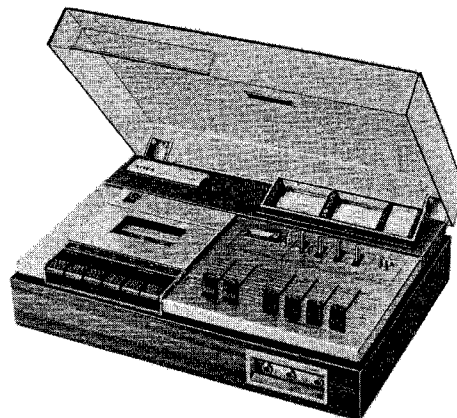


STEREO CASSETTE DECK WITH DOLBY SYSTEM AND DNL

MODEL **AD-1800** EE, UK

AIWA®

(SERVICE MANUAL)



Set using ISO screws

DATE OF ISSUE 25/12/1975

SPECIFICATIONS

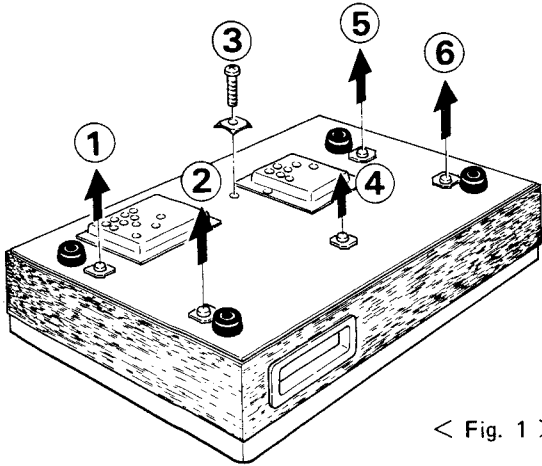
Type:	Hi-Fi stereo cassette tape deck with Dolby system and DNL	LINE (IN):	Max. input sensitivity: 50 mV Impedance: 100 k ohms or higher
Recording track system:	4-track, 2-channel	DIN (IN):	Max. input sensitivity: 0.1mV/k ohm Impedance: 2.7 k ohms
Circuit:	1 IC, 62 transistors, 43 diodes, 2 FET, 3 LED	Output:	
Power source:	"EE" model AC 110 ~ 120V/220 ~ 240V switch changeable, 50/60 Hz "UK" model AC 120V/240V switchable 50 Hz	LINE (OUT):	Standard output level: 0.775V (0 VU) Optimum load impedance: 50 k ohms or higher
Power consumption:	24W	DIN (OUT):	Standard output level: 0.775V (0 VU) Optimum load impedance: 50 k ohms or higher
Frequency response:	LH tape, 30 ~ 14,000 Hz Fe-Cr tape, 30 ~ 18,000 Hz CrO ₂ tape, 30 ~ 17,000 Hz	Headphone:	Load impedance: 8 ohms
SN ratio:	65 dB (Dolby NR/DNL ON, Fe-Cr tape)	Dimensions (w.h.d):	423 x 152 x 295 mm (with dust cover)
Wow & flutter:	0.05% (WRMS)	Weight:	7.5 kg (with dust cover)
Tape speed:	4.76 cm/sec. (1-7/8 ips) ±1.0%	Accessories:	Dust cover x 1 Tape cassette x 1 DIN cord x 1 Head cleaning pole x 1
Recording system:	AC bias		
Erasing system:	AC erase		
Rewind time:	95 sec. (w/ C-60)		
FF time:	95 sec. (w/ C-60)		
Usable cassette tape:	C-30, C-60, C-90, (C-120)		
Motor:	AC hysteresis synchronous motor		
Head:	Ferrite guard head (FGH)		
Input:			
MIC:	Max. input sensitivity: 0.25 mV Impedance: 200 ohms ~ 10k ohms		

- The external design and the specifications are subject to change without prior notice.
- Dolby Noise Reduction Circuit Under License from Dolby Laboratories Incorporated.
- The word "Dolby" and "Double-D" symbol are trademarks of Dolby Laboratories Incorporated.

DISASSEMBLY INSTRUCTIONS

1. To Remove Wooden Cover

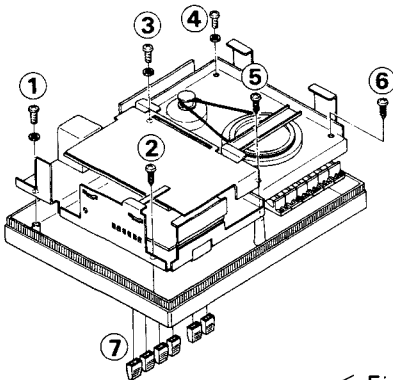
- (1) Remove six screws, (1) through (6). (Refer to Fig. 1)



< Fig. 1 >

2. To Remove Chassis

- (1) Pull off the six control knobs. (7)
- (2) Remove six screws, (1) through (6). (Refer to Fig. 2)



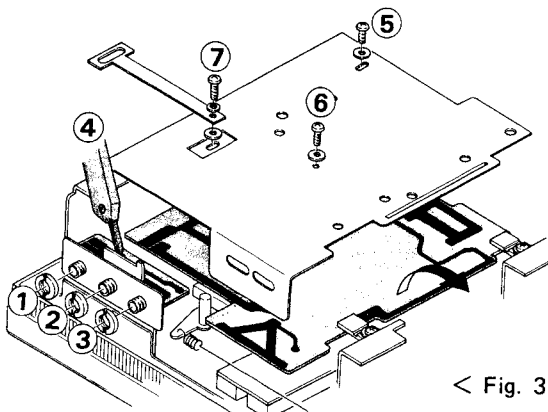
< Fig. 2 >

3. To Remove Jack-1 Circuit Board

- (1) Remove three nuts ((1) through (3)) and unsolder lead of capacitor (4). (Refer to Fig. 3)

4. To Remove Rec./Pb Circuit Board

- (1) Remove three screws, (5) through (7). (Refer to Fig. 3)



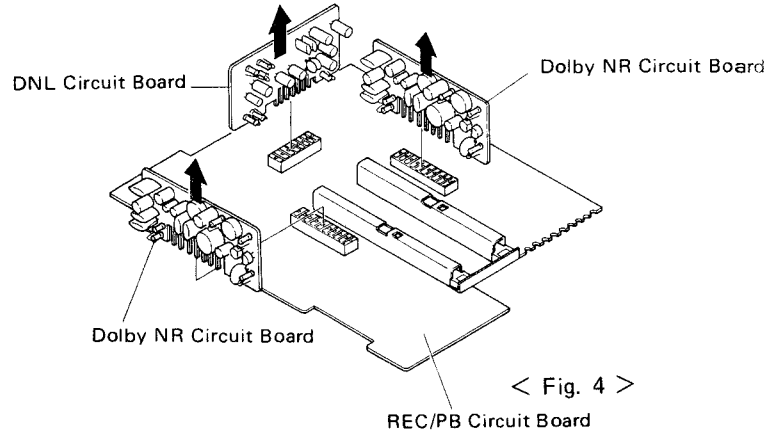
< Fig. 3 >

5. To Remove Dolby-NR Circuit Board.

- (1) Pull off the Dolby-NR circuit board. (Refer to Fig. 4)

6. To Remove DNL Circuit Board

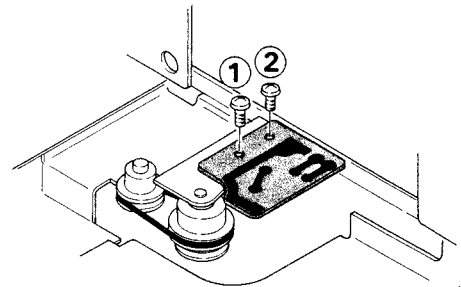
- (1) Pull off the DNL circuit board. (Refer to Fig. 4)



< Fig. 4 >

7. To Remove Auto-Stop Detectron Circuit Board.

- (1) Remove two screws, (1) and (2). (Refer to Fig. 5)



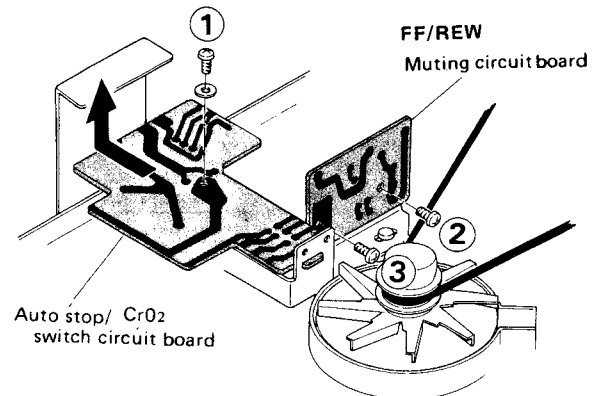
< Fig. 5 >

8. To Remove Auto-Stop/CrO₂ Switch Circuit Board

- (1) Remove one screw (1). (Refer to Fig. 6)

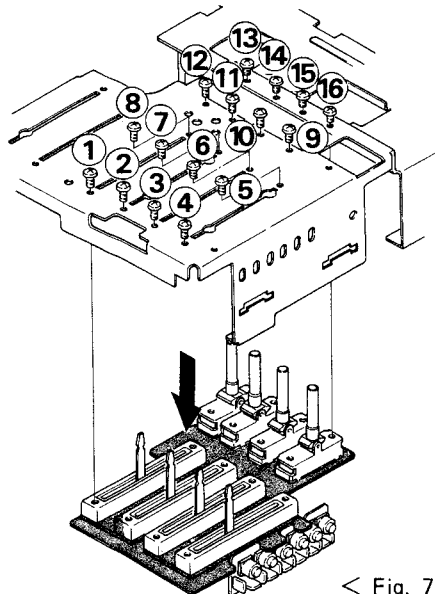
9. To Remove FF/REW Muting Circuit Board

- (1) Remove two screws, (2) and (3). (Refer to Fig. 6)



< Fig. 6 >

- 10. To Remove Switch/Volume Circuit Board**
 (1) Remove sixteen screw, (1) through (16).
 (Refer to Fig. 7)

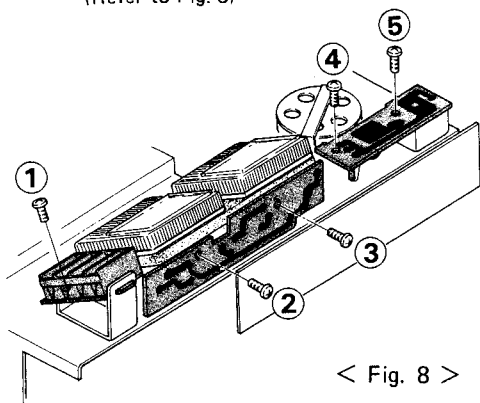


< Fig. 7 >

- 11. To Remove LAMP Circuit Board**
 (1) Remove one screw, (1).
 (Refer to Fig. 8)

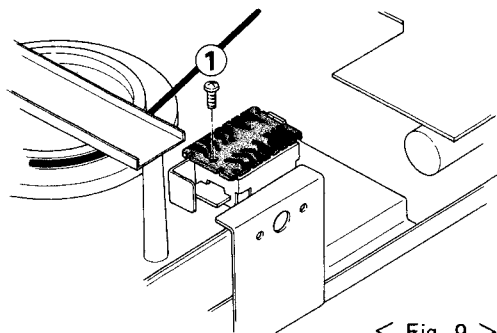
- 12. To Remove Meter Circuit Board**
 (1) Remove two screws, (2) and (3).
 (Refer to Fig. 8)

- 13. To Remove Bias Osc Circuit Board**
 (1) Remove two screws, (4) and (5).
 (Refer to Fig. 8)



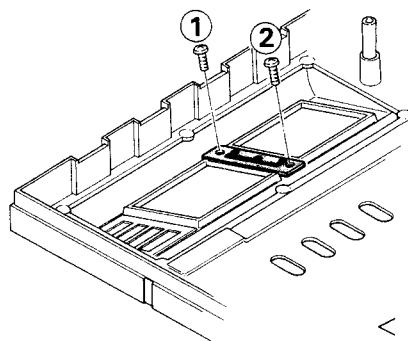
< Fig. 8 >

- 14. To Remove Stop Muting Circuit Board**
 (1) Remove one screw (1).
 (Refer to Fig. 9)



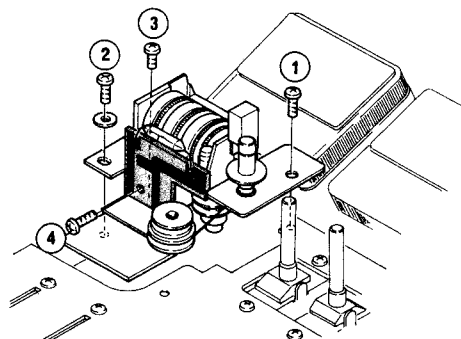
< Fig. 9 >

- 15. To Remove LED Circuit Board**
 (1) Remove two screws, (1) and (2).
 (Refer to Fig. 10)



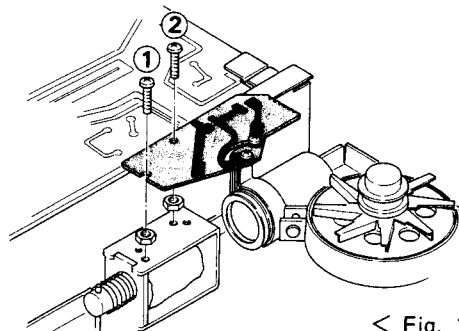
< Fig. 10 >

- 16. To Remove Counter Lamp Circuit Board**
 (1) Remove four screws, (1) through (4).
 (Refer to Fig. 11)



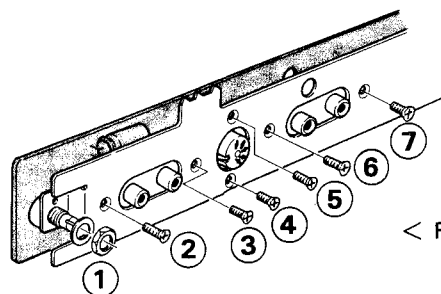
< Fig. 11 >

- 17. To Remove Motor Circuit Board**
 (1) Remove two screws, (1) and (2).
 (Refer to Fig. 12)



< Fig. 12 >

- 18. To Remove Jack-2 Circuit Board**
 (1) Remove the nut and washer (1).
 (2) Remove six screws, (2) through (7).
 (Refer to Fig. 13)

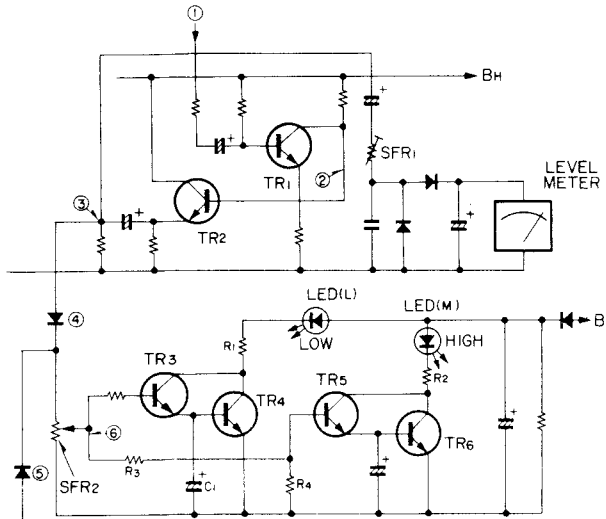


< Fig. 13 >

NEW CIRCUIT DESCRIPTION

2. Point Peak Indicators

- Peak indicator circuit diagram



< Fig. 14 >

Presently employed VU meters are capable of indicating continuous wave signals of approximately 300msec. They are incapable of following faster pulse type signals however, resulting in an indicated value considerably lower than the actual level. Thus if the recording level is set in reference to the VU meters, an instantaneous high level input can cause an over level, resulting in distortion.

Peak indicators are provided for preventing this situation and are capable of indicating to about 1msec instantaneous inputs. Earlier single point designs (a single peak indicator which lights at +6VU) however, were ambiguous and difficult to interpret. The indicator was not supposed to light, but if it did not light, the level could not be determined.

The 2 point peak indicator system employed in the AD-1800 represents an improvement over earlier systems. Two peak indicators are used with different lighting levels (+2.5~3VU and +6~7VU), allowing more accurate peak indication.

- Circuit Description

Input signal (1) is amplified approximately 10dB by TR1. Previously, it passed from (2) through the SFR and was rectified and connected to the meter. However, since the meter load is heavy, TR1 output voltage became varied by SFR adjustment, preventing connection to the peak indicator circuit.

TR2 is therefore inserted at that point as an emitter follower, reducing meter amplifier output impedance in order not to influence meter and peak indicators.

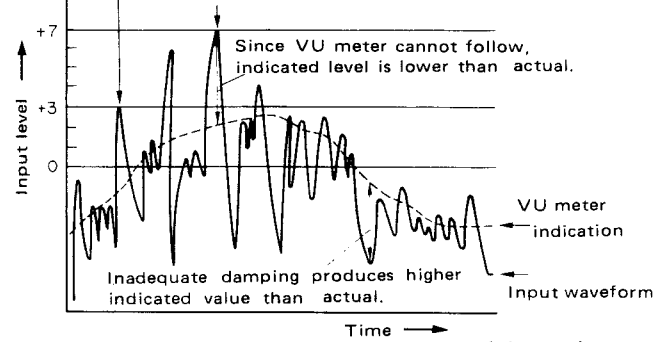
The signal to the meter amplifier is divided at (3). The peak indicator signal is rectified at (4) and the voltage is applied to SFR2. At this point the signal from the other channel is mixed, while the peak indicator lighting level is determined by adjusting SFR2.

When (6) reaches a specified voltage, TR3 and TR4 Darlington become on, and LED (L) lights. C1 is inserted at this point to provide a certain degree of lighting time, since instantaneous lighting with a pulse signal input would be difficult to observe.

The voltage at (6) is divided at R3 & R4. By a higher level than TR3 on level, TR5 and TR6 become on. R1 and R2 are inserted as protector resistors to control the current flow through the LED.

Low level peak lamp lights

High level peak lamp lights



< Fig. 15 >

- Recording Level Settings According to Tape

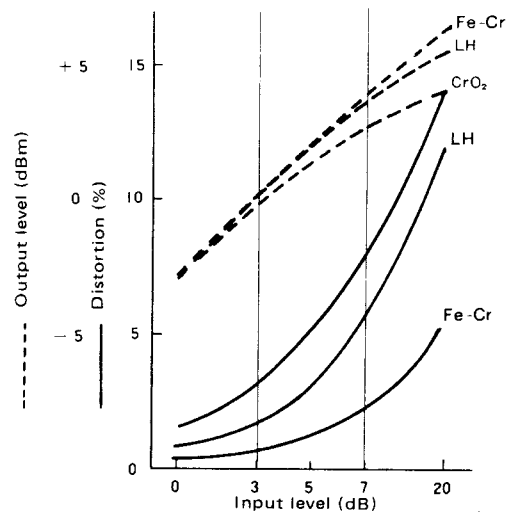
Distortion can be suppressed to below 3% and optimum recording performed by setting the recording levels as follows.

LH Tape: Lights occasionally at +3dB; does not light at +7dB

Fe-Cr Tape: Lights often at +3dB; lights occasionally at +7dB

CrO₂ Tape: Does not light at either +3dB or +7dB

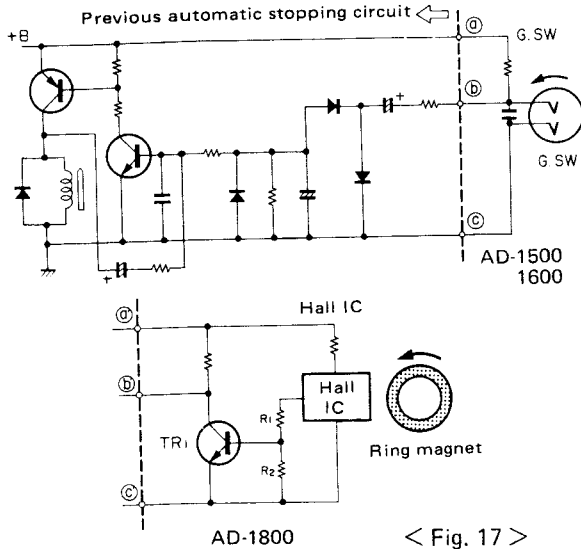
Input and output level distortion characteristics



< Fig. 16 >

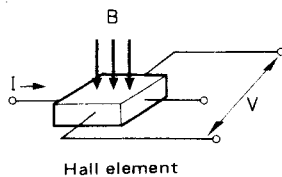
■ Hall IC Tape End Detector Circuit

In order to remedy the drawbacks (noise, life, maintenance, etc.) of earlier mechanical contact type tape end detectors (G. switch and reed switch), a magnet and Hall IC are employed in the AD-1800.



