

Service  
Service  
**Service**



# Service Manual



## CONTENTS

| SECTION .....                                 | PAGE  |
|---|-------|
| ACCESSORIES .....                             |       |
| SAFETY PRECAUTION .....                       |       |
| SPECIFICATIONS .....                          | 1     |
| PRECAUTIONS FOR MECHANISM AND HEAD            |       |
| ASSEMBLY HANDLING .....                       | 2     |
| DISASSEMBLY INSTRUCTIONS .....                | 3~11  |
| HOW TO CHECK OPERATIONS DURING                |       |
| DISASSEMBLY AND SERVICING .....               | 12~14 |
| MEASUREMENTS AND ADJUSTMENTS .....            | 15~23 |
| TECHNICAL NOTE .....                          | 24    |
| TROUBLESHOOTING .....                         | 25~33 |
| BLOCK DIAGRAM .....                           | 34~38 |
| SCHEMATIC DIAGRAM .....                       | 39~52 |
| PRINTED CIRCUIT BOARDS DIAGRAM .....          | 53~60 |
| WIRING CONNECTION DIAGRAM .....               | 61    |
| SCHEMATIC DIAGRAM (For AC adaptor) .....      | 62~64 |
| PRINTED CIRCUIT BOARD (For AC adaptor) .....  | 65    |
| TERMINAL FUNCTION OF IC'S .....               | 66~75 |
| PACKAGING .....                               | 76    |
| CABINET PARTS LOCATION (For AC adaptor) ..... | 77    |
| MECHANISM PARTS LOCATION .....                | 78    |
| CABINET PARTS LOCATION .....                  | 79~81 |
| ELECTRICAL PARTS LIST .....                   | 82~87 |



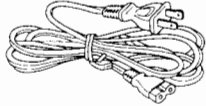
# PHILIPS

## ACCESSORIES

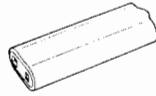
Stereo headphones with remote controller ..... 1 pc.  
(SBC3327  
Only USA/CANADA)



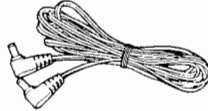
• Power cord ..... 1 pc.



Special rechargeable battery ..... 1 pack  
(SBC6430)



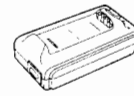
• DC cord ..... 1 pc.



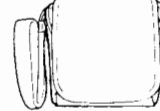
Line cable ..... 1 pc.



Battery charger/AC adaptor  
• Main unit ..... 1 pc.  
(SBC6630)



Carrying case ..... 1 pc.



## SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

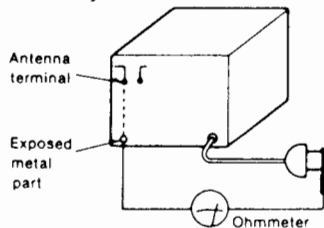
1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

### INSULATION RESISTANCE TEST

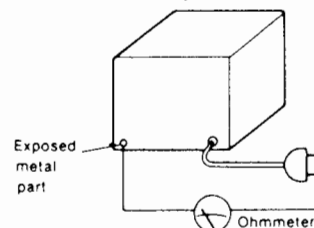
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between  $3M\Omega$  and  $5.2M\Omega$  to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

**Note:** Some exposed parts may be isolated from the chassis by design. These will read infinity.

(Fig A)  
Resistance =  $3M\Omega - 5.2M\Omega$



(Fig B)  
Resistance = Approx  $\infty$



4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

# ■ SPECIFICATIONS

## Digital format

|                               |  |
|-------------------------------|--|
| <b>Tape recording system</b>  | Digital compact cassette                 |
| <b>Sampling frequencies</b>   |  |
| <b>For playback</b>           | 48 kHz, 44.1 kHz, 32 kHz (automatically) |
| <b>No. of quantizing bits</b> | 16-bit, linear                           |
| <b>Data processing system</b> | PASC                                     |
| <b>No. of channels</b>        | 2-channel, stereo                        |

## DCC playback

|                           |                                |
|---------------------------|--------------------------------|
| <b>Frequency response</b> |                                |
| <b>fs: 44.1 kHz</b>       | 20 Hz—20 kHz+0.5 dB, -1.5 dB   |
| <b>fs: 48 kHz</b>         | 20 Hz—22 kHz+0.5 dB, -1.5 dB   |
| <b>fs: 32 kHz</b>         | 20 Hz—14.5 kHz+0.5 dB, -1.5 dB |
| <b>Dynamic range</b>      | 90 dB or more (A-weighted)     |
| <b>S/N</b>                | 90 dB or more (A-weighted)     |
| <b>Wow and flutter</b>    | Below measurable limit         |

## ACC playback

|  |                            |
|--|----------------------------|
| <b>Deck system</b>                       | Stereo cassette player     |
| <b>Track system</b>                      | 4-track, 2-channel, stereo |
| <b>Frequency response (Dolby NR off)</b> |                            |
| <b>Normal</b>                            | 20 Hz—18 kHz               |
| <b>CrO<sub>2</sub></b>                   | 20 Hz—18 kHz               |
| <b>Metal</b>                             | 20 Hz—18 kHz               |

## Terminals

|                              |   |
|------------------------------|---|
| <b>Analog output (fixed)</b> |   |
| <b>Output level</b>          | 1.0 V (50 k $\Omega$ load)                  |
| <b>Headphones output</b>     |   |
| <b>Output level (max.)</b>   | 15 mW + 15 mW (16 $\Omega$ load) $\phi$ 3.5 |
| <b>Digital output</b>        | Optical (only when AC adaptor is used)      |

## Mechanism

|                   |                                      |
|-------------------|--------------------------------------|
| <b>Head</b>       | 18 channel thin-film head $\times$ 1 |
| <b>Motor</b>      | Brushless motor $\times$ 1           |
| <b>Tape speed</b> | 4.76 cm/sec (1 $\frac{7}{8}$ ips.)   |

## General

|  |  |
|--|--|
| <b>Dimensions</b>                                      | 120.0 $\times$ 35.5 $\times$ 118.0 mm                                      |
| <b>(W <math>\times</math> H <math>\times</math> D)</b> | (4 $\frac{3}{4}$ " $\times$ 1 $\frac{3}{8}$ " $\times$ 4 $\frac{5}{8}$ " ) |
| <b>Weight (with battery)</b>                           | 490 g (1 lb. 1.3 oz.)  |

## Power supply (Using AC adaptor/charger)

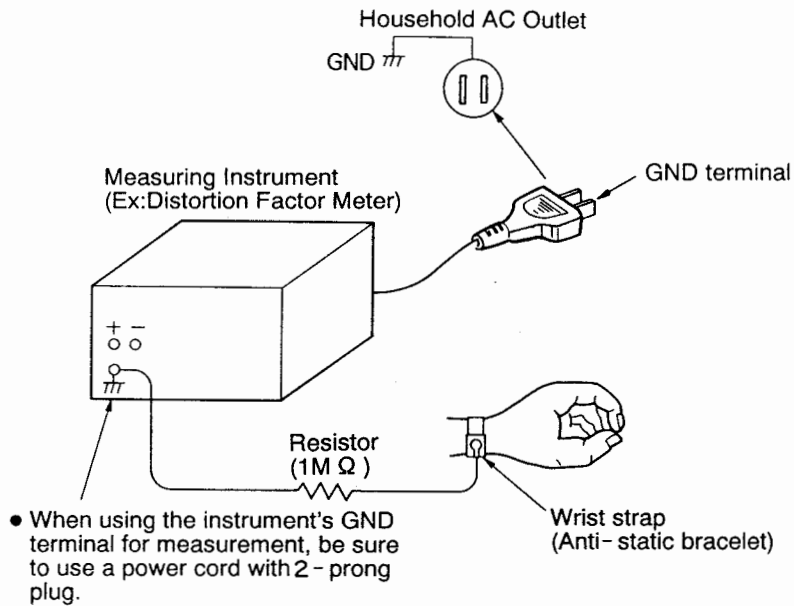
|                           |                     |
|---------------------------|---------------------|
| <b>Input: For Canada:</b> | AC 60 Hz 120 V 25W  |
| <b>For U.S.A.:</b>        | AC 60 Hz 120 V 25 W |
| <b>For Foreign:</b>       | AC 50/60 Hz         |
|                           | 100—240 V 25 W      |
| <b>Output: Adaptor:</b>   | DC 5.5 V 1.9 A      |
| <b>Charger:</b>           | DC 4.8 V 1.4 A      |
| <b>Power consumption:</b> | 4.1 W               |

## Note:

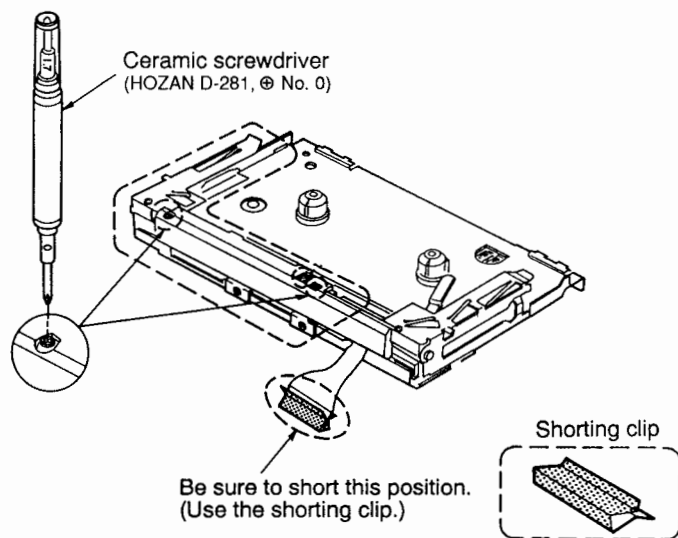
Design and specifications are subject to change without notice.  
Weight and dimensions are approximate.

## ■ PRECAUTIONS FOR MECHANISM AND HEAD ASSEMBLY HANDLING

- (1) Connect your wrist strap to the unit's GND or to the grounding post of a measuring instrument you are using.  
To protect the head assembly from magnetic or electrostatic damage, be sure to wear the wrist strap whenever replacing the head assembly or handling the PC boards.

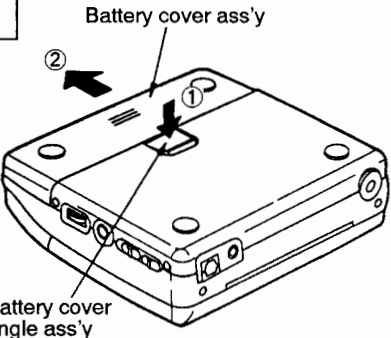
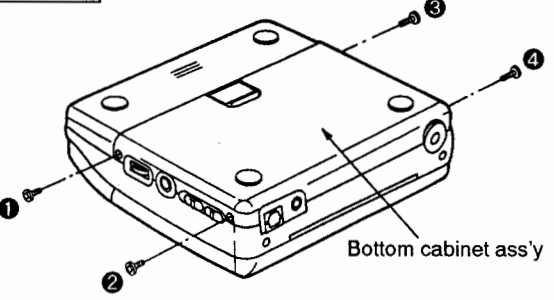

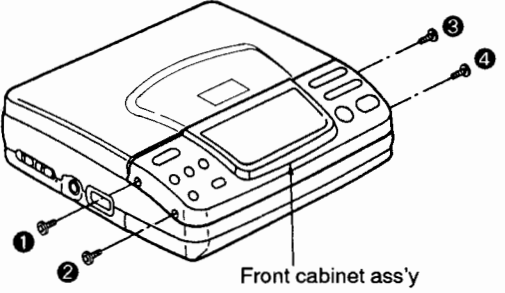

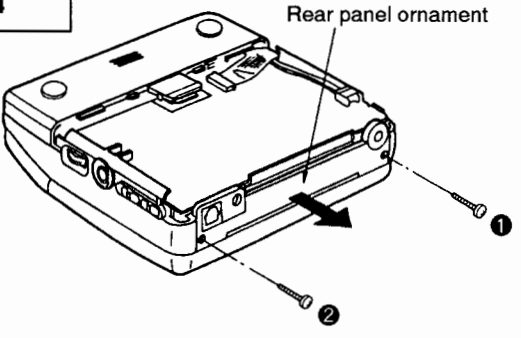

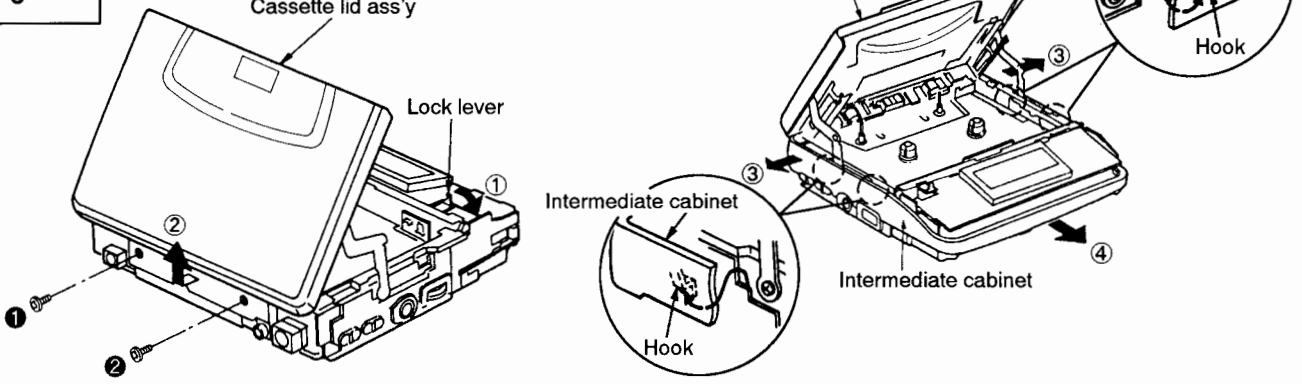


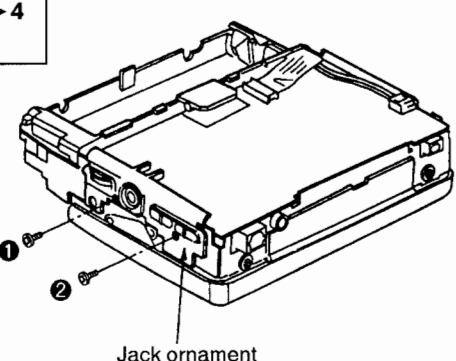

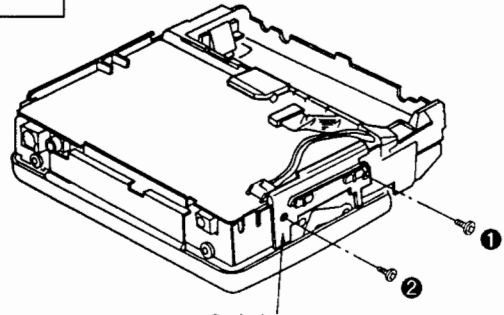

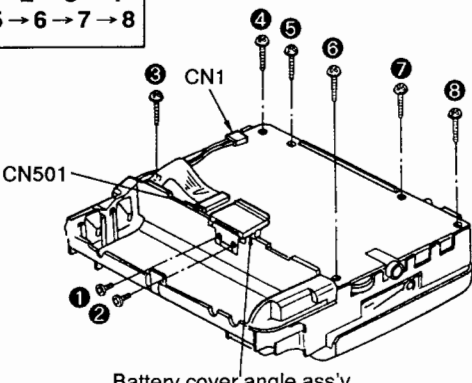


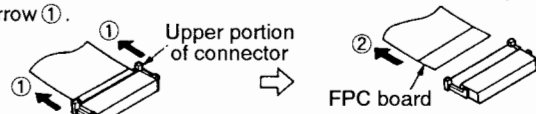
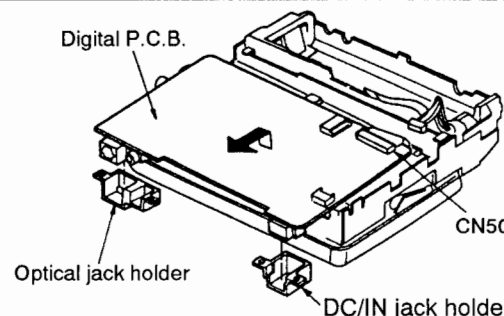
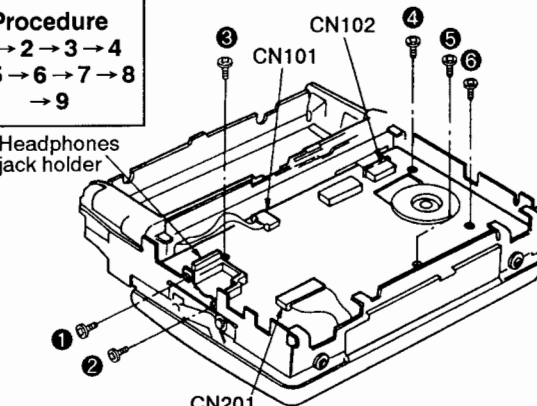


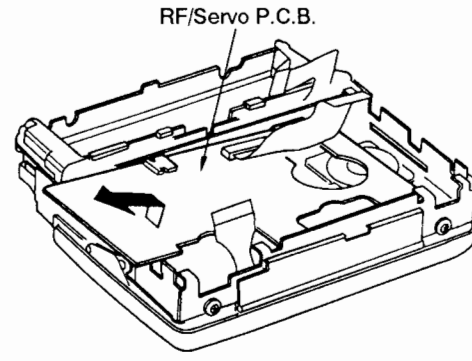
- (2) When disconnecting the head FPC from the RF/Servo P.C.B., install a shorting clip on the FPC to protect it from magnetic or electrostatic damage.
- (3) • Use a ceramic screwdriver for all head replacement and adjustment.  
• Keep magnetized metallic screwdrivers away from the head assembly, as they may damage the head's magnetic properties.



# DISASSEMBLY INSTRUCTIONS

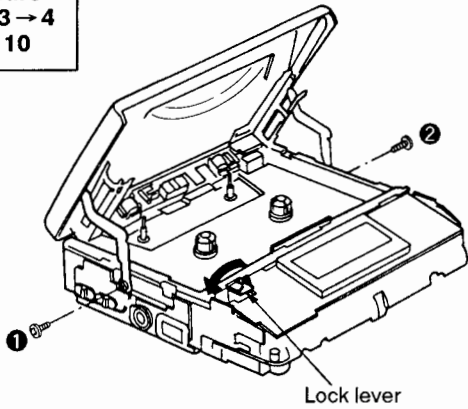
※ This unit is equipped with FPC boards, so handle them with care during disassembly and reassembly.

| Ref.No.<br>1               | Removal of the battery cover ass'y  | Ref.No.<br>2     | Removal of the bottom cabinet ass'y  |
|----------------------------|---|------------------|--|
| Procedure<br>1             |  <p>Battery cover ass'y</p> <p>Battery cover angle ass'y</p> <ul style="list-style-type: none"> <li>• Push the battery cover angle ass'y in the direction of arrow ①, and then remove the battery cover ass'y in the direction of arrow ②.</li> </ul>  | Procedure<br>2   |  <p>Bottom cabinet ass'y</p> <ul style="list-style-type: none"> <li>• Remove the 4 screws(①~④).</li> </ul> <div style="border: 1px solid black; padding: 2px; width: fit-content;">  (4 pcs.)<br/>M1.4 × 1.8         </div>   |
| Ref.No.<br>3               | Removal of the front cabinet ass'y  | Ref.No.<br>4     | Removal of the rear panel ornament   |
| Procedure<br>3             |  <p>Front cabinet ass'y</p> <ul style="list-style-type: none"> <li>• Remove the 4 screws(①~④).</li> </ul> <div style="border: 1px solid black; padding: 2px; width: fit-content;">  (4 pcs.)<br/>M1.4 × 1.8         </div>   | Procedure<br>2→4 |  <p>Rear panel ornament</p> <ol style="list-style-type: none"> <li>1. Remove the 2 screws(①, ②).</li> <li>2. Remove the rear panel ornament in the direction of arrow.</li> </ol> <div style="border: 1px solid black; padding: 2px; width: fit-content;">  (2 pcs.)<br/>M1.4 × 5.5         </div> |
| Ref.No.<br>5               | Removal of the intermediate cabinet   |                  |  |
| Procedure<br>1→2→3→4<br>→5 |  <p>Cassette lid ass'y</p> <p>Lock lever</p> <p>Intermediate cabinet</p> <p>Hook</p> <ol style="list-style-type: none"> <li>1. Push the lock lever in the direction of arrow ①, and then open the cassette lid ass'y.</li> <li>2. Remove the 2 screws(①, ②), and then disengage the cassette lid ass'y in the direction of arrow ②.</li> <li>3. Lift up the intermediate cabinet to release the 4 hooks, and stretch the intermediate cabinet in the direction of arrow ③.</li> <li>4. While stretching the intermediate cabinet, remove it in the direction of arrow ④.</li> </ol> |                  |  |

|   |   |   |   |
|---|---|---|---|
| <p><b>Ref.No. 6</b></p> <p><b>Procedure</b><br/>1 → 2 → 3 → 4<br/>→ 5 → 6</p>                 | <p><b>Removal of the jack ornament</b></p>  <p>Jack ornament</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;">  (2 pcs.)<br/>M1.4 × 1.8         </div> <p>• Remove the 2 screws (①, ②).</p>   | <p><b>Ref.No. 7</b></p> <p><b>Procedure</b><br/>1 → 2 → 3 → 4<br/>→ 5 → 7</p>   | <p><b>Removal of the switch ornament</b></p>  <p>Switch ornament</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;">  (2 pcs.)<br/>M1.4 × 1.8         </div> <p>• Remove the 2 screws (①, ②).</p>      |
| <p><b>Ref.No. 8</b></p> <p><b>Procedure</b><br/>1 → 2 → 3 → 4<br/>→ 5 → 6 → 7 → 8</p>         | <p><b>Removal of the digital P.C.B.</b></p>  <p>Battery cover angle ass'y</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;">  (2 pcs.) ①, ②<br/>M1.4 × 1.8<br/><br/>  (6 pcs.) ③ ~ ⑧<br/>M1.4 × 4         </div> <ol style="list-style-type: none"> <li>Remove the 2 screws (①, ②), and then remove the battery cover angle ass'y.</li> <li>Remove the 1 connector (CN1).</li> <li>Remove the 1 FPC board (CN501).</li> <li>Remove the 6 screws (③ ~ ⑧).</li> </ol>                 | <p><b>Removal of the FPC board</b></p> <ol style="list-style-type: none"> <li>Push the upper portion of connector in the direction of arrow ①.</li> <li>Pull the FPC board in the direction of arrow ②.</li> </ol>  |  <p>Digital P.C.B.</p> <p>Optical jack holder</p> <p>DC/IN jack holder</p> <p>CN505</p> <ol style="list-style-type: none"> <li>Lift up the digital P.C.B. in the direction of arrow, and then remove the 1 FPC board (CN505).</li> </ol> <p><b>Note:</b> When the digital P.C.B. is removed, the jack holders (Optical, DC/IN) will also be removed.</p> |
| <p><b>Ref.No. 9</b></p> <p><b>Procedure</b><br/>1 → 2 → 3 → 4<br/>→ 5 → 6 → 7 → 8<br/>→ 9</p> | <p><b>Removal of the RF/Servo P.C.B.</b></p>  <p>Headphones jack holder</p> <p>CN101</p> <p>CN102</p> <p>CN201</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;">  (2 pcs.) ①, ②<br/>M1.4 × 3<br/><br/>  (4 pcs.) ③ ~ ⑥<br/>Tapping 1.4 × 3         </div> <ol style="list-style-type: none"> <li>Remove the 2 screws (①, ②), and then remove the headphones jack holder.</li> <li>Remove the 3 FPC boards (CN101, CN102, CN201).</li> <li>Remove the 4 screws (③ ~ ⑥).</li> </ol> |  <p>RF/Servo P.C.B.</p> <ol style="list-style-type: none"> <li>Remove the RF/Servo P.C.B. in the direction of arrow.</li> </ol>   |   |

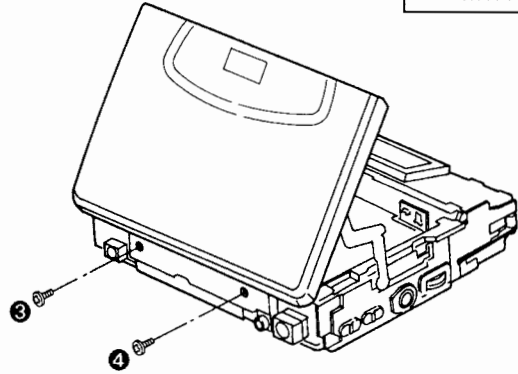
**Ref.No. 10**      **Removal of the cassette lid ass'y**

**Procedure**  
1 → 2 → 3 → 4  
→ 5 → 10



1. Push the lock lever in the direction of arrow and open the cassette lid ass'y.
2. Remove the 2 screws( ①, ② ).

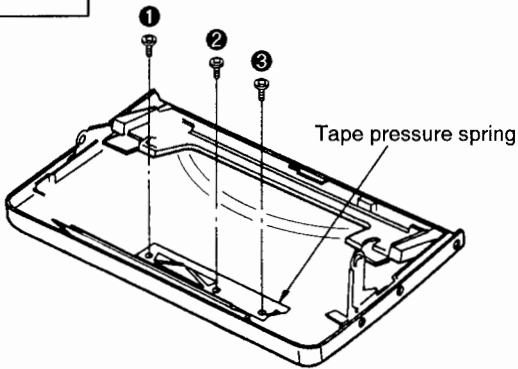
Ⓚ (2pcs.) ①, ②  
M1.4 × 1.8  
Ⓚ (2pcs.) ③, ④  
M1.4 × 1.8



3. Remove the 2 screws( ③, ④ ).

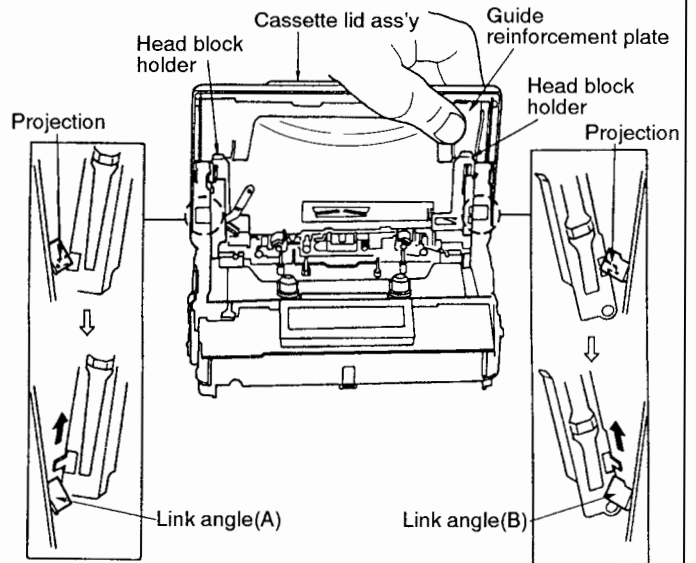
**Ref.No. 11**      **Removal of the tape pressure spring**

**Procedure**  
1 → 2 → 3 → 4  
→ 5 → 10 → 11



- Remove the 3 screws( ① ~ ③ ).

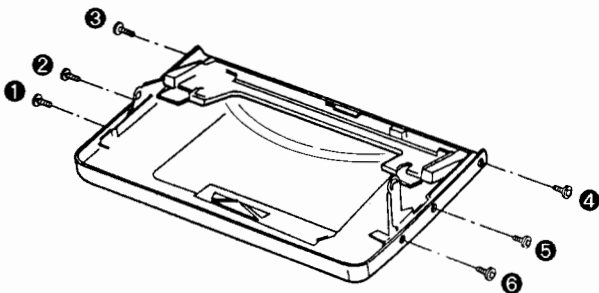
Ⓚ (3pcs.)  
Tapping 1.4 × 2



4. Holding the guide reinforcement plate, remove the projections of head block holder from link angles(A, B) in the direction of arrow.

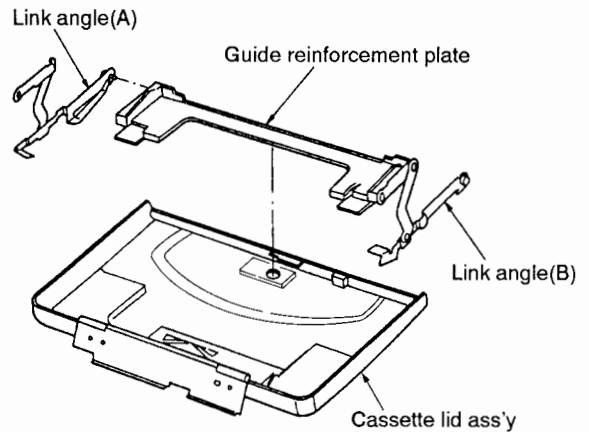
**Ref.No. 12**      **Removal of the guide reinforcement plate, link angle(A) and link angle(B)**

**Procedure**  
1 → 2 → 3 → 4  
→ 5 → 10 → 12



1. Remove the 6 screws( ① ~ ⑥ ).

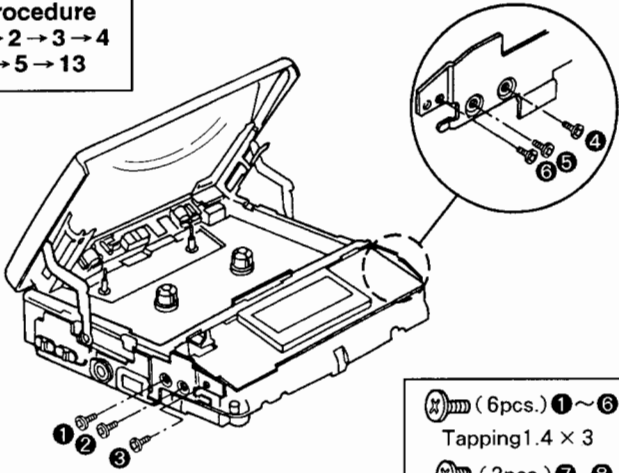
Ⓚ (6pcs.)  
M1.4 × 1.8



2. Remove the guide reinforcement plate, link angle(A) and link angle(B).

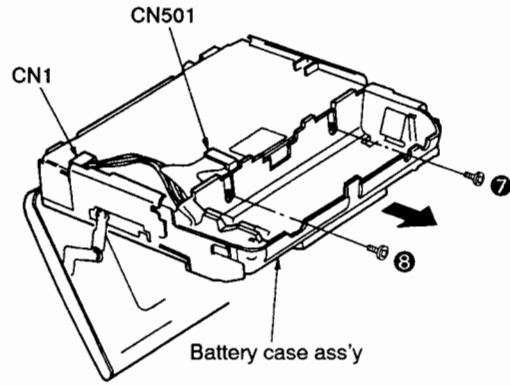
**Ref.No. 13**  
**Removal of the battery case ass'y**

**Procedure**  
1 → 2 → 3 → 4  
→ 5 → 13



- (6pcs.) ① ~ ⑥  
Tapping 1.4 × 3
- (2pcs.) ⑦, ⑧  
M1.4 × 1.8

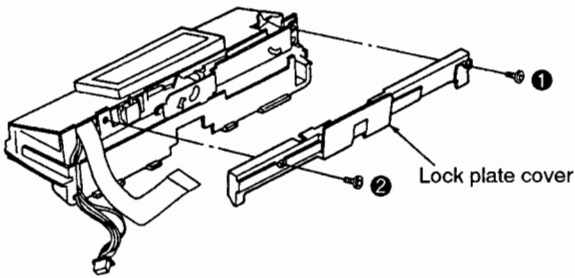
1. Remove the 6 screws(① ~ ⑥).



2. Remove the 1 connector(CN1).
3. Remove the 1 FPC board(CN501).
4. Remove the 2 screws(⑦, ⑧).
5. Remove the battery case ass'y in the direction of arrow.

**Ref.No. 14**  
**Removal of the lock plate cover**

**Procedure**  
1 → 2 → 3 → 4  
→ 5 → 13 → 14

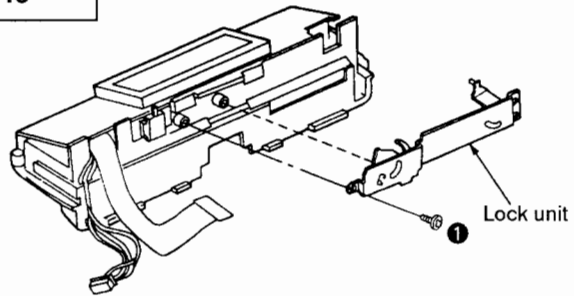


• Remove the 2 screws(①, ②).

- (2pcs.)  
Tapping 1.4 × 4.5

**Ref.No. 15**  
**Removal of the lock unit**

**Procedure**  
1 → 2 → 3 → 4  
→ 5 → 13 → 14  
→ 15

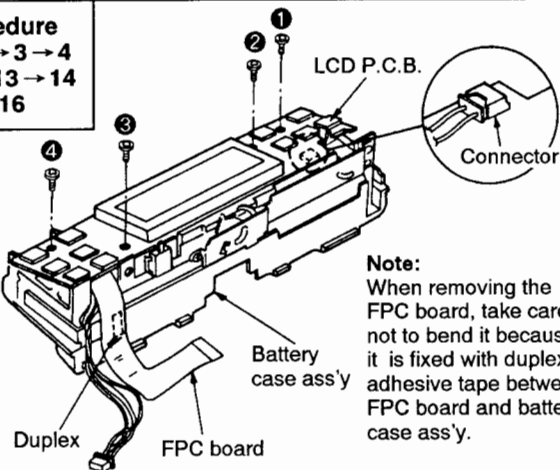


• Remove the 1 screw(①).

- (1pc.)  
Tapping 1.4 × 3

**Ref.No. 16**  
**Removal of the LCD P.C.B.**

**Procedure**  
1 → 2 → 3 → 4  
→ 5 → 13 → 14  
→ 16



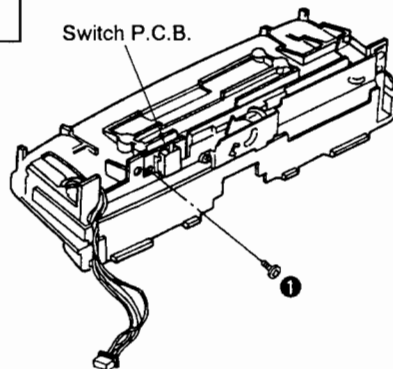
**Note:**  
When removing the FPC board, take care not to bend it because it is fixed with duplex adhesive tape between FPC board and battery case ass'y.

1. Remove the 4 screws(① ~ ④).
2. Remove the 1 connector.

- (4pcs.)  
Tapping 1.4 × 2

**Ref.No. 17**  
**Removal of the switch P.C.B.**

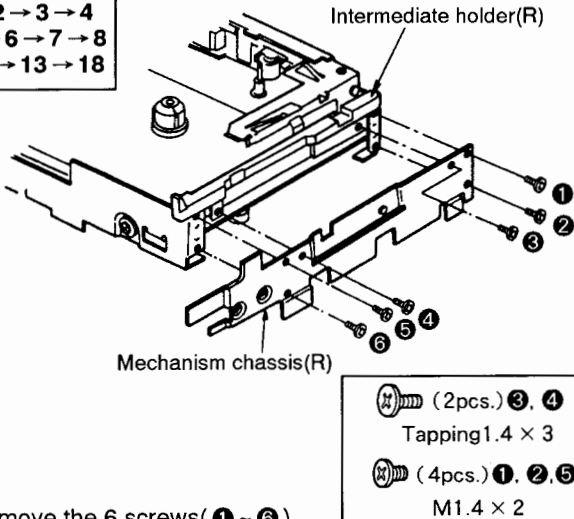
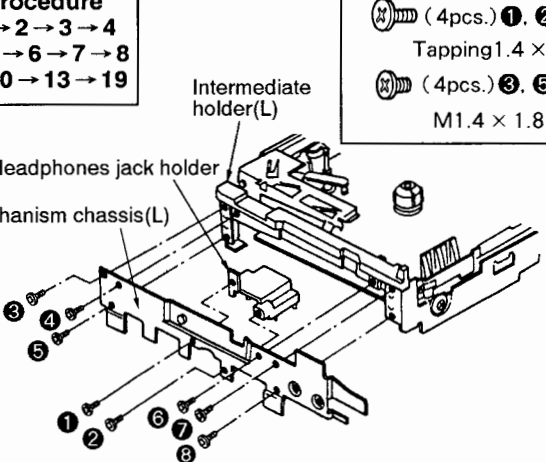
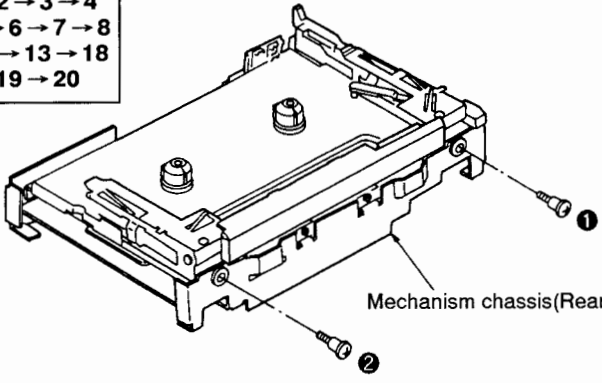
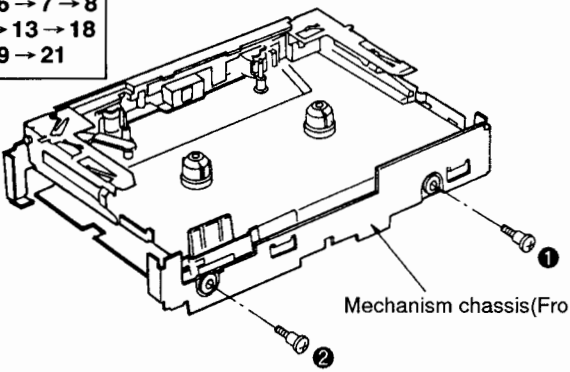
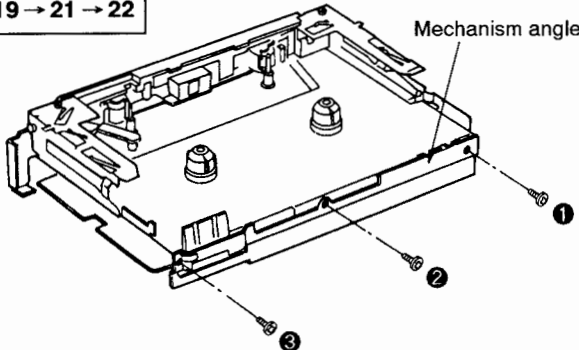
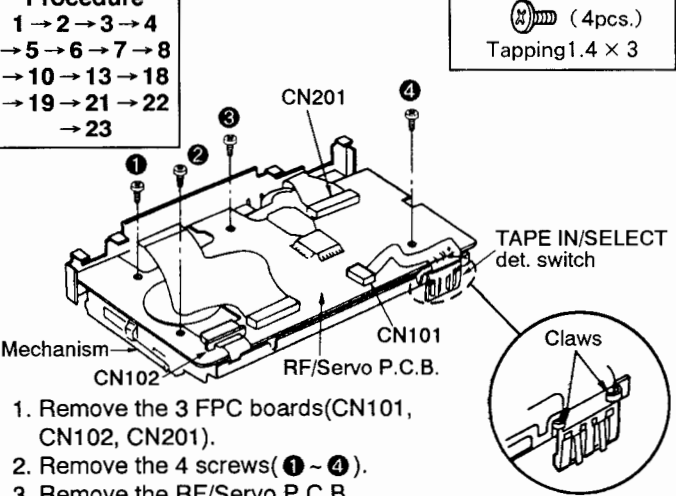
**Procedure**  
1 → 2 → 3 → 4  
→ 5 → 13 → 14  
→ 16 → 17



• Remove the 1 screw(①).

- (1pc.)  
Tapping 1.4 × 3



| Ref.No.<br>18  | Removal of the mechanism chassis(R) and intermediate holder(R)   | Ref.No.<br>19   | Removal of the mechanism chassis(L) and intermediate holder(L)  |
|--|--|---|---|
| <p><b>Procedure</b><br/>1 → 2 → 3 → 4<br/>→ 5 → 6 → 7 → 8<br/>→ 10 → 13 → 18</p>   |  <p>• Remove the 6 screws( ① ~ ⑥ ).</p>   | <p><b>Procedure</b><br/>1 → 2 → 3 → 4<br/>→ 5 → 6 → 7 → 8<br/>→ 10 → 13 → 19</p>  |  <p>1. Remove the 2 screws( ①, ② ), and headphones jack holder.<br/>2. Remove the 6 screws( ③ ~ ⑧ ).</p>  |
| <p><b>Ref.No.</b><br/>20</p> <p><b>Procedure</b><br/>1 → 2 → 3 → 4<br/>→ 5 → 6 → 7 → 8<br/>→ 10 → 13 → 18<br/>→ 19 → 20</p>      | <p><b>Removal of the mechanism chassis (Rear)</b></p>  <p>• Remove the 2 screws( ①, ② ).</p> | <p><b>Ref.No.</b><br/>21</p> <p><b>Procedure</b><br/>1 → 2 → 3 → 4<br/>→ 5 → 6 → 7 → 8<br/>→ 10 → 13 → 18<br/>→ 19 → 21</p>               | <p><b>Removal of the mechanism chassis (Front)</b></p>  <p>• Remove the 2 screws( ①, ② ).</p>  |
| <p><b>Ref.No.</b><br/>22</p> <p><b>Procedure</b><br/>1 → 2 → 3 → 4<br/>→ 5 → 6 → 7 → 8<br/>→ 10 → 13 → 18<br/>→ 19 → 21 → 22</p> | <p><b>Removal of the mechanism angle</b></p>  <p>• Remove the 3 screws( ① ~ ③ ).</p>        | <p><b>Ref.No.</b><br/>23</p> <p><b>Procedure</b><br/>1 → 2 → 3 → 4<br/>→ 5 → 6 → 7 → 8<br/>→ 10 → 13 → 18<br/>→ 19 → 21 → 22<br/>→ 23</p> | <p><b>Removal of the mechanism and TAPE IN/SELECT det. switch</b></p>  <p>1. Remove the 3 FPC boards(CN101, CN102, CN201).<br/>2. Remove the 4 screws( ① ~ ④ ).<br/>3. Remove the RF/Servo P.C.B.<br/>4. Release the 2 claws of TAPE IN/SELECT det. switch.</p> |

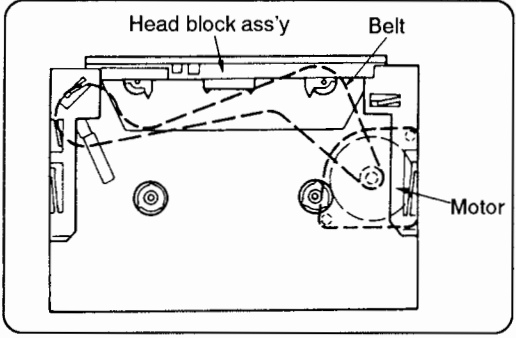
|  |   |  |
|--|---|--|
| <b>Ref.No.</b><br>24                                     | <b>Removal of the switch knob</b>   |  |
| <b>Procedure</b><br>1 → 2 → 3 → 4<br>→ 5 → 6 → 7<br>→ 24 | <ul style="list-style-type: none"> <li>• Release the 1 claw in the direction of arrow, and then remove the switch knobs.</li> </ul> |  |

**● How to replace the mechanism block**

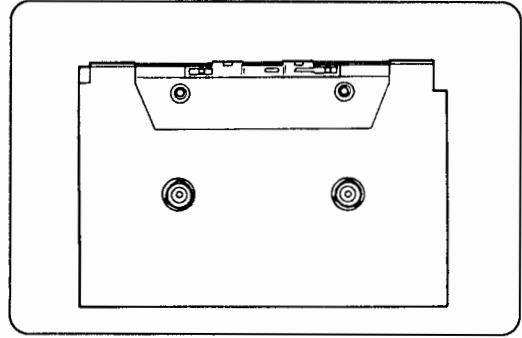
The mechanism block is supplied without other parts as a semi-assembly. The head block ass'y, motor and belt are supplied separately from the mechanism block. If the mechanism block is exchanged as a replacement assembly, follow the preparation procedure below.

**Preparation procedure**

Remove the head block ass'y, motor and belt from the mechanism to be replaced and replace those parts to the new mechanism block. (Refer to Fig. 1 and 2.) (Refer to the "PROCEDURES 23 FOR DISASSEMBLY OF THE MAIN PARTS ON THE MECHANISM AND TAPE IN/SELECT DET. SWITCH".



Mechanism to be repaired  
Fig. 1



Mechanism block  
Fig. 2

**● How to replace the head block ass'y**

The head block is supplied as a head block ass'y. (Refer to Fig 3.) The head and pinch roller arm(L)•(R) are supplied together in the head block ass'y. The pinch roller arm(L)•(R) is also supplied separately.

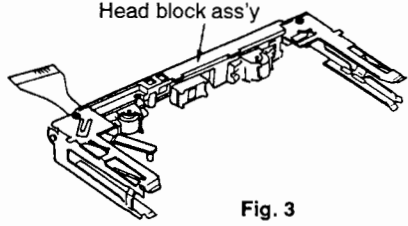


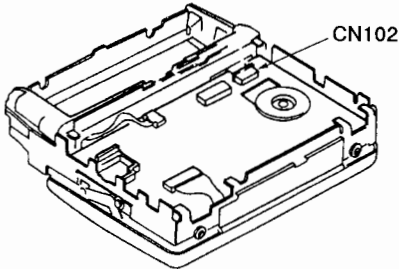
Fig. 3

**● How to replace cam gear and solenoid**

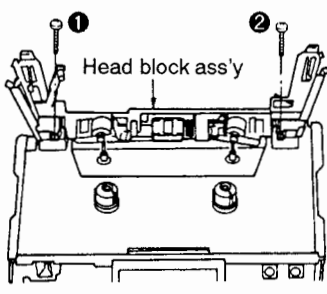
The cam gear and solenoid are included in the mechanism block. They are also supplied separately.

**● How to remove the head block ass'y and pinch roller arm(L)•(R)**

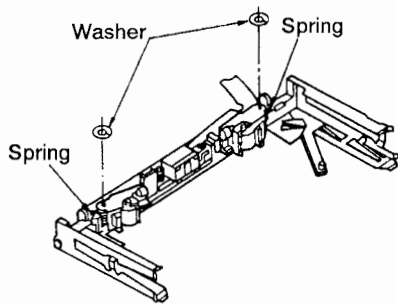
1. Follow the procedures in Ref. No. 1-8 in the Disassembly instructions. (Refer to pages 3 and 4.)



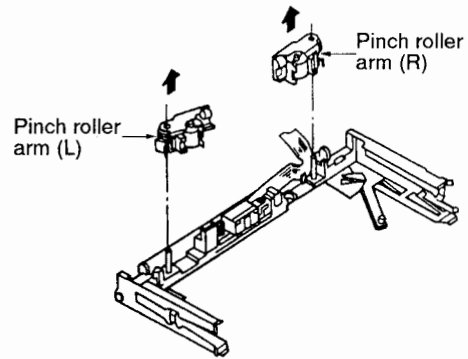
2. Remove the 1 connector(CN102).



3. Remove the 2 screws(1, 2) to remove the head block ass'y.



4. Remove the 2 washers.
5. Remove the springs from the hook.



6. Lift up the pinch roller arm(L)•(R) in the direction of arrow.

## ● Removal of the motor and belt

1. Follow the procedures in Ref. No. 1-10 in the Disassembly instructions. (Refer to pages 3 and 5.)
2. Remove the 2 screws(❶, ❷).(Refer to Fig. 1.)
3. Remove the 2 screws(❸, ❹) and the fixing plate.(Refer to Fig. 2.)
4. Unsolder the motor FPC(6 points).(Refer to Fig. 2.)
5. Remove the motor in the direction of arrow.(Refer to Fig. 2.)
6. Remove the belt from the motor.(Refer to Fig. 3.)

