

# MDS-JA50ES

## SERVICE MANUAL

US Model  
AEP Model  
UK Model



Photo: GOLD

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|                                    |              |
|------------------------------------|--------------|
| Model Name Using Similar Mechanism | NEW          |
| MD Mechanism Type                  | MDM-4A       |
| Base Unit Type                     | MBU-2B       |
| Optical Pick-up Type               | KMS-210A/J-N |

### SPECIFICATIONS

|                        |  |
|------------------------|--|
| System                 | MiniDisc digital audio system  |
| Disc                   | MiniDisc   |
| Laser                  | Semiconductor laser ( $\lambda = 780 \text{ nm}$ )<br>Emission duration: continuous  |
| Laser output           | Less than $44.6 \mu\text{W}^*$<br><br>* This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture. |
| Laser diode properties | Material: GaAlAs   |
| Revolutions (CLV)      | 400 rpm to 900 rpm   |
| Error correction       | Advanced Cross Interleave Reed Solomon Code (ACIRC)  |
| Sampling frequency     | 44.1 kHz   |
| Coding                 | Adaptive Transform Acoustic Coding (ATRAC)   |
| Modulation system      | EFM (Eight-to-Fourteen Modulation)   |
| Number of channels     | 2 stereo channels  |
| Frequency response     | 5 to 20,000 Hz $\pm 0.3 \text{ dB}$  |
| Signal-to-noise ratio  | Over 105 dB during playback  |
| Wow and flutter        | Below measurable limit   |

#### Inputs

|                    | Jack type                     | Input impedance             | Rated input          | Minimum input |
|--------------------|-------------------------------|-----------------------------|----------------------|---------------|
| LINE(ANALOG) IN    | Phono jacks                   | 47 kilohms                  | 500 mVrms            | 125 mVrms     |
| DIGITAL IN COAXIAL | Phono jack                    | 75 ohms                     | 0.5 Vp-p, $\pm 20\%$ | —             |
| DIGITAL IN OPT1    | Square optical connector jack | Optical wave length: 660 nm | —                    | —             |
| DIGITAL IN OPT2    | Square optical connector jack | Optical wave length: 660 nm | —                    | —             |

#### Outputs

|                     | Jack type                     | Rated output           | Load impedance      |
|---------------------|-------------------------------|------------------------|---------------------|
| PHONES              | Stereo phone jack             | 28 mW                  | 32 ohms             |
| LINE(ANALOG) OUT    | Phono jacks                   | 2 Vrms (at 50 kilohms) | Over 10 kilohms     |
| DIGITAL OUT OPTICAL | Square optical connector jack | -18 dBm                | Wave length: 660 nm |

MINIDISC DECK



SONY®

## General

### Power requirements

| Where purchased    | Power requirements       |
|--------------------|--------------------------|
| U.S.A.             | 120 V AC, 60 Hz          |
| Continental Europe | 220 – 230 V AC, 50/60 Hz |

Power consumption 26 W

Dimensions (approx.) (w/h/d) incl. projecting parts  
430 × 125 × 375 mm  
(17 × 5 × 14 7/8 in.)

Mass (approx.) 14.3 kg (31 lbs 3 oz)

### Supplied accessories

- Audio connecting cords (2)
- Remote commander (remote) RM-D13M (1)
- Sony SUM-3 (NS) batteries (2)
- Operating Instructions
- Warranty card

Design and specifications are subject to change without notice.

## CAUTION

Danger of explosion if battery is incorrectly replaced.  
Replace only with the same or equivalent type recommended by the equipment manufacturer.  
Discard used batteries according to manufacture's instructions.

## ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering.  
Udskiftning må kun ske med batteri af samme fabrikat og type.  
Levér det brugte batteri tilbage til leverandøren.

## ADVARSEL

Eksplosjonsfare ved feilaktig skifte av batteri.  
Benytt samme batteritype eller en tilsvarende type anbefalt av  
apparatfabrikanten.  
Brukte batterier katterier kasseres i henhold til fabrikantens

## VARNIG

Explosionsfara vid felaktigt batteribyte.  
Använd samma batterityp eller en likvärdig typ som rekommenderas  
av apparattillverkaren.  
Kassera använt batteri enligt gällande föreskrifter.

## VAROITUS

Parist voi räjähtää, jos se on virheellisesti asennettu.  
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.  
Hävitätä käytetty paristo valmistajan ohjeiden mukaisesti.

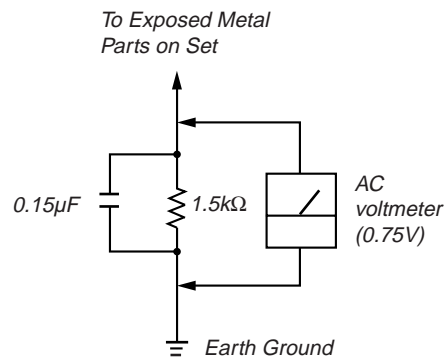
## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:  
Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

## LEAKAGE

The AC leakage from any exposed metal part to earth Ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

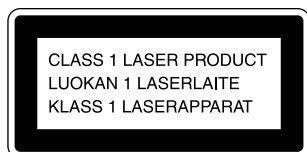


**Fig. A. Using an AC voltmeter to check AC leakage.**

## SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK  $\triangle$  OR DOTTED LINE WITH MARK  $\triangle$  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

The laser component in this product is capable of emitting radiation exceeding the limit for Class 1.



This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

The following caution label is located inside the unit.

|          |   |
|----------|---|
| CAUTION  | : INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.  |
| ADVARSEL | : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING. |
| VARO!    | : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA DLET ALTTIINA LASERSATEILYLLE.                                      |
| VARNING  | : LASERSTRÅLING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URÖPPPLAD.   |
| ADVARSEL | : USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNGÅ EKSPONERING FOR STRÅLEN.  |

#### CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

#### Notes on chip component replacement

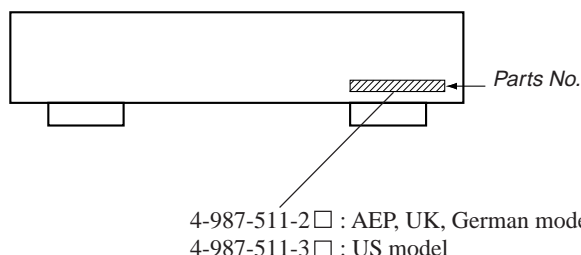
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

#### Flexible Circuit Board Repairing

- Keep the temperature of soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

#### MODEL IDENTIFICATION

— BACK PANEL —



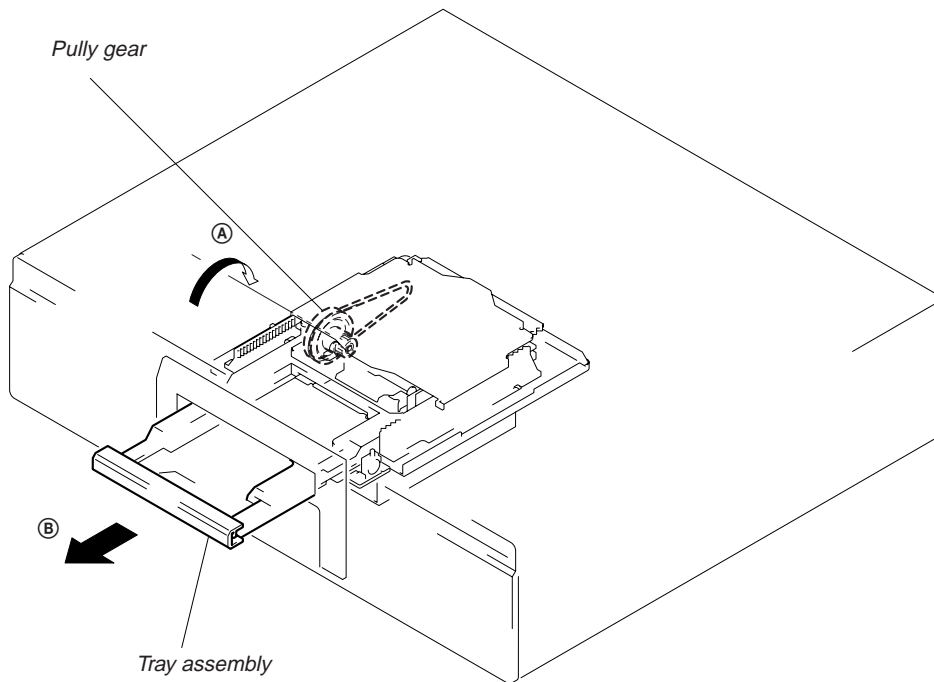
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## SECTION 1 SERVICING NOTE

### HOW TO OPEN THE DISC TRAY WHEN POWER SWITCH TURNS OFF

- ① Remove the fourteen screws (BVTT 3x8) from the bottom plate.
- ② Remove the bottom plate.
- ③ Rotate the pulley gear in the arrow direction (A), and open the tray assembly in the arrow direction (B).



### FORCED RESET

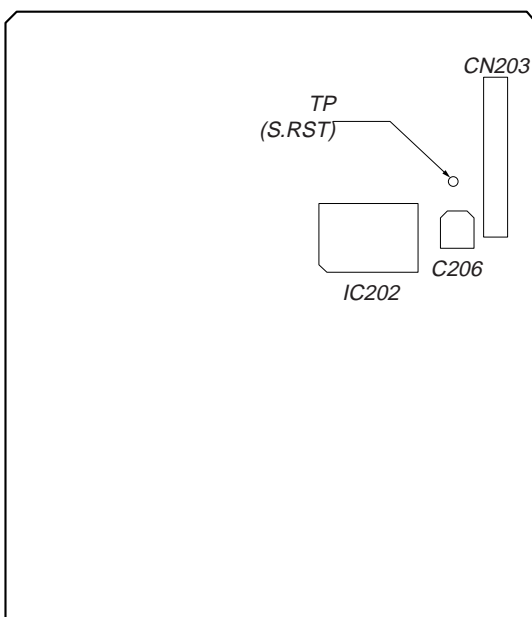
The system microprocessor can be reset in the following way.

Use these methods when the unit cannot be operated normally due to the overrunning of the microprocessor, etc.

#### Method 1:

Set TP (S.RST) of the DIG board to ground momentarily.

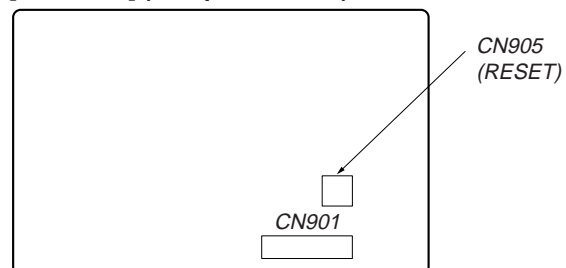
#### [DIG board] (Side A)



#### Method 2:

Disconnect the power plug, and short-circuit CN905 of the PW board with a pair of tweezers, etc.

#### [PW board] (Component Side)





## RETRY CAUSE DISPLAY MODE

- In this test mode, the causes for retry of the unit during recording can be displayed on the fluorescent display tube. This is useful for locating the faulty part of the unit.
- The retry cause, number of retries, and number of retry errors are displayed. Each is displayed in hexadecimal number.

### Method:

1. Load a recordable disc whose contents can be erased into the unit.
2. Press the ■ button, ≡OPEN/CLOSE button, DISPLAY/CHAR button simultaneously.
3. Press the ● button, and start recording.
4. The ## value increases with each retry. If an error occurs after a retry, the @@ count will also increase.
5. To exit the test mode, press the TIME button.

**Fig. 1 Reading the Test Mode Display**

R.T s \* \* c # # e @ @

### Fluorescent Display Tube Signs

- \* \* : Cause of retry  
# # : Number of retries  
@ @ : Number of retry errors

All three displays above are in hexadecimal numbers.

## Reading the Retry Cause Display

|             | Higher Bits |    |    |    | Lower Bits |    |    |    | Hexa-<br>decimal | Cause of Retry        | Occurring conditions                                    |
|-------------|-------------|----|----|----|------------|----|----|----|------------------|-----------------------|---|
| Hexadecimal | 8           | 4  | 2  | 1  | 8          | 4  | 2  | 1  |                  |                       |   |
| Bit         | b7          | b6 | b5 | b4 | b3         | b2 | b1 | b0 |                  |                       |   |
| Binary      | 0           | 0  | 0  | 0  | 0          | 0  | 0  | 1  | 01               | shock *1              | When more than 3.5 shocks are detected                  |
|             | 0           | 0  | 0  | 0  | 0          | 0  | 1  | 0  | 02               | ader5                 | When ADER was counted more than five times continuously |
|             | 0           | 0  | 0  | 0  | 0          | 1  | 0  | 0  | 04               | Discontinuous address | When ADIP address is not continuous                     |
|             | 0           | 0  | 0  | 0  | 1          | 0  | 0  | 0  | 08               | (Not used)            | (Not used)  |
|             | 0           | 0  | 0  | 1  | 0          | 0  | 0  | 0  | 10               | FCS incorrect         | When not in focus                                       |
|             | 0           | 0  | 1  | 0  | 0          | 0  | 0  | 0  | 20               | IVR rec error         | When ABCD signal level exceeds the specified range      |
|             | 0           | 1  | 0  | 0  | 0          | 0  | 0  | 0  | 40               | Spindle is slow       | When spindle rotation is detected as slow               |
|             | 1           | 0  | 0  | 0  | 0          | 0  | 0  | 0  | 80               | Access fault          | When access operation is not performed normally         |

\*1 Some displays are not used depending on the microprocessor version.

### Reading the Display:

Convert the hexadecimal display into binary display. If more than two causes, they will be added.

#### Example

When 42 is displayed:

Higher bit : 4 = 0100 → b6

Lower bit : 2 = 0010 → b1

In this case, the retry cause is combined of “spindle is slow” and “ader5”.

When A2 is displayed:

Higher bit : A = 1010 → b7+b5

Lower bit : 2 = 0010 → b1

The retry cause in this case is combined of “access fault”, “IVR rec error”, and “ader5”.

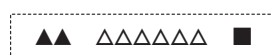
### Hexadecimal → Binary Conversion Table

| Hexadecimal | Binary | Hexadecimal | Binary |
|-------------|--------|-------------|--------|
| 0           | 0000   | 8           | 1000   |
| 1           | 0001   | 9           | 1001   |
| 2           | 0010   | A           | 1010   |
| 3           | 0011   | B           | 1011   |
| 4           | 0100   | C           | 1100   |
| 5           | 0101   | D           | 1101   |
| 6           | 0110   | E           | 1110   |
| 7           | 0111   | F           | 1111   |

### Reference:

In this test mode, when the ▷ button is pressed, and the disc is played back, the “PLAYBACK MODE” is set.

The display becomes as shown in Fig. 2. The playback mode is not used in particular during servicing.



**Fig. 2 Display during Playback Mode**

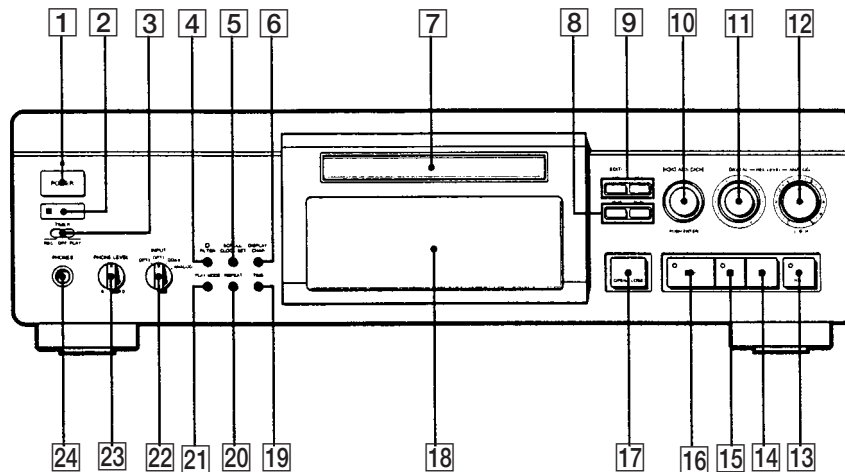
▲ : Parts No. (Name of area named on TOC)

△△△△△ : Address (Physical address on disc)

■ : Track mode (Copyright information of each part, information on copyright, etc.)

## SECTION 2 GENERAL

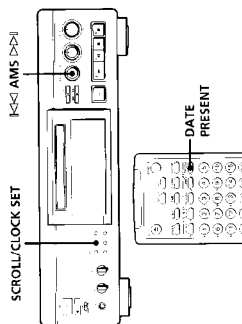
### Location of Parts and Controls



- |   |                                     |
|---|-------------------------------------|
| <b>1</b> POWER switch   | <b>10</b> AMS knob                  |
| <b>2</b> Remote sensor  | <b>11</b> DIGITAL REC LEVEL knob    |
| <b>3</b> TIMER switch   | <b>12</b> ANALOG REC LEVEL L/R knob |
| <b>4</b> FILTER button  | <b>13</b> ● REC (recording) button  |
| <b>5</b> SCROLL/CLOCK SET button  | <b>14</b> ■ (stop) button           |
| <b>6</b> DISPLAY/CHAR button  | <b>15</b>    (pause) button         |
| <b>7</b> Disc tray  | <b>16</b> ► (play) button           |
| <b>8</b> ◀◀/▶▶ (fast backward/fast forward) buttons   | <b>17</b> ≡ OPEN/CLOSE button       |
| <b>9</b> EDIT/NO /YES buttons   | <b>18</b> Display window            |
| Pressing the EDIT/NO button once, it becomes the edit menu and the recorded disc can be programmed. | <b>19</b> TIME button               |
| Pressing it twice it becomes the set up menu (page 43), and various settings are possible.          | <b>20</b> REPEAT button             |
|   | <b>21</b> PLAY MODE button          |
|   | <b>22</b> INPUT switch              |
|   | <b>23</b> PHONE LEVEL knob          |
|   | <b>24</b> PHONES jack               |

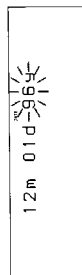
## Setting the Clock

Once you set the MD deck's internal clock, the MD deck will automatically record the date and time of all recordings. When playing a track, you can display the date and time the track was recorded (see page 21). Time on this deck is displayed on a 12-hour clock (Canadian model only) or a 24-hour clock (European model only).

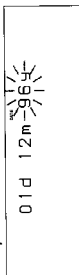


- 1 With the deck in standby status (the POWER indicator lights red), press SCROLL/CLOCK SET down for about 2 seconds until the year indication in the display starts flashing.

Canadian model

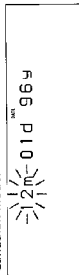


European model

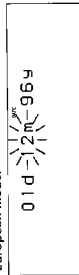


- 2 Turn AMS to enter the current year, then press AMS. The year indication stops flashing, and the month indication starts flashing.

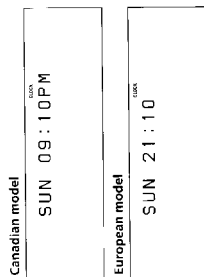
Canadian model



European model



- 3 Repeat Step 2 to enter the month, day, hour, and minute.



- 4 For precise time and date stamping of recordings Reset the time at least once a week.

**Note**  
If the AC power cord is disconnected or the MAIN POWER switch on the rear panel has been set to OFF (only on the European model) for a long time, the memorized clock settings will disappear and "STANDBY" will flash in the display the next time you plug in and turn on the deck. If this happens, reset the clock.

## Displaying the current date and time

You can display the current date and time any time even when the deck is in standby status.

Press DATE PRESENT.

Each press of the button changes the display as follows:

→ Current display → Date → Time

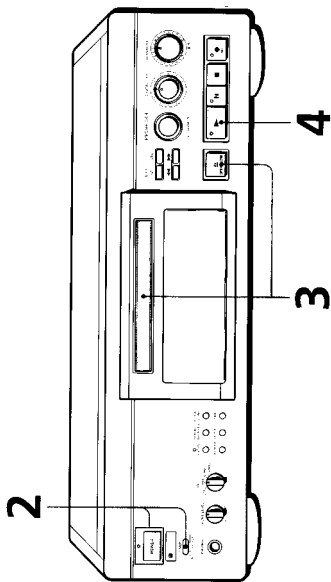
- 5 You can display the current date and time with an on-deck button

Press the SCROLL/CLOCK SET button. Each press of the button changes the display in the same order as the DATE PRESENT button on the remote does.

## Changing the date and/or time

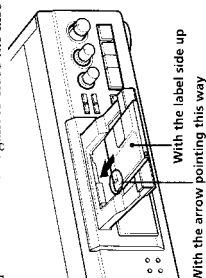
- 1 With the deck in standby status (the POWER indicator lights red), press SCROLL/CLOCK SET down for about 2 seconds until the year indication in the display starts flashing.
- 2 Press AMS repeatedly until the item you want to change flashes.
- 3 Turn AMS to change the contents of the selected item.
- 4 To complete the setting, press AMS repeatedly until all items stop flashing.

## Playing an MD



See pages 4 and 5 for hookup information.

- 1 Turn on the amplifier and set the source selector to the position for MD deck.
- 2 After confirming that TIMER is set to OFF, press POWER. The POWER indicator changes from red to green.
- 3 Press OPEN/CLOSE to open the disc tray, insert an MD, and then press the button again to close the disc tray.



- 4 Press ►. The deck starts playing. Adjust the volume on the amplifier.

To Do the following:

|                           |  |
|---------------------------|--|
| Stop playing              | Press ■  |
| Pause playing             | Press II. Press the button again or press ► to resume playing. |
| Go to the next track      | Turn AMS clockwise (or press ► on the remote).                 |
| Go to the preceding track | Turn AMS counterclockwise (or press ◀ on the remote).          |
| Take out the MD           | Press ▲ OPEN/CLOSE after stopping playing.                     |

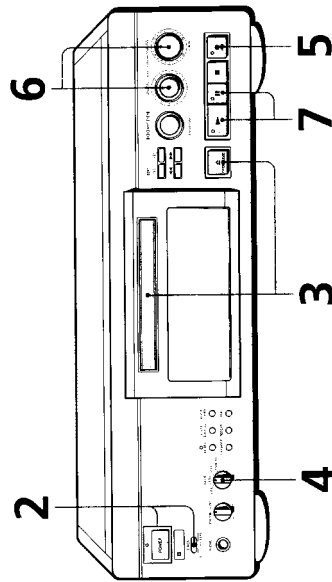
- 6 You can locate and play back a track while the deck is stopped

1 Turn AMS (or press ◀ or ▶) until the number of the track you want to play appears.

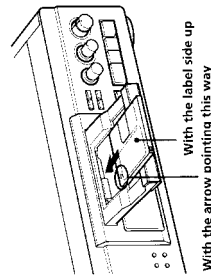
2 Press AMS or ►.

- 7 To use headphones Connect them to PHONES jack. Use PHONE LEVEL to adjust the volume.

## Recording on an MD



- 1** Turn on the amplifier and play the program source you want to record.
- 2** After confirming that **TIMER** is set to **OFF**, press **POWER**. The **POWER** indicator changes from red to green.
- 3** Insert a recordable MD and close the disc tray.



If the MD has a recorded material on it, the deck will automatically start recording from the end of the last recorded track.

- 4** Set **INPUT** to the corresponding input connector.

| To record through  | Set INPUT to |
|--------------------|--------------|
| LINE/ANALOG IN     | ANALOG       |
| DIGITAL IN COAXIAL | COAX         |
| DIGITAL IN OPT1    | OPT1         |
| DIGITAL IN OPT2    | OPT2         |

- 5** Press **● REC**.  
The deck becomes ready to record.
- 6** Adjust the recording level.  
**When recording through the DIGITAL IN COAXIAL, OPT1, or OPT2 connector**  
Setting the **DIGITAL REC LEVEL** control at 0 is satisfactory for most purposes. For details, see page 13.  
**When recording through the LINE/ANALOG IN connectors**  
Setting the **ANALOG REC LEVEL L/R** controls at 4 is satisfactory for most purposes. For details, see page 14.
- 7** Press **▶** or **||**.  
Recording starts.
- 8** Start playing the program source.

### Do not disconnect the deck from the power source immediately after recording

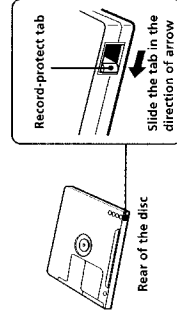
If you do, recorded material may not be saved to the MD. To save the material after recording, press **⏏ OPEN/CLOSE** to take out the MD or change the deck to standby by pressing **POWER**. "TOC Writing" will flash in the display at this time.  
After "TOC Writing" steps flashing and goes out, you can pull out the AC power cord.

| To               | Press   |
|------------------|---|
| Stop recording   | <b>■</b>  |
| Pause recording* | <b>  </b> Press the button again or press <b>▶</b> to resume recording. |
| Take out the MD  | <b>⏏ OPEN/CLOSE</b> after stopping                                      |

\* Whenever you pause recording, the track number increases by one. For example, if you paused recording while recording on track 4, the track number increases by one and recording continues on the new track when restarted.

### To protect an MD against accidental erasure

To make it impossible to record on an MD, slide the tab in the direction of arrow, opening the slot. To allow recording, close the slot.



## Notes on Recording

### If "Protected" appears in the display

The MD is record-protected. Close the slot to record on the disc (see "To protect an MD against accidental erasure" on page 9).

### If "Din Unlock" flashes in the display

- The digital program source is not connected as you set with the INPUT switch in Step 4 on page 8. To continue, connect the program source properly.
- The program source is not on.
- Turn on the program source.

### Depending on the menu settings and source being recorded, track numbers are marked in following ways:

- When recording from a CD or MD with the INPUT switch set at COAX, OPT1, or OPT2 and the source connected through the respective DIGITAL IN connector:
 

The deck automatically marks track numbers in the same sequence as the original. If, however, a track is repeated two or more times (e.g. by single-track repeat play) or two or more tracks with the same track number (e.g. from different MDs or CDs) are played, the track or tracks are recorded as part of a single, continuous track with a single track number. If the source is an MD, track numbers may not be marked for tracks of less than 4 seconds.
- When recording from a source connected through the LINE(ANALOG) IN connectors with the INPUT switch set at ANALOG or when recording from a DAT or satellite broadcast connected through one of the DIGITAL IN connectors with the INPUT switch set at the respective digital position and "T.Mark Off" selected in the S02 menu:
 

The source will be recorded as a single track.
- Even while recording an analog source or a DAT or satellite broadcast, you can mark track numbers if a setting other than "T.Mark Off" is selected in the S02 menu (see "Marking Track Numbers While Recording" on page 14).
- When recording from DAT or satellite broadcasts with the INPUT switch set at the respective digital position, the deck automatically marks a track number whenever the sampling frequency of the input signal changes regardless of the S02 menu setting.

### You can mark track numbers during or after recording

For details see "Marking Track Numbers While Recording" (page 14) and "Dividing Recorded Tracks" (page 31).

### You can mark track numbers at 1- or 5-minute intervals

For details, see "Marking track numbers automatically at regular intervals" (page 15).

### When "TOC Writing" flashes in the display

The deck is currently updating the Table Of Contents (TOC). Do not move the deck or pull out the AC power cord. Changes to an MD made through recording are saved only when you update the TOC by ejecting the MD or changing the deck to standby by pressing the POWER switch.

### The MD deck uses the SCMS (Serial Copy Management System on page 40)

MDs recorded through digital input connector cannot be copied onto other MDs or DAT tapes through the digital output connector.

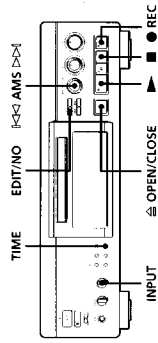
### When recording digital signals that have been emphasized (in the higher frequencies)

The signal is automatically de-emphasized (with attenuation proportional to the degree of emphasis) and the level of the de-emphasized signal is indicated on the peak level meters.

### When the deck is recording or in recording pause, digital signals input through one of the DIGITAL IN connectors are output to the DIGITAL OUT OPTICAL connector with the same sampling rate

To change the digital input signal to another sampling rate for output (without recording it to an MD), use Input Monitor Function (see page 11).

## Useful Tips for Recording



### Checking the remaining recordable time on the MD

Press TIME.

- When you press the TIME button while recording, the remaining recordable time on the MD appears.
- When you press the TIME button repeatedly while the deck is stopped, the display alternates between total disc playing time and remaining recordable time on the MD (see page 20).

### Monitoring the input signal (Input Monitor)

Before starting recording, you can monitor the selected input signal through the deck's output connectors.

- Press **OPEN/CLOSE** to remove the MD.
- Set INPUT according to the input signal you want to monitor.

#### When the INPUT switch is set at ANALOG

The analog signal input through the LINE(ANALOG) IN connectors is output to the DIGITAL OUT OPTICAL connector after A/D conversion, and then to the LINE(ANALOG) OUT connectors and the PHONES jack after D/A conversion.

#### When the INPUT switch is set to a digital source

After passing through the sampling rate converter, the digital signal input through the respective DIGITAL IN connector is output to the DIGITAL OUT OPTICAL connector, and after D/A conversion to the LINE(ANALOG) OUT connectors and PHONES jack. Either "32kHz", "44.1kHz", or "48kHz" appears in the display depending on the sampling rate of the digital signal.

- Press **REC**.

If the INPUT switch is set at ANALOG, "AD-DA" appears in the display.

If the INPUT switch is set at a digital position, "DA" appears in the display.

### If "Auto Cut" appears in the display (Auto Cut)

There has been no sound input for 30 seconds during recording. The 30 seconds of silence are replaced by a blank of about 3 seconds and the deck changes to recording pause.



#### You can turn off the Auto Cut Function

For details, see "To turn off the Smart Space Function and Auto Cut Function" below. Note that when you turn off the Auto Cut Function, the Smart Space Function is turned off automatically.

### If "Smart Space" appears in the display (Smart Space)

There has been an extended silence of 4 to 30 seconds in length during recording. The silence is replaced with a blank of about 3 seconds and the deck continues recording. Note that new track numbers may not be marked for portions recorded while this function is activated.

### To turn off the Smart Space Function and Auto Cut Function

- While the deck is stopped, press EDIT/NO twice.
- Turn AMS to display the S08 menu, then press AMS.
- Turn AMS to select "S-Space Off", then press AMS.
- Press EDIT/NO.

### To turn on the Smart Space Function and Auto Cut Function again

- Do Steps 1 and 2 in "To turn off the Smart Space Function and Auto Cut Function" above.
- Turn AMS to select "S-Space On", then press AMS.
- Press EDIT/NO.

#### Notes

- When you turn off the Smart Space Function, the Auto Cut Function is also turned off automatically.
- The Smart Space Function and Auto Cut Function are factory set to on.
- The Smart Space Function does not affect the order of the track numbers being recorded, even if the blank space occurs in the middle of a track.
- If you turn off the deck or disconnect the AC power cord, the deck will recall the last setting (On or Off) of the Smart Space and Auto Cut Functions the next time you turn on the deck.

### Playing back tracks just recorded

Do this procedure to immediately play back tracks that have just been recorded.

Press **▶** immediately after stopping recording.

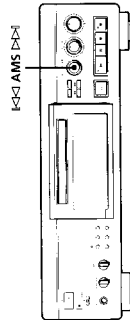
Playback starts from the first track of the material just recorded.

### To play from the first track of the MD after recording

1 Press **■** again after stopping recording.

2 Press **▶**.

Playback starts from the first track of the MD.



1 Do Steps 1 to 4 in "Recording on an MD" on page 8.

2 Turn AMS (or press **◀◀** or **▶▶**) until the number of the track to be recorded over appears.

3 To record from the start of the track, continue from Step 5 in "Recording on an MD" on page 9.

### While "TR" flashes in the display

The deck is recording over an existing track, and stops flashing when it reaches the end of the recorded portion.

### To record from the middle of the track

1 After Step 2 above, press **▶** to start playback.

2 Press **■** where you want to start recording.

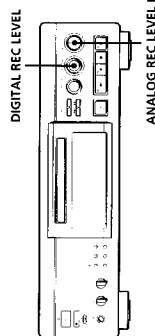
3 Continue from Step 5 in "Recording on an MD" on page 9.

### Note

You cannot record from the middle of an existing track when the "PROGRAM" or "SHUFFLE" is on.

## Adjusting the Recording Level

Use the DIGITAL REC LEVEL control or the ANALOG REC LEVEL L/R controls to adjust the recording level before starting recording.

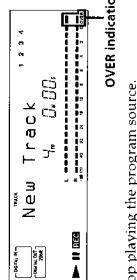


### Adjusting the digital recording level

1 Do Steps 1 to 5 in "Recording on an MD" on pages 8 and 9.

2 Play the portion of the program source with the strongest signal level.

3 While monitoring the sound, turn DIGITAL REC LEVEL (or press DIGITAL REC LEVEL +/-) to adjust the recording level so that the peak level meters reach their highest point without turning on the OVER indication. Occasional lighting of "OVER" is acceptable.



4 Stop playing the program source.

5 To start recording, do the procedure starting from Step 7 in "Recording on an MD" on page 9.

### You can use the S12 menu to select the signal levels adjusted by the DIGITAL REC LEVEL control

1 While the deck is stopped, press EDIT/NO twice.

2 Turn AMS to display the S12 menu, then press AMS.

3 Turn AMS to select the levels to be adjusted by turning DIGITAL REC LEVEL.

| To  | Select     |
|---|------------|
| adjust both the recording and playback levels | DigLvl All |
| adjust the recording level only               | DigLvl Rec |
| disable the DIGITAL REC LEVEL control         | DigLvl Off |

4 Press EDIT/NO.

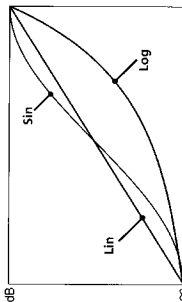
### You can select the type of increment/decrement curve for adjusting recording and/or playback level

1 While the deck is stopped, press EDIT/NO twice.

2 Turn AMS to display the S13 menu, then press AMS.

3 Turn AMS to select "DigLvl Lin", "DigLvl Sin", or "DigLvl Log", then press EDIT/NO.

The increment/decrement curves are shown in the graph below.  
All curves become "Lin" when the signal level goes beyond 0 dB.



The No Clip Function can be used to decrease the recording level gradually when a signal of excessively high level is input during digital recording.

To turn on the No Clip Function by menu setting

1 While the deck is stopped, press EDIT/NO twice.

2 Turn AMS to display the S09 menu, then press AMS.

3 Turn AMS to select "No Clip On", then press EDIT/NO.

To turn on the No Clip Function using the remote  
Press NO CLIP to display "No Clip On."

(Continued)

⚙ The Peak Hold Function freezes the level meter display at the highest level reached by the input signal.

- To turn on the **Peak Hold Function** by menu setting
- 1 While the deck is stopped, press EDIT/NO twice.
  - 2 Turn AMS to display the S10 menu, then press AMS.
  - 3 Turn AMS to select "P.Hold On", then press EDIT/NO.

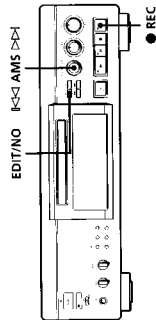
To turn on the **Peak Hold Function** using the remote  
Press P.HOLD to display "P.Hold On."

### Adjusting the analog recording level

- 1 Do Steps 1 to 5 in "Recording on an MD" on pages 8 and 9.
- 2 Play the portion of the program source with the strongest signal level.
- 3 While monitoring the sound, turn ANALOG REC LEVEL L and R.
- 4 Stop playing the program source.
- 5 To start recording, do the procedure starting from Step 7 in "Recording on an MD" on page 9.

## Marking Track Numbers While Recording (Track Marking)

You can mark track numbers either manually or automatically. By marking track numbers at specific points, you can quickly locate the points later using the AMS Function, or use various Editing Functions.



### Marking track numbers manually (Manual Track Marking)

You can mark track numbers at any time while recording on an MD.

Press **• REC** at the place you want to add a track mark while recording.

### Marking track numbers automatically (Automatic Track Marking)

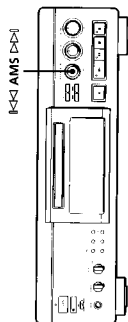
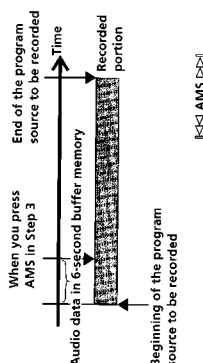
The deck adds track marks differently in the following cases:

- When recording from CDs or MDs with the INPUT switch set at a digital source:  
The deck marks track numbers automatically.
- In all other cases:  
If "T.Mark L.Syn" is selected in the S02 menu, the deck marks a new track number whenever the signal drops to the specified level or below for a specified amount of time or longer, then rises to a specified level. To select "T.Mark Off" or "T.Mark L.Syn" in the S02 menu, do the procedure below:

- 1 While the deck is stopped, press EDIT/NO twice.
- 2 Turn AMS to display the S02 menu, then press AMS.
- 3 Turn AMS to select "T.Mark Off" or "T.Mark L.Syn", then press AMS.  
"L.SYNC" lights up when you select "T.Mark L.Syn."
- 4 Press EDIT/NO.

## Starting Recording With 6 Seconds of Prestored Audio Data (Time Machine Recording)

When recording from an FM or satellite broadcast, the first few seconds of material are often lost due to the time it takes you to ascertain the contents and press the record button. To prevent the loss of this material, the Time Machine Recording Function constantly stores 6 seconds of the most recent audio data in a buffer memory so that when you begin recording, the program source using this function, the recording actually begins with the 6 seconds of audio data stored in the buffer memory in advance as shown in the illustration below.



- 1 Do Steps 1 to 5 in "Recording on an MD" on pages 8 and 9.  
The deck changes to recording pause.
- 2 Start playing the program source you want to record.  
The most recent 6 seconds of audio data is stored in the buffer memory.
- 3 Press AMS (or T.REC) to start Time Machine Recording.  
Recording of the program source starts with the 6 seconds of audio data stored in the buffer memory.

(Continued)



## To stop Time Machine Recording

Press ■

## Note

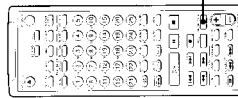
The deck starts storing audio data when the deck is in recording pause and you start playing the program source. With less than 6 seconds of playing of the program source and audio data stored in the buffer memory, Time Machine Recording starts with less than 6 seconds of audio data.

## Synchro-Recording With Audio Equipment of Your Choice (Music Synchro-Recording)



By using the MUSIC SYNC button on the remote, you can automatically start recording in sync with the signal input from the program source.

The method of marking track numbers differs, depending on the program source being recorded and the setting of the S02 menu (see "Notes on Recording" on page 10).



- 1 Do Steps 1 to 4 in "Recording on an MD" on page 8.

- 2 Press MUSIC SYNC.

The deck changes to recording pause.

- 3 Start playing the program source you want to record.

The deck starts recording automatically.

### To stop Music Synchro-Recording

Press ■

## Note

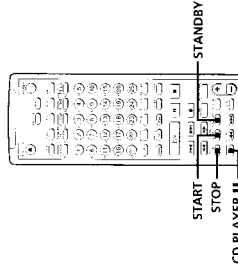
When Music Synchro-Recording, the Smart Space Function and the Auto Cut Function turn on automatically regardless of their setting (On or Off) and type of input (digital or analog).

## Synchro-Recording With a Sony CD Player



By connecting your deck to a Sony CD player or Hi-Fi Component System, you can easily dub CDs onto MDs using the CD synchro buttons on the remote. If your deck is connected to a Sony CD player by a digital input cable, track numbers are automatically marked as appear on the original even when "T.Mark Off" is selected in the S02 menu. If your deck is connected to a Sony CD player by audio connecting cords through the LINE(A/LOG) IN connectors, track numbers are automatically marked when you set the S02 menu to "T.Mark L/Syn" (see page 14).

As the same remote controls both the CD player and the deck, you may have trouble operating both units if they are far from each other. If you do, place the CD player close to this deck.



- 1 Set the source selector on the amplifier to CD.
- 2 Do Steps 2 to 4 in "Recording on an MD" on page 8 to prepare the deck for recording.
- 3 Insert a CD into the CD player.
- 4 Select the playback mode (Shuffle Play, Program Play, etc.) on the CD player.
- 5 Press STANDBY.  
The CD player pauses for playing and the deck pauses for recording.

- 6 Press START.

The deck starts recording and the CD player starts playback.  
The track number and elapsed recording time of the track appear in the display.

### If the CD player does not start playing

Some CD player models may not respond when you press START on the remote of the deck. Press ■ on the remote of the CD player instead.

- 7 Press STOP to stop synchro-recording.

### To pause recording

Press STANDBY or CD PLAYER ■.

To restart recording, press START or CD PLAYER ■. A new track number is marked each time you pause recording.

### You can use the remote of the CD player during synchro-recording

When you press ■, the CD player stops and the deck pauses for recording.  
When you press ■, the CD player pauses and the deck pauses for recording.

To restart synchro-recording, press ▷.

### You can change CDs during synchro-recording

Do the following steps instead of Step 7 above.

- 1 Press ■ on the remote of the CD player.  
The deck pauses for recording.
- 2 Change the CD.
- 3 Press ▷ on the remote of the CD player.  
Synchro-recording restarts.

### You can also do synchro-recording with a Sony video CD player

Using the procedure for synchro-recording with a Sony CD player, you can do synchro-recording with a Sony video CD player also.

To select the video CD player, press button number 2 while pressing down the POWER button on the remote before starting the procedure.

To select the CD player again, press button number 1 while pressing down the POWER button.

The deck is factory set to a CD player for synchro-recording.

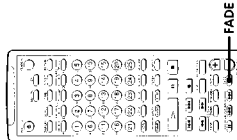
### You can check the remaining recordable time on the MD

Press TIME (see page 20).

## Fading In and Out (Fader)

You can gradually increase the recording level at the beginning of a recording (fade in) or gradually decrease the recording level at the end of a recording (fade out).

This function is convenient when, for example, you don't want the track cut off abruptly when the disc reaches its end.



### Fade-in recording

During recording pause, press FADE at the position where you want to start fade-in recording. "FADE IN" flashes in the display and the deck performs the fade-in recording until the counter reaches "00s."

### Fade-out recording

During recording, press FADE at the position where you want to start fade-out recording. "FADE OUT" flashes in the display and the deck performs the fade-out recording until the counter reaches "00s." The deck changes to recording pause when fade-out recording finishes.

### You can set the duration of fade-in and fade-out recording independently

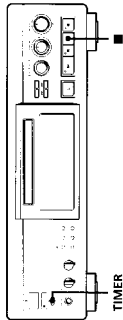
- 1 While the deck is stopped, press EDIT/NO twice.
  - 2 To set the duration of fade-in recording:  
Turn AMS to display the S14 menu, then press AMS.
  - 3 To set the duration of fade-out recording:  
Turn AMS to display the S15 menu, then press AMS.
- Both the fade-in and fade-out recording durations can be set within the following range:
- 1.0 to 3.0 seconds (in 0.2 second steps)
  - 3.0 to 5.0 seconds (in 0.4 second steps)
  - 5.0 to 15.0 seconds (in 1 second steps)
- 4 After selecting the duration, press AMS.
  - 5 Press EDIT/NO.



### You can select the type of increment/decrement curve for fade-in/fade-out recording

- 1 While the deck is stopped, press EDIT/NO twice.
- 2 To select the curve for fade-in recording:  
Turn AMS to display the S16 menu, then press AMS.
- 3 To select the curve for fade-out recording:  
Turn AMS to display the S17 menu, then press AMS.
- 4 Press EDIT/NO.

## Recording on an MD Using a Timer

By connecting a timer (not supplied) to the deck, you can start and stop recording operations at specified times. For further information on connecting the timer and setting the starting and ending times, refer to the instructions that came with the timer.



- 1 Do Steps 1 to 6 in "Recording on an MD" on pages 8 and 9.
- 2 If you want to specify the time for the start of recording, press .
  - If you want to specify the time for the end of recording, do Steps 7 and 8 of "Recording on an MD" on page 9.
  - If you want to specify the time for both start and end of recording, press .
- 3 Set TIMER on the deck to REC.
- 4 Set the timer as required.
  - When you have set the time for the start of recording, the deck turns off. When the specified time arrives, the deck turns on and starts recording.
  - When you have set the time for the end of recording, recording continues. When the specified time arrives, the deck stops recording and turns off.
  - When you have set the time for both the start and end of recording, the deck turns off. When the starting time arrives, the deck turns on and starts recording. When the ending time arrives, the deck stops recording and turns off.

- 5 After you have finished using the timer, set TIMER on the deck to OFF. Then place the deck in standby status by plugging the AC power cord of the deck into a wall outlet or set the timer to continuous operation.
  - If TIMER is left at REC, the deck will automatically start recording the next time you turn the deck on.
  - If you do not change the deck to standby status for more than a month after timer recording has finished, the recorded contents may disappear.

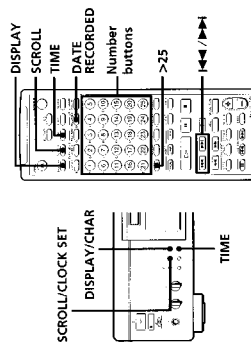
**Make sure to change the deck to standby status within a week after timer recording is completed**  
The TOC on the MD is updated and recorded contents are written to the MD when you turn the deck on. If the recorded contents have disappeared, "Standby" flashes when you turn the deck on.

### Notes

- During timer recording, new material is recorded from the end of the recorded portion on the MD.
- Material recorded during timer recording will be saved to the disc the next time you turn the deck on. "TOC" will flash in the display at that time. Do not move the deck or pull out the AC power cord while "TOC" is flashing.
- Timer recording will stop if the disc becomes full.
- Set the digital recording level for timer recording using the DIGITAL REC LEVEL control on the deck. If you set the recording level using the DIGITAL REC LEVEL +/- buttons on the remote, the digital timer recording will be performed at the level set by the DIGITAL REC LEVEL control.

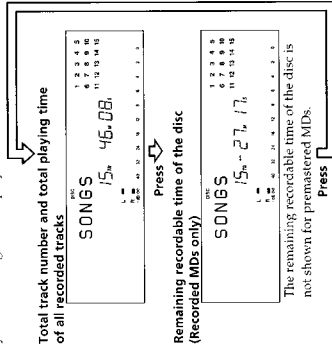
## Using the Display

You can use the display to check disc and track information such as the total track number, total playing time of the tracks, remaining recordable time of the disc, disc name, and the date when a track was recorded.

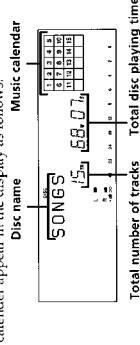


## Checking the total track number, total disc playing time, remaining recordable time of the disc

Each time you press TIME while the deck is stopped, you can change the display as follows:



When you insert an MD, the disc name, total number of tracks, total disc playing time, and the music calendar appear in the display as follows:



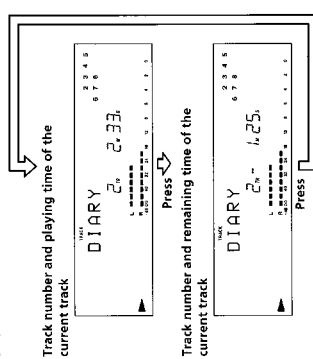
A music calendar shows all the track numbers within a grid if the MD is a premastered disc, or without a grid if the MD is a recordable disc. If the total track number exceeds 20, ► appears to the right of number 20 in the music calendar.

### Note

When you insert a new MD or turn off the deck and turn it on again, the last item displayed will reappear.

## Checking the playing time, remaining time, and track number

Each time you press TIME while playing an MD, you can change the display as shown below. The track numbers in the music calendar disappear after they are played.



## The track name and disc name are displayed as follows

The disc name appears whenever the deck is stopped, and the name of the current track appears when the track is playing. If no title is recorded, "No Name" appears instead of a title.

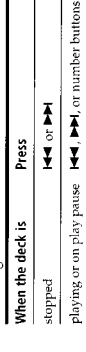
## You can scroll a title of more than 12 characters

Press SCROLL/CLOCK SET (or SCROLL). Since the display shows up to 11 characters at a time, press SCROLL again to see the rest of the title if the title has 12 characters or more. Press SCROLL again to pause scrolling, and again to continue scrolling.

## Displaying the recording date

When the internal clock has been set, the deck automatically records the recording date and time of all recordings. You can then check the recording date and time of a track.

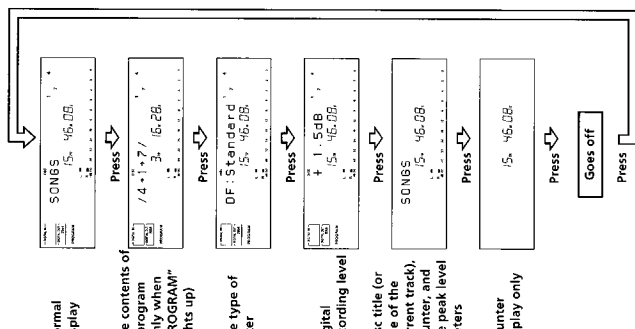
- 1 Locate the track for which you want to check the recording date and time.



- 2 Press DATE RECORDED. "No Date" appears if the internal clock has not been set or the track was recorded on another MD deck without a date and time stamp function.

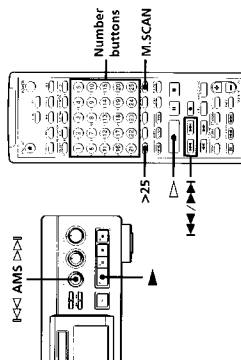
## Changing the display

Each time you press DISPLAY/CHAR (or DISPLAY) while the deck is stopped or playing, you can change the display as follows:



## Locating a Specific Track

You can quickly locate any track while playing a disc by using the AMS (Automatic Music Sensor) control, ► and ► buttons, number buttons, or M.SCAN button on the remote.



### To locate

The next or succeeding tracks  
During playback, turn AMS clockwise or press ► repeatedly until you find the track.

The current or preceding tracks  
During playback, turn AMS counterclockwise or press ◀ repeatedly until you find the track.

A specific track directly  
Press number buttons to enter the track number.

A specific track by using AMS  
1 Turn AMS until the track number you want to locate appears while the deck is stopped. (The track number is flashing.)  
2 Press AMS or ►.

By scanning each track for 6 seconds (music scan)  
1 Press M.SCAN before you start playing.  
2 When you find the track you want, press ► to start playing.

## When you directly locate a track with a number over 25

You must press >25 first, before entering the corresponding digits.

Press >25 once if it is a 2-digit track number, and twice if it is a 3-digit track number.

To enter "0," press button 10.  
Examples:  
• To play track number 30: Press >25 once, then 3 and 10.  
• To play track number 100: Press >25 twice, then 1, 10 and 10.

(Continued)

**You can extend the playing time during music scan**

- 1 While the deck is stopped, press EDIT/NO twice.
- 2 Turn AMS to display the S11 menu and press AMS.
- 3 Turn AMS to select the playing time within a range of 6 to 20 seconds (in 1 second steps) and press AMS.
- 4 Press EDIT/NO.

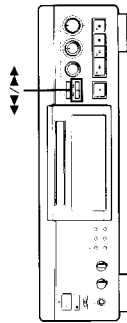
**To pause playing at the beginning of a track**

Turn AMS (or press ◀◀ or ▶▶) after pausing playback.

**To go quickly to the beginning of the last track**  
Turn AMS counterclockwise (or press ◀◀) while the display shows the total track number, total disc playing time or remaining recordable time of the disc (recordable disc only), or disc name (see page 20).

## Locating a Particular Point in a Track

You can also use the ◀◀ and ▶▶ buttons to locate a particular point in a track during playback or playback pause.



### To locate a point

While monitoring the sound ▶▶ (forward) or ◀◀ (backward) and keep pressing until you find the point.

Quickly by observing the display during playback pause ▶▶ or ◀◀ and keep pressing until you find the point. There is no sound output during this operation.

**If "Over—" appears while you are pressing ▶▶ during playback pause**

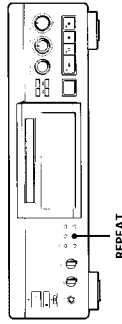
The G1C has reached to its end. Press ◀◀ (or ◀◀) or turn AMS counterclockwise to go back.

### Notes

- If the disc reaches the end while you are pressing ▶▶ during sound monitoring, the deck stops.
- Tracks that are only a few seconds long may be too short to scan using the search function. For such tracks, it is better to play the MD at normal speed.

## Playing Tracks Repeatedly

You can play tracks repeatedly in any play mode.



Press REPEAT.

"REPEAT" appears in the display.

The deck repeats the tracks as follows:

| When the MD is played in | The deck repeats               |
|--------------------------|--------------------------------|
| Normal play (page 7)     | All the tracks                 |
| Shuffle Play (page 23)   | All the tracks in random order |
| Program Play (page 24)   | The same program               |

### To cancel repeat play

Press REPEAT several times (or CONTINUE once) until "REPEAT" disappears.

The deck returns to the original playing mode.

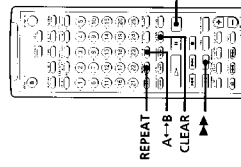
## Repeating the current track

While the track you want to repeat is playing in normal, Shuffle, or Program Play, press REPEAT several times until "REPEAT 1" appears in the display.

## Repeating a specific portion (A-B Repeat)

You can play a specific portion of a track repeatedly. This might be useful when you want to memorize lyrics.

Note that you can only repeat a portion within the boundaries of a single track.



- 1 While playing a disc, press A↔B at the starting point (point A) of the portion to be played repeatedly.

"REPEAT A" appears and "B" flashes in the display.

- 2 Continue playing the track or press ▶▶ until you reach the ending point (point B), then press A↔B again.

"REPEAT A-B" lights continuously. The deck starts to play the specified portion repeatedly.

### To cancel A-B Repeat

Press REPEAT, CLEAR, or ■.

### Setting new starting and ending points

You can repeat the portion immediately after the currently specified portion by changing the starting and ending points.

- 1 Press A↔B while "REPEAT A-B" appears.

The current ending point B becomes the new starting point A. "REPEAT A" lights continuously, and "B" flashes in the display.

- 2 Continue playing the track or press ▶▶ until you reach the new ending point (point B), then press A↔B again.

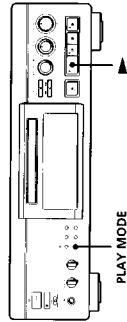
"REPEAT A-B" lights continuously and the deck starts playing repeatedly the newly specified portion.

### Note

If you turn off the deck or disconnect the AC power cord, the deck will recall the last setting of the Repeat Function the next time you turn on the deck.  
The A-B Repeat settings, however, are lost.

## Playing in Random Order (Shuffle Play)

You can have the deck "shuffle" tracks and play them in random order.



- 1 Press PLAY MODE repeatedly (or SHUFFLE once) until "SHUFFLE" appears in the display when the deck is stopped.

- 2 Press ▶▶ to start Shuffle Play.  
"G2" appears in the display while the deck is "shuffling" the tracks.

### To cancel Shuffle Play

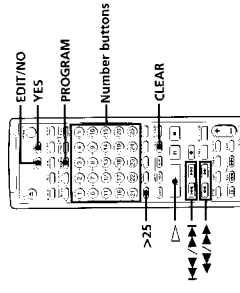
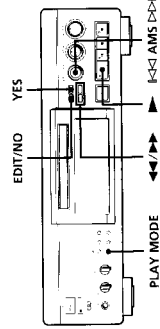
Press PLAY MODE repeatedly (or CONTINUE once) until "SHUFFLE" disappears.

