# DVP-NC600

## RMT-D130A/D130O/D130P

# SERVICE MANUAL

Self Diagnosis Supported model

US Model
Canadian Model
AEP Model
UK Model
Australian Model
PX Model


## SPECIFICATIONS

### System

| | |
|---|---|
| Laser | Semiconductor laser |
| Signal format system | NTSC<br>PAL (AEP, UK) |

### Audio characteristics

| | |
|---|---|
| Frequency response | DVD (PCM 96 kHz): 2 Hz to 44 kHz (±1.0 dB)<br>DVD (PCM 48 kHz): 2Hz to 22kHz (±0.5dB)<br>CD: 2 Hz to 20 kHz (±0.5 dB) |
| Signal-to-noise ratio (S/N ratio) | 115 dB (LINE OUT L/R (AUDIO) 1/2 jacks only) |
| Harmonic distortion | 0.003% |
| Dynamic range | DVD: 103 dB<br>CD: 99 dB |
| Wow and flutter | Less than detected value (±0.001% W PEAK) |

The signals from LINE OUT L/R (AUDIO) 1/2 jacks are measured. When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (COAXIAL and OPTICAL) jacks are converted to 48 kHz sampling frequency.

### Outputs

| Jack name | Jack type | Maximum output level | Load impedance |
|---|---|---|---|
| DIGITAL OUT (OPTICAL) | Optical output jack | -18 dBm | Wave length 66 nm |
| DIGITAL OUT (COAXIAL) | Phono jack | 0.5 Vp-p | 75 ohms terminated |
| LINE OUT L/R (AUDIO) 1/2 | Phono jack | 2 Vrms (50 kilohms) | Over 10 kilohms |
| LINE OUT (VIDEO) | Phono jack | 1.0 Vp-p | 75 ohms, sync negative |
| S VIDEO OUT | 4-pin mini DIN | Luminance signal:<br>1.0 Vp-p<br>Color signal:<br>0.286 Vp-p (NTSC)<br>0.3 Vp-p (PAL) | 75 ohms, sync negative<br>75 ohms terminated |
| COMPONENT VIDEO OUT (Y, $P_B$, $P_R$) (US, CND, PX) | Phono jack | Y: 1.0 Vp-p<br>$P_B$, $P_R$: 0.7 Vp-p | 75 ohms, sync negative<br>75 ohms terminated |

### General

| | |
|---|---|
| Power requirements | 120V AC, 60 Hz (US, CND)<br>110 to 240V AC, 50/60 Hz (PX)<br>220 to 240V AC, 50/60 Hz (AEP, UK, AUS) |
| Power consumption | 13 W<br>15 W |
| Dimensions (approx.) | 430 × 108 × 411 mm (17 × 4 3/8 × 16 1/4 in.) (width/height/depth) incl. projecting parts |
| Mass (approx.) | 5.4 kg (11 lb 14 oz) |
| Operating temperature | 5°C to 35°C (41°F to 35°F) |
| Operating humidity | 25% to 80% |

### Supplied accessories

Check that you have the following items:

- Audio/video cord (pinplug × 3 ←→ pinplug × 3) (1)
- Remote commander (remote) RMT-D130A (1) (US, CND, PX)
  RMT-D130O (1) (AUS)
  RMT-D130P (1) (AEP, UK)
- Size AA (R6) batteries (2)
- A plug adaptor is included with some models.

Specifications and design are subject to change without notice.

ENERGY STAR® is a U.S. registered mark. As an ENERGY STAR® Partner, Sony Corporation has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

- Abbreviation
  AUS : Australian
  CND : Canadian

DVD VIDEO
COMPACT disc DIGITAL VIDEO

## CD/DVD PLAYER

SONY®

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

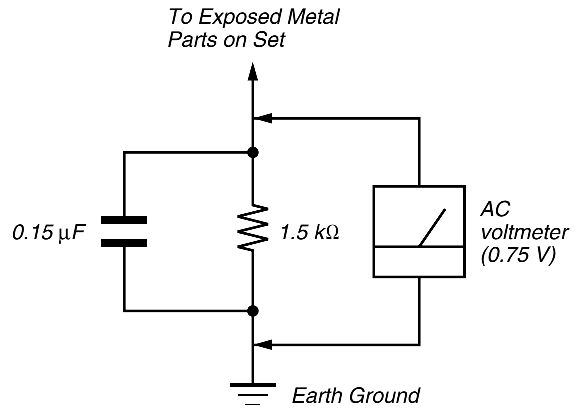
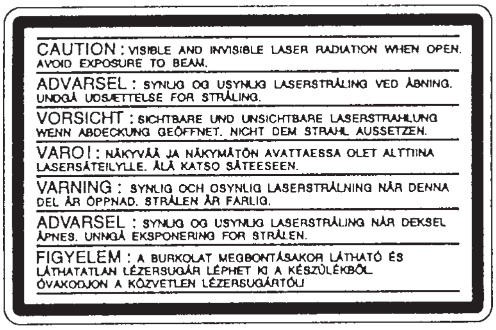


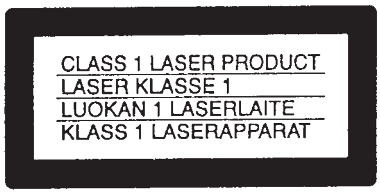

*Fig. A. Using an AC voltmeter to check AC leakage.*

### LEAKAGE TEST

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 0.75V, 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)




**CLASS 3B LASER**
**LUOKAN 3B LASER**
**LASERKLASS 3B**

**WARNING!!**

**WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.**

**CAUTION:**
The use of optical instrument with this product will increase eye hazard.

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

**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ 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.**

**ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!**

**LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.**

## TABLE OF CONTENTS

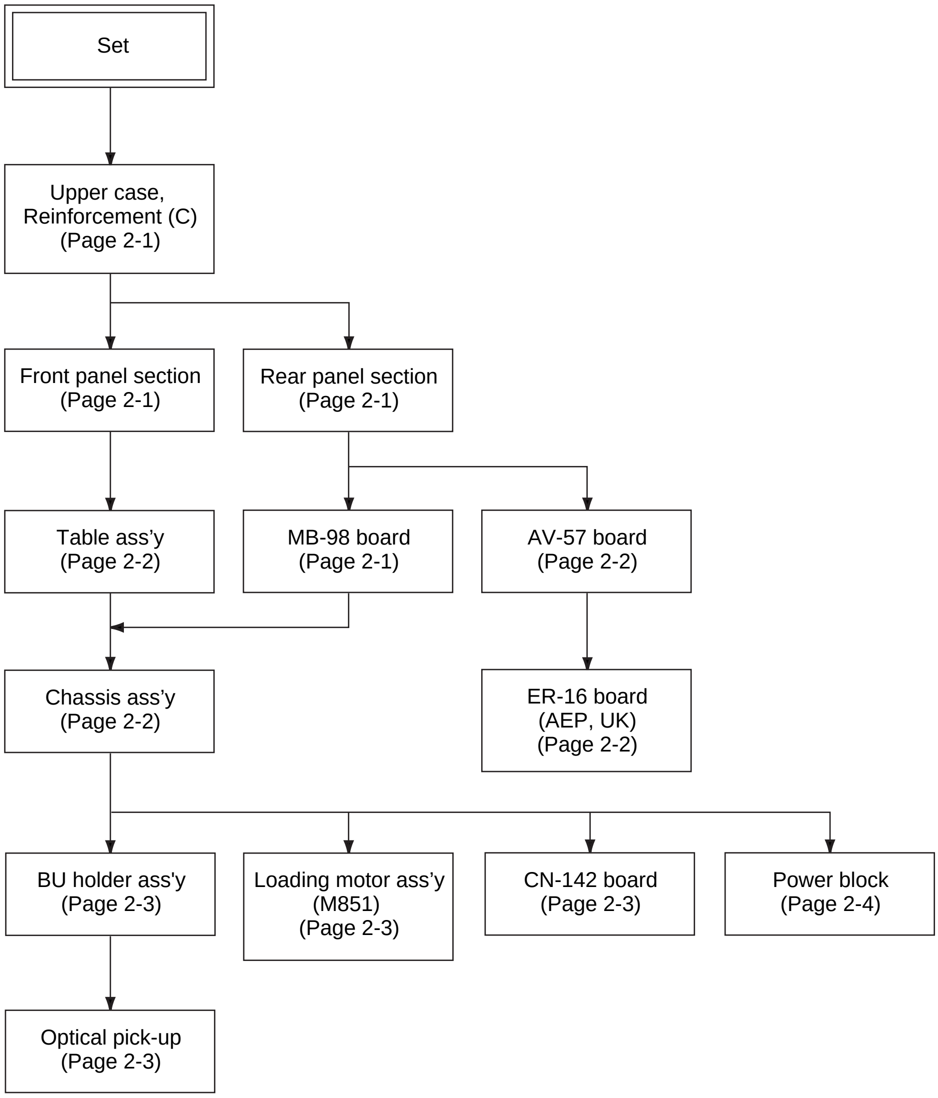


- Abbreviation
  AUS : Australian
  CND : Canadian

# SERVICE NOTE

## 1. DISASSEMBLY

• This set can be disassembled in the order shown below.



## 2. NOTE ON REMOVE THE UPPER CASE

1) Remove seven tapping screws. (See Fig. 1)
2) Open the side of case. (See Fig. 1)
3) Remove the upper case as lift in the direction of arrow.

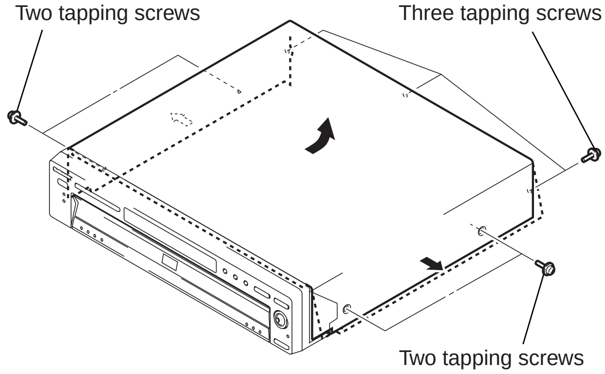



*Fig. 1*

## 3. DISC REMOVAL PROCEDURE

1) Insert a flat-blade screwdriver into a hole at the bottom, and rotare the cam gear in the direction of arrow Ⓐ. (See Fig. 2)

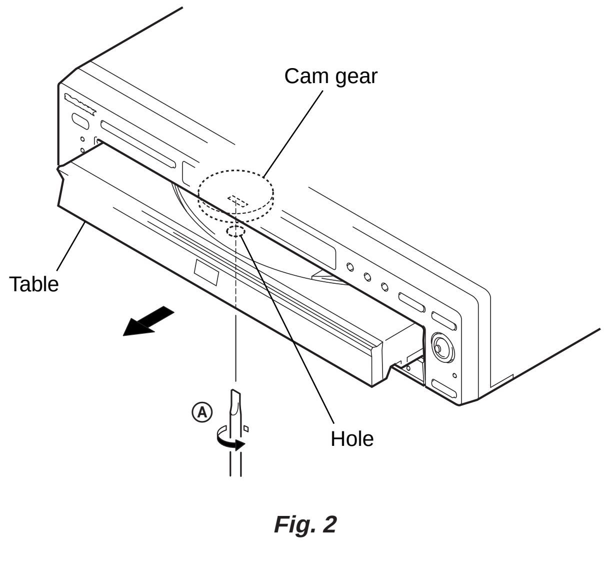



*Fig. 2*

## 4. NOTE ON MOUNTING GEARS

1) Mount the gear (U/D). (See Fig. 3.)
2) Rotate the gear (U/D) in the direction of arrow. (down position) (See Fig. 3.)

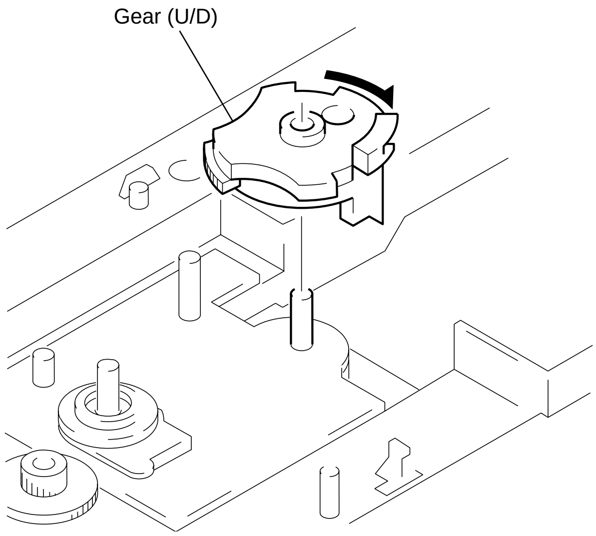



*Fig. 3*

3) Align triangle marks of the rotary encoder. (See Fig. 4.)
4) Escape the set lever. (See Fig. 4.)
5) Connect the boss of the gear (main) with the groove of the rotary encoder and mount the gear (main). (See Fig. 4.)

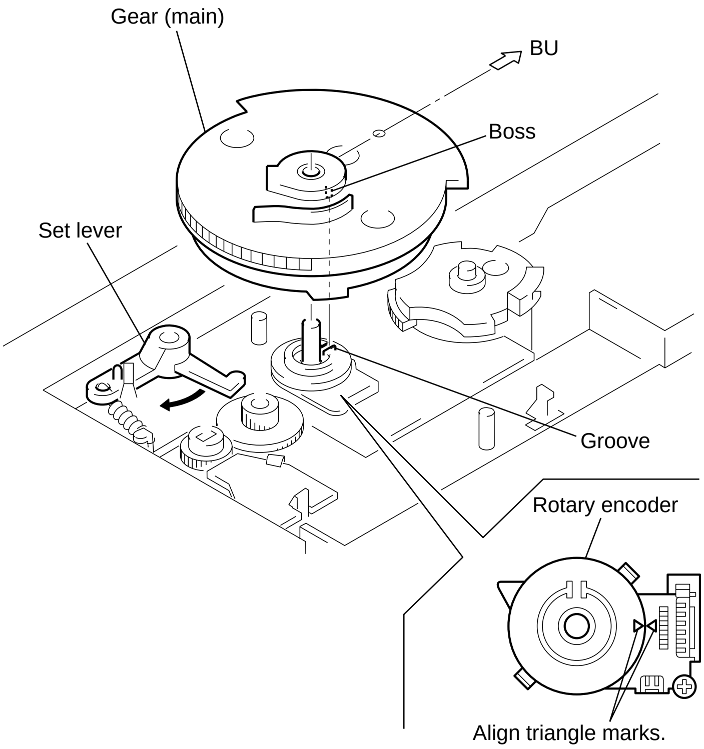



*Fig. 4*

6) Mount the lock lever (See Fig. 5.)
7) Mount the spring (lock lever). (See Fig. 5.)

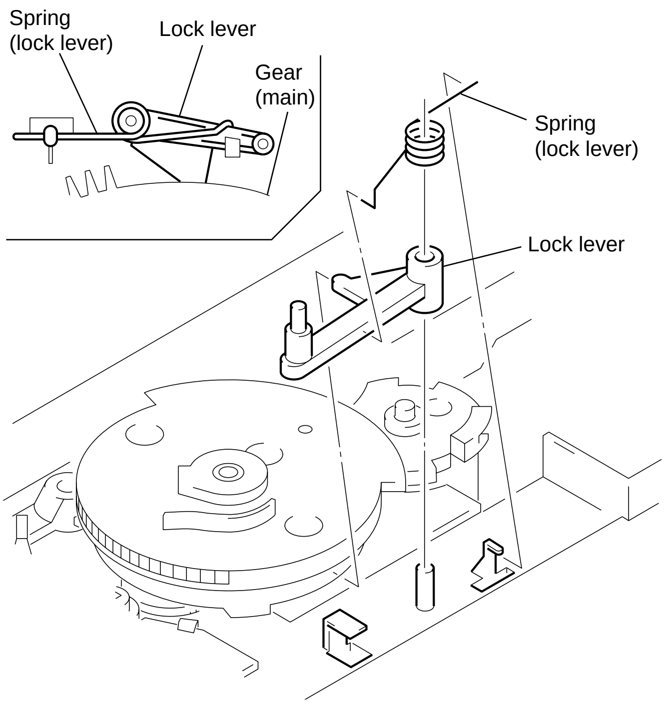



**Fig. 5**

8) Rotate the gear (main) in the direction of arrow Ⓐ by 90° turn. (Gear (U/D) is up position.) (See Fig. 6.)
9) Mount the Gear (rev). (See Fig. 6.)
10) Fix three stopper washers on the groove of shafts. (See Fig. 6.)

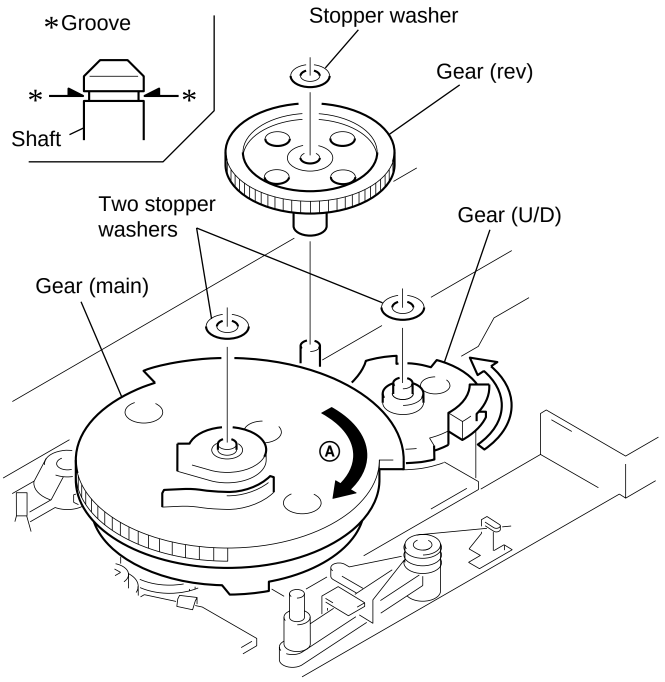
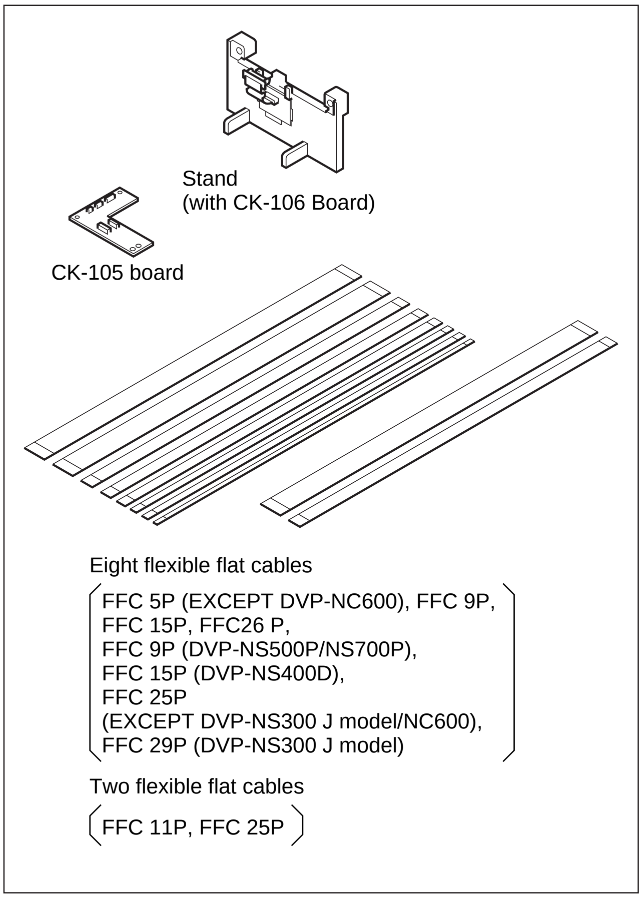



**Fig. 6**

## 5. HOW TO SERVICE MB-98 BOARD

- Jig (J-6090-107-A) Extension cable
- Jig (J-6090-108-A) Extension cable




1) Remove the upper case and reinforcement (C) from the set. (Refer to 2-1)
2) Remove the rear panel. (Refer to 2-1)
3) Remove the MB-98 board. (Refer to 2-1)
4) Set the stand (with CK-106 board) as shown in Fig. 7.

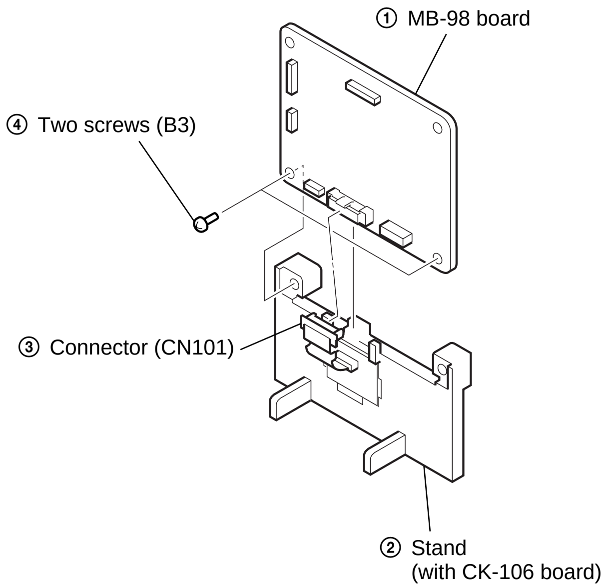



**Fig. 7**

5) Set the CK-105 board as shown in Fig. 8.

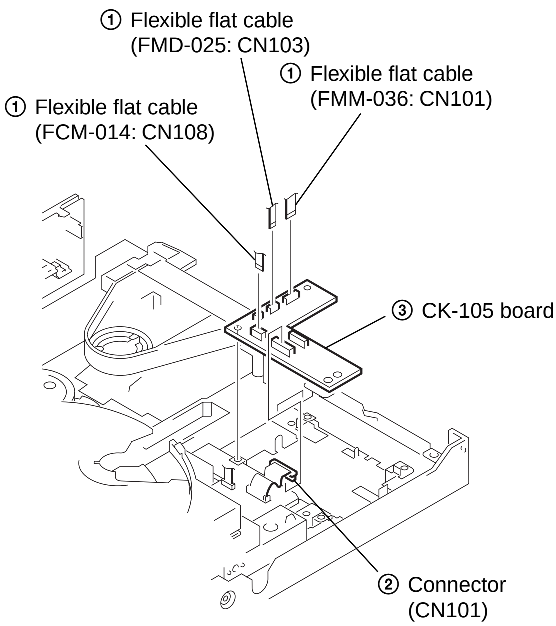



*Fig. 8*

6) Set the four flexible flat cables as shown in Fig. 9.

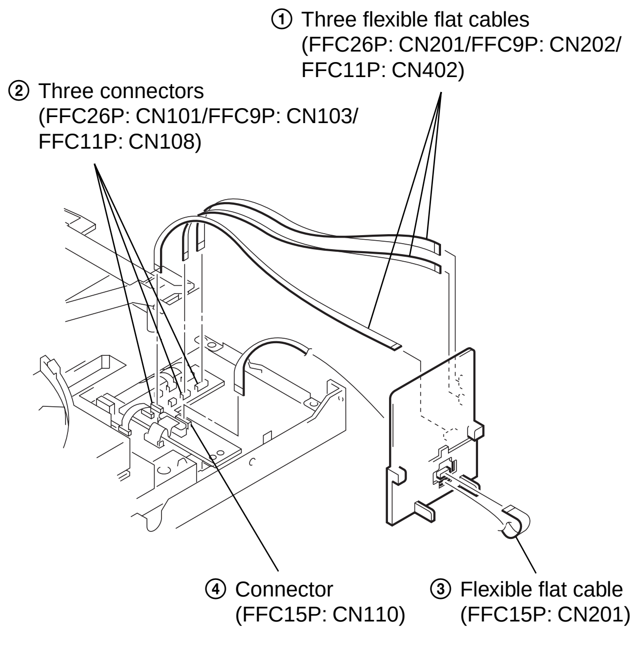



*Fig. 9*

7) Set the rear panel as shown in Fig. 10.

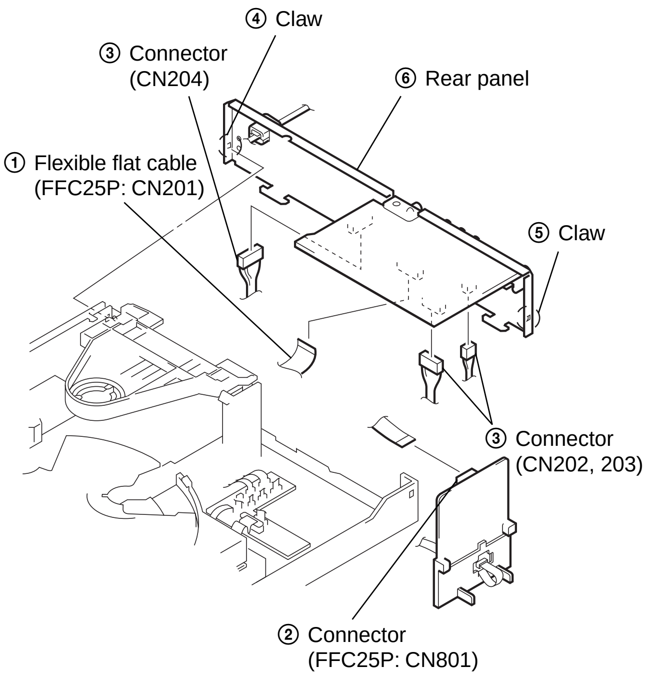
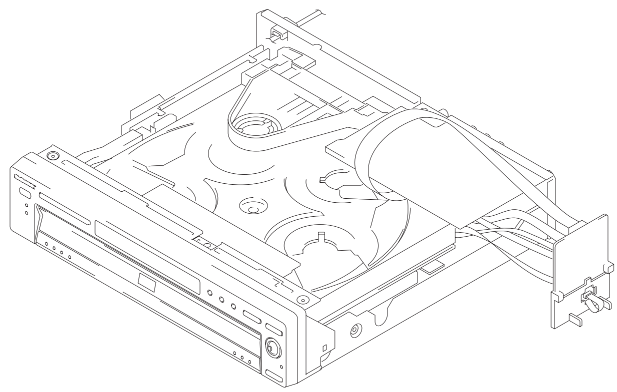
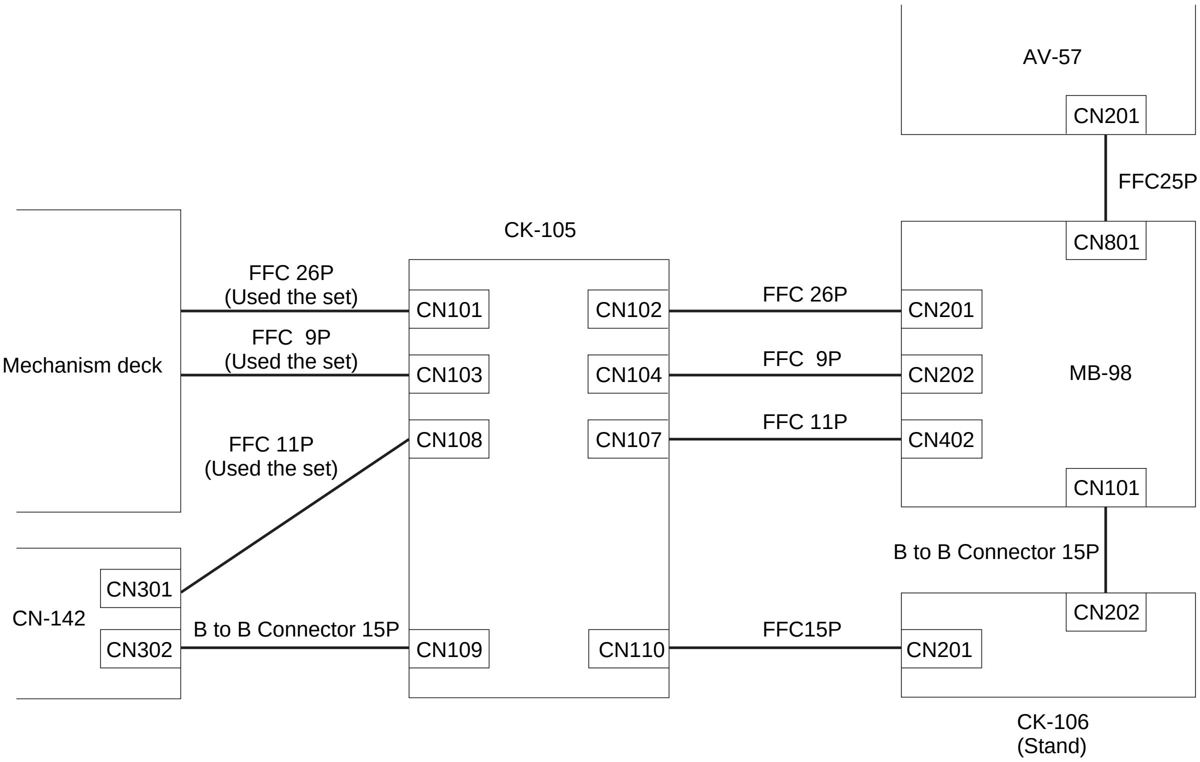



*Fig. 10*



## 6. CONNECTION OF SERVICE JIG



# SECTION 1
# GENERAL

This section is extracted from instruction manual (3-067-827-11).

## About this Manual

- Instructions in this manual describe the controls on the remote. You can also use the controls on the player if they have the same or similar names as those on the remote.
- The icons used in this manual are described below:

| Icon | Meaning | Icon | Meaning |
| --- | --- | --- | --- |
| DVD | Functions available in DVD video mode | CD | Functions available in music CD mode |
| VIDEO CD | Functions available in VIDEO CD mode | | More convenient features |

## This Player Can Play the Following Discs

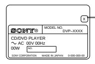
| Format of discs | |
| --- | --- |
| DVD VIDEO | DVD VIDEO |
| VIDEO CD | COMPACT disc DIGITAL VIDEO |
| Music CD | COMPACT disc DIGITAL AUDIO |

The "DVD VIDEO" logo is a trademark.

### Region code

Your player has a region code printed on the back of the unit and will only play DVDs labeled with identical region codes.

DVDs labeled ALL will also play on this player.
If you try to play any other DVD, the message "Playback prohibited by area limitations." will appear on the TV screen. Depending on the DVD, no region code indication may be labeled even though playing the DVD is prohibited by area restrictions.




### Example of discs that the player cannot play

The player cannot play the following discs:
- CD-ROMs (PHOTO CDs included)
- All CD-Rs other than music and VCD format CD-Rs
- Data part of CD-Extras
- DVD-ROMs
- DVD Audio discs
- HD layer on SACDs

Also, the player cannot play the following discs:
- A DVD with a different region code (page 72).
- A disc recorded in a color system other than NTSC, such as PAL or SECAM. (This player conforms to the NTSC color system.)
- A disc that has a non-standard shape (e.g., card, heart).
- A disc with paper or stickers on it.
- A disc that has the adhesive of cellophane tape or a sticker still left on it.

**Note**

Some CD-Rs or CD-RWs cannot be played on this player depending upon the recording quality or physical condition of the disc, or the characteristics of the recording device.
Furthermore, the disc will not play if it has not been correctly finalized. For more information, see the operating instructions for the recording device.

### Note on playback operations of DVDs and VIDEO CDs.

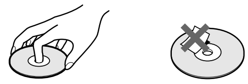
Some playback operations of DVDs and VIDEO CDs may be intentionally set by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, refer to the instructions supplied with the DVDs or VIDEO CDs.

### Copyrights

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents, other intellectual property rights owned by Macrovision Corporation, and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only, unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

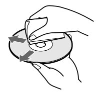
## Notes about the Discs

**On handling discs**
- To keep the disc clean, handle the disc by its edge. Do not touch the surface.



- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
- After playing, store the disc in its case.

**On cleaning**
- Before playing, clean the disc with a cleaning cloth.
  Wipe the disc from the center out.



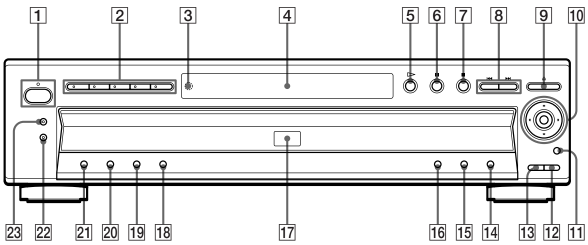
- Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.



## Index to Parts and Controls

For more information, refer to the pages indicated in parentheses.

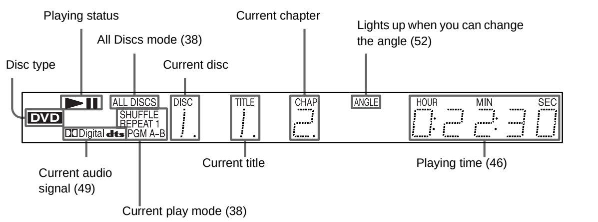
### Front panel



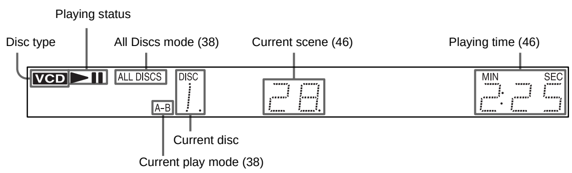

1 POWER switch/indicator (32)
2 DISC SELECT 1 - 5 buttons/indicators (34)
3 (remote sensor) (15)
4 Front panel display (10)
5 ▷ (play) button (32)
6 ❚❚ (pause) button (34, 59)
7 ■ (stop) button (32)
8 ⏮/⏭ (previous/next) buttons (34)
9 ⏏ (open/close) button (32)
10 ←/↑/↓/→/ENTER buttons (28)
11 DISPLAY button (13)
12 DISC SKIP button (32)
13 EXCHANGE button (34)
14 RETURN button (37)
15 DVD MENU button (37)
16 TITLE button (36)
17 Disc tray (32)
18 LOAD button (34)
19 ONE/ALL button (38)
20 REPEAT button (42)
21 SHUFFLE button (41)
22 BNR (Block Noise Reduction) button/indicator (53)
23 SURROUND button/indicator (50)

### Front Panel Display

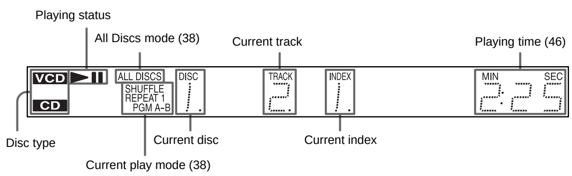
**When playing back a DVD**



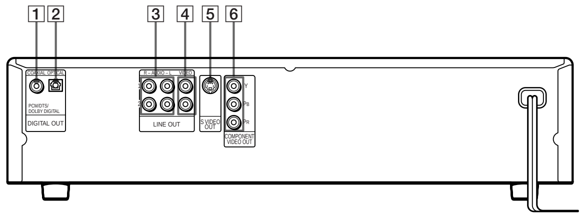

**When playing back a VIDEO CD (PBC)**




**When playing back a CD or VIDEO CD (without PBC)**

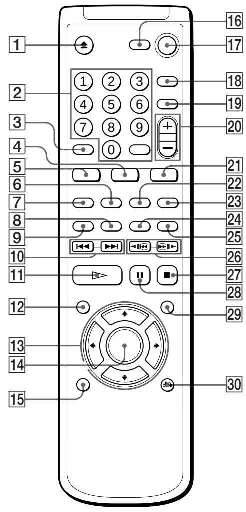


## Rear Panel




1 DIGITAL OUT (COAXIAL) jack (22, 24, 26)
2 DIGITAL OUT (OPTICAL) jack (22, 24, 26)
3 LINE OUT L/R (AUDIO) 1/2 jacks (16, 20, 21)
4 LINE OUT (VIDEO) 1/2 jacks (16, 21)
5 S VIDEO OUT jack (18, 21)
6 COMPONENT VIDEO OUT jacks (18)

## Remote



1 ≜ OPEN/CLOSE button (32)
2 Number and ENTER buttons
3 CLEAR button (40)
4 ANGLE button (52)
5 AUDIO button (49)
6 PROGRAM button (39)
7 SHUFFLE button (41)
8 DISC SKIP button (32)
9 TIME/TEXT button (46)
10 ⏮/⏭ PREV (previous) /NEXT buttons (34)
11 ▷ PLAY button (32)
12 TITLE button (36)
13 ←/↑/↓/→ buttons (28)
14 ENTER button (28)
15 DISPLAY button (62)
16 TV I/⏻ (on/standby) button (60)
17 I/⏻ (on/standby) button (32)
18 BNR (Block Noise Reduction) button (53)
19 TV/VIDEO button (60)
20 VOL (volume) +/– buttons (60)
21 SUBTITLE button (52)
22 REPEAT button (42)
23 ONE/ALL DISCS button (38)
24 A-B button (43)
25 INSTANT REPLAY button (34)
26 ◄◄/►► SCAN/SLOW buttons (44)
27 ■ STOP button (34)
28 ❚❚ PAUSE button (34, 59)
29 DVD MENU button (37)
30 ↶ RETURN button (37)

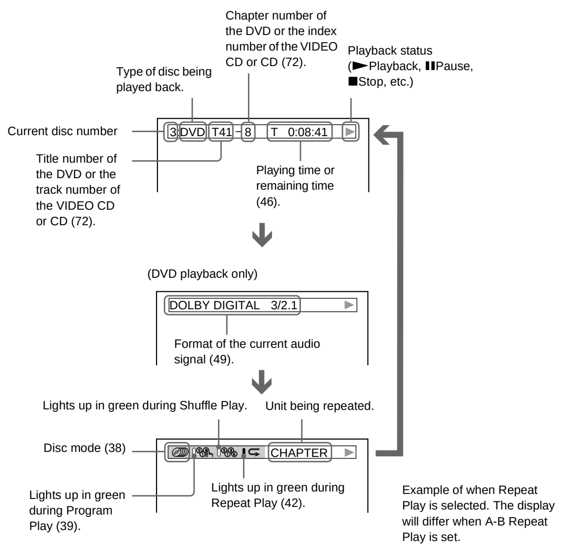


# Guide to On-Screen Displays (Status Bar, Control Bar, Control Menu)

The following explains the three types of on-screen displays used with this player:
Status Bar, Control Bar, and Control Menu.

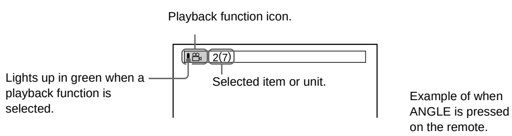
## Status Bar

Displays the current playing status.
This display appears when the DISPLAY button is pressed repeatedly during playback.
The numbers in parentheses indicate reference pages.



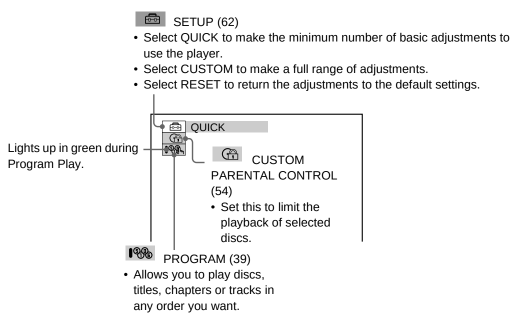

## Control Bar

The Control Bar appears when a playback function is selected by pressing the function's button on the remote.




## Control Menu

The Control Menu appears when the DISPLAY button is pressed when the player is in stop mode.
The number in parenthesis indicate reference pages.



## Quick Overview

A quick overview presented in this chapter will give you enough information to start using the player for your enjoyment. To use the surround sound features of this player, refer to "Hookups" on page 18.

**Note**

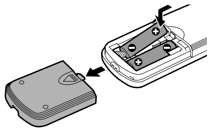
You cannot connect this player to a TV that does not have a video input jack.
Be sure to turn off the power of each component before connecting.

## Step 1: Unpacking

Check that you have the following items:
• Audio/video cord (pinplug × 3 ←→ pinplug × 3) (1)
• Remote commander (remote) RMT-D130A (1)
• Size AA (R6) batteries (2)
• A plug adaptor is included with some models.

## Step 2: Inserting Batteries into the Remote

You can control the player using the supplied remote. Insert two size AA (R6) batteries by matching the ⊕ and ⊖ ends on the batteries to the markings inside the compartment. When using the remote, point it at the remote sensor on the player.



**Notes**

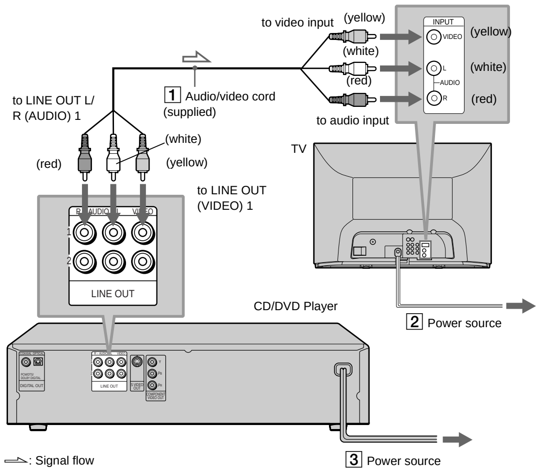
• Do not leave the remote in an extremely hot or humid place.
• Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
• Do not expose the remote sensor to direct light from the sun or lighting apparatus. Doing so may cause a malfunction.
• If you do not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.





## Step 3: TV Hookups

Connect the supplied audio/video cord and power cord in the order (1~3) shown below. Be sure to connect the power cord last.




**When connecting to a wide screen TV**

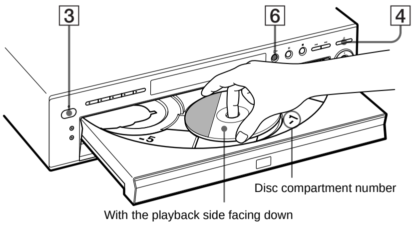
Depending on the disc, the image may not fit your TV screen.
If you want to change the aspect ratio, please refer to page 64.



## Step 4: Playing a Disc

1 **Turn on the TV.**

2 **Switch the input selector on the TV to the player.**




3 **Press POWER on the player.**

4 **Press ≜ on the player to open the disc tray.**

5 **Place the disc on the tray with the playback side facing down.**

6 **Press ▷.**
The disc tray closes and the player begins playing the disc.

**After Step 6**

Depending on the disc, a menu may be displayed on the TV screen. If so, select the item you want from the menu and play the DVD (page 37) or VIDEO CD disc (page 37).

**To stop playing**

Press ■.

**To take out the disc**

Press ≜.

**To turn off the player**

Press I/⏻ on the remote. The player is set to standby mode and the power indicator lights up in red. Press POWER on the player to turn off completely.





## Hooking Up the Player

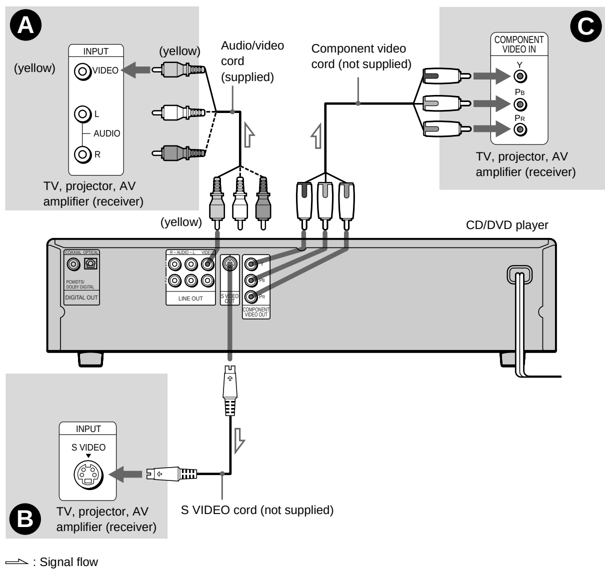
Follow Steps 1 to 4 to hook up and adjust the settings of the player.
Before you start, turn off the power, check that you have all of the supplied accessories, and insert the batteries into the remote (page 15).

**Notes**

• Plug cords securely to prevent unwanted noise.
• Refer to the instructions supplied with the components to be connected.

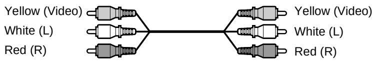
## Step 1: Connecting the Video Cords

Connect this player to your TV monitor, projector, or AV amplifier (receiver) using a video cord. Select one of the patterns A through C, according to the input jack on your TV monitor, projector, or AV amplifier (receiver).



### A If you are connecting to a video input jack

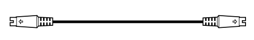
Connect the yellow plugs of the audio/video cord (supplied) to the yellow (video) jacks. You will enjoy standard quality images.




Use the red and white plugs to connect to the audio input jacks (page 20).

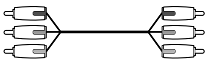
### B If you are connecting to an S VIDEO input jack

Connect the S VIDEO cord (not supplied). You will enjoy high quality images.



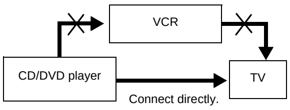
### C If you are connecting to a monitor, projector or AV amplifier (receiver) having component video input jacks (Y, $P_B$, $P_R$)

Connect the component via the COMPONENT VIDEO OUT jacks using component video cords (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate color reproduction and high quality images.



**Note**

Do not connect your player to a VCR. You may not receive a clear image on the TV screen if you pass the player signals via the VCR.






## Step 2: Connecting the Audio Cords

Refer to the chart below to select the connection that best suits your system. The surround effects you will enjoy depend on the connections and components you use.

### Select a connection

Select one of the following connections, A through D.

| Connection | Components to be connected |
|---|---|
| A (page 21) | • TV (stereo) |
| B (page 22) | • Stereo amplifier (receiver)<br>(having L and R audio input jacks only, or having a digital input jack)<br>• 2 speakers<br>(front L and R) |
| B (page 22) | • MD deck/DAT deck |
| C (page 24) | • AV amplifier (receiver) with a Dolby* Surround (Pro Logic) decoder<br>(having L and R audio input jacks only, or having a digital input jack)<br>• 3 speakers<br>(front L and R, and rear (monaural))<br>• 6 speakers<br>(front L and R, center, rear L and R, subwoofer) |
| D (page 26) | • AV amplifier (receiver) having a Dolby Digital or DTS** decoder, and a digital input jack<br>• 6 speakers<br>(front L and R, center, rear L and R, subwoofer) |

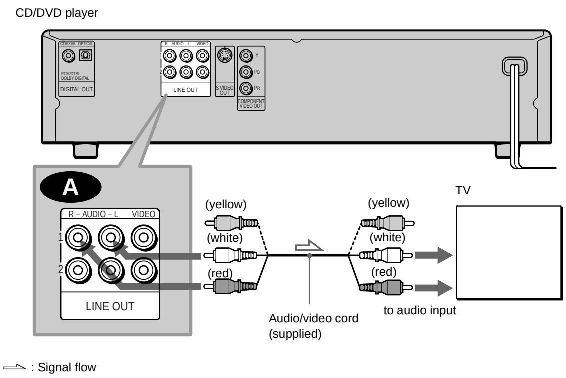
* Manufactured under license from Dolby Laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories. Confidential unpublished works. © 1992-1997 Dolby Laboratories. All rights reserved.
**"DTS" is a registered trademark of Digital Theater Systems, Inc.



### A Connecting to your TV

This connection will use your TV speakers for sound.

■Recommended surround sound effects for this connection.
- TVS DYNAMIC (page 50)
- TVS WIDE (page 50)




The yellow plug is used for video signals (page 18).



### B Connecting to a stereo amplifier (receiver) and 2 speakers/Connecting to an MD deck or DAT deck

This connection will use your 2 front speakers connected to your stereo amplifier (receiver) for sound. If the stereo amplifier (receiver) has audio input jacks L and R only, use B-1. If the amplifier (receiver) has a digital input jack, use B-2. When connecting to an MD deck or a DAT deck, use B-2. In this case, connect the player directly to the MD deck or DAT deck without using your stereo amplifier (receiver).

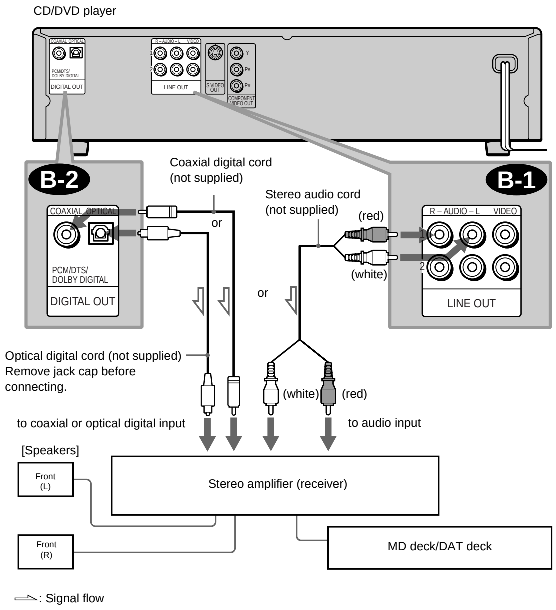
■Recommended surround sound effects for the B-1 connection only.
- TVS STANDARD (page 50)

In connection B-1, you can use the supplied audio/video cord instead of using a separate audio cord.

To realize better surround sound effects, make sure that your listening position is in between your speakers.

**Note**

If you select one of the TVS effects while playing a disc, no sound will come from your speakers with the B-2 connection.




## C Connecting to a Dolby Surround (Pro Logic) decoder amplifier (receiver) and 3 to 6 speakers

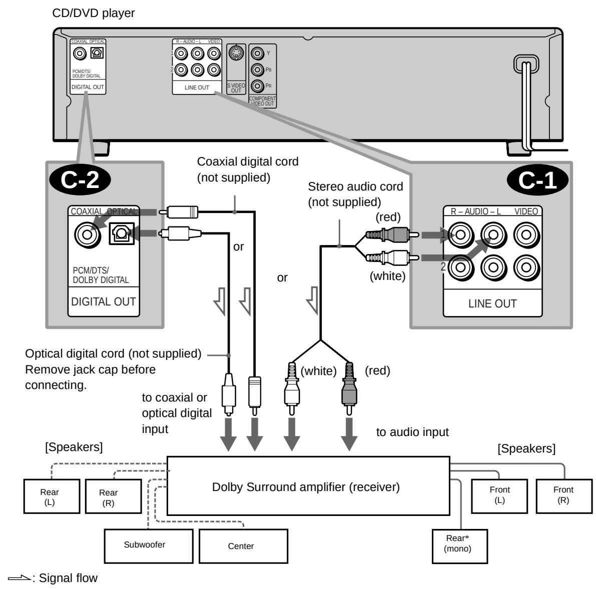
This connection will allow you to enjoy the surround effects of the Pro Logic decoder on your amplifier (receiver). If you have an AV amplifier (receiver) equipped with a Dolby Digital or DTS decoder, refer to page 26.
You can enjoy the Dolby Surround effects only when playing Dolby Surround audio or multichannel audio (Dolby Digital) discs.
Pro Logic uses a minimum of 3 speakers (front L and R, and rear (monaural)). The surround effects are enhanced if 6 speakers (front L and R, center, rear L and R, and subwoofer) are used. If your amplifier (receiver) has R and L audio input jacks only, use C-1. If your amplifier (receiver) has a digital input jack, use C-2.

■Recommended surround sound effects using this connection with your amplifier (receiver).
- Dolby Surround (Pro Logic) (page 66)

For correct speaker setting location, please refer to the operating instructions of the amplifier (receiver).

Hookups






* When connecting 6 speakers, replace the monaural rear speaker with a center speaker, 2 rear speakers and a subwoofer.

## D Connecting to an AV amplifier (receiver) with a digital input jack having a Dolby Digital or DTS decoder, and 6 speakers

This connection will allow you to use the Dolby Digital or DTS decoder function of your AV amplifier (receiver). You are not able to enjoy the TVS sound effects of the player.

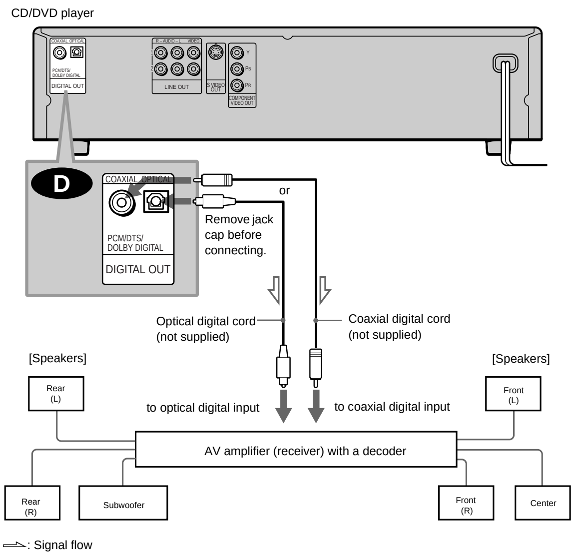
■Recommended surround sound effects using this connection with your amplifier (receiver).
- Dolby Digital (5.1ch) (page 66)
- DTS (5.1ch) (page 66)

To enhance the surround sound effects, refer to the operating instructions of the amplifier (receiver) for correct speaker setting location.

