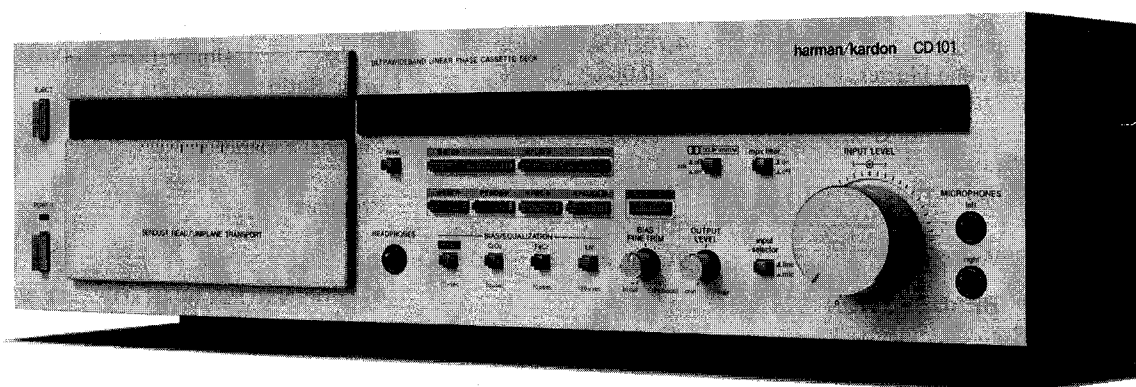


The Harman Kardon Model CD101

Manual No.36A

ULTRA WIDEBAND LINEAR PHASE CASSETTE DECK

Technical Manual



harman/kardon

240 CROSSWAYS PARK WEST, WOODBURY, N.Y. 11797
PRINTED IN JAPAN 1112-H15236A4 P-088111

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SPECIFICATIONS

Track Configuration 4-track 2 channel Stereo
Cassette Deck

• MECHANICAL SECTION

	Nominal	Limit
Tape Speed	4.75cm/sec.	$\pm 1.5\%$
Wow and Flutter	0.05%	$\leq 0.08\%$
F.F/REW Time for C-60 Cassette	90 sec.	≤ 100 sec.
Motor	DC Serve motor	
Tape Up Torque	50 gr. cm	35 ~ 70 gr. cm
F.F Torque	100 gr. cm	70 ~ 150 gr. cm
REW Torque	100 gr. cm	70 ~ 150 gr. cm

• HEAD SECTION

Recording/Playback Fe-Al-Si Alloy Core
Erase Ferrite Core

• AMPLIFIER SECTION

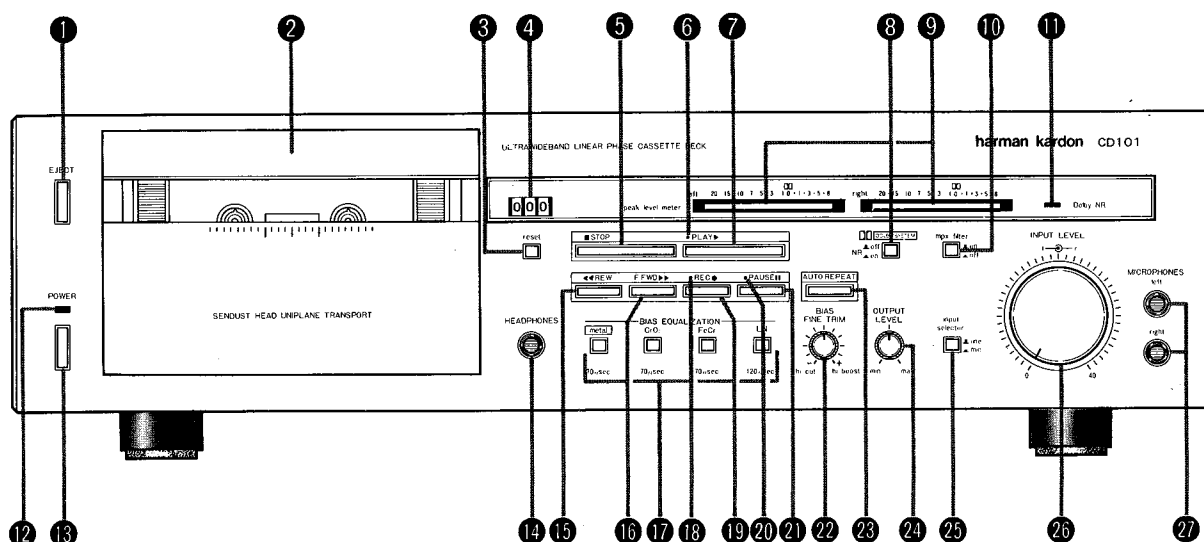
Input Censitivity	
MIC	0.75mV $\leq$ 1.0mV
LINE	47mV 30 ~ 60mV
Input Impedance	
MIC	4.7k Ω 3 ~ 15k Ω
LINE	20k Ω ± 10 k Ω

	Nominal	Limit
Signal-to-Noise Ratio (DOLBY NR to ON)		
at MIC input	49dB	≥ 45 dB
(Input 1kHz, 1.5mV for normal Tape)		
at LINE input	62dB	≥ 60 dB
(Input 1kHz, 100mV WTD for normal Tape)		
Erase Ratio	68dB	≥ 60 dB
(Input 80Hz for metal tape)		
Channel Separation	40dB	≥ 35 dB
(Input 1kHz)		
Crosstalk	72dB	≥ 60 dB
(Input 1kHz)		

- DIMENSIONS (WxHxD) 17-3/7" x 4-5/6" x 13-4/7"
(443 x 123 x 345 mm)
- WEIGHT 17.6lbs. (8kg)
- POWER SUPPLY 120V, 60Hz
- POWER CONSUMPTION 27W

Specifications and components subject to change without notice.
Overall performance will be maintained or improved.

COMPONENTS AND THEIR FUNCTIONS



① EJECT BUTTON (EJECT)

For opening the CASSETTE COMPARTMENT door.
The soft eject mechanism opens the door slowly when this button is pressed.

② CASSETTE COMPARTMENT**③ RESET BUTTON (reset)**

For resetting the TAPE COUNTER to "000".
Press this button to reset the TAPE COUNTER to "000" when starting to recording.

④ TAPE COUNTER

For digital display of the position in a cassette tape.
The figure changes as the tape runs. Cueing for the start of a melody is facilitated by making a note of the counter reading.

⑤ STOP BUTTON (■ STOP)

For stopping each operation.
Pressing this button stops playback, recording, fast forwarding or rewinding of a tape. It also cancels standby state by PAUSE button operation.

⑥ PLAY INDICATOR**⑦ PLAY BUTTON (PLAY▶)**

For playback of a tape.
Press this button to start playback. The PLAY INDICATOR illuminates in green color.

⑧ *DOLBY NR BUTTON (DOLBY SYSTEM NR)

For recording or playback using the Dolby NR system.
Press this switch to use the Dolby NR system. The DOLBY NR INDICATOR illuminates in green color.
Press this switch again to invalidate the Dolby NR system.

⑨ LED LEVEL DISPLAY (peak level meter)

For clear indication of the recording or playback level.

⑩ MPX FILTER SWITCH (mpx filter)

For cutting the multiplex noise during recording of an FM stereo broadcasting program by using the Dolby NR system.
Depress this switch to invalidate the MPX filter function.

⑪ DOLBY NR INDICATOR (Dolby NR)

For indication of the validation of the Dolby NR system.

⑫ POWER INDICATOR**⑬ POWER SWITCH (POWER)**

For power turning on and off.
When this switch is pressed with the AC cord plugged to an AC outlet, the POWER INDICATOR illuminates.

⑭ HEADPHONES JACK (HEADPHONES)

For connection of stereo headphones.
The sound volume can be adjusted by the OUTPUT LEVEL control.

⑮ REWIND BUTTON (◀◀ REW)

For rewinding of a tape at a high speed.

⑯ FAST FORWARD BUTTON (F. FWD▶▶)

For fast forwarding of a tape.

⑰ TAPE SELECTORS (BIAS/EQUALIZATION)

For selection of metal, CrO₂, FeCr or LN position according to the type of the tape to be used.

⑱ RECORD INDICATOR**⑲ RECORD BUTTON (REC●)**

For recording on a tape.
Press this button and the PAUSE button at the same time to provide standby state for recording. The RECORD INDICATOR illuminates in red color and PAUSE INDICATOR illuminates in yellow color. Recording starts when the PLAY button is pressed in this state.

⑳ PAUSE INDICATOR**㉑ PAUSE BUTTON (PAUSE II)**

For temporary stopping of playback or recording. Also press this button with the RECORD button to provide standby state for recording.

㉒ BIAS FINE TRIM KNOB (BIAS FINE TRIM)

For setting of the optional bias for the tape to be used. Normally set at the center position. Turn it counter-clockwise to attenuate the high signal level range, or clockwise to boost the high signal level range, during recording.

㉓ AUTOMATIC REPEAT BUTTON (AUTO REPEAT)

For automatic repeating of playback operation to enable endless playback.

㉔ OUTPUT LEVEL CONTROL (OUTPUT LEVEL)

For control of the output level during playback or monitoring of the recording sound.
It also controls the volume of the sound monitored through headphones.

㉕ INPUT SELECTOR (input selector)

For selection of the input source for recording.
LINE position: For recording from other components.
MIC position: For recording from microphones.

㉖ INPUT LEVEL CONTROL (INPUT LEVEL)

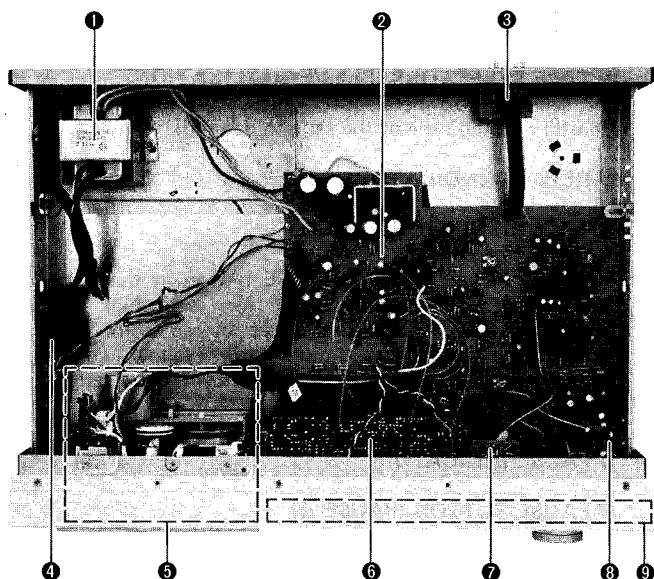
For input level control during recording.
The input level is shown on the LED LEVEL DISPLAY. The front side knob is for the left channel and the rear one is for the right channel. The front and rear knobs turn together unless one knob is held by another hand.

㉗ MICROPHONE JACKS (MICROPHONES)

For connection of recording microphones.
Use low-impedance microphones.

* Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbols are trademarks of Dolby Laboratories Licensing Corporation.

INTERNAL VIEW



- ① POWER TRANSFORMER
- ② MAIN P.C. BOARD (PCB-1)
- ③ JACK P.C. BOARD (PCB-8)
- ④ POWER SWITCH
- ⑤ CASSETTE TAPE RECORDER
MECHANICAL ASSEMBLY
- ⑥ LOGIC CONTROL P.C. BOARD (PCB-2)
- ⑦ DOLBY NR SWITCH P.C. BOARD (PCB-4)
- ⑧ METER AMP. P.C. BOARD (PCB-3)
- ⑨ PLATE ASSEMBLY

CAUTIONS ON REMOVAL OF SWITCH SHAFT (AUTO REPEAT)

(REFER TO REF. NO.207 OF PAGE 16)

Whenever it is necessary to remove the shaft from the push switch for repairing purpose, be careful not to pull out the shaft with the push switch being locked (a state being pushed in). That may damage the lock mechanism of the push switch. Be sure to push the switch once more to release the lock, if the push switch is locked.

DISASSEMBLY PROCEDURES

① CABINET TOP REMOVAL

Remove the screws ① to ⑥ in Fig. 1 and then remove the cabinet top.

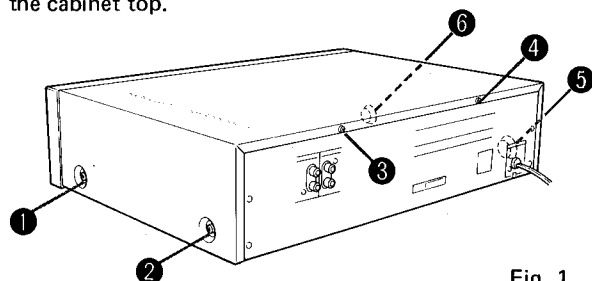


Fig. 1

② CABINET BOTTOM REMOVAL

Remove the screws ① to ⑩ in Fig. 2 and then remove the cabinet bottom.

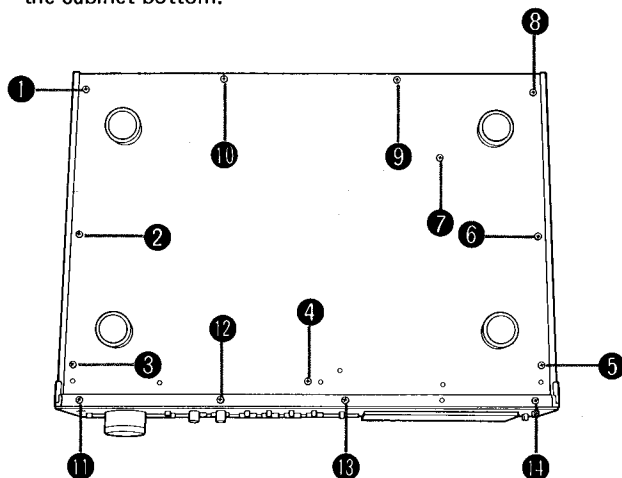


Fig. 2

③ FRONT PANEL ASSEMBLY REMOVAL

1. Remove the cabinet top. (Refer to step ①)
2. Unsolder the lead wires which are connected to rec., play and pause indicator P.C. board.
3. Pull out the input level knobs (Lch and Rch).
4. Remove the cassette door assembly.
5. Remove the screws ① to ⑭ in Fig. 2 and ① to ④ in Fig. 3 and then remove the front panel assembly.

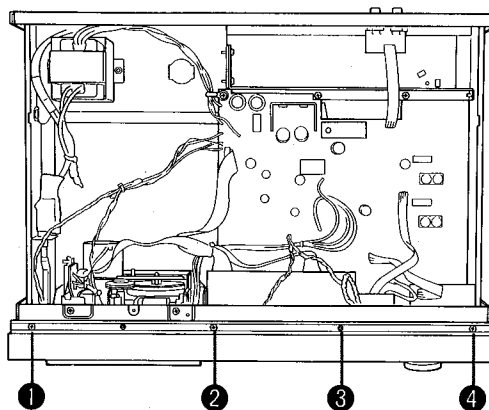


Fig. 3

④ METER AMP. P.C. BOARD REMOVAL

1. Remove the front panel assembly. (Refer to step ③)
2. Disconnect the connector from LED level display assembly and remove the screws ① and ② in Fig. 4 and then remove the meter amp. P.C. board.

* Parts inspection and exchange would be possible at this condition.

3. When detaching the meter amp. P.C. board, unsolder the lead wires which are connected to the meter amp. P.C. board.

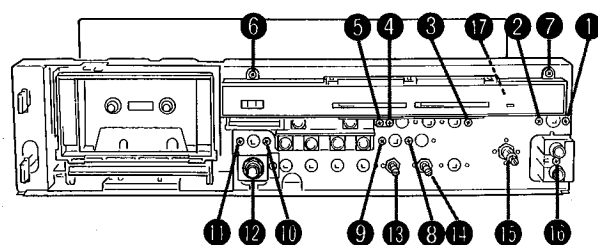


Fig. 4

5 DOLBY NR SWITCH P.C. BOARD REMOVAL

1. Remove the front panel assembly. (Refer to step 3)
 2. Remove the screw 17 in Fig. 4 (rear of plate assembly) and then remove dolby NR indicator P.C. board.
 3. Remove the screws 3 and 4 in Fig. 4 and then remove the dolby NR switch P.C. board.
- * Parts inspection and exchange would be possible in this condition.
4. When detaching the dolby NR switch P.C. board, unsolder the lead wires which are connected to the dolby NR switch P.C. board.

6 PLATE ASSEMBLY REMOVAL

1. Remove the dolby NR switch P.C. board. (Refer to step 5)
2. Pull out the connector which is connected to LED level display assembly.
3. Unsolder the lead wires which are connected to reed switch P.C. board.
4. Remove the belt of the counter.
5. Remove the screws 5 to 7 in Fig. 4 and then remove the plate assembly.

7 LOGIC CONTROL P.C. BOARD REMOVAL

1. Remove the plate assembly. (Refer to step 6)
2. Pull out the auto repeat push button.
3. Disconnect the connectors from main P.C. board and connector panel of cassette tape recorder mechanical assembly.
4. Remove the screws 9 to 11 in Fig. 4 and then remove the logic control P.C. board.

8 MAIN P.C. BOARD REMOVAL

1. Remove the meter amp. P.C. board and logic control P.C. board. (Refer to step 4 and 7)
2. Unsolder the lead wires which are connected to the main P.C. board.
3. Pull out the knobs of bias fine trim and output level.
4. Remove the hexagonal nuts 12 to 15 and the screw 16 in Fig. 4.
5. Remove the screws 1 to 3 in Fig. 5 and the screws 1 and 2 in Fig. 6 and then pull out main P.C. board backward.

9 CASSETTE TAPE RECORDER MECHANICAL ASSEMBLY REMOVAL

1. Remove the cabinet bottom and front panel assembly. (Refer to step 2 and 3)
2. Unsolder the lead wires and disconnect the connector which are connected to the cassette tape recorder mechanical assembly.
3. Remove the screws 4 and 5 in Fig. 5 and the screws 1 and 2 in Fig. 7 and then remove the cassette tape recorder mechanical assembly backward.

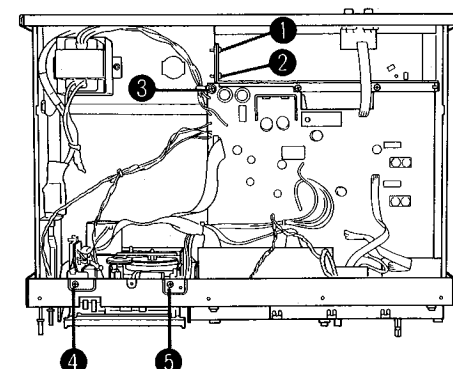


Fig. 5

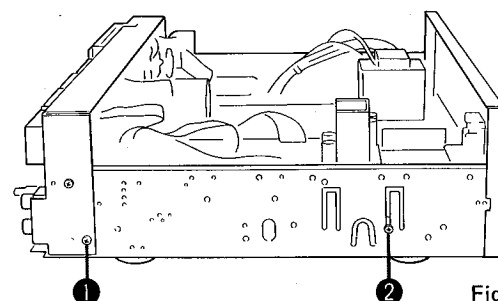


Fig. 6

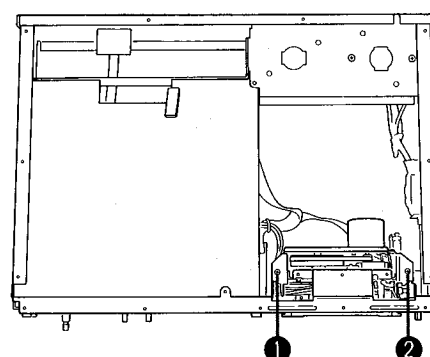


Fig. 7

10 PLATE REMOVAL

1. Remove the cassette tape mechanical assembly. (Refer to step 9)
2. Unsolder the lead wires of LED with the plate.
3. Remove the screws 1 and 2 in Fig. 8 and then remove the plate.

