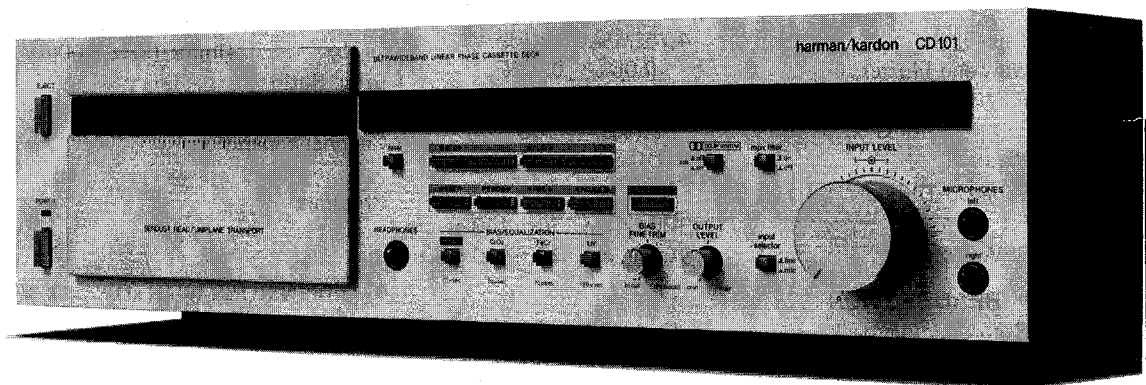


The Harman Kardon Model CD101

Manual No.36A

ULTRAWIDEBAND LINEAR PHASE CASSETTE DECK

Technical Manual



harman/kardon

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

CONTENTS

| | | | |
|--------------------------------------|------|--|--------|
| SPECIFICATIONS | 2 | TIMING CHART | 14, 15 |
| COMPONENTS AND THEIR FUNCTIONS | 2, 3 | GENERAL UNIT EXPLODED VIEW | 16 |
| INTERNAL VIEW | 4 | GENERAL UNIT PARTS LIST | 17 |
| DISASSEMBLY PROCEDURES | 4-6 | CASSETTE MECHANISM EXPLODED VIEW | 18 |
| ALIGNMENT PROCEDURES | 7-11 | CASSETTE MECHANISM PARTS LIST | 19 |
| BLOCK DIAGRAM | 12 | ELECTRICAL PARTS LIST | 20-22 |
| CIRCUIT DESCRIPTION | 13 | PACKAGE | 23 |
| IC FUNCTIONAL BLOCK DIAGRAM | 13 | SCHEMATIC DIAGRAM | 24 |
| | | WIRING DIAGRAM | 25 |

SPECIFICATIONS

Track Configuration 4-track 2 channel Stereo
Cassette Deck

MECHANICAL SECTION

| | Nominal | Limit |
|------------------------------------|--------------------|-----------------|
| Tape Speed | 4.75cm/sec. | ±1.5% |
| Wow and Flutter | 0.05% ≤ 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

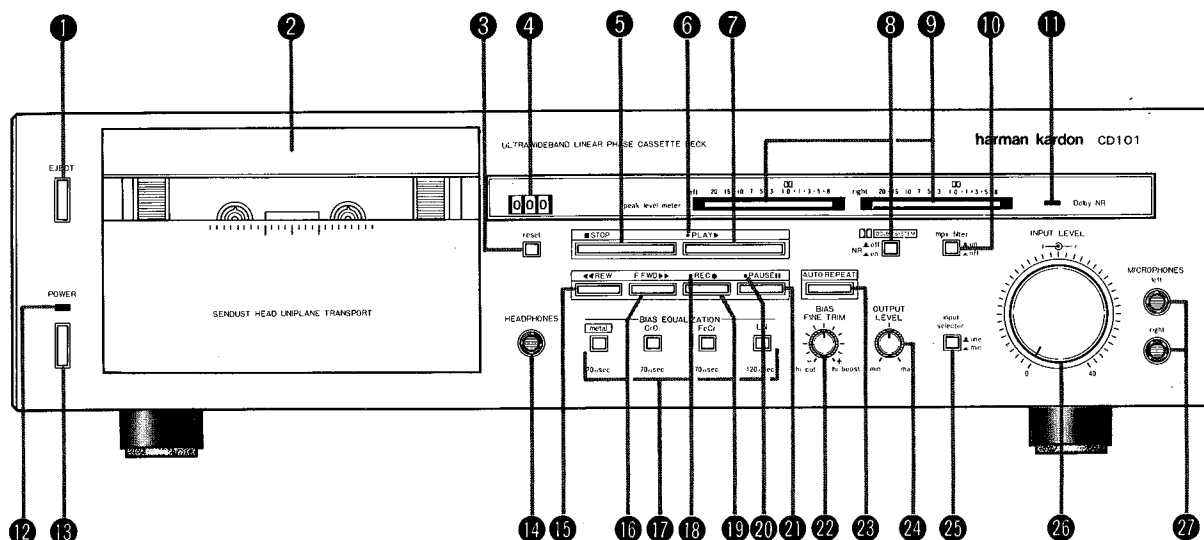
| | | |
|-------------------|------|----------------|
| Input Censitivity | | |
| | MIC | 0.75mV ≤ 1.0mV |
| | LINE | 47mV 30 ~ 60mV |
| Input Impedance | | |
| | MIC | 4.7kΩ 3 ~ 15kΩ |
| | LINE | 20kΩ ±10kΩ |

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

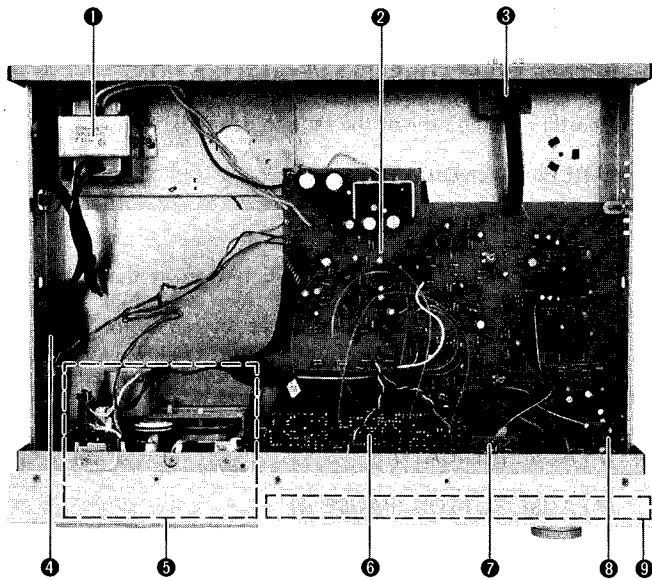
For input level control during recording. The input level is shown on the LED LEVEL DISPLAY. The front side knob is for the left channel and the rear one is for the right channel. The front and rear knobs turn together unless one knob is held by another hand.

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.

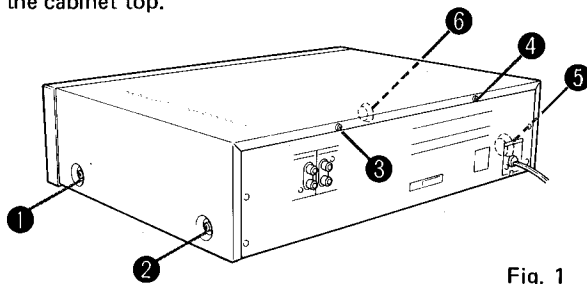


Fig. 1

② CABINET BOTTOM REMOVAL

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

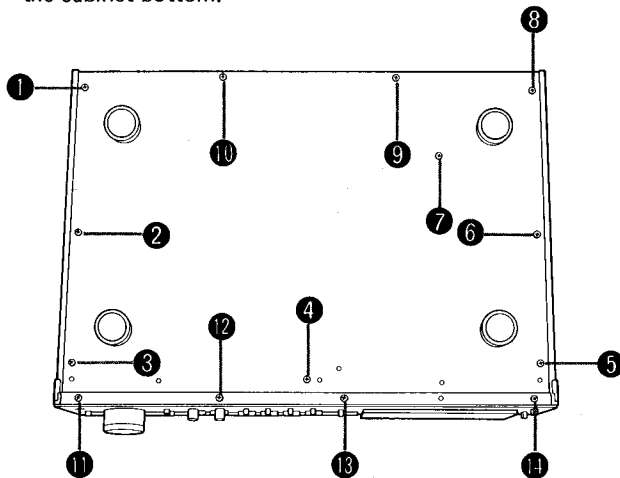


Fig. 2

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.

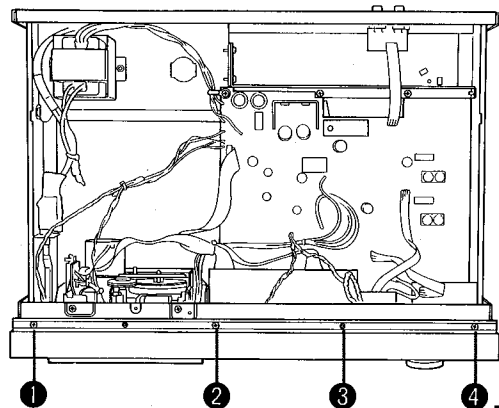


Fig. 3

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.

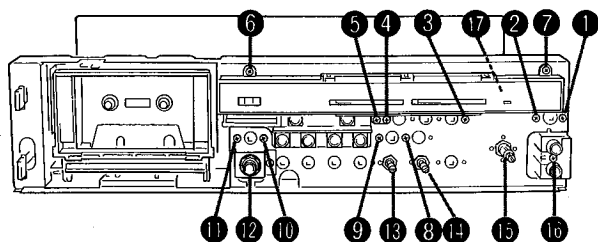


Fig. 4

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.

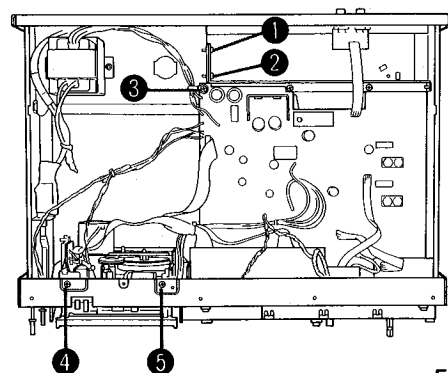


Fig. 5

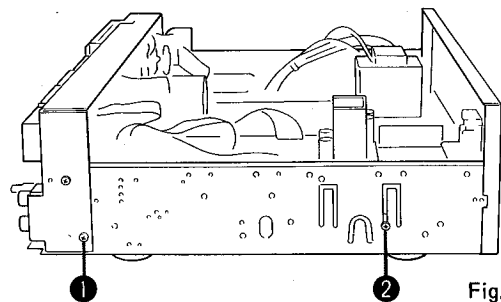


Fig. 6

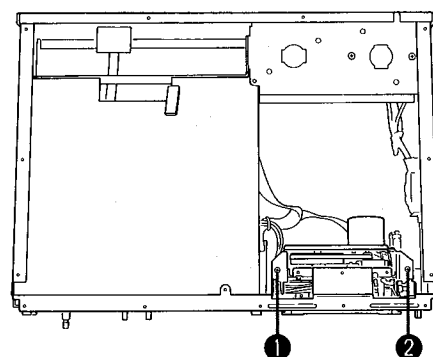


Fig. 7

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.

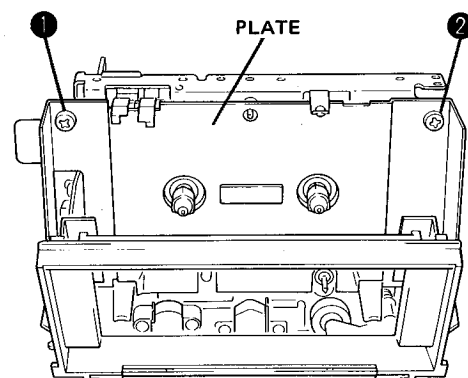


Fig. 8

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.

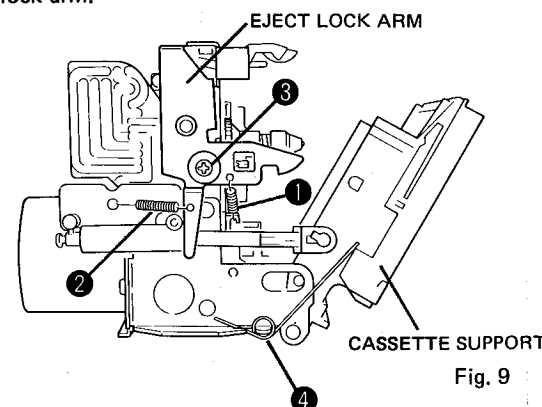


Fig. 9

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.

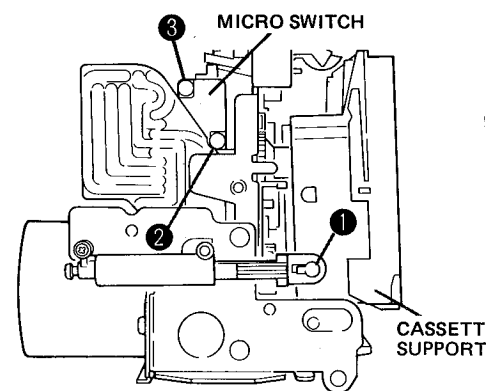


Fig. 10

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.

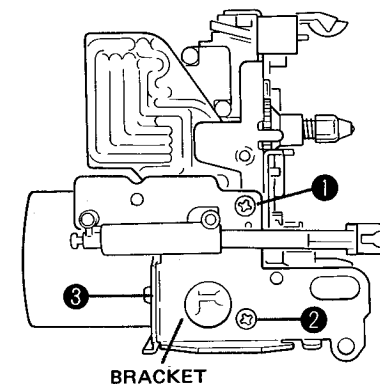


Fig. 11

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)

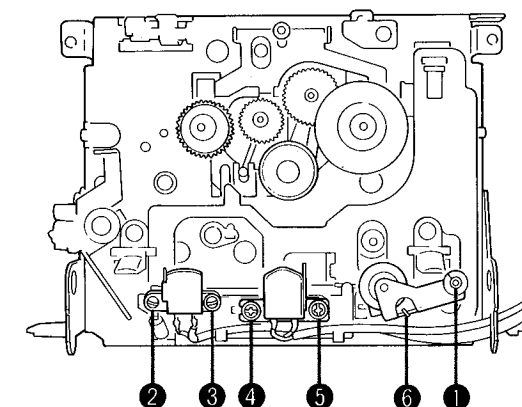


Fig. 12

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 and sub belts.
4. Remove the screws 1 and 2 in Fig. 14 and then remove the motor. MAIN BELT

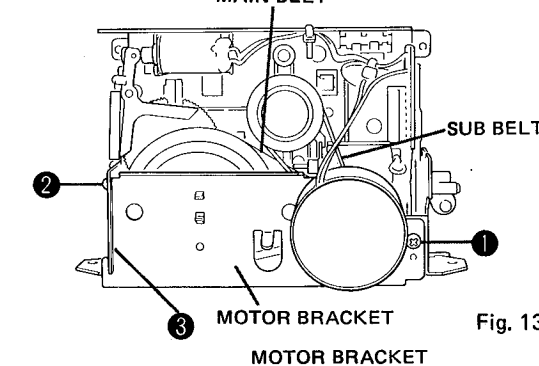


Fig. 13

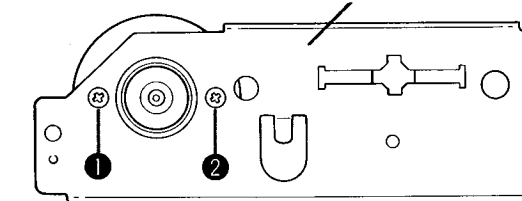


Fig. 14

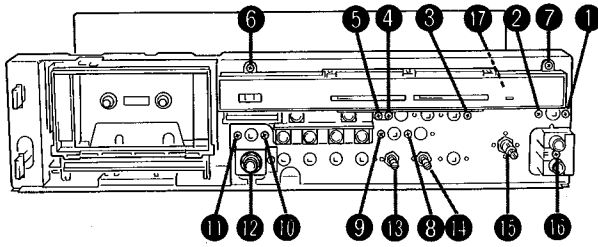


Fig. 4

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.

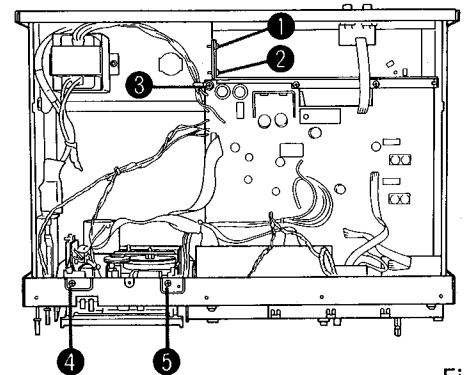


Fig. 5

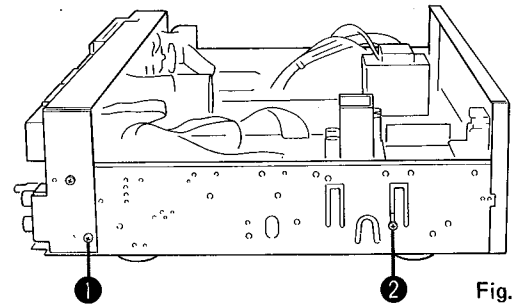


Fig. 6

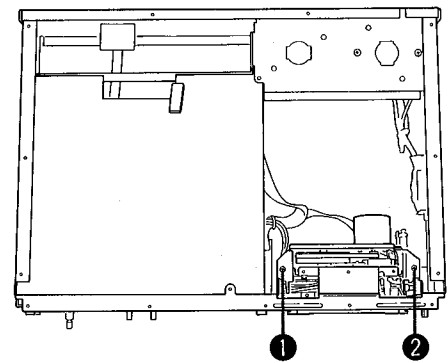


Fig. 7

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.

