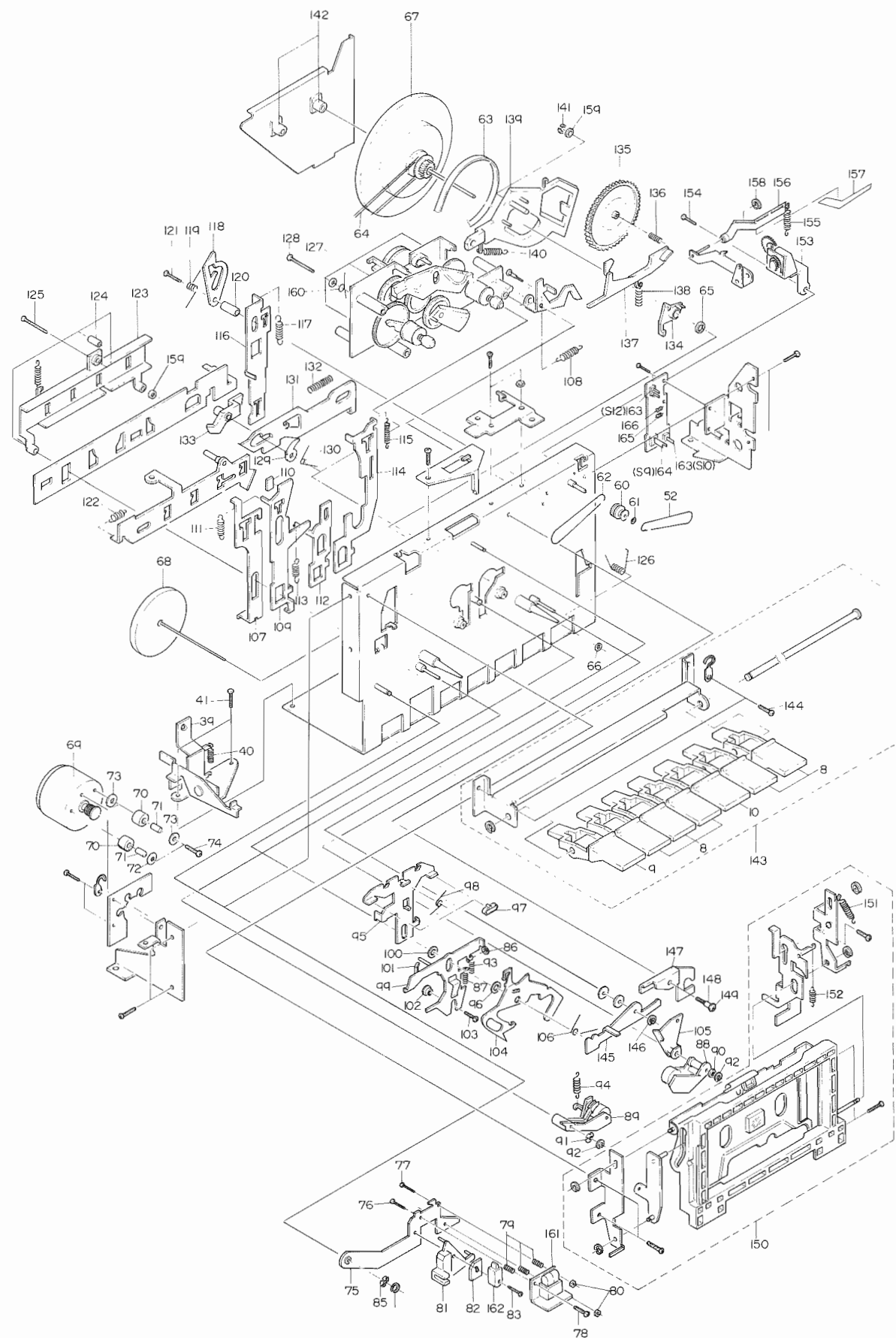
EXPLODED VIEW—CABINET



EXPLODED VIEW—MECHANISM



EXPLODED VIEW—MECHANISM



REPLACEMENT PARTS—ELECTRICAL

Ref. No.	Description	R. S. PART No.	MFR. S. PART No.	Ref. No.	Description	R. S. PART No.	MFR. S. PART No.