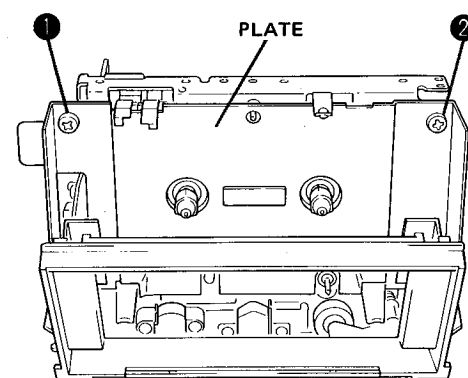


Fig. 8

11 EJECT LOCK ARM REMOVAL

1. Remove the plate. (Refer to step 10)
2. Remove the springs 1 and 2 in Fig. 9 and remove the screw 3 in Fig. 9 and then remove the eject lock arm.

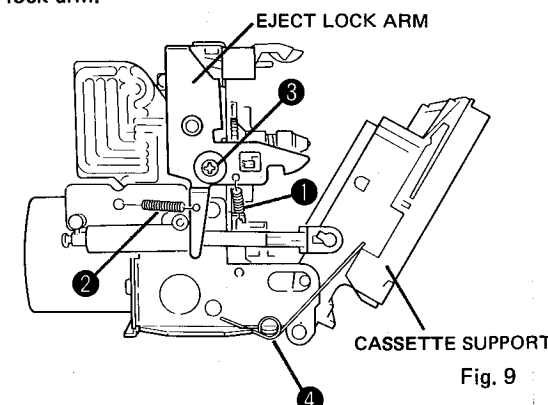


Fig. 9

12 MICRO SWITCH REMOVAL

1. Remove the eject lock arm. (Refer to step 11)
2. Unsolder the lead wires which are connected to the micro switch.
3. Remove the screws 2 and 3 in Fig. 10 and then remove the micro switch.

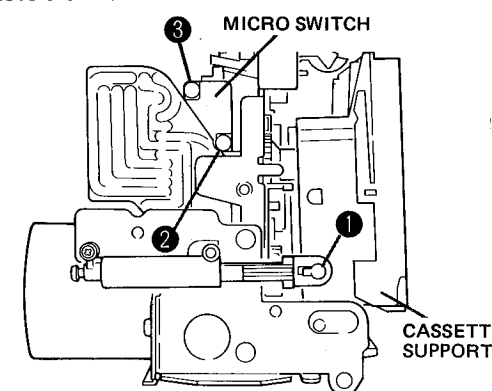


Fig. 10

13 CASSETTE SUPPORT REMOVAL

1. Remove the eject lock arm. (Refer to step 11)
2. Remove the spring 4 in Fig. 9 and remove the joint of damper 1 in Fig. 10 from cassette support.
3. Remove the screws 1 to 3 in Fig. 11 and remove the bracket and then remove the cassette support.

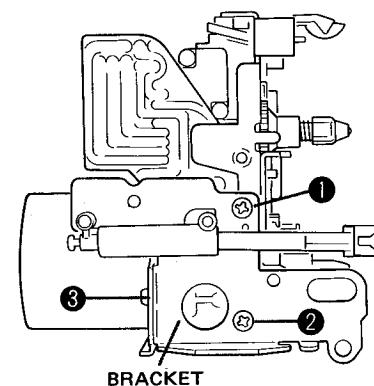


Fig. 11

14 PINCH ROLLER AND HEAD REMOVAL

1. Remove the cassette support. (Refer to step 13)
 2. Remove the lock washer 1 in Fig. 12 and remove the actuator of pinch roller spring 6 in Fig. 12 and then pull out the pinch roller.
 3. Remove the screws 2 and 3 in Fig. 12 and then remove the erase head.
 4. Remove the screws 4 and 5 in Fig. 12 and then remove the record/playback head.
- * Be careful not to lose the spring which are attached to the screws 2 and 4 in Fig. 12.
- Always adjust the azimuth after replacing the record/playback head. (Refer to alignment procedures)

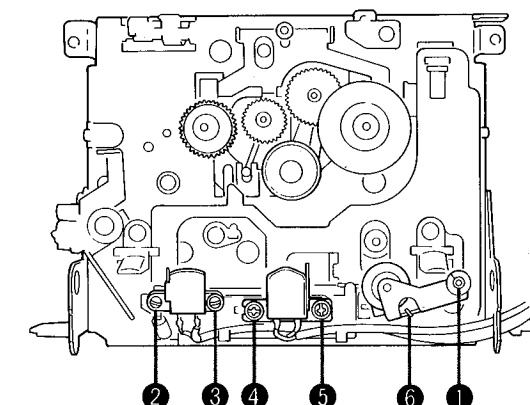


Fig. 12

15 MOTOR AND BELT REMOVAL

1. Remove the cassette tape recorder mechanical assembly. (Refer to step 9)
2. Unsolder the lead wires which are connected to the motor.
3. Remove the screw 1 in Fig. 13 and remove actuators 2 and 3 when pulling down the motor bracket and then remove the motor bracket and remove main and sub belts.
4. Remove the screws 1 and 2 in Fig. 14 and then remove the motor.

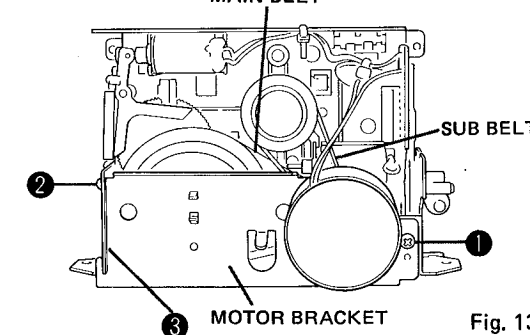


Fig. 13

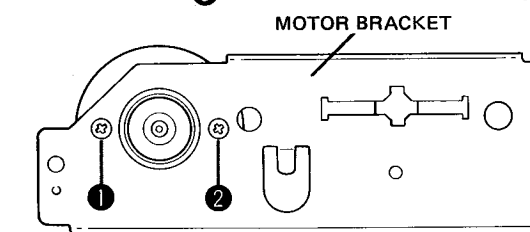


Fig. 14

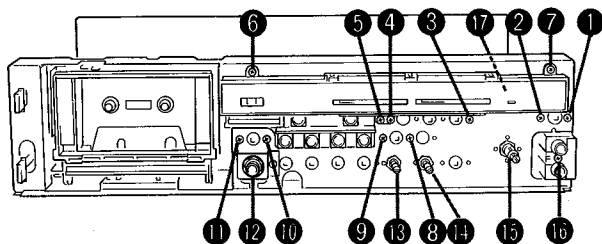


Fig. 4

5 DOLBY NR SWITCH P.C. BOARD REMOVAL

1. Remove the front panel assembly. (Refer to step 3)
2. Remove the screw 17 in Fig. 4 (rear of plate assembly) and then remove dolby NR indicator P.C. board.
3. Remove the screws 3 and 4 in Fig. 4 and then remove the dolby NR switch P.C. board.

* Parts inspection and exchange would be possible in this condition.

4. When detaching the dolby NR switch P.C. board, unsolder the lead wires which are connected to the dolby NR switch P.C. board.

6 PLATE ASSEMBLY REMOVAL

1. Remove the dolby NR switch P.C. board. (Refer to step 5)
2. Pull out the connector which is connected to LED level display assembly.
3. Unsolder the lead wires which are connected to reed switch P.C. board.
4. Remove the belt of the counter.
5. Remove the screws 5 to 7 in Fig. 4 and then remove the plate assembly.

7 LOGIC CONTROL P.C. BOARD REMOVAL

1. Remove the plate assembly. (Refer to step 6)
2. Pull out the auto repeat push button.
3. Disconnect the connectors from main P.C. board and connector panel of cassette tape recorder mechanical assembly.
4. Remove the screws 8 to 11 in Fig. 4 and then remove the logic control P.C. board.

8 MAIN P.C. BOARD REMOVAL

1. Remove the meter amp. P.C. board and logic control P.C. board. (Refer to step 4 and 7)
2. Unsolder the lead wires which are connected to the main P.C. board.
3. Pull out the knobs of bias fine trim and output level.
4. Remove the hexagonal nuts 12 to 15 and the screw 16 in Fig. 4.
5. Remove the screws 1 to 3 in Fig. 5 and the screws 1 and 2 in Fig. 6 and then pull out main P.C. board backward.

9 CASSETTE TAPE RECORDER MECHANICAL ASSEMBLY REMOVAL

1. Remove the cabinet bottom and front panel assembly. (Refer to step 2 and 3).
2. Unsolder the lead wires and disconnect the connector which are connected to the cassette tape recorder mechanical assembly.
3. Remove the screws 4 and 5 in Fig. 5 and the screws 1 and 2 in Fig. 7 and then remove the cassette tape recorder mechanical assembly backward.

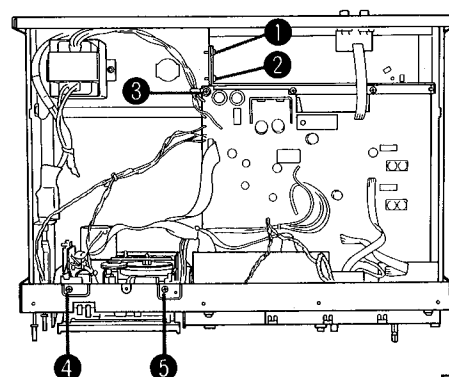


Fig. 5

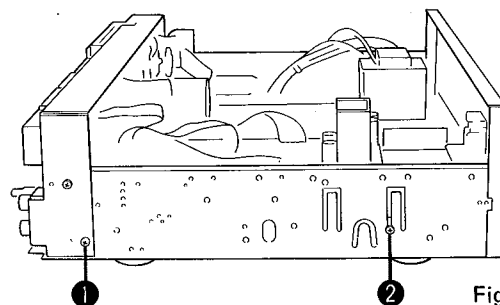


Fig. 6

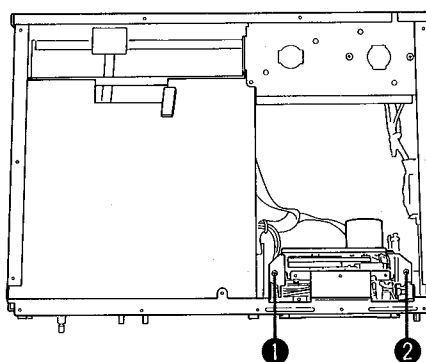


Fig. 7

10 PLATE REMOVAL

1. Remove the cassette tape mechanical assembly. (Refer to step 9)
2. Unsolder the lead wires of LED with the plate.
3. Remove the screws 1 and 2 in Fig. 8 and then remove the plate.

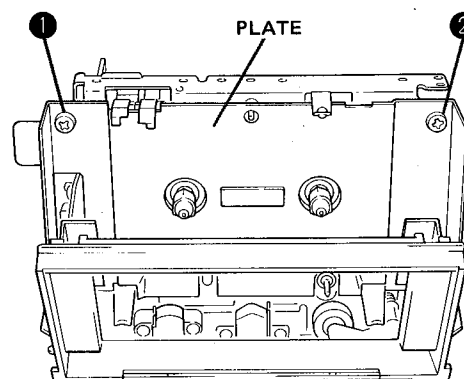


Fig. 8

11 EJECT LOCK ARM REMOVAL

1. Remove the plate. (Refer to step 10)
2. Remove the springs ① and ② in Fig. 9 and remove the screw ③ in Fig. 9 and then remove the eject lock arm.

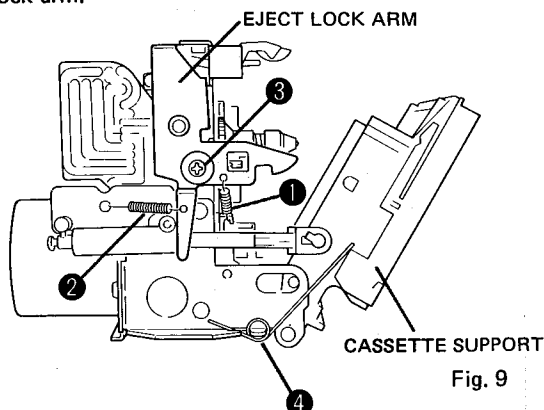


Fig. 9

12 MICRO SWITCH REMOVAL

1. Remove the eject lock arm. (Refer to step 11)
2. Unsolder the lead wires which are connected to the micro switch.
3. Remove the screws ② and ③ in Fig. 10 and then remove the micro switch.

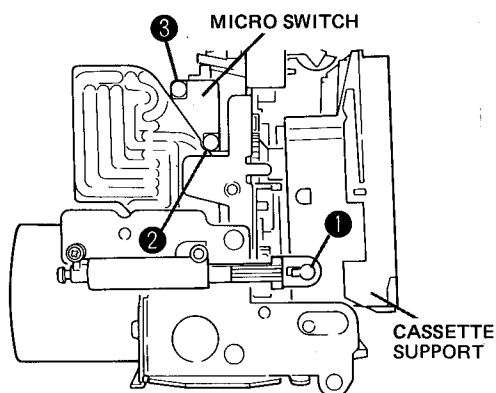


Fig. 10

13 CASSETTE SUPPORT REMOVAL

1. Remove the eject lock arm. (Refer to step 11)
2. Remove the spring ④ in Fig. 9 and remove the joint of damper ① in Fig. 10 from cassette support.
3. Remove the screws ① to ③ in Fig. 11 and remove the bracket and then remove the cassette support.

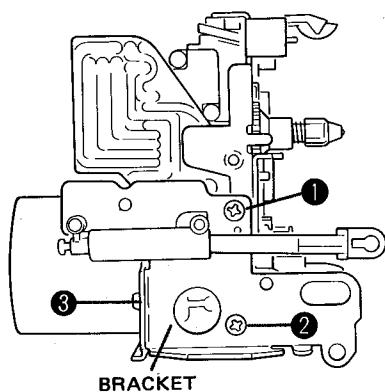


Fig. 11

14 PINCH ROLLER AND HEAD REMOVAL

1. Remove the cassette support. (Refer to step 13)
 2. Remove the lock washer ① in Fig. 12 and remove the actuator of pinch roller spring ⑥ in Fig. 12 and then pull out the pinch roller.
 3. Remove the screws ② and ③ in Fig. 12 and then remove the erase head.
 4. Remove the screws ④ and ⑤ in Fig. 12 and then remove the record/playback head.
- * Be careful not to lose the spring which are attached to the screws ② and ④ in Fig. 12.
Always adjust the azimuth after replacing the record/playback head. (Refer to alignment procedures)

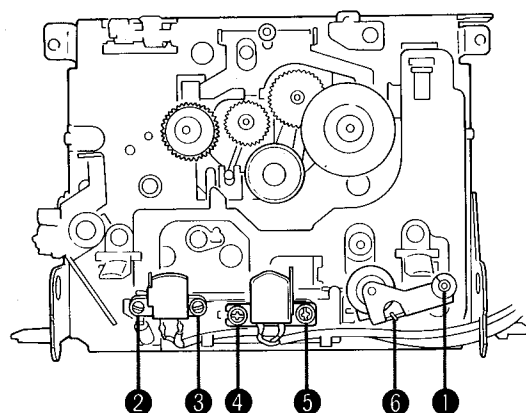


Fig. 12

15 MOTOR AND BELT REMOVAL

1. Remove the cassette tape recorder mechanical assembly. (Refer to step 9)
2. Unsolder the lead wires which are connected to the motor.
3. Remove the screw ① in Fig. 13 and remove actuators ② and ③ when pulling down the motor bracket and then remove the motor bracket and remove main and sub belts.
4. Remove the screws ① and ② in Fig. 14 and then remove the motor.

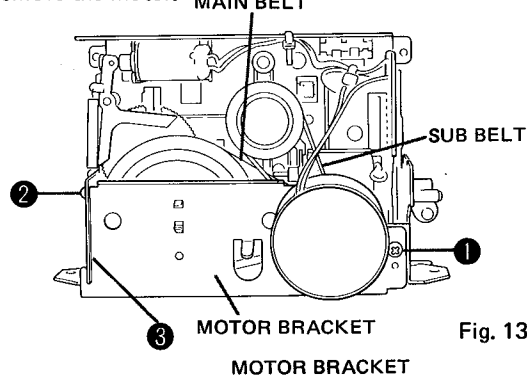


Fig. 13

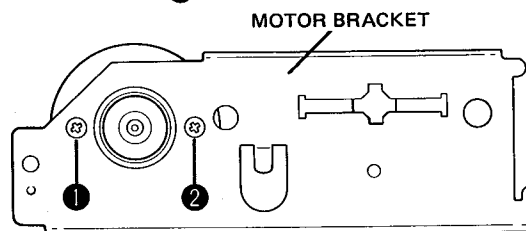


Fig. 14

ALIGNMENT PROCEDURES

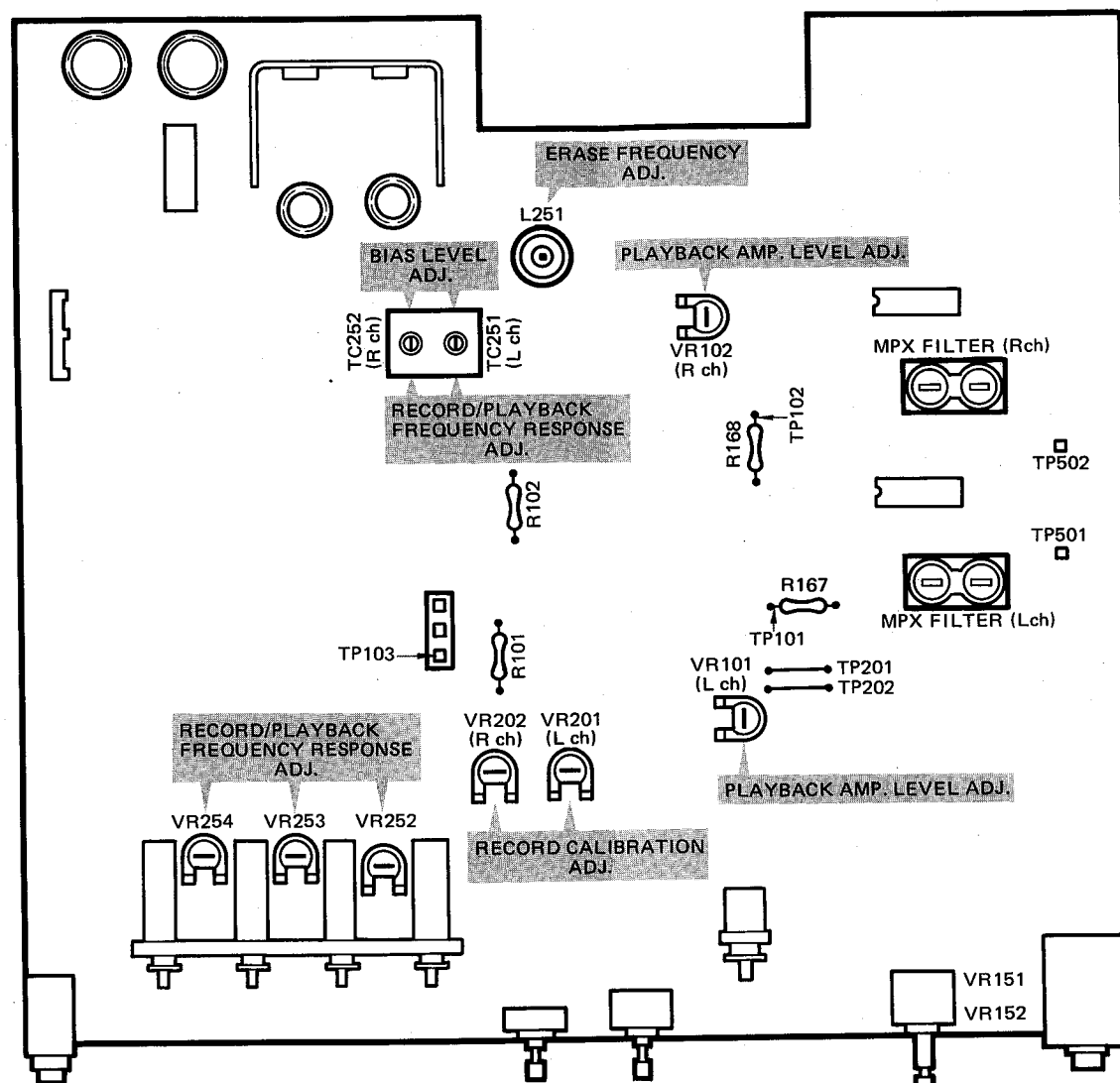


Fig. 1

ELECTRICAL ADJUSTMENT

General conditions (unless otherwise noted)

- Tape selector switch is LN position.
- Dolby NR switch is off position.
- MPX filter switch is off position.
- Input selector switch is line position.
- Bias fine trim control at center.
- Output level control at maximum.