**Note**

After you have completed the connection, be sure to set “DOLBY DIGITAL” to “DOLBY DIGITAL” (page 30). If your AV amplifier (receiver) has a DTS decoder, set “DTS” to “ON” (page 30). Otherwise, no sound or a loud noise will come from the speakers.

Hookups





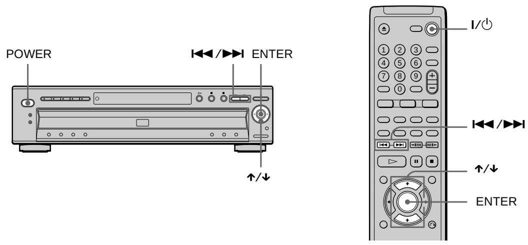

## Step 3: Connecting the Power Cord

Plug the player and TV power cords into an AC outlet.

Do not connect the power cord of your player to the “switched” power socket of an amplifier (receiver). Otherwise, when you turn off the power of your amplifier (receiver), the settings for the player may be lost.

## Step 4: Quick Setup

Follow the steps below to make the minimum number of basic adjustments to use the player. To skip an adjustment press ▶▶I, to return to the previous adjustment, press I◀◀.



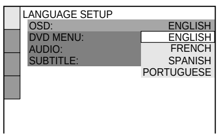

1 **Turn on the TV.**

2 **Switch the input selector on the TV to the player.**

3 **Press POWER on the player and press I/⏻ on the remote.**
“Press [ENTER] to run QUICK SETUP.” appears at the bottom of the screen. If this message does not appear, select “QUICK” under SETUP in the Control Menu (page 14) to run Quick Setup.



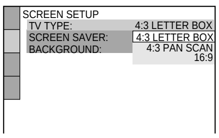
4 **Press ENTER without inserting a disc.**
The Setup Display for selecting the language used in the on-screen display appears.






5 **Press ↑/↓ to select a language.**
The player uses the language selected here to display the DVD menu and subtitles as well.

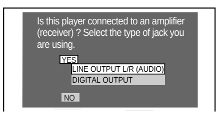
6 **Press ENTER.**
The Setup Display for selecting the aspect ratio of the TV to be connected appears.




7 **Press ↑/↓ to select the item.**

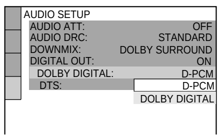
| TV Type | You select | Page |
|---|---|---|
| 4:3 standard TV | 4:3 LETTER BOX or 4:3 PAN SCAN | 64 |
| A wide-screen TV or 4:3 standard TV with the wide-screen mode | 16:9 | 64 |

8 **Press ENTER.**
The Setup Display for selecting the type of jack used to connect your amplifier (receiver) appears.



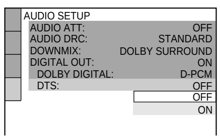

9 **Press ↑/↓ to select the item, then press ENTER.**
- When “NO” or “LINE OUTPUT L/R (AUDIO)” is selected, Quick Setup is finished and connections are complete.
- When “DIGITAL OUTPUT” is selected, the Setup Display for “DOLBY DIGITAL” appears. Proceed to Step 10.

10 **Press ↑/↓ to select the item.**
Choose the item that matches the audio connection you selected in pages 22 to 26 (B through D).




| Audio Cord Connection Type | You select | Page |
|---|---|---|
| B-2 C-2 | D-PCM | 68 |
| D | DOLBY DIGITAL (only if the amplifier/receiver has a Dolby Digital decoder) | 68 |

11 **Press ENTER.**
DTS is selected.




12 **Press ↑/↓ to select the item.**
Choose the item that matches the audio connection you selected in pages 22 to 26 (B through D).

| Audio Cord Connection Type | You select | Page |
|---|---|---|
| B-2 C-2 | OFF | 68 |
| D | ON (only if the amplifier/receiver has a DTS decoder) | 68 |

continued ➡

13 **Press ENTER.**
Quick Setup is finished. All connections and setup operations are complete.

**Note**

You can directly start Quick Setup only when you run it for the first time.
To run Quick Setup a second time, select "QUICK" under SETUP in the Control Menu (page 62).

### Enjoying the surround sound effects

To enjoy the surround sound effects of this player or your amplifier (receiver), the following items must be set as described below for the audio connection you selected in pages 22 to 26 (B through D). Each of these are the default settings and do not need to be adjusted when you first connect the player. Refer to page 62 for using the Setup Display.

**Audio Connection (pages 21 to 26)**

A

No additional settings are needed.

B-1 C-1

| Item | You select | Page |
|---|---|---|
| DOWNMIX | DOLBY SURROUND | 67 |

- If the sound distorts even when the volume is turned down, set "AUDIO ATT" to "ON" (page 66).

B-2 C-2 D

| Item | You select | Page |
|---|---|---|
| DOWNMIX | DOLBY SURROUND | 67 |
| DIGITAL OUT | ON | 67 |





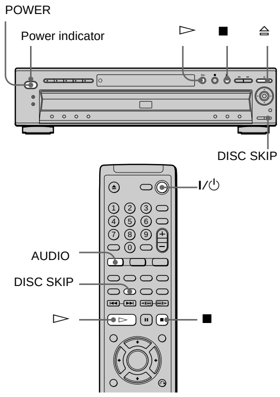


# Playing Discs

DVD VIDEO CD CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted.

Refer to the operating instructions supplied with your disc.



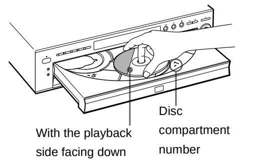

**1 Turn on your TV.**

**2 Switch the input selector on the TV to the player.**

**When using an amplifier (receiver)**
Turn on the amplifier (receiver) and select the appropriate channel.

**3 Press POWER on the player.**
The player enters standby mode and the power indicator lights up in red.

**4 Press ⏏ on the player, and place a disc on the disc tray.**
The player automatically turns on and the power indicator lights up in green.
To place other discs on the tray, press DISC SKIP and place the discs in the order you want to play them.
Each time you press DISC SKIP, the disc tray turns so you can place the discs on the empty compartments. The player plays from the last disc placed on the tray.




**5 Press ▷.**
The disc tray closes, and the player starts playback (continuous play). Adjust the volume on the TV or the amplifier (receiver).

**After following Step 5**
Depending on the disc, a menu may appear on the TV screen. You can play the disc interactively by following the instructions on the menu. DVD (page 36), VIDEO CD (page 37).

**To turn on the player**
Press POWER on the player. The player enters standby mode and the power indicator lights up in red. Press I/⏻ on the remote. The player turns on and the power indicator lights up in green. In standby mode, the player also turns on by pressing ⏏ on the player or by pressing ▷.



**To turn off the player**
Press I/⏻ on the remote. The player enters standby mode and the power indicator lights up in red. To turn off the player completely, press POWER on the player. While playing a disc, do not turn off the player by pressing POWER. Doing so may cancel the menu settings. When you turn off the player, first press ■ to stop playback and then press I/⏻ on the remote.

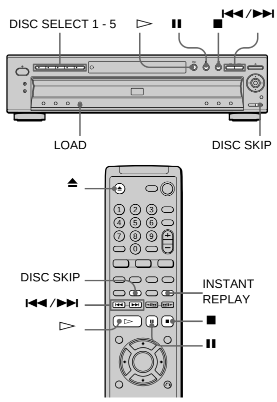
**Notes on playing DTS sound tracks on a CD**
- When playing DTS-encoded CDs, excessive noise will be heard from the analog stereo jacks. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo jacks of the player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel decoder system must be connected to the digital jacks of the player.
- Set the sound to "STEREO" using the AUDIO button when you play DTS sound tracks on a CD (page 49).
- Do not play DTS sound tracks without first connecting the player to an audio component having a built-in DTS decoder. The player outputs the DTS signal via the DIGITAL OUT (COAXIAL or OPTICAL) jack even if "DTS" in "AUDIO SETUP" is set to "OFF" in the Setup Display (page 68), and may affect your ears or cause your speakers to be damaged.

**Notes on playing DVDs with a DTS sound track**
- DTS audio signals are output only through the DIGITAL OUT (COAXIAL or OPTICAL) jack.
- If you connect the player to audio equipment without a DTS decoder, do not set "DTS" to "ON" in "AUDIO SETUP" (page 68). A loud noise may come out from the speakers, affecting your ears or causing the speakers to be damaged.
- When you play a DVD with DTS sound tracks, set "DTS" to "ON" in "AUDIO SETUP" (page 68).





### Additional operations




| To | Operation |
|---|---|
| Select a disc | Press DISC SELECT 1 - 5 on the player |
| Stop | Press ■ |
| Pause | Press II |
| Resume play after pause | Press II or ▷ |
| Go to the next disc | Press DISC SKIP |
| Go to the next chapter, track, or scene in continuous play mode | Press ⏭ |
| Go back to the preceding chapter, track, or scene in continuous play mode | Press ⏮ |
| Stop play and remove the disc | Press ⏏ |
| Replay a previous scene (DVD only) | Press INSTANT REPLAY |
| Check if a disc is in the disc compartment | Press LOAD on the player. The DISC SELECT indicator for each compartment (1 - 5) containing a disc lights up. |

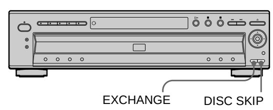
💡 The Instant Replay function is useful when you want to review a scene or dialog that you missed.

💡 Before loading the discs, a DISC SELECT indicator of an empty compartment may be lit.

**Notes**
- You may not be able to use the Instant Replay function with some scenes.
- If you turn the power off by pressing POWER on the player, the loading information will be reset.

### Replacing discs while playing a disc (EXCHANGE)

You can open the disc tray while playing a disc so that you can check which discs are to be played next and replace discs without interrupting playback of the current disc.




**1 Press EXCHANGE.**
The disc tray opens and two disc compartments appear. Even if the player is playing a disc, it doesn't stop playing.

**2 Replace the discs in the compartments with new ones.**

**3 Press DISC SKIP.**
The disc tray turns and another two disc compartments appear.

**4** **Replace the discs in the compartments with new ones.**

**5** **Press EXCHANGE.**
The disc tray closes.

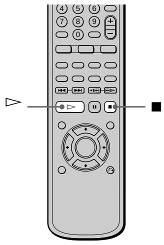
💡 While the disc tray is open,
– If the playback of the current disc ends, the player stops playing. If the disc is played in ONE DISC Repeat Play mode, the current disc starts playing again.
– In ALL DISCS Shuffle Play mode (page 41), titles/tracks/chapters are reshuffled only on the current disc.
– In Program Play mode (page 39), the titles/tracks/chapters only on the current disc are played.

**Note**

Do not push the disc tray to close in Step 5, as you may damage the player.

## Resuming Playback from the Point Where You Stopped the Disc (Resume Play) DVD VIDEO CD CD

When you stop the disc, the player remembers the point where you pressed ■ and "RESUME" appears on the front panel display. As long as you do not open the disc tray, Resume Play works even if the player enters standby mode by pressing I/⏻ on the remote.




**1** **While playing a disc, press ■ to stop playback.**
"RESUME" appears on the front panel display and you can restart the disc from the point where you stopped the disc.
If "RESUME" does not appear, Resume Play is not available.

**2** **Press ▷.**
The player starts playback from the point where you stopped the disc in Step 1.

💡 To play from the beginning of the disc, press ■ twice, then press ▷.



**Notes**

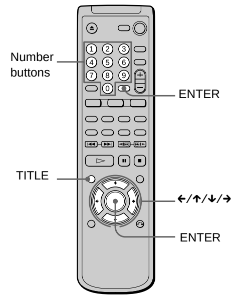
- Depending on where you stopped the disc, the player may not resume playback from exactly the same point.
- The point where you stopped playing is cleared when:
  – you turn the power off by pressing POWER on the player.
  – you change the play mode.
  – you change the settings on the Setup Display.
  – you load disc information by pressing LOAD on the player.

## Using the DVD's Menu DVD

Some discs have a "title menu" or a "DVD menu." On some DVDs, this may simply be called a "menu" or "title."

### Using the title menu

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the title menu.




**1** **Press TITLE.**
The title menu appears on the TV screen. The contents of the menu vary from disc to disc.

**2** **Press ←/↑/↓/→ or the number buttons to select the title you want to play.**

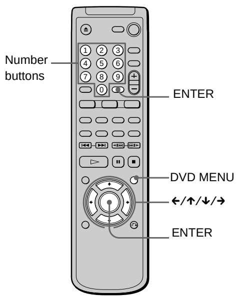
**3** **Press ENTER.**
The player starts playing the selected title.

💡 You can also display the title menu by pressing TITLE on the player.



### Using the DVD menu

Some DVDs allow you to select the disc contents using a menu. When you play these DVDs, you can select items such as the language for the subtitles and the language for the sound using the DVD menu.




**1** **Press DVD MENU.**
The DVD menu appears on the TV screen. The contents of the menu vary from disc to disc.

**2** **Press ←/↑/↓/→ or the number buttons to select the item you want to change.**

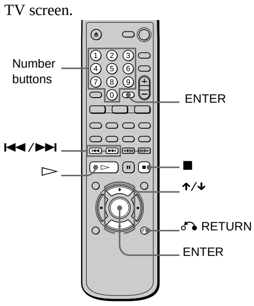
**3** **To change other items, repeat Step 2.**

**4** **Press ENTER.**

💡 You can also display the DVD menu by pressing DVD MENU on the player.

## Playing VIDEO CDs with PBC Functions (PBC Playback) VIDEO CD

With PBC (Playback Control) functions, you can enjoy simple interactive operations, search functions, and other operations.
PBC playback allows you to play VIDEO CDs interactively by following the menu on the TV screen.




**1** **Start playing a VIDEO CD with PBC functions.**
The menu for your selection appears.

**2** **Select the item number you want by pressing ↑/↓ or the number buttons.**

**3** **Press ENTER.**

**4** **Follow the instructions in the menu for interactive operations.**
Refer to the instructions supplied with the disc, as the operating procedure may differ according to the VIDEO CD.

**To go back to the menu**
Press ↶ RETURN.



💡 To play without using PBC, press I◀◀/▶▶I or the number buttons while the player is stopped to select a track, then press ▷ or ENTER.
"Play without PBC." appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu.
To return to PBC playback, press ■ twice then press ▷.

**Note**

Depending on the VIDEO CD, "Press ENTER" in Step 3 may appear as "Press SELECT" in the instructions supplied with the disc. In this case, press ▷.

## Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play) DVD VIDEO CD CD

You can set the following play modes:
- Program Play (page 38)
- Shuffle Play (page 41)
- Repeat Play (page 42)
- A-B Repeat Play (page 43)

**Notes**

- The play mode is canceled when:
  – you open the disc tray.
  – the player enters standby mode by pressing I/⏻ on the remote.
  – you turn the power off by pressing POWER on the player.
- If you are playing a VIDEO CD with PBC, you must first cancel PBC playback before you can set a play mode (except when you want to set A-B Repeat Play for moving pictures).

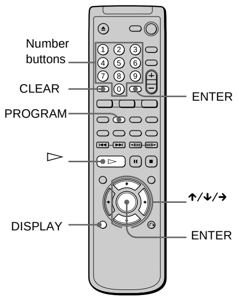
### Selecting the disc mode (One Disc or All Discs)

You can play one disc or all of the discs in the player. Before setting Program Play, Shuffle Play, or Repeat Play, you must select whether to set those play mode on one disc or all of the discs.


**Press ONE/ALL DISCS on the remote, or ONE/ALL on the player to select (ONE DISC mode) or (ALL DISCS mode).**

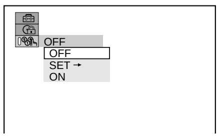
## Creating your own program (Program Play)

You can play the contents of the discs in the order you want by arranging the order of the discs, titles, chapters, or tracks to create your own program. You can program up to 99 titles, chapters, and tracks. By selecting ALL DISCS mode, you can create a program for all of the discs in the player.

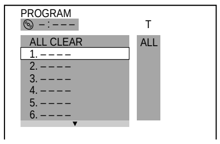



**1 Press DISPLAY while the player is in stop mode.**
The Control Menu is displayed.

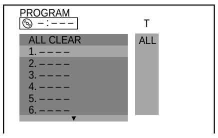
**2 Press ↑/↓ to select (PROGRAM) and press ENTER.**



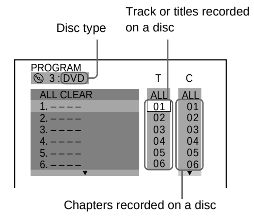

**3 Press ↑/↓ to select "SET→" and press ENTER.**
The display for programming appears.




**4 Press →.**
It is ready to set the first disc for the program.



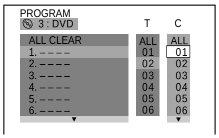

**5 Select the disc you want to program using the number buttons or ↑/↓, then press ENTER.**
The cursor moves to the title or track (in this case, "01").



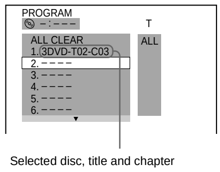

"?" appears when the player has not played a disc.

**6 Select the title, chapter, or track you want to program.**

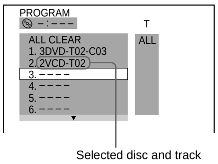
**■When playing a DVD**
For example, select chapter "03" of title "02."
Press ↑/↓ or the number buttons to select "02" under "T," then press ENTER.




Next, press ↑/↓ or the number buttons to select "03" under "C," then press ENTER.




**■When playing a VIDEO CD or CD**
For example, select track "02."
Press ↑/↓ or the number buttons to select "02" under "T," then press ENTER.




**7 To program other discs, titles, chapters, or tracks, repeat Steps 4 to 6.**
The programmed discs, titles, chapters, and tracks are displayed in the selected order.

**8 Press ▷ to start Program Play.**
Program Play begins.
When the program ends, you can restart the same program again by pressing ▷.

### To return to normal play
Press CLEAR, or select "OFF" in Step 3.
To play the same program again, select "ON" in Step 3 and press ▷.

### To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

### To change the program
1 In Step 4, select the program number of the disc, title, chapter, or track you want to change using ↑/↓ or the number buttons, and press →.
2 Follow Step 5 for new programming.

### To cancel the programmed order
To cancel all the titles, chapters, or tracks in the programmed order, press ↑, and select "ALL CLEAR" in Step 6. To cancel the selected program, select the program using ↑/↓ in Step 6, then press CLEAR.

You can do Repeat Play or Shuffle Play of the programmed discs, titles, chapters, or tracks by pressing REPEAT or SHUFFLE during Program Play.

You can select "PROGRAM" directly by pressing PROGRAM.



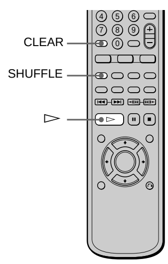
continued →



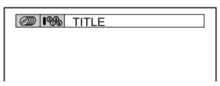
**Note**
The number of titles, chapters, or tracks displayed are the same number of titles, chapters, or tracks recorded on a disc.

## Playing in random order (Shuffle Play)

You can have the player "shuffle" discs, titles, chapters, or tracks and play them in a random order. Subsequent "shuffling" may produce a different playing order. By selecting ALL DISCS mode (page 38), you can shuffle all of the discs in the player.




**1 Press SHUFFLE during playback.**
The Control Bar is displayed.




**2 Press SHUFFLE repeatedly to select the item you want to set.**

**■When playing a DVD (Program Play is set to OFF)**
- DISC*: Shuffles discs and plays them in random order.
- TITLE: Shuffles titles and plays them in random order.
- CHAPTER: Shuffles chapters and plays them in random order.

**■When playing a VIDEO CD or CD (Program Play is set to OFF)**
- DISC*: Shuffles discs and plays them in random order.
- TRACK: Shuffles tracks and plays them in random order.

*Appears only when you select ALL DISCS mode.

**■When playing a VIDEO CD, CD, or DVD (Program Play is set to ON)**
- ON: Shuffles titles or tracks selected in Program Play and plays them in random order.

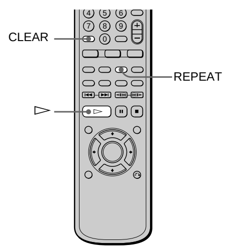
### To return to normal play
Press CLEAR or select "OFF" in Step 2.

You can set the player to "shuffle" in stop mode as well. After pressing SHUFFLE to select the item you want to set, press ▷. Shuffle Play starts.

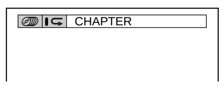
**Note**
Up to 96 chapters in a disc can be played in random order when "CHAPTER" is selected.

## Playing repeatedly (Repeat Play)

You can play all discs, or all of the titles or tracks on a disc or a single title, chapter, or track repeatedly.
You can use a combination of Shuffle or Program Play modes. By selecting ALL DISCS mode (page 38), you can repeat all of the discs in the player.




**1 Press REPEAT during playback.**
The Control Bar appears.




**2 Press REPEAT repeatedly to select the item you want to set.**

**■When playing a DVD (Program Play and Shuffle Play are set to OFF)**
- DISC: Repeats all of the titles on the disc when you select ONE DISC mode, or all of the titles on all of the discs when you select ALL DISCS.
- TITLE: Repeats the current title on a disc.
- CHAPTER: Repeats the current chapter.

**■When playing a VIDEO CD or CD (Program Play and Shuffle Play are set to OFF)**
- DISC: Repeats all of the tracks on a disc when you select ONE DISC mode, or all of the tracks on all of the discs when you select ALL DISCS mode.
- TRACK: Repeats the current track.

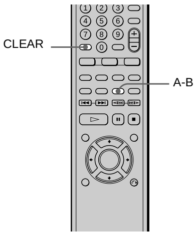
**■When Program Play or Shuffle Play is on**
- ON: Repeats Program Play or Shuffle Play.

### To return to normal play
Press CLEAR or select "OFF" in Step 2.

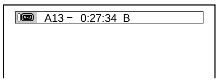
You can set the player to "repeat" in stop mode as well. After pressing REPEAT to select the item you want to set, press ▷. Repeat Play starts.

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

You can play a specific portion of a title, chapter, or track repeatedly. (This function is useful when you want to memorize lyrics, etc.)




**1 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press A-B.**
The Control Bar appears.
The starting point (point A) is set.




**2 When you reach the ending point (point B), press A-B again.**
The set points are displayed and the player starts repeating this specific portion.
"A-B" appears on the front panel display during A-B Repeat Play.

**To return to normal play**
Press CLEAR.

**Notes**
- You can set A-B Repeat Play for only one specific section.
- When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Program Play are canceled.
- You cannot set the start point (point A) on one disc and ending point (point B) on other disc.

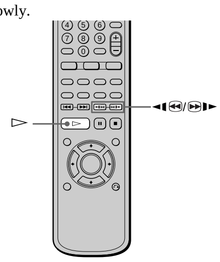






## Searching for a Particular Point on a Disc (Scan, Slow-motion Play) DVD VIDEO CD CD

You can locate a particular point on a disc quickly by monitoring the picture or playing back slowly.




**Note**
Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

### Locating a point quickly by playing a disc in fast forward or fast reverse (Scan)

Press ◄◄ or ►► while playing a disc. When you find the point you want, press ▷ to return to normal speed.
Each time you press ◄◄ or ►► during scan, the playback speed changes. Three speeds are available. With each press the indication changes as follows:

Playback direction
x2► (DVD/CD only) → 1►► → 2►►

Opposite direction
x2◄ (DVD only) → 1◄◄ → 2◄◄

The x2►/x2◄ playback speed is about twice the normal speed. The 2►►/2◄◄ playback speed is faster than 1►►/1◄◄.

### Watching frame by frame (Slow-motion Play) DVD VIDEO CD

You can use this function only for DVDs or VIDEO CDs. Press ◄◄ or ►► when the player is in pause mode. To return to the normal speed, press ▷.
Each time you press ◄◄ or ►► during Slow-motion Play, the playback speed changes. Two speeds are available. With each press the indication changes as follows:

Playback direction
2▮► ←→ 1▮►

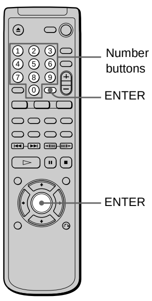
Opposite direction (DVD only)
2◄▮ ←→ 1◄▮

The 2▮►/2◄▮ playback speed is slower than 1▮►/1◄▮.

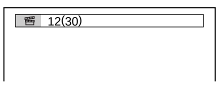


## Selecting a Chapter or Track DVD VIDEO CD CD

You can select a chapter or track directly by inputting the chapter or track number.




**1 Input the chapter or track number using the number buttons during playback.**
For example, to select chapter 12, press 1, then 2.




**■When playing a DVD**
(CHAPTER)

**■When playing a VIDEO CD (without PBC functions)**
(TRACK)

**■When playing a CD**
(TRACK)

**If you make a mistake**
Cancel the number by pressing CLEAR, then press a correct number.

**2 Press ENTER.**
The player starts playback from the selected chapter or track.

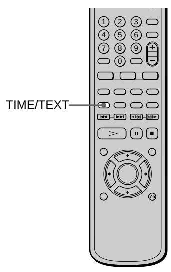






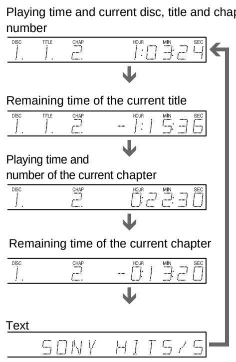
## Checking the Playing Time and Remaining Time on the Front Panel Display DVD VIDEO CD CD

You can check information about the disc, such as the remaining time, total number of titles of a DVD, or tracks of a CD or VIDEO CD, using the front panel display (page 10).

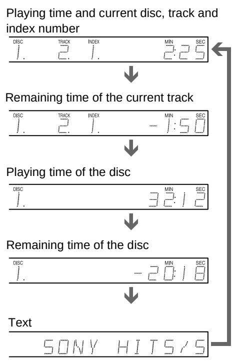



**Press TIME/TEXT.**
Each time you press TIME/TEXT while playing the disc, the display changes as shown in the following chart.

**When playing a DVD**




**When playing a VIDEO CD (without PBC functions) or CD**




When playing VIDEO CDs with PBC functions, the scene number and the playing time are displayed.

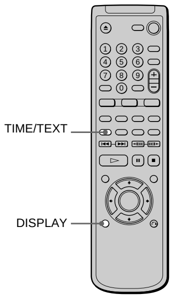
💡 The playing time and remaining time of the current chapter, title, track, scene, or disc will also appear on your TV screen. See the following section “Checking the Playing Time and Remaining Time” for instructions on how to read this information.

**Note**

Depending on the type of disc being played and the playing mode, the above mentioned disc information may not be displayed.

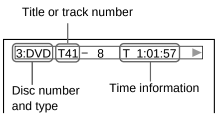
## Checking the Playing Time and Remaining Time DVD VIDEO CD CD

You can check the playing time and remaining time of the current title, chapter, or track, and the total playing time or remaining time of the disc. Also, you can check the DVD/CD text recorded on the disc.




**1 Press DISPLAY once during playback.**

The Status Bar is displayed.




continued ➡



**2 Press TIME/TEXT repeatedly to change the time information.**

The display and the kinds of time that you can change depend on the disc you are playing.

**■When playing a DVD**

- T **:**:**
  Playing time of the current title
- T–**:**:**
  Remaining time of the current title
- C **:**:**
  Playing time of the current chapter
- C–**:**:**
  Remaining time of the current chapter

**■When playing a VIDEO CD (with PBC functions)**

- **:**
  Playing time of the current scene

**■When playing a VIDEO CD (without PBC functions) or CD**

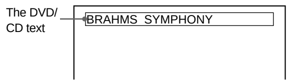
- T **:**
  Playing time of the current track
- T–**:**
  Remaining time of the current track
- D **:**
  Playing time of the current disc
- D–**:**
  Remaining time of the current disc

**To turn off the Status Bar**

Press DISPLAY repeatedly until the Status Bar is turned off.

**Checking the DVD/CD text**

Press TIME/TEXT repeatedly in Step 2 to display the text recorded on the DVD/CD.




💡 If the DVD/CD text does not fit on a single line, you can see the entire text by watching it scroll across the front panel display.

💡 You can select the time and text directly by pressing TIME/TEXT.

**Notes**

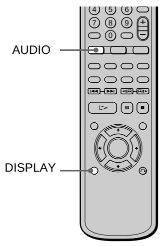
- Only letters of the alphabet can be displayed.
- This player can only display the first level of DVD/CD text, such as the disc’s name or title.





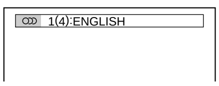
## Changing the Sound DVD VIDEO CD CD

If the DVD is recorded with multilingual tracks, you can select the language you want while playing the DVD.
If the DVD is recorded in multiple audio formats (PCM, Dolby Digital, or DTS), you can select the audio format you want while playing the DVD.
With stereo CDs or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. (In this case, the sound loses its stereo effect.) For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can select the left channel and hear the instruments from both speakers.




**1 Press AUDIO during playback.**

The Control Bar is displayed.
The number in parentheses indicates the total number of available audio signals.




**2 Press AUDIO repeatedly to select the desired audio signal.**

**■When playing a DVD**

Depending on the DVD, the choice of language varies.
When 4 digits are displayed, they represent the language code. Refer to the language code list on page 76 to see which language the code represents.
When the same language is displayed two or more times, the DVD is recorded in multiple audio formats.

**■When playing a VIDEO CD or CD**

The default setting is underlined.

- STEREO: The standard stereo sound
- 1/L: The sound of the left channel (monaural)
- 2/R: The sound of the right channel (monaural)

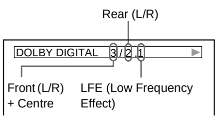
**Notes**

- For discs not in multiple audio format, you cannot change the sound.
- While playing a DVD, the sound may change automatically.

**Checking the audio signal format** DVD

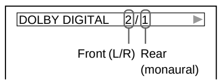
If you press DISPLAY twice during playback, the format of the current audio signal (Dolby Digital, DTS, PCM, etc.) appears as shown below.

Example
- Dolby Digital 5.1 ch

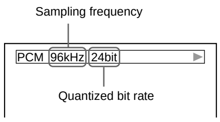





- Dolby Digital 3 ch




- PCM (Stereo)




**About audio signals**

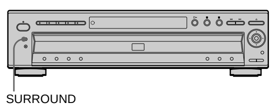
Audio signals recorded in a disc contain the sound elements (channels) shown below. Each channel is output from a separate speaker.
- Front (L)
- Front (R)
- Center
- Rear (L)
- Rear (R)
- Rear (Monaural): This signal can be either the Dolby Surround Sound processed signals or the Dolby Digital sound’s monaural rear audio signals.
- LFE (Low Frequency Effect) signal

**Note**

If “DTS” is set to “OFF” in “AUDIO SETUP,” the DTS track selection option will not appear on the screen even if the disc contains DTS tracks (page 68).

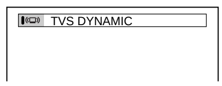
## TV Virtual Surround Sound Settings (TVS) DVD VIDEO CD CD

When you connect a stereo TV or 2 front speakers, TV Virtual Surround lets you enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers (L: left, R: right) without using actual rear speakers. This function is designed to work with the LINE OUT L/R (AUDIO) 1/2 jacks. Note that if you select one of the TVS settings while playing a DVD, the player does not output the Dolby Digital signals from the DIGITAL OUT (COAXIAL or OPTICAL) jack (when you set “DOLBY DIGITAL” in “AUDIO SETUP” to “D-PCM”) (page 68).




**1 Press SURROUND during playback.**

The Control Bar is displayed.




**2 Press SURROUND repeatedly to select one of the TVS (TV Virtual Surround) sounds.**

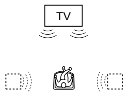
Refer to the explanations given for each item.
- TVS DYNAMIC
- TVS WIDE
- TVS NIGHT
- TVS STANDARD

### To reset the TVS setting

In Step 2, select "OFF."

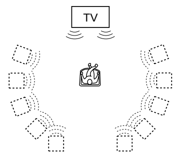
**TVS (TV Virtual Surround) DYNAMIC**

Uses sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. The sound imaging effect is distinct and clearly reproduces each aural element of the audio track.
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.




**TVS (TV Virtual Surround) WIDE**

Uses sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. This gives the sound an expanded effect that fills the area surrounding the listener.
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

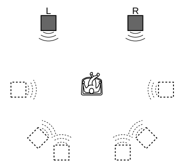



**TVS (TV Virtual Surround) NIGHT**

The large sounds, such as explosions, are suppressed, but the quieter sounds are unaffected. This feature is useful when you don't want to disturb other people but still want to hear the dialog and enjoy the surround sound effects of TVS WIDE.

**TVS (TV Virtual Surround) STANDARD**

Uses sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. Use this setting when you want to use TVS with 2 separate speakers and retain the sound quality.




L: Left front speaker
R: Right front speaker
□: Virtual speakers

If you select any TVS setting other than "OFF," the indicator on the player lights up.

**Notes**

- When you select an effect, the sound cuts off for a moment.
- When the playing signal does not contain a signal for the rear speakers (page 49), the surround effects may be difficult to hear.
- When you select one of the TVS modes, turn off the surround setting of the connected TV or amplifier (receiver).
- Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings. Otherwise, the TVS effect may be hard to discern.
- TVS NIGHT only works with Dolby Digital discs. However, not all discs will respond to the TVS NIGHT function in the same way.
- If you use the DIGITAL OUT (COAXIAL or OPTICAL) jack, sound will come from your speakers but it will not have the TVS effect.

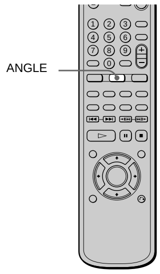




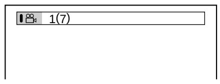


## Changing the Angles DVD

If various angles (multi-angles) for a scene are recorded on the DVD, "ANGLE" appears on the front panel display. This means that you can change the viewing angle.
For example, while playing a scene of a train in motion, you can display the view from either the front of the train, the left window of the train, or from the right window without having the train's movement interrupted.




**1 Press ANGLE during playback.**
The Control Bar is displayed.
The number in parentheses indicates the total number of available angles.



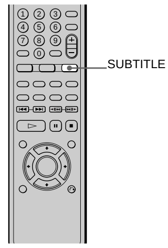

**2 Press ANGLE repeatedly to select the angle number.**
The scene changes to the selected angle.

**Note**

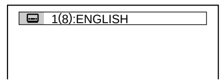
Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

## Displaying the Subtitles DVD

If subtitles are recorded on the disc, you can turn the subtitles on and off whenever you want while playing. If multilingual subtitles are recorded on the disc, you can change the subtitle language while playing, and turn it on or off whenever you want. For example, you can select the language you want to practice and turn the subtitles on for better understanding.




**1 Press SUBTITLE during playback.**
The Control Bar is displayed.
The number in parentheses indicates the total number of available subtitles.




**2 Press SUBTITLE repeatedly to select the language.**
Depending on the DVD, the choice of language varies.
When 4 digits are displayed, they indicate the language code. Refer to the language code list on page 76 to see which language the code represents.



### To turn off the subtitles

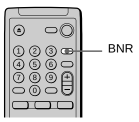
Select "OFF" in Step 2.

**Note**

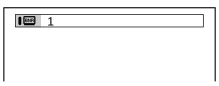
Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it.

## Adjusting the Picture Quality (BNR) DVD VIDEO CD

The Block Noise Reduction (BNR) function adjusts the picture quality by reducing the "block noise" or mosaic like patterns that appear on your TV screen.




**1 Press BNR during playback.**
The Control Bar is displayed.




**2 Press BNR repeatedly to select a level.**
As the value increases, the mosaic like patterns on your TV screen will decrease.
- 1: reduces the "block noise."
- 2: reduces the "block noise" more than 1.
- 3: reduces the "block noise" more than 2.

### To reset the BNR setting

Select "OFF" in Step 2.

You can also change the BNR value by pressing BNR on the player. If you select any setting other than "OFF," the indicator on the player lights up.

**Notes**

- If the outlines of the images on your screen should become blurred, set "BNR" to "OFF."
- Depending on the disc or the scene being played, the BNR effect may be hard to discern.







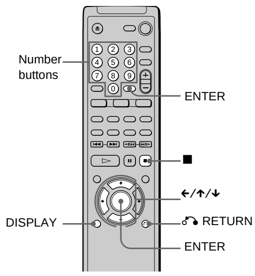
## Locking Discs (Custom Parental Control, Parental Control)

You can set two kinds of playback restrictions for the desired disc.
- Custom Parental Control
  You can set the playback restrictions so that the player will not play inappropriate discs.
- Parental Control
  Playback of some DVDs can be limited according to a predetermined level such as the age of the users.

The same password is used for both Parental Control and Custom Parental Control.

### Custom Parental Control DVD VIDEO CD CD

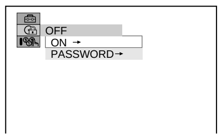
You can set the same Custom Parental Control password for up to 50 discs. When you set the fifty-first disc, the first disc is canceled.




**1 Insert the disc you want to lock.**
If the disc is playing, press ■ to stop playback.

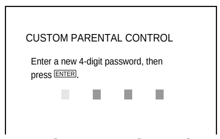
**2 Press DISPLAY while the player is in stop mode.**
The Control Menu is displayed.

**3 Press ↑/↓ to select (CUSTOM PARENTAL CONTROL), then press ENTER.**
"CUSTOM PARENTAL CONTROL" is selected.



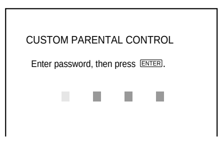

**4 Press ↑/↓ to select "ON →," then press ENTER.**

**■If you have not entered a password**
The display for registering a new password appears.




Enter a 4-digit password using the number buttons, then press ENTER.
The display for confirming the password appears.

**■When you have already registered a password**
The display for entering the password appears.



**5 Enter or re-enter your 4-digit password using the number buttons, then press ENTER.**
"Custom parental control is set." appears and then the screen returns to the Control Menu display.

**If you make a mistake entering your password**
Press ← before you press ENTER and input the correct number.

### If you make a mistake
Press RETURN, then start from Step 3 again.

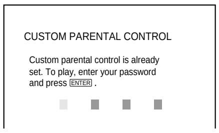
### To turn off the Control Menu
Press RETURN, then press DISPLAY repeatedly until the Control Menu is turned off.

### To turn off the Custom Parental Control function
1 In Step 4, select "OFF →," then press ENTER.
2 Enter your 4-digit password using the number buttons, then press ENTER.

### To change the password
1 In Step 4, press ↑/↓ to select "PASSWORD →," then press ENTER.
The display for entering the password appears.
2 Enter your 4-digit password using the number buttons, then press ENTER.
3 Enter a new 4-digit password using the number buttons, then press ENTER.
4 To confirm your password, re-enter it using the number buttons, then press ENTER.

## Playing the disc for which Custom Parental Control is set

**1 Insert the disc for which Custom Parental Control is set.**
The CUSTOM PARENTAL CONTROL display appears.




**2 Enter your 4-digit password using the number buttons, then press ENTER.**
The player is ready for playback.

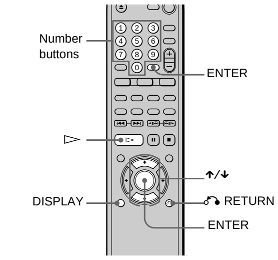
If you forget your password, enter the 6-digit number "199703" using the number buttons when the CUSTOM PARENTAL CONTROL display asks you for your password, then press ENTER. The display will ask you to enter a new 4-digit password.





## Limiting playback by children (Parental Control) DVD

Playback of some DVDs can be limited according to a predetermined level such as the age of the users. The Parental Control function allows you to set a playback limitation level.
A scene that is limited is not played, or it is replaced by a different scene.

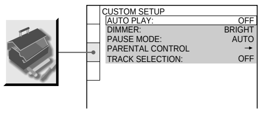



**1 Press DISPLAY while the player is in stop mode.**

**2 Press ↑/↓ to select (SETUP), then press ENTER.**
The Control Menu is displayed.

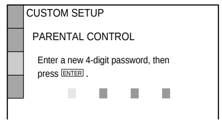
**3 Press ↑/↓ to select "CUSTOM," then press ENTER.**
The Setup Display appears.

**4 Press ↑/↓ to select "CUSTOM SETUP," then press ENTER.**
"CUSTOM SETUP" is displayed.



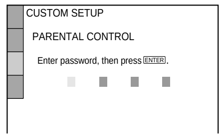

**5 Press ↑/↓ to select "PARENTAL CONTROL →," then press ENTER.**

**■If you have not entered a password**
The display for registering a new password appears.

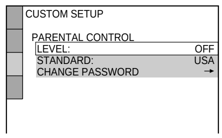



Enter a 4-digit password using the number buttons, then press ENTER.
The display for confirming the password appears.

**■When you have already registered a password**
The display for entering the password appears.

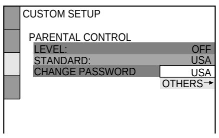



**6 Enter or re-enter your password using the number buttons, then press ENTER.**
The display for setting the playback limitation level and changing the password appears.



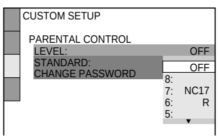



**7 Press ↑/↓ to select "STANDARD," then press ENTER.**
The selection items for "STANDARD" are displayed.

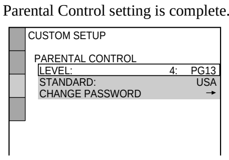



**8 Press ↑/↓ to select a geographic area as the playback limitation level, then press ENTER.**
The area is selected.
When you select "OTHERS →," select and enter the standard code in the table on page 58 using the number buttons.

**9 Press ENTER.**
The selection items for "LEVEL" are displayed.




**10 Select the level you want using ↑/↓, then press ENTER.**
Parental Control setting is complete.




The lower the value, the more strict the limitation.

### If you make a mistake
Press RETURN to go back to the previous screen.

### To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

### To turn off the Parental Control function and play the DVD after entering your password
Set "LEVEL" to "OFF" in Step 10.

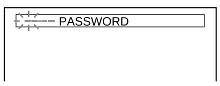
### To change the password
1 In Step 7, select "CHANGE PASSWORD →" using ↓, then press ENTER.
The display for entering the password appears.
2 Follow Step 6 to enter a new password.

Using Various Additional Functions



## Playing the disc for which Parental Control is set

**1 Insert the disc and press ▷.**
The Control Bar appears.




**2 Enter your 4-digit password using the number buttons, then press ENTER.**
The player starts playback.

If you forget your password, remove the disc and repeat Step 1 to 5 of "Limiting playback by children." When you are asked to enter your password, enter "199703" using the number buttons, then press ENTER. The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password in Step 6, replace the disc in the player and press ▷. When the Control Bar appears, enter your new password.

**Note**

When you play DVDs which do not have the Parental Control function, playback cannot be limited on this player.

### Area Code

| Standard | Code number | Standard | Code number |
|---|---|---|---|
| Argentina | 2044 | Korea | 2304 |
| Australia | 2047 | Malaysia | 2363 |
| Austria | 2046 | Mexico | 2362 |
| Belgium | 2057 | Netherlands | 2376 |
| Brazil | 2070 | New Zealand | 2390 |
| Canada | 2079 | Norway | 2379 |
| Chile | 2090 | Pakistan | 2427 |
| China | 2092 | Philippines | 2424 |
| Denmark | 2115 | Portugal | 2436 |
| Finland | 2165 | Russia | 2489 |
| France | 2174 | Singapore | 2501 |
| Germany | 2109 | Spain | 2149 |
| Hong Kong | 2219 | Sweden | 2499 |
| India | 2248 | Switzerland | 2086 |
| Indonesia | 2238 | Taiwan | 2543 |
| Italy | 2254 | Thailand | 2528 |
| Japan | 2276 | United Kingdom | 2184 |

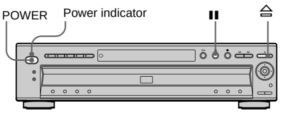
## Operation Sound Effects

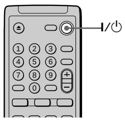
**(Sound Feedback)**

The player beeps when the following operations are performed.
The default setting of the Sound Feedback function is set to off.

| Operation | Operation sound |
|---|---|
| Power is turned on | One beep |
| Power is turned off | Two beeps |
| ▷ is pressed | One beep |
| ❚❚ is pressed | Two beeps |
| Playback is stopped | One long beep |
| Operation is not possible | Three beeps |

### To set Sound Feedback




**1 Press POWER on the player, then press I/⏻ on the remote.**
The power indicator lights up in green. When there is a disc in the player, press ≜ and remove the disc. Then press ≜ again to close the disc tray.

**2 Press and hold ❚❚ on the player for more than two seconds.**
You will hear one beep and the Sound Feedback function is turned on.

#### To turn off the Sound Feedback function

When there is no disc in the player, press and hold ❚❚ on the player for more than two seconds. You will hear two beeps and the Sound Feedback function is turned off.







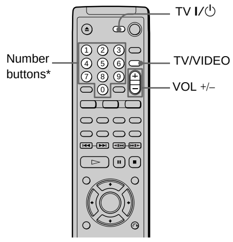
## Controlling Your TV or AV Amplifier (Receiver) with the Supplied Remote

By adjusting the remote signal, you can control your TV or AV amplifier (receiver) with the supplied remote.
If you connect the player with an AV amplifier (receiver), you can control the volume with the supplied remote.

**Notes**

- Depending on the units being connected, you may not be able to control your TV or AV amplifier (receiver) using some of the buttons below.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number may be reset to the default setting. Reset the appropriate code number.

### Controlling TVs with the remote




**1 Hold down TV I/⏻, and enter your TV's manufacturer's code (see the table) using the number buttons.**

**2 Release TV I/⏻.**

#### Code number of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

| Manufacturer | Code number | Manufacturer | Code number |
|---|---|---|---|
| Sony (default) | 01 | Panasonic | 06, 19 |
| Akai | 04 | Philco | 03, 04 |
| AOC | 04 | Philips | 08 |
| Centurion | 12 | Pioneer | 16 |
| Coronado | 03 | Portland | 03 |
| Curtis-Mathes | 12 | Quasar | 06, 18 |
| Daytron | 12 | Radio Shack | 05, 14 |
| Emerson | 03,04,14 | RCA | 04, 10 |
| Fisher | 11 | Sampo | 12 |
| General Electric | 06, 10 | Sanyo | 11 |
| Gold Star | 03,04,17 | Scott | 12 |
| Hitachi | 02,03 | Sears | 07,10,11 |
| J. C. Penney | 04,12 | Sharp | 03,05,18 |
| JVC | 09 | Sylvania | 08, 12 |
| KMC | 03 | Teknika | 03,08,14 |
| Magnavox | 03,08,12 | Toshiba | 07 |
| Marantz | 04, 13 | Wards | 03,04,12 |
| MGA/Mitsubishi | 04,12,13,17 | Yorx | 12 |
| NEC | 04, 12 | Zenith | 15 |

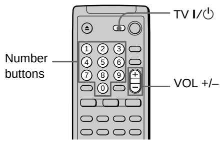
#### Controlling the TV

You can control your TV using the buttons below.

| By pressing | You can |
|---|---|
| TV I/⏻ | Turn the TV on or off |
| VOL (volume) +/– | Adjust the volume of the TV |
| TV/VIDEO | Switch the TV's input source between the TV and other input sources |

* Use the number buttons only to enter the code number of controllable TVs.

### Controlling AV amplifiers (receivers) with the remote




**1 Hold down TV I/⏻, and enter your AV amplifier's (receiver's) manufacturer's code (see the table) using the number buttons.**

**2 Release TV I/⏻.**

#### Code numbers of controllable AV amplifiers (receivers)

If more than one code number is listed, try entering them one at a time until you find the one that works with your AV amplifier (receiver).

| Manufacturer | Code number |
|---|---|
| Sony | 91, 89 |
| Denon | 84, 85, 86 |
| Kenwood | 92, 93 |
| Onkyo | 81, 82, 83 |
| Pioneer | 99 |
| Sansui | 87 |
| Technics | 97, 98 |
| Yamaha | 94, 95, 96 |

#### Controlling the AV amplifier (receiver)

You can change the volume of the AV amplifier (receiver) using VOL +/–.





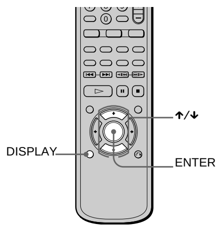
Settings and Adjustments

## Using the Setup Display

DVD VIDEO CD CD

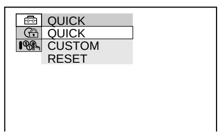
By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things. For details on each Setup Display item see page 63 through 68. For an overall list of Setup Display items, see page 77.

### How to use the Setup Display

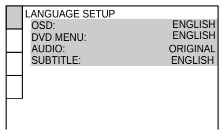



**1 Press DISPLAY on the remote when the player is in stop mode.**
The Control Menu Appears.

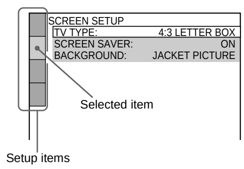
**2 Press ↑/↓ to select [SETUP icon] (SETUP) and press ENTER.**
The options for SETUP appear.



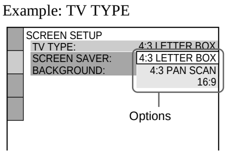

**3 Press ↑/↓ to select "CUSTOM" and press ENTER.**
The Setup Display appears.



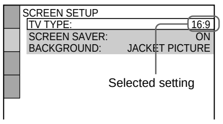

**4 Press ↑/↓ to select the setup item from the displayed list: "LANGUAGE SETUP," "SCREEN SETUP," "CUSTOM SETUP," or "AUDIO SETUP." Then press ENTER.**
The selected setup item appears.
Example: SCREEN SETUP




**5 Select an item using ↑/↓, then press ENTER.**
The options for the selected item appear.
Example: TV TYPE



**6** **Select a setting using ↑/↓, then press ENTER.**
The setting is selected and setup is complete.
Example: 16:9




**To turn off the Setup Display**

Press DISPLAY repeatedly until the Setup Display is turned off.

💡 If you select "QUICK" in Step 3, you will enter the Quick Setup mode (page 28).
Follow from Step 5 of the Quick Setup explanation to make basic adjustments.

💡 If you select "RESET" in Step 3, you can reset all of the "SETUP" settings on pages 77 to 78 (except for "PARENTAL CONTROL") to the default settings. After you select "RESET" and press ENTER, select "YES" and press ENTER to reset the settings (it takes a few seconds to complete), or select "NO" and press ENTER to return to the Control Menu. Do not press POWER or I/⏻ when resetting the player.

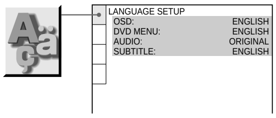
## Setting the Display or Sound Track Language

**(LANGUAGE SETUP)**

DVD VIDEO CD CD

"LANGUAGE SETUP" allows you to set various languages for the on-screen display or sound track.

Select "LANGUAGE SETUP" in the Setup Display. For details on using the display, see "Using the Setup Display" (page 62).




**■OSD (On-Screen Display)**

Switches the display language on the screen. Selects the language from the displayed list.

**■DVD MENU (DVD only)**

You can select the desired language for the DVD menu.

**■AUDIO (DVD only)**

Switches the language of the sound track. Selects the language from the displayed list. When you select "ORIGINAL," the language given priority in the disc is selected.

**■SUBTITLE (DVD only)**

Switches the language of the subtitles recorded on the DVD.
Select the language from the displayed list. When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language you selected for the sound track.

continued ➡

Settings and Adjustments



💡 If you select "OTHERS →" in "DVD MENU," "SUBTITLE," and "AUDIO," select and enter the language code from the list using the number buttons (page 76).
After you have made a selection, the language code (4 digits) is displayed the next time you select "OTHERS →."

**Note**

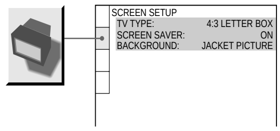
When you select a language that is not recorded on the DVD, one of the recorded languages will be automatically selected (except for the "OSD").

## Settings for the Display

**(SCREEN SETUP)** DVD VIDEO CD CD

Choose settings according to the TV to be connected.

Select "SCREEN SETUP" in the Setup Display. For details on using the display, see "Using the Setup Display" (page 62).
The default settings are underlined.




**■TV TYPE (DVD only)**

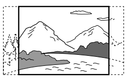
Selects the aspect ratio of the connected TV (4:3 standard or wide).

| | |
|---|---|
| <u>4:3 LETTER BOX</u> | Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen. |
| 4:3 PAN SCAN | Select this when you connect a 4:3 screen TV. Automatically displays the wide picture on the entire screen and cuts off the portions that do not fit. |
| 16:9 | Select this when you connect a wide-screen TV or a TV with a wide mode function. |

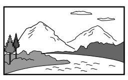


4:3 LETTER BOX

4:3 PAN SCAN



16:9



**Note**

Depending on the DVD, "4:3 LETTER BOX" may be selected automatically instead of "4:3 PAN SCAN" or vice versa.