CAPACITORS							
C 1LR	Electrolytic 1.0µF 50V		0252811	C113	Electrolytic 100µF 16V		0252531
C 2LR	Ceramic disc 470pF±10%		0249723	C114	Electrolytic 470µF 16V		0252535
C 3LR	Electrolytic 3.3µF 25V		0252613	C115	Electrolytic 470µF 16V		0252535
C 4LR	Ceramic disc 0.0027µF±10% (EUROPE, U.K. AUSTRALIA)		0221378	C116	Electrolytic 100µF 16V		0252531
				C117	Electrolytic 100µF 16V		0252531
				C118	Electrolytic 470µF 16V		0252535
				C119	Electrolytic 470µF 16V		0252535
				C120	Electrolytic 47µF 16V		0252525
C 11LR	Mylar 0.0018µF±5% (U.S.A. CANADA)		0268430	C121	Electrolytic 470µF 16V		0252535
C 12LR	Ceramic disc 0.0022µF±10%		0249733	C122	Ceramic disc 0.01µF±10%		0249737
C 13LR	Electrolytic 3.3µF 25V		0252613	C123	Ceramic disc 0.022µF±10%		0249737
C 14LR	Ceramic disc 9pF±10%		0248649	C124	Mylar 0.022µF±10%		0275013
C 15LR	Electrolytic 47µF 10V		0256114	C125	Ceramic disc 0.0068µF±10%		0249736
C 16LR	Electrolytic 1.0µF 50V		0252811	C126	Mylar 0.0033µF±10%		0268427
C 21LR	Electrolytic 1.0µF 50V		0252811	C126	Ceramic disc 220pF±10%		0248732
C 22LR	Ceramic disc 470pF±10%		0249723	C127	Mylar 0.068µF±10%		0275016
C 23LR	Ceramic disc 68pF±10%		0248720	C128	Electrolytic 47µF 10V		0256114
C 24LR	Ceramic disc 0.0033µF±10%		0249734	C129	Mylar 0.047µF±10%		0275015
C 25LR	Mylar 0.0022µF±5%		0268426	C130	Mylar 0.047µF±10%		0275015
C 26LR	Ceramic disc 0.0022µF±10%		0249733	C131	Mylar 0.047µF±10%		0275015
C 27LR	Electrolytic 3.3µF 25V		0252613	C132	Electrolytic 3.3µF 25V		0252613
C 28LR	Electrolytic 0.33µF 25V		0256523	C133	Electrolytic 47µF 16V		0252525
C 29LR	Mylar 0.015µF±10%		0275012	C134	Electrolytic 3.3µF 25V		0252613
C 30LR	Mylar 0.0047µF±10%		0274015	C135	Electrolytic 3.3µF 25V		0252613
C 31LR	Mylar 0.015µF±10%		0275012	C136	Electrolytic 3.3µF 25V		0252613
C 32LR	Electrolytic 10µF 25V		0252621	C137	Electrolytic 3.3µF 25V		0252613
C 33LR	Electrolytic 0.33µF 25V		0256523	C138	Ceramic disc 0.001µF±10%		0249731
C 34LR	Electrolytic 10µF 25V		0252621	C139	Ceramic disc 0.01µF±10%		0249737
C 35LR	Electrolytic 0.1µF 25V		0256520	C140	Ceramic disc 0.01µF±10%		0249737
C 36LR	Electrolytic 0.1µF 25V		0256520	C141	Ceramic disc 0.001µF±10%		0249731
C 37LR	Electrolytic 10µF 25V		0252621	C142	Ceramic disc 0.001µF±10%		0249731
C 41LR	Ceramic disc 0.0022µF±10%		0249733	C143	Ceramic disc 0.001µF±10%		0249731
C 42LR	Electrolytic 0.68µF 25V		0256525	C144	Ceramic disc 0.001µF±10%		0249731
C 43LR	Electrolytic 3.3µF 25V		0252613	C151	Electrolytic 220µF 25V		0256110
C 44LR	Electrolytic 10µF 25V		0252621	C152	Electrolytic 470µF 16V		0252535
C 45LR	Electrolytic 10µF 25V		0252621	C153	Electrolytic 100µF 25V		0252631
C 46LR	Mylar 0.047µF±10%		0275015	C154	Electrolytic 220µF 25V		0256110
C 47LR	Electrolytic 0.1µF 25V		0256520	C156	Electrolytic 47µF 16V		0252525
C 48LR	Mylar 0.068µF±10%		0275116	C157	Electrolytic 470µF 16V		0252535
C 50LR	Mylar 0.022µF±10%		0275013	C161	Electrolytic 100µF 16V		0252531
C 51LR	Mylar 0.033µF±10%		0275014	C162	Electrolytic 10µF 25V		0252621
C 52LR	Ceramic disc 68pF±10%		0248720	RESISTORS :			
C 53LR	Ceramic disc 100pF±10%		0248724	R 1LR	Carbon film 82Kohm±5% 1/8W		0123956
C 61LR	Ceramic disc 220pF±10%		0248732	R 2LR	Carbon film 470Kohm±5% 1/8W		0123965
C 62LR	Electrolytic 10µF 25V		0252621	R 3LR	Carbon film 330Kohm±5% 1/8W		0123963
C 63LR	Electrolytic 47µF 16V		0252525	R 4LR	Carbon film 820Kohm±5% 1/8W		0123968
C 64LR	Ceramic disc 0.001µF±10%		0249731	R 5LR	Carbon film 15Kohm±5% 1/8W		0123947
C 65LR	Mylar 0.01µF±10%		0275011	R 6LR	Carbon film 18Kohm±5% 1/8W		0123948
C 66LR	Electrolytic 100µF 6.3V		0252231				
C 67LR	Ceramic disc 27pF±10%		0248710				
C 68LR	Electrolytic 10µF 25V		0252621				
C 69LR	Ceramic disc 0.0047µF±10%		0249735				
C 70LR	Ceramic disc 68pF±10%		0248720	R 7LR	Carbon film 39Kohm±5% 1/8W		0123952