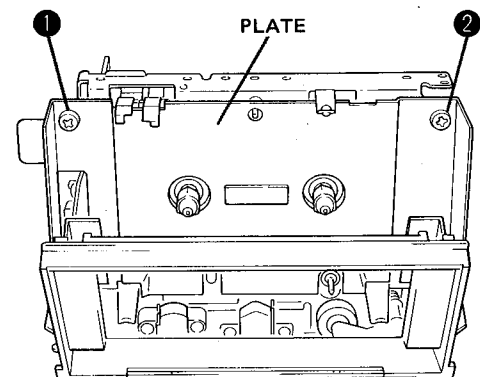
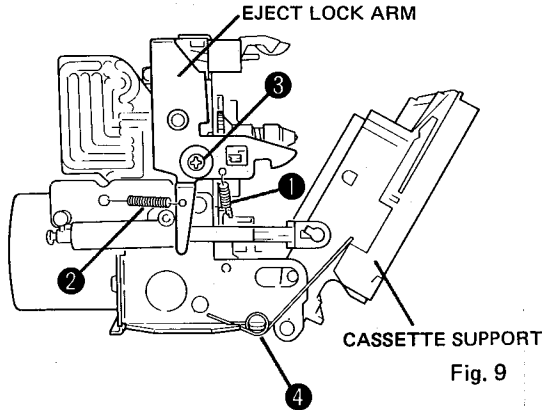


Fig. 8

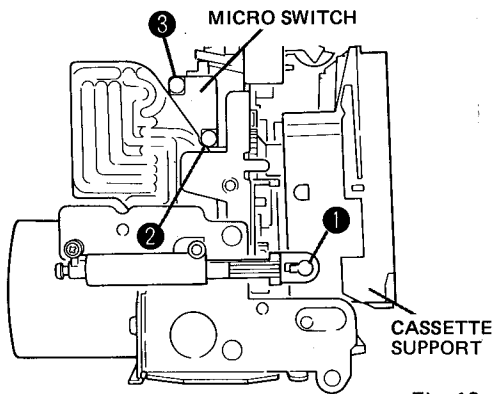
11 EJECT LOCK ARM REMOVAL

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.



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.



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.

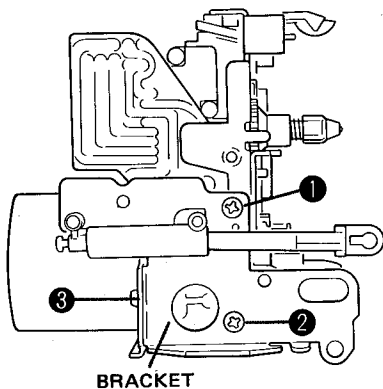


Fig. 11

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)

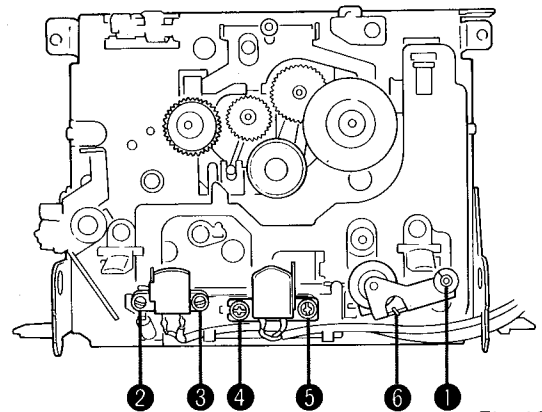


Fig. 12

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. MAIN BELT

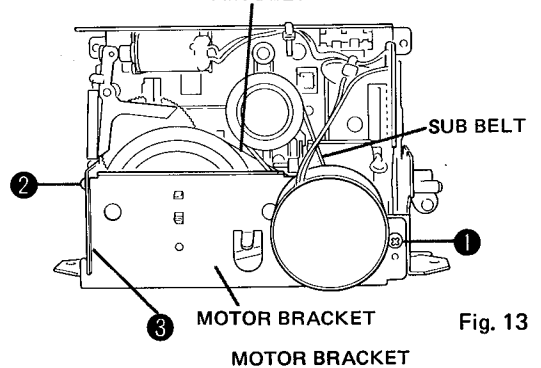


Fig. 13

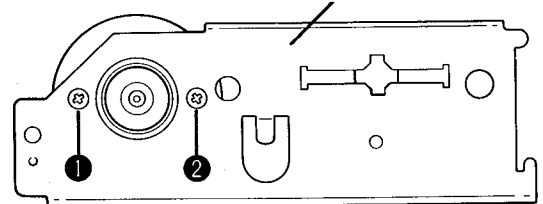


Fig. 14

ALIGNMENT PROCEDURES

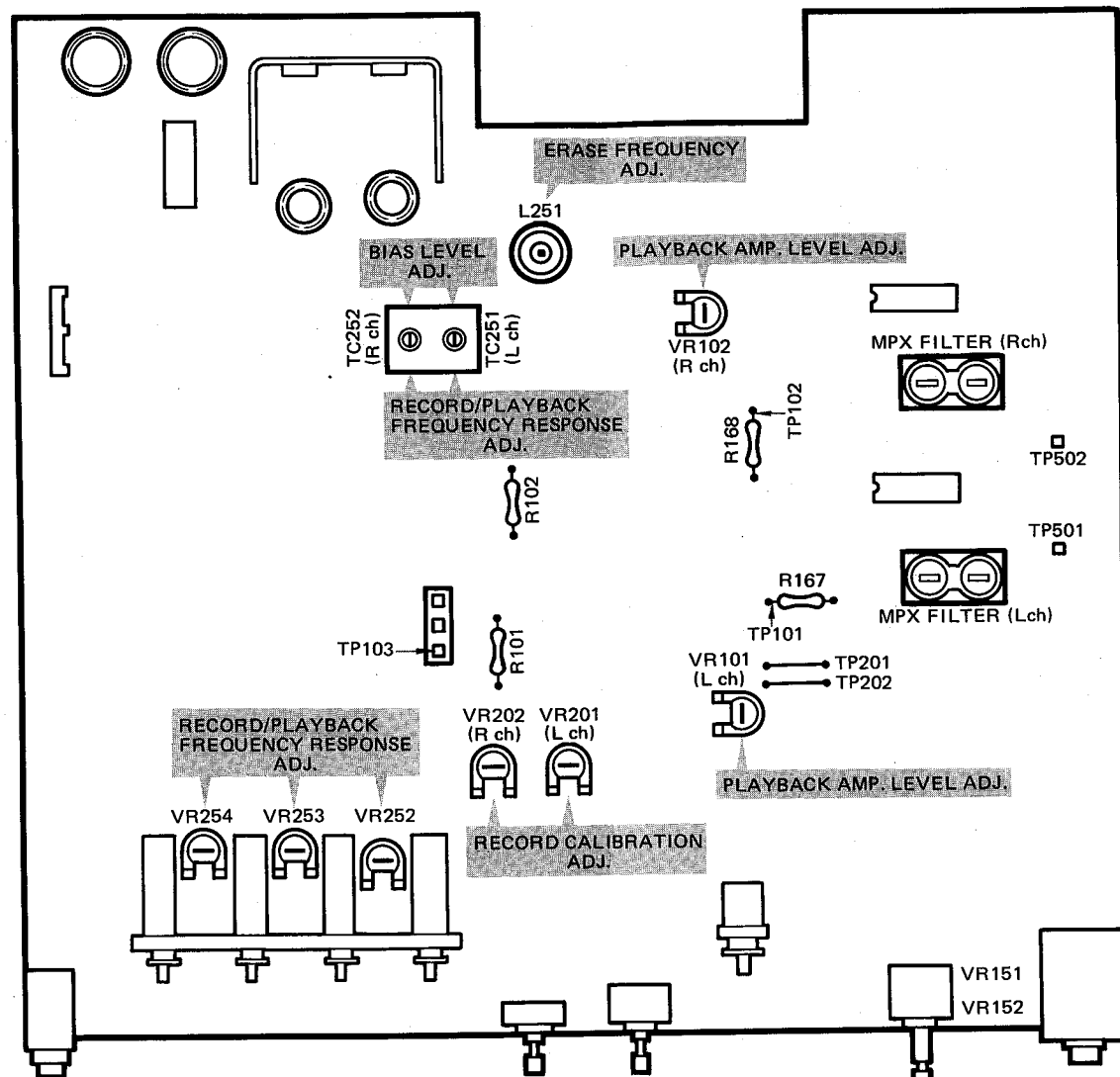


Fig. 1

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

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

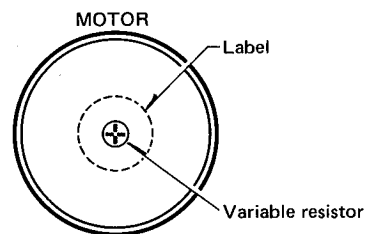


Fig. 2

2. WOW FLUTTER TEST

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

3. DOLBY ENCODE TEST

- a) 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.
- b) 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.
- c) Adjust VR151 (left) and VR152 (right) to obtain a VTVM (A) reading of 17.5mV, and note the voltage obtained on the VTVM (B).
- d) 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

- a) Insert a cassette without a tape.
- b) Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- c) 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.
- d) Set the dolby NR switch to on position. Confirm that the voltage on VTVM becomes 44mV -8dB ± 1dB. When the voltage is out of rating, check on circuit and replace IC501 and IC502.

5. METER 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. Apply a 400Hz (100mV) signal. Record this signal on the normal blank test tape (XL-1).
- c) Adjust VR151 (left) and VR152 (right) so that the output on VTVM becomes 580mV.
- d) Adjust VR401 (left) and VR402 (right) so that 0dB of meter LED lights up.
- e) 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

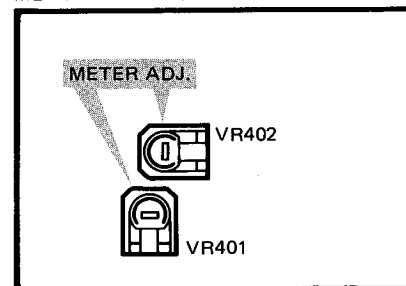


Fig. 3

6. HEAD AZIMUTH ADJUSTMENT

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

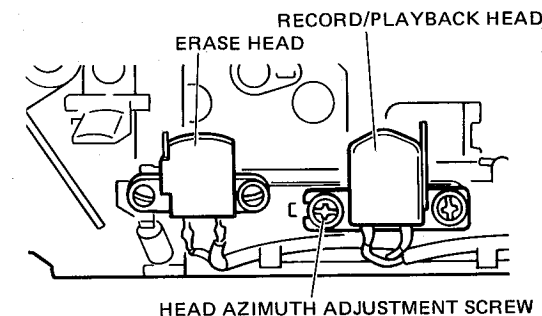


Fig. 4

* 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.

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

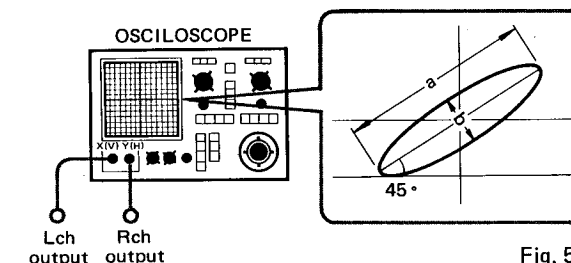


Fig. 5

7. PLAYBACK AMP. LEVEL ADJUSTMENT

- a) Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- b) 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

- a) Connect a dual channel AC VTVM to TP501 (left), TP502 (right) and ground.
- b) 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

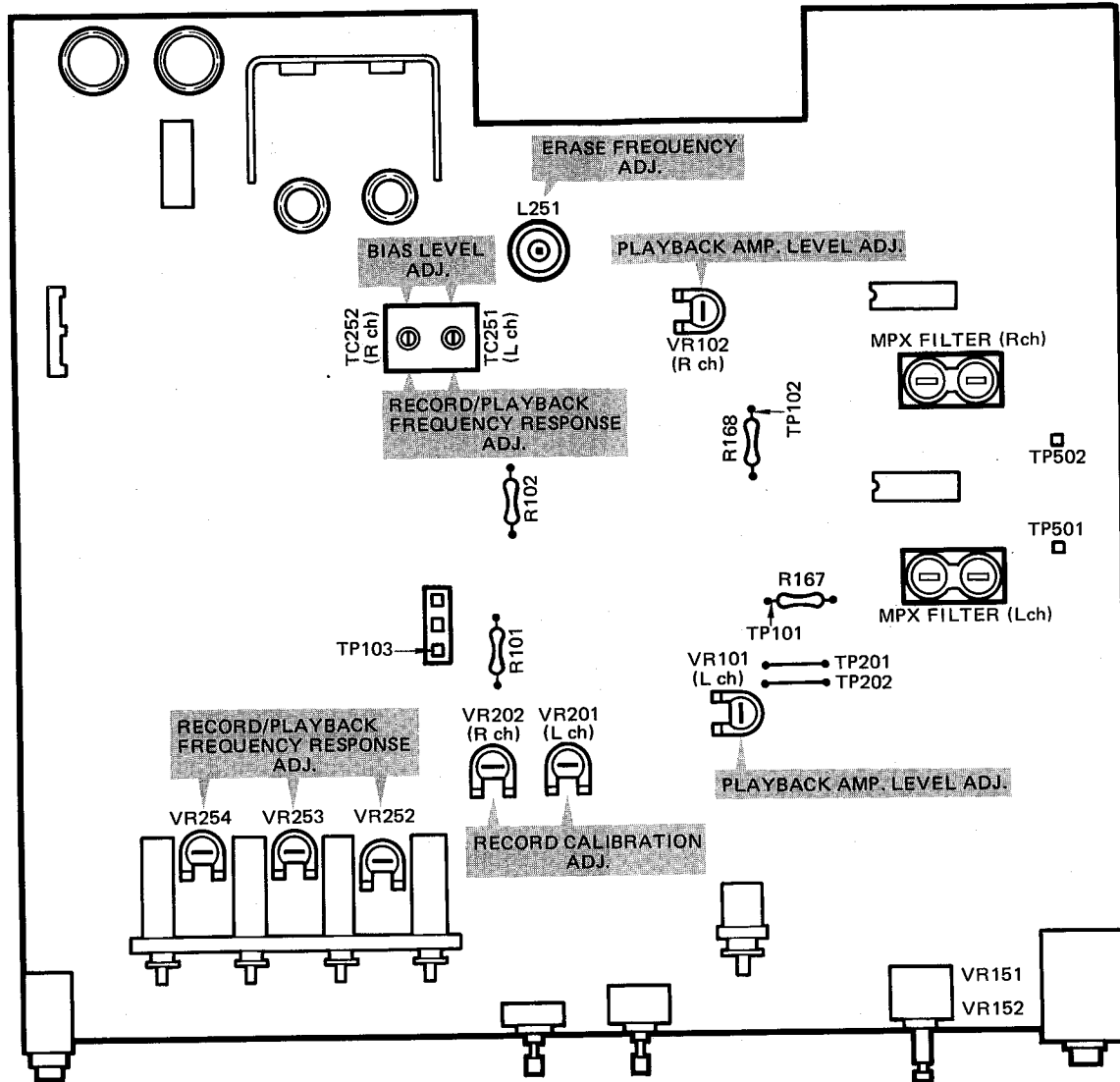


Fig. 1

■ 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

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

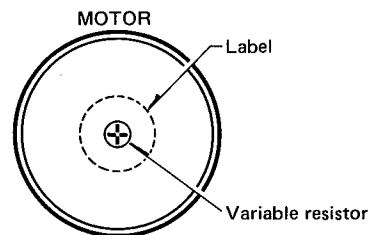


Fig. 2

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

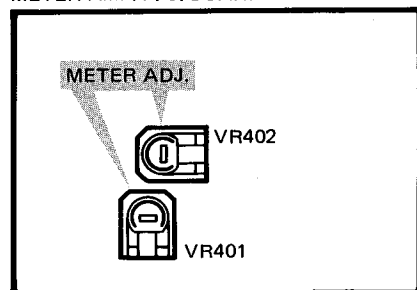


Fig. 3

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.

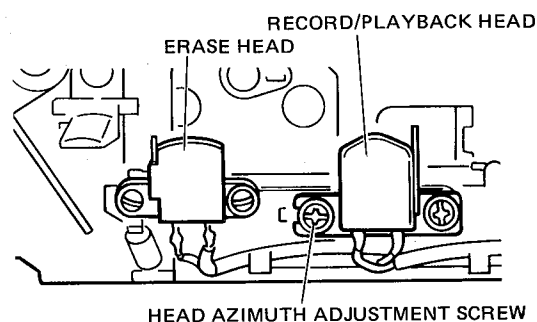


Fig. 4

- * 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.