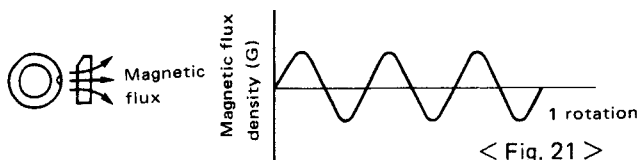
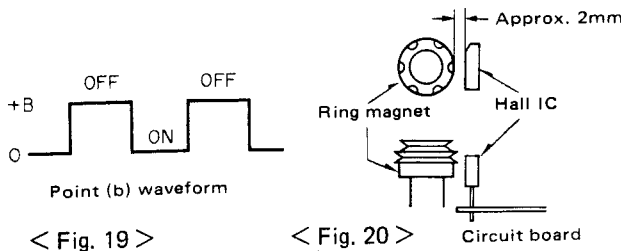
● Automatic Stopping Circuit Diagram

When a magnetic field is applied at right angles to the current flow in a Hall element, an emf (Hall voltage) becomes generated at right angles to the magnetic field and current flow. As the output of the Hall element is small (0.3V at $I = 20\text{mA}$, $B = 1000$ Gauss), the AD-1800 element is incorporated into an IC amplifier (more than 2.5V at $I_{cc} = 13.5\text{mA}$, $B = 350$ Gauss).

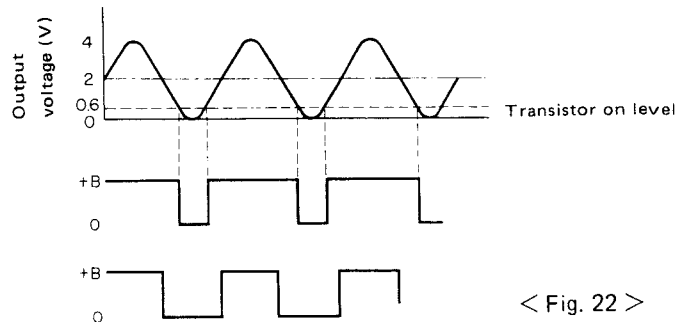


● Operating Description

The waveform at point (b), shown in Fig. 19, pertains to previous automatic stopping circuits. An identical waveform can also be obtained from a ring magnet and Hall IC. Six magnetic poles are provided at the outer circumference of the ring magnet, producing more than 500 Gauss at 2mm from the outer circumference. The magnetic flux pattern through 1 rotation of the ring magnet is shown in Fig. 21.



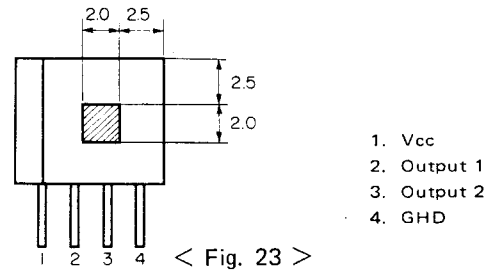
The flux variation through ring magnet rotation (coupled with counter pulley rotation) imparted to the Hall IC results in an output as shown in Fig. 22.



If this voltage were applied directly to TR1 base, the transistor on and off times would differ, since the voltage is 2V even with 0 magnetic flux. R1 and R2 perform dividing in order to equalize on and off times. TR1 collector output voltage waveform (at b) becomes the waveform applied to (b).

● Hall IC Handling Cautions

The Hall element is located within the IC as illustrated in Fig. 23. If the magnet position becomes disturbed, or its distance increased, the IC output declines. Caution is therefore needed.



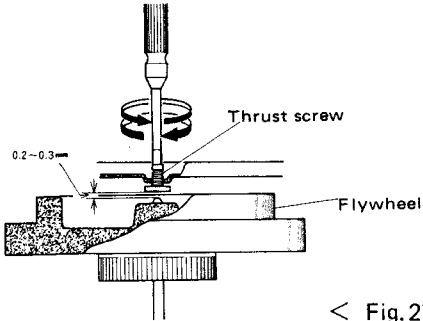
Specified position is approximately 2mm from magnet.

ADJUSTMENTS

■ **Mechanical Section**

1. Thrust Adjustment

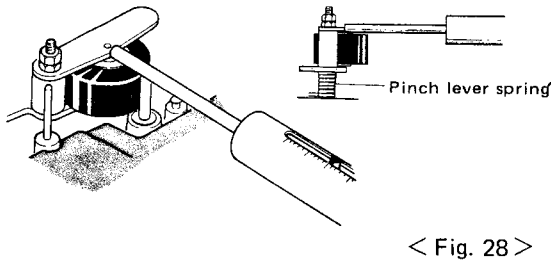
- 1) Turn thrust screw to move flywheel assembly vertically to obtain 0.2~0.3mm thrust. (Refer to Fig. 27).



2. Pinch Pressure

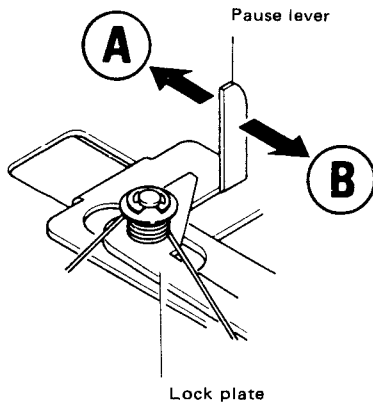
- 1) With set in play mode, apply 500g cylindrical tension gage to pinch lever center. Press slowly and measure pinch pressure when pinch roller separates from capstan. (Refer to Fig. 28).

Rating: 400 ±50g



3. Pause Timing

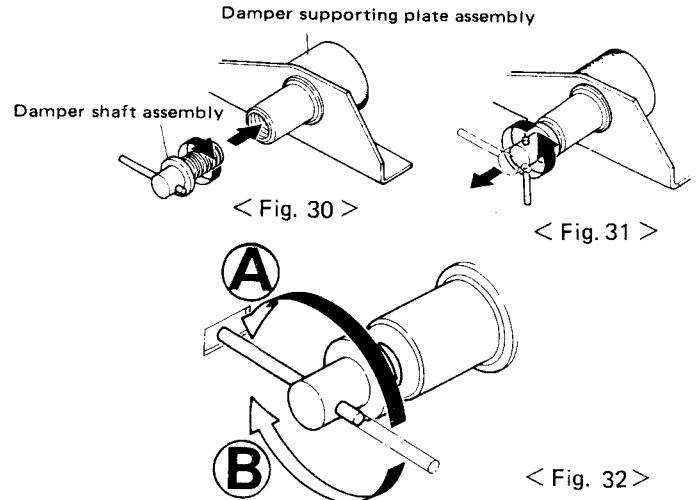
- 1) Press FWD button for play mode, then slowly press pause button. Observe stopping times of take up reel hub and pinch roller rotations.
- 2) If pinch roller quickly separates from capstan, while tape is running, adjust by bending pause lever in direction B.
- 3) If pinch roller separation is delayed and tape winds onto pinch roller without take up reel hub rotation, adjust by bending pause lever in direction A. (Refer to Fig. 29).



4. Supporting Plate Assembly Adjustments

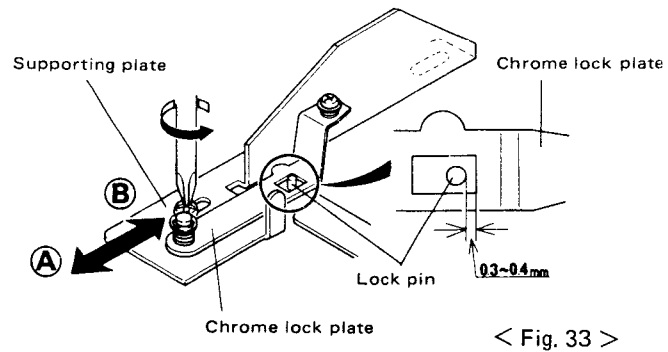
4-1 Damper Adjustments

- 1) Screw damper shaft assembly fully into damper supporting plate assembly (Refer to Fig. 30).
- 2) When damper shaft assembly is turned 2 rotations clockwise, observe that shaft pin becomes positioned toward square hole of supporting plate (Refer to Fig. 31).
- 3) If shaft pin is in range A, turn counter-clockwise to adjust; if in range B turn clockwise (Refer to Fig. 32).



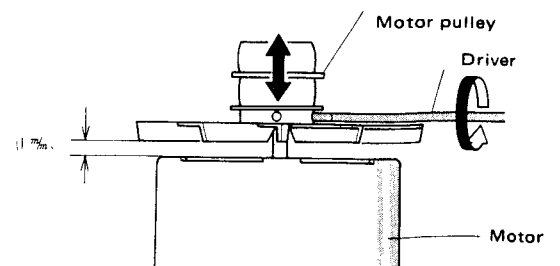
4-2 Supporting Plate Adjustment

- 1) Lock pin of tape selector lever should engage with chrome lock plate when cassette elevating plate raises during eject. Loosen supporting plate screw and adjust by moving in A-B direction. Adjust so that lock pin spacing from right side of chrome plate square hole becomes 0.3~0.4mm (Refer to Fig. 33).



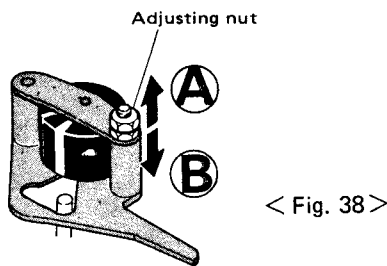
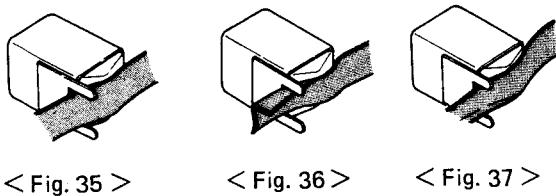
5. Motor Pulley Thrust

- 1) Adjust by raising or lowering motor pulley so that space between pulley rim and motor becomes 1mm (Refer to Fig. 34).



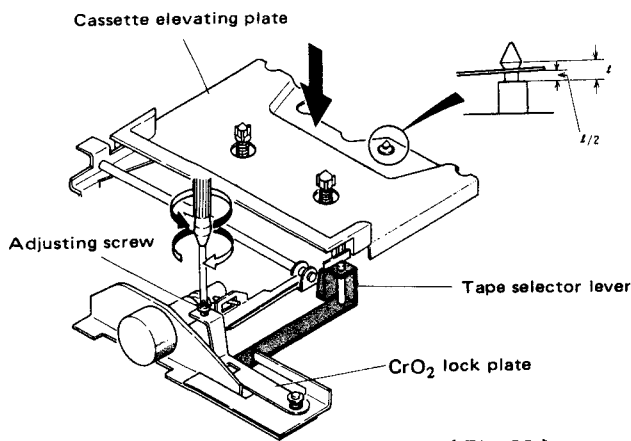
6. Tape Running

- 1) Adjust so that tape does not contact tape guide when running (Refer to Fig. 35).
- 2) If tape contacts upper portion of guide (Fig. 36), move adjusting nut in direction A (Refer to Fig. 38).
- 3) If tape contacts lower portion of guide (Fig. 37), move adjusting nut in direction B (Refer to Fig. 38).



7. CrO₂ Lock Plate

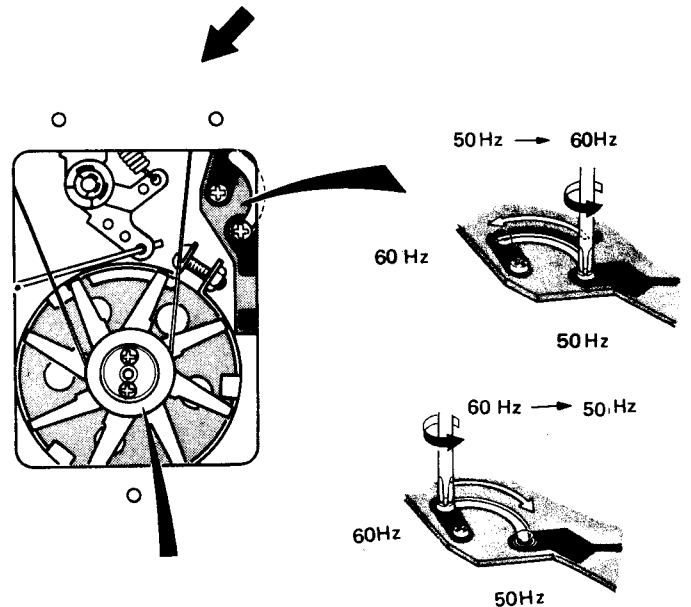
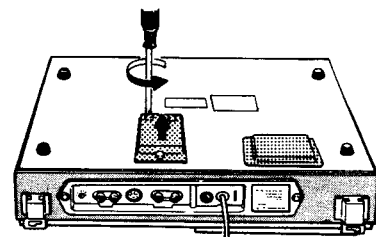
- 1) Confirm that CrO₂ lock plate separates from tape selector lever when cassette elevating plate is in 1/2 range.
- 2) If it fails to separate, adjust by turning CrO₂ lock plate adjusting screw clockwise or counter-clockwise to obtain separation in the 1/2 range. Apply screw locking compound after adjusting. (Refer to Fig. 39)



CYCLE CONVERSION

Conversion Steps

1. Observe that POWER switch is OFF and AC cord unplugged from power outlet.
 2. Turn the set upside down, take out 3 screws from the motor cover, and remove the motor cover.
 3. Disengage belt from motor pulley and temporarily position it on the motor fan securing screw.
 4. Take out 2 motor pulley setscrews and remove motor pulley.
 5. Turn motor pulley upside down and reinstall it with setscrews.
 6. Engage belt on lower portion of motor pulley.
 7. Install motor cover.
- The thicker side of the motor pulley upward is for 60 Hz operation, while for 50 Hz operation, the thinner side of the pulley should be upward.



8. Tape Speed

3kHz ±1%
Use a standard test tape, TTA-111A (3kHz) or equivalent.

9. Wow and Flutter

0.05% (WRMS) at PB
Use a standard test tape, TTA-11A (3kHz) or equivalent.

10. Take-up Torque

40 ~ 60g-cm

11. FF and Rewind Torque

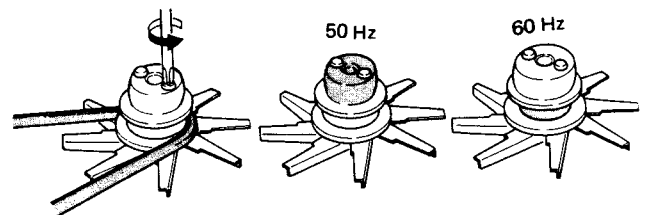
90 ~ 160g-cm

12. FF and Rewind Time

90 ±10 sec. (at C-60 cassette tape)

13. Automatic shut-off Time

4 ±1 sec.



ADJUSTMENTS

■ ELECTRICAL SECTION

● Preparations for Adjustment

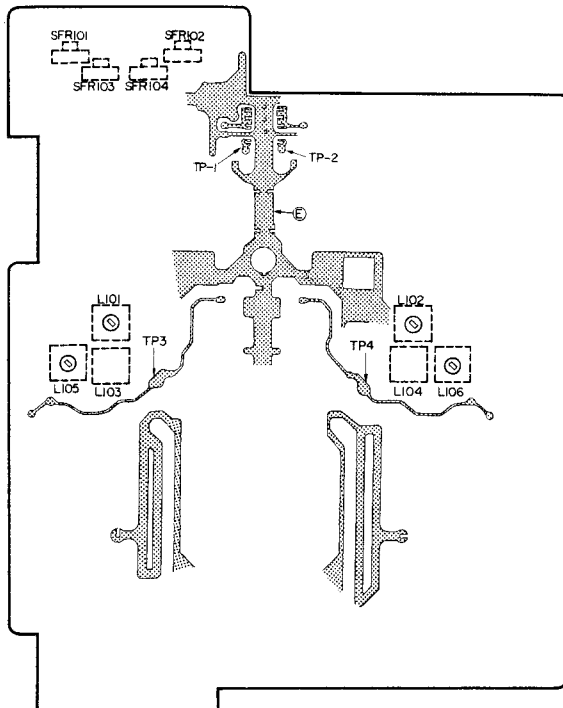
1. Required Equipment

- Low frequency oscillator (signal generator)
- Variable resistance attenuator
- VTVM
- Oscilloscope
- Resistors: 600Ω, 100kΩ, 27kΩ, 5.6kΩ
- Test tapes: TTA-117E/TTA-161/TTA-119D (CrO₂)/TTA-119E (FeCr)/TTA-119A (LH)

2. Adjustment Cautions

- 1) Before adjusting, clean heads, capstan and pinch roller with gauze moistened in alcohol.
- 2) Demagnetize record/play head with head eraser.
- 3) Thoroughly demagnetize adjusting driver.
- 4) Set playback volume to maximum.
- 5) Except where otherwise indicated, set DOLBY-NR and DNL switches to OFF, employ MIC jacks for input and LINE OUT for output.
- 6) Standard inputs (0dB = 0.775V)
MIC Jack: 65dB
LINE-IN: 20dB
- 7) Connect 100kΩ load resistor to LINE-OUT.

● Main Component Locations



PLAYBACK ADJUSTMENTS

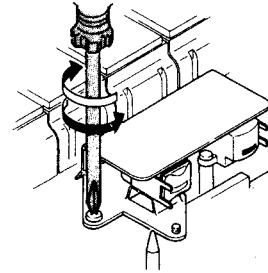
1. Azimuth

TAPE SELECTOR: CrO₂

Play 10kHz portion of test tape TTA-117E (CrO₂) and turn azimuth adjusting screw to obtain maximum output from left and right channels.

Do not rotate screw more than 1/4 turn.

After adjusting, apply locking compound to screw.



2. Playback Frequency Response

TAPE SELECTOR: CrO₂

Play test tape TTA-117E (CrO₂) and adjust high frequency trimmer resistor SFR101 for equal outputs at 1kHz and 10kHz. In the same manner, adjust SFR102 for the right channel.

Rating: 1kHz~10kHz flat

3. Level Meters

With set in record mode, apply 400Hz ±25dB signal. Adjust LINE IN volume for 580mV output from TP-3.

Adjust meter trimmer resistor SFR201 so that level meter indicates the Dolby mark. In the same manner, measure TP-4 and adjust SFR202 for the right channel.

4. Playback Level

TAPE SELECTOR: LH

Play test tape TTA-161 and adjust playback output trimmer resistor SFR103 so that level meter indicates the Dolby mark. In the same manner, adjust SFR104 for the right channel.

RECORDING ADJUSTMENTS

1. Bias Trap Coil

TAPE SELECTOR: CrO₂

With set in recording mode, adjust trap coil L107 for minimum voltage at test point TP-5. In the same manner, measure TP-6 and adjust L108 for the right channel.

2. Dolby Trap Coil

TAPE SELECTOR: CrO₂

With set in recording mode, adjust Dolby trap coil L101 for minimum bias leakage to LINE OUT. In the same manner, adjust L102 for the right channel.

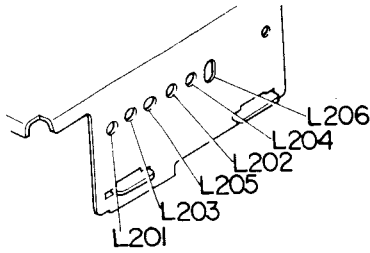
3. Bias Current

TAPE SELECTOR: CrO₂

With set in recording mode, adjust bias current trimmer TC701 for 2mV (200μA) voltage at test point TP-1. In the same manner, measure TP-2 and adjust TC202 for the right channel.