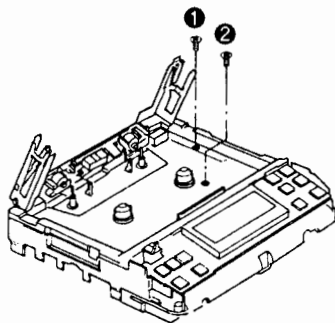


Fig. 1

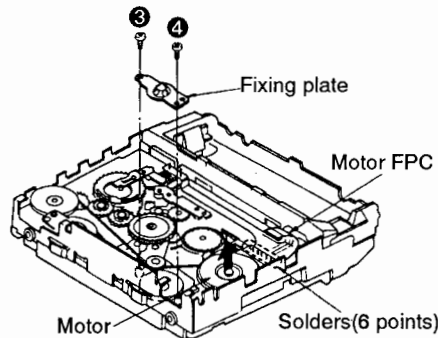


Fig. 2

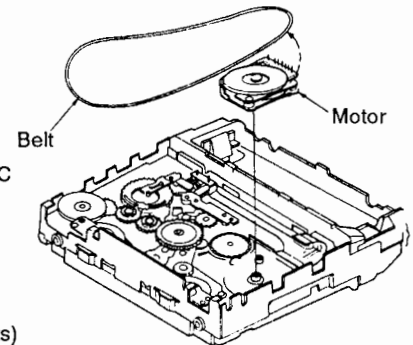


Fig. 3

- Befor installing the belt to the motor, insert the unmagnetized sheet to the clearance between chassis and lower portion of motor, and then push the upper portion of motor in the direction of arrow.  
Put the belt into the clearance between upper portion of motor and coil P.C.B.  
(Refer to Fig. 4 and 5.)

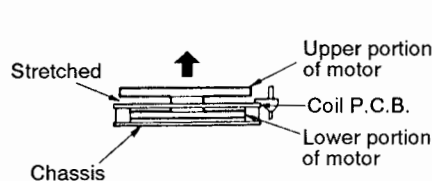


Fig. 4

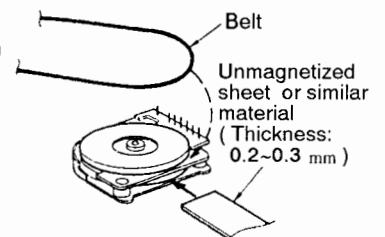
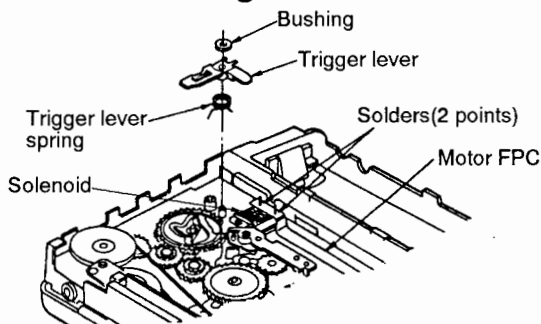
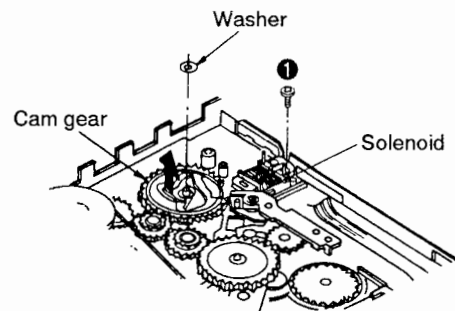


Fig. 5

## ● Removal of the cam gear and solenoid



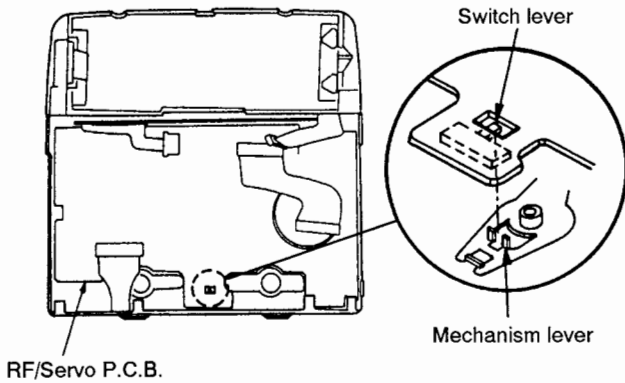
1. Unsolder the motor FPC (2 points), and then remove the motor FPC from the solenoid.
  2. Pull out the bushing.
  3. Remove the trigger lever.
- Note:** Avoid missing the trigger lever spring when removing the trigger lever.



4. Remove the 1 screw(❶) and the solenoid.
5. Remove the washer.
6. Remove the cam gear in the direction of arrow.

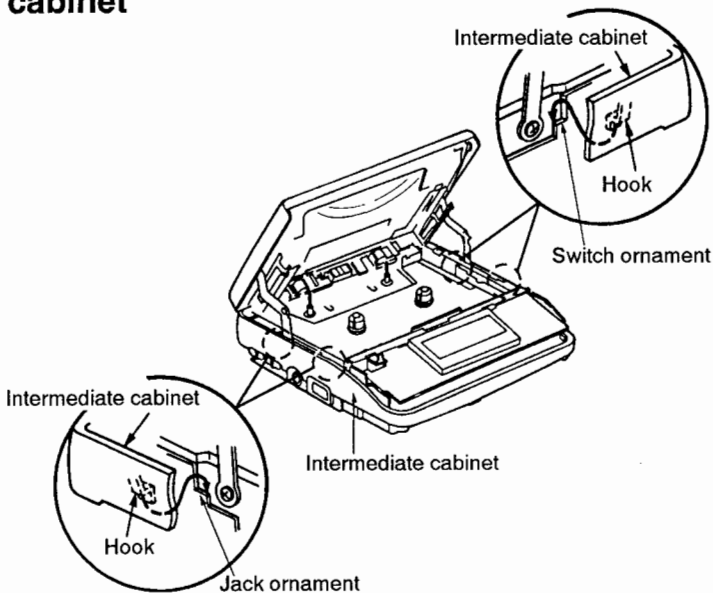
## NOTE FOR ASSEMBLY

### ● Notice for assembling the RF/Servo P.C.B.



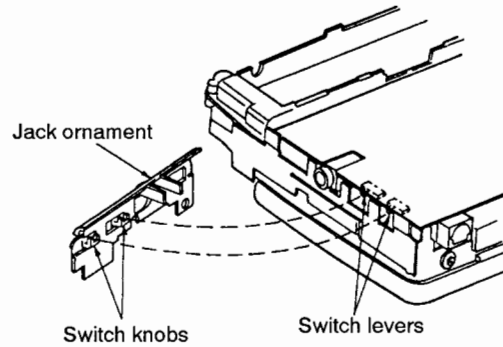
- Align the switch lever with mechanism lever when installing the RF/Servo P.C.B.

### ● Notice for assembling the intermediate cabinet

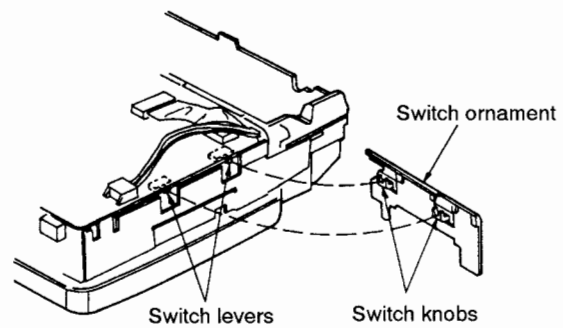


- Make sure the hooks inside the intermediate cabinet are joined to the jack ornament(Side L) and switch ornament(Side R) when installing the intermediate cabinet to unit.

### ● Notice for assembling the jack ornament and switch ornament



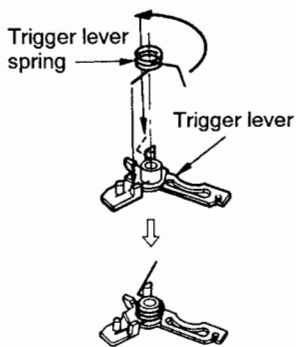
- Align the switch levers with switch knobs when installing the jack ornament.



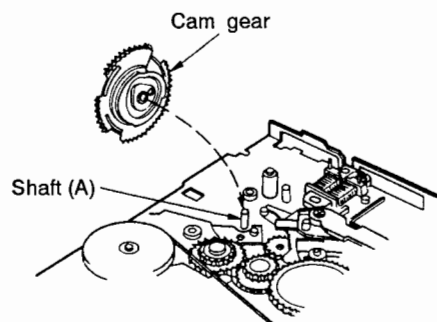
- Align the switch levers with switch knobs when installing the switch ornament.

**Note:** Before installing the switch knob, be sure to check the claws for defects that would render the claws unserviceable.  
(If a white line like white wax on a claw is found, the claw may be broken when installing the switch knob.)

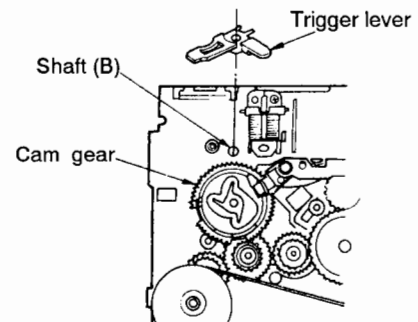
### ● Notice for assembling the cam gear



1. Temporarily install the trigger lever spring on trigger lever.

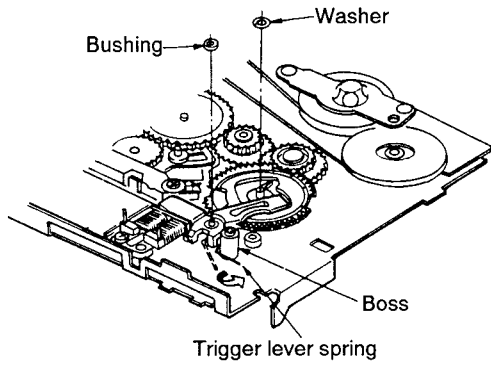


2. Install the cam gear to the shaft (A).

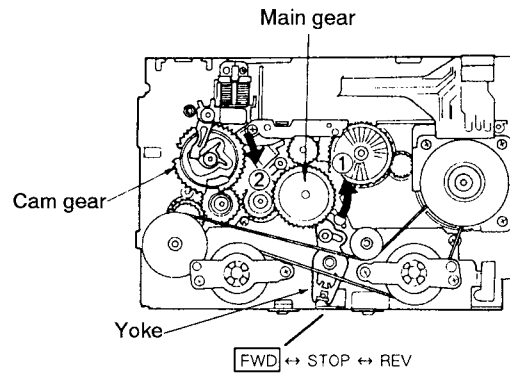


3. Rotate the cam gear toward the position as shown above.
4. Install the trigger lever to the shaft (B).

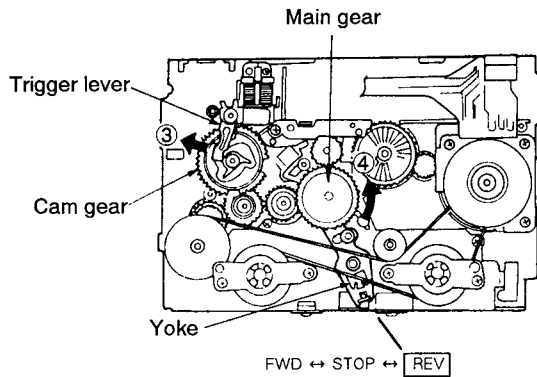
• Confirmation of cam gear operation



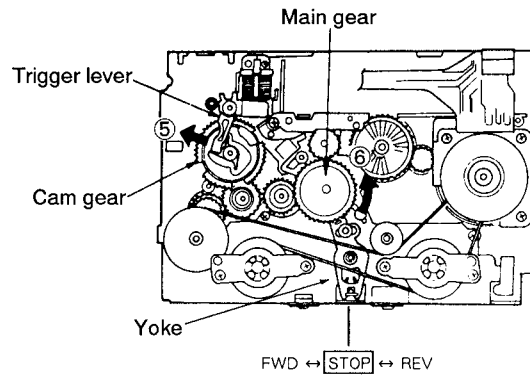
5. Latch the temporary attached trigger lever spring to the boss.
6. Install the bushing and washer.



7. Rotate the main gear in the direction of arrow ①, and then the cam gear associates in the direction of arrow ②.
8. Make sure the yoke is located at the position "FWD" when the cam gear is ceased rotating.



9. Pull the trigger lever one time in the direction of arrow ③, and then rotate the main gear in the direction of arrow ④.
10. Make sure the yoke is located at the position "REV" when the cam gear is ceased rotating.



11. Further, pull the trigger lever one time in the direction of arrow ⑤, and then rotate the main gear in the direction of arrow ⑥.
12. Make sure the yoke is located at the position "STOP" when the cam gear is ceased rotating.

## ■ HOW TO CHECK OPERATIONS DURING DISASSEMBLY AND SERVICING

The following describes post-disassembly checking procedures for board and unit functions:

### • Checking Digital P.C.B. Operations

1. Complete disassembly steps 1, "Removal of the battery cover ass'y" through 8, "Removal of the digital P.C.B." In step 8, remove the 8 screws (①~⑧) retaining the Digital P.C.B.
2. Set the HOLD switch (S502) to the OFF position (See Fig. 1).

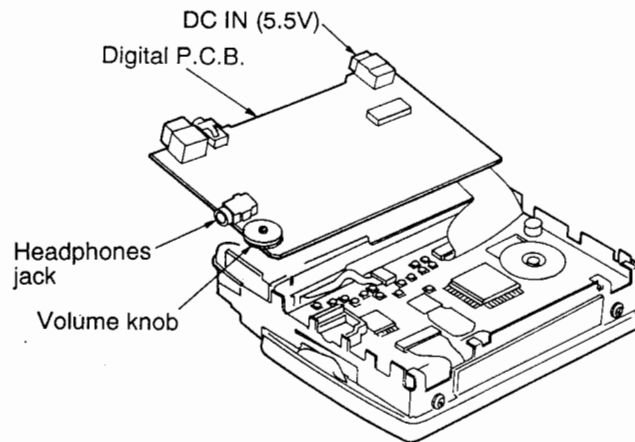


Fig. 1

### • Checking RF/Servo P.C.B. Operations

1. Complete disassembly steps 1, "Removal of the battery cover ass'y" through 9, "Removal of the RF/Servo P.C.B."
2. Remove the battery holder by following disassembly step 13, "Removal of the battery case ass'y."
3. Remove the LCD P.C.B. by completing step 16, "Removal of the LCD P.C.B." and step 17, "Removal of the switch P.C.B." then install the battery case ass'y.
4. Interconnect the LCD, Digital, and RF/Servo P.C.B.
5. Connect the RF/Servo P.C.B.'s connector (CN102) to the capstan motor FPC with the interconnection cable (RFKZ0043). (See Fig. 2).
6. Set the HOLD switch (S502) to the OFF position.
7. Condition in setting the Factory Mode  
Set the three switches as follows:

| Sw No. | Sw Name  | Condition                | Setting Procedure  |
|--------|--|--------------------------|--|
| S503   | Cassette Compartment Lid OPEN/CLOSE Detection Switch | CLOSE                    | Disconnect 3-pin connector lead wires (blue and white) between S503 and LCD P.C.B. |
| S101   | ACC/DCC Tape Detection Switch                        | DCC tape loading: OFF    | Demount RF/SERVO P.C.B. from Mechanism. (See Fig. 2)                               |
|        |  | ACC tape loading: ON     | Hold S101 by taping.   |
| S102   | TAPE IN Detection Switch                             | ACC/DCC tape loading: ON | Short by soldering Pins ② and ③ of Connector (CN101).                              |

8. How to set the Factory Mode

(Follow the procedure of steps 1~4 below. Power source: AC)

- Step 1** From the ALL-OFF status, press the PLAY key while pressing the COUNTER RESET key. (Power source turns ON and the unit is then in the STOP <WAKE-UP> status.)

| LCD Indication for WAKE-UP status   |   |
|---|---|
| DCC tape loading  | ACC tape loading  |
| <div style="border: 1px solid black; padding: 5px;">                     dcc    <span style="border: 1px solid black; padding: 0 2px;">A</span><br/>                     ABS                      TRACK NO<br/>                     - : - - : - -    - -                 </div> | <div style="border: 1px solid black; padding: 5px;">                     FWD<br/><br/>                     0 0 0 . S T O P                 </div> |

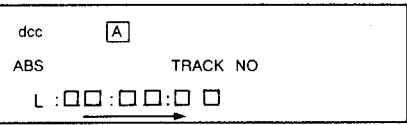
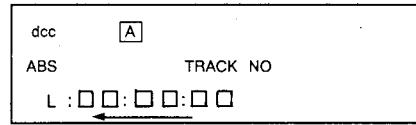
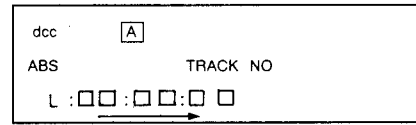
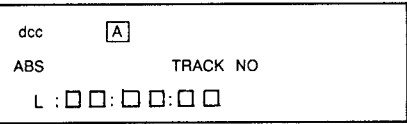
- Step 2** Press the FF key twice while pressing the COUNTER RESET key.

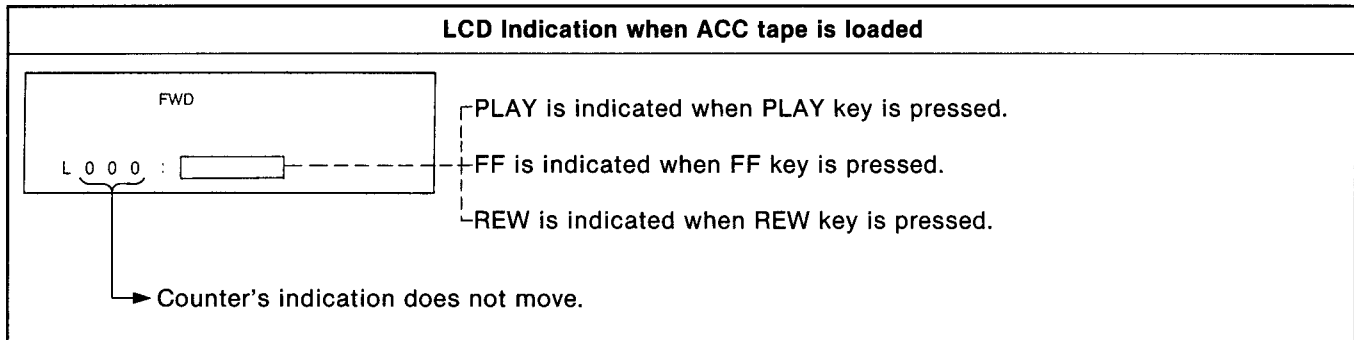
| LCD Indication   |
|--|
| ACC tape or DCC tape loading<br><br><div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>FACTORY MODE</b><br/>  (1 sec. later, all LCD's light up.)                     </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">                     dcc REV B A FWD TPS [ ■ ■    <span style="border: 1px solid black; padding: 0 2px;">PLAY</span><br/>                     ABS TRACK TOTAL TRACK NO<br/>                     A : L L : * I N D I C A T E                 </div> <p>(All LCD's light up.)</p> <p>(NOTE) If the unit is left in the mode for 4 minutes or longer, all LCD's are turned OFF.</p> |

- Step 3** Press the COUNTER RESET key twice.

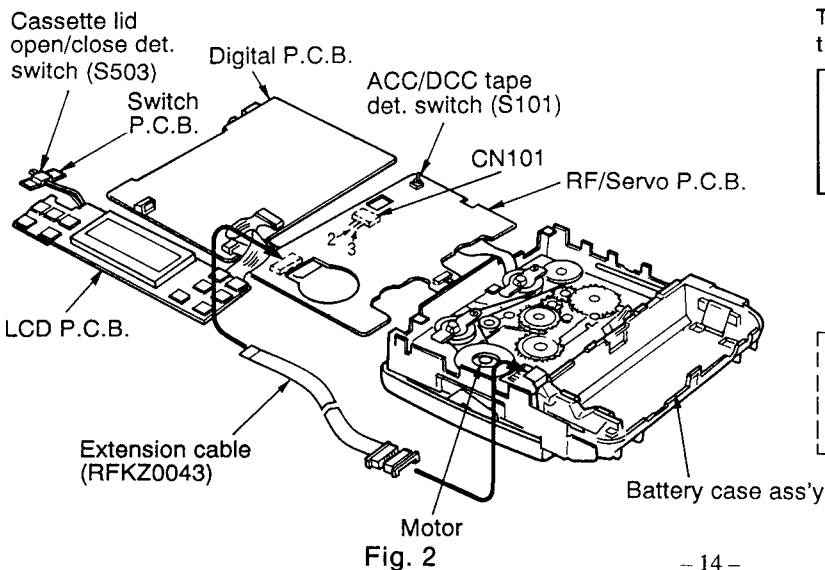
| LCD Indication  |   |
|---|---|
| DCC tape loading  | ACC tape loading  |
| <div style="border: 1px solid black; padding: 5px;">                     dcc    <span style="border: 1px solid black; padding: 0 2px;">A</span><br/>                     ABS                      TRACK NO<br/>                     L : - - : - -    - -                 </div> | <div style="border: 1px solid black; padding: 5px;">                     FWD<br/><br/>                     L 0 0 0 . S T O P                 </div> |
| L means that the Factory Mode has been set.   |   |

**Step 4** Press the desired key out of the PLAY, FF, and REW keys.  
 (Indication at the tape leader part differs from indication at the music recording part.)

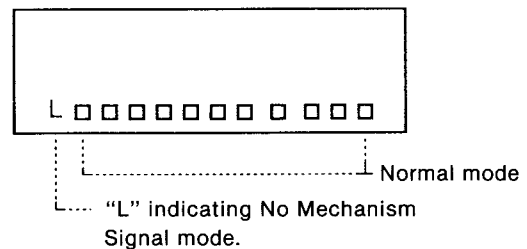
| LCD Indication when DCC tape is loaded   |  |   |
|--|--|---|
| PLAY key is pressed  | FF key is pressed  | REW key is pressed  |
| <p>• Indication at the tape leader part during play</p>  <p>4 segments light up one by one sequentially.</p>  |  <p>4 segments light up one by one sequentially, and tape runs faster than in PLAY.</p> |  <p>Segment lighting direction differs but lighting speed does not differ from the case of FF.</p> |
| <p>• Indication at the music recording part during play</p>  <p>Time and track No. indicated are ordinarily the same as during PLAY, FF or REW.</p> |  |   |



**Step 5** To cancel the Factory Mode, press the STOP key for the ALL-OFF status.  
 (To cancel it from the OPERATION status, press the STOP key twice, and to cancel it from the STOP status, press the STOP key once.)



The unit indicates "L" after entering the No Mechanism Signal mode.



This mode is used to check boards with a Mechanism mode SW or boards with reel pulse mode. It senses the Mechanism mode, then controls the audio control signal.

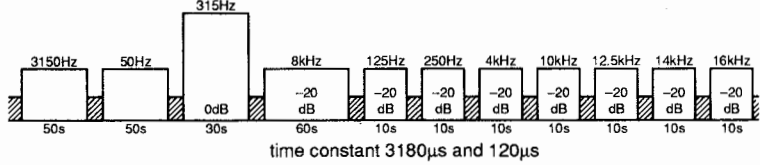
Fig. 3



# MEASUREMENTS AND ADJUSTMENTS

Required Jigs, Test Tapes, and Measuring Instruments

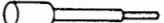
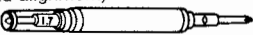
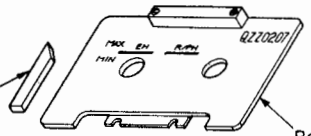


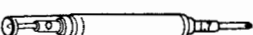
## • Test tape

| Part No. | Contents  | Use  |
|----------|---|--|
| SBC420   | 315Hz: 0dB, 3150Hz: -10dB<br>125Hz~16kHz: -20dB<br>4.76cm/s<br>250nWb/m<br> | Tape speed adjustment<br>Distortion adjustment<br>NF adjustment<br>Frequency response adjustment |
| SBC438   | Mirror tape   | Tape transport adjustment  |

## • Measuring instrument

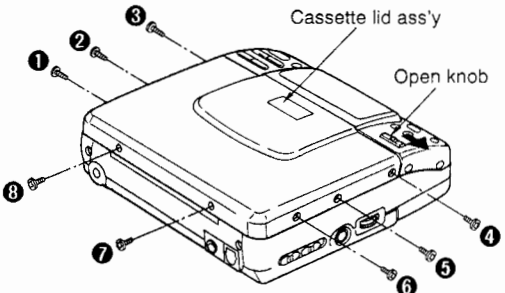
Oscilloscope    Distortion factor meter    Frequency counter    Electronic voltmeter (E.V.M.) (AC/DC)

## • Jigs and Tools

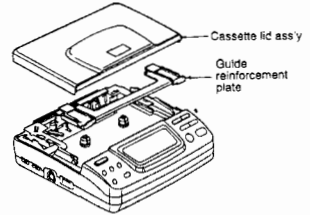
|                           |   |
|---------------------------|---|
| (A) MECHANISM ADJUSTMENT  | Head alignment adjusting screwdriver (RZZ0296)<br><br>Ceramic screwdriver (Head alignment) (HOZAN D-281, ⌀ No. 0)<br><br>Head adjusting jig (QZZ0207)<br><br>Check bar<br><br>Base<br> |
| (B) ELECTRICAL ADJUSTMENT | Ceramic screwdriver (HOZAN D-281, ⌀ No. 1.7)<br>   |

## (A) MECHANISM ADJUSTMENT (HEAD POSITION ADJUSTMENT)

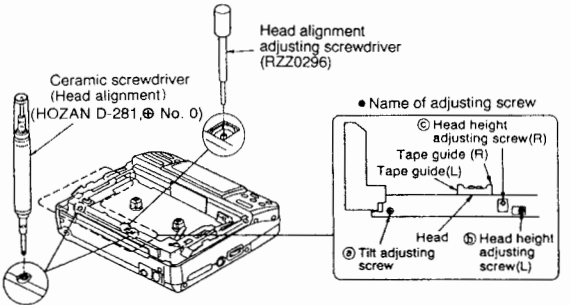
### • Disassembly



1. Push the OPEN knob in the direction of the arrow to open the cassette lid ass'y.
2. Remove the 8 screws (1~8).
4. Perform head position adjustment after disassembling the unit to the point shown on the right.



3. Remove the cassette lid ass'y and guide reinforcement plate.

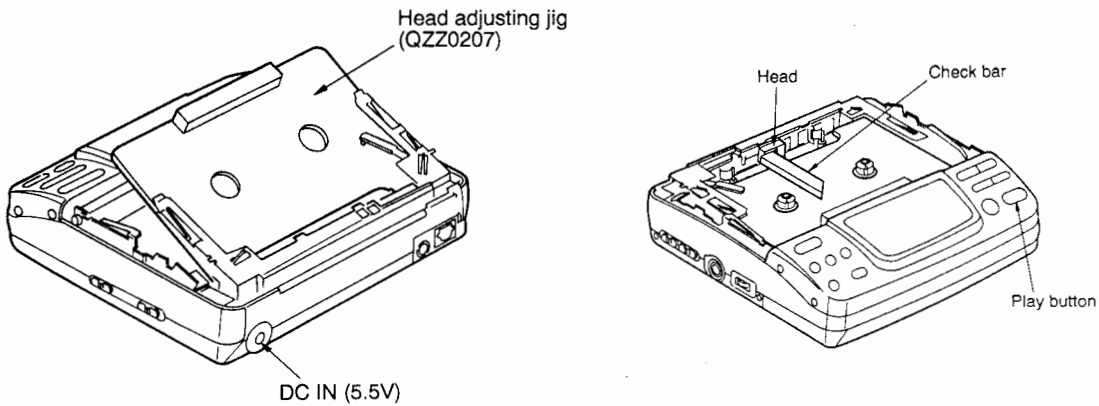


• Name of adjusting screw

- Ⓒ Head height adjusting screw(R)
- Ⓓ Tape guide (R)
- Ⓔ Tape guide(L)
- Ⓕ Tilt adjusting screw
- Ⓖ Head height adjusting screw(L)

## • Loading Head Adjusting Jig (QZZ0207)

1. Load the head adjusting jig (QZZ0207) into the unit.

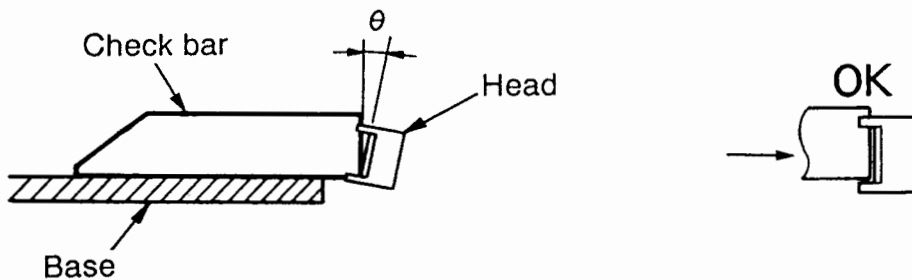


## • Power Connection

1. Plug the accessory AC Adaptor (or other 5.5V DC power supply) into the unit's DC IN jack.
2. Press the PLAY button to enter PLAY mode.

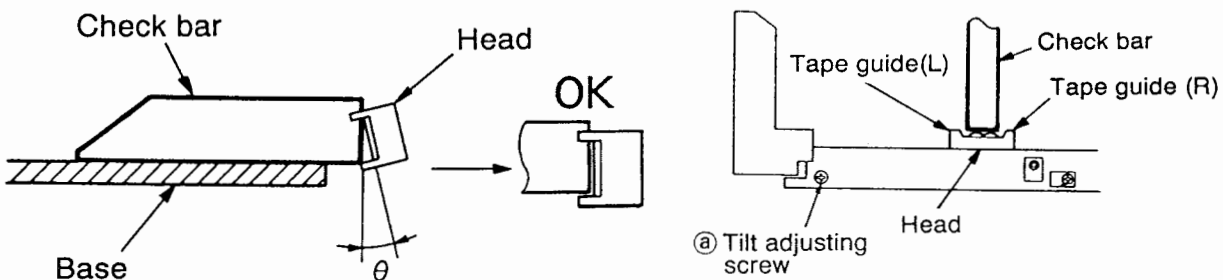
### (1) Tilt Adjustment

#### • If the head tilts backward:



Turn the ③ tilt adjusting screw clockwise until the head surface is parallel with the end of the check bar ( $\theta = \text{within } \pm 30'$ ).

#### • If the head tilts forward:

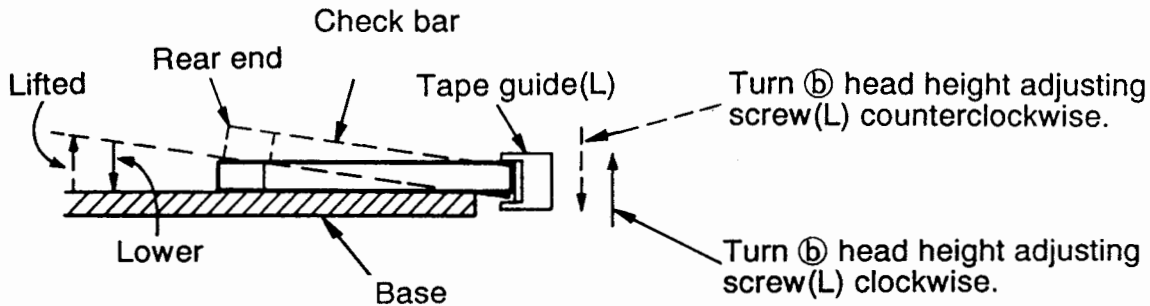
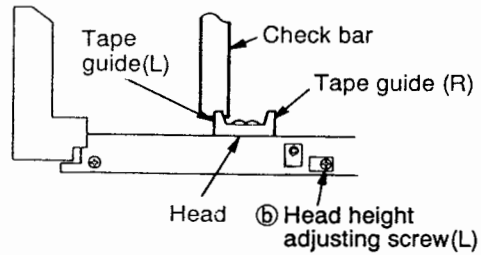


Turn ③ tilt adjusting screw counterclockwise until the head surface is parallel with the end of the check bar ( $\theta = \text{within } \pm 30'$ ).

## (2) Guide Heights Adjustment

### • Adjusting Guide (L)

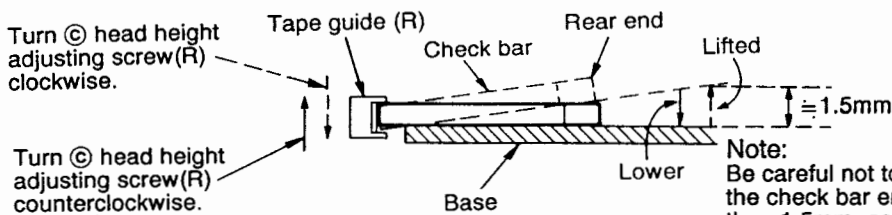
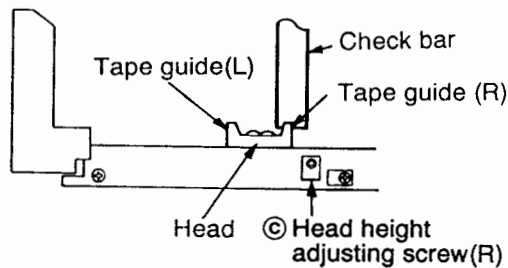
Insert the check bar into tape guide (L) as shown below.



Turn (b) head height adjusting screw (L) counterclockwise to lift the rear end of the check bar off the base, then slowly turn the screw clockwise to lower the rear end until it is parallel and rests on the base.

### • Adjusting Guide (R)

Insert the check bar into tape guide (R) as shown below.



**Note:** Be careful not to lift the check bar end more than 1.5mm, as the screw may loosen completely and pop out.

Turn (c) head height adjusting screw (R) clockwise to lift the rear end of the check bar off the base, then slowly turn the screw counterclockwise to lower the rear end until it is parallel and rests on the base.

**Note:** The head arm has a slight amount of play. Make sure that the rear end of the check bar completely rests on the base after the screwdriver is removed.

## (3) Tape Tr

• Load the forward the step

Tape

A curled along a s Check fo

① If a curl Turn (c)



Tape hu

② If a curl Turn (c)



Tape hu

③ When th



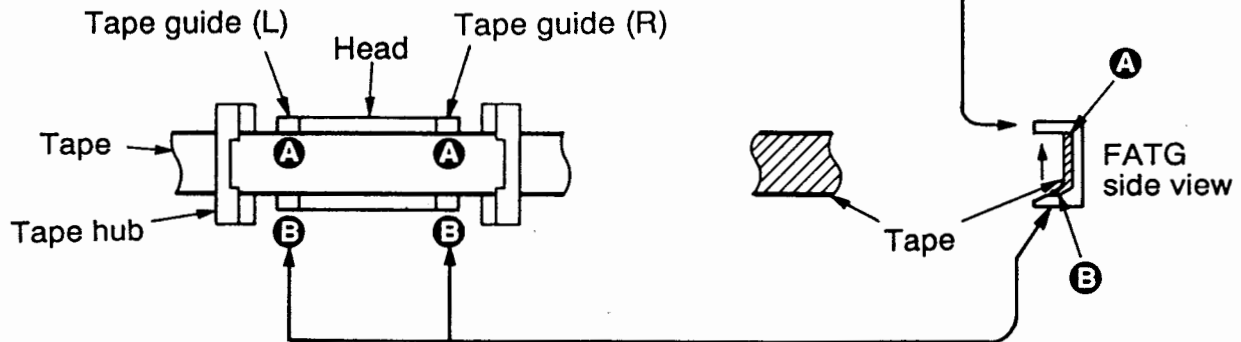
Tape hu

After complet tape edge. I

**Note:** Sinc differ mar

### (3) Tape Transport Adjustment

- Load the mirror tape (SBC438) into the unit and check tape transport in PLAY mode, Check both forward and reverse directions. If the top edge of the tape is curled, remove the curl by following the steps below:

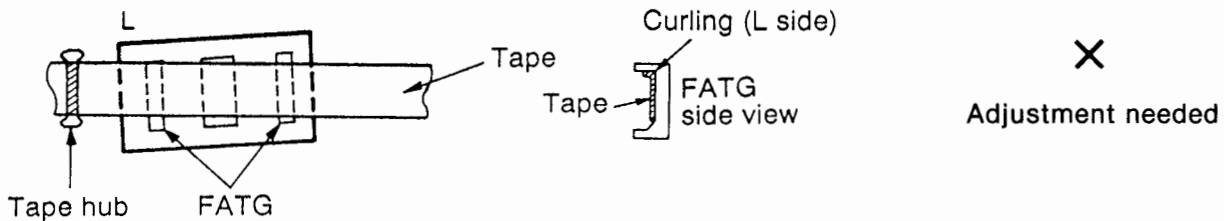


A curled tape edge will not occur at the bottom ② of the tape guide, as the tape is pushed up along a slope.

Check for a curled tape edge at the top ① of the tape guide.

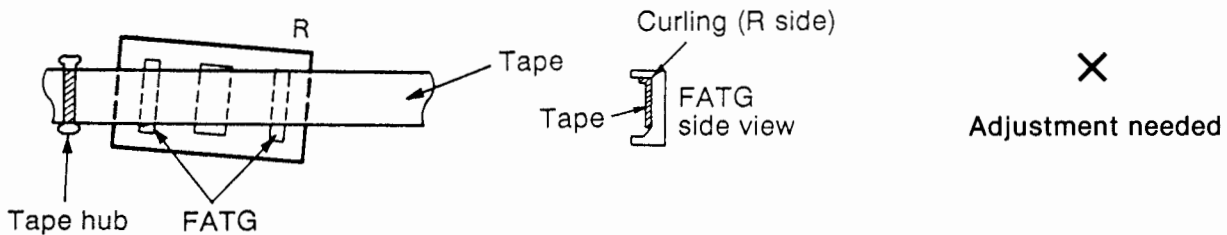
- ① If a curled tape edge occurs on FATG (L):

Turn ③ head height adjusting screw (R) clockwise until the curl is removed.

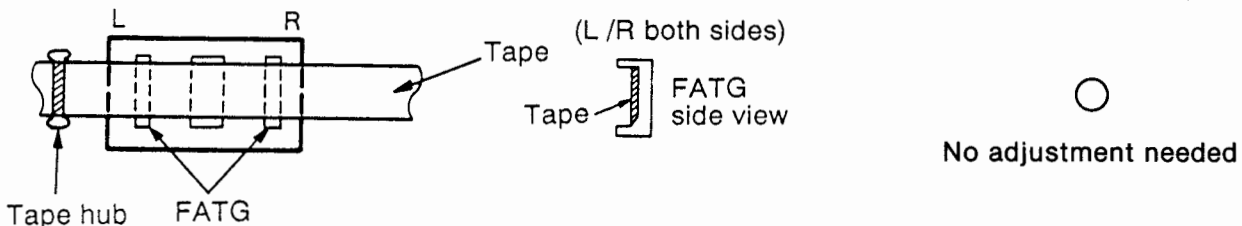


- ② If a curled tape edge occurs on FATG (R):

Turn ③ head height adjusting screw (R) counterclockwise until the curl is removed.



- ③ When the relative positioning of the tape hub and tape head (tape guides) is correct:



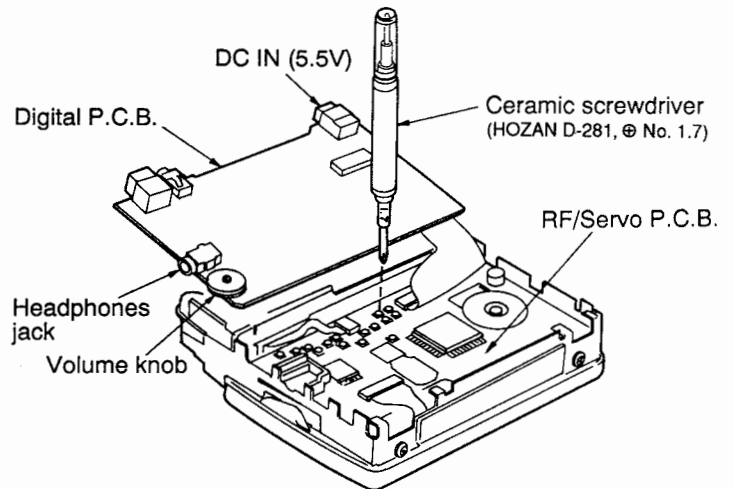
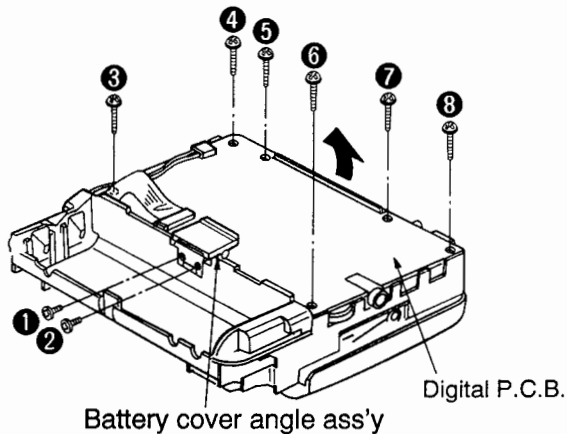
After completing the above adjustment, run the tape both forward and backward to check for a curled tape edge. If it still occurs, repeat step ① or ②.

**Note:** Since the head arm has a slight amount of play, the degree to which the tape edge curls will differ before and after the adjustment screwdriver is removed. (Allow a sufficient adjustment margin.)

## (B) ELECTRICAL ADJUSTMENT

### • Disassembly

1. Complete disassembly steps 1, "Removal of the battery case ass'y" (page 3) through 7, "Removal of the switch ornament" (page 4).



2. Remove the two screws (①, ②) and remove the battery cover angle ass'y.
3. Remove the 6 screws (③~⑧).
4. Swing open the Digital P.C.B. in the direction of the arrow.

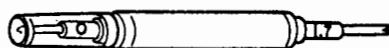
5. With the unit disassembled as shown above, plug the accessory AC Adaptor (or other 5.5V DC power supply) into the unit's DC IN jack.
6. Connect a measuring instrument to the LINE OUT jack with the accessory line cable (4822 321 62146).

**Note:** Use the inside censor for audio monitoring.

### • List of Adjustment VR

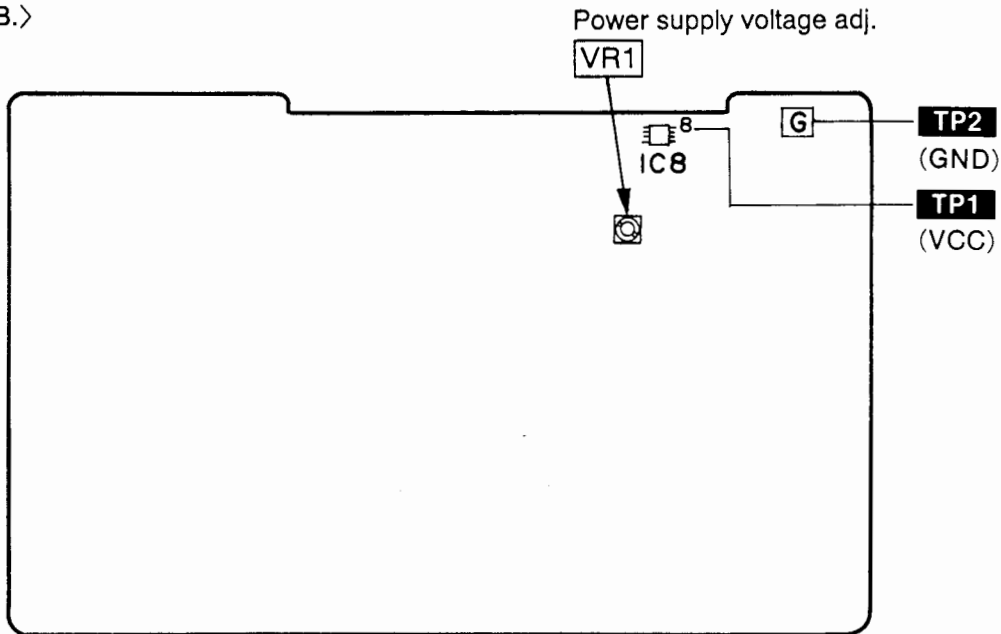
| Adjustment Item                    | Adjustment VR |       |       |       | Test Tape | Measuring instrument                    |
|------------------------------------|---------------|-------|-------|-------|-----------|---|
|                                    | FWD           |       | REV   |       |           |   |
|                                    | LCH           | RCH   | LCH   | RCH   |           |   |
| Power supply voltage adjustment    | VR1           |       |       |       | —         | E.V.M                                   |
| Distortion adjustment              | VR209         | VR210 | VR207 | VR208 | SBC420    | Oscilloscope or Distortion factor meter |
| N.F adjustment                     | VR205         | VR206 | VR203 | VR204 | SBC420    | E.V.M                                   |
| High frequency response adjustment | VR213         | VR214 | VR211 | VR212 | SBC420    | E.V.M                                   |
| Playback sensitivity adjustment    | VR221         | VR222 | VR219 | VR220 | SBC420    | E.V.M                                   |
| Tape speed adjustment              | VR102         |       | VR101 |       | SBC420    | Frequency counter                       |

**Caution:** Use a ceramic screwdriver (HOZAN D-281 ⊕ No. 1.7) for all trimmer adjustments.

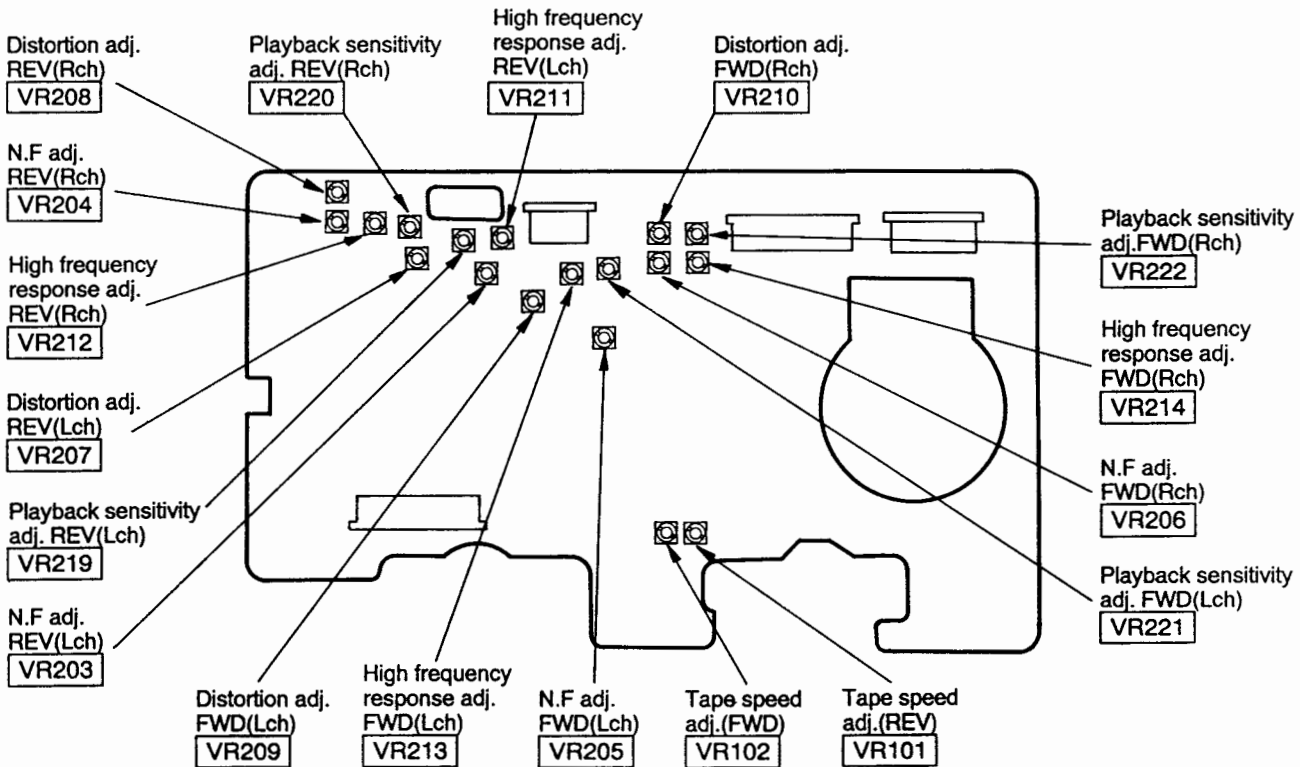


## • Adjustment VR Layout

<Digital P.C.B.>



<RF/Servo P.C.B.>



## • Adjustment Procedures

### (1) Power Supply Voltage Adjustment

1. Connect the DC voltmeter's positive lead to **TP1** (VCC) and the negative lead to **TP2** (GND) on the Digital P.C.B.
2. Plug the AC Adaptor into the unit's DC IN jack, then power up the unit by pressing the PLAY button. (When using a rechargeable battery instead of the AC Adaptor, make sure that the battery is fully charged.)
3. Adjust **VR1** on the Digital P.C.B. until the voltmeter reads  $5.3 \pm 0.05$  V.