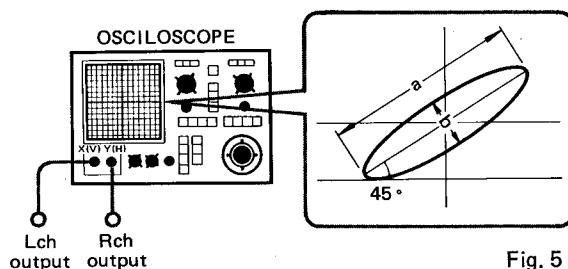


Fig. 5

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.

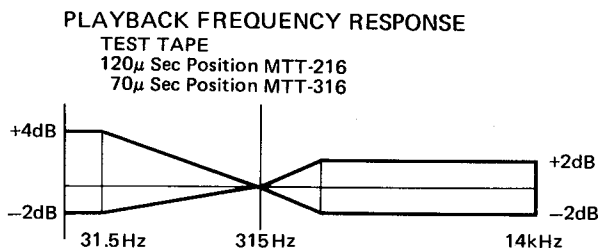


Fig. 6

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

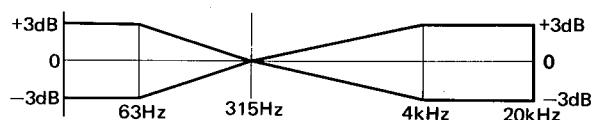


Fig. 7

- 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.

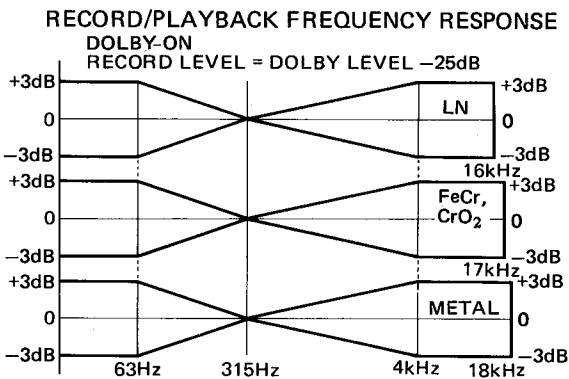


Fig. 8

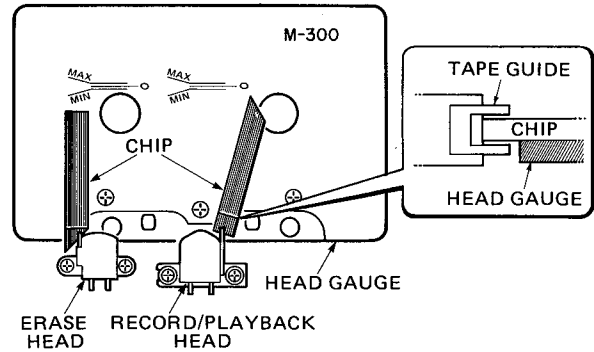
- **LEVEL DEVIATION between L and R channels**
The maximum level deviation should be within 3dB at 315 ~ 12.5kHz.

MECHANISM ADJUSTMENT AND CONFIRMATION

■ **HEAD**

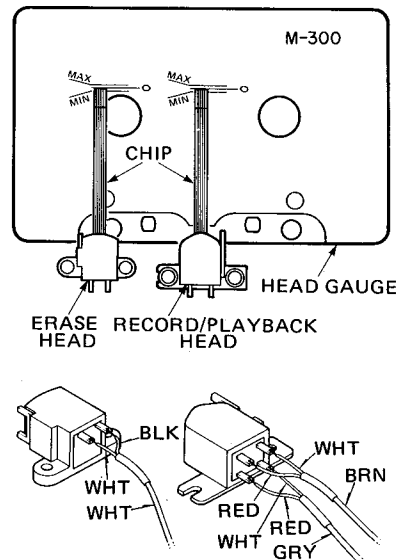
● **HEIGHT**

- 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

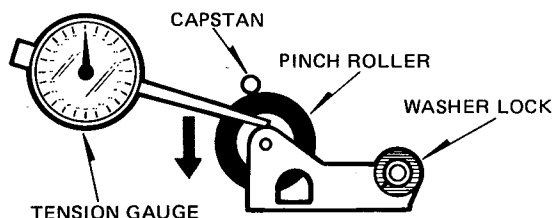
● TAPE RUNNING

- 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.

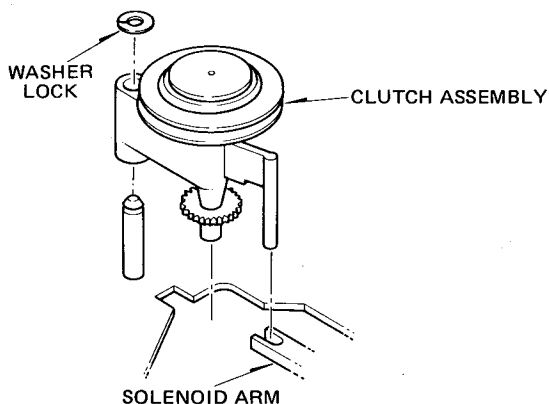
● PINCH ROLLER PRESSURE

- 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.



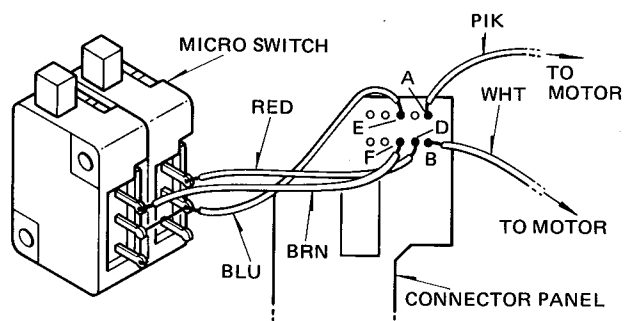
■ MICRO SWITCH

● 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.

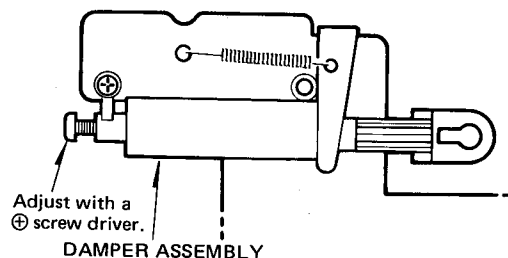
● MIS-ERASE PROTECT SWITCH

- 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

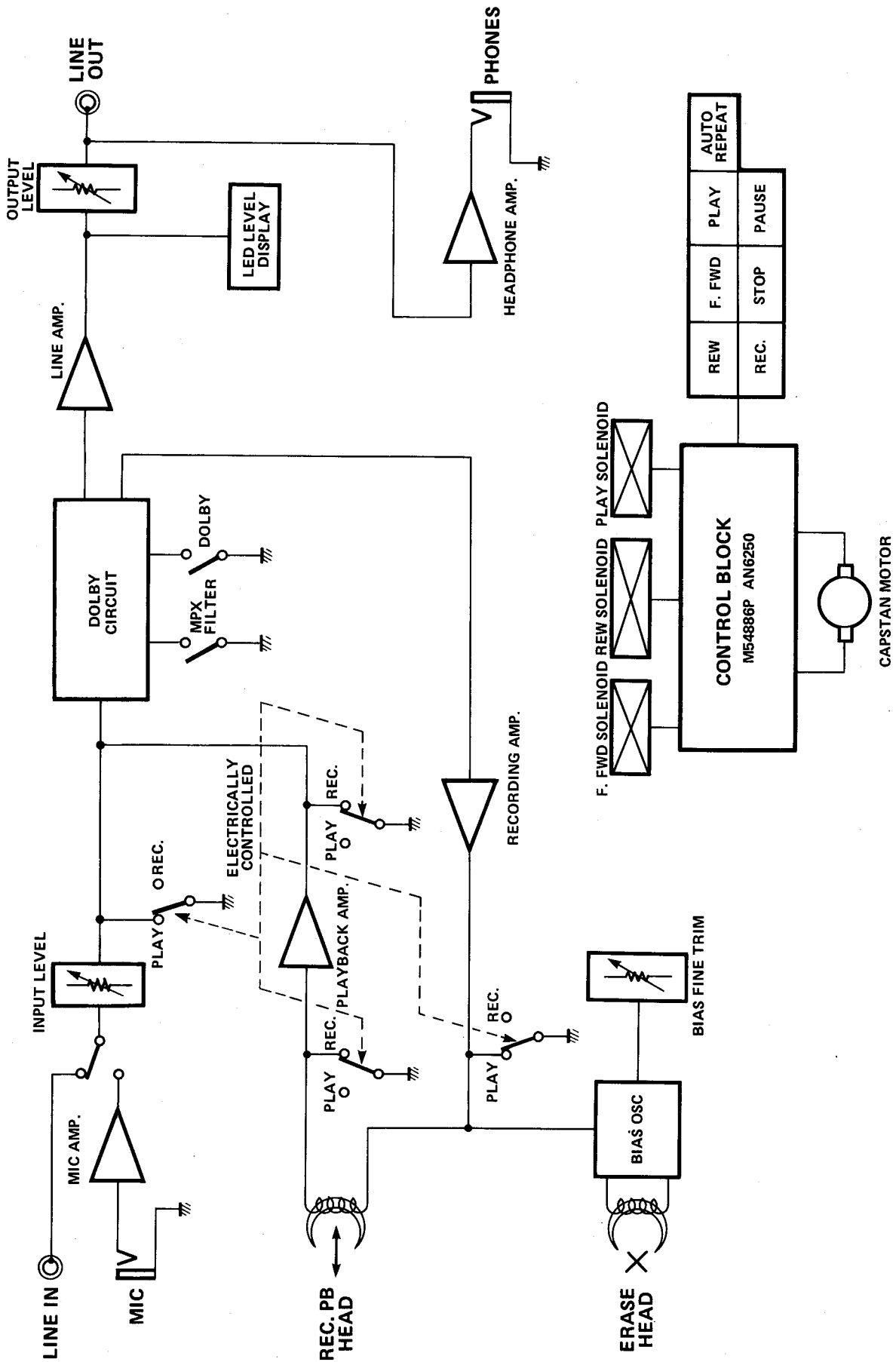
- Confirm that cassette lid opens smoothly and that no unusual sound is heard while opening or closing the cassette lid when the eject button is depressed.
- Confirm that the eject lever does not touch the chassis or the damper, etc. and it operates smoothly.
- Confirm that the eject button can't be depressed during playback.
- Adjust the screw of the damper with a ⊕ 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.

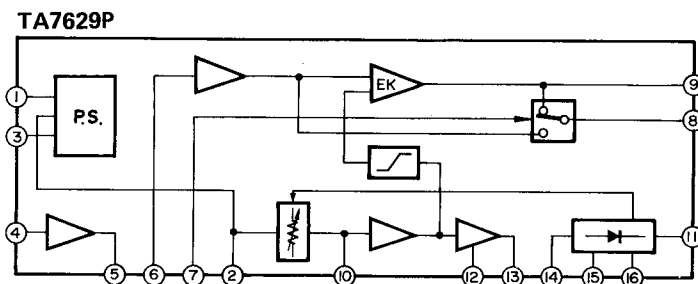
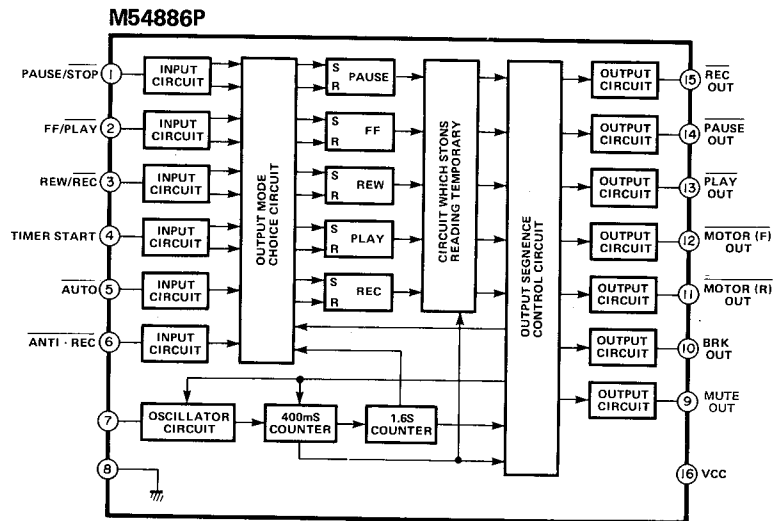
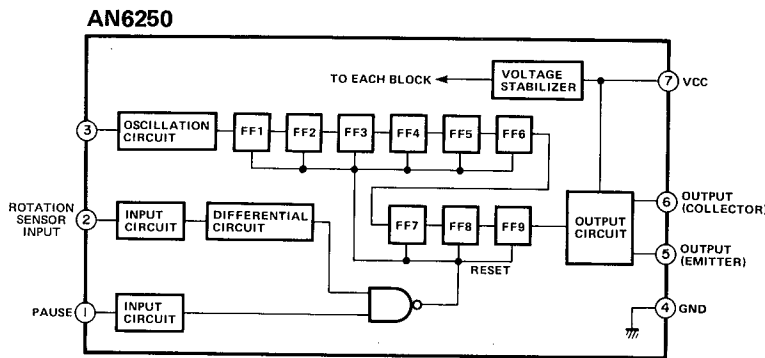
- **MUTING**