### You can specify tracks during Shuffle Play

- To play the next track, turn AMS clockwise (or press ▶▶).
- To play from the beginning of the current track again, turn AMS counterclockwise (or press ◀◀). You cannot use AMS (or ◀◀) to go to tracks that have already been played.

## Creating Your Own Program (Program Play)

You can specify the playback order of the tracks on an MD and create your own programs containing up to 25 tracks.



- 1 While the deck is stopped, press EDIT/NO twice.
- 2 Turn AMS to select the S01 menu and display "Program ?". then press AMS.

- 3 Do either a) or b):

### a) When using the controls on the deck

- 1 Turn AMS until the track number you want appears in the display.
- 2 Press AMS.

### b) When using the remote

- 1 Press the number buttons to enter the tracks you want to program in the order you want.
- 2 To program a track with a number over 25, use the >25 button (see page 21).

### If you enter the wrong track number

Press ◀◀ or ▶▶ until the wrong track number flashes, then enter the correct track number with the number buttons.

- 4 Repeat Step 3 to enter other tracks. Each time you enter a track, the total program time is added up and appears in the display.
- 5 After finishing programming, press YES. "Complete?" appears and programming is completed.
- 6 Press PLAY MODE repeatedly (or PROGRAM once) until "PROGRAM" appears in the display.
- 7 Press ▶ to start Program Play.

### To cancel Program Play

Press PLAY MODE repeatedly (or CONTINUE once) when the deck is stopped until "PROGRAM" disappears.

### The program remains even after Program Play ends

When you press ▶, you can play the same program again.

### Note

The display shows "m - s" instead of the total playing time when the total playing time of the program exceeds 199 minutes.

### Checking the track order

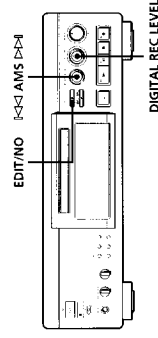
Turn AMS (or press ◀◀ or ▶▶) during playback or playback pause. The track numbers appear in the order they were programmed.

## Changing the track order

You can change the order of the tracks in your program before you start playing.

| To                                     | Do the following:  |
|--|--|
| Erase a track in the program. <b>1</b> | 1 After Steps 1 and 2 on the previous page, press ▶▶ until the track number flashes.                                 |
| Add tracks to the end of the program   | 2 Press EDIT/NO or CLEAR.  |
| Change the whole program completely    | 1 After Steps 1 and 2 on the previous page, press ▶▶ until the last track number flashes.                            |
|  | 2 Press ▶ again and do Steps 3 to 5 on the previous page.  |
|  | 1 After Steps 1 and 2 on the previous page, hold down EDIT/NO or CLEAR until all programmed track numbers disappear. |
|  | 2 Do Steps 1 to 5 on the previous page.  |

## Useful Tips When Recording From MDs to Tape



### Inserting blank spaces while recording to tape (Auto Space)

The Auto Space Function inserts a 3-second blank space between each track while recording from MDs to tapes, allowing you to use the AMS function during later playback.

- 1 While the deck is stopped, press EDIT/NO twice.
- 2 Turn AMS to display the S07 menu, then press AMS.
- 3 Turn AMS to select "Auto Space", then press AMS.
- 4 Press EDIT/NO.

### You can turn on the Auto Space Function using the remote

While the deck is stopped, press A SPACE repeatedly until "Auto Space" appears in the display.

### To cancel Auto Space

Cancel the function through menu operation on the deck

- 1 Do Steps 1 and 2 of "Inserting blank spaces while recording to tape" on this page.
- 2 Turn AMS to select "Auto Off", then press AMS.
- 3 Press EDIT/NO.

### Cancel the function using the remote

While the deck is stopped, press A SPACE repeatedly until "Auto Off" appears.

### Note

If the Auto Space Function is on while recording a selection containing multiple track numbers (for example, a medley or symphony), blank spaces will be inserted within the selection whenever the track number changes.

### Pausing after each track (Auto Pause)

When the Auto Pause Function is on, the deck pauses after playing each track. Auto Pause is convenient when recording single tracks or multiple, nonconsecutive tracks.

Select "Auto Pause" instead of "Auto Space" in Step 3 on "Inserting blank spaces while recording to tape" on this page.

### You can turn on the Auto Pause Function using the remote

While the deck is stopped, press A SPACE repeatedly until "Auto Pause" appears in the display.

### To restart playback

Press ▶ or II.

### To cancel Auto Pause

Cancel the function through a menu operation on the deck

Do Steps 1 to 3 of "To cancel Auto Space" on this page.

### Cancel the function using the remote

While the deck is stopped, press A SPACE repeatedly until "Auto Off" appears.

### Note

If you turn off the deck or disconnect the AC power cord, the deck will recall the last setting of the Auto Space and Auto Pause Functions the next time you turn on the deck.

## Changing the bit length of the digital output signals

By changing the bit length, you can improve the sound quality of the signal output from the DIGITAL OUT OPTICAL connector to an MD deck or a 20-bit format DA converter.

- 1 While the deck is stopped, press EDIT/NO twice.
- 2 Turn AMS to display the S06 menu, then press AMS.
- 3 Turn AMS to select "Dout 20bit", then press AMS.
- 4 Press EDIT/NO.

### Notes

- This function affects only digital signal output from the DIGITAL OUT OPTICAL connector.
- A momentary sound dropout occurs when the bit length setting is changed during playback or recording.

## Adjusting the analog signal level

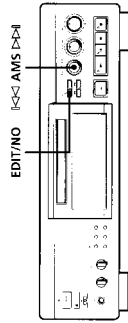
You can adjust the level of an analog signal for output to an amplifier connected through the LINE(ANALOG) OUT connectors.

- 1 While the deck is stopped, press EDIT/NO twice.
- 2 Turn AMS to display the S12 menu, then press AMS.
- 3 Turn AMS to select "DigLvl All", then press AMS.
- 4 Press EDIT/NO.

- 5 Turn DIGITAL REC LEVEL (or DIGITAL REC LEVEL +/-) to adjust the analog output level. The maximum level is output when you set the control to 0. Turning the control function in the + direction does not result in a further increase in output level.

## Starting Playback From a Specific Position the Next Time You Start Playback (Resume Play)

You can specify the start of playback from the position where playback was last stopped or the deck was turned off, or from next track after that position.



- 1 While the deck is stopped, press EDIT/NO twice.
- 2 Turn AMS to display the S06 menu, then press AMS.
- 3 Set the position where you want playback to start the next time you start playback.

### To start playback where you last stopped playback

- 1 Turn AMS to select "Resume Play", then press AMS.

### To start playback from the track after the position where you stopped playback

- 1 Turn AMS to select "Resume Next", then press AMS.

- 2 Press EDIT/NO.

- 3 After you stop playback or turn the deck off and press the ► button to start playback again, playback starts from the position you set in Step 3 above.

### To turn off the Resume Play Function

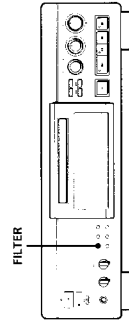
- 1 Do Steps 1 and 2 above.
- 2 Turn AMS to select "Resume Off", then press AMS.
- 3 Press EDIT/NO.

## Playing Back With Different Tones (Digital Filter)

This deck is equipped with the V.C. (Variable Coefficient) filters to allow you adjust the tone to match your audio system, listening environment, and the source being played back.

### Note

The digital filters are effective only on the analog signals output from the LINE(ANALOG) OUT connectors and the PHONES connector.



- 1 Press FILTER. The currently selected filter appears in the display.
- 2 Press FILTER repeatedly to select the filter that you want. Each press of the button changes the filter as follows:

DF-Standard → DF-Spline → DF-Analog → DF-Plane

### You can select the filter using the remote

Press FILTER repeatedly until the filter that you want appears in the display.

### What is a V.C. (Variable Coefficient) filter?

A variable coefficient filter changes the sound characteristics of a signal by applying specific frequency cut-off conditions. Such filters are provided on digital devices such as CD players and MD decks to remove aliasing noise. Your deck comes with four types of digital filters: standard, spline, plane, and analog. A brief description is given below of the sound characteristics of each filter.

#### Standard

This filter produces an expansive sound of wide range.

#### Spline

This filter produces a sound that is clearly positioned and smooth.

#### Plane

This filter produces a fresh and powerful sound.

#### Analog

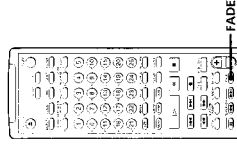
This filter produces a resonant and mellow sound.

### Notes

- A momentary sound dropout occurs when the filter setting is changed during playback or recording.
- The change in sound characteristics caused by digital filters occur mainly in the inaudible range, not the audible range as in the case of an amplifier.

## Fading In and Out (Fader)

You can gradually increase the playback level of the signal output from the LINE(ANALOG) IN/OUT connectors and the PHONES connector at the beginning of a playback (fade in) or gradually decrease the playback level at the end of a playback (fade out). This function is convenient when, for example, you want to start or end playback in the middle of the track.



## Fade-in playback

During playback pause, press FADE at the position where you want fade-in playback to start.

"FADE IN" flashes in the display and the deck performs fade-in playback until the counter reaches to "0.0s."



## Playing MDs

### Fade-out playback

During playback, press **FADE** at the position where you want fade-out playback to start. "FADE OUT" flashes in the display and the deck performs fade-out recording until the counter reaches "0.0s."

The deck changes to play pause when fade-out playback finishes.

### Note on the peak level meters display during fade-in/fade-out playback

The peak level meters show the level of the original signal (input from the LINE(ANALOG) IN connectors or output to the LINE(ANALOG) OUT connectors and the PHONES connector). Therefore, the level shown on the meters does not increase or decrease even as the output fades in or out.

### You can set the duration of fade-in and fade-out playback independently

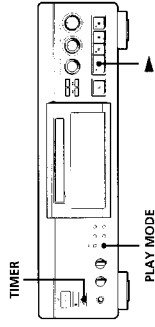
Do Steps 1 to 5 in "You can set the duration of the fade-in and fade-out recording independently" on page 18.

### You can select the type of increment/decrement curve for fade-in/fade-out recording

Do Steps 1 to 4 in "You can select the type of increment/decrement curve for fade-in/fade-out recording" on page 18.

## Playing an MD Using a Timer

By connecting a timer (not supplied) to the deck, you can start and stop playback operations at specified times. For further information on connecting the timer or setting the starting and ending times, refer to the instructions that came with the timer.



- 1 Do Steps 1 to 3 in "Playing an MD" on page 7.
- 2 Press **PLAY MODE** repeatedly (or one of the **PLAY MODE** buttons once) to select the play mode you want.  
To play only specific tracks, create a program (see page 24).

## Editing Recorded MDs

### Notes on Editing

You can edit the recorded tracks after recording, using the following functions:

- **Erase Function** allows you to erase recorded tracks simply by specifying the corresponding track number.

- **A-B Erase Function** allows you to specify a portion within a track to erase it.
- **Divide Function** allows you to divide tracks at specified points so that you can quickly locate those points afterwards, using the **AMS** function.
- **Combine Function** allows you to combine two consecutive tracks into one.
- **Move Function** allows you to change the order of tracks by moving a specific track to a track position you want.
- **Title Function** allows you to create titles for your recorded MDs and tracks.

### If "Protected" appears in the display

The deck could not edit because the record-protect slot on the MD is open. Edit after closing the slot.

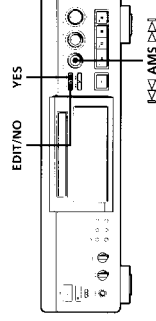
### When "TOC" flashes in the display

Do not move the deck or pull out the AC power cord. After editing, "TOC" lights continuously until you eject the MD or turn off the power. "TOC Writing" flashes while the deck is updating the TOC. When the deck finishes updating the TOC, "TOC" goes off.

## Erasing Recordings (Erase Function)

Do the procedures below to erase following:

- A single track
- All tracks

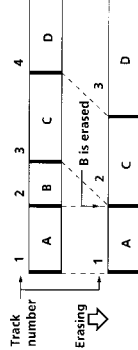


### Erasing a single track

You can erase a track simply by specifying the respective track number. When you erase a track, the total number of tracks on the MD decreases by one and all tracks following the erased one are renumbered. Since erasing merely updates the TOC, there is no need to record over material.

To avoid confusion when erasing multiple tracks, you should proceed in order of high to low track number to prevent the renumbering of tracks that have not been erased yet.

### Example: Erasing B



- 1 While the deck is stopped, playing, or pausing, press **EDIT/NO**.
- 2 Turn **AMS** until "Erase ?" appears in the display.
- 3 Press **AMS**.  
The display for erasing tracks appears and playback of the displayed track starts.
- 4 Turn **AMS** to select the track to be erased.
- 5 Press **AMS** or **YES**.  
When the track selected in Step 4 has been erased, "Complete!" appears for a few seconds and the total number of tracks in the music calendar decreases by one.  
If you erase a track during playback, the track following the deleted track begins playing afterwards.
- 6 Repeat Steps 1 to 5 to erase more tracks.

### To cancel the Erase Function

Press **EDIT/NO** or **■**.

### Note

If "Erase ????" appears in the display, the track was recorded or edited on another MD deck and is record-protected. If this indication appears, press **YES** to erase the track.

## Erasing all tracks on an MD

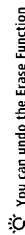
Erasing a recordable MD deletes the disc name, all recorded tracks, and titles (see page 36).

- 1 While the deck is stopped, playing, or pausing, press EDIT/NO.
- 2 Turn AMS until "All Erase ?" appears in the display.
- 3 Press AMS.  
"All Erase??" appears in the display and all tracks in the music calendar start flashing.

- 4 Press AMS or YES.  
When the disc name, all recorded tracks, and titles on the MD has been erased, "Complete!!" appears for a few seconds and the music calendar disappears.

## To cancel the Erase Function

Press EDIT/NO or ■ to turn off the "All Erase ?" or "All Erase??" indication.

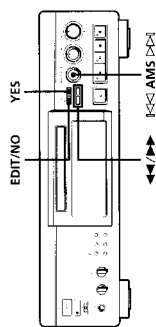
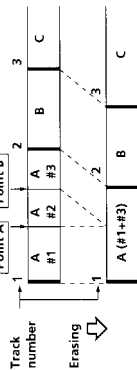


**You can undo the Erase Function**  
See "Undoing the Last Edit" on page 36.

## Erasing a Part of a Track (A-B Erase Function)

You can specify a portion within a track and erase the portion with ease. It is convenient when erasing unnecessary sections after recording satellite broadcast or FM broadcast.

**Example: Erasing a part of track A**

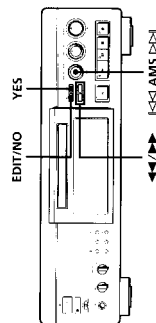
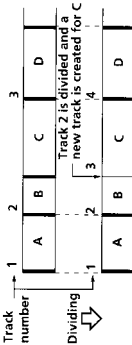


- 1 While the deck is stopped, playing, or pausing, press EDIT/NO.
- 2 Turn AMS until "A-B Erase ?" appears in the display.
- 3 Press AMS.
- 4 Turn AMS to select the number of the track, then press AMS.  
"Rehearsal" and "Point A ok?" alternates in the display while the deck plays back the selected track from the beginning.
- 5 While monitoring the sound, turn AMS to find the starting point of the portion to be erased (point A).  
You can select the unit by which the starting point is shifted. Press the ◀ or ▶ button to select frame, second, or minute.  
For frame, the number of frames appears when you turn the AMS control; for second and minute, "S" or "M" flashes in the display.
- 6 If the point A is still incorrect, repeat Step 5 until it is correct.

## Dividing Recorded Tracks (Divide Function)

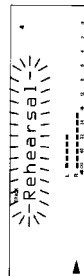
With the Divide Function you can assign a track number at places that you want to randomly access afterwards. Use this function to add tracks to MDs recorded from an analog source (and therefore contain no track numbers), or to divide an existing track into multiple portions for locating positions in the middle of a track. When you divide a track, the total number of tracks on the MD increases by one and all tracks following the divided track are renumbered.

**Example: Dividing track 2 to create a new track for C**



## Dividing a track after selecting the track

- 1 While the deck is stopped, playing, or pausing, press EDIT/NO.
- 2 Turn AMS until "Divide ?" appears in the display and press AMS.
- 3 Turn AMS to select the track to be divided and press AMS.  
"Rehearsal" appears in the display and the deck plays back the selected track from the beginning.



(Continued)



- 4** While monitoring the sound, turn AMS to find the point to divide the track.  
You can select the unit by which the starting point is shifted. Press the ◀◀ or ▶▶ button to select frame, second, or minute.  
For frame, the number of frames appears when you turn the AMS control; for second and minute, “S” or “M” flashes in the display.

- 5** Press YES or AMS when the position is correct.  
“Complete!” appears for a few seconds and the newly created track begins playing. The new track will have no track title even if the original track was labelled. The total number of tracks in the music calendar increases by one.

**To cancel the Divide Function**  
Press ■.

**You can undo a track division**

Combine the tracks again (see “Combining Recorded Tracks” on this page) then redivide the tracks if necessary.

**You can divide a track while recording**

Use the Track Marking Function (see page 14).

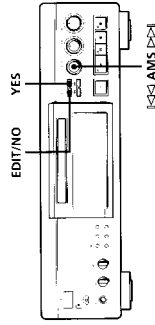
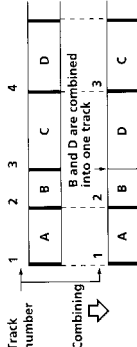
### Dividing a track after selecting the dividing point

- While playing the MD, press AMS at the point where you want to create a new track.  
“Release!” appears in the display and playback continues from the position you selected.
- To make fine adjustment on the dividing position, do Step 4 in “Dividing a track after selecting the track” on this page.
- Press EDIT/NO to display “Divide ?” and press YES or AMS.

### Combining Recorded Tracks (Combine Function)

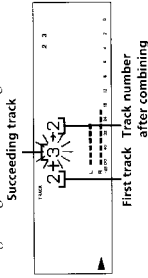
Use the Combine Function to combine tracks on a recorded MD. The two tracks to be combined need not be consecutive and the latter track to be combined can be the track which comes before the former one in the track number order. This function is useful for combining several songs into a single medley, or several independently recorded portions into a single track. When you combine two tracks, the total number of tracks decreases by one and all tracks following the combined tracks are renumbered.

**Example: Combining B and D**



- While the deck is stopped, playing, or pausing, press EDIT/NO.
- Turn AMS until “Combine ?” appears in the display.
- Press AMS.
- Turn AMS to select the first track of the two to be combined and press AMS.

The display for selecting the second track appears and the deck repeats the portion where the two tracks will join (i.e., the end of the first track and the beginning of the succeeding track).



- 5** Turn AMS to select the second track of the two to be combined and press YES or AMS.  
“Complete!” appears for a few seconds and the total number of tracks in the music calendar decreases by one.  
If both of the combined tracks have track titles, the title of the second track is erased.

**To cancel the Combine Function**

Press EDIT/NO or ■.

**You can undo the Combine Function**

Divide the tracks again (see “Dividing Recorded Tracks” on page 31), then repeat the combine function with the correct tracks if necessary.

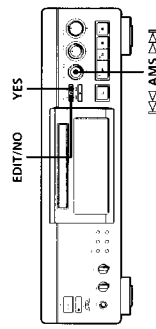
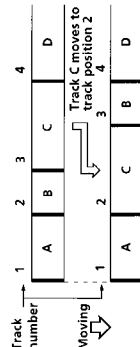
**Note**

If “Impossible” appears in the display, the tracks cannot be combined. This sometimes happens when you’ve edited the same track many times, and is due to a technical limitation of the MD system, not a mechanical error.

### Moving Recorded Tracks (Move Function)

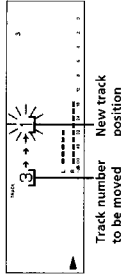
Use the Move Function to change the order of any track. After you move a track, the track numbers between the new and old track positions are automatically renumbered.

**Example: Moving track C to track position 2**



- While the deck is stopped, playing, or pausing, press EDIT/NO.
- Turn AMS until “Move ?” appears in the display.

- 3** Press AMS.
- 4** Turn AMS to select the track to be moved and press AMS.
- 5** Turn AMS until the new track position appears.



- 6** Press YES or AMS.

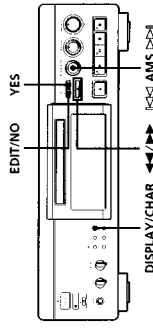
“Complete!” appears for a few seconds and the moved track begins playing back if the deck is in playback mode.

**To cancel the Move Function**

Press EDIT/NO or ■.

### Labeling Recordings (Title Function)

You can create titles for your recorded MDs and tracks. Titles — which may consist of uppercase and lowercase letters, numbers and symbols for a maximum of about 1,700 characters per disc — appear in the display during MD operation. You can label a track or an MD by using the controls on the deck or on the remote.



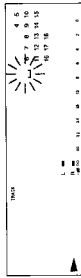
Use the following procedure to label a track or an MD.  
**You can label a track while it is playing, pausing or recording. If the track is playing or recording, be sure to finish labeling before the track ends. If the track ends before you've completed the labeling procedure, the characters already entered are not recorded and the track will remain unlabeled.**

- Press EDIT/NO.
- Turn AMS until “Name ?” appears in the display and press AMS.

(Continued)

- 3** Turn AMS until "Name in ?" appears in the display, then press AMS.

- 4** Turn AMS to select "Disc" to label an MD, or to specify the track to label, and press AMS. A flashing cursor appears in the display.



- 5** Press DISPLAY/CHAR to select the character type as follows:

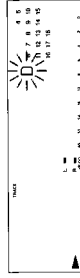
| To select         | Press DISPLAY/CHAR repeatedly until |
|-------------------|-------------------------------------|
| Uppercase letters | "A" appears in the display          |
| Lowercase letters | "a" appears in the display          |
| Numbers           | "0" appears in the display          |



- 6** Turn AMS to select the character. The selected character flashes.

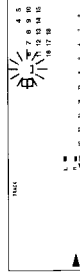
Letters, numbers, and symbols appear in sequential order as you turn AMS. You can use the following symbols in titles:

! " # \$ % & ' ( ) \* + , - . / : ; < = > ? @ \_



You can press DISPLAY/CIAR to change the character type at any time during Step 6 (see Step 5).

- 7** Press AMS to enter the selected character. The cursor shifts rightward and waits for the input of the next character.



- 8** Repeat Steps 6 and 7 until you have entered the entire title.

#### If you entered the wrong character

Press ◀◀ or ▶▶ until the character to be corrected starts flashing, and repeat Steps 6 and 7 to enter the correct character.

#### To erase a character

Press ◀◀ or ▶▶ until the character to be erased starts flashing, then press EDIT/NO.

#### To enter a space

Press AMS or ▶▶ while the cursor is flashing.

#### To cancel labeling

Press YES. This completes the labeling procedure and the title appears in the display.

#### To cancel labeling

Press ■.

#### Note

You cannot label a track or an MD while you are recording over an existing track.

#### Copying a track or disc title

You can copy a track or disc title to use it as a title of another track or the disc title within a disc. Note that you can do this operation by using the controls on the deck only.

- 1** Press EDIT/NO.

- 2** Turn AMS until "Name ?" appears in the display and press AMS.

- 3** Turn AMS until "Nm Copy ?" appears in the display.

- 4** Press AMS.

- 5** Turn AMS to select "Disc" to copy the disc title, or the track whose title you want to copy and press AMS.

#### If "No Name" appears in the display

The disc or the track has no name.

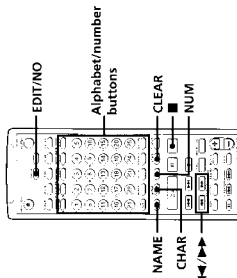
- 6** Turn AMS to select "Disc" for disc title or to specify the track number to copy a title, and press AMS.

"Complete!" appears for a few seconds to indicate that the copying operation is completed.

#### To cancel title copying

Press EDIT/NO or ■.

#### Labeling tracks and MDs with the remote



- 1** Press NAME repeatedly until a flashing cursor appears in the display, then do the following:

| To label | Make sure that the deck is   |
|----------|--|
| A track  | Playing, pausing, recording the track to be labeled, or stopped after locating the track to be labeled |
| An MD    | Stopped with no track number appearing in the display  |

- 2** Select the character type as follows:

| To select         | Press  |
|-------------------|--|
| Uppercase letters | CHAR repeatedly until "Selected AB" appears in the display |
| Lowercase letters | CIAR repeatedly until "Selected ab" appears in the display |
| Numbers           | NUM repeatedly until "Selected 12" appears in the display  |

- 3** Press an alphabet/number button to enter a character.

After you enter a character, the cursor shifts rightward and waits for the input of the next character.

You can change the character type at any time during Step 3 (see Step 2).

- 4** Repeat Step 3 until you have entered the entire title.

#### If you entered the wrong character

Press ◀◀ or ▶▶ until the character to be corrected starts flashing.

Press CLEAR to erase the incorrect character, then enter the correct one.

- 5** Press NAME again. This completes the labeling procedure and the title appears in the display.

#### To cancel labeling

Press ■.

#### Changing an existing title

- 1** Press NAME, then do the following:

| To change     | Make sure that the deck is  |
|---------------|---|
| A track title | Playing, pausing the track whose title is to be changed, or stopped after locating the track whose title is to be changed |
| A disc name   | Stopped with no track number appearing in the display   |

- 2** Hold down CLEAR or EDIT/NO until the current title is erased.

- 3** Enter the new title.

Do Steps 5 to 8 of "Labeling Recordings" on page 34, or Steps 2 to 4 of "Labeling tracks and MDs with the remote" on this page.

- 4** Press NAME.

#### Erasing a title on a disc (Name Erase)

Use this function to erase a title on a disc.

- 1** While the deck is stopped, playing, or pausing, press EDIT/NO.

- 2** Turn AMS until "Name ?" appears in the display and press AMS.

- 3** Turn AMS until "Nm Erase ?" appears in the display and press AMS.

- 4** Turn AMS to select "Disc" to erase the disc title, or the track whose title you want to erase and press AMS.

"Complete!" appears for a few seconds and the title is erased.

#### To cancel Name Erase Function

Press ■.

## Editing Recorded MDs

### Erasing all titles on a disc (Name All Erase)

Use this function to erase all titles on an MD simultaneously.

- 1 While the deck is stopped, press EDIT/NO.
- 2 Turn AMS until "Name ?" appears in the display and press AMS.
- 3 Turn AMS until "Nm All Ers ?" appears in the display and press AMS.  
"Nm All Ers?" appears in the display.
- 4 Press AMS.  
"Complete!" appears for a few seconds and the all the titles is erased.

### To cancel the Name All Erase Function

Press ■.

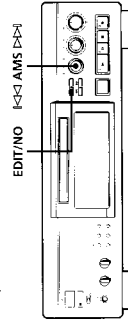
You can undo the Name All Erase Function  
See "Undoing the Last Edit" on this page.

You can erase all recorded tracks and titles  
See "Erasing all tracks on an MD" on page 30.

## Undoing the Last Edit (Undo Function)

You can use the Undo Function to cancel the last edit and restore the contents of the MD to the condition that existed before editing was done. Note, however, that you cannot undo an edit if you do any of the following after the edit:

- Press the ● REC button on the deck.
- Press the ● button, the MUSIC SYNC. button, or the CD SYNC STANDBY button on the remote.
- Update the TOC by turning off the power or ejecting the MD.
- Disconnect the AC power cord or set the MAIN POWER switch on the rear panel to OFF (only on European model).



- 1 With the deck stopped and no track number appearing in the display, press EDIT/NO and turn AMS until "Undo ?" appears in the display. "Undo ?" does not appear if no editing has been done.

- 2 Press AMS.  
One of the following messages appears in the display, depending on the type of editing to be undone:
- | Editing done:               | Message:         |
|-----------------------------|------------------|
| Erasing a single track      |                  |
| Erasing all tracks on an MD | "Erase Undo ?"   |
| Erasing a part of a track   |                  |
| Dividing a track            | "Divide Undo ?"  |
| Combining tracks            | "Combind Undo ?" |
| Moving a track              | "Move Undo ?"    |
| Labeling a track or an MD   |                  |
| Changing an existing title  | "Name Undo ?"    |
| Erasing all titles on an MD |                  |
| Copying a title             |                  |

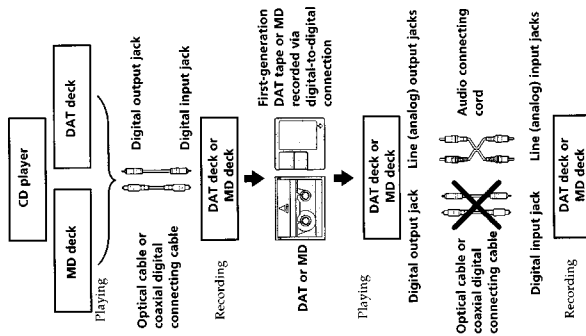
- 3 Press AMS again.  
"Complete!" appears for a few seconds and the contents of the MD are restored to the condition that existed before the edit.

**To cancel the Undo Function**  
Press EDIT/NO or ■.

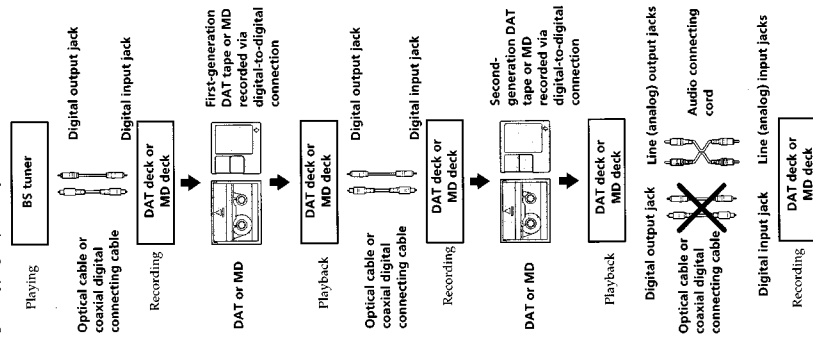
## Guide to the Serial Copy Management System

This MD deck uses the Serial Copy Management System, which allows only first-generation digital copies to be made of premastered software via the deck's digital input jack. An outline of this system appears below:

- 1 You can record from digital program sources (CDs, DATs or premastered MDs) onto a DAT tape or recordable MD via digital input jack on the DAT or MD deck. You cannot, however, record from this recorded DAT tape or MD onto another DAT tape or recordable MD via the digital input jack on the DAT or MD deck.



- 2 You can record the digital input signal of a digital satellite broadcast onto a DAT tape or recordable MD via the digital input jack on the DAT or MD deck which is capable of handling a sampling frequency of 32 kHz or 48 kHz. You can then record the contents of this recorded DAT tape or MD (first-generation) onto another DAT tape or recordable MD via digital input jack on the DAT or MD deck to create a second-generation digital copy. Subsequent recording from the second-generation copy onto another recordable DAT tape or MD is possible only through the analog input jack on the DAT or MD deck. Note, however, that on some BS tuners, second-generation digital copying may not be possible.



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## Table of Setup Menus

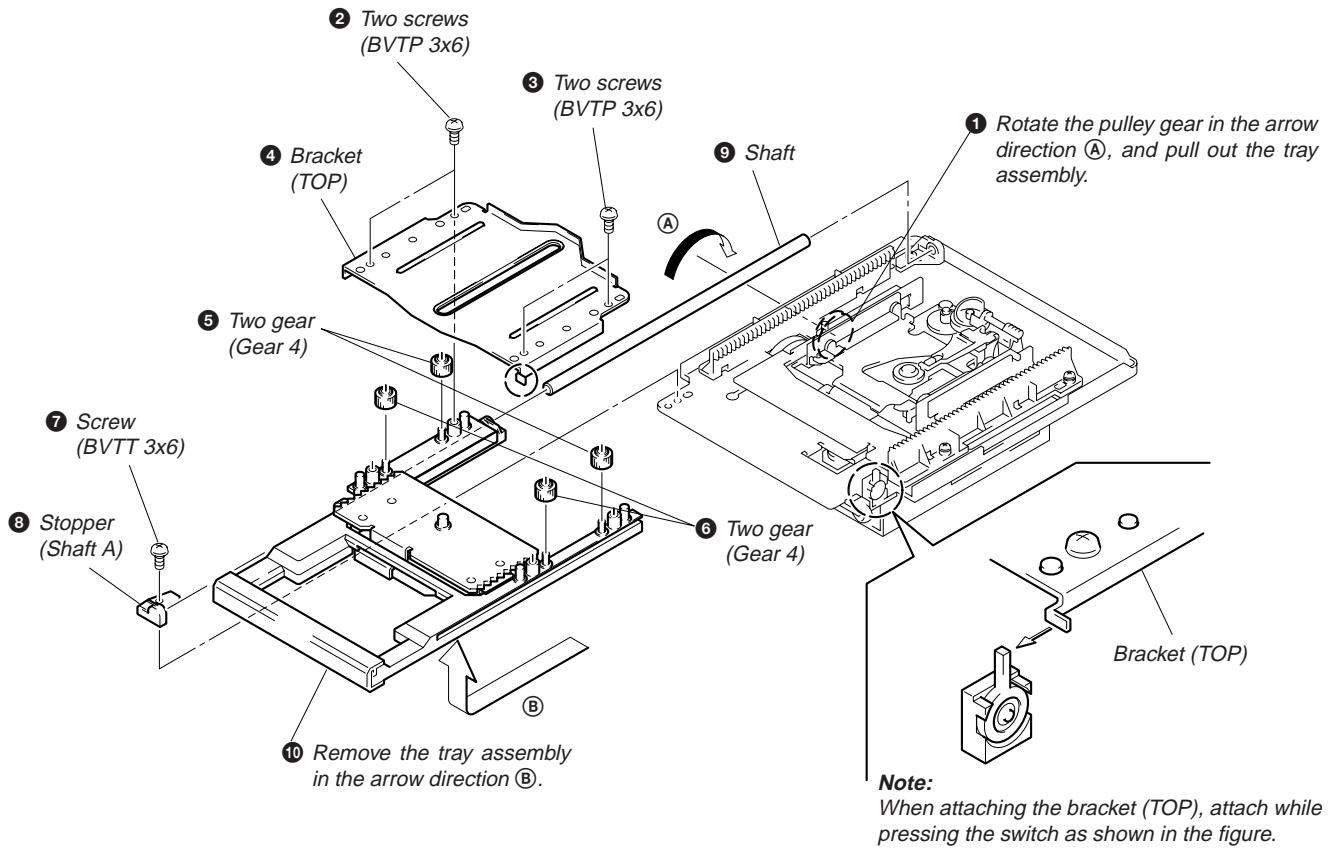
You can make various settings on this deck by using setup menus. Operation related to each menu were explained in the previous sections. The table below outlines each menu, including the various parameters and default settings.

| Menu number | Function  | Parameters  | Default setting | See             |
|-------------|---|---|-----------------|-----------------|
| S01         | Creates a program.  | —   | —               | page 24         |
| S02         | Sets the track marking function.  | T.Mark Off, T.Mark LSyn, T.Mark Lmin, T.Mark 5min | T.Mark LSyn     | page 14         |
| S03         | Sets the reference level of the input signal when "T.Mark LSyn" is selected in the S02 menu                     | LS(T)-72 to 0dB                                   | LS(T)-50dB      | page 15         |
| S04         | Sets the duration of silence portion to be detected when "T.Mark LSyn" is selected in the S02 menu              | LS(W)0.0 to 9.5s                                  | LS(W)1.5s       | page 15         |
| S05         | Sets the Resume Play mode.  | Resume Off, Resume Play, Resume Next              | Resume Off      | page 26         |
| S06         | Switches the bit length for the digital output signal.  | Dout 20bit, Dout 16bit                            | Dout 20bit      | page 26         |
| S07         | Turns the Auto Space and Auto Pause Functions on and off.   | Auto Off, Auto Space, Auto Pause                  | Auto Off        | page 25         |
| S08         | Turn the Smart Space Function on and off.   | S.Space Off, S.Space On                           | S.Space On      | page 11         |
| S09         | Turns the No Clip Function on and off.  | No Clip On, No Clip Off                           | No Clip Off     | page 13         |
| S10         | Turns the Peak Hold function on and off for the peak level meters.  | P.Hold On, P.Hold Off                             | P.Hold Off      | page 14         |
| S11         | Sets the playing time during music scan.  | M.Scan 6 to 20s                                   | M.Scan 6s       | page 22         |
| S12         | Selects the signal to be adjusted using the DIGITAL REC LEVEL control.  | DigLvl Off, DigLvl Rec, DigLvl All                | DigLvl Rec      | pages 13 and 26 |
| S13         | Selects the type of increment/decrement curve of the signal level when the DIGITAL REC LEVEL control is turned. | DigLvl Lin, DigLvl Sin, DigLvl Log                | DigLvl Lin      | page 13         |
| S14         | Sets the duration of fade-in recording and playback.  | FadeIn 1.0 to 15s                                 | FadeIn 5.0s     | pages 18 and 28 |
| S15         | Sets the duration of fade-out recording and playback.   | FadeOut 1.0 to 15s                                | FadeOut 5.0s    | pages 18 and 28 |
| S16         | Selects the type of increment curve of the signal level for fade-in recording and playback.                     | FadeIn Lin, FadeIn Sin, FadeIn Log                | FadeIn Lin      | pages 18 and 28 |
| S17         | Selects the type of decrement curve of the signal level for fade-out recording and playback.                    | FadeOut Lin, FadeOut Sin, FadeOut Log             | FadeOut Lin     | pages 18 and 28 |

## SECTION 3 DISASSEMBLY

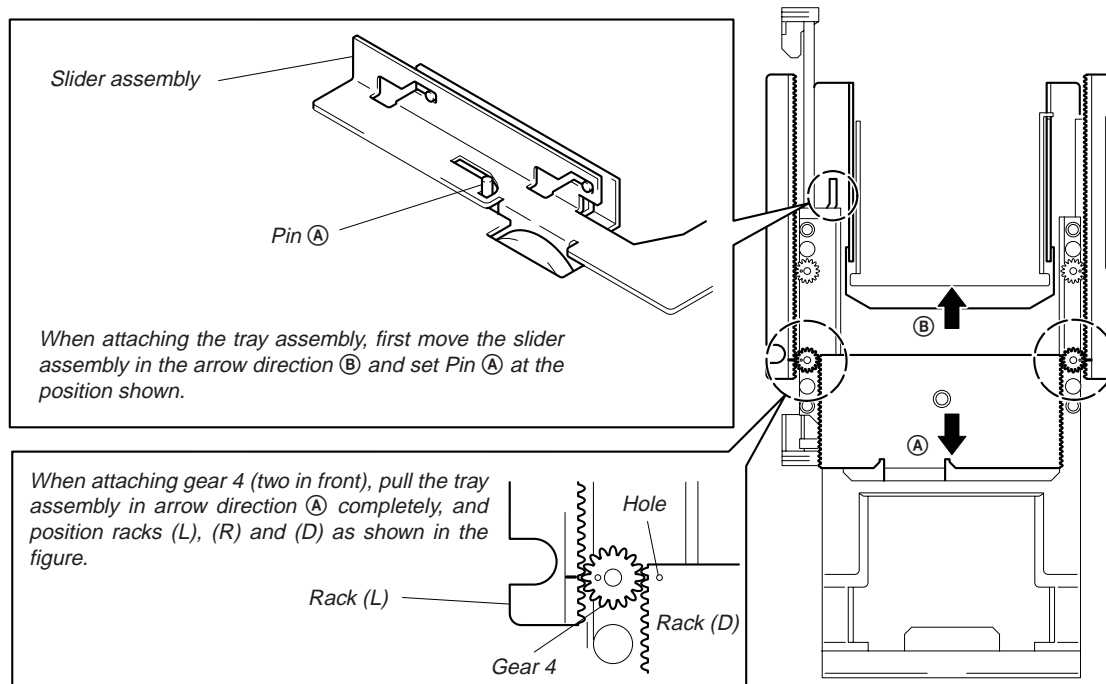
**Note :** Follow the disassembly procedure in the numerical order given.

### 3-1. TRAY ASSEMBLY

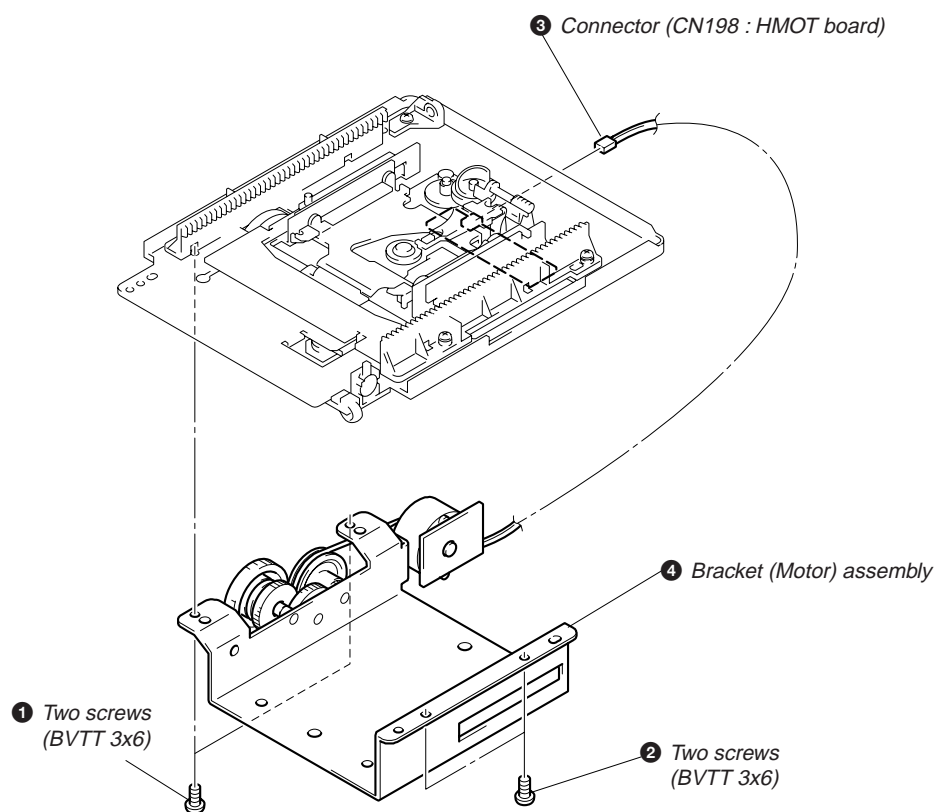


#### • Precautions on Attaching

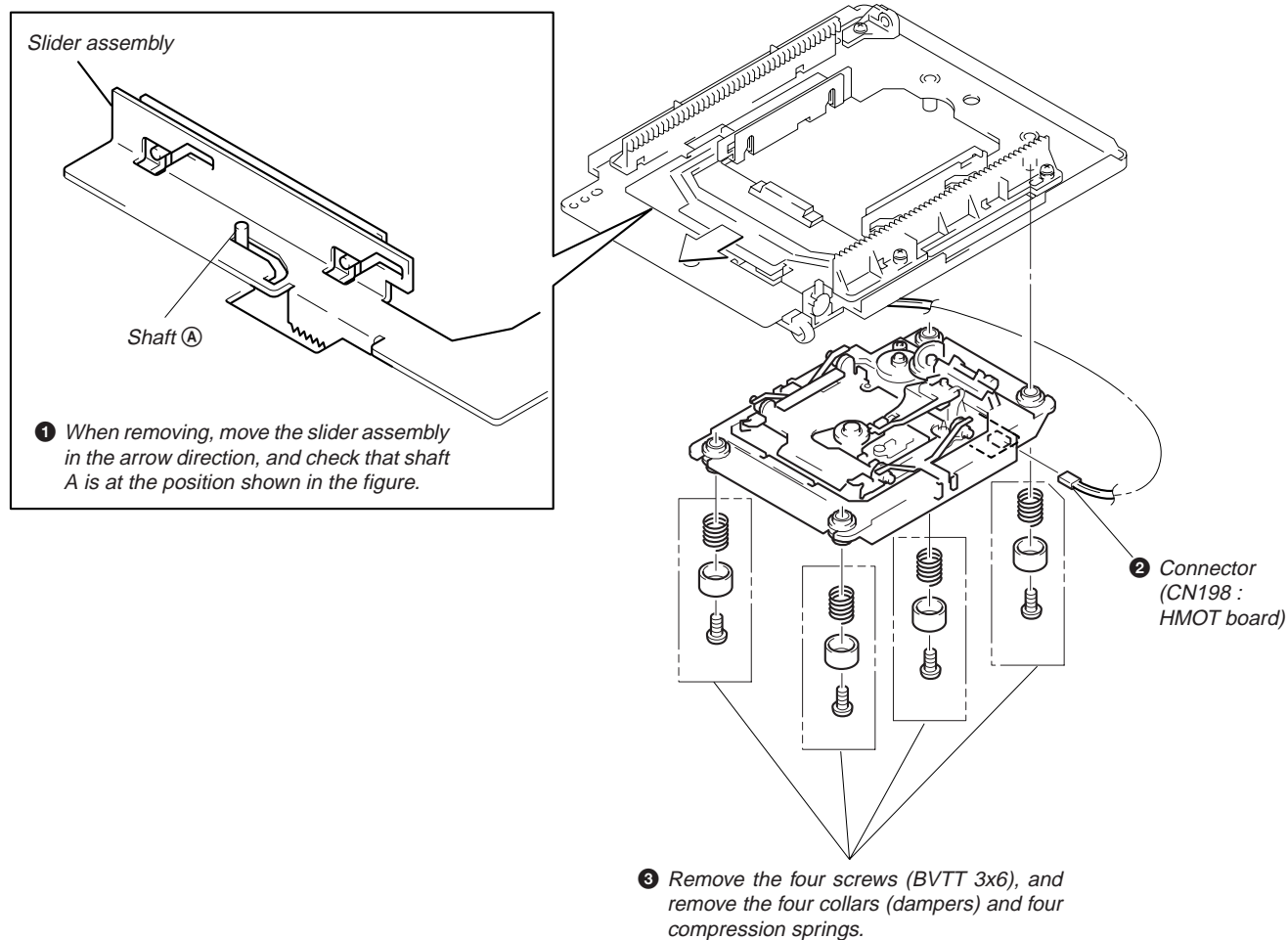
(Assemble in the reverse order of removal.)



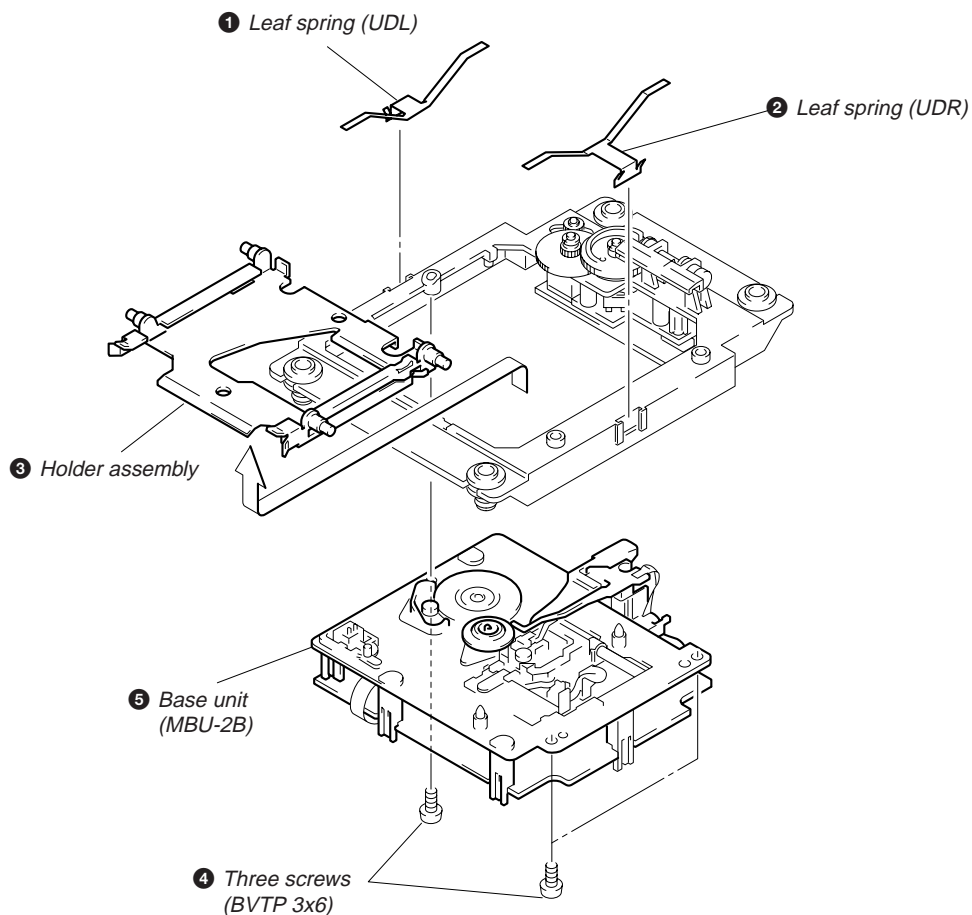
### 3-2. BRACKET (MOTOR) ASSY



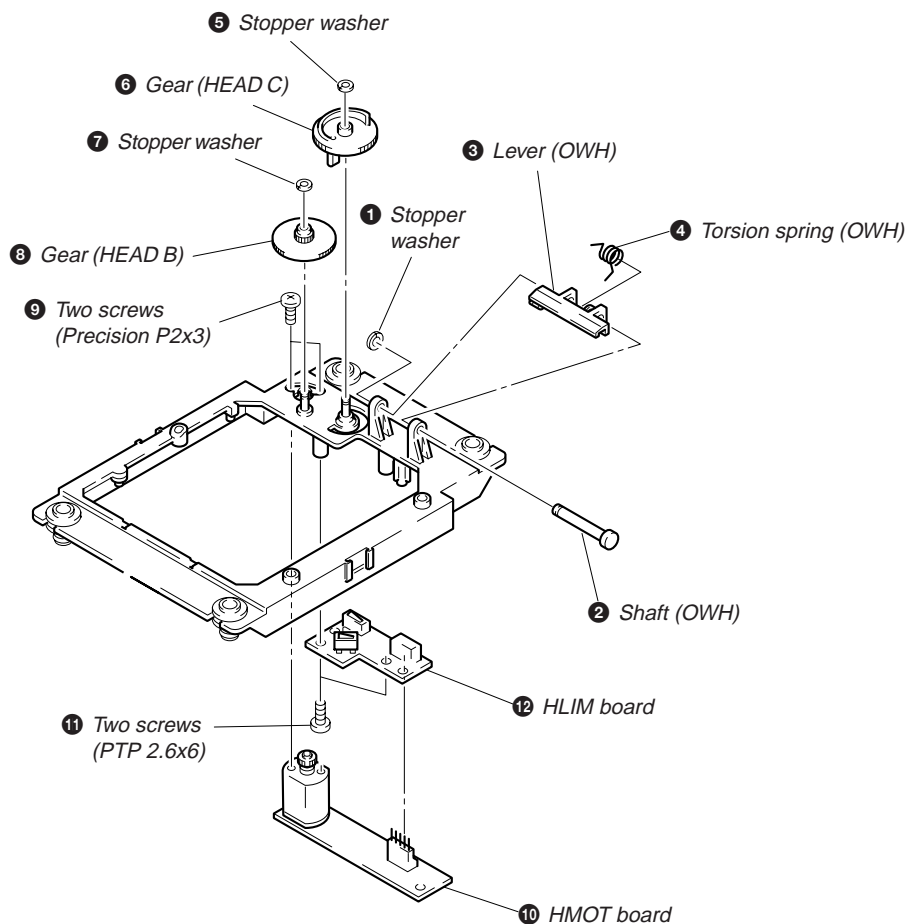
### 3-3. HOLDER ASSY



### 3-4. BASE UNIT



### 3-5. HMOT BOARD AND HLIM BOARD





## SECTION 4 TEST MODE

### 4-1. Setting the Test Mode

While pressing the AMS knob, insert the power plug into the power supply inlet, and release the AMS knob.

### 4-2. Exiting the Test Mode

Press the REPEAT button. Unplug the power plug from an outlet.

### 4-3. Basic Operations of the Test Mode

All operations are performed using the AMS knob, YES button, and NO button.  
The functions of these buttons are as follows.

| Function   | Contents                                      |
|------------|---|
| AMS knob   | Changes parameters and modes                  |
| YES button | Proceeds onto the next step. Finalizes input. |
| NO button  | Returns to previous step. Stops operations.   |

### 4-4. Selecting the Test Mode

Eight test modes are selected by turning the AMS knob.

| Display     | Contents                                   |
|-------------|--|
| TEMP ADJUS  | Temperature compensation offset adjustment |
| LDPWR ADJUS | Laser power adjustment                     |
| EFBAL ADJUS | Traverse adjustment                        |
| FBIAS ADJUS | Focus bias adjustment                      |
| FBIAS CHECK | Focus bias check                           |
| CPLAY MODE  | Continuous playback mode                   |
| CREC MODE   | Continuous recording mode                  |
| EP MODE     | Non-volatile memory mode *                 |

For detailed description of each adjustment mode, refer to 5. Electrical Adjustments.

If a different adjustment mode has been selected by mistake, press the NO button to exit from it.

\* The EP MODE is not used in servicing. If set accidentally, press the NO button immediately to exit it.

#### 4-4-1. Operating the Continuous Playback Mode

##### 1. Entering the continuous playback mode

- ① Set the disc in the unit (either MO or CD).(MO: Recordable disc, CD: Disc for playback only).
- ② Rotate the AMS knob and display “CPLAY MODE”.
- ③ Press the YES button to change the display to “CPLAY IN”.
- ④ When access completes, the display changes to “C1 = 0000 AD = 00”.

**Note :** The “0” displayed are arbitrary numbers.

##### 2. Changing the parts to be played back

- ① Press the YES button during continuous playback to change the display to “CPLAY MID”, “CPLAY OUT”.
- When pressed another time, the parts to be played back can be changed.
- ② When access completes, the display changes to “C1 = 0000 AD = 00”.

**Note :** The “0” displayed are arbitrary numbers.

##### 3. Ending the continuous playback mode

- ① Press the NO button. The display will change to “CPLAY MODE”.
- ② Press the OPEN/CLOSE button and remove the disc.

**Note 1 :** The playback start addresses for IN, MID, and OUT are as follows.

IN 40h cluster  
MID 300h cluster  
OUT 700h cluster

#### 4-4-2. Operating the Continuous Recording Mode

1. Entering the continuous recording mode

- ① Set the MO disc in the unit.
- ② Rotate the AMS knob and display “CREC MODE”.
- ③ Press the YES button to change the display to “CREC IN”.
- ④ When access completes, the display changes to “CREC (0000)” and **REC** lights up.

**Note :** The “0” displayed are arbitrary numbers.

2. Changing the parts to be recorded


- ① When the YES button is pressed during continuous recording, the display changes to “CREC MID”, “CREC OUT” and **REC** goes off.

When pressed another time, the parts to be recorded can be changed.

- ② When access completes, the display changes to “CREC (0000)” and **REC** lights up.