#### (4) High Frequency Response Check and Adjustment

- Cautions:**
- Be sure to check the frequency response after the head assembly is replaced.
  - If the frequency response does not fall within the limits, perform the following adjustment.
  - If it is still outside the limits after realignment, do the N.F. adjustment described in item (3).

#### Frequency Response Check

1. Play back 250Hz, -20dB and 12.5KHz, -20dB of the ACC Test Tape (SBC420) forward, and verify that the level difference between the two bands is within  $0 \pm 1\text{dB}$ .
2. Reverse the direction of tape transport and perform the same check.

| Preparation   |   | Setup |
|---|---|-------|
| Test tape and tool required   | Measuring instruments required                                    |       |
| 1. ACC test tape (SBC420)<br>2. Ceramic screwdriver<br>(HOZAN D-281, ⊕ No. 1.7) | 1. Frequency counter<br>2. Electron voltmeter (EVM)<br>(AC range) |       |

#### • Adjustment Procedure

1. While playing back 250Hz, -20dB of ACC Test Tape (SBC420) forward, measure the LINE OUT levels on both channels. Use these levels as standards.
2. Play back 12.5kHz, -20dB of the same test tape forward, and adjust **VR213** (L-ch.) and **VR214** (R-ch.) until the LINE OUT levels are identical to the standard levels obtained above.

**Adjustment Target:  $0 \pm 0.5\text{dB}$**

3. Reverse the direction of tape transport and perform the same adjustment with **VR211** (L-ch. 12.5kHz) and **VR212** (R-ch. 12.5kHz).

FWD  LCH: **VR213** (12.5kHz)  
 RCH: **VR214** (12.5kHz)

REV  LCH: **VR211** (12.5kHz)  
 RCH: **VR212** (12.5kHz)





# TECHNICAL NOTE

## Wake-Up (Power-On) Sequence

The unit has a Wake-Up feature which controls power on/off operations with CPU (system control) commands (IC500). To turn the unit power ON, the system microprocessor must be activated first. The unit will remain OFF unless the system microprocessor is active.

**The CPU (system control) becomes active only if:**

- (1) A. VDD is supplied to pin ⑤0 and VDD to pins ⑦ and ④9.
- (2) Pin ⑩6 (WAKE UP) goes Low (negative edge).

### Setting pin ⑩6 to Low

Pin ⑩6 of the CPU (system control) goes Low if any of the following three conditions is fulfilled:

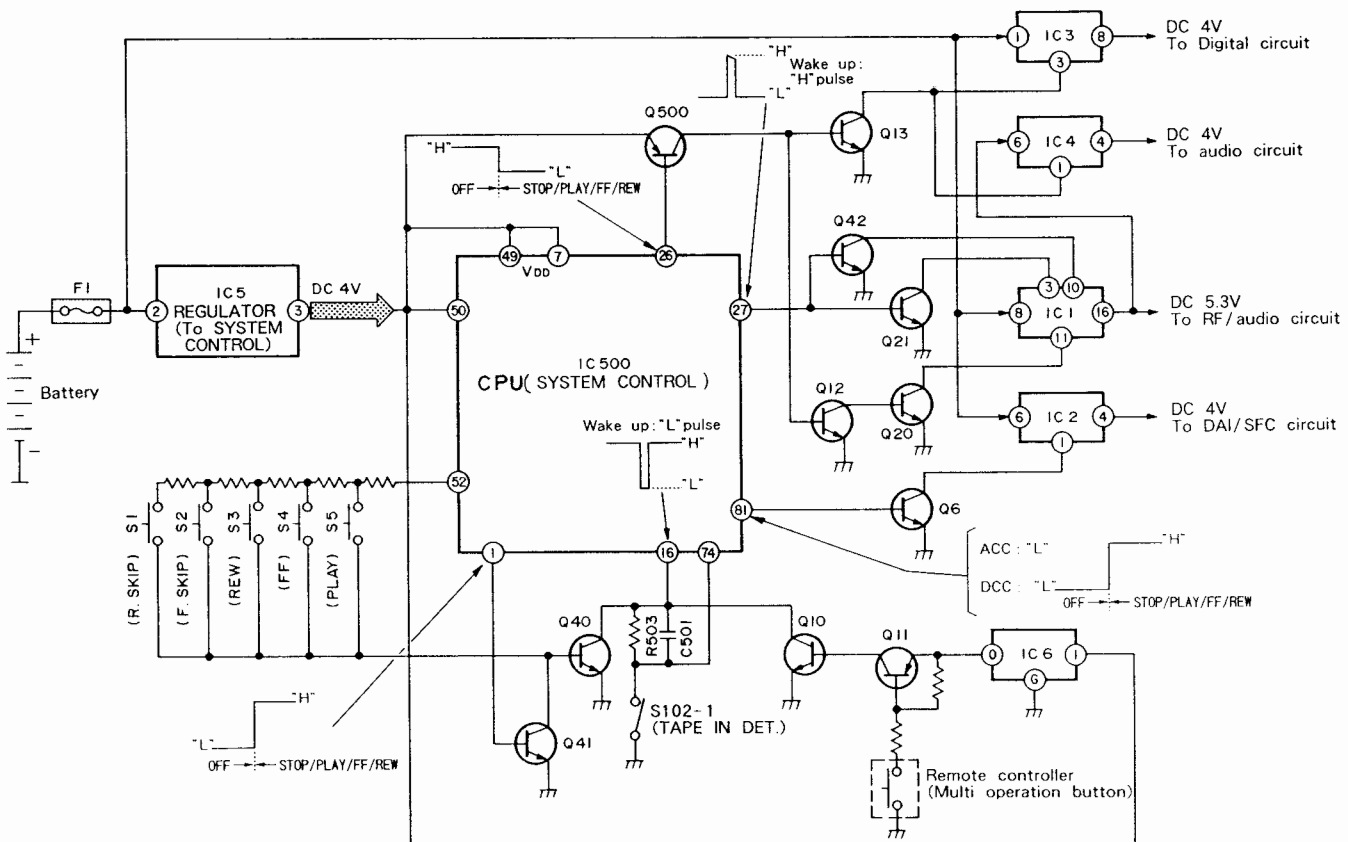
- a) Any one of the PLAY, FF, REW, F. SKIP, or R. SKIP buttons is pressed.
- b) "TAPE IN" is detected (S102-1).
- c) Button "1" (multi-function button) on the wired remote control is pressed.

Case a): Q40 is turned ON, which switches processor pin ⑩6 (IC500) from High to Low.

Case b): S102-1 is turned ON, which brings processor pin ⑩6 Low via C501.

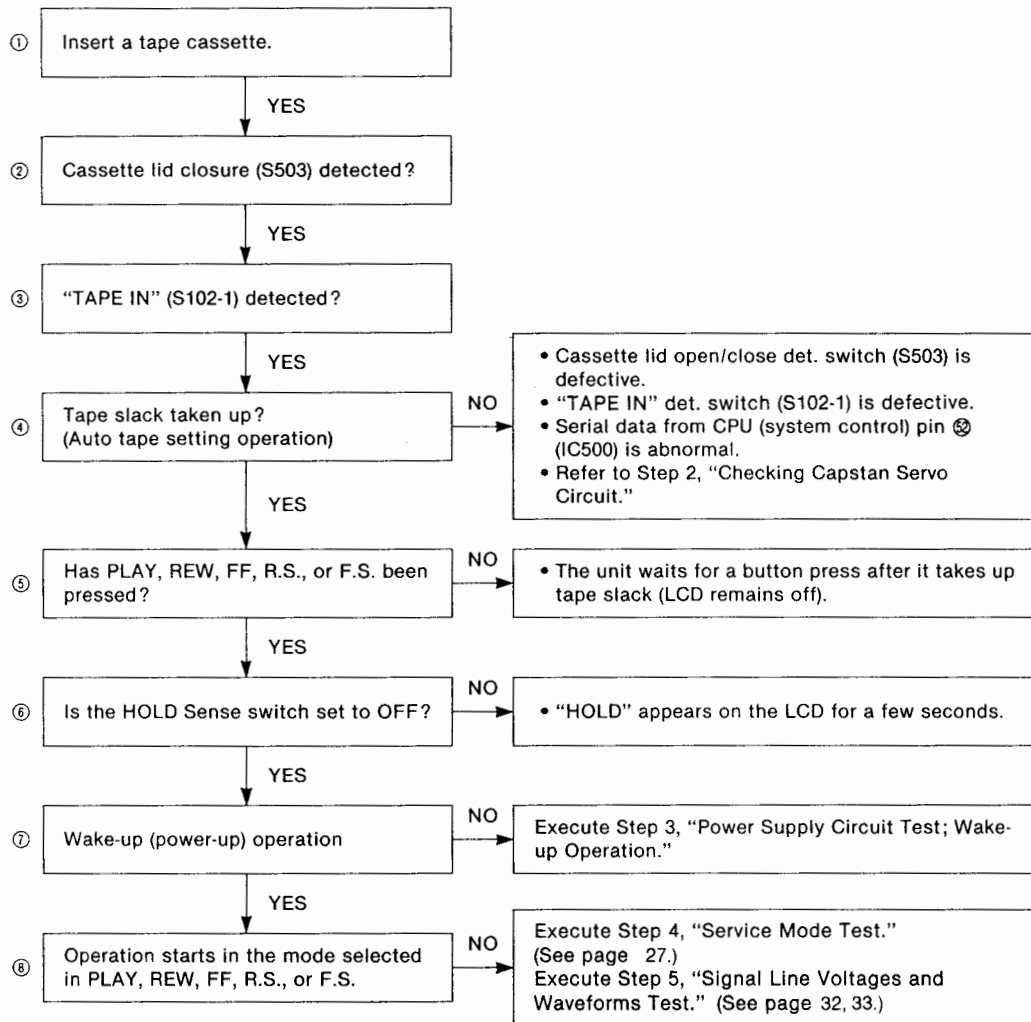
Case c): Q10 and Q11 are turned ON, which switches processor pin ⑩6 from High to Low.

Once the unit wakes up, Q41 is turned ON, which pulls Q40's base to ground to allow the unit to read subsequent button entries correctly. CPU (system control) pins ②9, ②7, and ⑧1 then control Q6, Q12, Q13, Q21, Q42, and Q500 to activate the outputs of voltage regulators IC1 through IC4 to supply DC power to the other circuits.



# ■ TROUBLESHOOTING

## Step 1. Checking Operations from Tape Insertion through Operation Start



## Step 2. Checking Capstan Servo Circuit

### • DCC Playback

1. Connect an oscilloscope to **IC503 pin ⑩** on the **digital P.C.B.**
2. Load a **DCC music tape** into the unit under test and put the unit in **PLAY mode**. When the capstan servo is locked, a **square wave with a duty ratio fluctuation of less than 0.5μs** will be observed on the scope (see Fig. 1). Unlock the servo and verify that the muting function is active.

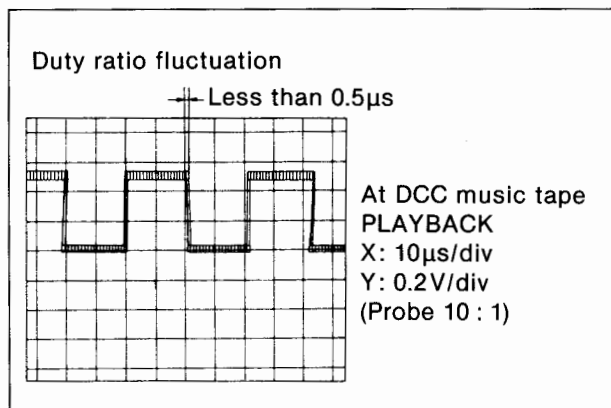


Fig. 1

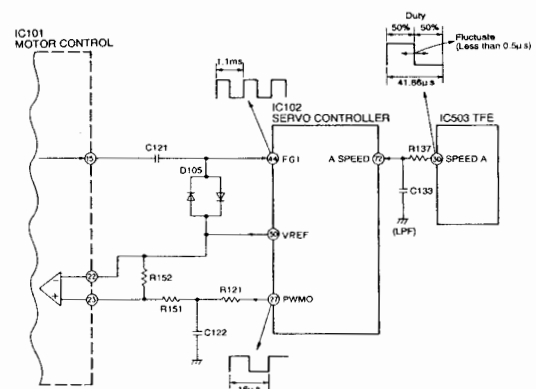
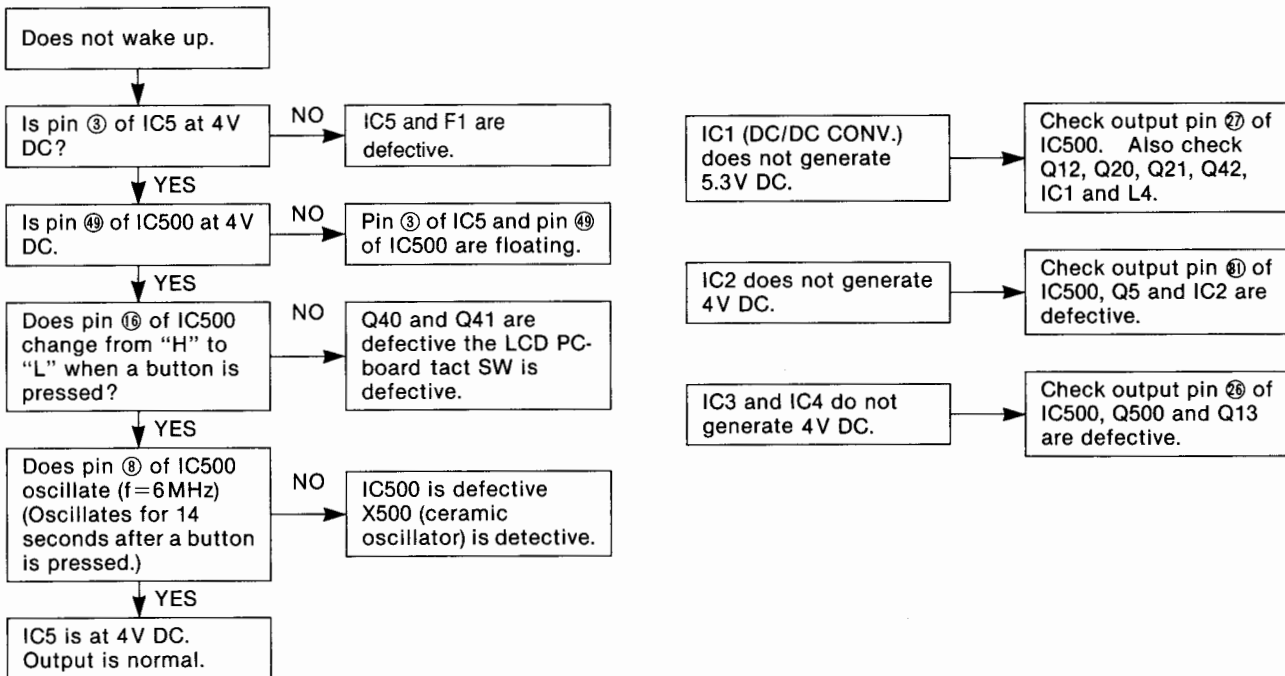
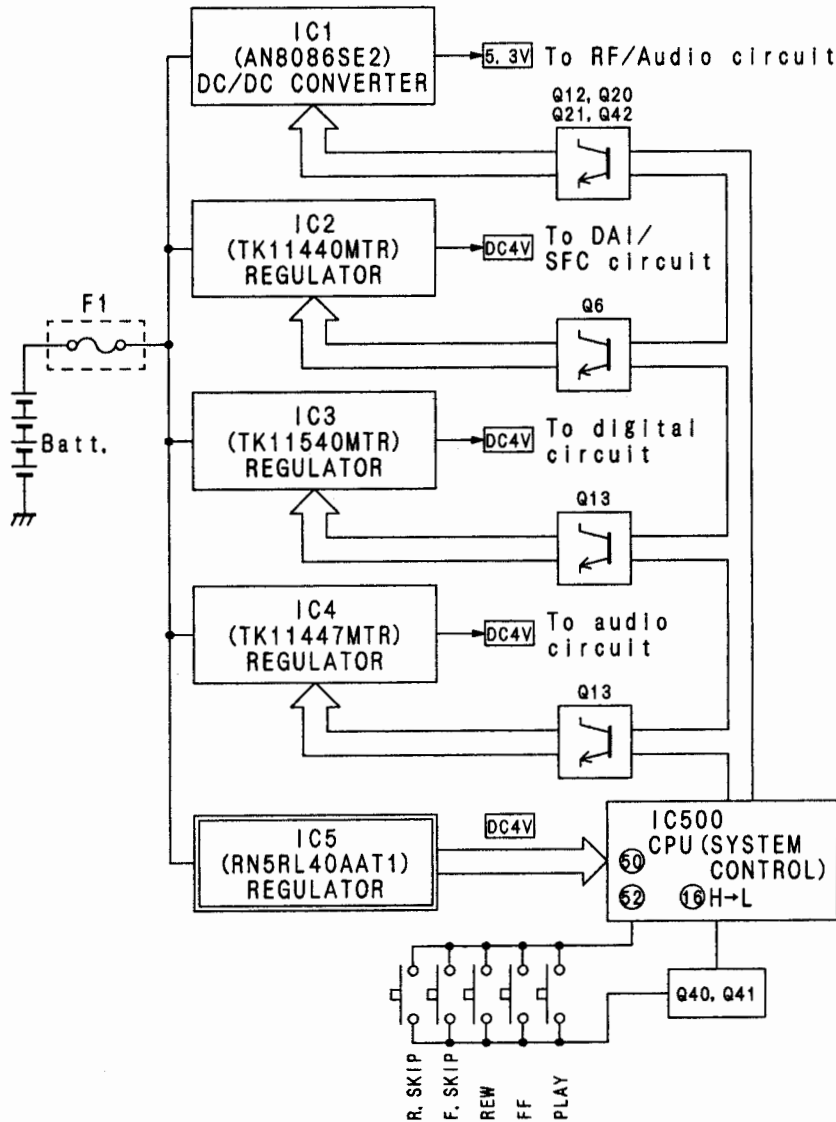
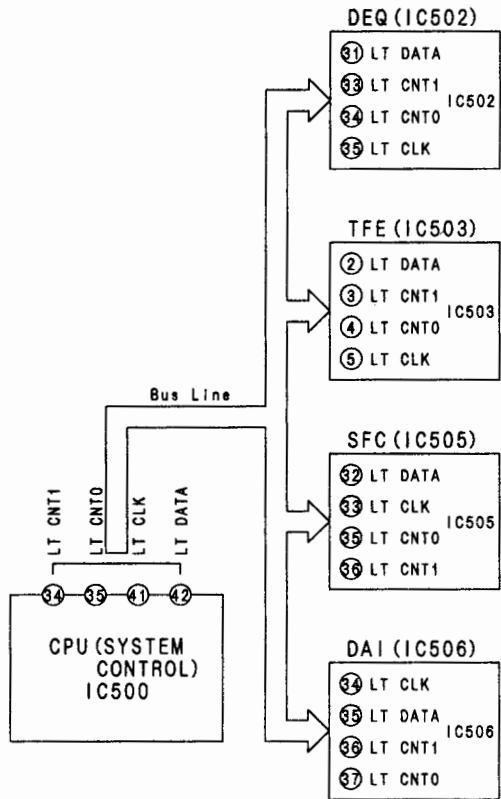


Fig. 2

**Step 3. Power Supply Circuit Test; Wake-Up Operation (See the Technical Note on page 34.)**



**Step 4. CPU ↔ IC's Communication (Bus Line) test [Self Diagnostic (Service Mode)]**



In Service mode, the CPU (system control) checks for circuit integrity and displays the test results on the LCD. Use this mode for quick fault isolation.

**How To Enter Service Mode**

- With the unit in STOP mode, press the PLAY button twice while holding down the COUNTER RESET button. "SERVICE MODE" appears on the LCD.
- The following test modes are sequentially selected each time the COUNTER RESET button is pressed:

|                        | COUNTER RESET button operation count               | Test item              | LCD message   | Remarks                                 |
|------------------------|--|------------------------|---|---|
| LSI Communication test | 1  | LSI communication test | LT OK or LT NG  | See communication Test on pages 28 ~29. |
|                        | 2  | DEQ communication test | DEQ OK or DEQ NG  |   |
|                        | 3  | TFE communication test | TFE OK or TFE NG  |   |
|                        | 4  | SFC communication test | SFC OK or SFC NG  |   |
| Data error test        | 5  | SYS INFO data error    | ERR SYS 000   | See Digital Error Rate Display.         |
|                        | 6  | AUX data error         | ERR AUX 000   |   |
|                        | 7  | MAIN data error        | ERR MAIN 0CH 000  |   |
|                        | 8 (Overall error test for items 5, 6 and 7 above.) | Total error rate       | Displays the number of occurrences in which any one of SYSFLC, AUXFLO, and STRGL is set to "1" in four seconds, 100 segments. |   |

**• Digital Error Rate Display**

00 00000000  
 ↳ Indicates main data error.  
 ↳ Indicates AUX data error.  
 ↳ Indicates SYS INFO data

• Meaning of LCD data error codes

00 00000000 } EX: OK  
 00 00101000 }

01 00000000 } (AUX data error)  
 10 00000000 } (SYS INFO data error)

00 01101000 } EX: NG  
 11 11111111 }  
 99 99999999 }

AA AAAAAAAA }  
 FF FFFFFFFF } Main data error

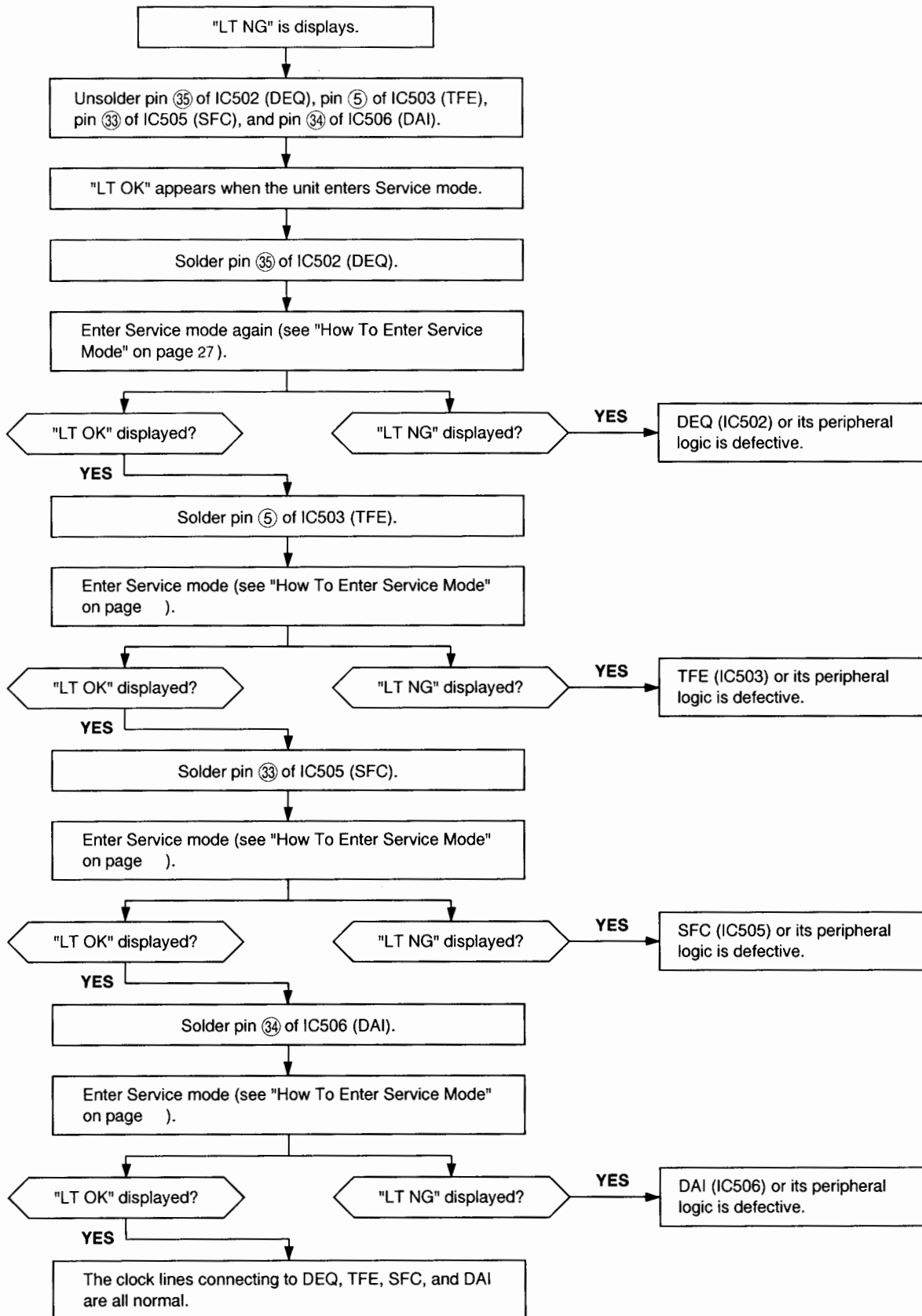
• If the data error code is "NG", check test points step 5. ①-1, ①-2 and the waveform at ①.

**• LSI, DEQ, TFE and SFC Communication Test**

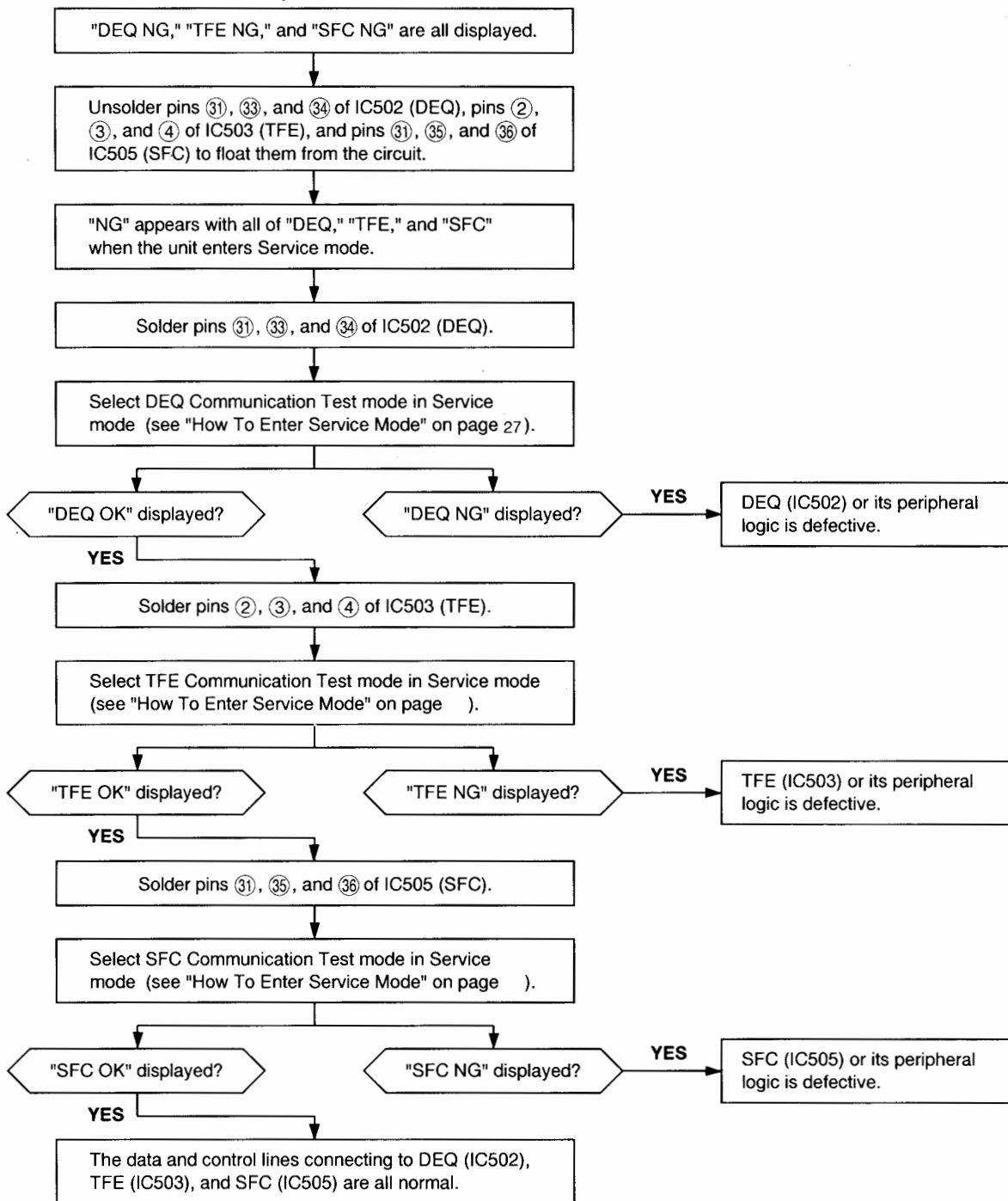
The CPU (system control) is connected to its peripheral ICs (DEQ, TFE, SFC, DAI) via a parallel bus consisting of clock, data, and control lines. If an "NG" message is displayed on the LCD as a result of self diagnostics in Service mode, it is necessary to

determines which IC out of DEQ, TFE, SFC, and DAI (including their peripheral components) is defective. The flowcharts on the following pages provide a quick troubleshooting guide to locate the defective IC(s).

(1) Locating the defective division of LSI communication test (Clock Line: "LT NG")



**(2) Locating the defective division of DEQ, TFE and SFC communication (Data and Control Line: "DEQ/TFE/SFC NG")**



**Notes:**

- If an IC or its peripheral component is found to be defective, leave its pin(s) unsoldered or replace it with a functioning component.
- If a defective IC or peripheral is left soldered, an "NG" message will reappear when another IC is tested.
- ICs or peripherals found to be normal may be resoldered.
- More than one IC or peripheral may be defective at a time. Carry out all the troubleshooting steps even if a defective IC or component is discovered before you complete all the steps.
- The data and control lines connecting to the DAI are not testable.
- The unit turns off if no button is operated for 4 minutes after entering Service mode.
- The unit will not be stopped automatically with the Service mode.
- Use a normal (new) tape for troubleshooting.
- To exit Service mode, press the STOP button.

**FACTORY MODE**

The following shows the entire contents of the LCD, the state of the switching mechanism, etc. Refer to these when servicing the cassette recorder.

**Factory Mode ON/OFF**

**ON:** While holding down the COUNTER RESET button, press the PLAY button once, Factory mode wakes up in the same way as the regular STOP mode. Then, while holding down the COUNTER RESET button, press the FF button twice.

**OFF:** Press the STOP/POWER OFF button.

**Notes:**

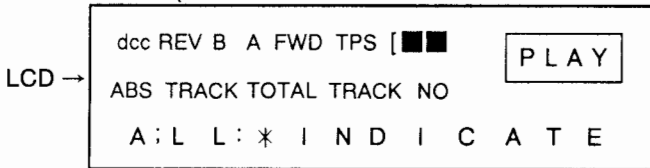
- (1) The power turns OFF unless a button is pressed within 4 minutes while in the Factory mode (the same as for normal operation).
- (2) When Factory mode is OFF, operation is the same as that of Power-OFF mode.
- (3) Both the ACC and DCC switch contacts must be closed to enter this mode. (Closing only the DCC switch contacts accesses the Service mode.)

**Items:** In Factory mode, use the COUNTER RESET button to sequentially select modes. When the factory mode is entered, "FACTORY MODE" is displayed for 1 second before entering mode 1.

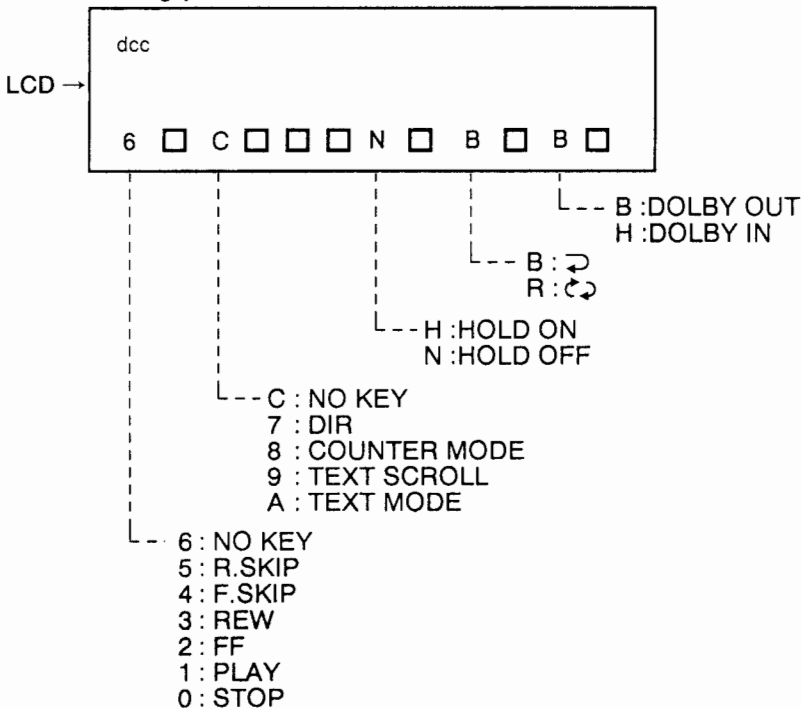
In Factory mode, set the 4 minute Power-OFF timer to 5 second.



1. Activate the entire LCD (Press the COUNTER RESET button to enter mode 2.)



2. Check each switch input (Press the COUNTER RESET button to enter mode 3.) Deactivate the entire LCD and read the status of each switch on the display. Display the reading results in the following position.



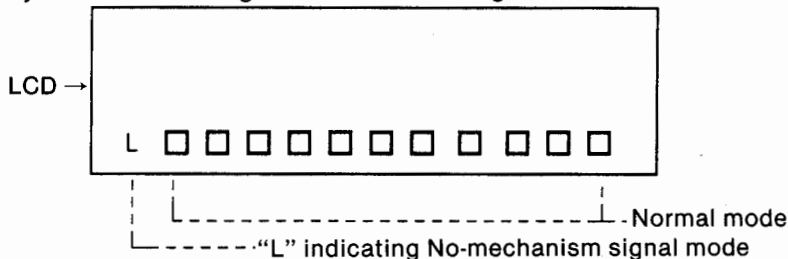
After checking all the above switch positions, activate the entire LCD again.



**Notes:**

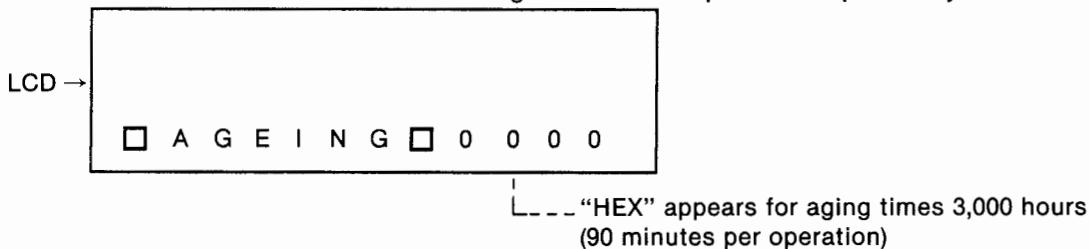
- (1) Regarding the DCC/ACC switches and REW mode switch, the entire LCD is activated on the condition that both modes are checked.
- (2) Check the HOLD switch with the Factory mode OFF. (Special care must be taken when this check is made.)
- (3) In modes other than the Switch check mode, normal operation is possible, but the Factory mode is given priority on the display.

mechanism signal mode (Press the COUNTER RESET button to enter mode 4.)  
is displayed after entering No-mechanism signal mode.



This mode is used to check boards with a Mechanism mode SW or a reel pulse mode. It senses the Mechanism mode and then activates the audio control signal. (The internal timer is active for mode switches.)

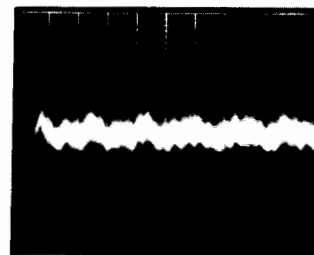
ng mode (Press the COUNTER RESET button to enter mode 4.)  
0” appears on the LCD and then the following modes are repeated sequentially.



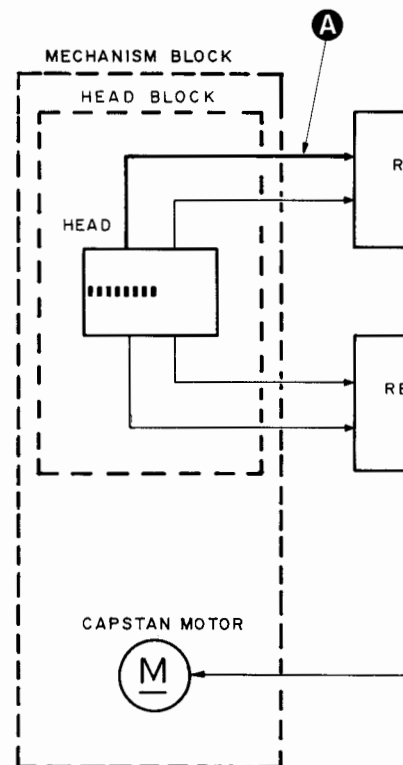
1. FF (Up to the end of side A)
2. REW (Rewinding from the end of side A to the beginning of side A)
3. +10 skip operations  
Repeat the + SKIP operation 10 times per song from the beginning of side A. Each time a piece of music is skipped, it is entered in the replay mode, and then skipped to the next piece for a play operation again. This cycle is repeated 10 times.
4. -10 skip operations  
When the repeat + skip operations on side A are completed, - skip operations can be performed.  
Repeat the - skip operation 10 times per song to return to the first piece.
5. Side A replay (Played up to the end of side A and reversed.)
6. Side B replay (Played up to the end of side B and reversed.)

**Step 5. Signal line voltages**

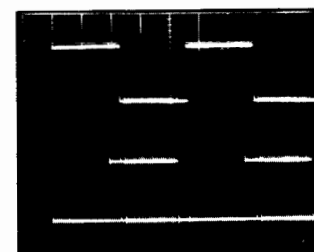
Ⓐ IC201, 202 Pin ⑫~⑳  
EYE MONITOR



Y : 2mV × 10  
X : 0.1μs



Ⓔ-2 IC505 Pin ⑳ SWS (CH1)  
IC505 Pin ⑳ SDA (CH2)



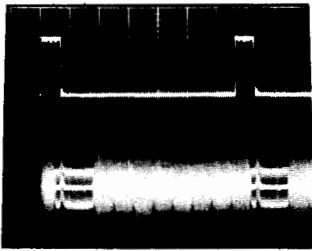
CH1 Y : 0.2V × 10  
X : 5μs  
CH2 Y : 0.2V × 10  
X : 5μs

nal line voltages and waveforms test, and motor driving voltage test

n ⑫~⑳  
R

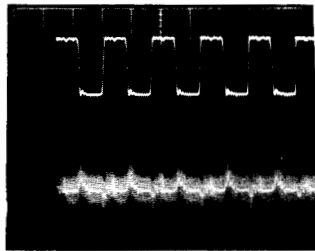


Ⓔ-1 IC201, 202 Pin ④ RDSYNC (CH1)  
IC201, 202 Pin ① RDMUX (CH2)



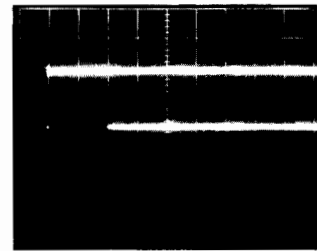
CH1 Y : 0.2V × 10  
X : 0.5μs  
CH2 Y : 50mV × 10  
X : 0.5μs

Ⓔ-2 IC201, 202 Pin ④ RDCLK (CH1)  
IC201, 202 Pin ① RDMUX (CH2)



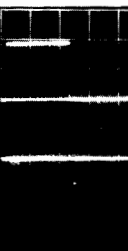
CH1 Y : 0.2V × 10  
X : 0.2μs  
CH2 Y : 50mV × 10  
X : 0.2μs

Ⓕ IC502 Pin ⑳~㉑ (TCH1~7)

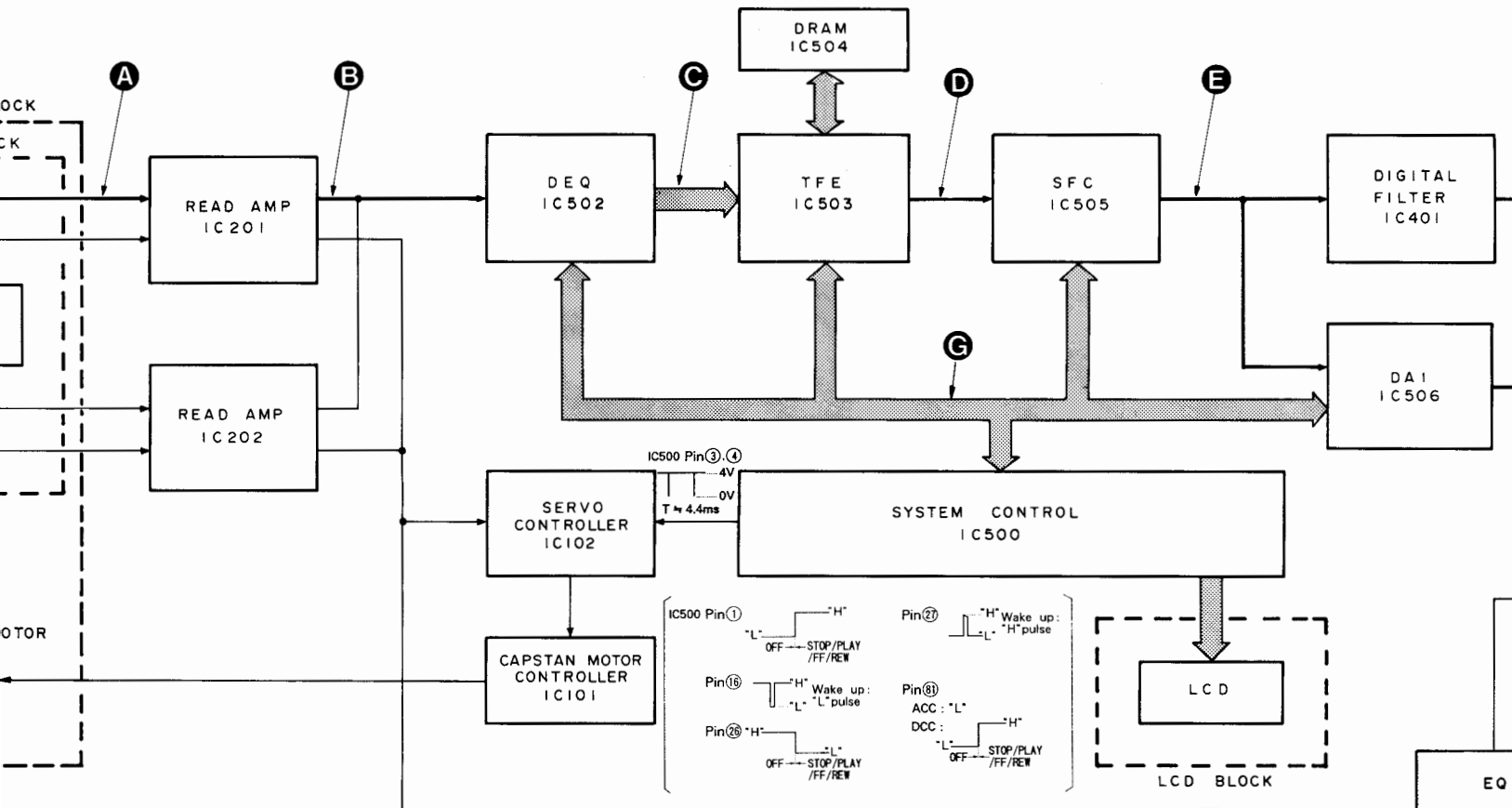


Y : 0.2V × 10  
X : 5μs

Ⓖ IC503 Pin  
IC503 Pin



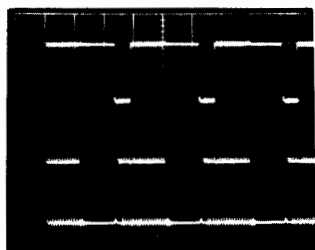
CH1 Y : 0.2V  
X : 10μs  
CH2 Y : 0.2V  
X : 10μs



SWS (CH1)  
SDA (CH2)

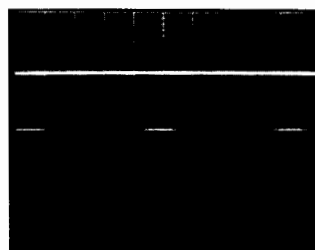


Ⓕ IC401 Pin ⑬ WCKO (CH1)  
IC401 Pin ⑬ DOR (CH2)



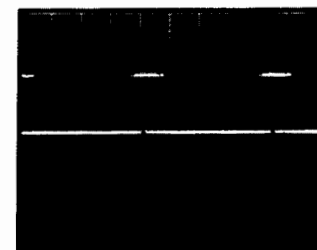
CH1 Y : 0.2V × 10  
X : 1μs  
CH2 Y : 0.2V × 10  
X : 1μs

Ⓖ-1 IC502 Pin ⑳/IC503 Pin ②/  
IC505 Pin ⑳/IC506 Pin ⑳ (LTCLK)



Y : 0.2V × 10  
X : 10ms

Ⓖ-2 IC502 Pin ㉑/IC503 Pin ③/  
IC505 Pin ㉑ (LTDATA)



Y : 0.2V × 10  
X : 10ms

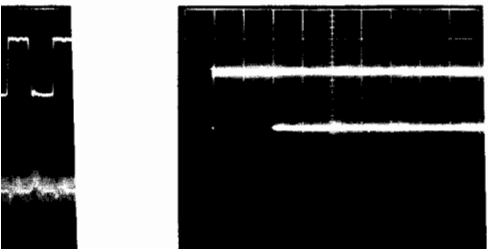
Ⓖ-3 IC502 Pin  
IC505 Pin



Y : 0.2V × 10  
X : 10ms

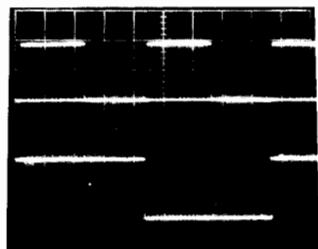


RDCLK (CH1)  
RDMUX (CH2)  
Ⓒ IC502 Pin ⑳~㉑ (TCH1~7)