1. TAPE SPEED ADJUSTMENT

- Connect a frequency counter to line out jacks.
- Play back the test tape (MTT-111D) and adjust the variable resistor built in the motor for 3kHz.

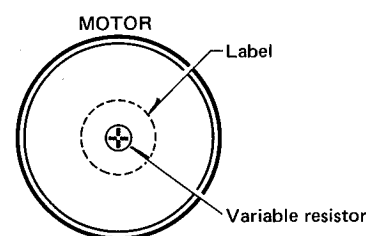


Fig. 2

2. WOW FLUTTER TEST

- Connect a wow flutter meter to line out jacks.
- Play back the test tape (MTT-111D) and confirm that wow flutter is within the specification.

3. DOLBY ENCODE TEST

- Connect a dual channel AC VTVM (A) to TP501 (left), TP502 (right) and ground, and connect a dual channel AC VTVM (B) to TP201 (left), TP202 (right) and ground.
- Connect an audio signal generator to both left and right line input jacks. Set the generator for a 5kHz (100mV) signal. Place unit in record mode.
- Adjust VR151 (left) and VR152 (right) to obtain a VTVM (A) reading of 17.5mV, and note the voltage obtained on the VTVM (B).
- Set the dolby NR switch to on position. Confirm that the voltage is 8dB greater than the voltage obtained on VTVM (B) at step c).

4. DOLBY DECODE TEST

- Insert a cassette without a tape.
- Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- Connect an audio signal generator to TP101 (left), TP102 (right) and ground. Set the generator for a 5kHz signal. Place unit in playback mode. Adjust generator input level for an output on the VTVM of 44mV.
- Set the dolby NR switch to on position. Confirm that the voltage on VTVM becomes 44mV - 8dB $\pm$ 1dB. When the voltage is out of rating, check on circuit and replace IC501 and IC502.

5. METER ADJUSTMENT

- Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- Connect an audio signal generator to both left and right line input jacks. Apply a 400Hz (100mV) signal. Record this signal on the normal blank test tape (XL-1).
- Adjust VR151 (left) and VR152 (right) so that the output on VTVM becomes 580mV.
- Adjust VR401 (left) and VR402 (right) so that 0dB of meter LED lights up.
- Set the output on VTVM to 580mV +5dB, 580mV -10dB and 580mV -20dB with VR151 (left) and VR152 (right). Confirm that LED lights up at each level accurately. When the LED does not light up accurately, proceed with the step d).

METER AMP. P. C. BOARD

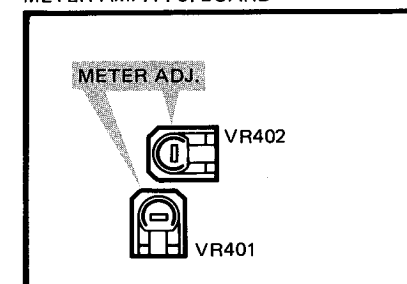


Fig. 3

6. HEAD AZIMUTH ADJUSTMENT

- Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- Play back the test tape (MTT-114) and adjust record/playback head azimuth adjustment screw so that the output on VTVM becomes maximum.

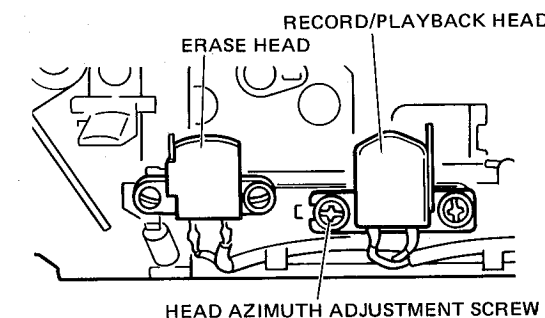


Fig. 4

* When the maximum level point of R channel does not equal that of L channel, connect the oscilloscope as shown in Fig. 5 and proceed with azimuth adjustment so that L and R channels are in phase.

- Connect L channel tape out to "X(or V)" and R channel to "Y(or H)". Observe the lissajous waveform.
- Set L and R channels to monaural. Adjust vertical and horizontal gain so that the waveform becomes 45 degree.
- Adjust azimuth so that the measurement of "a" becomes maximum and the measurement of "b" becomes minimum against 45 degree line.

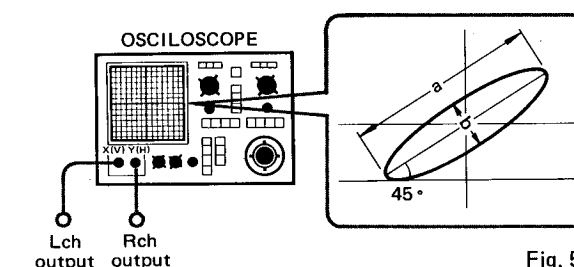


Fig. 5

7. PLAYBACK AMP. LEVEL ADJUSTMENT

- Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- Play back the test tape (MTT-150). Adjust VR101 (left) and VR102 (right) so that the output on VTVM becomes 580mV.

8. PLAYBACK EQUALIZER FREQUENCY CHARACTERISTIC TEST

- Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- Play back the test tape (MTT-216) and note the frequency response obtained on the VTVM. Confirm that frequency response is within the range as shown in Fig. 6.

ALIGNMENT PROCEDURES

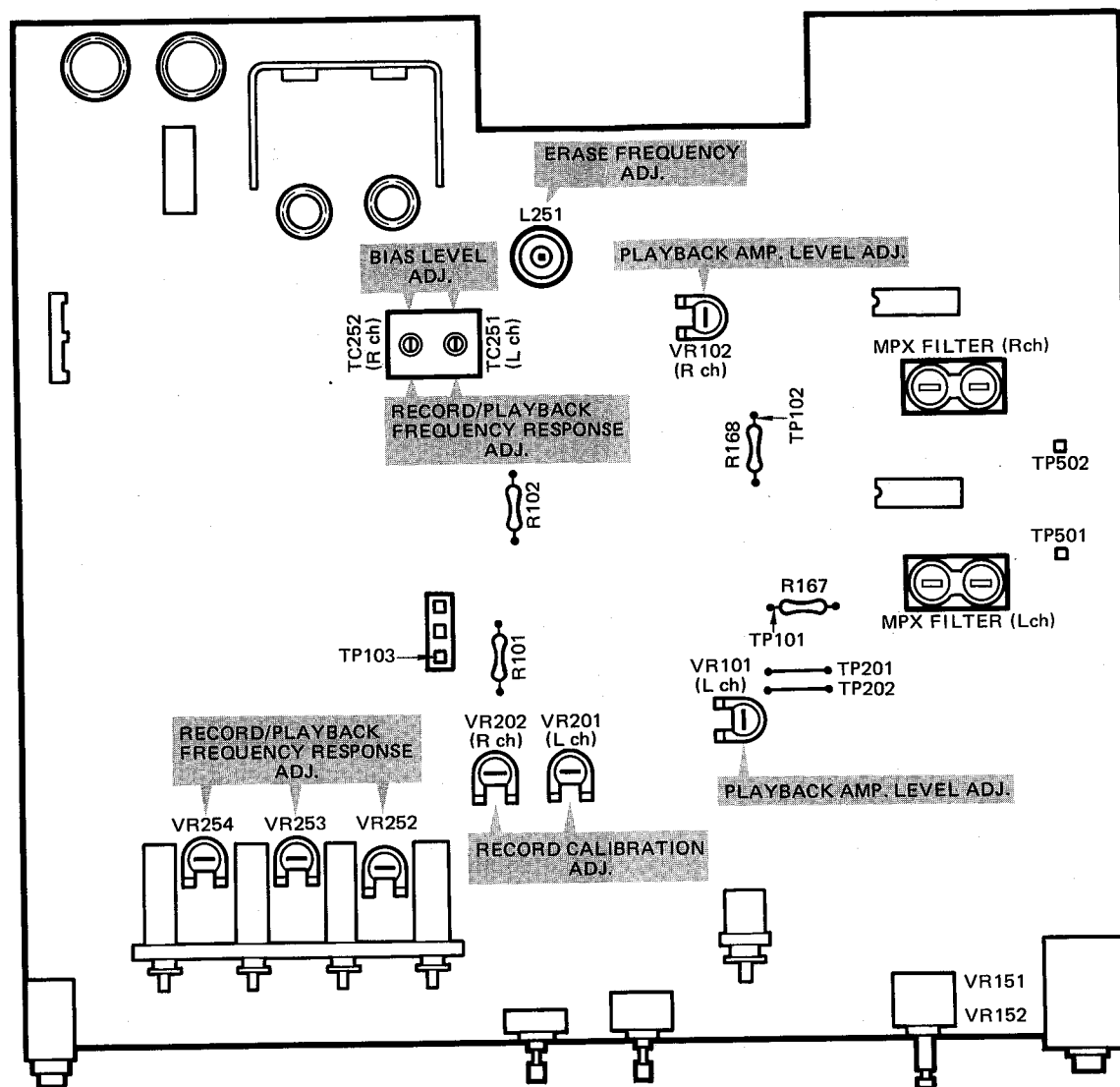


Fig. 1

■ ELECTRICAL ADJUSTMENT

General conditions (unless otherwise noted)

- Tape selector switch is LN position.
- Dolby NR switch is off position.
- MPX filter switch is off position.
- Input selector switch is line position.
- Bias fine trim control at center.
- Output level control at maximum.

1. TAPE SPEED ADJUSTMENT

- Connect a frequency counter to line out jacks.
- Play back the test tape (MTT-111D) and adjust the variable resistor built in the motor for 3kHz.

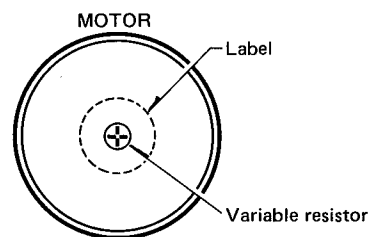


Fig. 2

2. WOW FLUTTER TEST

- Connect a wow flutter meter to line out jacks.
- Play back the test tape (MTT-111D) and confirm that wow flutter is within the specification.

3. DOLBY ENCODE TEST

- Connect a dual channel AC VTVM (A) to TP501 (left), TP502 (right) and ground, and connect a dual channel AC VTVM (B) to TP201 (left), TP202 (right) and ground.
- Connect an audio signal generator to both left and right line input jacks. Set the generator for a 5kHz (100mV) signal. Place unit in record mode.
- Adjust VR151 (left) and VR152 (right) to obtain a VTVM (A) reading of 17.5mV, and note the voltage obtained on the VTVM (B).
- Set the dolby NR switch to on position. Confirm that the voltage is 8dB greater than the voltage obtained on VTVM (B) at step c).

4. DOLBY DECODE TEST

- Insert a cassette without a tape.
- Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- Connect an audio signal generator to TP101 (left), TP102 (right) and ground. Set the generator for a 5kHz signal. Place unit in playback mode. Adjust generator input level for an output on the VTVM of 44mV.
- Set the dolby NR switch to on position. Confirm that the voltage on VTVM becomes 44mV $-8\text{dB} \pm 1\text{dB}$. When the voltage is out of rating, check on circuit and replace IC501 and IC502.

5. METER ADJUSTMENT

- Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- Connect an audio signal generator to both left and right line input jacks. Apply a 400Hz (100mV) signal. Record this signal on the normal blank test tape (XL-1).
- Adjust VR151 (left) and VR152 (right) so that the output on VTVM becomes 580mV.
- Adjust VR401 (left) and VR402 (right) so that 0dB of meter LED lights up.
- Set the output on VTVM to 580mV +5dB, 580mV -10dB and 580mV -20dB with VR151 (left) and VR152 (right). Confirm that LED lights up at each level accurately. When the LED does not light up accurately, proceed with the step d).

METER AMP. P. C. BOARD

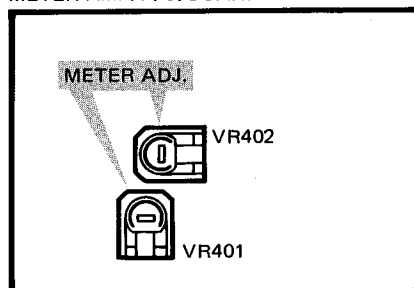


Fig. 3

6. HEAD AZIMUTH ADJUSTMENT

- Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- Play back the test tape (MTT-114) and adjust record/playback head azimuth adjustment screw so that the output on VTVM becomes maximum.

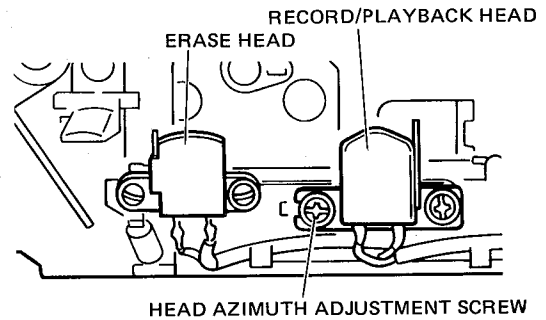


Fig. 4

- * When the maximum level point of R channel does not equal that of L channel, connect the oscilloscope as shown in Fig. 5 and proceed with azimuth adjustment so that L and R channels are in phase.

- Connect L channel tape out to "X(or V)" and R channel to "Y(or H)". Observe the lissajous waveform.
- Set L and R channels to monaural. Adjust vertical and horizontal gain so that the waveform becomes 45 degree.
- Adjust azimuth so that the measurement of "a" becomes maximum and the measurement of "b" becomes minimum against 45 degree line.

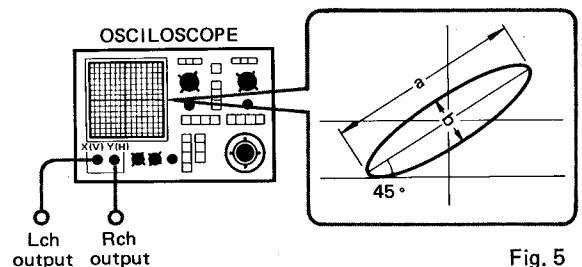


Fig. 5

7. PLAYBACK AMP. LEVEL ADJUSTMENT

- Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- Play back the test tape (MTT-150). Adjust VR101 (left) and VR102 (right) so that the output on VTVM becomes 580mV.

8. PLAYBACK EQUALIZER FREQUENCY CHARACTERISTIC TEST

- Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- Play back the test tape (MTT-216) and note the frequency response obtained on the VTVM. Confirm that frequency response is within the range as shown in Fig. 6.

- c) Set the tape selector switch to FeCr position.
- d) Play back the test tape (MTT-316) and note the frequency response obtained on the VTVM. Confirm that frequency response is within the range as shown in Fig. 6.

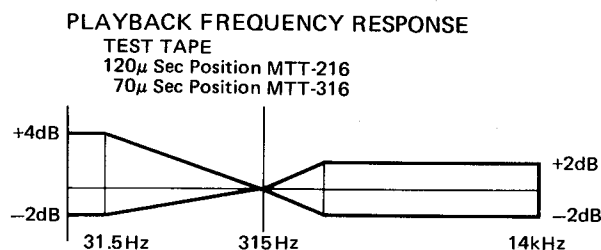


Fig. 6

9. ERASE FREQUENCY ADJUSTMENT

- a) Connect a frequency counter to TP103 and ground.
- b) Set the tape selector switch to metal position.
- c) Place unit in record mode by using metal blank test tape (AC-711).
- d) Adjust L251 for a reading of 105 kHz on the frequency counter.

10. RECORD CALIBRATION TEMPORARY ADJUSTMENT

- a) Connect a dual channel AC VTVM across R101 (left) and across R102 (right).
- b) Place unit in record mode.
- c) Adjust TC251 and TC252 so that bias level becomes about 88mV with metal position by using metal blank test tape (AC-711).
- d) Adjust VR254 so that bias level becomes about 44mV with CrO₂ position by using CrO₂ blank test tape (AC-512).
- e) Adjust VR253 so that bias level becomes about 47mV with FeCr position by using FeCr blank test tape (CS-30).
- f) Adjust VR252 so that bias level becomes about 31mV with LN position by using normal blank test tape (XL-1).
- g) Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- h) Connect an audio signal generator to both left and right line input jacks. Set the generator for a 400Hz (100mV) signal.
- i) Set tape selector switch to LN position. Place unit in record mode. Adjust VR151 (left) and VR152 (right) so that the output on VTVM becomes 580mV.
- j) Recording this signal on the normal blank test tape (XL-1) and playing it, adjust VR201 (left) and VR202 (right) by repeating record and playback so that the output on VTVM becomes 580mV.

11. RECORD/PLAYBACK EQUALIZER FREQUENCY CHARACTERISTIC ADJUSTMENT

- a) Connect a dual channel AC VTVM (A) to TP501 (left), TP502 (right) and ground, and connect a dual channel AC VTVM (B) to both left and right line output jacks.
- b) Connect an audio signal generator to both left and right line input jacks. Adjust the generator input level for an output on VTVM (A) of 580mV -25dB, when the unit is in recording mode.
- c) Set tape selector switch to metal position.
- d) Record the signal from generator on to a metal blank test tape (AC-711) varying the generator frequency from 20Hz to 30kHz.
- e) Play back the metal tape recorded above, note the frequency response obtained on the VTVM (B) and compare to Fig. 7.
- f) If the above frequency response is not within the range as shown in Fig. 7, adjust TC251 (left) and TC252 (right) slightly. Repeat steps d) and e) until playback frequency response on the VTVM (B) is adjusted within the range as shown in Fig. 7.

RECORD/PLAYBACK FREQUENCY RESPONSE

DOLBY-OFF
RECORD LEVEL = DOLBY LEVEL -25dB

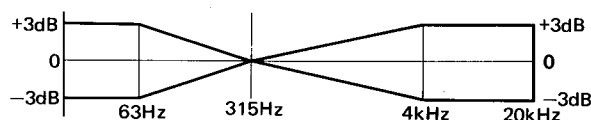


Fig. 7

• **LEVEL DEVIATION between L and R channels**
The maximum level deviation should be within 3dB at 315 ~12.5kHz.

- g) Set tape selector switch to CrO₂ position.
- h) Record the signal from generator on to a CrO₂ blank test tape (AC-512) varying the generator frequency from 20Hz to 30kHz.
- i) Play back the CrO₂ tape recorded above, note the frequency response obtained on the VTVM (B) and compare to Fig. 7.
- j) If the above frequency response is not within the range as shown in Fig. 7, adjust VR254 slightly. Repeat steps h) and i) until playback frequency response on the VTVM (B) is adjusted within the range as shown in Fig. 7.
- k) Set tape selector switch to FeCr position.
- l) Record the signal from generator on to a FeCr blank test tape (CS-30) varying the generator frequency from 20Hz to 30kHz.

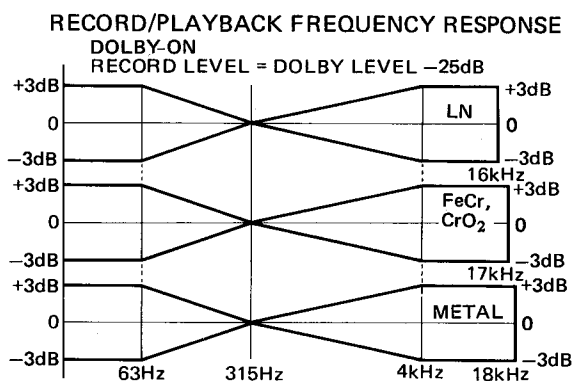
- m) Play back the FeCr tape recorded above and note the frequency response obtained on the VTVM (B).
- n) If the above frequency response is not within the range as shown in Fig. 7, adjust VR253 slightly. Repeat steps l) and m) until playback frequency response on the VTVM (B) is adjusted within the range as shown in Fig. 7.
- o) Set tape selector switch to LN position.
- p) Record the signal from generator on to a normal blank test tape (XL-1) varying the generator frequency from 20Hz to 30kHz.
- q) Play back the normal tape recorded above and note the frequency response obtained on the VTVM (B).
- r) If the above frequency response is not within the range as shown in Fig. 7, adjust VR252 slightly. Repeat steps p) and q) until playback frequency response on the VTVM (B) is adjusted within the range as shown in Fig. 7.