**Note :** The “0” displayed are arbitrary numbers.

3. Ending the continuous recording mode

- ① Press the NO button. The display changes to “CREC MODE” and **REC** goes off.
- ② Press the  OPEN/CLOSE button and remove the disc.

**Note 1 :** The recording start addresses for IN, MID, and OUT are as follows.

IN 40h cluster  
MID 300h cluster  
OUT 700h cluster

**Note 2 :** The NO button can be used to stop recording anytime.

**Note 3 :** During the test mode, the erasing-protection tab will not be detected. Therefore be careful not to set the continuous recording mode when a disc not to be erased is set in the unit.

**Note 4 :** Do not perform continuous recording for long periods of time above 5 minutes.






**Note 5 :** During continuous recording, be careful not to apply vibration.


#### 4-4-3. Non-Volatile Memory Mode

This mode reads and writes the contents of the non-volatile memory.

It is not used in servicing. If set accidentally, press the NO button immediately to exit it.

#### 4-5. Functions of Other buttons

| Function   | Contents   |
|--|--|
|  | Sets continuous playback when pressed in the STOP state. When pressed during continuous playback, the tracking servo turns ON/OFF. |
|  | Stops continuous playback and continuous recording.  |
|  | The sled moves to the outer circumference only when this is pressed.   |
|  | The sled moves to the inner circumference only when this is pressed.   |
|  | Turns recording ON/OFF when pressed during continuous playback.  |
| SCROLL/<br>CLOCK SET   | Switches between the pit and groove modes when pressed.  |
| PLAY MODE  | Switches the spindle servo mode (CLVS and A).  |
| DISPLAY/<br>CHAR   | Switches the display when pressed>Returns to previous step. Stops operations.  |

**Note :** The erasing-protection tab is not detected during the test mode. Recording will start regardless of the position of the erasing-protection tab when the  button is pressed.

## 4-6. Test Mode Displays

Each time the DISPLAY/CHAR button is pressed, the display changes in the following order.

MODE display → Error rate display → Address display

### 1. MODE display

Displays “TEMP ADJUS”, “CPLAY MODE”, etc.

### 2. Error rate display

Error rates are displayed as follows.

C1 = 0000 AD = 0000

C1 = : Indicates C1 error

AD = : Indicates ADER

### 3. Address display

Addresses are displayed as follows.

“h = 0000 s = 0000” (MO pit and CD)

“h = 0000 a = 0000” (MO groove)

h = : Header address

s = : SUBQ address

a = : ADIP address

\* “—” is displayed when the address cannot be read.

## 4-7. Meanings of Other Displays

| Display  | Contents  |                    |   |
|----------|---|--------------------|---|
|          | Light   | Off                | Blinking  |
| ▷        | During continuous playback  | STOP               |   |
| II       | Tracking servo OFF  | Tracking servo ON  |   |
| REC      | Recording mode ON   | Recording mode OFF |   |
| CLOCK    | CLV LOCK  | CLV UNLOCK         |   |
| TRACK    | Pit   | Groove             |   |
| DISC     | High reflection   | Low reflection     |   |
| DATE     | CLV-S   | CLV-A              |   |
| A. SPACE | ABCD adjustment completed   |                    |   |
| A – B    | <div>           (Focus auto gain successful<br/>Tracking auto gain successful)         </div> |                    | <div>           (Focus auto gain successful<br/>Tracking auto gain failed)         </div> |

## 4-8. Precautions for Use of Test Mode

- ① As loading related operations will be performed regardless of the test mode operations being performed, be sure to check that the disc is stopped before setting and removing it.  
Even if the OPEN/CLOSE button is pressed while the disc is rotating during continuous playback, continuous recording, etc., the disc will not stop rotating.  
Therefore, it will be ejected while rotating.  
Always press the NO button first before pressing the OPEN/CLOSE button.
- ② The erasing-protection tab is not detected in the test mode. Therefore, when modes which output the recording laser power such as continuous recording mode and traverse adjustment mode, etc. are set, the recorded contents will be erased regardless of the position of the tab. When using a disc that is not to be erased in the test mode, be careful not to enter the continuous recording mode and traverse adjustment mode.

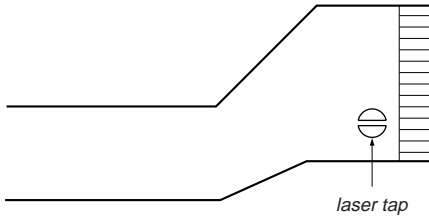
## SECTION 5 ELECTRICAL ADJUSTMENTS

### Precautions for Checking Laser Diode Emission

To check the emission of the laser diode during adjustments, never view directly from the top as this may lose your eye-sight.

### Precautions for Use of optical pick-up (KMS-210A)

As the laser diode in the optical pick-up is easily damaged by static electricity, solder the laser tap of the flexible board when using it. Before disconnecting the connector, desolder first. Before connecting the connector, be careful not to remove the solder. Also take adequate measures to prevent damage by static electricity. Handle the flexible board with care as it breaks easily.



**Optical pick-up flexible board**

- Abbreviation  
MO: Recordable disc  
CD: Disc for playback only

### Precautions for Adjustments

1) When replacing the following parts, perform the adjustments and checks with ○ in the order shown in the following table.

|   | Optical Pick-up | BD Board |      |                     |
|---|-----------------|----------|------|---------------------|
|   |                 | IC171    | D101 | IC101, IC121, IC191 |
| 1. Temperature compensation offset adjustment | ×               | ○        | ○    | ○                   |
| 2. Laser power adjustment                     | ○               | ×        | ×    | ○                   |
| 3. Traverse adjustment                        | ○               | ○        | ×    | ○                   |
| 4. Focus bias adjustment                      | ○               | ○        | ×    | ○                   |
| 5. Error rate check                           | ○               | ○        | ×    | ○                   |

- 2) Set the test mode when performing adjustments.  
After completing the adjustments, exit the test mode.
- 3) Perform the adjustments in the order shown.
- 4) Use the following tools and measuring devices.
  - Check Disc (MD) TDYS-1 (Parts No. 4-963-646-01)
  - Laser power meter LPM-8001 (Parts No. J-2501-046-A)
  - Oscilloscope
  - Digital voltmeter
  - Thermometer
- 5) When observing several signals on the oscilloscope, etc., make sure that VC and ground do not connect inside the oscilloscope.  
(VC and ground will become short-circuited.)

### Creating Continuously Recorded Disc

\* This disc is used in focus bias adjustment and error rate check.  
The following describes how to create a continuous recording disc.

1. Insert a MO disc (blank disc) commercially available.
2. Rotate the AMS knob and display “CREC MODE”.
3. Press the YES button and display “CREC IN”.
4. Press the YES button again to display “CREC MID”.  
“CREC (0300)” is displayed for a moment and recording starts.
5. Complete recording within 5 minutes.
6. Press the NO button and stop recording .
7. Press the OPEN/CLOSE button and remove the MO disc.

The above has been how to create a continuous recording data for the focus bias adjustment and error rate check.

#### Note :

- Be careful not to apply vibration during continuous recording.

## Temperature Compensation Offset Adjustment

Save the temperature data at that time in the non-volatile memory as 25 °C reference data.

### Note :

1. Usually, do not perform this adjustment.
2. Perform this adjustment in an ambient temperature of 22 °C to 28 °C. Perform it immediately after the power is turned on when the internal temperature of the unit is the same as the ambient temperature.
3. When D101 has been replaced, perform this adjustment after the temperature of this part has become the ambient temperature.

### Adjusting Method :

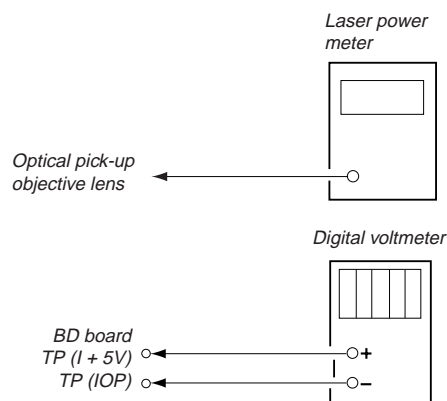
1. Rotate the AMS knob and display "TEMP ADJUS".
2. Press the YES button and select the "TEMP ADJUS" mode.
3. "TEMP = 000" and the current temperature data will be displayed.
4. To save the data, press the YES button.  
When not saving the data, press the NO button.
5. When the YES button is pressed, "TEMP = 000 SAV" will be displayed for some time, followed by "TEMP ADJUS".  
When the NO button is pressed, "TEMP ADJUS" will be displayed.

### Specifications :

The "TEMP = 000" should be within "E0 - EF", "F0 - FF", "00 - 0F", "10 - 1F" and "20 - 2F".

## Laser Power Adjustment

### Connection :



### Adjusting Method :

1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, press the ◀◀ button or ▶▶ button and move the optical pick-up.)  
Connect the digital volt meter to TP (IOP) and TP (I+5V).
2. Rotate the AMS knob and display "LDPWR ADJUS".  
(Laser power : For adjustment)
3. Press the YES button twice and display "LD \$ 4B = 3.5 m".
4. Adjust RV102 of the BD board so that the reading of the laser power meter becomes  $3.4^{+0.1}_{-0}$  mW.
5. Press the YES button and display "LD \$ 96 = 7.0 m".  
(Laser power : MO writing)
6. Check that the laser power meter and digital voltmeter readings satisfy the specified value.

### Specification :

Laser power meter reading :  $7.0 \pm 0.3$  mW

Digital voltmeter reading : Optical pickup displayed value  $\pm 10\%$

(Optical pickup label)



$I_{op} = 82.5$  mA in this case

$I_{op} (mA) = \text{Digital voltmeter reading (mV)} / 1 (\Omega)$

7. Press the YES button and display "LD \$ 0F = 0.7 m".  
(Laser power : MO reading)
8. Check that the laser power meter at this time satisfies the specified value.

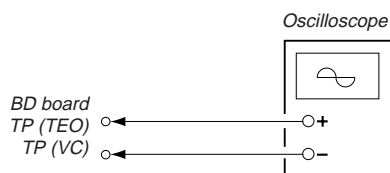
### Specification :

Laser power meter reading :  $0.70 \pm 0.1$  mW

9. Press the NO button and display "LDPWR ADJUS", and stop laser emission.  
(The NO button is effective at all times to stop the laser emission.)

## Traverse Adjustment

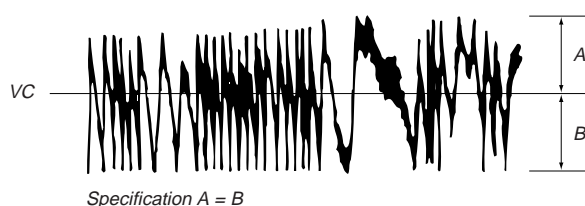
### Connection :



### Adjusting method :

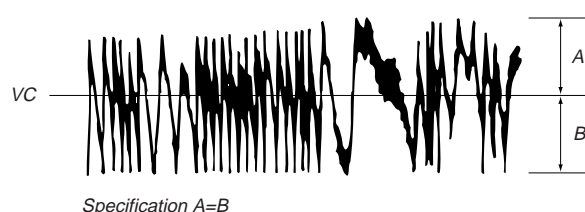
1. Connect an oscilloscope to TP (TEO) and TP (VC) of the BD board.
2. Load a MO disc (any available on the market).
3. Press the ◀◀ button or ▶▶ button and move the optical pick-up outside the pit.
4. Rotate the AMS knob and display "EFBAL ADJUS".
5. Press the YES button and display "EFBAL MO-W".  
(Laser power WRITE power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
6. Adjust RV101 of the BD board so that the waveform of the oscilloscope becomes the specified value.  
(MO groove write power traverse adjustment)

(Traverse Waveform)



7. Press the YES button and display "EFB = \$ ◻ MO-R".  
(Laser power : MO reading)
8. Rotate the AMS knob so that the waveform of the oscilloscope becomes the specified value.  
(When the AMS knob is rotated, the ◻ of "EFB = \$ ◻" changes and the waveform changes.) In this adjustment, waveform varies at intervals of approx. 3%. Adjust the waveform so that the specified value is satisfied as much as possible.  
(MO groove read power traverse adjustment)

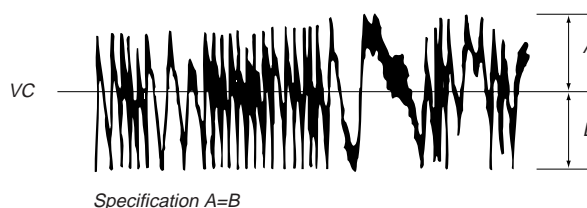
(Traverse Waveform)



9. Press the YES button, display "EFB = \$ ◻ SAV" for a moment and save the adjustment results in the non-volatile memory. Next "EFBAL MO-P" is displayed.
10. Press the YES button and display "EFB = \$ ◻ MO-P".  
The optical pick-up moves to the pit area automatically and servo is imposed.

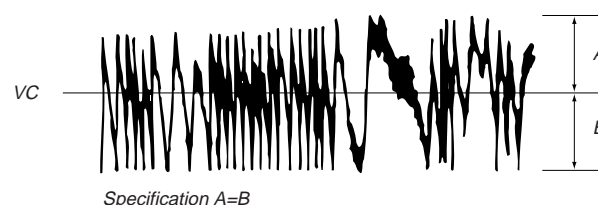
11. Rotate the AMS knob until the waveform of the oscilloscope moves closer to the specified value.  
In this adjustment, waveform varies at intervals of approx. 3%. Adjust the waveform so that the specified value is satisfied as much as possible.

(Traverse Waveform)



12. Press the YES button, display "EFB = \$ ◻ SAV" for a moment and save the adjustment results in the non-volatile memory. Next "EFBAL CD" is displayed. The disc stops rotating automatically.
13. Press the ≡OPEN/CLOSE button and remove the MO disc.
14. Load the check disc (MD) TDYS-1.
15. Press the YES button and display "EFB = \$ ◻ CD". Servo is imposed automatically.
16. Rotate the AMS knob so that the waveform of the oscilloscope moves closer to the specified value.  
In this adjustment, waveform varies at intervals of approx. 3%. Adjust the waveform so that the specified value is satisfied as much as possible.

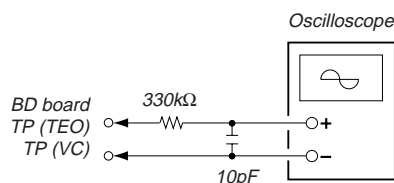
(Traverse Waveform)



17. Press the YES button, display "EFB = \$ ◻ SAV" for a moment and save the adjustment results in the non-volatile memory. Next "EFBAL ADJUS" is displayed.
18. Press the ≡OPEN/CLOSE button and remove the test disc TDYS-1.

**Note 1 :** Data will be erased during MO reading if a recorded disc is used in this adjustment.

**Note 2 :** If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



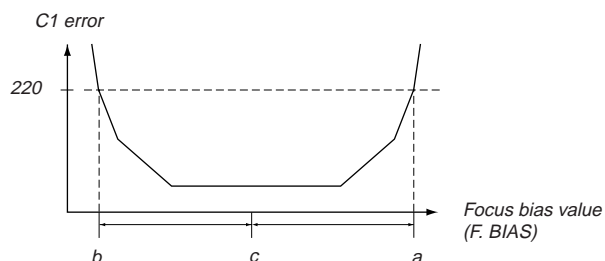
## Focus Bias Adjustment

### Adjusting Method :

1. Load a continuously recorded disc (Refer to “Page 32 Creating Continuously Recorded Disc”).
2. Rotate the AMS knob and display “CPLAY MODE”.
3. Press the YES button twice and display “CPLAY MID”.
4. Press the NO button when “C1 = 0000 AD = 00” is displayed.
5. Rotate the AMS knob and display “FBIAS ADJUS”.
6. Press the YES button and display “0000/00 a = 00”.  
The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [a =] indicate the focus bias value.
7. Rotate the AMS knob in the clockwise direction and find the focus bias value at which the C1 error rate becomes 220.
8. Press the YES button and display “0000/00 b = 00”.
9. Rotate the AMS knob in the counterclockwise direction and find the focus bias value at which the C1 error rate becomes 220.
10. Press the YES button and display “0000/00 c = 00”.
11. Check that the C1 error rate is below 50 and ADER is 00. Then press the YES button.
12. If the “(00)” in “00 - 00 - 00 (00)” is above 20, press the YES button.  
If below 20, press the NO button and repeat the adjustment from step 2 again.
13. Press the NO button and press the  $\triangle$ OPEN/CLOSE button to remove the continuously recorded disc.

**Note 1 :** The relation between the C1 error and focus bias is as shown in the following figure. Find points a and b in the following figure using the above adjustment. The focal point position C is automatically calculated from points a and b.

**Note 2 :** As the C1 error rate changes, perform the adjustment using the average value.



## Error Rate Check

### CD Error Rate Check

#### Checking Method :

1. Load a check disc (MD) TDYS-1.
2. Rotate the AMS knob and display “CPLAY MODE”.
3. Press the YES button twice and display “CPLAY MID”.
4. “C1 = 0000 AD = 00” is displayed.
5. Check that the C1 error rate is below 20.
6. Press the NO button, stop playback, press the  $\triangle$ OPEN/CLOSE button, and remove the test disc.

### MO Error Rate Check

#### Checking Method :

1. Load a continuously recorded disc (Refer to “Page 32 Creating Continuously Recorded Disc”).
2. Rotate the AMS knob and display “CPLAY MODE”.
3. Press the YES button twice and display “CPLAY MID”.
4. “C1 = 0000 AD = 00” is displayed.
5. If the C1 error rate is below 50, check that ADER is 00.
6. Press the NO button, stop playback, press the  $\triangle$ OPEN/CLOSE button, and remove the continuously recorded disc.

## Focus Bias Check

Change the focus bias and check the focus tolerance amount.

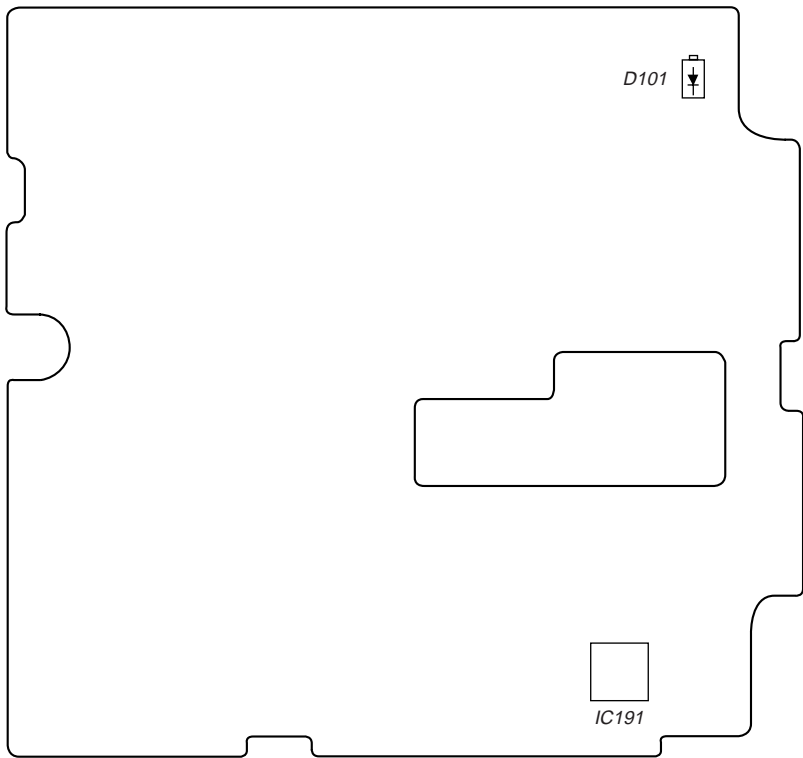
#### Checking Method :

1. Load a continuously recorded disc (Refer to “Page 32 Creating Continuously Recorded Disc”).
2. Rotate the AMS knob and display “CPLAY MODE”.
3. Press the YES button twice and display “CPLAY MID”.
4. Press the NO button when “C1 = 0000 AD = 00” is displayed.
5. Rotate the AMS knob and display “FBIAS CHECK”.
6. Press the YES button and display “0000/00 c = 00”.  
The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.  
Check that the C1 error is below 50 and ADER is 00.
7. Press the YES button and display “0000/00 b = 00”.  
Check that the C1 error is not below 220 and ADER is not above 00 every time.
8. Press the YES button and display “0000/00 a = 00”.  
Check that the C1 error is not below 220 and ADER is not above 00 every time.
9. Press the NO button, next press the  $\triangle$ OPEN/CLOSE button, and remove the continuously recorded disc.

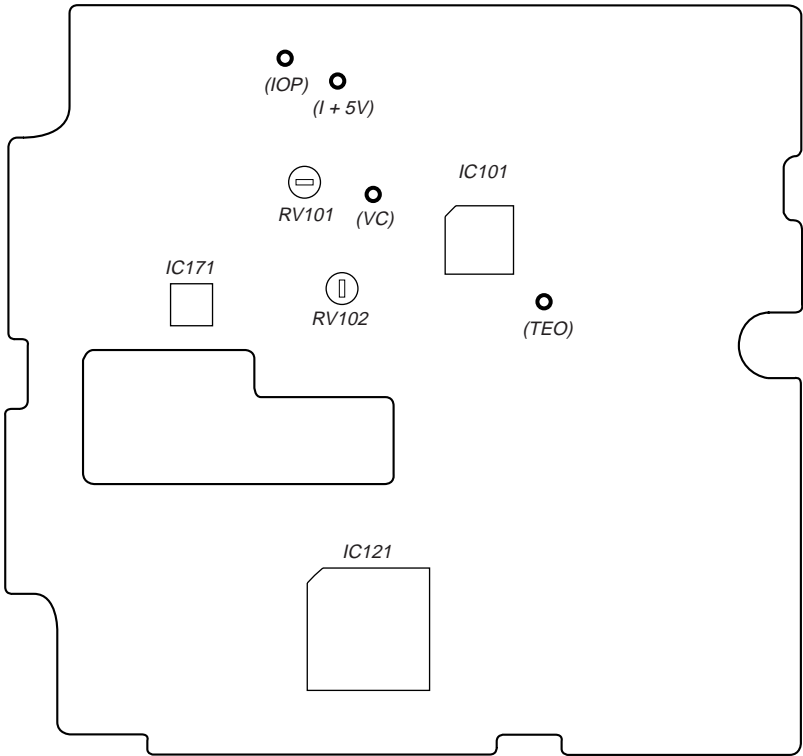
**Note 1 :** If the C1 error and ADER are above 00 at points a or b, the focus bias adjustment may not have been carried out properly. Adjust perform the beginning again.

Adjusting Points and Connecting Points

[BD BOARD] (SIDE A)



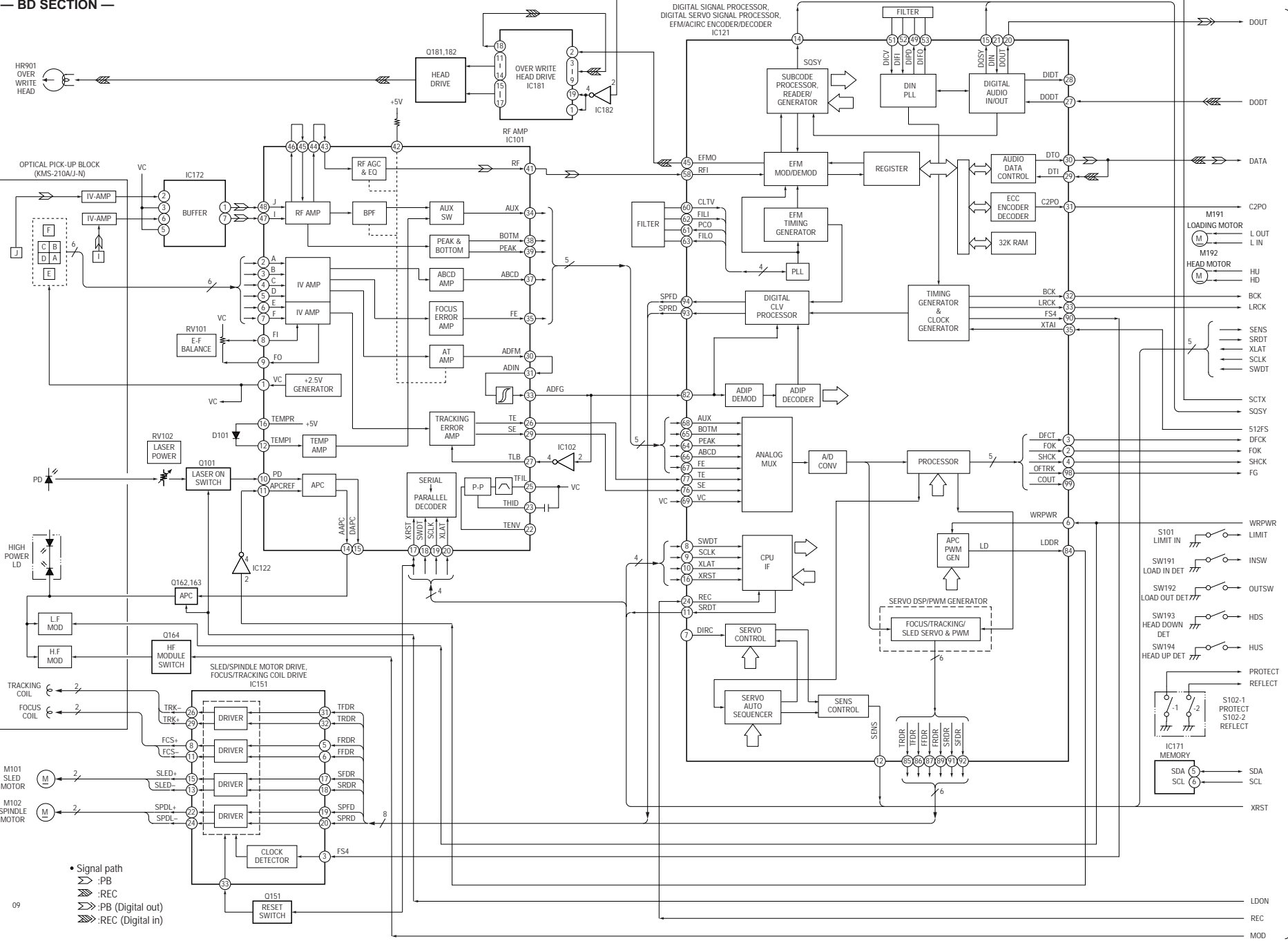
[BD BOARD] (SIDE B)



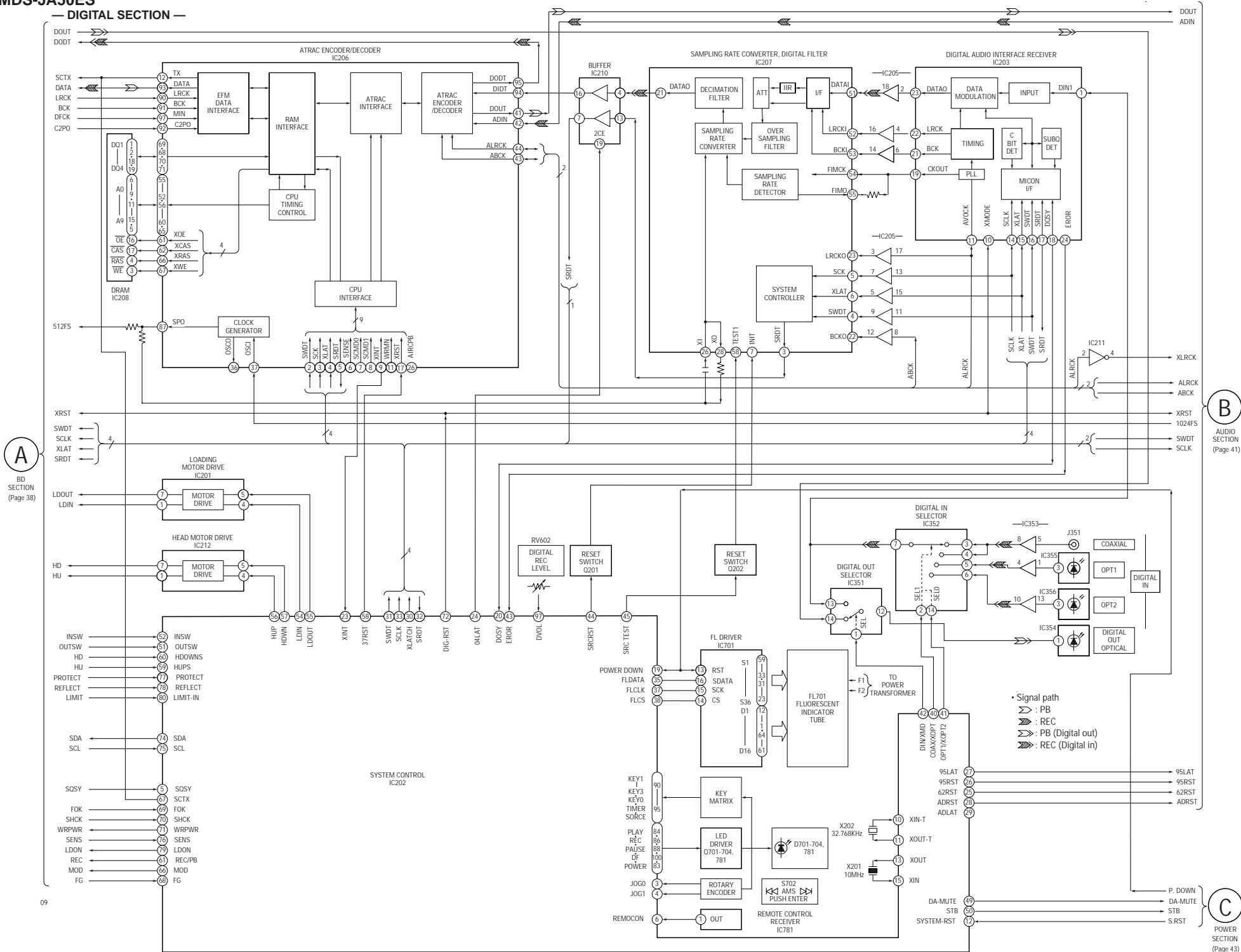


SECTION 6  
DIAGRAMS

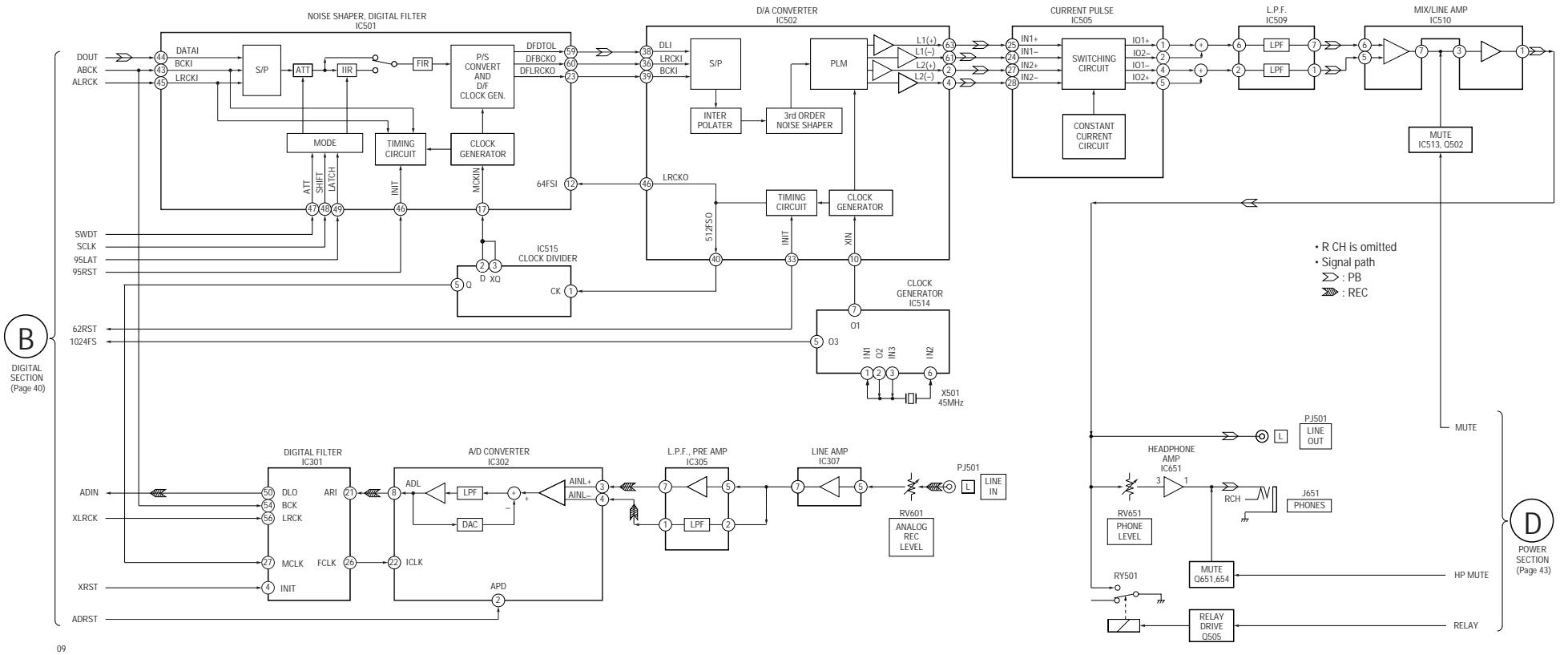
6-1. BLOCK DIAGRAMS  
— BD SECTION —



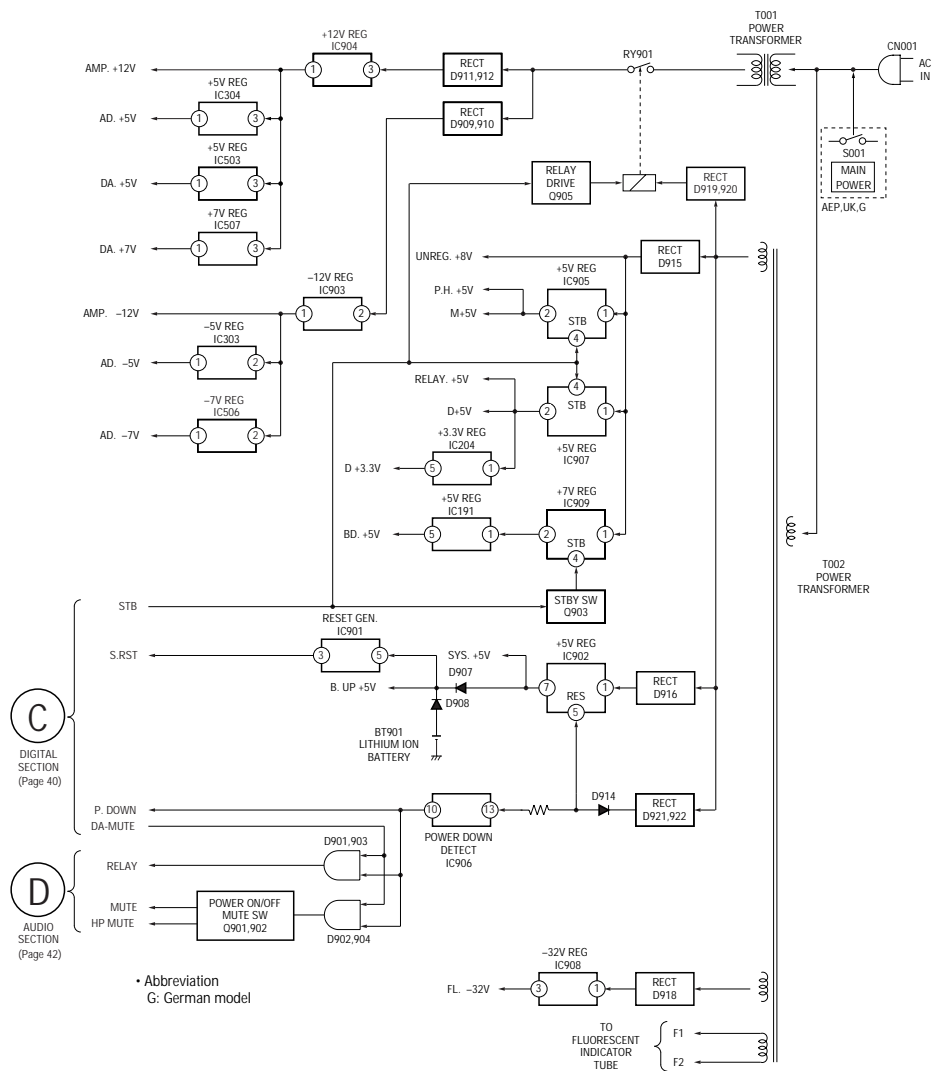
A  
DIGITAL  
SECTION  
(Page 39)



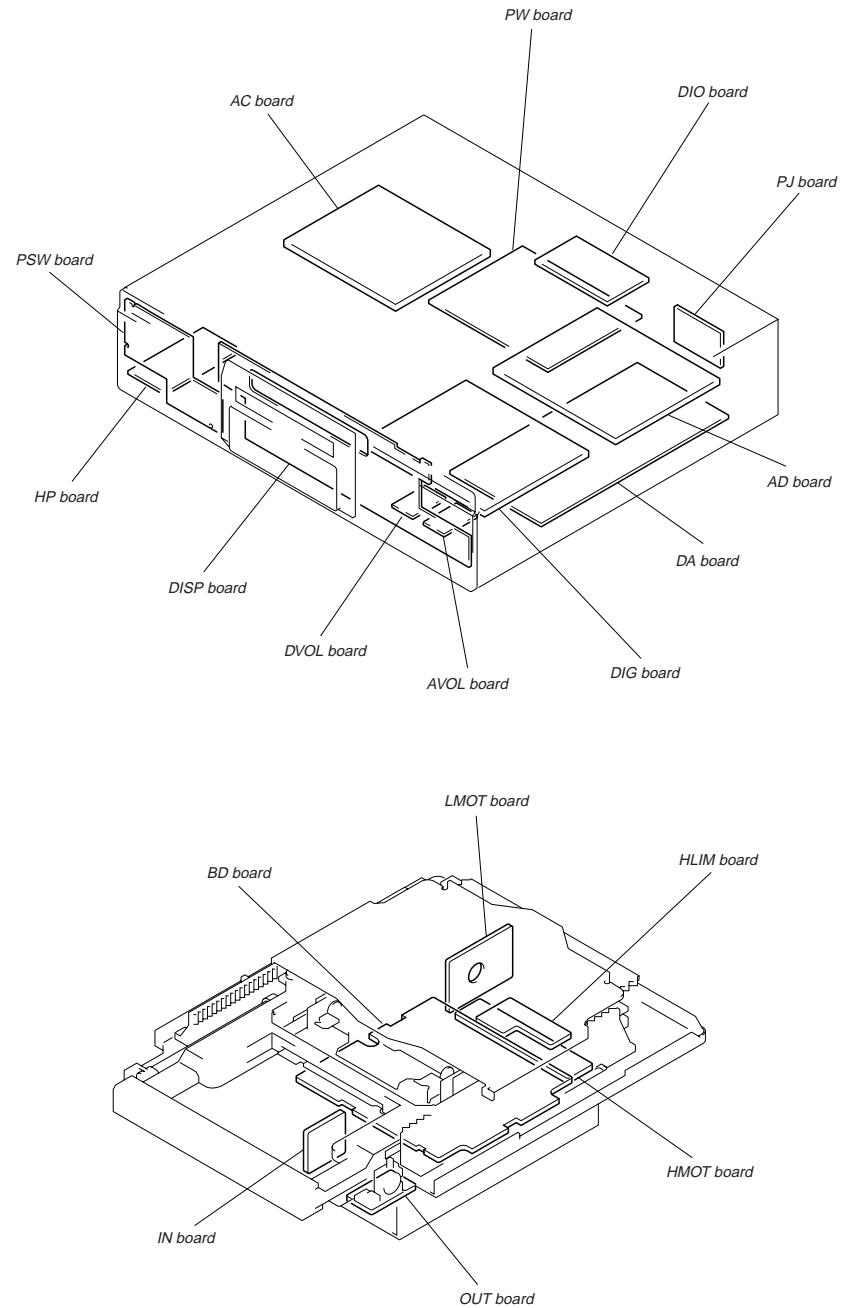
— AUDIO SECTION —



— POWER SECTION —

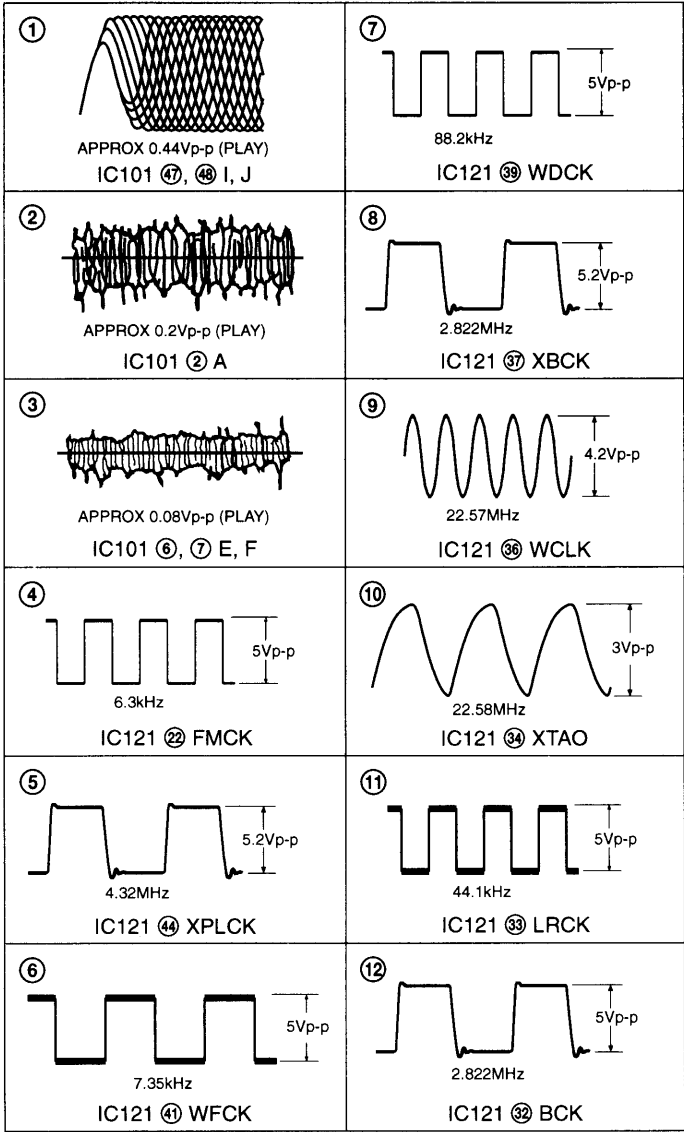


6-2. CIRCUIT BOARDS LOCATION

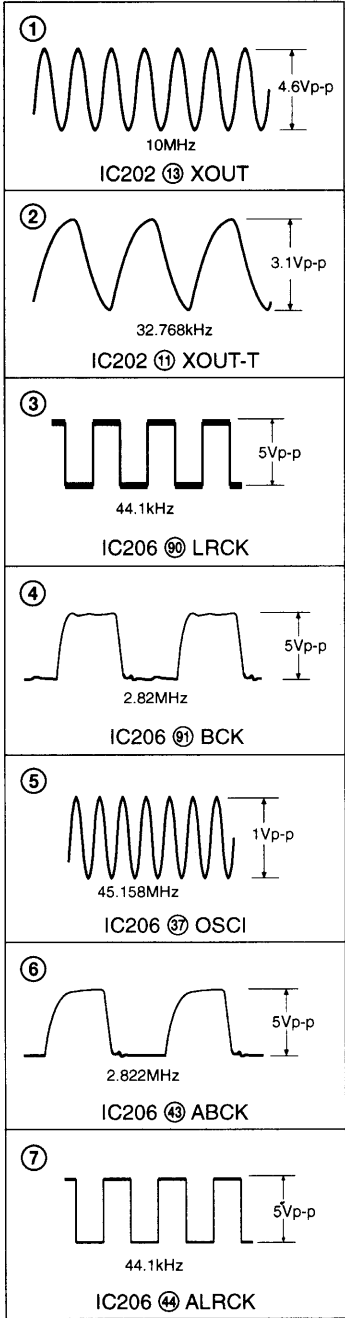


6-3. WAVEFORMS

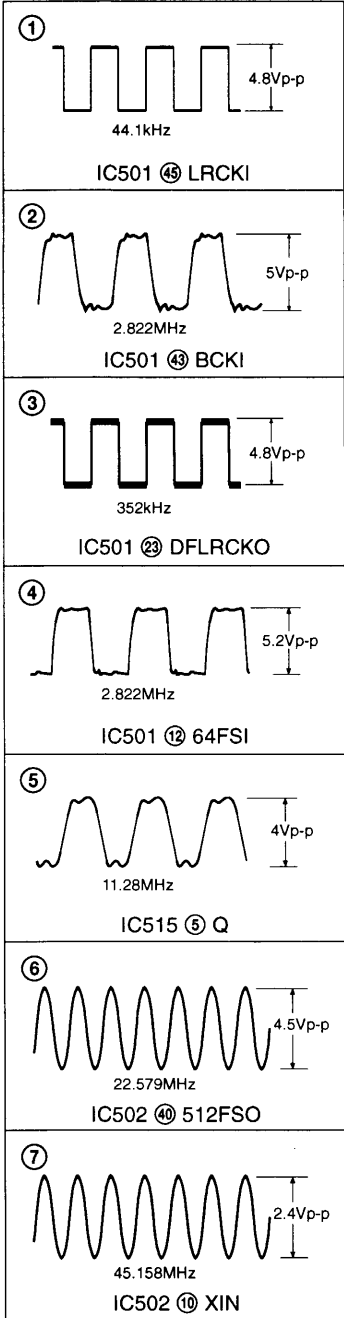
BD SECTION



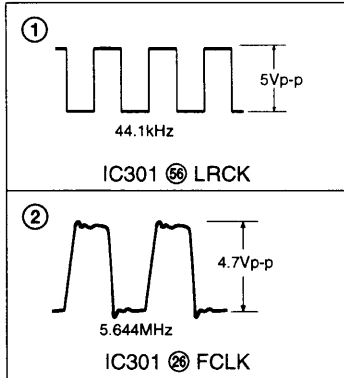
DIGITAL SECTION



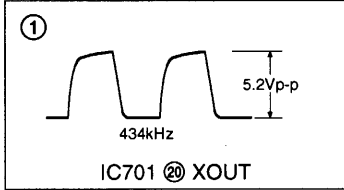
DA SECTION



AD SECTION



PANEL SECTION



**THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.**  
(In addition to this, the necessary note is printed in each block.)

NOTE

- : parts extracted from the component side.
- : Through hole.
- ▨ : Pattern from the side which enable seeing.
- ▩ : Pattern of the rear side.

NOTE

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$  :  $\mu\text{F}$
- 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and 1/4W or less unless otherwise specified.
- △ : internal component.
- : panel designation.

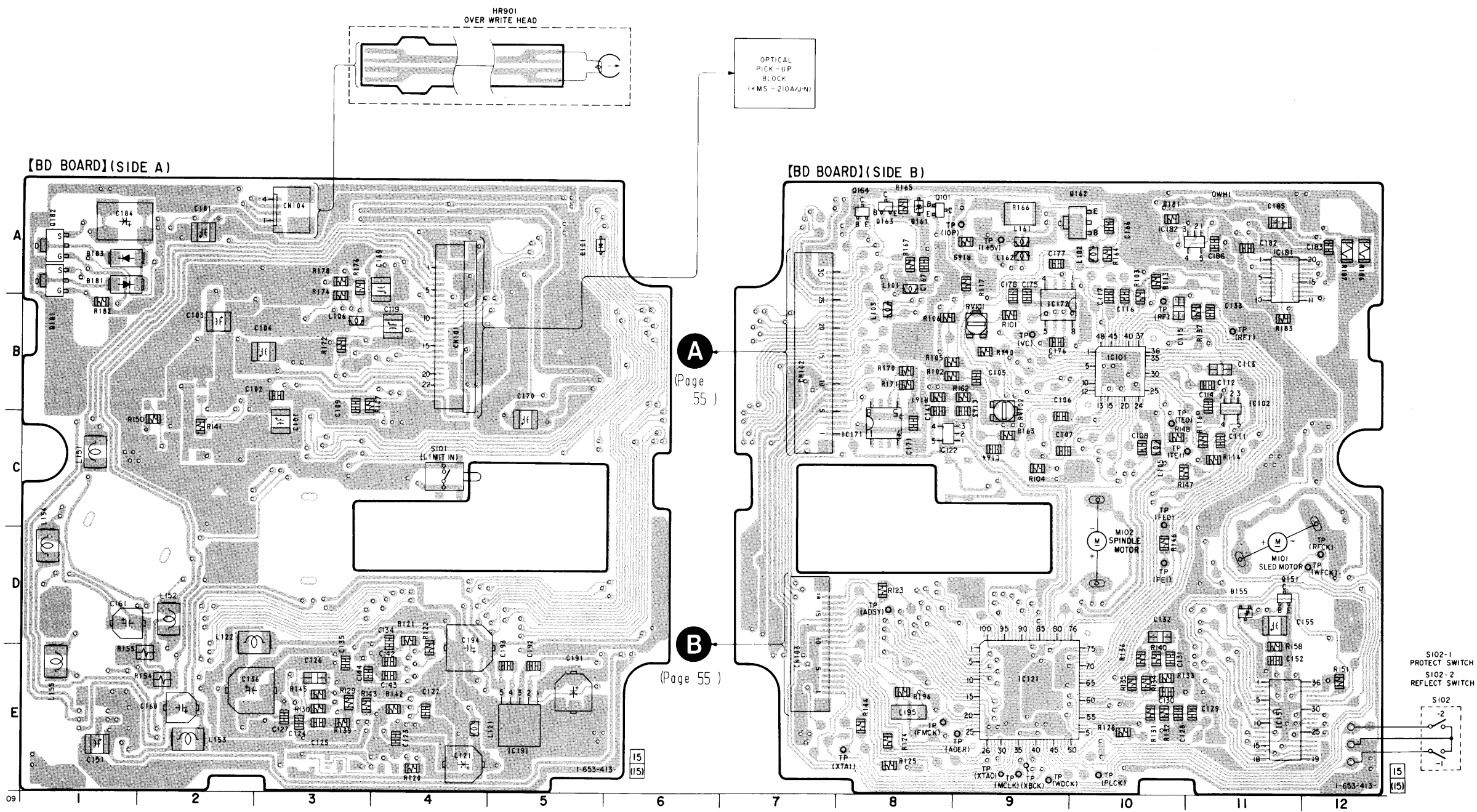
**Note** : The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.

- B+ : B+ Line
- B- : B- Line
- : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.  
no mark : REC/PLAY  
( ) : REC  
< > : PLAY  
\* : can not be measured.
- Voltages are taken with a VOM (Input impedance 10M $\Omega$ ).  
Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.  
Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.  
▨ : PB  
▨▨ : PB (Digital out)  
▨▨ : REC  
▨▨ : REC (Digital in)
- Abbreviation  
G : German model.

6-4. PRINTED WIRING BOARD — BD SECTION —  
• See page 44 for Circuit Boards Location.