Rating: 2mV (200μA)

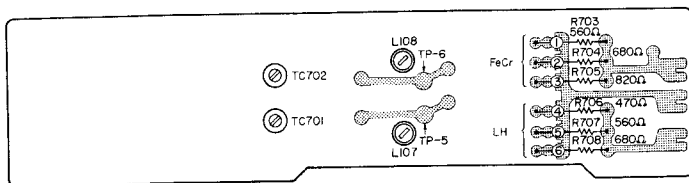
4. Record/Playback Frequency Response



- 1) **CrO₂**
 TAPE SELECTOR: CrO₂
 Test Tape: TTA-119D
 Apply 500Hz (-25dB) signal via LINE IN jack and adjust line volume for 77.5mV output at LINE OUT. Record 500Hz and 5kHz signals on test tape TTA-119D and play back. Confirm that the 1kHz level is within ±0.5dB in respect to the 500Hz level.
 If the 5kHz level is higher, set the bias current higher than 2mV.
 If the 5kHz level is lower, set the bias current lower than 2mV
 Perform adjustment in the same manner as described in Step 3 Bias Current adjustment.
 Record and play back 500Hz, 5kHz, 10kHz and 15kHz signals. Adjust CrO₂ hi peaking coil L201 so that with respect to the 500Hz signal, 5kHz and 10kHz become within ±0.5dB and 15kHz within ±1dB. In the same manner, adjust L202 for the right channel.
- 2) **Fe-Cr**
 Test Tape: TTA-119E
 TAPE SELECTOR: Fe-Cr
 Record and play back with TTA-119E test tape as described for CrO₂ in step 1. If results are not within ratings, adjust as follows.

Playback Level (1kHz ref.)	Connection	Bias Voltage
5kHz level higher	(1)	Increases
5kHz level lower	(3)	Decreases

Short one of the circuit patterns among 1~3.



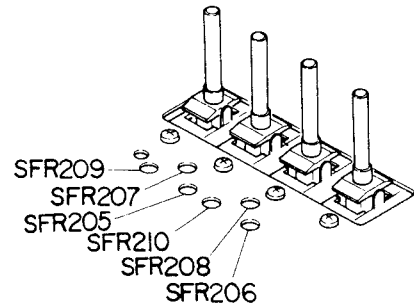
Record and play back 500Hz, 10kHz and 15kHz signals. Adjust FeCr hi peaking coil L203 so that with reference to the 500Hz level, 10kHz becomes within ±0.5dB and 15kHz within ±1dB. In the same manner, adjust L204 for the right channel.

- 3) **LH-NORMAL**
 Test Tape: TTA-119A
 TAPE SELECTOR: LH-NORMAL
 Record and play back with TTA-119A test tape as described for CrO₂ in step 1. If results are not within ratings, adjust as follows.

Playback Level (1kHz ref.)	Connection	Bias Voltage
5kHz level higher	(4)	Increases
5kHz level lower	(6)	Decreases

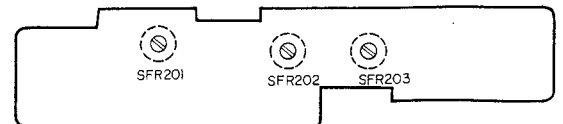
Record and play back 500Hz and 10kHz signals. Adjust LH hi peaking coil L205 so that with reference to the 500Hz level, 10kHz becomes within -1.5 +1dB. In the same manner, adjust L206 for the right channel.

5. Record/Playback Level



- 1) **CrO₂**
 Test Tape: TTA-119D
 TAPE SELECTOR: CrO₂
 With set in recording mode, apply 2kHz 77.5mV signal. Record and play back this signal on TTA-119D test tape. Adjust CrO₂ recording current trimmer resistor SFR205 so that playback level becomes 77.5mV ±0.25dB. In the same manner, adjust SFR206 for the right channel.
- 2) **Fe-Cr**
 Test Tape: TTA-119E
 TAPE SELECTOR: Fe-Cr
 Employ TTA-119E test tape and perform the same operation as for CrO₂ above. Adjust SFR207 for the left channel, and SFR208 for the right channel.
- 3) **LH-NORMAL**
 Test Tape: TTA-119A
 TAPE SELECTOR: LH-NORMAL
 Employ TTA-119A test tape and perform the same operation as for CrO₂. Adjust SFR209 for the left channel, and SFR210 for the right channel.

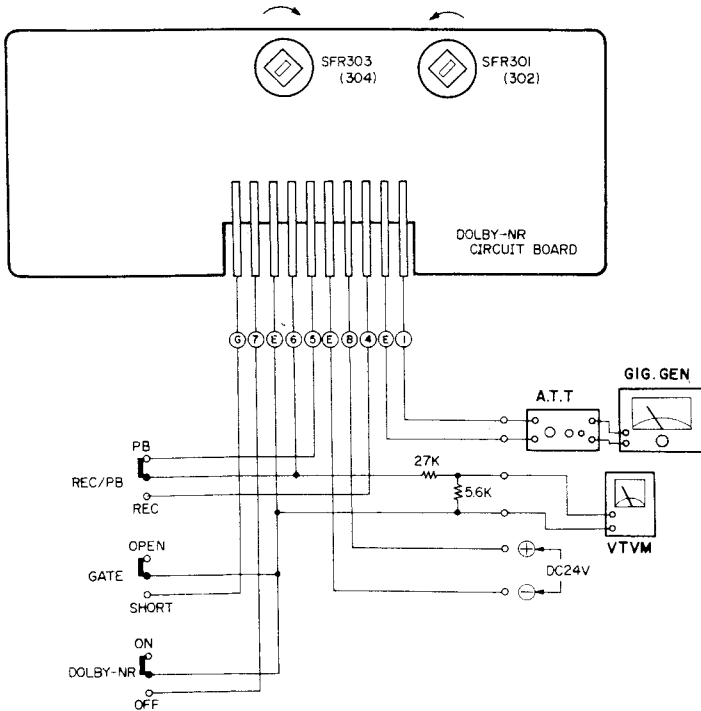
6. **Peak Indicator**
 With set in record mode, apply 1kHz -27dB signal. Adjust LINE IN volume for OVU indication on level meter. Set attenuator to -21dB (level meter indicates +6dB) and turn the peak indicator trimmer resistor SFR203 to the point where the red peak indicator just extinguishes. Next set attenuator to -20dB and confirm that red indicator lights. Vary attenuator in the -24dB area and read the value at the point where yellow indicator just extinguishes.
 Rating: -25dB ±1.5dB



7. **MPX Filter**
 With set in record mode, apply 19kHz signal to LINE IN. Adjust LINE IN volume for 0.77V at LINE OUT. With MPX filter switch of Dolby NR ON, adjust MPX filter coil L105 so that 19kHz signal becomes less than -30dB. In the same manner, adjust L106 for the right channel.

DOLBY NR ADJUSTMENTS

• Main Component Locations and Connections



- 1) Remove Dolby NR circuit board from set and connect as shown in drawing.
- 2) Turn SFR301 (302) and SFR303 (304) fully in the directions shown by arrows.
- 3) Position switches as follows.
 REC/PB: PB
 GATE: OPEN
 DOLBY-NR: OFF
- 4) Apply 400Hz signal and adjust attenuator so that output becomes 7.6mV, then read attenuator value.
Rating: -49dB ±1dB
- 5) Set REC/PB switch to REC and confirm output level difference of ±0.25dB. Next at frequencies of 100Hz, 1kHz and 10kHz, confirm an output level difference of ±1dB.
- 6) Position switches as follows.
 REC/PB: PB
 GATE: SHORT
 DOLBY-NR: OFF
- 7) Apply 5kHz signal and adjust attenuator so that output becomes 7.6mV, then read attenuator value.
Rating: -49 ±1dB
 Next set DOLBY-NR switch to ON and adjust SFR303 (304) for 2.4mV output.
- 8) At the above (step 7) condition, set GATE switch to OPEN and adjust SFR301 (302) for 3mV output.
- 9) After adjusting, apply locking compound to trimmer resistors.

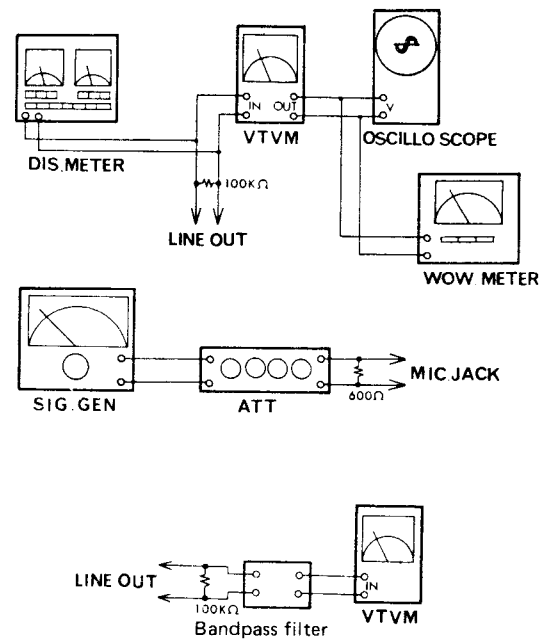
ELECTRICAL MEASUREMENTS

PREPARATIONS FOR MEASURING

1. Required Equipment

- Low frequency oscillator
- Variable resistance attenuator
- Oscilloscope
- 600Ω and 100kΩ resistors
- Distortion meter
- Wow meter
- 1kHz bandpass filter
- Test tapes: TTA-116/TTA-114/TTA-119D (CrO₂)/TTA-119E (Fe-Cr)/TTA-119A (LH)

2. Connection



3. Measuring Cautions

- 1) Before measuring, demagnetize rec/play and erase heads with head eraser and clean heads with gauze moistened in alcohol.
- 2) Set playback volume to maximum.
- 3) Standard inputs (0dB = 0.775V)
 MIC jack 65dB
 LINE-IN 20dB
- 4) Connect 100kΩ load resistor to LINE OUT.

1. Playback Output

Play test tape TTA-161 and measure output level.
Rating: 1.03V ±0.5dB

2. Recording/Playback Distortion

Apply 400Hz signal via MIC jack and adjust attenuator for OVU indication on set VU meter. Record this signal on test tape and measure playback distortion.
Ratings:

Test Tape	TAPE SELECTOR	Distortion
TTA-119D (CrO ₂ tape)	CrO ₂	Less than 2.5%
TTA-119E (Fe-Cr tape)	Fe-Cr	Less than 1.0%
TTA-119A (LH tape)	LH-NORMAL	Less than 1.5%

3. Recording/Playback Frequency Response

Apply 1kHz signal via MIC jack and adjust attenuator for 75mV at LINE OUT. Read the input level. On test tape record 60Hz, 100Hz, 1kHz, 10kHz, and 15kHz signals in sequence and play back. With 1kHz level as reference, measure each frequency level deviation.

Ratings:

Frequency	Test Tape TTA-119D TAPE SELECTOR CrO ₂	Test Tape TTA-119E TAPE SELECTOR Fe-Cr	Test Tape TTA-119A TAPE SELECTOR LH-NORMAL
60Hz	+2 -3 dB	+2 -3 dB	+2 -3 dB
100Hz	±1 dB	±1 dB	±1 dB
1kHz	0 dB	0 dB	0 dB
10kHz	±1 dB	±1 dB	±1 dB
15kHz	+1 -3 dB	+1 -3 dB	-
12.5kHz	-	-	+1 -3 dB

For LH-NORMAL, measure at 12.5kHz instead of 15kHz.

4. Recording/Playback S/N

Apply 400Hz signal via MIC jack and adjust attenuator for OVU indication on set VU meter. Short input and record with no signal. Play back and measure ratio between signal and no-signal portions.

Ratings:

TEST TAPE	TAPE SELECTOR	DOLBY-NR OFF S/N (dB)	DOLBY-NR ON S/N (dB)
TTA-119D (CrO ₂)	CrO ₂	-45	-49
TTA-119E (FeCr)	Fe-Cr	-40	-49
TTA-119A (LH)	LH-NORMAL	-43	-48

5. Erase Efficiency

TAPE SELECTOR: CrO₂

Apply 1kHz signal via MIC jack and adjust attenuator for OVU indication on set VU meter. On test tape TTA-119D, record signal decreased by +10dB of this attenuation value. Rewind half the recorded portion, set recording volume to minimum and erase. Play back tape and measure signal and erased portion levels. Measure playback level through a 1kHz bandpass filter.

Rating: -65dB

6. Channel Separation

TAPE SELECTOR: LH-NORMAL

Apply 1kHz signal via right channel MIC jack and adjust attenuator for OVU indication on set VU meter. Record and play back with TTA-119A test tape. Measure left channel leakage level with respect to the right channel output level. Measure playback level through 1kHz bandpass filter.

Rating: More than 30dB

7. Crosstalk

TAPE SELECTOR: LH-NORMAL

Turn tape over and measure right channel leakage level with respect to right channel output level of signal recorded for channel separation measurement (step 6 above). Employ bandpass filter.

Rating: More than 60dB

8. Dolby NR Effectiveness

TAPE SELECTOR: LH-NORMAL

Play test tape TTA-114 and measure DOLBY NR switch ON level difference with respect to DOLBY NR switch OFF level.

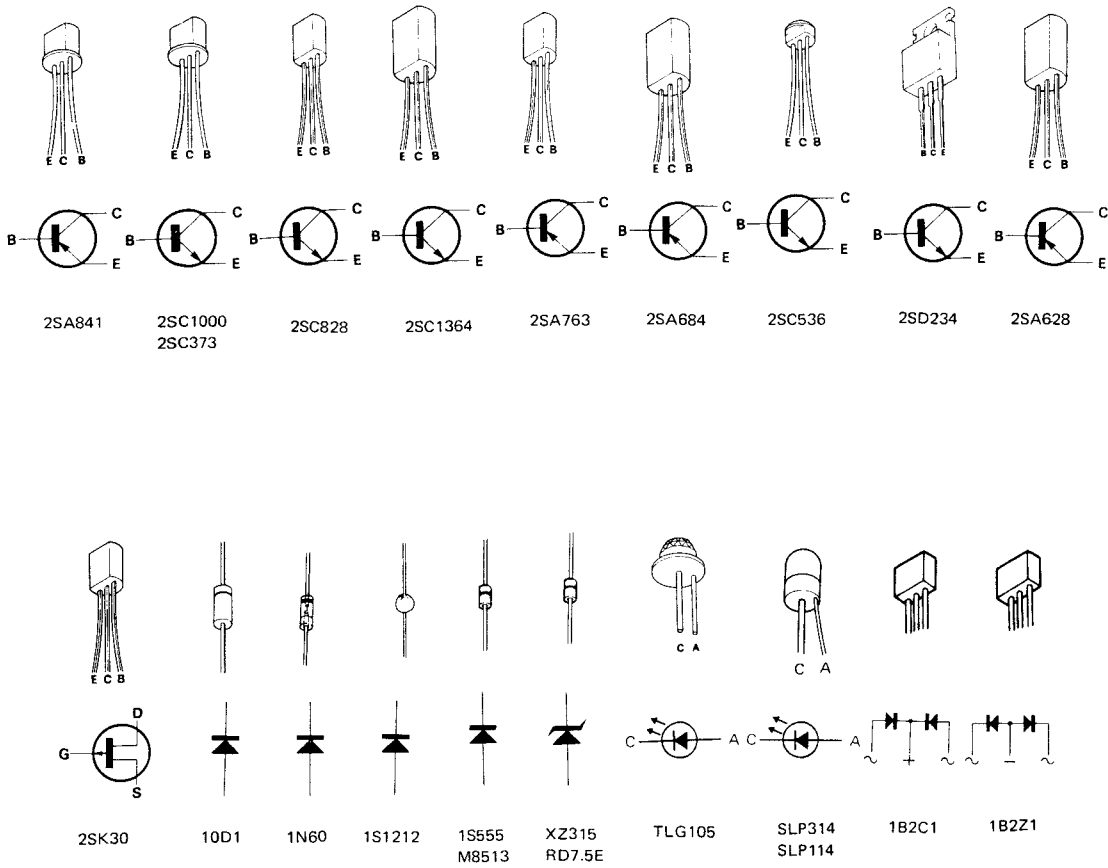
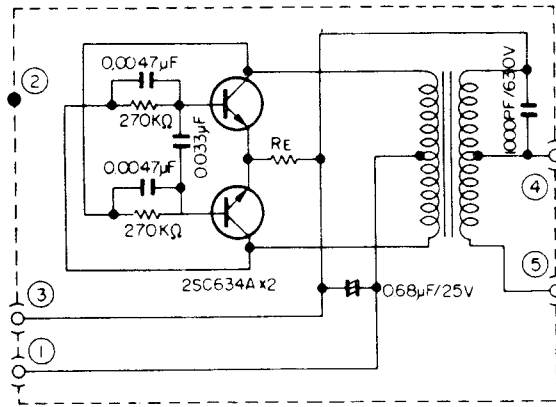
Rating: -4 ±1dB

9. DNL Effectiveness

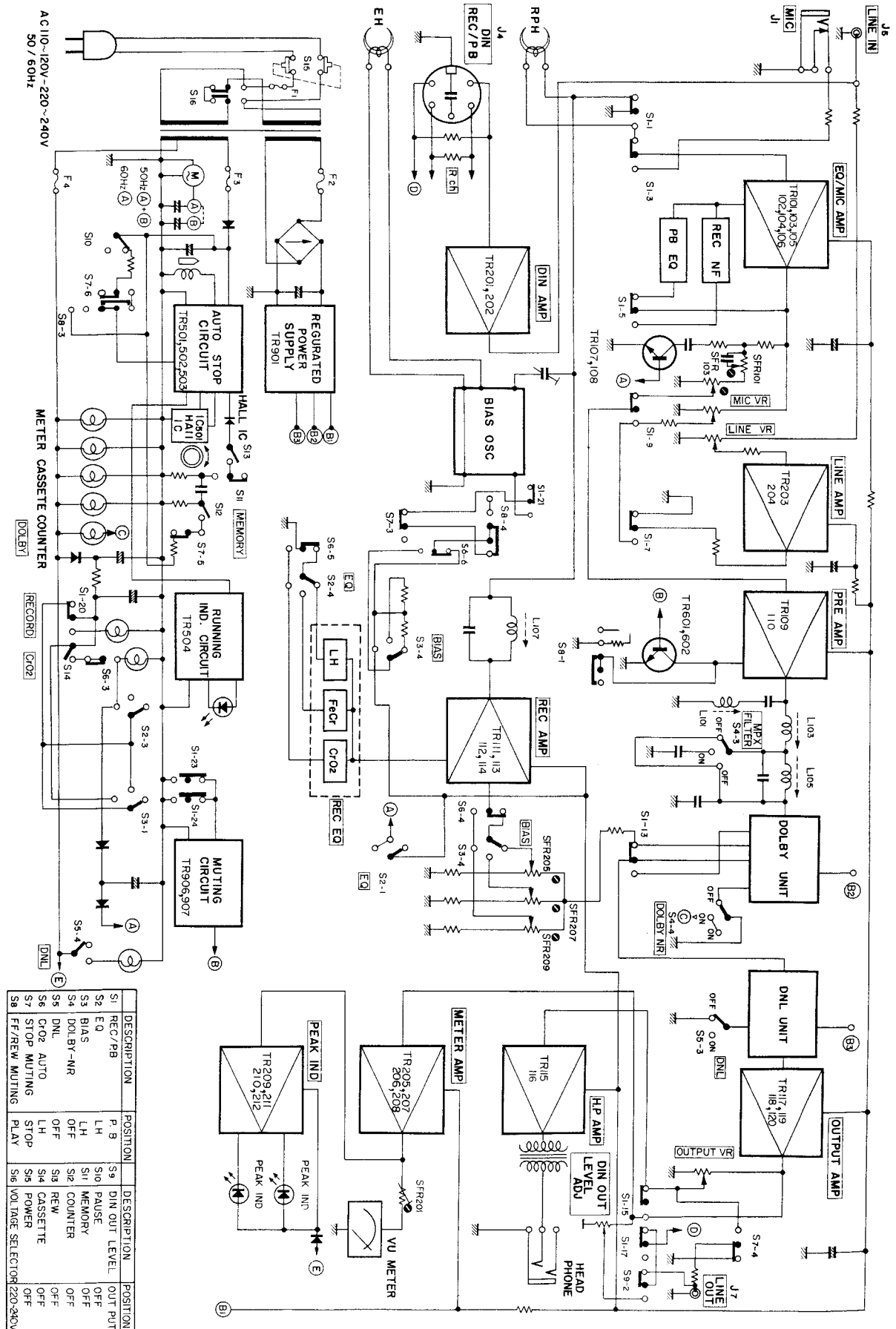
Install test tape and set for playback mode, then set for pause. Measure noise level difference with DNL switch ON in respect to noise level with DNL switch OFF.