C 71LR	Ceramic disc 0.0047µF±10%		0249735	R 8LR	Carbon film 5.6Kohm±5% 1/4W		0137860
C 72LR	Ceramic disc 0.0068µF±10%		0249736	R 8L	Carbon film 2.2Kohm±5% 1/4W		0137855
C 73LR	Ceramic disc 680pF±10%		0249725	R 8R	Carbon film 2.2Kohm±5% 1/8W		0123937
C 74LR	Electrolytic 3.3µF 25V		0252613	R 10LR	Carbon film 2.2Kohm±5% 1/4W		0137855
C 75LR	Ceramic disc 470pF±10%		0249723	R 11LR	Carbon film 15Kohm±5% 1/8W		0101947
C 76LR	Electrolytic 3.3µF 25V		0252613	R 12LR	Carbon film 1.8Kohm±5% 1/8W		0101936
C 81LR	Electrolytic 3.3µF 25V		0252613	R 13LR	Carbon film 18Kohm±5% 1/8W		0123948
C 82LR	Electrolytic 0.33µF 25V		0256523	R 14LR	Carbon film 2.7Kohm±5% 1/8W		0123938
C 83LR	Mylar 0.0047µF±10%		0274015	R 15LR	Carbon film 22Kohm±5% 1/8W		0123949
C 84LR	Mylar 0.015µF±10%		0275012	R 15LR	Carbon film 22Kohm±5% 1/4W		0137905
C 85LR	Mylar 0.015µF±10%		0275012	R 21LR	Carbon film 100Kohm±5% 1/8W		0123957
C 86LR	Electrolytic 10µF 25V		0252621	R 22LR	Carbon film 330Kohm±5% 1/8W		0123963
C 87LR	Electrolytic 0.33µF 25V		0256523	R 23LR	Carbon film 150Kohm±5% 1/8W		0123959
C 88LR	Electrolytic 10µF 25V		0252621	R 23L	Carbon film 150Kohm±5% 1/4W		0137953
C 89LR	Electrolytic 0.1µF 25V		0256520	R 24LR	Carbon film 3.3Kohm±5% 1/4W		0137857
C 90LR	Electrolytic 0.1µF 25V		0256520	R 25LR	Carbon film 390ohm±5% 1/8W		0123928
C 91LR	Electrolytic 10µF 25V		0252621	R 26LR	Carbon film 47Kohm±5% 1/8W		0123953
C 92LR	Electrolytic 3.3µF 25V		0252613	R 27LR	Carbon film 3.9Kohm±5% 1/8W		0123940
C 93LR	Ceramic disc 0.0022µF±10%		0249733	R 28LR	Carbon film 220ohm±5% 1/8W		0123925
CR94LR	Electrolytic 47µF 16V		0252525	R 29LR	Carbon film 6.8Kohm±5% 1/4W		0137861
C 95LR	Ceramic disc 0.001µF±10%		0249731	R 30LR	Carbon film 12Kohm±5% 1/8W		0123946
C101LR	Electrolytic 3.3µF 25V		0252613	R 31LR	Carbon film 270Kohm±5% 1/8W		0123962
C102LR	Electrolytic 10µF 25V		0252621	R 32LR	Carbon film 270Kohm±5% 1/8W		0123962
C103LR	Electrolytic 3.3µF 10V		0256304	R 33LR	Carbon film 22Kohm±5% 1/8W		0123949
C111	Electrolytic 100µF 16V		0252531	R 41LR	Carbon film 6.8Kohm±5% 1/8W		0123943
C112	Electrolytic 100µF 16V		0252531	R 42LR	Carbon film 4.7Kohm±5% 1/8W		0123941
				R 43LR	Carbon film 220Kohm±5% 1/8W		0123961

REPLACEMENT PARTS—ELECTRICAL

Ref. No.	Description	R.S. PART No.	MFR.S PART No.	Ref. No.	Description	R.S. PART No.	MFR.S PART No.
CAPACITORS				C113	Electrolytic 100 μ F 16V		0252531
C 1LR	Electrolytic 1.0 μ F 50V		0252811	C114	Electrolytic 470 μ F 16V		0252535
C 2LR	Ceramic disc 470pF \pm 10%		0249723	C115	Electrolytic 470 μ F 16V		0252535
C 3LR	Electrolytic 3.3 μ F 25V		0252613	C116	Electrolytic 100 μ F 16V		0252531
C 4LR	Ceramic disc 0.0027 μ F \pm 10% (EUROPE, U.K., AUSTRALIA)		0221378	C117	Electrolytic 100 μ F 16V		0252531
	Mylar 0.0018 μ F \pm 5% (U.S.A., CANADA)		0268430	C118	Electrolytic 470 μ F 16V		0252535
C 11LR	Ceramic disc 0.0022 μ F \pm 10%		0249733	C119	Electrolytic 470 μ F 16V		0252535
C 12LR	Electrolytic 3.3 μ F 25V		0252613	C120	Electrolytic 47 μ F 16V		0252525
C 13LR	Ceramic disc 0.0022 μ F \pm 10%		0249733	C121	Electrolytic 470 μ F 16V		0252535
C 14LR	Ceramic disc 9pF \pm 10%		0248649	C122	Ceramic disc 0.01 μ F \pm 10%		0249737
C 15LR	Electrolytic 47 μ F 10V		0256114	C123	Mylar 0.022 μ F \pm 10%		0275013
C 16LR	Electrolytic 1.0 μ F 50V		0252811	C124	Ceramic disc 0.0068 μ F \pm 10%		0249736
C 21LR	Electrolytic 1.0 μ F 50V		0252811	C125	Mylar 0.0033 μ F \pm 10%		0268427
C 22LR	Ceramic disc 470pF \pm 10%		0249723	C126	Ceramic disc 220pF \pm 10%		0248732
C 23LR	Ceramic disc 68pF \pm 10%		0248720	C127	Mylar 0.068 μ F \pm 10%		0275016
C 24LR	Ceramic disc 0.0033 μ F \pm 10%		0249734	C128	Electrolytic 47 μ F 10V		0256114
C 25LR	Mylar 0.0022 μ F \pm 5%		0268426	C129	Mylar 0.047 μ F \pm 10%		0275015