• Semiconductor  
Location

| Ref. No. | Location |
|----------|----------|
| D101     | A-5      |
| D155     | D-11     |
| D161     | A-8      |
| D181     | A-1      |
| D183     | A-1      |
| IC101    | B-10     |
| IC102    | B-11     |
| IC121    | E-9      |
| IC122    | C-8      |
| IC151    | E-11     |
| IC171    | C-8      |
| IC172    | B-9      |
| IC181    | A-11     |
| IC182    | A-10     |
| IC192    | E-5      |
| Q101     | A-8      |
| Q151     | D-11     |
| Q162     | A-10     |
| Q163     | A-8      |
| Q164     | A-8      |
| Q181     | B-1      |
| Q182     | A-1      |

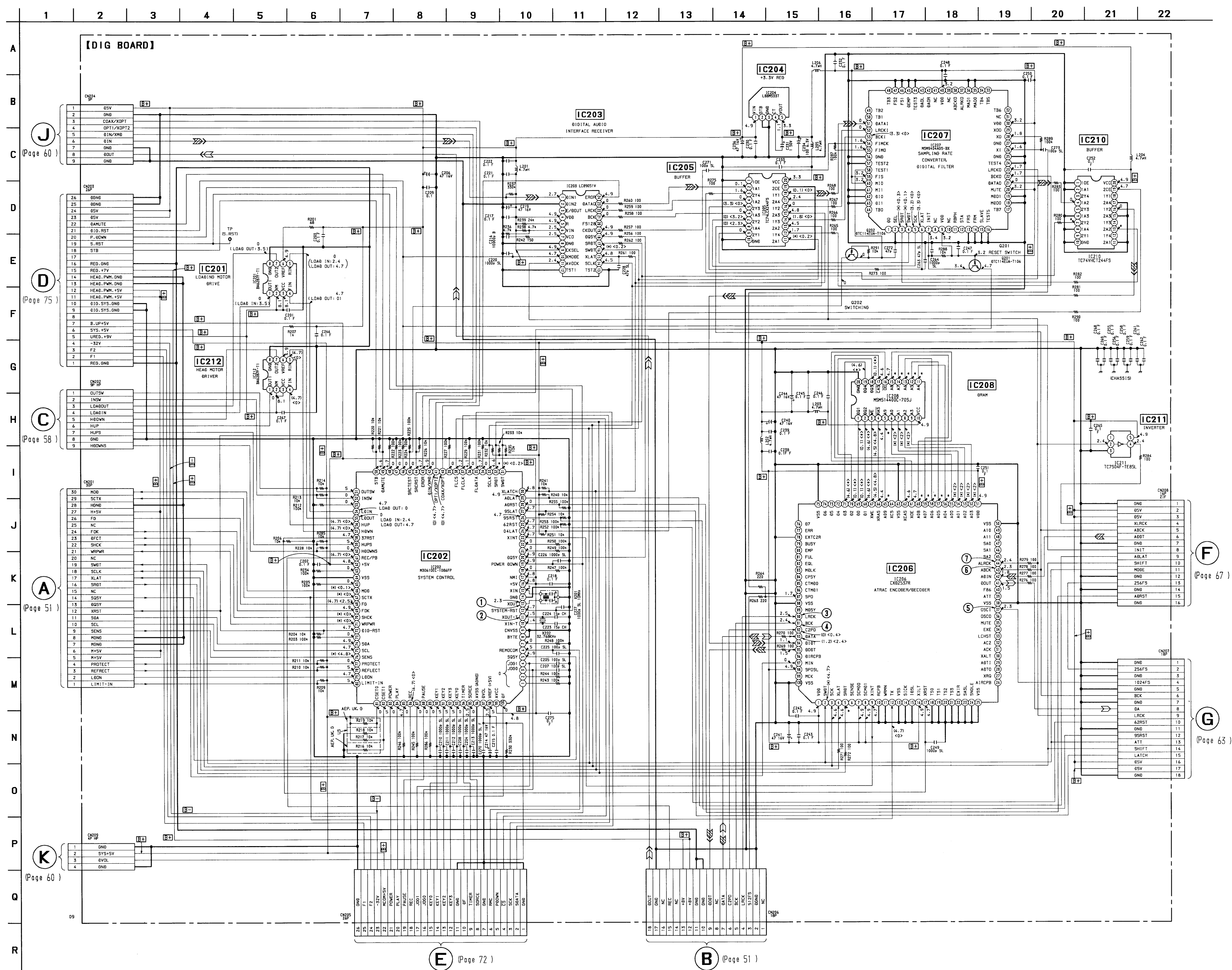




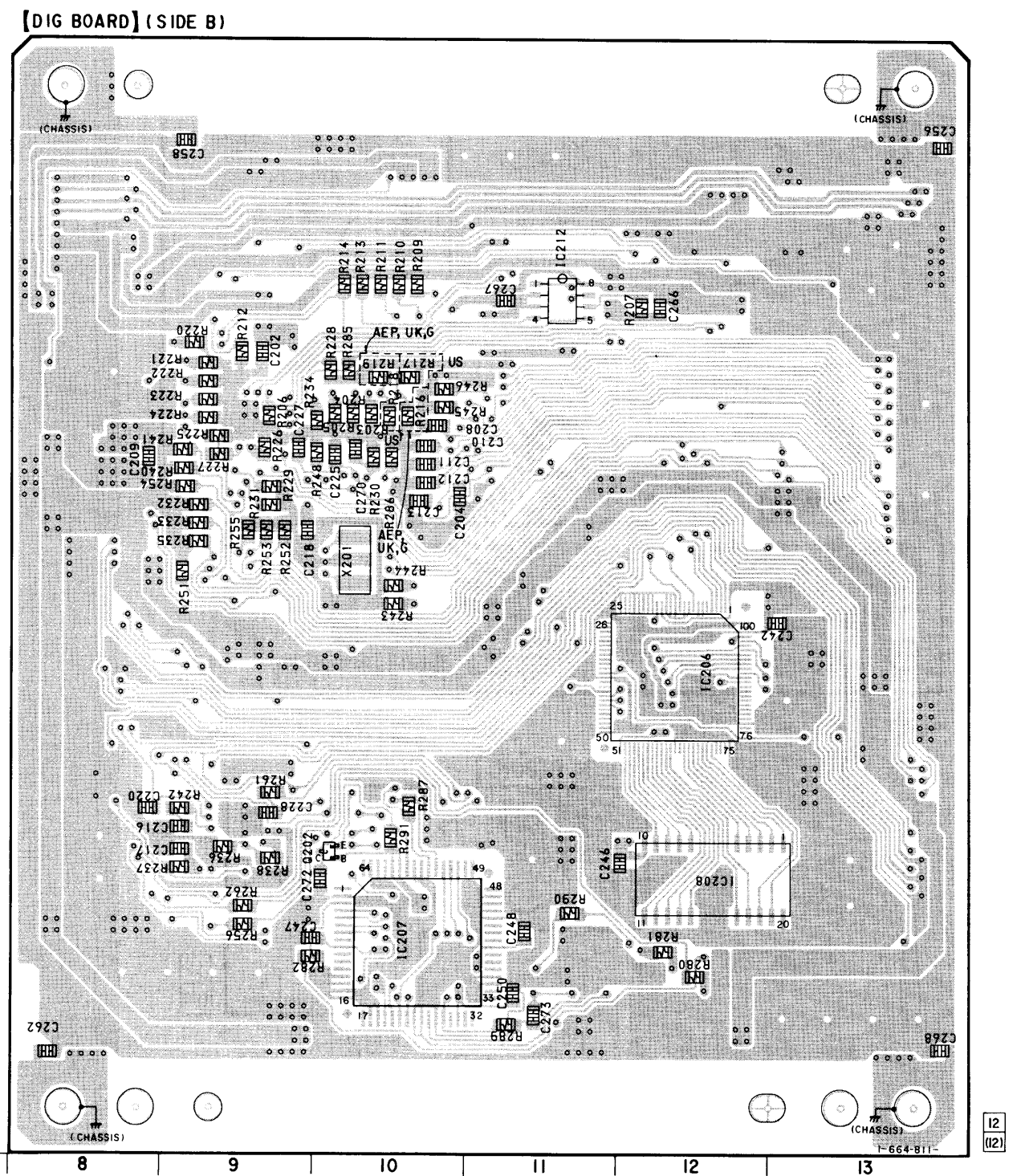


6-6. SCHEMATIC DIAGRAM — DIGITAL SECTION —

- See page 45 for Waveforms.
- See page 74 for IC Block Diagrams.
- See page 88 for IC Pin Functions.

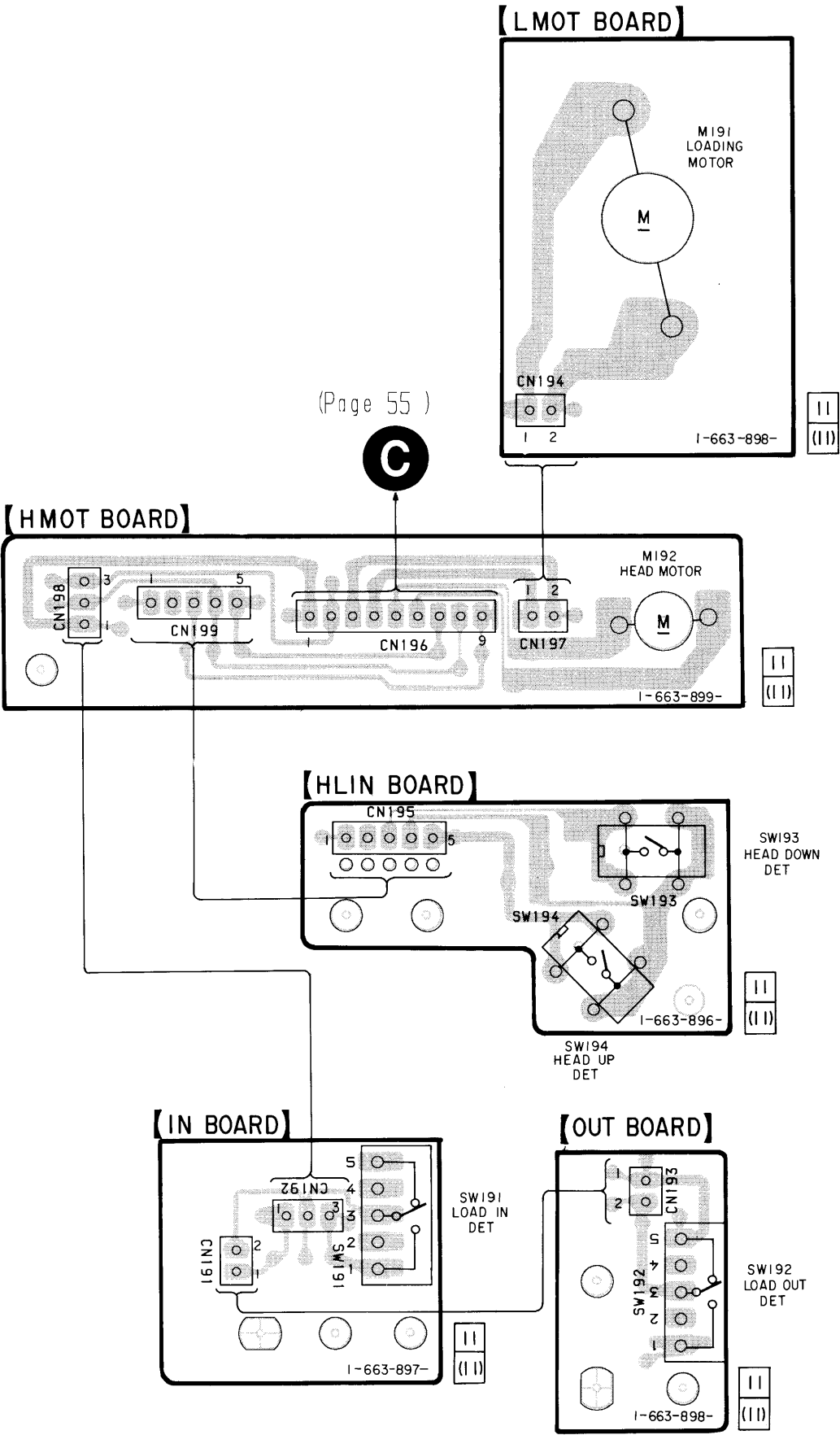




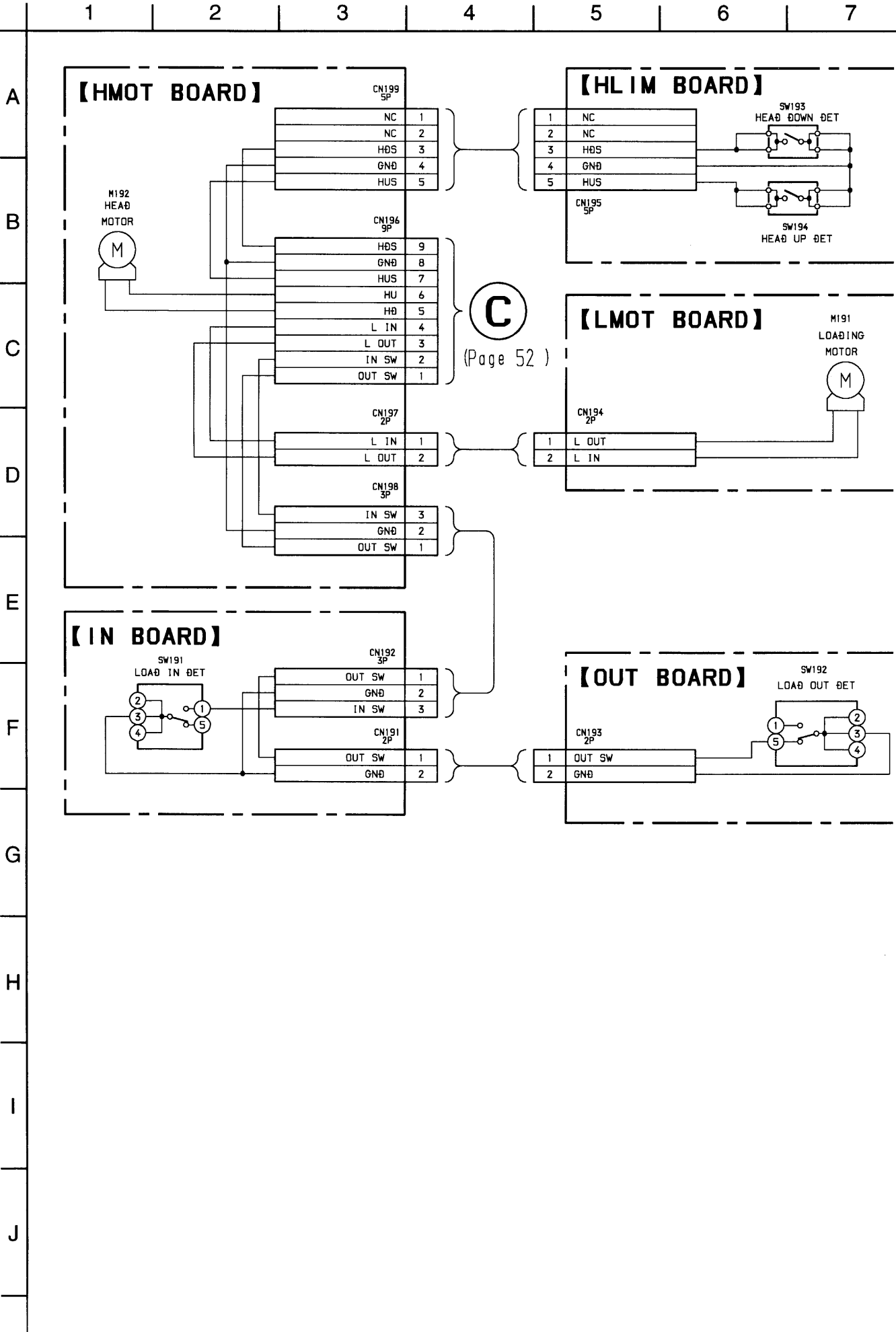


| Ref. No. | Location | Ref. No. | Location |
|----------|----------|----------|----------|
| IC201    | C-3      | IC208    | F-12     |
| IC202    | C-5      | IC210    | G-2      |
| IC203    | F-5      | IC211    | D-3      |
| IC204    | E-5      | IC212    | B-11     |
| IC205    | F-4      |          |          |
| IC206    | E-12     | Q201     | G-5      |
| IC207    | G-10     | Q202     | F-10     |

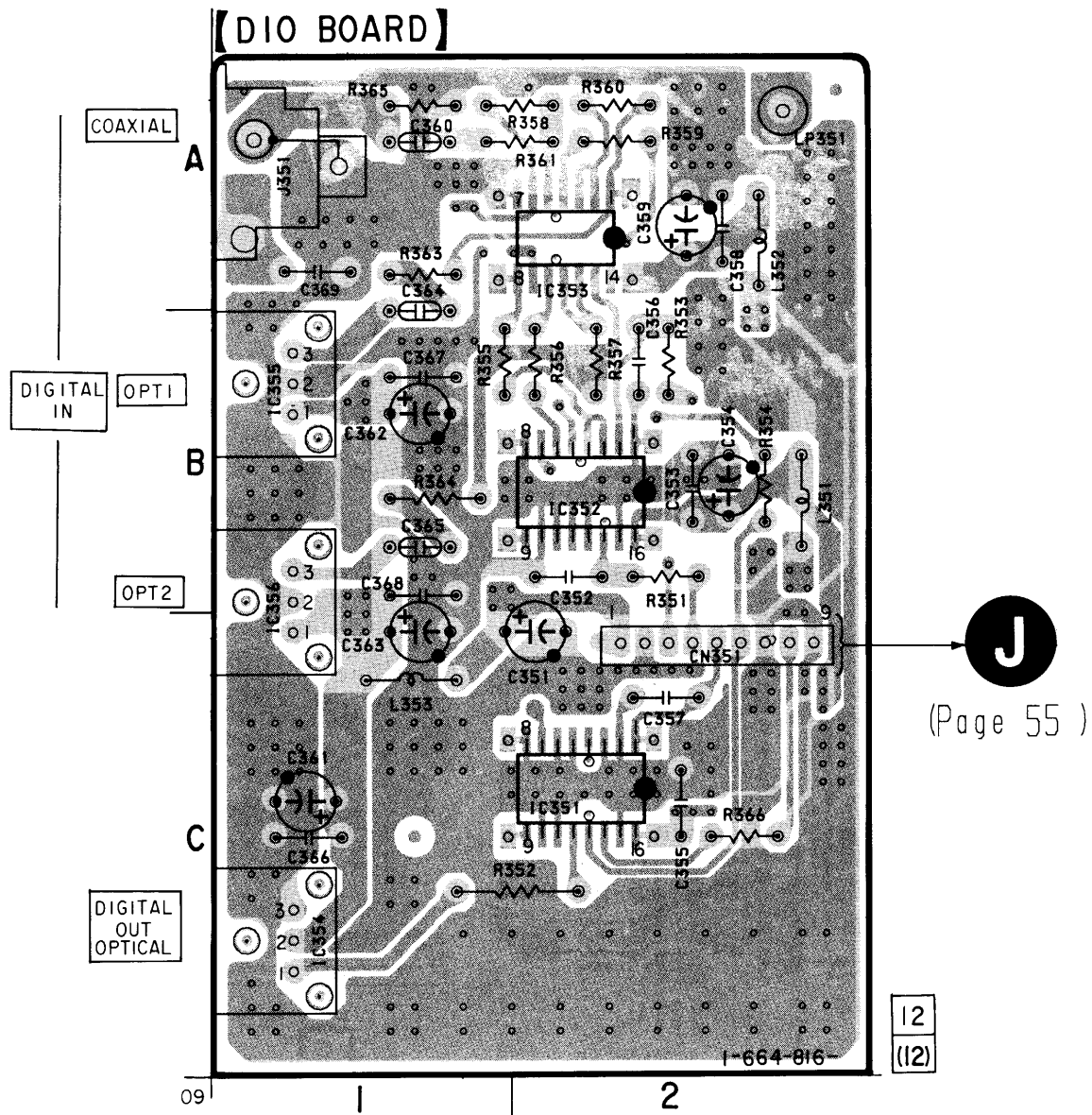
6-8. PRINTED WIRING BOARD — MD SECTION —  
• See page 44 for Circuit Boards Location.



6-9. SCHEMATIC DIAGRAM — MD SECTION —

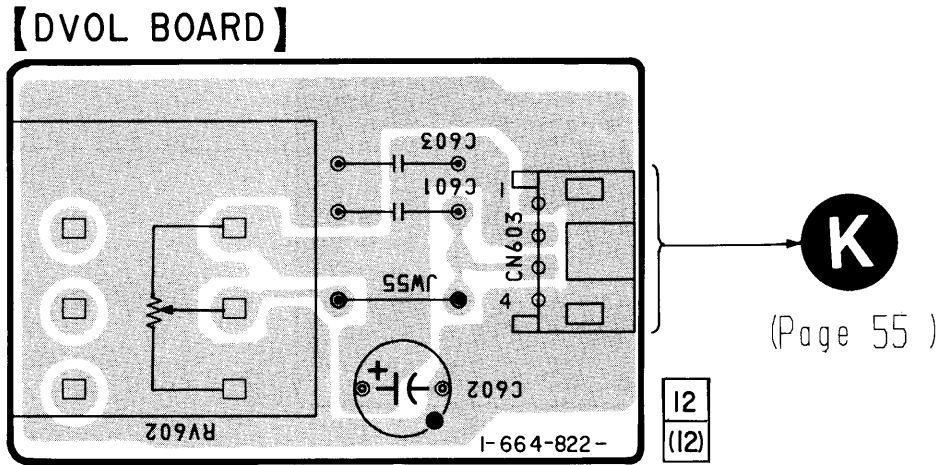


6-10. PRINTED WIRING BOARD — D OUT, D VOL SECTION —  
• See page 44 for Circuit Boards Location.

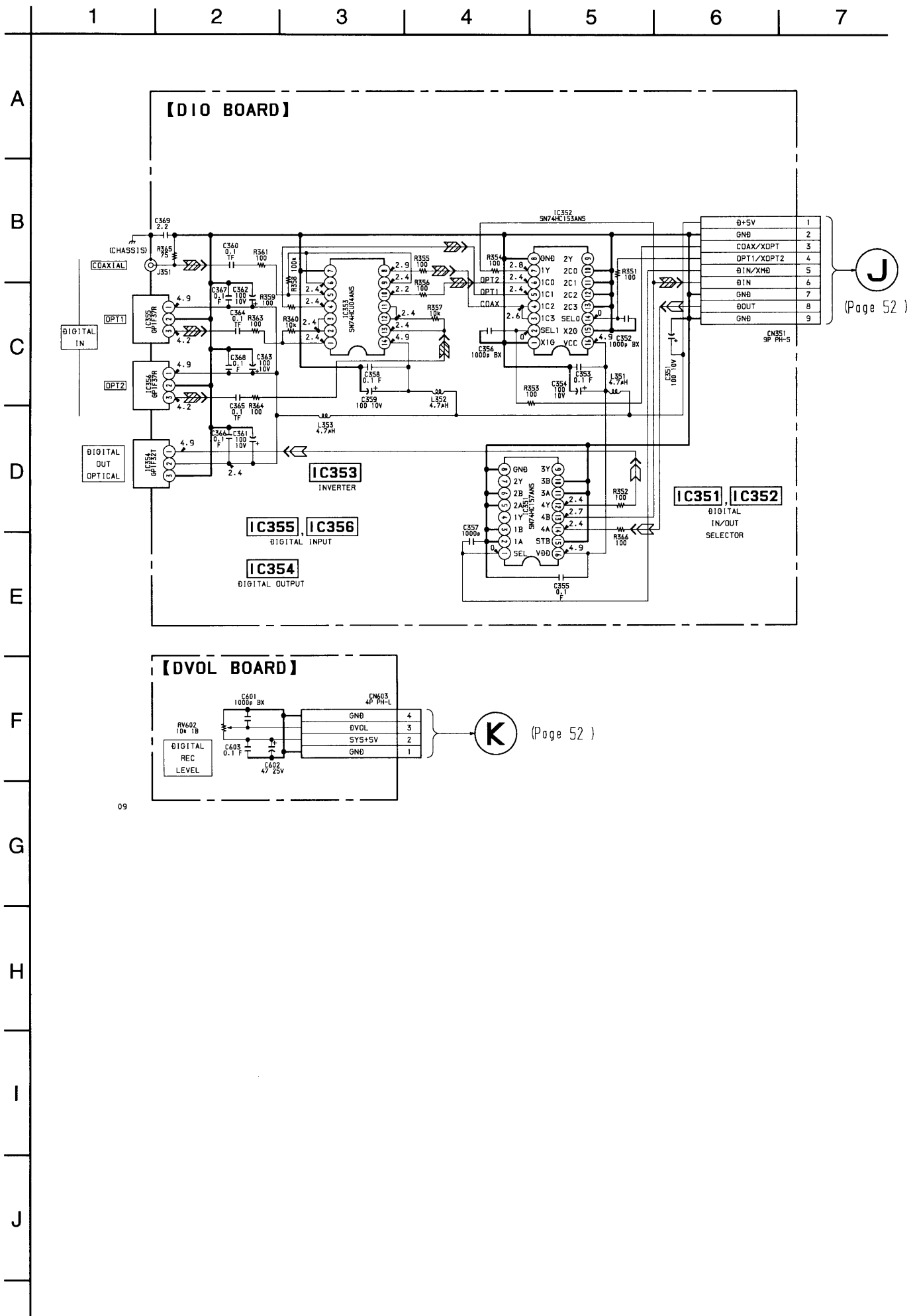


• Semiconductor Location

| Ref. No. | Location |
|----------|----------|
| IC351    | C-2      |
| IC352    | B-2      |
| IC353    | A-2      |
| IC354    | C-1      |
| IC355    | B-1      |
| IC356    | C-1      |



6-11. SCHEMATIC DIAGRAM — D OUT, D VOL SECTION —  
• See page 81 for IC Block Diagrams.



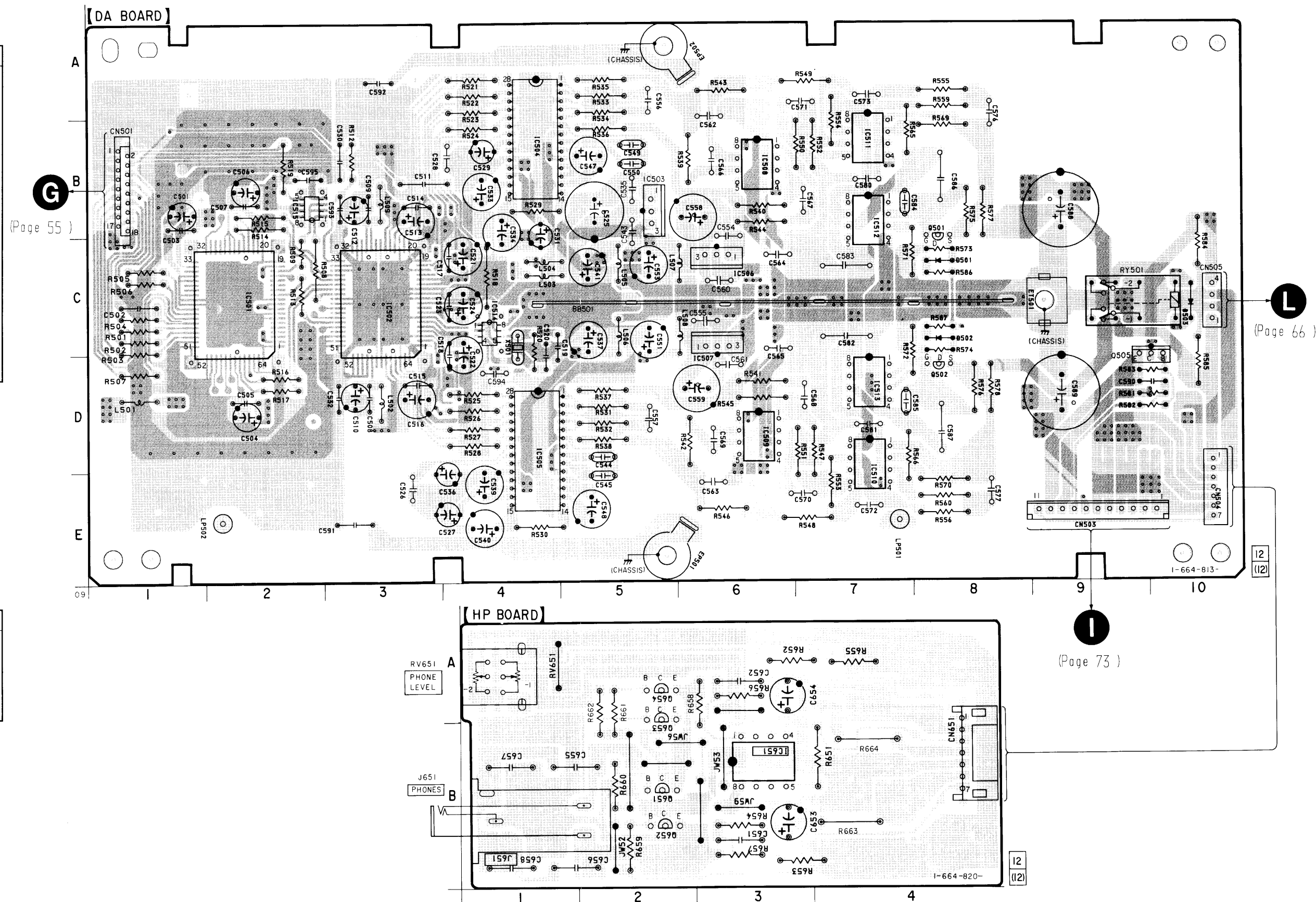


- **Semiconductor Location**

| Ref. No. | Location |
|----------|----------|
| D501     | C-8      |
| D502     | C-8      |
| D503     | C-10     |
| IC501    | C-2      |
| IC502    | C-3      |
| IC503    | B-5      |
| IC504    | B-4      |
| IC505    | D-4      |
| IC506    | C-6      |
| IC507    | D-6      |
| IC508    | B-6      |
| IC509    | D-6      |
| IC510    | D-7      |
| IC511    | B-7      |
| IC512    | B-7      |
| IC513    | D-7      |
| IC514    | C-4      |
| IC515    | B-2      |
| Q501     | B-8      |
| Q502     | D-8      |
| Q505     | C-9      |

- **Semiconductor Location**

| Ref. No. | Location |
|----------|----------|
| IC651    | B-3      |
| Q651     | B-2      |
| Q652     | B-2      |
| Q653     | B-2      |
| Q654     | B-1      |





6-14. PRINTED WIRING BOARD — AD SECTION —  
• See page 44 for Circuit Boards Location.

• Semiconductor Location

| Ref. No. | Location |
|----------|----------|
| D301     | C-3      |
| D302     | B-3      |
| D303     | D-2      |
| D304     | D-2      |
| D305     | C-3      |
| D306     | B-3      |
| D307     | D-3      |
| D308     | D-3      |
| IC301    | B-1      |
| IC302    | C-2      |
| IC303    | C-3      |
| IC304    | D-3      |
| IC305    | B-3      |
| IC306    | E-3      |
| IC307    | B-4      |
| IC308    | D-3      |

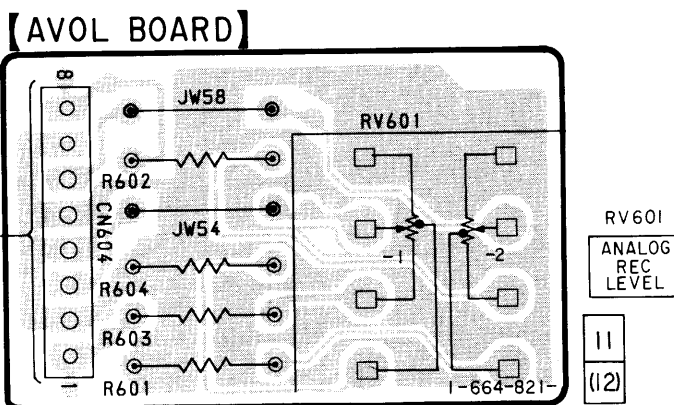
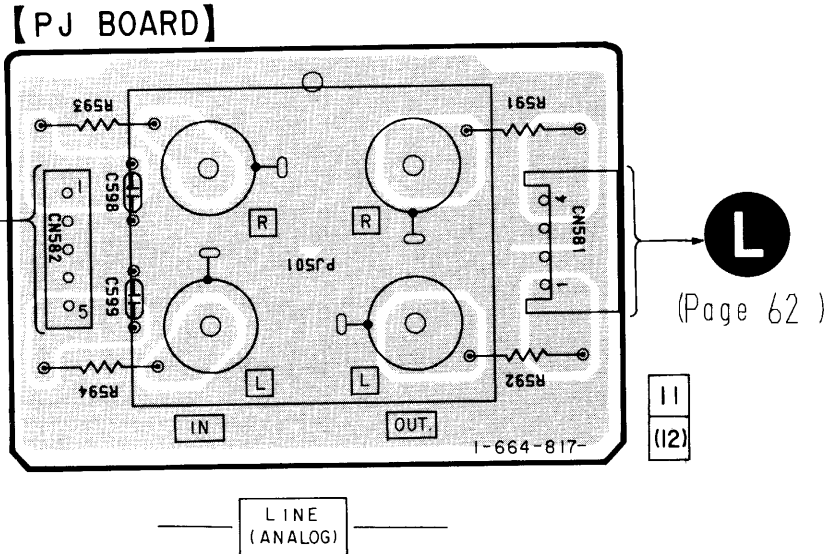
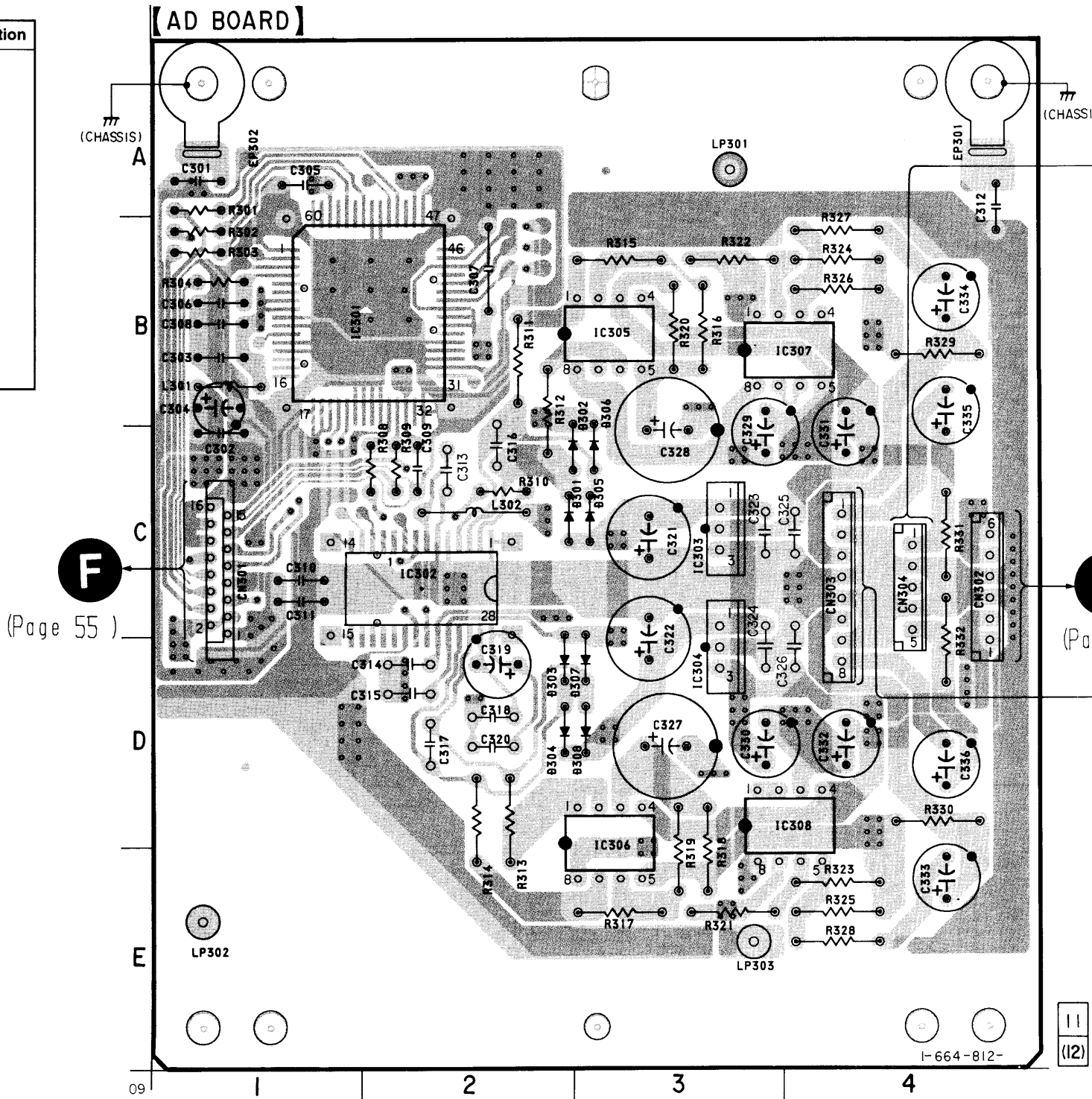


Diagram illustrating the circuitry of a stereo system, showing connections between various boards and components.

**Component Boards:**

- [AD BOARD]**: Includes IC301 (16P SMC-S10L), IC302 (A/D CONVERTER), IC303 (-5V REG), IC304 (+5V REG), IC305 (L.P.F. PRE AMP L-CH), IC306 (PRE AMP R-CH), IC307 (LINE AMP L-CH), IC308 (LINE AMP R-CH), and IC309 (6P EH-S).
- [AVOL BOARD]**: Includes IC303 (6P EH-S), IC304 (+5V REG), IC305 (L.P.F. PRE AMP L-CH), IC306 (PRE AMP R-CH), IC307 (LINE AMP L-CH), IC308 (LINE AMP R-CH), and IC309 (6P EH-S).
- [PJ BOARD]**: Includes IC303 (6P EH-S), IC304 (+5V REG), IC305 (L.P.F. PRE AMP L-CH), IC306 (PRE AMP R-CH), IC307 (LINE AMP L-CH), IC308 (LINE AMP R-CH), and IC309 (6P EH-S).

**Connections:**

- AD BOARD to AVOL BOARD:** Connections include IC301, IC302, IC303, IC304, IC305, IC306, IC307, IC308, and IC309.
- AD BOARD to PJ BOARD:** Connections include IC301, IC302, IC303, IC304, IC305, IC306, IC307, IC308, and IC309.
- AVOL BOARD to PJ BOARD:** Connections include IC303, IC304, IC305, IC306, IC307, IC308, and IC309.

**Component Values:**

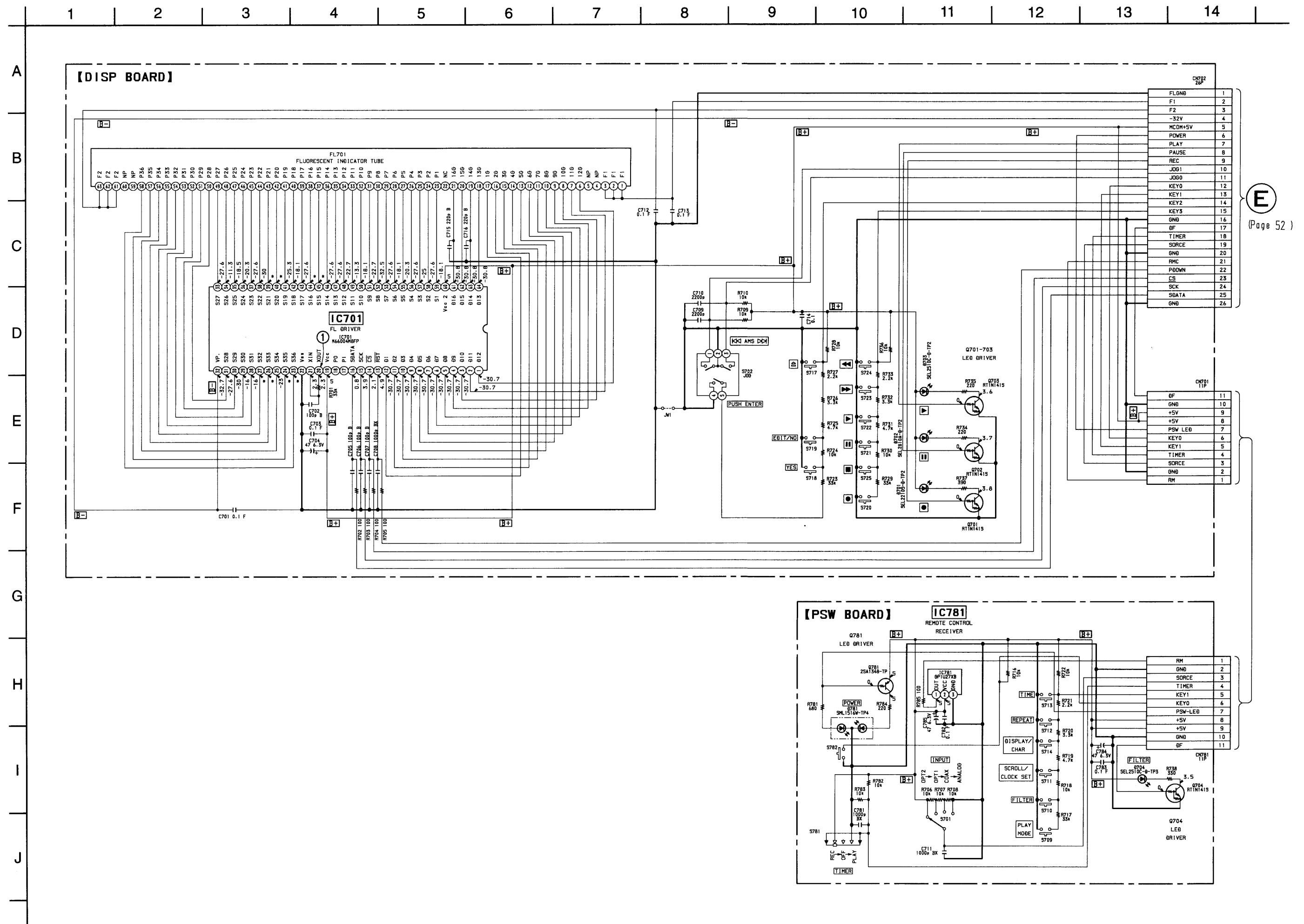
- Resistors: R301, R302, R303, R304, R305, R306, R307, R308, R309, R310, R311, R312, R313, R314, R315, R316, R317, R318, R319, R320, R321, R322, R323, R324, R325, R326, R327, R328, R329, R330, R331, R332, R333, R334, R335, R336, R337, R338, R339, R340, R341, R342, R343, R344, R345, R346, R347, R348, R349, R350, R351, R352, R353, R354, R355, R356, R357, R358, R359, R360, R361, R362, R363, R364, R365, R366, R367, R368, R369, R370, R371, R372, R373, R374, R375, R376, R377, R378, R379, R380, R381, R382, R383, R384, R385, R386, R387, R388, R389, R390, R391, R392, R393, R394, R395, R396, R397, R398, R399, R400, R401, R402, R403, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, R442, R443, R444, R445, R446, R447, R448, R449, R450, R451, R452, R453, R454, R455, R456, R457, R458, R459, R460, R461, R462, R463, R464, R465, R466, R467, R468, R469, R470, R471, R472, R473, R474, R475, R476, R477, R478, R479, R480, R481, R482, R483, R484, R485, R486, R487, R488, R489, R490, R491, R492, R493, R494, R495, R496, R497, R498, R499, R500, R501, R502, R503, R504, R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520, R521, R522, R523, R524, R525, R526, R527, R528, R529, R530, R531, R532, R533, R534, R535, R536, R537, R538, R539, R540, R541, R542, R543, R544, R545, R546, R547, R548, R549, R550, R551, R552, R553, R554, R555, R556, R557, R558, R559, R560, R561, R562, R563, R564, R565, R566, R567, R568, R569, R570, R571, R572, R573, R574, R575, R576, R577, R578, R579, R580, R581, R582, R583, R584, R585, R586, R587, R588, R589, R590, R591, R592, R593, R594, R595, R596, R597, R598, R599, R600, R601, R602, R603, R604, R605, R606, R607, R608, R609, R610, R611, R612, R613, R614, R615, R616, R617, R618, R619, R620, R621, R622, R623, R624, R625, R626, R627, R628, R629, R630, R631, R632, R633, R634, R635, R636, R637, R638, R639, R640, R641, R642, R643, R644, R645, R646, R647, R648, R649, R650, R651, R652, R653, R654, R655, R656, R657, R658, R659, R660, R661, R662, R663, R664, R665, R666, R667, R668, R669, R670, R671, R672, R673, R674, R675, R676, R677, R678, R679, R680, R681, R682, R683, R684, R685, R686, R687, R688, R689, R690, R691, R692, R693, R694, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704, R705, R706, R707, R708, R709, R710, R711, R712, R713, R714, R715, R716, R717, R718, R719, R720, R721, R722, R723, R724, R725, R726, R727, R728, R729, R730, R731, R732, R733, R734, R735, R736, R737, R738, R739, R740, R741, R742, R743, R744, R745, R746, R747, R748, R749, R750, R751, R752, R753, R754, R755, R756, R757, R758, R759, R760, R761, R762, R763, R764, R765, R766, R767, R768, R769, R770, R771, R772, R773, R774, R775, R776, R777, R778, R779, R780, R781, R782, R783, R784, R785, R786, R787, R788, R789, R790, R791, R792, R793, R794, R795, R796, R797, R798, R799, R800, R801, R802, R803, R804, R805, R806, R807, R808, R809, R810, R811, R812, R813, R814, R815, R816, R817, R818, R819, R820, R821, R822, R823, R824, R825, R826, R827, R828, R829, R830, R831, R832, R833, R834, R835, R836, R837, R838, R839, R840, R841, R842, R843, R844, R845, R846, R847, R848, R849, R850, R851, R852, R853, R854, R855, R856, R857, R858, R859, R860, R861, R862, R863, R864, R865, R866, R867, R868, R869, R870, R871, R872, R873, R874, R875, R876, R877, R878, R879, R880, R881, R882, R883, R884, R885, R886, R887, R888, R889, R890, R891, R892, R893, R894, R895, R896, R897, R898, R899, R900, R901, R902, R903, R904, R905, R906, R907, R908, R909, R910, R911, R912, R913, R914, R915, R916, R917, R918, R919, R920, R921, R922, R923, R924, R925, R926, R927, R928, R929, R930, R931, R932, R933, R934, R935, R936, R937, R938, R939, R940, R941, R942, R943, R944, R945, R946, R947, R948, R949, R950, R951, R952, R953, R954, R955, R956, R957, R958, R959, R960, R961, R962, R963, R964, R965, R966, R967, R968, R969, R970, R971, R972, R973, R974, R975, R976, R977, R978, R979, R980, R981, R982, R983, R984, R985, R986, R987, R988, R989, R990, R991, R992, R993, R994, R995, R996, R997, R998, R999, R1000.
- Capacitors: C301, C302, C303, C304,







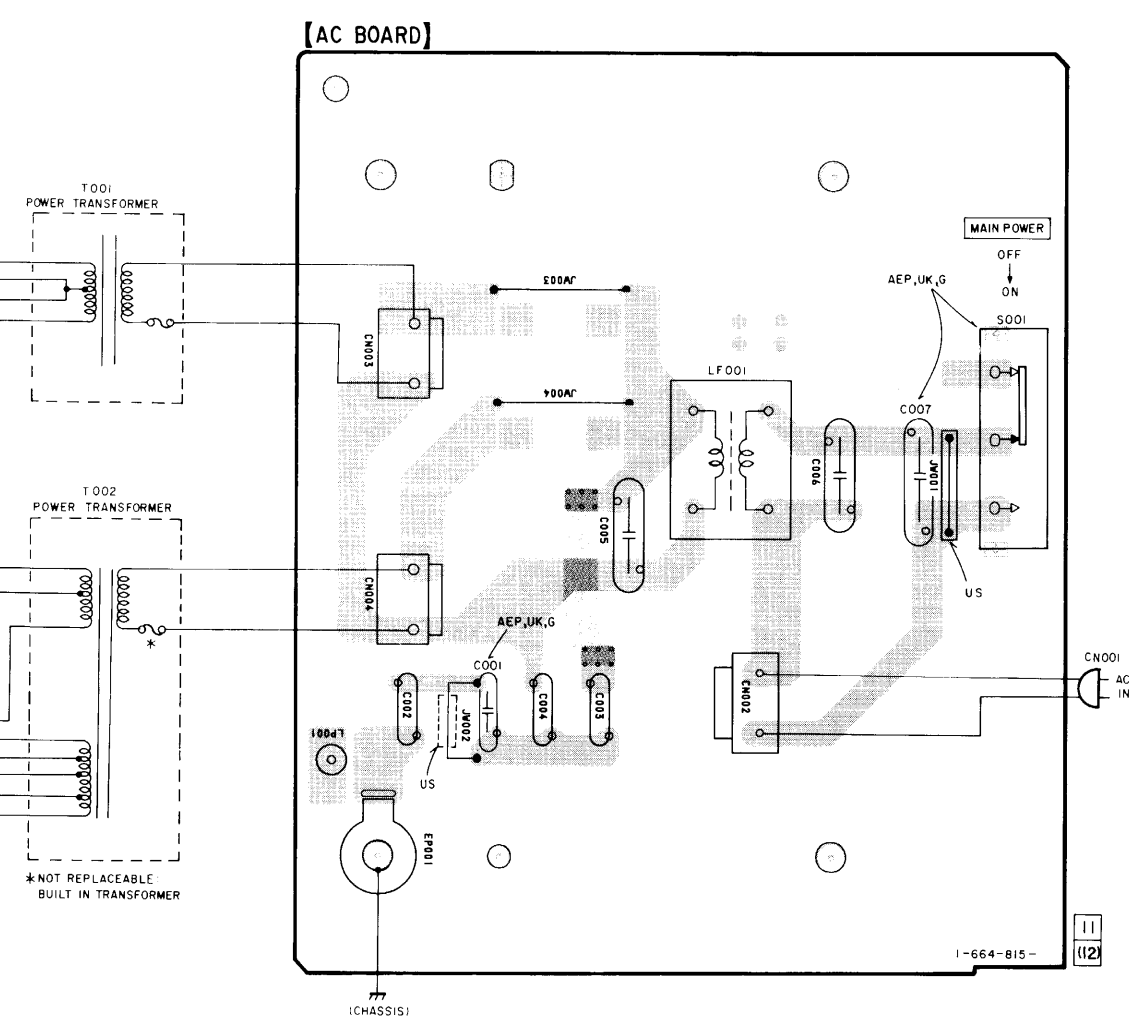
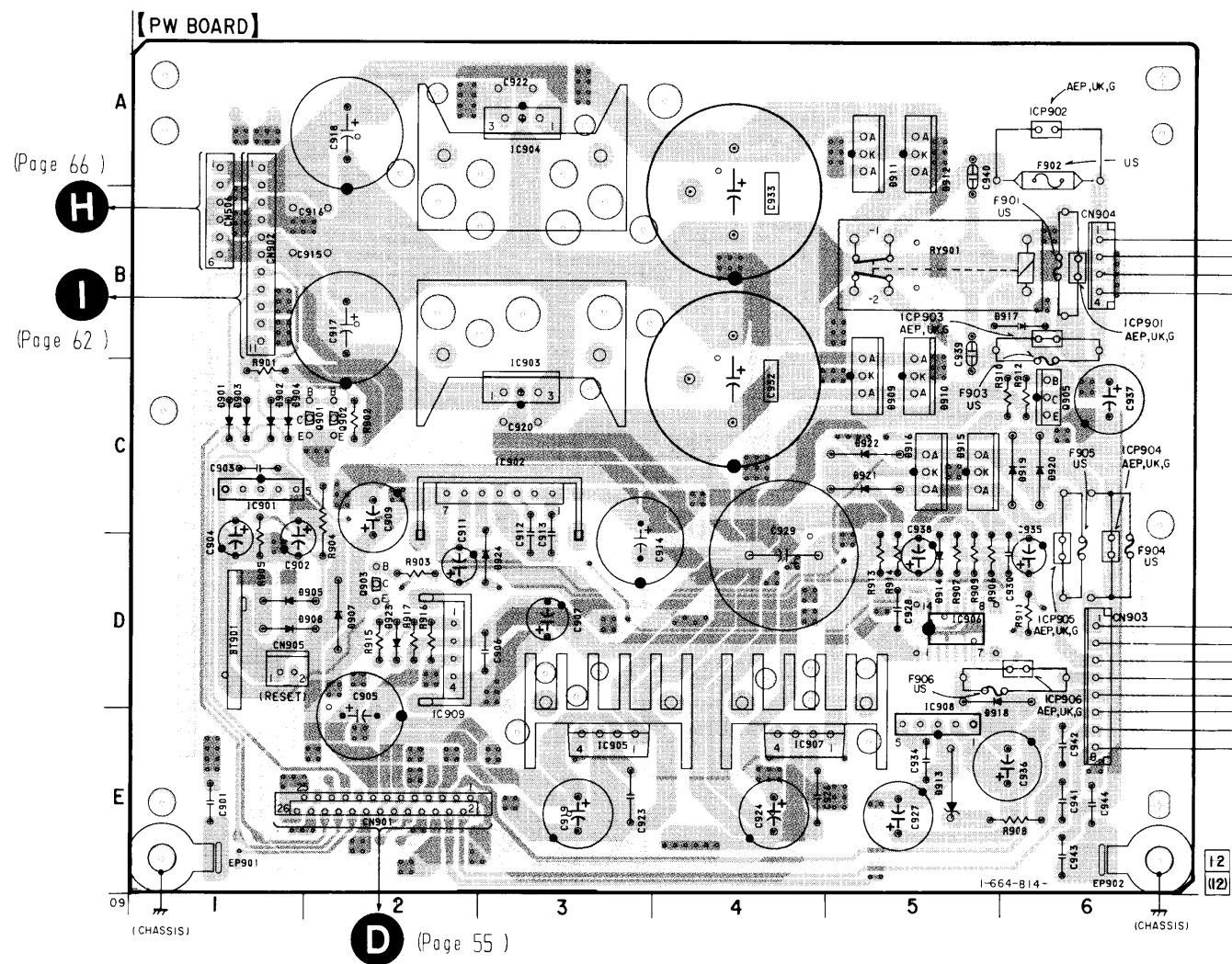
- See page 46 for Waveforms.
- See page 82 for IC Block Diagrams.

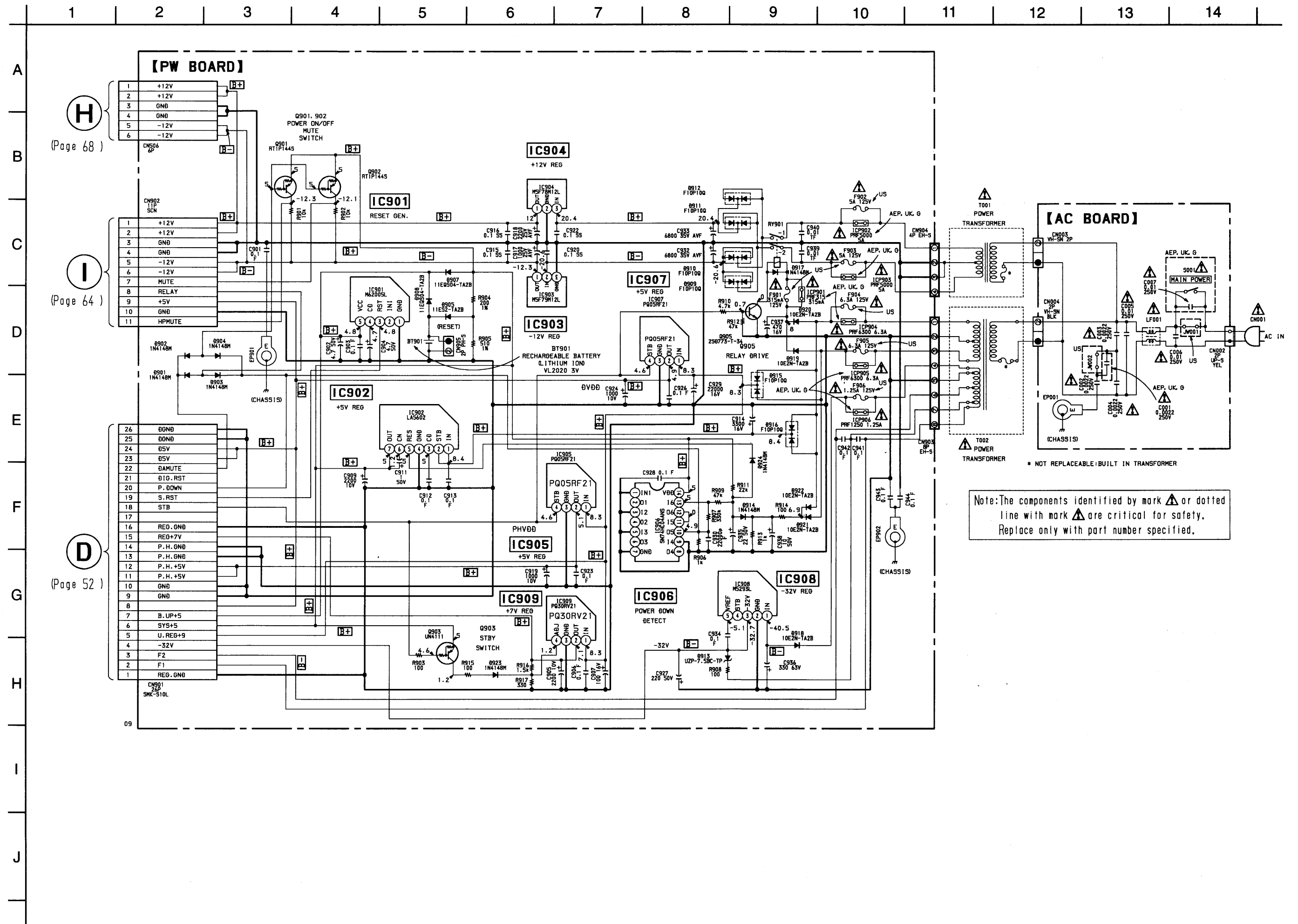


6-18. PRINTED WIRING BOARD — POWER SECTION —  
• See page 44 for Circuit Boards Location.