**■SCREEN SAVER**

Turns on and off the screen saver so that the screen saver image appears when you leave the player in pause or stop mode for 15 minutes, or when you play back a CD for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press ▷ to turn off the screen saver.

| | |
|---|---|
| <u>ON</u> | Turns on the screen saver. |
| OFF | Turns off the screen saver. |

**■BACKGROUND**

Selects the background color or picture on the TV screen in stop mode or while playing a CD.

| | |
|---|---|
| <u>JACKET PICTURE</u> | The jacket picture (still picture) appears in the background, but only when the jacket picture is already recorded on the disc (CD-EXTRA, etc.). If the disc does not contain a jacket picture, the "GRAPHICS" picture appears. |
| GRAPHICS | A preset picture stored in the player appears in the background. |
| BLUE | The background color is blue. |
| BLACK | The background color is black. |

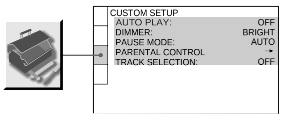
## Custom Settings

**(CUSTOM SETUP)**

DVD VIDEO CD CD

Allows setting up Parental Control and other settings.

Select "CUSTOM SETUP" in the Setup Display. For details on using the display, see "Using the Setup Display" (page 62).
The default settings are underlined.




**■AUTO PLAY**

Selects the Auto Play setting when you turn on the player.

| | |
|---|---|
| <u>OFF</u> | Does not use "TIMER," "DEMO1," or "DEMO2" to start playback. |
| TIMER | Starts playing when the player is turned on. The player can be played at any time when connected to a timer (not supplied). Set the timer when the player is in standby mode (the power indicator lights up in red). |
| DEMO1 | Starts playing the first demonstration automatically. |
| DEMO2 | Starts playing the second demonstration automatically. |

**■DIMMER**

Adjusts the lighting of the front panel display.

| | |
|---|---|
| <u>BRIGHT</u> | Makes the front panel display bright. |
| DARK | Makes the front panel display dark. |
| OFF | Turns off the lighting of the front panel display. |

continued ➡

Settings and Adjustments



**■PAUSE MODE (DVD only)**

Selects the picture in pause mode.

| | |
|---|---|
| <u>AUTO</u> | The picture, including subjects that move dynamically, is output with no jitter. Normally, select this position. |
| FRAME | The picture, including subjects that do not move dynamically, is output in high resolution. |

**■PARENTAL CONTROL → (DVD only)**

Sets a password and playback limitation level for DVDs with playback limitation for children. For details, see "Limiting playback by children (Parental Control)" (page 56).

**■TRACK SELECTION (DVD only)**

Gives the sound track which contains the highest number of channels priority when you play a DVD on which multiple audio formats (PCM, DTS or Dolby Digital format) are recorded.

| | |
|---|---|
| <u>OFF</u> | No priority given. |
| AUTO | Priority given. |

**Notes**

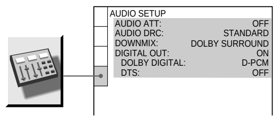
- When you set the item to "AUTO," the language may change. The "TRACK SELECTION" setting has higher priority than the "AUDIO" settings in "LANGUAGE SETUP" (page 63).
- If you set "DTS" to "OFF" (page 68), the DTS sound track is not played even if you set "TRACK SELECTION" to "AUTO."
- If PCM, DTS and Dolby Digital sound tracks have the same number of channels, the player selects PCM, DTS and Dolby Digital sound tracks in this order.
- Depending on the DVD, the audio channel with priority may be predetermined. In this case, you cannot give priority to the DTS or Dolby Digital format by selecting "AUTO."

## Settings for the Sound

**(AUDIO SETUP)**

"AUDIO SETUP" allows you to set the sound according to the playback and connection conditions.

Select "AUDIO SETUP" in the Setup Display. For details on using the display, see "Using the Setup Display" (page 62).
The default settings are underlined.




**■AUDIO ATT (attenuation)**

If the playback sound is distorted, set this item to "ON." The player reduces the audio output level.
This function affects the output of the LINE OUT L/R (AUDIO) 1/2 jacks.

| | |
|---|---|
| <u>OFF</u> | Turns off the audio attenuation. Normally, select this position. |
| ON | Reduces the audio output level so that no sound distortion occurs. Select this when the playback sound from the speakers is distorted. |

### ■AUDIO DRC (Dynamic Range Control) (DVD only)

Makes the sound clear when the volume is turned down when playing a DVD that has the AUDIO DRC function. This affects the output from the following jacks:
– LINE OUT L/R (AUDIO) 1/2 jacks
– DIGITAL OUT (COAXIAL or OPTICAL) jack only when “DOLBY DIGITAL” is set to “D-PCM” in “DIGITAL OUT” (page 67).

| | |
|---|---|
| STANDARD | Normally, select this position. |
| TV MODE | Makes the low sounds clear even if you turn the volume down. It is especially recommended when you listen to the sound using the speakers of the TV. |
| WIDE RANGE | Gives you the feeling of being at a live performance. When you use high quality speakers, it is even more effective. |

### ■DOWNMIX (DVD only)

Switches the mixing down methods when you play a DVD on which rear signal components such as LS, RS, or S are recorded in Dolby Digital format. For details on the rear signal components, see “Changing the Sound” (page 49). This function affects the output of the following jacks:
– LINE OUT L/R (AUDIO) 1/2 jacks
– DIGITAL OUT (COAXIAL or OPTICAL) jack when “DOLBY DIGITAL” is set to “D-PCM” in “DIGITAL OUT” (page 67).

| | |
|---|---|
| DOLBY SURROUND | Select this when the player is connected to an audio component that conforms to Dolby Surround (Pro Logic). The output signals which reproduce the Dolby Surround effect are downmixed to 2 channels. |
| NORMAL | Select this when the player is connected to an audio component that does not conform to Dolby Surround (Pro Logic). All of the output signals are downmixed to 2 channels without the Dolby Surround (Pro Logic) effect. |

### ■DIGITAL OUT

Selects if audio signals are output via the DIGITAL OUT (COAXIAL or OPTICAL) jack.

| | |
|---|---|
| ON | Normally, select this position. When you select “ON,” set “DOLBY DIGITAL” and “DTS.” For details on setting these items, see “Setting the digital output signal.” |
| OFF | The player does not output the audio signals via the DIGITAL OUT (COAXIAL or OPTICAL) jack. The influence of the digital circuit upon the analog circuit is minimal. |

## Setting the digital output signal

Switches the method of outputting audio signals when you connect the following component using a coaxial digital or optical digital cord via the DIGITAL OUT (COAXIAL or OPTICAL) jack.
– Amplifier (receiver) with digital input jack
– Amplifier (receiver) with a built-in DTS or DOLBY DIGITAL decoder
– MD or DAT deck

For connection details, see page 20.
Select “DOLBY DIGITAL” and “DTS” after setting “DIGITAL OUT” to “ON.”

```
AUDIO SETUP
 AUDIO ATT:                OFF
 AUDIO DRC:           STANDARD
 DOWNMIX:      DOLBY SURROUND
 DIGITAL OUT:               ON
   DOLBY DIGITAL:        D-PCM
   DTS:                    OFF
```



continued ➡



### ■DOLBY DIGITAL

Selects the Dolby Digital signals output via the DIGITAL OUT (COAXIAL or OPTICAL) jack.

| | |
|---|---|
| D-PCM | Select this when the player is connected to an audio component lacking a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the “DOWNMIX” item in “AUDIO SETUP” (page 67). |
| DOLBY DIGITAL | Select this when the player is connected to an audio component with a built-in Dolby Digital decoder.<br>If the player is connected to an audio component lacking a built-in Dolby Digital decoder, do not set this. Otherwise, when you play the Dolby Digital sound track, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged. |

### ■DTS

Selects if DTS signals are output via the DIGITAL OUT (COAXIAL or OPTICAL) jack.

| | |
|---|---|
| OFF | Select this when the player is connected to an audio component lacking a built-in DTS decoder. Note, however, that the DTS signals contained in a CD are output even if “OFF” is selected. |
| ON | Select this when the player is connected to an audio component having a built-in DTS decoder.<br>If the player is connected to an audio component lacking a built-in DTS decoder, do not set this. Otherwise, when you play the DTS sound track, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged. |

**Note**

If you select one of the TVS settings while playing a DVD, the player does not output the Dolby Digital signals from the DIGITAL OUT (COAXIAL or OPTICAL) jack (when you set “DOLBY DIGITAL” in “AUDIO SETUP” to “D-PCM”).





# Troubleshooting

If you experience any of the following difficulties while using the player, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your nearest Sony dealer.

## Power

### The power is not turned on.

➡ Check that the AC power cord is connected securely.

## Picture

### There is no picture.

➡ The connecting cords are not connected securely.
➡ The connecting cords are damaged.
➡ The player is not connected to the correct TV input jack (page 18).
➡ The video input on the TV is not set so that you can view pictures on the player.

### Picture noise appears.

➡ The disc is dirty or flawed.
➡ If the picture output from your player goes through your VCR to get to your TV, the copy-protection signal applied to some DVD programs could affect picture quality. If you still experience problems even when you connect your player directly to your TV, please try connecting your player to your TV’s S video input (page 18).

### Even though you set the aspect ratio in “TV TYPE” of “SCREEN SETUP,” the picture does not fill the screen.

➡ The aspect ratio of the disc is fixed on your DVD.

## Sound

### There is no sound.

➡ The connecting cord is not connected securely.
➡ The connecting cord is damaged.
➡ The player is connected to the wrong input jack on the amplifier (receiver) (page 20, 22, 24).
➡ The amplifier (receiver) input is not changed so that you can listen to the player.
➡ The player is in pause mode or in Slow-motion play mode.
➡ The player is in fast forward or fast reverse mode.
➡ If the audio signal does not come through the DIGITAL OUT (COAXIAL or OPTICAL) jack, check the audio settings (page 66).

### Sound is noisy.

➡ The disc is dirty or flawed.
➡ When playing a CD with DTS sound tracks, noise will come from the LINE OUT L/R (AUDIO) 1/2 jacks (page 33).

### Sound distortion occurs.

➡ Set “AUDIO ATT” in “AUDIO SETUP” to “ON” (page 66).

## Operation

### The remote does not function.

➡ There are obstacles between the remote and the player.
➡ The distance between the remote and the player is too far.
➡ The remote is not pointed at the remote sensor on the player.
➡ The batteries in the remote are weak.

continued ➡



### The disc does not play.

➡ There is no disc inside.
➡ The disc is turned over.
Insert the disc with the playback side facing down on the disc tray.
➡ The disc is skewed.
➡ The player cannot play CD-ROMs, etc. (page 7).
➡ The region code on the DVD does not match the player.
➡ Moisture has condensed inside the player.
Remove the disc and leave the player turned on for about half an hour. Turn on the power again before playing the disc (page 3).

### The disc does not start playing from the beginning.

➡ Program Play, Shuffle Play, Repeat Play or A-B Repeat Play has been selected (page 38).
Press CLEAR to cancel these functions before playing a disc.
➡ Resume Play has been selected.
During stop, press ■ on the player or the remote and then start playback (page 35).
➡ The title, DVD or PBC menu automatically appears on the TV screen.

### The player starts playing the disc automatically.

➡ The DVD features an auto playback function.
➡ “AUTO PLAY” in “CUSTOM SETUP” is set to “TIMER” (page 65).

### Playback stops automatically.

➡ Some discs may contain an auto pause signal. While playing such a disc, the player stops playback at the auto pause signal.

### You cannot perform some functions such as stop, Scan, Slow-motion Play, Repeat Play, Shuffle Play, or Program Play.

➡ Depending on the disc, you may not be able to do some of the operations above. See the operating manual that comes with the disc.

### Messages do not appear on the screen in the language you want.

➡ In the Setup Display, select the desired language for the on-screen display in “OSD” under “LANGUAGE SETUP” (page 63).

### The language for the sound track cannot be changed.

➡ Multilingual tracks are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the language for the sound track.

### The subtitle language cannot be changed.

➡ Multilingual subtitles are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the subtitles.

### The subtitle cannot be turned off.

➡ The DVD prohibits the subtitles being turned off.

### The angles cannot be changed.

➡ Multi-angles are not recorded on the DVD being played. The angle can be changed when the “ANGLE” indicator lights up on the front panel display (page 10).
➡ The DVD prohibits changing of the angles.

**The player does not operate properly.**

➡ When static electricity, etc., causes the player to operate abnormally, press POWER on the player to turn the player off and then on again.

**Nothing is displayed on the front panel display.**

➡ "DIMMER" in "CUSTOM SETUP" is set to "OFF." Set "DIMMER" to "BRIGHT" or "DARK" (page 65).

**5 numbers or letters are displayed on the screen and on the front panel display.**

➡ The self-diagnosis function was activated. (See the table on page 71.)

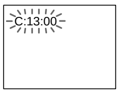
**The disc tray does not open and "LOCKED" appears on the front panel display.**

➡ Contact your Sony dealer or local authorized Sony service facility.

## Self-diagnosis Function

### (When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the player from malfunctioning, a five-character service number (e.g., C 13 00) with a combination of a letter and digits appears on the screen and the front panel display. In this case, check the following table.




| First three characters of the service number | Cause and/or corrective action |
|---|---|
| C 13 | The disc is dirty. ➡ Clean the disc with a soft cloth (page 8). |
| C 31 | The disc is not inserted correctly. ➡ Re-insert the disc correctly. |
| E XX (xx is a number) | To prevent a malfunction, the player has performed the self-diagnosis function. ➡ Contact your nearest Sony dealer or local authorized Sony service facility and give the 5-character service number. Example: E 61 10 |

Additional Information

## Glossary

**Chapter (page 10)**
Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

**Dolby Digital (page 20, 67)**
Digital audio compression technology developed by Dolby Laboratories. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same 5.1 discrete channels of high quality digital audio found in Dolby Digital cinema audio systems. Good channel separation is realized because all of the channel data are recorded discretely and little deterioration is realized because all channel data processing is digital.

**Dolby Surround (Pro Logic) (page 67)**
Audio signal processing technology that Dolby Laboratories developed for surround sound. When the input signal contains a surround component, the Pro Logic process outputs the front, center, and rear signals. The rear channel is monaural.

**DTS (page 20, 67)**
Digital audio compression technology that Digital Theater Systems, Inc. developed. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same 5.1 discrete channels of high quality digital audio.
Good channel separation is realized because all of the channel data is recorded discretely and little deterioration is realized because all channel data processing is digital.

**DVD (page 7)**
A disc that contains up to 8 hours of moving pictures even though its diameter is the same as a CD.
The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5 GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17 GB.
The picture data uses the MPEG 2 format, one of the worldwide standards of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in Dolby Digital as well as in PCM, allowing you to enjoy a more real audio presence. Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided with the DVD.

**Index (CD)/Video Index (VIDEO CD) (page 10)**
A number that divides a track into sections to easily locate the point you want on a VIDEO CD or CD. Depending on the disc, no index may be recorded.

**Parental Control (page 56)**
A function of the DVD used to limit playback of the disc according to the age of the user and the limitation level in each country. The limitation varies from disc to disc; when it is activated, or playback is completely prohibited, violent scenes are skipped or replaced with other scenes, etc.



**Region Code (page 7)**
This system is used to protect copyrights. A region number is allocated on each DVD player or DVD disc according to the sales region. Each region code is shown on the player as well as on the disc packaging. The player can play the discs that match its region code. The player can also play discs with the ALL mark. Even when the region code is not shown on the DVD, the region limit may still be activated.

**Scene (page 10)**
On a VIDEO CD with PBC (playback control) functions, the menu screens, moving pictures and still pictures are divided into sections called "scenes."

**Title (page 10)**
The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

**Track (page 10)**
Sections of a picture or a music feature on a VIDEO CD or CD (the length of a song).

**TV Virtual Surround (TVS) (page 50)**
Technology from Sony developed to produce surround sound for home use using just a stereo TV. Designed to work with the sound characteristics of your TV, this technology brings the excitement of surround sound to your home using nothing more than your stereo TV's internal speakers. Furthermore, various TVS modes are available. For example, TVS WIDE uses just two speakers to create a virtual sound environment that makes you feel like you are surrounded by multiple speakers.

Additional Information

## Language Code List

For details, see page 49, 52, 63.
The language spellings conform to the ISO 639: 1988 (E/F) standard.

| Code | Language | Code | Language | Code | Language | Code | Language |
|---|---|---|---|---|---|---|---|
| 1027 | Afar | 1183 | Irish | 1347 | Maori | 1507 | Samoan |
| 1028 | Abkhazian | 1186 | Scots Gaelic | 1349 | Macedonian | 1508 | Shona |
| 1032 | Afrikaans | 1194 | Galician | 1350 | Malayalam | 1509 | Somali |
| 1039 | Amharic | 1196 | Guarani | 1352 | Mongolian | 1511 | Albanian |
| 1044 | Arabic | 1203 | Gujarati | 1353 | Moldavian | 1512 | Serbian |
| 1045 | Assamese | 1209 | Hausa | 1356 | Marathi | 1513 | Siswati |
| 1051 | Aymara | 1217 | Hindi | 1357 | Malay | 1514 | Sesotho |
| 1052 | Azerbaijani | 1226 | Croatian | 1358 | Maltese | 1515 | Sundanese |
| 1053 | Bashkir | 1229 | Hungarian | 1363 | Burmese | 1516 | Swedish |
| 1057 | Byelorussian | 1233 | Armenian | 1365 | Nauru | 1517 | Swahili |
| 1059 | Bulgarian | 1235 | Interlingua | 1369 | Nepali | 1521 | Tamil |
| 1060 | Bihari | 1239 | Interlingue | 1376 | Dutch | 1525 | Telugu |
| 1061 | Bislama | 1245 | Inupiak | 1379 | Norwegian | 1527 | Tajik |
| 1066 | Bengali; Bangla | 1248 | Indonesian | 1393 | Occitan | 1528 | Thai |
| 1067 | Tibetan | 1253 | Icelandic | 1403 | (Afan) Oromo | 1529 | Tigrinya |
| 1070 | Breton | 1254 | Italian | 1408 | Oriya | 1531 | Turkmen |
| 1079 | Catalan | 1257 | Hebrew | 1417 | Punjabi | 1532 | Tagalog |
| 1093 | Corsican | 1261 | Japanese | 1428 | Polish | 1534 | Setswana |
| 1097 | Czech | 1269 | Yiddish | 1435 | Pashto; Pushto | 1535 | Tonga |
| 1103 | Welsh | 1283 | Javanese | 1436 | Portuguese | 1538 | Turkish |
| 1105 | Danish | 1287 | Georgian | 1463 | Quechua | 1539 | Tsonga |
| 1109 | German | 1297 | Kazakh | 1481 | Rhaeto-Romance | 1540 | Tatar |
| 1130 | Bhutani | 1298 | Greenlandic | 1482 | Kirundi | 1543 | Twi |
| 1142 | Greek | 1299 | Cambodian | 1483 | Romanian | 1557 | Ukrainian |
| 1144 | English | 1300 | Kannada | 1489 | Russian | 1564 | Urdu |
| 1145 | Esperanto | 1301 | Korean | 1491 | Kinyarwanda | 1572 | Uzbek |
| 1149 | Spanish | 1305 | Kashmiri | 1495 | Sanskrit | 1581 | Vietnamese |
| 1150 | Estonian | 1307 | Kurdish | 1498 | Sindhi | 1587 | Volapük |
| 1151 | Basque | 1311 | Kirghiz | 1501 | Sangho | 1613 | Wolof |
| 1157 | Persian | 1313 | Latin | 1502 | Serbo-Croatian | 1632 | Xhosa |
| 1165 | Finnish | 1326 | Lingala | 1503 | Singhalese | 1665 | Yoruba |
| 1166 | Fiji | 1327 | Laothian | 1505 | Slovak | 1684 | Chinese |
| 1171 | Faroese | 1332 | Lithuanian | 1506 | Slovenian | 1697 | Zulu |
| 1174 | French | 1334 | Latvian; Lettish | | | 1703 | Not specified |
| 1181 | Frisian | 1345 | Malagasy | | | | |

## List of Setup Display Items

The default settings are underlined.

**LANGUAGE SETUP (page 63)**

| | |
|---|---|
| OSD | ENGLISH<br>FRENCH<br>SPANISH<br>PORTUGUESE |
| DVD MENU | ENGLISH<br>FRENCH<br>SPANISH<br>PORTUGUESE<br>GERMAN<br>ITALIAN<br>DUTCH<br>CHINESE<br>JAPANESE<br>DANISH<br>SWEDISH<br>FINNISH<br>NORWEGIAN<br>RUSSIAN<br>OTHERS → |
| AUDIO | ORIGINAL<br>(All other selections are same as the DVD MENU language.) |
| SUBTITLE | AUDIO FOLLOW<br>(All other selections are same as the DVD MENU language.) |

**SCREEN SETUP (page 64)**

| | |
|---|---|
| TV TYPE | 4:3 LETTER BOX<br>4:3 PAN SCAN<br>16:9 |
| SCREEN SAVER | ON<br>OFF |
| BACKGROUND | JACKET PICTURE<br>GRAPHICS<br>BLUE<br>BLACK |

**CUSTOM SETUP (page 65)**

| | |
|---|---|
| AUTO PLAY | OFF<br>TIMER<br>DEMO1<br>DEMO2 |
| DIMMER | BRIGHT<br>DARK<br>OFF |
| PAUSE MODE | AUTO<br>FRAME |
| PARENTAL CONTROL ➡ | |
| TRACK SELECTION | OFF<br>AUTO |

**AUDIO SETUP (page 66)**

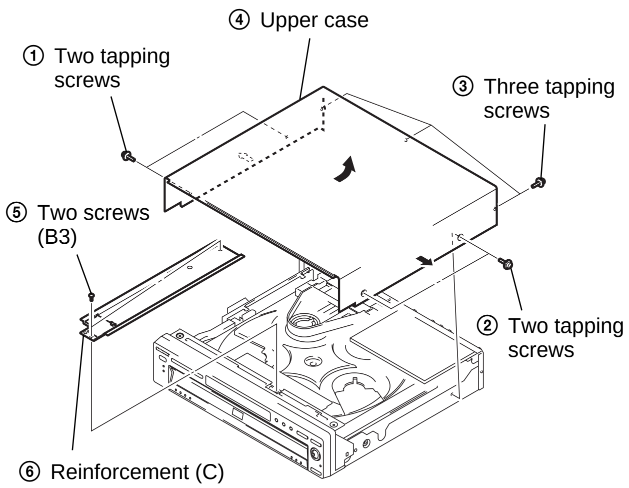
| | | | |
|---|---|---|---|
| AUDIO ATT | OFF<br>ON | | |
| AUDIO DRC | STANDARD<br>TV MODE<br>WIDE RANGE | | |
| DOWNMIX | DOLBY SURROUND<br>NORMAL | | |
| DIGITAL OUT | ON | DOLBY DIGITAL | D-PCM<br>DOLBY DIGITAL |
| | | DTS | OFF<br>ON |
| | OFF | | |

Additional Information

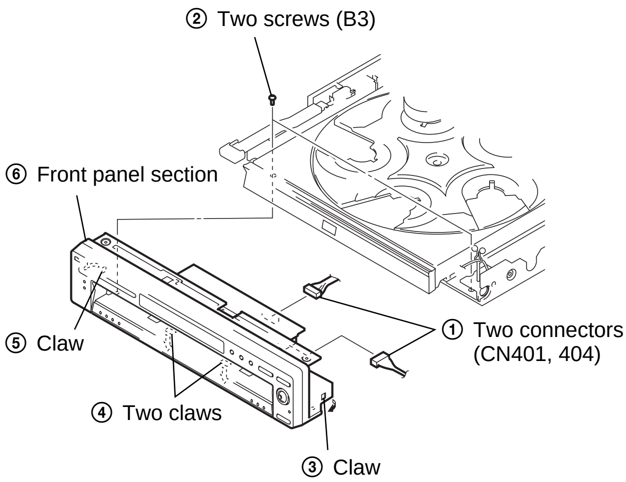
# SECTION 2
# DISASSEMBLY

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

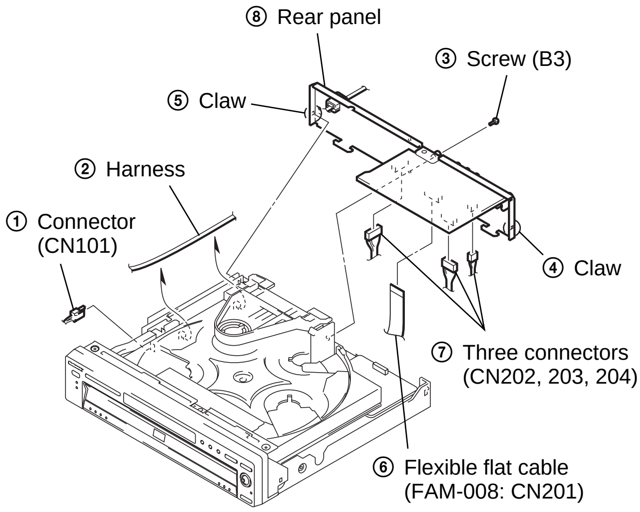
## 2-1. UPPER CASE, REINFORCEMENT (C) REMOVAL



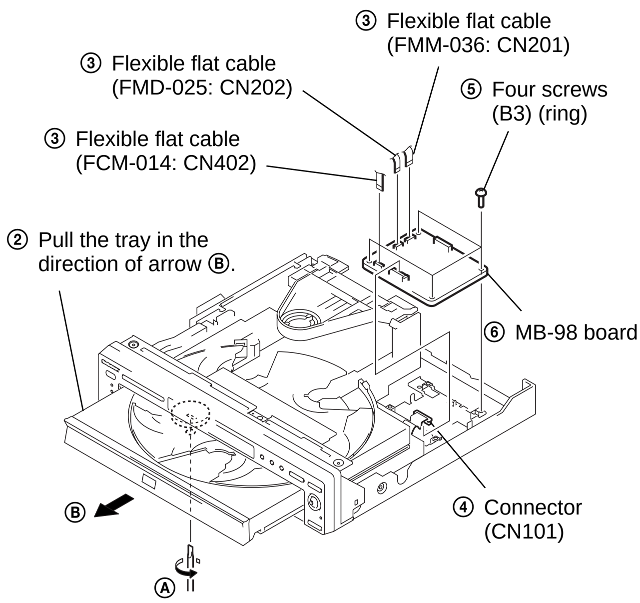

## 2-2. FRONT PANEL SECTION REMOVAL




## 2-3. REAR PANEL REMOVAL

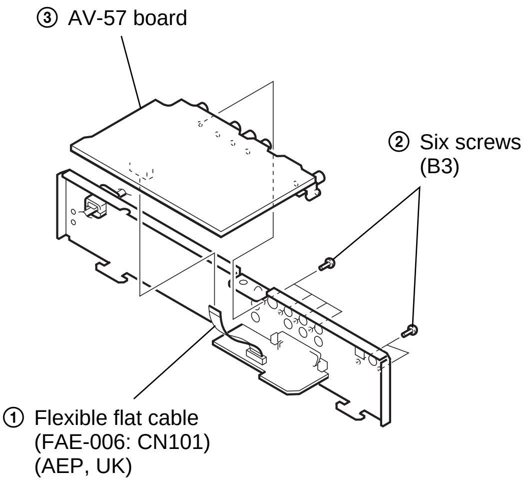



## 2-4. MB-98 BOARD REMOVAL

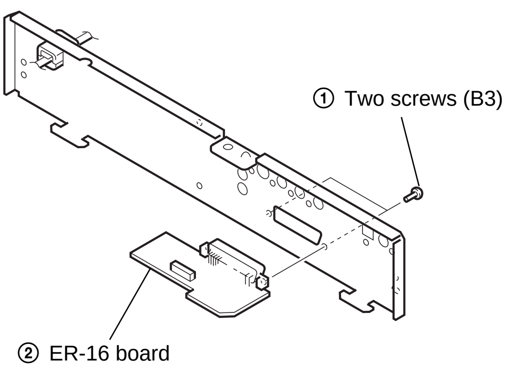



① Insert a flat-blade screwdriver into a hole at the bottom, and rotate the cam gear in the direction of arrow Ⓐ.