C 26LR	Ceramic disc 0.0022 μ F \pm 10%		0249733	C130	Mylar 0.047 μ F \pm 10%		0275015
C 27LR	Electrolytic 3.3 μ F 25V		0252613	C131	Mylar 0.047 μ F \pm 10%		0275015
C 28LR	Electrolytic 0.33 μ F 25V		0256523	C132	Electrolytic 3.3 μ F 25V		0252613
C 29LR	Mylar 0.015 μ F \pm 10%		0275012	C133	Electrolytic 47 μ F 16V		0252525
C 30LR	Mylar 0.0047 μ F \pm 10%		0274015	C134	Electrolytic 3.3 μ F 25V		0252613
C 31LR	Mylar 0.015 μ F \pm 10%		0275012	C135	Electrolytic 3.3 μ F 25V		0252613
C 32LR	Electrolytic 10 μ F 25V		0252621	C136	Electrolytic 3.3 μ F 25V		0252613
C 33LR	Electrolytic 0.33 μ F 25V		0256523	C137	Electrolytic 3.3 μ F 25V		0252613
C 34LR	Electrolytic 10 μ F 25V		0252621	C138	Ceramic disc 0.001 μ F \pm 10%		0249731
C 35LR	Electrolytic 0.1 μ F 25V		0256520	C139	Ceramic disc 0.01 μ F \pm 10%		0249737
C 36LR	Electrolytic 0.1 μ F 25V		0256520	C140	Ceramic disc 0.01 μ F \pm 10%		0249737
C 37LR	Electrolytic 10 μ F 25V		0252621	C141	Ceramic disc 0.001 μ F \pm 10%		0249731
C 41LR	Ceramic disc 0.0022 μ F \pm 10%		0249733	C142	Ceramic disc 0.001 μ F \pm 10%		0249731
C 42LR	Electrolytic 0.68 μ F 25V		0256525	C143	Ceramic disc 0.001 μ F \pm 10%		0249731
C 43LR	Electrolytic 3.3 μ F 25V		0252613	C144	Ceramic disc 0.001 μ F \pm 10%		0249731
C 44LR	Electrolytic 10 μ F 25V		0252621	C151	Electrolytic 2200 μ F 25V		0256110
C 45LR	Electrolytic 10 μ F 25V		0252621	C152	Electrolytic 470 μ F 16V		0252535
C 46LR	Mylar 0.047 μ F \pm 10%		0275015	C153	Electrolytic 100 μ F 25V		0252631
C 47LR	Electrolytic 0.1 μ F 25V		0256520	C154	Electrolytic 2200 μ F 25V		0256110
C 48LR	Mylar 0.068 μ F \pm 10%		0275116	C156	Electrolytic 47 μ F 16V		0252525
C 50LR	Mylar 0.022 μ F \pm 10%		0275013	C157	Electrolytic 470 μ F 16V		0252535
C 51LR	Mylar 0.033 μ F \pm 10%		0275014	C161	Electrolytic 100 μ F 16V		0252531
C 52LR	Ceramic disc 68pF \pm 10%		0248720	C162	Electrolytic 10 μ F 25V		0252621
C 53LR	Ceramic disc 100pF \pm 10%		0248724	RESISTORS :			
C 61LR	Ceramic disc 220pF \pm 10%		0248732	R 1LR	Carbon film 82Kohm \pm 5% 1/8W		0123956
C 62LR	Electrolytic 10 μ F 25V		0252621	R 2LR	Carbon film 470Kohm \pm 5% 1/8W		0123965
C 63LR	Electrolytic 47 μ F 16V		0252525	R 3LR	Carbon film 330Kohm \pm 5% 1/8W		0123963
C 64LR	Ceramic disc 0.001 μ F \pm 10%		0249731	R 4LR	Carbon film 820Kohm \pm 5% 1/8W		0123968
C 65LR	Mylar 0.01 μ F \pm 10%		0275011	R 5LR	Carbon film 15Kohm \pm 5% 1/8W		0123947
C 66LR	Electrolytic 100 μ F 6.3V		0252231	R 6LR	Carbon film 18Kohm \pm 5% 1/8W		0123948
C 67LR	Ceramic disc 27pF \pm 10%		0248710	(EUROPE, U.K., AUSTRALIA) (U.S.A., CANADA)			
C 68LR	Electrolytic 10 μ F 25V		0252621		Carbon film 39Kohm \pm 5% 1/8W		0123952
C 69LR	Ceramic disc 0.0047 μ F \pm 10%		0249735	R 7LR	Carbon film 5.6Kohm \pm 5% 1/4W		0137860
C 70LR	Ceramic disc 68pF \pm 10%		0248720	R 8L	Carbon film 2.2Kohm \pm 5% 1/4W		0137855
C 71LR	Ceramic disc 0.0047 μ F \pm 10%		0249735	R 8R	Carbon film 2.2Kohm \pm 5% 1/8W		0123937
C 72LR	Ceramic disc 0.0068 μ F \pm 10%		0249736	R 10LR	Carbon film 2.2Kohm \pm 5% 1/4W		0137855
C 73LR	Ceramic disc 680pF \pm 10%		0249725	R 11LR	Carbon film 15Kohm \pm 5% 1/8W		0101947
C 74LR	Electrolytic 3.3 μ F 25V		0252613	R 12LR	Carbon film 1.8Kohm \pm 5% 1/8W		0101936
C 75LR	Ceramic disc 470pF \pm 10%		0249723	R 13LR	Carbon film 18Kohm \pm 5% 1/8W		0123948
C 76LR	Electrolytic 3.3 μ F 25V		0252613	R 14LR	Carbon film 2.7Kohm \pm 5% 1/8W		0123938
C 81LR	Electrolytic 3.3 μ F 25V		0252613	R 15LR	Carbon film 22Kohm \pm 5% 1/8W		0123949
C 82LR	Electrolytic 0.33 μ F 25V		0256523	R 15LR	Carbon film 22Kohm \pm 5% 1/4W		0137905
C 83LR	Mylar 0.0047 μ F \pm 10%		0274015	R 21LR	Carbon film 100Kohm \pm 5% 1/8W		0123957
C 84LR	Mylar 0.015 μ F \pm 10%		0275012	R 22LR	Carbon film 330Kohm \pm 5% 1/8W		0123963
C 85LR	Mylar 0.015 μ F \pm 10%		0275012	R 23LR	Carbon film 150Kohm \pm 5% 1/8W		0123959