• Semiconductor Location

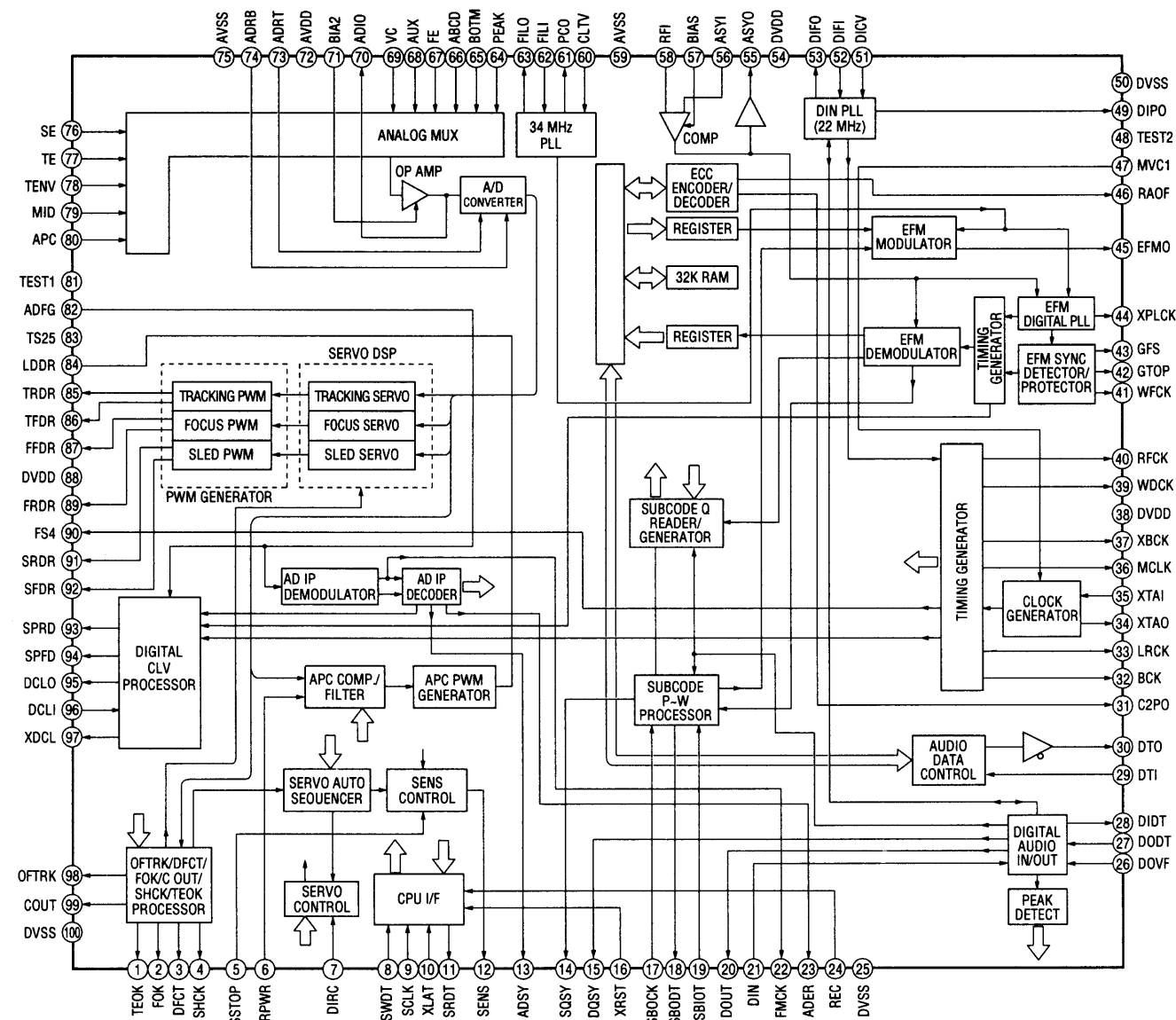
| Ref. No. | Location |
|----------|----------|
| D901     | C-1      |
| D902     | C-1      |
| D903     | C-1      |
| D904     | C-1      |
| D905     | D-1      |
| D907     | D-2      |
| D908     | D-1      |
| D909     | C-5      |
| D910     | C-5      |
| D911     | B-5      |
| D912     | B-5      |
| D913     | E-5      |
| D914     | D-5      |
| D915     | C-5      |
| D916     | C-5      |
| D917     | B-6      |
| D918     | D-5      |
| D919     | C-6      |
| D920     | C-6      |
| D921     | C-5      |
| D922     | C-5      |
| D923     | D-2      |
| D924     | D-3      |
| IC901    | C-1      |
| IC902    | C-3      |
| IC903    | C-3      |
| IC904    | A-3      |
| IC905    | E-3      |
| IC906    | D-5      |
| IC907    | E-4      |
| IC908    | D-5      |
| IC909    | E-2      |
| Q901     | C-2      |
| Q902     | C-2      |
| Q903     | D-2      |
| Q905     | C-6      |



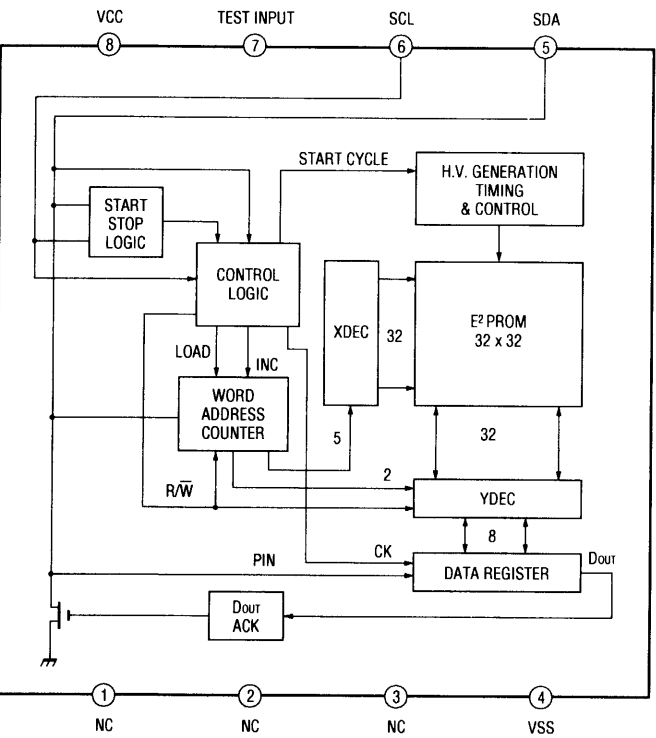


6-20. IC BLOCK DIAGRAMS

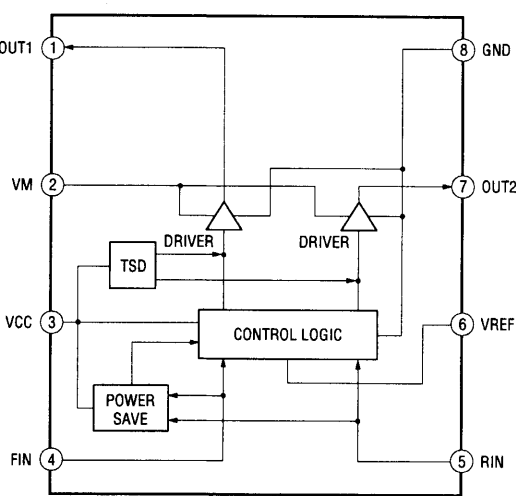
IC121 CXD2535CR



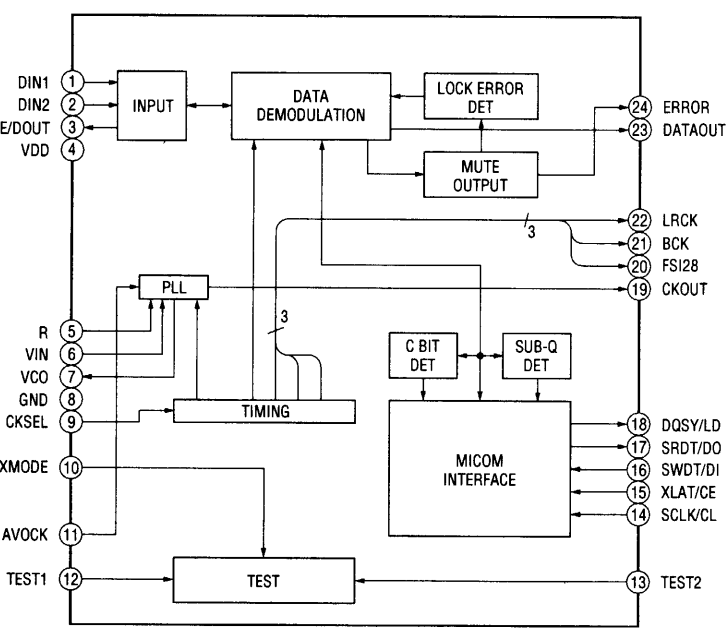
IC171 X24C01S



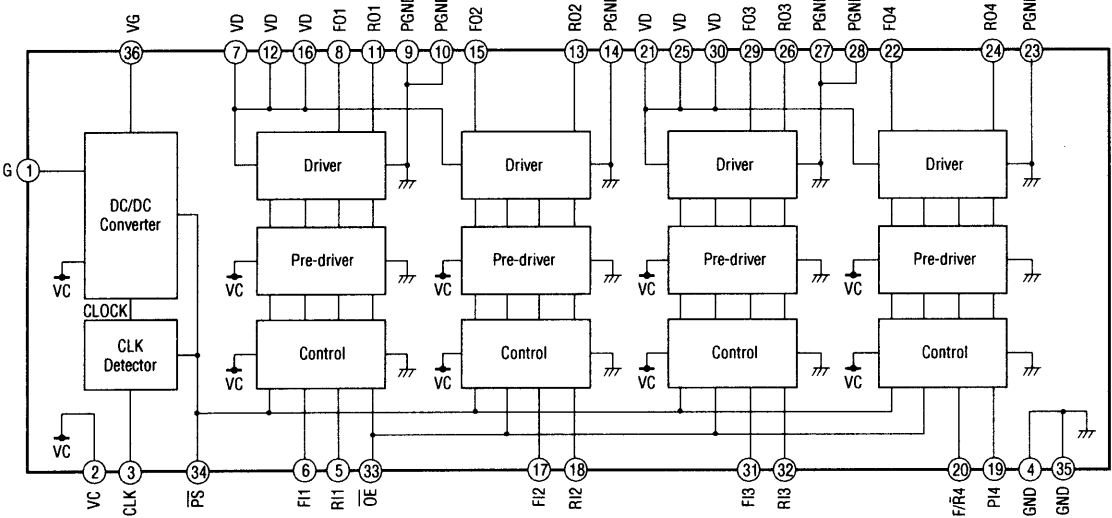
IC201, 212 BA6287F



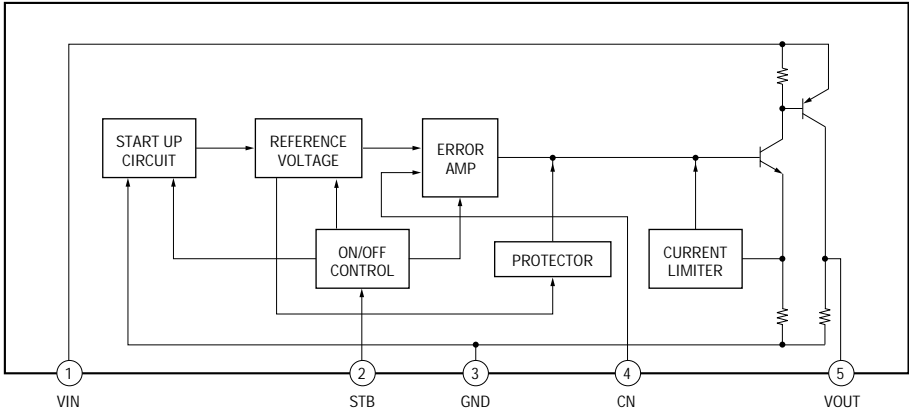
IC203 LC89051V-TLM



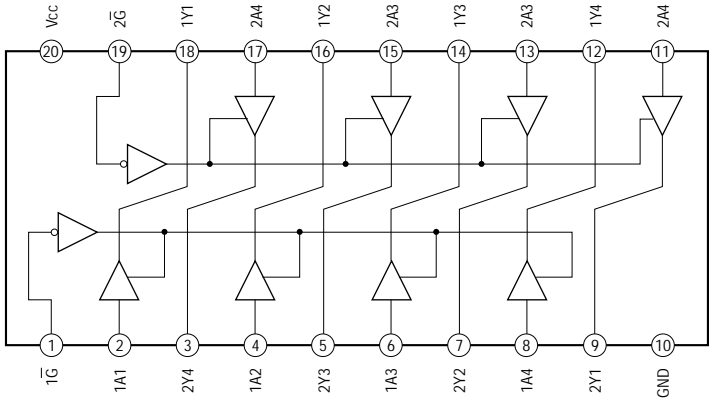
IC151 MPC17A38VMEL



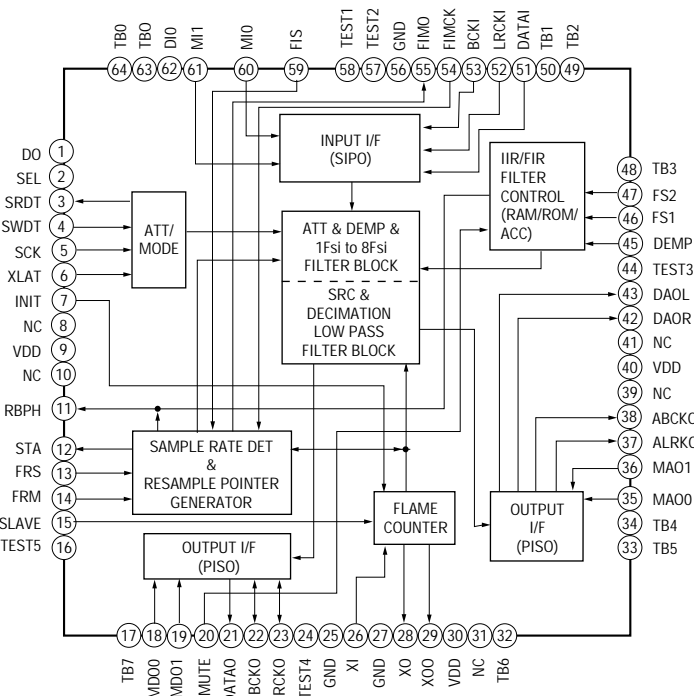
IC204 L88MS33T-TL



IC205 TC74LCX244FS (EL)  
IC210 TC74VHCT244F (EL)

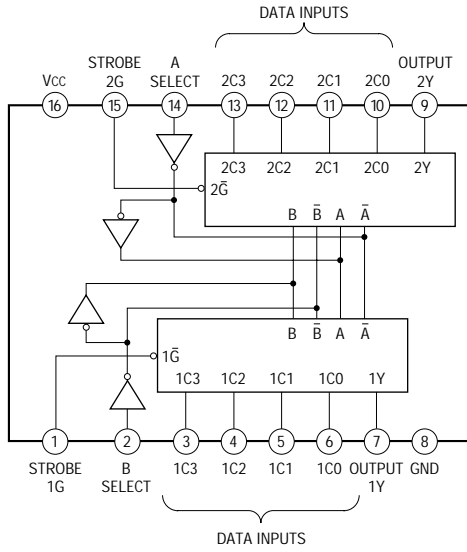


IC207 MSM9404AGS-BK

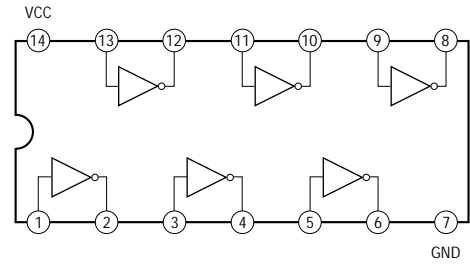


The diagram illustrates the pin configuration and internal architecture of the AT32F405 microcontroller. The pins are numbered 1 to 100, with Vss at pins 13, 25, 51, and 75. The internal architecture includes a CPU Command I/F, ATRAC Encoder/Decoder, Memory Controller I/F, Data Memory, ATRAC Encoder/Decoder I/F, RAM R/W Controller, CD-ROM Encoder/Decoder, EFM Encoder/Decoder I/F, and a Clock Generator. The diagram also shows the ATRAC Block, AI Block, and DI Block, along with the Address Generator and Audio I/F.

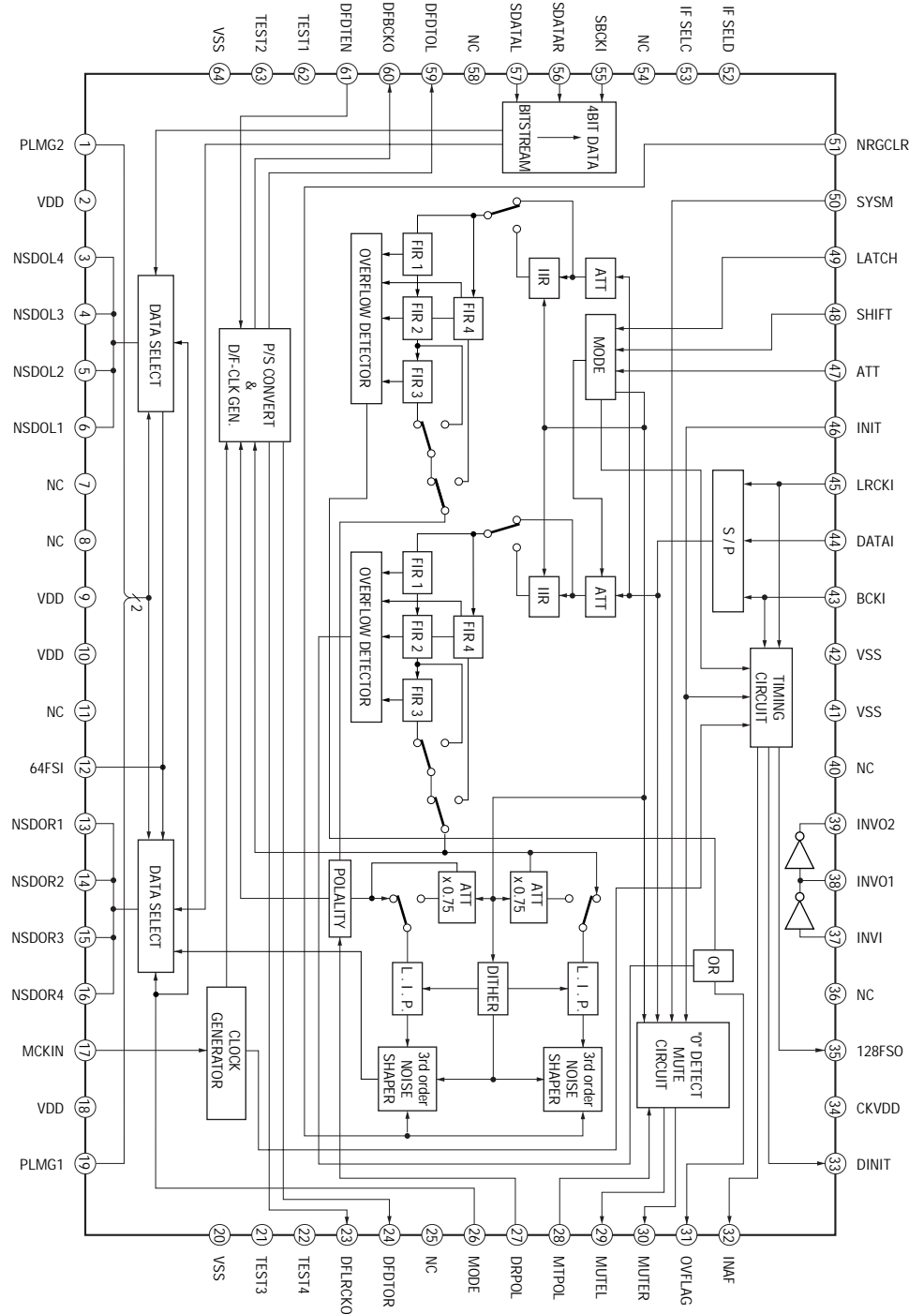
### IC352 SN74HC153ANS-E20



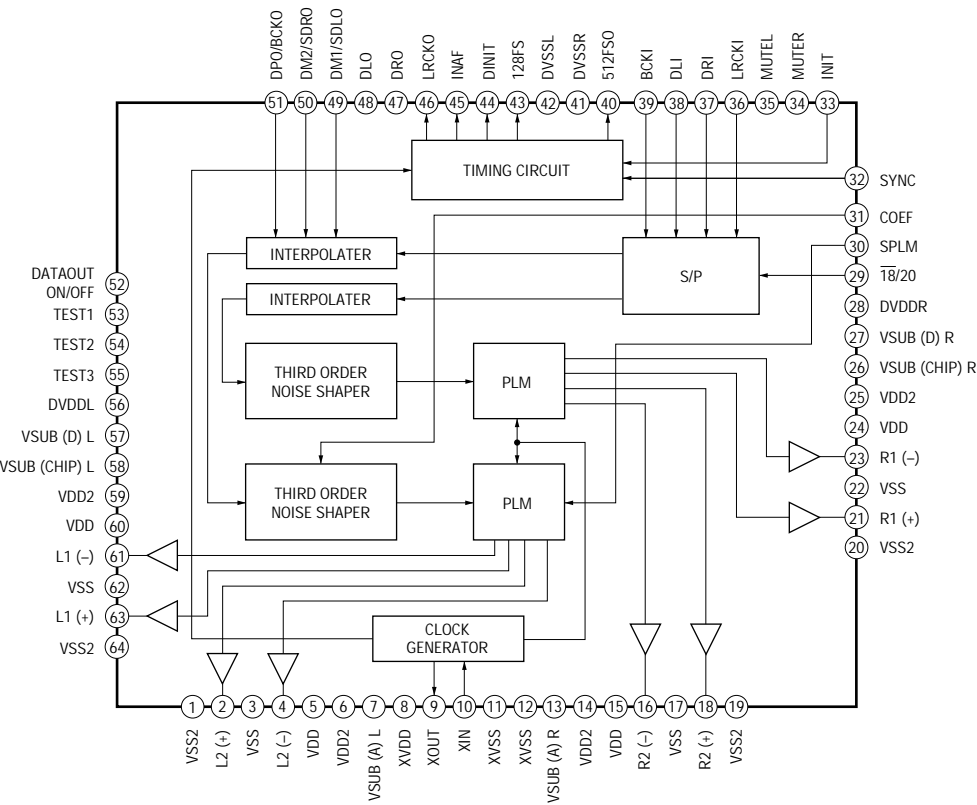
### IC353 SN74HCU04ANS-E20



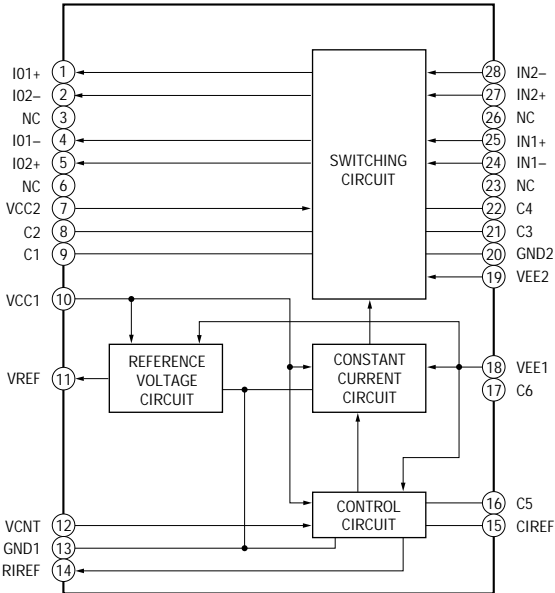
### IC501 CXD8595Q



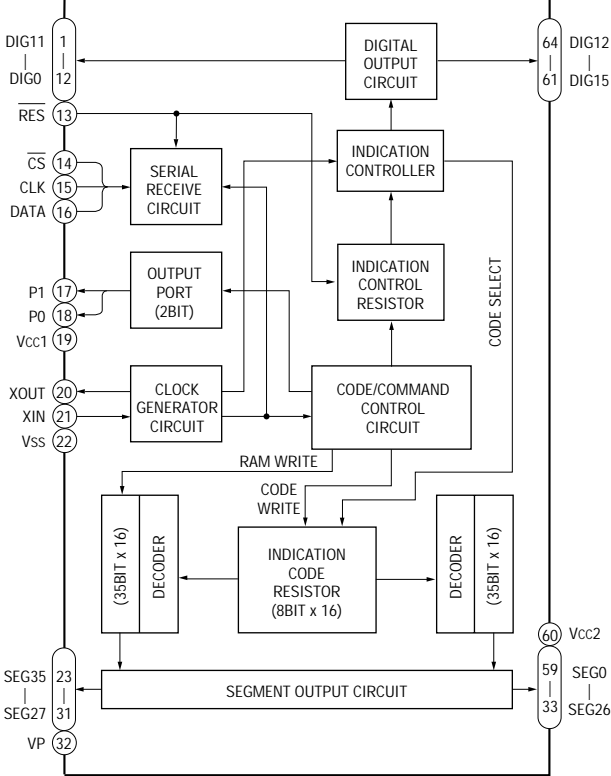
IC502 CXD2562Q-CS



IC504, 505 CXA8042AS

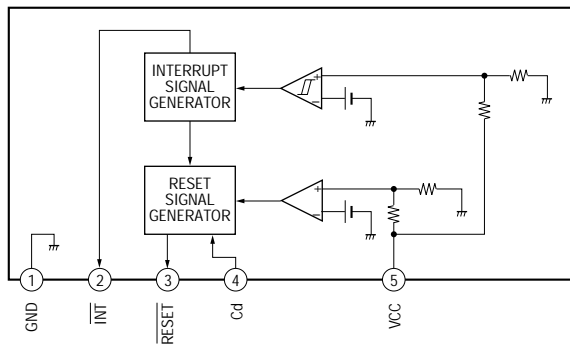


IC701 M66004M8FP

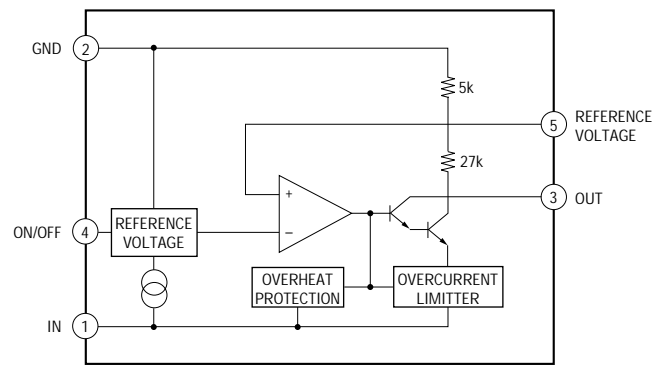




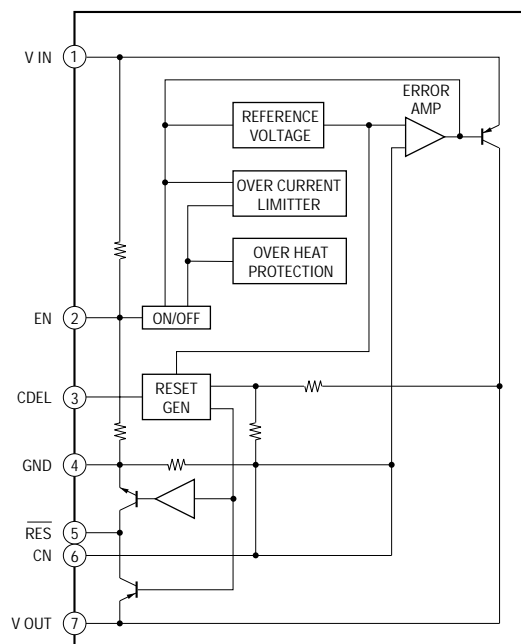
### IC901 M62005L



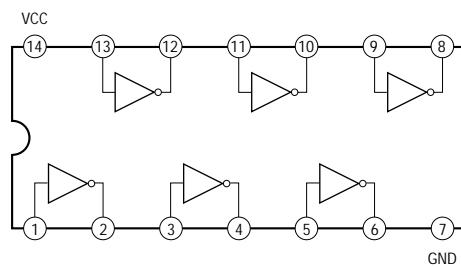
### IC908 M5293L



### IC902 LA5602



### IC906 SN74HC04ANS-E20



## 6-21. IC PIN FUNCTIONS

### • IC101 RF Amplifier (CXA1981AR)/BD board

| Pin No. | Pin Name | I/O | Function   |
|---------|----------|-----|--|
| 1       | VC       | O   | Middle point voltage (+2.5V) generation output                                   |
| 2 to 7  | A to F   | I   | Input of signal from optical pick-up detector                                    |
| 8       | FI       | I   | F operation amplifier input  |
| 9       | FO       | O   | F operation amplifier output   |
| 10      | PD       | I   | Front monitor Connected to photo diode   |
| 11      | APCREF   | I   | Input for setting laser power  |
| 12      | TEMPI    | I   | Temperature sensor connection pin  |
| 13      | GND      | —   | Ground   |
| 14      | AAPC     | O   | APC LD amplifier output  |
| 15      | DAPC     | O   | Digital APC output (Not used)  |
| 16      | TEMPR    | O   | Temperature sensor reference voltage output                                      |
| 17      | XRST     | I   | Input of reset signal from system controller Reset: “L”                          |
| 18      | SWDT     | I   | Input of write data signal from system controller                                |
| 19      | SCLK     | I   | Input of clock signal from system controller                                     |
| 20      | XLAT     | I   | Input of latch signal from system controller                                     |
| 21      | VREF     | O   | Reference voltage output (Not used)  |
| 22      | TENV     | O   | Tracking envelop signal output (Not used)  |
| 23      | THLD     | I   | Track hold capacitor connection pin  |
| 24      | VCC      | —   | Power supply (+5V)   |
| 25      | TFIL     | I   | Track hold input (Connected to VC)   |
| 26      | TE       | O   | Output of tracking error signal to CXD2535CR                                     |
| 27      | TLB      | I   | Input of add signal to tracking error  |
| 28      | CSLED    | I   | Sled error LPF pin   |
| 29      | SE       | O   | Output of sled error signal to CXD2535CR   |
| 30      | ADFM     | O   | ADIP FM signal output  |
| 31      | ADIN     | I   | Inputs ADIP FM signal by AC coupling   |
| 32      | ADAGC    | I   | Connection pin of external capacitor for ADIP AGC                                |
| 33      | ADFG     | O   | Output of ADIP dual FM signal to CXD2535CR (22.05 kHz±1 kHz)                     |
| 34      | AUX      | O   | Output of auxiliary signal to CXD2535CR  |
| 35      | FE       | O   | Output of focus error signal to CXD2535CR  |
| 36      | FLB      | I   | Focus bias control input (Not used)  |
| 37      | ABCD     | O   | Output of light amount signal to CXD2535CR                                       |
| 38      | BOTM     | O   | Output of bottom hold signal of light amount signal to CXD2535CR                 |
| 39      | PEAK     | O   | Output of peak hold signal of light amount signal to CXD2535CR                   |
| 40      | RFAGC    | I   | Connection pin of RF AGC circuit external capacitor                              |
| 41      | RF       | O   | Output of playback EFM RF signal to CXD2535CR                                    |
| 42      | ISSET    | I   | Internal circuit constant setting pin 22 kHz BPF center frequency (Fixed at “H”) |
| 43      | AGCT     | I   | Inputs RF signal by AC coupling  |
| 44      | RFO      | O   | Output pin of RF signal  |
| 45      | MORFI    | I   | Inputs MO RF signal by AC coupling   |
| 46      | MORFO    | O   | Output pin of MO RF signal   |
| 47, 48  | I, J     | I   | Input of signal from optical pick-up detector                                    |

• IC121 Digital Signal Processor, Digital Servo Processor, EFM/ACIRC Encoder/Decoder (CXD2535CR)/BD board

| Pin No. | Pin Name | I/O   | Function   |
|---------|----------|-------|--|
| 1       | FS256    | O     | 11.2896 MHz clock output (MCLK) (Not used)   |
| 2       | FOK      | O     | Output of FOK signal to system controller<br>Outputs “H” when focus is set   |
| 3       | DFCT     | O     | Outputs defect ON/OFF switching signal to ATRAC encoder/decoder  |
| 4       | SHCK     | O     | Outputs track jump detection signal to system controller   |
| 5       | SHCKEN   | I     | Track jump detection enable input (Not used) (Fixed at “H”)  |
| 6       | WRPWR    | I     | Inputs laser power switching signal from system controller   |
| 7       | DIRC     | I     | Disc drive recording/playback switching signal input (Fixed at “H”)  |
| 8       | SWDT     | I     | Inputs write data signal from system controller  |
| 9       | SCLK     | I     | Inputs serial clock signal from system controller  |
| 10      | XLAT     | I     | Inputs serial latch signal from system controller  |
| 11      | SRDT     | O     | Outputs read data signal to system controller  |
| 12      | SENS     | O (3) | Outputs internal status (SENSE) to system controller   |
| 13      | ADSY     | O     | ADIP sync signal output (Not used)   |
| 14      | SQSY     | O     | Output subcode Q sync (SCOR) to system controller<br>Outputs “L” every 13.3 msec    Outputs “H” at all most mostly   |
| 15      | DQSY     | O     | Outputs digital-in U-bit CD format subcode Q sync (SCOR) to system controller<br>Outputs “L” every 13.3 msec    Outputs “H” at all most mostly                             |
| 16      | XRST     | I     | Inputs reset signal from system controller    Reset: “L”   |
| 17      | TEST4    | I     | Test input (Fixed at “L”)  |
| 18      | CLVSCK   | O     | Not used   |
| 19      | TEST5    | I     | Test input (Fixed at “L”)  |
| 20      | DOUT     | O     | Digital audio signal output (For optical output)   |
| 21      | DIN      | I     | Digital audio signal input (For optical input) (Not used)  |
| 22      | FMCK     | O     | ADIP FM demodulation clock signal output   |
| 23      | ADER     | O     | ADIP CRC flag output    “H”:Error  |
| 24      | REC      | I     | Input of recording/playback switching signal from system controller<br>Recording: “H”    Playback: “L”   |
| 25      | DVSS     | —     | Ground (Digital)   |
| 26      | DOVF     | I     | Digital audio output validity flag input (Fixed at “L”)  |
| 27      | DODT     | I     | Input of 16bit data for digital audio output   |
| 28      | DIDT     | O     | Output of 16bit data for digital audio input to ATRAC encoder/decoder  |
| 29      | DTI      | I     | Input of recording audio data signal from ATRAC encoder/decoder  |
| 30      | DTO      | O (3) | Output of playback audio data signal to ATRAC encoder/decoder  |
| 31      | C2PO     | O     | Outputs C2PO signal to ATRAC encoder/decoder (Output indicating data error status)<br>Playback: C2PO (“H”)    Digital recording: Digital-in-Vflag    Analog recording: “L” |
| 32      | BCK      | O     | Outputs bit clock signal (2.8224 MHz) (MCLK)   |
| 33      | LRCK     | O     | Outputs L/R clock signal (44.1 kHz) (MCLK)   |
| 34      | XTAO     | O     | System clock (512 fs=22.5792 MHz) signal output  |
| 35      | XTAI     | I     | Input of system clock (512fs=22.5792 MHz) signal input   |
| 36      | MCLK     | O     | MCLK clock (22.5792 MHz) signal output (Not used)  |
| 37      | XBCK     | O     | Pin 32 (BCK) inversion output (Not used)   |
| 38      | DVDD     | —     | Power supply (+5V) (Digital)   |
| 39      | WDCK     | O     | WDCK clock (88.2 kHz) signal output (MCLK)   |
| 40      | RFCK     | O     | RFCK clock (7.35 kHz) signal output (MCLK)   |

| Pin No. | Pin Name | I/O   | Function  |
|---------|----------|-------|---|
| 41      | WFCK     | O     | WFCK clock (7.35 kHz) signal output<br>(Playback: EFM decoder PLL   Recording: EFM encoder PLL)   |
| 42      | GTOP     | O     | “H”: Opens playback EFM frame sync protection window  |
| 43      | GFS      | O     | “H”: Playback EFM sync and interpolation protection timing match  |
| 44      | XPLCK    | O     | EFM decoder PLL clock output (98 fs=4.3218 MHz)<br>Falling edge and EFM signal edge match   |
| 45      | EFMO     | O     | EFM signal output (Recording)   |
| 46      | RAOF     | O     | Internal RAM overflow detection signal output (decoder monitor output)<br>Outputs “H” when the disc rotation exceeds $\pm 4F$ jitter margin during playback |
| 47      | MVCI     | I     | Digital-in PLL oscillation input (Not used) (Fixed at “L”)  |
| 48      | TEST2    | I     | Test pin (Fixed at “L”)   |
| 49      | DIPD     | O (3) | Digital-in PLL phase comparison output<br>Internal VCO: (Frequency: Low $\rightarrow$ “H”)   External VCO: (Frequency: Low $\rightarrow$ “L”)               |
| 50      | DVSS     | —     | Ground (Digital)  |
| 51      | DICV     | I (A) | Digital-in PLL internal VCO control voltage input   |
| 52      | DIFI     | I (A) | Filter input when digital-in PLL internal VCO is used   |
| 53      | DIFO     | O (A) | Filter output when digital-in PLL internal VCO is used (Not used)   |
| 54      | AVDD     | —     | Power supply (+5V) (Analog )  |
| 55      | ASYO     | O     | Playback EFM full-swing output (L=VSS, H=VDD)   |
| 56      | ASYI     | I (A) | Playback EFM asymmetry comparate voltage input  |
| 57      | BIAS     | I (A) | Playback EFM asymmetry circuit constant current input   |
| 58      | RFI      | I (A) | Inputs playback EFM RF signal from RF amplifier   |
| 59      | AVSS     | —     | Ground (Analog )  |
| 60      | CLTV     | I (A) | Decoder PLL master clock PLL VCO control voltage input  |
| 61      | PCO      | O (3) | Decoder PLL master clock PLL phase comparison output  |
| 62      | FILI     | I (A) | Decoder PLL master clock PLL filter input   |
| 63      | FILO     | O (3) | Decoder PLL master clock PLL filter output  |
| 64      | PEAK     | I (A) | Inputs peak hold signal for light amount signal from RF amplifier   |
| 65      | BOTM     | I (A) | Inputs bottom hold signal for light amount signal from RF amplifier   |
| 66      | ABCD     | I (A) | Light amount signal from RF amplifier   |
| 67      | FE       | I (A) | Input of focus error signal from RF amplifier   |
| 68      | AUX1     | I (A) | Input of auxiliary signal from RF amplifier   |
| 69      | VC       | I (A) | Input of middle point voltage (+2.5V) from RF amplifier   |
| 70      | ADIO     | O (A) | A/D converter input signal monitor output   |
| 71      | TEST3    | I (A) | Test input (Fixed at “L”)   |
| 72      | AVDD     | —     | Power supply (+5V) (Analog)   |
| 73      | ADRT     | I (A) | A/D converter operation range upper limit voltage input (Fixed at “H”)  |
| 74      | ADRB     | I (A) | A/D converter operation range lower limit voltage input (Fixed at “L”)  |
| 75      | AVSS     | —     | Ground (Analog)   |
| 76      | SE       | I (A) | Input of sled error signal from RF amplifier  |
| 77      | TE       | I (A) | Input of tracking error signal from RF amplifier  |
| 78      | AUX2     | I (A) | Auxiliary input pin 2 (Fixed at “L”)  |
| 79      | DCHG     | I (A) | Connected to ground   |
| 80      | APC      | I (A) | Laser APC input (Fixed at “L”)  |

• Abbreviation

EFM : Eight to Fourteen Modulation

PLL : Phase Locked Loop

| Pin No. | Pin Name | I/O | Function  |
|---------|----------|-----|---|
| 81      | TEST1    | I   | Test pin (Fixed at “L”)   |
| 82      | ADFG     | I   | Input of ADIP dual FM signal from RF amplifier (22.05 kHz $\pm$ 1 kHz)<br>(TTL Schmidt input) |
| 83      | TS25     | I   | Test pin (Fixed at “L”)   |
| 84      | LDDR     | O   | Laser APC signal output   |
| 85      | TRDR     | O   | Tracking servo drive signal output (–)  |
| 86      | TFDR     | O   | Tracking servo drive signal output (+)  |
| 87      | FFDR     | O   | Focus servo drive signal output (+)   |
| 88      | DVDD     | —   | Power supply (+5V) (Digital)  |
| 89      | FRDR     | O   | Focus servo drive signal output (–)   |
| 90      | FS4      | O   | 176.4 kHz clock signal output (MCLK) (Not used)   |
| 91      | SRDR     | O   | Sled servo drive signal output (–)  |
| 92      | SFDR     | O   | Sled servo drive signal output (+)  |
| 93      | SPRD     | O   | Spindle servo drive signal output (–)   |
| 94      | SPFD     | O   | Spindle servo drive signal output (+)   |
| 95      | DCLO     | O   | Not used normally   |
| 96      | DCLI     | I   | Not used normally (Fixed at “H”)  |
| 97      | XDCL     | O   | Not used normally   |
| 98      | OFTRK    | O   | Off track signal output (Not used)  |
| 99      | COUT     | O   | Traverse count signal output (Not used)   |
| 100     | DVSS     | —   | Ground (Digital)  |

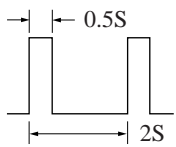
\* (3) of I/O is 3-state output, (A) is analog output.

• IC202 System Controller (M30610EC-1086FP)/DIG board

| Pin No. | Pin Name   | I/O | Function  |
|---------|------------|-----|---|
| 1, 2    | —          | —   | Not used  |
| 3       | JOG0       | I   | AMS jog signal input  |
| 4       | JOG1       | I   |   |
| 5       | SQSY       | I   | ATP address sync or sub code Q sync (SCOR) input from CXD2535CR<br>“L” is input every 13.3 msec Mainly “H”        |
| 6       | REMOCON    | I   | Remote control signal interruption input  |
| 7       | —          | —   | Not used  |
| 8       | BYTE       | I   | Data bus switching signal input “L”:Single chip mode (Fixed at “L”)   |
| 9       | CNVSS      | —   | Ground  |
| 10      | XIN-T      | I   | Sub clock input (37.768 kHz)  |
| 11      | XOUT-T     | O   | Sub clock output (32.768 kHz)   |
| 12      | SYSTEM-RST | I   | System reset input “L”:Reset  |
| 13      | XOUT       | O   | Main clock output (10 MHz)  |
| 14      | GND        | —   | Ground  |
| 15      | XIN        | I   | Main clock input (10 MHz)   |
| 16      | +5V        | —   | Power supply (+5V)  |
| 17      | MNI        | I   | Not used  |
| 18      | —          | —   |   |
| 19      | POWER DOWN | I   | Power down detection signal input “L”:Power down  |
| 20      | DQSY       | I   | Digital-in U-bit CD format sub code Q sync (SCOR) input from CXD2535CR<br>“L” is input every 13.3 msec Mainly “H” |
| 21, 22  | —          | —   | Not used  |
| 23      | XINT       | I   | Interruption status input from ATRAC encoder/decoder  |
| 24      | 04LAT      | O   | Data read signal output to sampling rate converter, digital filter<br>“L”:Active                                  |
| 25      | 62RST      | O   | Reset signal output to D/A converter “L”:Reset  |
| 26      | 95RST      | O   | Reset signal output to CXD8595Q “L”:Reset   |
| 27      | 95LAT      | O   | Transmission data latch signal output to CXD8595Q   |
| 28      | ADRST      | O   | Reset signal output to A/D converter “H”:Reset  |
| 29      | ADLAT      | O   | Latch signal output to A/D converter  |
| 30      | XLATCH     | O   | Serial data latch signal output   |
| 31      | SWDT       | O   | Write data signal input to serial bus   |
| 32      | SRDT       | I   | Read data signal input from serial bus  |
| 33      | SCLK       | O   | Clock signal output to serial bus   |
| 34      | —          | —   | Not used  |
| 35      | FLDATA     | O   | Transmission data clock output to FL driver   |
| 36      | —          | —   | Not used  |
| 37      | FLCLK      | O   | Transmission data clock output to FL driver   |
| 38      | FLCS       | O   | Transmission data chip select output to FL driver   |
| 39      | —          | —   | Not used  |
| 40      | COAX/XOPT  | O   | Digital-in select signal output “L”:Optical input, “H”:Coaxial input  |
| 41      | OPT1/XOPT2 | O   | Digital-in select signal output “L”:OPT2, “H”:OPT1  |
| 42      | DIN/XMD    | O   | Digital-out select signal output “L”:MD, “H”:Digital in through   |
| 43      | EROR       | I   | Digital-in error signal input   |
| 44      | SRCRST     | O   | Reset signal output to sampling rate converter, digital filter “L”:Reset  |

• Abbreviation

FL : Fluorescent indicator tube

| Pin No.  | Pin Name | I/O | Function   |
|----------|----------|-----|--|
| 45       | SRC TEST | O   | The second reset signal output from sampling rate converter  |
| 46 to 48 | —        | —   | Not used   |
| 49       | DAMUTE   | O   | D/A line mute output “L”:Active  |
| 50       | STB      | O   | Strobe signal output to power supply circuit When power is ON:“H”, When standby:“L”  |
| 51       | OUTSW    | I   | Detection input from loading out detection switch  |
| 52       | INSW     | I   | Detection input from loading in detection switch   |
| 53       | —        | —   | Not used   |
| 54       | LDIN     | O   | Loading motor control output   |
| 55       | LDOUT    | O   |  |
| 56       | HUP      | O   | Magnetic head up/down control output   |
| 57       | HDWN     | O   |  |
| 58       | 37RST    | O   | Reset signal output to ATRAC encoder/decoder “L”:Reset   |
| 59       | HUPS     | I   | Detection input from magnetic head up detection switch   |
| 60       | HADOWNS  | I   | Detection input from magnetic head down detection switch   |
| 61       | REC/PB   | O   | Recording/playback selection signal output to CXD2535CR<br>When recording:“H”, when playing back:“L”   |
| 62       | VCC      | —   | Power supply (+5V)   |
| 63       | —        | —   | Not used   |
| 64       | VSS      | —   | Ground   |
| 65       | —        | —   | Not used   |
| 66       | MOD      | O   | <p>Laser modulation switching signal output<br/>During playback power: “L”, During stop:“H”<br/>During recording power: </p> |
| 67       | SCTX     | O   | Write data transmission timing output to ATRAC encoder/decoder<br>Used also as magnetic head ON/OFF output   |
| 68       | FG       | I   | FG detection signal output from spindle motor driver   |
| 69       | FOK      | I   | FOK signal input from CXD2535CR<br>“H” is input when focus is set  |
| 70       | SHCK     | I   | Track jump detection signal input from CXD2535CR   |
| 71       | WRPWR    | O   | Laser power switching signal output to optical pick-up and CXD2535CR   |
| 72       | DIG-RST  | O   | Digital reset signal output  |
| 73       | —        | —   | Not used   |
| 74       | SDA      | I/O | Input/output of data signal with EEPROM  |
| 75       | SCL      | O   | Clock signal output to EEPROM  |
| 76       | SENS     | I   | Internal status (SENSE) input from CXD2535CR   |
| 77       | PROTECT  | I   | Recording prevention tab detection input from protect detection switch<br>When protect is ON:“H”   |
| 78       | REFLECT  | I   | Disc reflection rate detection input from reflect detection switch<br>When low reflection rate disc is used:“H”  |
| 79       | LDON     | O   | Laser ON/OFF control output “H”:Laser ON   |
| 80       | LIMIT-IN | I   | Detection input from limit-in switch<br>When sled limit in:“L”   |

| Pin No. | Pin Name   | I/O | Function  |
|---------|------------|-----|---|
| 81      | CSET0      | I   | Destination setting pin   |
| 82      | CSET1      | I   |   |
| 83      | POWER      | O   | POWER LED drive output  |
| 84      | PLAY       | O   | PLAY (▶) LED drive output   |
| 85      | —          | —   | Not used  |
| 86      | REC        | O   | REC (●) LED drive output  |
| 87      | —          | —   | Not used  |
| 88      | PAUSE      | O   | PAUSE (⏸) LED drive output  |
| 89      | —          | —   | Not used  |
| 90      | KEY1       | I   | Key input (A/D)   |
| 91      | KEY2       | I   |   |
| 92      | KEY3       | I   |   |
| 93      | KEY0       | I   |   |
| 94      | TIMER      | I   | Timer recording/playback/OFF switching input “L”:Playback, “H”:Recording, “M”:OFF |
| 95      | SORCE      | I   | Input signal (analog/digital input) selection signal input                        |
| 96      | AVSS(AGND) | —   | Analog ground   |
| 97      | DVOL       | I   | Digital input level volume input (A/D)  |
| 98      | VREF(+5V)  | I   | A/D reference voltage input (+5V)   |
| 99      | AVCC       | —   | Analog power supply (+5V)   |
| 100     | DF         | O   | FILTER LED drive output   |



• IC203 Digital Audio Interface Receiver (LC89051V-TLM)/DIG board

| Pin No. | Pin Name | I/O | Function  |
|---------|----------|-----|---|
| 1       | DIN1     | I   | Data input with built-in amplifier (responding to the coaxial optical module) |
| 2       | DIN2     | I   | Data input (responding to the optical module) (Not used)                      |
| 3       | E/DOUT   | O   | Emphasis, input bi-phase, validity flag output (Not used)                     |
| 4       | VDD      | —   | Power supply (+5V)  |
| 5       | R        | I   | VCO gain control input  |
| 6       | VIN      | I   | VCO freerunning frequency setting input                                       |
| 7       | VCO      | O   | LPF setting of PLL  |
| 8       | GND      | —   | Ground  |
| 9       | CKSEL    | I   | System clock select input (384fs, 512fs) (Fixed at “H”)                       |
| 10      | XMODE    | I   | Reset input   |
| 11      | AVOCK    | I   | Clock input for preventing PLL lock failure                                   |
| 12      | TST1     | I   | Test input (Normally “L”)   |
| 13      | TST2     | I   |   |
| 14      | SCLK     | I   | Microcomputer IF clock input  |
| 15      | XLAT     | I   | Microcomputer IF latch/chip enable input                                      |
| 16      | SWDT     | I   | Microcomputer IF write data input   |
| 17      | SRDT     | O   | Microcomputer IF read data output   |
| 18      | DQSY     | O   | Microcomputer IF Sub-Q sync and ID sync output                                |
| 19      | CKOUT    | O   | VCO clock output (freerunning, 384fs, 512fs)                                  |
| 20      | FS128    | O   | 128fs clock output (Not used)   |
| 21      | BCK      | O   | Bit clock output  |
| 22      | LRCK     | O   | L/R clock output  |
| 23      | DATAOUT  | O   | Audio data output   |
| 24      | ERROR    | O   | PLL lock error mute output  |

• IC206 Shock-Proof Memory Controller, ATRAC Encoder/Decoder (CXD2537R)/DIG board

| Pin No.  | Pin Name   | I/O | Function  |
|----------|------------|-----|---|
| 1        | VDD        | —   | Power supply (+5V)  |
| 2        | SWDT       | I   | Input of write data signal from system controller   |
| 3        | SCK        | I   | Input of serial clock signal from system controller   |
| 4        | XLAT       | I   | Input of serial latch signal from system controller   |
| 5        | SRDT       | O/Z | Output of read data signal to system controller   |
| 6        | SENSE      | O/Z | Internal status (SENSE) output (Not used)   |
| 7        | SCMD0      | I   | Serial command control mode input (Fixed at “H”)  |
| 8        | SCMD1      | I   |   |
| 9        | XINT       | O   | Interrupt status output   |
| 10       | RCPB       | I   | Recording/playback switching input “L”: Recording mode (Fixed at “L”)                             |
| 11       | WRMN       | I   | Write/monitor mode switching signal input “H”: Monitor mode (Fixed at “L”)                        |
| 12       | TX         | I   | Write data transmission timing input<br>Also used as magnetic field head ON/OFF output            |
| 13       | VSS        | —   | Ground  |
| 14       | SICK       | I   | Chip reservation pin (Fixed at “L”)   |
| 15       | IDSL       | I   |   |
| 16       | XILT       | I   | Chip reservation pin (Fixed at “H”)   |
| 17       | XRST       | I   | Input of reset signal from system controller Reset: “L”   |
| 18 to 21 | TS0 to TS3 | I   | Test pin (Fixed at “L”)   |
| 22       | EXIR       | I   | Chip reservation pin (Fixed at “L”)   |
| 23       | SASL       | I   | Block selection in single use “L”: ATRAC “H”: RAM controller (Fixed at “L”)                       |
| 24       | SNGLE      | I   | Normally fixed at “L” Fixed at “H” when used as ATRAC or RAM controller for single (Fixed at “L”) |
| 25       | VSS        | —   | Ground  |
| 26       | AIRCPB     | O   | Output of ATRAC and external audio block recording/playback mode signal (Not used)                |
| 27       | XRQ        | O   | ATRAC I/F data request signal output (Not used)   |
| 28       | ADTO       | I   | ATRAC decode data signal input (Not used)   |
| 29       | ADTI       | O   | ATRAC encode data signal output (Not used)  |
| 30       | XALT       | I   | ATRAC I/F XALT signal input (Not used)  |
| 31       | ACK        | I   | ATRAC I/F ACK signal input (Not used)   |
| 32       | AC2        | I   | ATRAC I/F C2PO signal input (Not used)  |
| 33       | LCHST      | I/O | ATRAC I/F Lch start data signal input/output (Not used)   |
| 34       | EXE        | I/O | ATRAC I/F EXE signal input/output (Not used)  |
| 35       | MUTE       | I/O | ATRAC I/F MUTE signal input/output (Not used)   |
| 36       | OSCO       | O   | Clock output (45 MHz) (Not used)  |
| 37       | OSCI       | I   | Clock input (45 MHz)  |
| 38       | VSS        | —   | Ground  |
| 39       | ATT        | I/O | ATRAC I/F ATT signal input/output (Not used)  |
| 40       | F86        | O   | ATRAC block 11.6 msec timing signal output (Not used)   |
| 41       | DOUT       | O   | Output of audio data signal to D/A converter  |
| 42       | ADIN       | I   | Input of recording signal from A/D converter  |
| 43       | ABCK       | O   | Bit clock signal output   |
| 44       | ALRCK      | O   | L/R clock output  |
| 45 to 47 | SA2 to SA0 | O   | Address signal output (Not used)  |