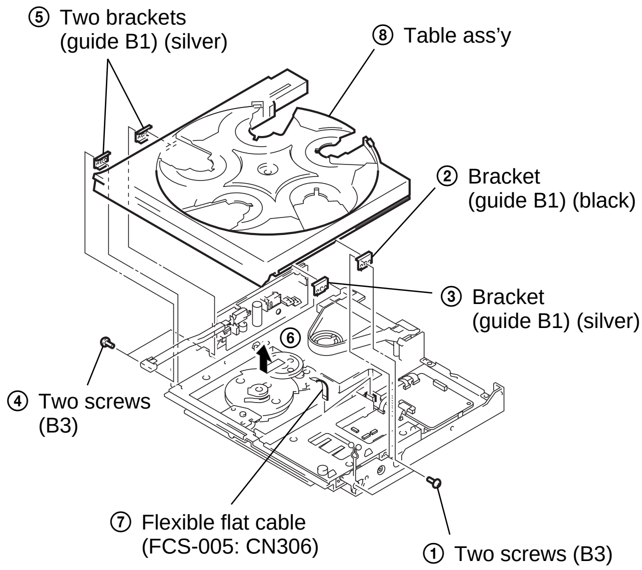
## 2-5. AV-57 BOARD REMOVAL



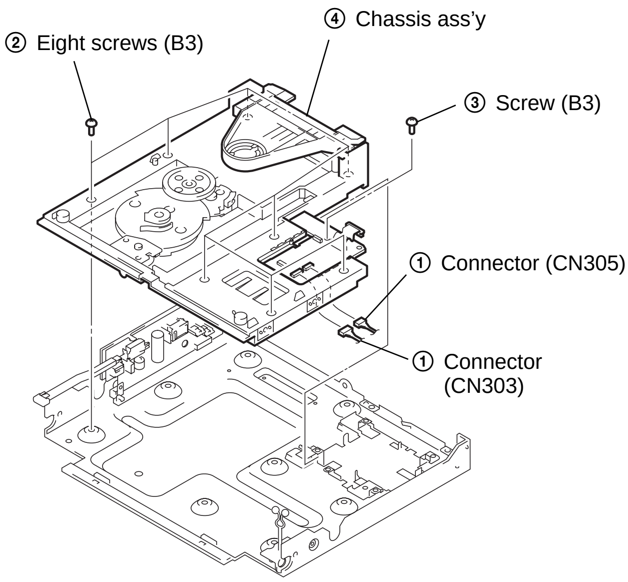

## 2-6. ER-16 BOARD REMOVAL (AEP, UK)



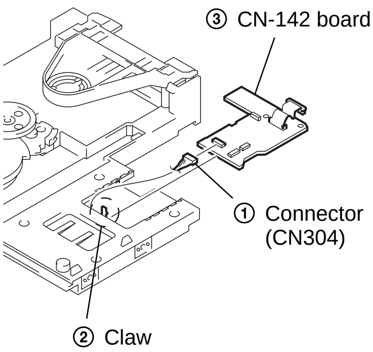

## 2-7. TABLE ASS'Y REMOVAL



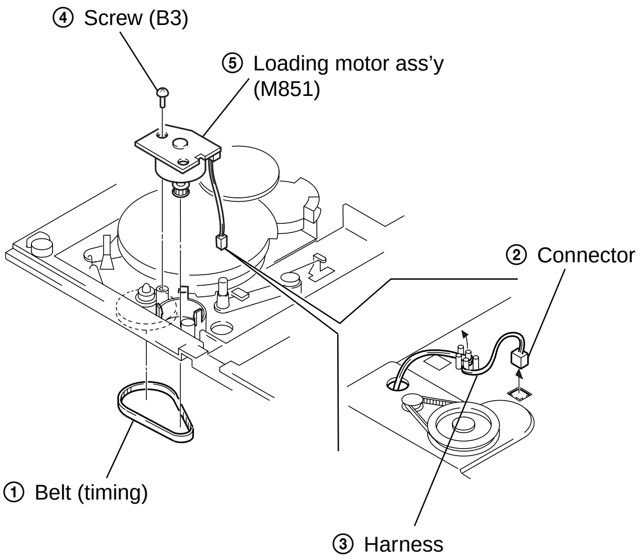

## 2-8. CHASSIS ASS'Y



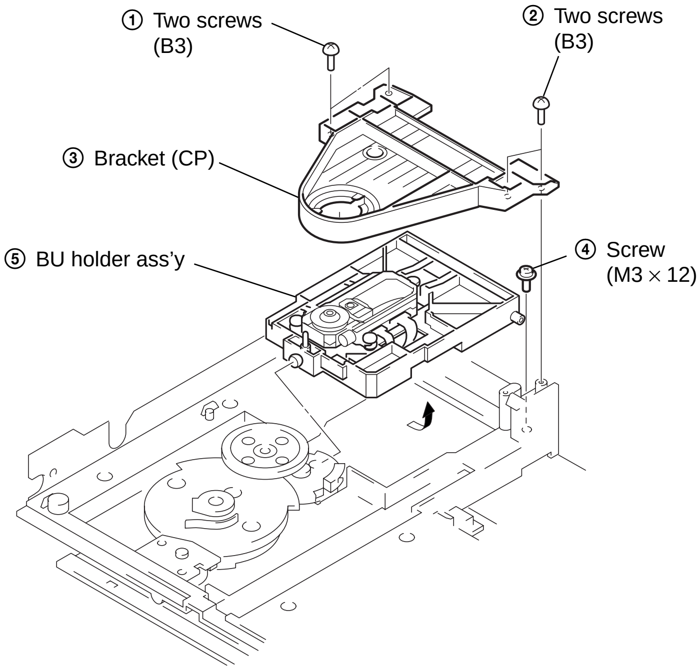
## 2-9. CN-142 BOARD REMOVAL



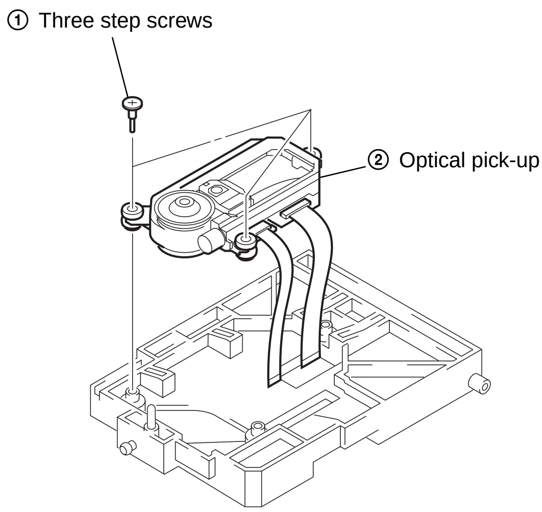

## 2-10. LOADING MOTOR ASS'Y (M851) REMOVAL



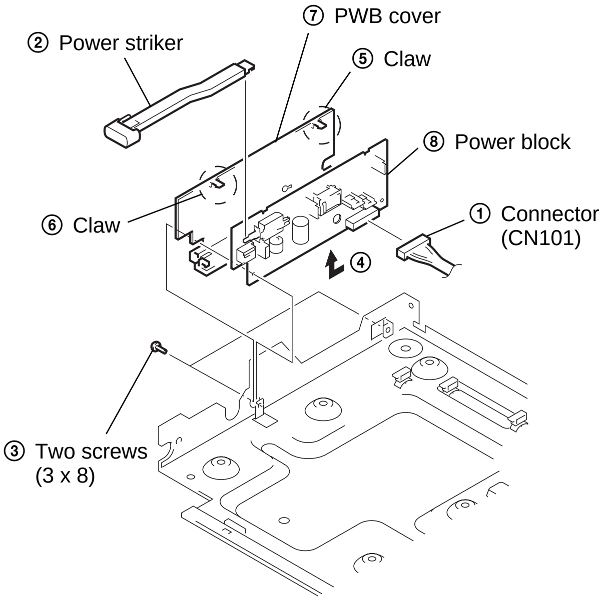

## 2-11. BU HOLDER ASS'Y REMOVAL



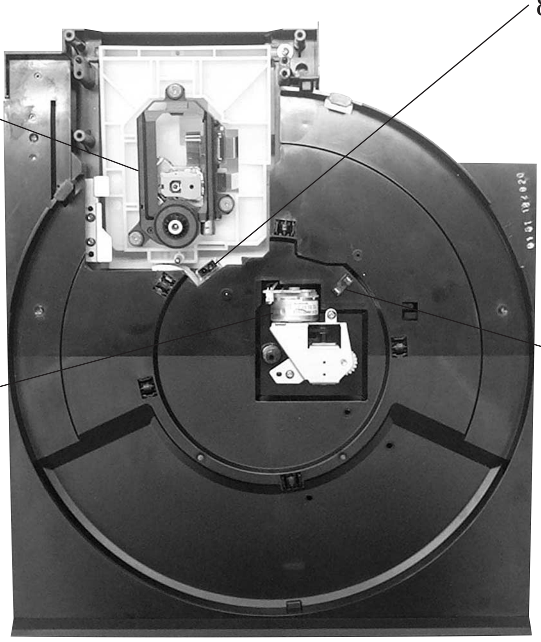

## 2-12. OPTICAL PICK-UP REMOVAL

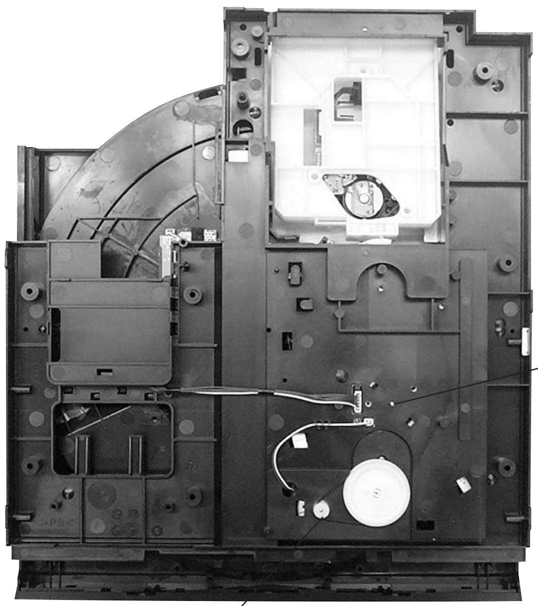


## 2-13. POWER BLOCK REMOVAL

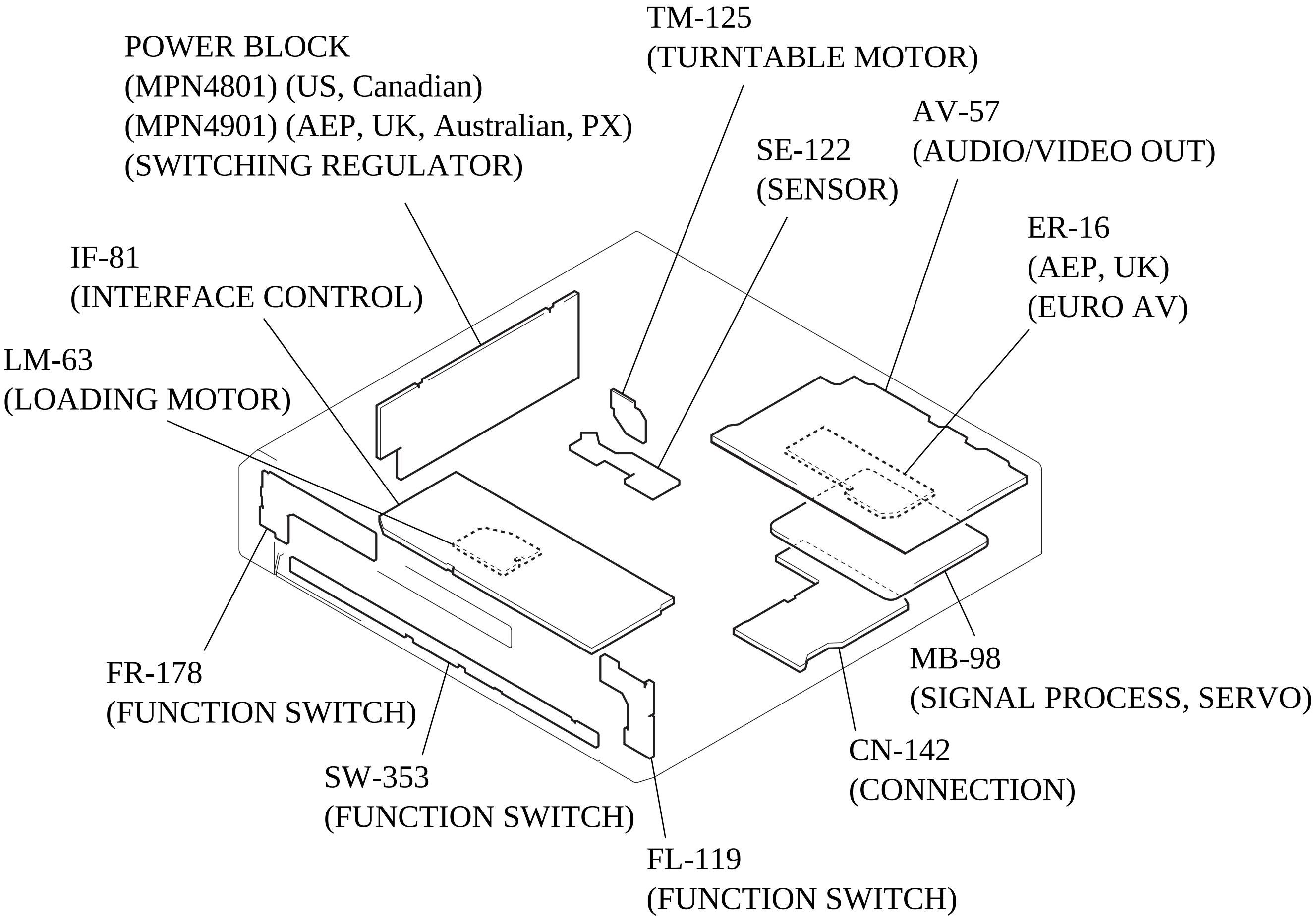


## 2-14. INTERNAL VIEWS



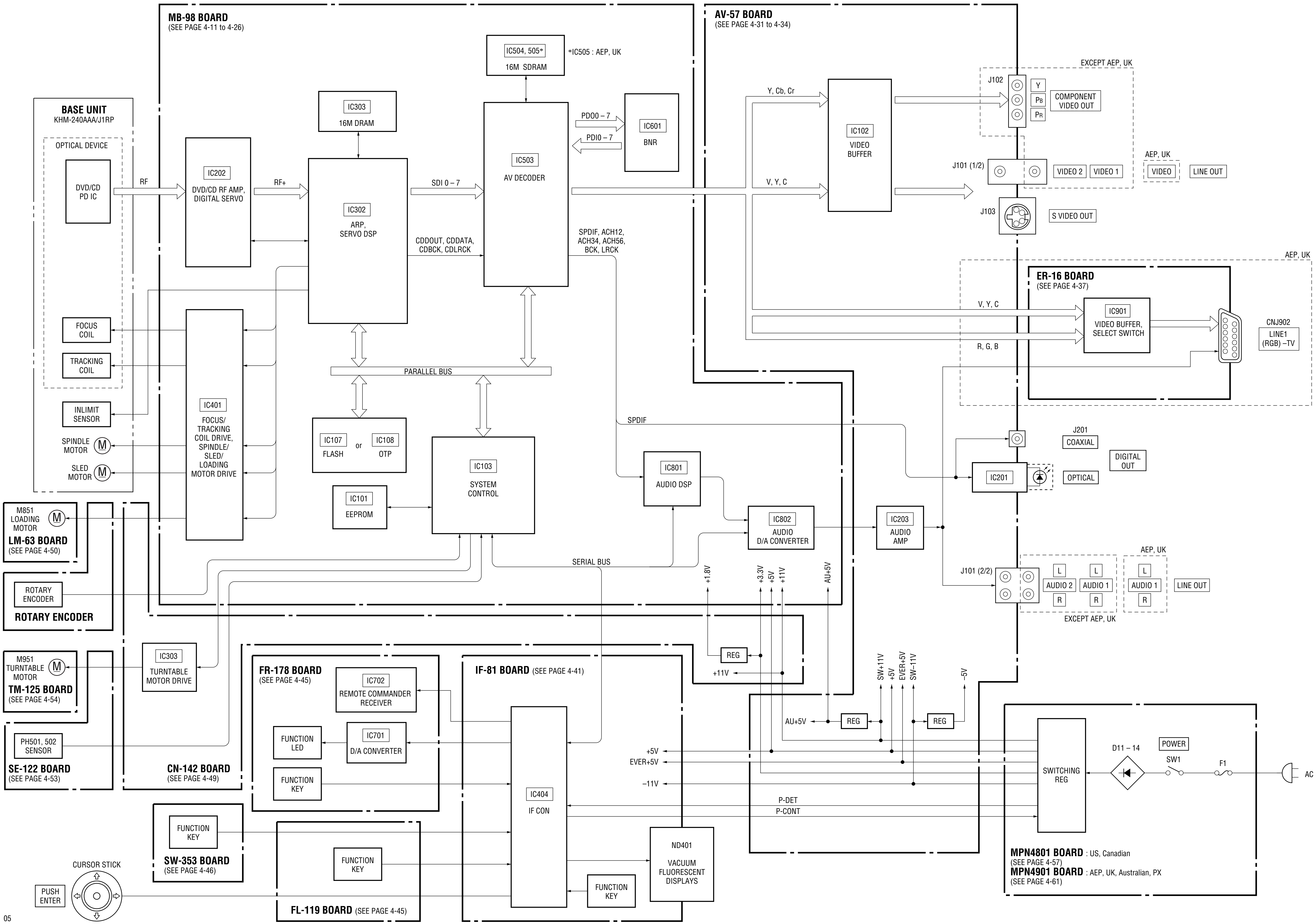



## 2-15. CIRCUIT BOARDS LOCATION

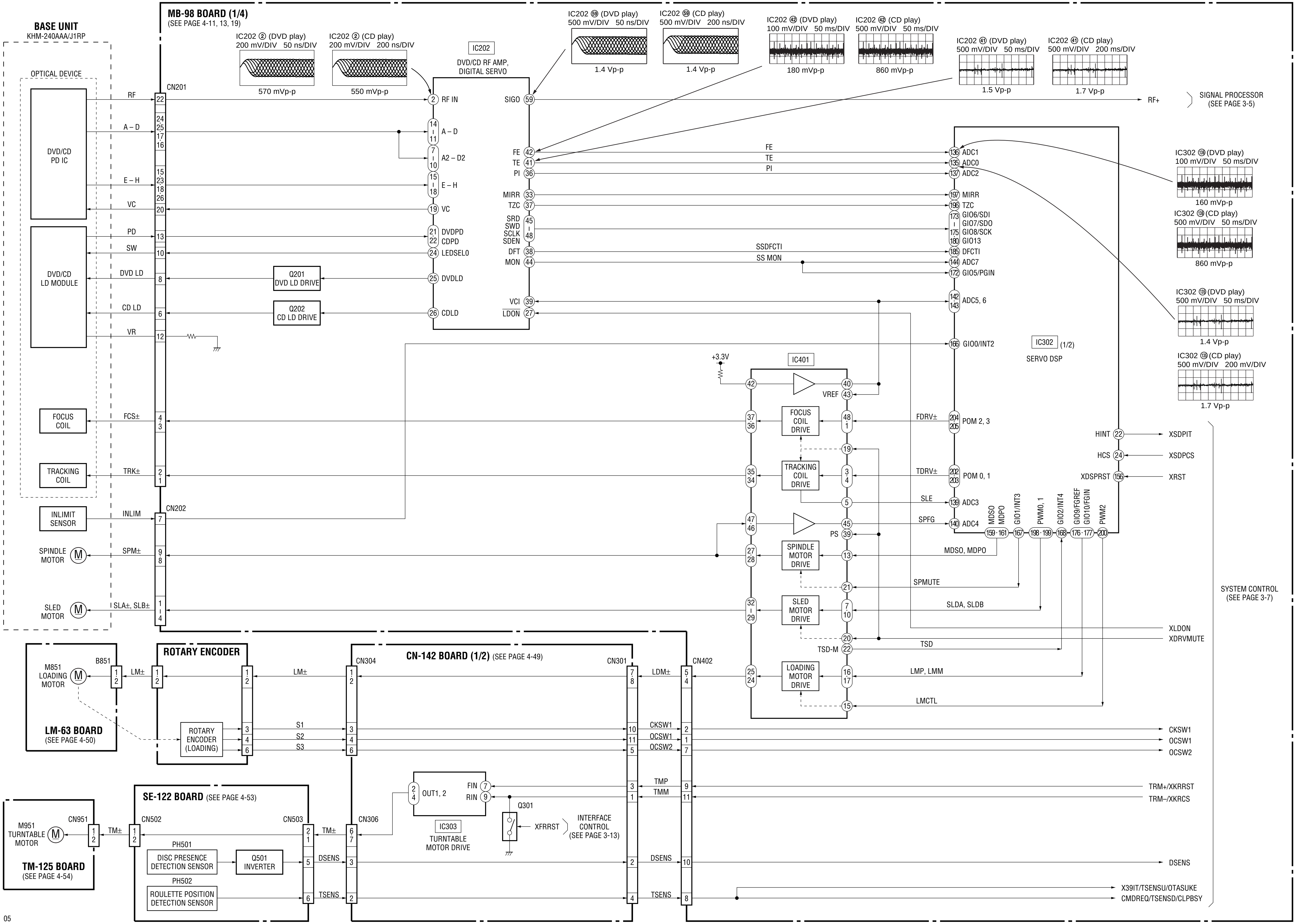


# SECTION 3
# BLOCK DIAGRAMS

## 3-1. OVERALL BLOCK DIAGRAM

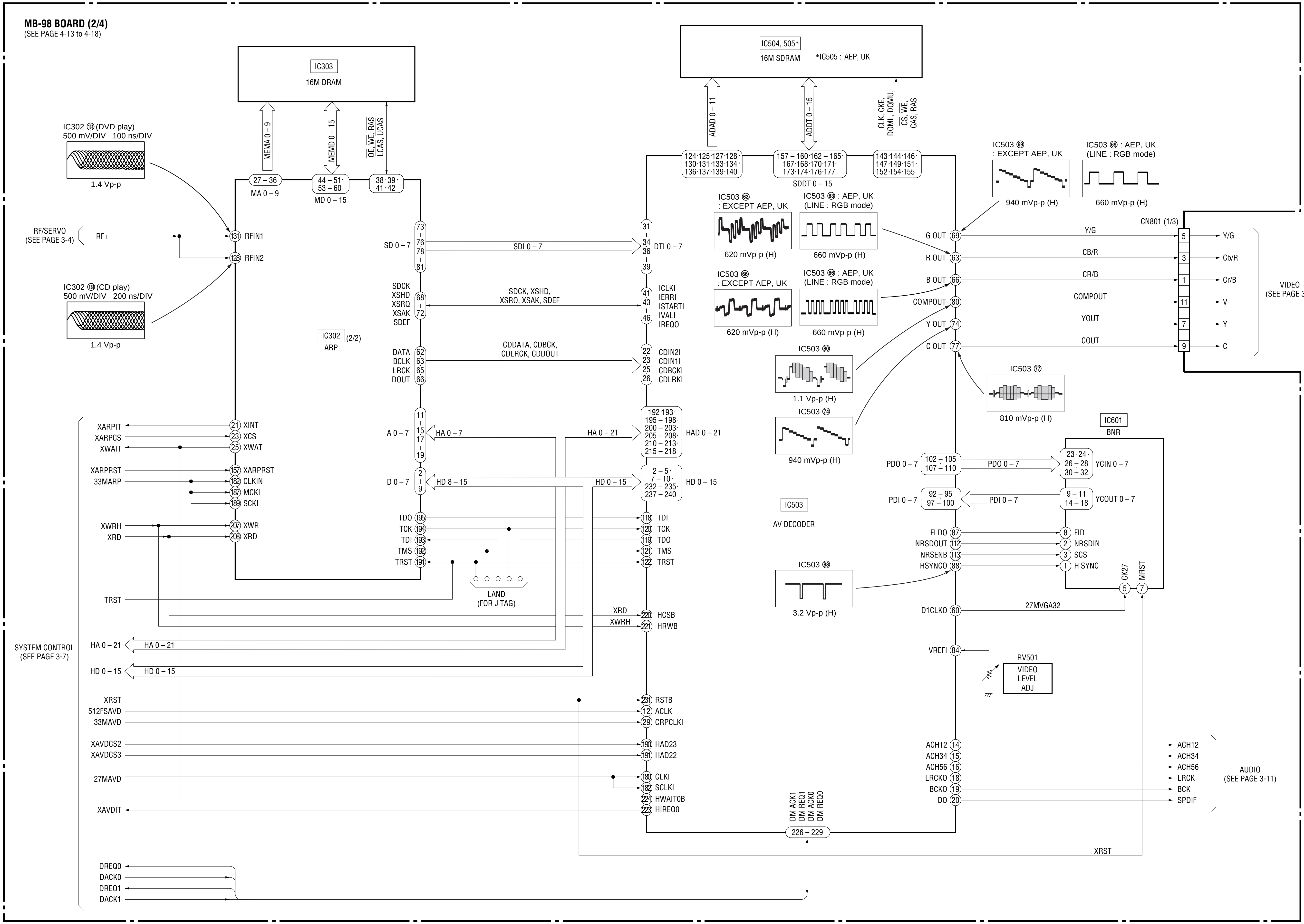


## 3-2. RF/SERVO BLOCK DIAGRAM

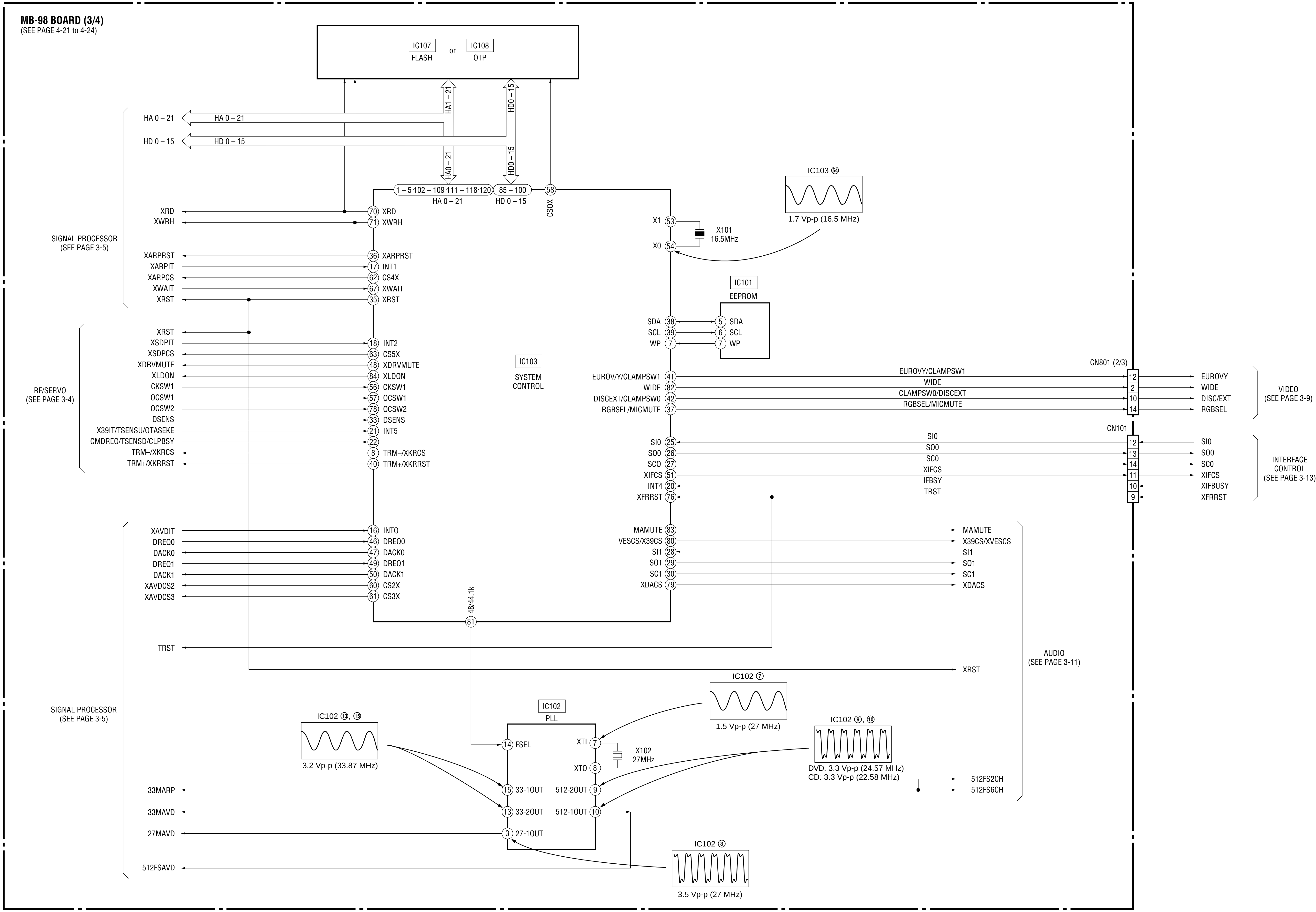



05

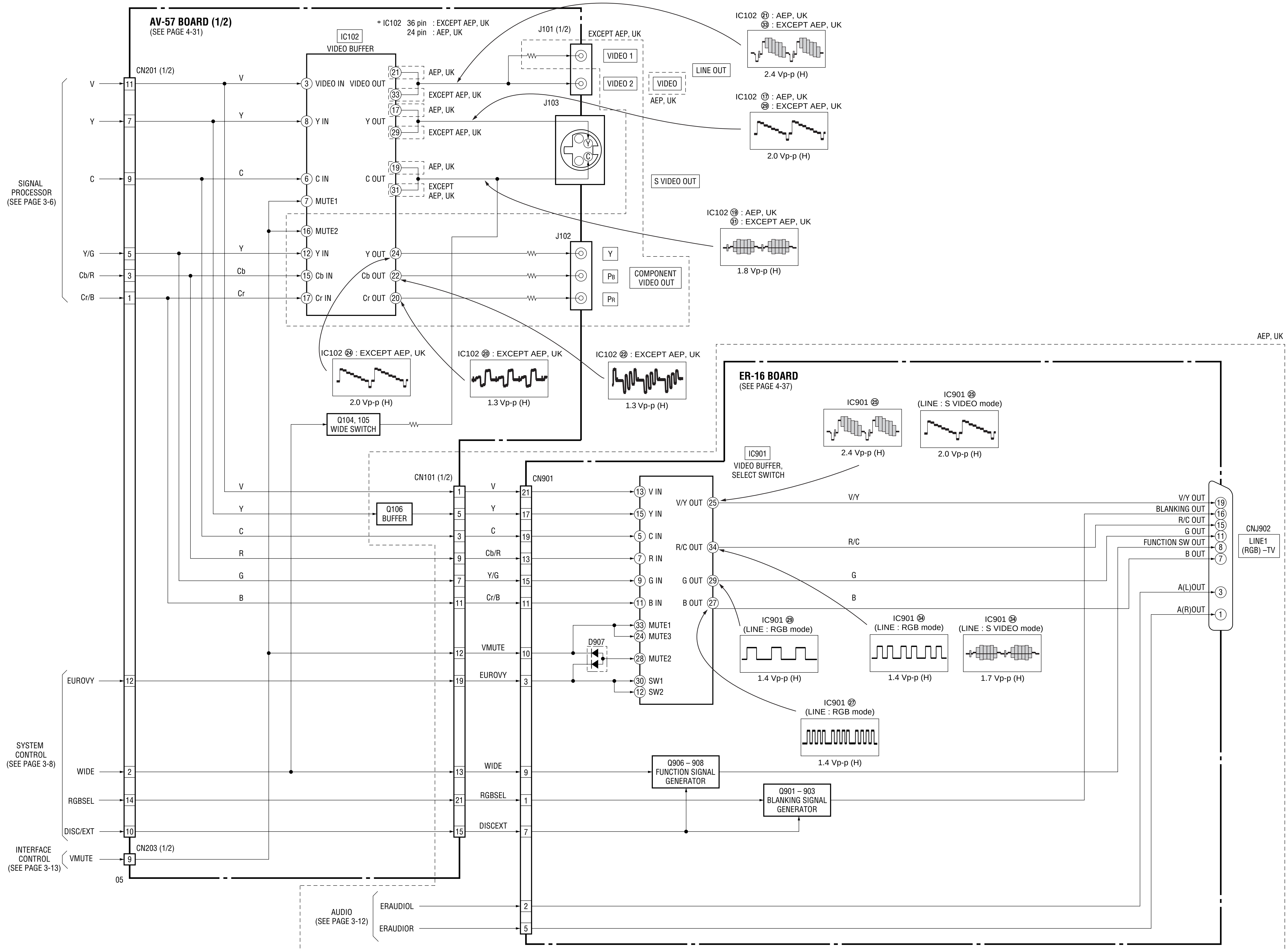
## 3-3. SIGNAL PROCESSOR BLOCK DIAGRAM



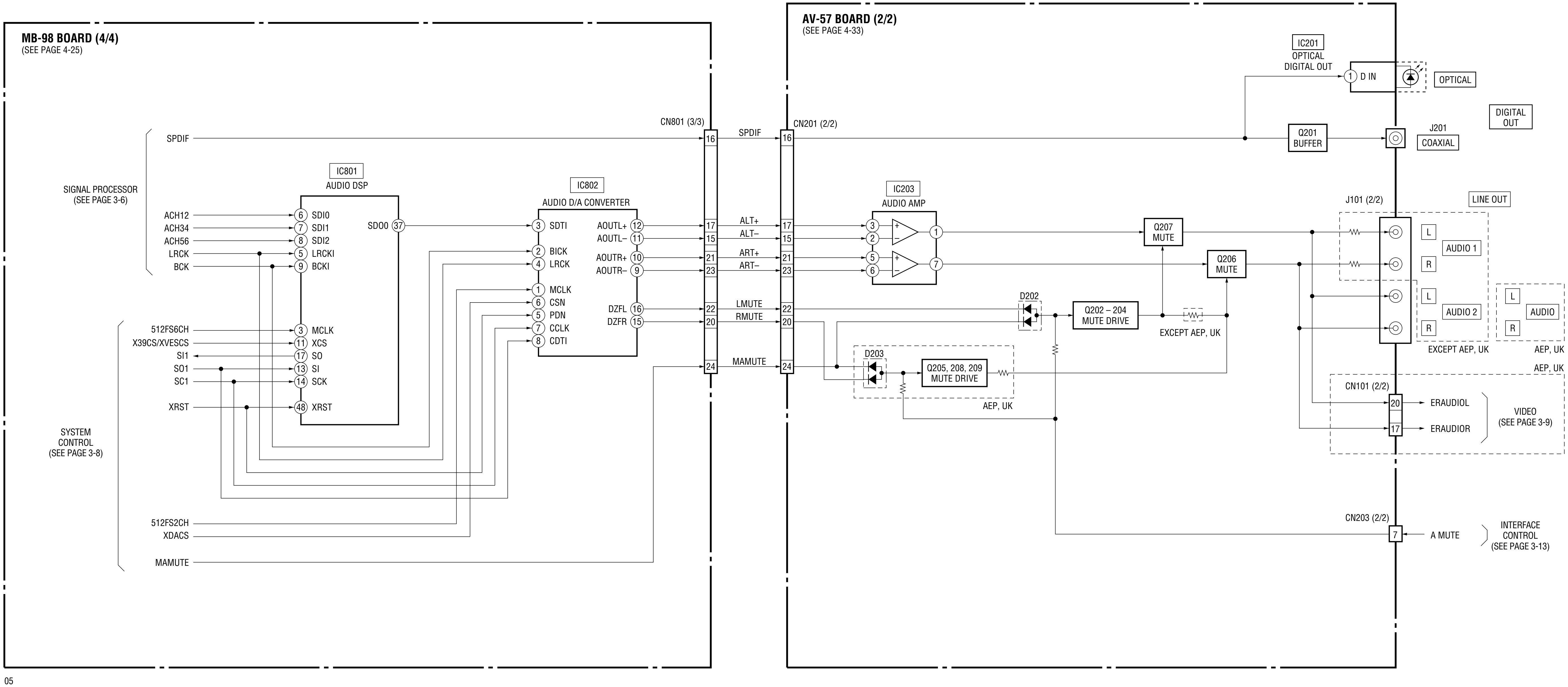
## 3-4. SYSTEM CONTROL BLOCK DIAGRAM



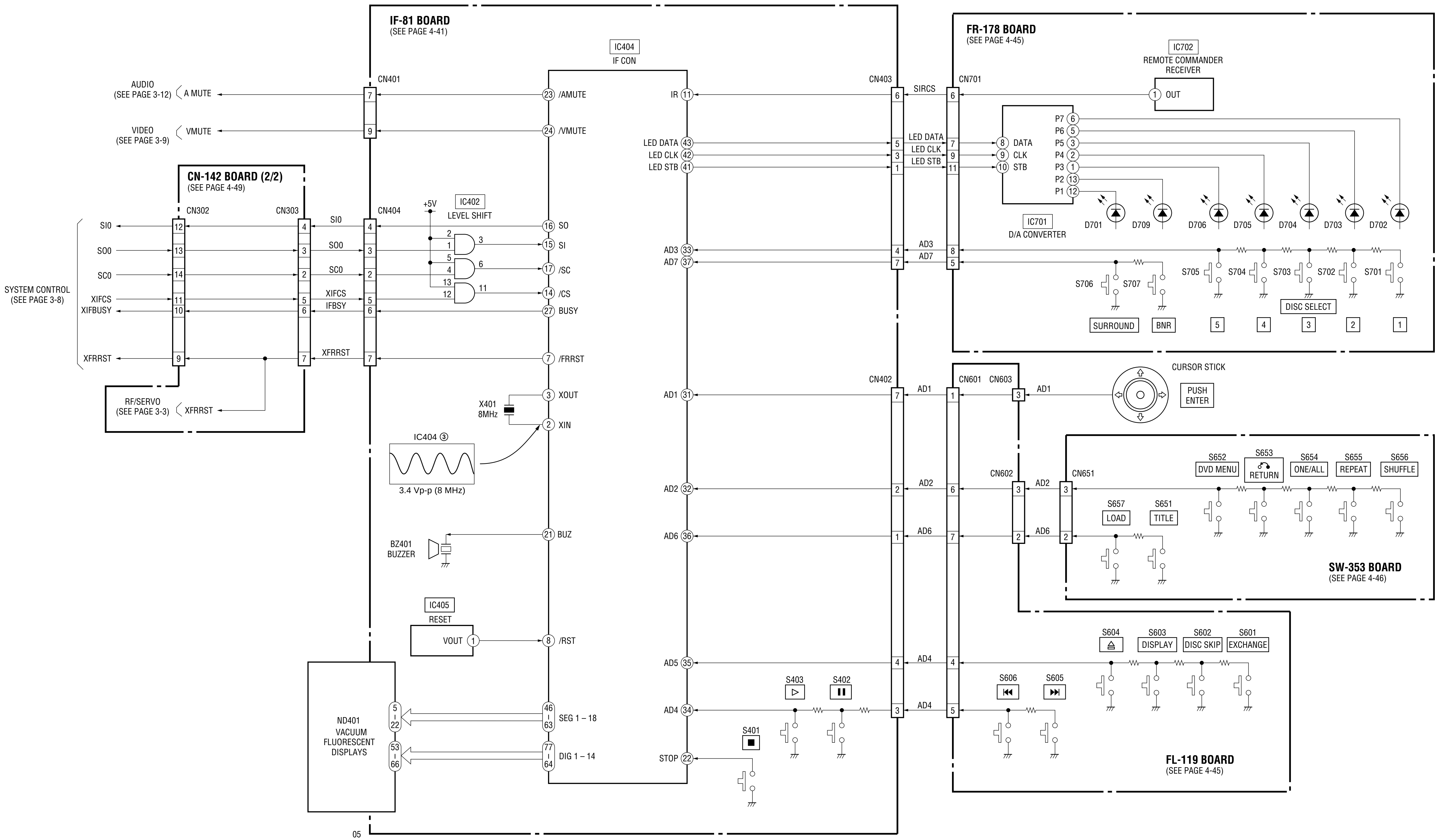
## 3-5. VIDEO BLOCK DIAGRAM



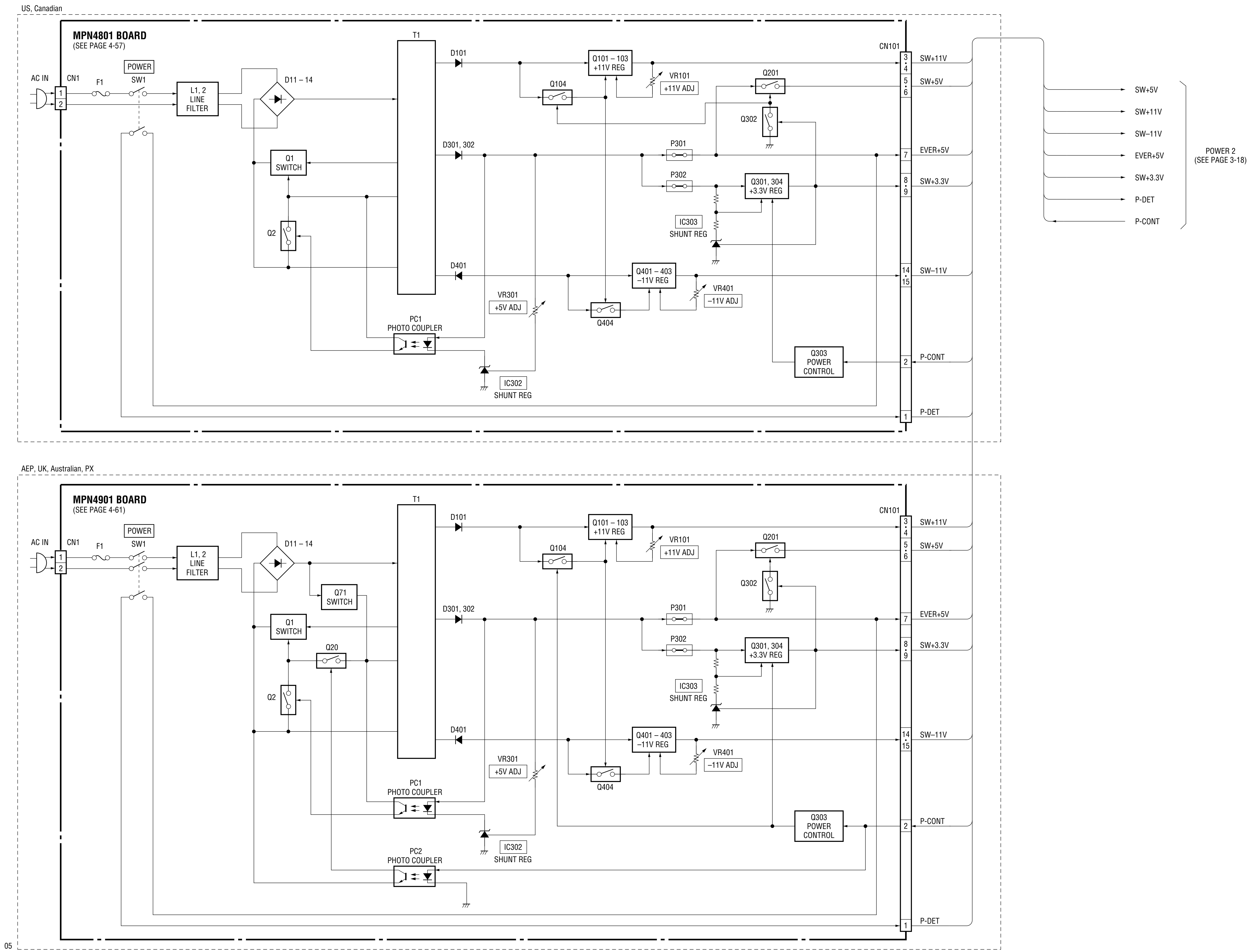
## 3-6. AUDIO BLOCK DIAGRAM



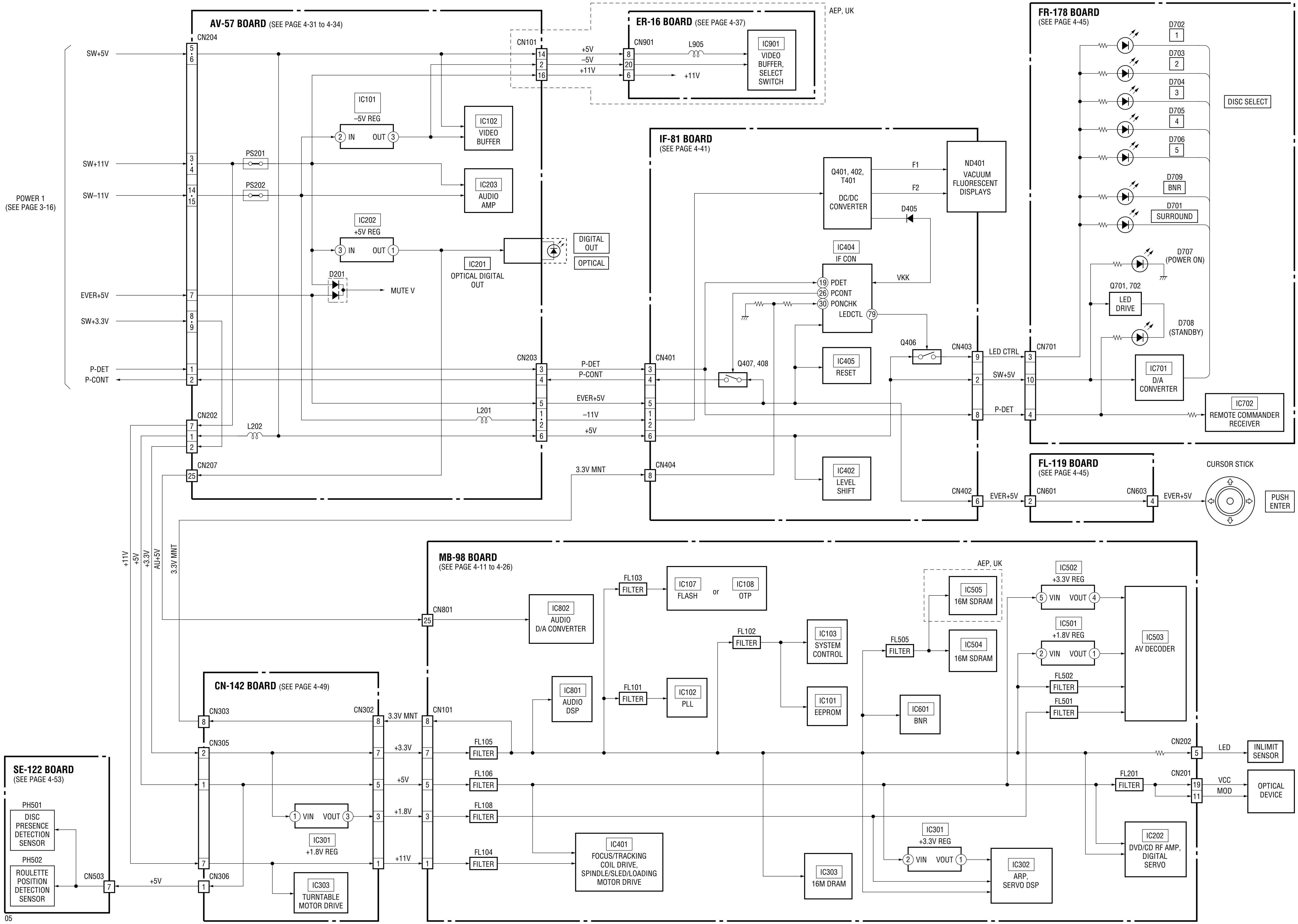
## 3-7. INTERFACE CONTROL BLOCK DIAGRAM



## 3-8. POWER 1 BLOCK DIAGRAM



## 3-9. POWER 2 BLOCK DIAGRAM



# SECTION 4
# PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

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

**For printed wiring boards:**
- : indicates a lead wire mounted on the component side.
- : indicates a lead wire mounted on the printed side.
- : Through hole.
- : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

| Caution: | |
|---|---|
| Pattern face side: (Side A) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Side B) | Parts on the parts face side seen from the parts face are indicated. |

**For schematic diagram:**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4 W (Chip resistors : 1/10 W) unless otherwise specified.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- **B +** : B+ Line.
- **B –** : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

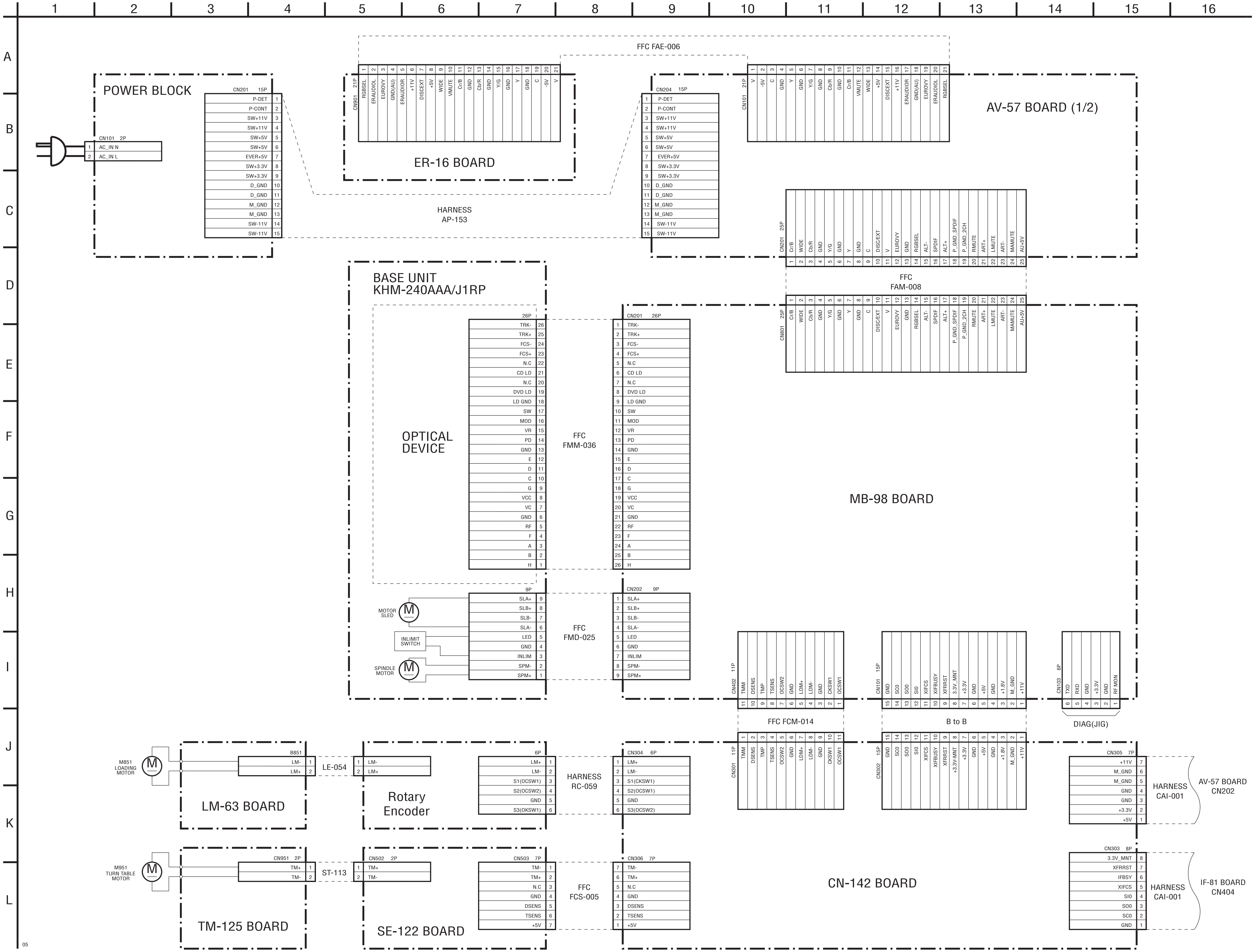
| **Note:** | **Note:** |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié. |

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

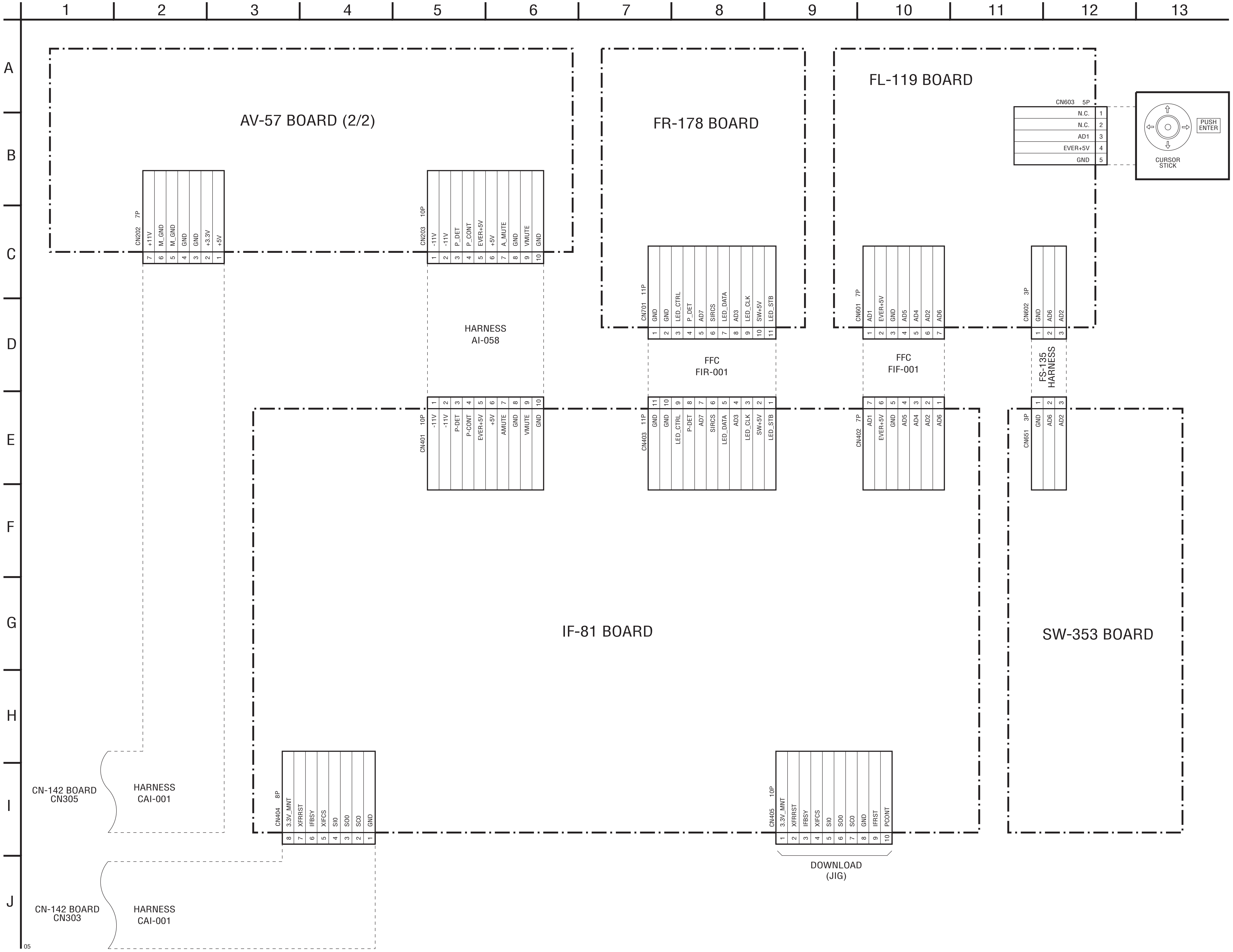
- Abbreviation
  AUS : Australian
  CND : Canadian

## 4-1. FRAME SCHEMATIC DIAGRAM

### FRAME 1 SCHEMATIC DIAGRAM



FRAME 2 SCHEMATIC DIAGRAM



There are a few cases that the part isn't mounted in this model is printed on this diagram.

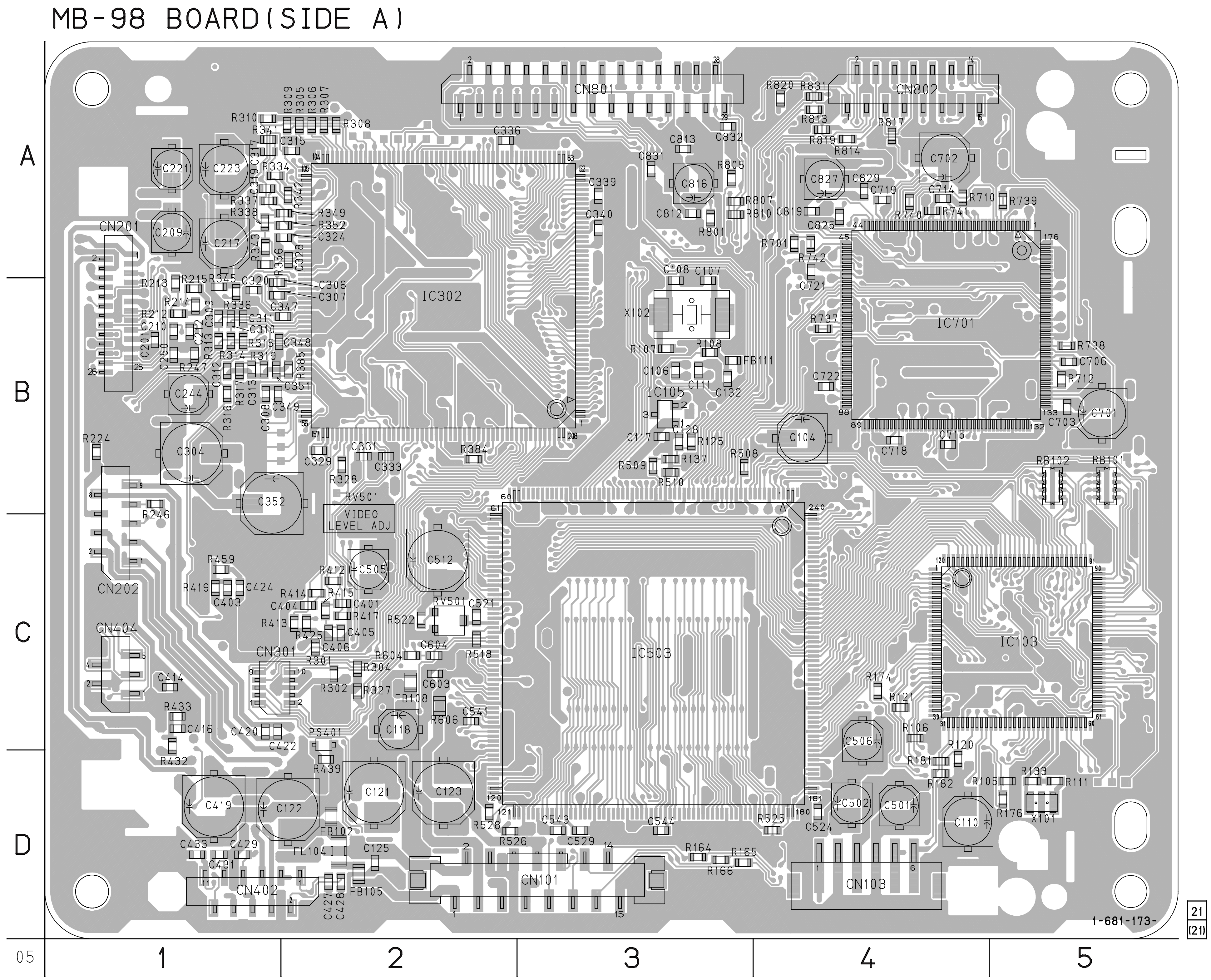
## 4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

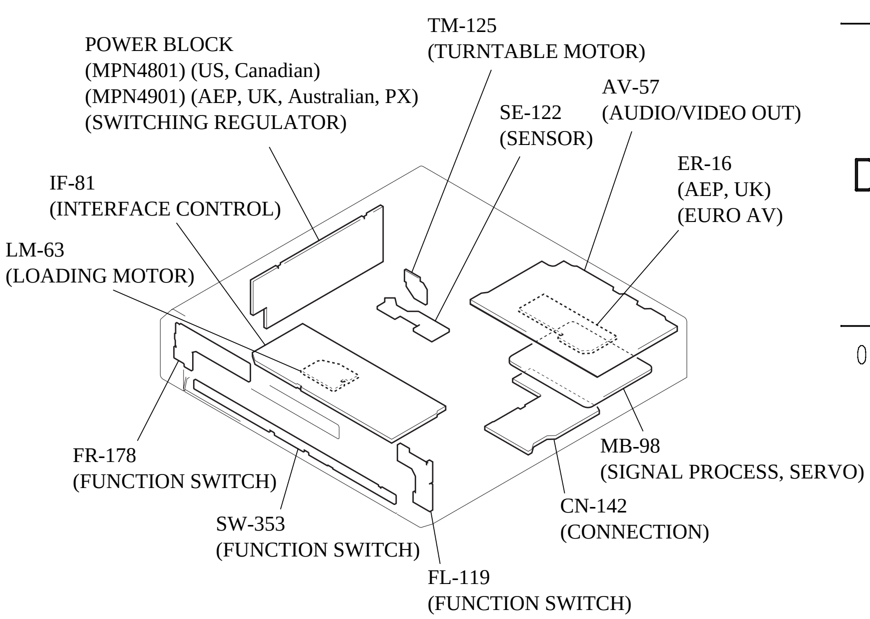
### MB-98 (SIGNAL PROCESS, SERVO) PRINTED WIRING BOARD

– Ref. No.: MB-98 board; 2,000 series –

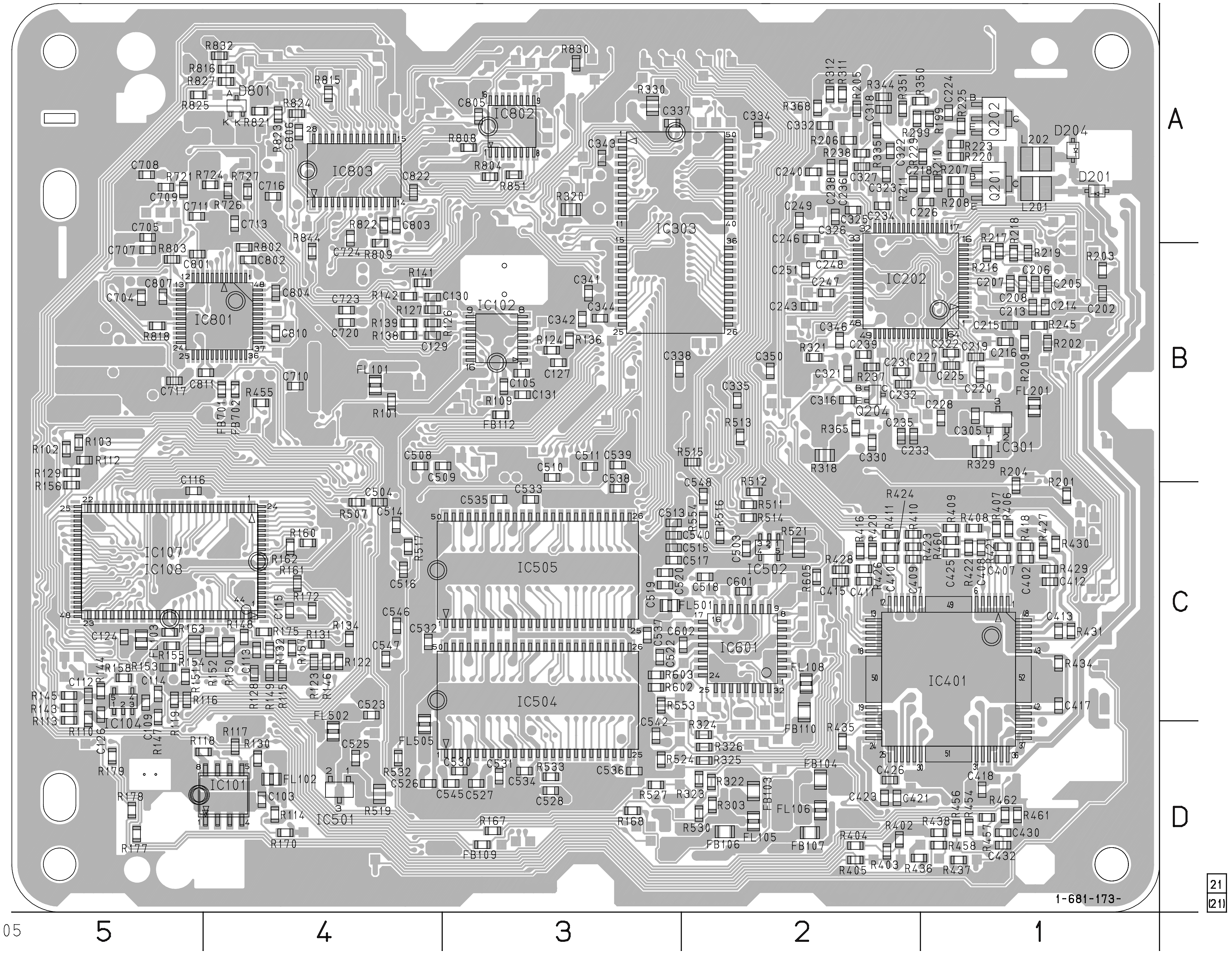
MB-98 BOARD (SIDE A)

| | |
|---|---|
| CN101 | D-3 |
| CN103 | D-4 |
| CN201 | A-1 |
| CN202 | C-1 |
| CN402 | D-1 |
| CN801 | A-3 |
| IC103 | C-5 |
| IC302 | B-2 |
| IC503 | C-3 |



# MB-98 BOARD(SIDE B)

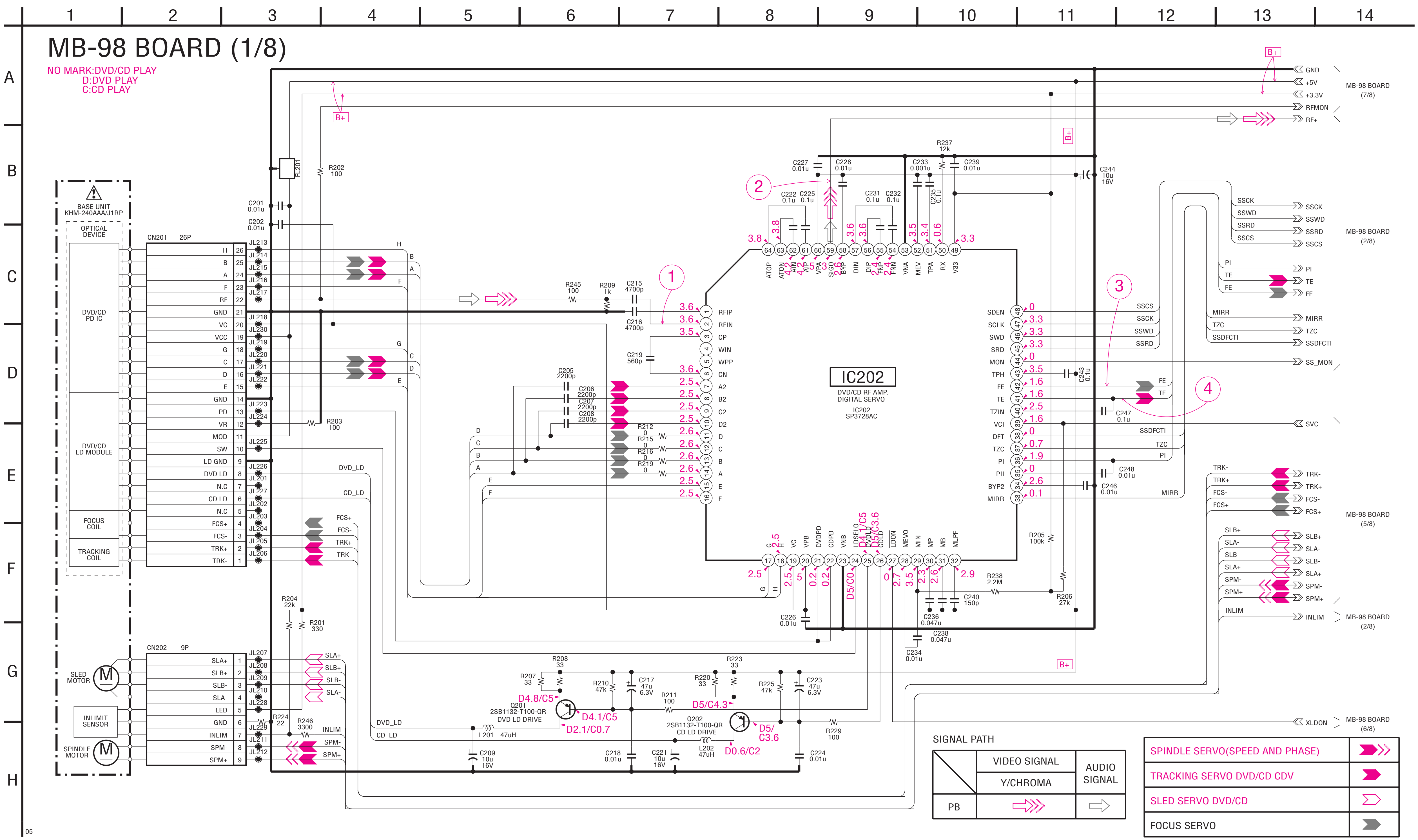


MB-98 BOARD (SIDE B)

| | |
|---|---|
| IC101 | D-4 |
| IC102 | B-3 |
| IC107 | C-5 |
| IC202 | B-2 |
| IC301 | B-1 |
| IC303 | A-3 |
| IC401 | C-1 |
| IC501 | D-4 |
| IC502 | C-2 |
| IC504 | C-3 |
| IC505 | C-3 |
| IC601 | C-2 |
| IC801 | B-4 |
| IC802 | A-3 |
| Q201 | A-1 |
| Q202 | A-1 |

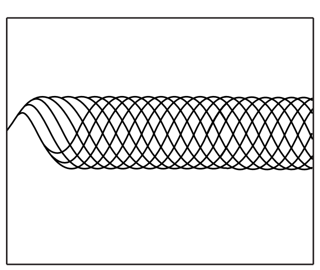
**MB-98 (RF AMP, SERVO) SCHEMATIC DIAGRAM** • See page 4-7 for printed wiring board.
– Ref. No.: MB-98 board; 2,000 series –

| | |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié. |



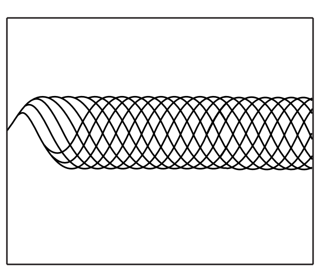

**• Waveforms**

❶ IC202 ② (DVD play)
200 mV/DIV 50 ns/DIV



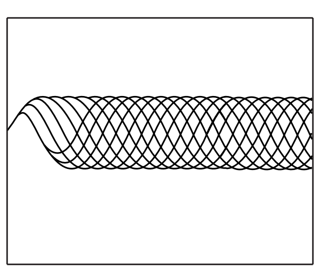
570 mVp-p

❶ IC202 ② (CD play)
200 mV/DIV 200 ns/DIV



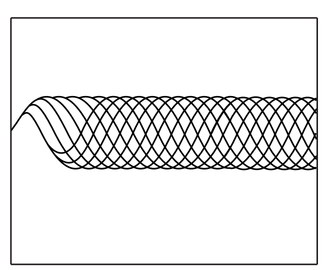
550 mVp-p

❷ IC202 ⑲ (DVD play)
500 mV/DIV 50 ns/DIV



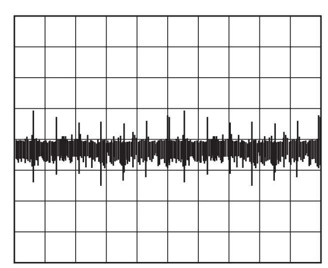
1.4 Vp-p

❷ IC202 ⑲ (CD play)
500 mV/DIV 200 ns/DIV



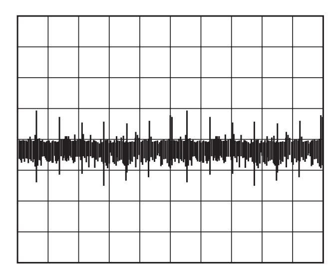
1.4 Vp-p

❸ IC202 ㊷ (DVD play)
100 mV/DIV 50 ms/DIV



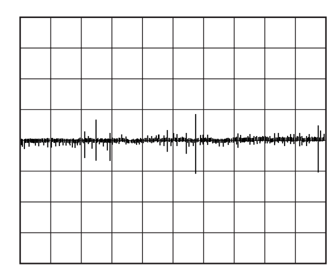
180 mVp-p

❸ IC202 ㊷ (CD play)
500 mV/DIV 50 ms/DIV



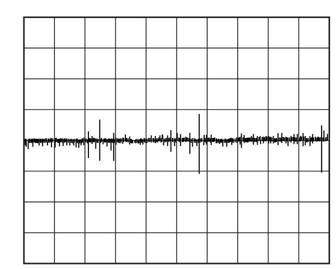
860 mVp-p

❹ IC202 ㊶ (DVD play)
500 mV/DIV 50 ms/DIV



1.5 Vp-p

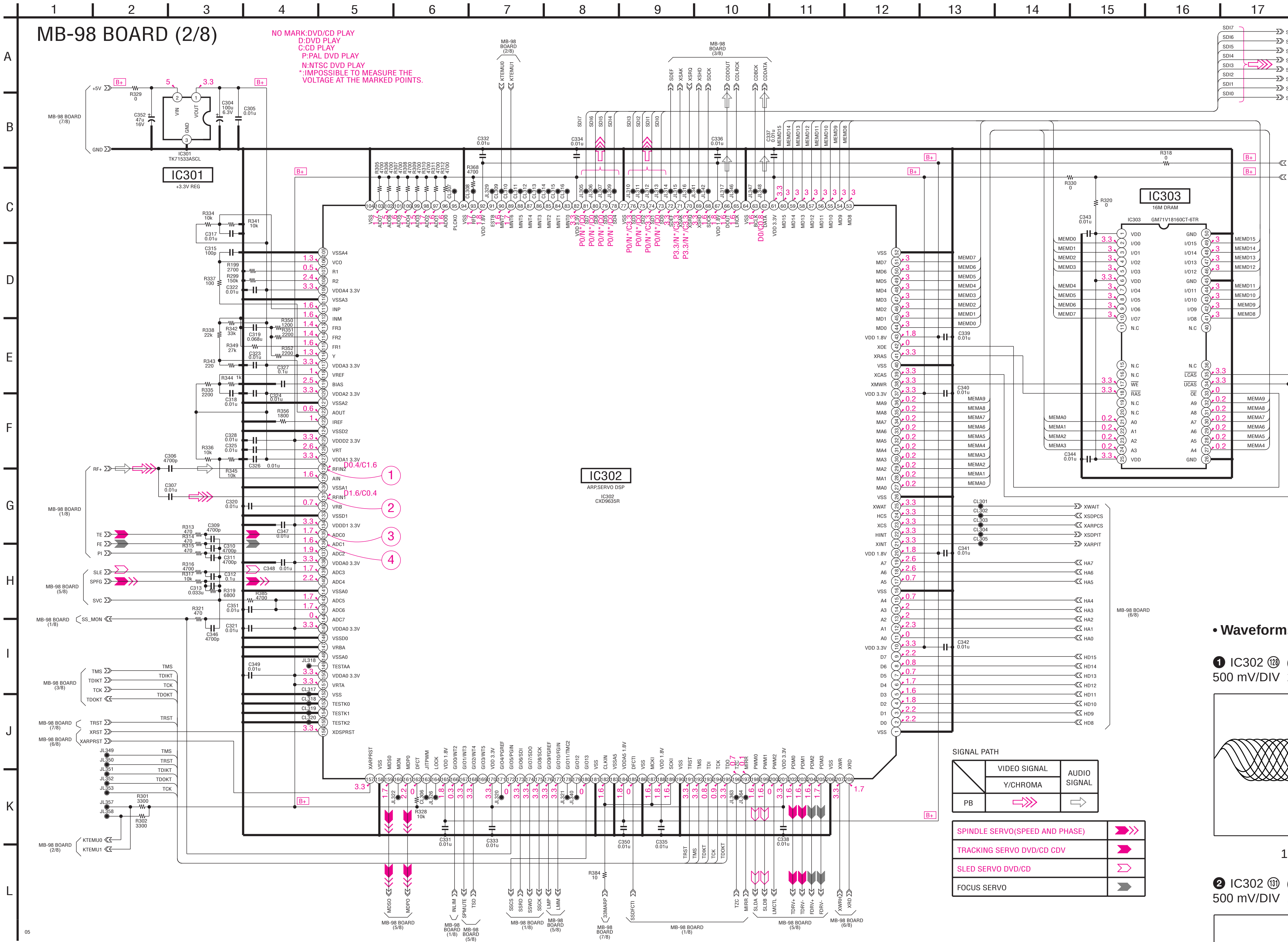
❹ IC202 ㊶ (CD play)
500 mV/DIV 200 ms/DIV



1.7 Vp-p

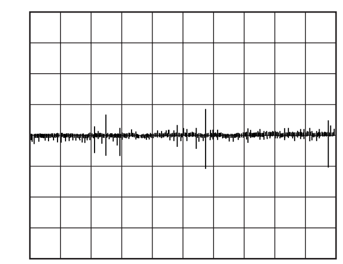
## MB-98 (ARP, SERVO DSP) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –



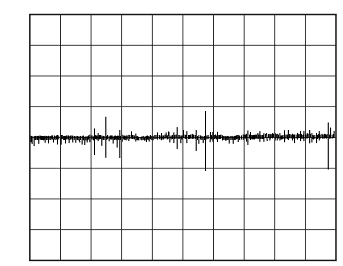

**• Waveforms**

❸ IC302 ⑬⑤ (DVD play)
500 mV/DIV 50 ms/DIV



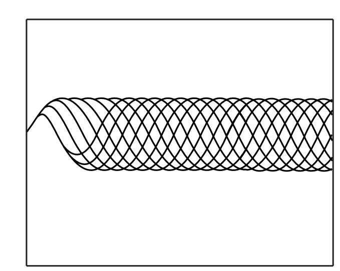
1.4 Vp-p

❸ IC302 ⑬⑤ (CD play)
500 mV/DIV 200 ms/DIV



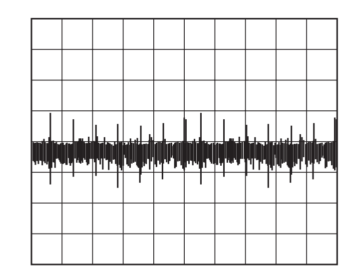
1.7 Vp-p

❶ IC302 ⑫⑧ (CD play)
500 mV/DIV 200 ns/DIV



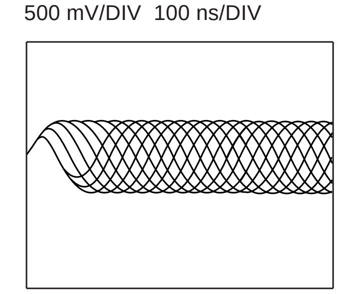
1.4 Vp-p

❹ IC302 ⑬⑥ (DVD play)
100 mV/DIV 50 ms/DIV



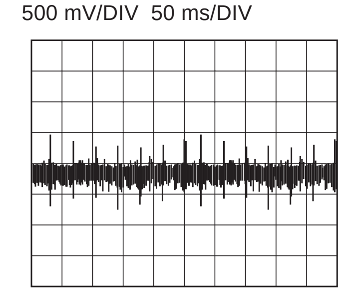
160 mVp-p

❷ IC302 ⑬① (DVD play)
500 mV/DIV 100 ns/DIV



1.4 Vp-p

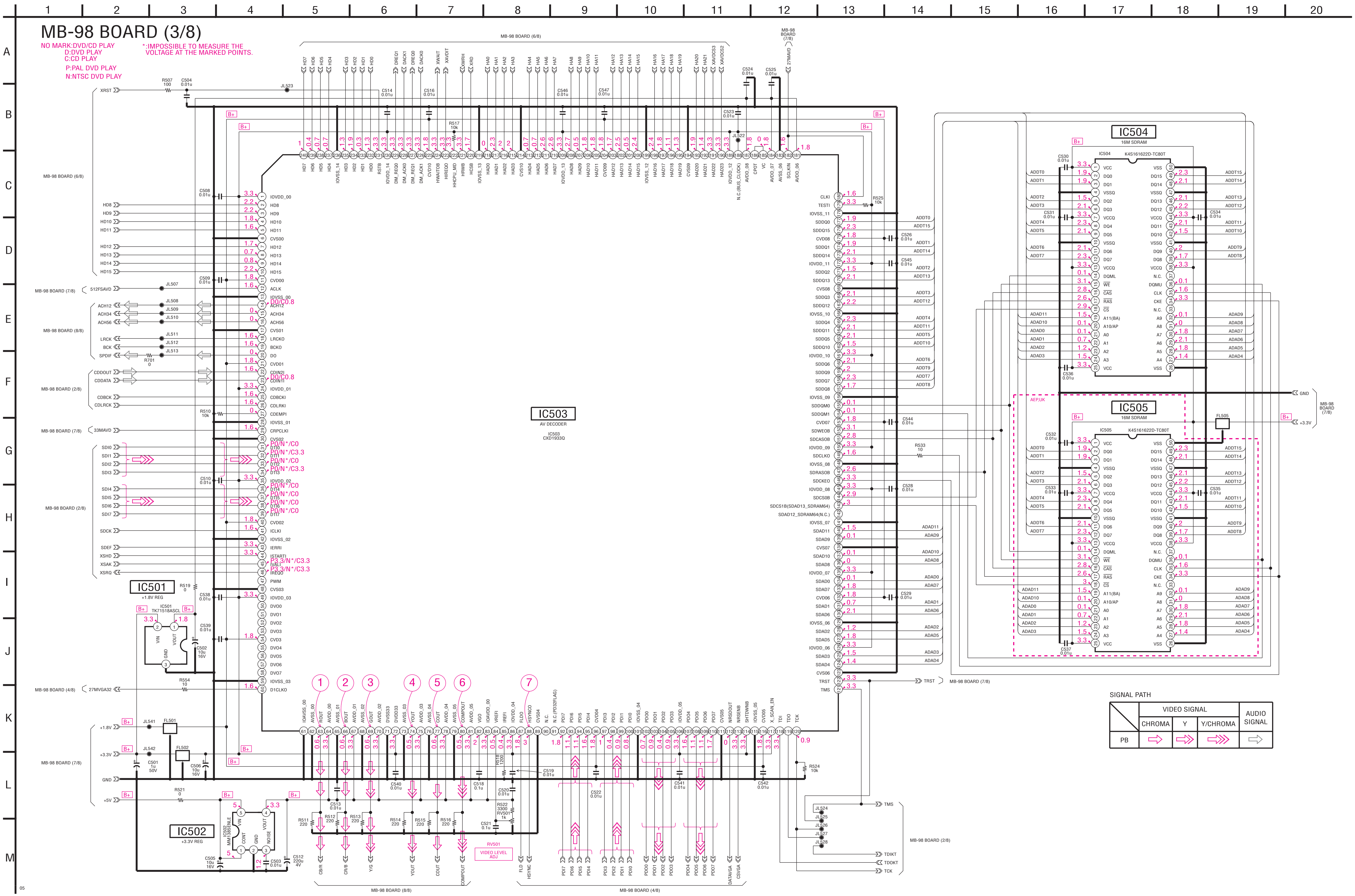
❹ IC302 ⑬⑥ (CD play)
500 mV/DIV 50 ms/DIV



860 mVp-p

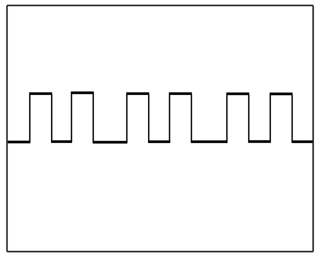
## MB-98 (AV DECODER) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –



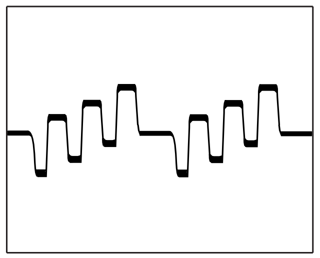
• Waveforms

1 IC503 63 : AEP, UK
(LINE : RGB mode)



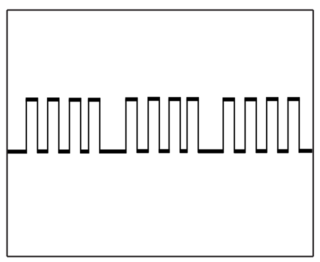
660 mVp-p (H)

1 IC503 63 : EXCEPT AEP, UK



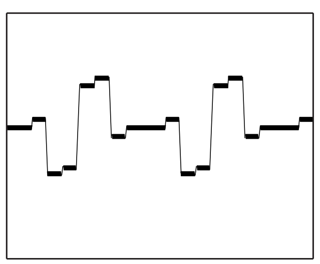
620 mVp-p (H)

2 IC503 66 : AEP, UK
(LINE : RGB mode)



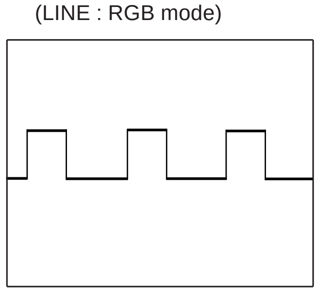
660 mVp-p (H)

2 IC503 66 : EXCEPT AEP, UK



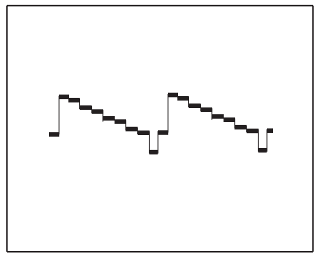
620 mVp-p (H)

3 IC503 69 : AEP, UK
(LINE : RGB mode)



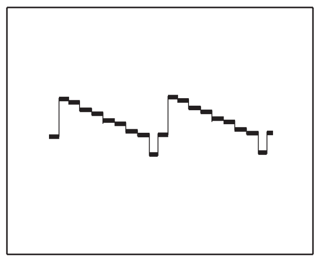
660 mVp-p (H)

3 IC503 69 : EXCEPT AEP, UK



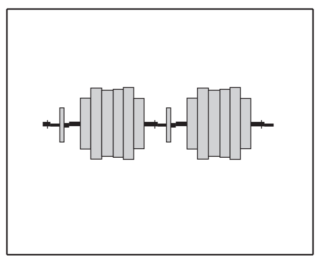
940 mVp-p (H)

4 IC503 74



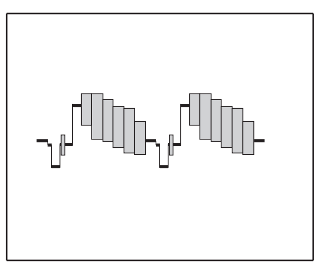
940 mVp-p (H)

5 IC503 77



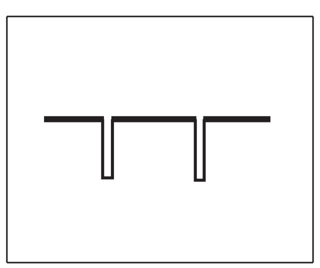
810 mVp-p (H)

6 IC503 80



1.1 Vp-p (H)

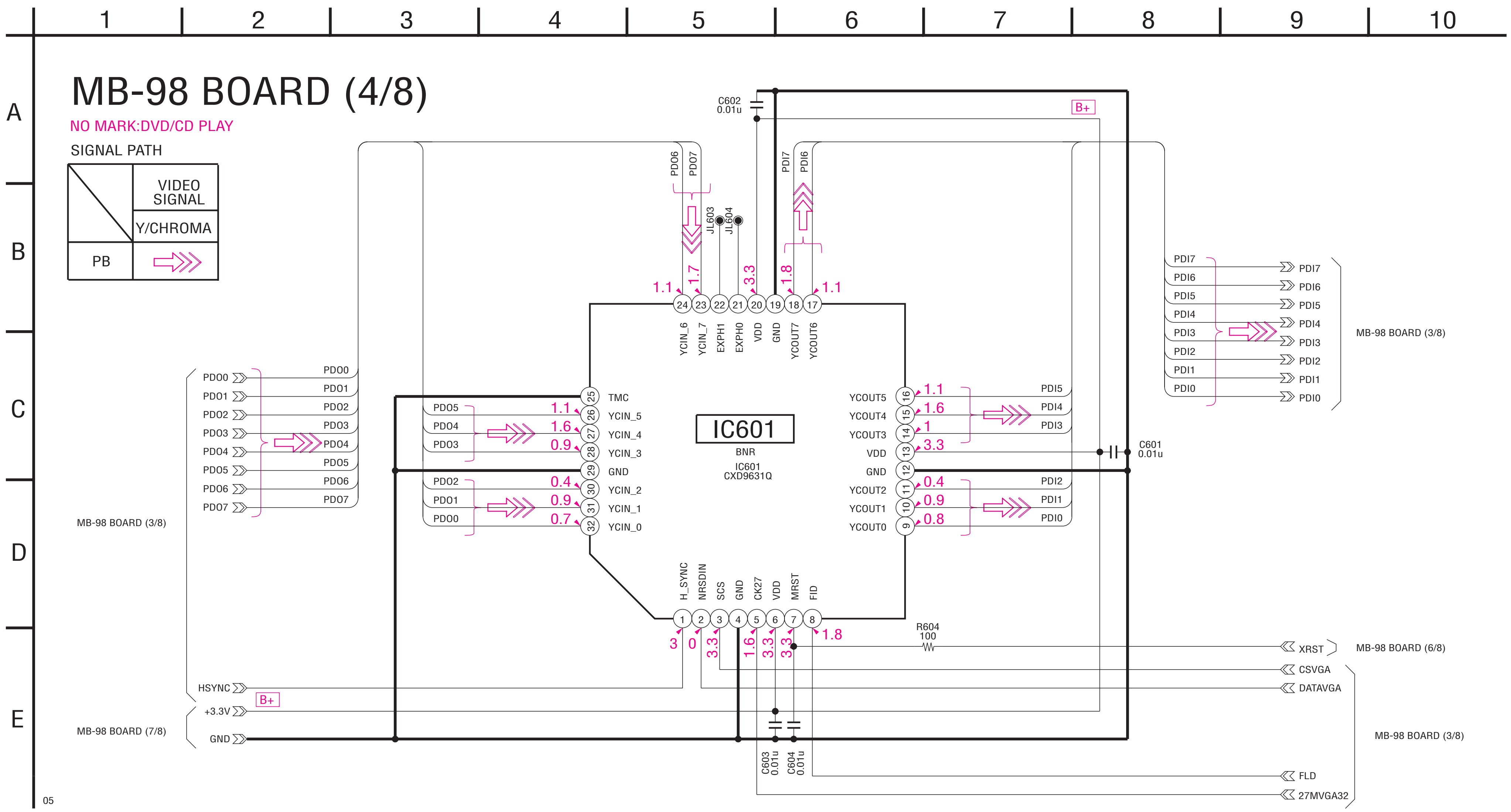
7 IC503 88



3.2 Vp-p (H)

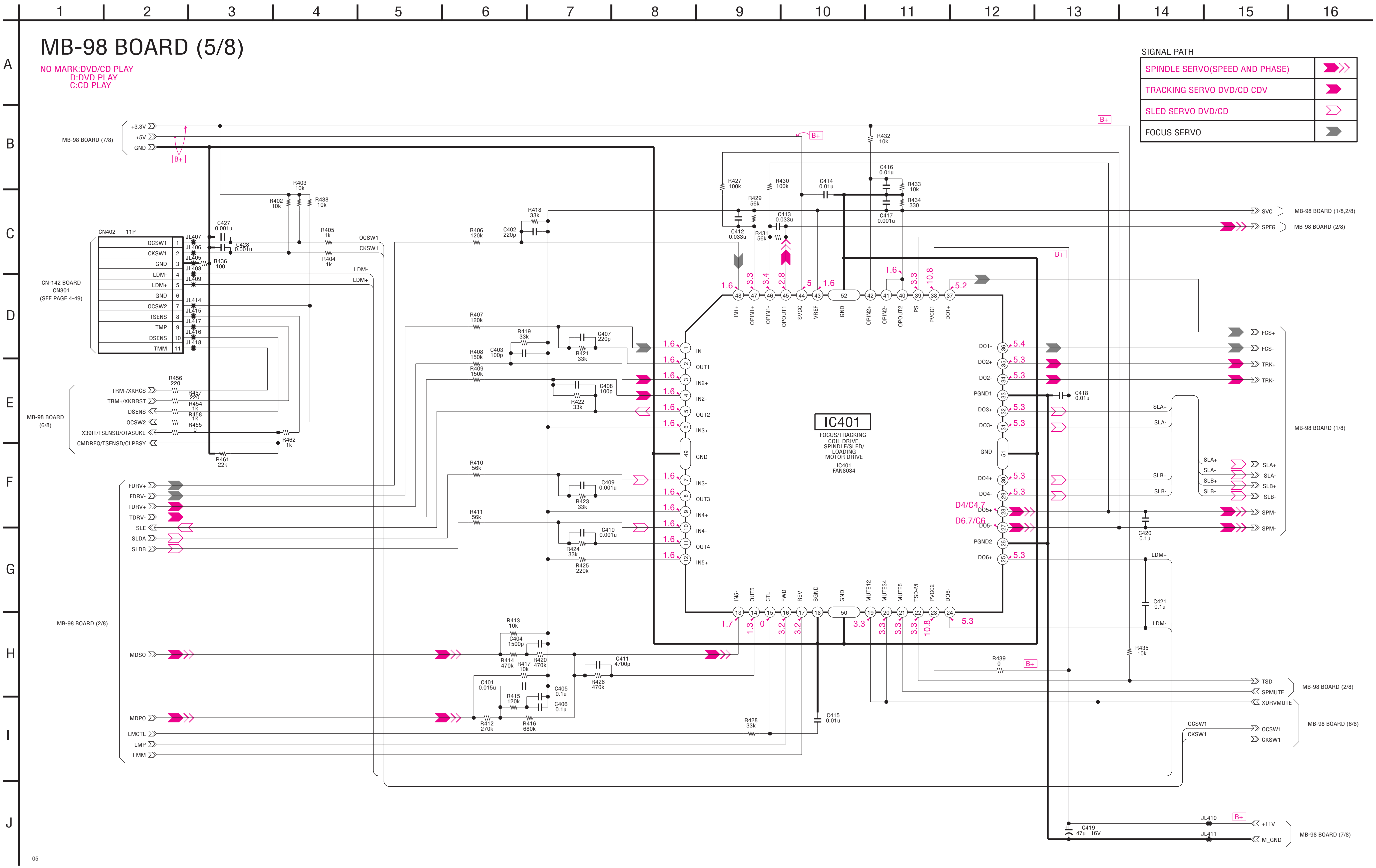
**MB-98 (BNR) SCHEMATIC DIAGRAM** **• See page 4-7 for printed wiring board.**

– Ref. No.: MB-98 board; 2,000 series –



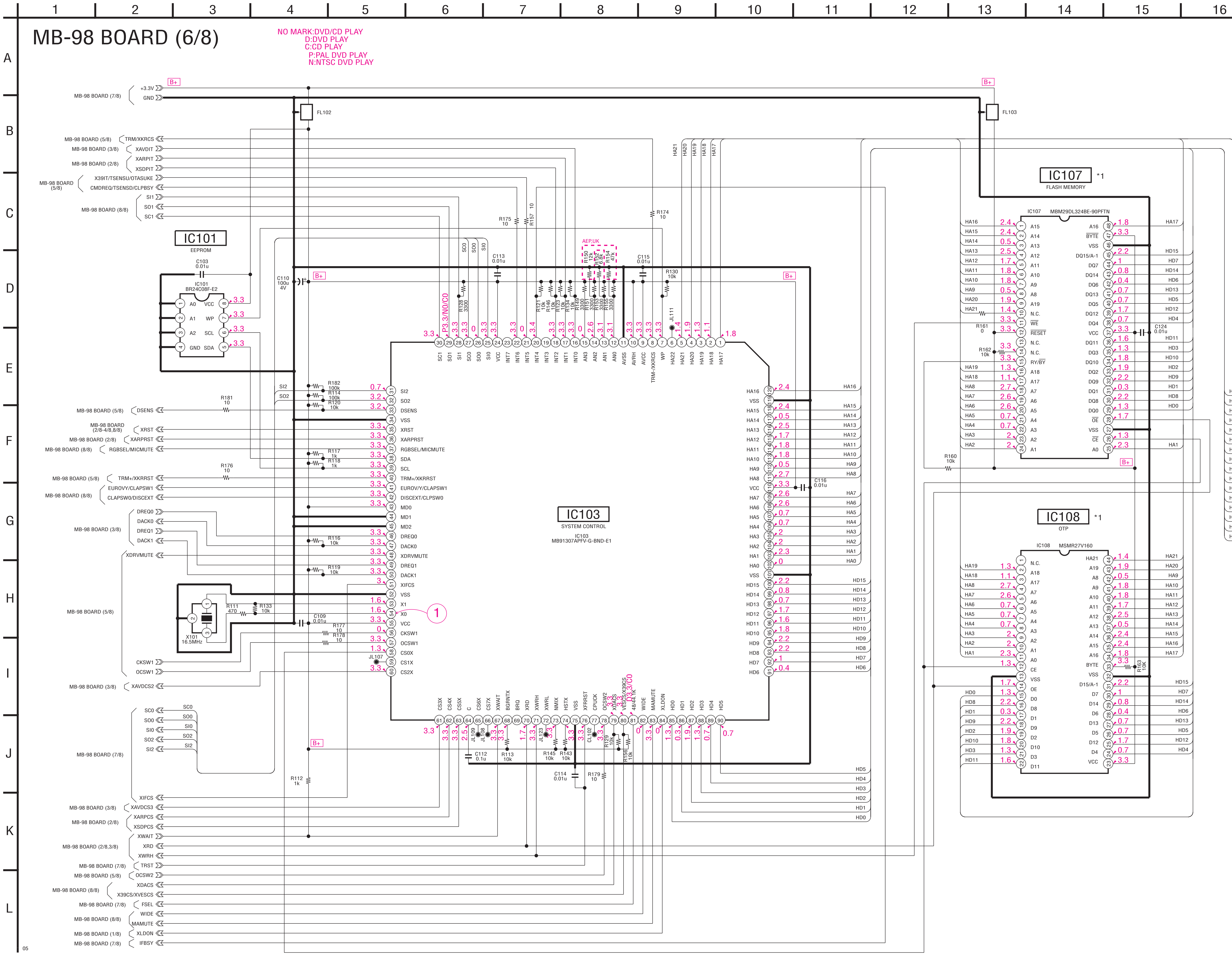
## MB-98 (DRIVE) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-98 board; 2,000 series –



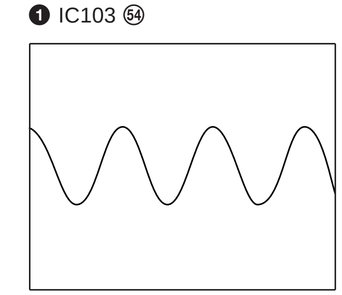
**MB-98 (SYSTEM CONTROL) SCHEMATIC DIAGRAM** **• See page 4-7 for printed wiring board.**

– Ref. No.: MB-98 board; 2,000 series –




**• Waveform**

1 IC103 54



1.7 Vp-p (16.5 MHz)

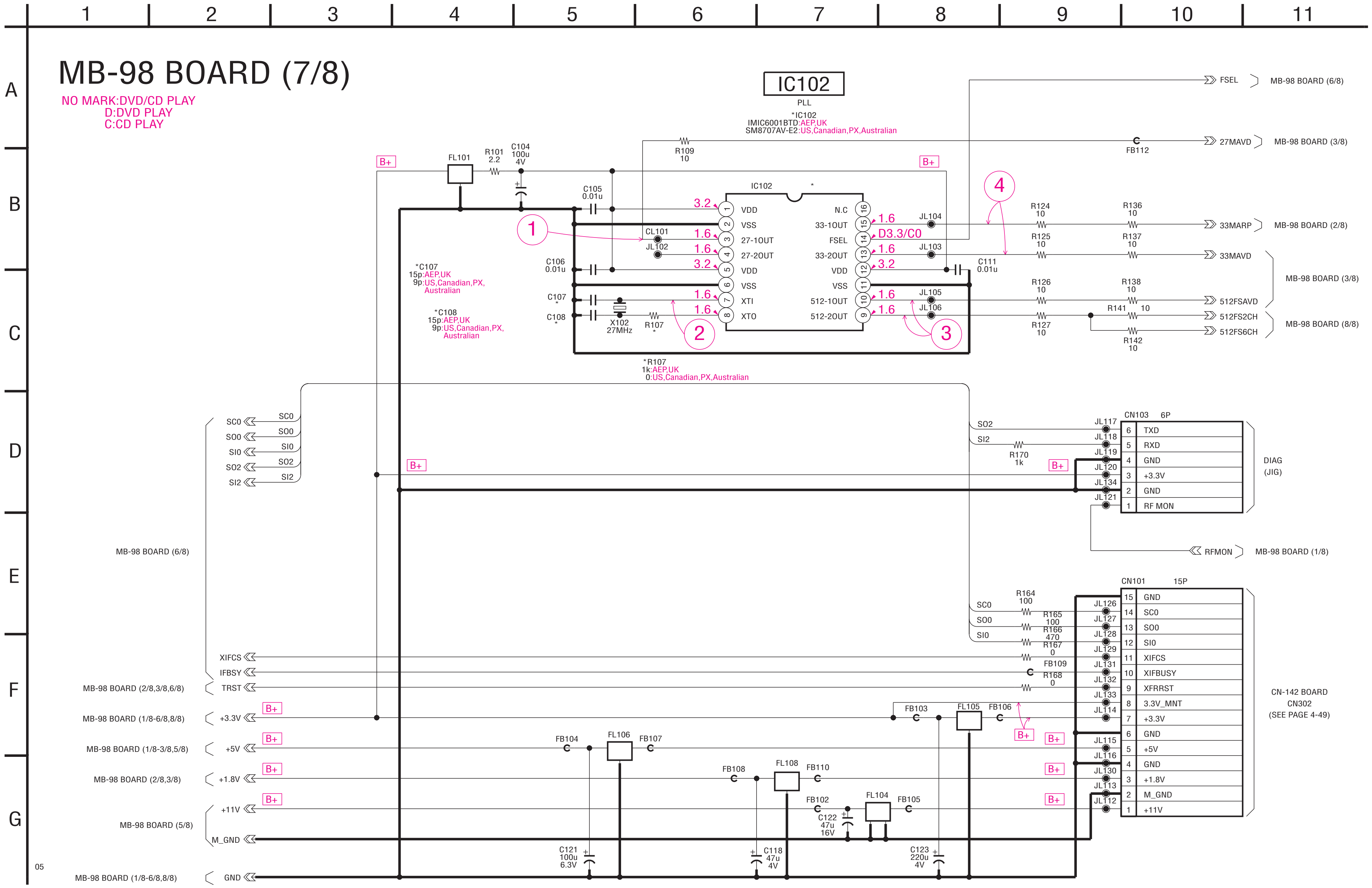




**SYSTEM CONTROL**
**MB-98 (6/8)**

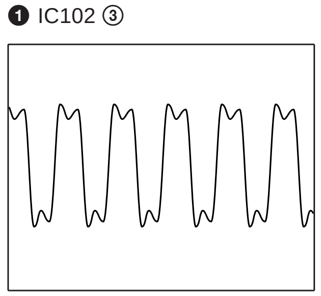
**MB-98 (CLOCK GENERATOR) SCHEMATIC DIAGRAM** **• See page 4-7 for printed wiring board.**

– Ref. No.: MB-98 board; 2,000 series –



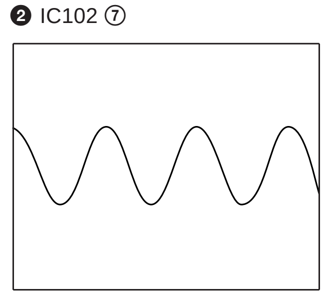

**• Waveforms**

❶ IC102 ③



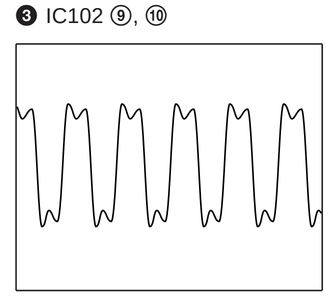
3.5 Vp-p (27 MHz)

❷ IC102 ⑦



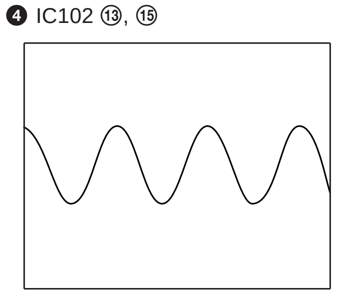
1.5 Vp-p (27 MHz)

❸ IC102 ⑨, ⑩



DVD : 3.3 Vp-p (24.57 MHz)
CD : 3.3 Vp-p (22.58 MHz)

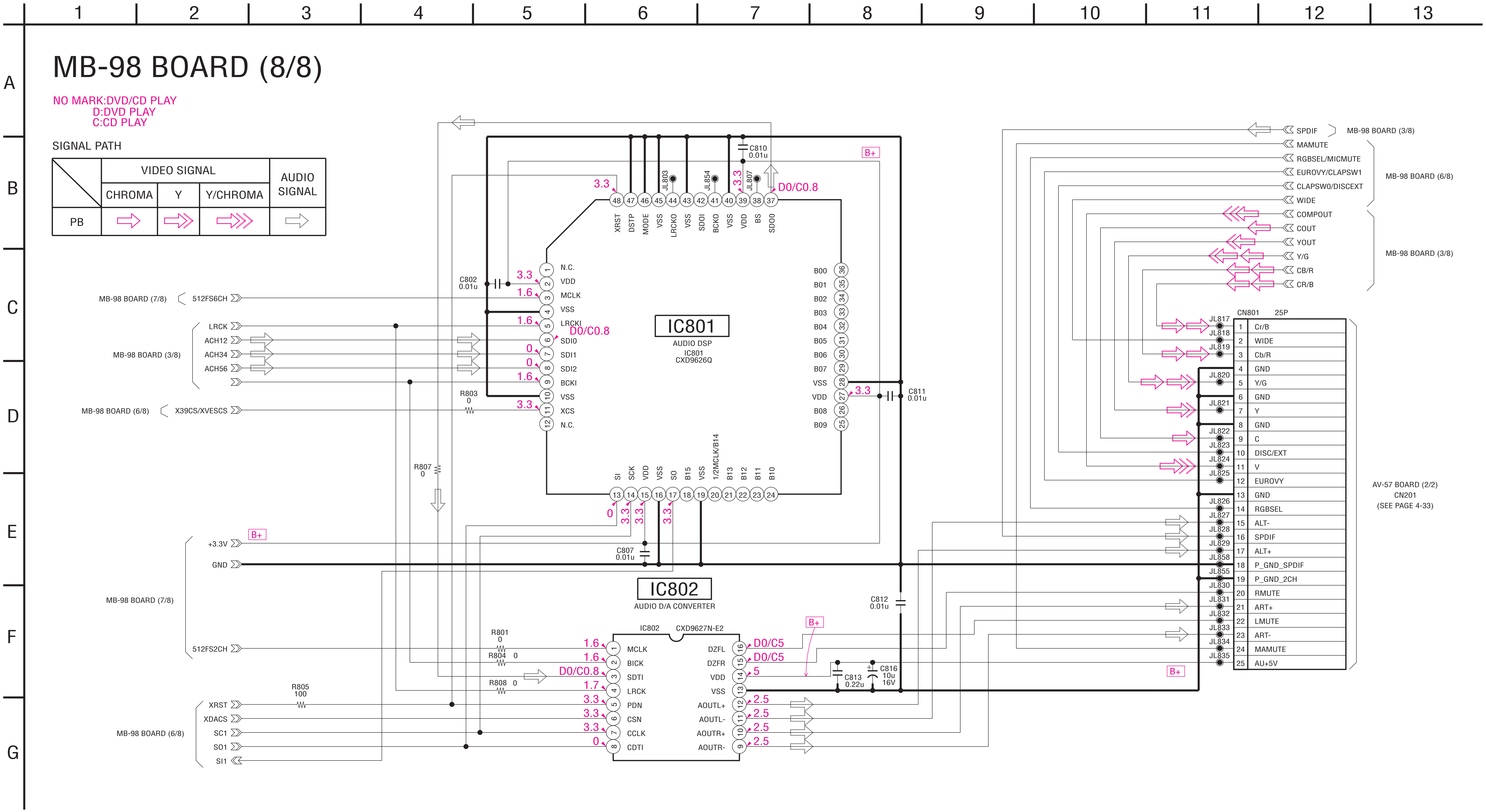
❹ IC102 ⑬, ⑮



3.2 Vp-p (33.87 MHz)

**MB-98 (AUDIO DSP, D/A CONVERTER) SCHEMATIC DIAGRAM** • **See page 4-7 for printed wiring board.**

– Ref. No.: MB-98 board; 2,000 series –



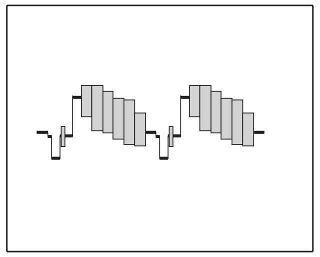





**AUDIO DSP, D/A CONVERTER**
**MB-98 (8/8)**

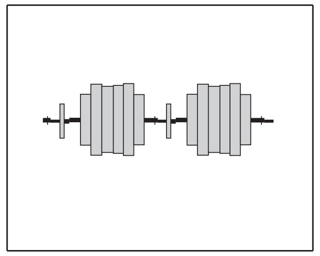
**• Waveforms**

❶ IC102 ㉑ : AEP, UK
IC102 ㉝ : EXCEPT AEP, UK



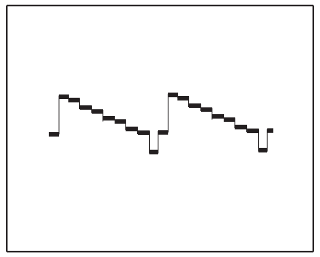
2.4 Vp-p (H)

❷ IC102 ⑲ : AEP, UK
IC102 ㉛ : EXCEPT AEP, UK



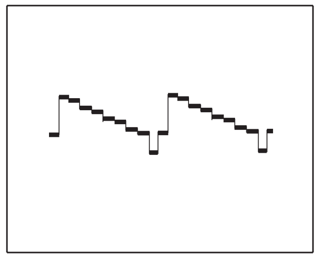
1.8 Vp-p (H)

❸ IC102 ⑰ : AEP, UK
IC102 ㉙ : EXCEPT AEP, UK



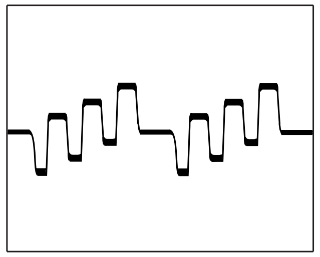
2.0 Vp-p (H)

❹ IC102 ㉔ : EXCEPT AEP, UK



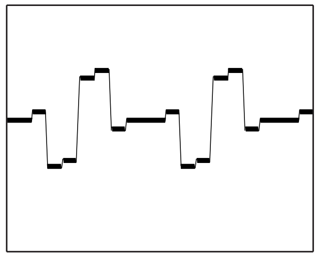
2.0 Vp-p (H)

❺ IC102 ㉒ : EXCEPT AEP, UK



1.3 Vp-p (H)

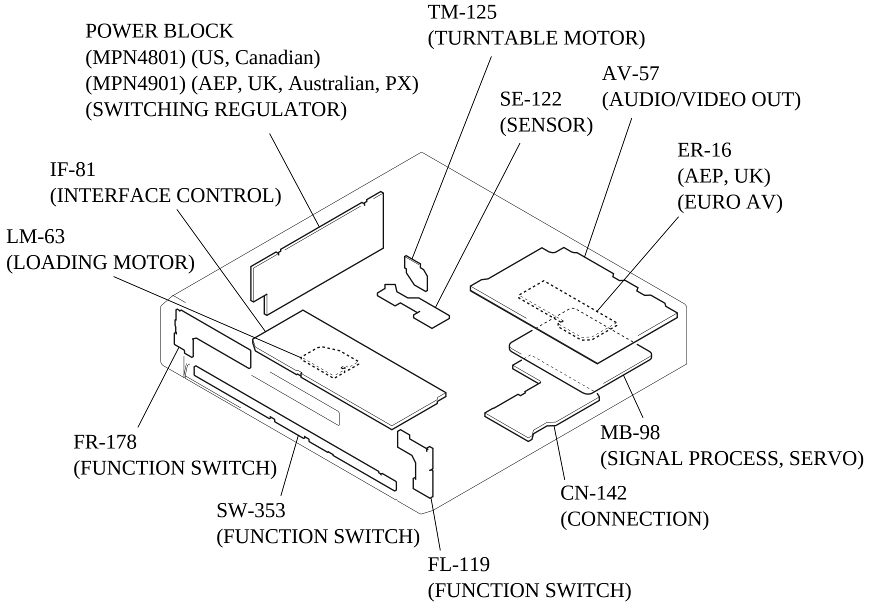
❻ IC102 ⑳ : EXCEPT AEP, UK



1.3 Vp-p (H)

AV-57 BOARD

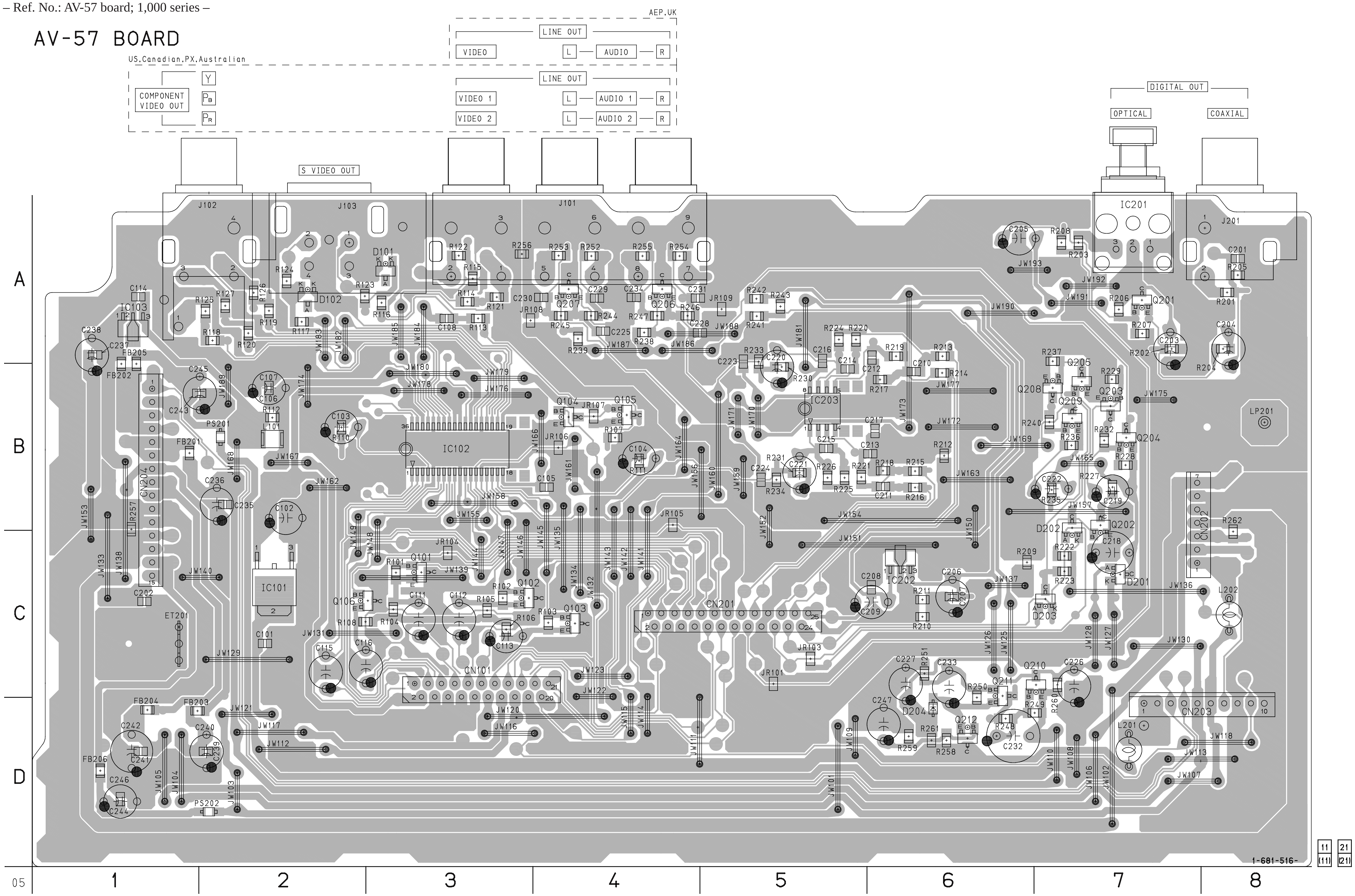
| | |
|---|---|
| CN101 | D-3 |
| CN201 | C-5 |
| CN202 | B-7 |
| CN203 | D-8 |
| CN204 | B-1 |
| D101 | A-3 |
| D102 | A-2 |
| D201 | C-7 |
| D202 | C-7 |
| D203 | C-7 |
| IC101 | C-2 |
| IC102 | B-3 |
| IC201 | A-7 |
| IC202 | C-6 |
| IC203 | B-5 |
| Q104 | B-4 |
| Q105 | B-4 |
| Q106 | C-2 |
| Q201 | A-7 |
| Q202 | C-7 |
| Q203 | B-7 |
| Q204 | B-7 |
| Q205 | B-7 |
| Q206 | A-4 |
| Q207 | A-4 |
| Q208 | B-7 |
| Q209 | B-7 |



There are a few cases that the part isn't mounted in this model is printed on this diagram.

**AV-57 (AUDIO/VIDEO OUT) PRINTED WIRING BOARD**

– Ref. No.: AV-57 board; 1,000 series –

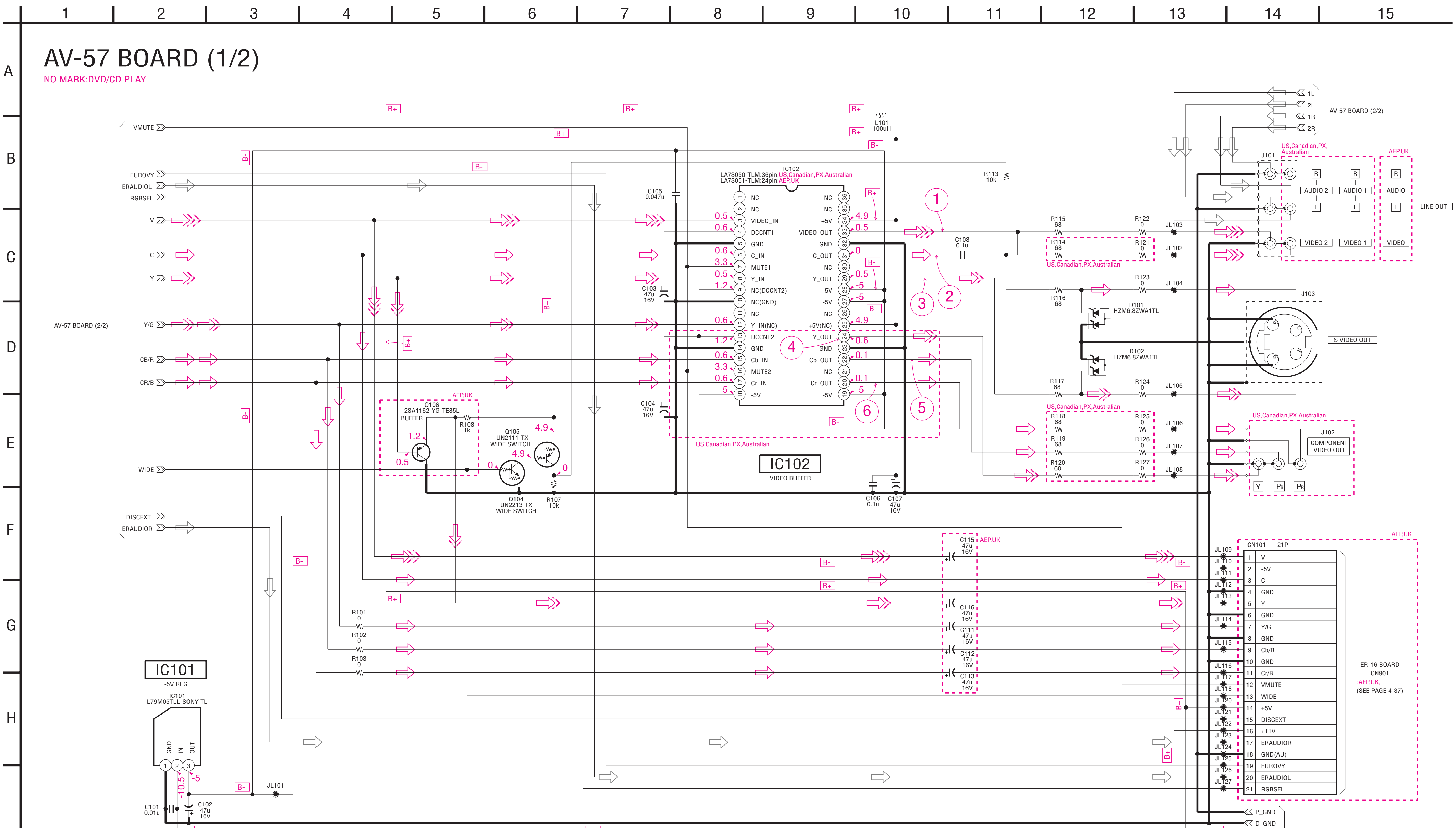






AUDIO/VIDEO OUT
AV-57

**AV-57 (VIDEO BUFFER) SCHEMATIC DIAGRAM** • **See page 4-29 for printed wiring board, and see page 4-28 for waveforms.**
– Ref. No.: AV-57 board; 1,000 series –




SIGNAL PATH

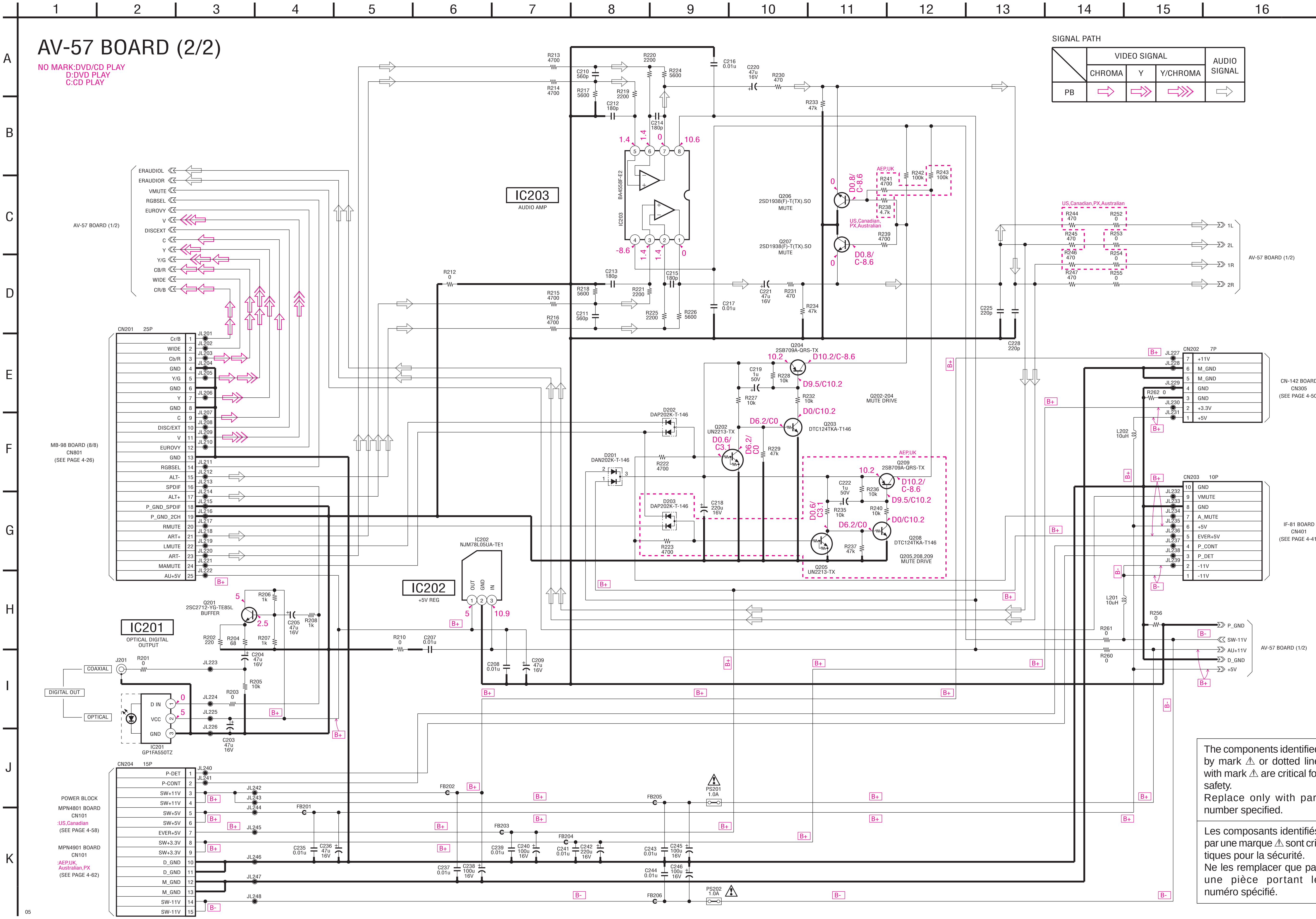
| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| PB | ⇨ | ⇨ | ⇨ | ⇨ |

05

**VIDEO BUFFER**
**AV-57 (1/2)**

**AV-57 (AUDIO AMP) SCHEMATIC DIAGRAM • See page 4-29 for printed wiring board.**

– Ref. No.: AV-57 board; 1,000 series –




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

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

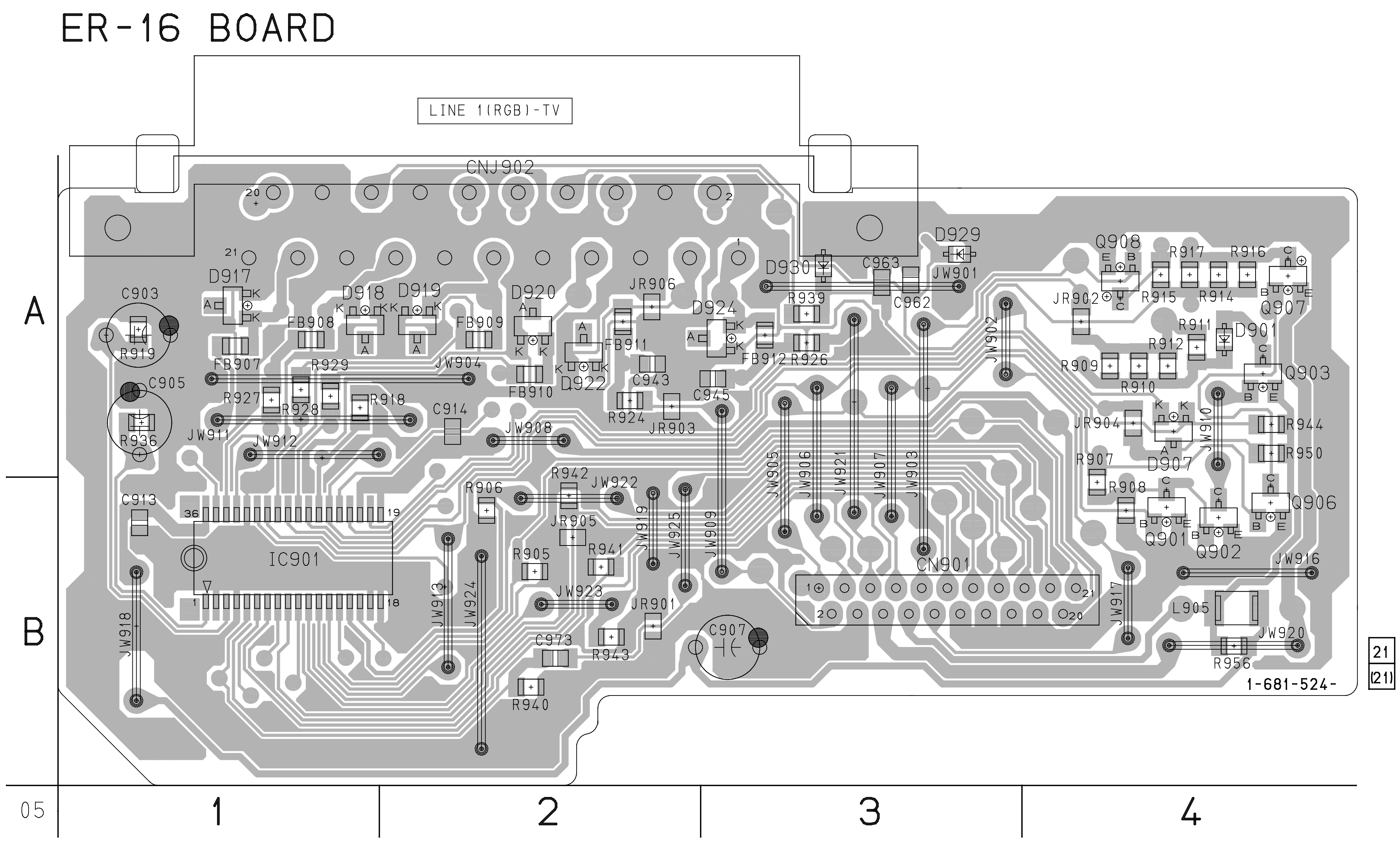




AUDIO AMP
AV-57 (2/2)

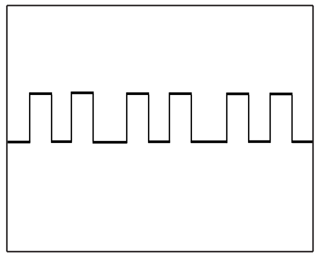
**ER-16 (EURO AV) PRINTED WIRING BOARD**
– Ref. No.: ER-16 board; 1,000 series –
**– AEP, UK –**

There are a few cases that the part isn't mounted in this model is printed on this diagram.