C 86LR	Electrolytic 10 μ F 25V		0252621	R 23L	Carbon film 150Kohm \pm 5% 1/4W		0137953
C 87LR	Electrolytic 0.33 μ F 25V		0256523	R 24LR	Carbon film 3.3Kohm \pm 5% 1/4W		0137857
C 88LR	Electrolytic 10 μ F 25V		0252621	R 25LR	Carbon film 390 ohm \pm 5% 1/8W		0123928
C 89LR	Electrolytic 0.1 μ F 25V		0256520	R 26LR	Carbon film 47Kohm \pm 5% 1/8W		0123953
C 90LR	Electrolytic 0.1 μ F 25V		0256520	R 27LR	Carbon film 3.9Kohm \pm 5% 1/8W		0123940
C 91LR	Electrolytic 10 μ F 25V		0252621	R 28LR	Carbon film 220ohm \pm 5% 1/8W		0123925
C 92LR	Electrolytic 3.3 μ F 25V		0252613	R 29LR	Carbon film 6.8Kohm \pm 5% 1/4W		0137861
C 93LR	Ceramic disc 0.0022 μ F \pm 10%		0249733	R 30LR	Carbon film 12Kohm \pm 5% 1/8W		0123946
CR94LR	Electrolytic 47 μ F 16V		0252525	R 31LR	Carbon film 270Kohm \pm 5% 1/8W		0123962
C 95LR	Ceramic disc 0.001 μ F \pm 10%		0249731	R 32LR	Carbon film 270Kohm \pm 5% 1/8W		0123962
C101LR	Electrolytic 3.3 μ F 25V		0252613	R 33LR	Carbon film 22Kohm \pm 5% 1/8W		0123949
C102LR	Electrolytic 10 μ F 25V		0252621	R 41LR	Carbon film 6.8Kohm \pm 5% 1/8W		0123943
C103LR	Electrolytic 3.3 μ F 10V		0256304	R 42LR	Carbon film 4.7Kohm \pm 5% 1/8W		0123941
C111	Electrolytic 100 μ F 16V		0252531	R 43LR	Carbon film 220Kohm \pm 5% 1/8W		0123961
C112	Electrolytic 100 μ F 16V		0252531				

Ref No	Description	R.S. PART No.	MFR'S PART No	Ref No	Description	R.S. PART No.	MFR'S PART No
RESISTORS :							
R 44LR	Carbon film 47Kohm±5% 1/8W		0123953	R135	Carbon film 47Kohm±5% 1/8W		0123953
R 45LR	Carbon film 3.9Kohm±5% 1/8W		0123940	R136	Carbon film 47Kohm±5% 1/8W		0123953
R 46LR	Carbon film 820ohm±5% 1/8W		0123932	R137	Carbon film 470Kohm±5% 1/4W		0137959
R 47LR	Carbon film 82ohm±5% 1/8W		0123920	R138	Carbon film 100Kohm±5% 1/8W		0123957
R 48R	Carbon film 220Kohm±5% 1/8W		0123961	R139	Carbon film 470Kohm±5% 1/8W		0123965
R 48L	Carbon film 220Kohm±5% 1/8W		0137955	R140	Carbon film 10Kohm±5% 1/8W		0123945
R 49LR	Carbon film 820ohm±5% 1/8W		0123932	R141	Carbon film 10Kohm±5% 1/8W		0123945
R 51LR	Carbon film 2.2Kohm±5% 1/8W		0123937	R142	Carbon film 220Kohm±5% 1/4W		0137955
R 52LR	Carbon film 100Kohm±5% 1/8W		0123957	R143	Carbon film 10Kohm±5% 1/8W		0123945
R 53LR	Carbon film 100ohm±5% 1/8W		0123921	R144	Carbon film 6.8Kohm±5% 1/8W		0123945
R 53LR	Carbon film 56ohm±5% 1/8W		0123918	R145	Carbon film 10Kohm±5% 1/8W		0123945
R 54LR	Carbon film 1Kohm±5% 1/8W		0123933	R146	Carbon film 3.3Kohm±5% 1/8W		0123939
R 61LR	Carbon film 39Kohm±5% 1/8W		0123952	R147	Carbon film 4.7Kohm±5% 1/8W		0123941
R 62LR	Carbon film 330Kohm±5% 1/8W		0123963	R148	Carbon film 22ohm±5% 1/4W		0114375
R 63LR	Carbon film 56Kohm±5% 1/8W		0123954	R149	Carbon film 1Kohm±10% 1/2W		0113365
R 64LR	Carbon film 2.7Kohm±5% 1/8W		0123938	R150	Carbon film 270ohm±10% 1/2W		0113292
R 65LR	Carbon film 12Kohm±5% 1/8W		0123946	R151	Carbon film 10ohm±5% 1/8W		0123909
R 66LR	Carbon film 2.2Kohm±5% 1/8W		0123937	R152	Carbon film 1Kohm±5% 1/8W		0123933
R 67LR	Carbon film 6.8Kohm±5% 1/8W		0123943	R153	Carbon film 1Kohm±5% 1/8W		0123933
R 68LR	Carbon film 12Kohm±5% 1/8W		0123946	R154	Carbon film 82ohm±10% 1/2W		0113228
R 69LR	Carbon film 470Kohm±5% 1/8W		0123965	R155	Carbon film 22ohm±10% 1/2W		0113221
R 70LR	Carbon film 470Kohm±5% 1/8W		0123965	R158	Carbon film 1.8Kohm±5% 1/8W		0123936
R 71LR	Carbon film 68Kohm±5% 1/8W		0123955	R159	Carbon film 3.3Kohm±5% 1/8W		0123939
R 72LR	Carbon film 5.6Kohm±5% 1/8W		0123942	R160	Carbon film 390ohm±5% 1/4W		0137808
R 73LR	Carbon film 1.2Kohm±5% 1/8W		0123934	R161	Carbon film 2.2Kohm±5% 1/4W		0137855
R 74LR	Carbon film 22Kohm±5% 1/4W		0137905	R162	Carbon film 22Kohm±5% 1/4W		0137905
R 75LR	Carbon film 22Kohm±5% 1/4W		0137905	R163	Carbon film 5.6Kohm±5% 1/4W		0137860