Rating: More than 3dB

SCHEMATIC DIAGRAM—OSC UNIT

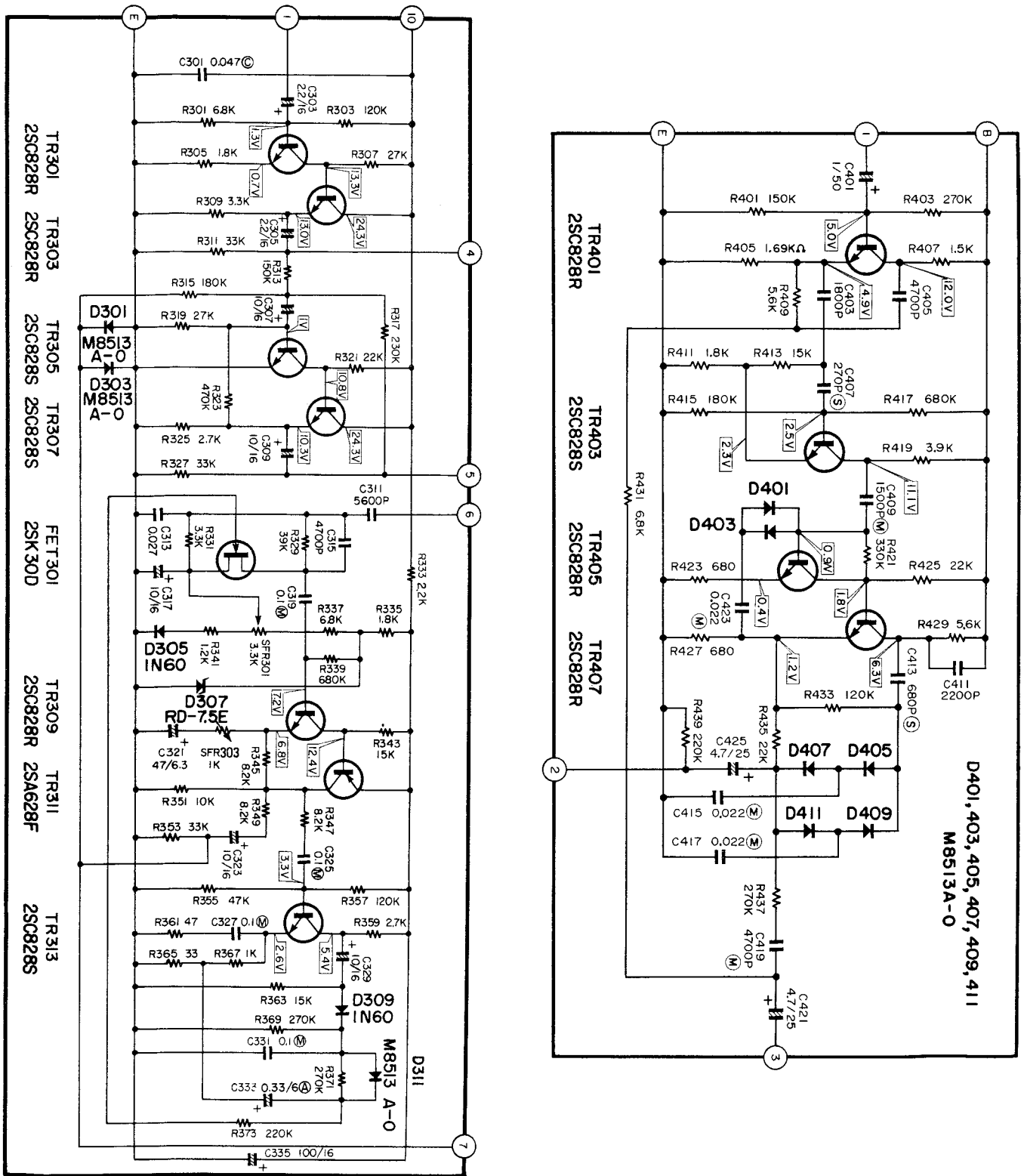


BLOCK DIAGRAM

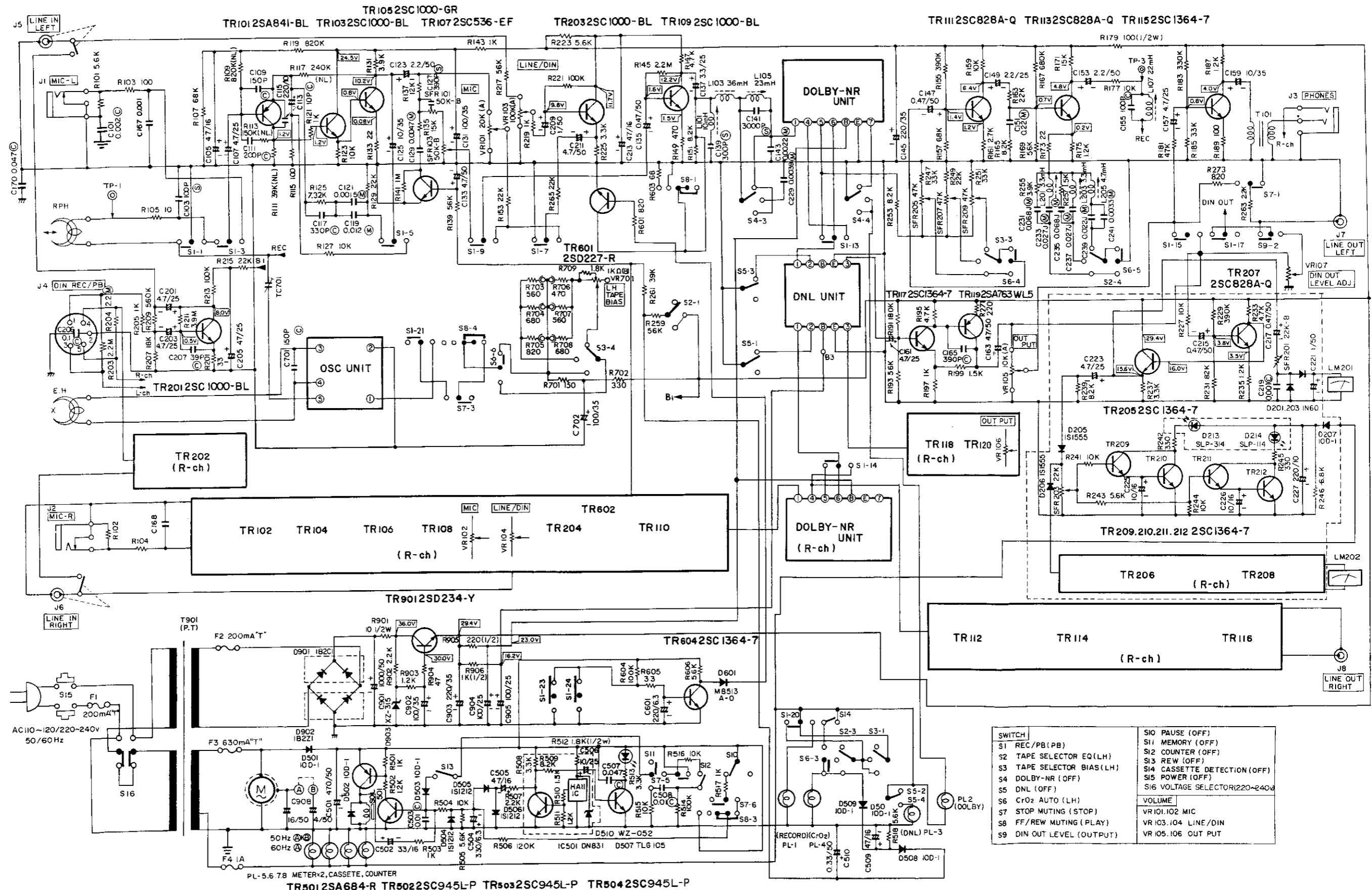


DESCRIPTION	POSITION	DESCRIPTION	POSITION
S1 REC/RB	P-9	S9 DIN OUT LEVEL	OFF
S2 EQ	LH	S10 PAUSE	OFF
S3 BIAS	LH	S11 MEMORY	OFF
S4 DOLBY-NR	OFF	S12 COUNTER	OFF
S5 DNL	OFF	S13 REW	OFF
S6 CROZ AUTO	OFF	S14 CASSETTE	OFF
S7 STOP MUTING	LH	S15 POWER	OFF
S8 FF/REW MUTING	STOP	S16 VOLTAGE SELECTOR	220-240V
	PLAY		

SCHMATIC DIAGRAM, DOLBY-NR/DNL

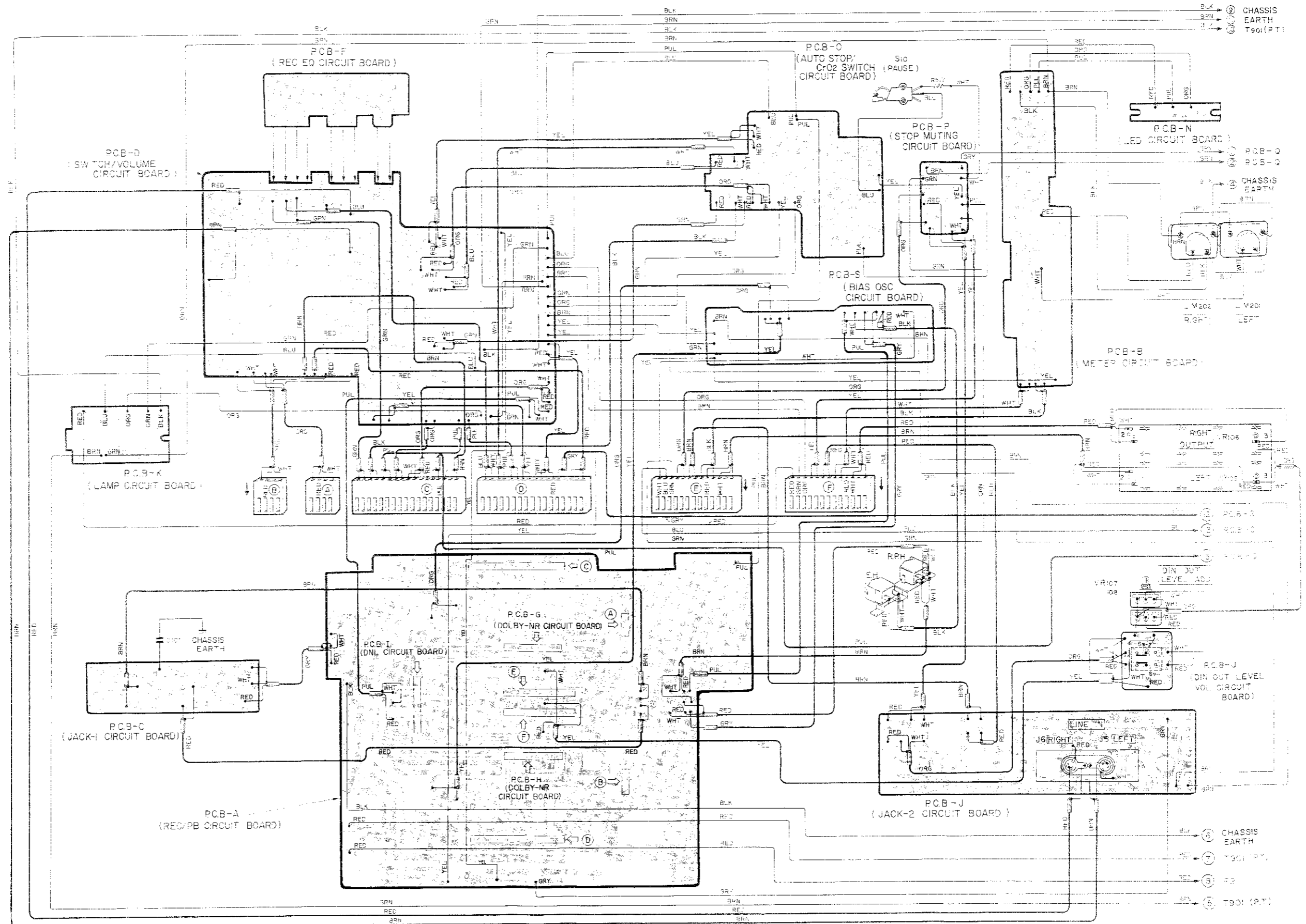


SCHEMATIC DIAGRAM

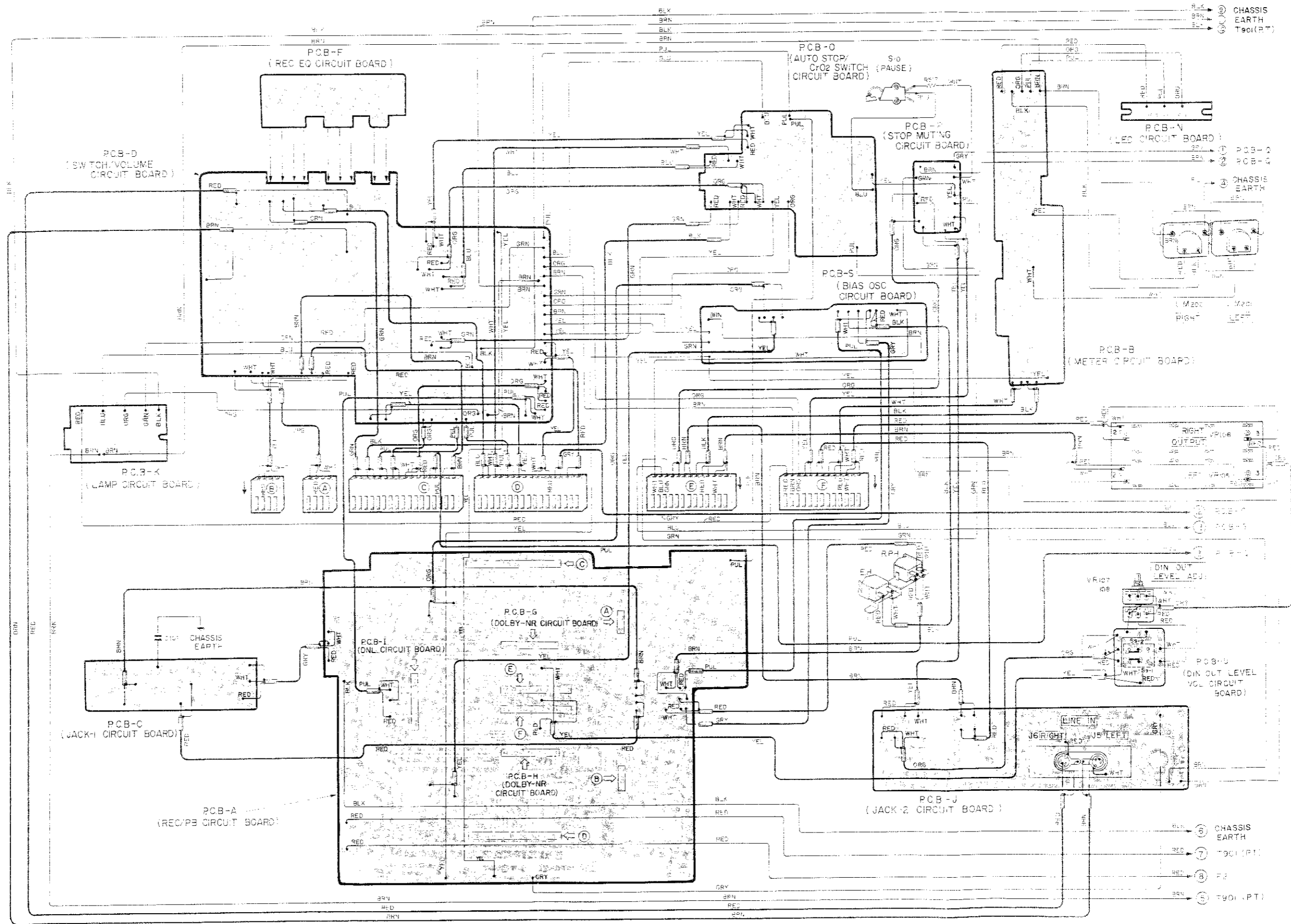


SWITCH	SIO PAUSE (OFF)
S1 REC/PB(PB)	S11 MEMORY (OFF)
S2 TAPE SELECTOR EQ(LH)	S12 COUNTER (OFF)
S3 TAPE SELECTOR BIAS(LH)	S13 REW (OFF)
S4 DOLBY-NR (OFF)	S14 CASSETTE DETECTION (OFF)
S5 DNL (OFF)	S15 POWER (OFF)
S6 C702 AUTO (LH)	S16 VOLTAGE SELECTOR(220-240V)
S7 STOP MUTING (STOP)	VOLUME
S8 FF/REW MUTING (PLAY)	VR101,102 MIC
S9 DIN OUT LEVEL (OUTPUT)	VR103,104 LINE/DIN
	VR105,106 OUT PUT