12. RECORD CALIBRATION ADJUSTMENT

- a) Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- b) Connect an audio signal generator to both left and right line input jacks. Set the generator for a 400Hz (100mV) signal.
- c) Place unit in record mode and adjust VR151 (left) and VR152 (right) so that the output on VTVM becomes 580mV.
- d) Recording this signal on the normal blank test tape (XL-1) and playing it, adjust VR201 (left) and VR202 (right) by repeating record and playback so that the playback output on VTVM becomes 580mV.
- e) Confirm that playback levels for FeCr, CrO₂ and metal position as it is with LN position by using each test tapes (CS-30, AC-512 and AC-711).

13. RECORD/PLAYBACK EQUALIZER FREQUENCY CHARACTERISTIC FOR DOLBY NR SYSTEM

After adjusting step 11 and 12, confirm that the frequency response is within the range as shown in Fig. 8 with dolby NR on.



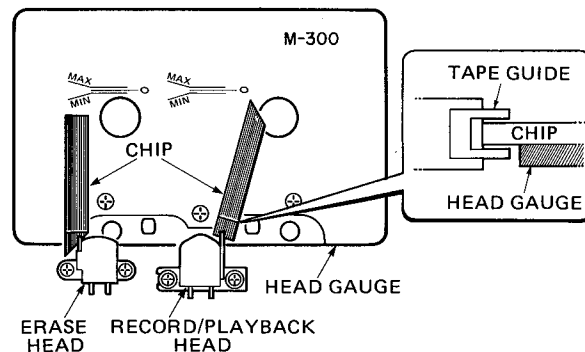
- **LEVEL DEVIATION between L and R channels**
The maximum level deviation should be within 3dB at 315 ~ 12.5kHz.

MECHANISM ADJUSTMENT AND CONFIRMATION

■ HEAD

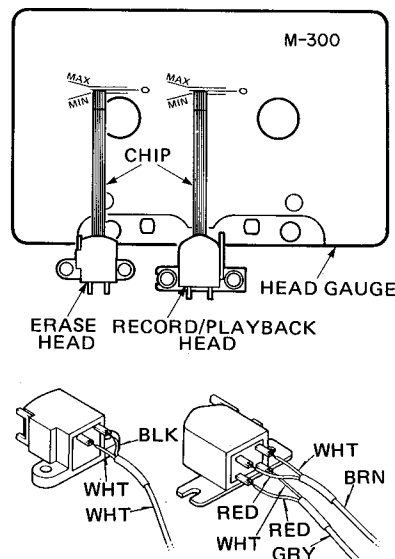
● HEIGHT

- a) Attach the M-300 head gauge plate.
- b) Inspect the height of the head with a adjustment chip attached to the gauge plate at playback mode.
- c) The adjustment chip attached to the gauge plate should not hit the tape guide of record/playback and erase heads.



● FRONT AND REAR POSITION

- a) Attach the M-300 head gauge plate.
- b) Attach the adjustment chip attached to the gauge plate to the center of the head and read the scale on the plate.
- c) The scale should be within MIN and MAX of the M-300 head gauge at both record/playback and erase heads.
- d) If the scale is not within the specified range, adjust it by loosening the screw fixing each head.
- e) After adjustment, apply screw lock paint.



■ PINCH ROLLER

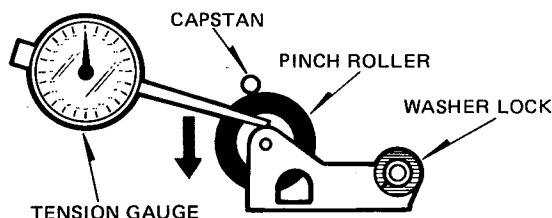
● TAPE RUNNING

- Insert a mirror cassette tape and set to the playback mode.
- The tape should not be curled at the tape guide of the record/playback and erase heads.

NOTES: Confirm that grease or foreign substance adhere to the rubber of the pinch roller, and that no flaw is on the pinch roller.

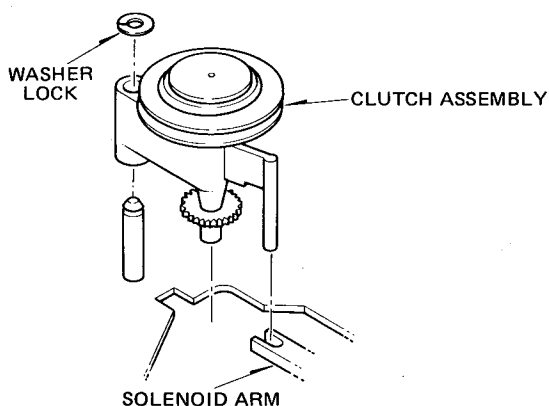
● PINCH ROLLER PRESSURE

- With unit in playback mode, put a tension gauge as shown in the illustration and add the load to arrow direction and measure the value at which the rotation of the pinch roller stops.
- Confirm that the load is between 250g and 350g when the pinch roller leaves the capstan.



■ CLUTCH ASSEMBLY

- Confirm that clutch assembly operates smoothly after replacing.
- Insert the C-60 tape and when stop button is depressed at fast forward/rewind end, clutch assembly return to the neutral position.



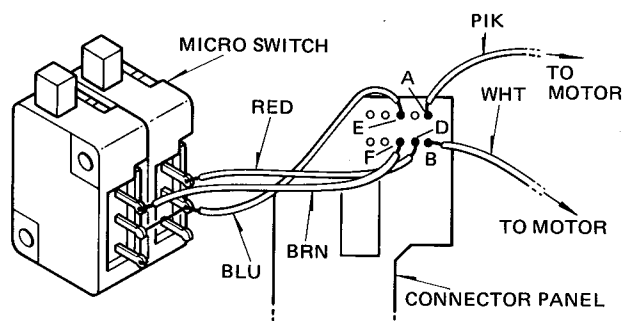
■ MICRO SWITCH

● CASSETTE PACK DETECT SWITCH

- Confirm that the switch operates when the cassette pack (the cassette pack is measurement 63.5mm or a MAZ-0184-C gauge) is set to the right position.
- Confirm that the switch changes to off when you return the switch (SW. ARM) at on position slowly.

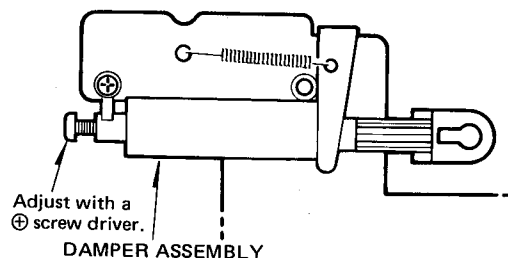
● MIS-ERASE PROTECT SWITCH

- Confirm that the switch operates with a cassette tape which has an actuator for mis-erase protect (a tape which is measurement 62.9mm or a MAZ-0184-C gauge).
- Confirm that the switch changes to off when you return the switch (REC. ARM) at on position.



■ AIR DAMPER

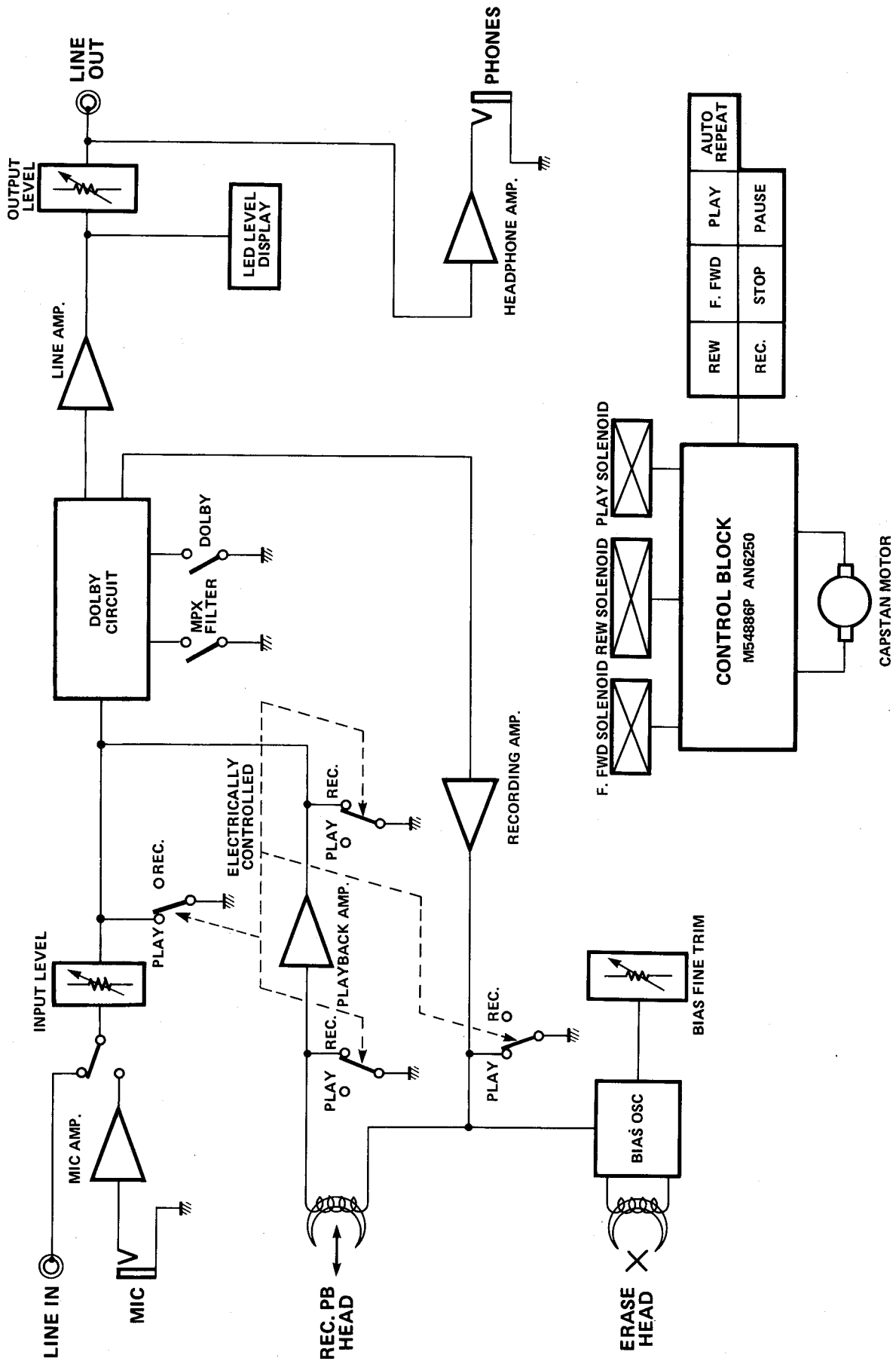
- Confirm that cassette lid opens smoothly and that no unusual sound is heard while opening or closing the cassette lid when the eject button is depressed.
- Confirm that the eject lever does not touch the chassis or the damper, etc. and it operates smoothly.
- Confirm that the eject button can't be depressed during playback.
- Adjust the screw of the damper with a $\oplus$ screw driver so that the speed which is necessary for the cassette support to fully open with the eject lock arm becomes more than one second.



■ BELT

Confirm that the belt does not fall off when you force the fly wheel to stop with your hand while it is rotating.

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

• PLAYBACK MODE (R CH)

The output of record/playback head is fed to base of playback amp. (Q102) and amplified. The output of playback amp. is fed to ④ pin of the dolby IC (IC502). The noise reduction is done with Dolby IC. After noise reduction, the signal is amplified in the line amp. (Q302, Q304) and through output level variable resistor, line out signal is gained.

• RECORDING MODE (L CH)

Mic. input is fed to the base of mic amp. (Q151) and line in input are fed to ④ pin of Dolby IC (IC501). After, noise reduction, recording signal is fed to the record amp. (Q201). The output of record amp. (Q201) is added to the bias current from bias OSC (Q251) and fed to the record/playback head.

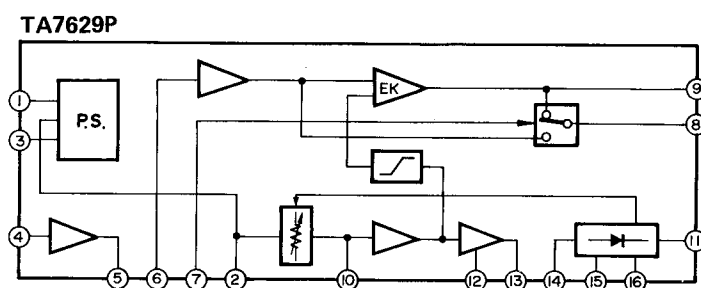
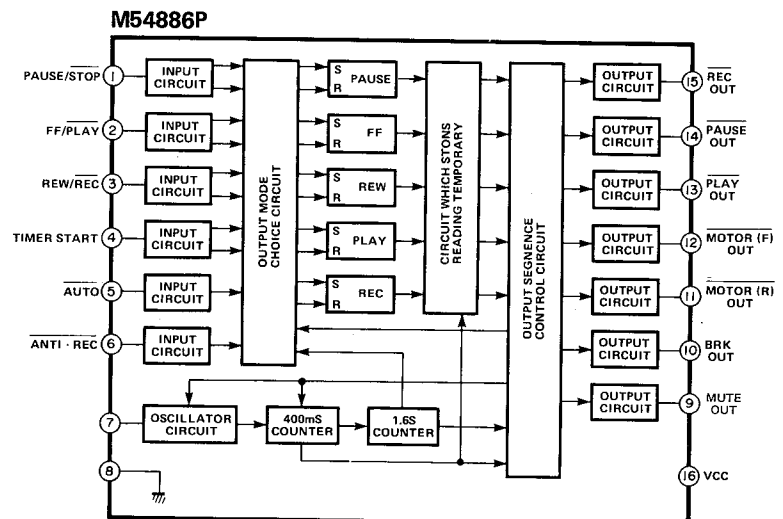
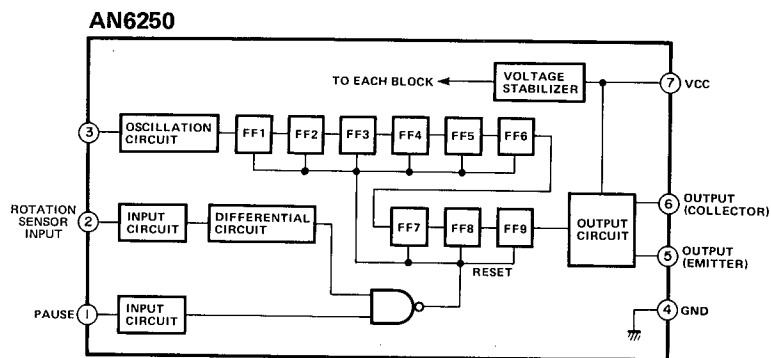
• MUTING

To mute the output of the line amp. Q301, 303 (L ch) and Q302, 304 (R ch), the muting control voltage is taken out from ⑨ pin of the tape deck controller (IC801) and mutes at "high" level. Q53 (L ch) and Q54 (R ch) become on.

• RECORD/PLAYBACK CONTROL SWITCH TABLE

MODE	Q52	Q53	Q701 Q703	Q705	Q707	Q709	Q713	Q715
PLAYBACK IC801 PIN 9	OFF	OFF	ON	OFF	OFF	ON	ON	OFF
RECORD IC801 PIN 15	OFF	OFF	OFF	ON	ON	OFF	OFF	ON