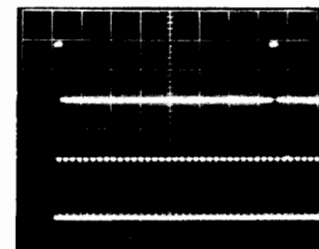
Y : 0.2V × 10  
X : 5μs

Ⓓ IC503 Pin ⑳ SBDA (CH1)  
IC503 Pin ㉑ SBWS (CH2)

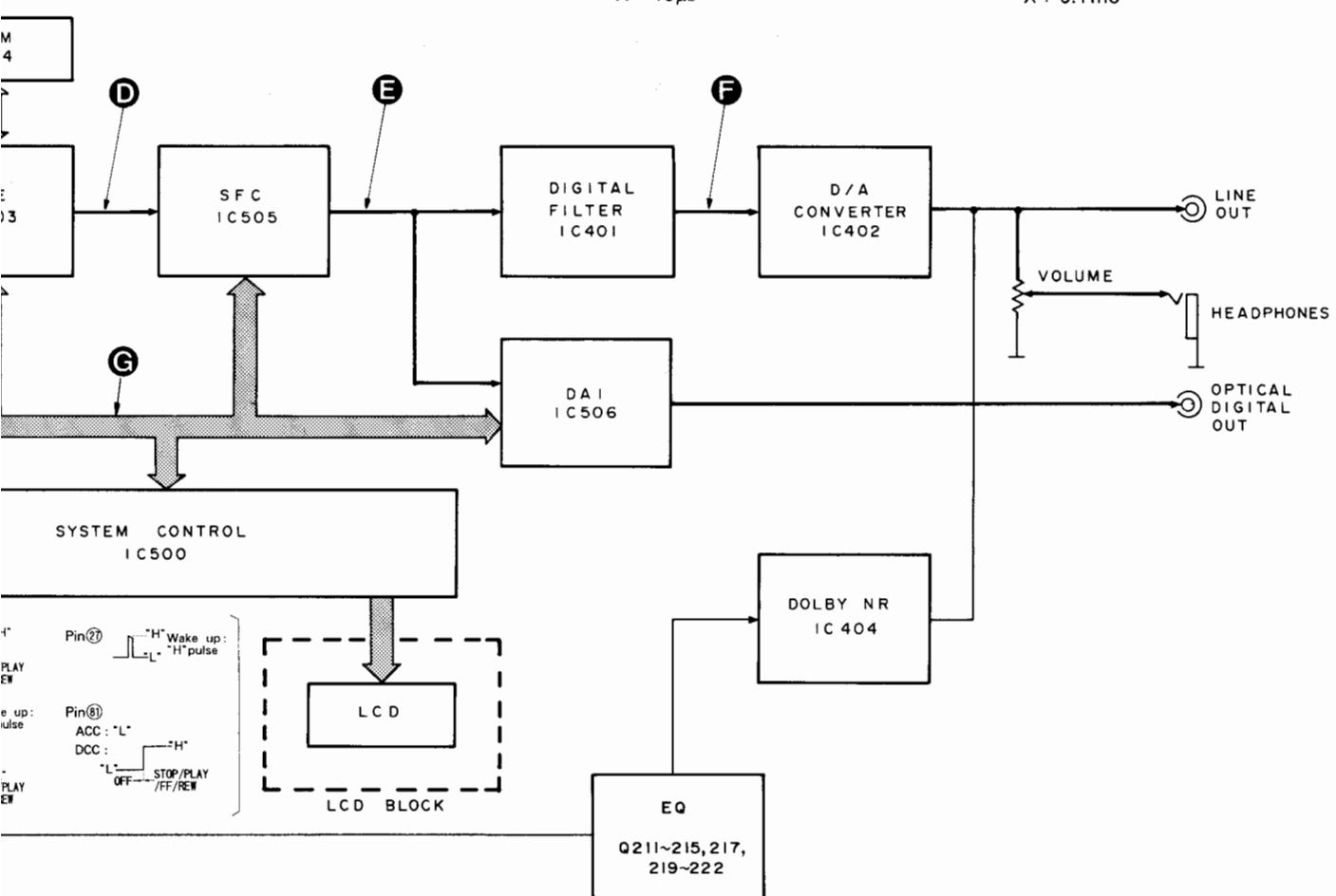


CH1 Y : 0.2V × 10  
X : 10μs  
CH2 Y : 0.2V × 10  
X : 10μs

Ⓔ-1 IC505 Pin ⑱ FSYNC (CH1)  
IC505 Pin ㉒ SDA (CH2)



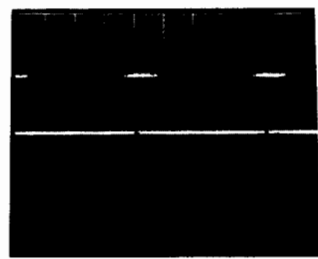
CH1 Y : 0.2V × 10  
X : 0.1ms  
CH2 Y : 0.2V × 10  
X : 0.1ms



Pin ⑳/  
Pin ㉑ (LTCLK)

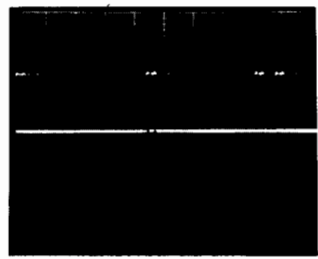


Ⓔ-2 IC502 Pin ⑱/IC503 Pin ⑳/  
IC505 Pin ㉒ (LTDATA)



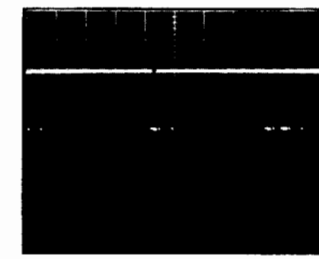
Y : 0.2V × 10  
X : 10ms

Ⓔ-3 IC502 Pin ㉓/IC503 Pin ㉔/  
IC505 Pin ㉕ (LTCNT1)



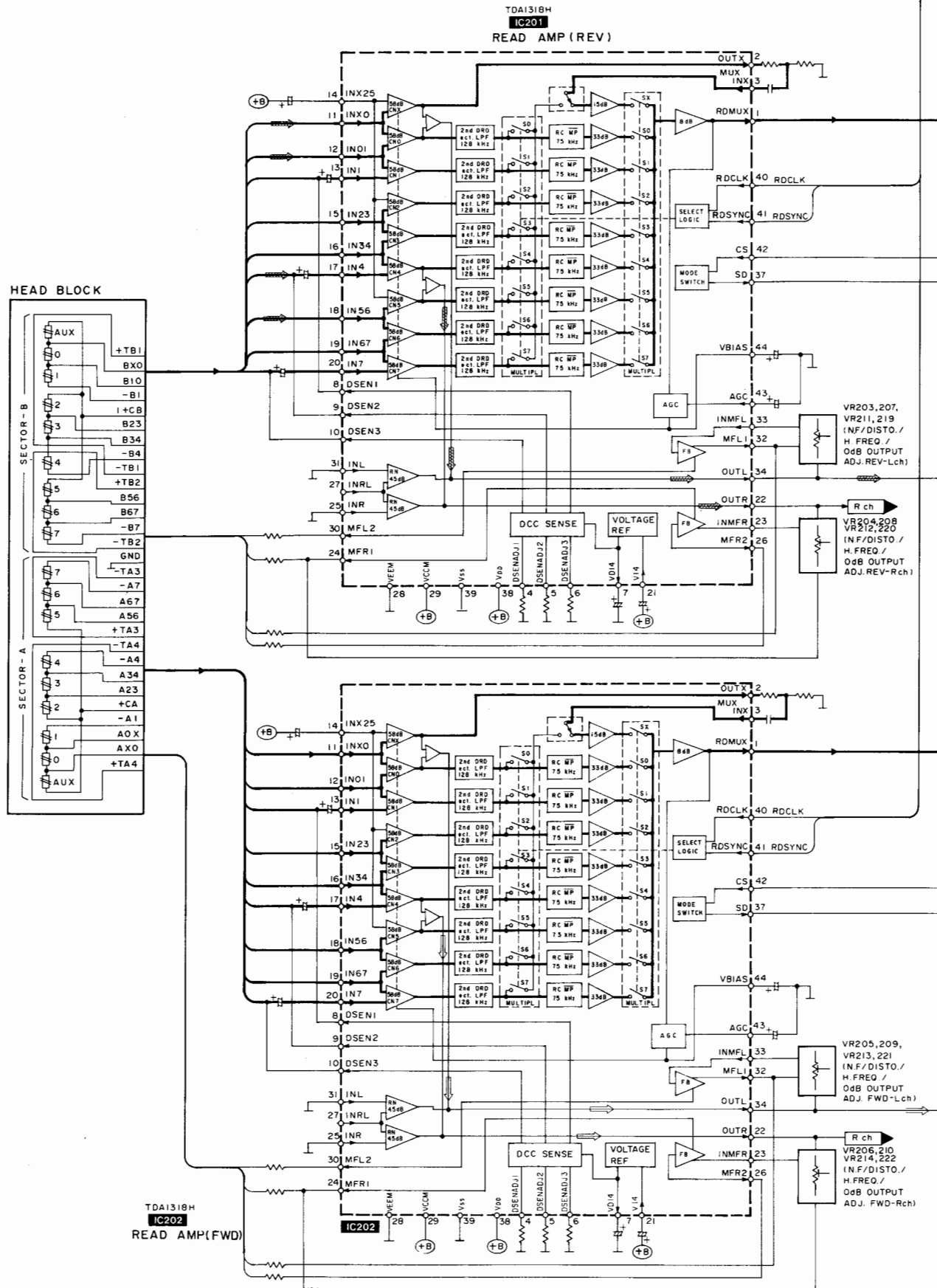
Y : 0.2V × 10  
X : 10ms

Ⓔ-4 IC502 Pin ㉖/IC503 Pin ㉗/  
IC505 Pin ㉘ (LTCNT0)

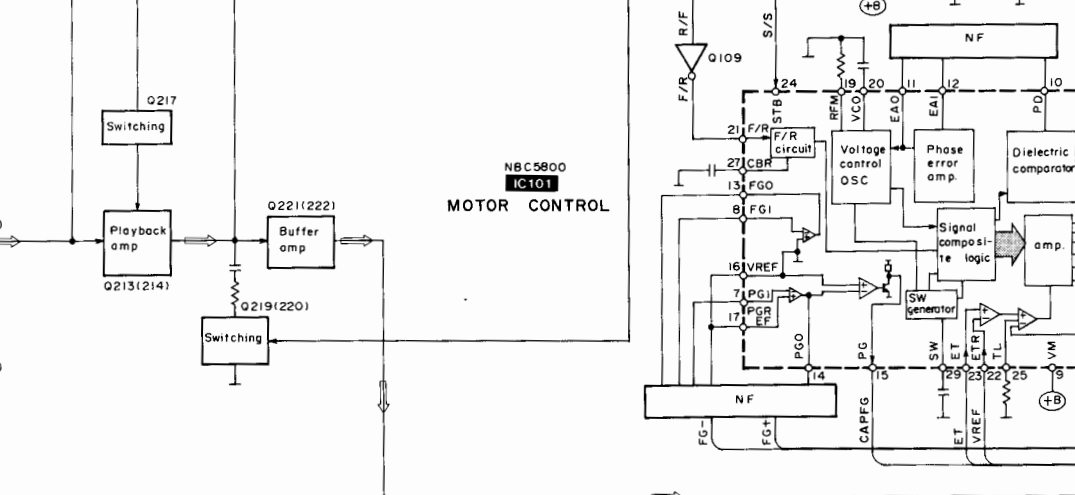
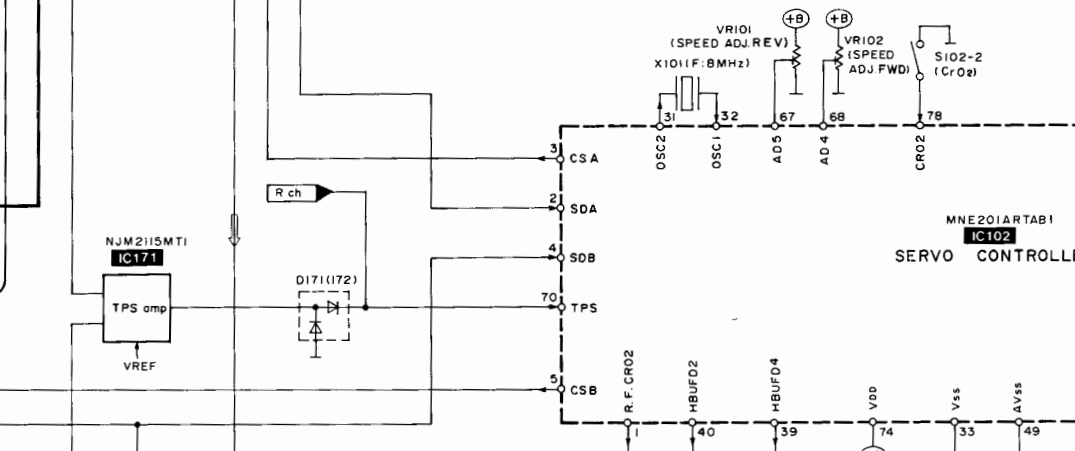
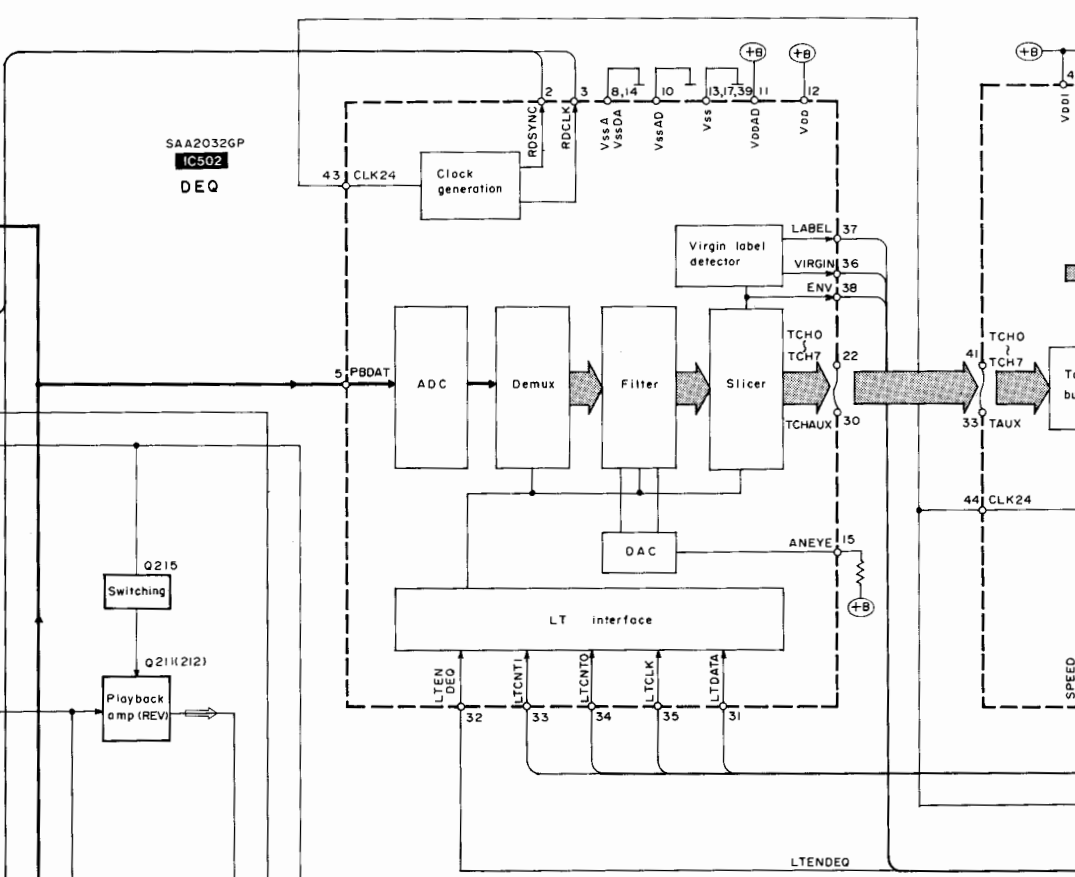
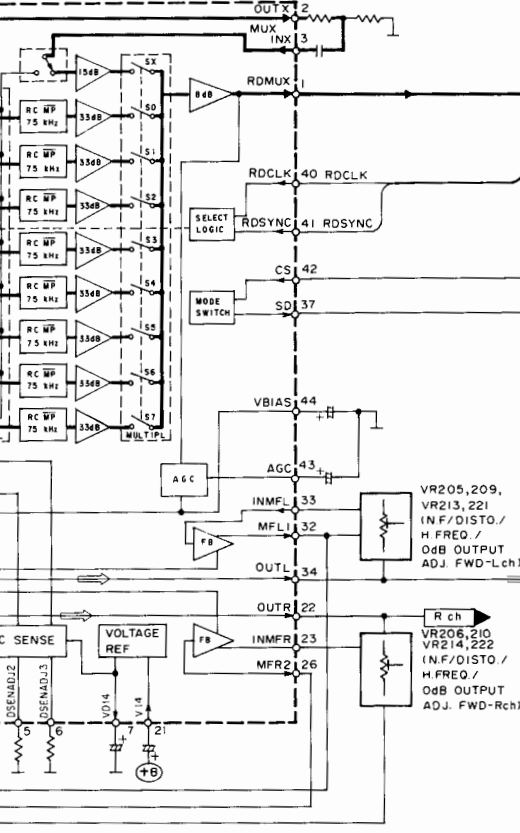
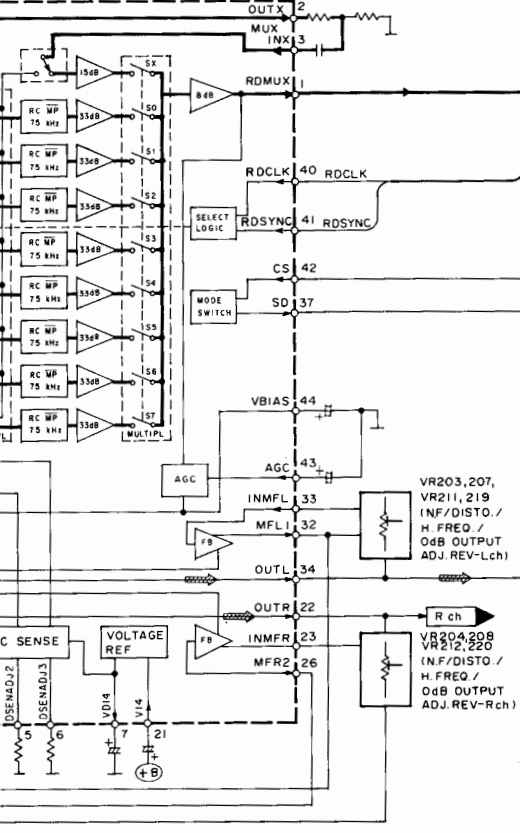


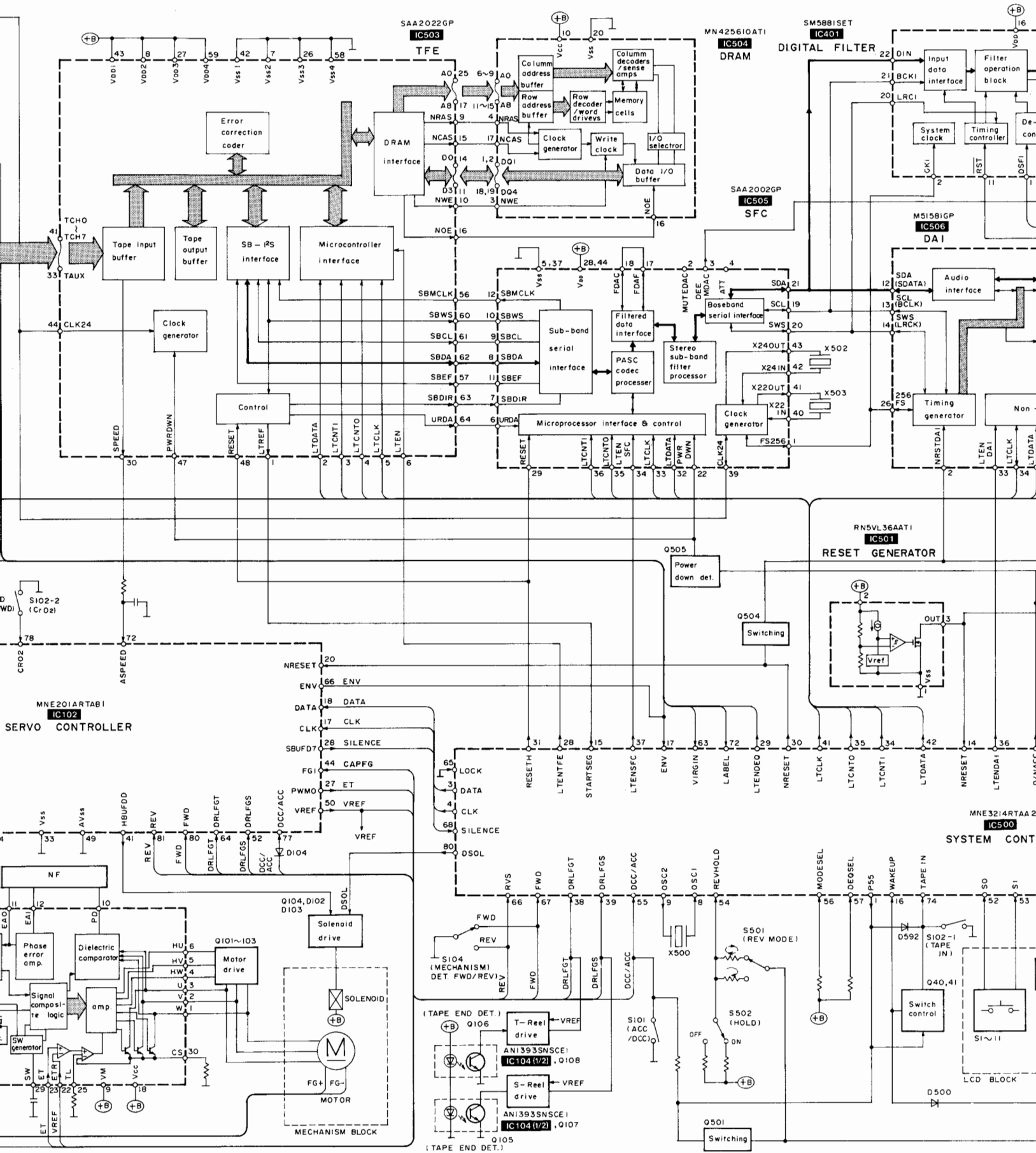
Y : 0.2V × 10  
X : 10ms

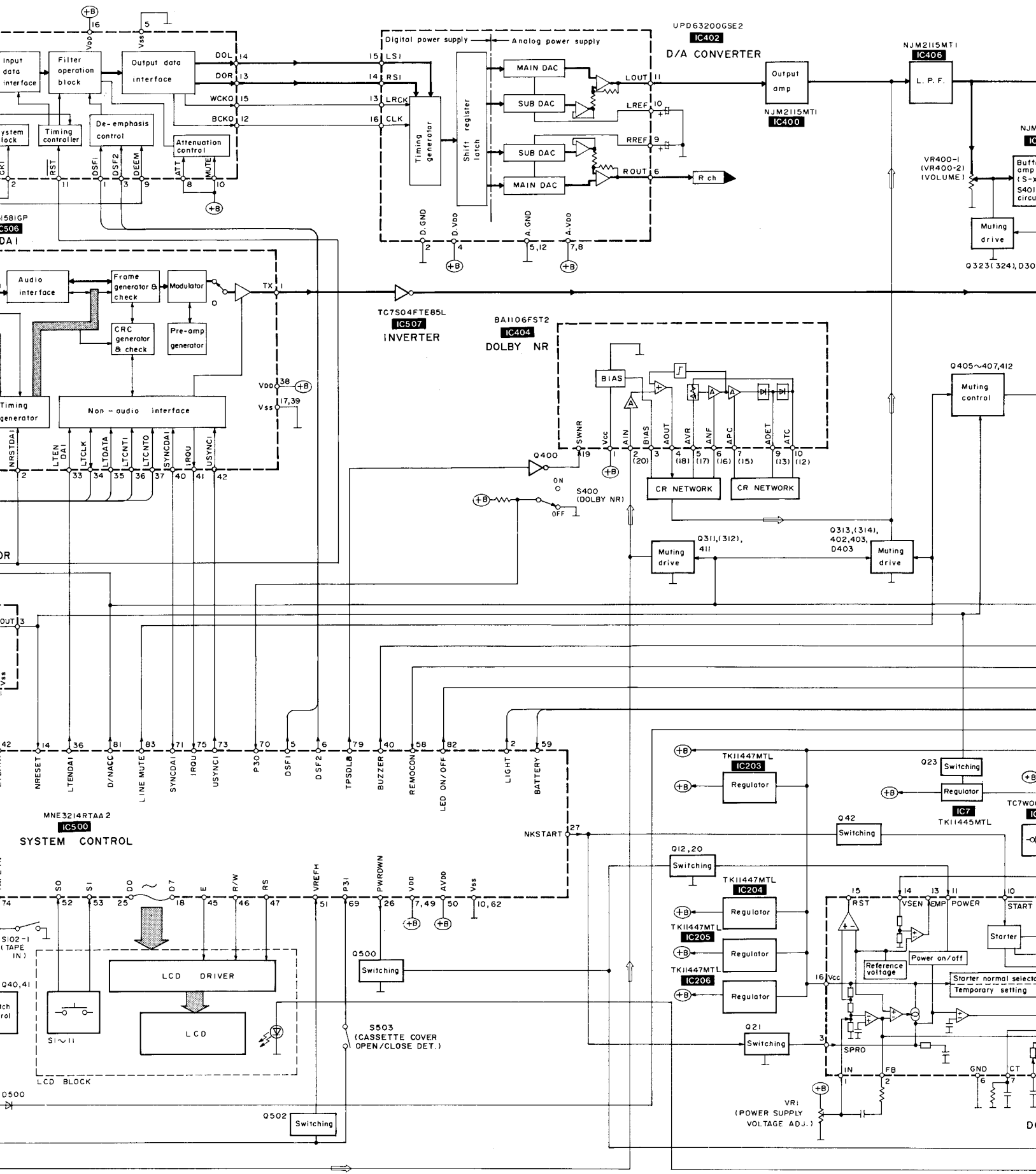
# BLOCK DIAGRAM

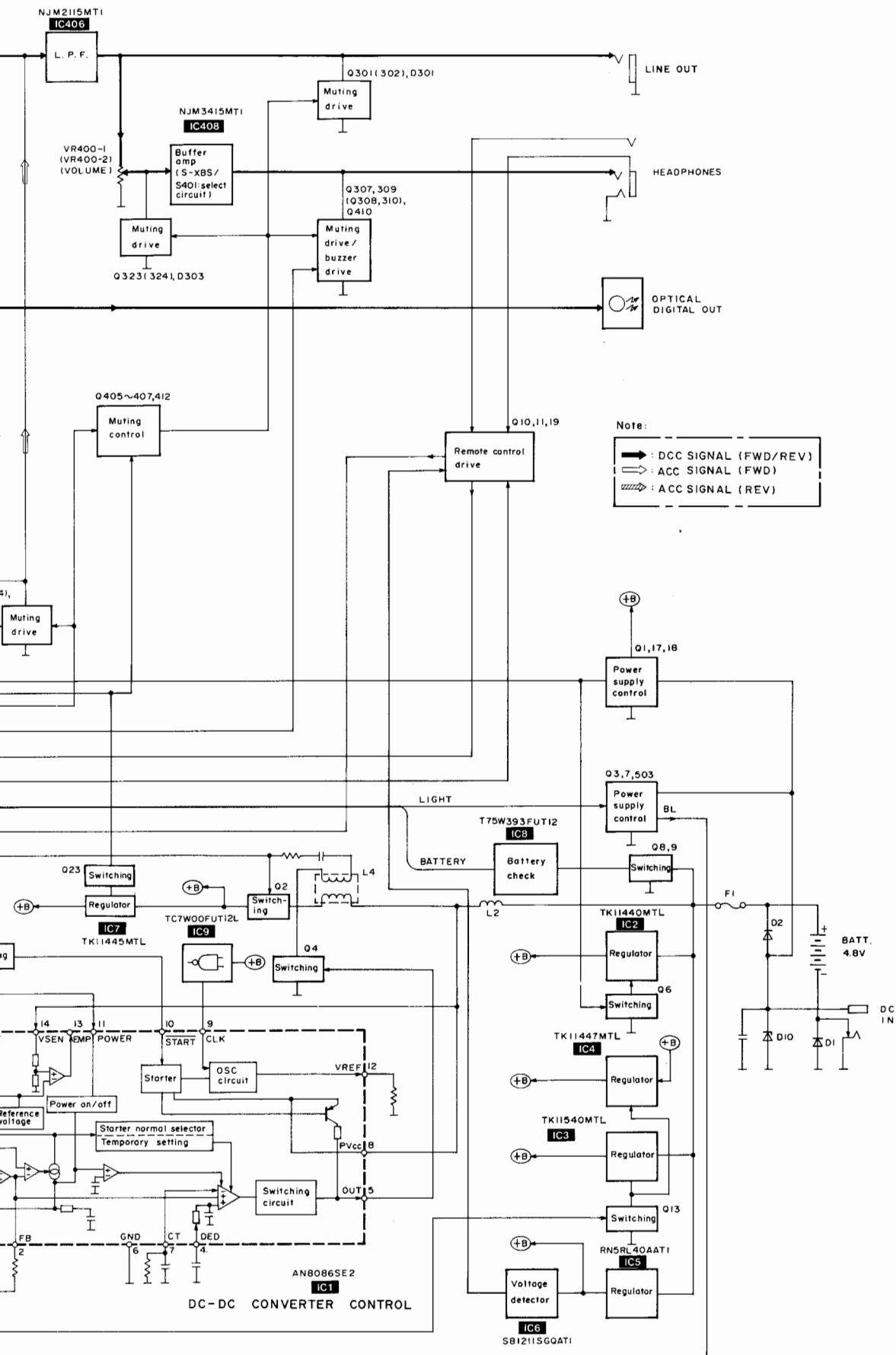


AMP (REV)







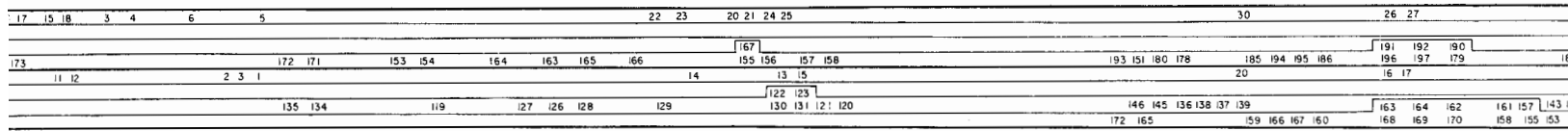
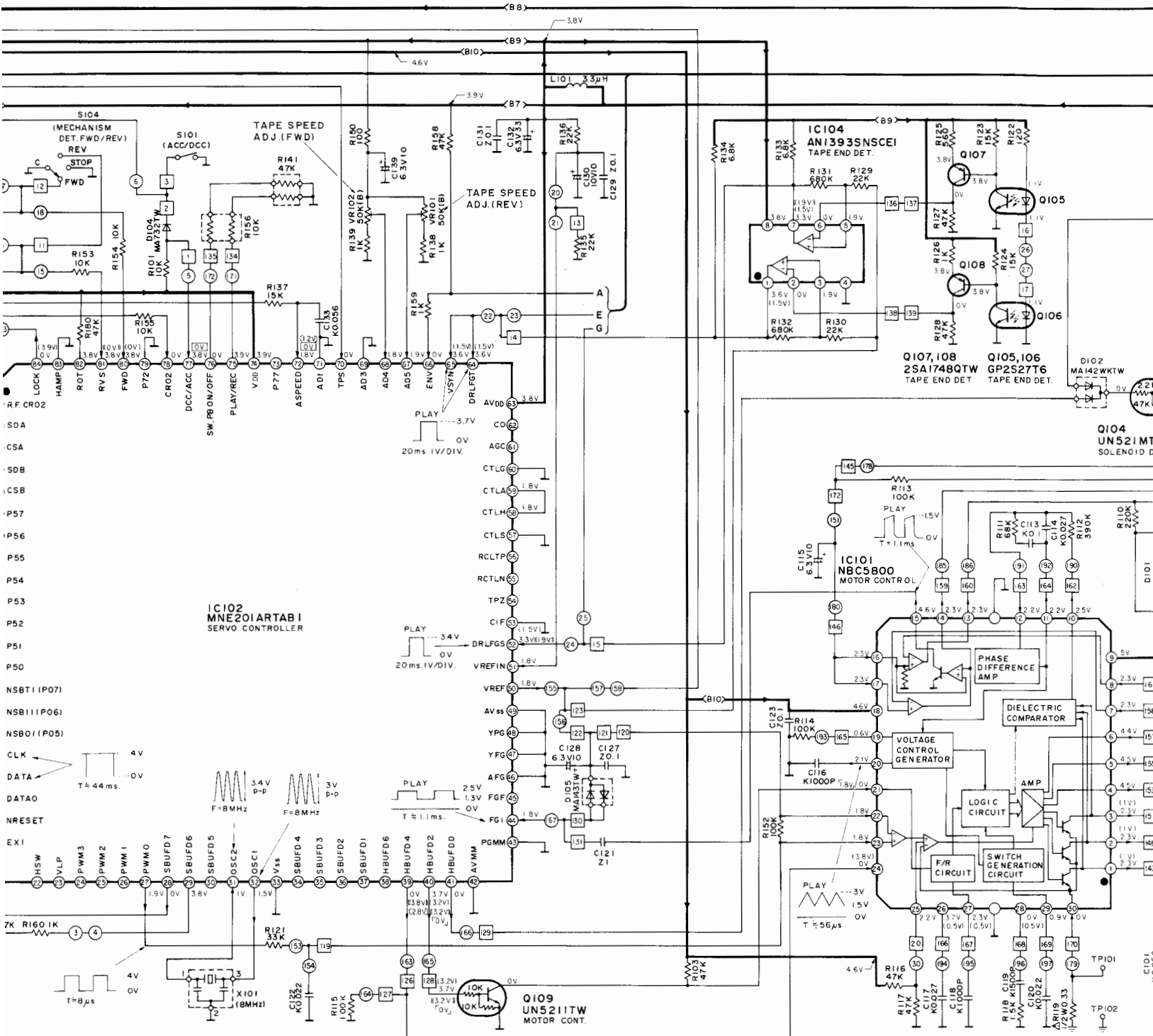


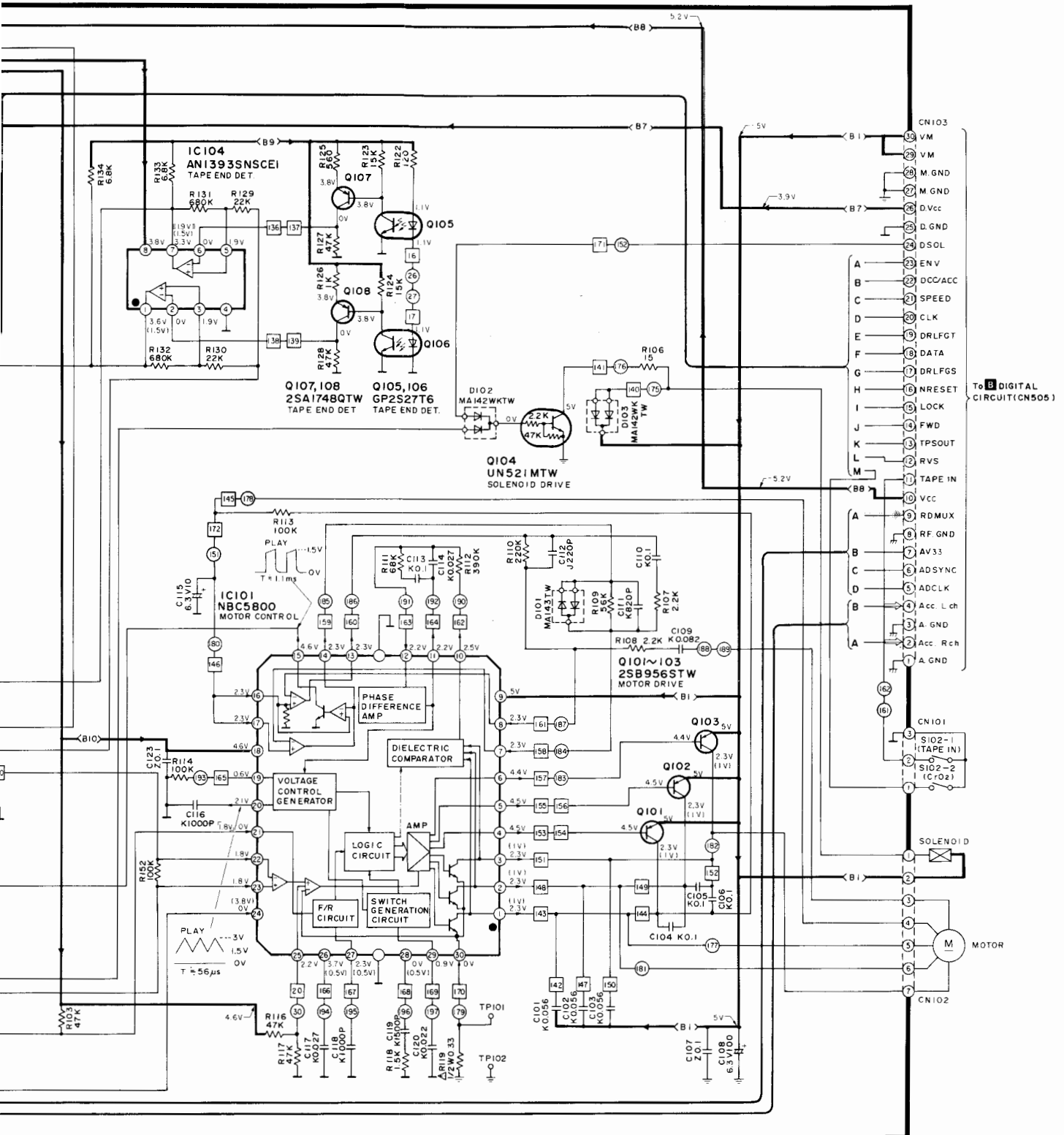




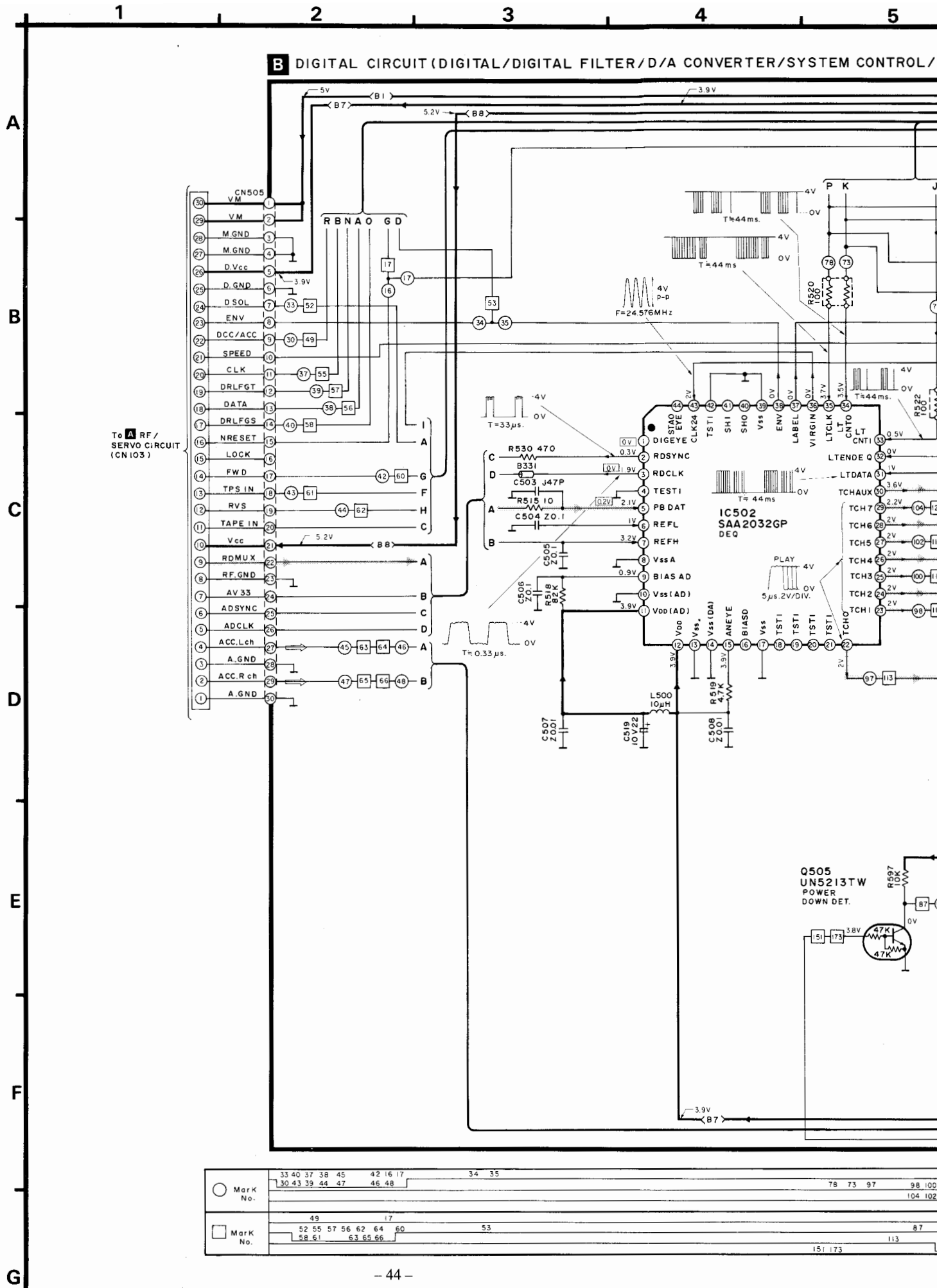




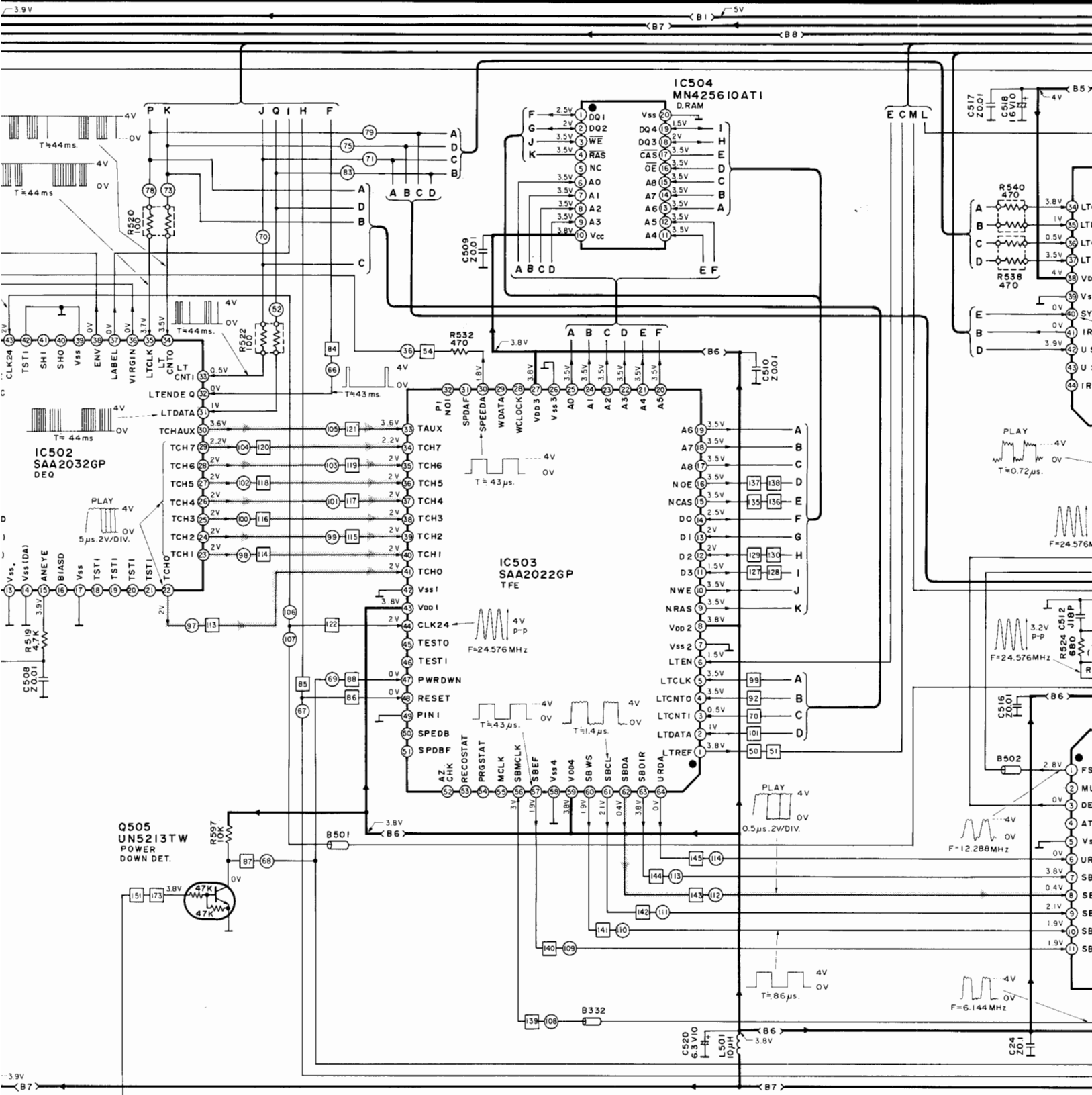




|                         |                 |             |                             |                 |         |         |
|-------------------------|-----------------|-------------|-----------------------------|-----------------|---------|---------|
| 193 151 180 178         | 185 194 195 186 | 191 192 190 | 187 184 183 152 176 175 181 | 188 189 177 182 | 161 162 | 1~50    |
| 20                      | 16 17           | 151 150     | 149 144                     |                 |         | 51~100  |
| 146 145 136 138 137 139 | 163 164 162     | 161 157     | 143 148 142 147 141 150 140 |                 |         | 101~150 |
| 172 165                 | 159 166 167 160 | 168 169 170 | 158 155 153 151 154 156 171 |                 |         | 151~197 |
|                         |                 |             |                             |                 |         | 1~50    |
|                         |                 |             |                             |                 |         | 51~100  |
|                         |                 |             |                             |                 |         | 101~150 |
|                         |                 |             |                             |                 |         | 151~173 |