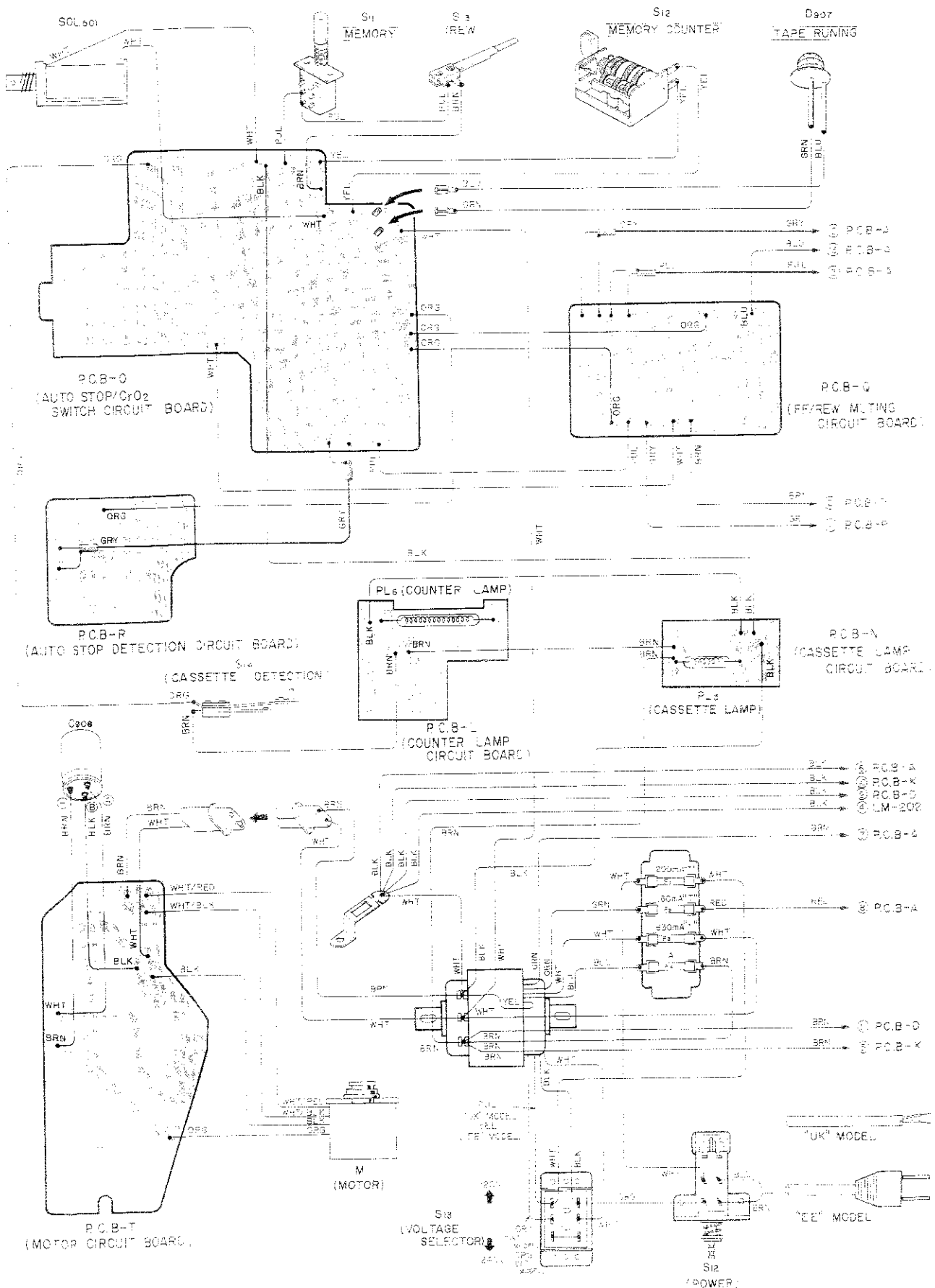
WIRING



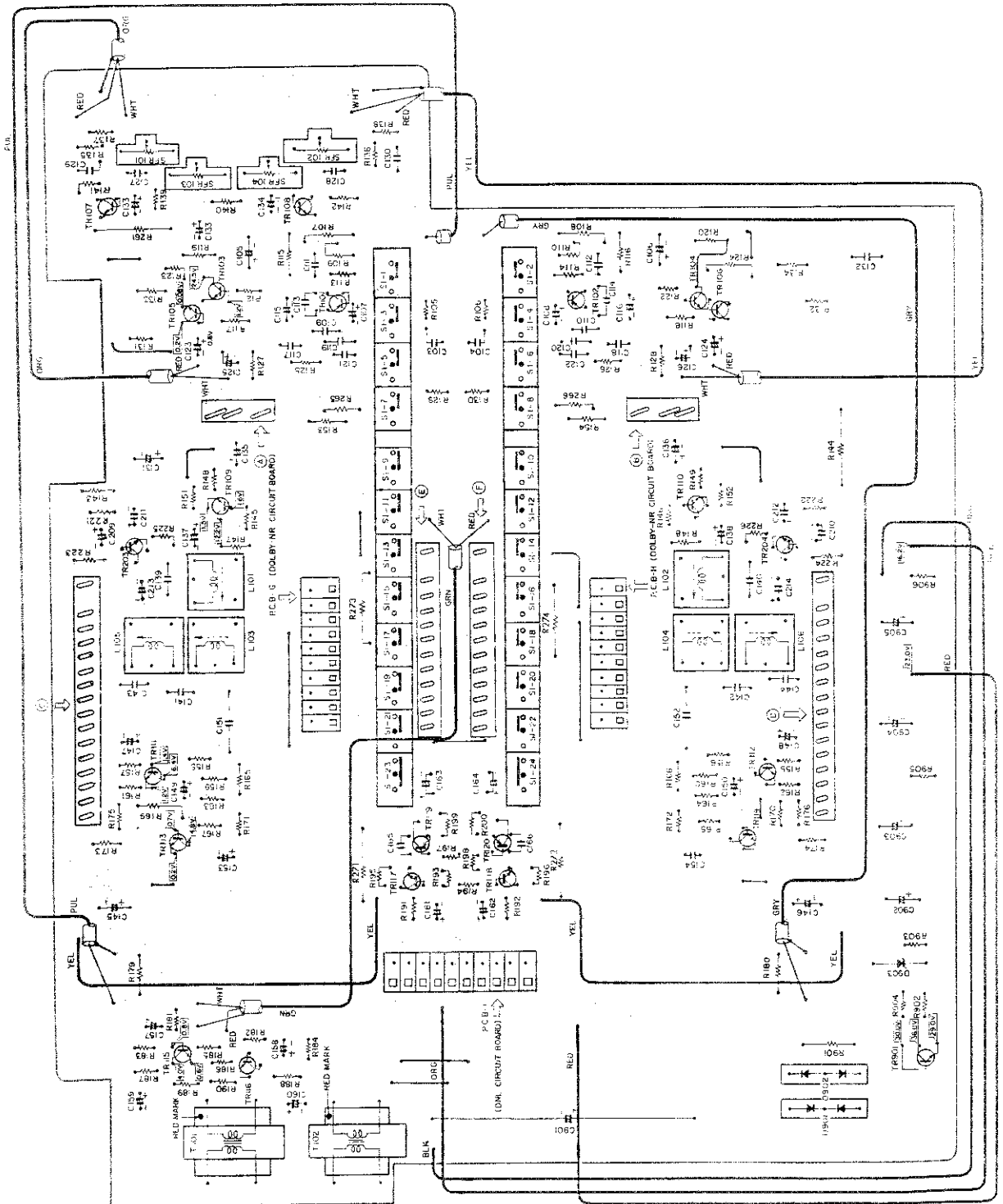
WIRING



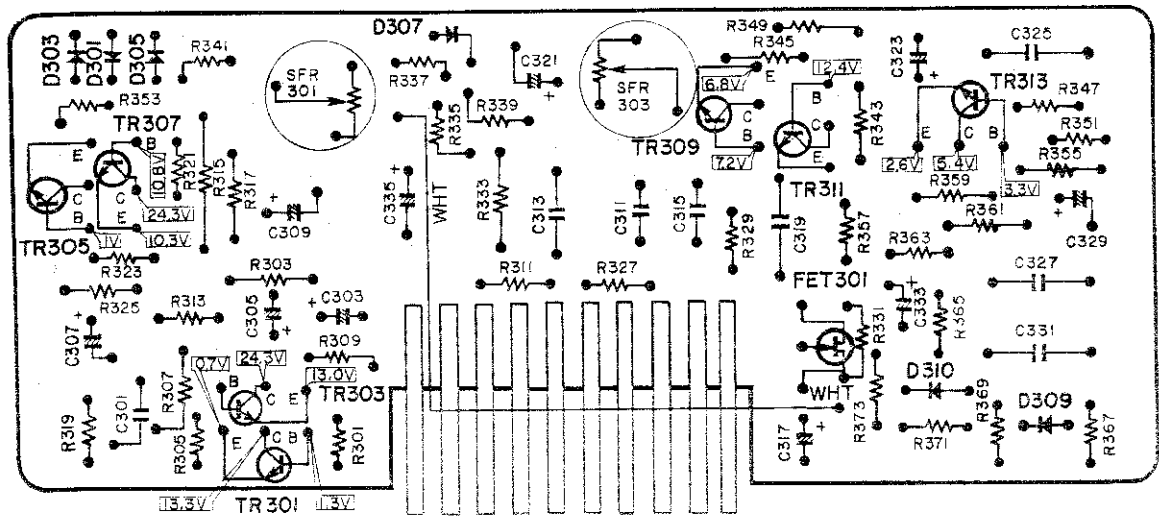
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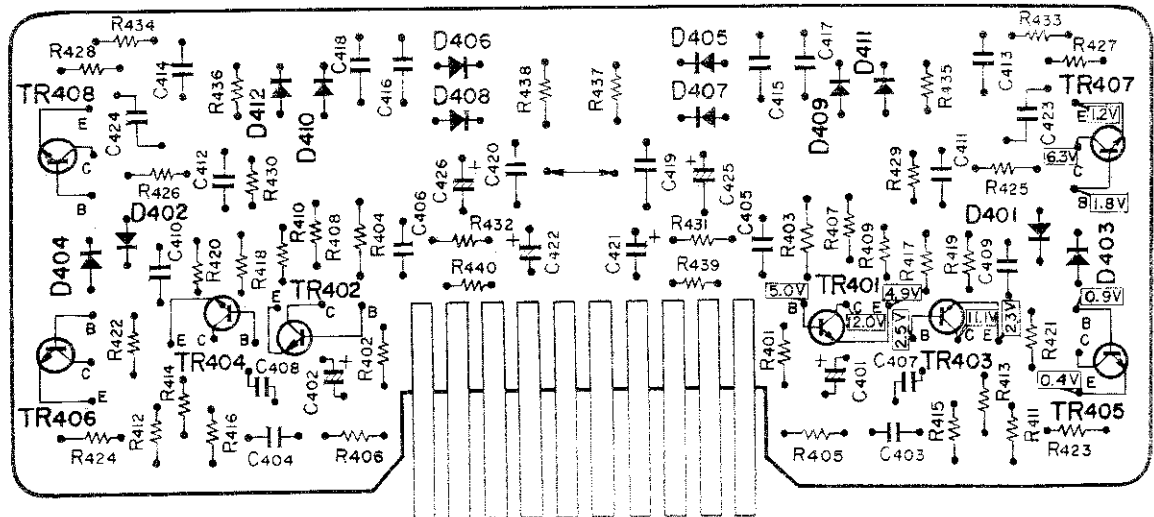
REC/PB CIRCUIT BOARD



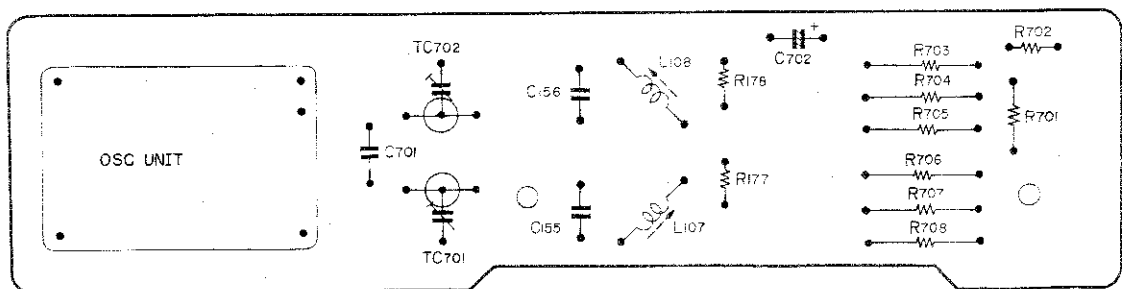
DOLBY-NR CIRCUIT BOARD



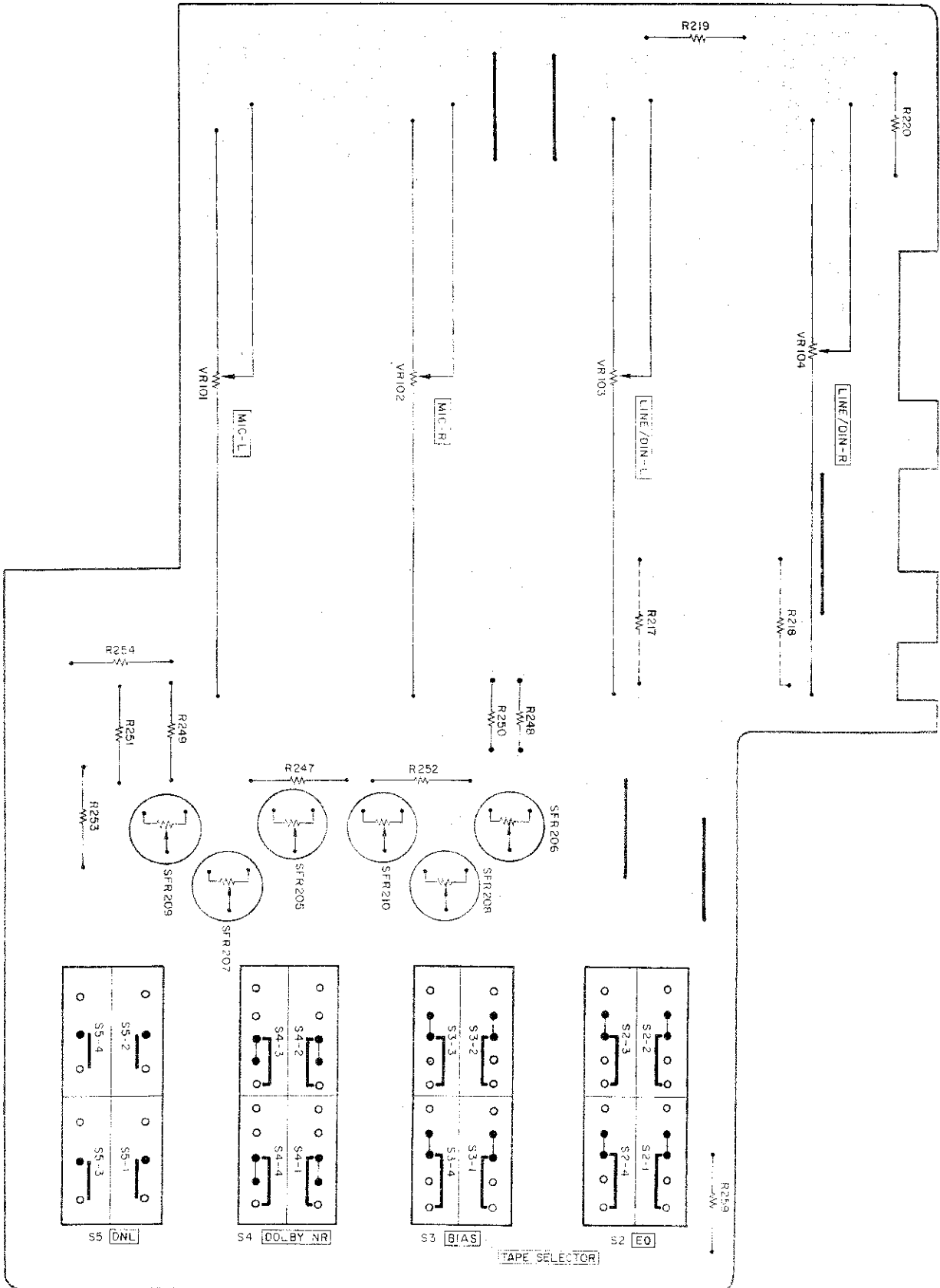
DNL CIRCUIT BOARD



BIAS OSC CIRCUIT BOARD

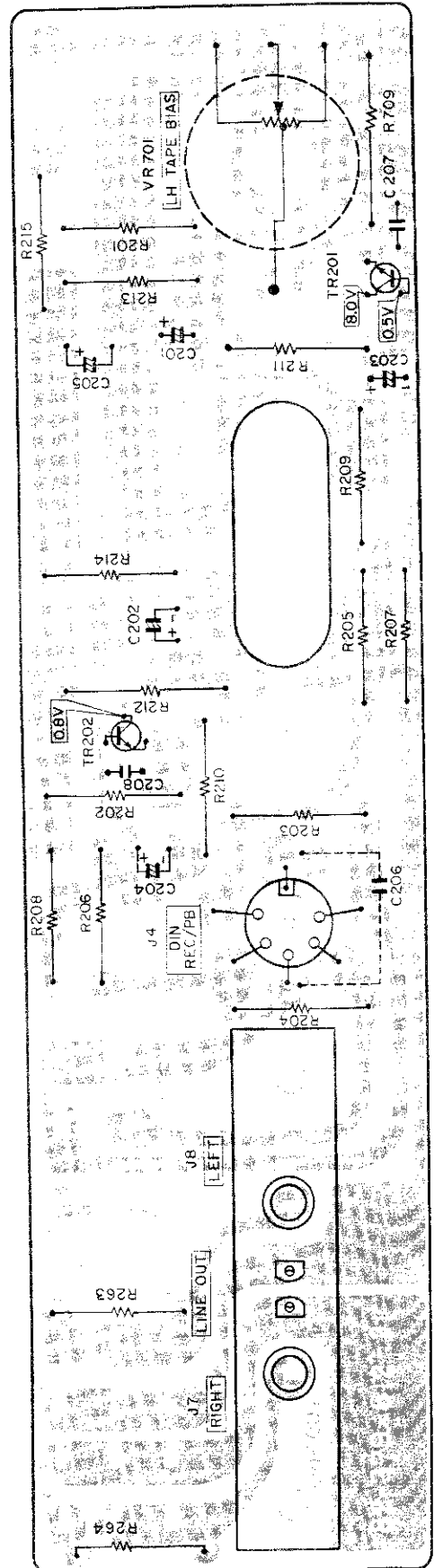
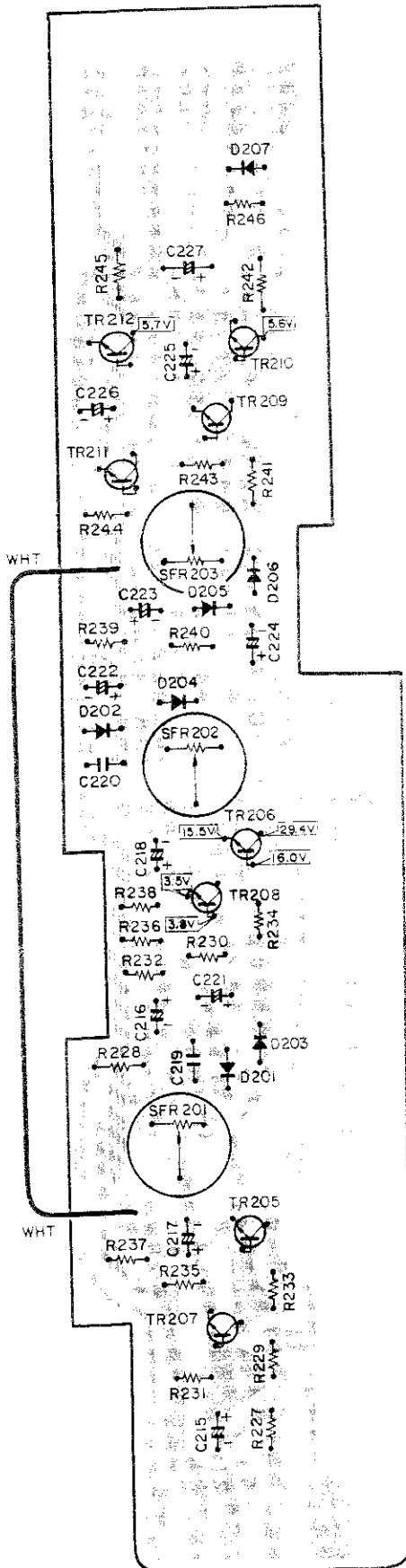