IC FUNCTIONAL BLOCK DIAGRAM



TIMING CHART

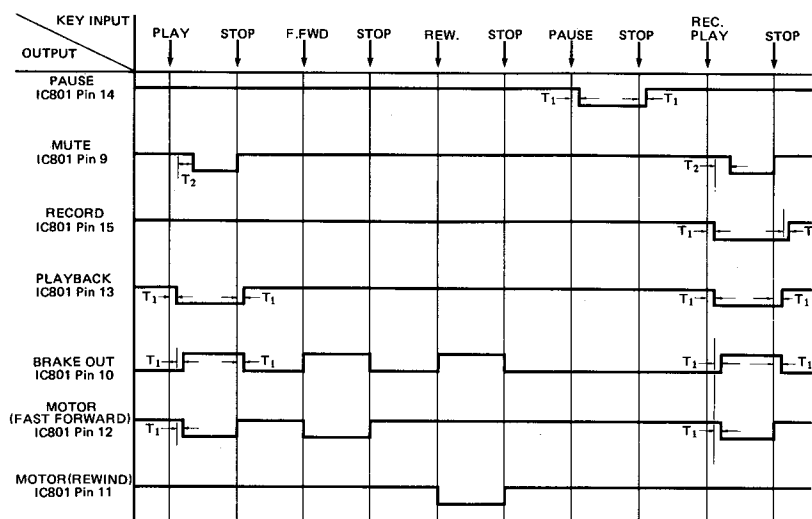


Fig. 1

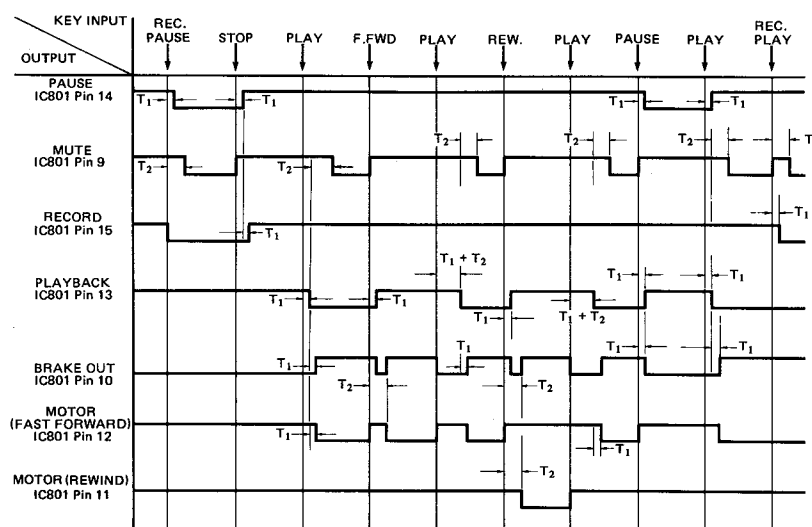


Fig. 2

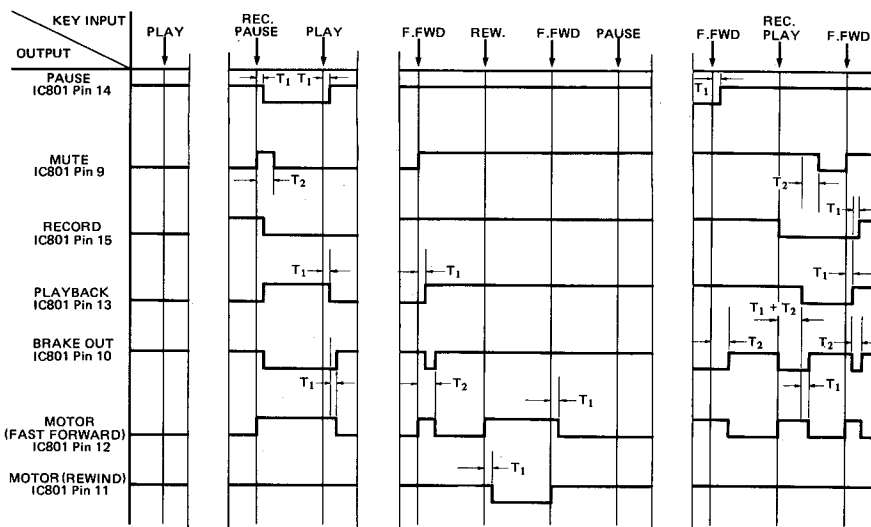


Fig. 3

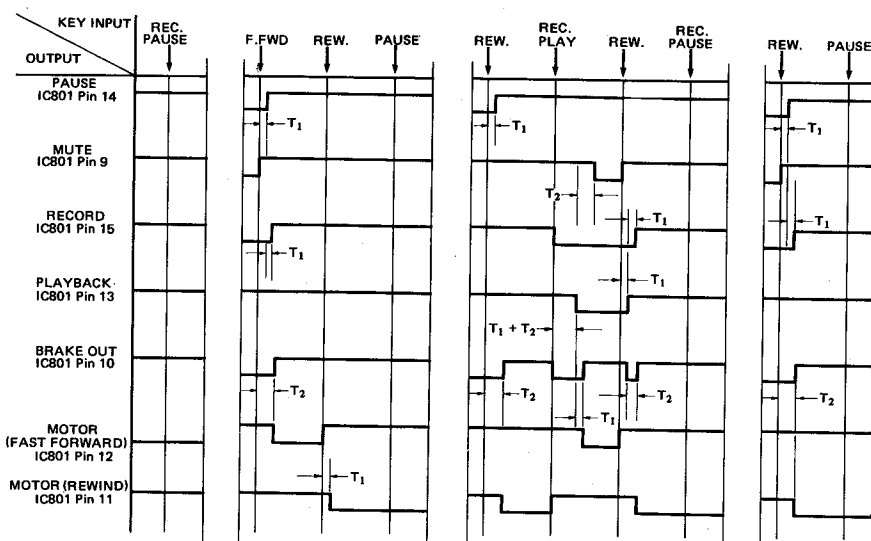


Fig. 4

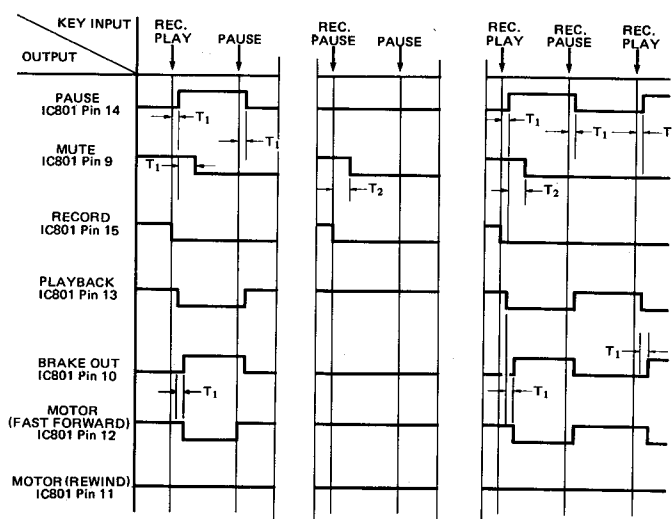


Fig. 5

● AUTO REPEAT TIMING CHART

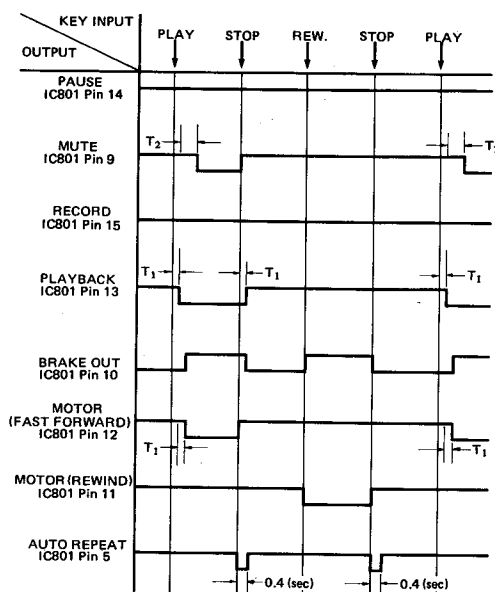


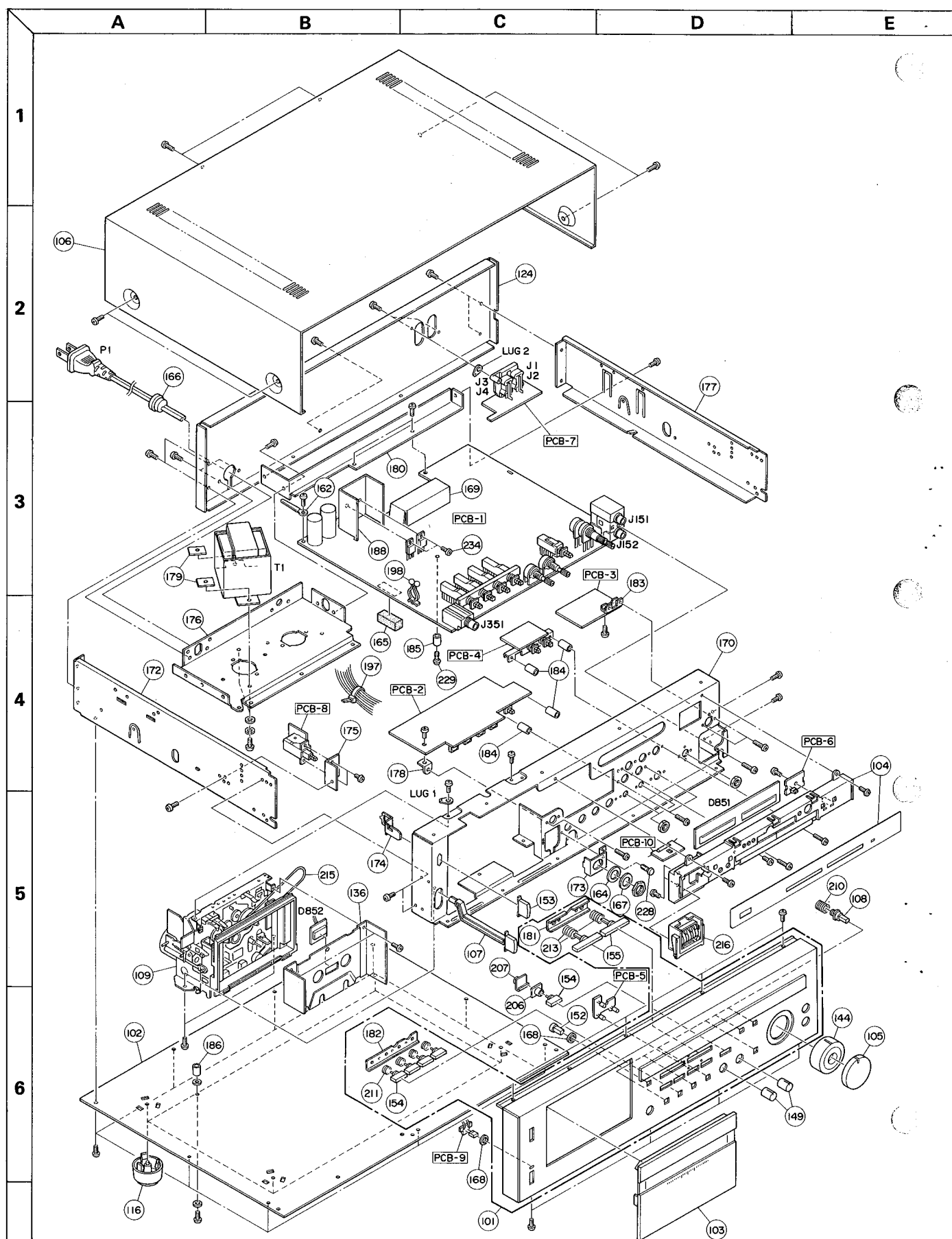
Fig. 6

NOTE

After the power switch is pushed on, the unit remains in stop mode for about 1.6 second. After that, it operates according to each input key as shown figure. During this 1.6 second all input keys are ineffective.

$T_1 = 61$ (msec)
 $T_2 = 400$ (msec)

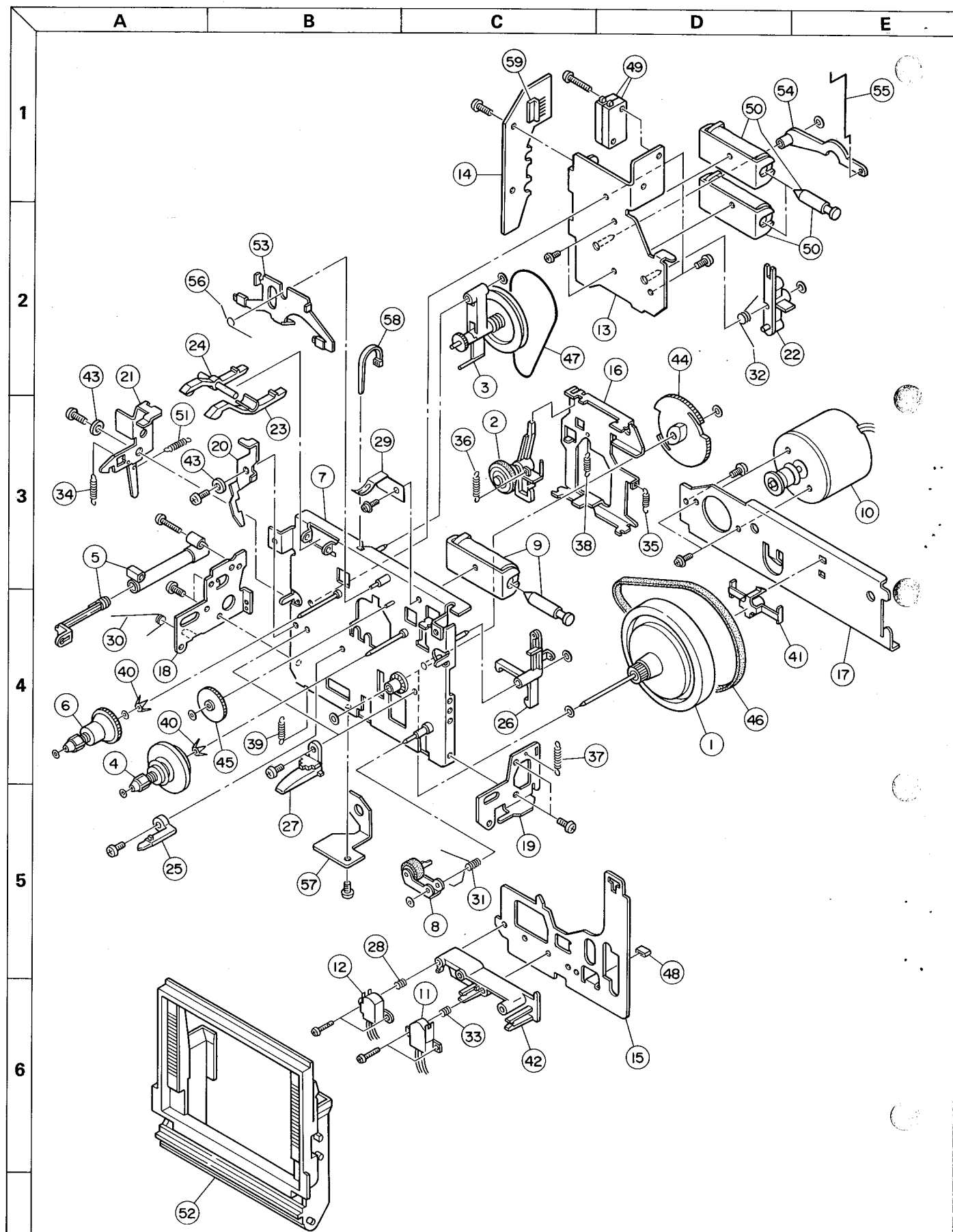
GENERAL UNIT EXPLODED VIEW



GENERAL UNIT PARTS LIST

Ref. No.	Part No.	Description
101	A443-CD101A	Front Panel Assembly
102	A423-CD101A	Cabinet Bottom Assembly
103	A452-CD101A	Door Assembly
104	A514-CD101A	Plate Assembly, L.E.D.
105	A634-CD101A	Knob Assembly, Input Level (L)
106	A414-CD101A	Cabinet Top Assembly
107	A662-CD101A	Push Button Assembly, Power
108	A662-CD101B	Push Button Assembly, Tape Selectors, Dolby NR System, MPX Filter, Input Selector
109	3112-10801	Cassette Tape Recorder Mechanical Assembly
116	1319-0139	Foot
124	1424-07001	Cabinet Back
136	1514-08801	Plate
144	1630-01801	Knob, Input Level (R)
149	1634-02701	Knob, Bias Fine Trim, Output Level
152	1662-05401VN	Push Button, Reset
153	1662-05501VN	Push Button, Eject
154	1662-08502VN	Push Button, Rew., F.FWD, Rec., Pause, Auto Repeat
155	1662-08602VN	Push Button, Stop, Play
162	2218-7001	Holding Bracket
164	2111-1356	Felt, Headphones Jack
165	2112-11251	Sponge
166	2114-415027	Bushing, AC Line Cord
167	2114-72167	Bushing, Headphones Jack
168	2114-01247	Bushing, Power Indicator, Reset Button
169	2216-7124	Shield Plate
170	2211-7222	Chassis
172	2219-7655	Bracket
173	2219-7809	Bracket
174	2219-7810	Bracket
175	2219-7811	Bracket
176	2219-7812	Bracket
177	2219-7813	Bracket
178	2219-7501	Bracket
179	2219-7091	Bracket
180	2219-7836	Bracket
181	2219-7818	Bracket
182	2219-7819	Bracket
183	2219-7824	Bracket
184	2132-01401	Spacer
185	2132-7016	Spacer
186	2132-01405	Spacer
188	2222-7124	Heat Sink
197	2240-7120	Holder
198	2240-7048	Holder
206	2601-7098	Shaft
207	2601-7102	Shaft
210	2651-210188	Spring
211	2651-210192	Spring
213	2651-210197	Spring
215	2642-01444	Belt
216	3131-445001	Counter
228	2459-3003511	Rivet
229	2459-3008011	Rivet
234	2320-7004	Special Screw (+)

CASSETTE MECHANISM EXPLODED VIEW



CASSETTE MECHANISM PARTS LIST

Ref. No.	Part No.	Description
1	FP467-11	Flywheel Assembly
2	FP469-12	Idler Assembly
3	FP470-11	Clutch Assembly
4	FR12N-11	Take-up Reel Assembly
5	FP472-11	Damper Assembly
6	FR12P-11	Supply Reel Assembly
7	F011-132	Chassis
8	F014-053	Pinch Roller
9	PKA16108	Solenoid
10	F064-093	Motor
11	F029-116	Head, Record/Playback
12	F030-059	Head, Erase
13	F214-015	Bracket, Solenoid
14	FP11N-11	Connector Panel
15	FR345-12	Head Base
16	FR346-11	Assist Base
17	FR347-11	Bracket, Motor
18	FR349-13	Bracket, Damper
19	FR350-12	Bracket, Door
20	FR352-11	Safety Lever
21	FC11H-12	Eject Lock Arm
22	FR355-14	FF Solenoid Arm
23	FR356-14	Switch Arm
24	FD17T-12	Record Arm
25	FR358-12	Reference Guide
26	FR359-12	Play Solenoid Arm
27	FR360-12	Cassette Guide
28	FK572-12	Spring, Azimuth
29	FK551-13	Spring, Cassette
30	FK568-11	Spring, Door
31	FK569-12	Spring, Pinch Roller
32	FK570-12	Spring, Solenoid Bracket
33	FK572-11	Spring, Azimuth
34	FK573-11	Spring, Eject Lock Arm
35	FK574-12	Spring, Assist Base
36	FK575-11	Spring, Play Idler
37	FK576-12	Spring, Play Solenoid Arm
38	FK577-12	Spring, Assist Base
39	FK578-12	Spring, Head Base Hold
40	FK579-11	Spring, Back Tension
41	FM281-11	Spacer, Flywheel
42	FM283-13	Spacer, Head
43	FM296-11	Spacer
44	FN153-11	Play Gear
45	FN154-13	Idler Gear
46	FP462-11	Main Belt
47	FP463-11	Sub Belt
48	FP464-11	Cushion
49	FE173-11	Micro Switch
50	PKA16106	Solenoid
51	FK11C-11	Spring, Eject Lock Arm
52	F027-055	Cassette Support
53	F028-025	Brake
54	FD12W-11	Brake Arm
55	FK11Y-12	Rod, Brake Arm
56	FK12A-11	Spring, Brake
57	FC25D-11	Belt Guide
58	FH126-11	Holder
59	KY130-11	Connector

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
CHASSIS MISCELLANEOUS		
P1	4161-0487	AC Line Cord
T1	5584-701376	Power Transformer
D851	5623-LT1042	LED Display Assembly, Peak Level Meter
D852	5637-SLF301C	L.E.D., SLF301C, Yellow, Cassette Illumination
J401	4163-051302	Connector with Lead Wire, 5-Pin
J701	4163-082501	Connector with Lead Wire, 8-Pin
J801	4163-082002	Connector with Lead Wire, 8-Pin
JM151, 501	4242-051102	Jumper Lead, 5-Wire
JM551	4242-042002	Jumper Lead, 4-Wire
CO1	4443-712	Connector, AC Line Cord
LUG1, 2	4211-4	Lug Terminal
PCB-1 MAIN P.C. BOARD		
RESISTORS		
R10, 11	5102-2R2579	2.2 Ω , $\pm 5\%$, 1/4W, Fuse
R254, 259	5102-4R75715	4.7 Ω , $\pm 5\%$, 1/4W, Fuse
R317	5102-1814715	180 Ω , $\pm 5\%$, 1/4W, Fuse
R318	5102-1214715	120 Ω , $\pm 5\%$, 1/4W, Fuse
R511, 512	5174-332381	3.3k Ω , $\pm 1\%$, 1/4W, Metal
R519	5102-6804715	68 Ω , $\pm 5\%$, 1/4W, Fuse
CONTROLS		
VR101, 102	5101-50371920	50k Ω B
VR151, 152	5113-5037682	50k Ω A, Input Level
VR201, 202	5101-50271920	5k Ω B
VR251	5113-1027921	1k Ω B, Bias Fine Trim
VR252	5101-10371920	10k Ω A
VR253, 254	5101-20371920	20k Ω A
VR301, 302	5113-50279122	5k Ω A, Output Level
CAPACITORS		
C6, 7	5345-228D041	2200 μ F, $\pm 20\%$, 25V, Electrolytic
C8, 9	5345-226C041	22 μ F, $\pm 20\%$, 16V, Electrolytic
C10, 11	5345-108C041	1000 μ F, $\pm 20\%$, 16V, Electrolytic
C12, 306	5345-107C041	100 μ F, $\pm 20\%$, 16V, Electrolytic
C51, 521, 522	5345-L104M50	0.1 μ F, $\pm 20\%$, 50V, Electrolytic
C52, 527	5345-226-16	22 μ F, $\pm 50\%$ -10%, 16V, Electrolytic
C53, 353, 354	5345-107B041	100 μ F, $\pm 20\%$, 10V, Electrolytic
C54	5345-105-50	1 μ F, $\pm 75\%$ -10%, 50V, Electrolytic
C101, 102	5359-3915851	390pF, $\pm 5\%$, 100V, Polypropylene
C103, 104	5345-226B0226	22 μ F, $\pm 20\%$, 10V, Electrolytic
C107, 108	5345-107B0951	100 μ F, $\pm 20\%$, 10V, Electrolytic
C109, 110	5345-106C0951	10 μ F, $\pm 20\%$, 16V, Electrolytic
C111, 112	5359-822771	8200pF, $\pm 2\%$, 50V, Polypropylene
C113, 158, 223	5345-227C041	220 μ F, $\pm 20\%$, 16V, Electrolytic
C114	5345-227B041	220 μ F, $\pm 20\%$, 10V, Electrolytic
C151, 152	5345-L475M25	4.7 μ F, $\pm 20\%$, 25V, Electrolytic
C155, 156	5345-L335M50	3.3 μ F, $\pm 20\%$, 50V, Electrolytic
C157, 528	5345-476-16	47 μ F, $\pm 50\%$ -10%, 16V, Electrolytic
C201, 202, 213, 214	5345-336C0951	33 μ F, $\pm 20\%$, 16V, Electrolytic
C203, 204	5345-684F0951	0.68 μ F, $\pm 20\%$, 50V, Electrolytic
C217, 218	5345-225F0951	2.2 μ F, $\pm 20\%$, 50V, Electrolytic
C224, 305	5345-477C041	470 μ F, $\pm 20\%$, 16V, Electrolytic
C225, 226	5359-4715851	470pF, $\pm 5\%$, 100V, Polypropylene
C252	5359-332771	3300pF, $\pm 2\%$, 50V, Polypropylene
C253	5342-476C042	47 μ F, $\pm 20\%$, 16V, Electrolytic
C254	5345-476C041	47 μ F, $\pm 20\%$, 16V, Electrolytic
C301, 302, 501, 502	5345-105F0951	1 μ F, $\pm 20\%$, 50V, Electrolytic
C303, 304	5345-476C0951	47 μ F, $\pm 20\%$, 16V, Electrolytic
C309, 310	5345-474F0951	0.47 μ F, $\pm 20\%$, 50V, Electrolytic
C351, 352, 519, 520	5345-106-16	10 μ F, $\pm 50\%$ -10%, 16V, Electrolytic
C503, 504, 505, 506	5345-336-10	33 μ F, $\pm 50\%$ -10%, 10V, Electrolytic
C507, 508	5359-1025851	1000pF, $\pm 5\%$, 100V, Polypropylene