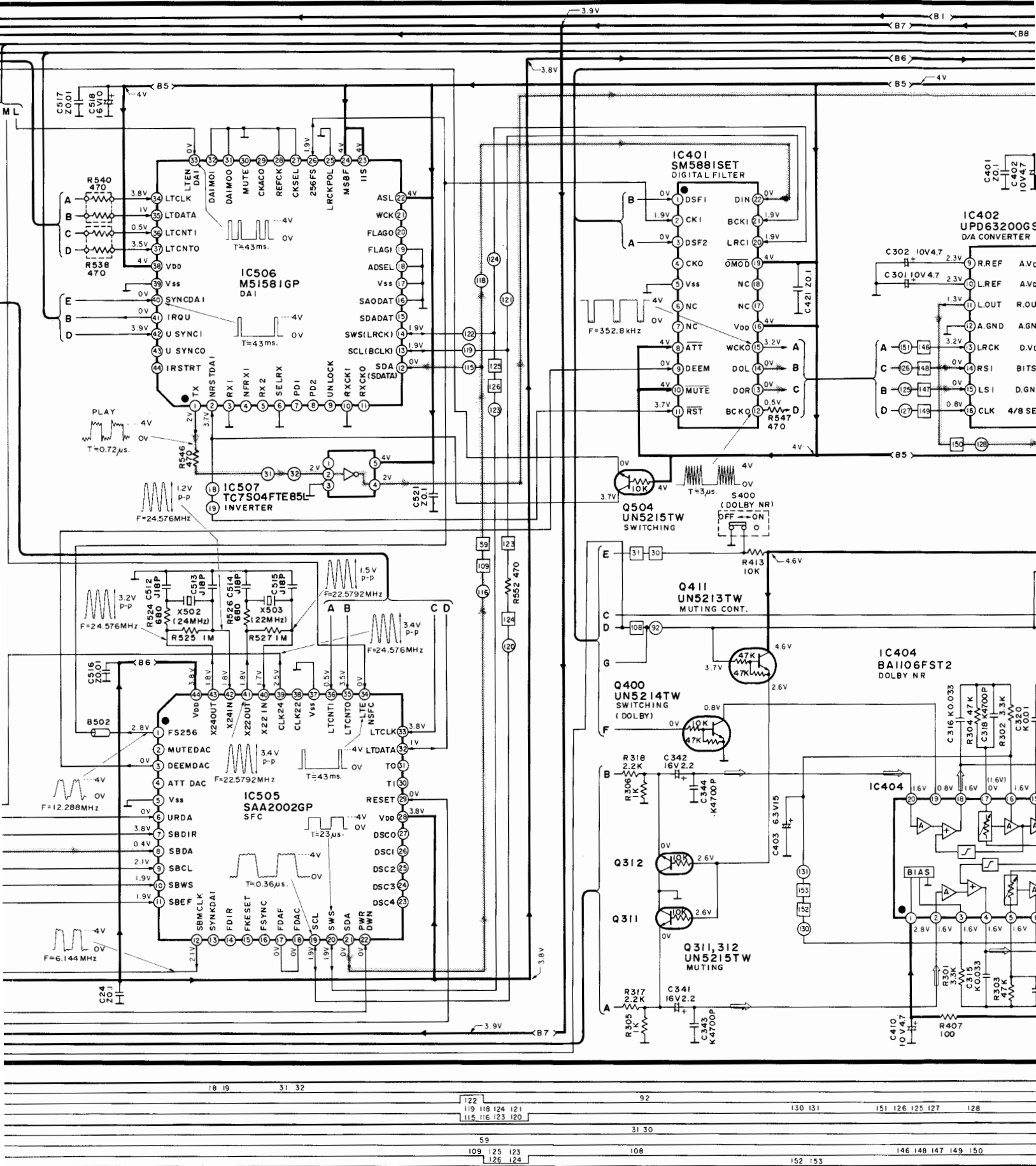


CONVERTER/SYSTEM CONTROL/FILTER AMP/DOLBY NR/BUFFER AMP/RESET/DC-DC CONVERTER/REGULATOR)



|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 78  | 73  | 97  | 52  | 99  | 75  | 79  | 36  |     |     |     |     |     |     |     |     |     |     |     |     |
| 98  | 100 | 68  | 70  | 67  | 66  | 69  | 83  | 71  |     |     |     |     |     |     |     |     |     |     |     |
| 104 | 102 | 106 | 107 | 101 | 103 | 105 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 108 | 109 | 110 | 111 | 113 | 112 | 114 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 87  | 85  | 84  | 86  | 88  | 54  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     | 99  | 92  | 70  | 51  |     |     |     |     |     |     |     |     |     |
| 151 | 173 | 113 | 120 | 118 | 122 | 121 | 119 | 139 | 140 | 141 | 142 | 144 | 143 | 145 | 137 | 135 | 136 | 138 | 101 |
|     |     |     | 116 | 114 | 117 | 115 |     |     |     |     |     |     |     |     | 123 | 127 | 130 | 128 |     |

(OR)



18 19 31 32

122 119 118 124 121 115 116 123 120

92

130 131

151 126 125 127 128

59 109 125 123 126 124

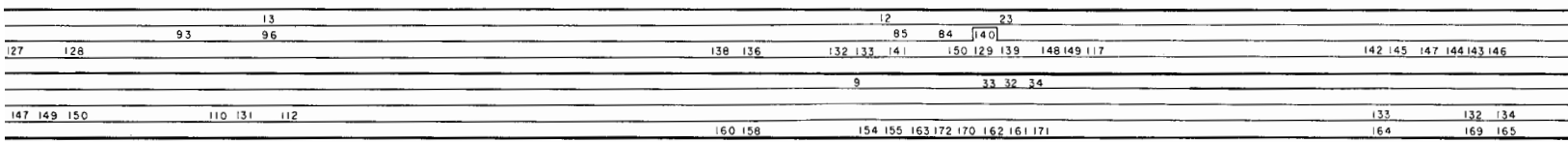
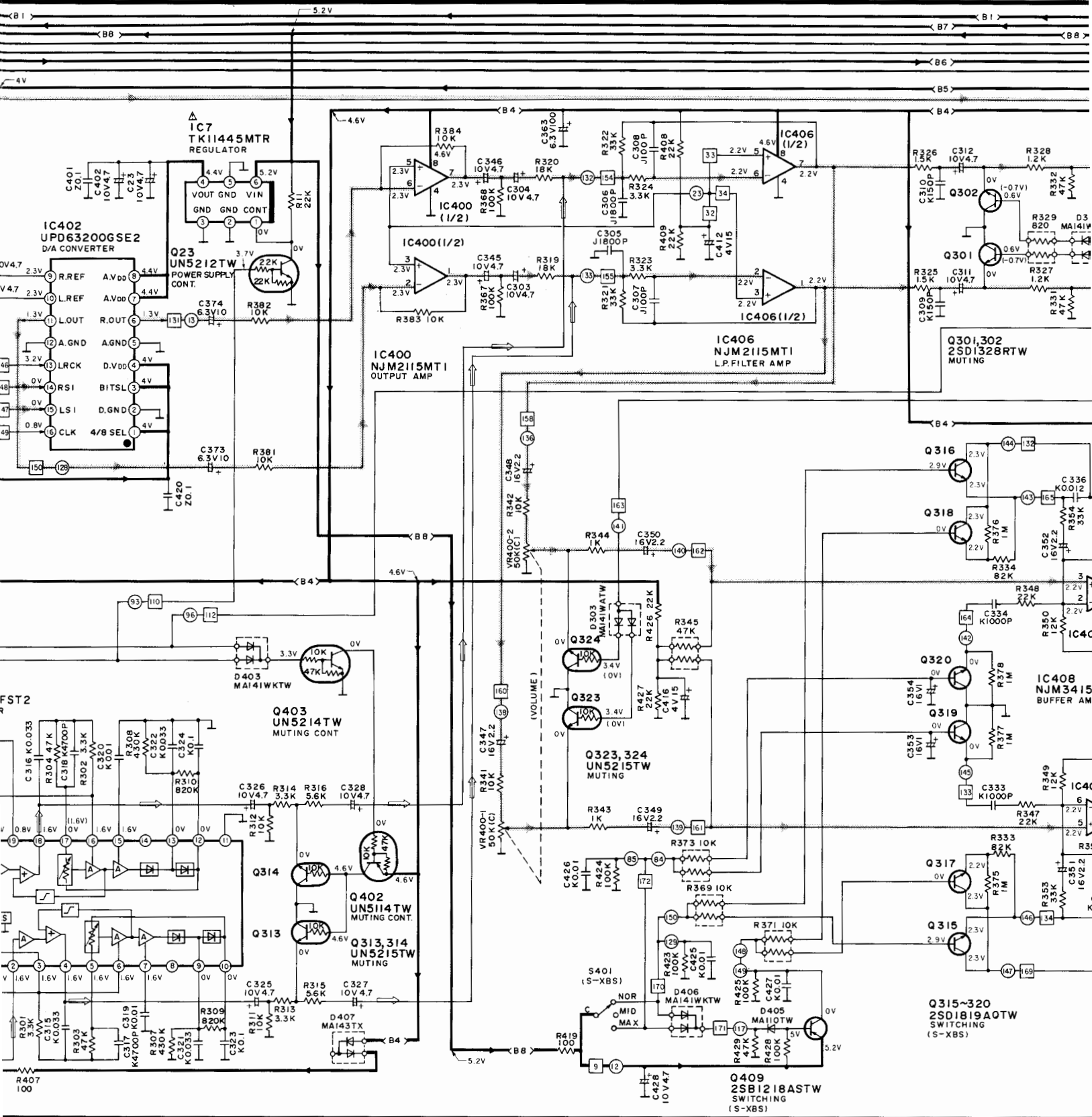
31 30

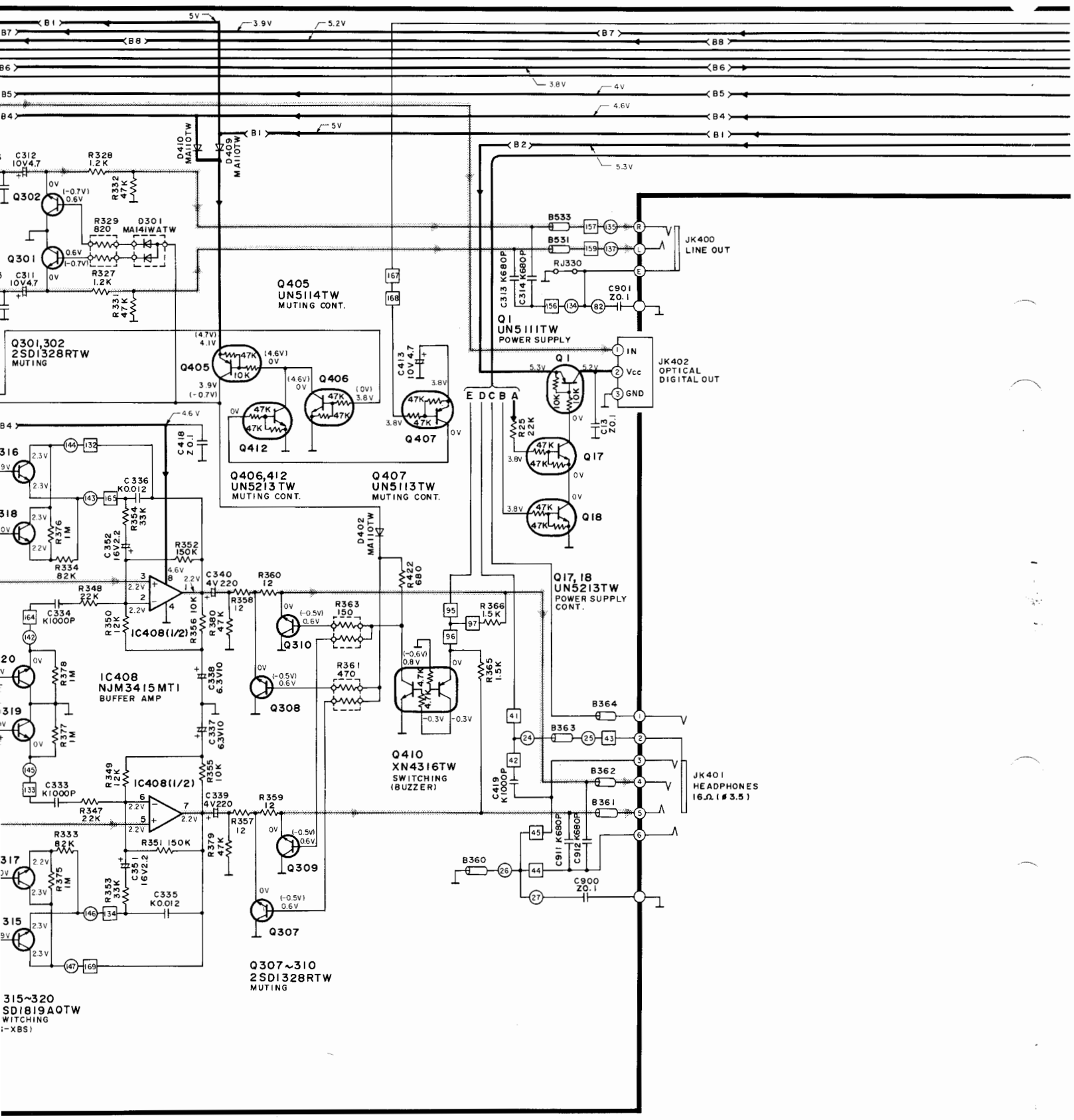
108

152 153

146 148 147 149 150



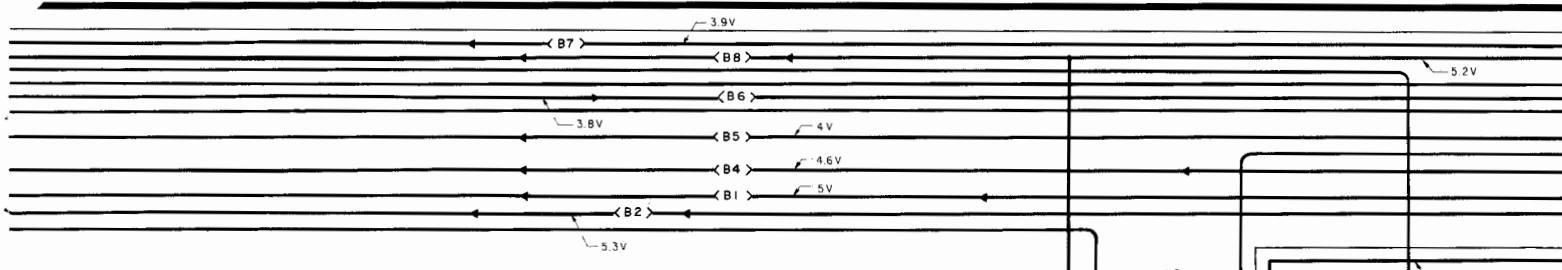




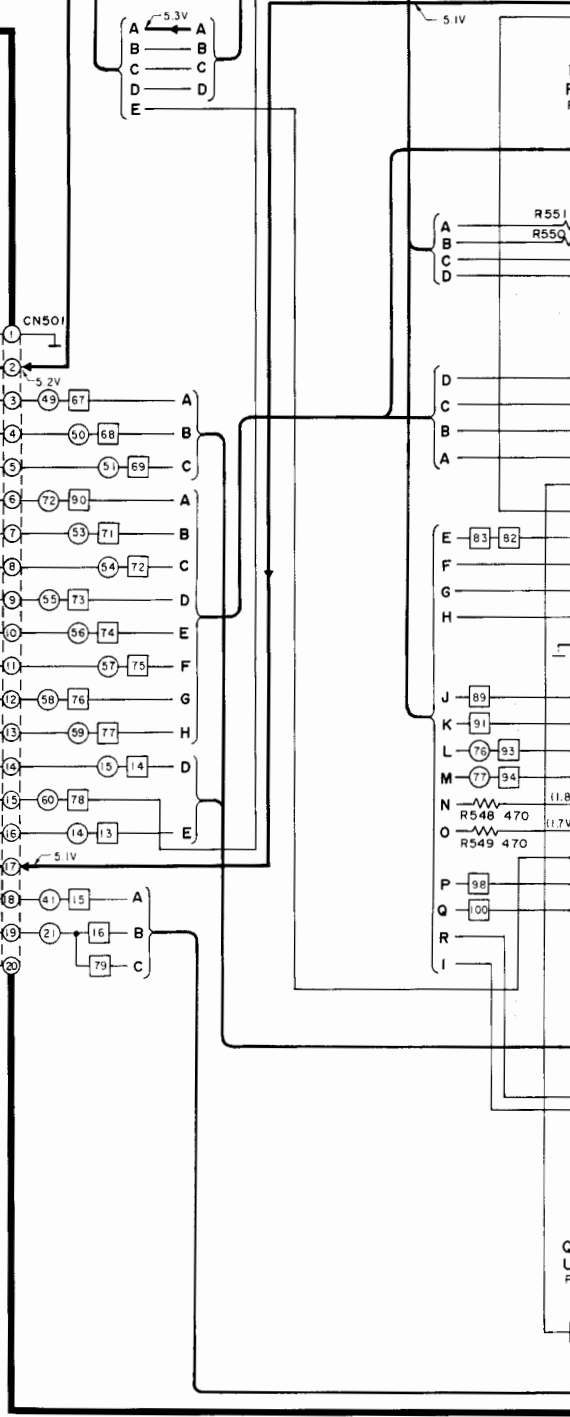
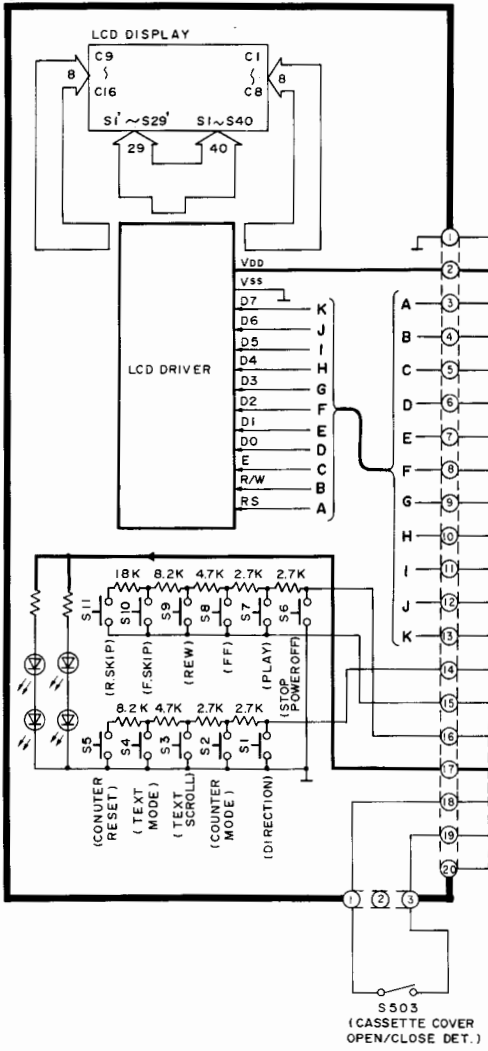
315~320  
SD1819A0TW  
WITCHING  
(-XBS)

|     |     |     |     |     |     |     |     |    |     |     |     |     |    |
|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|----|
| 142 | 145 | 147 | 144 | 143 | 146 | 26  | 24  | 27 | 25  | 82  |     |     |    |
|     |     |     |     |     |     |     |     |    |     | 134 | 135 | 137 |    |
|     |     |     |     |     |     |     |     |    |     |     |     |     |    |
|     |     |     |     |     |     | 95  | 96  | 97 | 41  | 42  | 44  | 45  | 43 |
| 133 | 132 | 134 |     |     |     |     |     |    |     |     |     |     |    |
| 164 | 169 | 165 |     |     |     | 167 | 168 |    | 156 | 157 | 159 |     |    |

○ Mark No.  
□ Mark No.

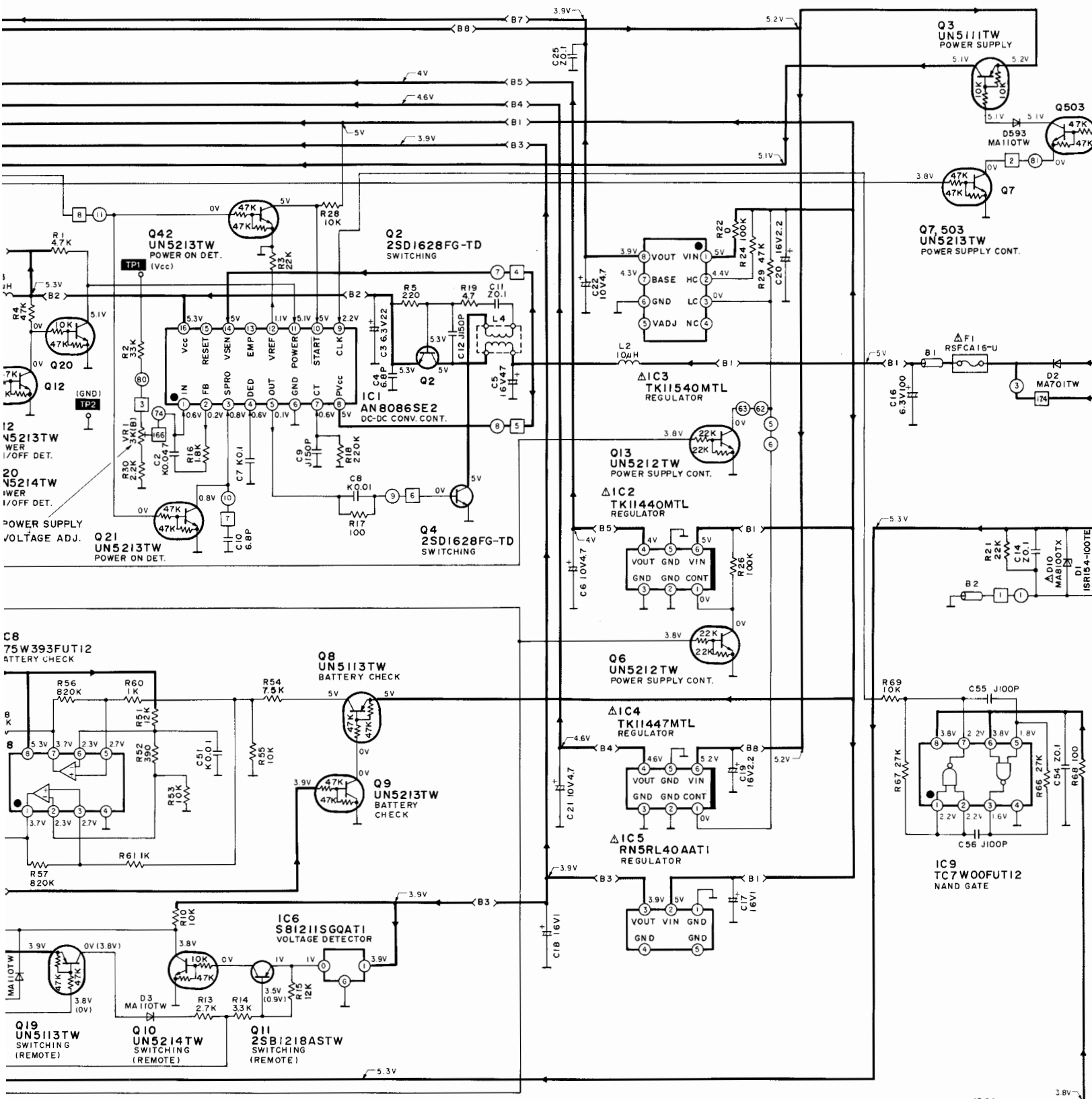


**C LCD CIRCUIT**

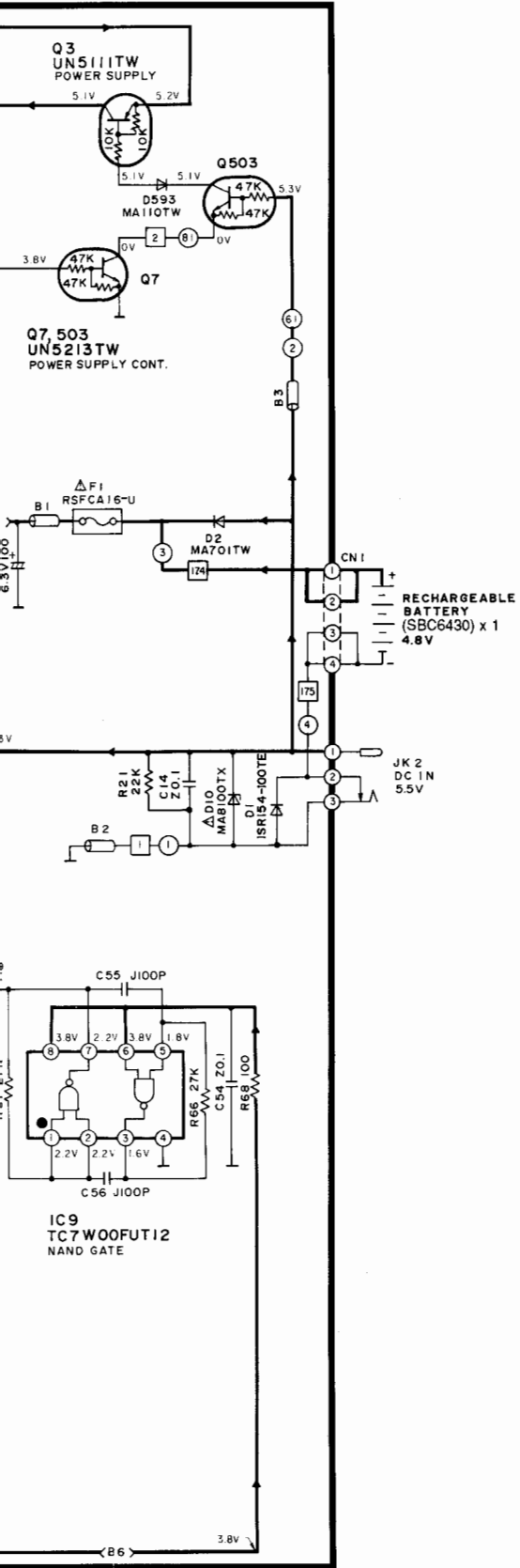


|            |                      |              |
|------------|----------------------|--------------|
| ○ Mark No. | 41 49 50 21 14 15    | 76 77        |
|            | 72 35 38 60 53 51 57 |              |
|            | 59 56 54             |              |
| □ Mark No. | 15 16 13 14          |              |
|            | 67 90 73 68 71 69 72 | 83 82 89 91  |
|            | 76 78 79 74 77 75    | 98 100 93 94 |





|    |    |    |    |   |   |   |   |   |    |    |   |   |
|----|----|----|----|---|---|---|---|---|----|----|---|---|
| 11 | 80 | 74 | 10 | 9 | 7 | 8 | 5 | 6 | 63 | 62 | 3 | 1 |
| 8  | 3  | 7  | 6  | 4 | 5 | 1 | 2 |   |    |    |   |   |



Note 2:

The supply part number is described alone in the replacement parts.

| Part No. | Production Part No. | Supply part No. |
|----------|---------------------|-----------------|
| IC408    | NJM3415MT1          | NJM3415M        |

Note 3:

**CAUTION:** FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE 1.6A 60V FUSE.

RISK OF FIRE-REPLACE FUSE AS MARKED.

**FUSE CAUTION**

This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating, refer to the marking adjacent to the symbol.

Ce symbole indique que le fusible utilisé est à rapide. Pour une protection permanente, n' utiliser que des fusibles de même type. Ce dernier est indiqué là où le présent symbole est apposé.

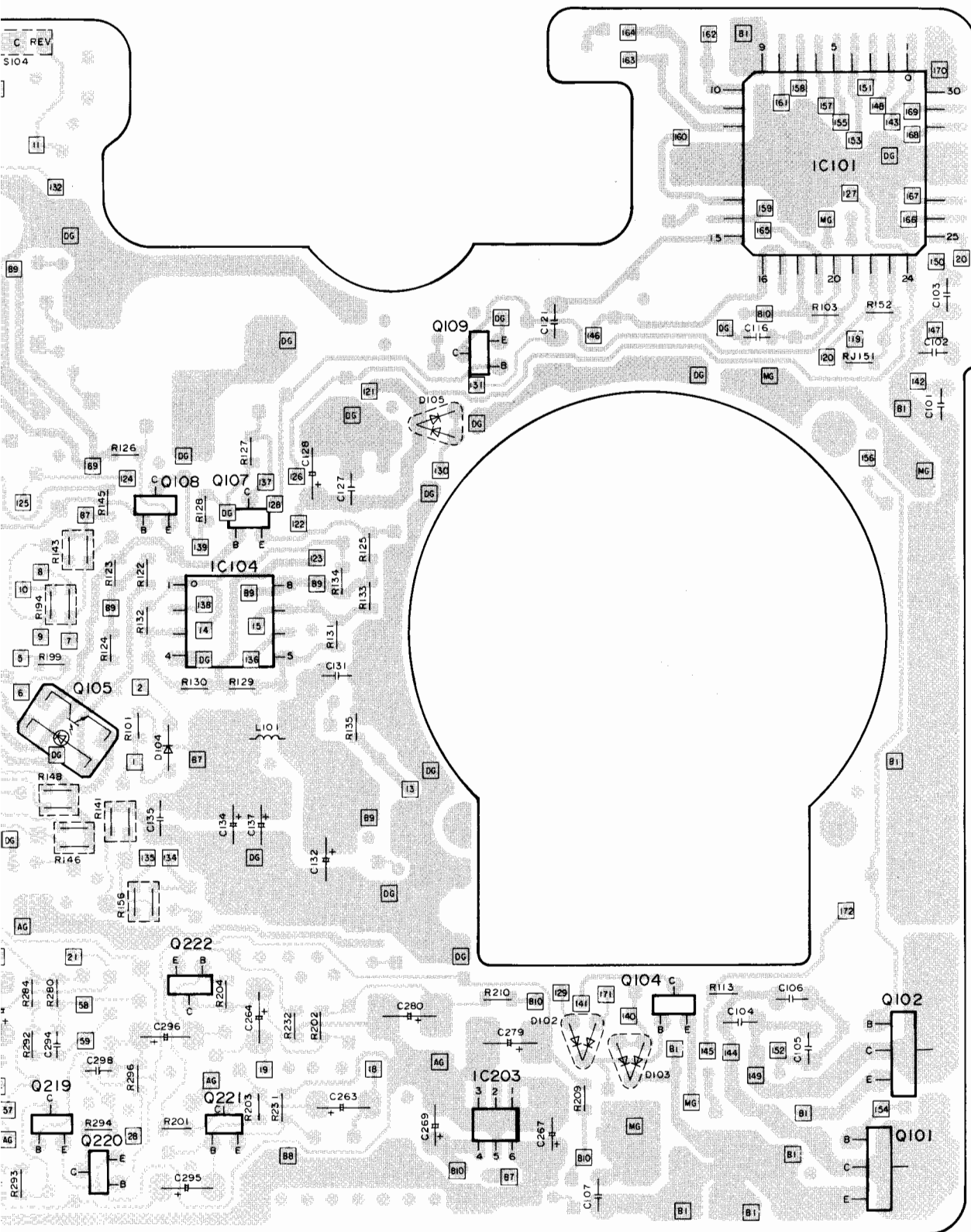
|     |     |           |
|-----|-----|-----------|
| 3 1 | 2 4 | 1 ~ 50    |
| 8 1 | 6 1 | 51 ~ 100  |
|     |     | 101 ~ 151 |
| 1 2 |     | 1 ~ 50    |
|     |     | 51 ~ 100  |
|     |     | 101 ~ 150 |
| 174 | 175 | 151 ~ 175 |





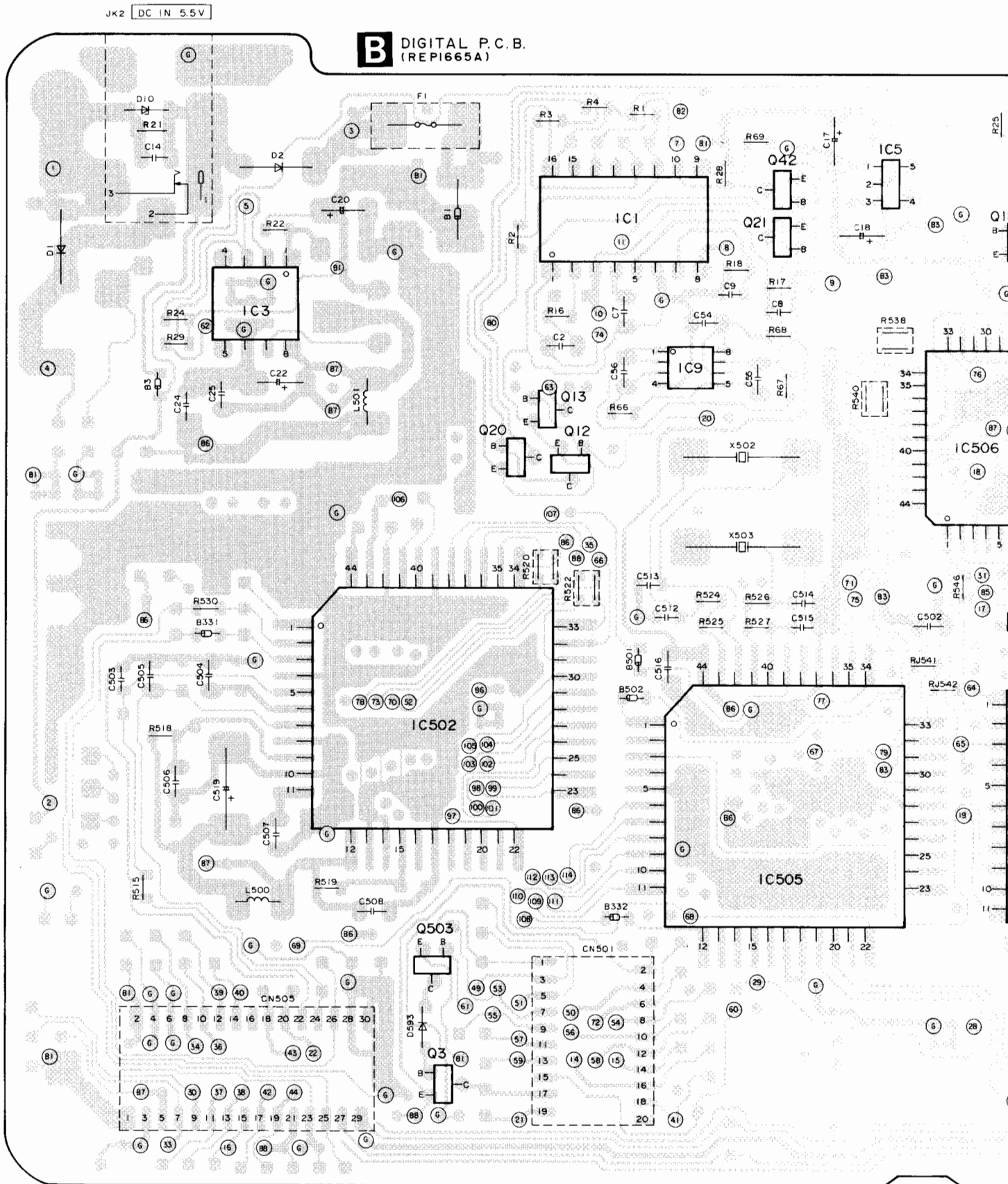




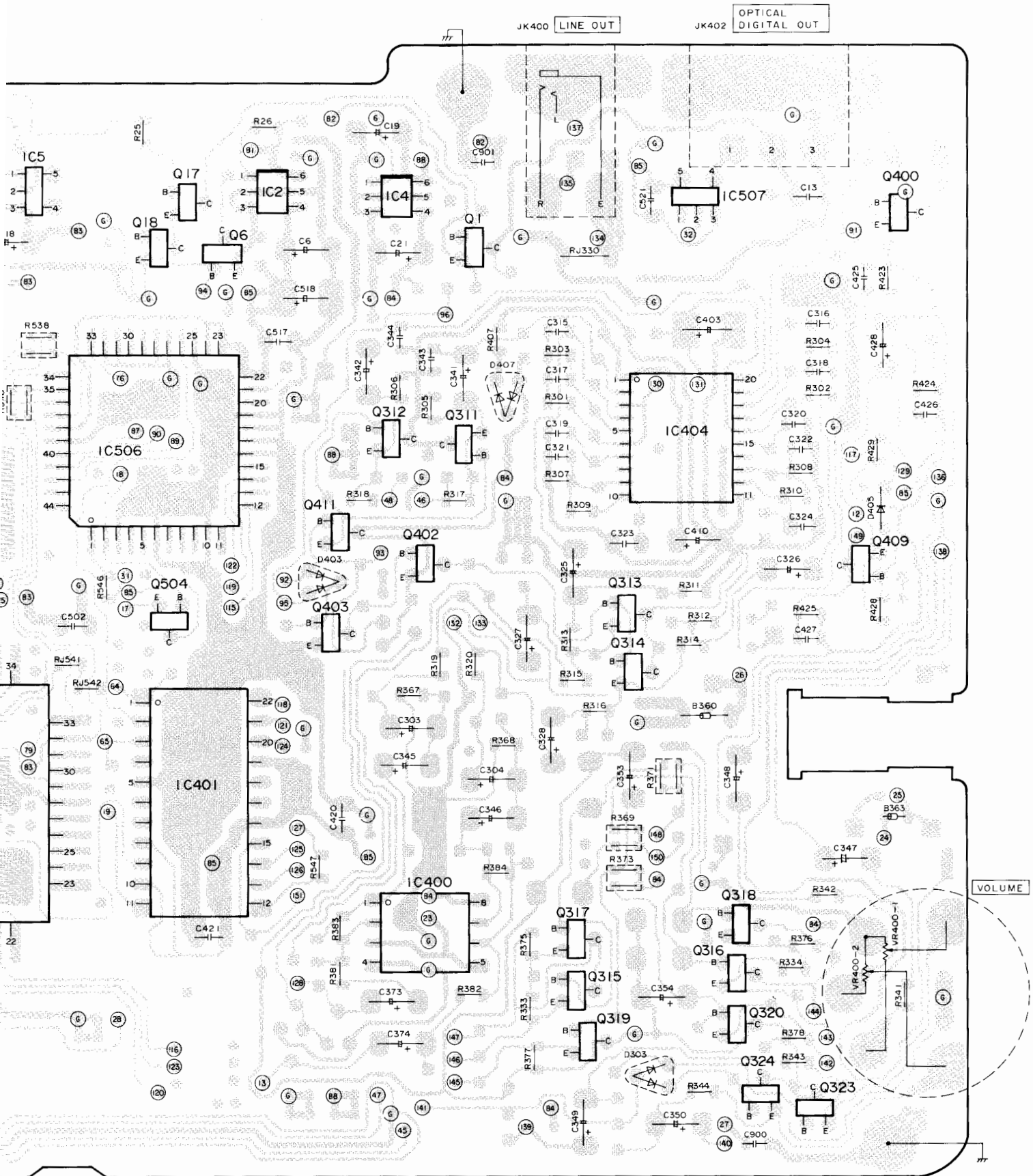


|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |          |     |     |     |     |     |     |     |     |     |     |     |     |           |     |     |     |     |     |     |     |     |     |     |           |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|
| 3   | 6   | 10  | 5   | 8   | 9   | 11  | 7   | 21  | 28  | 1   | 2   | 14  | 15  | 19  | 18  | 13  | 20  | 1 ~ 50   |     |     |     |     |     |     |     |     |     |     |     |     |           |     |     |     |     |     |     |     |     |     |     |           |
| 57  |     |     |     |     |     |     |     | 58  | 59  |     |     |     |     |     |     |     |     | 51 ~ 100 |     |     |     |     |     |     |     |     |     |     |     |     |           |     |     |     |     |     |     |     |     |     |     |           |
| 125 | 132 | 124 | 135 | 134 | 139 | 138 | 136 | 137 | 128 | 126 | 122 | 123 | 121 | 130 | 131 | 129 | 141 | 146      | 140 | 145 | 144 | 149 | 120 | 119 | 127 | 148 | 143 | 142 | 147 | 150 | 101 ~ 150 |     |     |     |     |     |     |     |     |     |     |           |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |          |     | 171 | 163 | 164 | 160 | 162 | 165 | 159 | 152 | 161 | 158 | 157 | 155       | 172 | 153 | 151 | 156 | 166 | 154 | 167 | 168 | 169 | 170 | 151 ~ 173 |

• Layer 1 pattern diagram



|   |   |   |    |    |    |    |    |    |    |    |   |    |    |    |    |    |   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|---|---|---|----|----|----|----|----|----|----|----|---|----|----|----|----|----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 2 | 1 | 4 | 33 | 30 | 34 | 39 | 37 | 36 | 16 | 40 | 5 | 38 | 42 | 43 | 44 | 22 | 3 | 49  | 21  | 50  | 14  | 35  | 10  | 15  | 11  | 7   | 41  | 20  | 8   | 29  | 9   | 19 | 28 | 18 | 17 | 31 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|   |   |   | 62 |    |    |    |    |    |    |    |   |    |    |    |    | 69 |   | 78  | 73  | 70  | 52  | 97  | 81  | 61  | 98  | 100 | 55  | 80  | 53  | 99  | 59  | 57 | 51 | 63 | 86 | 56 | 88 | 74 | 58 | 66 | 72 | 54 | 68 | 60 | 67 | 77 | 71 | 75 | 79 | 83 | 65 | 64 | 76 | 87 |
|   |   |   |    |    |    |    |    |    |    |    |   |    |    |    |    |    |   | 106 | 103 | 105 | 104 | 102 | 101 | 110 | 108 | 112 | 109 | 113 | 107 | 111 | 114 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

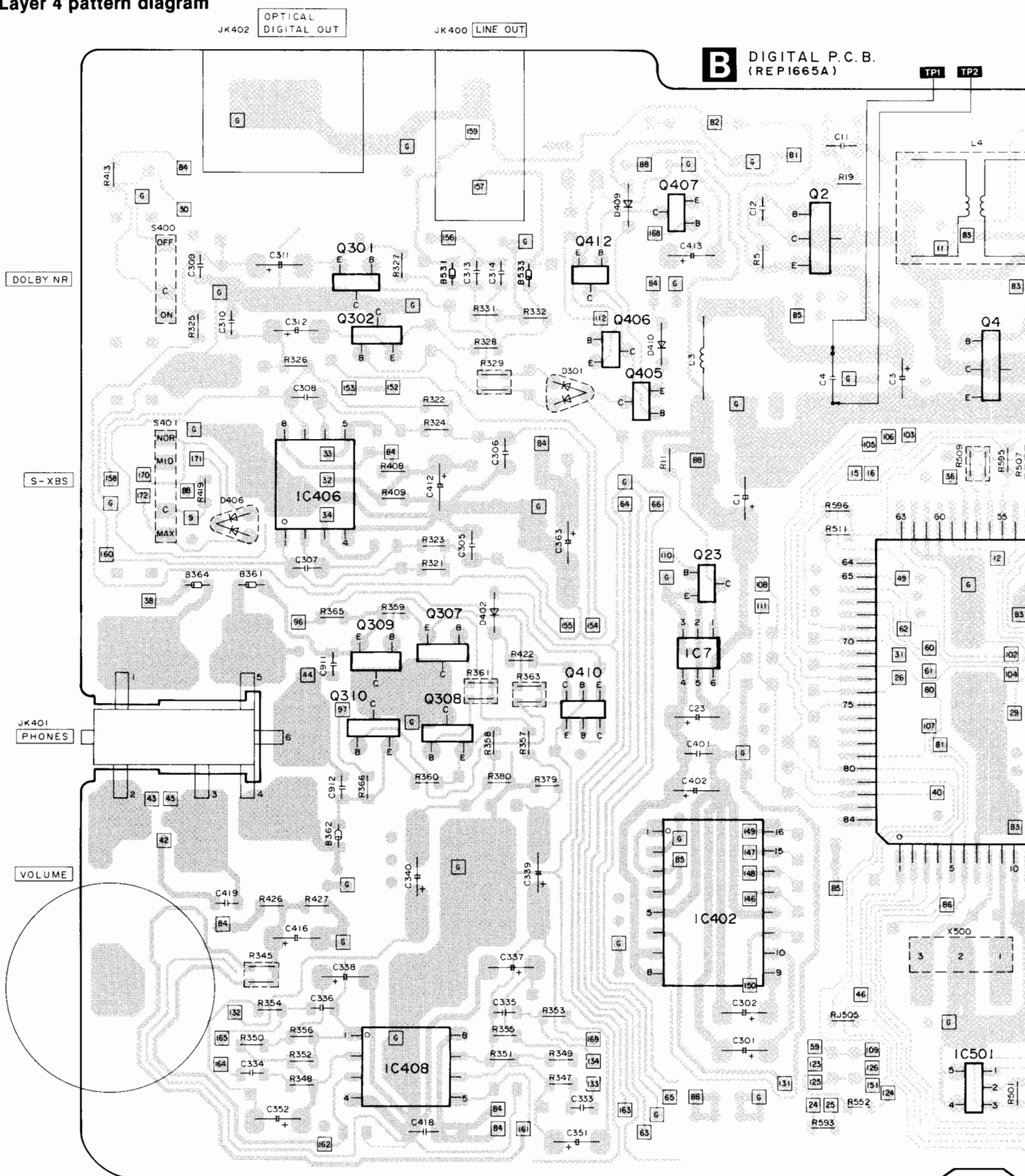


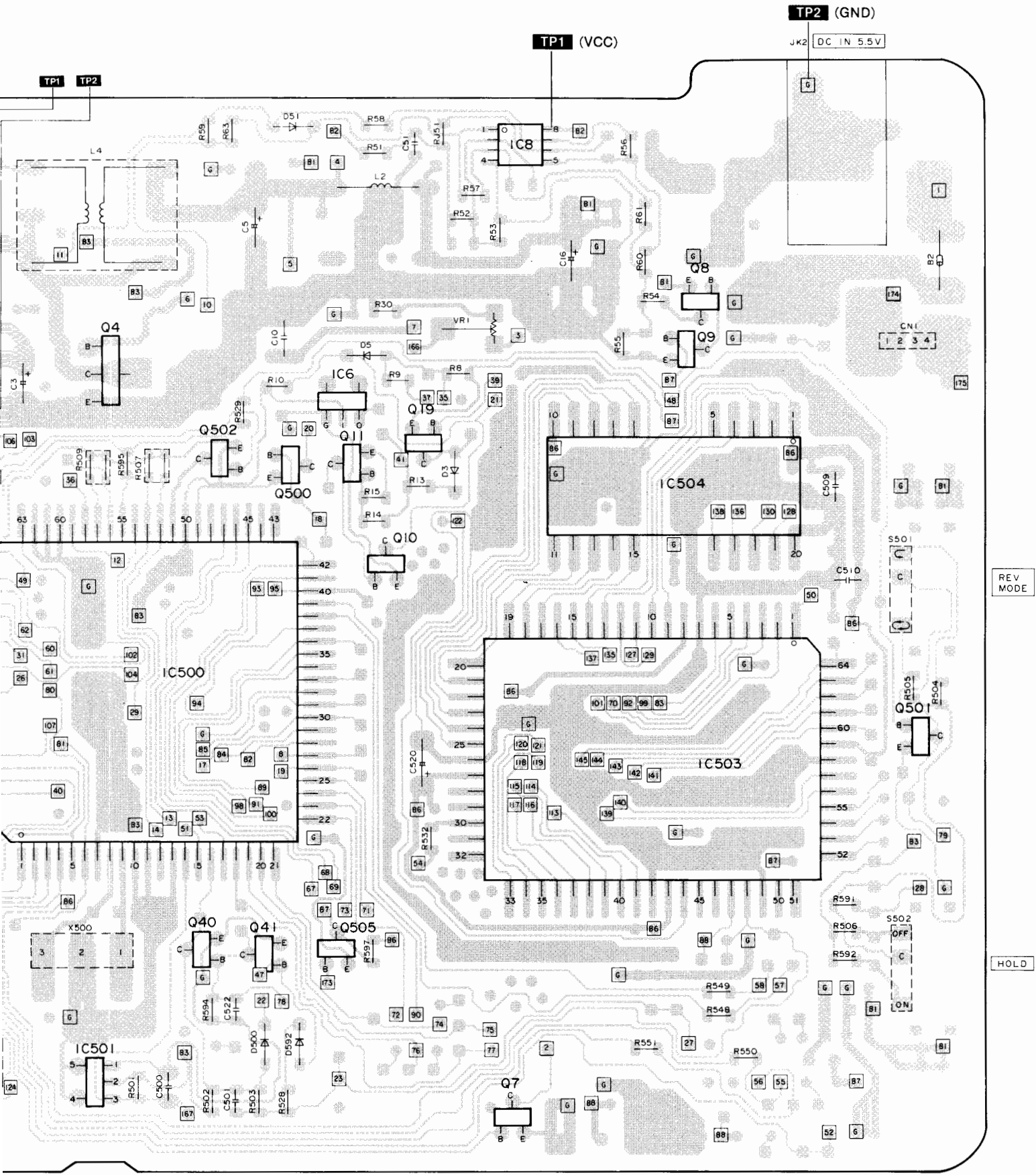
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |           |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|
| 19  | 28  | 18  | 17  | 31  | 13  | 47  | 6   | 48  | 45  | 46  | 23  | 32  | 27  | 26  | 12  | 24  | 25  | 1 ~ 50   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |           |
| 75  | 79  | 83  | 65  | 64  | 76  | 87  | 90  | 89  | 94  | 92  | 95  | 93  | 96  | 82  | 84  | 91  | 85  | 51 ~ 100 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |           |
| 120 | 116 | 123 | 122 | 119 | 115 | 118 | 121 | 151 | 128 | 127 | 125 | 126 | 124 | 141 | 147 | 132 | 146 | 145      | 133 | 139 | 135 | 137 | 134 | 130 | 148 | 150 | 131 | 140 | 149 | 144 | 143 | 142 | 117 | 129 | 136 | 138 | 101 ~ 151 |