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

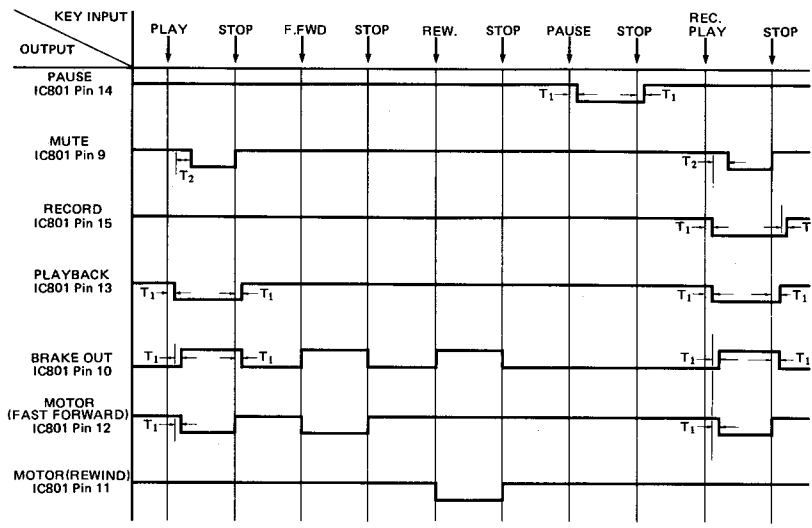


Fig. 1

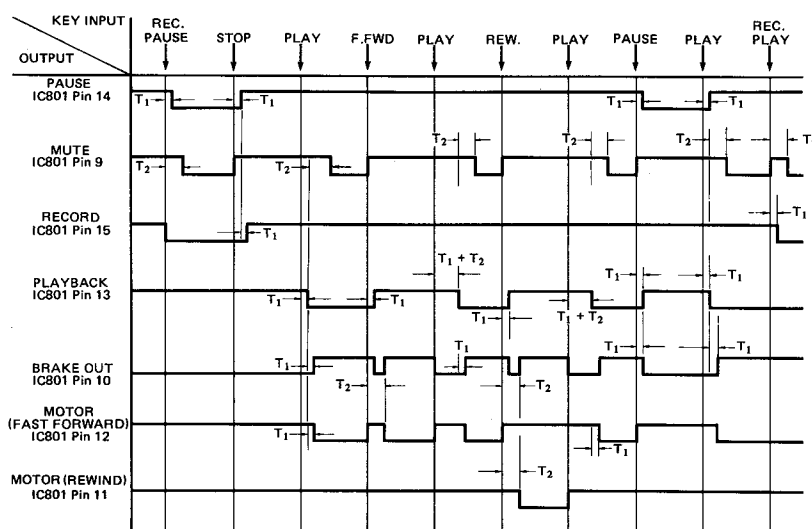


Fig. 2

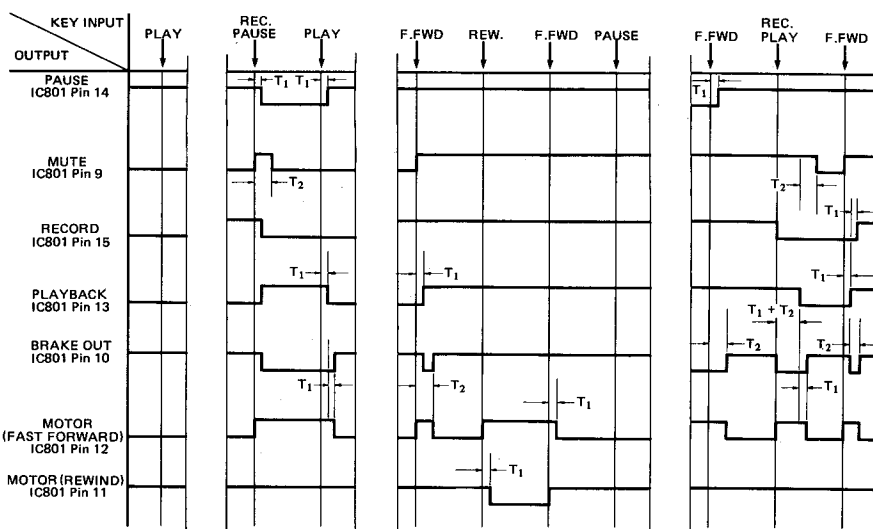


Fig. 3

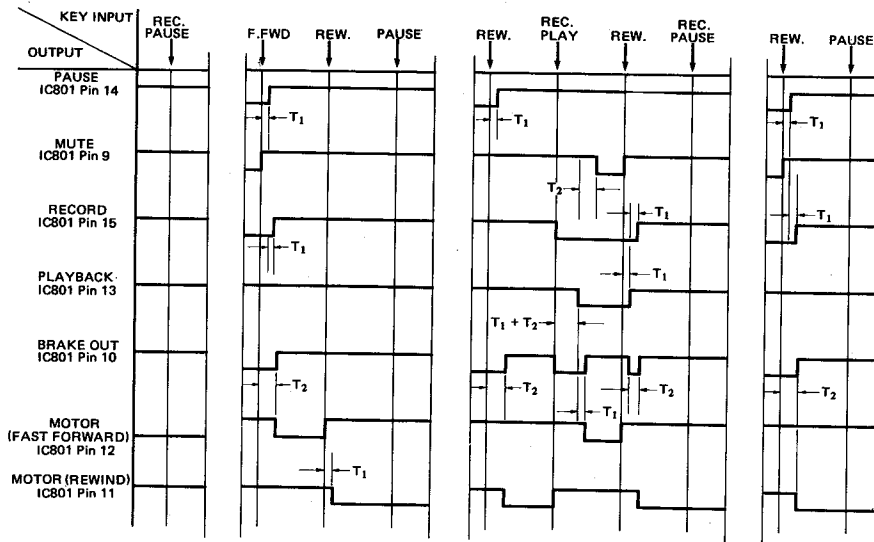


Fig. 4

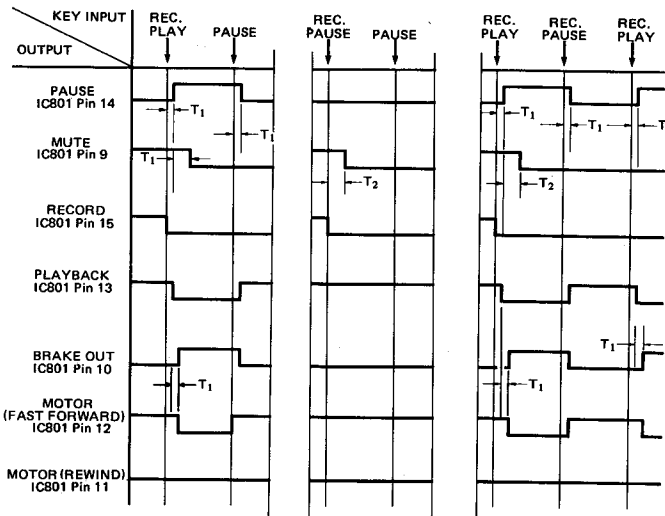


Fig. 5

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.

● **AUTO REPEAT TIMING CHART**

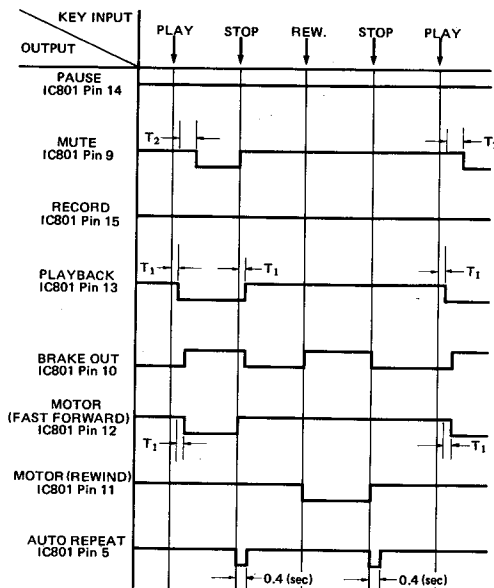
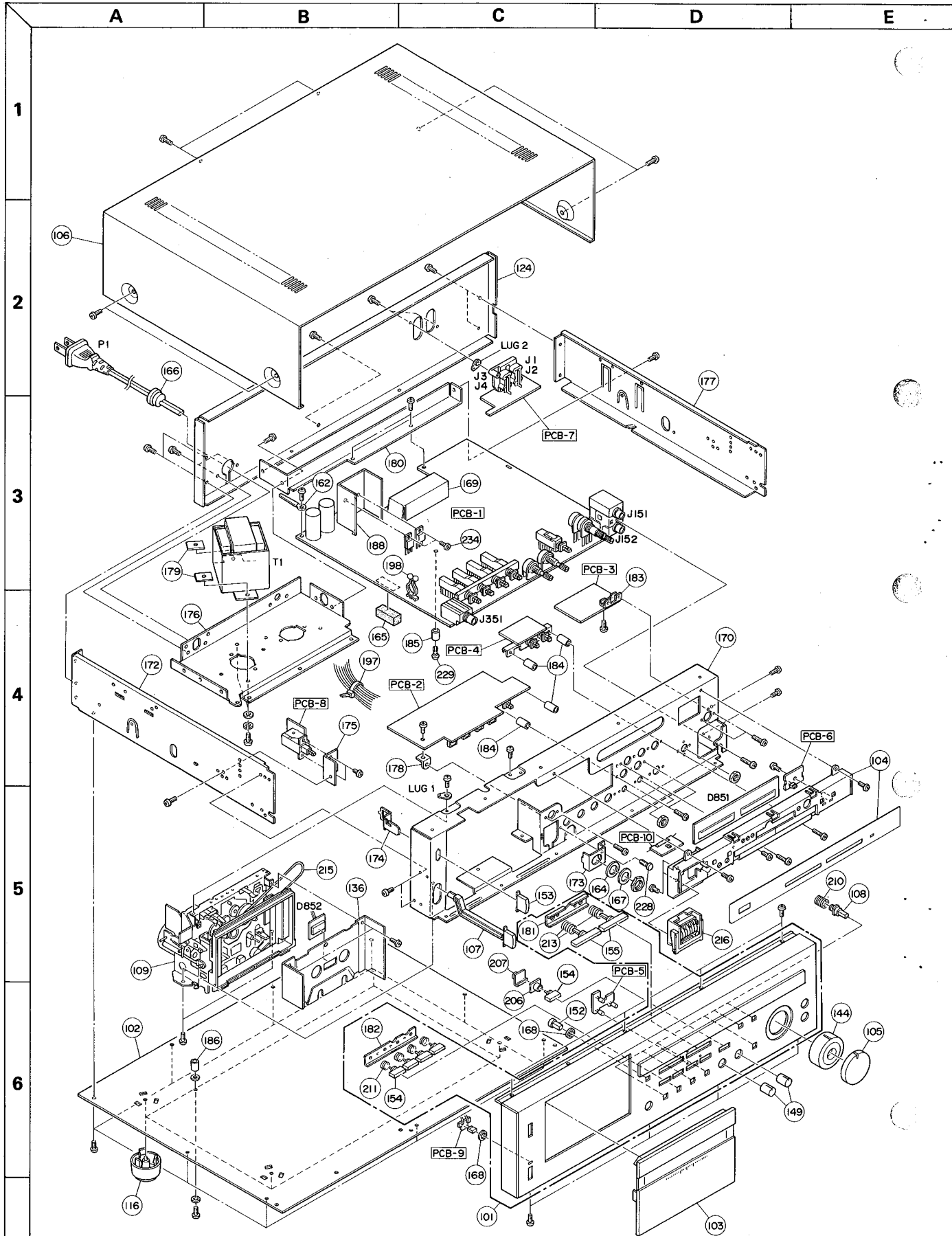


Fig. 6

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

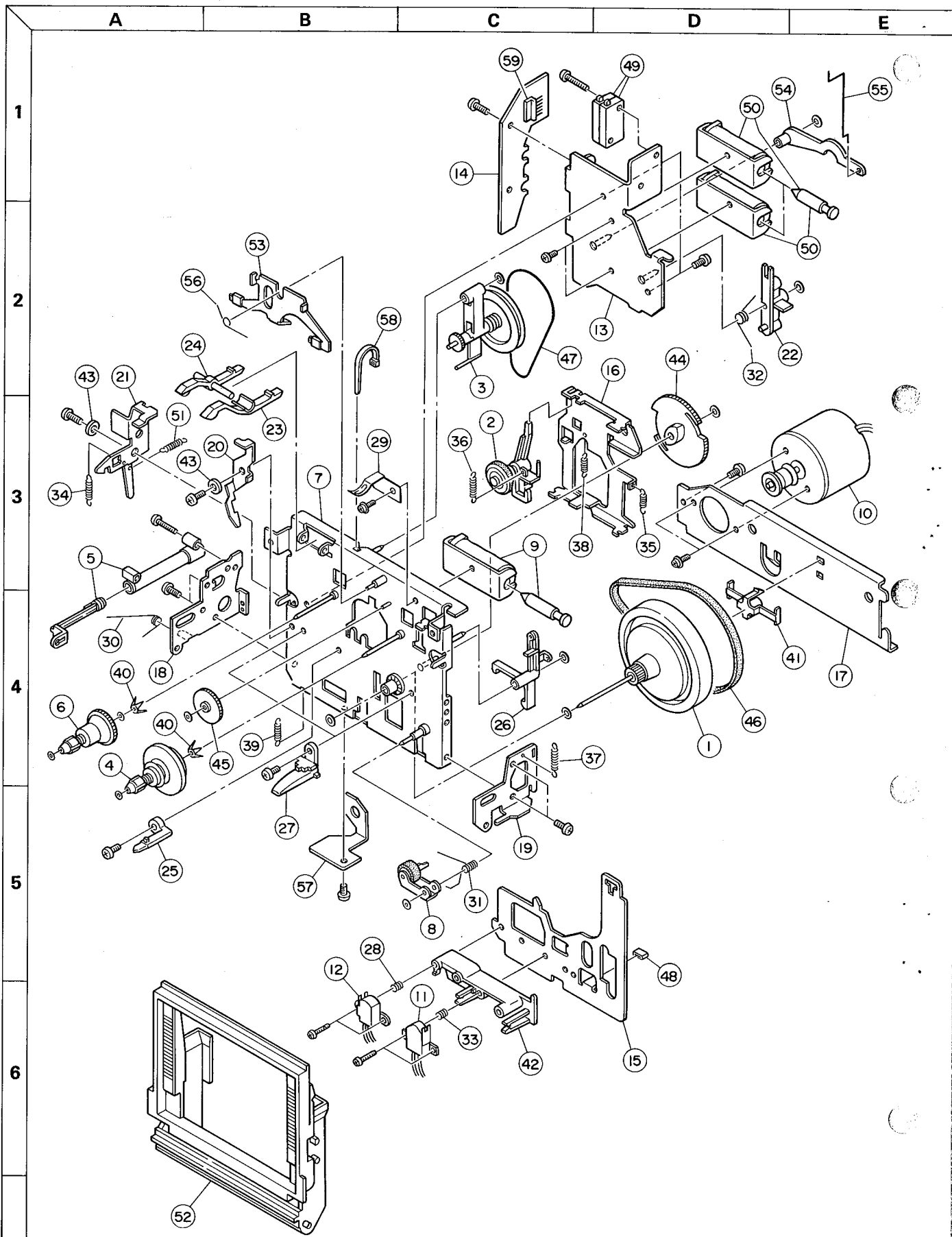
GENERAL UNIT EXPLODED VIEW



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 D551-CD101A | | |
| 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, +50% -10%, 16V, Electrolytic |
| C53, 353, 354 | 5345-107B041 | 100 μ F, \pm 20%, 10V, Electrolytic |
| C54 | 5345-105-50 | 1 μ F, +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, +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, +50% -10%, 16V, Electrolytic |
| C503, 504, 505, 506 | 5345-336-10 | 33 μ F, +50% -10%, 10V, Electrolytic |
| C507, 508 | 5359-1025851 | 1000pF, \pm 5%, 100V, Polypropylene |

| 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

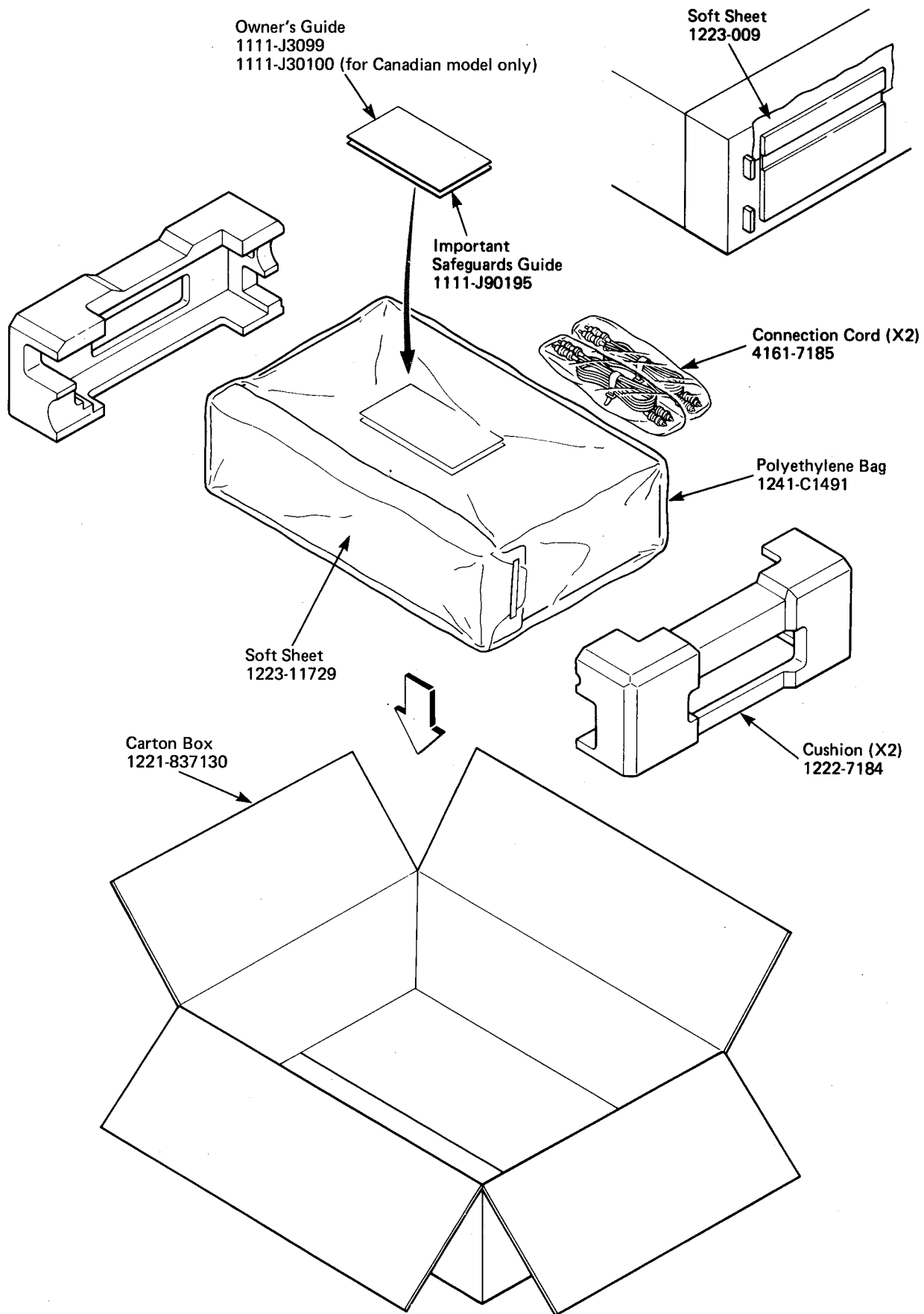
D551-CD101F or 2016

| Ref. No. | Part No. | Description |
|-------------------|---------------|--|
| 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 |