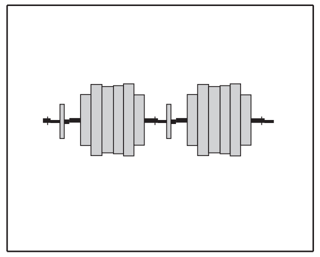

**• Waveforms**

❶ IC901 ㉞ (LINE : RGB mode)



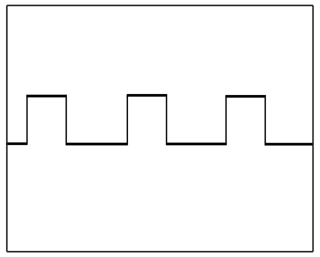
1.4 Vp-p (H)

❶ IC901 ㉞ (LINE : S VIDEO mode)



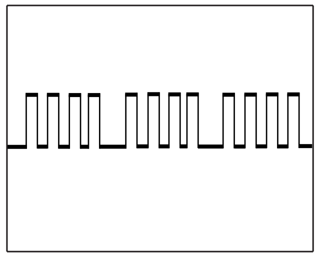
1.7 Vp-p (H)

❷ IC901 ㉙ (LINE : RGB mode)



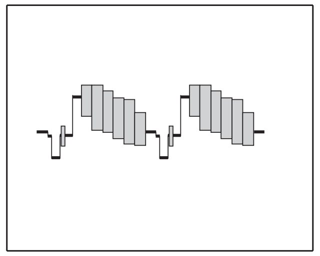
1.4 Vp-p (H)

❸ IC901 ㉗ (LINE : RGB mode)



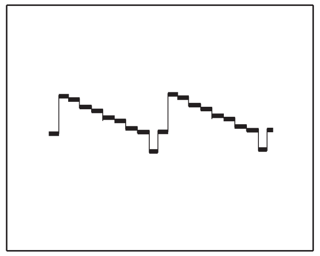
1.4 Vp-p (H)

❹ IC901 ㉕



2.4 Vp-p (H)

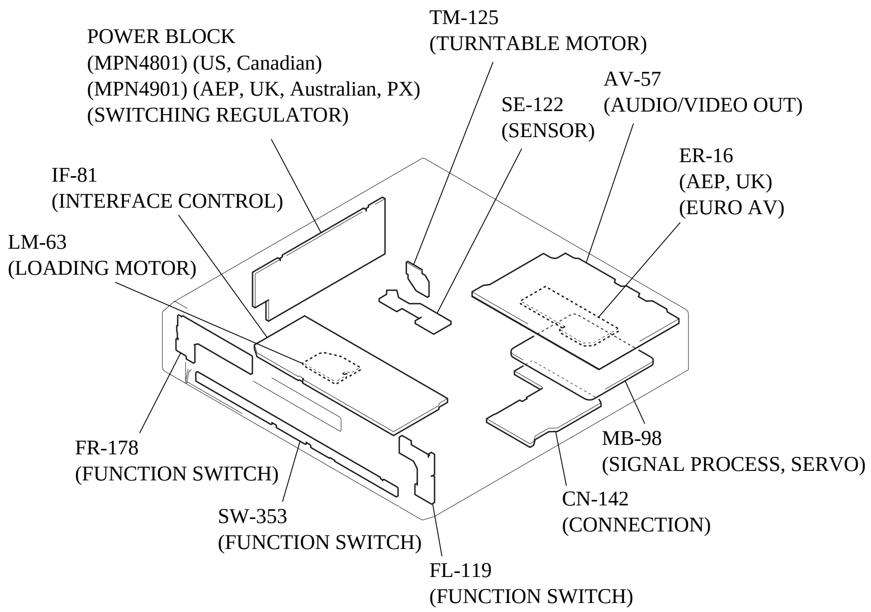
❹ IC901 ㉕ (LINE : S VIDEO mode)



2.0 Vp-p (H)

ER-16 BOARD

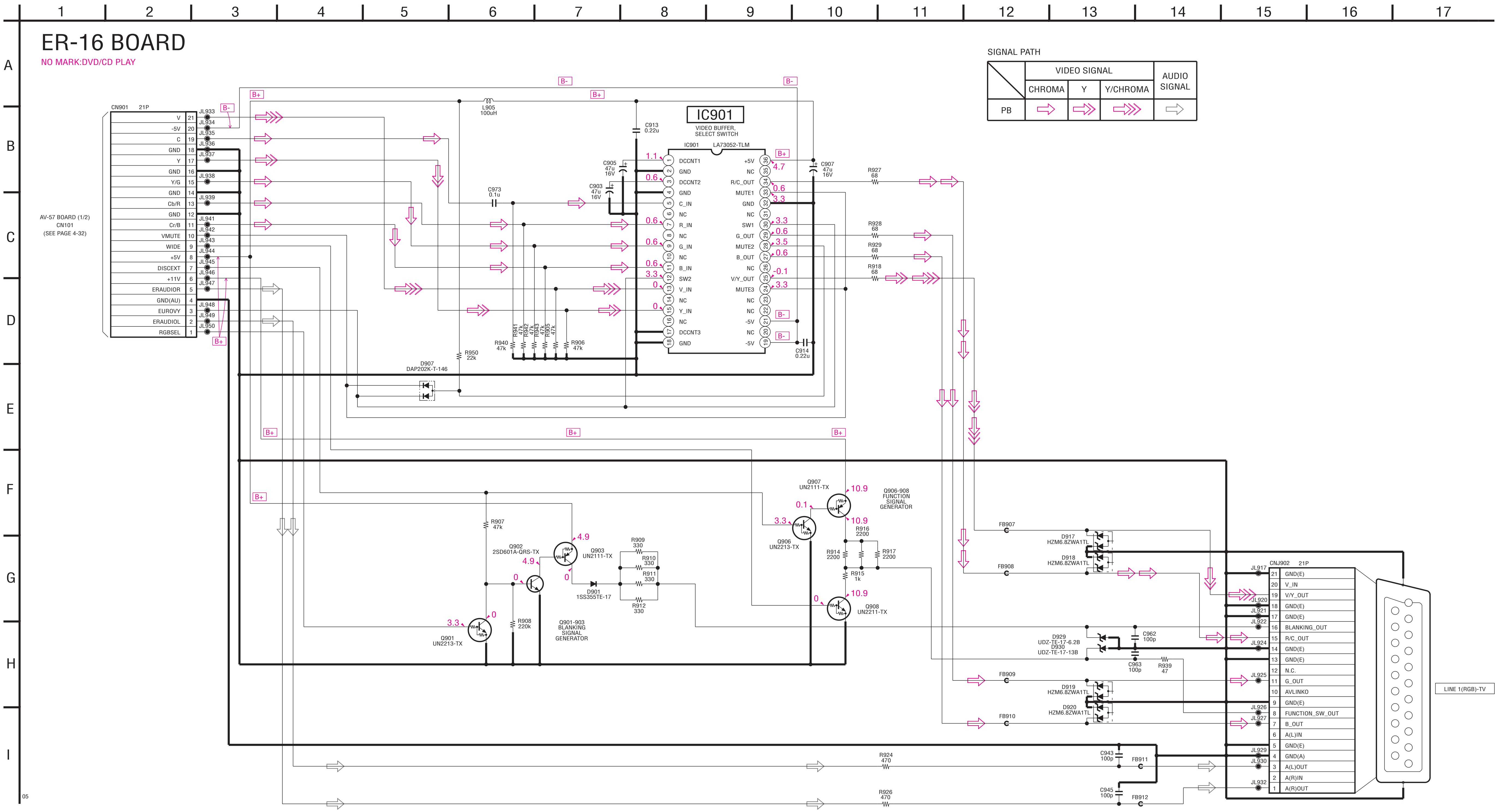
| | |
|---|---|
| CN901 | B-3 |
| D901 | A-4 |
| D907 | A-4 |
| D917 | A-1 |
| D918 | A-1 |
| D919 | A-2 |
| D920 | A-2 |
| D929 | A-3 |
| D930 | A-3 |
| IC901 | B-1 |
| Q901 | B-4 |
| Q902 | B-4 |
| Q903 | A-4 |
| Q906 | B-4 |
| Q907 | A-4 |
| Q908 | A-4 |



## ER-16 (EURO AV) SCHEMATIC DIAGRAM

– Ref. No.: ER-16 board; 1,000 series –

**– AEP, UK –**







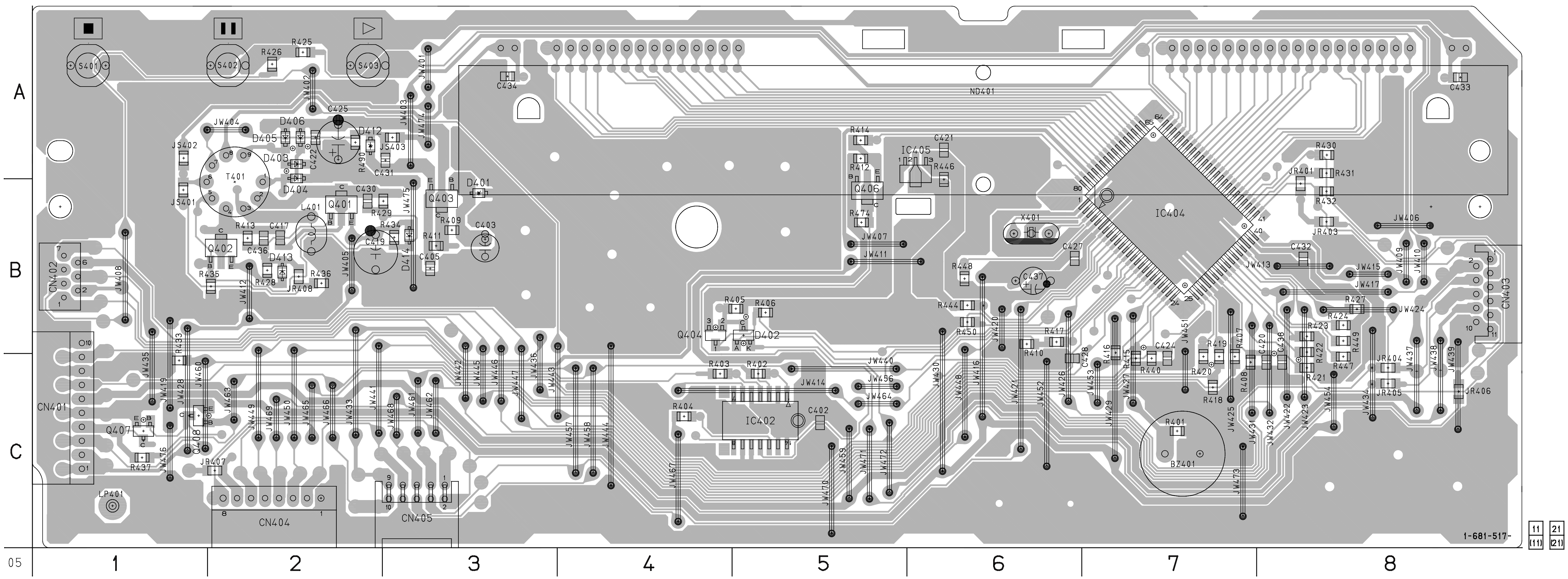

EURO AV
ER-16

## IF-81 (INTERFACE CONTROL) PRINTED WIRING BOARD

– Ref. No.: IF-81 board; 1,000 series –

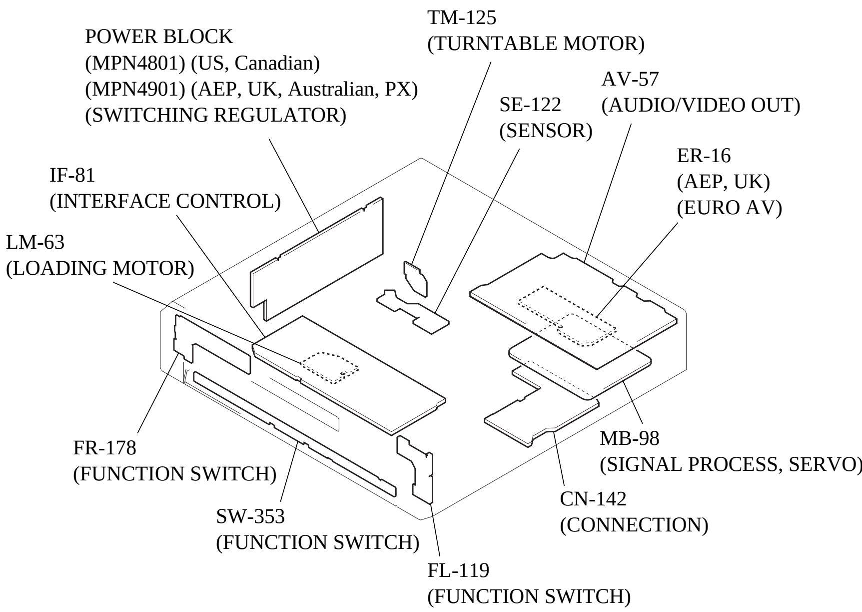
There are a few cases that the part isn't mounted in this model is printed on this diagram.

IF-81 BOARD



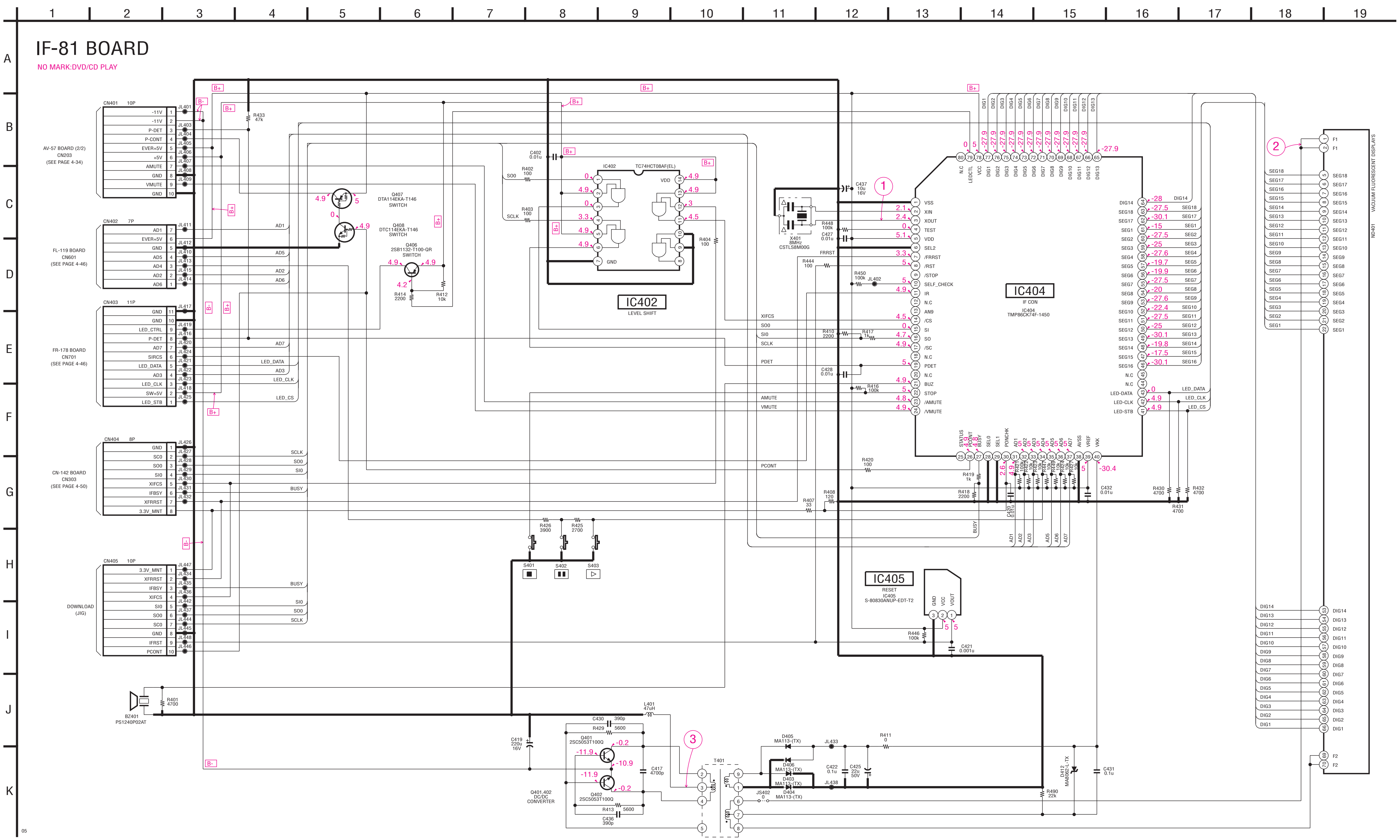

IF-81 BOARD

| | |
|---|---|
| CN401 | C-1 |
| CN402 | B-1 |
| CN403 | B-8 |
| CN404 | C-2 |
| CN405 | C-3 |
| D403 | B-2 |
| D404 | B-2 |
| D405 | A-2 |
| D406 | A-2 |
| D412 | A-3 |
| IC402 | C-5 |
| IC404 | B-7 |
| IC405 | A-5 |
| Q401 | B-2 |
| Q402 | B-2 |
| Q406 | B-5 |
| Q407 | C-1 |
| Q408 | C-1 |



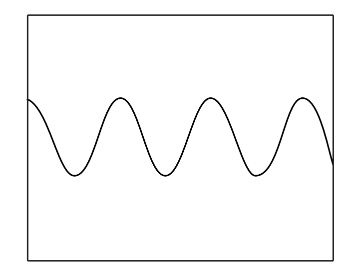
## IF-81 (IF CON) SCHEMATIC DIAGRAM

– Ref. No.: IF-81 board; 1,000 series –



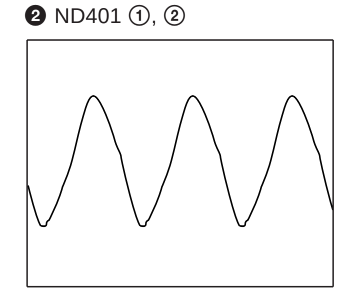

**• Waveforms**

1 IC404 3



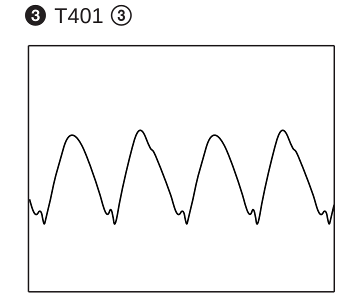
5 Vp-p (8 MHz)

2 ND401 1, 2



8 Vp-p (200 kHz)

3 T401 3



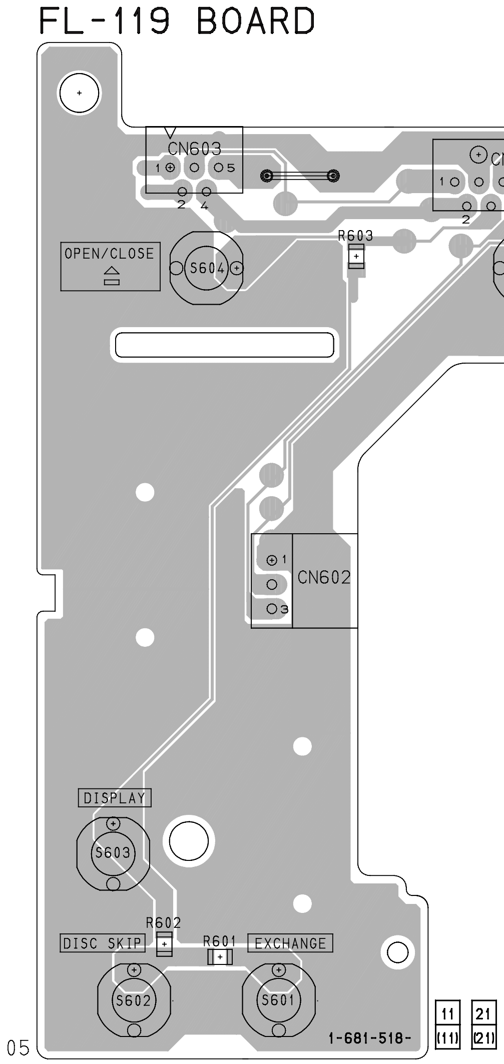
20 Vp-p (409 kHz)

| | |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié. |

## FL-119 (FUNCTION SWITCH), FR-178 (FUNCTION SWITCH), SW-353 (FUNCTION SWITCH) PRINTED WIRING BOARDS

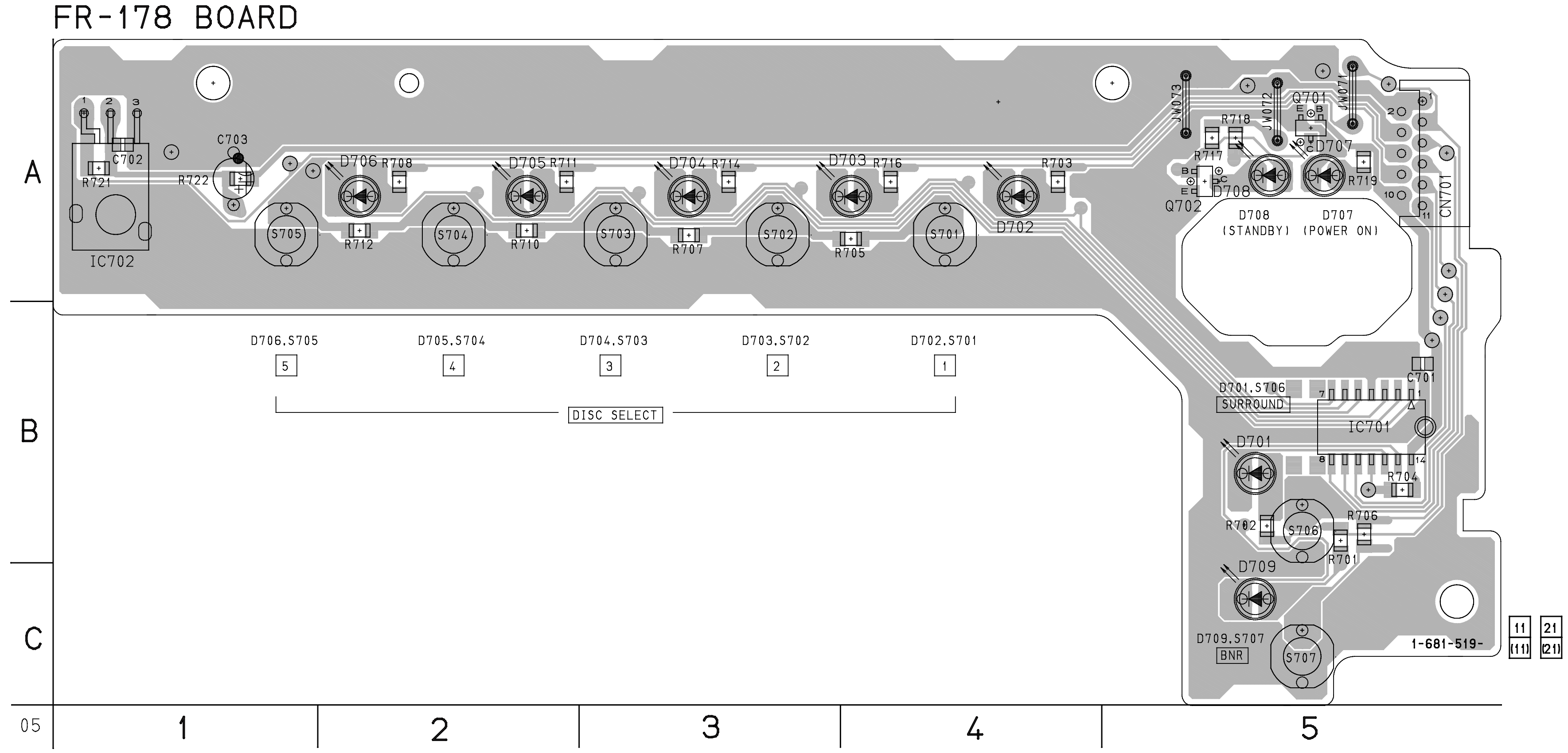
– Ref. No.: FL-119 board, FR-178 board and SW-353 board; 3,000 series –

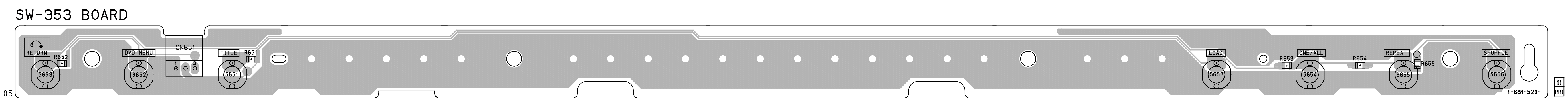
There are a few cases that the part isn't mounted in this model is printed on this diagram.

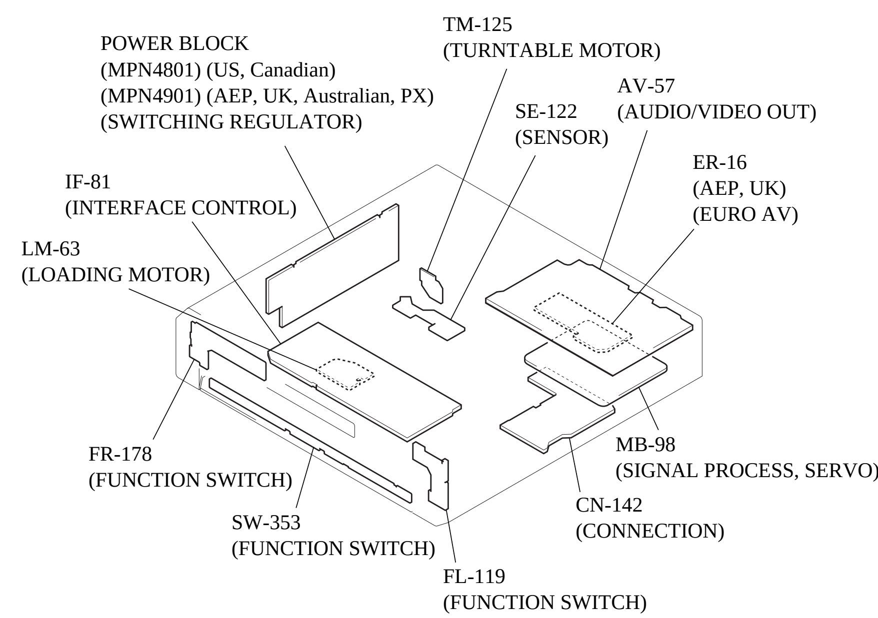



FR-178 BOARD

| | |
|---|---|
| CN701 | A-5 |
| D701 | B-5 |
| D702 | A-4 |
| D703 | A-4 |
| D704 | A-3 |
| D705 | A-2 |
| D706 | A-2 |
| D707 | A-5 |
| D708 | A-5 |
| D709 | C-5 |
| IC701 | B-5 |
| IC702 | A-1 |
| Q701 | A-5 |
| Q702 | A-5 |

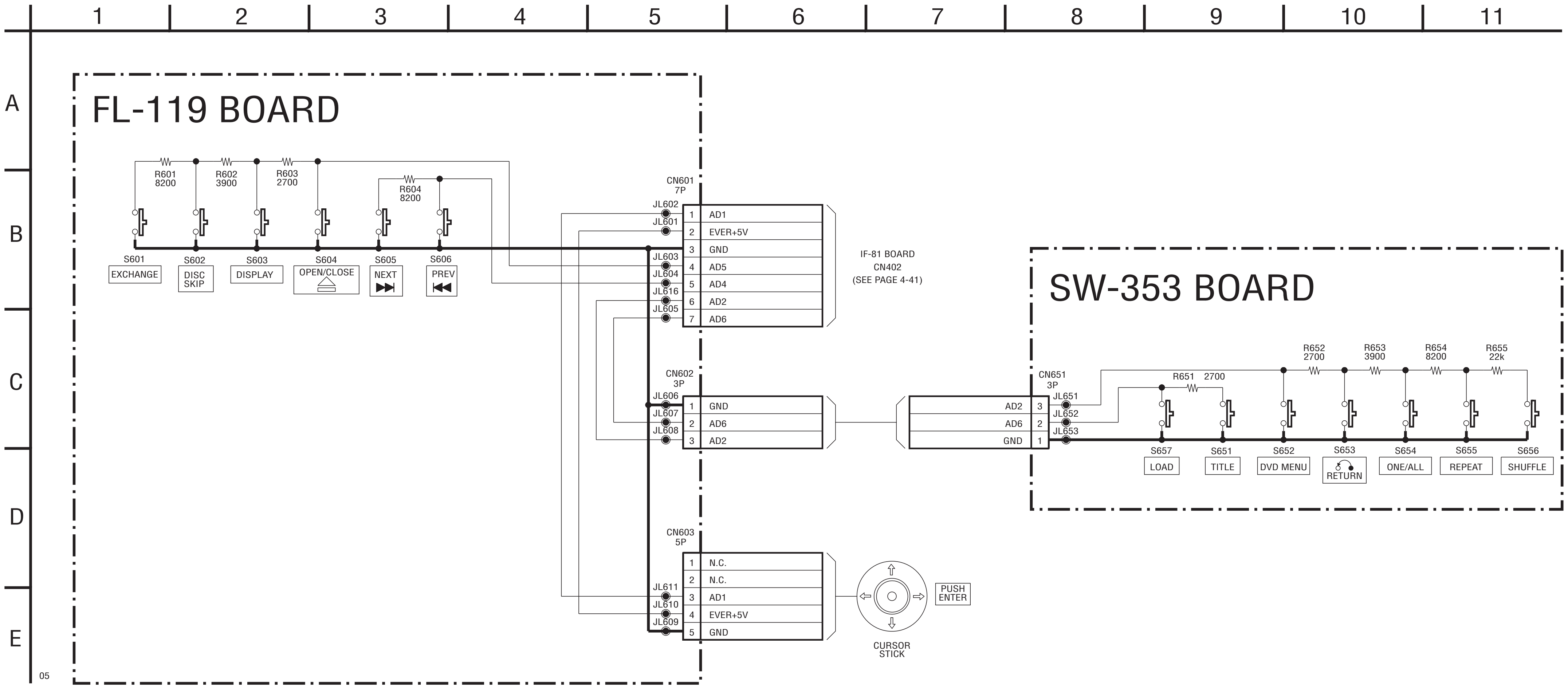


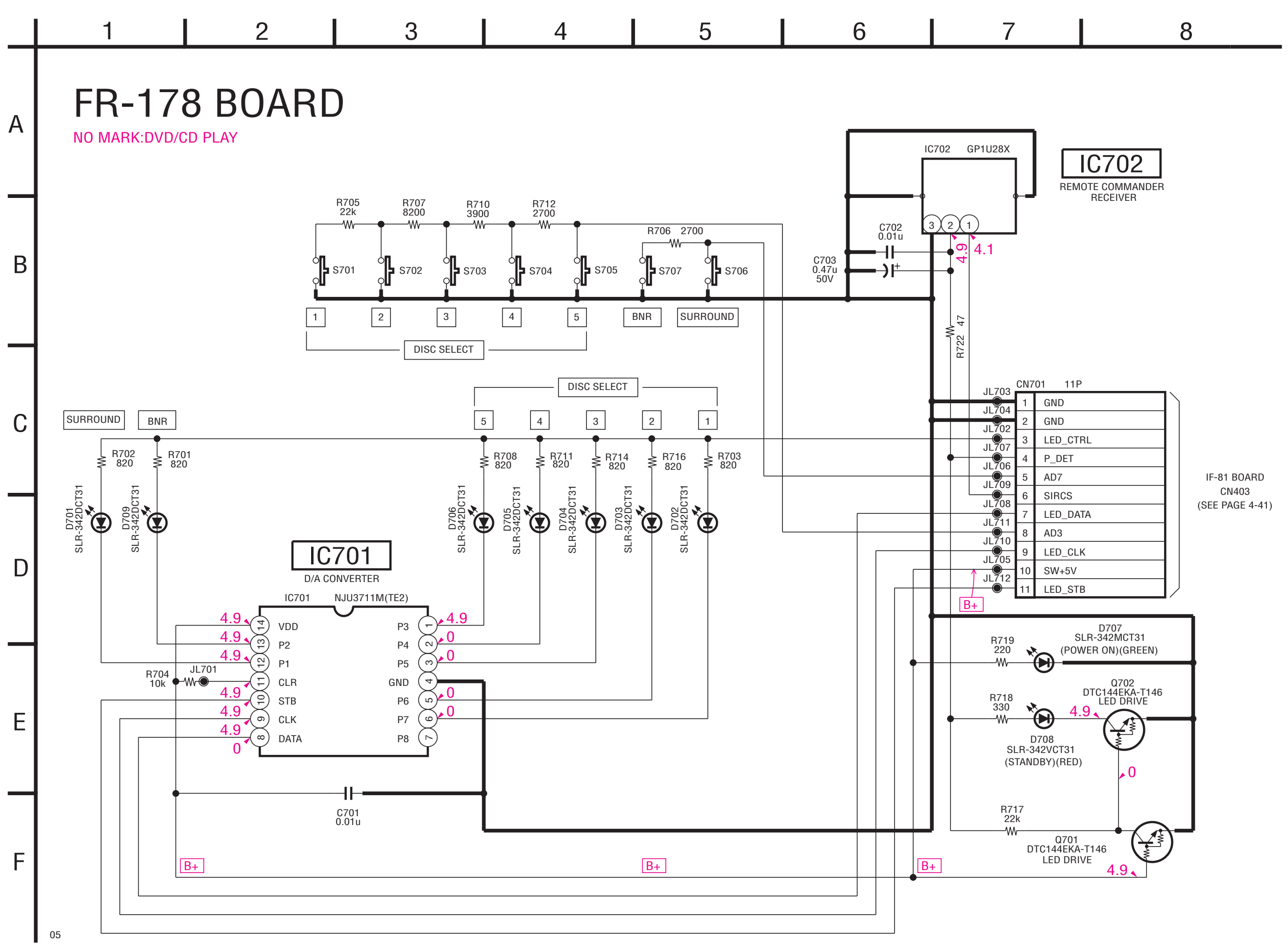



**FL-119 (FUNCTION SWITCH), FR-178 (FUNCTION SWITCH), SW-353 (FUNCTION SWITCH) SCHEMATIC DIAGRAM**

– Ref. No.: FL-119 board, FR-178 board and SW-353 board; 3,000 series –





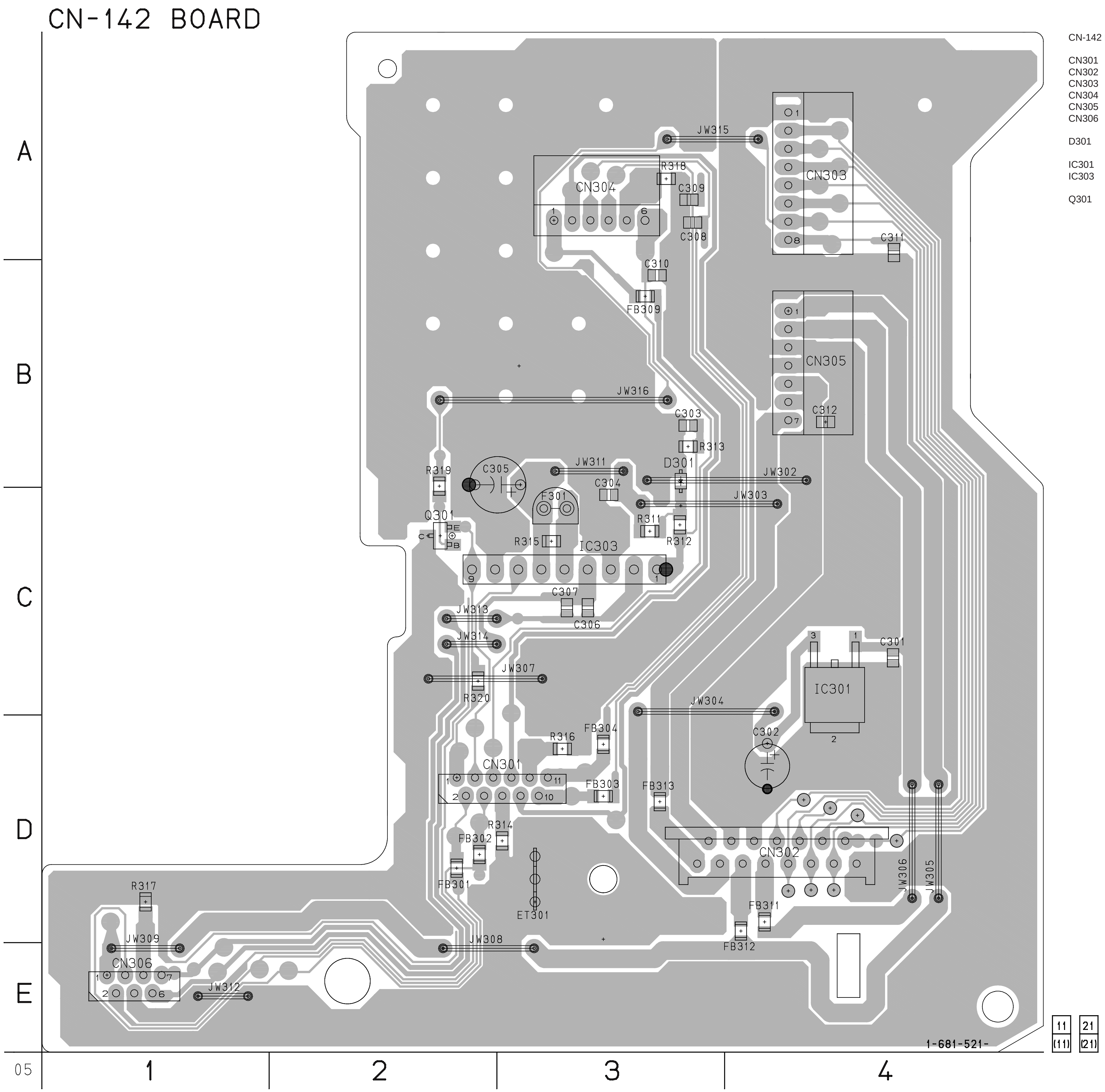



FUNCTION SWITCH
FL-119/FR-178/SW-353

## CN-142 (CONNECTION), LM-63 (LOADING MOTOR) PRINTED WIRING BOARDS

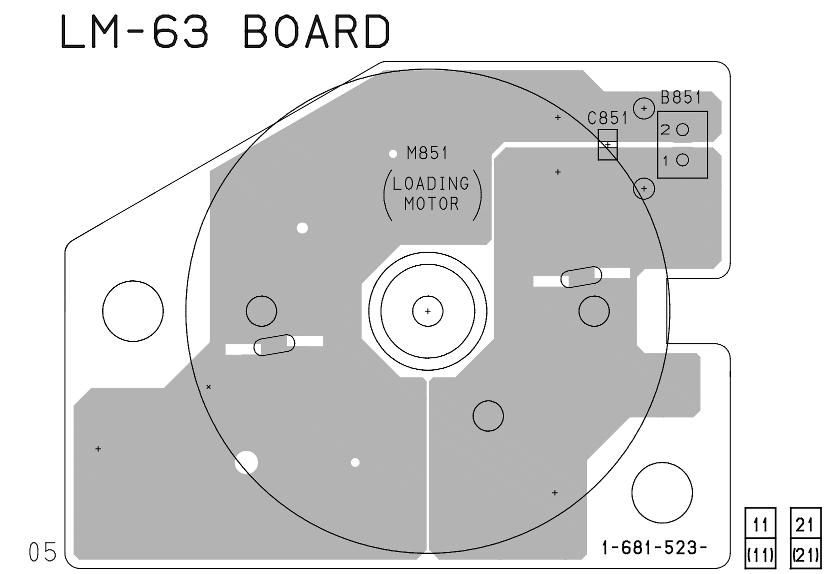
– Ref. No.: CN-142 board, LM-63 board; 1,000 series –

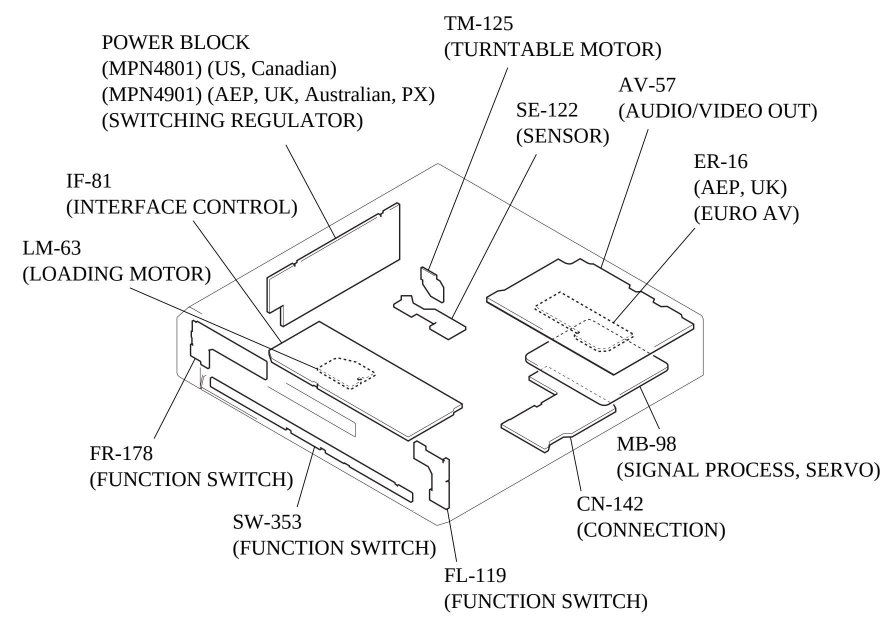
There are a few cases that the part isn't mounted in this model is printed on this diagram.




CN-142 BOARD

| | |
|---|---|
| CN301 | D-3 |
| CN302 | D-4 |
| CN303 | A-4 |
| CN304 | A-3 |
| CN305 | B-4 |
| CN306 | E-1 |
| D301 | C-3 |
| IC301 | C-4 |
| IC303 | C-3 |
| Q301 | C-2 |

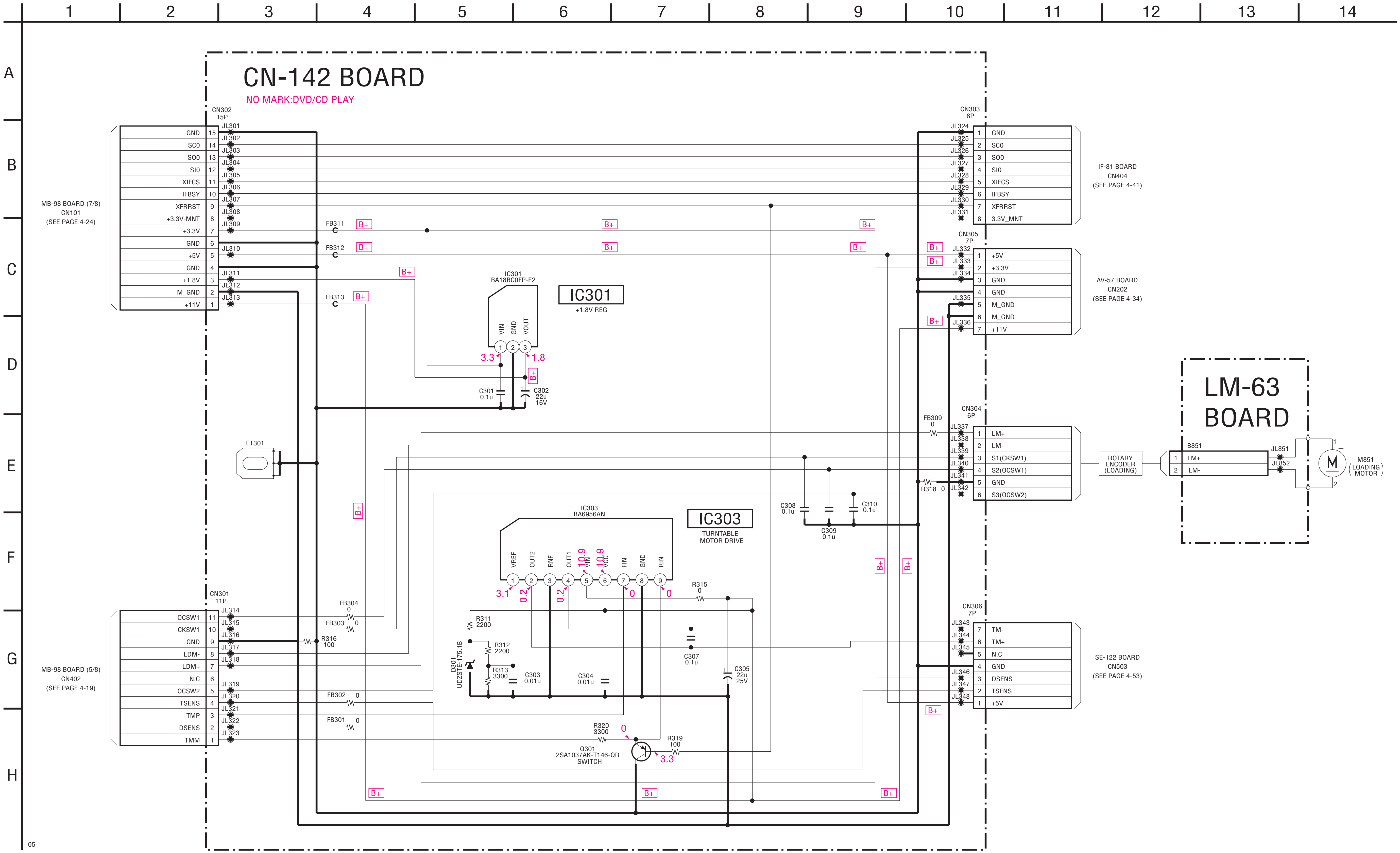




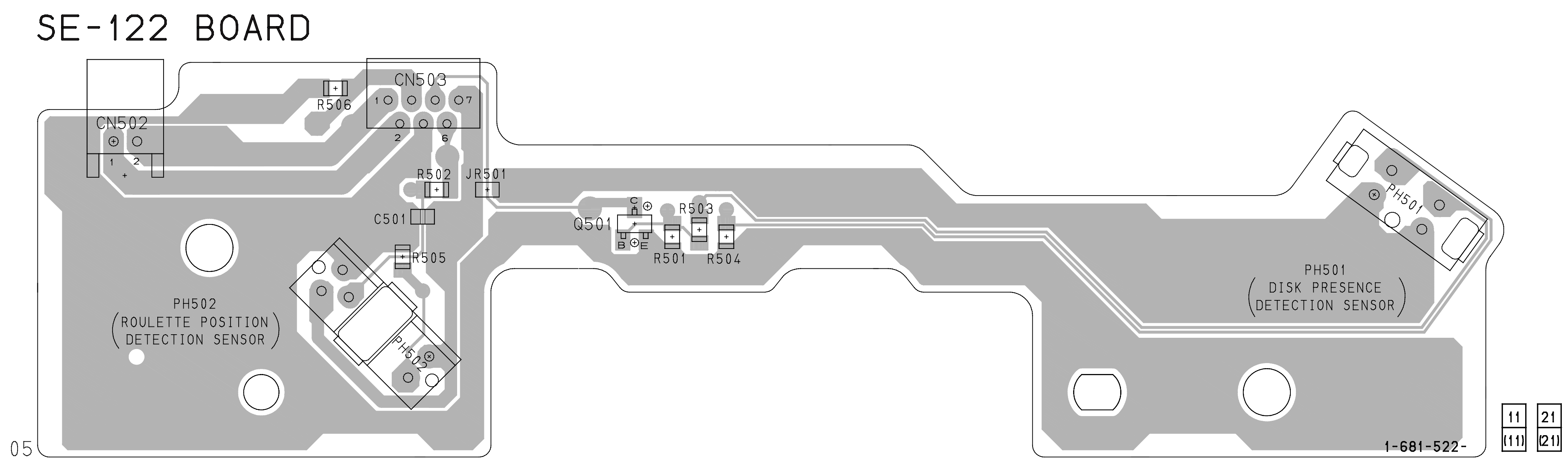

**CONNECTION, LOADING MOTOR**
**CN-142/LM-63**

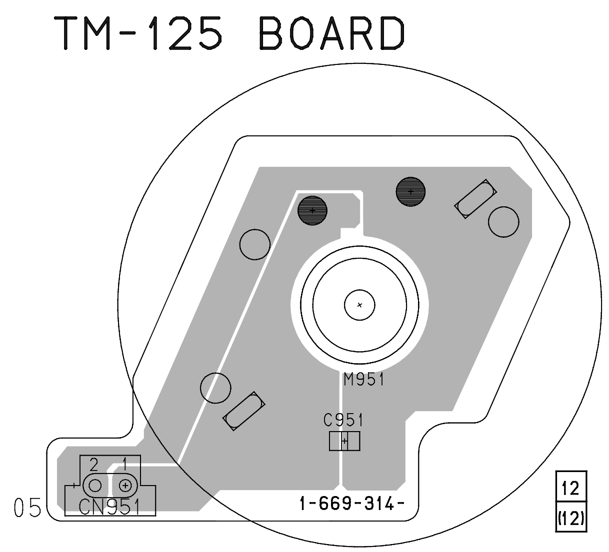
**CN-142 (CONNECTION), LM-63 (LOADING MOTOR) SCHEMATIC DIAGRAM**
– Ref. No.: CN-142 board, LM-63 board; 1,000 series –

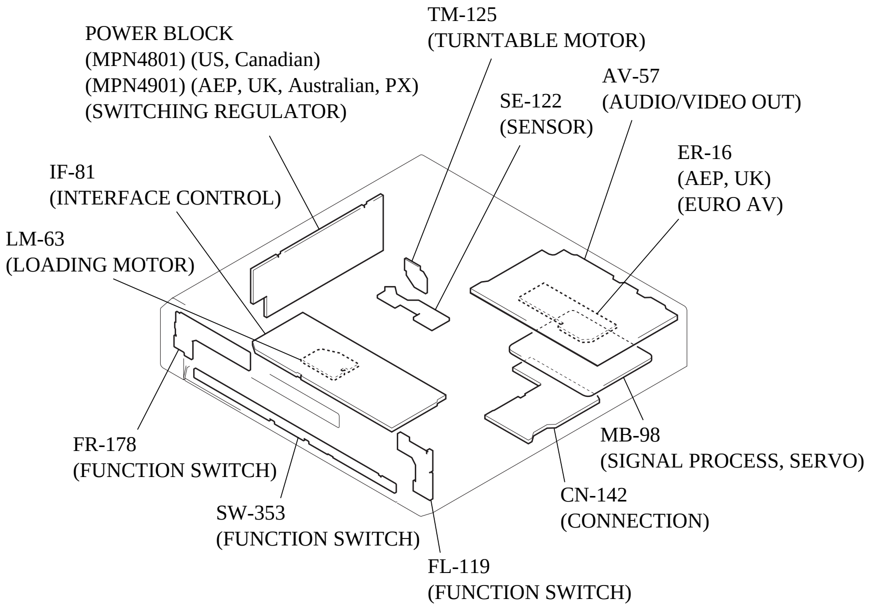


**SE-122 (SENSOR), TM-125 (TURNTABLE MOTOR) PRINTED WIRING BOARDS**
– Ref. No.: SE-122 board, TM-125 board; 1,000 series –

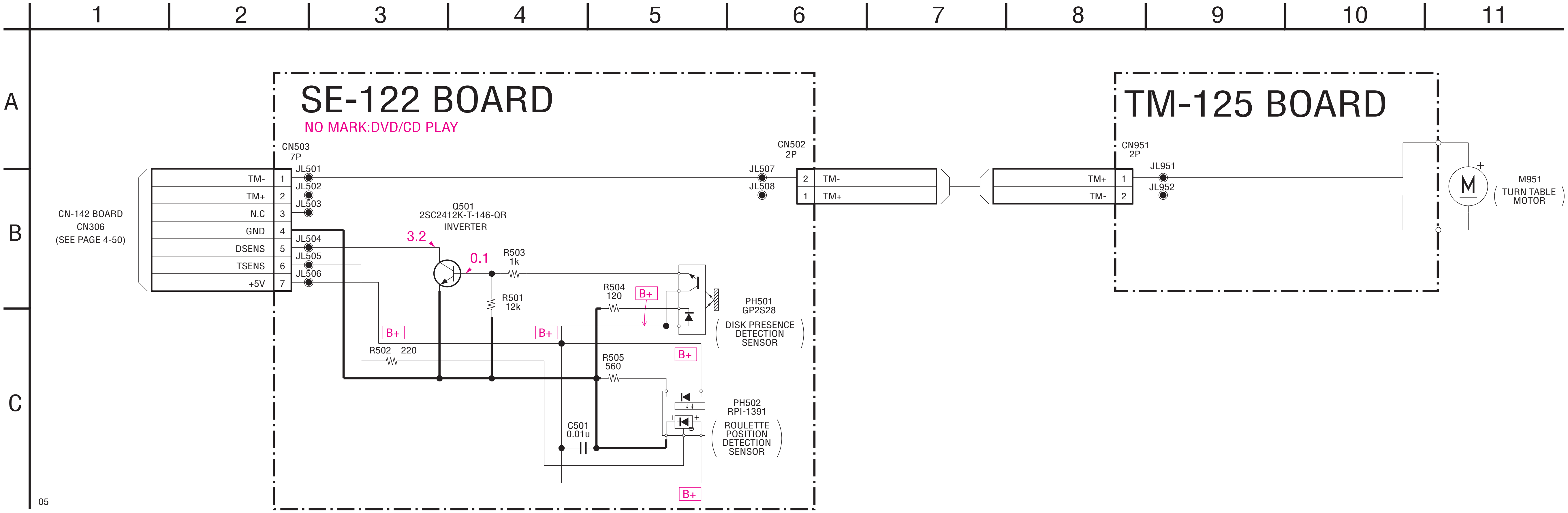
There are a few cases that the part isn't mounted in this model is printed on this diagram.