R 81LR	Carbon film 47Kohm±5% 1/8W		0123953	RT1LR	Semi variable 10Kohm	P0652	0151886
R 82LR	Carbon film 3.9Kohm±5% 1/8W		0123940	RT2LR	Semi variable 47Kohm	P0652	0151886
R 83LR	Carbon film 5.6Kohm±5% 1/8W		0123942	RT3LR	Semi variable 4.7Kohm	P6112	0151885
R 84LR	Carbon film 220ohm±5% 1/8W		0123925	RT4LR	Semi variable 220Kohm	P6125	0151890
R 85LR	Carbon film 12Kohm±5% 1/8W		0123946	RT5LR	Semi variable 10Kohm	P0652	0151886
R 86R	Carbon film 270Kohm±5% 1/8W		0123962	RT6LR	Semi variable 10Kohm	P0652	0151886
R 86L	Carbon film 270Kohm±5% 1/4W		0137956	RT7LR	Semi variable 47Kohm	P0657	0151888
R 87L	Carbon film 270Kohm±5% 1/4W		0137956	RV1LR	Variable 20Kohm (B)	P1884	5000307
R 87R	Carbon film 270Kohm±5% 1/8W		0123962	RV2LR	Variable 10Kohm (B)	P1885	5000344
R 91LR	Carbon film 33Kohm±5% 1/8W		0123951	RV3LR	Variable 10Kohm (B)	P1886	5000142
R 92LR	Carbon film 820Kohm±5% 1/8W		0123968	RV4LR	Variable 10Kohm (B)	P1887	0151435
R 93LR	Carbon film 330ohm±10% 1/2W		0113293	RV5	Variable 5Kohm (B)	P1888	5000435
R 94LR	Carbon film 10Kohm±5% 1/8W		0123945	SEMI-CONDUCTORS :			
R 95LR	Carbon film 100ohm±5% 1/8W		0123921	Q 1LR	Transistor 2SC458D-LG		5320024
R 96LR	Carbon film 39Kohm±5% 1/8W		0123952	Q 2LR	Transistor 2SC458D-LG		5320024
R 97LR	Carbon film 33Kohm±5% 1/8W		0123951	Q 3LR	Transistor 2SD467B		5321192
R 98LR	Carbon film 12Kohm±5% 1/8W		0123946	Q 4LR	Transistor 2SC1740LN-E		5321295
R 99LR	Carbon film 2.7Kohm±5% 1/8W		0123938	Q 5LR	Transistor 2SD467B		5321192
R100LR	Carbon film 220ohm±5% 1/4W		0137805	Q 6LR	Transistor 2SD467B		5321192
R101LR	Carbon film 120Kohm±5% 1/8W		0123958	Q 7LR	Transistor 2SC1740LN-E		5321295
R102LR	Carbon film 68Kohm±5% 1/8W		0123955	Q 8LR	Transistor 2SD467B		5321192
R103LR	Carbon film 2.2Kohm±5% 1/8W		0123937	Q 9LR	Transistor 2SC1740LN-E		5321295
R104LR	Carbon film 4.7Kohm±5% 1/8W		0123941	Q10LR	Transistor 2SC1740LN-E		5321295
R105LR	Carbon film 390Kohm±5% 1/4W		0137958	Q11	Transistor 2SC1162WT		5320643
R106L	Carbon film 12Kohm±5% 1/4W		0137902	Q12	Transistor 2SA673C		5320593
R106R	Carbon film 12Kohm±5% 1/8W		0123946	Q13	Transistor 2SC1740LN-E		5321295
R107LR	Carbon film 12Kohm±5% 1/8W		0123946	Q14	Transistor 2SC1061C		5320433
R111	Carbon film 2.2Kohm±5% 1/8W		0123937	Q15	Transistor 2SC1740LN-E		5321295
R112	Carbon film 1Kohm±5% 1/8W		0123933	Q16	Transistor 2SC1740		5321192
R113	Carbon film 2.2Kohm±5% 1/8W		0123937	Q17	Transistor 2SA673C		5320593
R114	Carbon film 82ohm±10% 1/2W		0113228	IC1LR	IC HA1406		5350251
R115	Carbon film 680ohm±5% 1/8W		0123931	IC2	IC HA11226		5350561
R116	Carbon film 82ohm±10% 1/2W		0113228	IC3LR	IC HA1406		5350251
R117	Carbon film 270ohm±5% 1/8W		0123926	IC4	IC HA11226		5350561
R118	Carbon film 470ohm±5% 1/4W		0170239	IC5	IC HJM4558		5350601
R119	Carbon film 4.7Kohm±5% 1/4W		0137859	D1LR	Diode IS2473HC		5330572
R120	Carbon film 120ohm±5% 1/8W		0123922	D2LR	Diode IN34A-TF1		5330721
R121	Carbon film 6.8Kohm±5% 1/8W		0123943	D3LR	Diode IS2473HC		5330572
R122	Carbon film 10ohm±5% 1/8W		0123909	D4LR	Diode IN34A-TF1		5330721
R123	Carbon film 220ohm±5% 1/8W		0123925	D5LR	Diode IN34A-TF1		5330721
R124	Carbon film 330ohm±5% 1/4W		0137807	D6LR	Diode IN34A-TF1		5330721
R127	Carbon film 68Kohm±5% 1/8W		0123955	D7	Diode IS2473HC		5330572
R128	Carbon film 12Kohm±5% 1/8W		0123946	D8	Diode IS2473VE		5330571
R129	Carbon film 100ohm±5% 1/8W		0123921	D9	Diode IS2473HC		5330572
R130	Carbon film 4.7Kohm±5% 1/8W		0123941	D10	Diode V06C		5330101
R131	Carbon film 12Kohm±5% 1/8W		0123946	D11	Diode V06C		5330101
R132	Carbon film 12Kohm±5% 1/8W		0123946	D12	Diode W06A		5330341
R133	Carbon film 12Kohm±5% 1/8W		0123946	D13	Diode W06A		5330341
R134	Carbon film 12Kohm±5% 1/8W		0123946	D14	Diode LEDSLP-24B		DX0988

Ref. No.	Description	R.S. PART No.	MFR'S PART No.	Ref. No.	Description	R.S. PART No.	MFR'S PART No.