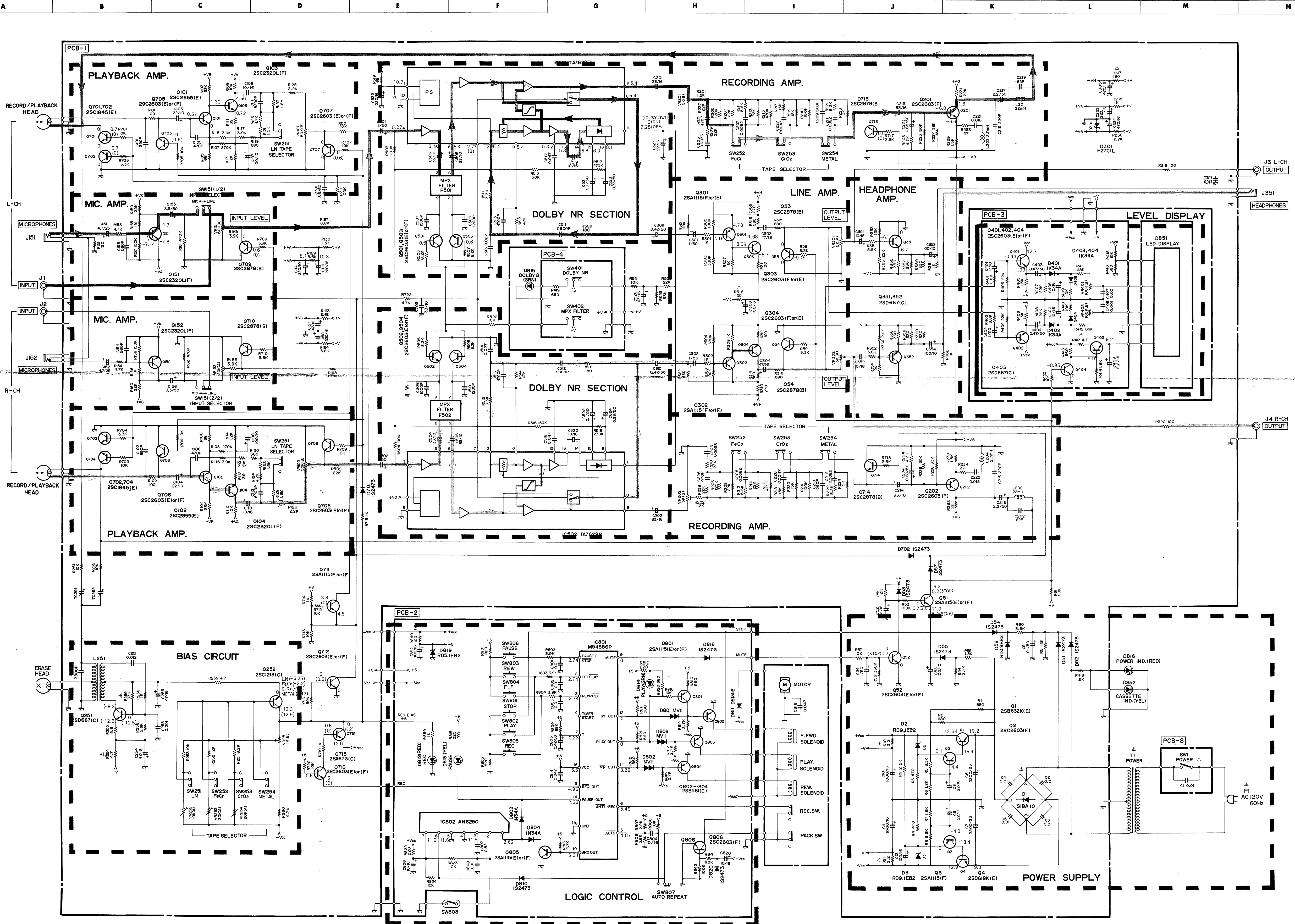
| Ref. No. | Part No. | Description |
|----------------------------|--------------|-------------|
| INTEGRATED CIRCUITS | | |
| IC801 | 5654-M54886P | M54886P |
| IC802 | 5654-AN6250 | AN6250 |

| 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 <i>D551-CD101D CD201E</i> | | |
| 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 <i>D551-CD101C</i> | | |
| SW401, 402 | 4431-02047149 | Push Switch, Dolby NR, MPX Filter |
| PCB-5 REC., PLAY AND PAUSE INDICATORS P.C. BOARD <i>D551-CD101K + CD201L</i> | | |
| 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 <i>D551-CD101G + 201H</i> | | |
| D815 | 5637-GL9PG19 | L.E.D., GL9PG19, Green, Dolby NR |
| PCB-7 JACK P.C. BOARD <i>D551-CD101B</i> | | |
| J1, 2, 3, 4 | 4484-31 | 4-Pin Jack, Line Input, Line Output |
| PCB-8 POWER SWITCH P.C. BOARD <i>D551-CD101E + 201F</i> | | |
| SW1 | 4431-A01026 | Push Switch, Power |
| PCB-9 POWER INDICATOR P.C. BOARD <i>D551-CD101H + 201J</i> | | |
| D816 | 5637-GL9PR2 | L.E.D., GL9PR2, Red, Power |
| PCB-10 REED SWITCH P.C. BOARD <i>D551-CD101J CD201K</i> | | |
| SW808 | 4466-713 | Reed Switch, Auto Stop |

PACKAGE



SCHEMATIC DIAGRAM

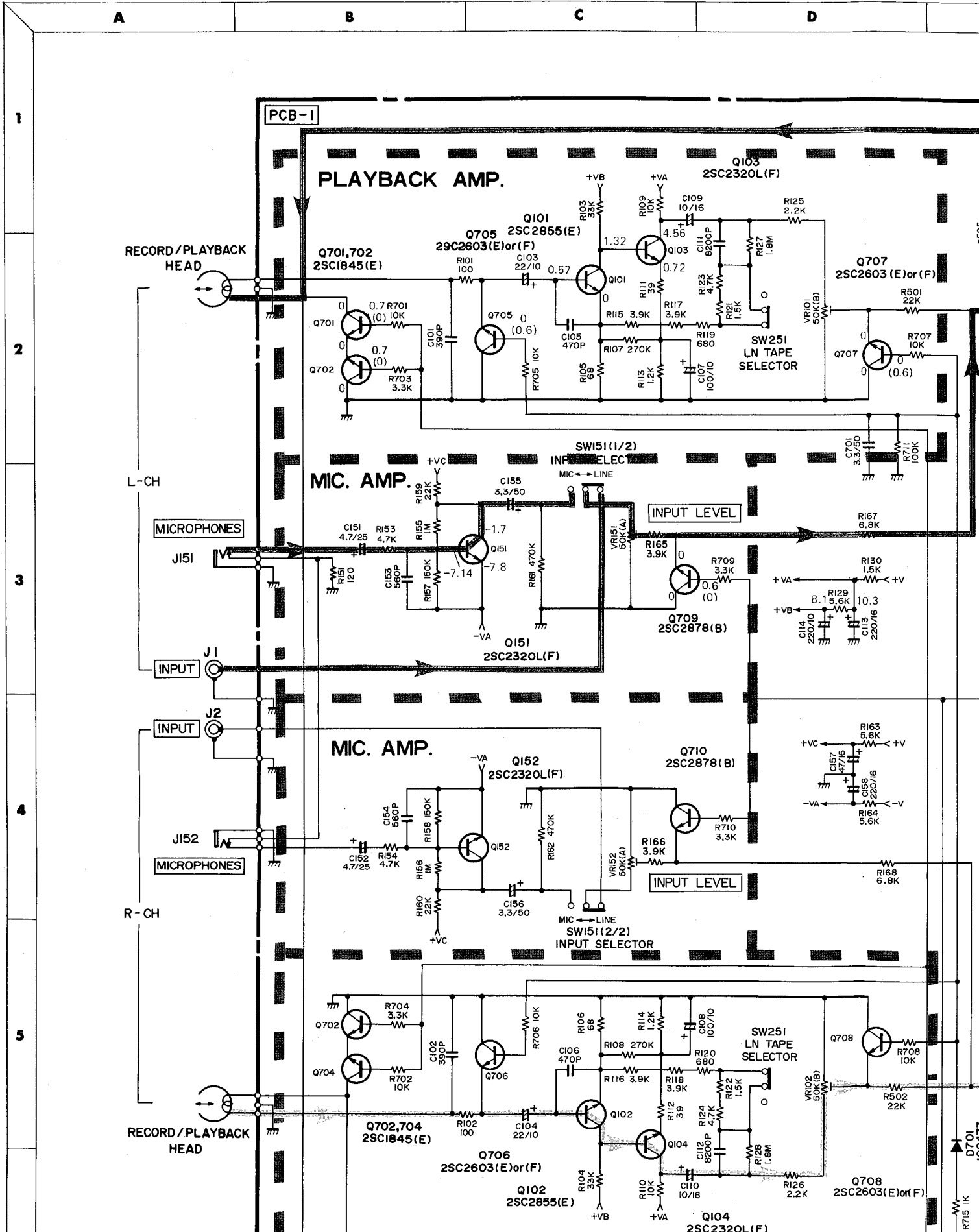


RECORDING SIGNAL (L ch)
 PLAYBACK SIGNAL (R ch)

1. ALL RESISTANCE VALUES ARE IN Ω , K Ω = 1000 Ω , M Ω = 1000K Ω
 2. THE WATTAGE OF RESISTOR IS 1/4W, UNLESS OTHERWISE NOTED.
 3. ALL CAPACITANCE VALUES ARE IN μ F UNLESS OTHERWISE NOTED. P = μ F
 4. DC VOLTAGE AT NO SIGNAL: VOLT
PLAYBACK MODE,RECORD MODE

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

SCHEMATIC DIAGRAM



E

F

G

H

IC10: TA7620B

RECORD

(E) or (F)

(0.6)

+V

+V

-V

W

W

(E) or (F)

DOLBY SWIT
0 (ON)
9.25 (OFF)

DOLBY NR SECTION

PCB-4

D815
DOLBY B
(GRN)

SW401
DOLBY NR

SW402
MPX FILTER

DOLBY NR SECTION

Q301
2SA1115(F) or (E)

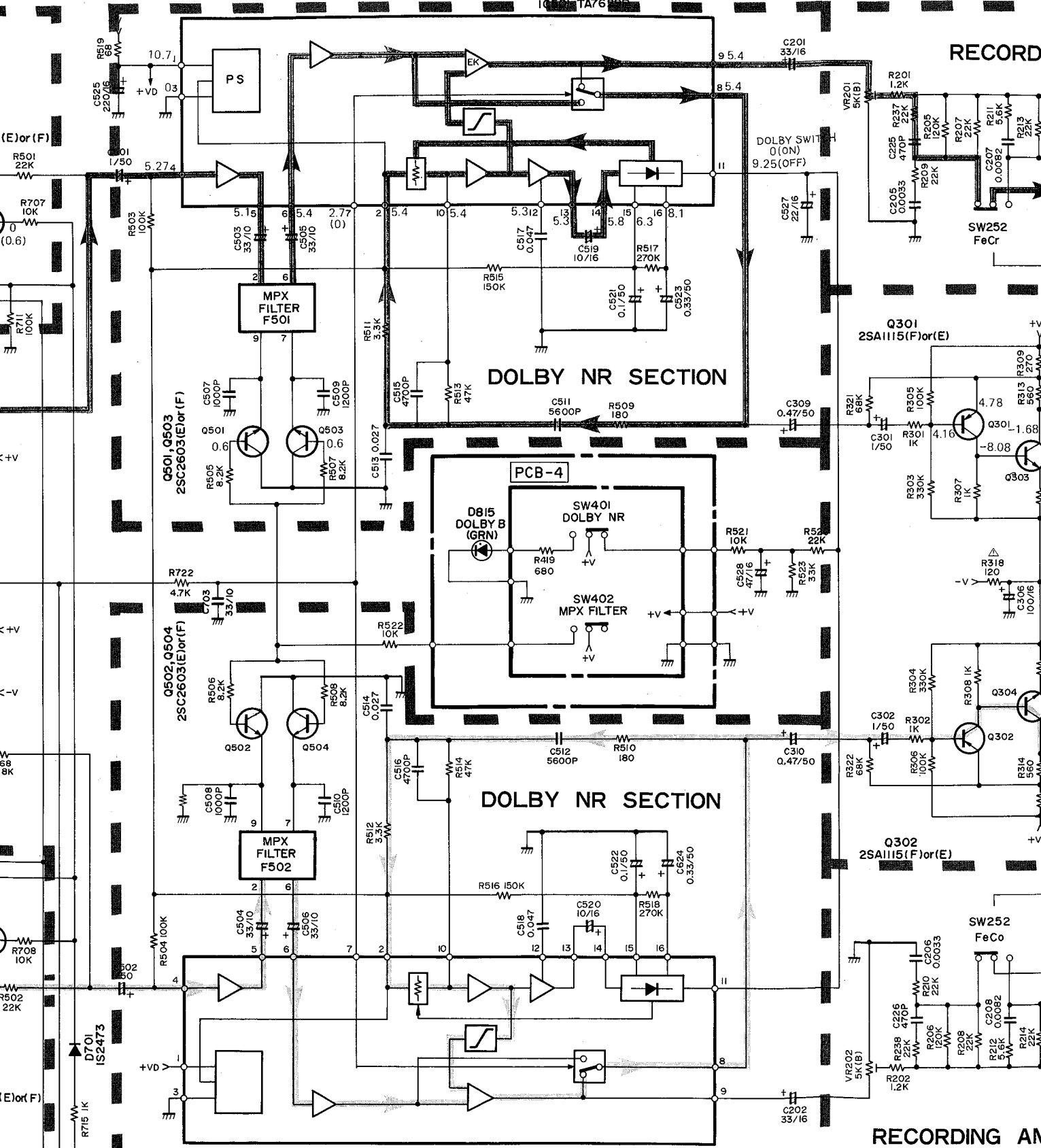
Q302
2SA1115(F) or (E)

Q303
1.68

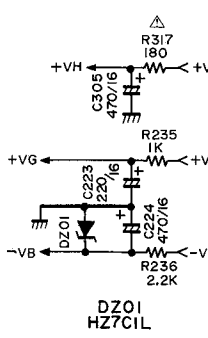
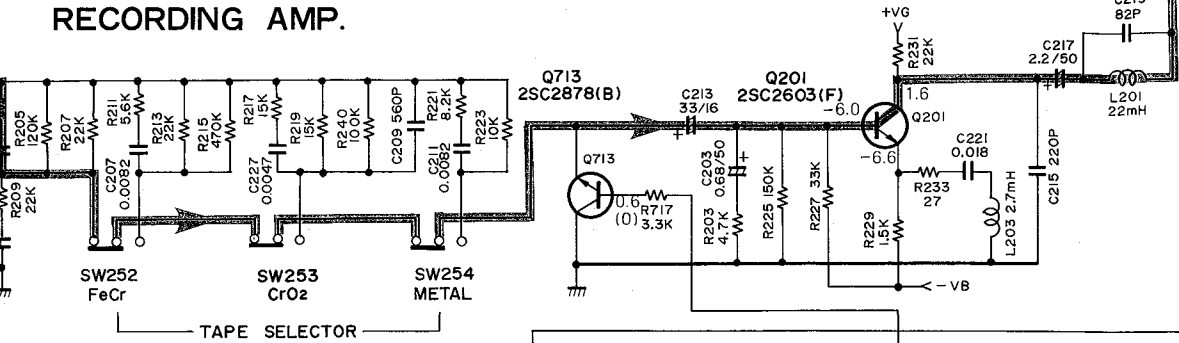
Q304
1.68

SW252
FeCo

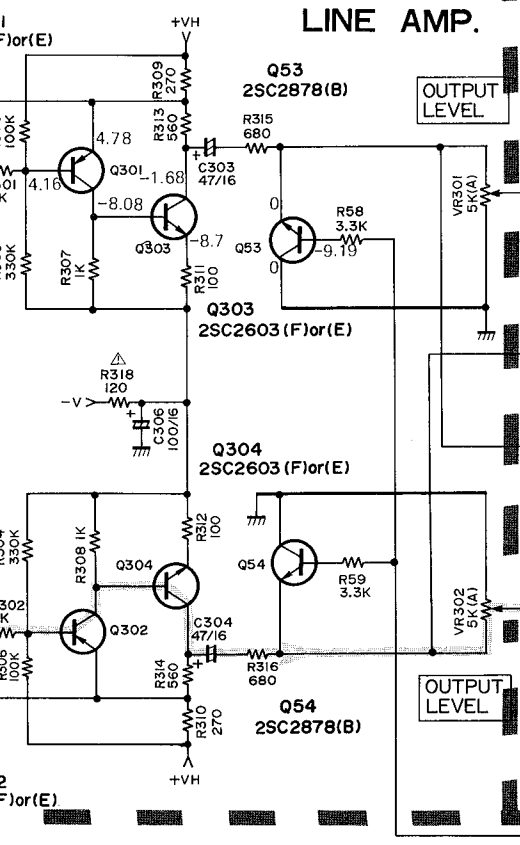
RECORDING AM



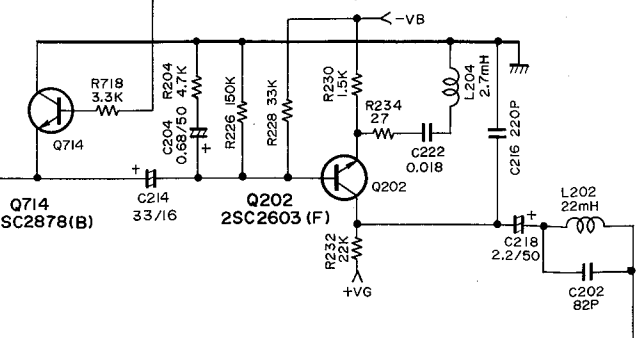
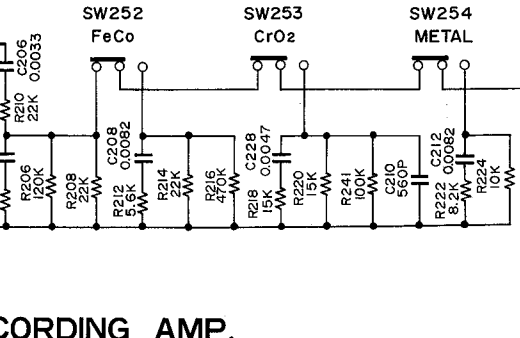
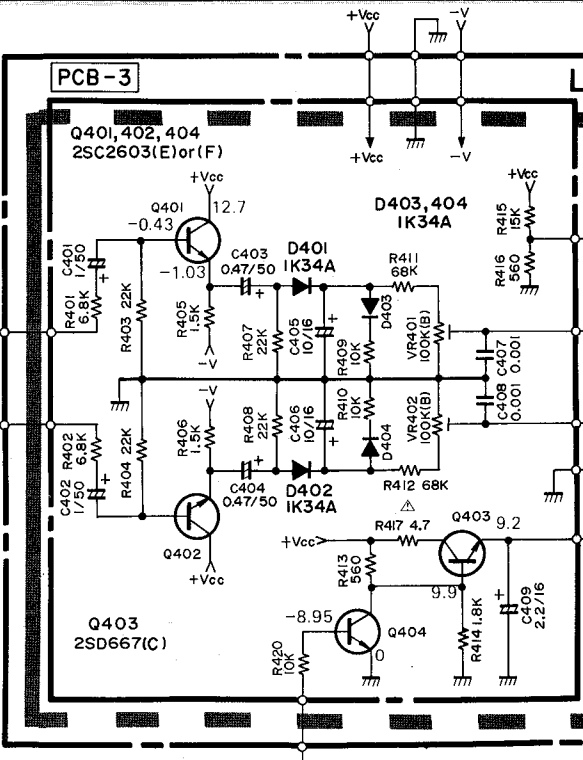
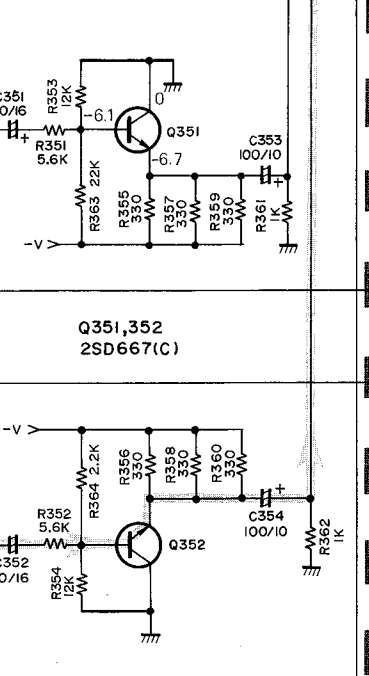
RECORDING AMP.