SWITCH/VOLUME CIRCUIT BOARD

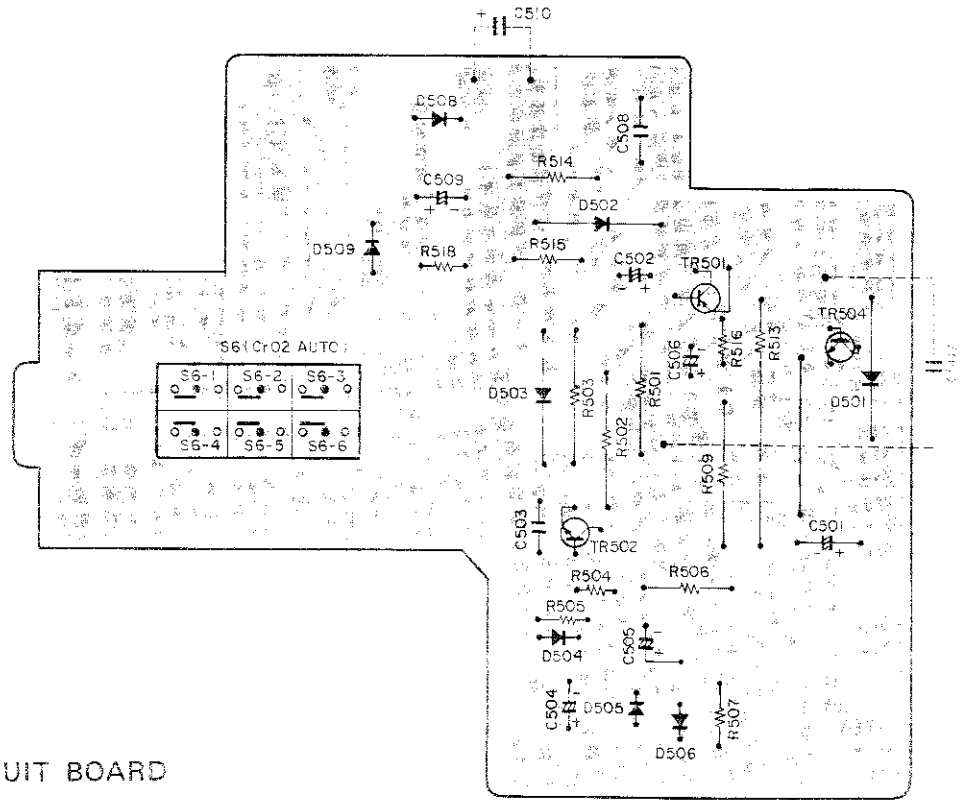


METER CIRCUIT BOARD

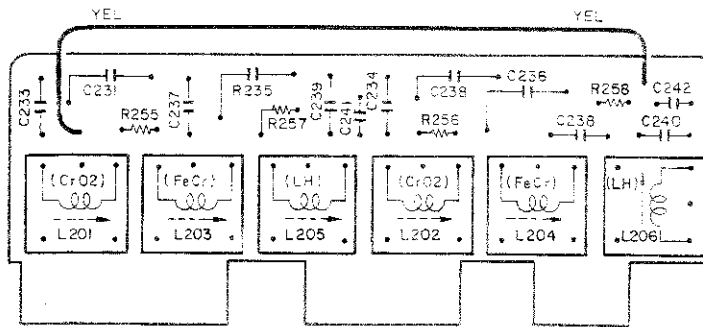
JACK-2 CIRCUIT BOARD



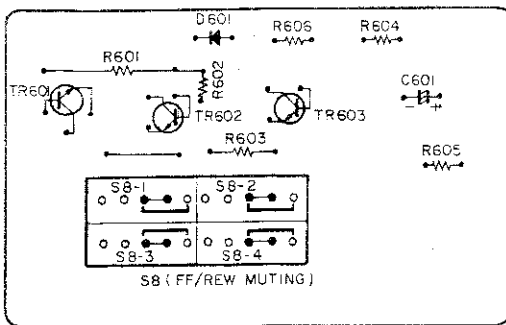
AUTO-STOP/CR₂ SWITCH CIRCUIT BOARD



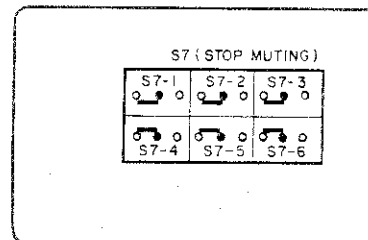
REC EQ CIRCUIT BOARD



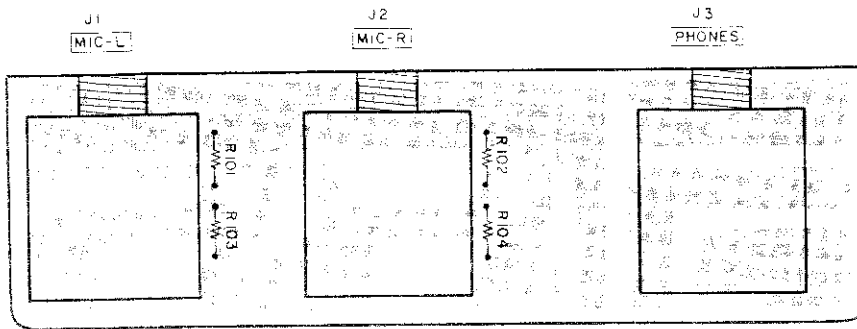
FF/REW MUTING CIRCUIT BOARD



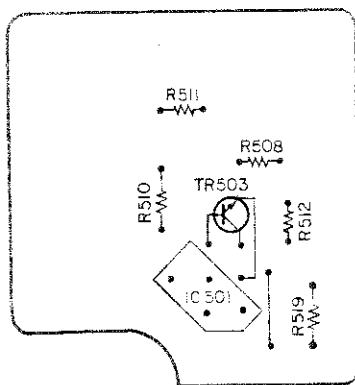
STOP MUTING CIRCUIT BOARD



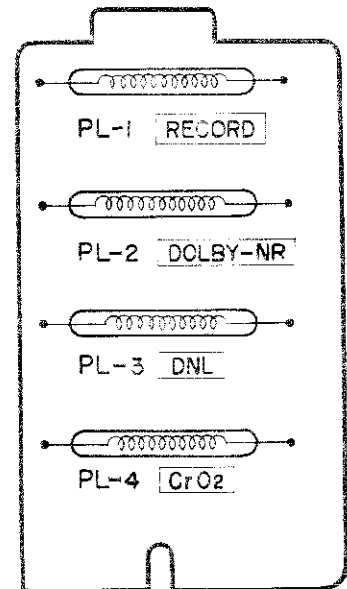
JACK-1 CIRCUIT BOARD



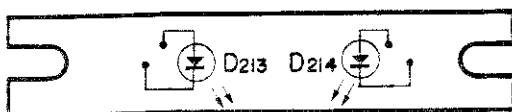
AUTO-STOP DETECTION CIRCUIT BOARD



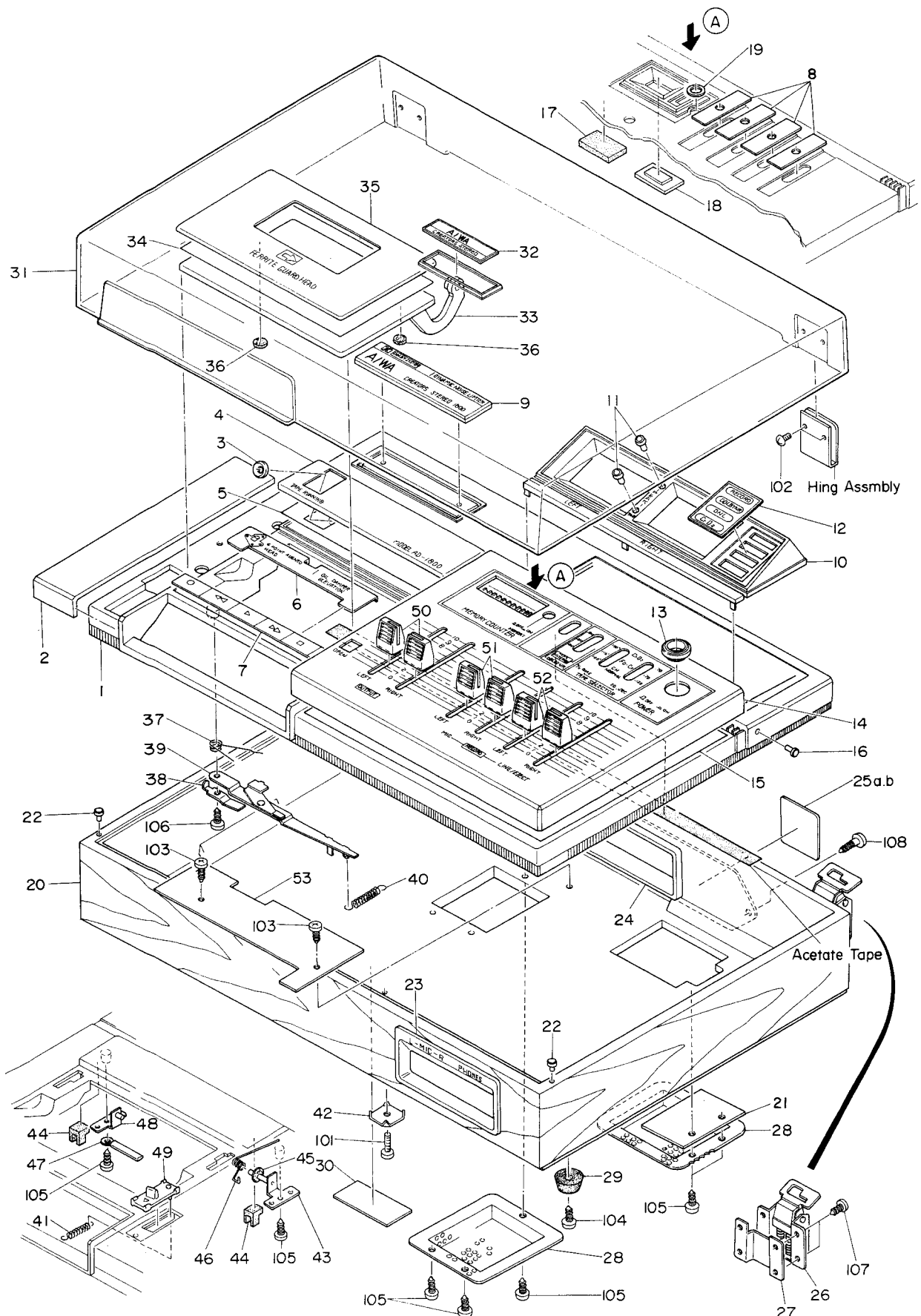
LAMP CIRCUIT BOARD



LED CIRCUIT BOARD



EXPLODED VIEW-1



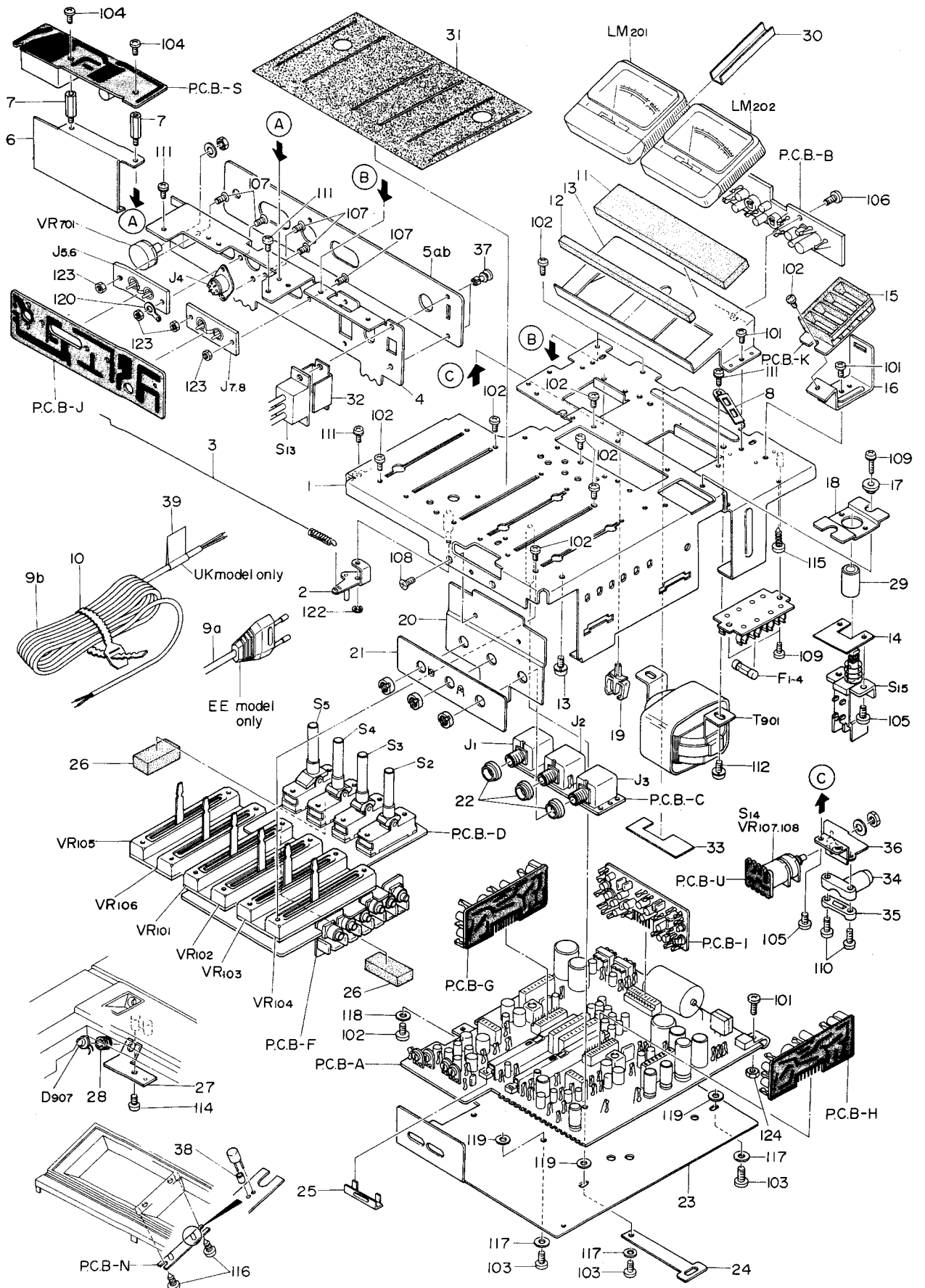
MECHANICAL PARTS

PARTS LIST

* mark in this part list shows exclusive part
(which is used) for only Model AD-1800

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1~30	80-003-790-41		Cabinet Assembly-"EE" model only (Main case ass'y + Bottom cover ass'y)		
1~30	80-003-790-01		Cabinet Assembly-"UK" model only (Main case ass'y + Bottom cover ass'y)		
1~20	80-003-791-41		Main case ass'y (EE model only)		
1~20	80-003-791-01		Main case ass'y (UK model only)		
1-1	82-379-007-01		Case proper	*	1
1-2	82-379-002-01		Panel B, Case proper	*	1
1-3	82-372-054-01		Decorative ring, Tape runing	AD-1500	1
1-4	82-379-060-01		Panel D, Case proper	*	1
1-5	82-372-407-01		Adhesive paper, Panel D	AD-1500	1
1-6	82-379-046-01		Head cover	*	1
1-7	82-379-049-01		Panel C, Case proper	*	1
1-8	82-372-047-01		Switch cover	AD-1500	4
1-9	82-379-074-01		Badge, AIWA	*	1
1-10	82-379-005-01		Panel, Meter	*	1
1-11	82-379-013-01		Decorative ring, Peak running	*	2
1-12	82-379-042-01		Indication plate	*	1
1-13	82-372-018-01		Decorative ring, Power switch	AD-1500	1
1-14	82-379-055-01		Panel AEE, Case proper	*	1
1-15	82-372-406-01		Adhesive paper, Panel A	AD-1500	1
1-16	87-085-090-01		Nylon rivet		2
1-17	82-381-219-01		M cushion C		1
1-18	82-072-048-01		Window, Tape counter		1
1-19	82-381-012-01		Switch cover B		1
1-20	82-379-062-01		Bottom cover	*	1
21~30	80-003-792-41		Bottom cover ass'y (EE model only)		
21~30	80-003-792-01		Bottom cover ass'y (UK model only)		
1-21	82-379-703-01		Insulation fiber C	*	1
1-22	82-372-413-01		Nylon pin	AD-1500	2
1-23	82-379-039-01		Decorative window, Front jack	*	1
1-24	82-372-012-01		Decorative window, Rear jack	AD-1500	1
1-25	82-379-065-01		Name plate, Spec.	*	1
1-26	82-372-429-01		Hinge ass'y	AD-1500	2
1-27	82-372-069-01		Hinge base	AD-1500	2
1-28	82-381-010-01		Cover, Transformer		2
1-29	87-085-061-01		Rubber foot		4
1-30	87-057-479-01		Label, Dolby		1
31~32	80-003-795-41		Upper cover ass'y (EE model only)		
31~32	80-003-795-01		Upper cover ass'y (UK model only)		
1-31	82-379-047-01		Dust cover	*	1
1-32	82-379-048-01		Name plate, Dust cover	*	1
33~36	80-003-797-41		Cassette lid ass'y (EE model only)		
33~36	80-003-797-01		Cassette lid ass'y (UK model only)		
1-33	82-372-007-01		Cassette lid	AD-1500	1
1-34	82-372-032-01		Adhesive paper, Cassette lid	AD-1500	1
1-35	82-379-012-01		Name plate, Cassette lid	*	1
1-36	82-372-058-01		Felt 7φ	AD-1500	2
1-37	82-379-257-01		Spring, Lid lock lever C	*	1
1-38	82-381-229-01		Plate spring, Lid lock lever		1
1-39	82-379-254-01		Lid lock lever B ass'y	*	1
1-40	82-379-285-01		Spring, Lid lock lever	*	1
1-41	82-371-366-01		Spring, Push slide lever		1
1-42	82-365-031-01		Washer, Case fastening		6
1-43	82-372-214-01		Arm R ass'y, Cassette lid	AD-1500	1
1-44	82-372-376-01		Cushion, Cassette lid	AD-1500	2
1-45	82-372-386-01		Felt 9mmφ	AD-1500	2
1-46	82-372-250-01		Spring, Cassette lid	AD-1500	1
1-47	82-038-039-01		Binder, Lead wire		1
1-48	82-372-217-01		Arm L ass'y, Cassette lid	AD-1500	1
1-49	82-379-059-01		Bottom, Lid open	*	1
1-50	82-379-671-01		Knob, Volume C	*	2
1-51	82-379-670-01		Knob, Volume B	*	2
1-52	82-379-069-01		Knob, Volume A	*	2
1-53	82-379-687-01		Shield paper	*	1

EXPLODED VIEW-2



Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
2-1	82-379-288-01		Sub-chassis ass'y	*	1
2-2	82-372-228-01		Rec, lever C ass'y	AD-1500	1
2-3	82-379-292-01		Spring, Rec.	*	1
2-4	82-372-249-01		Jack bracket, Rear	AD-1500	1
2-5(a)	82-379-057-01		Jack panel EE, Rear	*	1
2-5(b)	82-379-073-01		Jack panel UK, Rear	*	1
2-6	82-375-662-01		Shield plate, Jack		1
2-7	82-375-299-01		Stud A, Circuit board		2
2-8	87-065-009-01		Earth terminal plate		1
2-9(a)	87-034-069-01		AC power cord (EE model only)		1
2-9(b)	87-034-847-01		AC power cord (UK model only)		1
2-10	87-058-009-01		Free-up belt		1
2-11	82-372-421-01		Cushion A, Meter	AD-1500	1
2-12	82-372-422-01		Cushion B, Meter	AD-1500	1
2-13	82-372-420-01		Bracket, Meter	AD-1500	1
2-14	82-380-701-01		Insulation fiber A		1
2-15	82-372-246-01		Cushion, Lamp	AD-1500	1
2-16	82-372-247-01		Bracket, Lamp circuit board	AD-1500	1
2-17	82-372-385-01		Collar, Power switch	AD-1500	2
2-18	82-372-384-01		Holder, Power switch	AD-1500	1
2-19	82-064-038-01		Wire clip		1
2-20	82-372-303-01		Jack bracket, Front	AD-1500	1
2-21	82-379-032-01		Jack panel, Front	*	1
2-22	82-374-238-01		Spacer, MIC jack		4
2-23	82-379-616-01		Shield paper	*	1
2-24	82-379-313-01		Metal fitting, Stop	*	1
2-25	82-372-414-01		Holder plate, Rec. switch	AD-1500	1
2-26	82-422-235-01		M cushion A		2
2-27	82-372-337-01		Tape running holder	AD-1500	1
2-28	82-379-616-01		Bushing rubber	*	1
2-29	82-372-061-01		Power button ass'y	AD-1500	1
2-30	82-379-315-01		Paper	*	1
2-31	82-372-026-01		Himeron cloth volume	AD-1500	1
2-32	82-379-704-01		Insulation fiber D	*	1
2-33	82-379-702-01		Insulation fiber B	*	1
2-34	87-085-094-01		Cord holder A		1
2-35	87-085-095-01		Cord holder B		1
2-36	82-372-383-01		Metal fitting cord holder	AD-1500	1
2-37	87-085-102-01		Nylon rivet		1
2-38	82-379-310-01		Red collar	*	2
2-39	87-056-008-01		Label, AC power cord (UK model only)		1

Ref. No.	Part No.	Description	Q'ty
2-101	87-263-091-11	V + 3-3	3
2-102	87-253-094-11	U + 3-6	26
2-103	87-253-075-01	U + 2.6-10	3
2-104	87-253-071-01	U + 2.6-4	2
2-105	87-253-092-11	U + 3-4	2
2-106	87-253-072-01	U + 2.6-5	2
2-107	87-233-073-01	Q + 2.6-6	6
2-108	87-233-071-01	Q + 2.6-4	2
2-109	87-253-095-01	U + 3-8	2
2-110	87-253-099-11	U + 3-15	2
2-111	87-480-093-11	VS + 3-5	7
2-112	87-430-169-11	VS + 4-6	2
2-113	87-341-073-01	VS + 3-8	1