D15	Diode LEDSLP-24B	DX0989	5380111	29	Bind tapping screw-3mmφ×10mm		8788410
D16	Diode W06A		5330341	30	(6 req'd) for bottom cover mounting		
D18	Diode IS2473HC		5330572		Rating metal (U.S.A.)		6653246
D100	Diode W06A		5330341		Rating metal (CANADA)		6653244
ZD1	Zener diode HZ-15		5330541		Rating metal (EUROPE)		6653247
ZD2	Zener diode HZ-12A		5330531		Rating metal (U.K., AUSTRALIA)		6653248
TRANSFORMERS :							
T 1	Bias osc coil	CA3941	5260231	31	DIN metal	HB7752	
PT	Power trans. (U.S.A.)		5212031		Knob (DIN OUTPUT)	K2986	6262182
PT	Power trans. (CANADA)	TA0675	5211906		Knob (BIAS FINE)	K2987	6287281
	Power trans. (EUROPE)		5211777	for Chassis Assembly			
	Power trans. (AUSTRALIA)		5211776				
	Power trans. (JAPAN)		5211771	34	Mold chassis ass.		6742157
COILS :							
L1LR	Choke coil 33mH	CB2400	5120304	35	Bind tapping screw-3mmφ×12mm		8798412
L2LR	Choke coil 33mH	CB2290	5260215		(4 req'd) for chassis mounting		
L3LR	Choke coil 2.5mH	CB2289	5120274	36	Lock washer-3mmφ		8815114
L4LR	Choke coil 33mH		5260215	37	Pan head screw-3mmφ×5mm		8711405
L5LR	Choke coil 33mH		5120304		(2 req'd) for push switch mounting		
for P.C.B. Assembly							
PL3	Pilot lamp	L0912	5762036	38	Bind tapping screw-3mmφ×10mm		8788410
JK1, 2	Jacks (Mic. & Headphone)	J0967	5679402			(4 req'd) for min P.C.B., mounting	
JK3, 4	Pin jack assembly(AUX IN & PREAMP OUT)	J0749	5676082	39	Record holder ass.	RT1386	7291034
JK5	DIN socket	J6205	5651141	40	Record spring	RB6180	6300373
S1	Slide switch (for Rec./Play)	S2456	5623371	41	FT bind screw-3mmφ×6mm		8741406
S2, 3, 4	Lever switch (Bias, Equalizer, Dolby NR)	S0854	5604211		(2 req'd) for record holder mounting		
S5, 6	Push switch (Monitor, Input)	S7373	5634133	42	Record arm	RT1387	7295721
S7	Push switch (Dolby calibrate)	S7374	5630837	43	Guide collar	HB7753	7574352
S8	Push switch (DIN output)	S7375	5633161	44	Pan head screw with washer-3mmφ×6mm		8660406
S11	Push switch (Power)	S7376	5633271	45	Record spring	RB6181	6530591
RL1	Reed relay	R8098	5641111	46	Record rod	HB7754	7295731
F1, 2	Fuse 630mA		5720174	47	Counter holder	HB7755	6741982
F3	Fuse 250mA (EUROPE)		5721012	48	FT bind screw-3mmφ×8mm		8641408
for Final Assembly							
1	Front panel ass. (U.S.A., CANADA, EUROPE, U.K., AUSTRALIA)	Z4105	6221351	49	Washer-3mmφ	D2078	8811114
2	Front panel ass. (JAPAN)		6221352		50	Counter	
3	Bind tapping screw-3mmφ×8mm		8788408	51	Pan head screw with washer-3mmφ×6mm		8660406
4	(2 req'd) for jack plate mounting			52	Belt for counter	B6372	6354481
5	Bind screw-3mmφ×6mm		8741406	53	Meter frame	RT1388	6746171
6	(3 req'd) for front panel mounting			54	Level meter	M0388	5554551
7	Lock washer-3mmφ		8815114	55	Power cord (U.S.A., CANADA)		5746441
8	Bind screw-3mmφ×25mm	HD2071	8745425		Power cord (EUROPE)		5746451
9	(2 req'd) for front panel mounting				Power cord (U.K., AUSTRALIA)		5740653
10	Bind screw-3mmφ×8mm	HD2057	8745408		Power cord (JAPAN)		5740508
11	(1 req'd) for front panel mounting				Bushing	HB7756	6794081
12	Cassette lid ass.	DA0244	6091291	56	Bushing (U.K., AUSTRALIA)		8641408
13	Function knob (REW, PLAY, FF, PAUSE, EJECT)	K2975	6255951	57	FT bind screw-3mmφ×8mm		
14	Function knob (RECORD)	K2976	6256481	58	(2 req'd) for power trans. mounting		
15	Function knob (STOP)	K2977	6256491	59	Washer-3mmφ		8811114
16	Marker ass. (REC VOL)	HB7749	6464401		Switch lever	HB7757	6746191
17	Marker (OUTPUT)	HB7750	6747911	for Cassette Deck Assembly			
18	Knob ass. (RECORD LEVEL, L)	K2978	6287252	60	Relay pulley	RA2618	6421321
19	Knob ass. (RECORD LEVEL, R)	K2979	6287262	61	Polyester washer		7778851
20	Knob (OUTPUT LEVEL)	K2980	6287272	62	Belt	B6373	6354381
21	Spring for output volume						

Ref. No.	Description	R.S. PART No.	MFR'S PART No.	Ref. No.	Description	R.S. PART No.	MFR'S PART No.