LINE AMP.



HEADPHONE AMP.



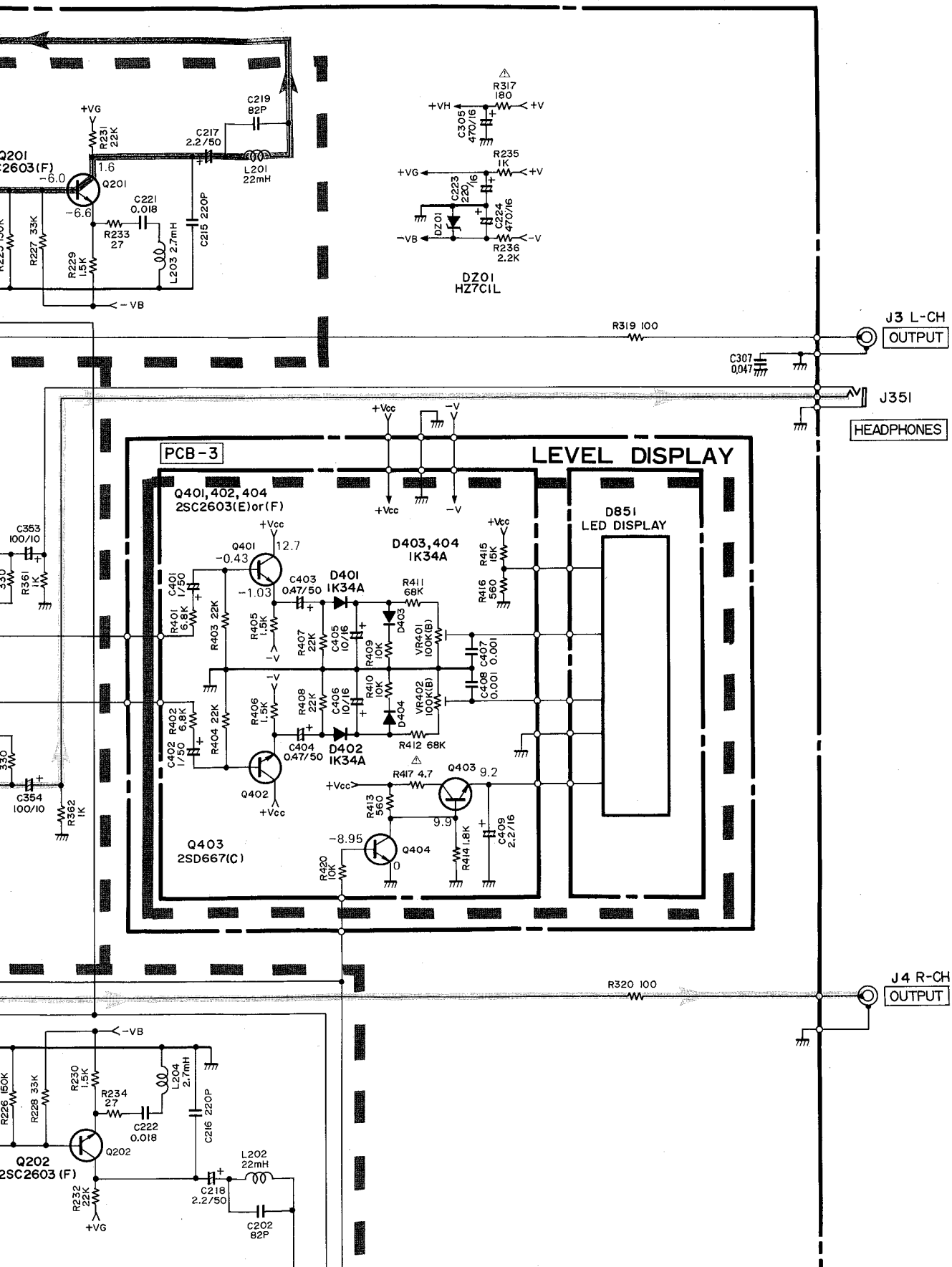
RECORDING AMP.

K

L

M

N



R-CH

INPUT LEVEL

MIC → LINE
SW151(2/2)
INPUT SELECTOR

RECORD / PLAYBACK
HEAD

PLAYBACK AMP.

BIAS CIRCUIT

ERASE
HEAD

SW251 LN
SW252 FeCr
SW253 CrO2
SW254 METAL

TAPE SELECTOR

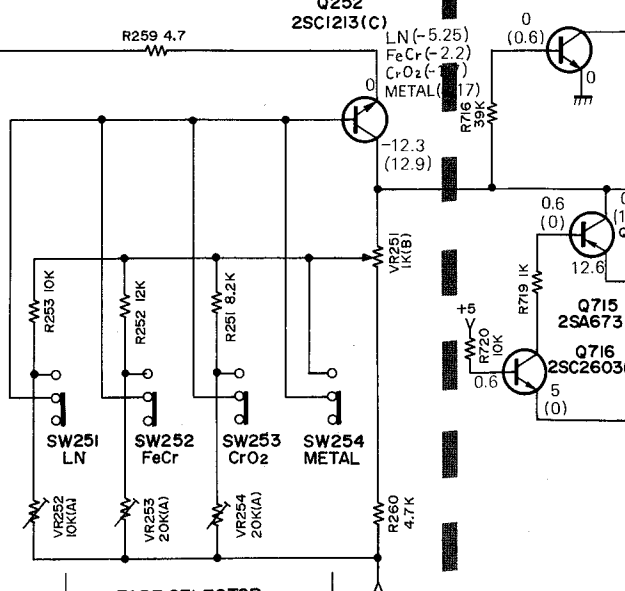
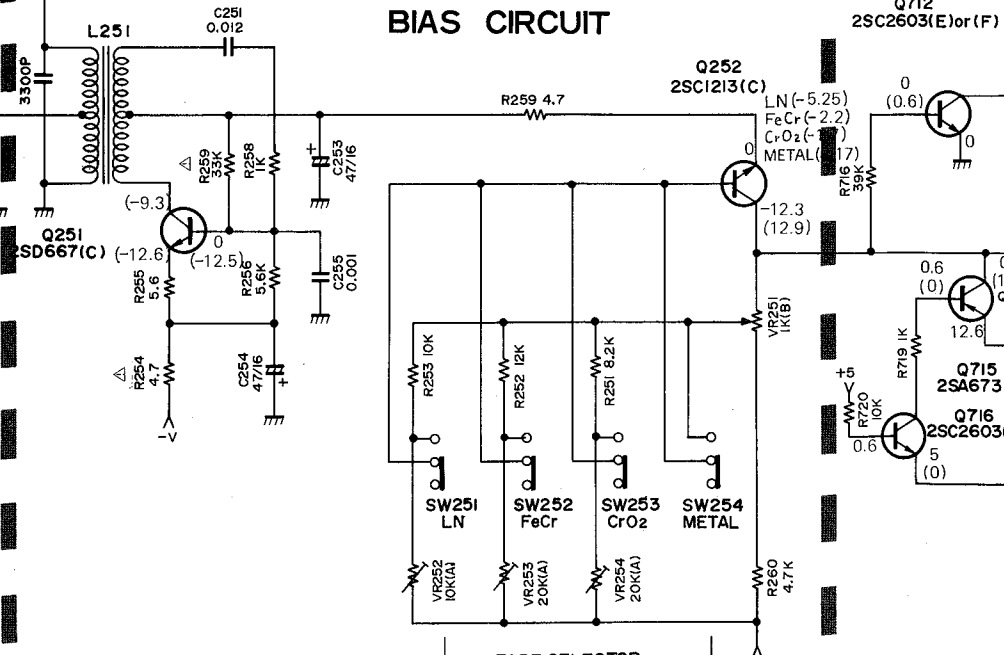
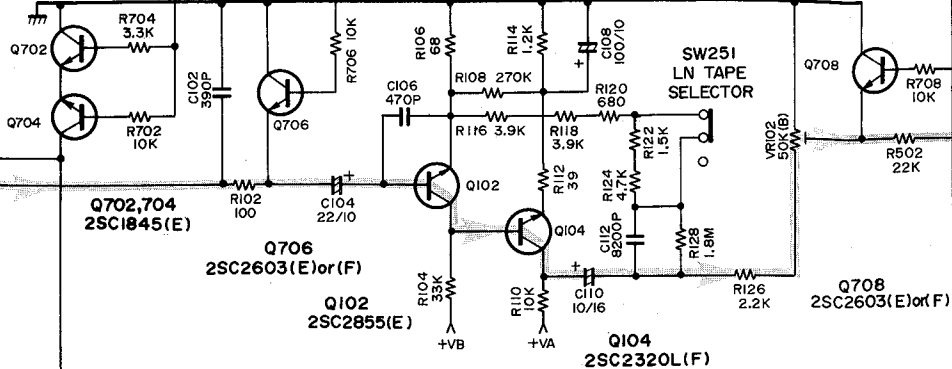
5

6

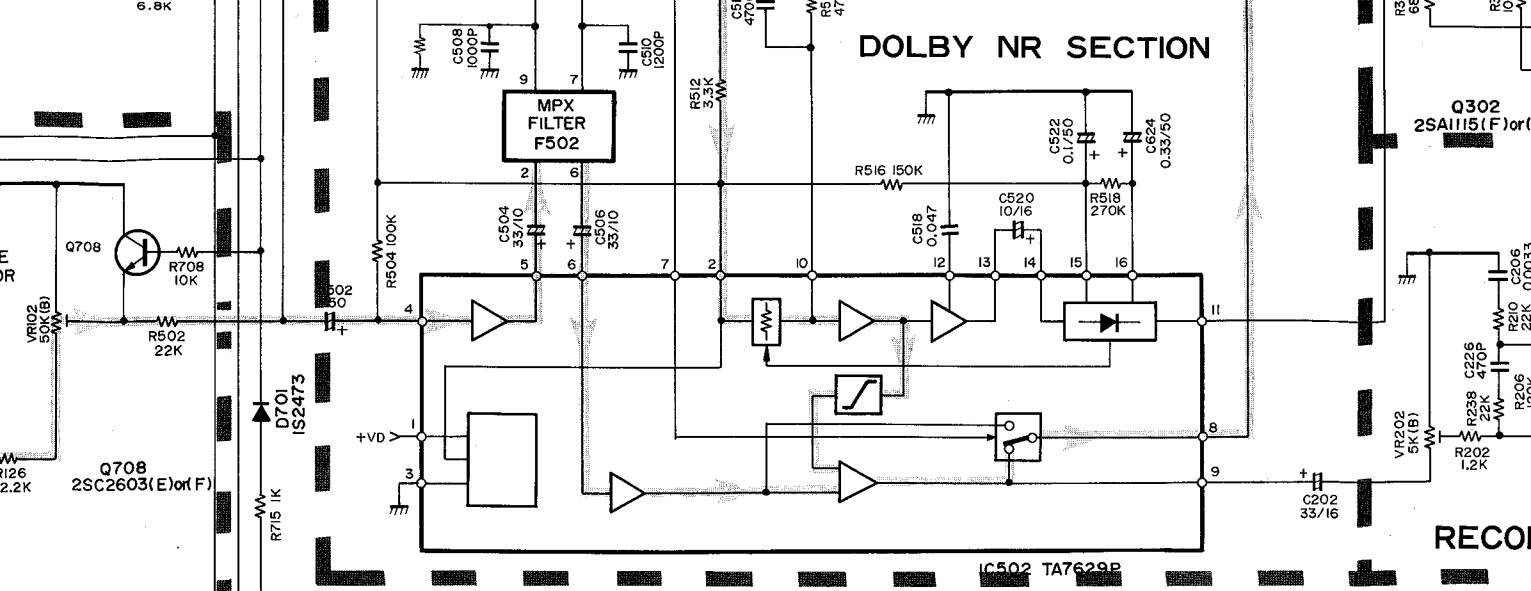
7

8

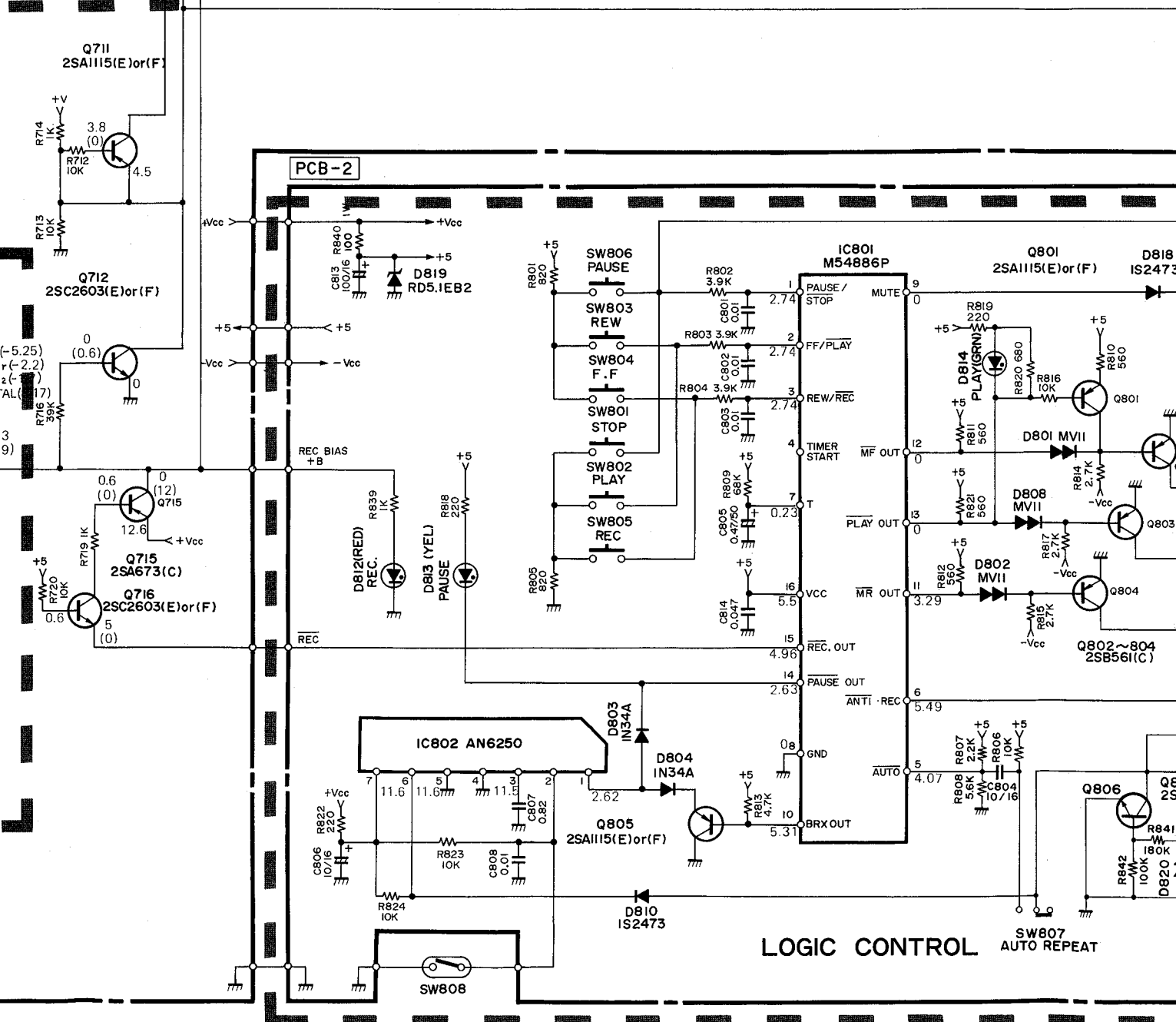
9



DOLBY NR SECTION



PCB-2



LOGIC CONTROL

RECO

Q302
2SA1115(F) or (F)