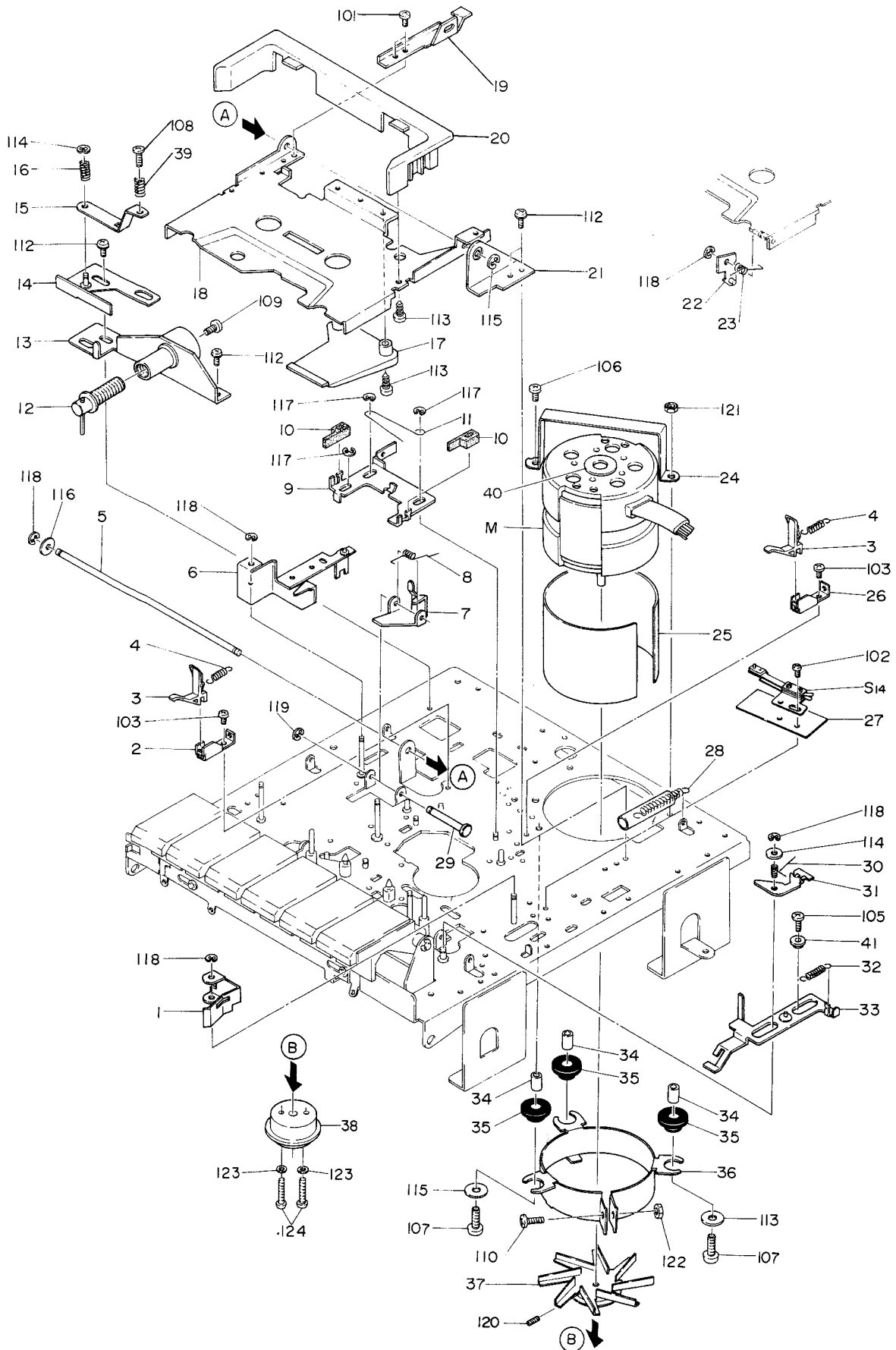
Ref. No.	Part No.	Description	Q'ty
2-114	87-480-095-01	UT ₁ + 2.6-6	1
2-115	87-341-091-01	UT ₁ + 3-12	1
2-116	87-341-072-01	UT ₁ + 2.6-5	2
2-117	87-410-315-01	W3-8-0.5	3
2-118	87-410-317-01	W3-10-0.8	2
2-119	87-081-018-01	FW3-10-1	3
2-120	87-450-412-11	LB-2	1
2-121	87-433-903-01	WTIE 2.6	1
2-122	87-441-009-01	STE-3	1
2-123	87-391-013-01	N 2.6	4
2-124	87-391-017-01	N-3	1

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
3-1	82-379-201-01		Main chassis ass'y	*	1
3-2	82-371-455-01		Collar, Lid lock lever		1
3-3	82-379-249-01		Cassette lid lock lever A ass'y	*	1
3-4	82-379-284-01		Spring, Thing lever	*	1
3-5	82-372-334-01		Spring B, Pinch roller	AD-1500	1
3-6	82-379-237-01		Spring, Pinch lever	*	1
3-7	82-371-265-01		Pinch lever ass'y		1
3-8	82-372-306-01		Lever, Tension	AD-1500	1
3-9	82-372-307-01		Felt, Tension	AD-1500	1
3-10	82-372-308-01		Spring, Tension	AD-1500	1
3-11	82-379-229-01		Plate spring A, Actuating chassis	*	1
3-12	82-379-230-01		Plate spring B, Actuating chassis	*	1
3-13	82-215-341-01		Steel ball, 3/32		3
3-14	87-038-039-01		Wire binder		1
3-15	82-372-931-01		Label, Head	AD-1500	1
3-16	82-379-213-01		Actuating chassis	*	1
3-17	82-371-346-01		Rubber cushion		1
3-18	82-357-487-01		Holder, Lead wire		1
3-19	82-379-238-01		Spring, Rec/pb head adjuster	*	1
3-20	87-379-231-01		Screw, Rec/pb head adjuster	*	1
3-21	87-379-232-01		Shield plate, Head	*	1
3-22	82-379-295-01		Cover, Shield plate	*	1
3-23	82-381-206-01		Counter		1
3-24	82-379-246-01		Pulley, Relay	*	1
3-25	82-379-298-01		Belt S, Counter	*	1
3-26	82-379-617-01		Magnet, Ring	*	1
3-27	82-379-243-01		Counter bracket ass'y	*	1
3-28	82-363-265-01		Cap, Take-up reel platform		1
3-29	82-371-445-01		Rewind reel platform ass'y		1
3-30	82-372-419-01		Felt 25mmφ	AD-1500	1
3-31	82-372-339-01		Bracket, Circuit board	AD-1500	1
3-32	82-372-416-01		Auxiliary plate C, Switch	AD-1500	1
3-33	82-379-030-01		Memory button ass'y	*	1
3-34	82-379-228-01		Roller, Actuating chassis	*	3
3-35	82-379-319-01		Plate spring, Slit	*	1

Ref. No.	Part No.	Description	Q'ty
3-101	87-253-036-01	V + 2-8	2
3-102	87-261-032-01	V + 2-3	2
3-103	87-263-070-01	V + 2.6-3	2
3-104	87-263-091-01	V + 3-3	1
3-105	87-253-094-11	U + 3-6	2
3-107	87-253-035-01	U + 2-6	2
3-108	87-253-073-01	U + 2.6-6	2
3-109	87-253-092-11	U + 3-4	2
3-110	87-233-033-01	Q + 2-4	2
3-111	87-480-093-11	VS + 3-5	1
3-112	87-481-071-01	VS + 2.6-4	3
3-113	87-480-095-11	VS + 3-8	2

Ref. No.	Part No.	Description	Q'ty
3-114	87-341-097-01	UT, + 3-12	2
3-115	87-410-214-01	W3-8-0.3	1
3-116	87-710-311-01	W2.6-7.5-0.5	1
3-117	87-081-036-01	TW2-5-0.2	1
3-118	87-081-202-01	TW1.5-4-0.3	1
3-119	87-082-005-01	NW2.5-5-0.3	1
3-120	87-421-303-01	SW-2	2
3-121	87-421-305-01	SW2.6	2
3-122	87-441-003-01	STE-1.5	1
3-123	87-441-008-01	STE-2.5	1
3-124	87-441-005-01	STE-2	1
3-125	87-374-034-01	SS2-5	2
3-126	87-391-006-01	N-2	2

EXPLODED VIEW-4

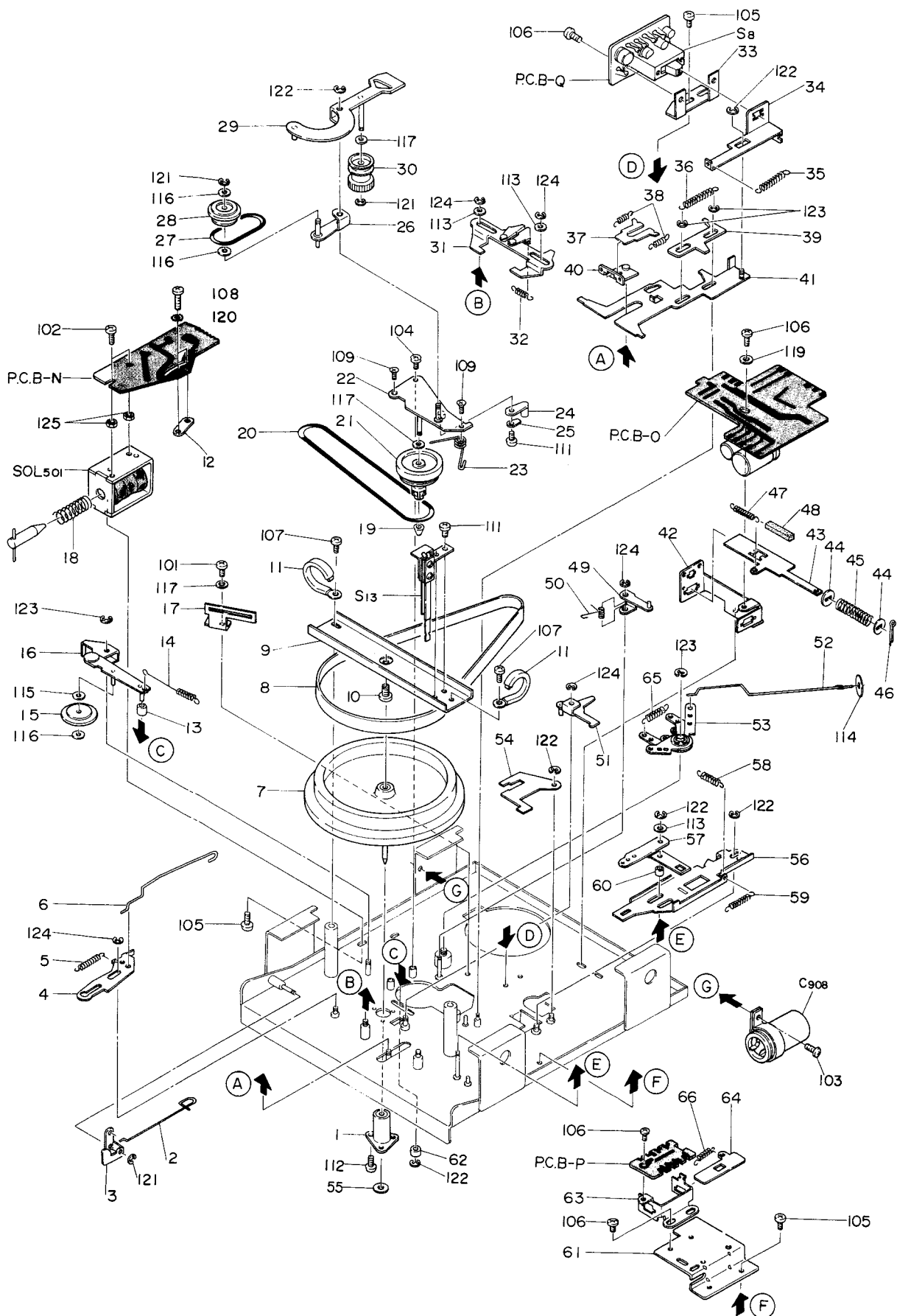


Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
4-1	82-372-347-01		Pause switch holder plate	AD-1500	1
4-2	82-372-234-01		Bracket L, Cassette holder	AD-1500	1
4-3	82-372-235-01		Cassette holder	AD-1500	2
4-4	82-372-252-01		Spring, Cassette holder	AD-1500	2
4-5	82-372-264-01		Spindle shaft, Cassette-up plate	AD-1500	1
4-6	82-372-366-01		Tape selector lever ass'y	AD-1500	1
4-7	82-372-232-01		Lever, Record-blocking	AD-1500	1
4-8	82-371-356-01		Spring, Record-blocking lever		1
4-9	82-372-240-01		Brake plate	AD-1500	1
4-10	82-372-410-01		Brake shoe	AD-1500	2
4-11	82-371-491-01		Spring, Brake		1
4-12	82-372-369-01		Damper shaft ass'y	AD-1500	1
4-13	82-372-361-01		Supporting plate ass'y, Damper	AD-1500	1
4-14	82-372-274-01		Lock auxiliary plate ass'y	AD-1500	1
4-15	82-372-365-01		Lock plate, CrO ₂	AD-1500	1
4-16	82-372-372-01		Spring, CrO ₂ lock plate	AD-1500	1
4-17	82-372-053-01		Window, Tape indicator	AD-1500	1
4-18	82-379-211-01		Cassette-up plate ass'y	*	1
4-19	82-372-364-01		Auxiliary plate	AD-1500	1
4-20	82-372-024-01		Cassette guide proper	AD-1500	1
4-21	82-372-288-01		Bracket, Cassette-up	AD-1500	1
4-22	82-372-310-01		Cassette-up lock plate ass'y	AD-1500	1
4-23	82-372-254-01		Spring, Cassette-up lock plate	AD-1500	1
4-24	82-379-311-01		Motor holder	*	1
4-25	82-379-630-01		Shield plate, Motor	*	1
4-26	82-372-233-01		Bracket R, Cassette holder	AD-1500	1
4-27	82-372-354-01		Insulation fibre	AD-1500	1
4-28	82-372-251-01		Spring, Cassette-up	AD-1500	1
4-29	82-371-349-01		Interlock lever shaft		1
4-30	82-372-309-01		Plate spring, Lock plate	AD-1500	1
4-31	82-370-262-01		Lock plate		1
4-32	82-371-374-01		Spring, Pause lever		1
4-33	82-371-307-01		Pause lever ass'y		1
4-34	82-371-318-01		Motor collar A		3
4-35	82-371-317-01		Motor cushion A		3
4-36	82-379-251-01		Motor holder	*	1
4-37	82-379-320-01		Motor pulley ass'y	*	1
4-38	82-379-322-01		Motor pulley	*	1
4-39	82-372-371-01		Adjuster spring	AD-1500	1
4-40	82-379-312-01		Motor cushion B	*	1
4-41	82-371-465-01		Lid lock lever collar		1

Ref. No.	Part No.	Description	Q'ty
4-101	87-263-031-01	V + 2-2	2
4-102	87-261-033-01	V + 2-4	2
4-103	87-263-070-01	V + 2.6-3	2
4-104	87-263-091-11	V + 3-3	1
4-105	87-253-072-01	U + 2.6-5	1
4-106	87-253-092-11	U + 3-4	1
4-107	87-253-097-11	U + 3-12	3
4-108	87-253-035-01	U + 2-6	1
4-109	87-253-033-01	U + 2-4	1
4-110	87-253-172-11	U + 4-12	1
4-111	87-480-071-01	VS + 2.6-4	1
4-112	87-480-093-11	VS + 3-5	6

Ref. No.	Part No.	Description	Q'ty
4-113	87-351-036-01	VT ₁ + 2-8	4
4-114	87-410-314-01	W2.6-7.5-0.5	1
4-115	87-410-317-01	W3-10-0.8	3
4-116	87-410-315-01	W3-8-0.5	1
4-117	87-441-008-01	STE-2.5	4
4-118	87-441-005-01	STE-2.0	5
4-119	87-441-003-01	STE-1.5	1
4-120	87-373-037-01	SS2-10	2
4-121	87-391-017-11	N-3	1
4-122	87-391-034-11	N-4	1
4-123	87-421-303-01	SW-2	2
4-124	82-379-325-01	V + 2-18	2

EXPLODED VIEW - 5



Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
5-1	82-371-271-01		Flywheel shaft bearing ass'y		1
5-2	82-371-467-01		Coupling wire B		1
5-3	82-372-411-01		Plunger lever	AD-1500	1
5-4	82-372-241-01		Swing plate	AD-1500	1
5-5	82-379-284-01		Spring, Swing lever	*	1
5-6	82-372-341-01		Push rod A	AD-1500	1
5-7	82-379-302-01		Flywheel ass'y	*	1
5-8	82-371-342-01		Belt, Main	*	1
5-9	82-379-304-01		Bearing plate, Flywheel	*	1
5-10	82-331-107-01		Screw for thrust	TP-1004	1
5-11	82-038-039-01		Binder, Lead wire	*	2
5-12	82-379-323-01		Metal fitting, Cycle selector	*	1
5-13	82-379-280-01		Idler collar B	*	1
5-14	82-371-360-01		Spring, Play idler	*	1
5-15	82-379-300-01		Play idler ass'y	*	1
5-16	82-379-274-01		Idler arm ass'y	*	1
5-17	82-371-332-01		Guide plate	*	1
5-18	82-379-305-01		Spring, Plunger	*	1
5-19	82-363-265-01		Cap, Take-up reel platform		1
5-20	82-372-226-01		Belt L, Counter	AD-1500	1
5-21	82-379-264-01		Take-up reel platform	*	1
5-22	82-371-280-01		Reel platform base ass'y		1
5-23	82-371-357-01		Spring, Fast roller		1
5-24	82-371-250-01		Rewind roller ass'y		1
5-25	82-372-397-01		Holder, Rewind roller	AD-1500	1
5-26	82-371-284-01		Fast lever ass'y		1
5-27	82-371-343-01		Belt, FR		1
5-28	82-371-482-01		Fast roller ass'y		1
5-29	82-371-289-01		FR lever ass'y		1
5-30	82-371-256-01		FR pulley ass'y		1
5-31	82-371-299-01		FR slide plate ass'y		1
5-32	82-371-367-01		Spring, FR lever	*	1
5-33	82-379-236-01		Switch holder B	*	1
5-34	82-379-235-01		Switch auxiliary plate B	*	1
5-35	82-379-241-01		Spring C, Switch return	*	1
5-36	82-379-240-01		Spring, Brake actuating plate	*	1
5-37	82-379-242-01		Pressure plate, Actuating chassis	*	1
5-38	82-379-258-01		Pressure spring, Actuating chassis	*	2
5-39	82-371-321-01		Brake actuating plate B	*	1
5-40	82-379-219-01		Actuating chassis coupling plate ass'y	*	1
5-41	82-379-223-01		Brake actuating plate A ass'y	*	1
5-42	82-372-316-01		Selector switch holder	AD-1500	1
5-43	82-372-320-01		Auxiliary plate, Switch	AD-1500	1
5-44	82-372-323-01		Washer, Selector spring	AD-1500	2
5-45	82-372-318-01		Spring, Selector switch	AD-1500	1
5-46	82-372-321-01		Pin	AD-1500	1
5-47	82-372-317-01		Spring, Switch return	AD-1500	1
5-48	82-601-206-01		Spring cushion B		3
5-49	82-371-309-01		Center shifter ass'y		1
5-50	82-371-359-01		Spring, Center shifter		1
5-51	82-379-226-01		Review lever A ass'y	*	1
5-52	82-379-283-01		Push rod B	*	1
5-53	82-372-377-01		Relay terminal ass'y	*	1
5-54	82-379-234-01		Rec. release lever B	*	1
5-55	82-416-358-01		Poly-slider washer 6mmφ	AD-1200	1
5-56	82-379-262-01		Rec. lever A	*	1
5-57	82-371-327-01		Rec. lever B	*	1
5-58	82-371-414-01		Spring, Rec. release	*	1
5-59	82-371-363-01		Spring A, Rec. release	*	1
5-60	82-371-384-01		Collar		1
5-61	82-372-415-01		Switch holder A	AD-1500	1
5-62	82-379-279-01		Idler collar A	*	1
5-63	82-374-248-01		Switch holder C	*	1
5-64	82-381-220-01		Switch auxiliary plate B	*	1
5-65	82-372-380-01		Spring, Terminal	AD-1500	1
5-66	82-372-417-01		Spring B, Switch return	AD-1500	1

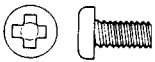
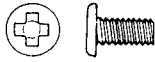

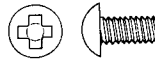





Ref. No.	Part No.	Description	Q'ty
1-101	87-253-097-01	U + 3-12	6
1-102	87-276-095-11	Y + 3-8	4
1-103	87-341-094-01	UT ₁ + 3-5	2
1-104	87-341-097-01	UT ₁ + 3-12	4










Ref. No.	Part No.	Description	Q'ty
1-105	87-341-095-01	UT ₁ + 3-8	8
1-106	87-341-073-01	UT ₁ + 2.6-6	1
1-107	87-351-074-01	VT ₁ + 2.6-8	8
1-108	87-213-085-01	WV + 2.7-10	2