\* O/Z: In case of no output data, it becomes high impedance

| Pin No.  | Pin Name   | I/O | Function  |
|----------|------------|-----|---|
| 48, 49   | A11, A10   | O   | Address signal output (Not used)  |
| 50       | VSS        | —   | Ground  |
| 51       | VDD        | —   | Power supply (+5V)  |
| 52 to 55 | A03 to A00 | O   | Address signal output   |
| 56 to 60 | A04 to A08 | O   | Address signal output   |
| 61       | XOE        | O   | Output enable control signal output   |
| 62       | XCAS       | O   | Column address strobe signal output   |
| 63       | VSS        | —   | Ground  |
| 64       | XCS        | O   | Chip select signal output (Not used)  |
| 65       | A09        | O   | Address signal output   |
| 66       | XRAS       | O   | Row address strobe signal output  |
| 67       | XWE        | O   | Read/write control signal output  |
| 68, 69   | D1, D0     | I/O | Data signal input/output  |
| 70 to 74 | D2 to D6   | I/O |   |
| 75       | VSS        | —   | Ground  |
| 76       | D7         | I/O | Data signal input/output (Not used)   |
| 77       | ERR        | I/O | Input/output of error (C2PO) data to external RAM (Not used)  |
| 78       | EXTC2R     | I   | External RAM selection input for error data writing (“H”: External RAM) (Fixed at “L”)                                  |
| 79       | BUSY       | O   | RAM access BUSY signal output (Not used)  |
| 80       | EMP        | O   | EMPTY or immediately before FULL of ATRAC data (When DSC=ASC+1: “H”) (Not used)   |
| 81       | FUL        | O   | FULL or immediately before EMPTY of ATRAC data (When ASC=DSC+1: “H”) (Not used)   |
| 82       | EQL        | O   | ATRAC data EMPTY (When DSC=ASC: “H”) (Not used)   |
| 83       | MDLK       | O   | Indicates recording/playback data main/sub (“H”: Sub, Linking: “L”: Main) (Not used)                                    |
| 84       | CPSY       | O   | Interpolation sync signal output (Not used)   |
| 85       | CTMD0      | O   | DSC counter mode output (Not used)  |
| 86       | CTMD1      | O   |   |
| 87       | SPO        | O   | System clock (512fs=22.5792 MHz) signal output  |
| 88       | VSS        | —   | Ground  |
| 89       | MDSY       | O   | Main data sync detection signal output (Not used)   |
| 90       | LRCK       | I   | L/R clock signal input (44.1 kHz)   |
| 91       | BCK        | I   | Bit clock signal input (2.8224 MHz)   |
| 92       | C2PO       | I   | C2PO signal input (Shows data error status)<br>Playback: C2PO (“H”) Digital recording: D In-Vflag Analog recording: “L” |
| 93       | DATA       | I/O | Recording: Recording audio data signal output<br>Playback: Playback audio data signal input                             |
| 94       | DIDT       | I   | Input of digital audio input 16-bit data from CXD2535CR   |
| 95       | DODT       | O   | Output of digital audio output 16-bit data to CXD2535CR   |
| 96       | DIRCPB     | O   | Disc drive and EFM encoder/decoder recording/playback mode output (Not used)  |
| 97       | MIN        | I   | External monitor signal input   |
| 98       | SPOSL      | I   | Pin 87 (SPO) input/output switching input pin (“L”:IN “H”:OUT) (Not used) (Fixed at “H”)                                |
| 99       | MCK        | O   | RAM controller internal master clock output (Not used)  |
| 100      | VSS        | —   | Ground  |

• IC207 Sampling Rate Converter, Digital Filter (MSM9404AGS-BX)/DIG board

| Pin No.  | Pin Name   | I/O | Function  |
|----------|------------|-----|---|
| 1        | DO         | O   | Data output (Not used)  |
| 2        | SEL        | I   | Data select control input “L”:DI0 → DO, “H”:DI1 → DO (Fixed at “L”)   |
| 3        | SRDT       | O   | Serial data output  |
| 4        | SWDT       | I   | Serial data input   |
| 5        | SCK        | I   | Serial clock input  |
| 6        | XLAT       | I   | Serial latch pulse input  |
| 7        | INIT       | I   | Initialize input “L”:Reset  |
| 8        | NC         | —   | Not used  |
| 9        | VDD        | —   | Power supply (+3.3V)  |
| 10       | NC         | —   | Not used  |
| 11       | RBPH       | O   | Ring buffer R/W phase control monitor signal output “L”:Control OFF (Not used)  |
| 12       | STA        | O   | Fs conversion rate measurement state monitor signal output “L”:High accuracy<br>“H”:High speed response mode (Not used) |
| 13       | FRS        | I   | Input/output Fs rate measurement time selection input<br>“L”:High accuracy “H”:High speed response mode (Fixed at “L”)  |
| 14       | FRM        | I   | Input/output Fs rate measurement mode signal input<br>“L”:Automatic, “H”:Manual (Fixed at “L”)                          |
| 15       | SLAVE      | I   | Output sync mode selection input “L”:Slave, “H”:Master (Fixed at “L”)   |
| 16       | TEST5      | I   | Test pin (Fixed at “L”)   |
| 17       | TB7        | I/O | Test bus input/output (Open)  |
| 18       | MDO0       | I   | Data output serial data format setting input (Fixed at “L”)   |
| 19       | MDO1       | I   |   |
| 20       | MUTE       | I   | Output mute setting input “L”:Muted (DATAO only)  |
| 21       | DATAO      | O   | Data output (Fso output)  |
| 22       | BCKO       | I/O | Data output bit clock input/output  |
| 23       | LRCKO      | I/O | Data output Fso word clock input/output   |
| 24       | TEST4      | I   | Test pin (Fixed at “L”)   |
| 25       | GND        | —   | Ground  |
| 26       | XI         | I   | 512 Fso output line master clock input  |
| 27       | GND        | —   | Ground  |
| 28       | XO         | O   | Clock output  |
| 29       | XOO        | O   | Output line master clock output (Not used)  |
| 30       | VDD        | —   | Power supply (+3.3V)  |
| 31       | NC         | —   | Not used  |
| 32 to 34 | TB6 to TB4 | I/O | Test bus input/output (Open)  |
| 35       | MAO0       | I   | D/A output serial data format setting input (Fixed at “L”)  |
| 36       | MAO1       | I   |   |
| 37       | ALRKO      | O   | D/A output word clock output Data changes at “L”→“H” edge (Not used)  |
| 38       | ABCKO      | O   | D/A output bit clock output Data changes at “L”→“H” edge (Not used)   |
| 39       | NC         | —   | Not used  |
| 40       | VDD        | —   | Power supply (+3.3V)  |

| Pin No.  | Pin Name   | I/O | Function  |
|----------|------------|-----|---|
| 41       | NC         | —   | Not used  |
| 42       | DAOR       | O   | Rch D/A 8Fso, 4Fso data output (Not used)   |
| 43       | DAOL       | O   | Lch D/A 8Fso, 4Fso data output (Not used)   |
| 44       | TEST3      | I   | Test pin (Fixed at “L”)   |
| 45       | DEMP       | I   | Deemphasis setting input “L”:OFF (Fixed at “L”)   |
| 46       | FS1        | I   | Deemphasis setting input Fsi frequency selection input (Fixed at “L”)                         |
| 47       | FS2        | I   |   |
| 48 to 50 | TB3 to TB1 | I/O | Test bus input/output (Open)  |
| 51       | DATAI      | I   | Data input  |
| 52       | LRCKI      | I   | Input data 1Fs word clock input (Schmidt)   |
| 53       | BCKI       | I   | Input data bit clock input  |
| 54       | FIMCK      | I   | Input data line Fs reference input and master clock input                                     |
| 55       | FIMO       | O   | Master clock output   |
| 56       | GND        | —   | Ground  |
| 57       | TEST2      | I   | Test pin (Fixed at “L”)   |
| 58       | TEST1      | I   | The second reset signal input from system controller  |
| 59       | FIS        | I   | FIMCK frequency division rate setting input “L”:1/1 (256 Fs), “H”:1/2 (512 Fs) (Fixed at “H”) |
| 60       | MI0        | I   | Input data format setting input (Fixed at “H”)  |
| 61       | MI1        | I   | Input data format setting input (Fixed at “L”)  |
| 62       | DI0        | I   | Data input (Not used)   |
| 63       | DI1        | I   |   |
| 64       | TB0        | I/O | Test bus input/output (Open)  |

• IC301 Digital Filter (CXD8512Q)/AD board

| Pin No. | Pin Name | I/O | Function   |
|---------|----------|-----|--|
| 1       | TEST     | I   | Test pin (Fixed at “L”)                                |
| 2       | NC       | —   | Not used   |
| 3       | SYNC     | I   | Sync mode selection (Fixed at “L”)                     |
| 4       | INIT     | I   | Initialization input                                   |
| 5       | NC       | —   | Not used   |
| 6       | CFLG     | O   | Flag output for calibration (Not used)                 |
| 7, 8    | VDD      | —   | Power supply (+5V)                                     |
| 9       | LRKI     | I   | LRKI input (8fs/2fs/fs) (Not used)                     |
| 10      | BKI      | I   | BKI input (8fs/2fs/fs) (Not used)                      |
| 11      | NC       | —   | Not used   |
| 12      | DLI      | I   | Lch data input (8fs/2fs/fs) (Not used)                 |
| 13      | DRI      | I   | Rch data input (8fs/2fs/fs) (Not used)                 |
| 14      | IFLG     | O   | Input side sync flag output (Not used)                 |
| 15, 16  | NC       | —   | Not used   |
| 17      | FE       | I   | Test pin (Fixed at “L”)                                |
| 18      | AL2      | I   | Lch data input (64fs) (Not used)                       |
| 19      | AR2      | I   | Rch data input (64fs) (Not used)                       |
| 20      | AL1      | I   | Lch data input (64fs)                                  |
| 21      | AR1      | I   | Rch data input (64fs)                                  |
| 22, 23  | Vss      | —   | Ground   |
| 24, 25  | CVss     | —   |  |
| 26      | FCLK     | O   | FE clock output (128fs)                                |
| 27      | MCLK     | I   | Master clock input (256fs)                             |
| 28      | CVDD     | —   | Power supply (+5V)                                     |
| 29      | NC       | —   | Not used   |
| 30      | IBIT     | I   | Data input word length selection (64fs) (Fixed at “L”) |
| 31      | NC       | —   | Not used   |
| 32      | Vss      | —   | Ground   |
| 33      | SCALE    | I   | Test pin (Fixed at “L”)                                |
| 34      | ISEL1    | I   | Input selection (Fixed at “L”)                         |
| 35      | ISEL2    | I   | Input selection (Fixed at “L”)                         |
| 36      | NC       | —   | Not used   |
| 37      | DITH     | I   | Dither (Not used)                                      |
| 38      | BOOST    | I   | Boost (Not used)                                       |
| 39      | VDD      | —   | Power supply (+5V)                                     |
| 40      | MODE     | I   | MODE data input (Not used)                             |
| 41      | SHIFT    | I   | SHIFT clock input (Not used)                           |
| 42      | LATCH    | I   | LATCH input (Not used)                                 |
| 43      | NC       | —   | Not used   |
| 44      | LC       | I   | Low cut (Not used)                                     |
| 45      | TEST     | I   | Test pin (Fixed at “L”)                                |

| Pin No. | Pin Name | I/O | Function  |
|---------|----------|-----|---|
| 46      | NC       | —   | Not used  |
| 47      | OSEL     | I   | Test pin (Fixed at “L”)   |
| 48      | OBIT     | I   | Output data word length selection “H”: 24 bits, “L”: 16 bits (Fixed at “H”) |
| 49      | DRO      | O   | Rch data output (Not used)  |
| 50      | DLO      | O   | Lch data output   |
| 51      | NC       | —   | Not used  |
| 52, 53  | Vss      | —   | Ground  |
| 54      | BCK      | I/O | SYNC “H”: BCK output, “L”: BCK input  |
| 55      | NC       | —   | Not used  |
| 56      | LRCK     | I/O | SYNC “H”: LRCK output, “L”: LRCK input                                      |
| 57      | OFLG     | O   | Output side sync flag output (Not used)                                     |
| 58      | VDD      | —   | Power supply (+5V)  |
| 59      | OVR      | O   | Rch overflow flag output (Not used)   |
| 60      | OVL      | O   | Lch overflow flag output (Not used)   |

• IC501 Noise Shaper, Digital Filter (CXD8595Q)/DA board

| Pin No. | Pin Name | I/O | Function   |
|---------|----------|-----|--|
| 1       | PLMG2    | I   | 4 bit conversion data setting pin in SCD mode (Fixed at “L”)         |
| 2       | VDD      | —   | Power supply (+5V)   |
| 3       | NSDOL4   | O   | Noise shaping data Lch parallel output 4 (MSB) (Not used)            |
| 4       | NSDOL3   | O   | Noise shaping data Lch parallel output 3 (4SB) (Not used)            |
| 5       | NSDOL2   | O   | Noise shaping data Lch parallel output 2 (2SB) (Not used)            |
| 6       | NSDOL1   | O   | Noise shaping data Lch parallel output 1 (LSB) (Not used)            |
| 7, 8    | NC       | —   | Not used   |
| 9, 10   | VDD      | —   | Power supply (+5V)   |
| 11      | NC       | —   | Not used   |
| 12      | 64FSI    | I   | 64 Fs clock input  |
| 13      | NSDOR1   | O   | Noise shaping data Rch parallel output 1 (LSB) (Not used)            |
| 14      | NSDOR2   | O   | Noise shaping data Rch parallel output 2 (2SB) (Not used)            |
| 15      | NSDOR3   | O   | Noise shaping data Rch parallel output 3 (4SB) (Not used)            |
| 16      | NSDOR4   | O   | Noise shaping data Rch parallel output 4 (MSB) (Not used)            |
| 17      | MCKIN    | I   | Master clock input (256 Fs)  |
| 18      | VDD      | —   | Power supply (+5V)   |
| 19      | PLMG1    | I   | 4 bit conversion data setting pin in SCD mode (Fixed at “L”)         |
| 20      | VSS      | —   | Ground   |
| 21      | TEST3    | I   | Test pin (Fixed at “L”)  |
| 22      | TEST4    | I   |  |
| 23      | DFLRCKO  | O   | Digital filter data LR clock output                                  |
| 24      | DFDTOR   | O   | Digital filter data Rch data output                                  |
| 25      | NC       | —   | Not used   |
| 26      | MODE     | I   | Mode setting pin “L”:CD mode, “H”:DSD mode (Fixed at “L”)            |
| 27      | DRPOL    | I   | Rch data polarity setting pin “L”:Positive phase (Fixed at “L”)      |
| 28      | OVFLAG   | O   | Digital filter output overflow flag output “H”:Active (Fixed at “L”) |
| 29      | MUTEL    | O   | Mute flag output (Lch) (Not used)                                    |
| 30      | MUTER    | O   | Mute flag output (Rch) (Not used)                                    |
| 31      | MTPOL    | I   | Mute flag polarity setting pin “L”:L active, “H”:H active (Not used) |
| 32      | INAF     | O   | Sync deviation detection flag “H”:Active (Sync deviation detection)  |
| 33      | DINIT    | O   | External INIT signal delay signal output (Not used)                  |
| 34      | CKVDD    | —   | Power supply (+5V) (Clock system)                                    |
| 35      | 128FSO   | O   | 128 Fs clock output (Not used)                                       |
| 36      | NC       | —   | Not used   |
| 37      | INVI     | I   | 384 Fs generation three times buffer input (Not used)                |
| 38      | INVO1    | O   | First stage buffer output for three times (Not used)                 |
| 39      | INVO2    | O   | Second stage buffer output for three times (Not used)                |
| 40      | NC       | —   | Not used   |



| Pin No. | Pin Name | I/O | Function  |
|---------|----------|-----|---|
| 41, 42  | VSS      | —   | Ground  |
| 43      | BCKI     | I   | Bit clock input   |
| 44      | DATAI    | I   | Data input  |
| 45      | LRCKI    | I   | LR clock input  |
| 46      | INIT     | I   | Initialize input “L”:Reset  |
| 47      | ATT      | I   | Serial data input   |
| 48      | SHIFT    | I   | Serial shift clock input  |
| 49      | LATCH    | I   | Serial latch clock input  |
| 50      | SYSM     | I   | External mute signal input “H”:Active (Fixed at “L”)                          |
| 51      | NRGCLR   | I   | N/S calculation section register clear signal input “H”:Active (Fixed at “L”) |
| 52      | IFSELD   | I   | Data line input signal voltage level selection pin (Fixed at “L”)             |
| 53      | IFSELC   | I   | Control line input signal voltage level selection pin (Fixed at “L”)          |
| 54      | NC       | —   | Not used  |
| 55      | SBCKI    | I   | LR clock input (during SCD mode) (Not used)                                   |
| 56      | SDATAR   | I   | Bit clock input (during SCD mode) (Not used)                                  |
| 57      | SDATAL   | I   | Data input (during SCD mode) (Not used)                                       |
| 58      | NC       | —   | Not used  |
| 59      | DFDTOL   | O   | Digital filter serial data Lch output   |
| 60      | DFBCKO   | O   | Digital filter serial data output bit clock output                            |
| 61      | DFDTEN   | I   | Digital filter data output “L”:OFF, “H”:ON                                    |
| 62      | TEST1    | I   | Test pin (Fixed at “L”)   |
| 63      | TEST2    | I   |   |
| 64      | VSS      | —   | Ground  |

## SECTION 7 EXPLODED VIEWS

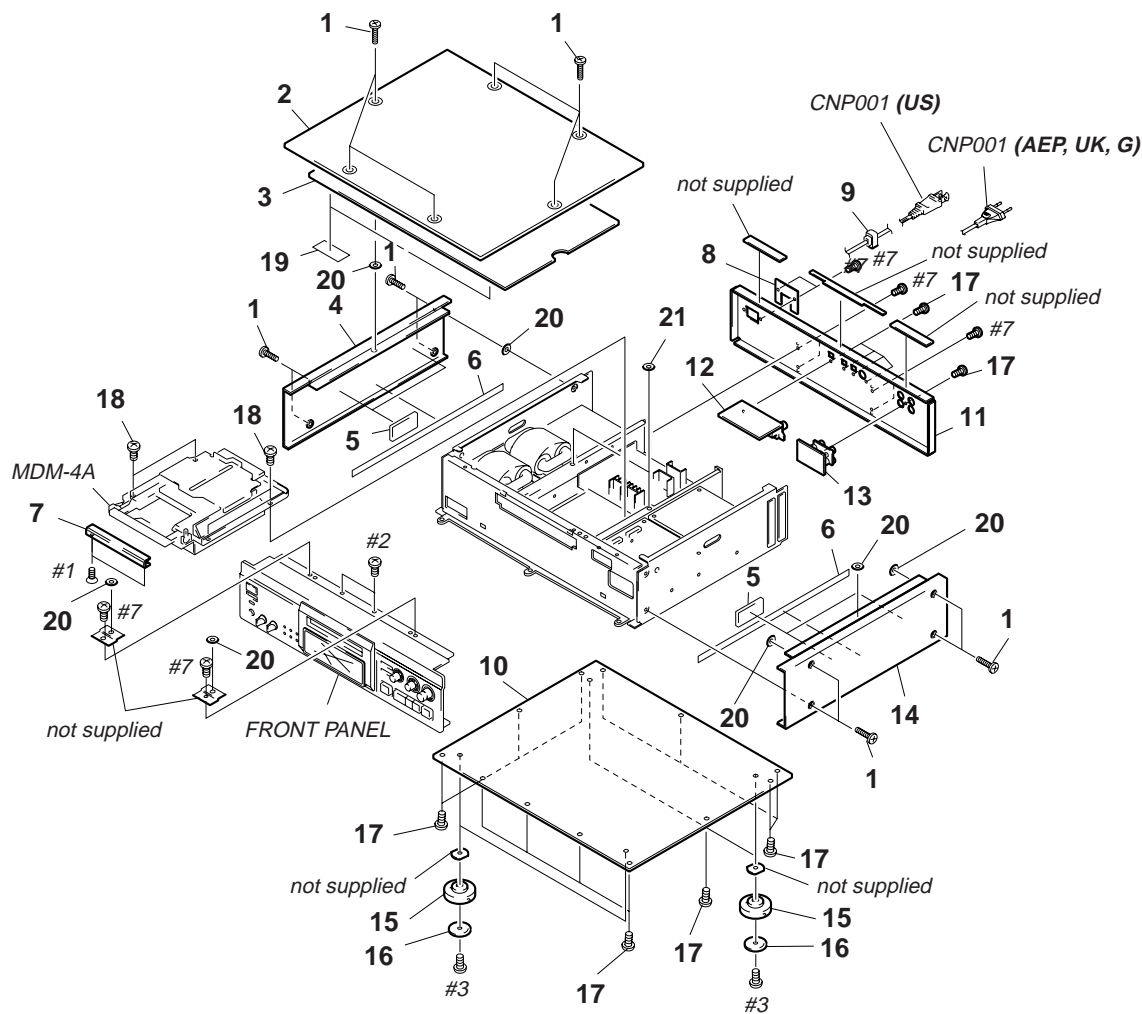
### NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts Example:  
KNOB, BALANCE (RED)  
↓  
Cabinets color

- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation  
G : German model

The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety.  
Replace only with part number specified.

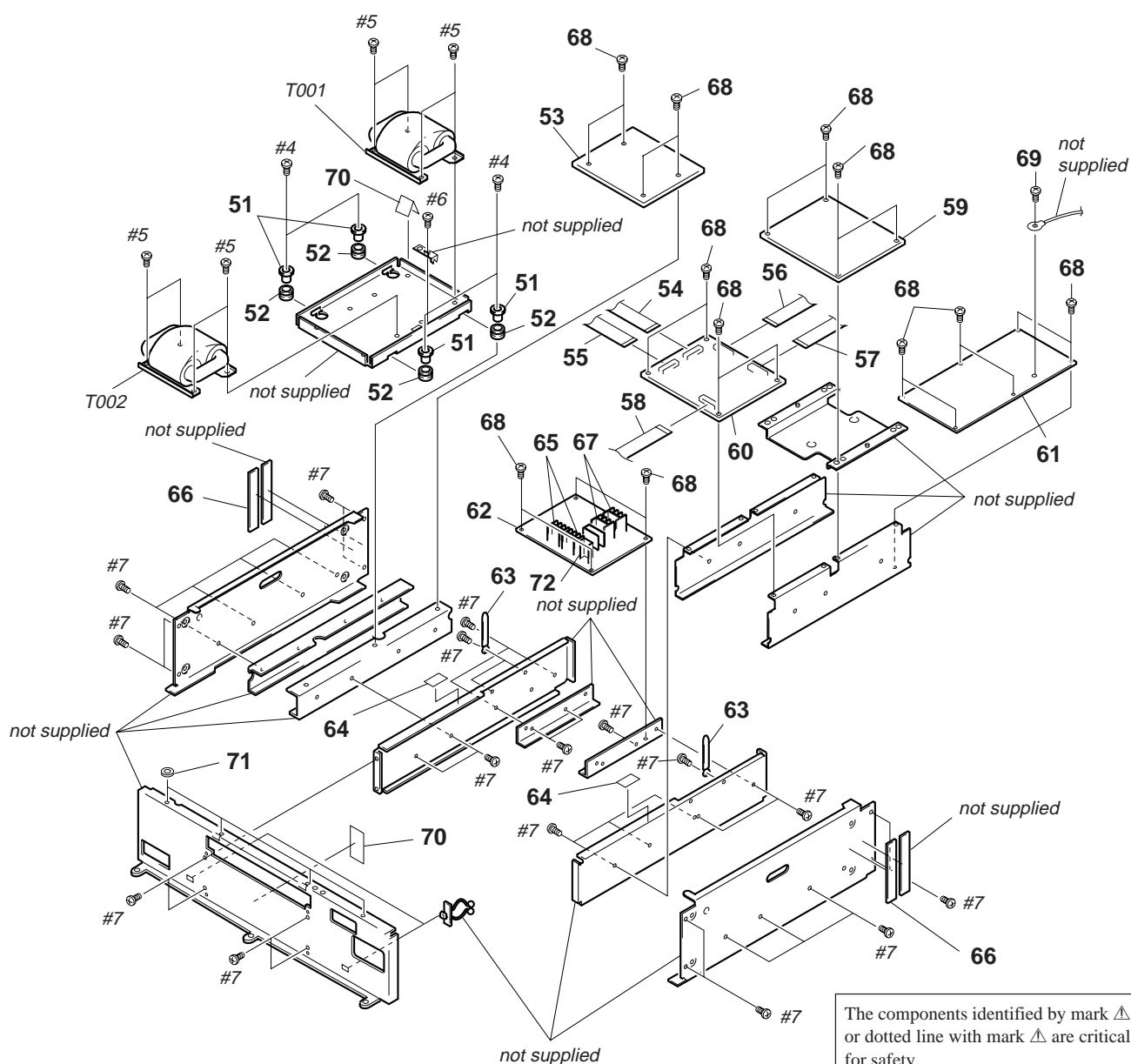
### 7-1. MAIN SECTION





| Ref. No. | Part No.     | Description                     | Remark |
|----------|--------------|---------------------------------|--------|
| 1        | 4-976-827-01 | SCREW, FLAT HEAD (BLACK)        |        |
| 1        | 4-976-827-11 | SCREW, FLAT HEAD (GOLD)         |        |
| 2        | 4-969-821-01 | CASE (TOP PLATE)(BLACK)         |        |
| 2        | 4-969-821-11 | CASE (TOP PLATE)(GOLD)          |        |
| * 3      | A-4660-735-A | REINFORCEMENT (TOP PLATE) ASSY  |        |
| 4        | 4-969-823-01 | PLATE (L), SIDE (BLACK)         |        |
| 4        | 4-969-823-11 | PLATE (L), SIDE (GOLD)          |        |
| 5        | 4-972-438-01 | ABSORBENT, VIBRATION            |        |
| 6        | 4-972-439-01 | SPACER (SCREW HEAD)             |        |
| 7        | 4-987-666-01 | PANEL, LOADING (GOLD)           |        |
| 7        | 4-987-666-11 | PANEL, LOADING (BLACK)          |        |
| * 8      | 4-923-873-01 | BRACKET, CORD STOPPER           |        |
| * 9      | 3-703-244-00 | BUSHING (2104), CORD (AEP,UK,G) |        |
| 9        | 4-916-783-01 | BUSHING, CORD (US)              |        |
| * 10     | 4-987-539-01 | PLATE, BOTTOM                   |        |

| Ref. No.           | Part No.     | Description             | Remark |
|--------------------|--------------|-------------------------|--------|
| * 11               | 4-987-511-22 | PANEL, BACK (AEP,UK,G)  |        |
| * 11               | 4-987-511-31 | PANEL, BACK (US)        |        |
| * 12               | A-4699-457-A | DIO BOARD, COMPLETE     |        |
| * 13               | 1-664-817-11 | PJ BOARD                |        |
| 14                 | 4-969-824-01 | PLATE (R), SIDE (BLACK) |        |
| 14                 | 4-969-824-11 | PLATE (R) SIDE (GOLD)   |        |
| 15                 | 4-970-487-01 | FOOT (F50180S)          |        |
| 16                 | 4-970-124-11 | CUSHION (F50180S)       |        |
| 17                 | 4-929-074-01 | SCREW (3X8)             |        |
| 18                 | 4-974-510-01 | SCREW (+BV 3X8 B)       |        |
| 19                 | 9-911-830-XX | SHEET, HB               |        |
| 20                 | 4-949-302-31 | WASHER (GREEN t 0.25)   |        |
| 21                 | 4-945-431-01 | WASHER (BLACK t 0.8)    |        |
| $\triangle$ CNP001 | 1-558-568-21 | CORD, POWER (AEP,UK,G)  |        |
| $\triangle$ CNP001 | 1-559-583-21 | CORD, POWER (US)        |        |

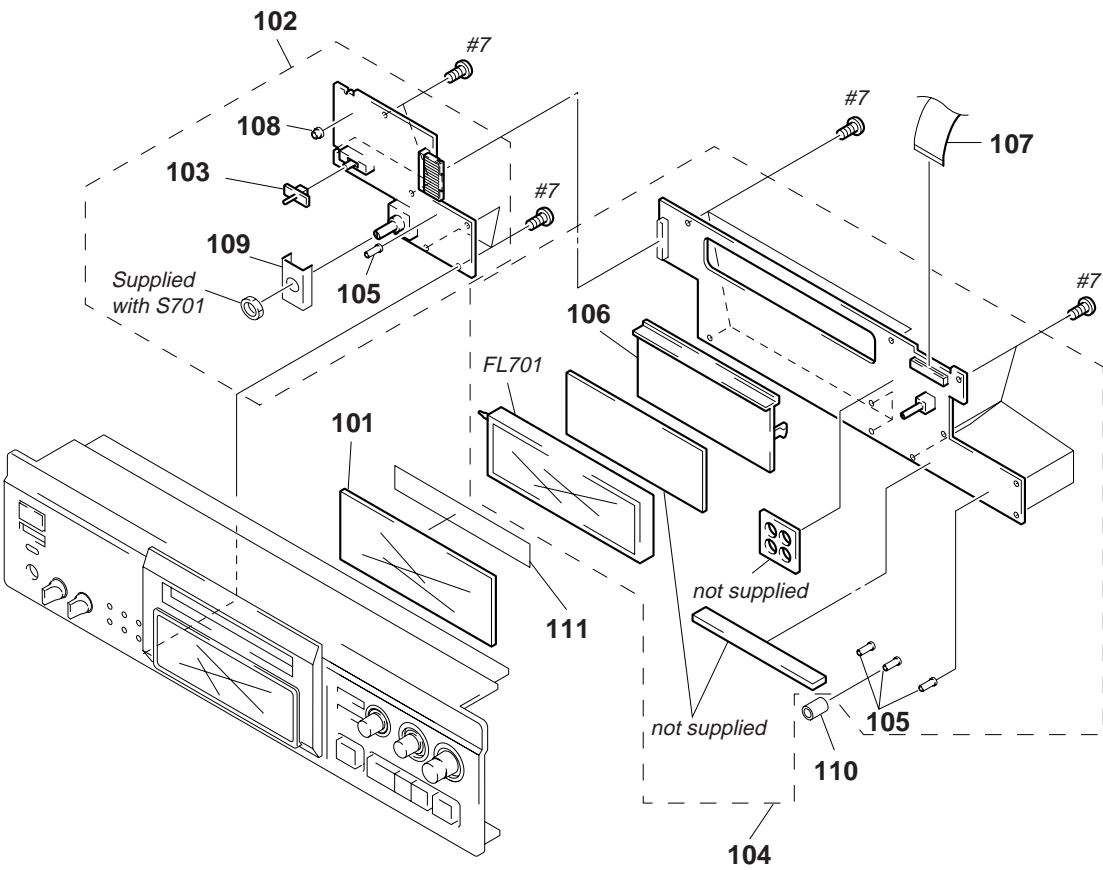
## 7-2. CHASSIS SECTION



The components identified by mark  or dotted line with mark  are critical for safety.  
Replace only with part number specified.

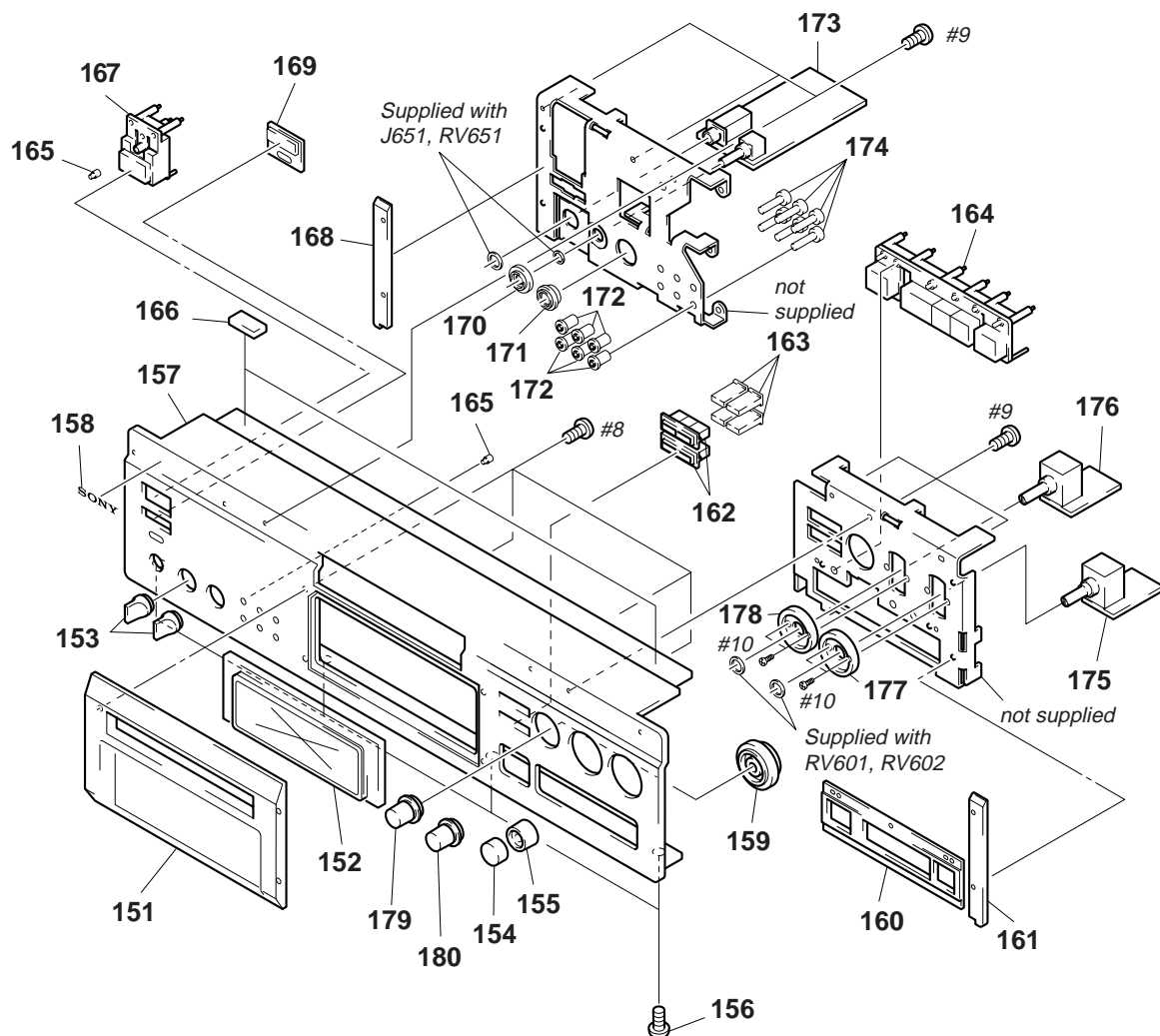
| Ref. No. | Part No.     | Description                    | Remark | Ref. No. | Part No.     | Description                   | Remark |
|----------|--------------|--------------------------------|--------|----------|--------------|-------------------------------|--------|
| 51       | 4-928-032-01 | COLLAR (A)                     |        | 64       | 3-846-312-11 | SPACER (E)                    |        |
| * 52     | 4-888-798-00 | BUSHING, RUBBER                |        | * 65     | 4-363-146-00 | HEAT SINK, V.OUT              |        |
| * 53     | 1-664-815-11 | AC BOARD                       |        | 66       | 4-972-440-01 | SPACER                        |        |
| 54       | 1-782-216-11 | WIRE (FLAT TYPE)(30 CORE)      |        | * 67     | 4-921-402-01 | HEAT SINK                     |        |
| 55       | 1-782-215-11 | WIRE (FLAT TYPE)(18 CORE)      |        | 68       | 4-974-510-01 | SCREW (+BV 3X8 B)             |        |
| 56       | 1-777-738-11 | WIRE (FLAT TYPE)(26 CORE)      |        | 69       | 2-259-121-01 | SCREW, TR                     |        |
| 57       | 1-777-737-11 | WIRE (FLAT TYPE)(16 CORE)      |        | 70       | 3-831-441-XX | CUSHION                       |        |
| 58       | 1-777-735-11 | WIRE (FLAT TYPE)(18 CORE)      |        | 71       | 4-945-431-01 | WASHER                        |        |
| * 59     | A-4699-453-A | AD BOARD, COMPLETE             |        | * 72     | 3-309-144-21 | HEAT SINK                     |        |
| * 60     | A-4699-589-A | DIG BOARD, COMPLETE (US)       |        | △ T001   | 1-431-178-11 | TRANSFORMER, POWER (AEP,UK,G) |        |
| * 60     | A-4699-593-A | DIG BOARD, COMPLETE (AEP,UK,G) |        | △ T001   | 1-431-180-11 | TRANSFORMER, POWER (US)       |        |
| * 61     | A-4699-454-A | DA BOARD, COMPLETE             |        | △ T002   | 1-431-179-11 | TRANSFORMER, POWER (AEP,UK,G) |        |
| * 62     | A-4699-455-A | PW BOARD, COMPLETE (US)        |        | △ T002   | 1-431-181-11 | TRANSFORMER, POWER (US)       |        |
| * 62     | A-4699-591-A | PW BOARD, COMPLETE (AEP,UK,G)  |        |          |              |                               |        |
| 63       | 3-703-397-01 | STOPPER, WIRING                |        |          |              |                               |        |

**7-3. FRONT PANEL SECTION 1**



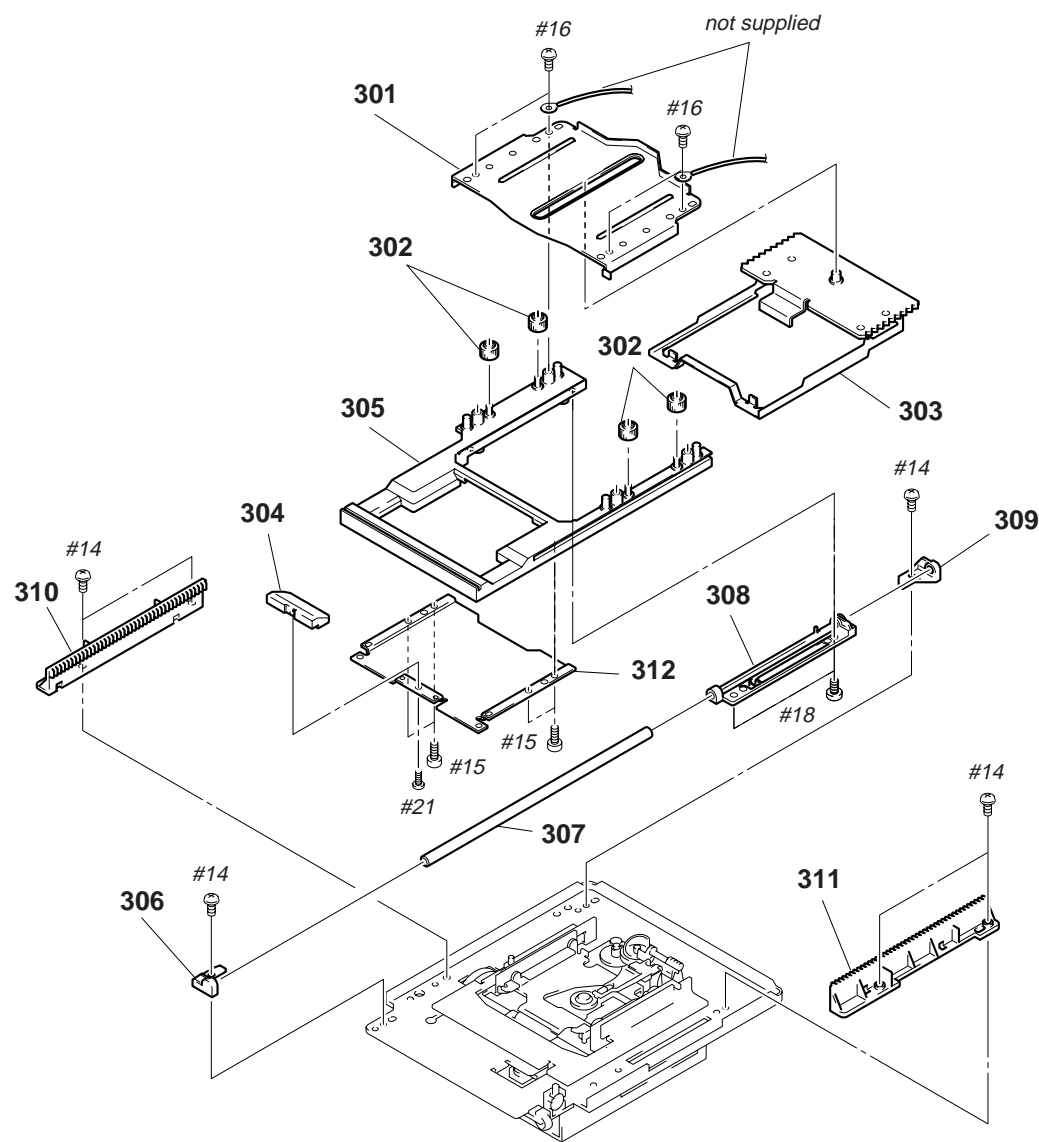
| Ref. No. | Part No.     | Description          | Remark | Ref. No. | Part No.     | Description                 | Remark |
|----------|--------------|----------------------|--------|----------|--------------|-----------------------------|--------|
| 101      | 4-987-518-01 | FILTER               |        | 107      | 1-777-736-11 | WIRE (FLAT TYPE)(26 CORE)   |        |
| * 102    | A-4699-460-A | PSW BOARD, COMPLETE  |        | * 108    | 4-972-608-01 | HOLDER (DIA. 5), LED        |        |
| 103      | 4-971-774-01 | KNOB (TIMER)(BLACK)  |        | 109      | 4-976-360-02 | REINFORCEMENT (CONT)        |        |
| 103      | 4-971-774-21 | KNOB (TIMER)(GOLD)   |        |          |              |                             |        |
| * 104    | A-4699-459-A | DISP BOARD, COMPLETE |        | * 110    | 4-988-382-01 | COVER (LED)                 |        |
|          |              |                      |        | 111      | 4-989-035-01 | CUSHION (FL)                |        |
| * 105    | 3-362-478-11 | HOLDER (T), LED      |        | FL701    | 1-517-620-11 | INDICATOR TUBE, FLUORESCENT |        |
| * 106    | 4-987-501-01 | HOLDER (FL)          |        |          |              |                             |        |

## 7-4. FRONT PANEL SECTION 2



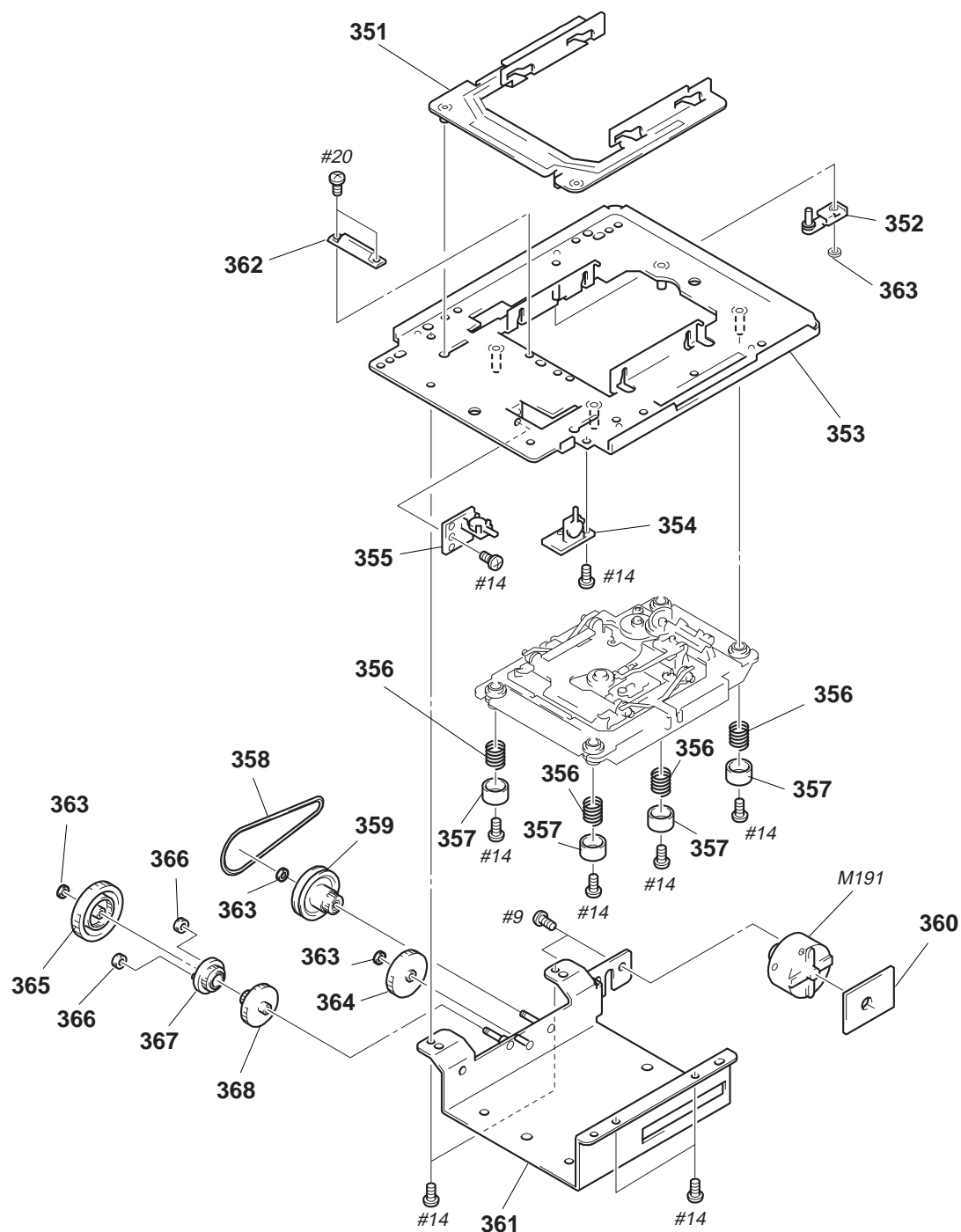
| Ref. No. | Part No.     | Description                    | Remark | Ref. No. | Part No.     | Description                       | Remark |
|----------|--------------|--------------------------------|--------|----------|--------------|-----------------------------------|--------|
| 151      | 4-987-495-01 | PANEL (GOLD)(ESCUTCHEON)       |        | 165      | 4-987-519-01 | INDICATOR (D2)                    |        |
| 151      | 4-987-495-11 | PANEL (BLACK)(ESCUTCHEON)      |        | 166      | 9-911-842-XX | RUBBER (B)                        |        |
| 152      | 4-987-517-01 | PLATE, INDICATION              |        | 167      | 4-987-496-01 | BUTTON (POWER)(GOLD)              |        |
| 153      | 4-987-527-01 | KNOB (VOL)(GOLD)               |        |          |              |                                   |        |
| 153      | 4-987-527-11 | KNOB (VOL)(BLACK)              |        | 167      | 4-987-496-11 | BUTTON (POWER)(BLACK)             |        |
|          |              |                                |        | 168      | 4-987-502-01 | PANEL (EDGE L)(GOLD)              |        |
| 154      | 4-987-525-01 | KNOB (REC R)(GOLD)             |        | 168      | 4-987-502-11 | PANEL (EDGE L)(BLACK)             |        |
| 154      | 4-987-525-11 | KNOB (REC R)(BLACK)            |        | 169      | 4-987-520-01 | WINDOW (REMOTE CONTROL)(GOLD)     |        |
| 155      | 4-987-524-01 | KNOB (REC L)(GOLD)             |        | 169      | 4-987-520-11 | WINDOW (REMOTE CONTROL)(BLACK)    |        |
| 155      | 4-987-524-11 | KNOB (REC L)(BLACK)            |        |          |              |                                   |        |
| 156      | 4-929-074-01 | SCREW (3X8)                    |        | * 170    | 4-987-514-01 | GUIDE (VOL)(GOLD)                 |        |
|          |              |                                |        | * 170    | 4-987-514-11 | GUIDE (VOL)(BLACK)                |        |
| 157      | 4-987-494-01 | PANEL, FRONT (GOLD)(AEP,UK,G)  |        | * 171    | 4-987-515-01 | GUIDE (INPUT)(GOLD)               |        |
| 157      | 4-987-494-11 | PANEL, FRONT (BLACK)(AEP,UK,G) |        | * 171    | 4-987-515-11 | GUIDE (INPUT)(BLACK)              |        |
| 157      | 4-987-494-21 | PANEL, FRONT (BLACK)(US)       |        | * 172    | 4-987-513-01 | GUIDE (FUNC)                      |        |
| 158      | 4-942-568-01 | EMBLEM (NO.5), SONY (BLACK)    |        |          |              |                                   |        |
| 158      | 4-942-568-31 | EMBLEM (NO.5), SONY (GOLD)     |        | * 173    | A-4699-461-A | HP BOARD, COMPLETE                |        |
|          |              |                                |        | 174      | 4-987-522-01 | BUTTON (FUNC)(GOLD)               |        |
| * 159    | 4-987-535-01 | GUIDE (AMS)(GOLD)              |        | 174      | 4-987-522-11 | BUTTON (FUNC)(BLACK)              |        |
| * 159    | 4-987-535-11 | GUIDE (AMS)(BLACK)             |        | * 175    | 1-664-821-11 | A VOL BOARD                       |        |
| 160      | 4-987-500-01 | ESCUTCHEON (GOLD)              |        | * 176    | 1-664-822-11 | D VOL BOARD                       |        |
| 160      | 4-987-500-11 | ESCUTCHEON (BLACK)             |        |          |              |                                   |        |
| 161      | 4-987-503-01 | PANEL (EDGE R)(GOLD)           |        | 177      | 4-987-516-01 | GUIDE (REC)(GOLD)                 |        |
|          |              |                                |        | 177      | 4-987-516-11 | GUIDE (REC)(BLACK)                |        |
| 161      | 4-987-503-11 | PANEL (EDGE R)(BLACK)          |        | 178      | 4-987-516-21 | GUIDE (REC)(GOLD)                 |        |
| * 162    | 4-987-512-01 | GUIDE (EDIT)(GOLD)             |        | 178      | 4-987-516-31 | GUIDE (REC)(BLACK)                |        |
| * 162    | 4-987-512-11 | GUIDE (EDIT)(BLACK)            |        | 179      | 4-987-526-01 | KNOB (AMS)(GOLD)                  |        |
| 163      | 4-987-523-01 | BUTTON (EDIT)(GOLD)            |        |          |              |                                   |        |
| 163      | 4-987-523-11 | BUTTON (EDIT)(BLACK)           |        | 179      | 4-987-526-11 | KNOB (AMS)(BLACK)                 |        |
|          |              |                                |        | 180      | 4-987-526-21 | KNOB (AMS)(WITH RED POINT)(GOLD)  |        |
| 164      | X-4947-844-1 | BUTTON (PLAY) ASSY (GOLD)      |        | 180      | 4-987-526-31 | KNOB (AMS)(WITH RED POINT)(BLACK) |        |
| 164      | X-4947-845-1 | BUTTON (PLAY) ASSY (BLACK)     |        |          |              |                                   |        |

7-5. MECHANISM SECTION 1 (MDM-4A)



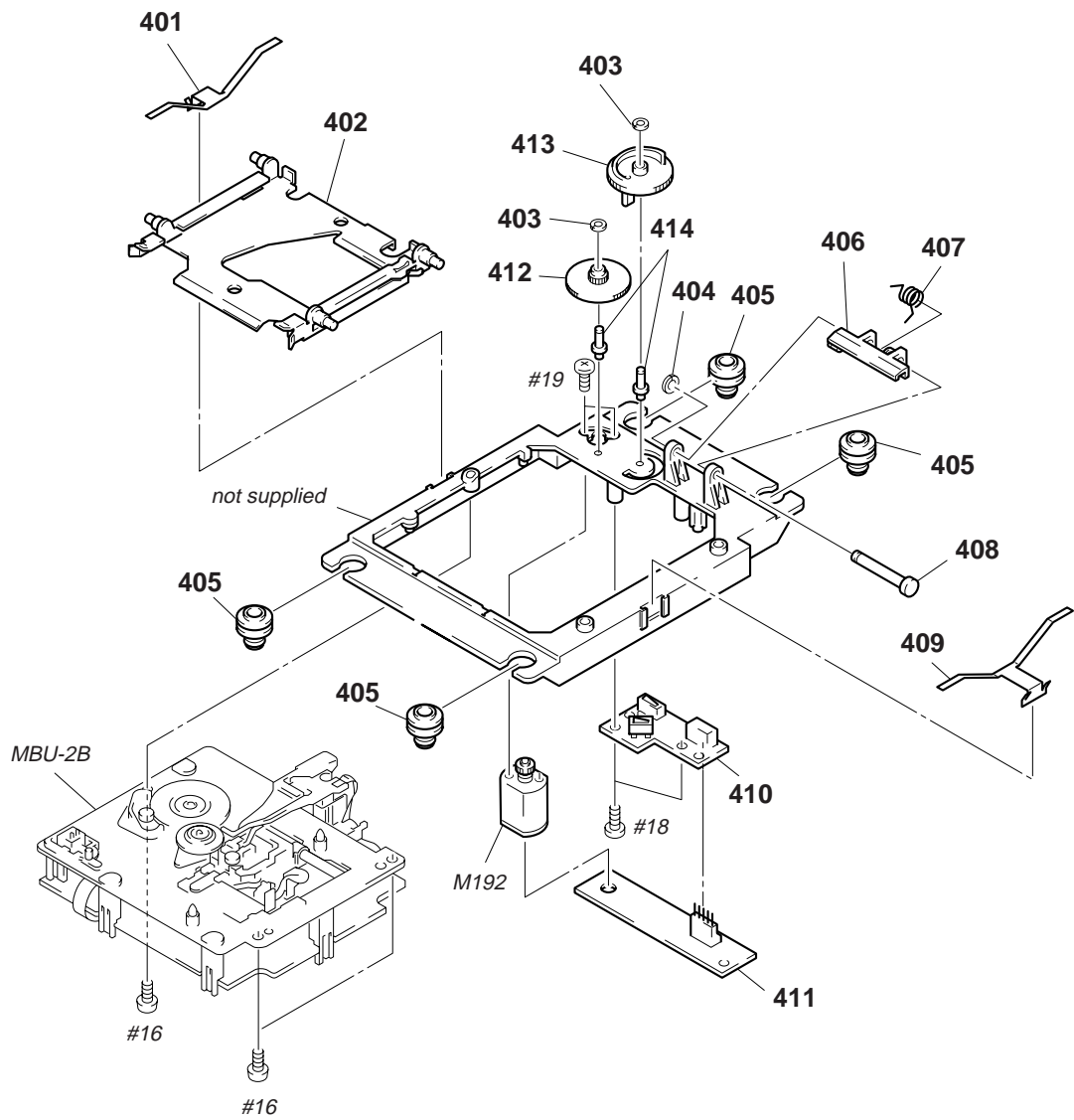
| Ref. No. | Part No.     | Description       | Remark | Ref. No. | Part No.     | Description       | Remark |
|----------|--------------|-------------------|--------|----------|--------------|-------------------|--------|
| * 301    | 4-987-291-01 | BRACKET (TOP)     |        | * 308    | 4-987-294-01 | GUIDE (SHAFT)     |        |
| 302      | 4-987-293-01 | GEAR (4)          |        | 309      | 4-987-271-01 | STOPPER (SHAFT B) |        |
| * 303    | X-4947-820-1 | SLIDER (D) ASSY   |        | 310      | 4-987-269-01 | RACK (L)          |        |
| * 304    | 4-987-267-01 | TABLE (EJECT)     |        | 311      | 4-987-268-01 | RACK (R)          |        |
| * 305    | 4-987-282-01 | TRAY              |        | 312      | 4-987-290-01 | BRACKET (TRAY)    |        |
| 306      | 4-987-270-01 | STOPPER (SHAFT A) |        |          |              |                   |        |
| * 307    | 4-987-295-01 | SHAFT             |        |          |              |                   |        |