R302
22K

R303
22K

R304
22K

R305
22K

R306
22K

R307
22K

R308
22K

R309
22K

R310
22K

R311
22K

R312
22K

R313
22K

R314
22K

R315
22K

R316
22K

R317
22K

R318
22K

R319
22K

R320
22K

R321
22K

R322
22K

R323
22K

R324
22K

R325
22K

R326
22K

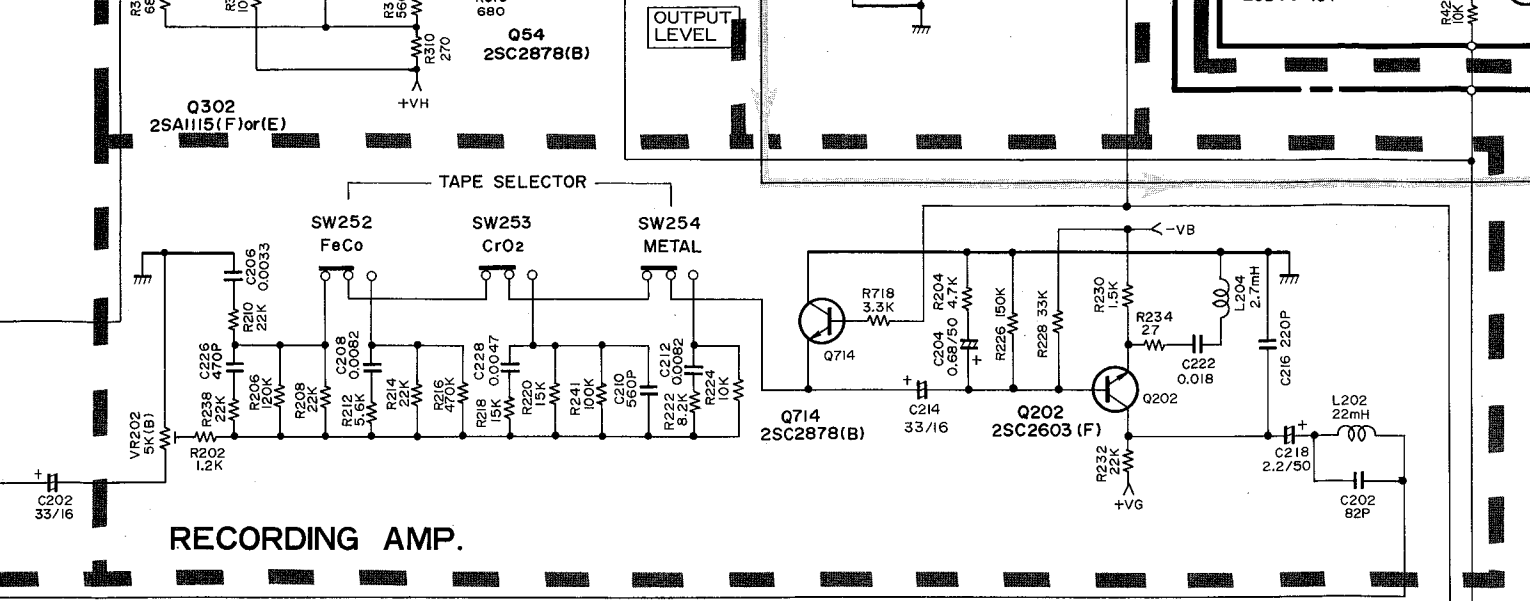
R327
22K

R328
22K

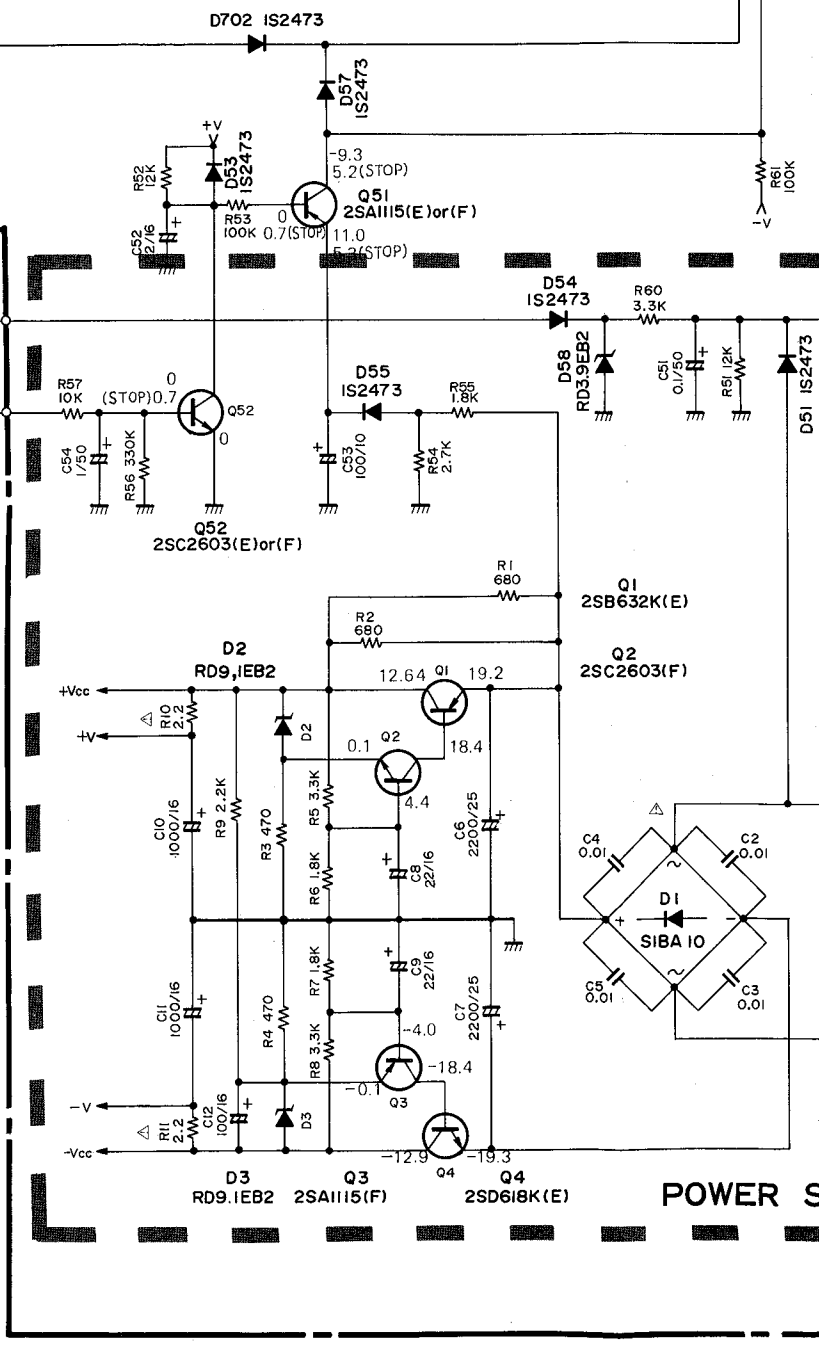
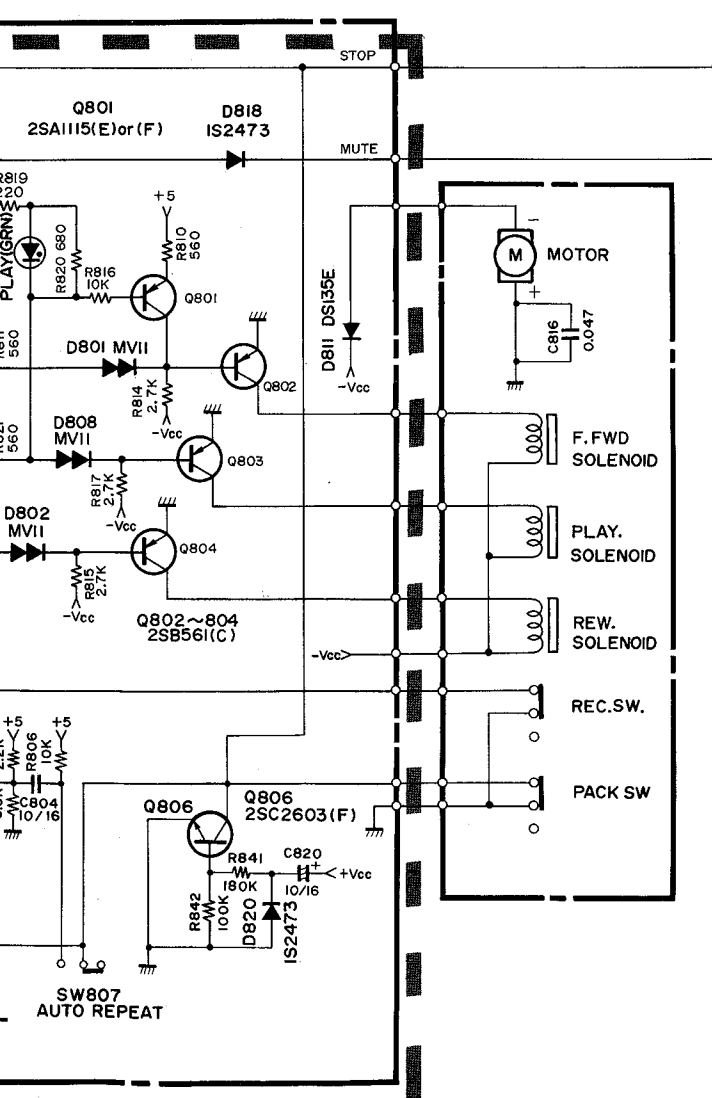
R329
22K

R330
22K

R331
22K



RECORDING AMP.

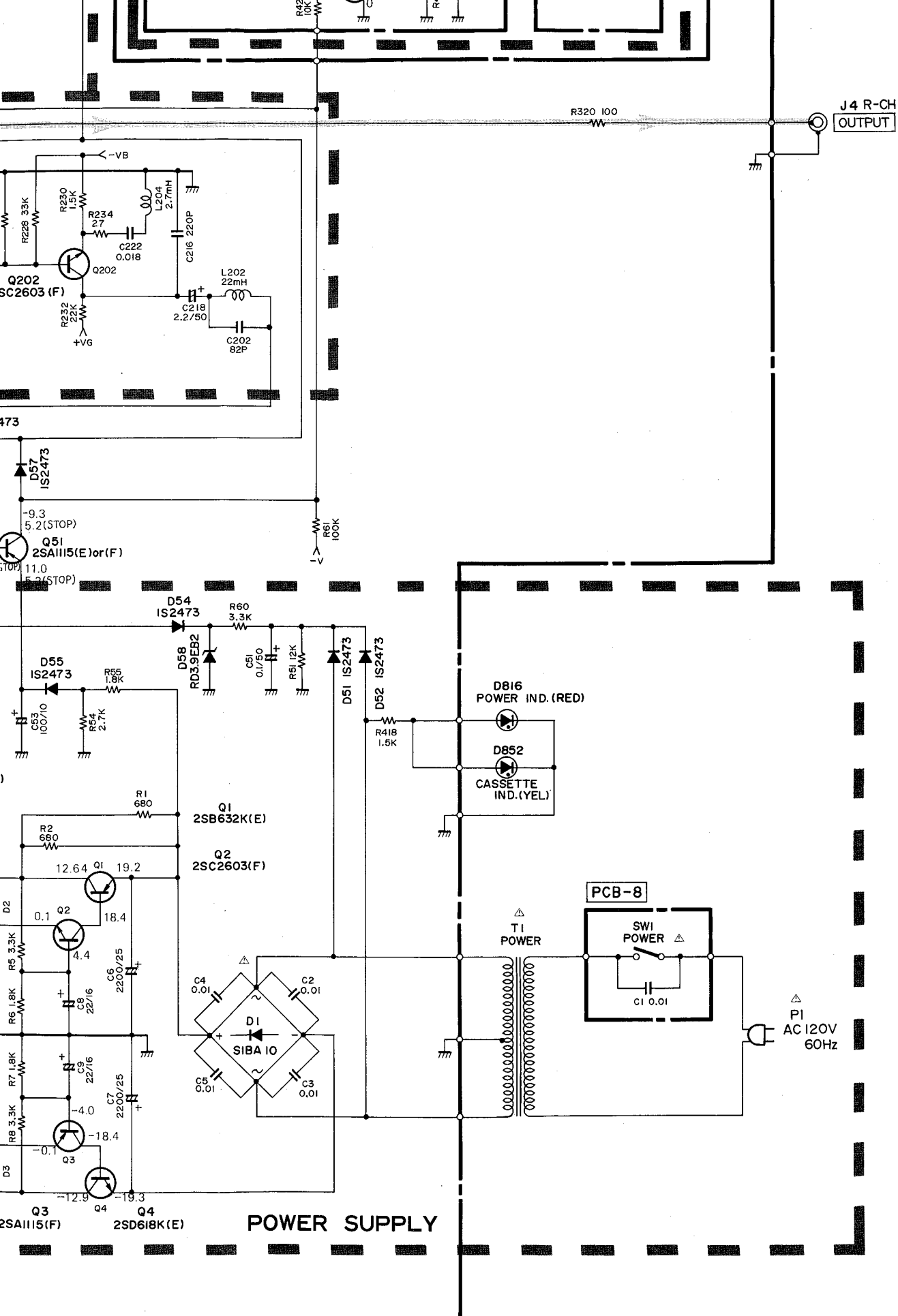


POWER S

.....RECORDING SIGNAL (L ch)
PLAYBACK SIGNAL (R ch)