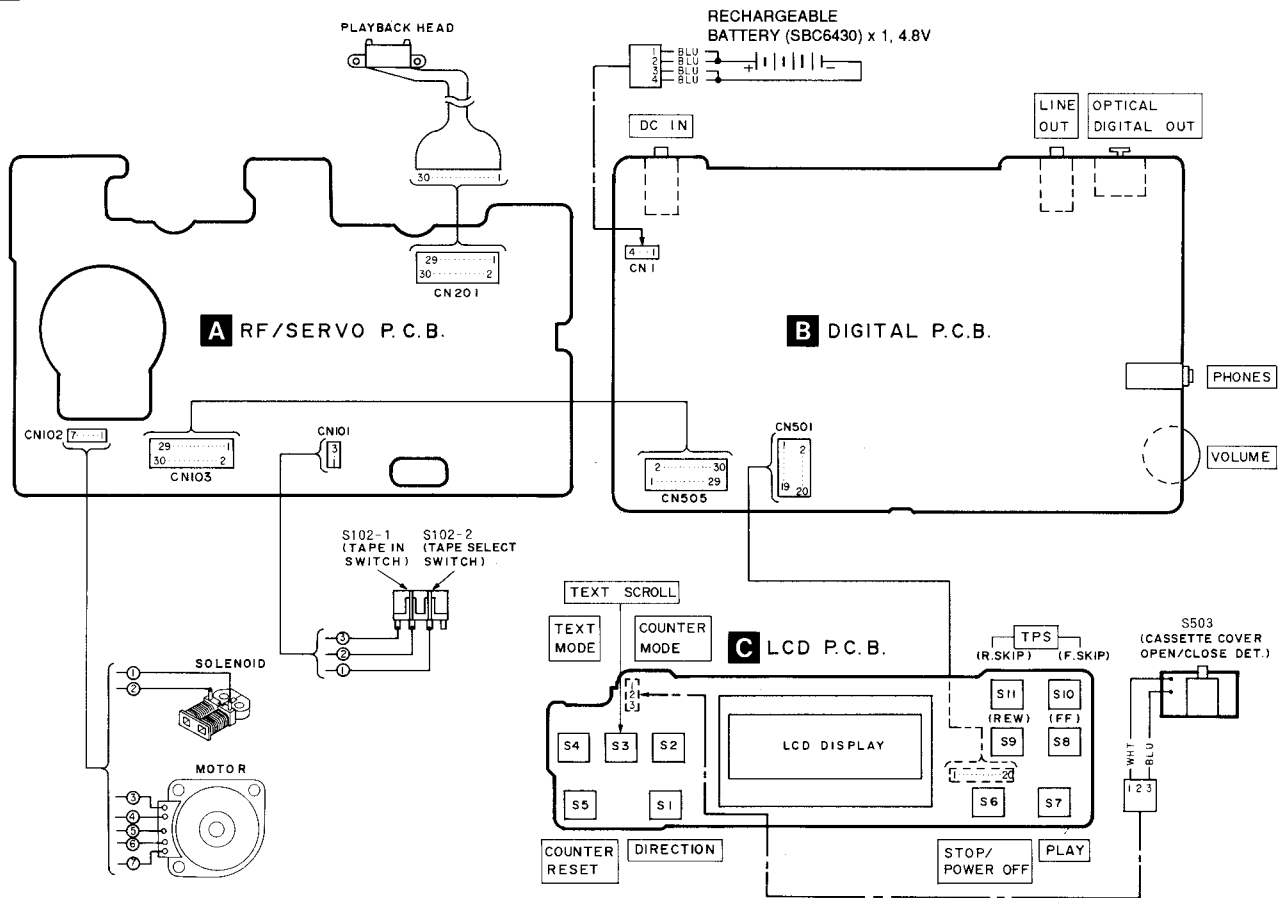
• Layer 4 pattern diagram

**B** DIGITAL P.C.B. (REPI665A)




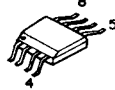

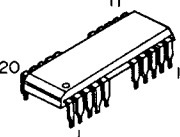
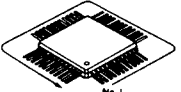
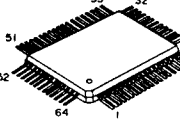
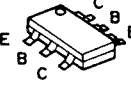
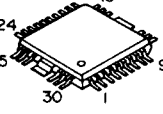













# WIRING CONNECTION DIAGRAM



## Terminal guide of IC's, transistors and diodes

|   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
|---|--|--------------|---|-----------|---|------------|--|---|-----------|---|-----------|------------|---|--------------|-----------|---|----------|--------------|--------------|---|---|---|--|-----------|---|---|------------|-------------|------------|--------------|-------------|---|---|----------|--|--|---------|--|--------------|--|
|  <p>No.1</p>   | <table border="1"> <tr><td>AN1393SNSCE1</td><td>8 Pin</td><td>AN8086SE2</td><td>16 Pin</td></tr> <tr><td>NJM2115MT1</td><td>8 Pin</td><td>UPD63200GSE2</td><td>16 Pin</td></tr> <tr><td>NJM3415MT1</td><td>8 Pin</td><td>BA1106FST2</td><td>20 Pin</td></tr> <tr><td>T75W393FUT12</td><td>8 Pin</td><td>SM5881SET</td><td>22 Pin</td></tr> <tr><td>TC7W00FUT12L</td><td>8 Pin</td><td></td><td></td></tr> </table> | AN1393SNSCE1 | 8 Pin   | AN8086SE2 | 16 Pin  | NJM2115MT1 | 8 Pin  | UPD63200GSE2  | 16 Pin    | NJM3415MT1  | 8 Pin     | BA1106FST2 | 20 Pin  | T75W393FUT12 | 8 Pin     | SM5881SET   | 22 Pin   | TC7W00FUT12L | 8 Pin        |   |   | <table border="1"> <tr><td>S81211SGQAT1</td><td></td></tr> </table>  | S81211SGQAT1   |           | <table border="1"> <tr><td>RN5VL36AAT1</td><td></td></tr> <tr><td>RN5RL40AAT1</td><td></td></tr> <tr><td>TC7S04FTE85L</td><td></td></tr> </table>  | RN5VL36AAT1   |            | RN5RL40AAT1 |            | TC7S04FTE85L |             | <table border="1"> <tr><td>TK11540MTL</td><td></td></tr> </table>  | TK11540MTL  |          |  |  |         |  |              |  |
| AN1393SNSCE1  | 8 Pin  | AN8086SE2    | 16 Pin  |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| NJM2115MT1  | 8 Pin  | UPD63200GSE2 | 16 Pin  |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| NJM3415MT1  | 8 Pin  | BA1106FST2   | 20 Pin  |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| T75W393FUT12  | 8 Pin  | SM5881SET    | 22 Pin  |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| TC7W00FUT12L  | 8 Pin  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| S81211SGQAT1  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| RN5VL36AAT1   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| RN5RL40AAT1   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| TC7S04FTE85L  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| TK11540MTL  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| <table border="1"> <tr><td>TK11440MTL</td><td></td></tr> <tr><td>TK11445MTL</td><td></td></tr> <tr><td>TK11447MTL</td><td></td></tr> </table>  | TK11440MTL   |              | TK11445MTL  |           | TK11447MTL  |            | <table border="1"> <tr><td>MN425610AT1</td><td></td></tr> </table>  | MN425610AT1   |           | <table border="1"> <tr><td>M51581GP</td><td>44 Pin</td></tr> <tr><td>SAA2002GP</td><td>44 Pin</td></tr> <tr><td>SAA2032GP</td><td>44 Pin</td></tr> <tr><td>TDA1318H</td><td>44 Pin</td></tr> <tr><td>MNE201ARTAB1</td><td>84 Pin</td></tr> <tr><td>MNE3214RTAA2</td><td>84 Pin</td></tr> </table>  | M51581GP  | 44 Pin     | SAA2002GP   | 44 Pin       | SAA2032GP | 44 Pin  | TDA1318H | 44 Pin       | MNE201ARTAB1 | 84 Pin  | MNE3214RTAA2  | 84 Pin  | <table border="1"> <tr><td>SAA2022GP</td><td></td></tr> </table>  | SAA2022GP |   | <table border="1"> <tr><td>XN4316TW</td><td></td></tr> </table>  | XN4316TW   |             |            |              |             |   |   |          |  |  |         |  |              |  |
| TK11440MTL  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| TK11445MTL  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| TK11447MTL  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| MN425610AT1   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| M51581GP  | 44 Pin   |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| SAA2002GP   | 44 Pin   |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| SAA2032GP   | 44 Pin   |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| TDA1318H  | 44 Pin   |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| MNE201ARTAB1  | 84 Pin   |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| MNE3214RTAA2  | 84 Pin   |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| SAA2022GP   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| XN4316TW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| <table border="1"> <tr><td>NBC5800</td><td></td></tr> </table>   | NBC5800  |              | <table border="1"> <tr><td>UN5111TW</td><td></td></tr> <tr><td>UN5113TW</td><td></td></tr> <tr><td>UN5114TW</td><td></td></tr> <tr><td>UN521MTW</td><td></td></tr> <tr><td>UN5211TW</td><td></td></tr> <tr><td>UN5212TW</td><td></td></tr> <tr><td>UN5213TW</td><td></td></tr> <tr><td>UN5214TW</td><td></td></tr> </table>  | UN5111TW  |   | UN5113TW   |  | UN5114TW  |           | UN521MTW  |           | UN5211TW   |   | UN5212TW     |           | UN5213TW  |          | UN5214TW     |              | <table border="1"> <tr><td>UN5215TW</td><td></td></tr> <tr><td>2SA1748QTW</td><td></td></tr> <tr><td>2SB1218ASTW</td><td></td></tr> <tr><td>2SC4081RTW</td><td></td></tr> <tr><td>2SD1328RTW</td><td></td></tr> <tr><td>2SD1819AQTW</td><td></td></tr> </table> | UN5215TW  |   | 2SA1748QTW   |           | 2SB1218ASTW   |   | 2SC4081RTW |             | 2SD1328RTW |              | 2SD1819AQTW |   | <table border="1"> <tr><td>MA8100TX</td><td></td></tr> </table>  | MA8100TX |  | <table border="1"> <tr><td>MA701TW</td><td></td></tr> <tr><td>1SR154-100TE</td><td></td></tr> </table>  | MA701TW |  | 1SR154-100TE |  |
| NBC5800   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| UN5111TW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| UN5113TW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| UN5114TW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| UN521MTW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| UN5211TW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| UN5212TW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| UN5213TW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| UN5214TW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| UN5215TW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| 2SA1748QTW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| 2SB1218ASTW   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| 2SC4081RTW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| 2SD1328RTW  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| 2SD1819AQTW   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| MA8100TX  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| MA701TW   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| 1SR154-100TE  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| <table border="1"> <tr><td>2SB956STW</td><td></td></tr> <tr><td>2SD1628FG-TD</td><td></td></tr> </table>                                       | 2SB956STW  |              | 2SD1628FG-TD  |           | <table border="1"> <tr><td>GP2S27T6</td><td></td></tr> </table>  | GP2S27T6   |  | <table border="1"> <tr><td>MA141WKTW</td><td></td></tr> <tr><td>MA142WKTW</td><td></td></tr> </table>  | MA141WKTW |   | MA142WKTW |            | <table border="1"> <tr><td>MA141WATW</td><td></td></tr> </table>  | MA141WATW    |           | <table border="1"> <tr><td>MA143TW</td><td></td></tr> <tr><td>MA143TX</td><td></td></tr> </table>  | MA143TW  |              | MA143TX      |   | <table border="1"> <tr><td>MA110TW</td><td></td></tr> <tr><td>MA732TW</td><td></td></tr> </table>  | MA110TW   |  | MA732TW   |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| 2SB956STW   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| 2SD1628FG-TD  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| GP2S27T6  |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| MA141WKTW   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| MA142WKTW   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| MA141WATW   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| MA143TW   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| MA143TX   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| MA110TW   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |
| MA732TW   |  |              |   |           |   |            |  |   |           |   |           |            |   |              |           |   |          |              |              |   |   |   |  |           |   |   |            |             |            |              |             |   |   |          |  |  |         |  |              |  |

# SCHEMATIC DIAGRAM

## Note 1:

• The voltage value and waveforms are the reference voltage of this (connect the AC adaptor and portable DC player) measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of GND terminal (DC IN Jack).

Accordingly, there may arise some errors in the voltage values and waveforms depending upon the internal impedance of the tester or measuring unit.

## • Important safety notice:

Components identified by  $\triangle$  mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.


## Note 2:


**CAUTION:** FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE 2.0A 250V FUSE.



RISK OF FIRE-REPLACE FUSE AS MARKED.

### FUSE CAUTION

 This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating, refer to the marking adjacent to the symbol.

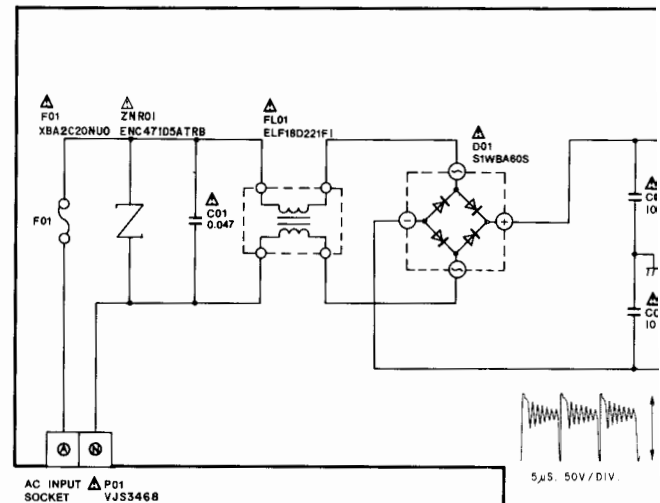
 Ce symbole indique que le fusible utilisé est à rapide. Pour une protection permanente, n' utiliser que des fusibles de même type. Ce dernier est indiqué là où le présent symbole est apposé.

## Caution!

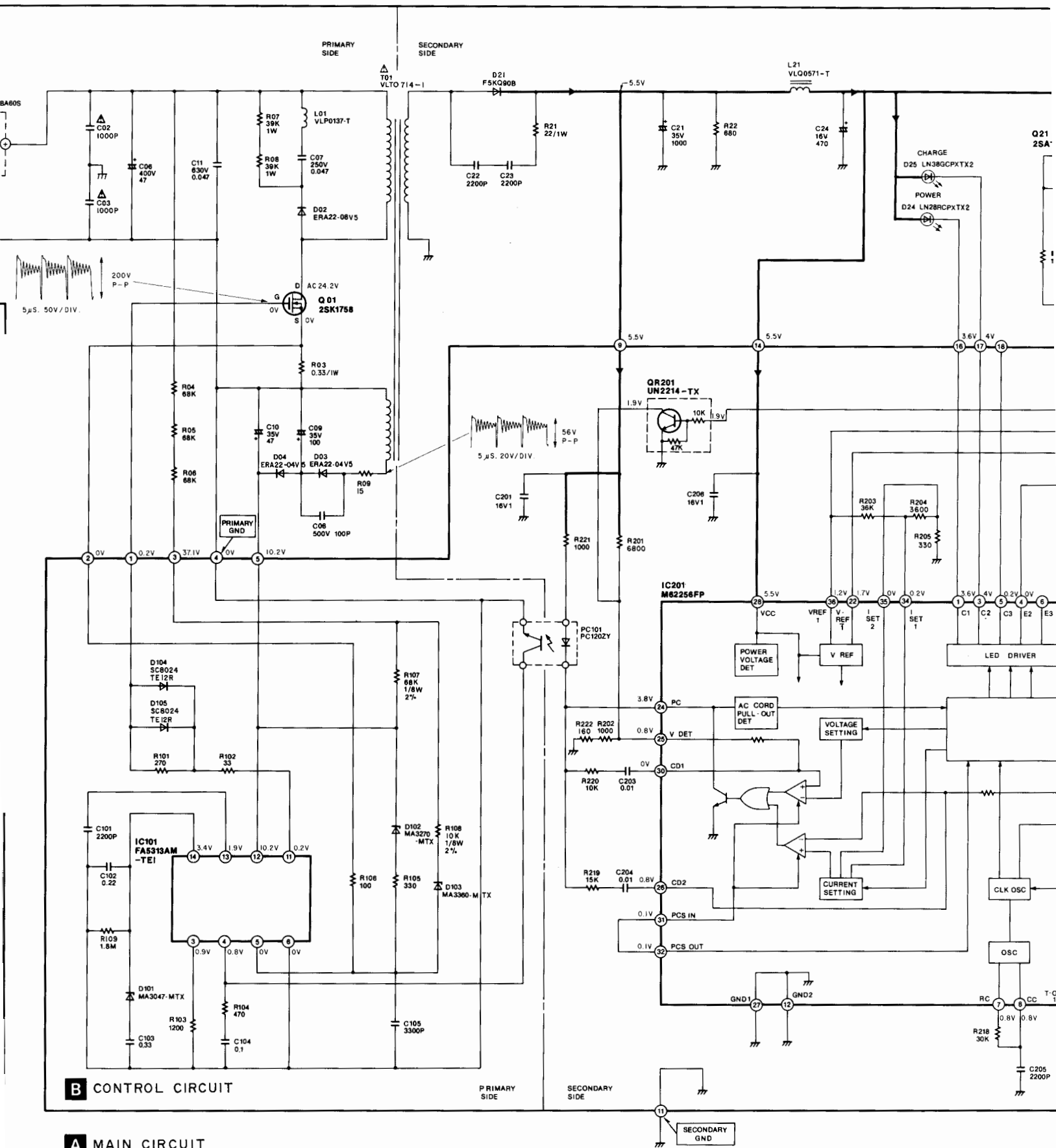
IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.

- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.

## • For AC adaptor

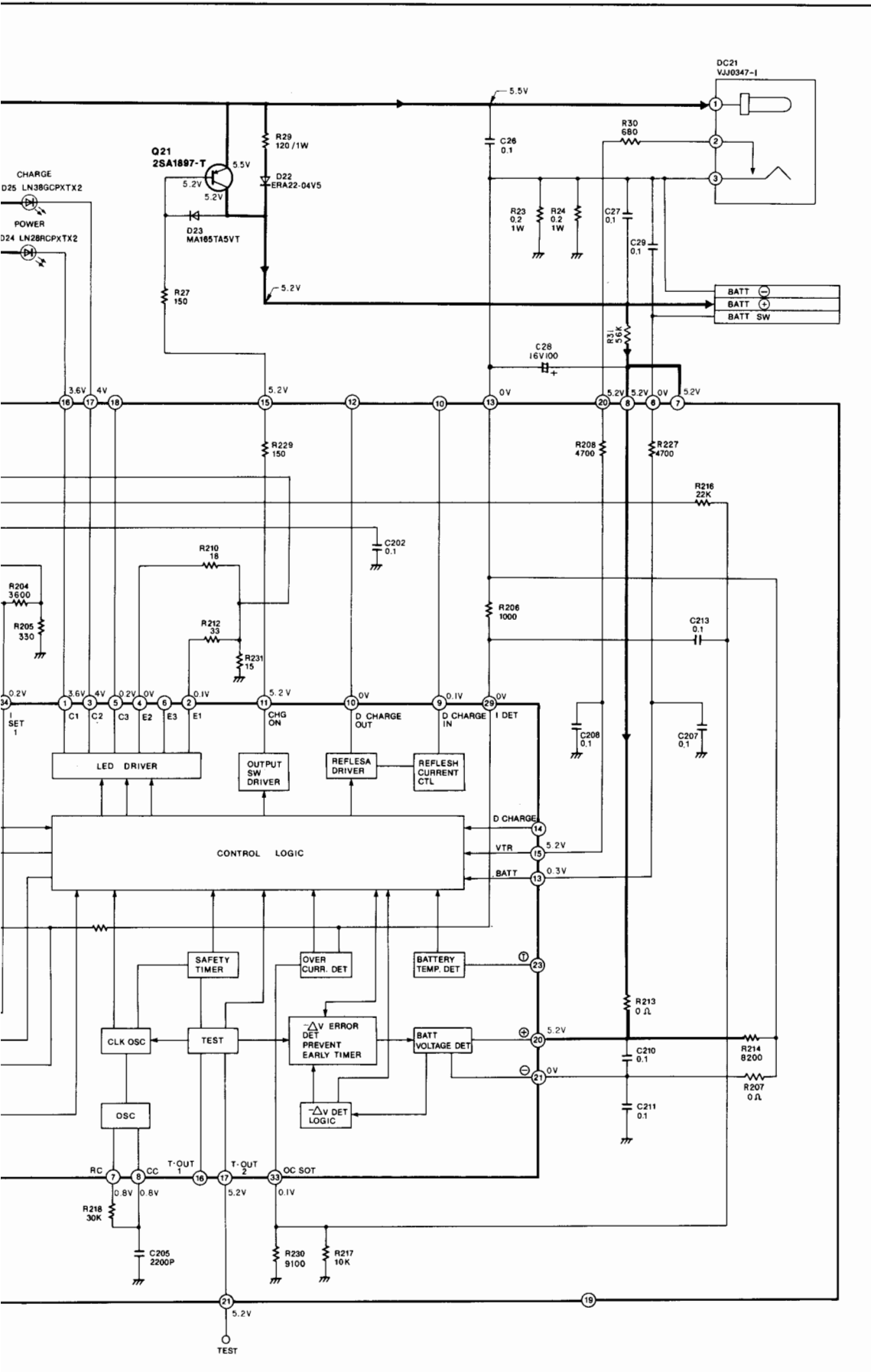






**B** CONTROL CIRCUIT

**A** MAIN CIRCUIT

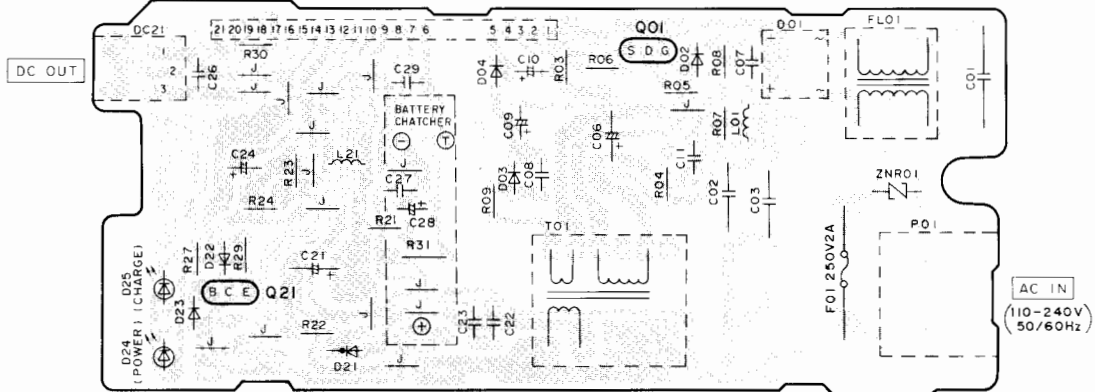


# PRINTED CIRCUIT BOARDS

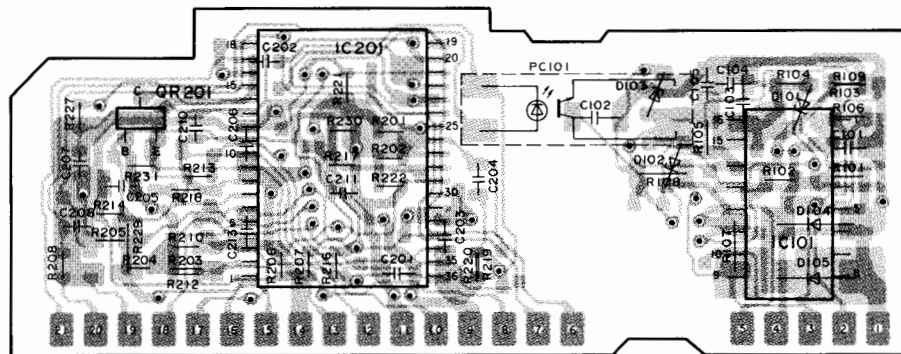
## Notes:

- In this printed circuit board diagram, the parts and foil patterns on the board facing toward you are printed in black. The opposite side is printed in Red.
- The "●" mark denotes the connection points of double-faced foil patterns (through holes) on both sides of the printed circuit board.
- This printed circuit board diagram may be modified at any time with the development of new technology.

**A** MAIN P.C.B. (VEP6113A)



**B** CONTROL P.C.B. (VEP60295C-A)



## • Terminal guide of IC's, transistors and diodes

|   |        |              |        |          |        |  |  |  |
|---|--------|--------------|--------|----------|--------|--|--|--|
| <table border="1"> <tr> <td>FA5313AM-TE1</td> <td>16 Pin</td> </tr> <tr> <td>M62256FP</td> <td>36 Pin</td> </tr> </table> |        | FA5313AM-TE1 | 16 Pin | M62256FP | 36 Pin |  |  |  |
| FA5313AM-TE1  | 16 Pin |              |        |          |        |  |  |  |
| M62256FP  | 36 Pin |              |        |          |        |  |  |  |
|   |        |              |        |          |        |  |  |  |
|   |        |              |        |          |        |  |  |  |

## ■ TERMINAL FUNCTION OF IC'S

### • IC1 (AN8086SE2): DC-DC converter control

| Pin No. | Mark | I/O Division | Function                                   |
|---------|------|--------------|--|
| 1       | IN   | I            | Error amp input                            |
| 2       | FB   | O            | Error amp output                           |
| 3       | SPRO | I            | Short protect input                        |
| 4       | DED  | I            | Dead time input                            |
| 5       | OUT  | O            | Switching output                           |
| 6       | GND  | —            | Ground terminal                            |
| 7       | CT   | I            | Triangular wave oscillator capacitor input |
| 8       | PVCC | I            | Power supply terminal                      |

| Pin No. | Mark  | I/O Division | Function                        |
|---------|-------|--------------|---------------------------------|
| 9       | CLK   | I            | Clock signal input (f=88.2kHz)  |
| 10      | START | I            | Start detection input           |
| 11      | POWER | I            | Power ON/OFF detection terminal |
| 12      | VREF  | O            | Reference voltage output        |
| 13      | EMP   | O            | Empty detection output          |
| 14      | VSEN  | I            | Empty detection input           |
| 15      | RESET | O            | Reset signal output             |
| 16      | VCC   | I            | Power supply terminal           |

### • IC101 (NBC5800): Capstan motor control

| Pin No. | Mark  | I/O Division | Function                    |
|---------|-------|--------------|-----------------------------|
| 1       | W     | O            | W phase output terminal     |
| 2       | V     | O            | V phase output terminal     |
| 3       | U     | O            | U phase output terminal     |
| 4       | HW    | O            | W phase pre-drive output    |
| 5       | HV    | O            | V phase pre-drive output    |
| 6       | HU    | O            | U phase pre-drive output    |
| 7       | PGI   | I            | PG amp input                |
| 8       | FGI   | I            | FG amp input                |
| 9       | VM    | I            | Motor power supply terminal |
| 10      | PD    | O            | Phase det. terminal         |
| 11      | EAO   | O            | Error amp output            |
| 12      | EAI   | I            | Error amp input             |
| 13      | FGOUT | O            | FG amp output               |
| 14      | PGOUT | O            | PG amp output               |
| 15      | PG    | O            | PG comparator output        |
| 16      | VREF  | I            | Reference voltage terminal  |

| Pin No. | Mark  | I/O Division | Function  |
|---------|-------|--------------|---|
| 17      | PGREF | I            | PG amp non-inversion input                      |
| 18      | VCC   | I            | Power supply terminal                           |
| 19      | RFM   | —            | Low frequency setting terminal                  |
| 20      | VCO   | O            | Voltage control OSC terminal                    |
| 21      | F/R   | I            | FWD/REV select terminal                         |
| 22      | ETR   | I            | Torque command voltage input                    |
| 23      | ET    | I            | Torque command input                            |
| 24      | STB   | I            | Standby input terminal                          |
| 25      | TL    | I            | Torque limit terminal                           |
| 26      | PCI   | —            | Phase compensating of current feedback terminal |
| 27      | CBR   | —            | Condition det. terminal                         |
| 28      | PCV   | —            | Phase compensating of voltage feedback terminal |
| 29      | SW    | —            | Slope OSC terminal                              |
| 30      | CS    | I            | Current det. input                              |

• IC102 (MNE201ARTAB1): Servo controller

| Pin No. | Mark              | I/O Division | Function                            |
|---------|-------------------|--------------|-------------------------------------|
| 1       | R64 (RFCR02)      | O            | Tape select output terminal         |
| 2       | P63 (SDA)         | I            | DCC part select input               |
| 3       | P62 (CSA)         | O            | Chip select input                   |
| 4       | P61 (SDB)         | I            | DCC part select output              |
| 5       | P60 (CSB)         | O            | Chip Select                         |
| 6       | P57               | —            | Not connection                      |
| 7       | P56               | —            | Not connection                      |
| 8       | P55               | —            | Not connection                      |
| 9       | P54               | —            | Not connection                      |
| 10      | P53               | —            | Not used, connected to GND          |
| 11      | P52               | —            | Not used, connected to GND          |
| 12      | P51               | —            | Not used, connected to GND          |
| 13      | P50               | —            | Not used, connected to GND          |
| 14      | NSBT1 (P07)       | —            | Test terminal                       |
| 15      | NSBI1 (P06)       | —            | Test terminal                       |
| 16      | NSBO1 (P05)       | —            | Test terminal                       |
| 17      | NSBT0 (CLK)       | I            | Serial clock input                  |
| 18      | NSBI0 (DATA)      | I            | Serial data input                   |
| 19      | NSBO0 (DATA0)     | —            | Not connection                      |
| 20      | NRST (NRESET)     | I            | Reset signal input                  |
| 21      | EXI               | —            | Not used, connected to GND          |
| 22      | HSW               | —            | Not connection                      |
| 23      | VLP               | —            | Not connection                      |
| 24      | PWM3              | —            | Not connection                      |
| 25      | PWM2              | —            | Not connection                      |
| 26      | PWM1              | —            | Not connection                      |
| 27      | PWM0              | O            | Torque command output               |
| 28      | SBUFD7 (TPS OUT)  | O            | TPS signal output                   |
| 29      | SBUFD6 (SYS/MECA) | —            | Connected to resistor and capacitor |
| 30      | SBFUD5            | —            | Not connection                      |
| 31      | OSC2              | I            | Crystal OSC terminal (f=6MHz)       |
| 32      | OSC1              | O            |                                     |
| 33      | VSS               | —            | GND terminal                        |

| Pin No. | Mark           | I/O Division | Function                         |
|---------|----------------|--------------|----------------------------------|
| 34      | SBFD4          | —            | Not connection                   |
| 35      | SBFD3          | —            | Not connection                   |
| 36      | SBFD2          | —            | Not connection                   |
| 37      | SBFD1          | —            | Not connection                   |
| 38      | HBFD6          | —            | Not connection                   |
| 39      | HBFD4 (S/S)    | O            | Standby output                   |
| 40      | HBFD2 (R/F)    | O            | REV/FWD select terminal          |
| 41      | HBFDD (S06)    | O            | Plunger control terminal         |
| 42      | AVMM           | —            | Not connection                   |
| 43      | PGMM           | —            | Not used, connected to GND       |
| 44      | FGI (CAPFG)    | I            | Motor FG signal input            |
| 45      | FGF            | —            | Not connection                   |
| 46      | AFG            | —            | Not used, connected to GND       |
| 47      | YFG            | —            | Not connection                   |
| 48      | YPG            | —            | Not used, connected to GND       |
| 49      | AVSS           | —            | GND terminal                     |
| 50      | VRO (VREF)     | O            | Servo reference voltage output   |
| 51      | VRI (VREF IN)  | I            | Servo reference voltage input    |
| 52      | CIR (DRLFGS)   | I            | Supply reel FG input             |
| 53      | CIF            | —            | Not connection                   |
| 54      | TPZ            | —            | Not connection                   |
| 55      | RCTLN          | —            | Not connection                   |
| 56      | RCLTP          | —            | Not connection                   |
| 57      | CTLS           | —            | Not connection                   |
| 58      | CTLH           | —            | Connected to IC102 ⑨ pin         |
| 59      | CTLA           | —            | Connected to IC102 ⑩ pin         |
| 60      | CTLG           | —            | Not connection                   |
| 61      | AGC            | —            | Not connection                   |
| 62      | CO             | —            | Not connection                   |
| 63      | AVDD           | I            | Power supply terminal            |
| 64      | VSYNC (DRLFGT) | I            | Take-up reel FG input            |
| 65      | AD7 (VSYN)     | I            | Take-up reel FG input            |
| 66      | AD6 (ENV)      | I            | Auxiliary search mode det. input |
| 67      | AF5 (RSPEED)   | I            | RVS speed adjustment terminal    |

| Pin No. | Mark               | I/O Division | Function                        |
|---------|--------------------|--------------|---------------------------------|
| 68      | AD4 (FSPEED)       | I            | FWD speed adjustmetn terminal   |
| 69      | AD3                | —            | Not used, connected to GND      |
| 70      | AD2 (TPS)          | I            | Analog TPS signal input         |
| 71      | AD1                | —            | Not used, connected to GND      |
| 72      | AD0 (ASPEED)       | I            | Capstan phase information input |
| 73      | P77                | —            | Not connection                  |
| 74      | VDD                | I            | Power supply terminal           |
| 75      | P76 (PLAY/REC)     | —            | Test terminal                   |
| 76      | P75 (SW. PBON/OFF) | —            | Test terminal                   |

| Pin No. | Mark          | I/O Division | Function                            |
|---------|---------------|--------------|-------------------------------------|
| 77      | P74 (DCC/ACC) | I            | DCC/ACC tape det. terminal          |
| 78      | P73 (CRO2)    | I            | Tape det. (CrO <sub>2</sub> ) input |
| 79      | P72           | —            | Not used, connected to GND          |
| 80      | P71 (FWD)     | I            | Mechanism mode (FWD) det. terminal  |
| 81      | P70 (RVS)     | I            | Mechanism mode (RVS) det. terminal  |
| 82      | ROT           | —            | Not used, connected to GND          |
| 83      | HAMP          | —            | Not used, connected to GND          |
| 84      | DEW (LOCK)    | O            | Lock signal output                  |

• IC201, 202 (TDA1318H): Read amp

| Pin No. | Mark     | I/O Division | Function   |
|---------|----------|--------------|--|
| 1       | RDMUX    | O            | Output of sampled and multiplexed auxiliary and data signals |
| 2       | OUTX     | O            | Auxiliary channel preamplifier output                        |
| 3       | MUXINX   | I            | Auxiliary channel multiplexer input                          |
| 4       | DSENADJ1 | —            | Adjust pin for DCC sense current 1                           |
| 5       | DSENADJ2 | —            | Adjust pin for DCC sense current 2                           |
| 6       | DSENADJ3 | —            | Adjust pin for DCC sense current 3                           |
| 7       | VD14     | O            | Reference voltage output DCC sense                           |
| 8       | DSEN1    | O            | DCC sense current output 1                                   |
| 9       | DSEN2    | O            | DCC sense current output 2                                   |
| 10      | DSEN3    | O            | DCC sense current output 3                                   |
| 11      | INX0     | I            | Auxiliary channel input/channel 0 input                      |
| 12      | IN01     | I            | Channel 0/1 input  |
| 13      | IN1      | I            | Channel 1 input  |
| 14      | INX25    | I            | Channel Aux/2/5 input  |
| 15      | IN23     | I            | Channel 2/3 input  |
| 16      | IN34     | I            | Channel 3/4 input  |
| 17      | IN4      | I            | Channel 4 input  |
| 18      | IN56     | I            | Channel 5/6 input  |
| 19      | IN67     | I            | Channel 6/7 input  |
| 20      | IN7      | I            | Channel 7 input  |
| 21      | V14      | O            | Reference voltage output for DCC/analog inputs               |
| 22      | OUTR     | O            | Right channel analog output                                  |
| 23      | INMFR    | I            | Right channel feedback amplifier input                       |

| Pin No. | Mark   | I/O Division | Function                                  |
|---------|--------|--------------|---|
| 24      | MFR1   | O            | Right channel feedback amplifier output 1 |
| 25      | INR    | I            | Right channel analog input                |
| 26      | MFR2   | O            | Right channel feedback amplifier output 2 |
| 27      | INRL   | I            | Right/left channel analog input           |
| 28      | VEEM   | —            | Ground for feedback amplifiers            |
| 29      | VCCM   | I            | Positive supply for feedback amplifiers   |
| 30      | MFL2   | O            | Left channel feedback amplifier output 2  |
| 31      | INL    | I            | Left channel analog input                 |
| 32      | MFL/   | O            | Left channel feedback amplifier output 1  |
| 33      | INMFL  | I            | Left channel feedback amplifier input     |
| 34      | OUTL   | I            | Left channel analog output                |
| 35      | VR14   | O            | Reference voltage output CC sense         |
| 36      | V33    | O            | ADC Reference voltage output              |
| 37      | SD     | I            | Select DCC-part input                     |
| 38      | VDD    | I            | General positive supply                   |
| 39      | VSS    | —            | General ground                            |
| 40      | RDCLK  | I            | Read Clock input                          |
| 41      | RDSYNC | I            | Read Sync pulse input                     |
| 42      | CS     | I            | Chip select input                         |
| 43      | AGC    | I            | AGC time constant                         |
| 44      | VBIAS  | —            | DCC preamplifier control voltage          |

• IC401 (SM5881SET): Digital filter

| Pin No.             | Mark | I/O Division | Function   |      |      |
|---------------------|------|--------------|--|------|------|
| 1                   | DSF1 | I            | de-emphasis input terminal                                   |      |      |
|                     |      |              | Pin Setting  | DEEM | Etc. |
|                     |      |              | DSF1 DSF2 fs(Hz) H L Noise Shaper                            |      |      |
|                     |      |              | L L 44.1K ON OFF ON  |      |      |
|                     |      |              | L H 48.0K ON OFF ON  |      |      |
| H H 32.0K ON OFF ON |      |              |  |      |      |
| H L OFF (test mode) |      | OFF          |  |      |      |
| 2                   | CKI  | I            | System clock input terminal                                  |      |      |
| 3                   | DSF2 | I            | De-emphasis select terminal                                  |      |      |
| 4                   | CKO  | O            | System clock output terminal                                 |      |      |
| 5                   | VSS  | —            | GND terminal   |      |      |
| 6                   | NC   | —            | Not connection   |      |      |
| 7                   | NC   | —            | Not connection   |      |      |
| 8                   | ATT  | I            | Attenuation signal input ["H": OFF (-12dB), "L": ON (-12dB)] |      |      |
| 9                   | DEEM | I            | De-emphasis ON/OFF control terminal ("L": OFF, "H": ON)      |      |      |
| 10                  | MUTE | I            | Muting signal input ("H": Soft mute OFF, "L": Soft mute ON)  |      |      |

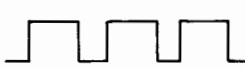
| Pin No. | Mark | I/O Division | Function   |
|---------|------|--------------|--|
| 11      | RST  | I            | System reset (initialize)                              |
| 12      | BCKO | O            | Bit clock output                                       |
| 13      | DOR  | O            | Rch data output with "OMOD": "H"                       |
|         |      |              | LR clock output with "OMOD": "L"                       |
| 14      | DOL  | O            | Lch data output with "OMOD": "H"                       |
|         |      |              | L/Rch data output with "OMOD": "L"                     |
| 15      | WCKO | O            | Word clock (8fs) output                                |
| 16      | VDD  | I            | Power supply terminal                                  |
| 17      | NC   | —            | Not connection   |
| 18      | NC   | —            | Not connection   |
| 19      | OMOD | I            | Output mode select terminal ("H": 18 bit, "L": 16 bit) |
| 20      | LRCI | I            | Data sample rate (fs) clock input                      |
| 21      | BCKI | I            | Bit clock (64fs) input                                 |
| 22      | DIN  | I            | Data (fs•18 bit) input                                 |

• IC402 (UPD63200GSE2): D/A converter

| Pin No. | Mark    | I/O Division | Function  |
|---------|---------|--------------|---|
| 1       | 4/8 SEL | I            | L/Rch data input from "LSI" with "L" or open.<br>Lch data input from "LSI" and Rch data input from "RSI" with "H" |
| 2       | DGND    | —            | Digital GND terminal  |
| 3       | BITSL   | I            | 16 bit data mode with "L" or open.<br>18 bit data mode with "H"   |
| 4       | DVDD    | I            | Power supply terminal   |
| 5       | AGND    | —            | Analog GND terminal   |
| 6       | ROUT    | O            | Rch analog signal output  |
| 7       | AVDD    | I            | Analog power supply terminal  |
| 8       | AVDD    | I            |   |
| 9       | RREF    | —            | Reference voltage terminal<br>(Connected to GND by capacitor)   |
| 10      | LREF    | —            |   |
| 11      | LOUT    | O            | Lch analog signal output  |

| Pin No. | Mark | I/O Division | Function  |
|---------|------|--------------|---|
| 12      | AGND | —            | Analog GND terminal   |
| 13      | LRCK | I            | L/Rch discrimination signal when "4/8 SEL" is "L" or open word discrimination signal when "4/8 SEL" is "H".   |
| 14      | RSI  | I            | L/Rch polarity select signal when "4/8 SEL" is "L" or open Lch data input (LRCK: "H" and RSI: "L"/LRCH: "L" and RSI: "H")<br>Rch serial data input (4/8 SEL: "H") |
| 15      | LSI  | I            | Serial data input of alternate Lch and Rch when "4/8 SEL" is "L" or open<br>Serial data input of Lch when "4/8 SEL" is "H"  |
| 16      | CLK  | I            | Read clock signal of serial input data  |