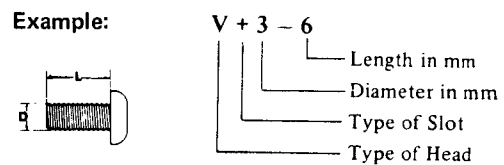
Ref. No.	Part No.	Description	Q'ty
5-101	87-263-070-01	V + 2.6-3	1
5-102	87-253-095-11	U + 3-8	2
5-103	87-253-096-11	U + 3-10	1
5-104	87-253-073-01	U + 2.6-5	1
5-105	87-253-092-11	U + 3-4	7
5-106	87-253-071-01	U + 2.6-4	6
5-107	87-253-090-11	U + 3-6	2
5-108	87-253-874-01	U + 2.6-8	2
5-109	87-233-071-01	Q + 2.6-4	2
5-110	87-480-033-01	VS + 2-4	1
5-111	87-480-071-01	VS + 2.6-4	3
5-112	87-480-072-01	VS + 2.6-5	3
5-113	87-410-314-01	W3-8-0.3	3

Ref. No.	Part No.	Description	Q'ty
5-114	87-410-305-01	W2-6-0.4	1
5-115	87-081-209-01	TW2-9-0.2	1
5-116	87-081-036-01	TW2.5-0.2	4
5-117	87-081-202-01	TW1.5-4-0.3	1
5-118	87-421-305-01	SW 2.6	1
5-119	87-081-197-01	FW 2.6-8-1	1
5-120	87-433-903-01	WTIE-2.6	2
5-121	87-441-003-01	STE-1.5	3
5-122	87-441-008-01	STE-2.5	6
5-123	87-441-099-01	STE-3	4
5-124	87-441-005-01	STE-2	5
5-125	87-391-036-11	N-5	2

HARDWARE NOMENCLATURE

- V:** Pan head screw 
- U:** Binding head screw 
- Q:** Flat countersunk head screw 
- Y:** Truss screw 
- VT₁:** Pan head tapping screw 
- UT₁:** Binding head tapping screw 
- VS:** Pan head screw with spring washer 
- WV:** Wooden screw 
- SS:** Setscrew 

- STE:** E ring (washer) 
- W:** Washer 
- FW:** Fibre washer 
- TW:** Tefron washer 
- SW:** Spring washer 
- NW:** Nylon washer 
- WTIE:** Crown washer 
- N:** Nut 
- LB:** Lug terminal plate 



Symbol No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
◀REC EQ CIRCUIT BOARD SECTION▶					
PCB-F	82-381-602-11		Rec EQ circuit board		1
L201,202,203, 204	82-372-670-01		Coil (3.3mH)		4
L205,206	82-379-606-01		Coil (4.7mH)	*	2
			<Resistors>		
R157,158	88-181-152-01		1.5k Ω 1/4W \pm 5% ELR		2
R255,256	88-181-392-01		3.9k Ω 1/4W \pm 5% ELR		2
			<Capacitors>		
C241,242	88-707-700-01		0.0033 μ F 50V Mylar		2
C 239, 240	88-707-830-01		0.022 μ F 50V Mylar		2
C233,234,237, 238	88-707-890-01		0.027 μ F 50V Mylar		4
C231,232,235, 236	88-707-860-01		0.068 μ F 50V Mylar		4
◀DOLBY-NR CIRCUIT BOARD SECTION▶					
PCB-G,H	82-379-608-11		DOLBY-NR circuit board	*	1
TR301,302, 303,304, 309,310	89-308-284-01		Transistor, 2SC-828 (R)		6
TR305,306, 307,308, 313,314	89-308-285-01		Transistor, 2SC-828 (S)		6
TR311,312	89-106-285-01		Transistor, 2SA-628 (F)		2
FET301,302	82-371-625-01		FET 2SK-30 (D)		2
D301,302,303, 304,311,312	87-026-066-01		Diode M-8513A (O)		6
D305,306,309, 310	88-051-060-01		Diode 1N-60		4
C307,308	82-371-647-01		Zener diode RD-7.5 (E)		2
SFR301,302	87-021-423-01		Semi-fixed resistor, 3.3k Ω -B		2
SFR303,304	87-021-421-01		Semi-fixed resistor, 1k Ω -B		2
	87-032-640-01		Connector (10P)		2
			<Resistors>		
R365,366	88-181-330-01		33 Ω 1/4W \pm 5% ELR		2
R361,362	88-181-470-01		47 Ω 1/4W \pm 5% ELR		2
R363,364	88-181-102-01		1k Ω 1/4W \pm 5% ELR		2
R341,342	88-181-122-01		1.2k Ω 1/4W \pm 5% ELR		2
R305,306,335, 336	88-181-182-01		1.8k Ω 1/4W \pm 5% ELR		4
R333,334	88-181-222-01		2.2k Ω 1/4W \pm 5% ELR		2
R325,326,359, 360	88-181-272-01		2.7k Ω 1/4W \pm 5% ELR		4
R309,310	88-181-332-01		3.3k Ω 1/4W \pm 5% ELR		2
R301,302,337, 338	88-181-682-01		6.8k Ω 1/4W \pm 5% ELR		4
R345,346,347, 348,349,350	88-181-822-01		8.2k Ω 1/4W \pm 5% ELR		6
R351,352	88-181-103-01		10k Ω 1/4W \pm 5% ELR		2
R343,344,367, 368	88-181-153-01		15k Ω 1/4W \pm 5% ELR		4
R321,322	88-181-223-01		22k Ω 1/4W \pm 5% ELR		2
R307,308,319, 320,	88-181-273-01		27k Ω 1/4W \pm 5% ELR		4
R311,312,327, 328,353,354	88-181-333-01		33k Ω 1/4W \pm 5% ELR		6
R329,330	88-181-393-01		39k Ω 1/4W \pm 5% ELR		2
R355,356	88-181-473-01		47k Ω 1/4W \pm 5% ELR		2
R303,304,357, 358	88-181-124-01		120k Ω 1/4W \pm 5% ELR		4
R313,314	88-181-154-01		150k Ω 1/4W \pm 5% ELR		2

Symbol No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
R315,316	88-181-184-01		180kΩ 1/4W ±5% ELR		6
R373,374	88-181-224-01		220kΩ 1/4W ±5% ELR		4
R317,318	88-181-234-01		230kΩ 1/4W ±5% ELR		2
R369,370,371 372	88-181-274-01		270kΩ 1/4W ±5% ELR		4
R323,324	88-181-474-01		470kΩ 1/4W ±5% ELR		2
R339,340	88-181-684-01		680kΩ 1/4W ±5% ELR		2
R353,354	88-131-333-01		33kΩ 1/4W ±5%		4
R331,332	82-371-645-01		3.3kΩ 1/4W ±1%		2
C303,304,305, 306	88-337-200-01		<Capacitors> 2.2μF 50V Electrolytic		4
C307,308,309, 310,317,318, 323,324,329, 330	88-335-110-01		10μF 16V Electrolytic		10
C335,336	88-335-120-01		100μF 16V Electrolytic		2
C321,322	88-333-510-01		47μF 10V Electrolytic		2
C333,334	87-015-099-01		0.33μF 10V Aluminum solid		2
C327,328	88-707-910-01		0.1μF Mylar		2
C319,320,325, 326,331,332	88-717-910-01		0.1μF Mylar		6
C301,302	88-202-850-01		0.047μF Ceramic		2
C315,316	82-371-643-01		4700pF PP		2
C311,312	82-371-642-01		5600pF PP		2
C313,314	82-371-641-01		0.27μF PP		2
<<DNL CIRCUIT BOARD SECTION>>					
PCB-I	82-379-610-11		DNL circuit board	*	1
TR401,402, 405,406, 407,408	89-308-284-01		Transistor, 2SC-828 (R)		6
TR403,404	89-308-285-01		Transistor, 2SC-828 (S)		2
D401,402,403, 404,405,406, 407,408,409, 410,411,412	87-026-066-01		Diode, M-8513A-(O)		12
	87-032-640-01		Connector (10p)		1
R423,424,427, 428	88-181-681-01		<Resistors> 680Ω 1/4W ±5% ELR		4
R407,408	88-181-152-01		1.5kΩ 1/4W ±5% ELR		2
R411,412	88-181-182-01		1.8kΩ 1/4W ±5% ELR		2
R419,420	88-181-392-01		3.9kΩ 1/4W ±5% ELR		2
R409,410,429, 430	88-181-562-01		5.6kΩ 1/4W ±5% ELR		4
R431,432	88-181-682-01		6.8kΩ 1/4W ±5% ELR		2
R413,414	88-181-153-01		15kΩ 1/4W ±5% ELR		2
R425,426,435, 436	88-181-223-01		22kΩ 1/4W ±5% ELR		4
R433,434	88-181-124-01		120kΩ 1/4W ±5% ELR		2
R401,442	88-181-154-01		150kΩ 1/4W ±5% ELR		2
R415,416	88-181-184-01		180kΩ 1/4W ±5% ELR		2
R439,440	88-181-224-01		220kΩ 1/4W ±5% ELR		2
R403,404,437, 438	88-181-274-01		270kΩ 1/4W ±5% ELR		4
R417,418	88-181-684-01		680kΩ 1/4W ±5% ELR		2
R421,422	88-183-334-01		330kΩ 1/4W ±5% NL		2
R405,406	82-379-674-01		1.69kΩ 1/4W ±2%	*	2
C401,402	88-337-100-01		<Capacitors> 1μF 50V Electrolytic		2
C421,422,425, 426	88-336-500-01		4.7μF 25V Electrolytic		4

Symbol No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
C407,408	88-507-500-01		270pF Styrol		2
C413,414	88-507-570-01		680pF Styrol		2
C409,410	88-707-630-01		1500pF Mylar		2
C403,404	88-707-640-01		1800pF Mylar		2
C411,412	88-707-600-01		2200pF Mylar		2
C405,406,419, 420	88-707-720-01		4700pF Mylar		4
C415,416,417, 418	88-707-830-01		0.022μF Mylar		4
C423,424	88-717-830-01		0.022μF Mylar		2
«JACK-2 CIRCUIT BOARD SECTION»					
PCB-J	82-379-612-21		Jack-2 circuit board	*	1
TR201,202	89-310-006-01		Transistor, 2SC-1000 (BL)		2
VR701	82-379-680-01		Volume 1kΩ-B (LH TAPE BIAS)	*	1
J4	87-032-524-01		5P DIN jack (DIN, REC/PB)		1
J7,8	87-032-525-01		2P pin jack (LINE OUT)		1
<Resistors>					
R201,202	88-131-330-01		33Ω 1/4W ±5%		2
R205,206	88-131-102-01		1kΩ 1/4W ±5%		2
R709	88-131-182-01		1.8kΩ 1/4W ±5%		1
R263,264	88-131-222-01		2.2kΩ 1/4W ±5%		2
R207,208	88-131-183-01		18kΩ 1/4W ±5%		2
R215	88-131-223-01		22kΩ 1/4W ±5%		1
R213,214	88-131-104-01		100kΩ 1/4W ±5%		2
R209,210	88-131-564-01		560kΩ 1/4W ±5%		2
R203,204	88-131-225-01		2.2MΩ 1/4W ±5%		2
R211,212	88-176-395-01		3.9MΩ 1/4W ±5%		2
<Capacitors>					
C201,202,203, 204	88-337-500-01		4.7μF 50V Electrolytic		4
C205	88-336-510-01		47μF 25V Electrolytic		1
C207,208	88-212-270-01		39pF 50V Ceramic		2
C206	88-205-910-01		0.1μF 25V Ceramic		1
«LAMP CIRCUIT BOARD SECTION»					
PCB-K	82-379-671-01		LAMP circuit board	*	1
PL1,2,3,4	82-372-617-11		Pilot lamp 6.3V 70mA (RECORD, DOLBY-NR DNL, CrO ₂)		4
«COUNTER LAMP CIRCUIT BOARD SECTION»					
PCB-L	82-379-672-01		Counter lamp circuit board	*	1
PL6	82-372-617-11		Pilot lamp 6.3V 70mA (COUNTER)		1
«LED CIRCUIT BOARD SECTION»					
PCB-M	82-379-661-01		LED circuit board	*	1
D213	87-026-086-01		Light emitting diode SLP-614 (ORG)		1
D214	87-026-083-01		Light emitting diode SLP-114 (RED)		1
«CASSETTE LAMP CIRCUIT BOARD SECTION»					
PCB-N	82-379-670-01		Cassette lamp circuit board	*	1
PL5	82-372-617-11		Pilot lamp 6.3V 70mA (CASSETTE)		1
«AUTO-STOP/CrO₂ SWITCH CIRCUIT BOARD SECTION»					
PCB-O	82-381-620-11		Auto-stop/CrO ₂ switch circuit board		1
TR-501	89-106-844-01		Transistor, 2SA-684 (R)		1
TR-502,504	89-309-456-01		Transistor, 2SC-945L (P)		2
D501,502,503, 508,509	87-027-039-01		Diode 10D-1		5
D504,505,506	87-027-025-01		Diode 1S-1212		3
S6	87-031-239-01		Slide switch (CrO ₂ /automatic selector switch)		1
	87-033-092-01		PCB tab (A)		2

Symbol No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
			<Resistors>		
R501,503	88-131-102-01		1kΩ 1/4W ±5%		2
R502	88-131-122-01		1.2kΩ 1/4W ±5%		1
R507	88-131-222-01		2.2kΩ 1/4W ±5%		1
R513	88-131-332-01		3.3kΩ 1/4W ±5%		1
R505,518	88-131-562-01		5.6kΩ 1/4W ±5%		2
R509	88-131-822-01		8.2kΩ 1/4W ±5%		1
R504,515,516	88-131-103-01		10kΩ 1/4W ±5%		3
R514	88-131-104-01		100kΩ 1/4W ±5%		1
R506	88-131-124-01		120kΩ 1/4W ±5%		1
			<Capacitors>		
C510	88-337-390-01		0.33μF 50V Electrolytic		1
C501	88-344-524-01		470μF 35V Electrolytic		1
C506	88-336-110-01		10μF 25V Electrolytic		1
C502	88-335-310-01		33μF 16V Electrolytic		1
C505,509	88-335-510-01		47μF 16V Electrolytic		2
C504	88-332-320-01		330μF 6.3V Electrolytic		1
C503,508	88-214-810-01		0.01μF Ceramic		2
C507	88-205-850-01		0.047μF Ceramic		1
<<STOP-MUTING CIRCUIT BOARD SECTION>>					
PCB-P	82-381-621-11		Stop muting circuit board		1
S7	87-031-239-01		Slide switch (STOP MUTING)		1
<<FF/REW MUTING CIRCUIT BOARD SECTION>>					
PCB-Q	82-379-615-01		FF/REW muting circuit board	*	1
TR601,602	89-402-274-01		Transistor, 2SD-227 (R)		2
TR603	89-313-647-01		Transistor, 2SC-1364 (7)		1
D601	87-026-066-01		Diode M-8513 (O)		1
S8	82-379-626-01		Slide switch (FF/REW MUTING)	*	1
			<Resistors>		
R605	88-181-330-01		33Ω 1/4W ±5% ELR		1
R603	88-181-680-01		68Ω 1/4W ±5% ELR		1
R601,602	88-181-821-01		820Ω 1/4W ±5% ELR		2
R606	88-181-562-01		5.6kΩ 1/4W ±5% ELR		1
R604	88-131-104-01		100kΩ 1/4W ±5% ELR		1
			<Capacitor>		
C601	88-332-220-01		220μF 6.3V Electrolytic		1
<<AUTO-STOP DETECTION CIRCUIT BOARD SECTION>>					
PCB-R	82-379-614-01		Auto-stop detection circuit board	*	1
TR503	89-309-456-01		Transistor, 2SC-945L (P)		1
IC501	87-027-160-01		Hall IC, DN-835		1
D510	87-026-069-01		Zener-diode, WZ-052		1
			<Resistors>		
R508,512	88-131-332-01		3.3kΩ 1/4W ±5%		2
R511	88-181-122-01		1.2kΩ 1/4W ±5% ELR		1
R510	88-181-152-01		1.5kΩ 1/4W ±5% ELR		1
R512	88-140-182-01		1.8kΩ 1/2W ±5%		1
<<BIAS OSC CIRCUIT BOARD SECTION>>					
PCB-S	82-379-673-11		BIAS OSC circuit board	*	1
TC701,702	87-011-079-01		Trimer (30pF)		2
OSC UNIT	82-372-658-01		OSC unit		1
L107,108	82-371-644-01		Coil (22mH)		2
			<Resistors>		
R706	88-131-471-01		470Ω 1/4W ±5%		1
R703,707	88-131-561-01		560Ω 1/4W ±5%		2
R704,708	88-131-681-01		680Ω 1/4W ±5%		2
R705	88-131-821-01		820Ω 1/4W ±5%		1
R177,178	88-181-103-01		10kΩ 1/4W ±5% ELR		2
R701	88-141-151-01		150Ω 1/2W ±5%		1
R702	88-141-331-01		330Ω 1/2W ±5%		1

Symbol No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
C702	88-344-120-01		<Capacitors> 100 μ F 35V Electrolytic		1
C701	88-238-450-01		150pF Ceramic		1
C155,156	88-238-410-01		100pF Ceramic		2
<<MOTOR CIRCUIT BOARD SECTION>>					
PCB-T	82-379-666-01		Motor circuit board	*	1
SOL501	82-372-677-21		Solenoid		1
C908	82-379-679-01		<Capacitor> 16 + 4 μ F 50V Electrolytic	*	1
<<DIN OUT LEVEL VOLUME CIRCUIT BOARD SECTION>>					
P.C.B-U	82-379-667-01		DIN OUT LEVEL VOLUME circuit board		
VR107,108	82-372-668-01		Volume 10k Ω -A with switch (DIN OUT LEVEL)		
S9					
<<MISCELLANEOUS>>					
D507	82-379-640-01		Right emitting diode, TLG-105	*	1
T901	82-379-698-01		Power transformer (EE model only)	*	1
T901	82-379-699-01		Power transformer (UK model only)	*	1
S10	87-031-288-01		Micro switch (PAUSE)		1
S11	87-031-330-01		Push switch (MEMORY)		1
S12	82-381-206-01		Counter (MEMORY)		1
S13	82-379-646-01		Leaf switch (REW)	*	1
S14	82-372-651-01		Leaf switch (Cassette detection)		1
S15	87-031-342-01		Push switch (POWER)		1
S16	87-031-343-01		Slide switch (VOLTAGE SELECTOR)		1
VR5,6	82-372-609-01		Slide volume 10k Ω A x 2 (LINE OUT)		1
J5,6	82-372-633-01		2P pin jack w/switch (LINE IN)		1
RPH	82-379-631-01		REC/PB head	*	1
EH	87-046-088-11		Erase head		1
LM201,202	82-379-695-01		Level meter	*	2
M	82-379-628-01		Motor (24V)	*	1
F1,2	87-035-079-01		Fuse, 200mA "T"		2
	87-057-774-01		Fuse label, 200mA "T"		2
F3	87-035-063-01		Fuse 630mA "T"		1
	87-057-798-01		Fuse label 630mA "T"		1
F4	87-035-127-01		Fuse 1A		1
	87-057-762-11		Fuse label 1A "T"		1
	82-379-678-01		Fuse holder (4P)	*	1
	87-034-069-01		AC power cord (EE model only)		1
	87-034-847-01		AC power cord (UK model only)		1
	82-372-657-01		Connector (2P) (F)		1
	82-372-656-01		Connector (2P) (M)		1
	82-379-691-01		3P connector ass'y	*	1
	82-379-689-01		3P connector ass'y	*	1
	82-379-690-01		16 p connector ass'y	*	1
	82-379-688-01		16 p connector ass'y	*	1
	82-379-694-01		12 p connector ass'y	*	1
	82-379-693-01		12 p connector ass'y	*	1
	87-033-013-01		Lug terminal plate, 1L4P		1
	82-372-648-01		Fasten ass'y (D507)		1
	82-372-649-01		Fasten ass'y (D507)		1
R517	88-131-102-01		<Resistor> 1k Ω 1/4W \pm 5%		1
C101	88-215-660-01		<Capacitors> 0.0022 μ F Ceramic		1
C170	88-205-850-01		0.047 μ F Ceramic		