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

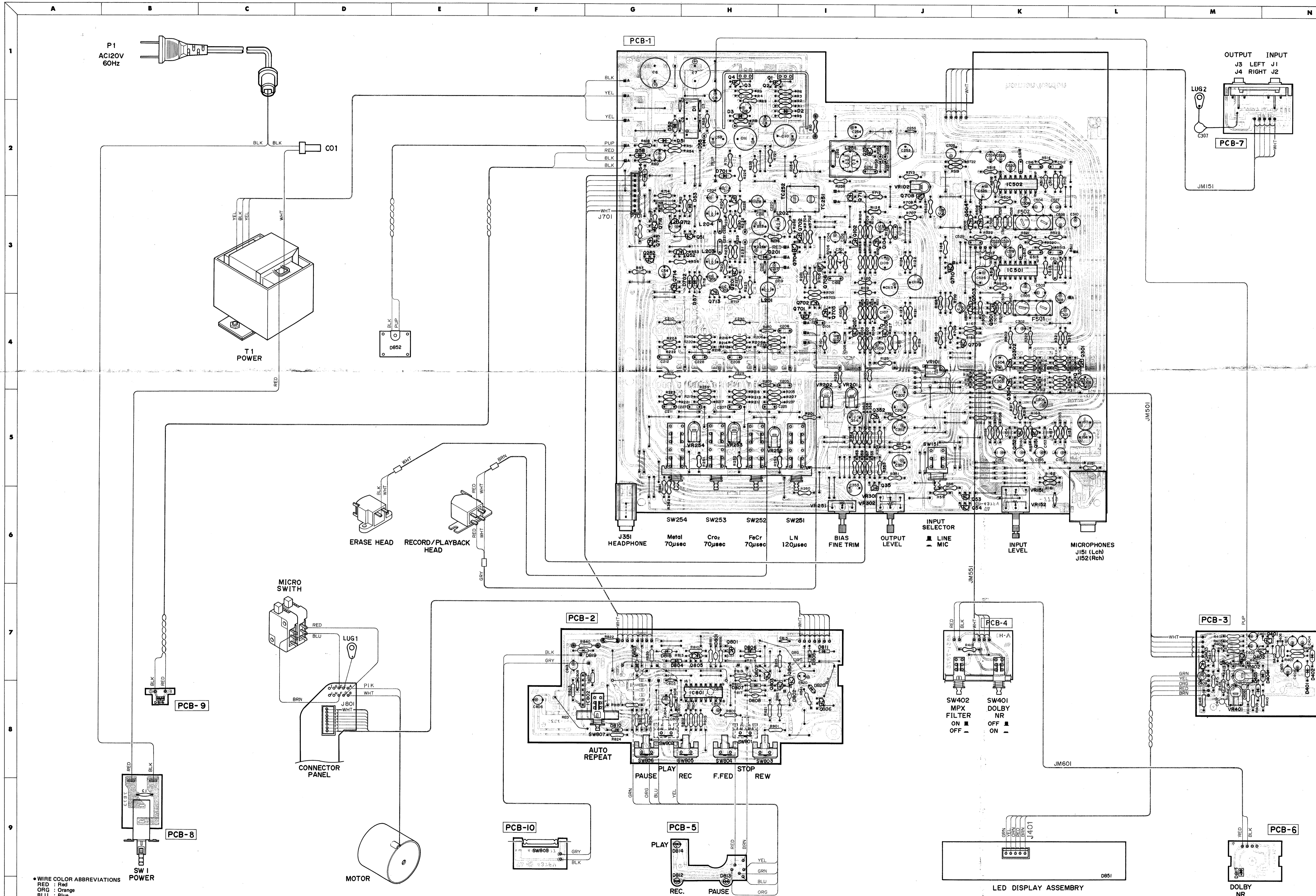
5. Δ SA1 OR



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

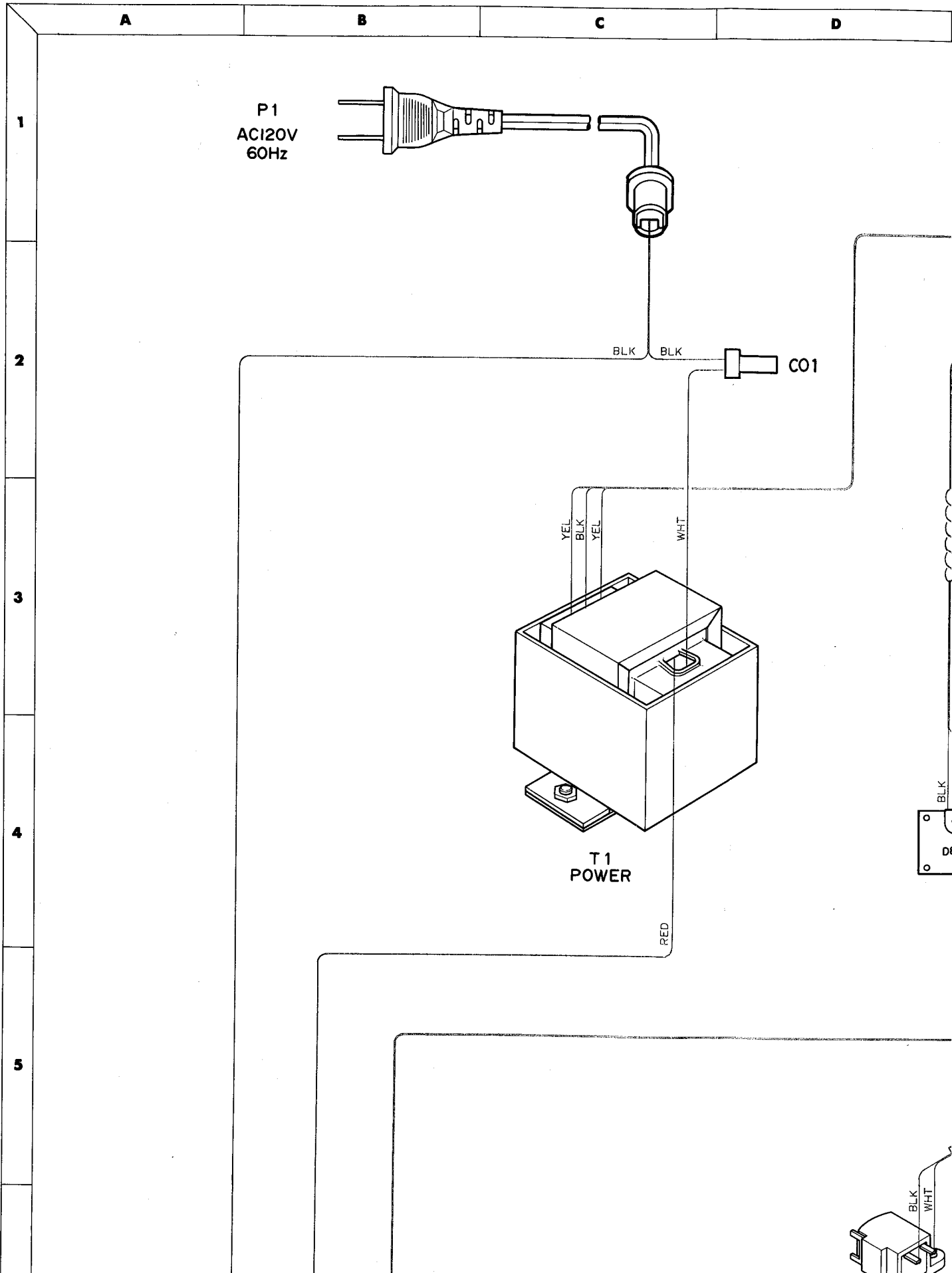
5. ⚠ SAFETY-REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

WIRING DIAGRAM



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

WIRING DIAGRAM



D

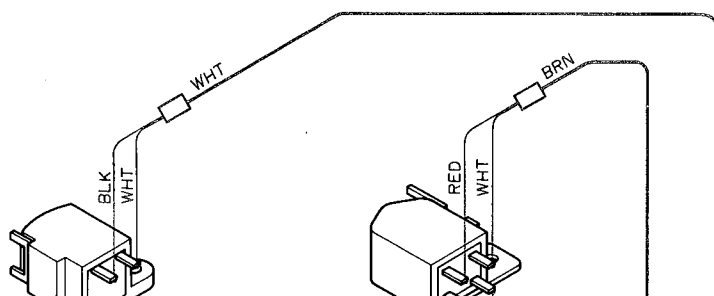
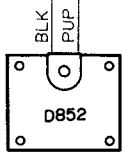
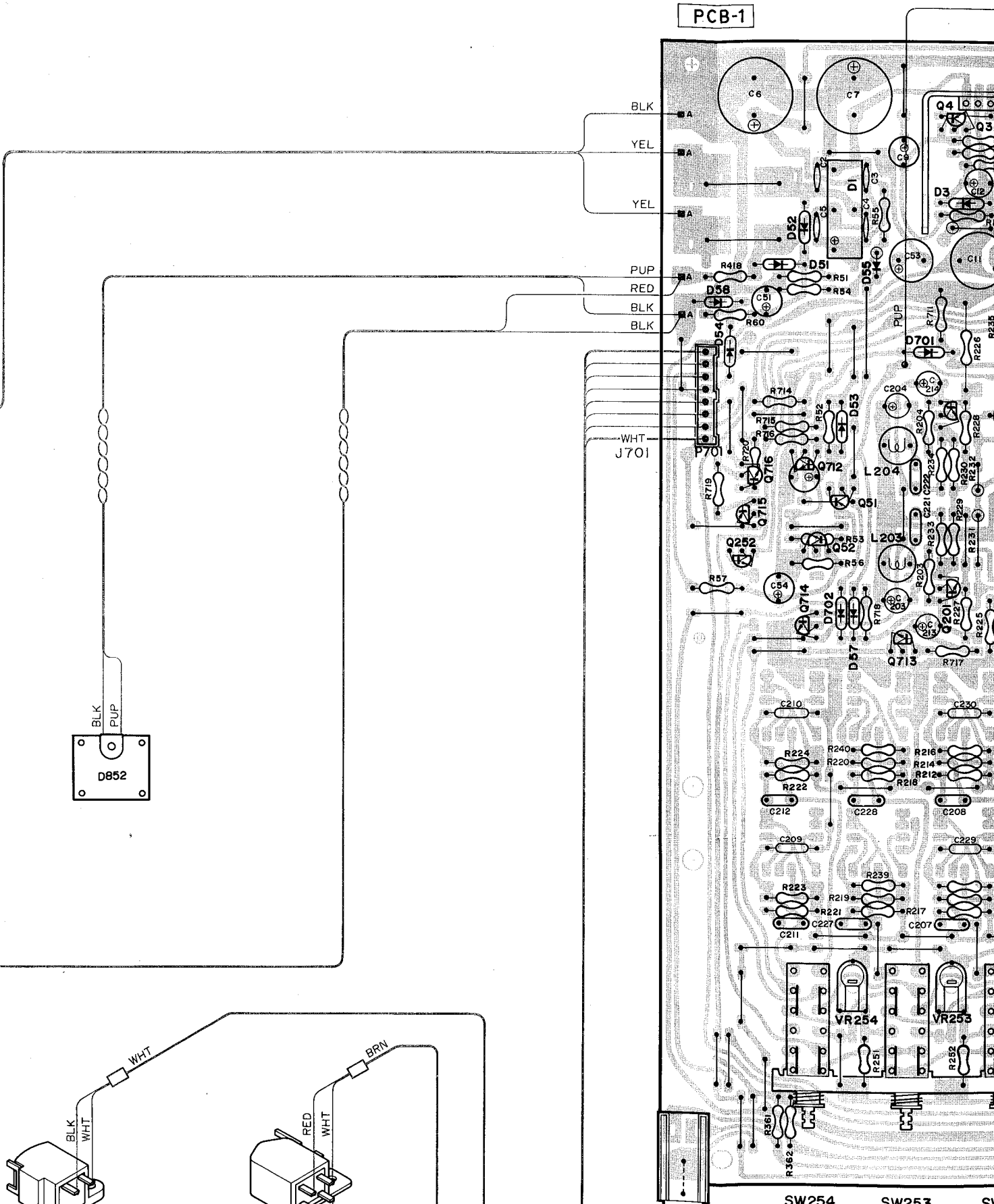
E

F

G

H

PCB-1



SW254 SW253 SW

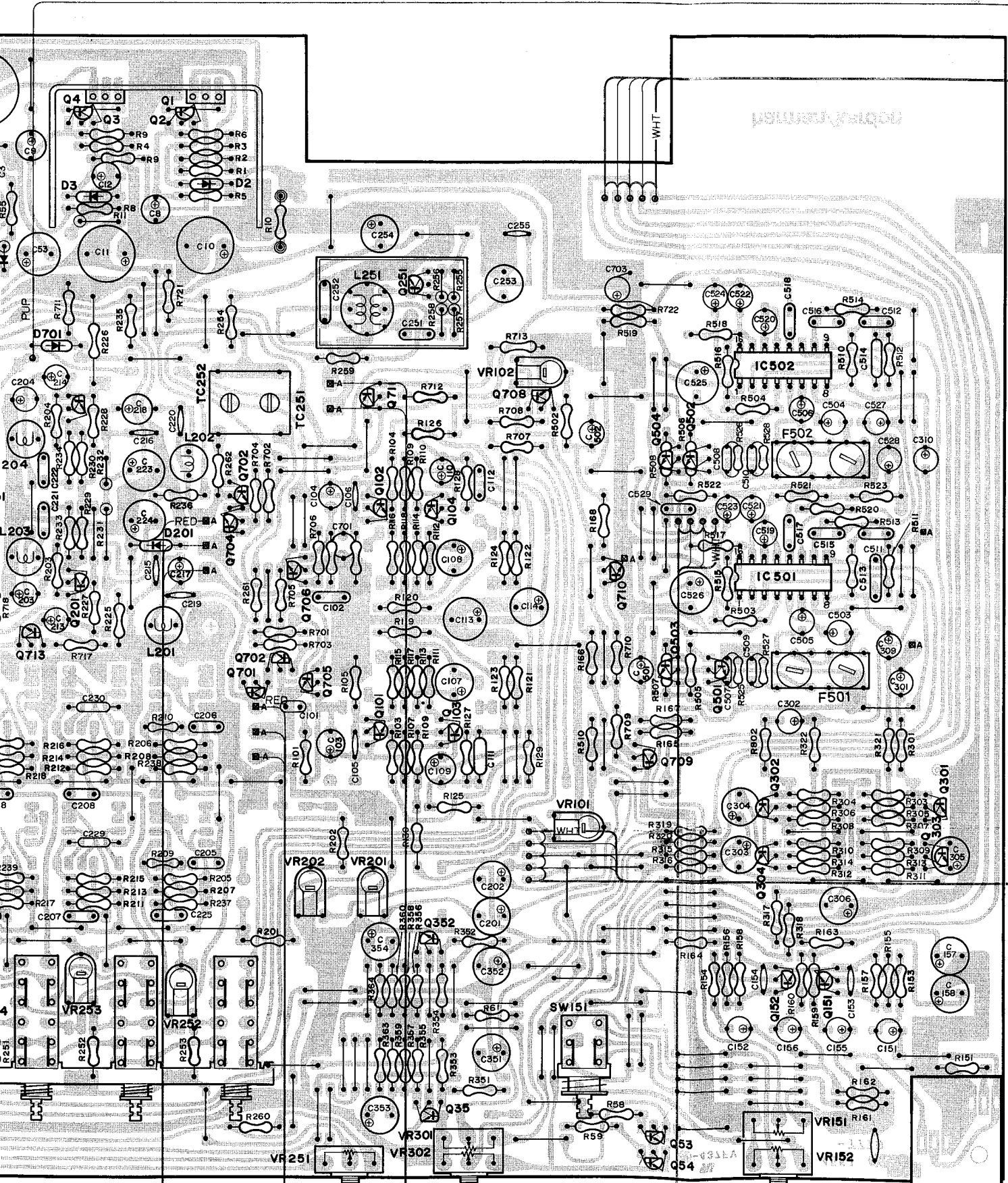
H

I

J

K

L



SW253 SW254 SW255

INPUT

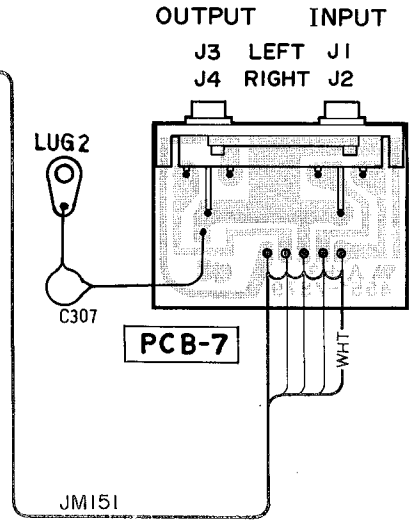
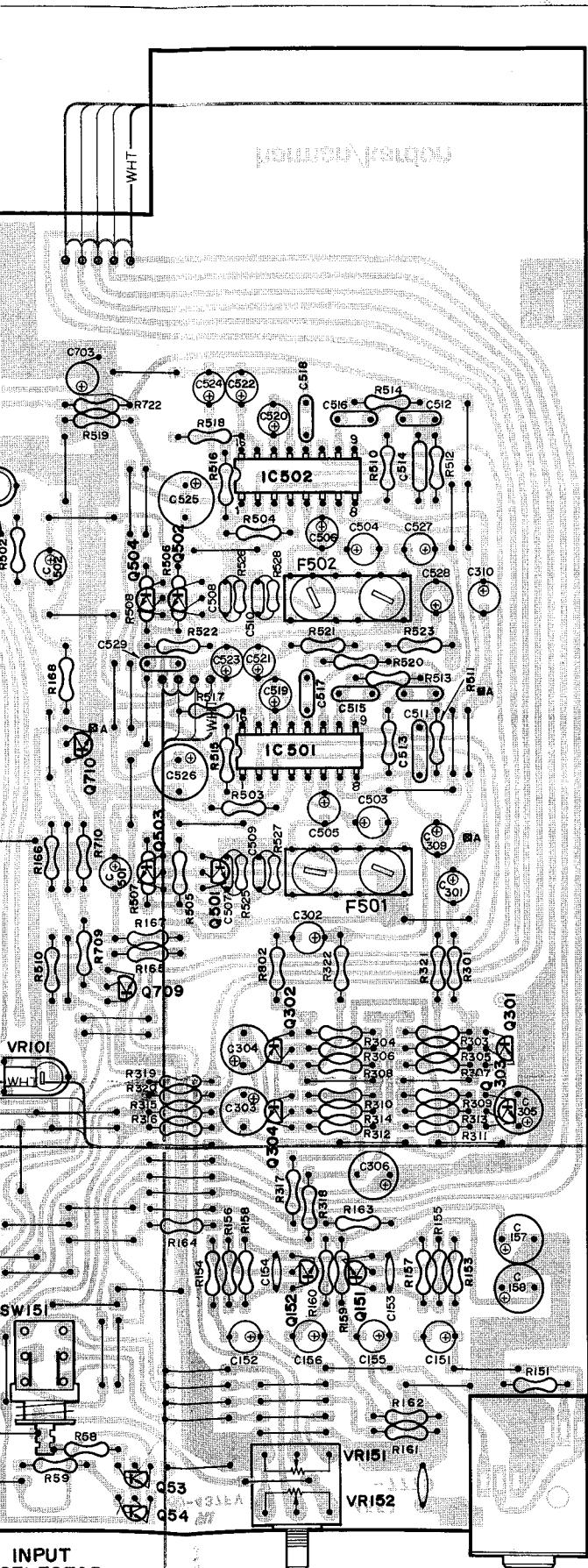
VR151 VR152

K

L

M

N



JM501

INPUT

RED

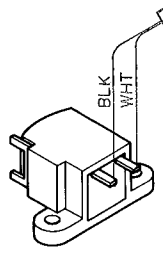
5

6

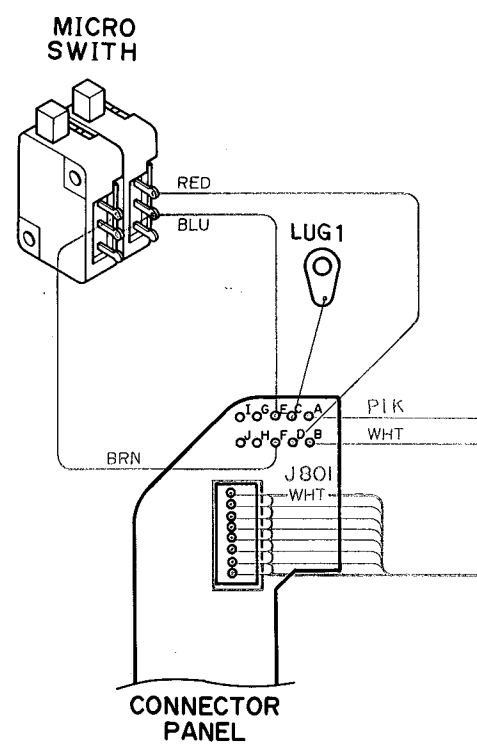
7

8

9



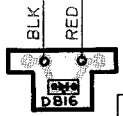
ERASE HEAD



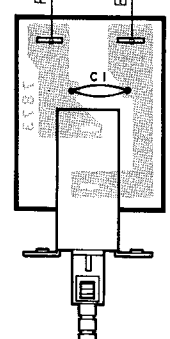
MICRO SWITCH

CONNECTOR PANEL

MOTOR



PCB-9



PCB-8

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