D551-CD101A

Ref. No.	Part No.	Description
C509, 510	5359-1225851	1200pF, $\pm 5\%$, 100V, Polypropylene
C511, 512	5359-562771	5600pF, $\pm 2\%$, 50V, Polypropylene
C513, 514	5359-273771	0.027 μ F, $\pm 2\%$, 50V, Polypropylene
C515, 516	5359-472771	4700pF, $\pm 2\%$, 50V, Polypropylene
C523, 524	5345-L334M50	0.33 μ F, $\pm 20\%$, 50V, Electrolytic
C525	5345-227-16	220 μ F, $+50\% -10\%$, 16V, Electrolytic
C526	5345-477-10	470 μ F, $+50\% -10\%$, 10V, Electrolytic
C701	5342-335F0951	3.3 μ F, $\pm 20\%$, 50V, Electrolytic
C703	5345-336C041	33 μ F, $\pm 20\%$, 16V, Electrolytic
TC251, 252	5372-61	Trimmer Capacitor
INTEGRATED CIRCUITS		
IC501, 502	5652-TA7629P	TA7629P
TRANSISTORS		
Q1	5612-632K(E)	2SB632K(E)
Q2, 201, 202	5613-2603(F)	2SC2603(F)
Q3	5611-1115(F)	2SA1115(F)
Q4	5614-612K(E)	2SD612K(E)
Q51, 301, 302, 711	5611-1115(F)or(E)	2SA1115(E) or 2SA1115(F)
Q52, 303, 304, 501, 502, 503, 504, 705, 706, 707, 708, 712, 716	5613-2603(F)or(E)	2SC2603(E) or 2SC2603(F)
Q53, 54, 709, 710, 713, 714	5613-2878(B)	2SC2878(B)
Q101, 102	5613-2855(E)	2SC2855(E)
Q103, 104, 151, 152	5613-2320L(F)	2SC2320L(F)
Q251, 351, 352	5614-667(C)	2SD667(C)
Q252	5613-1213(C)	2SC1213(C)
Q701, 702, 703, 704	5613-1845(E)	2SC1845(E)
Q715	5611-673(C)	2SA673(C)
DIODES		
D1	5685-1F	Bridge Silicon, SIBA10
D2, 3	5635-RD9R1EB2	Zener, RD9.1EB2
D51, 52, 53, 54, 55, 57, 701, 702	5631-1S2473	1S2473
D58	5635-RD3R9EB2	Zener, RD3.9EB2
D201	5635-HZ7C1L	Zener, HZ7C1L
COILS		
L201, 202	5995-223156	22mH
L203, 204	5995-272156	2.7mH
L251	5933-70122	
MISCELLANEOUS		
F501, 502	5214-33	LC Components
SW151	4431-A027110	Push Switch, Input Selector
SW251, 252, 253, 254	4431-04167163	Push Switch, Tape Selector
J151, 152	4452-0110	2-Pin Jack, Microphones
J351	4451-00107	Jack, Headphones
P701	4443-080177	Connector, 8-Pin
	2132-5049	Spacer, R10 and R11

PCB-2 LOGIC CONTROL P.C. BOARD

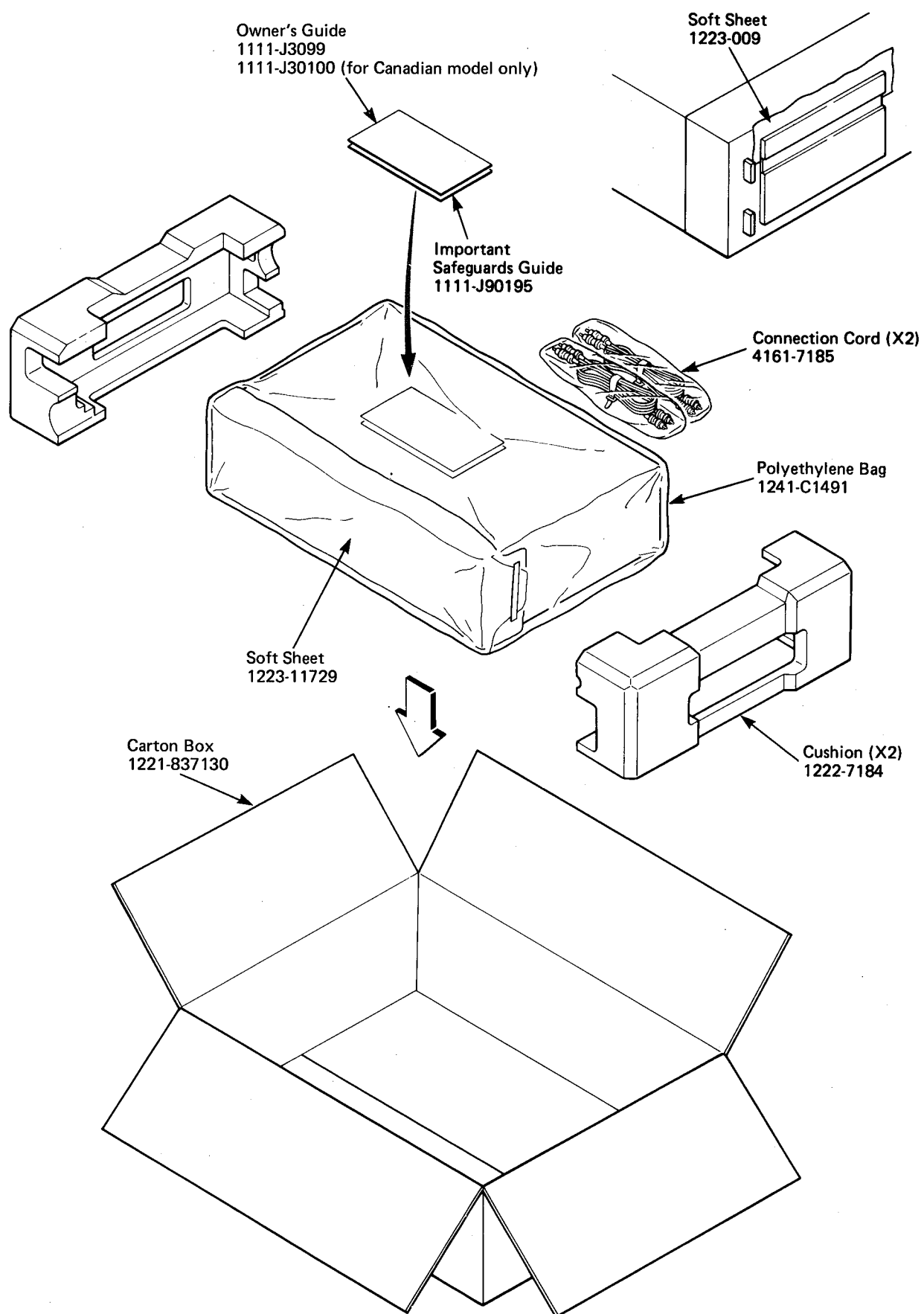
D551 - CD101 F or 2016

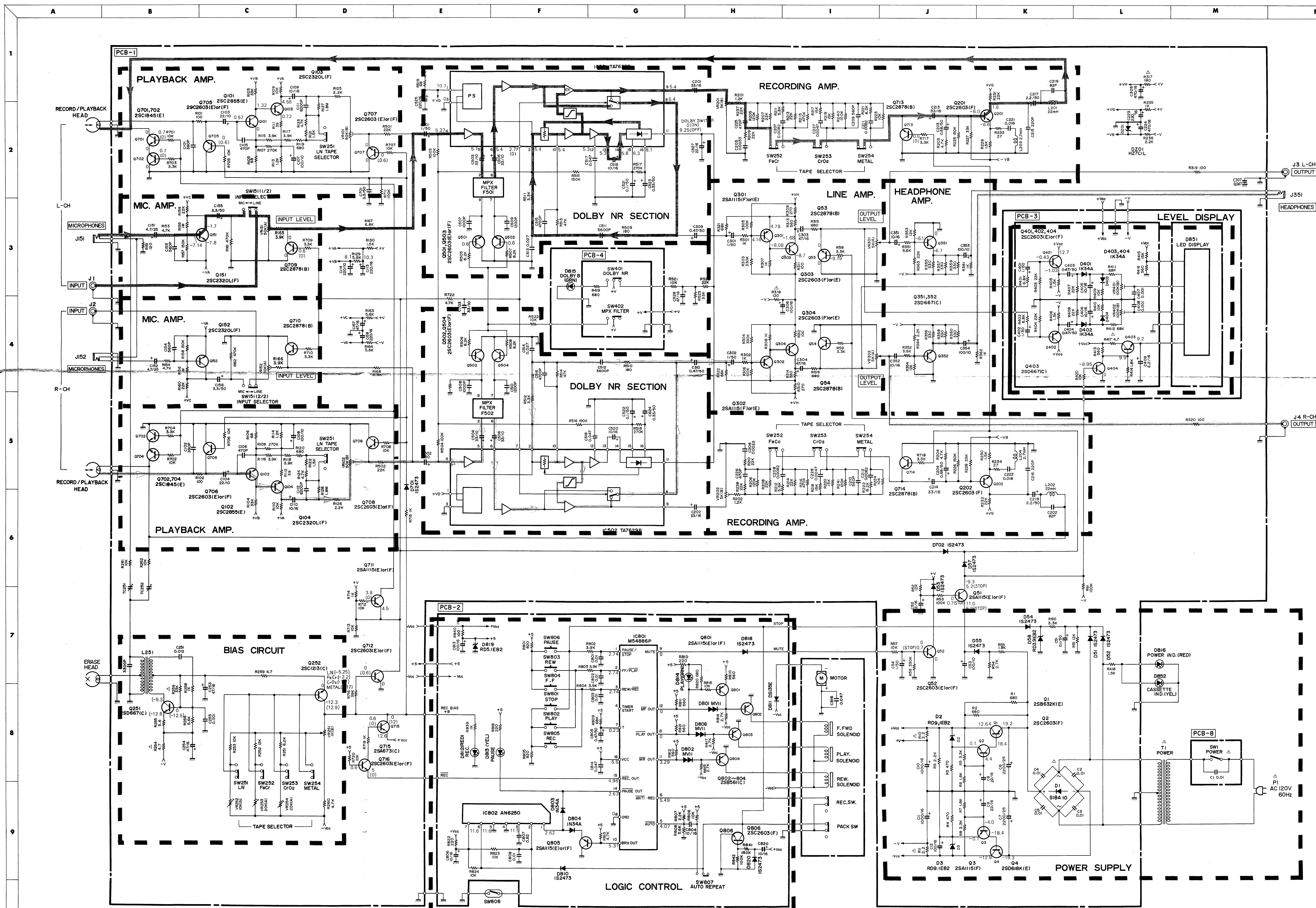
CAPACITORS		
C804	5342-106C0951	10 μ F, $\pm 20\%$, 16V, Electrolytic
C805	5345-474F0951	0.47 μ F, $\pm 20\%$, 50V, Electrolytic
C806	5345-106-16	10 μ F, $+50\% -10\%$, 16V, Electrolytic
C807	5352-824571	0.82 μ F, $\pm 5\%$, 63V, Metal
C813	5345-107C041	100 μ F, $\pm 20\%$, 16V, Electrolytic
C820	5345-106C041	10 μ F, $\pm 20\%$, 16V, Electrolytic

INTEGRATED CIRCUITS		
IC801	5654-M54886P	M54886P
IC802	5654-AN6250	AN6250

Ref. No.	Part No.	Description
TRANSISTORS		
Q801, 805	5611-1115(F) or (E)	2SA1115(E) or 2SA1115(F)
Q802, 803, 804	5612-561(C)	2SB561(C)
Q806	5613-2603(F)	2SC2603(F)
DIODES		
D801, 802, 808	5641-MV11	Varistor, MV11
D803, 804	5631-1K34A	1K34A
D805, 806, 807, 811	5632-DS135E	DS135E
D810, 818, 820	5631-1S2473	1S2473
D819	5635-RD5R1EB2	Zener, RD5.1EB2
MISCELLANEOUS		
SW801, 802, 803, 804, 805, 806	4431-A017111	Push Switch, Stop, Play, Rew., F. FWD, Rec., Pause
SW807	4431-01020194	Push Switch, Auto Repeat
	2132-5049	Spacer, R822
	2132-7048	Spacer, R840
PCB-3 METER AMP. P.C. BOARD D551-CD101D CD201E		
RESISTORS		
R417	5102-4R75715	4.7 Ω , $\pm 5\%$, 1/4W, Fuse
CONTROLS		
VR401, 402	5101-10471920	100k Ω B
CAPACITORS		
C401, 402	5345-105-50	1 μ F, +75% -10%, 50V, Electrolytic
C403, 404	5345-474-50	0.47 μ F, +75% -10%, 50V, Electrolytic
C405, 406	5345-106C041	10 μ F, $\pm 20\%$, 16V, Electrolytic
C409	5345-226-16	22 μ F, +50% -10%, 16V, Electrolytic
TRANSISTORS		
Q401, 402, 404	5613-2603(F) or (E)	2SC2603(E) or 2SC2603(F)
Q403	5614-667(C)	2SD667(C)
DIODES		
D401, 402, 403, 404	5631-1K34A	1K34A
PCB-4 DOLBY NR SWITCH P.C. BOARD D551-CD101C		
SW401, 402	4431-02047149	Push Switch, Dolby NR, MPX Filter
PCB-5 REC., PLAY AND PAUSE INDICATORS P.C. BOARD D551-CD101K + CD201L		
D812	5637-TLR226	L.E.D., TLR226, Red, Rec.
D813	5637-TLY226	L.E.D., TLY226, Yellow, Pause
D814	5637-TLG226	L.E.D., TLG226, Green, Play
PCB-6 DOLBY NR INDICATOR P.C. BOARD D551-CD101G + 201H		
D815	5637-GL9PG19	L.E.D., GL9PG19, Green, Dolby NR
PCB-7 JACK P.C. BOARD D551-CD101B		
J1, 2, 3, 4	4484-31	4-Pin Jack, Line Input, Line Output
PCB-8 POWER SWITCH P.C. BOARD D551-CD101E + 201F		
SW1	4431-A01026	Push Switch, Power
PCB-9 POWER INDICATOR P.C. BOARD D551-CD101H + 201J		
D816	5637-GL9PR2	L.E.D., GL9PR2, Red, Power
PCB-10 REED SWITCH P.C. BOARD D551-CD101J CD201K		
SW808	4466-713	Reed Switch, Auto Stop