## 7-6. MECHANISM SECTION 2 (MDM-4A)



| Ref. No. | Part No.     | Description         | Remark | Ref. No. | Part No.     | Description          | Remark |
|----------|--------------|---------------------|--------|----------|--------------|----------------------|--------|
| * 351    | X-4947-819-1 | SLIDER ASSY         |        | * 361    | X-4947-823-1 | BRACKET (MOTOR) ASSY |        |
| 352      | X-4947-937-1 | LEVER (LOCK) ASSY   |        | 362      | 4-987-274-01 | TABLE (LOADING)      |        |
| * 353    | X-4947-818-1 | CHASSIS ASSY        |        | 363      | 4-968-919-31 | WASHER, STOPPER      |        |
| * 354    | 1-663-898-11 | OUT BOARD           |        | 364      | 4-987-302-01 | GEAR                 |        |
| * 355    | 1-663-897-11 | IN BOARD            |        | 365      | 4-987-298-01 | GEAR (A), PLANET     |        |
| 356      | 4-987-313-01 | SPRING, COMPRESSION |        | 366      | 4-987-301-01 | GEAR (D), PLANET     |        |
| * 357    | 4-987-314-01 | COLLAR (DAMPER)     |        | 367      | 4-987-300-01 | GEAR (C), PLANET     |        |
| 358      | 4-987-308-01 | BELT (LOADING)      |        | 368      | 4-987-299-01 | GEAR (B), PLANET     |        |
| 359      | 4-987-297-01 | GEAR, PULLEY        |        | M191     | X-4947-824-1 | MOTOR (LOADING) ASSY |        |
| * 360    | 1-663-900-11 | LMOT BOARD          |        |          |              |                      |        |

7-7. MECHANISM SECTION 3 (MDM-4A)

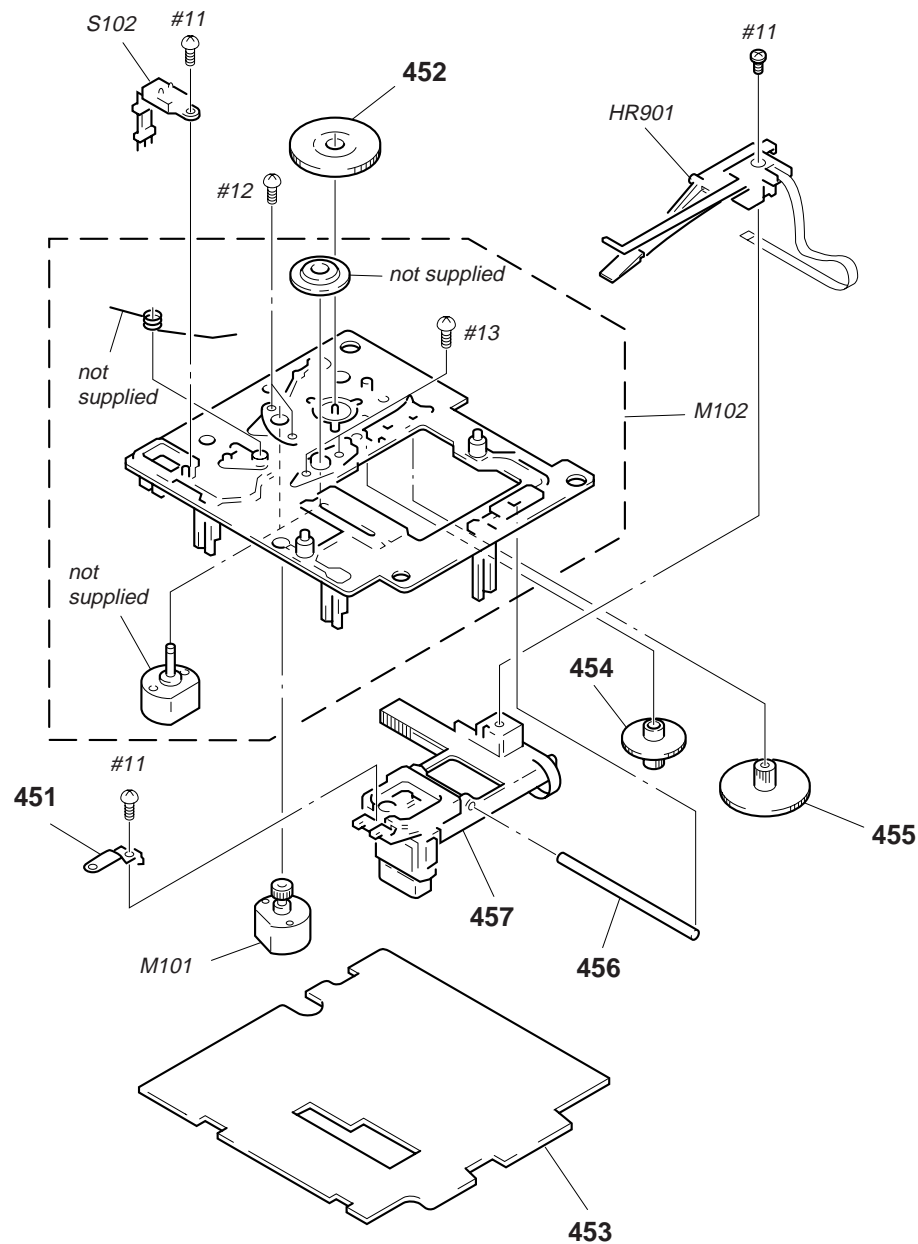


| Ref. No. | Part No.     | Description           |
|----------|--------------|-----------------------|
| 401      | 4-987-273-01 | SPRING (UDL), LEAF    |
| * 402    | X-4947-847-1 | HOLDER ASSY           |
| 403      | 4-989-938-01 | WASHER, STOPPER       |
| 404      | 4-968-919-31 | WASHER, STOPPER       |
| 405      | 4-987-312-01 | INSULATOR (MD)        |
| 406      | 4-987-306-01 | LEVER (OWH)           |
| 407      | 4-987-307-01 | SPRING (OWH), TORSION |
| * 408    | 4-989-233-01 | SHAFT (OWH)           |

| Ref. No. | Part No.     | Description        |
|----------|--------------|--------------------|
| 409      | 4-987-272-01 | SPRING (UDR), LEAF |
| * 410    | 1-663-896-11 | HLIM BOARD         |
| * 411    | 1-663-899-11 | HMOT BOARD         |
| 412      | 4-987-276-01 | GEAR (HEAD-B)      |
| 413      | 4-987-277-01 | GEAR (HEAD-C)      |
| * 414    | 4-987-278-01 | SHAFT (HEAD)       |
| M192     | X-4947-821-1 | MOTOR ASSY, HEAD   |



7-8. BASE UNIT SECTION (MBU-2B)



The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety.  
Replace only with part number specified.

| Ref. No. | Part No.     | Description        | Remark | Ref. No.        | Part No.     | Description                           | Remark |
|----------|--------------|--------------------|--------|-----------------|--------------|---------------------------------------|--------|
| 451      | 4-967-679-01 | SPRING (OP), LEAF  |        | $\triangle$ 457 | 8-583-009-12 | OPTICAL PICK-UP KMS-210A/J-N          |        |
| 452      | 4-967-675-01 | GEAR (SL-A)        |        | HR901           | 1-500-304-21 | HEAD, OVER WRITE                      |        |
| * 453    | A-4673-809-A | BD BOARD, COMPLETE |        | M101            | A-4660-651-A | MOTOR ASSY (SLED)                     |        |
| 454      | 4-967-676-01 | GEAR (SL-B)        |        | M102            | A-4660-650-A | CHASSIS ASSY, BU (SPINDLE)            |        |
| 455      | 4-967-677-01 | GEAR (SL-C)        |        | S102            | 1-762-148-11 | SWITCH, PUSH (2 KEY)(PROTECT/REFLECT) |        |
| 456      | 4-967-678-01 | SHAFT (OP)         |        |                 |              |                                       |        |

AC

AD

## SECTION 8 ELECTRICAL PARTS LIST

### Note:

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS  
All resistors are in ohms  
METAL: Metal-film resistor  
METAL OXIDE: Metal Oxide-film resistor  
F : nonflammable

- SEMICONDUCTORS  
In each case, u:  $\mu$ , for example:  
uA...:  $\mu$  A..., uPA...:  $\mu$  PA..., uPB...:  $\mu$  PB...,  
uPC...:  $\mu$  PC..., uPD...:  $\mu$  PD...
- CAPACITORS  
uF :  $\mu$  F
- COILS  
uH :  $\mu$  H
- Abbreviation  
G: German model

| Ref. No.       | Part No.     | Description                          | Remark |  |            | Ref. No. | Part No.     | Description           | Remark |  |  |
|----------------|--------------|--------------------------------------|--------|--|------------|----------|--------------|-----------------------|--------|--|--|
| *              | 1-664-815-11 | AC BOARD<br>*****                    |        |  |            | C316     | 1-136-820-11 | FILM 0.01uF 5% 100V   |        |  |  |
|                |              | < CAPACITOR >                        |        |  |            | C317     | 1-136-820-11 | FILM 0.01uF 5% 100V   |        |  |  |
| $\Delta$ C001  | 1-113-920-11 | CERAMIC 0.0022uF 20% 250V            |        |  | (AEP,UK,G) | C318     | 1-164-732-11 | CERAMIC 0.1uF 20% 50V |        |  |  |
| $\Delta$ C002  | 1-113-920-11 | CERAMIC 0.0022uF 20% 250V            |        |  |            | C319     | 1-126-052-11 | ELECT 100uF 20% 16V   |        |  |  |
| $\Delta$ C003  | 1-113-920-11 | CERAMIC 0.0022uF 20% 250V            |        |  |            | C320     | 1-164-732-11 | CERAMIC 0.1uF 20% 50V |        |  |  |
| $\Delta$ C004  | 1-113-920-11 | CERAMIC 0.0022uF 20% 250V            |        |  |            | C321     | 1-126-103-11 | ELECT 470uF 20% 16V   |        |  |  |
| $\Delta$ C005  | 1-113-925-11 | CERAMIC 0.01uF 20% 250V              |        |  |            | C322     | 1-126-103-11 | ELECT 470uF 20% 16V   |        |  |  |
| $\Delta$ C006  | 1-113-925-11 | CERAMIC 0.01uF 20% 250V              |        |  |            | C323     | 1-164-732-11 | CERAMIC 0.1uF 20% 50V |        |  |  |
| $\Delta$ C007  | 1-113-925-11 | CERAMIC 0.01uF 20% 250V              |        |  | (AEP,UK,G) | C324     | 1-164-732-11 | CERAMIC 0.1uF 20% 50V |        |  |  |
|                |              | < CONNECTOR >                        |        |  |            | C325     | 1-164-732-11 | CERAMIC 0.1uF 20% 50V |        |  |  |
| CN002          | 1-580-230-11 | PIN, CONNECTOR (PC BOARD) 2P         |        |  |            | C326     | 1-164-732-11 | CERAMIC 0.1uF 20% 50V |        |  |  |
| CN003          | 1-564-321-00 | PIN, CONNECTOR 2P                    |        |  |            | C327     | 1-128-201-11 | ELECT 100uF 20% 50V   |        |  |  |
| * CN004        | 1-564-321-21 | PIN, CONNECTOR 2P                    |        |  |            | C328     | 1-128-201-11 | ELECT 100uF 20% 50V   |        |  |  |
|                |              | < GROUND PLATE >                     |        |  |            | C329     | 1-126-023-11 | ELECT 100uF 20% 25V   |        |  |  |
| * EP001        | 4-870-539-00 | PLATE, GROUND                        |        |  |            | C330     | 1-126-023-11 | ELECT 100uF 20% 25V   |        |  |  |
|                |              | < LINE FILTER >                      |        |  |            | C331     | 1-126-023-11 | ELECT 100uF 20% 25V   |        |  |  |
| $\Delta$ LF001 | 1-424-485-11 | FILTER, LINE                         |        |  |            | C332     | 1-126-023-11 | ELECT 100uF 20% 25V   |        |  |  |
|                |              | < SWITCH >                           |        |  |            | C333     | 1-126-023-11 | ELECT 100uF 20% 25V   |        |  |  |
| $\Delta$ S001  | 1-762-764-11 | SWITCH, POWER (MAIN POWER)(AEP,UK,G) |        |  |            | C334     | 1-126-023-11 | ELECT 100uF 20% 25V   |        |  |  |
| *****          |              |                                      |        |  |            | C335     | 1-126-023-11 | ELECT 100uF 20% 25V   |        |  |  |
| *              | A-4699-453-A | AD BOARD, COMPLETE<br>*****          |        |  |            | C336     | 1-126-023-11 | ELECT 100uF 20% 25V   |        |  |  |
|                |              | < CAPACITOR >                        |        |  |            |          |              | < CONNECTOR >         |        |  |  |
| C301           | 1-164-159-11 | CERAMIC 0.1uF 50V                    |        |  |            | CN301    | 1-580-463-11 | SOCKET, CONNECTOR 16P |        |  |  |
| C302           | 1-164-159-11 | CERAMIC 0.1uF 50V                    |        |  |            | * CN302  | 1-564-509-11 | PLUG, CONNECTOR 6P    |        |  |  |
| C303           | 1-164-159-11 | CERAMIC 0.1uF 50V                    |        |  |            | CN303    | 1-564-511-11 | PLUG, CONNECTOR 8P    |        |  |  |
| C304           | 1-126-923-11 | ELECT 220uF 20% 10V                  |        |  |            | * CN304  | 1-564-508-11 | PLUG, CONNECTOR 5P    |        |  |  |
| C305           | 1-164-159-11 | CERAMIC 0.1uF 50V                    |        |  |            |          |              | < DIODE >             |        |  |  |
| C306           | 1-162-294-31 | CERAMIC 0.001uF 10% 50V              |        |  |            | D301     | 8-719-987-63 | DIODE 1N4148M         |        |  |  |
| C307           | 1-164-159-11 | CERAMIC 0.1uF 50V                    |        |  |            | D302     | 8-719-987-63 | DIODE 1N4148M         |        |  |  |
| C308           | 1-164-159-11 | CERAMIC 0.1uF 50V                    |        |  |            | D303     | 8-719-987-63 | DIODE 1N4148M         |        |  |  |
| C309           | 1-164-159-11 | CERAMIC 0.1uF 50V                    |        |  |            | D304     | 8-719-987-63 | DIODE 1N4148M         |        |  |  |
| C310           | 1-164-159-11 | CERAMIC 0.1uF 50V                    |        |  |            | D305     | 8-719-987-63 | DIODE 1N4148M         |        |  |  |
| C311           | 1-164-159-11 | CERAMIC 0.1uF 50V                    |        |  |            | D306     | 8-719-987-63 | DIODE 1N4148M         |        |  |  |
| C312           | 1-164-159-11 | CERAMIC 0.1uF 50V                    |        |  |            | D307     | 8-719-987-63 | DIODE 1N4148M         |        |  |  |
| C313           | 1-164-732-11 | CERAMIC 0.1uF 20% 50V                |        |  |            | D308     | 8-719-987-63 | DIODE 1N4148M         |        |  |  |
| C314           | 1-164-732-11 | CERAMIC 0.1uF 20% 50V                |        |  |            |          |              | < GROUND PLATE >      |        |  |  |
| C315           | 1-164-732-11 | CERAMIC 0.1uF 20% 50V                |        |  |            | * EP301  | 4-870-539-00 | PLATE, GROUND         |        |  |  |
|                |              |                                      |        |  |            | * EP302  | 4-870-539-00 | PLATE, GROUND         |        |  |  |
|                |              |                                      |        |  |            |          |              | < IC >                |        |  |  |
|                |              |                                      |        |  |            | IC301    | 8-759-280-17 | IC CXD8512Q           |        |  |  |
|                |              |                                      |        |  |            | IC302    | 8-759-330-53 | IC CXD8493M-E1        |        |  |  |
|                |              |                                      |        |  |            | IC303    | 8-759-701-65 | IC NJM79M05FA         |        |  |  |
|                |              |                                      |        |  |            | IC304    | 8-759-604-35 | IC M5F78M05L          |        |  |  |
|                |              |                                      |        |  |            | IC305    | 8-759-712-02 | IC NJM2114D           |        |  |  |

AD

AVOL

BD

| Ref. No.              | Part No.     | Description              | Remark             |    |      |   |
|-----------------------|--------------|--------------------------|--------------------|----|------|---|
| IC306                 | 8-759-712-02 | IC NJM2114D              |                    |    |      |   |
| IC307                 | 8-759-712-02 | IC NJM2114D              |                    |    |      |   |
| IC308                 | 8-759-712-02 | IC NJM2114D              |                    |    |      |   |
| < COIL >              |              |                          |                    |    |      |   |
| L301                  | 1-408-405-00 | INDUCTOR                 | 4.7uH              |    |      |   |
| L302                  | 1-408-405-00 | INDUCTOR                 | 4.7uH              |    |      |   |
| < RESISTOR >          |              |                          |                    |    |      |   |
| R301                  | 1-259-404-11 | CARBON                   | 100                | 5% | 1/6W |   |
| R302                  | 1-259-380-11 | CARBON                   | 10                 | 5% | 1/6W |   |
| R303                  | 1-259-380-11 | CARBON                   | 10                 | 5% | 1/6W |   |
| R304                  | 1-259-380-11 | CARBON                   | 10                 | 5% | 1/6W |   |
| R308                  | 1-259-404-11 | CARBON                   | 100                | 5% | 1/6W |   |
| R309                  | 1-259-380-11 | CARBON                   | 10                 | 5% | 1/6W |   |
| R310                  | 1-259-404-11 | CARBON                   | 100                | 5% | 1/6W |   |
| R311                  | 1-249-504-11 | CARBON                   | 10                 | 5% | 1/4W |   |
| R312                  | 1-249-504-11 | CARBON                   | 10                 | 5% | 1/4W |   |
| R313                  | 1-249-504-11 | CARBON                   | 10                 | 5% | 1/4W |   |
| R314                  | 1-249-504-11 | CARBON                   | 10                 | 5% | 1/4W |   |
| R315                  | 1-249-576-11 | CARBON                   | 10K                | 5% | 1/4W |   |
| R316                  | 1-249-576-11 | CARBON                   | 10K                | 5% | 1/4W |   |
| R317                  | 1-249-576-11 | CARBON                   | 10K                | 5% | 1/4W |   |
| R318                  | 1-249-576-11 | CARBON                   | 10K                | 5% | 1/4W |   |
| R319                  | 1-249-576-11 | CARBON                   | 10K                | 5% | 1/4W |   |
| R320                  | 1-249-576-11 | CARBON                   | 10K                | 5% | 1/4W |   |
| R321                  | 1-249-588-91 | CARBON                   | 33K                | 5% | 1/4W |   |
| R322                  | 1-249-588-91 | CARBON                   | 33K                | 5% | 1/4W |   |
| R323                  | 1-247-722-11 | CARBON                   | 5.6K               | 5% | 1/4W | F |
| R324                  | 1-247-722-11 | CARBON                   | 5.6K               | 5% | 1/4W | F |
| R325                  | 1-249-469-11 | CARBON                   | 100K               | 5% | 1/4W |   |
| R326                  | 1-249-469-11 | CARBON                   | 100K               | 5% | 1/4W |   |
| R327                  | 1-249-552-11 | CARBON                   | 1K                 | 5% | 1/4W |   |
| R328                  | 1-249-552-11 | CARBON                   | 1K                 | 5% | 1/4W |   |
| R329                  | 1-249-995-11 | CARBON                   | 1M                 | 5% | 1/4W |   |
| R330                  | 1-249-995-11 | CARBON                   | 1M                 | 5% | 1/4W |   |
| R331                  | 1-249-995-11 | CARBON                   | 1M                 | 5% | 1/4W |   |
| R332                  | 1-249-995-11 | CARBON                   | 1M                 | 5% | 1/4W |   |
| *****                 |              |                          |                    |    |      |   |
| *                     | 1-664-821-11 | AVOL BOARD               | *****              |    |      |   |
| < CONNECTOR >         |              |                          |                    |    |      |   |
| CN604                 | 1-564-511-11 | PLUG, CONNECTOR 8P       |                    |    |      |   |
| < RESISTOR >          |              |                          |                    |    |      |   |
| R601                  | 1-249-461-11 | CARBON                   | 18K                | 5% | 1/4W |   |
| R602                  | 1-249-459-11 | CARBON                   | 12K                | 5% | 1/4W |   |
| R603                  | 1-249-459-11 | CARBON                   | 12K                | 5% | 1/4W |   |
| R604                  | 1-249-461-11 | CARBON                   | 18K                | 5% | 1/4W |   |
| < VARIABLE RESISTOR > |              |                          |                    |    |      |   |
| RV601                 | 1-225-371-11 | RES, VAR, CARBON 50K/50K | (ANALOG REC LEVEL) |    |      |   |
| *****                 |              |                          |                    |    |      |   |

| Ref. No. | Part No.     | Description        |          |       |      | Remark |
|----------|--------------|--------------------|----------|-------|------|--------|
| *        | A-4673-809-A | BD BOARD, COMPLETE | *****    |       |      |        |
|          |              | < CAPACITOR >      |          |       |      |        |
| C101     | 1-104-913-11 | TANTAL. CHIP       | 10uF     | 20%   | 16V  |        |
| C102     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C103     | 1-104-913-11 | TANTAL. CHIP       | 10uF     | 20%   | 16V  |        |
| C104     | 1-104-913-11 | TANTAL. CHIP       | 10uF     | 20%   | 16V  |        |
| C105     | 1-164-232-11 | CERAMIC CHIP       | 0.01uF   |       | 50V  |        |
| C106     | 1-163-275-11 | CERAMIC CHIP       | 0.001uF  | 5%    | 50V  |        |
| C107     | 1-164-232-11 | CERAMIC CHIP       | 0.01uF   |       | 50V  |        |
| C108     | 1-164-232-11 | CERAMIC CHIP       | 0.01uF   |       | 50V  |        |
| C109     | 1-163-037-11 | CERAMIC CHIP       | 0.022uF  | 10%   | 25V  |        |
| C111     | 1-164-004-11 | CERAMIC CHIP       | 0.1uF    | 10%   | 25V  |        |
| C112     | 1-164-232-11 | CERAMIC CHIP       | 0.01uF   |       | 50V  |        |
| C113     | 1-107-682-11 | CERAMIC CHIP       | 1uF      | 10%   | 16V  |        |
| C114     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C115     | 1-107-682-11 | CERAMIC CHIP       | 1uF      | 10%   | 16V  |        |
| C116     | 1-163-019-00 | CERAMIC CHIP       | 0.0068uF | 10%   | 50V  |        |
| C117     | 1-164-004-11 | CERAMIC CHIP       | 0.1uF    | 10%   | 25V  |        |
| C119     | 1-104-913-11 | TANTAL. CHIP       | 10uF     | 20%   | 16V  |        |
| C121     | 1-126-395-11 | ELECT              | 22uF     | 20%   | 16V  |        |
| C122     | 1-164-232-11 | CERAMIC CHIP       | 0.01uF   |       | 50V  |        |
| C123     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C124     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C125     | 1-104-760-11 | CERAMIC CHIP       | 0.047uF  | 10%   | 50V  |        |
| C126     | 1-107-682-11 | CERAMIC CHIP       | 1uF      | 10%   | 16V  |        |
| C127     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C128     | 1-164-232-11 | CERAMIC CHIP       | 0.01uF   |       | 50V  |        |
| C129     | 1-107-823-11 | CERAMIC CHIP       | 0.47uF   | 10%   | 16V  |        |
| C130     | 1-163-251-11 | CERAMIC CHIP       | 100PF    | 5%    | 50V  |        |
| C131     | 1-104-760-11 | CERAMIC CHIP       | 0.047uF  | 10%   | 50V  |        |
| C132     | 1-107-682-11 | CERAMIC CHIP       | 1uF      | 10%   | 16V  |        |
| C133     | 1-163-017-00 | CERAMIC CHIP       | 0.0047uF | 5%    | 50V  |        |
| C134     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C135     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C136     | 1-126-206-11 | ELECT CHIP         | 100uF    | 20%   | 6.3V |        |
| C141     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C142     | 1-163-251-11 | CERAMIC CHIP       | 100PF    | 5%    | 50V  |        |
| C143     | 1-163-251-11 | CERAMIC CHIP       | 100PF    | 5%    | 50V  |        |
| C144     | 1-163-251-11 | CERAMIC CHIP       | 100PF    | 5%    | 50V  |        |
| C151     | 1-104-913-11 | TANTAL. CHIP       | 10uF     | 20%   | 16V  |        |
| C152     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C155     | 1-104-916-11 | TANTAL. CHIP       | 6.8uF    | 20%   | 20V  |        |
| C160     | 1-104-601-11 | ELECT CHIP         | 10uF     | 20%   | 10V  |        |
| C161     | 1-104-601-11 | ELECT CHIP         | 10uF     | 20%   | 10V  |        |
| C163     | 1-164-232-11 | CERAMIC CHIP       | 0.01uF   |       | 50V  |        |
| C164     | 1-164-232-11 | CERAMIC CHIP       | 0.01uF   |       | 50V  |        |
| C166     | 1-163-275-11 | CERAMIC CHIP       | 0.001uF  | 5%    | 50V  |        |
| C167     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C169     | 1-104-913-11 | TANTAL. CHIP       | 10uF     | 20%   | 16V  |        |
| C170     | 1-104-913-11 | TANTAL. CHIP       | 10uF     | 20%   | 16V  |        |
| C171     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C175     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C176     | 1-163-227-11 | CERAMIC CHIP       | 10PF     | 0.5PF | 50V  |        |
| C177     | 1-163-227-11 | CERAMIC CHIP       | 10PF     | 0.5PF | 50V  |        |
| C178     | 1-163-038-91 | CERAMIC CHIP       | 0.1uF    |       | 25V  |        |
| C181     | 1-104-913-11 | TANTAL. CHIP       | 10uF     | 20%   | 16V  |        |

| Ref. No.       | Part No.     | Description                      | Remark       |     |      | Ref. No.     | Part No.     | Description            | Remark    |    |       |
|----------------|--------------|----------------------------------|--------------|-----|------|--------------|--------------|------------------------|-----------|----|-------|
| C182           | 1-163-038-91 | CERAMIC CHIP                     | 0.1uF        |     | 25V  | Q151         | 8-729-905-18 | TRANSISTOR             | DTC144EU  |    |       |
| C183           | 1-163-038-91 | CERAMIC CHIP                     | 0.1uF        |     | 25V  | Q162         | 8-729-101-07 | TRANSISTOR             | 2SB798-DL |    |       |
| C184           | 1-107-836-11 | ELECT CHIP                       | 22uF         | 20% | 8V   | Q163         | 8-729-905-12 | TRANSISTOR             | DTA144EU  |    |       |
| C185           | 1-164-611-11 | CERAMIC CHIP                     | 0.001uF      | 10% | 500V | Q164         | 8-729-924-19 | TRANSISTOR             | DTA123JU  |    |       |
| C186           | 1-163-038-91 | CERAMIC CHIP                     | 0.1uF        |     | 25V  | Q181         | 8-729-018-75 | TRANSISTOR             | 2SJ278MY  |    |       |
| C191           | 1-126-395-11 | ELECT                            | 22uF         | 20% | 16V  | Q182         | 8-729-017-65 | TRANSISTOR             | 2SK1764KY |    |       |
| C192           | 1-163-038-91 | CERAMIC CHIP                     | 0.1uF        |     | 25V  | < RESISTOR > |              |                        |           |    |       |
| C193           | 1-164-346-11 | CERAMIC CHIP                     | 1uF          |     | 16V  | R101         | 1-216-077-00 | METAL CHIP             | 15K       | 5% | 1/10W |
| C194           | 1-126-206-11 | ELECT CHIP                       | 100uF        | 20% | 6.3V | R102         | 1-216-073-00 | METAL CHIP             | 10K       | 5% | 1/10W |
| < CONNECTOR >  |              |                                  |              |     |      | R103         | 1-216-073-00 | METAL CHIP             | 10K       | 5% | 1/10W |
| CN101          | 1-766-508-11 | CONNECTOR, FFC/FPC (ZIF) 22P     |              |     |      | R104         | 1-216-049-91 | METAL GLAZE            | 1K        | 5% | 1/10W |
| CN102          | 1-766-510-21 | CONNECTOR, FFC/FPC 30P           |              |     |      | R105         | 1-216-065-00 | METAL CHIP             | 4.7K      | 5% | 1/10W |
| CN103          | 1-766-509-21 | CONNECTOR, FFC/FPC 18P           |              |     |      | R106         | 1-216-133-00 | METAL CHIP             | 3.3M      | 5% | 1/10W |
| CN104          | 1-766-898-21 | HOUSING, CONNECTOR (PC BOARD) 4P |              |     |      | R107         | 1-216-113-00 | METAL CHIP             | 470K      | 5% | 1/10W |
| < DIODE >      |              |                                  |              |     |      | R110         | 1-216-077-00 | METAL CHIP             | 15K       | 5% | 1/10W |
| D101           | 8-719-988-62 | DIODE                            | 1SS355       |     |      | R113         | 1-216-061-00 | METAL CHIP             | 3.3K      | 5% | 1/10W |
| D155           | 8-719-031-17 | DIODE                            | 1SS322-TE85L |     |      | R114         | 1-216-025-91 | METAL GLAZE            | 100       | 5% | 1/10W |
| D161           | 8-719-421-15 | DIODE                            | MA8027-L     |     |      | R116         | 1-216-069-00 | METAL CHIP             | 6.8K      | 5% | 1/10W |
| D181           | 8-719-033-60 | DIODE                            | F1P2STP      |     |      | R117         | 1-216-113-00 | METAL CHIP             | 470K      | 5% | 1/10W |
| D183           | 8-719-033-60 | DIODE                            | F1P2STP      |     |      | R120         | 1-216-025-91 | METAL GLAZE            | 100       | 5% | 1/10W |
| < IC >         |              |                                  |              |     |      | R121         | 1-216-097-91 | METAL GLAZE            | 100K      | 5% | 1/10W |
| IC101          | 8-752-072-68 | IC                               | CXA1981AR    |     |      | R122         | 1-216-295-91 | CONDUCTOR, CHIP (2012) |           |    |       |
| IC102          | 8-759-243-19 | IC                               | TC7SU04F     |     |      | R123         | 1-216-037-00 | METAL CHIP             | 330       | 5% | 1/10W |
| IC121          | 8-752-378-79 | IC                               | CXD2535CR    |     |      | R124         | 1-216-025-91 | METAL GLAZE            | 100       | 5% | 1/10W |
| IC122          | 8-759-243-19 | IC                               | TC7SU04F     |     |      | R125         | 1-216-025-91 | METAL GLAZE            | 100       | 5% | 1/10W |
| IC151          | 8-759-179-60 | IC                               | MPC17A38VMEL |     |      | R128         | 1-216-053-00 | METAL CHIP             | 1.5K      | 5% | 1/10W |
| IC171          | 8-759-504-12 | IC                               | X24C01S      |     |      | R129         | 1-216-037-00 | METAL CHIP             | 330       | 5% | 1/10W |
| IC172          | 8-759-149-73 | IC                               | uPC842G2     |     |      | R130         | 1-216-041-00 | METAL CHIP             | 470       | 5% | 1/10W |
| IC181          | 8-759-095-65 | IC                               | TC74ACT540FS |     |      | R131         | 1-216-073-00 | METAL CHIP             | 10K       | 5% | 1/10W |
| IC182          | 8-759-243-19 | IC                               | TC7SU04F     |     |      | R132         | 1-216-097-91 | METAL GLAZE            | 100K      | 5% | 1/10W |
| IC191          | 8-759-822-99 | IC                               | L88MS05T-FA  |     |      | R133         | 1-216-129-00 | METAL CHIP             | 2.2M      | 5% | 1/10W |
| < COIL >       |              |                                  |              |     |      | R134         | 1-216-037-00 | METAL CHIP             | 330       | 5% | 1/10W |
| L101           | 1-414-234-11 | INDUCTOR, FERRITE BEAD           |              |     |      | R135         | 1-216-053-00 | METAL CHIP             | 1.5K      | 5% | 1/10W |
| L102           | 1-414-234-11 | INDUCTOR, FERRITE BEAD           |              |     |      | R136         | 1-216-041-00 | METAL CHIP             | 470       | 5% | 1/10W |
| L103           | 1-414-234-11 | INDUCTOR, FERRITE BEAD           |              |     |      | R137         | 1-216-025-91 | METAL GLAZE            | 100       | 5% | 1/10W |
| L105           | 1-414-234-11 | INDUCTOR, FERRITE BEAD           |              |     |      | R139         | 1-216-017-91 | METAL GLAZE            | 47        | 5% | 1/10W |
| L106           | 1-414-234-11 | INDUCTOR, FERRITE BEAD           |              |     |      | R140         | 1-216-017-91 | METAL GLAZE            | 47        | 5% | 1/10W |
| L121           | 1-414-234-11 | INDUCTOR, FERRITE BEAD           |              |     |      | R141         | 1-216-295-91 | CONDUCTOR, CHIP (2012) |           |    |       |
| L122           | 1-412-039-51 | INDUCTOR CHIP                    | 100uH        |     |      | R142         | 1-216-073-00 | METAL CHIP             | 10K       | 5% | 1/10W |
| L151           | 1-412-622-51 | INDUCTOR                         | 10uH         |     |      | R143         | 1-216-073-00 | METAL CHIP             | 10K       | 5% | 1/10W |
| L152           | 1-412-622-51 | INDUCTOR                         | 10uH         |     |      | R144         | 1-216-025-91 | METAL GLAZE            | 100       | 5% | 1/10W |
| L153           | 1-412-039-51 | INDUCTOR CHIP                    | 100uH        |     |      | R145         | 1-216-121-91 | METAL GLAZE            | 1M        | 5% | 1/10W |
| L154           | 1-412-039-51 | INDUCTOR CHIP                    | 100uH        |     |      | R146         | 1-216-037-00 | METAL CHIP             | 330       | 5% | 1/10W |
| L155           | 1-410-980-51 | INDUCTOR CHIP                    | 1mH          |     |      | R147         | 1-216-025-91 | METAL GLAZE            | 100       | 5% | 1/10W |
| L161           | 1-414-234-11 | INDUCTOR, FERRITE BEAD           |              |     |      | R148         | 1-216-045-00 | METAL CHIP             | 680       | 5% | 1/10W |
| L162           | 1-414-234-11 | INDUCTOR, FERRITE BEAD           |              |     |      | R150         | 1-216-295-91 | CONDUCTOR, CHIP (2012) |           |    |       |
| L195           | 1-233-316-21 | FILTER, CHIP EMI                 |              |     |      | R151         | 1-216-097-91 | METAL GLAZE            | 100K      | 5% | 1/10W |
| < MOTOR >      |              |                                  |              |     |      | R154         | 1-220-262-11 | METAL GLAZE            | 680       | 5% | 1/4W  |
| M101           | A-4660-651-A | MOTOR (SLED) ASSY                |              |     |      | R155         | 1-220-262-11 | METAL GLAZE            | 680       | 5% | 1/4W  |
| M102           | A-4660-650-A | CHASSIS ASSY, BU (SPINDLE)       |              |     |      | R158         | 1-216-121-91 | METAL GLAZE            | 1M        | 5% | 1/10W |
| < TRANSISTOR > |              |                                  |              |     |      | R161         | 1-216-057-00 | METAL CHIP             | 2.2K      | 5% | 1/10W |
| Q101           | 8-729-905-12 | TRANSISTOR                       | DTA144EU     |     |      | R162         | 1-216-057-00 | METAL CHIP             | 2.2K      | 5% | 1/10W |
|                |              |                                  |              |     |      | R163         | 1-216-057-00 | METAL CHIP             | 2.2K      | 5% | 1/10W |
|                |              |                                  |              |     |      | R164         | 1-216-045-00 | METAL CHIP             | 680       | 5% | 1/10W |
|                |              |                                  |              |     |      | R165         | 1-216-097-91 | METAL GLAZE            | 100K      | 5% | 1/10W |
|                |              |                                  |              |     |      | R166         | 1-220-250-11 | METAL GLAZE            | 10        | 5% | 1/2W  |
|                |              |                                  |              |     |      | R167         | 1-216-065-00 | METAL CHIP             | 4.7K      | 5% | 1/10W |

| Ref. No.              | Part No.     | Description                    | Remark  |     |       | Ref. No. | Part No.     | Description | Remark   |     |      |
|-----------------------|--------------|--------------------------------|---------|-----|-------|----------|--------------|-------------|----------|-----|------|
| R169                  | 1-219-724-11 | METAL CHIP                     | 1       | 1%  | 1/4W  | C530     | 1-164-159-11 | CERAMIC     | 0.1uF    |     | 50V  |
| R170                  | 1-216-073-00 | METAL CHIP                     | 10K     | 5%  | 1/10W | C531     | 1-124-721-11 | ELECT       | 10uF     | 20% | 50V  |
| R171                  | 1-216-073-00 | METAL CHIP                     | 10K     | 5%  | 1/10W | C532     | 1-164-159-11 | CERAMIC     | 0.1uF    |     | 50V  |
| R172                  | 1-216-065-00 | METAL CHIP                     | 4.7K    | 5%  | 1/10W | C533     | 1-126-052-11 | ELECT       | 100uF    | 20% | 16V  |
| R174                  | 1-216-065-00 | METAL CHIP                     | 4.7K    | 5%  | 1/10W | C534     | 1-126-052-11 | ELECT       | 100uF    | 20% | 16V  |
| R176                  | 1-216-065-00 | METAL CHIP                     | 4.7K    | 5%  | 1/10W | C535     | 1-164-732-11 | CERAMIC     | 0.1uF    | 20% | 50V  |
| R178                  | 1-216-065-00 | METAL CHIP                     | 4.7K    | 5%  | 1/10W | C536     | 1-124-721-11 | ELECT       | 10uF     | 20% | 50V  |
| R181                  | 1-216-073-00 | METAL CHIP                     | 10K     | 5%  | 1/10W | C537     | 1-126-052-11 | ELECT       | 100uF    | 20% | 16V  |
| R182                  | 1-216-089-91 | METAL GLAZE                    | 47K     | 5%  | 1/10W | C539     | 1-126-052-11 | ELECT       | 100uF    | 20% | 16V  |
| R183                  | 1-216-089-91 | METAL GLAZE                    | 47K     | 5%  | 1/10W | C540     | 1-126-052-11 | ELECT       | 100uF    | 20% | 16V  |
| R186                  | 1-216-134-00 | METAL CHIP                     | 2.2     | 5%  | 1/8W  | C541     | 1-126-052-11 | ELECT       | 100uF    | 20% | 16V  |
| R187                  | 1-216-134-00 | METAL CHIP                     | 2.2     | 5%  | 1/8W  | C543     | 1-164-732-11 | CERAMIC     | 0.1uF    | 20% | 50V  |
| < VARIABLE RESISTOR > |              |                                |         |     |       | C544     | 1-136-165-00 | FILM        | 0.1uF    | 5%  | 50V  |
| RV101                 | 1-241-396-11 | RES, ADJ, METAL GLAZE 22K      |         |     |       | C545     | 1-136-165-00 | FILM        | 0.1uF    | 5%  | 50V  |
| RV102                 | 1-241-396-11 | RES, ADJ, METAL GLAZE 22K      |         |     |       | C547     | 1-124-724-11 | ELECT       | 47uF     | 20% | 50V  |
| < SWITCH >            |              |                                |         |     |       | C548     | 1-124-724-11 | ELECT       | 47uF     | 20% | 50V  |
| S101                  | 1-572-467-61 | SWITCH, PUSH (1 KEY)(LIMIT IN) |         |     |       | C549     | 1-136-165-00 | FILM        | 0.1uF    | 5%  | 50V  |
| *****                 |              |                                |         |     |       | C550     | 1-136-165-00 | FILM        | 0.1uF    | 5%  | 50V  |
| *****                 |              |                                |         |     |       | C551     | 1-126-052-11 | ELECT       | 100uF    | 20% | 16V  |
| *****                 |              |                                |         |     |       | C553     | 1-126-052-11 | ELECT       | 100uF    | 20% | 16V  |
| *****                 |              |                                |         |     |       | C554     | 1-164-732-11 | CERAMIC     | 0.1uF    | 20% | 50V  |
| *****                 |              |                                |         |     |       | C555     | 1-164-732-11 | CERAMIC     | 0.1uF    | 20% | 50V  |
| *                     | A-4699-454-A | DA BOARD, COMPLETE             |         |     |       | C556     | 1-130-973-00 | FILM        | 0.022uF  | 5%  | 63V  |
| *****                 |              |                                |         |     |       | C557     | 1-130-973-00 | FILM        | 0.022uF  | 5%  | 63V  |
| < BUS BAR >           |              |                                |         |     |       | C558     | 1-126-103-11 | ELECT       | 470uF    | 20% | 16V  |
| * BB501               | 1-560-242-71 | BUS BAR 6P                     |         |     |       | C559     | 1-126-103-11 | ELECT       | 470uF    | 20% | 16V  |
| < CAPACITOR >         |              |                                |         |     |       | C560     | 1-164-732-11 | CERAMIC     | 0.1uF    | 20% | 50V  |
| C501                  | 1-126-923-11 | ELECT                          | 220uF   | 20% | 10V   | C561     | 1-164-732-11 | CERAMIC     | 0.1uF    | 20% | 50V  |
| C502                  | 1-162-294-31 | CERAMIC                        | 0.001uF | 10% | 50V   | C562     | 1-130-969-11 | FILM        | 0.012uF  | 3%  | 100V |
| C503                  | 1-164-159-11 | CERAMIC                        | 0.1uF   |     | 50V   | C563     | 1-130-969-11 | FILM        | 0.012uF  | 3%  | 100V |
| C504                  | 1-126-923-11 | ELECT                          | 220uF   | 20% | 10V   | C564     | 1-130-969-11 | FILM        | 0.012uF  | 3%  | 100V |
| C505                  | 1-164-159-11 | CERAMIC                        | 0.1uF   |     | 50V   | C565     | 1-130-969-11 | FILM        | 0.012uF  | 3%  | 100V |
| C506                  | 1-126-923-11 | ELECT                          | 220uF   | 20% | 10V   | C566     | 1-136-233-11 | FILM        | 0.0047uF | 3%  | 100V |
| C507                  | 1-164-159-11 | CERAMIC                        | 0.1uF   |     | 50V   | C567     | 1-136-233-11 | FILM        | 0.0047uF | 3%  | 100V |
| C508                  | 1-164-159-11 | CERAMIC                        | 0.1uF   |     | 50V   | C568     | 1-136-233-11 | FILM        | 0.0047uF | 3%  | 100V |
| C509                  | 1-164-159-11 | CERAMIC                        | 0.1uF   |     | 50V   | C569     | 1-136-233-11 | FILM        | 0.0047uF | 3%  | 100V |
| C510                  | 1-126-923-11 | ELECT                          | 220uF   | 20% | 10V   | C570     | 1-136-810-11 | FILM        | 220PF    | 5%  | 100V |
| C511                  | 1-162-294-31 | CERAMIC                        | 0.001uF | 10% | 50V   | C571     | 1-136-810-11 | FILM        | 220PF    | 5%  | 100V |
| C512                  | 1-126-923-11 | ELECT                          | 220uF   | 20% | 10V   | C572     | 1-136-810-11 | FILM        | 220PF    | 5%  | 100V |
| C513                  | 1-126-335-11 | ELECT                          | 220uF   | 20% | 10V   | C573     | 1-136-810-11 | FILM        | 220PF    | 5%  | 100V |
| C514                  | 1-164-159-11 | CERAMIC                        | 0.1uF   |     | 50V   | C576     | 1-136-817-91 | FILM        | 0.0033uF | 5%  | 100V |
| C515                  | 1-164-159-11 | CERAMIC                        | 0.1uF   |     | 50V   | C577     | 1-136-817-91 | FILM        | 0.0033uF | 5%  | 100V |
| C516                  | 1-126-335-11 | ELECT                          | 220uF   | 20% | 10V   | C580     | 1-136-814-11 | FILM        | 0.001uF  | 5%  | 100V |
| C517                  | 1-164-159-11 | CERAMIC                        | 0.1uF   |     | 50V   | C581     | 1-136-814-11 | FILM        | 0.001uF  | 5%  | 100V |
| C518                  | 1-164-159-11 | CERAMIC                        | 0.1uF   |     | 50V   | C582     | 1-136-960-11 | FILM        | 0.1uF    | 10% | 160V |
| C519                  | 1-162-199-31 | CERAMIC                        | 10PF    | 5%  | 50V   | C583     | 1-136-960-11 | FILM        | 0.1uF    | 10% | 160V |
| C520                  | 1-162-199-31 | CERAMIC                        | 10PF    | 5%  | 50V   | C584     | 1-104-646-11 | CERAMIC     | 2.2uF    | 20% | 50V  |
| C521                  | 1-126-335-11 | ELECT                          | 220uF   | 20% | 10V   | C585     | 1-104-646-11 | CERAMIC     | 2.2uF    | 20% | 50V  |
| C522                  | 1-126-335-11 | ELECT                          | 220uF   | 20% | 10V   | C586     | 1-136-259-11 | FILM        | 0.1uF    | 3%  | 100V |
| C523                  | 1-164-159-11 | CERAMIC                        | 0.1uF   |     | 50V   | C587     | 1-136-259-11 | FILM        | 0.1uF    | 3%  | 100V |
| C524                  | 1-126-335-11 | ELECT                          | 220uF   | 20% | 10V   | C588     | 1-128-088-11 | ELECT       | 220uF    | 20% | 50V  |
| C525                  | 1-124-689-11 | ELECT                          | 1000uF  | 20% | 16V   | C589     | 1-128-088-11 | ELECT       | 220uF    | 20% | 50V  |
| C526                  | 1-130-973-00 | FILM                           | 0.022uF | 5%  | 63V   | C590     | 1-162-294-31 | CERAMIC     | 0.001uF  | 10% | 50V  |
| C527                  | 1-124-721-11 | ELECT                          | 10uF    | 20% | 50V   | C591     | 1-164-159-11 | CERAMIC     | 0.1uF    |     | 50V  |
| C528                  | 1-130-973-00 | FILM                           | 0.022uF | 5%  | 63V   | C592     | 1-164-159-11 | CERAMIC     | 0.1uF    |     | 50V  |
| C529                  | 1-124-721-11 | ELECT                          | 10uF    | 20% | 50V   | C593     | 1-162-294-31 | CERAMIC     | 0.001uF  | 10% | 50V  |
|                       |              |                                |         |     |       | C594     | 1-164-732-11 | CERAMIC     | 0.1uF    | 20% | 50V  |

| Ref. No. | Part No.     | Description                    | Remark |  |  | Ref. No. | Part No.     | Description    | Remark |   |  |
|----------|--------------|--------------------------------|--------|--|--|----------|--------------|----------------|--------|---|--|
| C595     | 1-164-159-11 | CERAMIC 0.1uF                  | 50V    |  |  | R505     | 1-259-380-11 | CARBON 10 5%   | 1/6W   |   |  |
|          |              | < CONNECTOR >                  |        |  |  | R506     | 1-259-380-11 | CARBON 10 5%   | 1/6W   |   |  |
| CN501    | 1-573-150-11 | SOCKET, CONNECTOR 18P          |        |  |  | R507     | 1-259-380-11 | CARBON 10 5%   | 1/6W   |   |  |
| * CN503  | 1-564-514-11 | PLUG, CONNECTOR 11P            |        |  |  | R508     | 1-259-404-11 | CARBON 100 5%  | 1/6W   |   |  |
| * CN504  | 1-564-709-11 | PIN, CONNECTOR (SMALL TYPE) 7P |        |  |  | R509     | 1-259-404-11 | CARBON 100 5%  | 1/6W   |   |  |
|          |              | < DIODE >                      |        |  |  | R512     | 1-259-380-11 | CARBON 10 5%   | 1/6W   |   |  |
| D501     | 8-719-987-63 | DIODE 1N4148M                  |        |  |  | R513     | 1-259-404-11 | CARBON 100 5%  | 1/6W   |   |  |
| D502     | 8-719-987-63 | DIODE 1N4148M                  |        |  |  | R514     | 1-259-404-11 | CARBON 100 5%  | 1/6W   |   |  |
| D503     | 8-719-987-63 | DIODE 1N4148M                  |        |  |  | R515     | 1-259-404-11 | CARBON 100 5%  | 1/6W   |   |  |
|          |              | < GROUND PLATE >               |        |  |  | R516     | 1-259-404-11 | CARBON 100 5%  | 1/6W   |   |  |
| * EP501  | 4-870-539-00 | PLATE, GROUND                  |        |  |  | R517     | 1-259-404-11 | CARBON 100 5%  | 1/6W   |   |  |
| * EP502  | 4-870-539-00 | PLATE, GROUND                  |        |  |  | R518     | 1-259-404-11 | CARBON 100 5%  | 1/6W   |   |  |
|          |              | < MOUNT TERMINAL >             |        |  |  | R519     | 1-259-412-11 | CARBON 220 5%  | 1/6W   |   |  |
| ET501    | 4-924-264-01 | TERMINAL, MOUNT                |        |  |  | R520     | 1-259-452-11 | CARBON 10K 5%  | 1/6W   |   |  |
|          |              | < IC >                         |        |  |  | R521     | 1-247-706-11 | CARBON 330 5%  | 1/4W   | F |  |
| IC501    | 8-759-442-42 | IC CXD8595Q                    |        |  |  | R522     | 1-247-706-11 | CARBON 330 5%  | 1/4W   | F |  |
| IC502    | 8-759-454-42 | IC CXD2562Q-CS                 |        |  |  | R523     | 1-247-706-11 | CARBON 330 5%  | 1/4W   | F |  |
| IC503    | 8-759-604-35 | IC M5F78M05L                   |        |  |  | R524     | 1-247-706-11 | CARBON 330 5%  | 1/4W   | F |  |
| IC504    | 8-759-371-51 | IC CXA8042AS                   |        |  |  | R525     | 1-247-706-11 | CARBON 330 5%  | 1/4W   | F |  |
| IC505    | 8-759-371-51 | IC CXA8042AS                   |        |  |  | R526     | 1-247-706-11 | CARBON 330 5%  | 1/4W   | F |  |
| IC506    | 8-759-604-95 | IC M5F79M07L                   |        |  |  | R527     | 1-247-706-11 | CARBON 330 5%  | 1/4W   | F |  |
| IC507    | 8-759-605-00 | IC M5F78M07L                   |        |  |  | R528     | 1-247-706-11 | CARBON 330 5%  | 1/4W   | F |  |
| IC508    | 8-759-259-12 | IC OPA2604AP                   |        |  |  | R529     | 1-247-706-11 | CARBON 330 5%  | 1/4W   | F |  |
| IC509    | 8-759-259-12 | IC OPA2604AP                   |        |  |  | R530     | 1-247-706-11 | CARBON 330 5%  | 1/4W   | F |  |
| IC510    | 8-759-443-33 | IC OPA2132PA                   |        |  |  | R531     | 1-249-504-11 | CARBON 10 5%   | 1/4W   |   |  |
| IC511    | 8-759-443-33 | IC OPA2132PA                   |        |  |  | R532     | 1-249-504-11 | CARBON 10 5%   | 1/4W   |   |  |
| IC512    | 8-759-053-07 | IC OP-27GP                     |        |  |  | R533     | 1-249-504-11 | CARBON 10 5%   | 1/4W   |   |  |
| IC513    | 8-759-053-07 | IC OP-27GP                     |        |  |  | R534     | 1-249-504-11 | CARBON 10 5%   | 1/4W   |   |  |
| IC514    | 8-759-242-70 | IC TC7WU04F                    |        |  |  | R535     | 1-249-504-11 | CARBON 10 5%   | 1/4W   |   |  |
| IC515    | 8-759-180-84 | IC TC7W74F                     |        |  |  | R536     | 1-249-504-11 | CARBON 10 5%   | 1/4W   |   |  |
|          |              | < COIL >                       |        |  |  | R537     | 1-249-504-11 | CARBON 10 5%   | 1/4W   |   |  |
| L501     | 1-408-405-00 | INDUCTOR 4.7uH                 |        |  |  | R538     | 1-249-504-11 | CARBON 10 5%   | 1/4W   |   |  |
| L502     | 1-408-405-00 | INDUCTOR 4.7uH                 |        |  |  | R539     | 1-249-514-11 | CARBON 27 5%   | 1/4W   |   |  |
| L503     | 1-408-405-00 | INDUCTOR 4.7uH                 |        |  |  | R540     | 1-249-514-11 | CARBON 27 5%   | 1/4W   |   |  |
| L504     | 1-408-405-00 | INDUCTOR 4.7uH                 |        |  |  | R541     | 1-249-514-11 | CARBON 27 5%   | 1/4W   |   |  |
| L505     | 1-408-405-00 | INDUCTOR 4.7uH                 |        |  |  | R542     | 1-249-514-11 | CARBON 27 5%   | 1/4W   |   |  |
| L506     | 1-408-405-00 | INDUCTOR 4.7uH                 |        |  |  | R543     | 1-249-542-11 | CARBON 390 5%  | 1/4W   |   |  |
| L507     | 1-408-405-00 | INDUCTOR 4.7uH                 |        |  |  | R544     | 1-249-542-11 | CARBON 390 5%  | 1/4W   |   |  |
| L508     | 1-408-405-00 | INDUCTOR 4.7uH                 |        |  |  | R545     | 1-249-542-11 | CARBON 390 5%  | 1/4W   |   |  |
| L509     | 1-408-405-00 | INDUCTOR 4.7uH                 |        |  |  | R546     | 1-249-542-11 | CARBON 390 5%  | 1/4W   |   |  |
|          |              | < TRANSISTOR >                 |        |  |  | R547     | 1-249-947-11 | CARBON 10K 1%  | 1/4W   |   |  |
| Q501     | 8-729-224-61 | TRANSISTOR 2SK246-Y            |        |  |  | R548     | 1-249-947-11 | CARBON 10K 1%  | 1/4W   |   |  |
| Q502     | 8-729-224-61 | TRANSISTOR 2SK246-Y            |        |  |  | R549     | 1-249-947-11 | CARBON 10K 1%  | 1/4W   |   |  |
| Q505     | 8-729-140-98 | TRANSISTOR 2SD773-34           |        |  |  | R550     | 1-249-947-11 | CARBON 10K 1%  | 1/4W   |   |  |
|          |              | < RESISTOR >                   |        |  |  | R551     | 1-249-947-11 | CARBON 10K 1%  | 1/4W   |   |  |
| R501     | 1-259-380-11 | CARBON 10 5%                   | 1/6W   |  |  | R552     | 1-249-947-11 | CARBON 10K 1%  | 1/4W   |   |  |
| R502     | 1-259-380-11 | CARBON 10 5%                   | 1/6W   |  |  | R553     | 1-249-947-11 | CARBON 10K 1%  | 1/4W   |   |  |
| R503     | 1-259-404-11 | CARBON 100 5%                  | 1/6W   |  |  | R554     | 1-249-947-11 | CARBON 10K 1%  | 1/4W   |   |  |
| R504     | 1-259-380-11 | CARBON 10 5%                   | 1/6W   |  |  | R555     | 1-249-927-11 | CARBON 1.5K 1% | 1/4W   |   |  |
|          |              |                                |        |  |  | R556     | 1-249-927-11 | CARBON 1.5K 1% | 1/4W   |   |  |
|          |              |                                |        |  |  | R559     | 1-249-927-11 | CARBON 1.5K 1% | 1/4W   |   |  |
|          |              |                                |        |  |  | R560     | 1-249-927-11 | CARBON 1.5K 1% | 1/4W   |   |  |
|          |              |                                |        |  |  | R565     | 1-249-977-11 | CARBON 180K 1% | 1/4W   |   |  |
|          |              |                                |        |  |  | R566     | 1-249-977-11 | CARBON 180K 1% | 1/4W   |   |  |
|          |              |                                |        |  |  | R569     | 1-249-934-11 | CARBON 3K 1%   | 1/4W   |   |  |
|          |              |                                |        |  |  | R570     | 1-249-934-11 | CARBON 3K 1%   | 1/4W   |   |  |
|          |              |                                |        |  |  | R571     | 1-249-616-11 | CARBON 470K 5% | 1/4W   |   |  |