• IC500 (MNE3214RTAA2): System Control

| Pin No. | Port        | I/O | Port Name                              | HPS Use   | OFF   | STOP                                       | PLAY                      | FF/REW            | SKIP | Remarks            |  |
|---------|-------------|-----|--|---|---|--|---------------------------|-------------------|------|--------------------|--|
| 1       | P55         | O   | ADON                                   | : "H" with AD input                             | L   | H  | H                         | H                 |      |                    |  |
| 2       | P54         | O   | LIGHT                                  | : LCD back light ON/OFF (H=ON)                  | L   | H  | H                         | H                 |      |                    |  |
| 3       | P53         | O   | DATA                                   | : SDA, SCA, SDB, SCB, FWD/RVS                   | L   | "H" or "L" with data                       |                           |                   |      |                    |  |
| 4       | P52         | O   | CLOCK                                  | : MSPEED, MOTORON, REC/PL                       | L   | Transfer clock                             |                           |                   |      |                    |  |
| 5       | P51         | O   | DSF1                                   | : Frequency select output (1) of digital filter | L   | de-emphasis OFF (ACC)                      |                           | de-emphasis ON    |      |                    |  |
|         |             |     |  |   | L   | H  | L                         | L                 |      |                    |  |
| 6       | P50         | O   | DSF2                                   | : Frequency select output (2) of digital filter | L   | L  | H                         | L                 | H    |                    |  |
| 7       | VDD         | I   | Power supply terminal:                 | 3.5~5.5V  | OFF   | STOP                                       | PLAY                      | FF/REW            | SKIP |                    |  |
|         |             |     |  |   | 4V  | 4V   | 4V                        | 4V                | 4V   |                    |  |
| 8       | OSC1        | I   | Crystal OSC terminal (f=6 MHz)         |   | L   | OSC  | OSC                       | OSC               | OSC  |                    |  |
| 9       | OSC2        | O   |  |   | L   | OSC  | OSC                       | OSC               | OSC  |                    |  |
| 10      | VSS         | —   | GND terminal                           |   | GND   |  |                           |                   |      |                    |  |
| 11      | XI (P23)    | I   | System OSC input terminal (Not used)   |   | L   | L  | L                         | L                 | L    |                    |  |
| 12      | XO          | I   | System OSC input terminal (Not used)   |   | L   | L  | L                         | L                 | L    |                    |  |
| 13      | EX2         | I   | Operation mode select terminal         |   | L   | L  | L                         | L                 | L    |                    |  |
| 14      | NRESET      | I   | Reset input terminal                   |   | H   | H  | H                         | H                 | H    |                    |  |
| 15      | P26 (IRQ2)  | I   | STARTSEG :                             |   | L   | Pulse input                                |                           |                   |      |                    |  |
| 16      | P25 (IRQ1)  | I   | WAKEUP : Starting (H→L) from power OFF |   | H   | H  | H                         | H                 | H    |                    |  |
| 17      | P24 (IRQ0)  | I   | AENV : AUX envelope input from DEQ     |   | L   | L  | L                         | Envelope waveform |      |                    |  |
| 18      | P77         | O   | D7                                     | Parallel transfer data of LCD                   | "H" or "L" with transfer data<br> |  |                           |                   |      |                    |  |
| 19      | P76         | O   | D6                                     |   |   |  |                           |                   |      |                    |  |
| 20      | P75         | O   | D5                                     |   |   |  |                           |                   |      |                    |  |
| 21      | P74         | O   | D4                                     |   |   |  |                           |                   |      |                    |  |
| 22      | P73         | O   | D3                                     |   |   |  |                           |                   |      |                    |  |
| 23      | P72         | O   | D2                                     |   |   |  |                           |                   |      |                    |  |
| 24      | P71         | O   | D1                                     |   |   |  |                           |                   |      |                    |  |
| 25      | P70         | O   | D0                                     |   |   |  |                           |                   |      |                    |  |
| 26      | P47         | O   | PWRDWN                                 | : DC/DC converter operation stop output         | H   | L  | L                         | L                 | L    |                    |  |
| 27      | P46 (SIFIN) | O   | NKSTART                                | : DC/DC converter start indication output       | L   | L  | L                         | L                 | L    | Stand up "H" pulse |  |
| 28      | P45 (PWM2-) | O   | LTenTFE                                | : LT bus enable line of TFE                     | L   | "H" or "L" signal with LT line data        |                           |                   |      |                    |  |
| 29      | P44 (PWM2+) | O   | LTenDEQ                                | : LT bus enable line of DEQ                     | L   |  |                           |                   |      |                    |  |
| 30      | P97         | O   | NRESETO                                | : Reset output of SERVO/DAI/DF                  | L   | H  | H                         | H                 | H    |                    |  |
| 31      | P96         | O   | RESETH                                 | : SFC, TFE reset output                         | L   | L  | L                         | L                 | L    | "H" with reset     |  |
| 32      | P95 (KEY5)  | I   | ADPDET                                 | : AC adaptor det. input                         | L   | L  | L                         | L                 | L    |                    |  |
| 33      | P94 (KEY4)  | O   | PWRLSI                                 | : Power down output of TFE/SFC                  | L   | *  | *                         | *                 | *    | *: "H" with ACC    |  |
| 34      | P43 (PWM1-) | O   | LTCNT1                                 | : LT bus control line (1)                       | "H" or "L" signal with LT bus control   |  |                           |                   |      |                    |  |
| 35      | P42 (PWM1+) | O   | LTCNT0                                 | : LT bus control line (2)                       |   |  |                           |                   |      |                    |  |
| 36      | P41 (PWM0-) | O   | LTenDAI                                | : LT bus enable line of DAI                     |   |  |                           |                   |      |                    |  |
| 37      | P40 (PWM0+) | O   | LTenSFC                                | : LT bus enable line of SFC                     |   |  |                           |                   |      |                    |  |
| 38      | P22 (TCI04) | I   | DRLFGT                                 | : Take-up reel pulse input                      | L   | L  | Reel pulse waveform input |                   |      |                    |  |
| 39      | P21 (TCI02) | I   | DRLFGS                                 | : Supply reel pulse input                       | L   | L  |                           |                   |      |                    |  |
| 40      | P20 (TCI01) | O   | BUZZER                                 | : Buzzer output of remote control               | L   | Pulse output with remote control operation |                           |                   |      |                    |  |
| 41      | P17 (SBT2)  | O   | LTCLK                                  | : LT bus clock line                             | L   | "H" or "L" signal with LT bus control      |                           |                   |      |                    |  |
| 42      | P16 (SBD2)  | I/O | LTDATA                                 | : LT bus data line                              | L   |  |                           |                   |      |                    |  |



| Pin No. | Port          | I/O | Port Name  | HPS Use                                | OFF              | STOP  | PLAY                 | FF/REW            | SKIP   | Remarks                |
|---------|---------------|-----|------------|--|------------------|---|----------------------|-------------------|--------|------------------------|
| 43      | P15 (TRXC)    | *   |            | : (Not used)                           | L                | L   | L                    | L                 | L      |                        |
| 44      | P14 (RXD)     | *   |            | : (Not used)                           | L                | L   | L                    | L                 | L      |                        |
| 45      | P13 (TXD)     | O   | E          | : LCD driver data R/W starting output  | L                | "H" or "L" signal with indication data transfer |                      |                   |        | "L" with read          |
| 46      | P12 (/SBT1)   | O   | R/W        | : LCD driver data R/W select output    | L                |   |                      |                   |        |                        |
| 47      | P11 (/SBI1)   | O   | RS         | : LCD driver IR/DR select output       | L                |   |                      |                   |        |                        |
| 48      | P10 (/SB01)   | *   |            | : (Not used)                           | L                | L   | L                    | L                 | L      |                        |
| 49      | VDD           | I   |            | : Power supply terminal                | 4V               | 4V  | 4V                   | 4V                | 4V     |                        |
| 50      | AVDD          | I   |            | : Power supply terminal                | 4V               | 4V  | 4V                   | 4V                | 4V     |                        |
| 51      | VREFH         | I   |            | : Power supply terminal                | 4V               | 4V  | 4V                   | 4V                | 4V     |                        |
| 52      | P87 (AD7)     | I   | S0         | : Mechanism key input (1)              | 4V               | Voltage change with key input (Normal: 4V)      |                      |                   |        |                        |
| 53      | P86 (AD6)     | I   | S1         | : Mechanism key input (2)              | 4V               | Voltage change with SW position                 |                      |                   |        |                        |
| 54      | P85 (AD5)     | I   | REVHOLD    | : Reverse mode/HOLD SW input           | 4V               | Voltage change with SW position                 |                      |                   |        |                        |
| 55      | P84 (AD4)     | I   | DCC/ACC    | : ACC/DCC det. input                   | L                | *   | *                    | *                 | *      | *: "H" with DCC        |
| 56      | P83 (AD3)     | I   | MODESEL    | :                                      | H                | H   | H                    | H                 | H      |                        |
| 57      | P82 (AD2)     | I   | DEQSEL     | :                                      | H                | H   | H                    | H                 | H      |                        |
| 58      | P81 (AD1)     | I   | REMCON     | : Remote control input                 | L                | Voltage output with key input                   |                      |                   |        |                        |
| 59      | P80 (AD0)     | I   | BATTERY    | : Battery voltage check input          | L                | Voltage output with battery det.                |                      |                   |        |                        |
| 60      | VREFL         | —   |            | : GND terminal                         | GND              |   |                      |                   |        |                        |
| 61      | AVSS          | —   |            | : GND terminal                         | GND              |   |                      |                   |        |                        |
| 62      | VSS           |     |            | : GND terminal                         | GND              |   |                      |                   |        |                        |
| 63      | P37 (SD7)     | I   | VIRGIN     | : Virgin det. terminal                 | L                | L   | L                    | L                 | *(DCC) | "H" with virgin det.   |
| 64      | P36 (SD6)     | I   | RSTSEL     | : Reset start select input             | H                | H   | H                    | H                 | H      |                        |
| 65      | P35 (SD5)     | I   | LOCK       | : Not used                             | L                | L   | L                    | L                 | L      |                        |
| 66      | P34 (SD4)     | I   | RVS        | : Mechanism mode (RVS) det. SW input   |                  | STOP  | A side Play          | B side Play       |        |                        |
|         |               |     |            |  |                  | H   | H                    | L                 |        |                        |
| 67      | P33 (SD3)     | I   | FWD        | : Mechanism mode (FWD) det. SW input   |                  | H   | L                    | H                 |        |                        |
| 68      | P32 (SD2)     | I   | SILENCE    | : Schedule of analog music det. signal | L                | L   | "H" with play signal |                   |        | ACC only               |
| 69      | P31 (SD1)     | I   | OPENDET    | : Cassette lid open/close det. input   | H                | "H" with cassette lid close                     |                      |                   |        |                        |
| 70      | P30 (SD0)     | I   | DLBIN      | : Dolby NR det. terminal               | L                | "H" with dolby in                               |                      |                   |        | ACC only               |
| 71      | P67           | O   | SYNCDAL    | : DAI mode setting timing output       | L                | Pulse output                                    |                      |                   |        | DCC only               |
| 72      | P93 (KEY3)    | I   | LABEL      | : Label input                          | L                | L   | L                    | L                 | *(DDC) | *: "H" with label det. |
| 73      | P92 (KEY2)    | O   | USYNCl     | : U bit output with DAI                | L                | H   | H                    | H                 | H      | DCC only               |
| 74      | P91 (KEY1)    | I   | TAPEIN     | : Wake-up and tape det. terminal       | "H" with no tape |   |                      |                   |        |                        |
| 75      | P90 (KEY0)    | I   | IRQU       | : Buffer werflow det. input of DAI     | L                | H   | H                    | H                 | H      | DCC only               |
| 76      | P66           | *   | } Not used |  |                  |   |                      |                   |        |                        |
| 77      | P65           | *   |            |  |                  |   |                      |                   |        |                        |
| 78      | P64           | *   |            |  |                  |   |                      |                   |        |                        |
| 79      | P63 (TPS DLB) | O   | DLBOUT     | : Dolby ON/OFF select with TPS         | L                | Dolby in: "H"                                   |                      |                   |        | ACC only               |
| 80      | P62           | O   | DSOL       | : Mode select solenoid suction output  | L                | "H" with planger suction                        |                      |                   |        |                        |
| 81      | P61           | O   | D/nACC     | : Digital/analog select output         | L                | "L" with ACC, "H" with DCC                      |                      |                   |        |                        |
| 82      | P60           | O   | LEDON/OFF  | : LED ON/OFF control output            | L                | H   | L                    | "H" or "L" signal |        |                        |
| 83      | P57           | O   | LINEMUTE   | : Line out mute output                 | L                | H   | L                    | H                 | H      |                        |
| 84      | P56           | *   | Not used   |  |                  |   |                      |                   |        |                        |

• IC502 (SAA2032GP): DEQ

| Pin No. | Mark     | I/O Division | Function  |
|---------|----------|--------------|---|
| 1       | DIGEYE   | O            | Serial data output for eye pattern  |
| 2       | RDSYMC   | O            | SYNC data for Read Amplifier (push-pull output)                               |
| 3       | RDCLK    | O            | Data Clock for Read Amplifier (push-pull output)                              |
| 4       | TESTI    | —            | Connect to V <sub>SS</sub>  |
| 5       | PBDAT    | I            | Analog time multiplexed input from Read Amplifier                             |
| 6       | REFL     | I            | Lower reference voltage (+1V) for ADC   |
| 7       | REFH     | I            | Upper reference voltage (+3.1V) for ADC                                       |
| 8       | VSSA     | —            | Analog substrate (0V)   |
| 9       | BIASAD   | —            | Bias current for A-D converter (sinks current from VDD via 12kΩ)              |
| 10      | VSS (AD) | —            | Supply ground (0V) for ADC  |
| 11      | VDD (AD) | I            | Positive supply (+5V) for ADC   |
| 12      | VDD      | I            | Positive supply (+5V)   |
| 13      | VSS      | —            | Supply ground (0V)  |
| 14      | VSS (DA) | —            | Supply ground (0V)  |
| 15      | ANEYE    | O            | Analog eye voltage output   |
| 16      | BIASD    | —            | Do not connect  |
| 17      | VSS      | —            | Supply ground (0V)  |
| 18      | TSTI     | —            | Do not connect  |
| 19      | TSTI     | —            | Do not connect  |
| 20      | TSTI     | —            | Do not connect  |
| 21      | TSTI     | —            | Do not connect  |
| 22      | TCH0     | O            | Channel 0 output for SAA2022 (DCC Drive Signal Processing) (push-pull output) |
| 23      | TCH1     | O            | Channel 1 output for SAA2022 (push-pull output)                               |
| 24      | TCH2     | O            | Channel 2 output for SAA2022 (push-pull output)                               |

| Pin No. | Mark    | I/O Division | Function   |
|---------|---------|--------------|--|
| 25      | TCH3    | O            | Channel 3 output for SAA2022 (push-pull output)                                      |
| 26      | TCH4    | O            | Channel 4 output for SAA2022 (push-pull output)                                      |
| 27      | TCH5    | O            | Channel 5 output for SAA2022 (push-pull output)                                      |
| 28      | TCH6    | O            | Channel 6 output for SAA2022 (push-pull output)                                      |
| 29      | TCH7    | O            | Channel 7 output for SAA2022 (push-pull output)                                      |
| 30      | TCHAU   | O            | Aux channel output for SAA2022 (push-pull output)                                    |
| 31      | LTDATA  | I/O          | Microcontroller I/O data interface (3 state push-pull output and input: CMOS levels) |
| 32      | LTEMDEQ | I            | Microcontroller interface enabling (CMOS input levels)                               |
| 33      | LTCNT1  | I            | Microcontroller interface; mode control 1 (CMOS input levels)                        |
| 34      | LTCNT0  | I            | Microcontroller interface; mode control 0 (CMOS input levels)                        |
| 35      | LTCLK   | I            | Microcontroller bit-clock interface (CMOS input levels)                              |
| 36      | VIRGIN  | O            | Search mode virgin detection output  |
| 37      | LABEL   | O            | Search mode label detection output   |
| 38      | ENV     | O            | Search mode auxiliary detection output   |
| 39      | VSS     | —            | Supply ground (0V)   |
| 40      | SH0     | I            | Test input connected to VSS  |
| 41      | SH1     | I            | Test input connected to VSS  |
| 42      | TST1    | I            | Test input to be connected to VSS  |
| 43      | CLK24   | I            | Clock input; typical frequency 24.576MHz (CMOS input)                                |
| 44      | STAOEYE | O            | Synchronization output for DIGEYE  |

• IC504 (MN425610AT1): DRAM

| Pin No. | Mark             | I/O Division | Function                    |
|---------|------------------|--------------|-----------------------------|
| 1       | DQ1              | I/O          | Data input/output terminal  |
| 2       | DQ2              | I/O          | Data input/output terminal  |
| 3       | $\overline{WE}$  | I            | Write enable input          |
| 4       | $\overline{RAS}$ | I            | Low address strobe terminal |
| 5       | NC               | —            | Not connection              |
| 6<br>9  | A0<br>A3         | I            | Address input terminal      |
| 10      | VCC              | I            | Power supply terminal       |

| Pin No.  | Mark             | I/O Division | Function                       |
|----------|------------------|--------------|--------------------------------|
| 11<br>15 | A4<br>A8         | I            | Address input terminal         |
| 16       | $\overline{OE}$  | I            | Output enable input            |
| 17       | $\overline{CAS}$ | I            | Column address strobe terminal |
| 18       | DQ3              | I/O          | Data input/output terminal     |
| 19       | DQ4              | I/O          | Data input/output terminal     |
| 20       | VSS              | —            | GND terminal                   |

• IC503 (SAA2022GP): TFE

| Pin No.    | Mark       | I/O Division | Function   |
|------------|------------|--------------|--|
| 1          | LTREF      | O            | Timing reference terminal of microcomputer interface |
| 2          | LTDATA     | I            | Data input terminal of microcomputer interface       |
| 3          | LTCNT1     | I            | Control input terminal of microcomputer interface    |
| 4          | LTCNT0     |              |  |
| 5          | LTCLK      | I            | Bit clock input of microcomputer interface           |
| 6          | LTEN       | I            | Enable terminal of microcomputer interface           |
| 7          | VSS2       | —            | GND terminal   |
| 8          | VDD2       | —            | Power supply terminal                                |
| 9          | NRAS       | O            | Low address strobe terminal of DRAM                  |
| 10         | NWE        | O            | Write enable terminal of DRAM                        |
| 11<br>} 14 | D3<br>} D0 | I/O          | Data input/output terminal of DRAM                   |
| 15         | NCAS       | O            | Column address strobe terminal of DRAM               |
| 16         | NOE        | O            | Output enable terminal of DRAM                       |
| 17<br>} 25 | A8<br>} A0 | O            | Address terminal of DRAM                             |
| 26         | VSS3       | —            | GND terminal   |
| 27         | VDD3       | I            | Power supply terminal                                |
| 28         | WCLOK      | O            | Clock output of write amp. transfer                  |
| 29         | WDATA      | O            | Serial data output of write amp.                     |
| 30         | SPEEDA     | O            | Capstan phase information output                     |
| 31         | SPDAF      | O            | Capstan frequency information output                 |
| 32         | PINO1      | O            | Output terminal of expander                          |
| 33         | TAUX       | I            | Aux channel input                                    |
| 34         | TCH7       | I            | Main data channel (7) input                          |
| 35         | TCH6       | I            | Main data channel (6) input                          |
| 36         | TCH5       | I            | Main data channel (5) input                          |

| Pin No. | Mark     | I/O Division | Function  |
|---------|----------|--------------|---|
| 37      | TCH4     | I            | Main data channel (4) input                                 |
| 38      | TCH3     | I            | Main data channel (3) input                                 |
| 39      | TCH2     | I            | Main data channel (2) input                                 |
| 40      | TCH1     | I            | Main data channel (1) input                                 |
| 41      | TCH0     | I            | Main data channel (0) input                                 |
| 42      | VSS1     | —            | GND terminal  |
| 43      | VDD1     | I            | Power supply terminal                                       |
| 44      | CLK24    | I            | Clock (f=24.576MHz) input                                   |
| 45      | TEST0    | —            | Test terminal   |
| 46      | TEST1    | —            | Test terminal   |
| 47      | PWRDWN   | I            | Standby mode select terminal                                |
| 48      | RESET    | I            | Reset input terminal  |
| 49      | PINI     | I            | Input terminal of expander                                  |
| 50      | SPEEDB   | O            | Output terminal of expander                                 |
| 51      | SPDBF    | O            | Output terminal of expander                                 |
| 52      | AZCHK    | O            | Azimuth check (ch0, 7) terminal                             |
| 53      | ERCOSTAT | O            | Not connection  |
| 54      | PRCSTAT  | O            | Not connection  |
| 55      | MCLK     | O            | Master clock (f=6.144 MHz) output                           |
| 56      | SBMCLK   | I            | Sub-band I <sup>2</sup> S master clock input                |
| 57      | SBEF     | O            | Sub-band I <sup>2</sup> S byte error output                 |
| 58      | VSS4     | —            | GND terminal  |
| 59      | VDD4     | I            | Power supply terminal                                       |
| 60      | SBWS     | I/O          | Sub-band I <sup>2</sup> S word select input/output terminal |
| 61      | SBCL     | I/O          | Sub-band I <sup>2</sup> S bit clock input/output terminal   |
| 62      | SBDA     | I/O          | Sub-band I <sup>2</sup> S data input/output terminal        |
| 63      | SBDIR    | O            | Sub-band I <sup>2</sup> S command output                    |
| 64      | URDA     | O            | Sub-band I <sup>2</sup> S needless data treatment terminal  |

• IC505 (SAA2002GP): SFC

| Pin No. | Mark    | I/O Division | Function   |
|---------|---------|--------------|--|
| 1       | FS256   | O            | (Filtered)-I <sup>2</sup> S clock; 256 × sample frequency. 12mA, 3-state output + CMOS input with pull-down  |
| 2       | MUTEDAC | O            | DAC control/output expander  |
| 3       | DEEMDAC | O            | DAC control/output expander  |
| 4       | ATTDAC  | O            | DAC control/output expander  |
| 5       | VSS     | —            | Supply ground (0V)   |
| 6       | URDA    | I            | Unreliable drive processing data; CMOS level   |
| 7       | SBDIR   | I            | Sub-band I <sup>2</sup> S direction (SWBS, SBCL); CMOS level   |
| 8       | SBDA    | I            | Sub-band I <sup>2</sup> S data; 4 mA, 3-state output + CMOS input with pull-down                             |
| 9       | SBCL    | I            | Sub-band I <sup>2</sup> S bit clock; 4 mA, 3-state output + CMOS input with pull-down                        |
| 10      | SBWS    | I            | Sub-band I <sup>2</sup> S word select; 4 mA, 3-state output + CMOS input with pull-down                      |
| 11      | SBEF    | I            | Sub-band I <sup>2</sup> S byte error flag; CMOS level  |
| 12      | SBMCLK  | O            | Sub-band I <sup>2</sup> S clock, 6.144 MHz locked to FS256; 8 mA, 3-state output + CMOS input with pull-down |
| 13      | SYNCDAI | O            | DAI synchronization pulse  |
| 14      | FDIR    | O            | (Filtered)-I <sup>2</sup> S direction: (FDAC, FDAF, SDA);  |
| 15      | FKESET  | O            | Reset signal for SAA2012   |
| 16      | FSYNC   | O            | Filtered-I <sup>2</sup> S sync signal for SAA2012  |
| 17      | FDAF    | I/O          | Filtered-I <sup>2</sup> S sub-band filter data; 4 mA, 3-state output + CMOS input with pull-down             |
| 18      | FDAC    | I/O          | Filtered-I <sup>2</sup> S sub-band codac data; 4 mA, 3-state output + CMOS input with pull-down              |
| 19      | SCL     | I/O          | I <sup>2</sup> S bit clock; 4 mA, 3-state output + CMOS input with pull-down                                 |

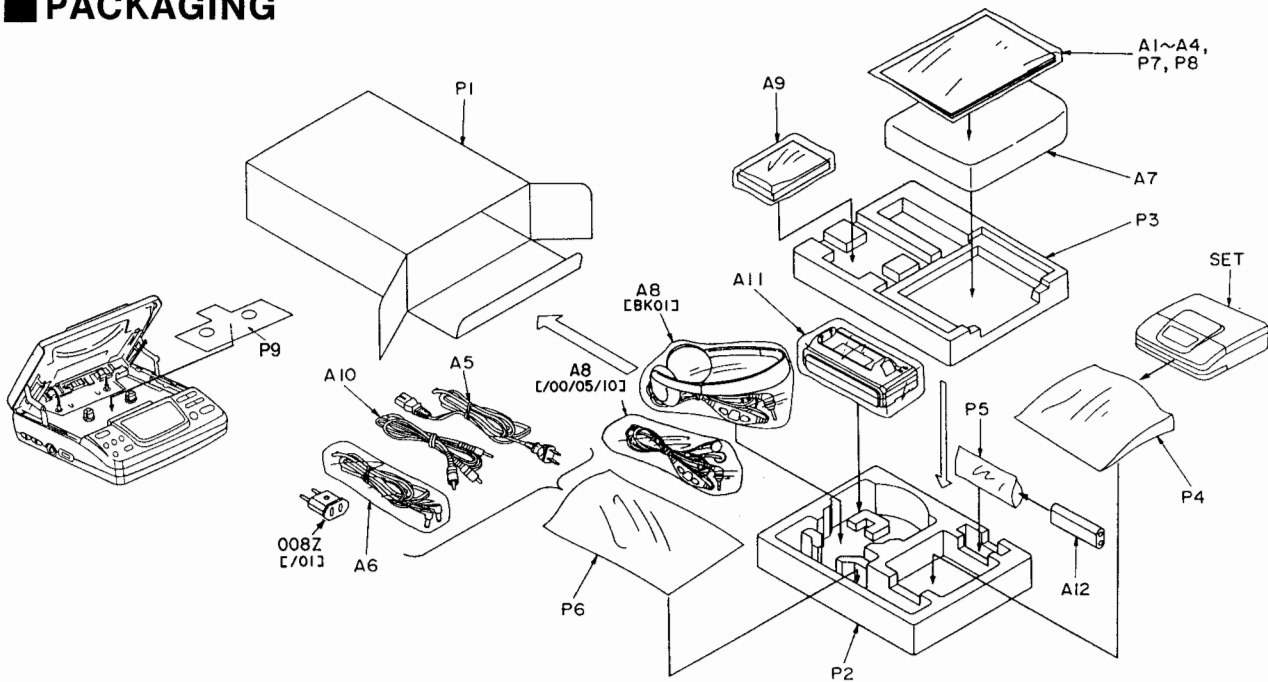
| Pin No. | Mark    | I/O Division | Function  |
|---------|---------|--------------|---|
| 20      | SWS     | I/O          | I <sup>2</sup> S-word select; 4 mA, 3-state output + CMOS input with pull-down          |
| 21      | SDA     | I/O          | I <sup>2</sup> S baseband data filter; 4 mA, 3-state output + CMOS input with pull-down |
| 22      | PWRDWN  | I            | Power-down mode; CMOS level   |
| 23      | DSC4    | —            | Test pin  |
| 24      | DSC3    | —            | Test pin  |
| 25      | DSC2    | —            | Test pin  |
| 26      | DSC1    | —            | Test pin  |
| 27      | DSC0    | —            | Test pin  |
| 28      | VDD     | I            | Positive supply voltage (+5V)   |
| 29      | RESET   | I            | System reset; CMOS level with pull-down and hysteresis                                  |
| 30      | T1      | —            | Test pin; do not connect  |
| 31      | T0      | —            | Test pin; do not connect  |
| 32      | LTDATA  | I/O          | LT interface data; 4 mA, 3-state output + CMOS input with pull-down                     |
| 33      | LTCLK   | I            | LT interface bit clock; CMOS level  |
| 34      | LTENSFC | I            | LT interface enable; CMOS level   |
| 35      | LTCNT0  | I            | LT interface control; CMOS level  |
| 36      | LTCNT1  |              |   |
| 37      | VSS     | —            | Supply ground (0V)  |
| 38      | CLK22   | O            | 22.5792 MHz buffered output   |
| 39      | CLK24   | O            | 24.576 MHz buffered output  |
| 40      | X22IN   | I            | 22.5792 MHz crystal input   |
| 41      | X22OUT  | O            | 22.5792 MHz crystal output  |
| 42      | X24IN   | I            | 24.576 MHz crystal input  |
| 43      | X24OUT  | O            | 24.576 MHz crystal output   |
| 44      | VDD     | I            | Positive supply voltage (+5V)   |
|         |         |              |   |

• IC506 (M51581GP): DAI

| Pin No. | Mark        | I/O Division | Function  |
|---------|-------------|--------------|---|
| 1       | TX          | O            | Digital audio interface format output   |
| 2       | NRSTDAL     | I            | Rest terminal: "0" reset (Microcomputer mode: transmission mode, fs=48kHz, TX disable)  |
| 3       | RX1         | I            | EIAJ format digital audio data input (1): coaxial cable   |
| 4       | NFRX1       | O            | RX1 level converter output  |
| 5       | RX2         | I            | EIAJ format digital audio data input (2): optical cable   |
| 6       | SELRX       | I            | RX input select ("1": RX1, "0" RX2) Microcomputer mode: SELRX polarity select   |
| 7       | PD1         | O            | Phase comparator output of charge pump VCO  |
| 8       | PD2         | O            |   |
| 9       | UNLOCK      | O            | Unlock det. output ("1": unlock)  |
| 10      | RXCKI       | I            | VCO clock input (256 fs)  |
| 11      | RXCKO       | O            | VCO clock output ( $\overline{\text{RXCKI}}$ )  |
| 12      | SDA (SDATA) | I            | Serial audio data input terminal (Input exclusive except I <sup>2</sup> S format)   |
| 13      | SCL (BCLK)  | I/O          | Audio data bit clock input/output terminal  |
| 14      | SWS (LRCK)  | I/O          | Audio data word select input/output terminal  |
| 15      | SDADAT      | I            | Serial audio data output  |
| 16      | SAODAT      | I            | AD converter serial audio input   |
| 17      | VSS         | —            | GND terminal  |
| 18      | ADSEL       | I            | Serial audio data source select terminal ["1": analog (AD converter), "0": digital (RX), microcomputer mode: ADSEL polarity select] |
| 19      | FLAGI       | I            | Error flag input  |
| 20      | FLAGO       | O            | Error flag output   |
| 21      | WCK         | O            | Word clock output (Received: 2fs)   |
| 22      | ASL         | I            | Audio data sample length select terminal ("1": 24 bit, "0": 1 bit)  |
| 23      | IIS         | I            | Audio data format select terminal ("1": I <sup>2</sup> S, "0": except I <sup>2</sup> S)   |
| 24      | MSBF        | I            | MSB select terminal ("1": MSB first, "0": LSB first)  |

| Pin No. | Mark    | I/O Division     | Function   |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
|---------|---------|------------------|--|------|------|------|---|---|---------------|---|---|------------|---|---|------------------|---|---|--------|
| 25      | LRCKPOL | I                | LRCK polarity select terminal ("1": Lch→1, "0": Lch→0)   |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 26      | 256FS   | I/O              | Master clock input/output terminal   |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 27      | CKSEL   | I                | Master clock frequency select terminal ("0": 256 fs, "1": 128 fs)  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 28      | REFCK   | I                | Reference clock input to check sampling frequency accuracy   |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 29      | CKACO   | O                | Checking terminal of sampling frequency accuracy   |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 30      | MUTE    | I                | Muting control terminal ("1": mute, microcomputer mode: muting control polarity select)  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 31      | DAIM00  | I                | Mode select terminal<br><table border="1"> <thead> <tr> <th>M00</th> <th>M01</th> <th>Mode</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>Microcomputer</td> </tr> <tr> <td>0</td> <td>1</td> <td>Easy</td> </tr> <tr> <td>1</td> <td>0</td> <td>Full transparent</td> </tr> <tr> <td>1</td> <td>1</td> <td>Test</td> </tr> </tbody> </table>        | M00  | M01  | Mode | 0 | 0 | Microcomputer | 0 | 1 | Easy       | 1 | 0 | Full transparent | 1 | 1 | Test   |
| M00     | M01     | Mode             |  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 0       | 0       | Microcomputer    |  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 0       | 1       | Easy             |  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 1       | 0       | Full transparent |  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 1       | 1       | Test             |  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 32      | DAIM01  | I                |  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 33      | LTENDAI | I                | LT interface enable terminal ("1": enable)   |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 34      | LTCLK   | I                | LT interface data bit clock input  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 35      | LTDATA  | I                | LT interface data input  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 36      | LTCNT1  | I                | LT interface control terminal<br><table border="1"> <thead> <tr> <th>CNT1</th> <th>CNT0</th> <th>Mode</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>C bit data</td> </tr> <tr> <td>0</td> <td>1</td> <td>U bit data</td> </tr> <tr> <td>1</td> <td>0</td> <td>Setting</td> </tr> <tr> <td>1</td> <td>1</td> <td>Status</td> </tr> </tbody> </table> | CNT1 | CNT0 | Mode | 0 | 0 | C bit data    | 0 | 1 | U bit data | 1 | 0 | Setting          | 1 | 1 | Status |
| CNT1    | CNT0    | Mode             |  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 0       | 0       | C bit data       |  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 0       | 1       | U bit data       |  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 1       | 0       | Setting          |  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 1       | 1       | Status           |  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 37      | LTCNT0  | I                |  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 38      | VDD     | I                | Power supply terminal  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 39      | VSS     | —                | GND terminal   |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 40      | SYNCDAL | I                | Setting latch clock input  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 41      | IRQU    | O                | U bit data information indicator output  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 42      | USYNCI  | I                | U bit data unit indicator input (transmission)   |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 43      | USYNCO  | O                | U bit data unit indicator output (reception)   |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |
| 44      | IRSTRT  | O                | U bit data message start indicator output  |      |      |      |   |   |               |   |   |            |   |   |                  |   |   |        |

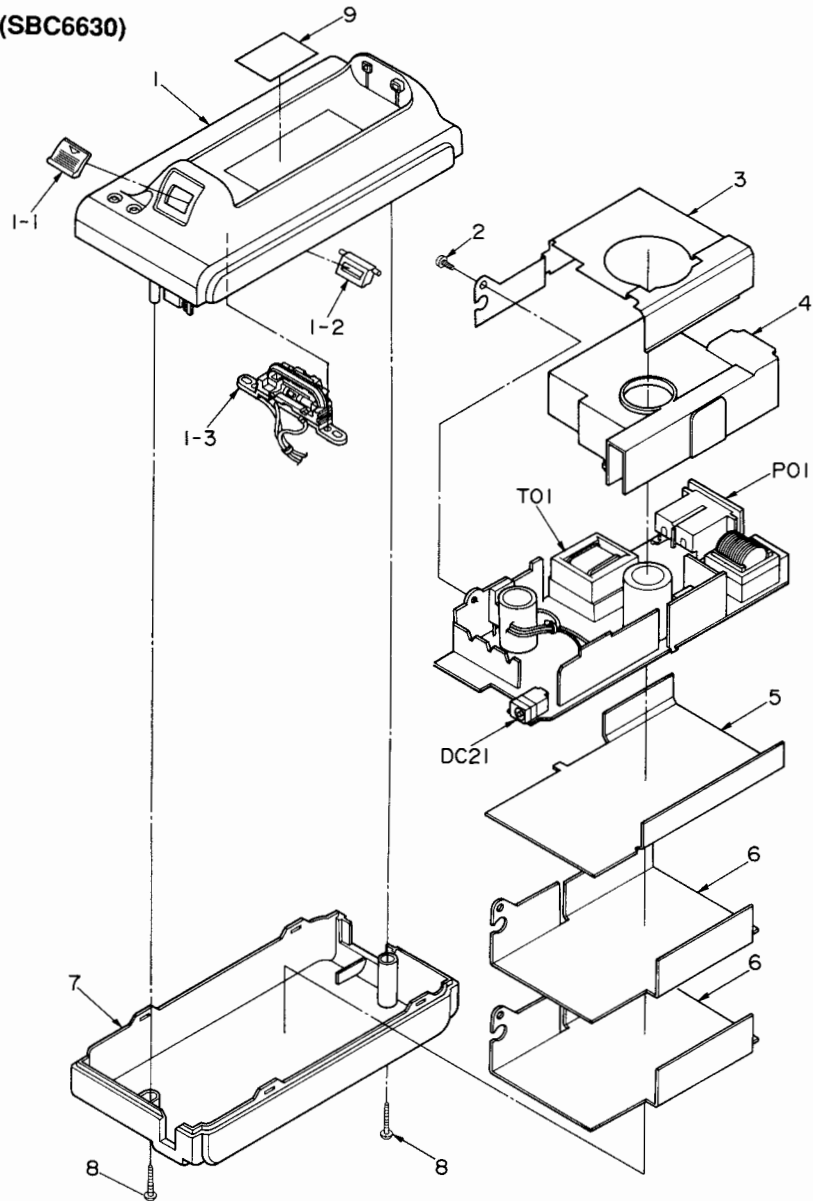
# PACKAGING



| REF. DESIG.    | PART NO.       | DESCRIPTION                                  |
|----------------|----------------|--|
| <b>PACKING</b> |                |  |
| A1             | 4822 736 21833 | USER'S MANUAL [/00/01/05/10]                 |
| A1             | 4822 736 21832 | USER'S MANUAL [BK01]                         |
| A5             | 4822 321 11016 | AC CORD [/10]                                |
| A5             | 4822 321 11015 | AC CORD [/00/01]                             |
| A5             | 4822 321 11014 | AC CORD [/05]                                |
| A5             | 4822 321 11013 | AC CORD [BK01]                               |
| A6             | 4822 321 11017 | DC CORD                                      |
| A7             | 4822 600 70731 | CARRYING CASE                                |
| A8             | 4822 242 50079 | HEAD PHONE, IN EAR [/00/01/05/10]<br>SBC3311 |
| A8             | 4822 242 50081 | HEAD PHONE, BAND [BK01] SBC3327              |
| A10            | 4822 321 62146 | PIN PLUG, LINE CORD                          |
| A11            | 4822 272 10359 | AC ADAPTOR [/10] SBC6630                     |
| A11            | 4822 272 10357 | AC ADAPTOR [/05] SBC6630                     |
| A11            | 4822 272 10358 | AC ADAPTOR [/00] SBC6630                     |
| A11            | 4822 272 10356 | AC ADAPTOR [BK01] SBC6630                    |
| A12            | 4822 138 10537 | BATTERY PACK, Ni-Cd DC4.8V<br>1300mA SBC6430 |
| 008Z           | 4822 267 31133 | AC PLUG ADAPTOR [/01]                        |

# ■ CABINET PARTS LOCATION

• For AC adaptor (SBC6630)

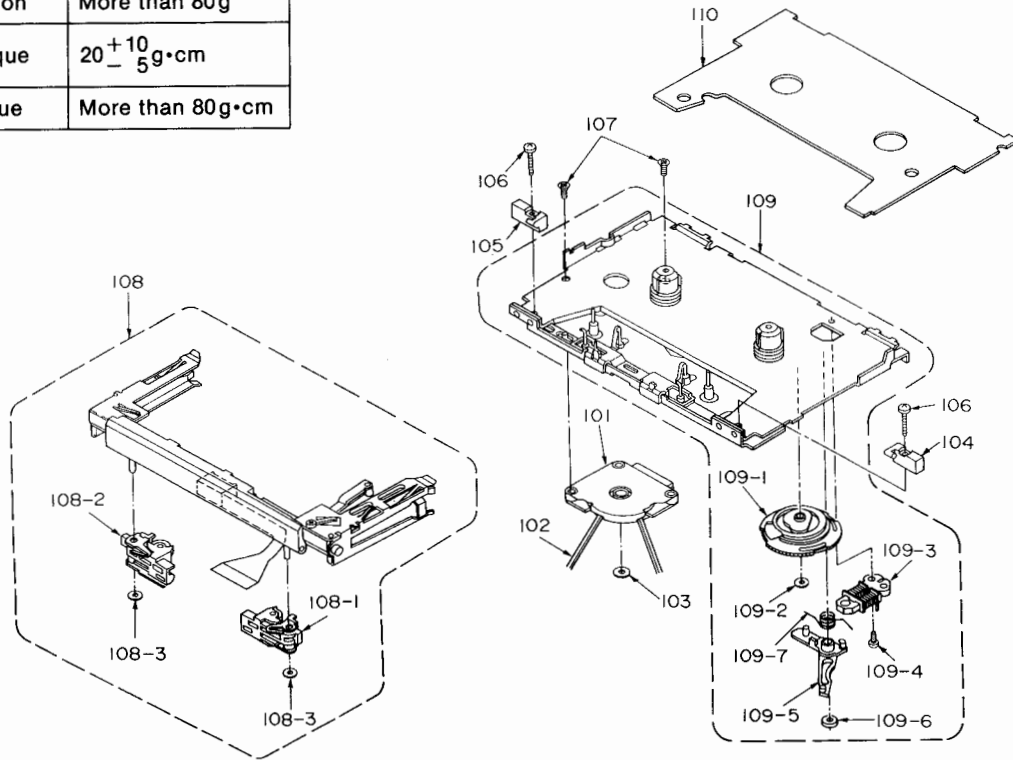


| REF. DESIG. | PART NO. | DESCRIPTION                |
|-------------|----------|----------------------------|
| 1           |          | CASE, TOP                  |
| 1-1         |          | KNOB, LOCK                 |
| 1-2         |          | CONTROL BOARD, SLIDE PIECE |
| 1-3         |          | LOCK, BATTERY CATCHER      |
| 2           |          | SCREW                      |
| 3           |          | SHIELD                     |
| 4           |          | INSULATOR                  |
| 5           |          | INSULATOR                  |
| 6           |          | SHIELD                     |
| 7           |          | CASE, BOTTOM               |
| 8           |          | SCREW                      |

# MECHANISM PARTS LOCATION

|                          |                              |
|--------------------------|------------------------------|
|                          | FWD & REV mode               |
| Wow and flutter          | 0.3% (WRMS) with ACC         |
| Pressure of pinch roller | 250 ± 20g                    |
| Take-up tension          | More than 80g                |
| Playback torque          | 20 $\pm$ $\frac{10}{5}$ g·cm |
| FF/REW torque            | More than 80g·cm             |

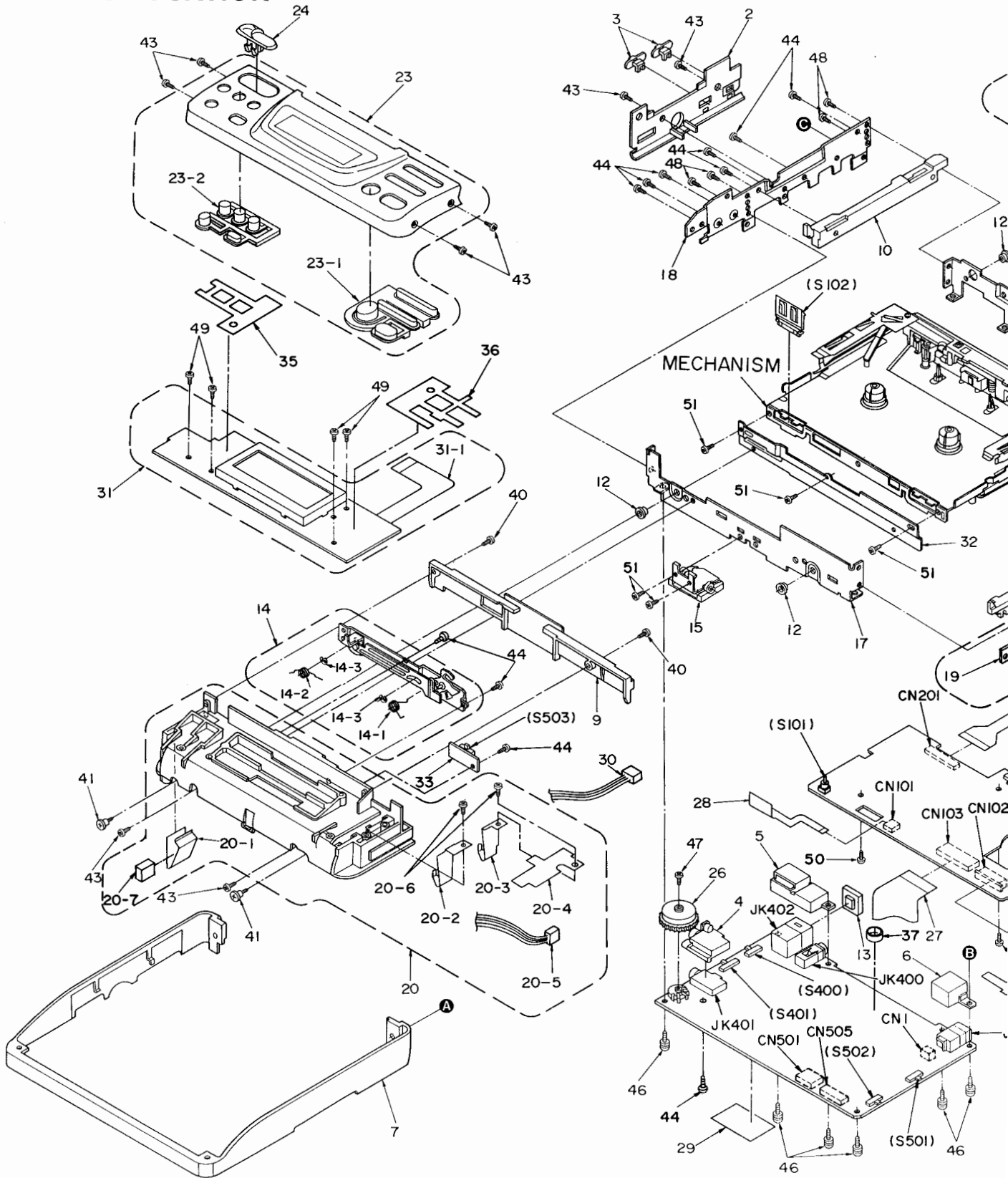
The parts enclosed in the dotted boxes are supplied as a block assembly. Therefore, they are not supplied separately except parts indicated with Ref. No.



| REF. DESIG. | PART NO.       | DESCRIPTION                |
|-------------|----------------|----------------------------|
| 101         | 4822 361 21654 | D.C.MOTOR HPX26NB5AT       |
| 102         | 4822 358 31272 | BELT, CP                   |
| 103         |                | WASHER                     |
| 104         |                | SUPPORT, HOLD PIECE R      |
| 105         |                | SUPPORT, HOLD PIECE L      |
| 106         |                | SCREW                      |
| 107         |                | SCREW                      |
| 108         | 4822 403 70978 | MECHANISM, HEAD BLOCK UNIT |
| 108-1       | 4822 528 70833 | ROLLER, ARM R UNIT         |
| 108-2       | 4822 528 70834 | ROLLER, ARM L UNIT         |
| 108-3       |                | WASHER, NYLON              |
| 109         | 4822 464 50984 | CHASSIS, BLOCK UNIT        |
| 109-1       |                | GEAR, CAM                  |
| 109-2       |                | WASHER                     |
| 109-3       | 4822 281 50183 | SOLENOID COIL              |
| 109-4       |                | SCREW                      |
| 109-5       |                | LEVER, TRIGGER             |
| 109-6       |                | WASHER                     |
| 109-7       |                | SPRING                     |
| 110         |                | ESCUTCHEON, MECHA          |



# CABINET PARTS LOCATION



There are two types of mechanism chassis (R), namely Type A and Type B. These two types are not interchangeable with each other. For replacement, take the following procedure:

- When replacing the front cabinet ass'y, replace the mechanism chassis (R). (See illustration)
- If the mechanism chassis (R) is type A, the front cabinet ass'y must be replaced together.
- If the mechanism chassis (R) is type B, the mechanism chassis (R) must be replaced. Disuse it.



| REF. DESIG. | PART NO.       | DESCRIPTION                  |
|-------------|----------------|------------------------------|
| 1           | 4822 454 21093 | ESCUTCHEON, SWITCH           |
| 2           | 4822 454 21094 | ESCUTCHEON, JACK             |
| 3           | 4822 411 61938 | KNOB, SLIDE                  |
| 4           | 4822 256 92092 | HOLDER, HP JACK              |
| 5           | 4822 256 92091 | HOLDER, OPT JACK             |
| 6           |                | HOLDER, DC IN JACK           |
| 7           | 4822 464 50985 | FRAME, CENTER CABINET        |
| 8           | 4822 464 50979 | FRAME, INNER CABINET A       |
| 9           | 4822 443 64007 | COVER, LOCK                  |
| 10          |                | INNER HOLDER (L)             |
| 11          |                | INNER HOLDER (R)             |
| 12          |                | DAMPER                       |
| 13          |                | CAP, OPT CONNECTOR           |
| 14          | 4822 466 83029 | LOCK, PLATE UNIT             |
| 14-1        |                | SPRING, LOCK                 |
| 14-2        |                | SPRING, RETURN               |
| 14-3        |                | WASHER                       |
| 15          |                | LOCK, BATTERY                |
| 16          | 4822 464 50975 | CHASSIS, INNER A REAR        |
| 17          | 4822 464 50978 | CHASSIS, FRONT               |
| 18          | 4822 464 50976 | CHASSIS, INNER B L           |
| 19          | 4822 464 50977 | CHASSIS, INNER C R           |
| 20          | 4822 443 64008 | CASE, BATTERY                |
| 20-1        |                | LEAF SPRING                  |
| 20-2        |                | CONTACTOR (+)                |
| 20-3        |                | CONTACTOR (-)                |
| 20-4        |                | SHEET                        |
| 20-5        |                | CONNECTIVE CORD              |
| 20-6        |                | SCREW                        |
| 21          | 4822 443 64027 | LID, BATTERY                 |
| 21-1        |                | LOCK, PIECE                  |
| 21-2        |                | LEG                          |
| 21-3        |                | SCREW                        |
| 22          | 4822 443 41287 | CASE, TOP                    |
| 22-1        | 4822 492 71395 | LEAF SPRING, CASSETTE        |
| 22-2        |                | SCREW                        |
| 22-3        |                | LINK, ANGLE (A) L            |
| 22-4        |                | LINK, ANGLE (B) R            |
| 22-5        |                | SCREW                        |
| 23          | 4822 443 64032 | CASE, FRONT                  |
| 23-1        | 4822 410 62774 | BUTTON, OPERATING A PLAY ETC |
| 23-2        | 4822 410 62775 | BUTTON, OPERATING B          |
| 24          | 4822 413 31767 | KNOB, OPEN                   |
| 25          | 4822 443 51247 | CASE, BOTTOM [/10]           |
|             | 4822 443 51246 | CASE, BOTTOM [/01]           |
|             | 4822 443 51245 | CASE, BOTTOM [/00]           |
|             | 4822 443 51244 | CASE, BOTTOM [/05]           |
|             | 4822 443 51243 | CASE, BOTTOM [BK01]          |
| 25-1        | 4822 462 42047 | LEG                          |
| 26          |                | KNOB, VR                     |
| 27          |                | FLEXIBLE P.W.B.              |
| 28          |                | FLEXIBLE P.W.B.              |
| 29          |                | INSULATOR                    |
| 30          |                | CONNECTIVE CORD 3P           |
| 31          | 4822 130 91268 | LCD KIT                      |
| 31-1        |                | FLEXIBLE P.W.B.              |
| 32          | 4822 403 70974 | BRACKET, MECHA               |
| 34          |                | FLEXIBLE P.W.B.              |
| 40          |                | SCREW                        |
| 41          |                | SCREW                        |
| 42          |                | SCREW                        |
| 43          |                | SCREW                        |
| 44          |                | SCREW                        |
| 45          |                | SCREW                        |
| 46          |                | SCREW                        |
| 47          |                | SCREW                        |
| 48          |                | SCREW                        |
| 49          |                | SCREW                        |
| 051B        | 4822 459 11151 | BADGE, DCC                   |





| REF. DESIG. | PART NO.       | DESCRIPTION  |
|-------------|----------------|--------------|
| S102        | 4822 276 13446 | PUSH SWITCH  |
| S503        | 4822 277 21713 | SLIDE SWITCH |