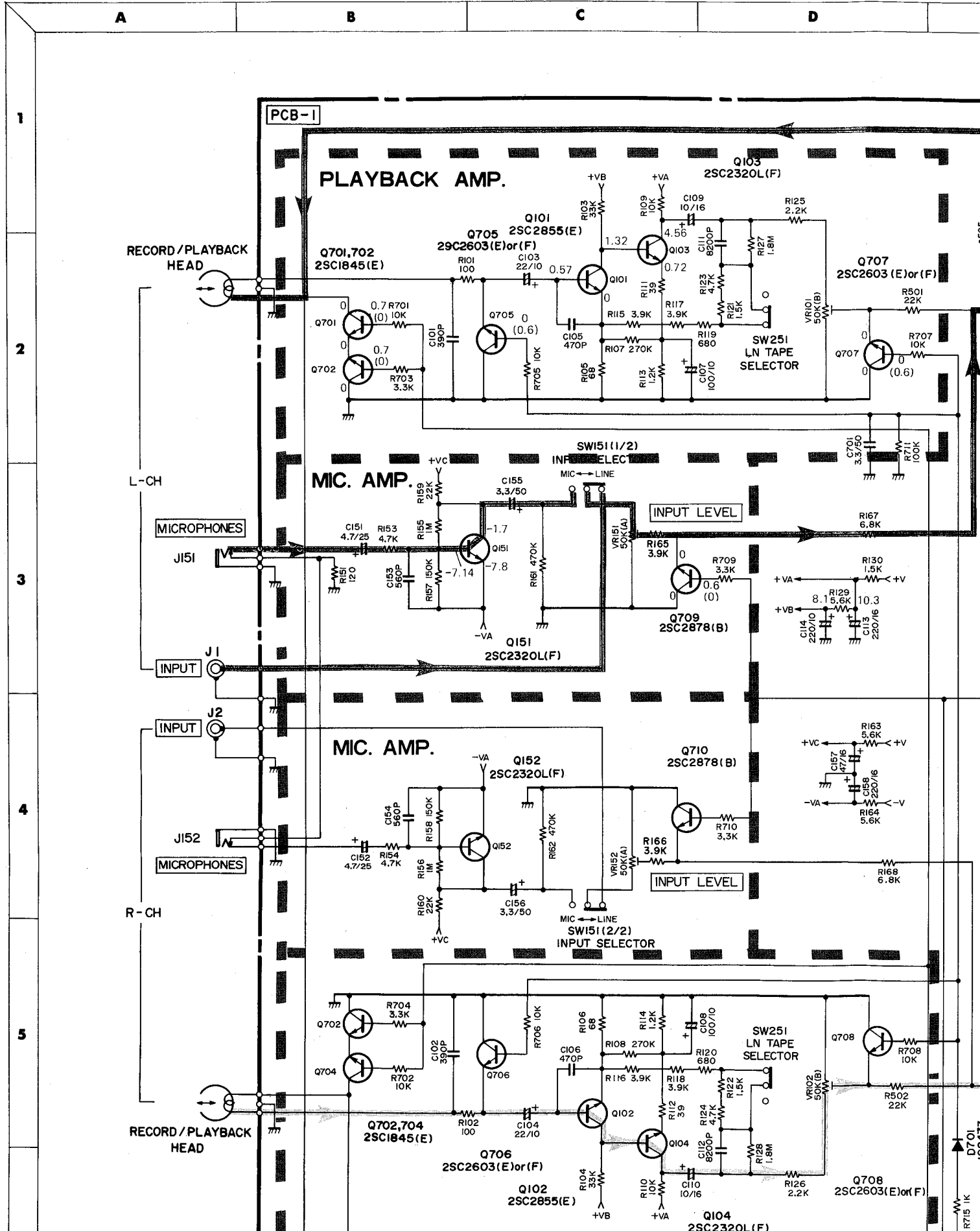
PACKAGE



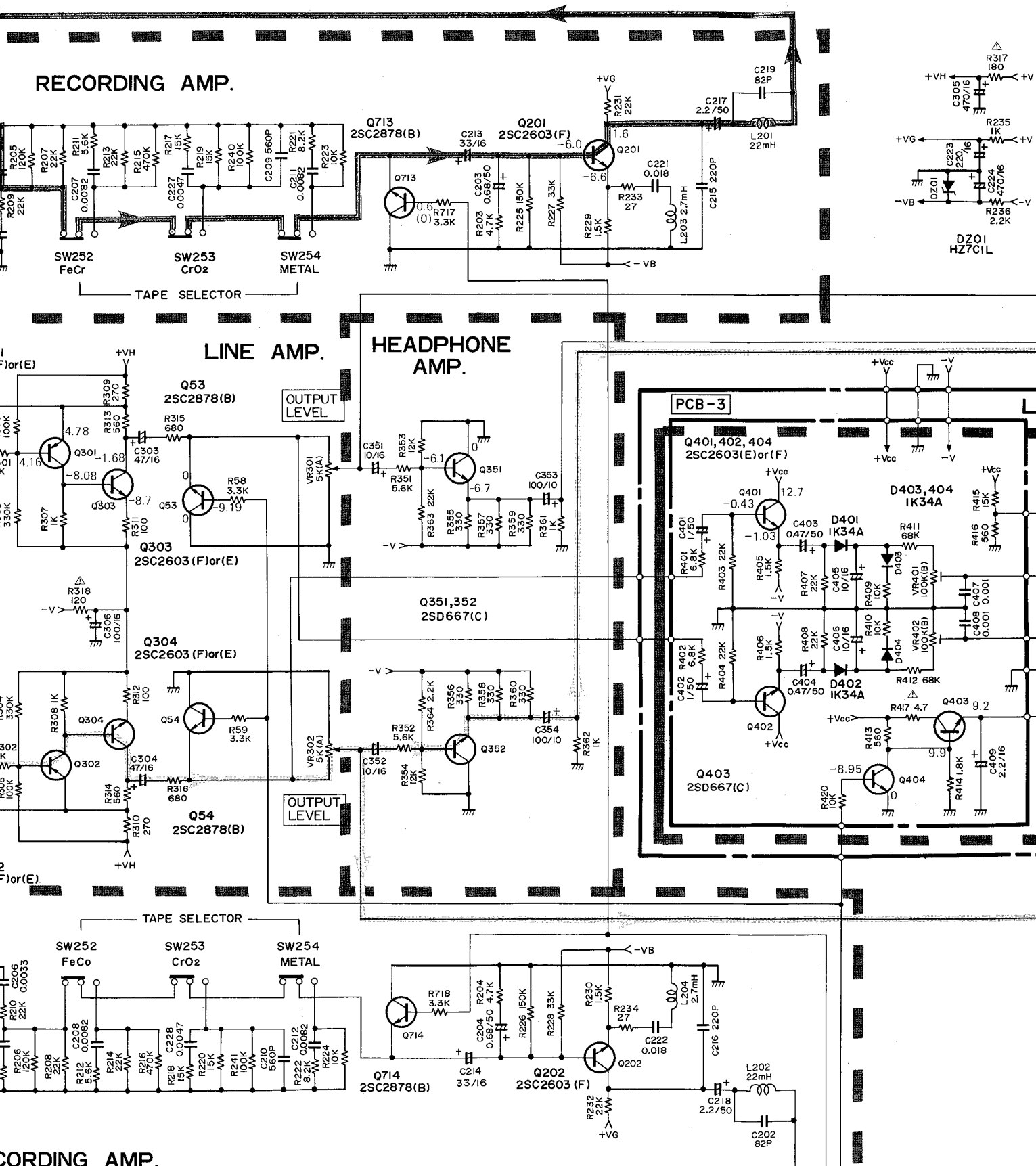


1. ALL RESISTANCE VALUES ARE IN Ω , $K\Omega = 1000\Omega$, $M\Omega = 1000K\Omega$.
2. THE WATTAGE OF RESISTOR IS 1/4W, UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCE VALUES ARE IN μF UNLESS OTHERWISE NOTED. $P = \mu\mu F$
4. DC VOLTAGE AT NO SIGNAL:.....VOLT
.....PLAYBACK MODE(.....)RECORD MODE
5. SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

SCHEMATIC DIAGRAM



CORDING AMP.

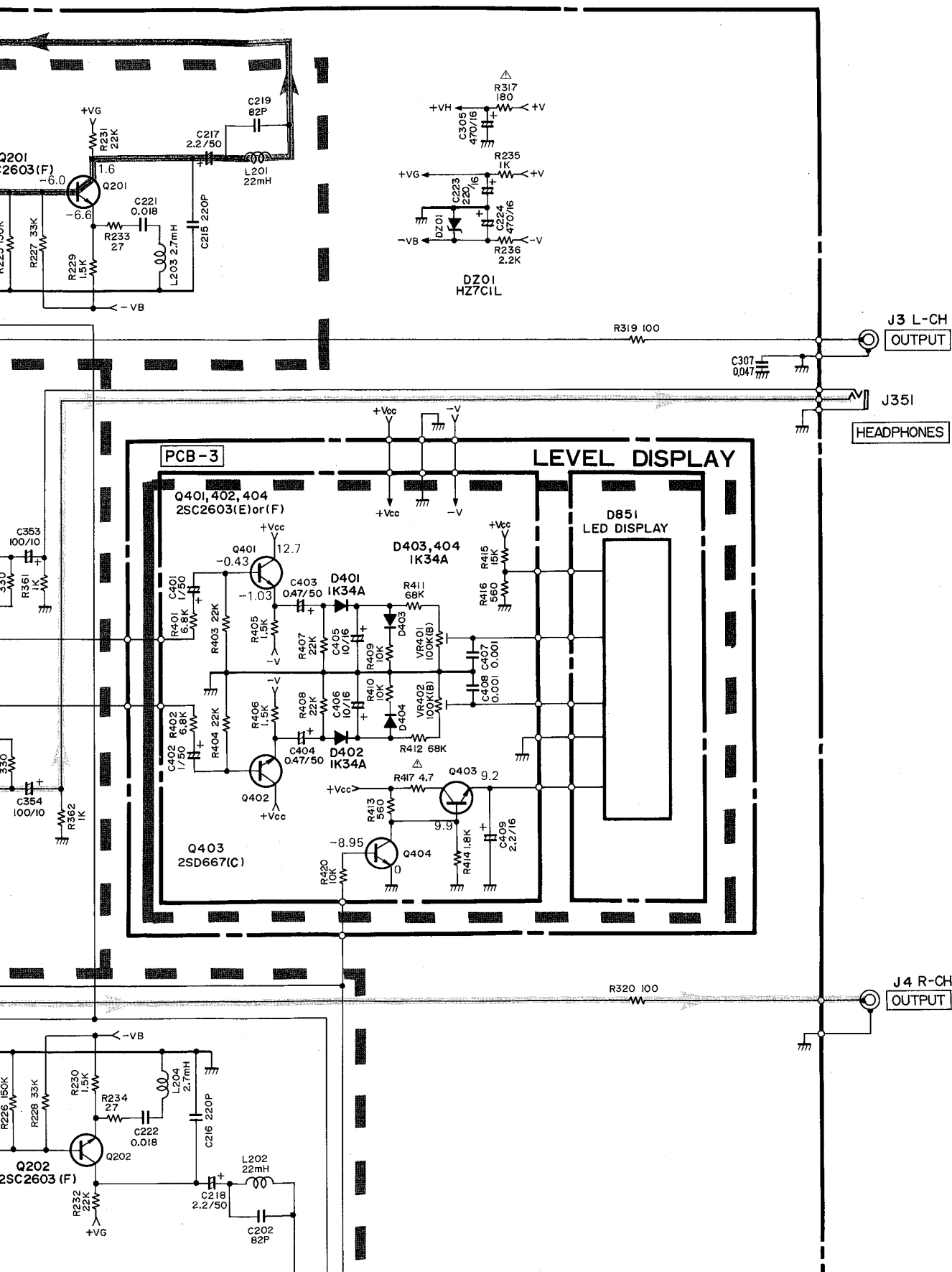


K

L

M

N



R-CH

INPUT LEVEL

MIC LINE
SW151(2/2)
INPUT SELECTOR

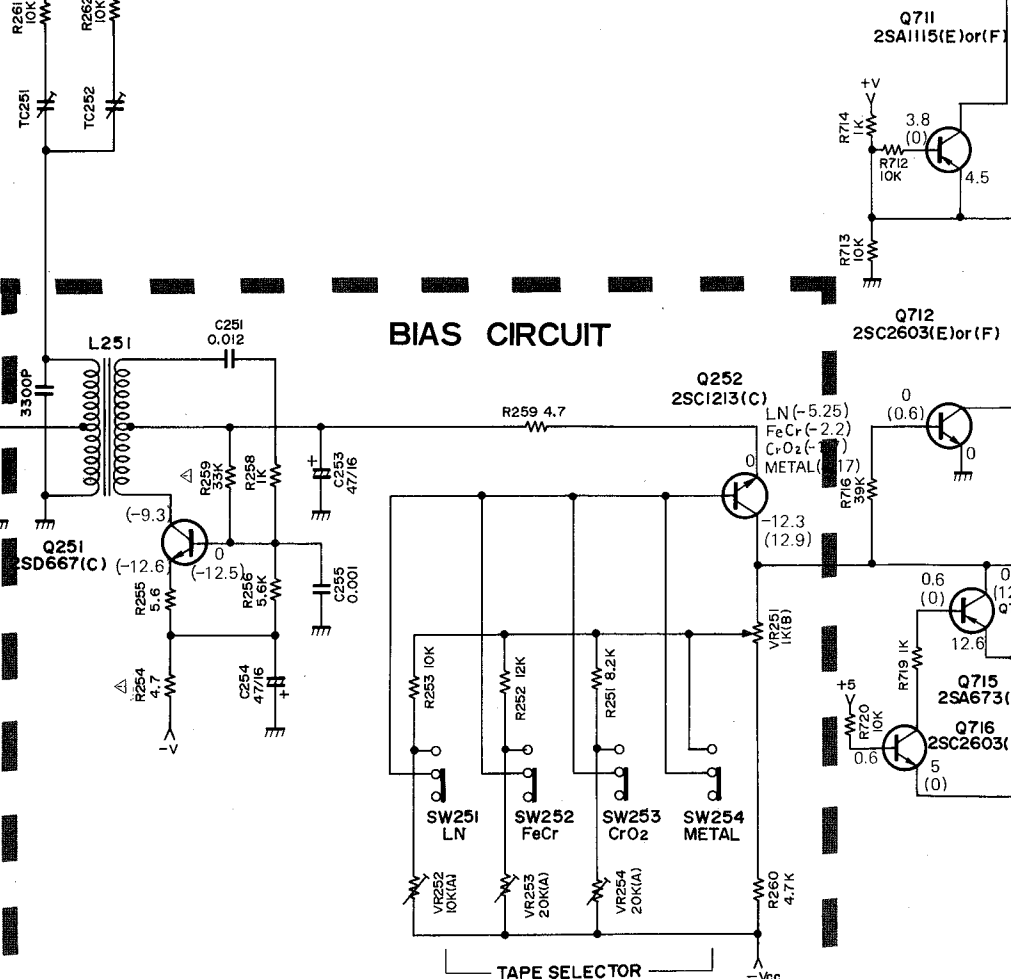
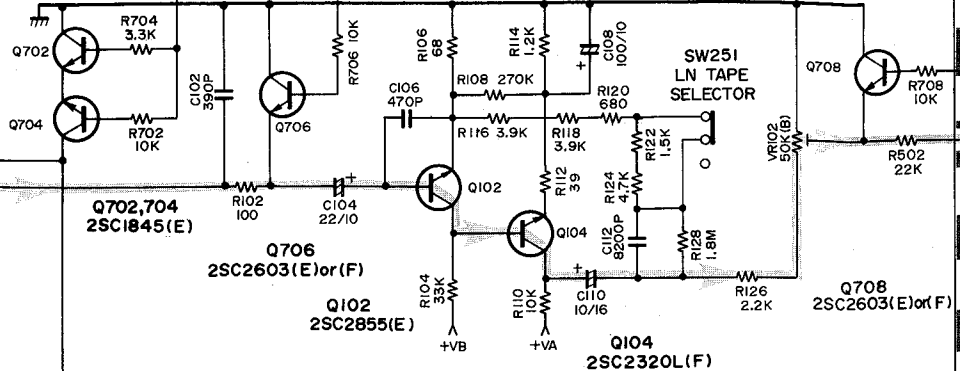
RECORD/PLAYBACK
HEAD

PLAYBACK AMP.

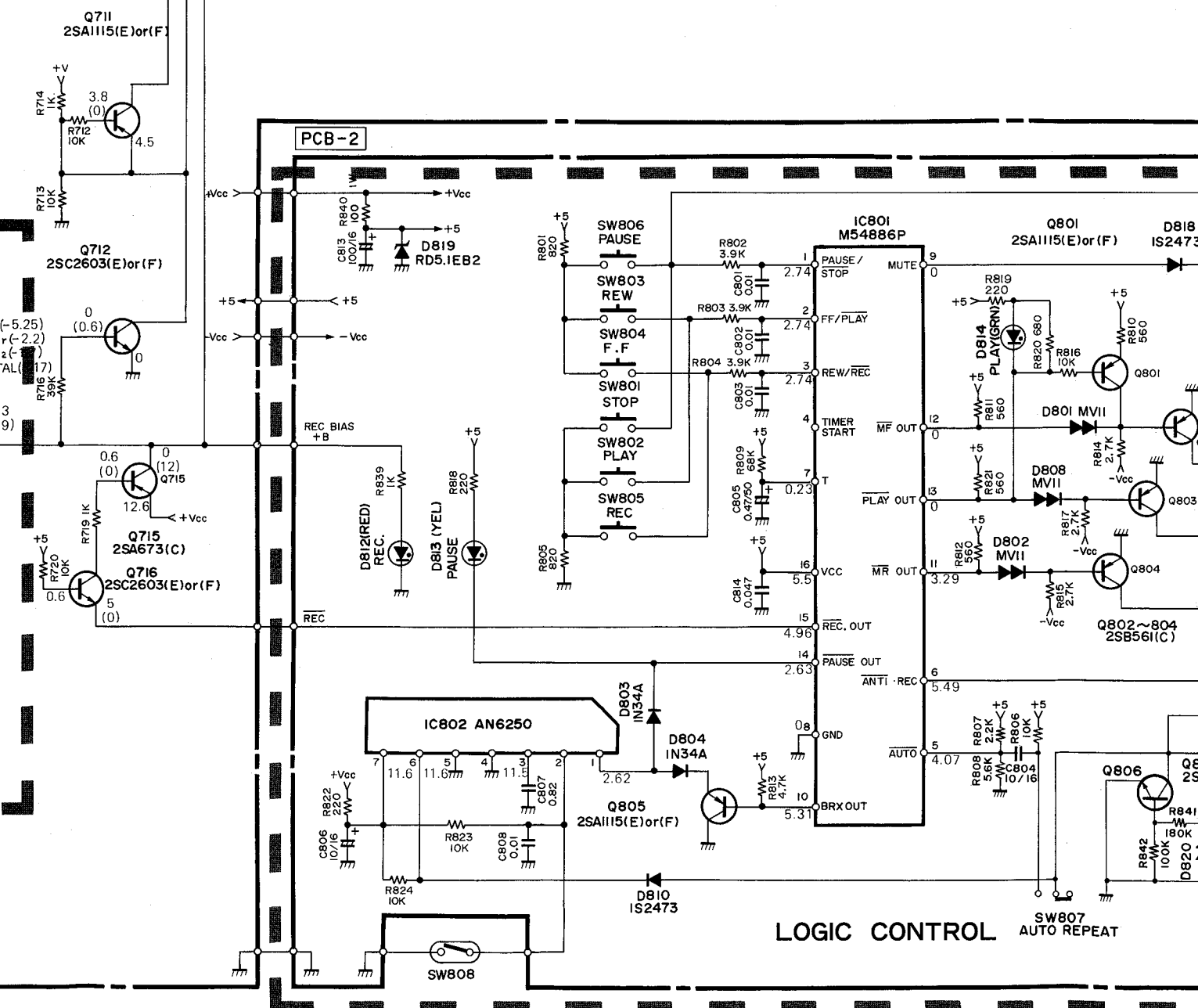
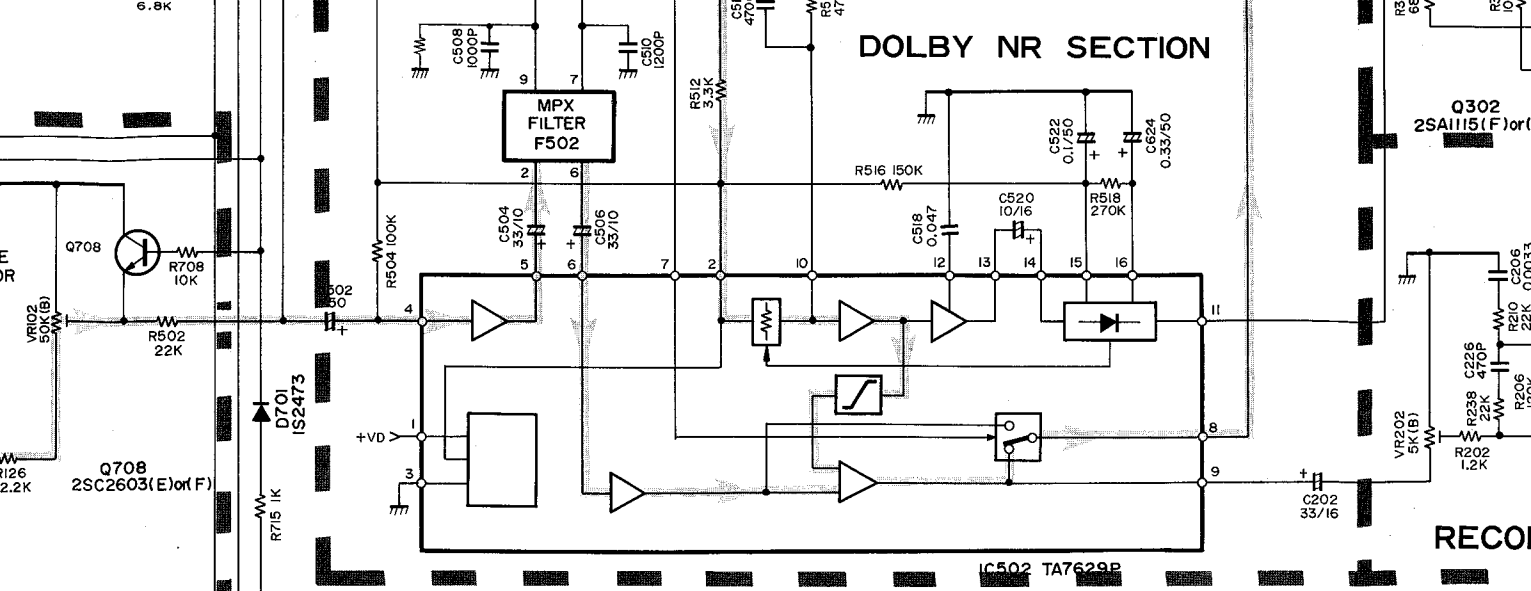
BIAS CIRCUIT