| Ref. No. | Part No.     | Description                    |         |     |      | Remark | Ref. No. | Part No.     | Description  |         |     |      | Remark |
|----------|--------------|--------------------------------|---------|-----|------|--------|----------|--------------|--------------|---------|-----|------|--------|
| R572     | 1-249-616-11 | CARBON                         | 470K    | 5%  | 1/4W |        | C231     | 1-126-193-11 | ELECT        | 1uF     | 20% | 50V  |        |
| R573     | 1-259-500-11 | CARBON                         | 1M      | 5%  | 1/6W |        |          |              |              |         |     |      |        |
| R574     | 1-259-500-11 | CARBON                         | 1M      | 5%  | 1/6W |        | C232     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| R575     | 1-249-616-11 | CARBON                         | 470K    | 5%  | 1/4W |        | C233     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
|          |              |                                |         |     |      |        | C234     | 1-126-206-11 | ELECT CHIP   | 100uF   | 20% | 6.3V |        |
| R576     | 1-249-616-11 | CARBON                         | 470K    | 5%  | 1/4W |        | C236     | 1-126-204-11 | ELECT CHIP   | 47uF    | 20% | 16V  |        |
| R577     | 1-249-528-91 | CARBON                         | 100     | 5%  | 1/4W |        | C238     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| R578     | 1-249-528-91 | CARBON                         | 100     | 5%  | 1/4W |        |          |              |              |         |     |      |        |
| R581     | 1-259-452-11 | CARBON                         | 10K     | 5%  | 1/6W |        | C239     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| R582     | 1-259-452-11 | CARBON                         | 10K     | 5%  | 1/6W |        | C240     | 1-126-204-11 | ELECT CHIP   | 47uF    | 20% | 16V  |        |
|          |              |                                |         |     |      |        | C241     | 1-126-204-11 | ELECT CHIP   | 47uF    | 20% | 16V  |        |
|          |              |                                |         |     |      |        | C242     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| R583     | 1-259-452-11 | CARBON                         | 10K     | 5%  | 1/6W |        | C243     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| R584     | 1-249-469-11 | CARBON                         | 100K    | 5%  | 1/4W |        |          |              |              |         |     |      |        |
| R585     | 1-249-469-11 | CARBON                         | 100K    | 5%  | 1/4W |        |          |              |              |         |     |      |        |
| R586     | 1-259-428-11 | CARBON                         | 1K      | 5%  | 1/6W |        | C244     | 1-126-204-11 | ELECT CHIP   | 47uF    | 20% | 16V  |        |
| R587     | 1-259-428-11 | CARBON                         | 1K      | 5%  | 1/6W |        | C245     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
|          |              | < RELAY >                      |         |     |      |        | C246     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| RY501    | 1-515-802-11 | RELAY                          |         |     |      |        | C247     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
|          |              | < VIBRATOR >                   |         |     |      |        | C248     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| X501     | 1-579-161-11 | VIBRATOR, CRYSTAL (45MHz)      |         |     |      |        | C249     | 1-163-141-00 | CERAMIC CHIP | 0.001uF | 5%  | 50V  |        |
| *****    |              |                                |         |     |      |        | C250     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| *        | A-4699-589-A | DIG BOARD, COMPLETE (US)       | *****   |     |      |        | C251     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
|          |              |                                |         |     |      |        | C252     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| *        | A-4699-593-A | DIG BOARD, COMPLETE (AEP,UK,G) | *****   |     |      |        | C255     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
|          |              | < CAPACITOR >                  |         |     |      |        | C256     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| C201     | 1-163-038-91 | CERAMIC CHIP                   | 0.1uF   |     | 25V  |        | C258     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| C202     | 1-163-038-91 | CERAMIC CHIP                   | 0.1uF   |     | 25V  |        | C259     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| C203     | 1-163-038-91 | CERAMIC CHIP                   | 0.1uF   |     | 25V  |        | C261     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| C204     | 1-163-141-00 | CERAMIC CHIP                   | 0.001uF | 5%  | 50V  |        | C262     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| C205     | 1-163-117-00 | CERAMIC CHIP                   | 100PF   | 5%  | 50V  |        |          |              |              |         |     |      |        |
| C206     | 1-126-204-11 | ELECT CHIP                     | 47uF    | 20% | 16V  |        | C263     | 1-163-109-00 | CERAMIC CHIP | 47PF    | 5%  | 50V  |        |
| C207     | 1-163-117-00 | CERAMIC CHIP                   | 100PF   | 5%  | 50V  |        | C264     | 1-163-141-00 | CERAMIC CHIP | 0.001uF | 5%  | 50V  |        |
| C208     | 1-163-141-00 | CERAMIC CHIP                   | 0.001uF | 5%  | 50V  |        | C265     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| C209     | 1-163-038-91 | CERAMIC CHIP                   | 0.1uF   |     | 25V  |        | C266     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| C210     | 1-163-141-00 | CERAMIC CHIP                   | 0.001uF | 5%  | 50V  |        | C267     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| C211     | 1-163-141-00 | CERAMIC CHIP                   | 0.001uF | 5%  | 50V  |        | C268     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| C212     | 1-163-141-00 | CERAMIC CHIP                   | 0.001uF | 5%  | 50V  |        | C269     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| C213     | 1-163-141-00 | CERAMIC CHIP                   | 0.001uF | 5%  | 50V  |        | C270     | 1-163-141-00 | CERAMIC CHIP | 0.001uF | 5%  | 50V  |        |
| C214     | 1-126-204-11 | ELECT CHIP                     | 47uF    | 20% | 16V  |        | C271     | 1-163-117-00 | CERAMIC CHIP | 100PF   | 5%  | 50V  |        |
| C215     | 1-163-038-91 | CERAMIC CHIP                   | 0.1uF   |     | 25V  |        | C272     | 1-163-109-00 | CERAMIC CHIP | 47PF    | 5%  | 50V  |        |
| C216     | 1-164-232-11 | CERAMIC CHIP                   | 0.01uF  |     | 50V  |        | C273     | 1-163-117-00 | CERAMIC CHIP | 100PF   | 5%  | 50V  |        |
| C217     | 1-163-038-91 | CERAMIC CHIP                   | 0.1uF   |     | 25V  |        | C275     | 1-163-038-91 | CERAMIC CHIP | 0.1uF   |     | 25V  |        |
| C218     | 1-163-038-91 | CERAMIC CHIP                   | 0.1uF   |     | 25V  |        |          |              |              |         |     |      |        |
| C219     | 1-126-204-11 | ELECT CHIP                     | 47uF    | 20% | 16V  |        |          |              |              |         |     |      |        |
| C220     | 1-163-141-00 | CERAMIC CHIP                   | 0.001uF | 5%  | 50V  |        |          |              |              |         |     |      |        |
| C221     | 1-163-038-91 | CERAMIC CHIP                   | 0.1uF   |     | 25V  |        |          |              |              |         |     |      |        |
| C222     | 1-163-038-91 | CERAMIC CHIP                   | 0.1uF   |     | 25V  |        |          |              |              |         |     |      |        |
| C223     | 1-163-231-11 | CERAMIC CHIP                   | 15PF    | 5%  | 50V  |        |          |              |              |         |     |      |        |
| C224     | 1-163-231-11 | CERAMIC CHIP                   | 15PF    | 5%  | 50V  |        |          |              |              |         |     |      |        |
| C225     | 1-163-117-00 | CERAMIC CHIP                   | 100PF   | 5%  | 50V  |        |          |              |              |         |     |      |        |
| C226     | 1-163-141-00 | CERAMIC CHIP                   | 0.001uF | 5%  | 50V  |        |          |              |              |         |     |      |        |
| C227     | 1-163-141-00 | CERAMIC CHIP                   | 0.001uF | 5%  | 50V  |        |          |              |              |         |     |      |        |
| C228     | 1-163-109-00 | CERAMIC CHIP                   | 47PF    | 5%  | 50V  |        |          |              |              |         |     |      |        |
| C230     | 1-163-038-91 | CERAMIC CHIP                   | 0.1uF   |     | 25V  |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
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|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
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|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
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|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |
|          |              |                                |         |     |      |        |          |              |              |         |     |      |        |



| Ref. No. | Part No.     | Description            | Remark |    |       | Ref. No. | Part No.     | Description | Remark |    |       |
|----------|--------------|------------------------|--------|----|-------|----------|--------------|-------------|--------|----|-------|
| IC207    | 8-759-461-47 | IC MSM9404AGS-BK       |        |    |       | R235     | 1-216-073-00 | METAL CHIP  | 10K    | 5% | 1/10W |
| IC208    | 8-759-344-86 | IC MSM514400C-70SJ     |        |    |       | R236     | 1-216-065-00 | METAL CHIP  | 4.7K   | 5% | 1/10W |
| IC210    | 8-759-272-05 | IC TC74VHCT244F(EL)    |        |    |       | R237     | 1-216-109-00 | METAL CHIP  | 330K   | 5% | 1/10W |
| IC211    | 8-759-031-84 | IC SC7S04F             |        |    |       | R238     | 1-216-065-00 | METAL CHIP  | 4.7K   | 5% | 1/10W |
| IC212    | 8-759-040-83 | IC BA6287F             |        |    |       | R239     | 1-216-082-00 | METAL GLAZE | 24K    | 5% | 1/10W |
|          |              | < JUMPER RESISTOR >    |        |    |       | R240     | 1-216-073-00 | METAL CHIP  | 10K    | 5% | 1/10W |
| JW201    | 1-216-295-91 | CONDUCTOR, CHIP (2012) |        |    |       | R241     | 1-216-073-00 | METAL CHIP  | 10K    | 5% | 1/10W |
|          |              | < COIL >               |        |    |       | R242     | 1-216-029-00 | METAL CHIP  | 150    | 5% | 1/10W |
| L201     | 1-412-336-41 | INDUCTOR               | 4.7uH  |    |       | R243     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
| L202     | 1-412-336-41 | INDUCTOR               | 4.7uH  |    |       | R244     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
| L203     | 1-412-336-41 | INDUCTOR               | 4.7uH  |    |       | R245     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
| L204     | 1-412-336-41 | INDUCTOR               | 4.7uH  |    |       | R246     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
| L205     | 1-412-336-41 | INDUCTOR               | 4.7uH  |    |       | R247     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
| L206     | 1-412-336-41 | INDUCTOR               | 4.7uH  |    |       | R248     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
|          |              | < TRANSISTOR >         |        |    |       | R249     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
| Q201     | 8-729-907-00 | TRANSISTOR DTC114EU    |        |    |       | R250     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
| Q202     | 8-729-907-00 | TRANSISTOR DTC114EU    |        |    |       | R251     | 1-216-073-00 | METAL CHIP  | 10K    | 5% | 1/10W |
|          |              | < RESISTOR >           |        |    |       | R252     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
| R201     | 1-216-021-00 | METAL CHIP             | 68     | 5% | 1/10W | R253     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
| R203     | 1-216-097-91 | METAL GLAZE            | 100K   | 5% | 1/10W | R254     | 1-216-073-00 | METAL CHIP  | 10K    | 5% | 1/10W |
| R204     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R255     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
| R205     | 1-216-097-91 | METAL GLAZE            | 100K   | 5% | 1/10W | R256     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R206     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R257     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R207     | 1-216-049-91 | METAL GLAZE            | 1K     | 5% | 1/10W | R258     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R209     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R259     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R210     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R260     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R211     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R261     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R212     | 1-216-097-91 | METAL GLAZE            | 100K   | 5% | 1/10W | R262     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R213     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R263     | 1-216-033-00 | METAL CHIP  | 220    | 5% | 1/10W |
| R214     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R264     | 1-216-033-00 | METAL CHIP  | 220    | 5% | 1/10W |
| R216     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R265     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R217     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R266     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R218     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R267     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R219     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R268     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R220     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R269     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R221     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R270     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R222     | 1-216-097-91 | METAL GLAZE            | 100K   | 5% | 1/10W | R271     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R223     | 1-216-097-91 | METAL GLAZE            | 100K   | 5% | 1/10W | R272     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R224     | 1-216-097-91 | METAL GLAZE            | 100K   | 5% | 1/10W | R273     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R225     | 1-216-097-91 | METAL GLAZE            | 100K   | 5% | 1/10W | R275     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R226     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R276     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R227     | 1-216-097-91 | METAL GLAZE            | 100K   | 5% | 1/10W | R277     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R228     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R278     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R229     | 1-216-097-91 | METAL GLAZE            | 100K   | 5% | 1/10W | R279     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R230     | 1-216-109-00 | METAL CHIP             | 330K   | 5% | 1/10W | R280     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R231     | 1-216-097-91 | METAL GLAZE            | 100K   | 5% | 1/10W | R281     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R232     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R282     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R233     | 1-216-073-00 | METAL CHIP             | 10K    | 5% | 1/10W | R283     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
| R234     | 1-216-097-91 | METAL GLAZE            | 100K   | 5% | 1/10W | R284     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
|          |              |                        |        |    |       | R285     | 1-216-073-00 | METAL CHIP  | 10K    | 5% | 1/10W |
|          |              |                        |        |    |       | R286     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
|          |              |                        |        |    |       | R287     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
|          |              |                        |        |    |       | R288     | 1-216-073-00 | METAL CHIP  | 10K    | 5% | 1/10W |
|          |              |                        |        |    |       | R289     | 1-216-097-91 | METAL GLAZE | 100K   | 5% | 1/10W |
|          |              |                        |        |    |       | R290     | 1-216-025-91 | METAL GLAZE | 100    | 5% | 1/10W |
|          |              |                        |        |    |       | R291     | 1-216-073-00 | METAL CHIP  | 10K    | 5% | 1/10W |

| Ref. No.      | Part No.     | Description  | Remark  |     |      |  |
|---------------|--------------|--|---------|-----|------|--|
| < VIBRATOR >  |              |  |         |     |      |  |
| X201          | 1-767-273-11 | VIBRATOR, CERAMIC (CHIP TYPE)(10MHz)               |         |     |      |  |
| X202          | 1-760-458-21 | VIBRATOR, CRYSTAL (32.768kHz)                      |         |     |      |  |
| *****         |              |  |         |     |      |  |
| *             | A-4699-457-A | DIO BOARD, COMPLETE                                |         |     |      |  |
| *****         |              |  |         |     |      |  |
| < CAPACITOR > |              |  |         |     |      |  |
| C351          | 1-126-933-11 | ELECT  | 100uF   | 20% | 10V  |  |
| C352          | 1-162-294-31 | CERAMIC  | 0.001uF | 10% | 50V  |  |
| C353          | 1-164-159-11 | CERAMIC  | 0.1uF   |     | 50V  |  |
| C354          | 1-126-933-11 | ELECT  | 100uF   | 20% | 10V  |  |
| C355          | 1-164-159-11 | CERAMIC  | 0.1uF   |     | 50V  |  |
| C356          | 1-162-294-31 | CERAMIC  | 0.001uF | 10% | 50V  |  |
| C357          | 1-162-294-31 | CERAMIC  | 0.001uF | 10% | 50V  |  |
| C358          | 1-164-159-11 | CERAMIC  | 0.1uF   |     | 50V  |  |
| C359          | 1-126-933-11 | ELECT  | 100uF   | 20% | 10V  |  |
| C360          | 1-136-165-00 | FILM   | 0.1uF   | 5%  | 50V  |  |
| C361          | 1-126-933-11 | ELECT  | 100uF   | 20% | 10V  |  |
| C362          | 1-126-933-11 | ELECT  | 100uF   | 20% | 10V  |  |
| C363          | 1-126-933-11 | ELECT  | 100uF   | 20% | 10V  |  |
| C364          | 1-136-165-00 | FILM   | 0.1uF   | 5%  | 50V  |  |
| C365          | 1-136-165-00 | FILM   | 0.1uF   | 5%  | 50V  |  |
| C366          | 1-164-159-11 | CERAMIC  | 0.1uF   |     | 50V  |  |
| C367          | 1-164-159-11 | CERAMIC  | 0.1uF   |     | 50V  |  |
| C368          | 1-164-159-11 | CERAMIC  | 0.1uF   |     | 50V  |  |
| C369          | 1-104-646-11 | CERAMIC  | 2.2uF   | 20% | 50V  |  |
| < IC >        |              |  |         |     |      |  |
| IC351         | 8-759-926-18 | IC SN74HC157ANS                                    |         |     |      |  |
| IC352         | 8-759-926-17 | IC SN74HC153ANS                                    |         |     |      |  |
| IC353         | 8-759-269-92 | IC SN74HCU04ANS-E20                                |         |     |      |  |
| IC354         | 8-749-921-12 | IC GP1F32T (DIGITAL OUT OPTICAL)                   |         |     |      |  |
| IC355         | 8-759-430-27 | IC GP1F37R (DIGITAL IN OPT1)                       |         |     |      |  |
| IC356         | 8-759-430-27 | IC GP1F37R (DIGITAL IN OPT2)                       |         |     |      |  |
| < JACK >      |              |  |         |     |      |  |
| J351          | 1-568-750-21 | JACK, PIN (1P SHIELD TYPE)<br>(DIGITAL IN COAXIAL) |         |     |      |  |
| < COIL >      |              |  |         |     |      |  |
| L351          | 1-408-405-00 | INDUCTOR   | 4.7uH   |     |      |  |
| L352          | 1-408-405-00 | INDUCTOR   | 4.7uH   |     |      |  |
| L353          | 1-408-405-00 | INDUCTOR   | 4.7uH   |     |      |  |
| < RESISTOR >  |              |  |         |     |      |  |
| R351          | 1-259-404-11 | CARBON   | 100     | 5%  | 1/6W |  |
| R352          | 1-259-404-11 | CARBON   | 100     | 5%  | 1/6W |  |
| R353          | 1-259-404-11 | CARBON   | 100     | 5%  | 1/6W |  |
| R354          | 1-259-404-11 | CARBON   | 100     | 5%  | 1/6W |  |
| R355          | 1-259-404-11 | CARBON   | 100     | 5%  | 1/6W |  |
| R356          | 1-259-404-11 | CARBON   | 100     | 5%  | 1/6W |  |
| R357          | 1-259-452-11 | CARBON   | 10K     | 5%  | 1/6W |  |
| R358          | 1-259-476-11 | CARBON   | 100K    | 5%  | 1/6W |  |
| R359          | 1-259-404-11 | CARBON   | 100     | 5%  | 1/6W |  |
| R360          | 1-259-452-11 | CARBON   | 10K     | 5%  | 1/6W |  |

| Ref. No. | Part No.     | Description                 | Remark   |     |      |
|----------|--------------|-----------------------------|----------|-----|------|
| R361     | 1-259-404-11 | CARBON                      | 100      | 5%  | 1/6W |
| R363     | 1-259-404-11 | CARBON                      | 100      | 5%  | 1/6W |
| R364     | 1-259-404-11 | CARBON                      | 100      | 5%  | 1/6W |
| R365     | 1-259-401-11 | CARBON                      | 75       | 5%  | 1/6W |
| R366     | 1-259-404-11 | CARBON                      | 100      | 5%  | 1/6W |
| *****    |              |                             |          |     |      |
| *        | A-4699-459-A | DISP BOARD, COMPLETE        |          |     |      |
|          |              | *****                       |          |     |      |
| *        | 3-362-478-11 | HOLDER (T), LED             |          |     |      |
| *        | 4-987-501-01 | HOLDER (FL)                 |          |     |      |
|          |              | < CAPACITOR >               |          |     |      |
| C701     | 1-164-159-11 | CERAMIC                     | 0.1uF    |     | 50V  |
| C702     | 1-162-282-31 | CERAMIC                     | 100PF    | 10% | 50V  |
| C703     | 1-164-159-11 | CERAMIC                     | 0.1uF    |     | 50V  |
| C704     | 1-126-154-11 | ELECT                       | 47uF     | 20% | 6.3V |
| C705     | 1-162-282-31 | CERAMIC                     | 100PF    | 10% | 50V  |
| C706     | 1-162-282-31 | CERAMIC                     | 100PF    | 10% | 50V  |
| C707     | 1-162-282-31 | CERAMIC                     | 100PF    | 10% | 50V  |
| C708     | 1-162-294-31 | CERAMIC                     | 0.001uF  | 10% | 50V  |
| C709     | 1-162-302-11 | CERAMIC                     | 0.0022uF | 30% | 16V  |
| C710     | 1-162-302-11 | CERAMIC                     | 0.0022uF | 30% | 16V  |
| C712     | 1-164-159-11 | CERAMIC                     | 0.1uF    |     | 50V  |
| C713     | 1-164-159-11 | CERAMIC                     | 0.1uF    |     | 50V  |
| C714     | 1-164-159-11 | CERAMIC                     | 0.1uF    |     | 50V  |
| C715     | 1-162-286-31 | CERAMIC                     | 220PF    | 10% | 50V  |
| C716     | 1-162-286-31 | CERAMIC                     | 220PF    | 10% | 50V  |
|          |              | < CONNECTOR >               |          |     |      |
| CN701    | 1-766-201-11 | SOCKET, CONNECTOR PIN 11P   |          |     |      |
| CN702    | 1-580-473-11 | SOCKET, CONNECTOR 26P       |          |     |      |
|          |              | < DIODE >                   |          |     |      |
| D701     | 8-719-301-39 | DIODE SEL2210S (●)          |          |     |      |
| D702     | 8-719-301-49 | DIODE SEL2810A (■)          |          |     |      |
| D703     | 8-719-303-02 | DIODE SEL2510C-D (▶)        |          |     |      |
|          |              | < FLUORESCENT INDICATOR >   |          |     |      |
| FL701    | 1-517-620-11 | INDICATOR TUBE, FLUORESCENT |          |     |      |
|          |              | < IC >                      |          |     |      |
| IC701    | 8-759-297-23 | IC M66004M8FP               |          |     |      |
|          |              | < TRANSISTOR >              |          |     |      |
| Q701     | 8-729-661-94 | TRANSISTOR RT1N141SK-TP     |          |     |      |
| Q702     | 8-729-661-94 | TRANSISTOR RT1N141SK-TP     |          |     |      |
| Q703     | 8-729-661-94 | TRANSISTOR RT1N141SK-TP     |          |     |      |
|          |              | < RESISTOR >                |          |     |      |
| R701     | 1-259-464-11 | CARBON                      | 33K      | 5%  | 1/6W |
| R702     | 1-259-404-11 | CARBON                      | 100      | 5%  | 1/6W |
| R703     | 1-259-404-11 | CARBON                      | 100      | 5%  | 1/6W |
| R704     | 1-259-404-11 | CARBON                      | 100      | 5%  | 1/6W |
| R705     | 1-259-404-11 | CARBON                      | 100      | 5%  | 1/6W |
| R709     | 1-259-452-11 | CARBON                      | 10K      | 5%  | 1/6W |
| R710     | 1-259-452-11 | CARBON                      | 10K      | 5%  | 1/6W |

|      |      |      |      |    |
|------|------|------|------|----|
| DISP | DVOL | HLIM | HMOT | HP |
|------|------|------|------|----|

| Ref. No.              | Part No.     | Description                              | Remark                  |     |      |  |  |  |
|-----------------------|--------------|--|-------------------------|-----|------|--|--|--|
| R723                  | 1-259-464-11 | CARBON                                   | 33K                     | 5%  | 1/6W |  |  |  |
| R724                  | 1-259-452-11 | CARBON                                   | 10K                     | 5%  | 1/6W |  |  |  |
| R725                  | 1-259-444-11 | CARBON                                   | 4.7K                    | 5%  | 1/6W |  |  |  |
|                       |              |  |                         |     |      |  |  |  |
| R726                  | 1-259-440-11 | CARBON                                   | 3.3K                    | 5%  | 1/6W |  |  |  |
| R727                  | 1-259-436-11 | CARBON                                   | 2.2K                    | 5%  | 1/6W |  |  |  |
| R728                  | 1-259-452-11 | CARBON                                   | 10K                     | 5%  | 1/6W |  |  |  |
| R729                  | 1-259-464-11 | CARBON                                   | 33K                     | 5%  | 1/6W |  |  |  |
| R730                  | 1-259-452-11 | CARBON                                   | 10K                     | 5%  | 1/6W |  |  |  |
|                       |              |  |                         |     |      |  |  |  |
| R731                  | 1-259-444-11 | CARBON                                   | 4.7K                    | 5%  | 1/6W |  |  |  |
| R732                  | 1-259-440-11 | CARBON                                   | 3.3K                    | 5%  | 1/6W |  |  |  |
| R733                  | 1-259-436-11 | CARBON                                   | 2.2K                    | 5%  | 1/6W |  |  |  |
| R734                  | 1-259-412-11 | CARBON                                   | 220                     | 5%  | 1/6W |  |  |  |
| R735                  | 1-259-412-11 | CARBON                                   | 220                     | 5%  | 1/6W |  |  |  |
|                       |              |  |                         |     |      |  |  |  |
| R736                  | 1-259-452-11 | CARBON                                   | 10K                     | 5%  | 1/6W |  |  |  |
| R737                  | 1-259-418-11 | CARBON                                   | 390                     | 5%  | 1/6W |  |  |  |
|                       |              |  |                         |     |      |  |  |  |
| < SWITCH >            |              |  |                         |     |      |  |  |  |
| S702                  | 1-473-965-11 | ENCODER, ROTARY                          | (⏏⏏ AMS ⏏⏏, PUSH ENTER) |     |      |  |  |  |
| S717                  | 1-554-303-21 | SWITCH, TACTILE (⏏ OPEN/CLOSE)           |                         |     |      |  |  |  |
| S718                  | 1-554-303-21 | SWITCH, TACTILE (YES)                    |                         |     |      |  |  |  |
| S719                  | 1-554-303-21 | SWITCH, TACTILE (EDIT/NO)                |                         |     |      |  |  |  |
| S720                  | 1-554-303-21 | SWITCH, TACTILE (●)                      |                         |     |      |  |  |  |
|                       |              |  |                         |     |      |  |  |  |
| S721                  | 1-554-303-21 | SWITCH, TACTILE (⏏)                      |                         |     |      |  |  |  |
| S722                  | 1-554-303-21 | SWITCH, TACTILE (▶)                      |                         |     |      |  |  |  |
| S723                  | 1-554-303-21 | SWITCH, TACTILE (▶▶)                     |                         |     |      |  |  |  |
| S724                  | 1-554-303-21 | SWITCH, TACTILE (◀◀)                     |                         |     |      |  |  |  |
| S725                  | 1-554-303-21 | SWITCH, TACTILE (■)                      |                         |     |      |  |  |  |
| *****                 |              |  |                         |     |      |  |  |  |
|                       |              |  |                         |     |      |  |  |  |
| *                     | 1-664-822-11 | DVOL BOARD                               | *****                   |     |      |  |  |  |
|                       |              |  |                         |     |      |  |  |  |
| < CAPACITOR >         |              |  |                         |     |      |  |  |  |
| C601                  | 1-162-294-31 | CERAMIC                                  | 0.001uF                 | 10% | 50V  |  |  |  |
| C602                  | 1-104-664-11 | ELECT                                    | 47uF                    | 20% | 25V  |  |  |  |
| C603                  | 1-164-159-11 | CERAMIC                                  | 0.1uF                   |     | 50V  |  |  |  |
|                       |              |  |                         |     |      |  |  |  |
| < CONNECTOR >         |              |  |                         |     |      |  |  |  |
| * CN603               | 1-564-720-11 | PIN, CONNECTOR (SMALL TYPE) 4P           |                         |     |      |  |  |  |
|                       |              |  |                         |     |      |  |  |  |
| < VARIABLE RESISTOR > |              |  |                         |     |      |  |  |  |
| RV602                 | 1-225-373-11 | RES, VAR, CARBON 10K (DIGITAL REC LEVEL) |                         |     |      |  |  |  |
| *****                 |              |  |                         |     |      |  |  |  |
|                       |              |  |                         |     |      |  |  |  |
| *                     | 1-663-896-11 | HLIM BOARD                               | *****                   |     |      |  |  |  |
|                       |              |  |                         |     |      |  |  |  |
| < CONNECTOR >         |              |  |                         |     |      |  |  |  |
| * CN195               | 1-750-148-11 | SOCKET, CONNECTOR (PC BOARD) 5P          |                         |     |      |  |  |  |
|                       |              |  |                         |     |      |  |  |  |
| < SWITCH >            |              |  |                         |     |      |  |  |  |
| SW193                 | 1-762-010-11 | SWITCH, LEVER (HEAD DOWN DET)            |                         |     |      |  |  |  |
| SW194                 | 1-762-010-11 | SWITCH, LEVER (HEAD UP DET)              |                         |     |      |  |  |  |
| *****                 |              |  |                         |     |      |  |  |  |

| Ref. No.       | Part No.     | Description                    | Remark     |     |      |  |
|----------------|--------------|--------------------------------|------------|-----|------|--|
| *              | 1-663-899-11 | HMOT BOARD<br>*****            |            |     |      |  |
| < MOTOR >      |              |                                |            |     |      |  |
| M192           | X-4947-821-1 | MOTOR ASSY, HEAD               |            |     |      |  |
| < CONNECTOR >  |              |                                |            |     |      |  |
| * CN196        | 1-568-947-11 | PIN, CONNECTOR 9P              |            |     |      |  |
| CN197          | 1-568-940-21 | PIN, CONNECTOR 2P              |            |     |      |  |
| * CN198        | 1-568-941-11 | PIN, CONNECTOR 3P              |            |     |      |  |
| CN199          | 1-778-987-11 | PIN,BOARD TO BOARD CONNECTOR5P |            |     |      |  |
| *****          |              |                                |            |     |      |  |
| *              | A-4699-461-A | HP BOARD, COMPLETE<br>*****    |            |     |      |  |
| < CAPACITOR >  |              |                                |            |     |      |  |
| C651           | 1-162-207-31 | CERAMIC                        | 22PF       | 5%  | 50V  |  |
| C652           | 1-162-207-31 | CERAMIC                        | 22PF       | 5%  | 50V  |  |
| C653           | 1-126-022-11 | ELECT                          | 47uF       | 20% | 25V  |  |
| C654           | 1-126-022-11 | ELECT                          | 47uF       | 20% | 25V  |  |
| C655           | 1-162-294-31 | CERAMIC                        | 0.001uF    | 10% | 50V  |  |
|                |              |                                |            |     |      |  |
| C656           | 1-162-294-31 | CERAMIC                        | 0.001uF    | 10% | 50V  |  |
| C657           | 1-164-159-11 | CERAMIC                        | 0.1uF      |     | 50V  |  |
| C658           | 1-164-159-11 | CERAMIC                        | 0.1uF      |     | 50V  |  |
| < CONNECTOR >  |              |                                |            |     |      |  |
| CN651          | 1-564-723-11 | PIN, CONNECTOR (SMALL TYPE) 7P |            |     |      |  |
| < IC >         |              |                                |            |     |      |  |
| IC651          | 8-759-712-02 | IC NJM2114D                    |            |     |      |  |
| < JACK >       |              |                                |            |     |      |  |
| J651           | 1-770-904-11 | JACK (LARGE TYPE)(PHONES)      |            |     |      |  |
| < TRANSISTOR > |              |                                |            |     |      |  |
| Q651           | 8-729-231-55 | TRANSISTOR                     | 2SC2878-AB |     |      |  |
| Q652           | 8-729-231-55 | TRANSISTOR                     | 2SC2878-AB |     |      |  |
| Q653           | 8-729-231-55 | TRANSISTOR                     | 2SC2878-AB |     |      |  |
| Q654           | 8-729-231-55 | TRANSISTOR                     | 2SC2878-AB |     |      |  |
| < RESISTOR >   |              |                                |            |     |      |  |
| R651           | 1-259-460-11 | CARBON                         | 22K        | 5%  | 1/6W |  |
| R652           | 1-259-460-11 | CARBON                         | 22K        | 5%  | 1/6W |  |
| R653           | 1-259-444-11 | CARBON                         | 4.7K       | 5%  | 1/6W |  |
| R654           | 1-259-458-11 | CARBON                         | 18K        | 5%  | 1/6W |  |
| R655           | 1-259-444-11 | CARBON                         | 4.7K       | 5%  | 1/6W |  |
|                |              |                                |            |     |      |  |
| R656           | 1-259-458-11 | CARBON                         | 18K        | 5%  | 1/6W |  |
| R657           | 1-259-406-11 | CARBON                         | 120        | 5%  | 1/6W |  |
| R658           | 1-259-406-11 | CARBON                         | 120        | 5%  | 1/6W |  |
| R659           | 1-259-444-11 | CARBON                         | 4.7K       | 5%  | 1/6W |  |
| R660           | 1-259-444-11 | CARBON                         | 4.7K       | 5%  | 1/6W |  |
|                |              |                                |            |     |      |  |
| R661           | 1-259-444-11 | CARBON                         | 4.7K       | 5%  | 1/6W |  |
| R662           | 1-259-444-11 | CARBON                         | 4.7K       | 5%  | 1/6W |  |

| Ref. No. | Part No.     | Description                            | Remark |
|----------|--------------|--|--------|
|          |              | < VARIABLE RESISTOR >                  |        |
| RV651    | 1-225-372-11 | RES, VAR, CARBON 20K/20K (PHONE LEVEL) |        |
| *****    |              |  |        |
| *        | 1-663-897-11 | IN BOARD                               |        |
|          |              | *****                                  |        |
|          |              | < CONNECTOR >                          |        |
| CN191    | 1-506-481-11 | PIN, CONNECTOR 2P                      |        |
| * CN192  | 1-568-941-11 | PIN, CONNECTOR 3P                      |        |
|          |              | < SWITCH >                             |        |
| SW191    | 1-571-300-21 | SWITCH, ROTARY (LOAD IN DET)           |        |
| *****    |              |  |        |
| *        | 1-663-900-11 | LMOT BOARD                             |        |
|          |              | *****                                  |        |
| M191     | X-4947-824-1 | MOTOR (LOADING) ASSY                   |        |
| *****    |              |  |        |
| *        | 1-663-898-11 | OUT BOARD                              |        |
|          |              | *****                                  |        |
|          |              | < CONNECTOR >                          |        |
| CN193    | 1-506-481-11 | PIN, CONNECTOR 2P                      |        |
|          |              | < SWITCH >                             |        |
| SW192    | 1-571-300-21 | SWITCH, ROTARY (LOAD OUT DET)          |        |
| *****    |              |  |        |
| *        | 1-664-817-11 | PJ BOARD                               |        |
|          |              | *****                                  |        |
|          |              | < CAPACITOR >                          |        |
| C598     | 1-110-335-11 | MYLAR 100PF 5% 50V                     |        |
| C599     | 1-110-335-11 | MYLAR 100PF 5% 50V                     |        |
|          |              | < CONNECTOR >                          |        |
| * CN581  | 1-564-519-11 | PLUG, CONNECTOR 4P                     |        |
|          |              | < JACK >                               |        |
| PJ501    | 1-568-101-11 | JACK, PIN 4P (LINE (ANALOG))           |        |
|          |              | < RESISTOR >                           |        |
| R591     | 1-249-528-91 | CARBON 100 5% 1/4W                     |        |
| R592     | 1-249-528-91 | CARBON 100 5% 1/4W                     |        |
| R593     | 1-249-528-91 | CARBON 100 5% 1/4W                     |        |
| R594     | 1-249-528-91 | CARBON 100 5% 1/4W                     |        |
| *****    |              |  |        |

| Ref. No. | Part No.     | Description                        | Remark |
|----------|--------------|------------------------------------|--------|
| *        | A-4699-460-A | PSW BOARD, COMPLETE                | *****  |
| *        | 4-972-608-01 | HOLDER (DIA. 5), LED               |        |
|          | 4-976-360-02 | REINFORCEMENT (CONT)               |        |
|          |              | < CAPACITOR >                      |        |
| C711     | 1-162-294-31 | CERAMIC 0.001uF 10% 50V            |        |
| C781     | 1-162-294-31 | CERAMIC 0.001uF 10% 50V            |        |
| C782     | 1-164-159-11 | CERAMIC 0.1uF 50V                  |        |
| C783     | 1-164-159-11 | CERAMIC 0.1uF 50V                  |        |
| C784     | 1-126-154-11 | ELECT 47uF 20% 6.3V                |        |
| C785     | 1-126-154-11 | ELECT 47uF 20% 6.3V                |        |
|          |              | < CONNECTOR >                      |        |
| CN781    | 1-766-204-11 | PLUG, CONNECTOR PIN 11P            |        |
|          |              | < DIODE >                          |        |
| D704     | 8-719-303-02 | DIODE SEL2510C-D (FILTER)          |        |
| D781     | 8-719-313-40 | DIODE SEL1516W (POWER)             |        |
|          |              | < IC >                             |        |
| IC781    | 8-759-332-18 | IC GP1U27XB                        |        |
|          |              | < TRANSISTOR >                     |        |
| Q704     | 8-729-661-94 | TRANSISTOR RT1N141SK-TP            |        |
| Q781     | 8-729-422-57 | TRANSISTOR UN4111                  |        |
|          |              | < RESISTOR >                       |        |
| R706     | 1-259-452-11 | CARBON 10K 5% 1/6W                 |        |
| R707     | 1-259-452-11 | CARBON 10K 5% 1/6W                 |        |
| R708     | 1-259-452-11 | CARBON 10K 5% 1/6W                 |        |
| R716     | 1-259-452-11 | CARBON 10K 5% 1/6W                 |        |
| R717     | 1-259-464-11 | CARBON 33K 5% 1/6W                 |        |
| R718     | 1-259-452-11 | CARBON 10K 5% 1/6W                 |        |
| R719     | 1-259-444-11 | CARBON 4.7K 5% 1/6W                |        |
| R720     | 1-259-440-11 | CARBON 3.3K 5% 1/6W                |        |
| R721     | 1-259-436-11 | CARBON 2.2K 5% 1/6W                |        |
| R722     | 1-259-452-11 | CARBON 10K 5% 1/6W                 |        |
| R738     | 1-259-416-11 | CARBON 330 5% 1/6W                 |        |
| R781     | 1-259-424-11 | CARBON 680 5% 1/6W                 |        |
| R782     | 1-259-452-11 | CARBON 10K 5% 1/6W                 |        |
| R783     | 1-259-452-11 | CARBON 10K 5% 1/6W                 |        |
| R784     | 1-259-412-11 | CARBON 220 5% 1/6W                 |        |
| R785     | 1-259-404-11 | CARBON 100 5% 1/6W                 |        |
|          |              | < SWITCH >                         |        |
| S701     | 1-762-878-11 | SWITCH, ROTARY (INPUT)             |        |
| S709     | 1-554-303-21 | SWITCH, TACTILE (PLAY MODE)        |        |
| S710     | 1-554-303-21 | SWITCH, TACTILE (FILTER)           |        |
| S711     | 1-554-303-21 | SWITCH, TACTILE (SCROLL/CLOCK SET) |        |
| S712     | 1-554-303-21 | SWITCH, TACTILE (REPEAT)           |        |
| S713     | 1-554-303-21 | SWITCH, TACTILE (TIME)             |        |
| S714     | 1-554-303-21 | SWITCH, TACTILE (DISPLAY/CHAR)     |        |
| S781     | 1-572-625-11 | SWITCH, SLIDE (TIMER)              |        |
| S782     | 1-554-303-21 | SWITCH, TACTILE (POWER)            |        |

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| Ref. No. | Part No.     | Description                            | Remark  |
|----------|--------------|--|---------|
| *        | A-4699-455-A | PW BOARD, COMPLETE (US)<br>*****       |         |
| *        | A-4699-591-A | PW BOARD, COMPLETE (AEP,UK,G)<br>***** |         |
| *        | 3-309-144-21 | HEAT SINK                              |         |
| *        | 4-363-146-00 | HEAT SINK, V.OUT                       |         |
| *        | 4-921-402-01 | HEAT SINK                              |         |
|          | 7-685-646-79 | SCREW +BVTP 3X8 TYPE2 N-S              |         |
|          |              | < BATTERY >                            |         |
| BT901    | 1-528-739-11 | BATTERY, LITHIUM (VL2020 3V)           |         |
|          |              | < CAPACITOR >                          |         |
| C901     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
| C902     | 1-126-963-11 | ELECT 4.7uF                            | 20% 50V |
| C903     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
| C904     | 1-126-963-11 | ELECT 4.7uF                            | 20% 50V |
| C905     | 1-126-927-11 | ELECT 2200uF                           | 20% 10V |
| C906     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
| C907     | 1-126-933-11 | ELECT 100uF                            | 20% 16V |
| C909     | 1-126-927-11 | ELECT 2200uF                           | 20% 10V |
| C911     | 1-126-960-11 | ELECT 1uF                              | 20% 50V |
| C912     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
| C913     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
| C914     | 1-126-936-11 | ELECT 3300uF                           | 20% 16V |
| C915     | 1-164-732-11 | CERAMIC 0.1uF                          | 20% 50V |
| C916     | 1-164-732-11 | CERAMIC 0.1uF                          | 20% 50V |
| C917     | 1-124-557-11 | ELECT 1000uF                           | 20% 25V |
| C918     | 1-117-149-21 | ELECT 2200uF                           | 20% 25V |
| C919     | 1-126-926-11 | ELECT 1000uF                           | 20% 10V |
| C920     | 1-164-732-11 | CERAMIC 0.1uF                          | 20% 50V |
| C922     | 1-164-732-11 | CERAMIC 0.1uF                          | 20% 50V |
| C923     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
| C924     | 1-126-926-11 | ELECT 1000uF                           | 20% 10V |
| C926     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
| C927     | 1-126-969-11 | ELECT 220uF                            | 20% 50V |
| C928     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
| C929     | 1-117-401-11 | ELECT 22000uF                          | 20% 16V |
| C930     | 1-161-494-00 | CERAMIC 0.022uF                        | 25V     |
| C932     | 1-110-504-11 | ELECT 6800uF                           | 20% 35V |
| C933     | 1-110-504-11 | ELECT 6800uF                           | 20% 35V |
| C934     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
| C935     | 1-126-965-11 | ELECT 22uF                             | 20% 50V |
| C936     | 1-128-554-11 | ELECT 330uF                            | 20% 63V |
| C937     | 1-126-935-11 | ELECT 470uF                            | 20% 16V |
| C938     | 1-126-964-11 | ELECT 10uF                             | 20% 50V |
| C939     | 1-136-153-00 | FILM 0.01uF                            | 5% 50V  |
| C940     | 1-136-153-00 | FILM 0.01uF                            | 5% 50V  |
| C941     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
| C942     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
| C943     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
| C944     | 1-164-159-11 | CERAMIC 0.1uF                          | 50V     |
|          |              | < CONNECTOR >                          |         |
| CN901    | 1-580-460-11 | SOCKET, CONNECTOR 26P                  |         |
| CN903    | 1-564-511-11 | PLUG, CONNECTOR 8P                     |         |
| * CN904  | 1-564-507-11 | PLUG, CONNECTOR 4P                     |         |

| Ref. No. | Part No.     | Description                              | Remark |
|----------|--------------|--|--------|
| * CN905  | 1-564-704-11 | PIN, CONNECTOR (SMALL TYPE) 2P           |        |
|          |              | < DIODE >                                |        |
| D901     | 8-719-987-63 | DIODE 1N4148M                            |        |
| D902     | 8-719-987-63 | DIODE 1N4148M                            |        |
| D903     | 8-719-987-63 | DIODE 1N4148M                            |        |
| D904     | 8-719-987-63 | DIODE 1N4148M                            |        |
| D905     | 8-719-200-82 | DIODE 11ES2                              |        |
| D907     | 8-719-210-21 | DIODE 11EQS04                            |        |
| D908     | 8-719-210-21 | DIODE 11EQS04                            |        |
| D909     | 8-719-210-29 | DIODE F10P10Q                            |        |
| D910     | 8-719-210-29 | DIODE F10P10Q                            |        |
| D911     | 8-719-210-29 | DIODE F10P10Q                            |        |
| D912     | 8-719-210-29 | DIODE F10P10Q                            |        |
| D913     | 8-719-014-96 | DIODE UZP-7.5BC                          |        |
| D914     | 8-719-987-63 | DIODE 1N4148M                            |        |
| D915     | 8-719-210-29 | DIODE F10P10Q                            |        |
| D916     | 8-719-210-29 | DIODE F10P10Q                            |        |
| D917     | 8-719-987-63 | DIODE 1N4148M                            |        |
| D918     | 8-719-200-77 | DIODE 10E2N                              |        |
| D919     | 8-719-200-77 | DIODE 10E2N                              |        |
| D920     | 8-719-200-77 | DIODE 10E2N                              |        |
| D921     | 8-719-200-77 | DIODE 10E2N                              |        |
| D922     | 8-719-200-77 | DIODE 10E2N                              |        |
| D923     | 8-719-987-63 | DIODE 1N4148M                            |        |
| D924     | 8-719-987-63 | DIODE 1N4148M                            |        |
|          |              | < GROUND PLATE >                         |        |
| * EP901  | 4-870-539-00 | PLATE, GROUND                            |        |
| * EP902  | 4-870-539-00 | PLATE, GROUND                            |        |
|          |              | < FUSE >                                 |        |
| △ F901   | 1-532-771-21 | FUSE, MICRO (SECONDARY)(0.315A 125V)(US) |        |
| △ F902   | 1-532-783-21 | FUSE, MICRO (SECONDARY)(5A 125V)(US)     |        |
| △ F903   | 1-532-783-21 | FUSE, MICRO (SECONDARY)(5A 125V)(US)     |        |
| △ F904   | 1-576-071-11 | FUSE, MICRO (SECONDARY)(6.3A 125V)(US)   |        |
| △ F905   | 1-576-071-11 | FUSE, MICRO (SECONDARY)(6.3A 125V)(US)   |        |
| △ F906   | 1-532-777-21 | FUSE, MICRO (SECONDARY)(1.25A 125V)(US)  |        |
|          |              | < IC >                                   |        |
| IC901    | 8-759-327-15 | IC M62005L                               |        |
| IC902    | 8-759-061-65 | IC LA5602                                |        |
| IC903    | 8-759-604-45 | IC M5F79M12                              |        |
| IC904    | 8-759-604-39 | IC M5F78M12                              |        |
| IC905    | 8-759-513-71 | IC PQ05RF21                              |        |
| IC906    | 8-759-925-74 | IC SN74HC04ANS                           |        |
| IC907    | 8-759-513-71 | IC PQ05RF21                              |        |
| IC908    | 8-759-633-42 | IC M5293L                                |        |
| IC909    | 8-759-520-49 | IC PQ30RV21                              |        |
|          |              | < IC LINK >                              |        |
| △ ICP901 | 1-532-834-21 | LINK, IC (PRF 315)(0.315A)(AEP,UK,G)     |        |
| △ ICP902 | 1-532-846-11 | LINK, IC (PRF 5000)(5A)(AEP,UK,G)        |        |
| △ ICP903 | 1-532-846-11 | LINK, IC (PRF 5000)(5A)(AEP,UK,G)        |        |
| △ ICP904 | 1-532-847-21 | LINK, IC (PRF 6300)(6.3A)(AEP,UK,G)      |        |
| △ ICP905 | 1-532-847-21 | LINK, IC (PRF 6300)(6.3A)(AEP,UK,G)      |        |
| △ ICP906 | 1-532-840-21 | LINK, IC (PRF 1250)(1.25A)(AEP,UK,G)     |        |

The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.

| Ref. No.       | Part No.     | Description                           | Remark      |    |      |  |
|----------------|--------------|---------------------------------------|-------------|----|------|--|
| < TRANSISTOR > |              |                                       |             |    |      |  |
| Q901           | 8-729-038-19 | TRANSISTOR                            | RT1P144S-TP |    |      |  |
| Q902           | 8-729-038-19 | TRANSISTOR                            | RT1P144S-TP |    |      |  |
| Q903           | 8-729-422-57 | TRANSISTOR                            | UN4111      |    |      |  |
| Q905           | 8-729-140-98 | TRANSISTOR                            | 2SD773-34   |    |      |  |
| < RESISTOR >   |              |                                       |             |    |      |  |
| R901           | 1-259-452-11 | CARBON                                | 10K         | 5% | 1/6W |  |
| R902           | 1-259-452-11 | CARBON                                | 10K         | 5% | 1/6W |  |
| R903           | 1-259-404-11 | CARBON                                | 100         | 5% | 1/6W |  |
| R904           | 1-215-404-00 | METAL                                 | 200         | 1% | 1/4W |  |
| R905           | 1-215-414-00 | METAL                                 | 510         | 1% | 1/4W |  |
| R906           | 1-259-428-11 | CARBON                                | 1K          | 5% | 1/6W |  |
| R907           | 1-259-488-11 | CARBON                                | 330K        | 5% | 1/6W |  |
| R908           | 1-259-404-11 | CARBON                                | 100         | 5% | 1/6W |  |
| R909           | 1-259-468-11 | CARBON                                | 47K         | 5% | 1/6W |  |
| R910           | 1-259-444-11 | CARBON                                | 4.7K        | 5% | 1/6W |  |
| R911           | 1-259-460-91 | CARBON                                | 22K         | 5% | 1/6W |  |
| R912           | 1-259-468-11 | CARBON                                | 47K         | 5% | 1/6W |  |
| R913           | 1-259-428-11 | CARBON                                | 1K          | 5% | 1/6W |  |
| R914           | 1-259-404-11 | CARBON                                | 100         | 5% | 1/6W |  |
| R915           | 1-259-404-11 | CARBON                                | 100         | 5% | 1/6W |  |
| R916           | 1-259-432-11 | CARBON                                | 1.5K        | 5% | 1/6W |  |
| R917           | 1-259-416-11 | CARBON                                | 330         | 5% | 1/6W |  |
| < RELAY >      |              |                                       |             |    |      |  |
| RY901          | 1-515-925-11 | RELAY (45MHz)                         |             |    |      |  |
| *****          |              |                                       |             |    |      |  |
| MISCELLANEOUS  |              |                                       |             |    |      |  |
| *****          |              |                                       |             |    |      |  |
| 54             | 1-782-216-11 | WIRE (FLAT TYPE)(30 CORE)             |             |    |      |  |
| 55             | 1-782-215-11 | WIRE (FLAT TYPE)(18 CORE)             |             |    |      |  |
| 56             | 1-777-738-11 | WIRE (FLAT TYPE)(26 CORE)             |             |    |      |  |
| 57             | 1-777-737-11 | WIRE (FLAT TYPE)(16 CORE)             |             |    |      |  |
| 58             | 1-777-735-11 | WIRE (FLAT TYPE)(18 CORE)             |             |    |      |  |
| 107            | 1-777-736-11 | WIRE (FLAT TYPE)(26 CORE)             |             |    |      |  |
| △ 457          | 8-583-009-12 | OPTICAL PICK-UP KMS-210A/J-N          |             |    |      |  |
| △ CNP001       | 1-558-568-21 | CORD, POWER (AEP,UK,G)                |             |    |      |  |
| △ CNP001       | 1-559-583-21 | CORD, POWER (US)                      |             |    |      |  |
| FL701          | 1-517-620-11 | INDICATOR TUBE, FLUORESCENT           |             |    |      |  |
| HR901          | 1-500-304-21 | HEAD, OVER WRITE                      |             |    |      |  |
| M101           | A-4660-651-A | MOTOR ASSY (SLED)                     |             |    |      |  |
| M102           | A-4660-650-A | CHASSIS ASSY, BU (SPINDLE)            |             |    |      |  |
| M191           | X-4947-824-1 | MOTOR (LOADING) ASSY                  |             |    |      |  |
| M192           | X-4947-821-1 | MOTOR ASSY, HEAD                      |             |    |      |  |
| S102           | 1-762-148-11 | SWITCH, PUSH (2 KEY)(PROTECT/REFLECT) |             |    |      |  |
| △ T001         | 1-431-178-11 | TRANSFORMER, POWER (AEP,UK,G)         |             |    |      |  |
| △ T001         | 1-431-180-11 | TRANSFORMER, POWER (US)               |             |    |      |  |
| △ T002         | 1-431-179-11 | TRANSFORMER, POWER (AEP,UK,G)         |             |    |      |  |
| △ T002         | 1-431-181-11 | TRANSFORMER, POWER (US)               |             |    |      |  |
| *****          |              |                                       |             |    |      |  |

| Ref. No.                        | Part No.     | Description   | Remark |
|---------------------------------|--------------|---|--------|
| ACCESSORIES & PACKING MATERIALS |              |   |        |
| *****                           |              |   |        |
|                                 | 1-475-091-11 | REMOTE COMMANDER (RM-D13M)                                  |        |
|                                 | 1-590-925-31 | CORD, CONNECTION (AUDIO, 100cm)                             |        |
|                                 | 3-859-239-11 | MANUAL, INSTRUCTION (ENGLISH,FRENCH)                        |        |
|                                 | 3-859-239-21 | MANUAL, INSTRUCTION<br>(SPANISH,GERMAN,ITALIAN)(AEP,UK,G)   |        |
|                                 | 3-859-239-31 | MANUAL, INSTRUCTION<br>(DUTCH,SWEDISH,PORTUGUESE)(AEP,UK,G) |        |
|                                 | 4-983-537-01 | COVER, BATTERY (for RM-D13M)                                |        |
| *****                           |              |   |        |
| *****                           |              |   |        |
| HARDWARE LIST                   |              |   |        |
| *****                           |              |   |        |
| #1                              | 7-685-233-14 | SCREW +KTP 2.6X6 TYPE2NON-SLIT (GOLD)                       |        |
| #1                              | 7-685-233-19 | SCREW +KTP 2.6X6 TYPE2NON-SLIT (BLACK)                      |        |
| #2                              | 7-682-247-09 | SCREW +K 3X6  |        |
| #3                              | 7-682-565-09 | SCREW +B 4X16   |        |
| #4                              | 7-685-873-09 | SCREW +BVTT 3X10 (S)  |        |
| #5                              | 7-685-880-09 | SCREW +BVTT 4X6 (S)   |        |
| #6                              | 7-685-871-01 | SCREW +BVTT 3X6 (S)   |        |
| #7                              | 7-682-548-09 | SCREW +B 3X8  |        |
| #8                              | 7-621-770-67 | SCREW +B 2.6X6  |        |
| #9                              | 7-621-775-10 | SCREW +B 2.6X4  |        |
| #10                             | 7-627-553-48 | SCREW,PRECISION +P 2X4                                      |        |
| #11                             | 7-685-105-19 | TPG +P 2X8, TYPE 2, NON-SLIT                                |        |
| #12                             | 7-627-852-48 | PRECISION SCREW +P1.7X3.5TYPE3                              |        |
| #13                             | 7-627-852-28 | +P 1.7X3  |        |
| #14                             | 7-685-871-09 | SCREW +BVTT 3X6 (S)   |        |
| #15                             | 7-685-533-19 | SCREW +BTP 2.6X6 TYPE2 N-S                                  |        |
| #16                             | 7-685-645-79 | SCREW +BVTP 3X6 TYPE2 N-S                                   |        |
| #17                             | 7-685-646-79 | SCREW +BVTP 3X8 TYPE2 N-S                                   |        |
| #18                             | 7-685-133-19 | SCREW +P 2.6X6 TYPE2  |        |
| #19                             | 7-627-553-38 | SCREW,PRECISION +P 2X3                                      |        |
| #20                             | 7-621-255-25 | SCREW +P 2X4  |        |
| #21                             | 7-685-103-19 | SCREW +P 2X5 TYPE2 NON-SLIT                                 |        |

The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.