# ELECTRICAL PARTS LIST


| REF. DESIG.  | PART NO.   | DESCRIPTION   |
|--|--|---|
|  |  | <b>P101-RF/SERVO CIRCUIT BOARD</b>  |
|  |  | <b>-II-</b>   |
|  |  | <b>P101-CAPACITORS(ALL CHIP)</b>  |
| C101<br>?  | 4822 126 12844   | CERAMIC 0.056μF ± 10%   |
| C103<br>?  | 4822 126 12061   | CERAMIC 0.1μF ± 10%   |
| C106<br>C107<br>C108<br>C109<br>C110   | 4822 126 12838<br>4822 124 10772<br>4822 126 12843<br>4822 126 12061   | CERAMIC 0.1μF +80%-20%<br>TANTALUM 100μF 6V<br>CERAMIC 0.082μF ± 10%<br>CERAMIC 0.1μF ± 10%   |
| C111<br>C112<br>C113<br>C114<br>C115<br>C116<br>C117<br>C118<br>C119<br>C120 | 4822 126 12845<br>4822 126 11668<br>4822 126 12061<br>4822 126 12841<br>4822 124 11383<br>4822 126 11681<br>4822 126 12841<br>4822 126 11681<br>4822 122 32922<br>4822 126 12839 | CERAMIC 820PF ± 10%<br>CERAMIC 220PF ± 5%<br>CERAMIC 0.1μF ± 10%<br>CERAMIC 0.027μF ± 10%<br>TANTALUM 10μF 6.3V<br>CERAMIC 1000PF ± 10%<br>CERAMIC 0.027μF ± 10%<br>CERAMIC 1000PF ± 10%<br>CERAMIC 1500PF ± 10%<br>CERAMIC 0.022μF ± 10%       |
| C121<br>C122<br>C123<br>C127<br>C128<br>C129<br>C130<br>C131<br>C132<br>C133 | 4822 126 11678<br>4822 126 12839<br>4822 126 11687<br>4822 126 12838<br>4822 124 11383<br>4822 126 11687<br>4822 124 11384<br>4822 126 12838<br>4822 124 11392<br>4822 126 12844 | CERAMIC 1μF +80%-20%<br>CERAMIC 0.022μF ± 10%<br>CERAMIC 0.1μF +80%-20%<br>CERAMIC 0.1μF +80%-20%<br>TANTALUM 10μF 6.3V<br>CERAMIC 0.1μF +80%-20%<br>TANTALUM 10μF 10V<br>CERAMIC 0.1μF +80%-20%<br>TANTALUM 33μF 6.3V<br>CERAMIC 0.056μF ± 10% |
| C134<br>C135<br>C136<br>C137<br>C139<br>C171<br>?                            | 4822 124 11392<br>4822 126 12838<br>4822 126 12838<br>4822 124 11405<br>4822 124 11383<br>4822 126 12842   | TANTALUM 33μF 6.3V<br>CERAMIC 0.1μF +80%-20%<br>CERAMIC 0.1μF +80%-20%<br>TANTALUM 15μF 6.3V<br>TANTALUM 10μF 6.3V<br>CERAMIC 0.33μF +80%-20%   |
| C174<br>C175<br>C176   | 4822 126 12836<br>4822 126 12836   | CERAMIC 1μF ± 10%<br>CERAMIC 1μF ± 10%  |
| C177<br>C178<br>C201<br>?  | 4822 126 12076<br>4822 126 11687<br>4822 126 11565   | CERAMIC 0.047μF ± 10%<br>CERAMIC 0.1μF +80%-20%<br>CERAMIC 0.01μF ± 10%   |
| C218<br>C219<br>?  | 4822 124 11382   | TANTALUM 1μF 16V  |
| C238<br>C239<br>?  | 4822 124 11383   | TANTALUM 10μF 6.3V  |
| C242<br><br>C243<br>C244<br>C245<br>C246<br>C247<br>C248<br>C251<br>?        | 4822 126 11687<br>4822 126 11687<br>4822 124 11389<br>4822 124 11389<br>4822 124 11382<br>4822 124 11382<br>4822 124 11382<br>4822 124 11395                                     | CERAMIC 0.1μF +80%-20%<br>CERAMIC 0.1μF +80%-20%<br>TANTALUM 2.2μF 16V<br>TANTALUM 2.2μF 16V<br>TANTALUM 1μF 16V<br>TANTALUM 1μF 16V<br>TANTALUM 6.8μF 16V  |
| C254<br><br>C255<br>?  | 4822 126 12061   | CERAMIC 0.1μF ± 10%   |
| C258<br>C260<br>C261<br>C263<br>C264   | 4822 124 11384<br>4822 124 11395<br>4822 124 11389<br>4822 124 11389<br>4822 124 11389   | TANTALUM 10μF 10V<br>TANTALUM 6.8μF 16V<br>TANTALUM 2.2μF 16V<br>TANTALUM 2.2μF 16V   |

| REF. DESIG.  | PART NO.   | DESCRIPTION  |
|--|--|--|
| C267<br>C269<br>C271<br>?  | 4822 124 11382<br>4822 124 11389<br>4822 124 11386   | TANTALUM 1μF 16V<br>TANTALUM 2.2μF 16V<br>TANTALUM 1.5μF 16V   |
| C274<br>C275<br>?  | 4822 126 12501   | CERAMIC 1800PF ± 10%   |
| C278<br>C279   | 4822 124 11384   | TANTALUM 10μF 10V  |
| C280<br>C281<br>?  | 4822 124 11384<br>4822 126 11678   | TANTALUM 10μF 10V<br>CERAMIC 1μF +80%-20%  |
| C286<br>C287<br>?  | 4822 124 11393   | TANTALUM 0.47μF 25V  |
| C290<br>C291<br>?  | 4822 126 12847   | CERAMIC 2700PF ± 10%   |
| C294<br><br>C295<br>C296<br>C297<br>C298                                     | 4822 124 11389<br>4822 124 11389<br>4822 126 12848<br>4822 126 12848   | TANTALUM 2.2μF 16V<br>TANTALUM 2.2μF 16V<br>CERAMIC 0.033μF ± 10%<br>CERAMIC 0.033μF ± 10%   |
|  |  | <b>P101-RESISTORS (ALL CHIP)</b>   |
| R101<br>R102<br>R103<br>R104<br>R105<br>R106<br>R107<br>R108<br>R109<br>R110 | 4822 051 30103<br>4822 051 30103<br>4822 051 30473<br>4822 051 30103<br>4822 051 30103<br>4822 051 30159<br>4822 051 30222<br>4822 051 30222<br>4822 116 83216<br>4822 051 30224 | 10KΩ ± 5% 1/16W<br>10KΩ ± 5% 1/16W<br>47KΩ ± 5% 1/16W<br>10KΩ ± 5% 1/16W<br>10KΩ ± 5% 1/16W<br>15Ω ± 5% 1/16W<br>2.2KΩ ± 5% 1/16W<br>2.2KΩ ± 5% 1/16W<br>56KΩ ± 5% 1/16W<br>220KΩ ± 5% 1/16W             |
| R111<br>R112<br>R113<br>R114<br>R115<br>R116<br>R117<br>R118<br>R119<br>R121 | 4822 051 30683<br>4822 051 30394<br>4822 051 30104<br>4822 051 30104<br>4822 051 30104<br>4822 051 30473<br>4822 051 30473<br>4822 051 30152<br>4822 117 10472<br>4822 051 30333 | 68KΩ ± 5% 1/16W<br>390KΩ ± 2% 1/16W<br>100KΩ ± 5% 1/16W<br>100KΩ ± 5% 1/16W<br>100KΩ ± 5% 1/16W<br>47KΩ ± 5% 1/16W<br>47KΩ ± 5% 1/16W<br>1.5KΩ ± 5% 1/16W<br>0.33Ω ± 5% 1/2W<br>33KΩ ± 5% 1/16W          |
| R122<br>R123<br>R124<br>R125<br>R126<br>R127<br>R128<br>R129<br>R130<br>R131 | 4822 116 83206<br>4822 051 30153<br>4822 051 30153<br>4822 051 30561<br>4822 051 30102<br>4822 051 30473<br>4822 051 30473<br>4822 051 30223<br>4822 051 30223<br>4822 051 30684 | 120Ω ± 5% 1/16W<br>15KΩ ± 5% 1/16W<br>15KΩ ± 5% 1/16W<br>560Ω ± 5% 1/16W<br>1KΩ ± 5% 1/16W<br>47KΩ ± 5% 1/16W<br>47KΩ ± 5% 1/16W<br>22KΩ ± 5% 1/16W<br>22KΩ ± 5% 1/16W<br>680KΩ ± 5% 1/16W               |
| R132<br>R133<br>R134<br>R135<br>R136<br>R137<br>R138<br>R139<br>R140<br>R141 | 4822 051 30684<br>4822 051 30682<br>4822 051 30682<br>4822 051 30223<br>4822 051 30153<br>4822 117 10459<br>4822 051 30102<br>4822 051 30102<br>4822 051 30473<br>4822 111 92162 | 680KΩ ± 5% 1/16W<br>6.8KΩ ± 5% 1/16W<br>6.8KΩ ± 5% 1/16W<br>22KΩ ± 5% 1/16W<br>15KΩ ± 5% 1/16W<br>15KΩ ± 0.5% 1/16W<br>1KΩ ± 5% 1/16W<br>1KΩ ± 5% 1/16W<br>47KΩ ± 5% 1/16W<br>COMPO. 47KΩ x 2 ± 5% 1/32W |
| R143<br>R145<br>R146<br>R148<br>R150   | 4822 111 92162<br>4822 051 30473<br>4822 111 92162<br>4822 111 92162<br>4822 051 30101   | COMPO. 47KΩ x 2 ± 5% 1/32W<br>47KΩ ± 5% 1/16W<br>COMPO. 47KΩ x 2 ± 5% 1/32W<br>COMPO. 47KΩ x 2 ± 5% 1/32W<br>100Ω ± 5% 1/16W   |

| REF. DESIG. | PART NO.       | DESCRIPTION                |
|-------------|----------------|----------------------------|
| R151        | 4822 051 30223 | 22KΩ ± 5% 1/16W            |
| R152        | 4822 051 30104 | 100KΩ ± 5% 1/16W           |
| R153        | ?              |                            |
| ?           | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R155        |                |                            |
| R156        | 4822 111 92159 | COMPO. 10KΩ x 2 ± 5% 1/32W |
| R158        | 4822 051 30473 | 47KΩ ± 5% 1/16W            |
| R159        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R160        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R171        | ?              |                            |
| ?           | 4822 051 30332 | 3.3KΩ ± 5% 1/16W           |
| R174        |                |                            |
| R175        | 4822 051 30334 | 330KΩ ± 5% 1/16W           |
| R176        | 4822 051 30334 | 330KΩ ± 5% 1/16W           |
| R177        | 4822 051 30223 | 22KΩ ± 5% 1/16W            |
| R178        | 4822 051 30223 | 22KΩ ± 5% 1/16W            |
| R179        | 4822 051 30334 | 330KΩ ± 5% 1/16W           |
| R180        | 4822 051 30473 | 47KΩ ± 5% 1/16W            |
| R190        | ?              |                            |
| ?           | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R193        |                |                            |
| R194        | 4822 111 92158 | COMPO. 1KΩ x 2 ± 5% 1/32W  |
| R199        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R201        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R202        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R203        | 4822 051 30184 | 180KΩ ± 5% 1/16W           |
| R204        | 4822 051 30184 | 180KΩ ± 5% 1/16W           |
| R205        | ?              |                            |
| ?           | 4822 117 10478 | 1.6KΩ ± 5% 1/16W           |
| R208        |                |                            |
| R209        | 4822 051 30101 | 100Ω ± 5% 1/16W            |
| R210        | 4822 051 30101 | 100Ω ± 5% 1/16W            |
| R211        | ?              |                            |
| ?           | 4822 117 10469 | 68Ω ± 0.5% 1/16W           |
| R216        |                |                            |
| R217        | ?              |                            |
| ?           | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R220        |                |                            |
| R221        | ?              |                            |
| ?           | 4822 051 30109 | 10Ω ± 5% 1/16W             |
| R228        |                |                            |
| R231        | 4822 051 30479 | 47Ω ± 5% 1/16W             |
| R232        | 4822 051 30479 | 47Ω ± 5% 1/16W             |
| R241        | ?              |                            |
| ?           | 4822 117 10465 | 27KΩ ± 0.5% 1/16W          |
| R244        |                |                            |
| R245        | ?              |                            |
| ?           | 4822 117 10456 | 1KΩ ± 0.5% 1/16W           |
| R248        |                |                            |
| R249        | ?              |                            |
| ?           | 4822 117 10457 | 10KΩ ± 0.5% 1/16W          |
| R252        |                |                            |
| R253        | ?              |                            |
| ?           | 4822 116 83222 | 82KΩ ± 5% 1/16W            |
| R256        |                |                            |
| R257        | ?              |                            |
| ?           | 4822 051 30472 | 4.7KΩ ± 5% 1/16W           |
| R260        |                |                            |
| R261        | ?              |                            |
| ?           | 4822 051 30473 | 47KΩ ± 5% 1/16W            |
| R264        |                |                            |
| R265        | 4822 051 30104 | 100KΩ ± 5% 1/16W           |
| R267        | 4822 051 30104 | 100KΩ ± 5% 1/16W           |
| R269        | 4822 051 30474 | 470KΩ ± 5% 1/16W           |
| R271        | 4822 051 30474 | 470KΩ ± 5% 1/16W           |
| R277        | ?              |                            |
| ?           | 4822 117 10462 | 2.2KΩ ± 0.5% 1/16W         |
| R280        |                |                            |




| REF. DESIG.   | PART NO.   | DESCRIPTION   |
|---|--|---|
| R281  | ?  |   |
| ?   | 4822 117 10466   | 3.3KΩ ± 0.5% 1/16W  |
| R284  |  |   |
| R285  | 4822 051 30103   | 10KΩ ± 5% 1/16W   |
| R286  | 4822 051 30103   | 10KΩ ± 5% 1/16W   |
| R289  | ?  |   |
| ?   | 4822 117 10457   | 10KΩ ± 0.5% 1/16W   |
| R292  |  |   |
| R293  | 4822 117 10464   | 2.7KΩ ± 0.5% 1/16W  |
| R294  | 4822 117 10464   | 2.7KΩ ± 0.5% 1/16W  |
| R295  | 4822 117 10462   | 2.2KΩ ± 0.5% 1/16W  |
| R296  | 4822 117 10462   | 2.2KΩ ± 0.5% 1/16W  |
| VR101   | 4822 100 12058   | 68KΩ (B) ± 25% 0.15W TRIMM.   |
| VR102   | 4822 100 12058   | 68KΩ (B) ± 25% 0.15W TRIMM.   |
| VR203   | ?  |   |
| ?   | 4822 100 12057   | 4.7KΩ (B) ± 25% 0.15W TRIMM.  |
| VR210   |  |   |
| VR211   | ?  |   |
| ?   | 4822 100 12054   | 10KΩ (B) ± 25% 0.15W TRIMM.   |
| VR214   |  |   |
| VR219   | ?  |   |
| ?   | 4822 100 12056   | 22KΩ (B) ± 25% 0.15W TRIMM.   |
| VR222   |  |   |
|      |  |  |
| D101  | 4822 130 83444   | DIODE MA143TW   |
| D102  | 4822 130 83446   | DIODE MA142WKTW   |
| D103  | 4822 130 83446   | DIODE MA142WKTW   |
| D104  | 4822 130 83452   | DIODE MA732TW   |
| D171  | 4822 130 83444   | DIODE MA143TW   |
| D172  | 4822 130 83444   | DIODE MA143TW   |
| IC101   | 4822 209 32621   | IC, MOTOR CONTROL, NBC5800  |
| IC102   | 4822 209 32614   | MICROPROCESSOR, SERVO μ-COM MNE201ARTAB   |
| IC104   | 4822 209 32596   | IC AN1393SNSCE1   |
| IC171   | 4822 209 32607   | IC NJM2115MT1   |
| IC201   | 4822 209 32618   | IC, READ TDA1318H   |
| IC202   | 4822 209 32618   | IC, READ TDA1318H   |
| IC203   | ?  |   |
| ?   | 4822 209 32611   | IC TK11447MTR   |
| IC206   |  |   |
| Q101  | ?  |   |
| ?   | 4822 130 63403   | TRANSISTOR 2SB956STW  |
| Q103  |  |   |
| Q104  | 4822 130 63394   | DIGITAL TRANSISTOR, UN521MTW  |
| Q105  | 4822 130 63399   | PHOTO UNIT, GP2S27T6  |
| Q106  | 4822 130 63399   | PHOTO UNIT, GP2S27T6  |
| Q107  | 4822 130 63401   | TRANSISTOR 2SA1748QTW   |
| Q108  | 4822 130 63401   | TRANSISTOR 2SA1748QTW   |
| Q109  | 4822 130 63395   | DIGITAL TRANSISTOR, UN5211TW  |
| Q211  | ?  |   |
| ?   | 4822 130 63404   | TRANSISTOR 2SB1218ASTW  |
| Q215  |  |   |
| Q217  | 4822 130 63404   | TRANSISTOR 2SB1218ASTW  |
| Q219  | 4822 130 63395   | DIGITAL TRANSISTOR, UN5211TW  |
| Q220  | 4822 130 63395   | DIGITAL TRANSISTOR, UN5211TW  |
| Q221  | 4822 130 63405   | TRANSISTOR 2SC4081RTW   |
| Q222  | 4822 130 63405   | TRANSISTOR 2SC4081RTW   |
|  |  |   |
| L101  | 4822 157 70767   | P101-COIL<br>CHOKE COIL, 33μF ± 10%   |
| CN101   | 4822 265 31119   | P101-MISCELLANEOUS<br>JACK, TO FPC  |
| CN102   | 4822 265 31121   | JACK, TO FPC  |
| CN103   | 4822 265 31117   | JACK, TO FPC  |
| CN201   | 4822 265 31118   | JACK, TO FPC  |
| S101  | 4822 276 13438   | PUSH SWITCH, ACC/DCC  |
| S104  | 4822 277 21707   | SLIDE SWITCH  |
| X101  | 4822 242 81551   | CERAMIC VIBRATOR. 8.00MHZ   |

| REF. DESIG. | PART NO.       | DESCRIPTION                       |
|-------------|----------------|-----------------------------------|
|             |                | <b>P401-DIGITAL CIRCUIT BOARD</b> |
|             |                | <b>—II—</b>                       |
|             |                | <b>P401-CAPACITORS</b>            |
| C1          | 4822 124 10772 | TANTALUM 100μF 6V                 |
| C2          | 4822 126 12076 | CERAMIC 0.047μF ± 10%             |
| C3          | 4822 124 11226 | TANTALUM 22μF 6V                  |
| C4          | 4822 126 12837 | CERAMIC 6.8μF +80%-20%            |
| C5          | 4822 124 41842 | TANTALUM 47μF 16V                 |
| C6          | 4822 124 11394 | TANTALUM 4.7μF 10V                |
| C7          | 4822 126 12061 | CERAMIC 0.1μF ± 10%               |
| C8          | 4822 126 11565 | CERAMIC 0.01μF ± 10%              |
| C9          | 4822 122 33753 | CERAMIC 150PF ± 5%                |
| C10         | 4822 126 12837 | CERAMIC 6.8μF +80%-20%            |
| C11         | 4822 126 12838 | CERAMIC 0.1μF +80%-20%            |
| C12         | 4822 122 33753 | CERAMIC 150PF ± 5%                |
| C13         | 4822 126 12838 | CERAMIC 0.1μF +80%-20%            |
| C14         | 4822 126 12838 | CERAMIC 0.1μF +80%-20%            |
| C16         | 4822 124 10772 | TANTALUM 100μF 6V                 |
| C17         | 4822 124 11382 | TANTALUM 1μF 16V                  |
| C18         | 4822 124 11382 | TANTALUM 1μF 16V                  |
| C19         | 4822 124 11389 | TANTALUM 2.2μF 16V                |
| C20         | 4822 124 11389 | TANTALUM 2.2μF 16V                |
| C21         | ?              |                                   |
| C23         | 4822 124 11394 | TANTALUM 4.7μF 10V                |
| C24         | 4822 126 12838 | CERAMIC 0.1μF +80%-20%            |
| C25         | 4822 126 12838 | CERAMIC 0.1μF +80%-20%            |
| C51         | 4822 126 11565 | CERAMIC 0.01μF ± 10%              |
| C54         | 4822 126 12838 | CERAMIC 0.1μF +80%-20%            |
| C55         | 4822 123 30388 | MICA 100PF ± 5%                   |
| C56         | 4822 123 30388 | MICA 100PF ± 5%                   |
| C301        | ?              |                                   |
| C304        | 4822 124 11394 | TANTALUM 4.7μF 10V                |
| C305        | 4822 123 30389 | MICA 1800PF ± 5%                  |
| C306        | 4822 123 30389 | MICA 1800PF ± 5%                  |
| C307        | 4822 123 30388 | MICA 100PF ± 5%                   |
| C308        | 4822 123 30388 | MICA 100PF ± 5%                   |
| C309        | 4822 126 11566 | CERAMIC 2200PF ± 10%              |
| C310        | 4822 126 11566 | CERAMIC 2200PF ± 10%              |
| C311        | 4822 124 11394 | TANTALUM 4.7μF 10V                |
| C312        | 4822 124 11394 | TANTALUM 4.7μF 10V                |
| C313        | 4822 126 11702 | CERAMIC 680PF ± 10%               |
| C314        | 4822 126 11702 | CERAMIC 680PF ± 10%               |
| C315        | 4822 126 12848 | CERAMIC 0.033μF ± 10%             |
| C316        | 4822 126 12848 | CERAMIC 0.033μF ± 10%             |
| C317        | 4822 126 11685 | CERAMIC 4700PF ± 10%              |
| C318        | 4822 126 11685 | CERAMIC 4700PF ± 10%              |
| C319        | 4822 126 11565 | CERAMIC 0.01μF ± 10%              |
| C320        | 4822 126 11565 | CERAMIC 0.01μF ± 10%              |
| C321        | 4822 126 12848 | CERAMIC 0.033μF ± 10%             |
| C322        | 4822 126 12848 | CERAMIC 0.033μF ± 10%             |
| C323        | 4822 126 12061 | CERAMIC 0.1μF ± 10%               |
| C324        | 4822 126 12061 | CERAMIC 0.1μF ± 10%               |
| C325        | ?              |                                   |
| C328        | 4822 124 11394 | TANTALUM 4.7μF 10V                |
| C333        | 4822 126 11681 | CERAMIC 1000PF ± 10%              |
| C334        | 4822 126 11681 | CERAMIC 1000PF ± 10%              |
| C335        | 4822 126 12846 | CERAMIC 0.012μF ± 10%             |
| C336        | 4822 126 12846 | CERAMIC 0.012μF ± 10%             |
| C337        | 4822 124 11383 | TANTALUM 10μF 6.3V                |
| C338        | 4822 124 11383 | TANTALUM 10μF 6.3V                |
| C339        | 4822 124 11396 | TANTALUM 220μF 4V                 |
| C340        | 4822 124 11396 | TANTALUM 220μF 4V                 |
| C341        | 4822 124 11389 | TANTALUM 2.2μF 16V                |
| C342        | 4822 123 11389 | TANTALUM 2.2μF 16V                |
| C343        | 4822 126 11685 | CERAMIC 4700PF ± 10%              |
| C344        | 4822 126 11685 | CERAMIC 4700PF ± 10%              |
| C345        | 4822 124 11394 | TANTALUM 4.7μF 10V                |

| REF. DESIG. | PART NO.       | DESCRIPTION   |
|-------------|----------------|---|
| C346        | 4822 124 11394 | TANTALUM 4.7μF 10V  |
| C347        | ?              |   |
| C352        | 4822 124 11389 | TANTALUM 2.2μF 16V  |
| C353        | 4822 124 11382 | TANTALUM 1μF 16V  |
| C354        | 4822 124 11382 | TANTALUM 1μF 16V  |
| C363        | 4822 124 10772 | TANTALUM 100μF 6V   |
| C373        | 4822 124 11383 | TANTALUM 10μF 6.3V  |
| C374        | 4822 124 11383 | TANTALUM 10μF 6.3V  |
| C401        | 4822 126 12838 | CERAMIC 0.1μF +80%-20%  |
| C402        | 4822 124 11394 | TANTALUM 4.7μF 10V  |
| C403        | 4822 124 11388 | TANTALUM 15μF 6.3V  |
| C410        | 4822 124 11394 | TANTALUM 4.7μF 10V  |
| C412        | 4822 124 11387 | TANTALUM 15μF 4V  |
| C413        | 4822 124 11394 | TANTALUM 4.7μF 10V  |
| C416        | 4822 124 11387 | TANTALUM 15μF 4V  |
| C418        | 4822 126 12838 | CERAMIC 0.1μF +80%-20%  |
| C419        | 4822 126 11681 | CERAMIC 1000PF ± 10%  |
| C420        | 4822 126 12838 | CERAMIC 0.1μF +80%-20%  |
| C421        | 4822 126 12838 | CERAMIC 0.1μF +80%-20%  |
| C425        | ?              |   |
| C427        | 4822 126 11565 | CERAMIC 0.01μF ± 10%  |
| C428        | 4822 124 11394 | TANTALUM 4.7μF 10V  |
| C500        | 4822 126 11678 | CERAMIC 1μF +80%-20%  |
| C501        | 4822 126 11565 | CERAMIC 0.01μF ± 10%  |
| C502        | 4822 126 12838 | CERAMIC 0.1μF +80%-20%  |
| C503        | 4822 122 33777 | CERAMIC 47PF ± 5%   |
| C504        | ?              |   |
| C506        | 4822 126 12838 | CERAMIC 0.1μF +80%-20%  |
| C507        | ?              |   |
| C510        | 4822 122 32667 | CERAMIC 0.01μF +80%-20%   |
| C512        | ?              |   |
| C515        | 4822 126 11671 | CERAMIC 33PF ± 5%   |
| C516        | 4822 122 32667 | CERAMIC 0.01μF +80%-20%   |
| C517        | 4822 122 32667 | CERAMIC 0.01μF +80%-20%   |
| C518        | 4822 124 11385 | TANTALUM 10μF 16V   |
| C519        | 4822 124 11391 | TANTALUM 22μF 10V   |
| C520        | 4822 124 11383 | TANTALUM 10μF 6.3V  |
| C521        | 4822 126 12838 | CERAMIC 0.1μF +80%-20%  |
| C522        | 4822 126 11565 | CERAMIC 0.01μF ± 10%  |
| C900        | 4822 126 11702 | CERAMIC 680PF ± 10%   |
| C901        | 4822 126 11702 | CERAMIC 680PF ± 10%   |
| C911        | 4822 126 11702 | CERAMIC 680PF ± 10%   |
| C912        | 4822 126 11702 | CERAMIC 680PF ± 10%   |
|             |                |  |
|             |                | <b>P401-RESISTORS (ALL CHIP)</b>  |
| R1          | 4822 051 30472 | 4.7KΩ ± 5% 1/16W  |
| R2          | 4822 117 10467 | 33KΩ ± 0.5% 1/16W   |
| R3          | 4822 117 10463 | 22KΩ ± 0.5% 1/16W   |
| R4          | 4822 051 30473 | 47KΩ ± 5% 1/16W   |
| R5          | 4822 051 30221 | 220Ω ± 5% 1/16W   |
| R8          | 4822 051 30223 | 22KΩ ± 5% 1/16W   |
| R9          | 4822 116 83212 | 18KΩ ± 5% 1/16W   |
| R10         | 4822 051 30103 | 10KΩ ± 5% 1/16W   |
| R11         | 4822 051 30223 | 22KΩ ± 5% 1/16W   |
| R13         | 4822 051 30272 | 2.7KΩ ± 5% 1/16W  |
| R14         | 4822 051 30333 | 33KΩ ± 5% 1/16W   |
| R15         | 4822 051 30154 | 150KΩ ± 5% 1/16W  |
| R16         | 4822 116 83211 | 1.8KΩ ± 5% 1/16W  |
| R17         | 4822 051 30101 | 100Ω ± 5% 1/16W   |
| R18         | 4822 051 30224 | 220KΩ ± 5% 1/16W  |
| R19         | 4822 051 30478 | 4.7Ω ± 5% 1/16W   |
| R22         | 4822 116 82487 | 0Ω ± 5% 1/16W   |
| R24         | 4822 051 30104 | 100KΩ ± 5% 1/16W  |
| R25         | 4822 051 30223 | 22KΩ ± 5% 1/16W   |

| REF. DESIG. | PART NO.       | DESCRIPTION                |
|-------------|----------------|----------------------------|
| R26         | 4822 051 30104 | 100KΩ ± 5% 1/16W           |
| R28         | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R29         | 4822 051 30473 | 47KΩ ± 5% 1/16W            |
| R30         | 4822 117 10462 | 2.2KΩ ± 0.5% 1/16W         |
| R51         | 4822 117 10458 | 12KΩ ± 0.5% 1/16W          |
| R52         | 4822 117 10468 | 390Ω ± 0.5% 1/16W          |
| R53         | 4822 117 10457 | 10KΩ ± 0.5% 1/16W          |
| R54         | 4822 117 10471 | 8.2KΩ ± 0.5% 1/16W         |
| R55         | 4822 117 10457 | 10KΩ ± 0.5% 1/16W          |
| R56         | 4822 051 30824 | 820KΩ ± 5% 1/16W           |
| R57         | 4822 051 30824 | 820KΩ ± 5% 1/16W           |
| R58         | 4822 051 30472 | 4.7KΩ ± 5% 1/16W           |
| R59         | 4822 051 30472 | 4.7KΩ ± 5% 1/16W           |
| R60         | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R61         | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R63         | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R66         | 4822 051 30273 | 27KΩ ± 5% 1/16W            |
| R67         | 4822 051 30273 | 27KΩ ± 5% 1/16W            |
| R68         | 4822 051 30101 | 100Ω ± 5% 1/16W            |
| R69         | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R301        | 4822 051 30332 | 3.3KΩ ± 5% 1/16W           |
| R302        | 4822 051 30332 | 3.3KΩ ± 5% 1/16W           |
| R303        | 4822 051 30473 | 47KΩ ± 5% 1/16W            |
| R304        | 4822 051 30473 | 47KΩ ± 5% 1/16W            |
| R305        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R306        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R307        | 4822 361 30322 | 430KΩ ± 5% 1/16W           |
| R308        | 4822 361 30322 | 430KΩ ± 5% 1/16W           |
| R309        | 4822 051 30824 | 820KΩ ± 5% 1/16W           |
| R310        | 4822 051 30824 | 820KΩ ± 5% 1/16W           |
| R311        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R312        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R313        | 4822 051 30332 | 3.3KΩ ± 5% 1/16W           |
| R314        | 4822 051 30332 | 3.3KΩ ± 5% 1/16W           |
| R315        | 4822 116 83215 | 5.6KΩ ± 5% 1/16W           |
| R316        | 4822 116 83215 | 5.6KΩ ± 5% 1/16W           |
| R317        | 4822 051 30222 | 2.2KΩ ± 5% 1/16W           |
| R318        | 4822 051 30222 | 2.2KΩ ± 5% 1/16W           |
| R319        | 4822 117 10461 | 18KΩ ± 0.5% 1/16W          |
| R320        | 4822 117 10461 | 18KΩ ± 0.5% 1/16W          |
| R321        | 4822 117 10467 | 33KΩ ± 0.5% 1/16W          |
| R322        | 4822 117 10467 | 33KΩ ± 0.5% 1/16W          |
| R323        | 4822 117 10466 | 3.3KΩ ± 0.5% 1/16W         |
| R324        | 4822 117 10466 | 3.3KΩ ± 0.5% 1/16W         |
| R325        | 4822 051 30152 | 1.5KΩ ± 5% 1/16W           |
| R326        | 4822 051 30152 | 1.5KΩ ± 5% 1/16W           |
| R327        | 4822 116 83207 | 1.2KΩ ± 5% 1/16W           |
| R328        | 4822 116 83207 | 1.2KΩ ± 5% 1/16W           |
| R329        | 4822 111 92163 | COMPO. 820Ω x 2 ± 5% 1/32W |
| R331        | 4822 051 30473 | 47KΩ ± 5% 1/16W            |
| R332        | 4822 051 30473 | 47KΩ ± 5% 1/16W            |
| R333        | 4822 116 83222 | 82KΩ ± 5% 1/16W            |
| R334        | 4822 116 83222 | 82KΩ ± 5% 1/16W            |
| R341        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R342        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R343        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R344        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R345        | 4822 111 92162 | COMPO. 47KΩ x 2 ± 5% 1/32W |
| R347        | 4822 051 30223 | 22KΩ ± 5% 1/16W            |
| R348        | 4822 051 30223 | 22KΩ ± 5% 1/16W            |
| R349        | 4822 116 83208 | 12KΩ ± 5% 1/16W            |
| R350        | 4822 116 83208 | 12KΩ ± 5% 1/16W            |
| R351        | 4822 051 30154 | 150KΩ ± 5% 1/16W           |
| R352        | 4822 051 30154 | 150KΩ ± 5% 1/16W           |
| R353        | 4822 051 30333 | 33KΩ ± 5% 1/16W            |
| R354        | 4822 051 30333 | 33KΩ ± 5% 1/16W            |
| R355        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R356        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R357        | 4822 116 81046 | 12Ω ± 5% 1/16W             |
| R358        | 4822 116 81046 | 12Ω ± 5% 1/16W             |

| REF. DESIG. | PART NO.       | DESCRIPTION                |
|-------------|----------------|----------------------------|
| R359        | 4822 116 81046 | 12Ω ± 5% 1/16W             |
| R360        | 4822 116 81046 | 12Ω ± 5% 1/16W             |
| R361        | 4822 111 92164 | COMPO. 470Ω x 2 ± 5% 1/32W |
| R363        | 4822 111 92161 | COMPO. 150Ω x 2 ± 5% 1/32W |
| R365        | 4822 051 30152 | 1.5KΩ ± 5% 1/16W           |
| R366        | 4822 051 30152 | 1.5KΩ ± 5% 1/16W           |
| R367        | 4822 051 30104 | 100KΩ ± 5% 1/16W           |
| R368        | 4822 051 30104 | 100KΩ ± 5% 1/16W           |
| R369        | 4822 111 92159 | COMPO. 10KΩ x 2 ± 5% 1/32W |
| R371        | 4822 111 92159 | COMPO. 10KΩ x 2 ± 5% 1/32W |
| R373        | 4822 111 92159 | COMPO. 10KΩ x 2 ± 5% 1/32W |
| R375        | ?              |                            |
| ?           | 4822 051 30105 | 1MΩ ± 5% 1/16W             |
| R378        | ?              |                            |
| R379        | 4822 051 30473 | 47KΩ ± 5% 1/16W            |
| R380        | 4822 051 30473 | 47KΩ ± 5% 1/16W            |
| R381        | ?              |                            |
| ?           | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R384        | ?              |                            |
| R407        | 4822 051 30101 | 100Ω ± 5% 1/16W            |
| R408        | 4822 051 30223 | 22KΩ ± 5% 1/16W            |
| R409        | 4822 051 30223 | 22KΩ ± 5% 1/16W            |
| R413        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R419        | 4822 051 30101 | 100Ω ± 5% 1/16W            |
| R422        | 4822 051 30684 | 680Ω ± 5% 1/16W            |
| R423        | ?              |                            |
| ?           | 4822 051 30104 | 100KΩ ± 5% 1/16W           |
| R425        | ?              |                            |
| R426        | 4822 051 30223 | 22KΩ ± 5% 1/16W            |
| R427        | 4822 051 30223 | 22KΩ ± 5% 1/16W            |
| R428        | 4822 051 30104 | 100KΩ ± 5% 1/16W           |
| R429        | 4822 051 30473 | 47KΩ ± 5% 1/16W            |
| R501        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R502        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R503        | 4822 051 30105 | 1MΩ ± 5% 1/16W             |
| R504        | 4822 116 83215 | 5.6KΩ ± 5% 1/16W           |
| R505        | 4822 116 83208 | 12KΩ ± 5% 1/16W            |
| R506        | 4822 116 83215 | 5.6KΩ ± 5% 1/16W           |
| R507        | 4822 111 92159 | COMPO. 10KΩ x 2 ± 5% 1/32W |
| R509        | 4822 111 92159 | COMPO. 10KΩ x 2 ± 5% 1/32W |
| R511        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R515        | 4822 051 30109 | 10Ω ± 5% 1/16W             |
| R518        | 4822 116 83222 | 82KΩ ± 5% 1/16W            |
| R519        | 4822 051 30472 | 4.7KΩ ± 5% 1/16W           |
| R520        | 4822 111 92157 | COMPO. 100Ω x 2 ± 5% 1/32W |
| R522        | 4822 111 92157 | COMPO. 100Ω x 2 ± 5% 1/32W |
| R524        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R525        | 4822 051 30105 | 1MΩ ± 5% 1/16W             |
| R526        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R527        | 4822 051 30105 | 1MΩ ± 5% 1/16W             |
| R528        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R529        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R530        | ?              |                            |
| ?           | 4822 051 30471 | 470Ω ± 5% 1/16W            |
| R533        | ?              |                            |
| R538        | 4822 111 92164 | COMPO. 470Ω x 2 ± 5% 1/32W |
| R540        | 4822 111 92164 | COMPO. 470Ω x 2 ± 5% 1/32W |
| R546        | ?              |                            |
| ?           | 4822 051 30471 | 470Ω ± 5% 1/16W            |
| R552        | ?              |                            |
| R591        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R592        | 4822 051 30223 | 22KΩ ± 5% 1/16W            |
| R593        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R594        | 4822 051 30223 | 22KΩ ± 5% 1/16W            |
| R595        | 4822 051 30102 | 1KΩ ± 5% 1/16W             |
| R596        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| R597        | 4822 051 30103 | 10KΩ ± 5% 1/16W            |
| U51         | 4822 116 82487 | 0Ω 1/16W                   |

| REF. DESIG.  | PART NO.  | DESCRIPTION   |
|--|---|---|
| U330   |   | 0Ω 1/8W   |
| U505   | 4822 116 82487  | 0Ω 1/16W  |
| U541   | 4822 116 82487  | 0Ω 1/16W  |
| U542   | 4822 116 82487  | 0Ω 1/16W  |
| VR1  | 4822 100 12059  | 3KΩ (B) ± 25% 0.15W TRIMM.  |
| VR400  | 4822 101 30833  | 50KΩ (C) x 2 VARIABLE VOLUME  |
|  |  |  |
| <b>P401-SEMICONDUCTORS</b>   |   |   |
| D1   | 4822 130 83471  | DIODE 1SR154-100TE  |
| D2   | 4822 130 83451  | DIODE MA701TX   |
| D3   | 4822 130 83449  | DIODE MA110TW   |
| D5   | 4822 130 83449  | DIODE MA110TW   |
| D10  | 4822 130 83453  | ZENER DIODE MA8100TX 8.1V   |
| D51  | 4822 130 83449  | DIODE MA110TW   |
| D105   | 4822 130 83444  | DIODE MA143TW   |
| D301   | 4822 130 83447  | DIODE MA141WATW   |
| D303   | 4822 130 83447  | DIODE MA141WATW   |
| D402   | 4822 130 83449  | DIODE MA110TW   |
| D403   | 4822 130 83448  | DIODE MA141WKTW   |
| D405   | 4822 130 83449  | DIODE MA110TW   |
| D406   | 4822 130 83448  | DIODE MA141WKTW   |
| D407   | 4822 130 83445  | DIODE MA143TX   |
| D409   | 4822 130 83449  | DIODE MA110TW   |
| D410   | 4822 130 83449  | DIODE MA110TW   |
| D500   | 4822 130 83449  | DIODE MA110TW   |
| D592   | 4822 130 83449  | DIODE MA110TW   |
| D593   | 4822 130 83449  | DIODE MA110TW   |
| IC1  | 4822 209 32599  | IC, SUPPLY AN8086SE2  |
| IC2  | 4822 209 32609  | IC TK11440MTR   |
| IC3  | 4822 209 32612  | IC TK11540MTR   |
| IC4  | 4822 209 32611  | IC TK11447MTR   |
| IC5  | 4822 209 32608  | IC RN5RL40AAT1  |
| IC6  | 4822 209 32604  | IC, RESET S8121SGQAT1   |
| IC7  | 4822 209 32613  | IC TK11445MTR   |
| IC8  | 4822 209 32605  | IC, OP AMP T75W393FUT12   |
| IC9  | 4822 209 32595  | IC TC7W00FUT12L   |
| IC400  | 4822 209 32607  | IC NJM2115MT1   |
| IC401  | 4822 209 32602  | IC, D. FILTER SM5881S-ET  |
| IC402  | 4822 209 32606  | IC, DAC μPD63200GSE2  |
| IC404  | 4822 209 32622  | IC, DOLBY BA1106FST2  |
| IC406  | 4822 209 32607  | IC, L.P.F. NJM2115MT1   |
| IC408  | 4822 209 32598  | IC NJM3415MT1   |
| IC500  | 4822 209 32615  | MICROPROCESSOR, μ-COM, MNE3214RTAA1   |
| IC501  | 4822 209 32603  | IC RN5VL36AAT1  |
| IC502  | 4822 209 32619  | IC, DEQ SAA2032GP   |
| IC503  | 4822 209 32617  | IC, TFE SAA2022GP   |
| IC504  | 4822 209 32597  | IC, DRAM MN425610AT1  |
| IC505  | 4822 209 32616  | IC, SFC SAA2002GP   |
| IC506  | 4822 209 32601  | IC, DAI M51581GP  |
| IC507  | 4822 209 32594  | IC, INVERTER TC7S04FTE85L   |
| Q1   | 4822 130 63391  | DIGITAL TRANSISTOR, UN5111TW  |
| Q2   | 4822 130 63407  | TRANSISTOR 2SD1628FG-TC   |
| Q3   | 4822 130 63391  | DIGITAL TRANSISTOR, UN5111TW  |
| Q4   | 4822 130 63407  | TRANSISTOR 2SD1628FG-TC   |
| Q6   | 4822 130 63396  | DIGITAL TRANSISTOR, UN5212TW  |
| Q7   | 4822 130 61059  | DIGITAL TRANSISTOR, NPN UN5213  |
| Q8   | 4822 130 61057  | DIGITAL TRANSISTOR, UN5113  |
| Q9   | 4822 130 61057  | DIGITAL TRANSISTOR, NPN UN5213  |
| Q10  | 4822 130 63397  | DIGITAL TRANSISTOR, UN5214TW  |
| Q11  | 4822 130 63404  | TRANSISTOR 2SB1218ASTW  |
| Q12  | 4822 130 61059  | DIGITAL TRANSISTOR, NPN UN5213  |
| Q13  | 4822 130 63396  | DIGITAL TRANSISTOR, UN5212TW  |
| Q17  | 4822 130 61059  | DIGITAL TRANSISTOR, NPN UN5213  |
| Q18  | 4822 130 61059  | DIGITAL TRANSISTOR, NPN UN5213  |
| Q19  | 4822 130 61057  | DIGITAL TRANSISTOR, UN5113  |
| Q20  | 4822 130 63397  | DIGITAL TRANSISTOR, UN5214TW  |
| Q21  | 4822 130 61059  | DIGITAL TRANSISTOR, NPN UN5213  |
| Q23  | 4822 130 63396  | DIGITAL TRANSISTOR, UN5212TW  |

| REF. DESIG.               | PART NO.       | DESCRIPTION                    |
|---------------------------|----------------|--------------------------------|
| Q40                       | 4822 130 63405 | TRANSISTOR 2SC4081RTW          |
| Q41                       | 4822 130 61059 | DIGITAL TRANSISTOR, NPN UN5213 |
| Q42                       | 4822 130 61059 | DIGITAL TRANSISTOR, NPN UN5213 |
| Q301                      | 4822 130 63406 | TRANSISTOR 2SD1328RTW          |
| Q302                      | 4822 130 63406 | TRANSISTOR 2SD1328RTW          |
| Q307                      |                | ?                              |
| Q310                      | 4822 130 63406 | TRANSISTOR 2SD1328RTW          |
| Q311                      |                | ?                              |
| Q314                      | 4822 130 61061 | DIGITAL TRANSISTOR, UN5215     |
| Q315                      |                | ?                              |
| Q320                      | 4822 130 63408 | TRANSISTOR 2SD1819AQTW         |
| Q323                      | 4822 130 61061 | DIGITAL TRANSISTOR, UN5215     |
| Q324                      | 4822 130 61061 | DIGITAL TRANSISTOR, UN5215     |
| Q400                      | 4822 130 63397 | DIGITAL TRANSISTOR, UN5214TW   |
| Q402                      | 4822 130 63392 | DIGITAL TRANSISTOR, UN5114TW   |
| Q403                      | 4822 130 63397 | DIGITAL TRANSISTOR, UN5214TW   |
| Q405                      | 4822 130 63392 | DIGITAL TRANSISTOR, UN5114TW   |
| Q406                      | 4822 130 61059 | DIGITAL TRANSISTOR, NPN UN5213 |
| Q407                      | 4822 130 61057 | DIGITAL TRANSISTOR, UN5113     |
| Q409                      | 4822 130 63404 | TRANSISTOR 2SB1218ASTW         |
| Q410                      | 4822 130 63398 | DIGITAL TRANSISTOR, X4316TW    |
| Q411                      | 4822 130 61059 | DIGITAL TRANSISTOR, NPN UN5213 |
| Q412                      | 4822 130 61059 | DIGITAL TRANSISTOR, NPN UN5213 |
| Q500                      | 4822 130 63391 | DIGITAL TRANSISTOR, UN5111TW   |
| Q501                      | 4822 130 61059 | DIGITAL TRANSISTOR, NPN UN5213 |
| Q502                      | 4822 130 61057 | DIGITAL TRANSISTOR, UN5113     |
| Q503                      | 4822 130 61059 | DIGITAL TRANSISTOR, NPN UN5213 |
| Q504                      | 4822 130 61061 | DIGITAL TRANSISTOR, UN5215     |
| Q505                      | 4822 130 61059 | DIGITAL TRANSISTOR, NPN UN5213 |
| <b>P401-COILS</b>         |                |                                |
| B1                        | 4822 158 10889 | FERRITE CORE                   |
| B2                        | 4822 158 10889 | FERRITE CORE                   |
| B3                        | 4822 158 10891 | FERRITE CORE                   |
| B331                      | 4822 158 10891 | FERRITE CORE                   |
| B332                      | 4822 158 10891 | FERRITE CORE                   |
| B360                      | 4822 158 10888 | FERRITE CORE                   |
| B361                      |                | ?                              |
| B364                      | 4822 158 10891 | FERRITE CORE                   |
| B501                      | 4822 158 10891 | FERRITE CORE                   |
| B502                      | 4822 158 10891 | FERRITE CORE                   |
| L2                        | 4822 157 70262 | CHOKE COIL, 10μH               |
| L3                        | 4822 157 70262 | CHOKE COIL, 10μH               |
| L4                        | 4822 157 70765 | CHOKE COIL                     |
| L500                      | 4822 157 70766 | CHOKE COIL, 10μH ± 10%         |
| L501                      | 4822 157 70766 | CHOKE COIL, 10μH ± 10%         |
| <b>P401-MISCELLANEOUS</b> |                |                                |
| F1                        | 4822 523 30439 | FUSE, RSFCA16-U                |
| CN1                       | 4822 265 31126 | JACK, P=1.25                   |
| CN501                     | 4822 265 31122 | JACK, TO FPC                   |
| CN505                     | 4822 265 31117 | JACK, TO FPC                   |
| JK2                       | 4822 265 31125 | JACK, DC IN                    |
| JK400                     | 4822 265 31123 | JACK                           |
| JK401                     | 4822 265 31124 | JACK, H.P                      |
| JK402                     | 4822 265 31127 | JACK, OPT. GP1F31T             |
| S400                      | 4822 277 21708 | SLIDE SWITCH, 1-2 CLICK        |
| S401                      | 4822 277 21709 | SLIDE SWITCH, 1-3 CLICK        |
| S501                      | 4822 277 21708 | SLIDE SWITCH, 1-2 CLICK        |
| S502                      | 4822 277 21708 | SLIDE SWITCH, 1-2 CLICK        |
| X500                      | 4822 242 81552 | CERAMIC VIBRATOR. 6.00MHZ      |
| X502                      | 4822 242 81554 | X-TAL, RSXC24M5S02T            |
| X503                      | 4822 242 81553 | X-TAL, RSXC22M5S03T            |



| REF.<br>DESIG. | PART NO.       | DESCRIPTION   |
|----------------|----------------|---|
| 31             | 4822 130 91268 | <b>K001-LCD CIRCUIT BOARD</b><br><b>K001-MISCELLANEOUS</b><br>LCD KIT |
| S1<br>?<br>S11 | 4822 276 13447 | PUSH SWITCH   |

**NOTE ON SAFETY**

Symbol ▲ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ▲ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.