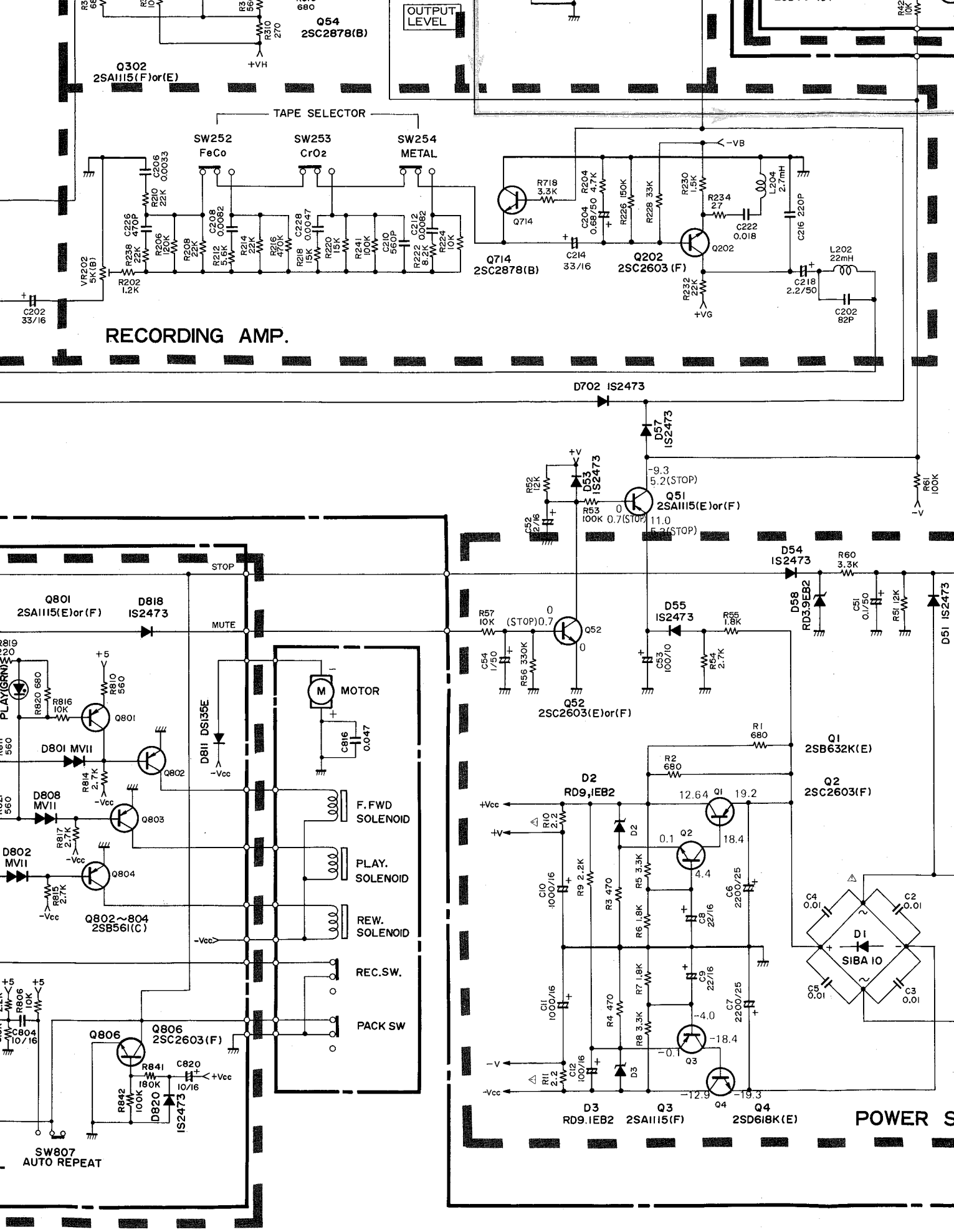
ERASE
HEAD

TAPE SELECTOR

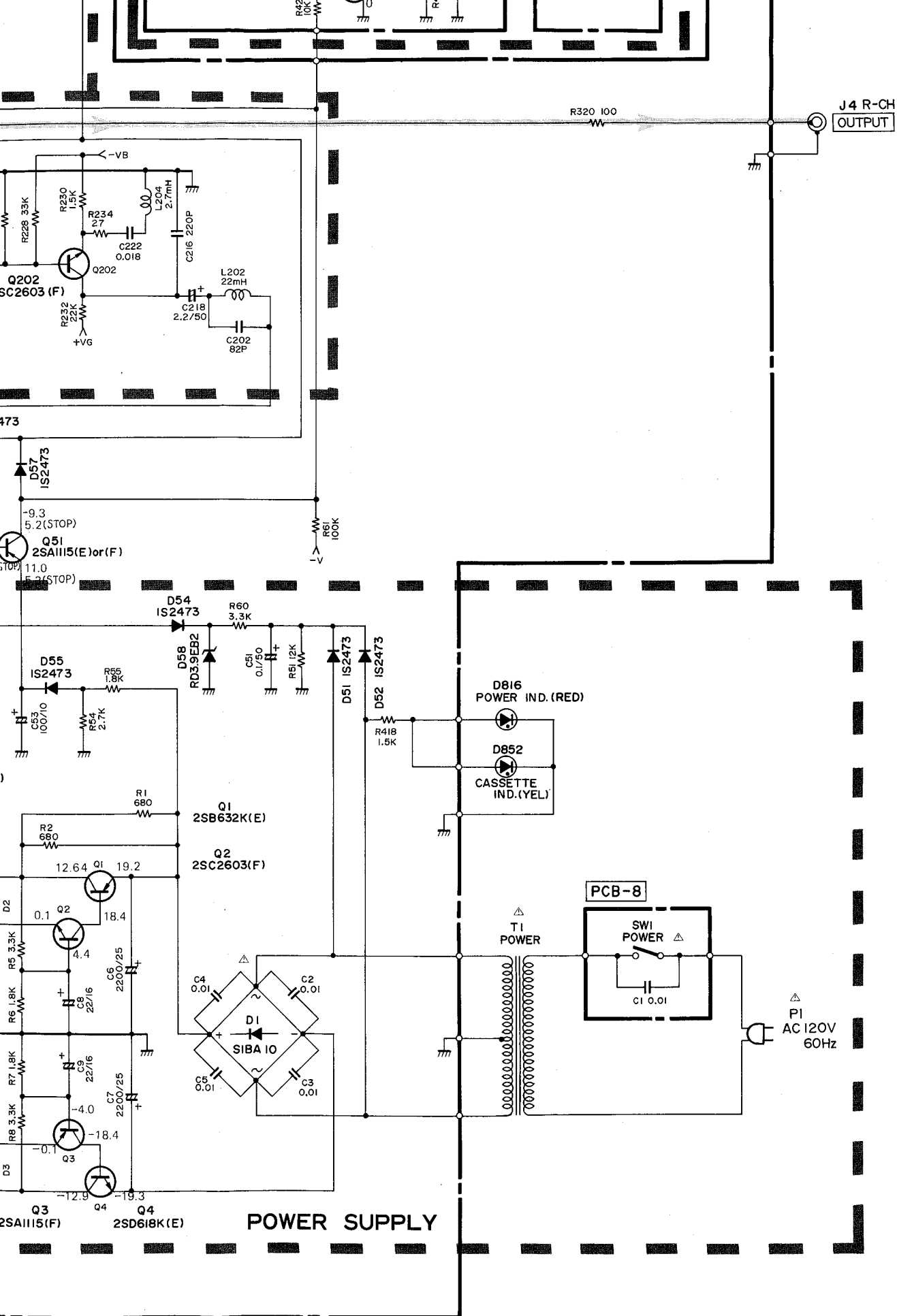


DOLBY NR SECTION





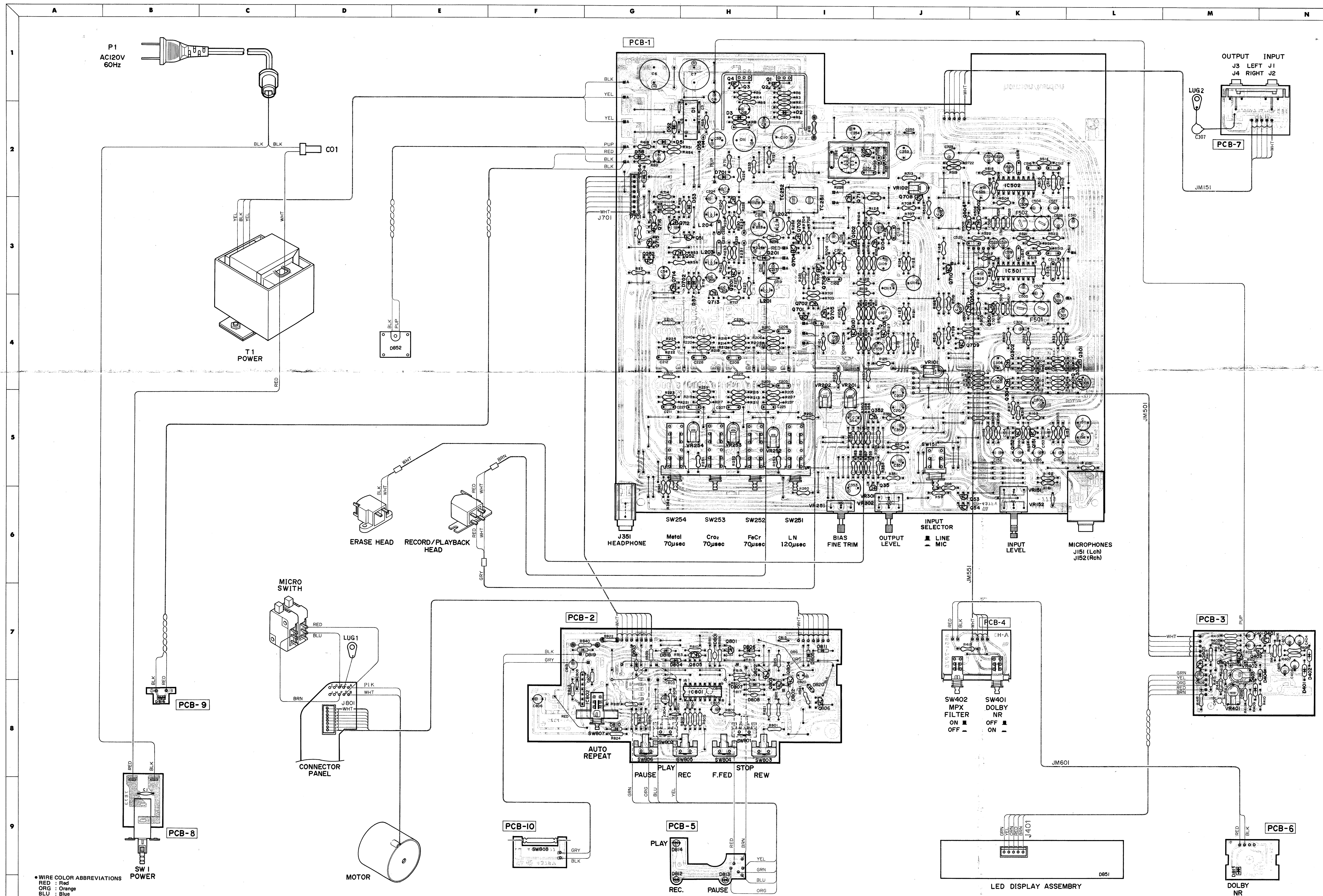
1. ALL RESISTANCE VALUES ARE IN Ω . $K\Omega = 1000\Omega$, $M\Omega = 1000K\Omega$
2. THE WATTAGE OF RESISTOR IS 1/4W, UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCE VALUES ARE IN μF UNLESS OTHERWISE NOTED. $P = \mu F$
4. DC VOLTAGE AT NO SIGNAL:.....VOLT
5. $\triangle$ SA OR



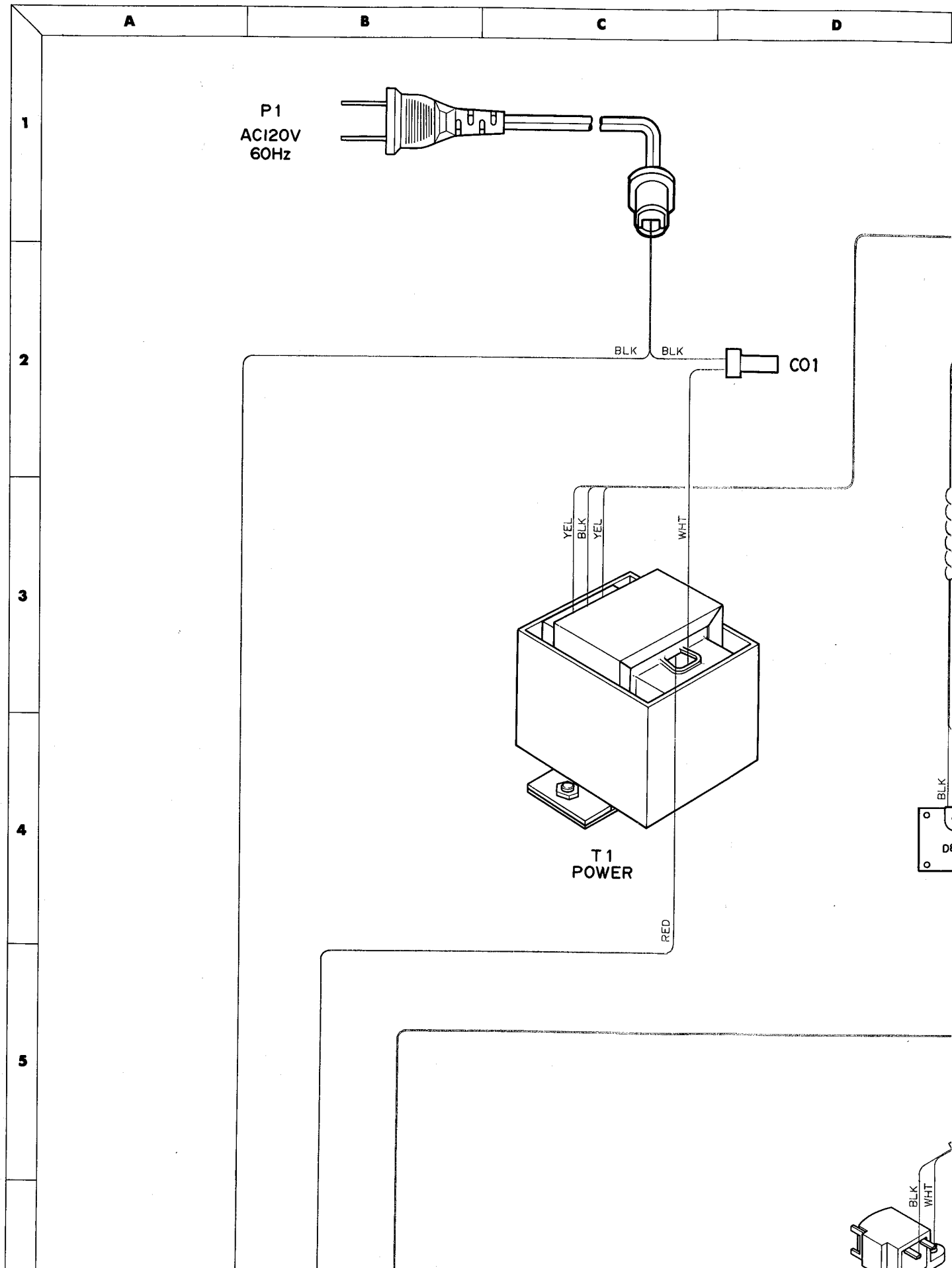
Ω. KΩ = 1000Ω, MΩ = 1000KΩ
 4W, UNLESS OTHERWISE NOTED.
 N μF UNLESS OTHERWISE NOTED. P = μμF
VOLT
 RECORD MODE

5. ⚠ SAFETY-REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

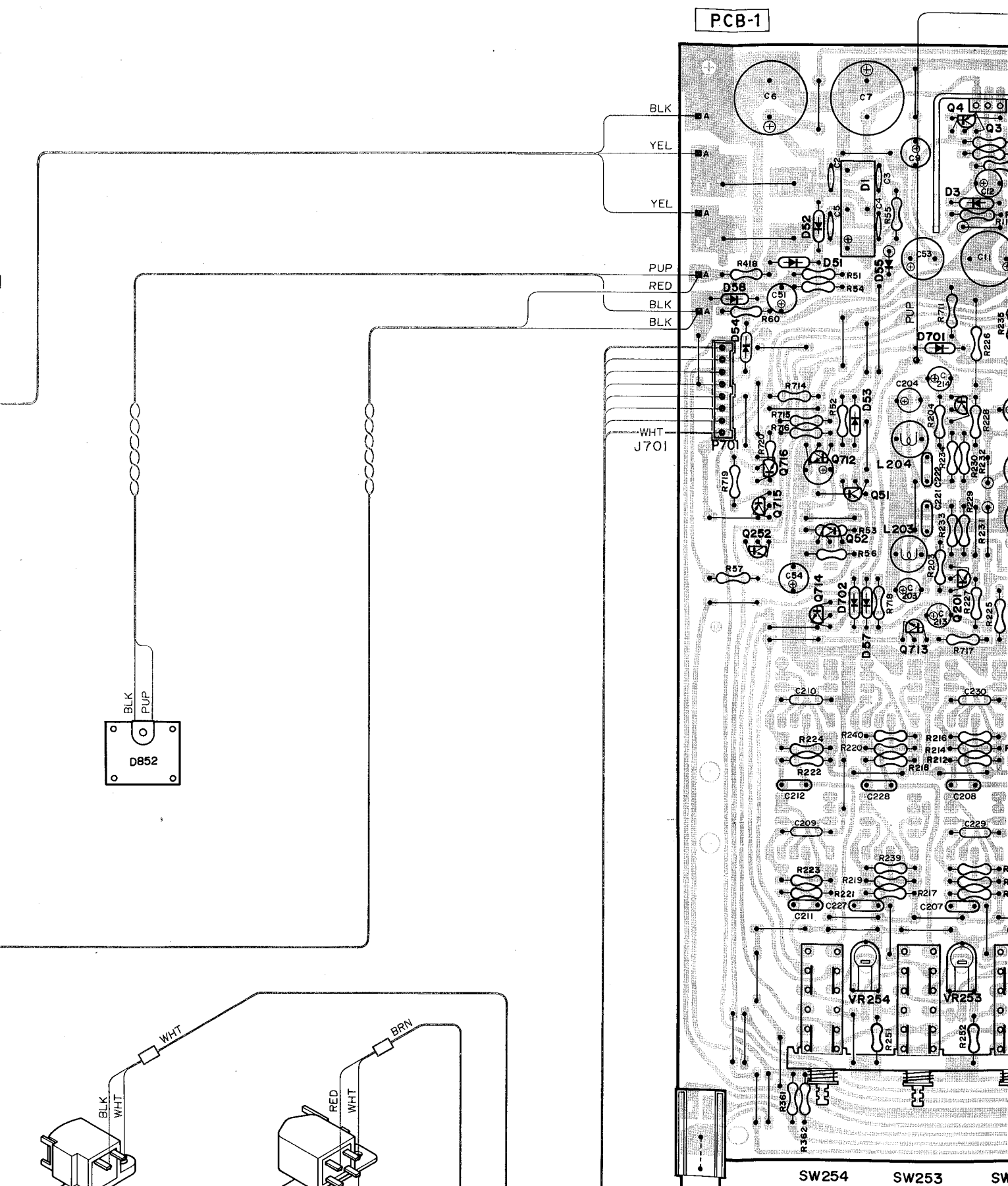
WIRING DIAGRAM



WIRING DIAGRAM

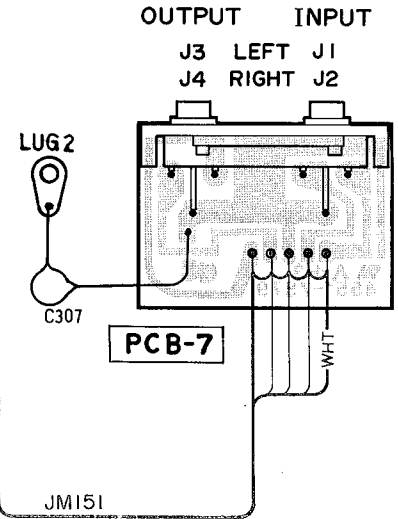


D	E	F	G	H
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N



5

6

7

8

9

• WIRE COLOR ABBREVIATIONS

RED : Red
 ORG : Orange
 BLU : Blue
 WHT : White
 GRN : Green
 BLK : Black
 YEL : Yellow
 PUP : Purple
 PIK : Pink

SW 1
 POWER

PCB-8

PCB-9

ERASE HEAD

MICRO
 SWITCH

CONNECTOR
 PANEL

MOTOR