**SE-122 (SENSOR), TM-125 (TURNTABLE MOTOR) SCHEMATIC DIAGRAM**
– Ref. No.: SE-122 board, TM-125 board; 1,000 series –



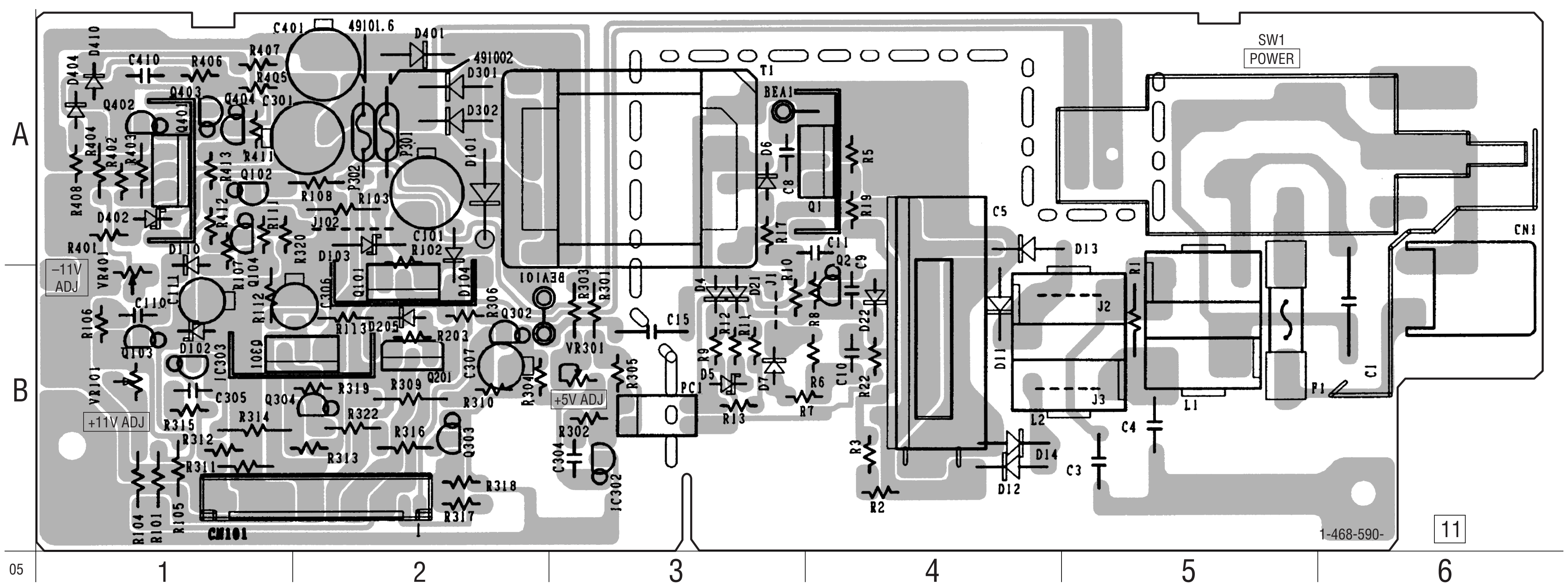
**MPN4801 (SWITCHING REGULATOR) PRINTED WIRING BOARD**
– Ref. No.: MPN4801 board; 4,000 series –
**– US, CND –**

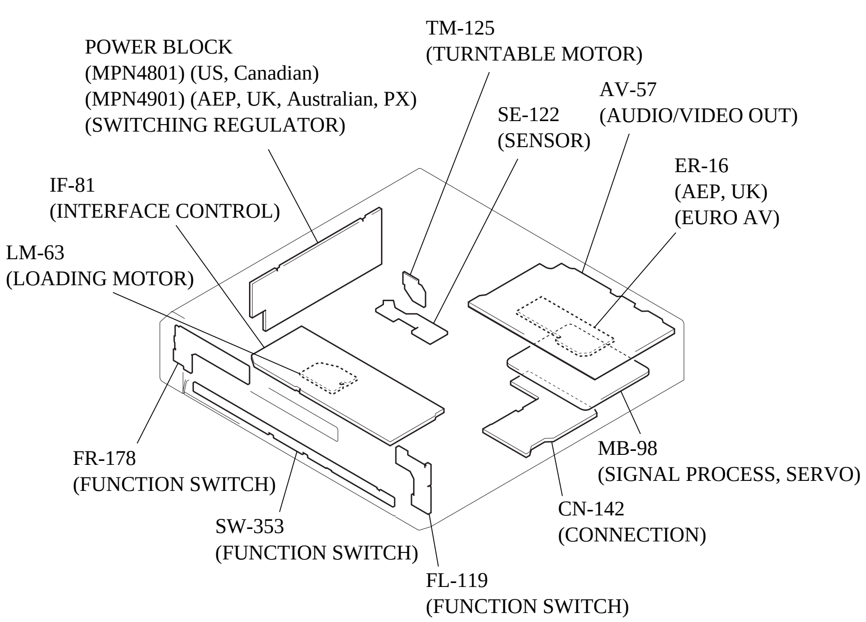
There are a few cases that the part isn't mounted in this model is printed on this diagram.

MPN4801BOARD

| | |
|---|---|
| CN1 | A-6 |
| CN101 | B-1 |
| D4 | B-3 |
| D5 | B-3 |
| D6 | A-3 |
| D7 | B-3 |
| D11 | B-4 |
| D12 | B-4 |
| D13 | A-4 |
| D14 | B-3 |
| D21 | B-3 |
| D22 | B-4 |
| D101 | A-2 |
| D102 | B-1 |
| D103 | B-2 |
| D104 | B-2 |
| D110 | B-1 |
| D205 | B-2 |
| D301 | A-2 |
| D302 | A-2 |
| D401 | A-2 |
| D402 | A-1 |
| D404 | A-1 |
| D410 | A-1 |
| IC302 | B-3 |
| IC303 | B-1 |
| Q1 | A-4 |
| Q2 | B-4 |
| Q101 | B-2 |
| Q102 | A-1 |
| Q103 | B-1 |
| Q104 | B-1 |
| Q201 | B-2 |
| Q301 | B-1 |
| Q302 | B-2 |
| Q303 | B-2 |
| Q304 | B-2 |
| Q401 | A-1 |
| Q402 | A-1 |
| Q403 | A-1 |

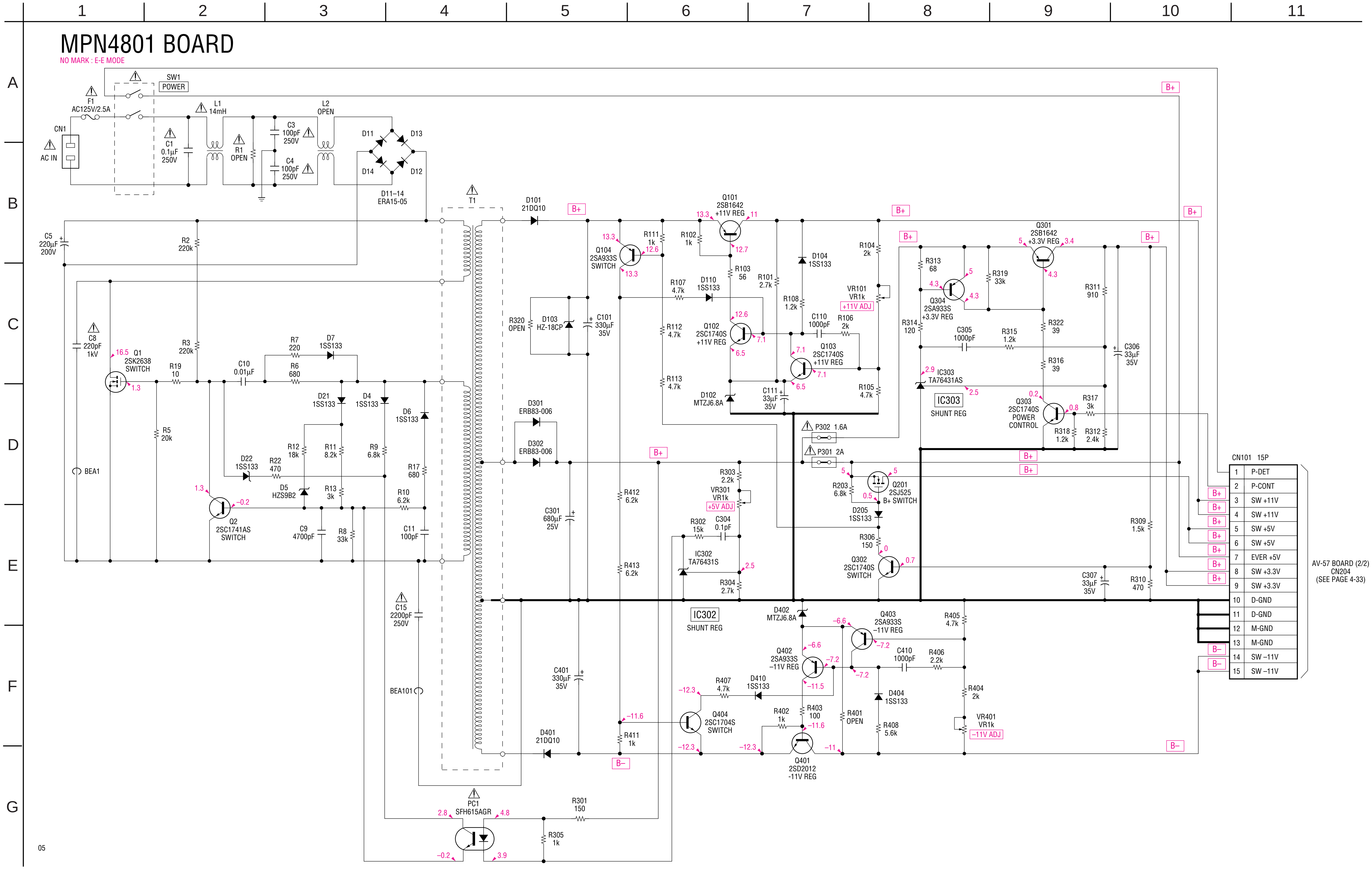
## MPN4801 BOARD



**MPN4801 (SWITCHING REGULATOR) SCHEMATIC DIAGRAM**
– Ref. No.: MPN4801 board; 4,000 series –
**– US, CND –**

| | |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié. |

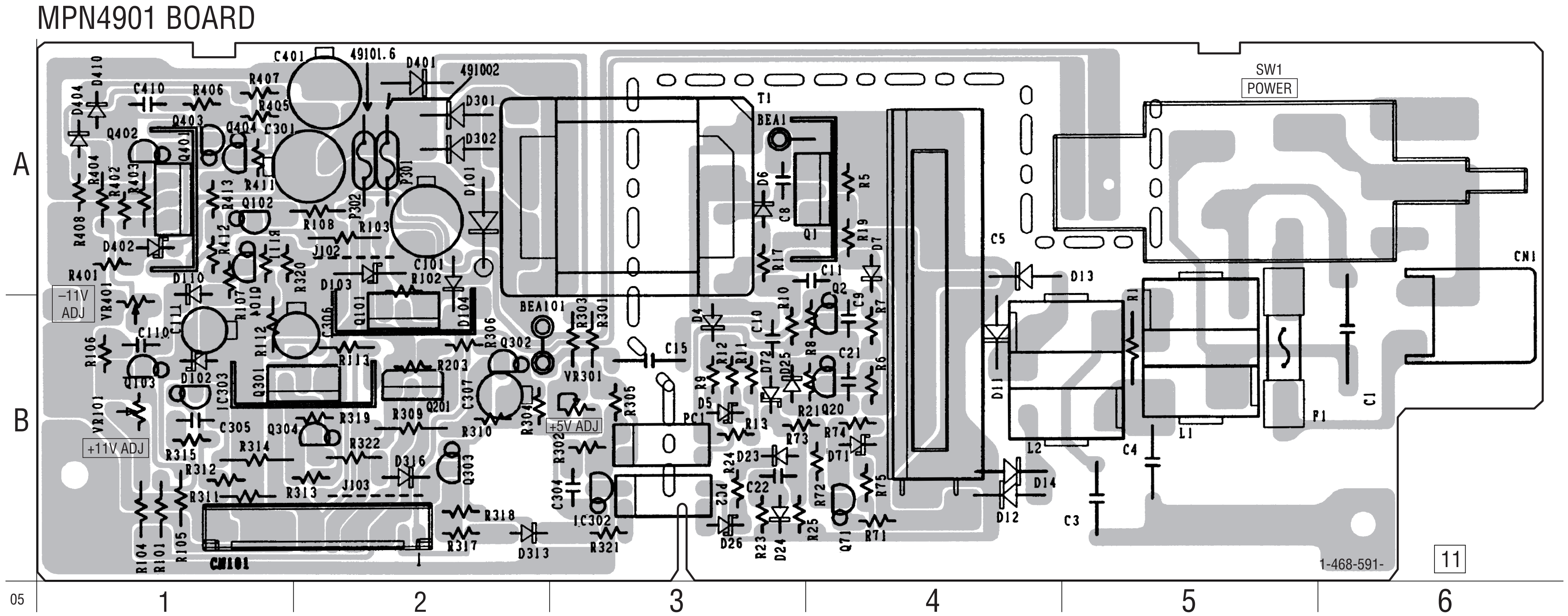


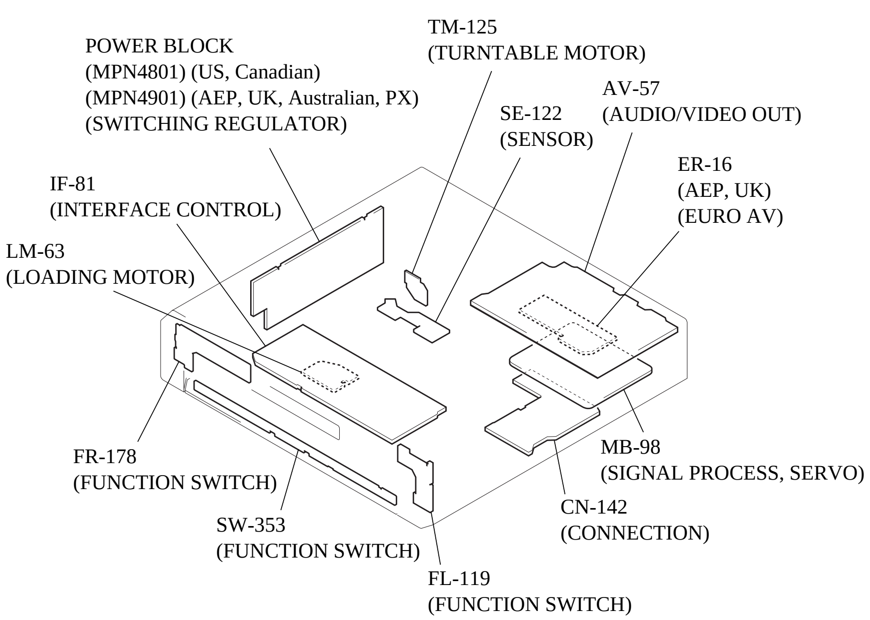
**MPN4901 (SWITCHING REGULATOR) PRINTED WIRING BOARD**
– Ref. No.: MPN4901 board; 5,000 series –
**– AEP, UK, AUS, PX –**

There are a few cases that the part isn't mounted in this model is printed on this diagram.

MPN4901BOARD

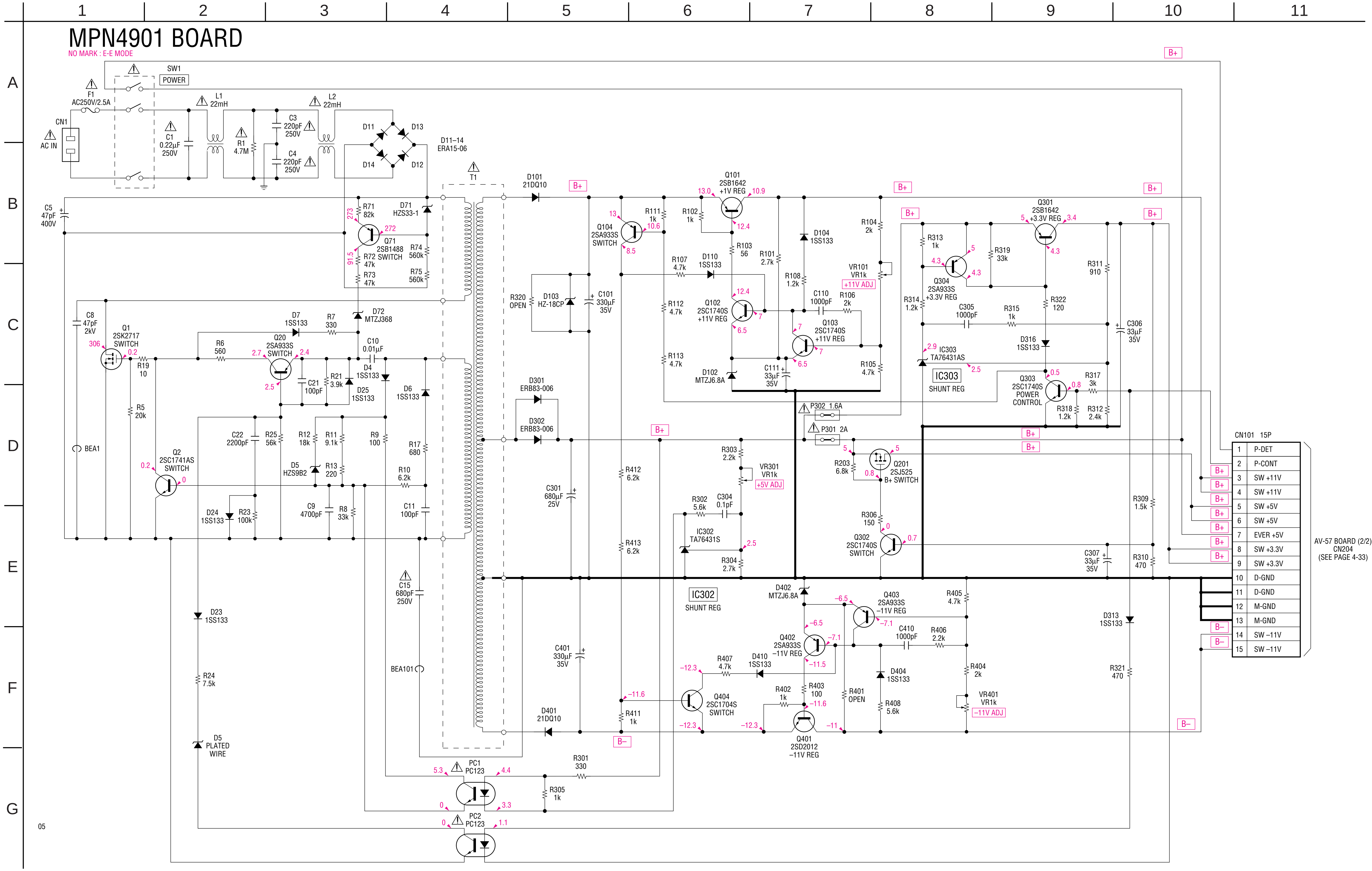
| | |
|---|---|
| CN1 | A-6 |
| CN101 | B-1 |
| D4 | B-3 |
| D5 | B-3 |
| D6 | A-3 |
| D7 | A-4 |
| D11 | B-4 |
| D12 | B-4 |
| D13 | B-4 |
| D14 | B-4 |
| D23 | B-3 |
| D24 | B-3 |
| D25 | B-3 |
| D71 | B-4 |
| D72 | B-3 |
| D101 | A-2 |
| D102 | B-1 |
| D103 | B-2 |
| D104 | B-2 |
| D110 | B-1 |
| D301 | A-2 |
| D302 | A-2 |
| D313 | B-2 |
| D316 | B-2 |
| D401 | A-2 |
| D402 | A-1 |
| D404 | A-1 |
| D410 | A-1 |
| IC302 | B-3 |
| IC303 | B-1 |
| Q1 | A-4 |
| Q2 | B-4 |
| Q20 | B-4 |
| Q71 | B-4 |
| Q101 | B-2 |
| Q102 | A-1 |
| Q103 | B-1 |
| Q104 | A-1 |
| Q201 | B-2 |
| Q301 | B-1 |
| Q302 | B-2 |
| Q303 | B-2 |
| Q304 | B-2 |
| Q401 | A-1 |
| Q402 | A-1 |
| Q403 | A-1 |
| Q404 | A-1 |



**MPN4901 (SWITCHING REGULATOR) SCHEMATIC DIAGRAM**
– Ref. No.: MPN4901 board; 5,000 series –
**– AEP, UK, AUS, PX –**

| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié. |
|---|---|








**SWITCHING REGULATOR**
**MPN4901**

# SECTION 5
# IC PIN FUNCTION DESCRIPTION

## 5-1. SYSTEM CONTROL PIN FUNCTION (MB-98 BOARD IC103)

| Pin No. | Pin name | I/O | Function |
|---|---|---|---|
| 1-5 | HA17-HA21 | O | Address bus A17-A21 |
| 6 | HA22 | - | Not used |
| 7 | WP | O | Write control signal output to EEPROM |
| 8 | TRM–/XKRCS | - | – Tray motor |
| 9 | AVCC | - | Power supply |
| 10 | AVRH | - | Reference power supply (+3.3 V) |
| 11 | AVSS | - | Ground |
| 12 | AN0 | I | Set of mode 0 |
| 13 | AN1 | I | Set of mode 1 |
| 14 | AN2 | I | Set of mode 2 |
| 15 | AN3 | I | Set of mode 3 |
| 16 | INT0 | I | Input of interrupt from AV DEC |
| 17 | INT1 | I | Input of interrupt from ARP |
| 18 | INT2 | I | Input of interrupt from servo DSP |
| 19 | INT3 | - | Not used |
| 20 | INT4 | I | Input of interrupt from IF CON |
| 21 | INT5 | I | Position detection of Tray turning part |
| 22 | INT6 | I | Position detection of Tray turning part |
| 23 | INT7 | - | Not used |
| 24 | VCC | - | Power supply |
| 25 | SI0 | I | Serial data input from IF CON |
| 26 | SO0 | O | Serial data output to IF CON |
| 27 | SC0 | O | Serial clock output to IF CON |
| 28 | SI1 | I | Serial bus 1 (for data input) |
| 29 | SO1 | O | Serial bus 1 (for data output) |
| 30 | SC1 | O | Serial clock output |
| 31 | SI2 | I | Serial bus 2 (for data input) |
| 32 | SO2 | O | Serial bus 2 (for data output) |
| 33 | DSENS | - | Disk detection |
| 34 | VSS | - | Ground |
| 35 | XRST | O | System reset signal output |
| 36 | XARPRST | O | Reset signal output for ARP |
| 37 | RGBSEL/MICMUTE | O | RGB signal select signal output/Mic mute signal output |
| 38 | SDA | I/O | I2C bus seria data input/output |
| 39 | SCL | O | I2C bus serial clock output |
| 40 | TRM+/XKRRST | - | + Tray motor |
| 41 | EUROV/Y/CLAPSW1 | O | EURO V/Y select signal output/Mute signal output to video buffer |
| 42 | DISCEXT/CLPSW0 | O | Line input select signal output (DISC: “H”, EXT: “ L”) |
| 43 | MD0 | I | Input of mode select 0 (fixed at “ H”) |
| 44 | MD1 | I | Input of mode select 1 (fixed at “ L”) |
| 45 | MD2 | I | Input of mode select 2 (fixed at “ L”) |
| 46 | DREQ0 | I | Input of DMA-REQ 0 from AV DEC |
| 47 | DACK0 | O | Output of DMA-ACK 0 to AV DEC |
| 48 | XDRVMUTE | O | Drive mute signal output |
| 49 | DREQ1 | I | Input of DMA-REQ 1 from AV DEC |
| 50 | DACK1 | O | Output of DMA-ACK 1 to AV DEC |
| 51 | XIFCS | O | Chip select signal to IF CON |
| 52 | VSS | - | Ground |
| 53 | X1 | O | Clock output (16.5 MHz) |
| 54 | X0 | I | Clock input (16.5 MHz) |
| 55 | VCC | - | Power supply |
| 56 | CKSW1 | I | Chuck sensor input to Rotary encoder |
| 57 | OCSW1 | I | Chuck sensor input to Rotary encoder |
| 58 | CS0X | O | External ROM chip select signal output |
| 59 | CS1X | - | Not used |
| 60 | CS2X | O | Chip select signal output (for AV DEC) |
| 61 | CS3X | O | Chip select signal output (for AV DEC) |
| 62 | CS4X | O | Chip select signal output (for ARP) |
| 63 | CS5X | O | Chip select signal output (for servo DSP) |
| 64 | C | - | Capacitor (0.1uF) connect between ground |
| 65 | CS6X | - | Not used |
| 66 | CS7X | - | Not used |
| 67 | XWAIT | I | Wait signal input |
| 68 | BGRNTX | - | Test terminal (fixed at “H”) |
| 69 | BRQ | - | Test terminal |
| 70 | XRD | O | Read enable signal output |

| Pin No. | Pin name | I/O | Function |
|---|---|---|---|
| 71 | XWRH | O | High byte write enable signal output (16 bit and 8 bit) |
| 72 | XWRL | - | Not used |
| 73 | NMIX | - | Not used (fixed at “H”) |
| 74 | HSTX | - | Not used (fixed at “H”) |
| 75 | VSS | - | Ground |
| 76 | XFRRST | I | Reset signal input from IF CON |
| 77 | CPUCK | O | CPU clock signal output |
| 78 | OCSW2 | I | Chuck sensor input to Rotary encoder |
| 79 | XDACS | O | Chip select signal output to DAC (2ch, 6ch) |
| 80 | VESCS/X39CS | O | Chip select signal output to DSP |
| 81 | 48/44.1K | O | PLL FS control signal output |
| 82 | WIDE | O | WIDE select signal output |
| 83 | MAMUTE | O | Audio mute signal output |
| 84 | XLDON | O | LD control signal output |
| 85-92 | HD0-HD7 | I/O | Data bus D0-D7 (16 bit only) |
| 93-100 | HD8-HD15 | I/O | Data bus D8-D15 (16 bit) , D0-D7 (8 bit) |
| 101 | VSS | - | Ground |
| 102-109 | HA0-HA7 | O | Address bus A00-A07 |
| 110 | VCC | - | Power supply |
| 111-118 | HA8-HA15 | O | Address bus A08-A15 |
| 119 | VSS | - | Ground |
| 120 | HA16 | O | Address bus A16 |

# SECTION 6
# TEST MODE

## 6-1. GENERAL DESCRIPTION

The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

## 6-2. STARTING TEST MODE

Press the [TITLE], [CLEAR], [POWER] keys on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then "DIAG START" will be displayed on the fluorescent display tube and the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed. Last Off at the lower right of screen indicates the information code concerning the last power off.
To execute each function, select the desired menu and press its number on the remote commander.
To exit from the Test Mode, press the [POWER] key.

```
         Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emergency History
5. Version Information
6. Video Level Adjustment
                Exit: POWER Key
_
Model  : DPX-145xxx
Revision : 1.xxxx   Last Off: xx
```

Power Off Information Code List

00 : Primary Power Off
01 : Power Off Request from SYSTEM CONTROL
02 : Power Off by Emergency Power Off Command from SYSTEM CONTROL
(if information is sent from SYSTEM CONTROL)
03 : IF CON Judged that SYSTEM CONTROL is Faulty
04 : Power Off from Diagnosis Mode of IF CON
05 : Forced Power Off by the User
06 : Power Off by Power Supply Voltage Monitor

## 6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander.
On the Test Mode Menu screen, press [0] key on the remote commander, and the following check menu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
0. Quit
1. All
2. Version
3. Peripheral
4. Servo
5. Supply
6. AV Decoder
7. Video
8. Audio
_
```

### 0. Quit
Quit the Syscon Diagnosis and return to the Test Mode Menu.

### 1. All
All items continuous check
This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.

```
    ### Syscon Diagnosis ###

         Diag All Check
         No. 2 Version

 2-3. ROM Check Sum
Check Sum = xxxx


Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.
Following the message, press [NEXT] key to go to the next item, or [PREV] key to repeat the same check again. To quit the diagnosis and return to the Check Menu screen, press [STOP] or [ENTER] key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```
    ### Syscon Diagnosis ###



 3-3. EEPROM Check
Error 03: EEPROM Write/Reed N
Address    : 00000001
Write Data : 2492
Read Data  : 2490
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

Press [STOP] key to quit the diagnosis, or [PREV] key to repeat the same item where an error occurred, or [NEXT] key to continue the check from the item next to faulty item.

Submenu

Selecting 2 and subsequent items calls the submenu screen of each item.
For example, if "5. Supply" is selected, the following submenu will be displayed.

```
    ### Syscon Diagnosis ###
          Check Menu
         No. 5 Supply
0. Quit
1. All
2. ARP Register Check
3. ARP to RAM Data Bus
4. ARP to RAM Address Bus
5. ARP RAM Check
_
```

## 0. Quit

Quit the submenu and return to the main menu.

## 1. All

All submenu items continuous check.
This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry.
Normally, all items are checked successively one after another automatically unless an error is found.
Selecting 2 and subsequent items executes respective menus and outputs the results.
For the contents of each submenu, see "General Description of Checking Method" and "Check Items List".

General Description of Checking Method

## 2. Version

(2-2) Revision
ROM revision number is displayed.
Error: Not detected.
The revision number defined in the source file of ROM (IC107) is displayed with four digits.

(2-3) ROM Check Sum
Check sum is calculated.
Error: Not detected.
8-bit data are added up to the ROM (IC107) address 0x000F0000 to 0x002EFFFF, and the result is displayed with 4-digit hexadecimal number. Error is not detected. Compare the result with the specified value.

(2-4) Model Type
Model code is displayed.
Error: Not detected.
The model code read from the EEPROM is displayed with 2-digit hexadecimal number.

| | Model Type | |
|---|---|---|
| US, Canadian, PX | 4 | 0 |
| AEP, UK | 4 | 3 |
| Australian | 4 | A |

(2-5) Region
Region code is displayed.
Error: Not detected.
The region code determined from the model code is displayed.

## 3. Peripheral

(3-2) Gate Array Check
Data write → read, and accord check
Error 02: Gate array write/read discord
Data of 0x00 to 0xFF is written sequentially to the address 0xF and then read for checking.

(3-3) EEPROM Check
Data write → read, and accord check
Error 03: EEPROM write/read discord
0x9249, 0x2942 and 0x4294 are written to the address 0x00 to 0xFF of the EEPROM and then read for checking. Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

## 4. Servo

(4-2) Servo DSP Check
Data write → read, and accord check
Error 12: Read data discord
0x9249, 0x2942 and 0x4294 are written to the RAM address 0x602 of the Servo DSP and then read for checking. Also, OPT type "1 LASER" or "2 LASER" is displayed.

(4-3) DSP Driver Test
Test signal data → DSP Driver
Error: Not detected.

Caution: Do not perform this checking with the mechanical deck connected.
The maximum voltage is applied to the Servo Driver IC (IC401). If the mechanical deck is connected, it will be destroyed immediately. Following the output message, disconnect the mechanical deck, then enter the specified 4- or 5-digit value from the commander, and press the ENTER key. The test is conducted only if the entered value accords. To exit the test, check the output level, then press NEXT key.
This check is not conducted, but skipped in "All" menu item.

Supplement: How to disconnect mechanical deck
Disconnect flexible flat cables connected to the CN201 and CN202 of MB-98 board. Also, disconnect flat cable from the CN402.

## 5. Supply

(5-2) ARP Register Check
Data write → read, and accord check
Error 08: ARP register write, and read data discord
Data 0x00 to 0xFF is written sequentially to the ARP TMAX register (address 0xC6) and then read for checking.

(5-3) ARP to RAM Data Bus
Data write → read, and accord check
Error 09: ARP ←→ RAM data bus error
Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus
Data write → other address read discord check
Error 10: ARP ←→ RAM address bus error
Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).
Before starting the test, all addresses of RAM (IC303) are cleared to 0x0000.
First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.
If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
    ### Syscon Diagnosis ###



 5-4. ARP to RAM Address Bus
Error 10: ARP - RAM Address B
Address    : 0000A55A
Write Data : 00000000
Read Data  : 00080000
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

(5-5) ARP RAM Check
Data write → read, and accord check
Error 11: ARP RAM read data discord
The program code data stored in ROM are copied to all areas of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

## 6. AV Decoder

(6-2) 1930 RAM
Data write → read, and accord check
Error 13: AVD RAM read data discord
The program code data stored in ROM (IC107) are copied to all areas of RAM (IC504, IC505) connected to the AVD (IC503) through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 13, and the test is suspended.
During the test, OSD display becomes blank as the OSD area is also checked.

(6-3) 1930 SP
ROM → AVD RAM → Video OUT
Error: Not detected.
The data including sub picture streams in ROM (IC107) are transferred to the RAM (IC504, IC505) in AVD (IC503), and output as video signals from the AVD (IC503).
Though OSD display becomes blank, the output of video signals continues until the key is pressed.
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

## 7. Video

(7-2) Color Bar
AVD color bar command write → Video OUT
Error: Not detected.
The command is transferred to the AVD, and the color bar signals are output from video terminals.
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

(7-3) Composite Out (AEP, UK Model)
EURO-AV Composite video output check
AVD color bar command write → Video (EURO-AV Composite) OUT
Error: Not detected.
With the Component of video output turned off, the color bar signals are output from the EURO-AV terminal.

(7-4) Y/C Out (AEP, UK Model)
EURO-AV Y/C video output check
AVD color bar command write → Video (EURO-AV Y/C) OUT
Error: Not detected.
With the Y/C of video output turned on, the color bar signals are output from the EURO-AV terminal.

(7-5) RGB Out (AEP, UK Model)
EURO-AV RGB video output check
AVD color bar command write → Video (EURO-AV RGB) OUT
Error: Not detected.
With the RGB of video output turned on, the color bar signals are output from the EURO-AV terminal.

(7-6) Component Out (AEP, UK Model)
EURO-AV Component video output check
AVD color bar command write → Video (EURO-AV Component) OUT
Error: Not detected.
With the Component of video output turned on, the color bar signals are output from the EURO-AV terminal.

## 8. Audio

(8-2) ARP → 1930
Error 14 : ARP → 1930 video NG
15 : ARP → 1930 audio NG

(8-3) Test Tone
A pink noise signal is output from the AVD (IC503) through optical coaxial digital terminal and analog audio terminal.
Error: Not detected.
After turning on all outputs, each time the NEXT key is pressed, the output channel is switched for individual channel checking.
Left + Right → Left → Right are checked in this order.

Check Items List

2) Version
(2-2) Revision
(2-3) ROM Check Sum
(2-4) Model Type
(2-5) Region

3) Peripheral
(3-2) Gate Array Check
(3-3) EEPROM Check

4) Servo
(4-2) Servo DSP Check
(4-3) DSP Driver Test

5) Supply
(5-2) ARP Register Check
(5-3) ARP to RAM Data Bus
(5-4) ARP to RAM Address Bus
(5-5) ARP RAM Check

6) AV Decoder
(6-2) 1930 RAM
(6-3) 1930 SP

7) Video
(7-2) Color Bar
(7-3) Composite Out (AEP, UK Model)
(7-4) Y/C Out (AEP, UK Model)
(7-5) RGB Out (AEP, UK Model)
(7-6) Component Out (AEP, UK Model)

8) Audio
(8-2) ARP → 1930
(8-3) Test Tone

Error Codes List

00: Error not detected
01: RAM write/read data discord
02: Gate array NG
03: EEPROM NG
04: Flash memory clear error
05: Flash memory write error
06: Flash memory read data discord
07: 2725 read data discord
08: ARP register read data discord
09: ARP ←→ RAM data bus error
10: ARP ←→ RAM address bus error
11: ARP RAM read data discord
12: Servo DSP NG
13: 1930 SDRAM NG
14: ARP → 1930 video NG
15: ARP → 1930 audio NG
16: 1910 UCODE download NG
17: System call error (function not supported)
18: System call error (parameter error)
19: System call error (illegal ID number)
20: System call error (time out)
21: NAND Flash faulty blocks exceed 10
90: Error occurred
91: User verification NG
92: Diagnosis cancelled

## 6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press [1] key on the remote commander, and the drive auto adjustment menu will be displayed.

```
   ## Drive Auto Adjustment ##

         Adjustment Menu

0. ALL
1. DVD-SL
2. CD
3. DVD-DL
4. LCD



                    Exit: RETURN
```

Normally, [0] is selected to adjust DVD (single layer), CD, DVD (dual layer), and LCD (SACD) in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen. Which disc is currently adjusted is displayed on the fluorescent display tube.
The disc used for adjustment must be the one specified for adjustment.

### 0. ALL

You will be asked if EEPROM data are initialized or not, and for this prompt, select [0] and press the [ENTER] key. First , the servo setting data in EEPROM, Emergency History and Hour Meter are cleared to initialize. Then, the disc tray will open. Place three kinds of discs on the turntable in advance. Place the DVD-SL disc on the turntable number 1, and press the [ENTER] key. The turntable turns and the number 2 will come to the front, and then place CD disc on the number 2. Similarly, place the DVD-DL disc on the number 3, and press the [ENTER] key. The adjustment will then be executed in order. If an error is detected, retry adjustment from the beginning. To quit the adjustment in the midway, press the [STOP] button. In adjusting each disc, the mirror time is measured to check the disk type. In the auto adjustment, whether the disc type is correct is not checked unlike conventional models, and accordingly, take care not to insert a different type of disc.

### 1. DVD-SL (single layer)

Select [1], place DVD single layer disc on the turntable number 1 and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Single Layer Disc Adjustment Steps

1. SLED TILT Reset
2. Disc Check Memory SL
3. Set Disc Type SL
4. Spdl Start
5. Wait 1 sec
6. LD ON
7. Focus Error Check
8. Focus ON 0
9. Auto Track Offset Adjust L0
10. Trv Level Check
11. Tracking ON
12. Wait 100 msec
13. CLVA ON
14. Wait 500 msec
15. Sled ON
16. Auto Loop Filter Offset Adjust
17. Auto Focus Gain Adjust L0
18. Auto Focus Balance Adjust L0
19. EQ Boost Adjust
20. Auto Loop Filter Offset Adjust
21. RF Level Measure
22. Jitter Disp ON
23. Jitter Memory
24. Jitter Disp OFF
25. Eep Copy Loop Filter Offset
26. All Servo Stop

## 2. CD

Select [2], place CD disc on the turntable number 2 and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

CD Adjustment Steps

1. Sled Tilt Reset
2. Disc Check Memory CD
3. Set Disc Type CD
4. Spdl Start
5. Wait 1 sec
6. LD ON
7. Focus Error Check
8. Fcs ON 1
9. Auto Track Offset Adjust L0
10. Trv Level Check
11. Tracking ON
12. Wait 100 msec
13. CLVA ON
14. Wait 500 msec
15. Sled ON
16. Auto Loop Filter Offset Adjust
17. Auto Focus Gain Adjust L0
18. Auto Focus Balance Adjust L0
19. Eq Boost Adjust
20. Auto Loop Filter Offset Adjust
21. Auto Track Gain Adjust
22. RF Level Measure
23. Jitter Disp ON
24. Jitter Memory
25. Jitter Disp OFF
26. All Servo Stop

## 3. DVD-DL (dual layer)

Select [3], place DVD dual layer disc on the turntable number 3 and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Dual Layer Disc Adjustment Steps

1. Sled Tilt Reset
2. Disc Check Memory DL
3. Set Disc Type DL

Layer 1 Adjust

4. Spdl Start (Wait 1 sec)
5. LD ON
6. Fcs ON 1
7. Auto Track Offset Adjust L1
8. Tracking ON
9. Wait 100 msec
10. Clva ON (Wait 500 msec)
11. Sled ON
12. Auto Focus Gain Adjust L1
13. Auto Focus Balance Adjust L1
14. Eq Boost Adjust L1
15. Auto Track Gain Adjust L1
16. Jitter Disp ON
17. Jitter Memory
18. Jitter Disp Off

Layer 0 Adjust

19. Focus Jump (L1 → L0)
20. Auto Track Offset Adjust L0
21. Tracking ON (Wait 100 msec)
22. Clva ON (Wait 500 msec)
23. Sled ON
24. Auto Focus Gain Adjust L0
25. Auto Focus Balance Adjust L0
26. Eq Boost Adjust L0
27. Auto Track Gain Adjust L0
28. Jitter Disp ON
29. Jitter Memory
30. Jitter Disp OFF
31. All Servo Stop

## 4. LCD (SACD)

This model does not adjust it because the adjusted data of CD are reflected.

## 6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select [2], and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.

```
  ## Drive Manual Operation ##

         Operation Menu
1. Disc type
2. Servo Control
3. Track/Layer Jump
4. Manual Adjustment
5. Auto Adjustment
6. Memory Check
7. 5CHG Mecha Control
0. Disc Check Memory

                Exit: RETURN
```

In using the manual operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type screen.
   The disc type must be set after a disc was loaded.
   The set disc type is cleared when the tray is opened.
2. After power ON, if the Drive Manual Operation was selected, first perform "Reset SLED TILT" by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the [STOP] button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

| | |
|---|---|
| [POWER] | Power OFF |
| [STOP] | Servo stop |
| [OPEN/CLOSE] | Stop+Eject/Loading |
| [RETURN] | Return to Operation Menu or Test Mode Menu |
| [NEXT], [PREV] | Transition between sub modes of menu |
| [1] to [9], [0] | Selection of menu items |
| Cursor UP/DOWN | Increase/Decrease in manually adjusted value |
| [DISC SELECT] [1] to [5] | Selection of applicable number disc |
| [DISC SKIP] | Go to the next disc |
| [EXCHANGE] | Open the disc tray while playing a disc |

### 0. Disc Check Memory

```
           Disc Check



1. SL Disc Check
2. CD Disc Check
3. DL Disc Check




0. Reset SLED TILT


```

On this screen, the mirror time is measured and written to the EEPROM to check the disc type. First, set a DVD SL disc and press [1], then set a CD disc and press [2], and finally set a DVD DL disc and press [3]. The measured mirror time is displayed respectively.
The adjustment must be executed more than once after default data were written.
Reference value for DVD is from 10 to 20, and for CD, from 28 to 4F. Check that the value of CD is larger than that of DVD. When those values are beyond a range perform this adjustment again.
From this screen, you can go to another mode by pressing [NEXT] or [PREV] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

### 1. Disc Type

```
           Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. LCD      12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. LCD      8 cm
0. Reset SLED TILT
                        EMG. 00
```

On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry "Disc Check Memory". Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.
In performing manual operation, the disc type must be set.
Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.

```
           Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. LCD      12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. LCD      8 cm
0. Reset SLED TILT
        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

***Display when DVD SL 12cm disc was selected***

```
              Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. LCD      12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. LCD      8 cm
0. Reset SLED TILT
           TC.---:---:--- EMG. 00
CD   12 cm
```

***Display when CD 12cm disc was selected***

| | |
|---|---|
| [0] Reset SLED TILT | Reset the Sled and Tilt to initial position. |
| [1] Disc Type Check | Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct.<br>If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD). |
| [2] to [9] | Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if [1] was selected. |

## 2. Servo Control

```
           Servo Control
1. LD         Off R. Sled FWD
2. SP         Off L. Sled REV
3. Focus      Off
4. TRK.       Off
5. Sled       Off
6. CLVA       Off
7. FCS. Srch  Off


0. Reset SLED TILT
        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked.
The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

| | |
|---|---|
| [0] Reset SLED TILT | Reset the Sled and Tilt to initial position. |
| [1] LD | Turn ON/OFF the laser. |
| [2] SP | Turn ON/OFF the spindle. |
| [3] Focus | Search the focus and turn on the focus. |
| [4] TRK | Turn ON/OFF the tracking servo. |
| [5] Sled | Turn ON/OFF the sled servo. |
| [6] CLVA | Turn ON/OFF normal servo of spindle servo. |
| [7] FCS. Srch | Apply same voltage as that of focus search to the focus drive to check the focus drive system. |
| [→] Sled FWD | Move the sled outward. Perform this operation with the tracking servo turned off. |
| [←] Sled REV | Move the sled inward. Perform this operation with the tracking servo turned off. |

## 3. Track/Layer Jump

```
      Tracking/Layer Jump
1. 1Tj FWD    R. Fj (L1 → L0)
2. 1Tj REV    L. Fj (L0 → L1)
3. 2Tj FWD    U. Lj (L1 → L0)
4. 2Tj REV    D. Lj (L0 → L1)
5. NTj FWD
6. NTj REV
7. 500Tj FWD
8. 500Tj REV
9. 10k/20k FWD
0. 10k/20k REV
        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, track jump, etc. can be performed. Only for the DVD-DL, the focus jump and layer jump are displayed in the right field.

| | |
|---|---|
| [1] 1Tj FWD | 1-track jump forward. |
| [2] 1Tj REV | 1-track jump reverse. |
| [3] 2Tj FWD | 2-track jump forward. |
| [4] 2Tj REV | 2-track jump reverse. |
| [5] NTj FWD | N-track jump forward. |
| [6] NTj REV | N-track jump reverse. |
| [7] 500Tj FWD | Fine search forward. |
| [8] 500Tj REV | Fine search reverse. |
| [9] 10k/20k FWD | Direct search forward. |
| [0] 10k/20k REV | Direct search reverse. |

– The following commands are valid for DVD-DL disc only –

| | |
|---|---|
| [→] Fj (L1 → L0) | Focus jump forward.<br>(Trk/Sled Servo OFF) |
| [←] Fj (L0 → L1) | Focus jump reverse.<br>(Trk/Sled Servo OFF) |
| [↑] Lj (L1 → L0) | Layer jump forward.<br>(Trk/Sled Servo ON) |
| [↓] Lj (L0 → L1) | Layer jump reverse.<br>(Trk/Sled Servo ON) |

## 4. Manual Adjustment

```
       Manual Adjustment
1. TRK. Offset
2. Focus Gain
3. TRK. Gain
4. Focus Offset
5. Focus Balance
6. L.F. Offset
7. EQ BOOST
8. GD ADJ
Adjustment : Up/Down
                     Jitter 1D
        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, each item can be adjusted manually. Select the desired number [1] to [8] from the remote commander, and current setting for the selected item will be displayed, then increase or decrease numeric value with [↑] key or [↓] key. This value is stored in the EEPROM. If CLV has been applied, the jitter is displayed for reference for the adjustment.

| | | |
|---|---|---|
| [1] | TRK. Offset | Adjusts tracking offset. |
| [2] | Focus Gain | Adjusts focus gain. |
| [3] | TRK. Gain | Adjusts track gain. |
| [4] | Focus Offset | Adjusts focus offset. |
| [5] | Focus Balance | Adjusts focus balance. |
| [6] | L.F. Offset | Adjusts loop filter offset. |
| [7] | EQ BOOST | |
| [8] | GD ADJ | |

## 5. Auto Adjustment

```
        Auto Adjustment
1. Auto TRK. Offset
2. Auto Focus Balance
3. Auto Focus Offset
4. Auto Focus Gain
5. Auto TRK. Gain
6. Auto EQ
7. Auto L.F. Offset
8. Auto Group Delay


        SA.------ SI.-- EMG. 00
DVD SL 12 cm
```

On this screen, each item can be adjusted automatically. Select the desired number [1] to [8] from the remote commander, and selected item is adjusted automatically.

| | | |
|---|---|---|
| [1] | Auto TRK. Offset | Adjusts tracking offset. |
| [2] | Auto Focus Balance | Adjusts focus balance. |
| [3] | Auto Focus Offset | Adjusts focus offset. |
| [4] | Auto Focus Gain | Adjusts focus gain. |
| [5] | Auto TRK. Gain | Adjusts track gain. |
| [6] | Auto EQ | |
| [7] | Auto L.F. Offset | Adjusts loop filter offset. |
| [8] | Auto Group Delay | |

## 6. Memory Check

```
EEPROM DATA 1           -- DL --
             CD LCD   SL  L0  L1
Focus Gain    xx xx   xx  xx  xx
TRK. Gain     xx xx   xx  xx  xx
FCS Balance   xx xx   xx  xx  xx
Focus Bias    xx xx   xx  xx  xx
TRV. Offset   xx xx   xx  xx  xx
L.F. Offset   xx xx   xx  xx  xx
EQ Boost      xx xx   xx  xx  xx
Mirror Time   xx --   xx  xx
_
DOWN : Next Data
CLEAR: Default Set    page. 1/2
```

```
EEPROM DATA 2           -- DL --
             CD LCD   SL  L0  L1
RF Jitter     xx --   xx  xx  xx
RF Level      xx --   xx  --  --
FE Level      xx --   xx  --  --
FE Balance    xx --   xx  --  --
TRV. Level    xx --   xx  --  --
Analog FRSW   xx xx   xx  xx  xx
PLL Dac Gain  xx xx   xx  xx  xx

_
UP : Prev Data
CLEAR: Default Set    page. 2/2
```

On this screen, current servo adjusted data stored in the EEPROM are displayed. The adjusted data are initialized by pressing the [CLEAR] key, but be careful that they are not recoverable after initialization.
Before clearing the adjusted data, make a note of the set data. This screen will also appear if [0] All is selected in the Drive Auto Adjustment. In this case, default setting cannot be made.
For reference, the drive has been designed so that the gain center value is 20 and offset value is 80. Other values will be in a range of 10 to 80. If extreme value such as 00 or FF is set, adjustment will be faulty. In such a case, check for disc scratch or cable disconnection, then perform adjustment again.

## 7. 5CHG Mecha Control

```
  ## 5CHG MechaControl Menu ##

ENTER   : Mecha Initial
OP/CL   : Tray Open/Close

UPDOWN  : TurnTable Stop
RIGHT   : TurnTable RightTurn
LEFT    : Turntable LeftTurn


RETURN  : Exit
```

| | |
|---|---|
| [ENTER] Mecha Initial | Initializes the mechanism. When the Drive Manual Operation started, the mechanism is initialized. Use this when an error occurred. |

| | |
|---|---|
| OPEN/CLOSE<br>Tray Open/Close | Opens/closes the disc tray. |
| Cursor UP/DOWN<br>TurnTable Stop | Stops the turning of turntable. |
| Cursor RIGHT<br>TurnTable RightTurn | Turns the turntable clockwise under full control. |
| Cursor LEFT<br>TurnTable LeftTurn | Turns the turntable counterclockwise under full control. |
| RETURN<br>Exit | Returns to Operation Menu. |

## 6-6. MECHA AGING

```
      ### Mecha Aging ###



Press OPEN key



Abort: STOP key
```

On the Test Mode Menu screen, selecting 3 executes the aging of mechanism. First, open the tray and load a disc. Press the PLAY key, and the aging will start. When the tray is closed, the disc type and size are judged and displayed. During aging, the repeat cycle is displayed. Aging can be aborted at any time by pressing the STOP key. After the operation has stopped, unload the disc and press again the STOP key or the RETURN key to return to the Test Mode Menu.

## 6-7. EMERGENCY HISTORY

```
      ### MEG. History ###

Laser Hours     CD   xxxxxxxh
                DVD  xxxxxxxh

1. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

2. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

Select: 1 – 9   Scroll: UP/DOWN
(1: Last EMG.)  Exit: Return
```

On the Test Mode Menu screen, selecting 4 displays the information such as servo emergency history. The history information from last 1 up to 10 can be scrolled with ↑ key or ↓ key. Also, specific information can be displayed by directly entering that number with ten keys.

The upper two lines display the laser ON total hours. Data below minutes are omitted.

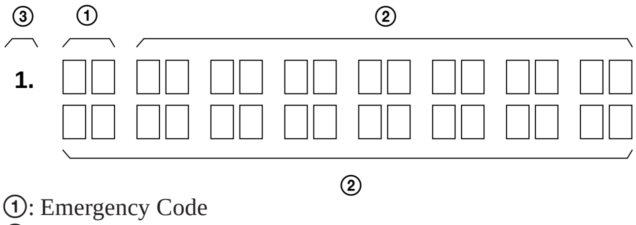
### Clearing History Information

◎ Clearing laser hours
Press DISPLAY and CLEAR keys in this order.
Both CD and DVD data are cleared.
Clearing emergency history

◎ Press TITLE and CLEAR keys in this order.
Initializing set up data

◎ Press DVD and CLEAR keys in this order.
The data have been initialized when “Set Up Initialized” message is displayed. The EMG. History screen will be restored soon.