85	Spring washer for head plate		7189545	127	Gear plate assembly	RA1303	7127937
86	Poly slider washer for head plate		7786115	128	Pan head screw-3mm ϕ X25mm		8711425
87	Spring for play plate		6301423		(3 req'd) for gear plate mounting		
88	Pressure roller arm assembly (R)		6743588	129	AS prevention plate	HB7771	7295951
89	Pressure roller arm assembly (L)		6743584	130	Spring for AS prevention plate	RB6196	6308301
90	Poly slider washer		7778856	131	Pause lock plate assembly	RT1393	7287413
91	Spring washer		7189547	132	Spring for pause lock plate	RB6197	6323732
92	"E" ring for pressure roller arm		7230901	133	AS lever	HB7772	6741521
93	Spring for pressure roller arm	RB6184	6301731	134	Stop arm	HB7773	6741702
94	Spring for pressure roller arm	RB6185	6301735	135	Play gear	RA2619	6348665
95	Brake plate	HB7760	7297242	136	Spring for play gear	RB6198	6303112
96	Polyester washer		0020784	137	Gear moving arm	HB7774	6741516
97	Brake rubber	HB7761	6586071	138	Spring for gear moving arm	RA5555	6324811
98	Brake spring	RB6186	6308072	139	Play arm	RT1394	6741497
99	Play plate assembly	RT1390	7296067	140	Spring for play arm	RA5807	6324591
100	Poly slider washer		7786113	141	"E" ring for play arm		7230901
101	Felt		7740392	142	Thrust support	HB7775	6741551
102	Collar for play plate	HB7762	7574355	143	Button holder assembly	K2988	6255947
103	FT bind screw-3mm ϕ X6mm		8641406	144	FT bind screw-3mm ϕ X6mm		8641406
for play plate mounting				145	Recording arm		7290493
				146	"E" ring for recording arm		7230902
104	Pause lever	HB7763	7297259	147	Eject arm		7287462
105	Pause change arm	HB7764	7297225	148	Spacer for eject arm		7574832
106	Spring for pause lever	RB6187	6308361	149	FT bind screw-3mm ϕ X12mm		8641412
107	Recording slider assembly	RT1391	7287064		(1 req'd) for eject arm mounting		
108	Spring for pause lever	RB6188	6301011	150	Cassette holder assembly	Z4108	7107052
109	Rewind slider	HB7765	7287114	151	Spring for tray arm	RB6199	6319693
110	Spring support	HB7766	7661777	152	Spring for eject slider	RB6200	6325061
111	Spring for rewind slider	RB6189	6300982	153	Governor	RT1395	7290501
112	Play slider	HB7767	7287104	154	Pan head screw-2.6mm ϕ X5mm		0711305
113	Spring for play slider	RB6190	6325842		(1 req'd) for governor mounting		
114	F. F slider	HB7768	7287095	155	Spring for stop arm	RB6201	6300843
115	Spring for F. F. slider	RB6189	6300982	156	Stop arm	HB7776	6744101
116	Pause slider assembly	RT1392	7287138	157	Rubber for stop arm	HB7777	6560234
117	Spring for pause slider	RB6192	6300074	158	"E" ring for stop arm		7230901
118	Pause lock arm	HB7769	7286962	159	Polyester washer		7771761
119	Spring for pause lock arm	RB6193	6307933	160	Ground spring	RB6202	6309832
120	Spacer		7574665	161	R & P combination head	H4346	5444511
121	FT bind screw-3mm ϕ X12mm		8641412	162	Erase head	H4347	5445161
122	Spring	RB6194	6300142	163(S10, S12)	Leaf switch (MOTOR, PAUSE)	S8166	5603091
123	Slider cover	HB7770	6741485	164 (S9)	Leaf switch (STOP)	S8167	5632712
124	Spacer for slider cover	HB2959	7574591	165	Diode W06A		5330341
125	FT bind screw-3mm ϕ X10mm for slider cover mounting		8641410	166	Carbon film 22Kohm \pm 5% 1/8F		0123949
126	Spring for lock plate	HB6195	6307871				

RADIO SHACK  **A DIVISION OF TANDY CORPORATION**

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