### How to see Emergency History




①: Emergency Code
②: Don't Care
These codes are used for verification of software designing.
③: Historical order 1 to 9

### Emergency Codes List

10: Communication to IC202 (MB-98 board) failed.
11: Each servo for focus, tracking, and spindle is unlocked.
12: Communication to EEPROM, IC101 (MB-98 board) failed.
13: Writing of hours meter data to EEPROM, IC101 (MB-98 board) failed.
14: Communication to Servo DSP IC302 (MB-98 board) failed, or Servo DSP is faulty.
20: Initialization of tilt servo and sled servo failed. They are not placed in the initial position.
21: Tilt servo operation error
22: Syscon made a request to move the tilt servo to wrong position.
23: Sled servo operation error
24: Syscon made a request to move the sled servo to wrong position.
30: Tracking balance adjustment error
31: Tracking gain adjustment error
32: Focus balance adjustment error
33: Focus bias adjustment error
34: Focus gain adjustment error
35: Tilt servo adjustment error
36: RF equalizer adjustment error
37: RF group delay adjustment error
38: Jitter value after adaptive servo operation is too large.
40: Focus servo does not operate.
41: With a dual layer (DL) disc, focus jump failed.
50: CLV (spindle) servo does not operate.
51: Spindle does not stop.
60: With a DVD disc, Syscon made a request to seek nonexistent address.
61: With a CD disc, Syscon made a request to seek nonexistent address.
62: With a CD disc, Syscon made a request to seek nonexistent track No. and index No.
63: With a DVD disc, seeking of target address failed.
64: With a CD disc, seeking of target address failed.
65: With a CD disc, seeking of target index failed.
70: With a DVD disc, physical information data could not be read.
71: With a CD disc, TOC data could not be read.
80: Disc type judgment failed.
81: As disc type judgment failed, retry was repeated.
82: As disc type judgment failed, a measurement error occurred.
83: Disc type could not be judged within the specified time.
84: Illegal command code was received from Syscon.
85: Illegal command was received from Syscon.

## 6-8. VERSION INFORMATION

```
   ## Version Information ##

IF con.    Ver : x. xxx (xxxx)
           Group    00

SYScon.    Ver : x. xxx (xxxx)
           Model    xx
           Region   0x
Servo DSP.  Ver : 1. xxxx
OPT Type : x LASER

Exit: RETURN
_
```

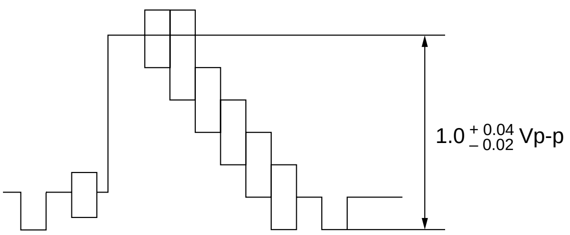
The ROM version, region code, OPT type, etc. are displayed if $\boxed{5}$ is selected in the Test Mode Menu.
The parenthesized hexadecimal number in the version number field indicates the checksum value of the ROM.

Note : After down loading ROM data, sometimes it happens that checksum is not the same as that of ROM data which has been down loaded. In such a case, go back to the menu and select “0. Syscon Diagnosis”, then select “1. All” in “2. Version”. If the result of this operation does not give an agreement, it must be either Down Load error or ROM error.

## 6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting $\boxed{6}$ displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

Measurement point : LINE OUT VIDEO
(75 Ω terminating resistance)
Measuring instrument : Oscilloscope
Adjustment device : RV501 on MB-98 board
Specified value : $1.0 {}^{+0.04}_{-0.02}$ Vp-p




## 6-10. IF CON SELF DIAGNOSTIC FUNCTION

### 1. IF-81 BOARD (IF CON) TEST MODE

The front board test mode is the IF CON self diagnostic mode. The IF CON can diagnose the functions of the front panel boards that the IF CON controls. Normally, the IF CON makes a serial communication with the SYSTEM CONTROL and operates following the commands from the SYSTEM CONTROL, but in the Test mode, the IF CON operates independently from the SYSTEM CONTROL.

In the Test mode, the following functions can be checked.
1. Button function
2. Remote commander receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Click shuttle function
5. Fluorescent display tube lighting check
   Grid check
   Anode check
6. LED control function

In the Test mode, the set operates same as usual, except voltage monitoring, communication monitoring, display of fluorescent display tube, and LED control.
1. The routine that monitors +3.3 V (P-CONT) of MB-98 board is not provided.
2. The monitoring timer for serial communication with the SYSTEM CONTROL is not provided. The set is not placed in the Standby mode, even if the communication with SYSTEM CONTROL is normal.
3. Display of fluorescent display tube (normally, display is made following the commands from SYSTEM CONTROL)
4. LED control (normally, control is made following the commands from SYSTEM CONTROL)

### 2. OPERATION OF SELF CHECK MODE

The Self Check mode is the function to conduct the basic test to the FL display and DVD panel section.

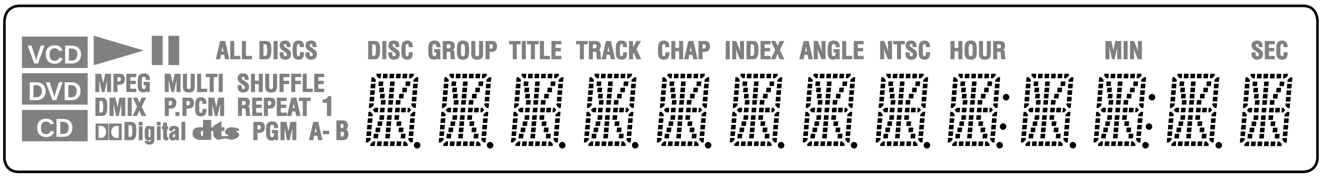
#### 2-1. Self Check Mode Transition Processing

At the AC Power ON after IF CON (IC404) was reset, the input to 10pin (SELF CHECK) is judged and if “Low” is entered, the main unit transits to the Self Check mode. In this port input judgment, the result of 3-time attempts must be same (assuming that the MB-98 board are not connected). While pressing the $\boxed{\text{STOP}}$ key on the main unit with the IF CON in STANDBY mode, enter $\boxed{\text{RETURN}}$ → $\boxed{\text{DISPLAY}}$ on the remote commander, and the unit transits to the Self Check Mode. The Self Check mode terminates when the IF CON transits to the STANDBY mode.

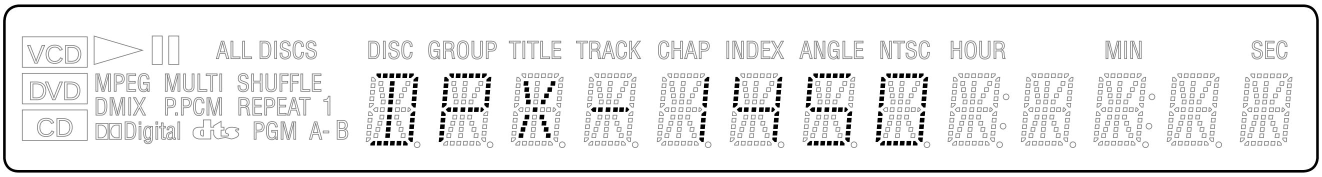
## 2-2. Operation of Auto Self Check

When the Self Check mode becomes active at the AC Power ON or by key input, the test display of the following steps (1) to (4) is repeated.

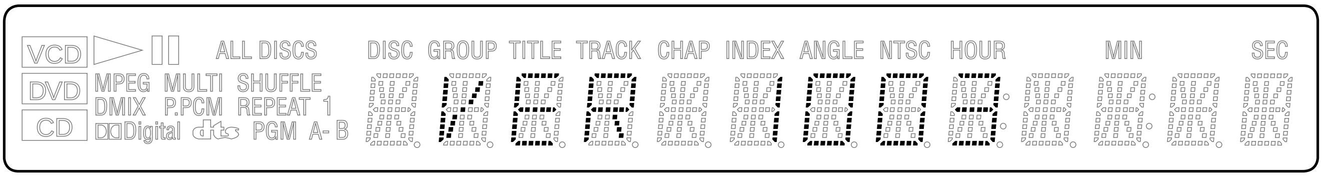
(1) FLD and LED all ON (for 5 seconds)



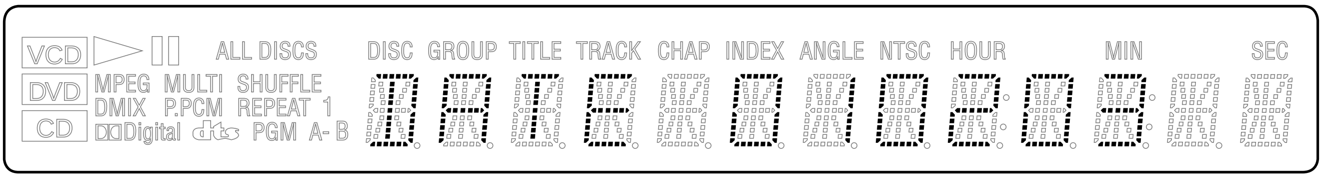

(2) MODEL display (for 2 seconds)




(3) Version display (for 2 seconds)




(4) ROM creation date display (for 2 seconds)



### 2-3. Each Self Check Function

Each Self Check function tests the FLD display, LED display, and key input.

| Input Voltage [V] | IC404: Pin No. (Signal) | | | | | | |
|---|---|---|---|---|---|---|---|
| | Pin ㉛ (AD1) | Pin ㉜ (AD2) | Pin ㉝ (AD3) | Pin ㉞ (AD4) | Pin ㉟ (AD5) | Pin ㊱ (AD6) | Pin ㊲ (AD7) |
| 0 | ENTER | DVD MENU | 5 | PLAY | OPEN/CLOSE | LOAD | SURROUND |
| 1.07 | DOWN | RETURN | 4 | PAUSE | DISPLAY | TITLE | BNR |
| 2.0 | LEFT | ONE/ALL | 3 | PREVIOUS | DISC SKIP | – | – |
| 3.0 | UP | REPEAT | 2 | NEXT | EXCHANGE | – | – |
| 3.96 | RIGHT | SHUFFLE | 1 | – | – | – | – |
| 5.0 | – | – | – | – | – | – | – |

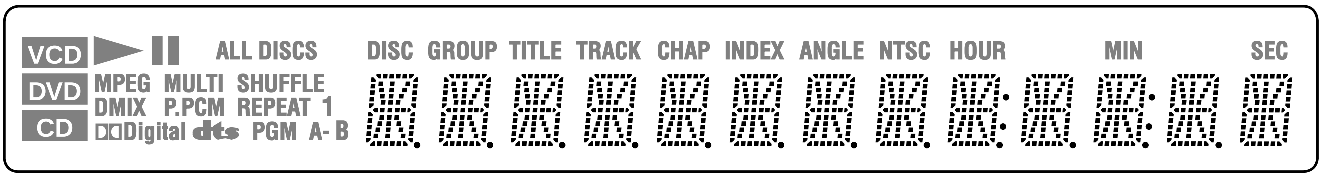
#### 2-3-1. FLD and LED All ON

#### 2-3-1-1. Transition Keys in Self Check Mode

- STOP key and OPEN/CLOSE key on the main unit
- LEFT key on the main unit and the remote commander

#### 2-3-1-2. Operation and Display

In this mode, all LEDs except STANDBY LED and all segments of FLD turn ON.
Example of FLD all ON




#### 2-3-2. Main Unit Key Name Display and Key Code Display

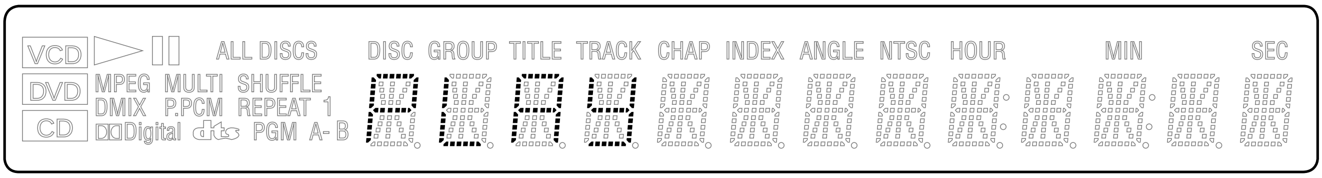
#### 2-3-2-1. Transition Keys in Self Check Mode

- Keys on main unit except keys transited in self check

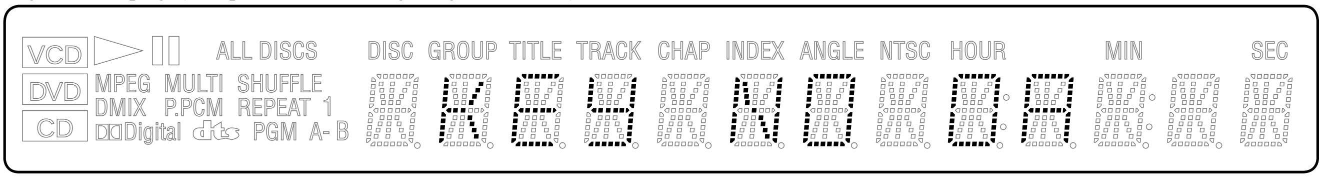
#### 2-3-2-2. Operation and Display

When a key on the main unit is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the DISPLAY key on the remote commander. "NOTHING" is displayed when nothing is entered. Also, VCD, DVD, and CD segments turn on when a communication error occurred.

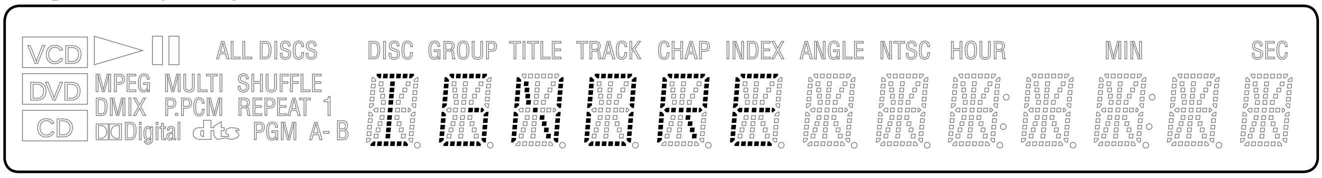
FLD display (at input of PLAY key on the main unit)



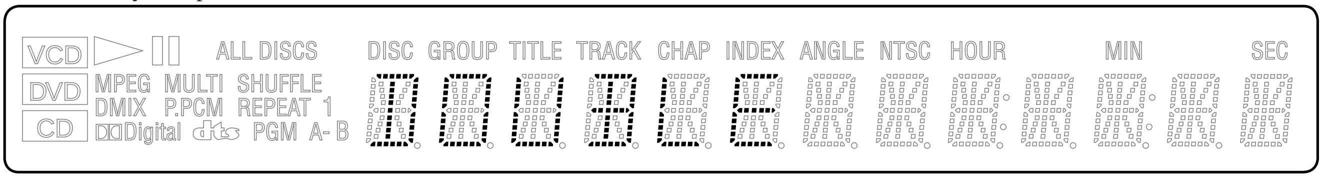
Key code display (at input of PLAY key, Key code: 0Ah)




At input of faulty voltage



When two keys are pressed



### 2-3-3. Remote Commander Key Name Display and Key Code Display

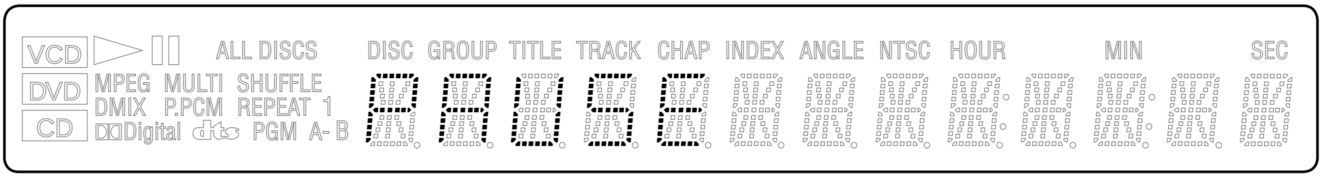
#### 2-3-3-1. Transition Keys in Self Check Mode

- Remote commander keys except keys transited in self check

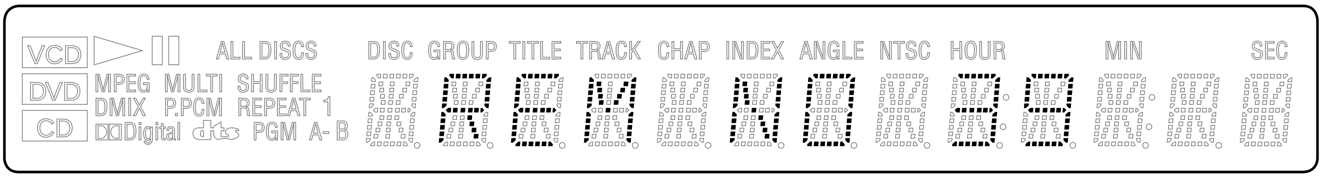
#### 2-3-3-2. Operation and Display

When a key on the remote commander is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the DISPLAY key on the remote commander. “NOTHING” is displayed when nothing is entered. Also, VCD, DVD, and CD segments turn on when a communication error occurred.

Remote commander key name display (at input of PAUSE key)



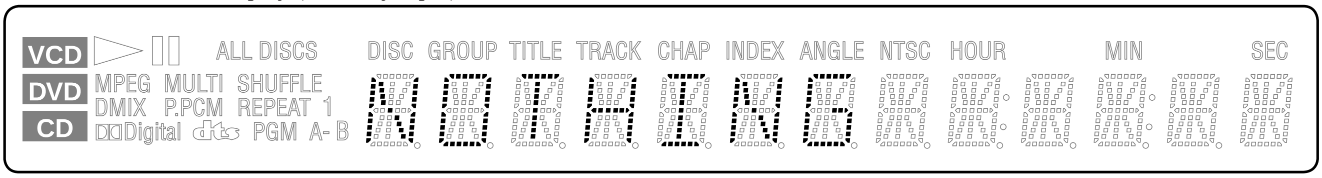

Remote commander key code display (at input of PAUSE key, Key code: 39h)



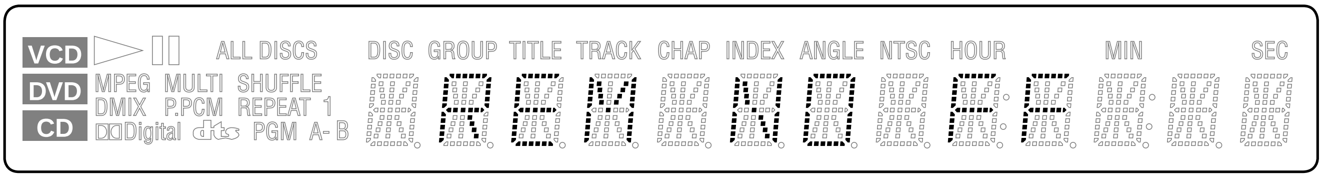
### 2-3-4. Communication Monitoring Display

The communication state is monitored and displayed while the key name on the main unit and the remote commander is displayed. When the communication to the System Controller failed, VCD, DVD, and CD segments turn on.

Communication error display (at no key input)




Communication error display (at code display without input of the remote commander)




### 2-3-5. FLD Anode Test Display and SHUTTLE Click Operation Test

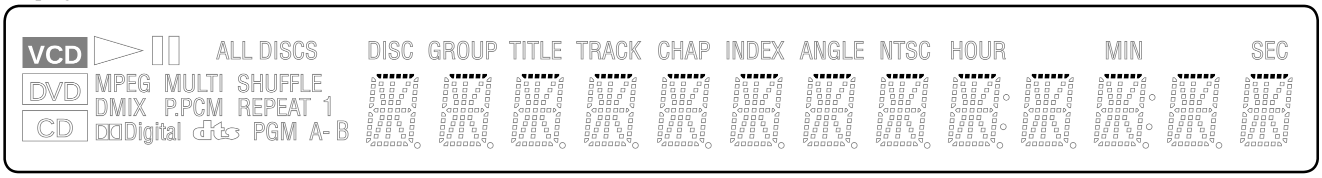
### 2-3-5-1. Transition Keys in Self Check Mode

- RIGHT on the main unit and the remote commander
- SHUTTLE on the remote commander during Anode Test display
  (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

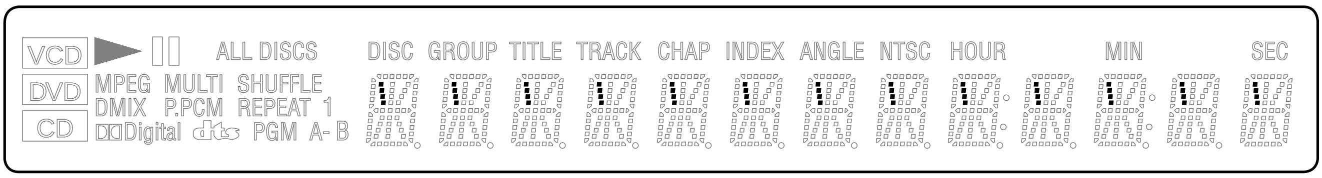
### 2-3-5-2. Operation and Display

The Self Check mode transits to this mode when RIGHT key is entered. Only the first segment of each grid of FLD turns on, and each time the SHUTTLE is entered, the segment of each grid is switched in order. When SHUTTLE input is clockwise, the segment switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each segment turns on individually.

Display at the start of Anode Test




↓ (Input in CW direction)



### 2-3-6. FLD Grid Test Display and SHUTTLE Click Operation Test

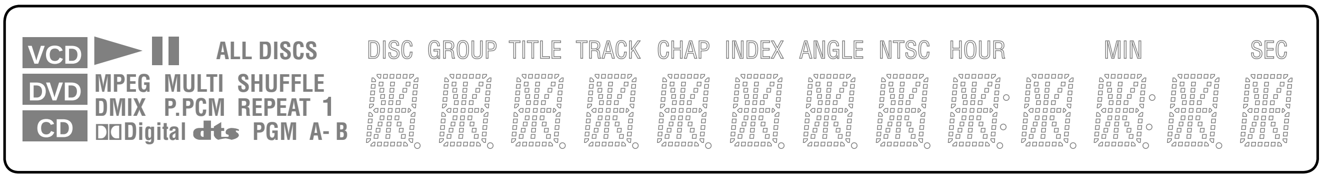
#### 2-3-6-1. Transition Keys in Self Check Mode

- UP on the main unit and the remote commander
- SHUTTLE on the remote commander during Grid Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

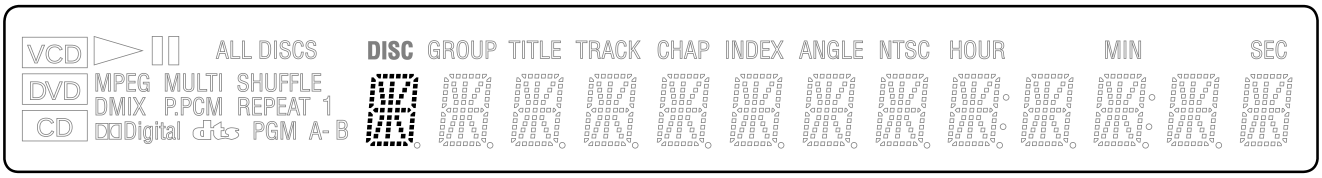
#### 2-3-6-2. Operation and Display

The Self Check mode transits to this mode when UP key is entered. The first grid of FLD all turns on and other grids turn off. Each time the SHUTTLE is entered, the grid is switched in order. When SHUTTLE input is clockwise, the grid switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each grid turns on individually.

Display at the start of Grid Test




↓ (Input in CW direction)




### 2-3-7. LED Test Display

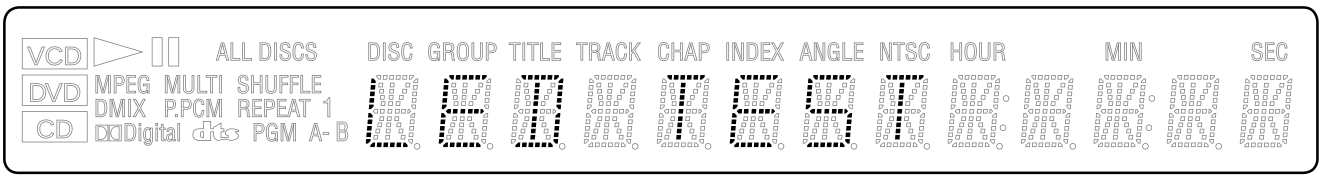
#### 2-3-7-1. Transition Keys in Self Check Mode

- DOWN on the main unit and the remote commander
- SHUTTLE on the remote commander during LED Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

#### 2-3-7-2. Operation and Display

LED is switched in order by the input of JOG/SHUTTLE. Also, LED ON/OFF is switched by the input of same key as the function that turns on the LED concerned.

FLD display during LED Test



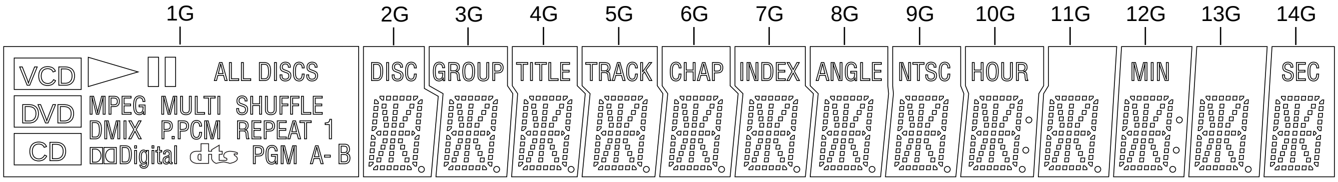

### 2-3-8. Beep Sound Test

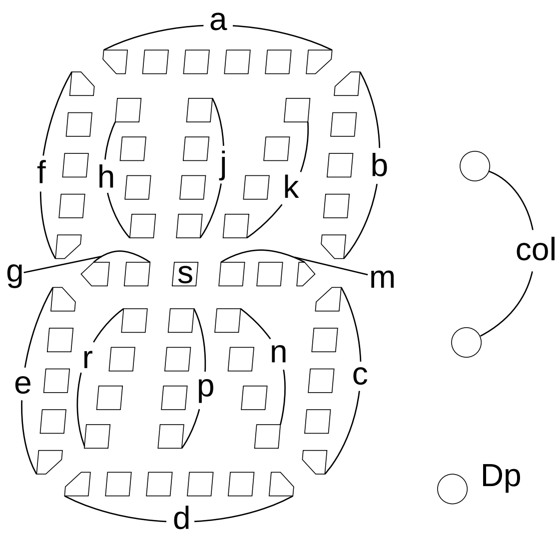
#### 2-3-8-1. Transition Keys in Self Check Mode

- Input of a key on main unit

#### 2-3-8-2. Operation and Display

In the Self Check mode, each time a key on the main unit is entered, a beep sound of 1kHz (100ms) is generated.




( 1G~12G )

ANODE CONNECTION

| | 1G | 2G | 3G | 4G | 5G | 6G | 7G | 8G | 9G | 10G | 11G | 12G | 13G | 14G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1 | VCD | a | a | a | a | a | a | a | a | a | a | a | a | a |
| P2 | ▷ | h | h | h | h | h | h | h | h | h | h | h | h | h |
| P3 | ▯▯ | j | j | j | j | j | j | j | j | j | j | j | j | j |
| P4 | ALL DISCS | k | k | k | k | k | k | k | k | k | k | k | k | k |
| P5 | DVD | b | b | b | b | b | b | b | b | b | b | b | b | b |
| P6 | MPEG | f | f | f | f | f | f | f | f | f | f | f | f | f |
| P7 | MULTI | m | m | m | m | m | m | m | m | m | m | m | m | m |
| P8 | SHUFFLE | s | s | s | s | s | s | s | s | s | s | s | s | s |
| P9 | DMIX | g | g | g | g | g | g | g | g | g | g | g | g | g |
| P10 | P.PCM | e | e | e | e | e | e | e | e | e | e | e | e | e |
| P11 | REPEAT | n | n | n | n | n | n | n | n | n | n | n | n | n |
| P12 | 1 | p | p | p | p | p | p | p | p | p | p | p | p | p |
| P13 | B | r | r | r | r | r | r | r | r | r | r | r | r | r |
| P14 | A- | c | c | c | c | c | c | c | c | c | c | c | c | c |
| P15 | PGM | d | d | d | d | d | d | d | d | d | d | d | d | d |
| P16 | dts | Dp | Dp | Dp | Dp | Dp | Dp | Dp | Dp | Dp | Dp | Dp | Dp | - |
| P17 | Digital | - | - | - | - | - | - | - | - | col | - | col | - | - |
| P18 | CD | DISC | GROUP | TITLE | TRACK | CHAP | INDEX | ANGLE | NTSC | HOUR | - | MIN | - | SEC |

## 6-11. TROUBLESHOOTING

### 6-11-1. Cannot Enter Test Mode

You cannot enter the Test mode when either button has been pressed by any reason with the board assembled in the front panel. In this state, the power does not turn on even under normal condition (the set is kept in standby state), and also no button is active and the remote commander is not accepted. In this case, disconnect the MB-98 board, and with the SELF CHECK (⑩ pin) of IF CON (IC404) on the IF-81 board kept in low state, supply AC, and the Test mode will be forcibly activated. The IF CON (IC404) checks the SELF CHECK port only after the power on reset (only at AC supply, not in standby state). If any button is pressed, its name is displayed on the fluorescent display tube. But, if other than "NOTHING" is displayed though no button is pressed, it means that any button has been pressed.

### 6-11-2. Faults in Test Mode (MB-98 Board)

**1. Test mode menu is not displayed**

- Board visual check
  Check main IC's, SYSTEM CONTROL (IC103), ROM (IC107 or IC108), AVD (IC503), and ARP&SERVO (IC302), for mounting condition, direction, or evidence of short between pins, or soldering failure. Also, compare with good board to check if there are missing capacitors or resistors.
- Clock signal check
  Measure the clock frequency at CPUCK (⑰ pin) of the SYSTEM CONTROL (IC103) using an oscilloscope.
  If 33 MHz is outputted, an access to the ROM is normal, and then check the items in 1-2.
  In the case of 8.25 MHz output, check the items in 1-1.
  If it is fixed to "H" or "L", the X101 or SYSTEM CONTROL (IC103) will be faulty.

**1-1. CPUCK (33 MHz) is not outputted**

- Power supply voltage check
  Check the power connectors of the boards or power input pins of the IC's for voltage. Check the IC's in order of SYSTEM CONTROL (IC103), ROM (IC107 or IC108), AVD (IC503), and ARP&SERVO (IC302). If correct voltage is not outputted, the power line will be shorted, or soldering or IC will be faulty.
- Reset signal check
  Check that the XFRRST (⑯ pin) of SYSTEM CONTROL (IC103) is "H" (3.3 V). If not "H", a soldering failure of that line, a shot with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.
- XRD, XWRH, and CS0X signals check
  Using an oscilloscope, measure the XRD (⑩ pin), XWRH (⑪ pin), and CS0X (㊽ pin) of the SYSTEM CONTROL (IC103) to check if they are fixed to "L" (0 V) or "H" (3.3 V), or if they are on the intermediate potential between "L" and "H". If they are fixed to "L" or "H", or on the intermediate potential, a soldering failure of that line, a shot with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.
- HA [0 – 21] and HD [0 – 15] signals check
  Using an oscilloscope, measure the HA [0 – 21] (⑩② – ⑩⑨, ⑪① – ⑪⑧, ⑫⓪, ① – ⑤ pins) and HD [0 – 15] (㊽⑤ – ⑩⓪ pins) of the SYSTEM CONTROL (IC103) to check if they are fixed to "L" (0 V) or "H" (3.3 V), or if HA is on the intermediate potential between "L" and "H" (HD is on intermediate potential in normal state), or if same waveform as that of adjacent pins is measured. In case of "L" or "H", intermediate potential, or same waveform, a soldering failure of that line, a shot with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.

**1-2. CPUCK (33 MHz) is outputted (communication with ROM is normal)**

- AVD (IC503) check
  Using an oscilloscope, measure the SDCLKO (⑭⑨ pin) of the AVD (IC503) to check that 95 MHz is outputted. If not outputted, a short of 27 MHz line across CLKI (⑱⓪ pin) and SCLKIN (⑱② pin), IC mounting failure, or faulty AVD (IC503) is doubtful. If 27 MHz is outputted, the communication between SYSTEM CONTROL (IC103) and AVD (IC503) is disabled, and therefore check the following items, particularly the AVD (IC503).
- WAIT signal check
  Using an oscilloscope, measure the XWAIT (⑥⑦ pin) of the SYSTEM CONTROL (IC103) to check if it is fixed to "L" (0 V) or on the intermediate potential. In case of "L" or intermediate potential, examine CS2X – CS5X (⑥⓪ – ⑥③ pins) to check if any pin is fixed to "L".
  For the CS2X and CS3X, AVD (IC503) mounting failure or faulty IC is doubtful.
  For the CS4X and CS5X, ARP&SERVO (IC302) mounting failure or faulty IC is doubtful.
  If CS2X – CS5X are not "L", or they are sometimes on intermediate potential, a soldering failure of XWAIT line, a short with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.
- INT signal check
  Using an oscilloscope, measure the INT0 – 2, 4 – 6 (⑯ – ⑱ pins, ⑳ – ㉒ pins) of the SYSTEM CONTROL (IC103) to check if INT0 – 2, and 6 are fixed to "L" (0 V) and INT5 is fixed to "H" (3.3 V), or they are on intermediate potential. In case of "L", "H", or intermediate potential, a soldering failure of IC's connected to that line, a short with other line, faulty SYSTEM CONTROL (IC103), or faulty each IC is doubtful.
  INT0 : AVD (IC503)
  INT1, INT2 : ARP&SERVO (IC302)
  INT5, INT6 : AUDIO DSP (IC701)
- CSnX signals check
  Using an oscilloscope, measure the CX0X – CX7X (㊽ – ⑥③, ⑥⑤, ⑥⑥ pins) of the SYSTEM CONTROL (IC103) to check if they are fixed to "L" (0 V), or two or more CS's sometime go "L", or on intermediate potential. In case of fixed "L", two or more CS's on "L" or intermediate potential, a soldering failure of IC's connected to that line, a short with other line, faulty SYSTEM CONTROL (IC103), or faulty each IC is doubtful.
  CS0X : ROM (IC107 or IC108)
  CS2X, CS3X: AVD (IC503)
  CS4X, CS5X: ARP&SERVO (IC302)
- Other CS signals check
  Using an oscilloscope, measure the VESCS/X39CS (⑧⓪ pin) and XDACS (⑦⑨ pin) of the SYSTEM CONTROL (IC103) to check if they are fixed to "L". If fixed, a soldering failure of that line, a short with other line, or faulty SYSTEM CONTROL (IC103) is doubtful.

If the above checking could not find a fault, check the outputted CS signal. If CS signal other than CS0X is outputted, a mounting failure of each IC or faulty IC that corresponds to active CS signal is doubtful.
CS2X, CS3X: AVD (IC503)
CS4X, CS5X: ARP&SERVO (IC302)

**2. Test mode menu is displayed, but operation stops when a menu is selected**

Using an oscilloscope, measure the PLCKO (⑨⑤ pin) of the ARP& SERVO (IC302) to check if it is fixed to "L" (0 V) or "H" (3.3 V). If fixed to "L" or "H", the ARP&SERVO (IC302) is faulty. If not fixed, check the items in 1-2. in order.

**3. Specific item failed in Diag All Check**

A mounting failure of IC or faulty IC for that item is doubtful.
If “1901NG” is displayed, a loose connection of CN801, mounting failure of AUDIO DSP (IC701), or faulty IC is doubtful.

**4. Picture and sound are not outputted**

Check the CN801 for connection, and the flat cable for damage or loose connection.

**5. Picture is outputted, but sound is not outputted**

A mounting failure of AUDIO DSP (IC801) or AUDIO DAC (IC802, IC803), power supply failure, or faulty IC is doubtful.

**6. Sound is outputted, but picture is not outputted**

Using an oscilloscope, measure the 63, 66, 69, 74, 77, and 80 pins of AVD (IC503) to check if analog signals are outputted respectively. If not outputted, a soldering failure of that line, a short with other line, missing capacitor or resistor, or faulty AVD is doubtful.

## 6-11-3. Drive Auto Adjustment stops by an error

Faulty analog circuits of ARP&SERVO (IC302) or faulty peripheral circuits of DIGITAL SERVO (IC202) on the MB-98 board, faulty optical pickup, or loose connection of flat cable is doubtful.

## 6-11-4. Power is Supplied but Unstable

If Syscon Diagnosis completed successfully, basically the boards other than MB-98 board, connection, optical pickup, or mechanical deck will be faulty.

**1. Red LED does not light when AC is supplied**

Check if the specified voltage is outputted from the EVER +5 V (7 pin) of CN201 in the power supply block. If not outputted, the power supply block will be faulty.

**2. At POWER button ON, LED does not light in green even once, but kept in red (standby state)**

Check if the specified voltage is outputted from the EVER +5 V (7 pin) of CN201 in the power supply block. If not outputted, the power supply block will be faulty.
When press the POWER button, check the P-CONT (4 pin) of CN401 on the IF-81 board if it becomes “H”. If not “H”, a soldering failure of that line, a short with other line, missing capacitor or resistor, faulty AVD (IC503), loose connection between power supply block and IF-81 board, loose connection of connectors, faulty power supply block, or faulty IF-81 board is doubtful.

**3. At POWER button ON, LED lights in green but returns to red (standby state) after several seconds (e.g. it returns to standby state after “SONY DVD” was displayed)**

There is no regularity between faulty parts and timing when the set returns to the standby state).
Check if the specified voltage is outputted from the power supply block. If not outputted, the power supply block will be faulty.
Check the XFRRST (9 pin) of CN101 on the MB-98 board if it is fixed to “L”, or the XIBUSY (10 pin), XIFCS (11 pin), SI0 (12 pin), SO0 (13 pin) and SC0 (14 pin) of CN101 if they are fixed to “L” or “H”.
If fixed to “L” or “H”, a soldering failure of that line, a short with other line, missing capacitor or resistor, or faulty SYSTEM CONTROL (IC103) is doubtful.
If not fixed to “L” or “H”, loose connection between power supply block and IF-81 board or between IF-81 board and MB-98 board, loose connection of connectors, or faulty IF-81 board is doubtful.

**4. At POWER button ON, LED lights in green but fluorescent display tube does not light**

Loose connection between power supply block and IF-81 board, loose connection of connectors, or faulty IF-81 board is doubtful.

**5. Picture and sound are not outputted**

Loose connection between power supply block and IF-81 board or between IF-81 and AV-57 board or between AV-57 board and MB-98 board, loose connection of connectors, or faulty AV-57 board is doubtful.

**6. Picture is out outputted correctly**

A mounting failure of BNR (IC601) on the MB-98 board, or faulty AVD (IC503) or ARP&SERVO (IC302), or faulty 27 MHz output (frequency, waveform) from 27-1OUT (3 pin) of PLL (IC102) is doubtful.

## 6-11-5. Power is not Supplied

**1. Red LED does not light when AC is supplied**

The power (EVER +5 V) is not supplied to the IF CON (IC404) on the IF-81 board.
The X401 does not oscillate.

**2. At POWER button ON, LED is kept in red (standby state)**

Any button has been pressed.
The voltage at PONCHK (30 pin) of the IF CON (IC404) on the IF-80 board exceeds 0.5 V.

**3. At POWER button ON, LED lights in green but returns to red (standby state) after several seconds**

The PONCHK (30 pin) of the IF CON (IC404) on the IF-81 board is abnormal (slow rising from 0.5 V to more than 1.5 V, or voltage not rising to more than 1.5 V).
The SYSTEM CONTROL (IC103) on the MB-98 board is faulty.

# SECTION 7
# ELECTRICAL ADJUSTMENT

**In making adjustment, refer to 7-3. Adjustment Related Parts Arrangement.**

**Note:** During diagnostic check, the characters and color bars can be seen only with the NTSC monitor. Therefore, for diagnostic check, use the monitor that supports both NTSC and PAL modes.
Use the reference disc for PAL for check, and use the reference disc for NTSC for adjustment.

This section describes procedures and instructions necessary for adjusting electrical circuits in this set.

**Instruments required:**

1) Color monitor TV
2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital voltmeter
5) Standard commander (RMT-D130A/D130O/D130P)
6) DVD reference disc
   HLX-501 (J-6090-071-A) (dual layer) (NTSC)
   HLX-503 (J-6090-069-A) (single layer) (NTSC)
   HLX-504 (J-6090-088-A) (single layer) (NTSC)
   HLX-505 (J-6090-089-A) (dual layer) (NTSC)
   HLX-506 (J-6090-077-A) (single layer) (PAL)
   HLX-507 (J-6090-078-A)(dual layer) (PAL)
7) SACD reference disc
   HLXA-509 (J-6090-090-A)
8) Extention Cable (J-6090-107-A)

## 7-1. POWER SUPPLY ADJUSTMENT

### 1. Power Supply Check (MPN4801/MPN4901 Boards)

| | |
|---|---|
| Mode | E-E |
| Instrument | Digital voltmeter |
| SW +3.3 V Check | |
| Test point | CN101 pin ⑧, ⑨ |
| Specification | 3.45 ± 0.2 Vdc |
| EVER +5 V Check | |
| Test point | CN101 pin ⑦ |
| Specification | 5.1 ± 0.2 Vdc |
| SW +5 V Check | |
| Test point | CN101 pin ⑤, ⑥ |
| Specification | 5.1 ± 0.2 Vdc |
| SW +11 V Check | |
| Test point | CN101 pin ③, ④ |
| Specification | 11.0 ± 1.0 Vdc |
| SW –11 V Check | |
| Test point | CN101 pin ⑭, ⑮ |
| Specification | –11.0 ± 1.0 Vdc |

**Checking method:**

1) Confirm that each voltage satisfies the specification.

### 2. +11 V Adjustment (MPN4801/MPN4901 Boards)

| | |
|---|---|
| Mode | PB |
| Measuring Instrument | Digital voltmeter |
| Measurement Point | CN101 pin ③, ④ |
| Adjusting Element | VR101 |
| Specified Value | 11.0 ± 1.0 V |

### 3. +5 V Adjustment (MPN4801/MPN4901 Boards)

| | |
|---|---|
| Mode | PB |
| Measuring Instrument | Digital voltmeter |
| Measurement Point | CN101 pin ⑦ |
| Adjusting Element | VR301 |
| Specified Value | 5.1 ± 0.2 V |

### 4. –11 V Adjustment (MPN4801/MPN4901 Boards)

| | |
|---|---|
| Mode | PB |
| Measuring Instrument | Digital voltmeter |
| Measurement Point | CN101 pin ⑭, ⑮ |
| Adjusting Element | VR401 |
| Specified Value | –11.0 ± 1.0 V |

## 7-2. ADJUSTMENT OF VIDEO SYSTEM

### 1. Video Level Adjustment (MB-98 Board)

**<Purpose>**

This adjustment is made to satisfy the NTSC/PAL standard, and if not adjusted correctly, the brightness will be too large or small.

| | |
|---|---|
| Mode | Video level adjustment in test mode |
| Signal | Color bars |
| Test point | LINE OUT (VIDEO) connector<br>(75 Ω terminated) |
| Instrument | Oscilloscope |
| Adjusting element | RV501 |
| Specification | $1.0^{+0.04}_{-0.02}$ Vp-p |

**Adjusting method:**

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Adjust the RV501 to attain $1.0^{+0.04}_{-0.02}$ Vp-p.

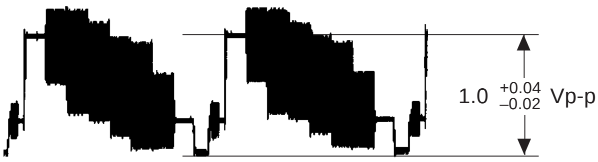



*Figure 7-1*

### 2. Checking S Video Output S-Y

**<Purpose>**

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

| | |
|---|---|
| Mode | Video level adjustment in test mode |
| Signal | Color bars |
| Test point | S VIDEO OUT (S-Y) connector<br>(75 Ω terminated) |
| Instrument | Oscilloscope |
| Specification | 1.0 ± 0.05 Vp-p |

**Checking method:**

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-Y level is 1.0 ± 0.05 Vp-p.


*Figure 7-2*

### 3. Checking S Video Output S-C

**<Purpose>**

This checks whether the S-C satisfies the NTSC/PAL Standard. If it is not correct, the colors will be too dark or light.

| | |
|---|---|
| Mode | Video level adjustment in test mode |
| Signal | Color bars |
| Test point | S VIDEO OUT (S-C) connector<br>(75 Ω terminated) |
| Instrument | Oscilloscope |
| Specification | A = 286 ± 30 mVp-p (NTSC)<br>A = 300 ± 100 mVp-p (PAL) |

**Checking method:**

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-C burst is “A”.

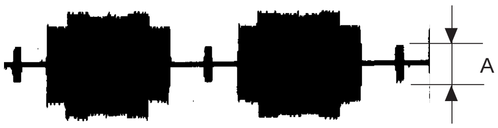



*Figure 7-3*

### 4. Checking Component Video Output Y (US, Canadian, Australian, PX Model)

**<Purpose>**

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

| | |
|---|---|
| Mode | Video level adjustment in test mode |
| Signal | Color bars |
| Test point | COMPONENT VIDEO OUT (Y)<br>connector (75 Ω terminated) |
| Instrument | Oscilloscope |
| Specification | 1.0 ± 0.05 Vp-p |

**Checking method:**

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the Y level is 1.0 ± 0.05 Vp-p.

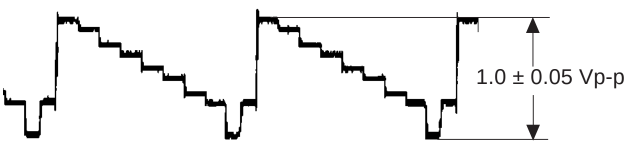



*Figure 7-4*

### 5. Checking Component Video Output B-Y (US, Canadian, Australian, PX Model)

**<Purpose>**

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

| | |
|---|---|
| Mode | Video level adjustment in test mode |
| Signal | Color bars |
| Test point | COMPONENT VIDEO OUT ($P_B$) connector (75 Ω terminated) |
| Instrument | Oscilloscope |
| Specification | 700 ± 50 mVp-p |

**Checking method:**

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the B-Y level is 700 ± 50 mVp-p.

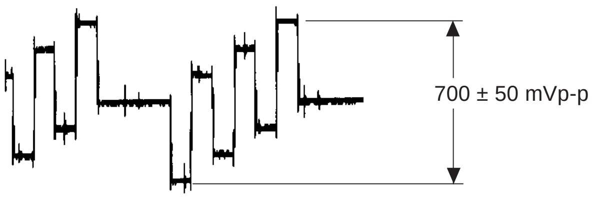



*Figure 7-5*

### 6. Checking Component Video Output R-Y (US, Canadian, Australian, PX Model)

**<Purpose>**

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

| | |
|---|---|
| Mode | Video level adjustment in test mode |
| Signal | Color bars |
| Test point | COMPONENT VIDEO OUT ($P_R$) connector (75 Ω terminated) |
| Instrument | Oscilloscope |
| Specification | 700 ± 50 mVp-p |

**Checking method:**

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the R-Y level is 700 ± 50 mVp-p.

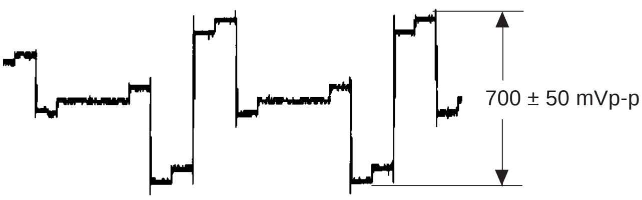



*Figure 7-6*

### 7. Checking RGB Output R (AEP, UK Model)

**<Purpose>**

This checks RGB output R. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

| | |
|---|---|
| Mode | In test mode, Push [0] for Syscon Diagnosis and push [7] for Video and push [5] for RGB out |
| Signal | Color bars |
| Test point | LINE 1 (RGB)-TV connector pin ⑮ (75 Ω terminated) |
| Instrument | Oscilloscope |
| Specification | 700 ± 50 mVp-p |

**Checking method:**

1) Confirm that the R level is 700 ± 50 mVp-p.

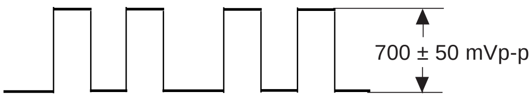



*Figure 7-7*

### 8. Checking RGB Output G (AEP, UK Model)

**<Purpose>**

This checks RGB output G. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

| | |
|---|---|
| Mode | In test mode, Push [0] for Syscon Diagnosis and push [7] for Video and push [5] for RGB out |
| Signal | Color bars |
| Test point | LINE 1 (RGB)-TV connector pin ⑪ (75 Ω terminated) |
| Instrument | Oscilloscope |
| Specification | 700 ± 50 mVp-p |

**Checking method:**

1) Confirm that the G level is 700 ± 50 mVp-p.

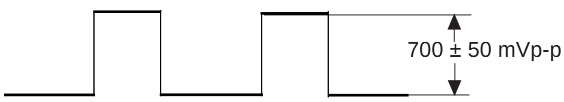



*Figure 7-8*

## 9. Checking RGB Output B (AEP, UK Model)

**<Purpose>**

This checks RGB output B. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

| | |
|---|---|
| Mode | In test mode,<br>Push [0] for Syscon Diagnosis and push [7] for Video and push [5] for RGB out |
| Signal | Color bars |
| Test point | LINE 1 (RGB)-TV connector pin ⑦ (75 Ω terminated) |
| Instrument | Oscilloscope |
| Specification | 700 ± 50 mVp-p |

**Checking method:**

1) Confirm that the B level is 700 ± 50 mVp-p.

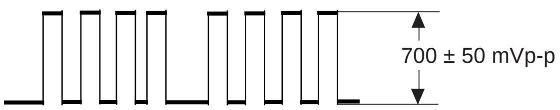
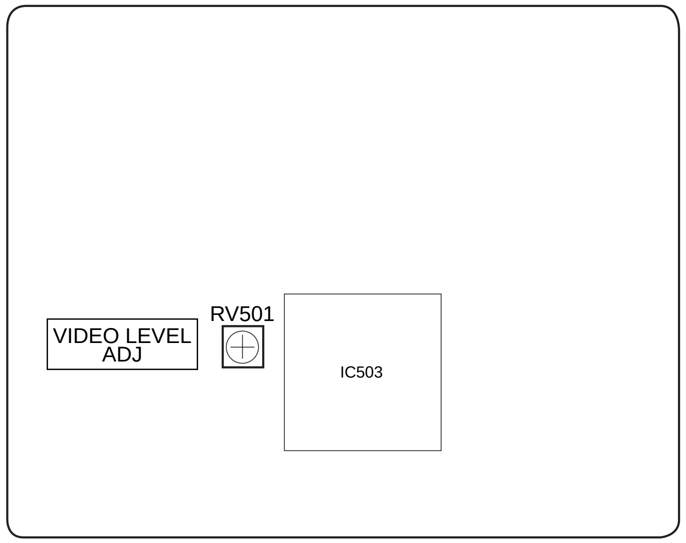


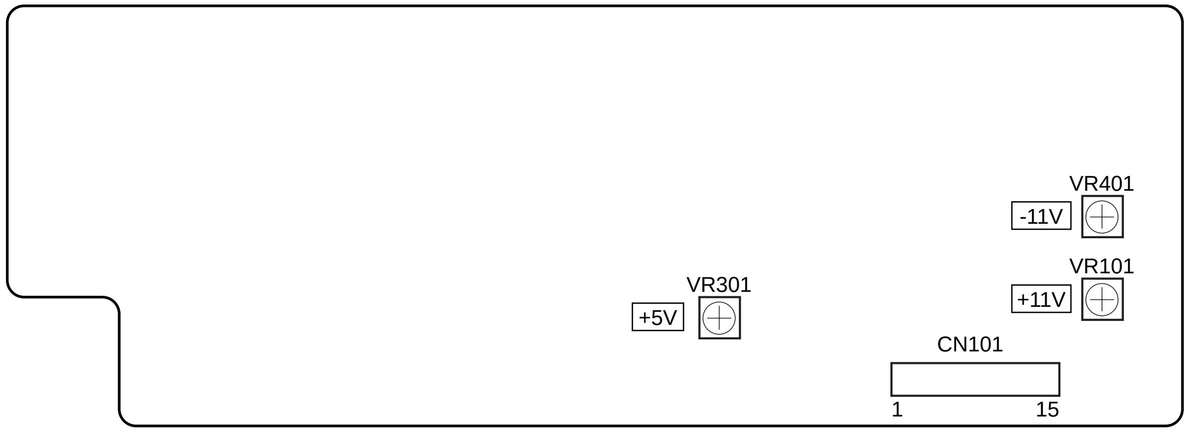

*Figure 7-9*

## 7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

### MB-98 BOARD (SIDE A)




### MPN4801/MPN4901 BOARDS (SIDE A)



# SECTION 8
# REPAIR PARTS LIST

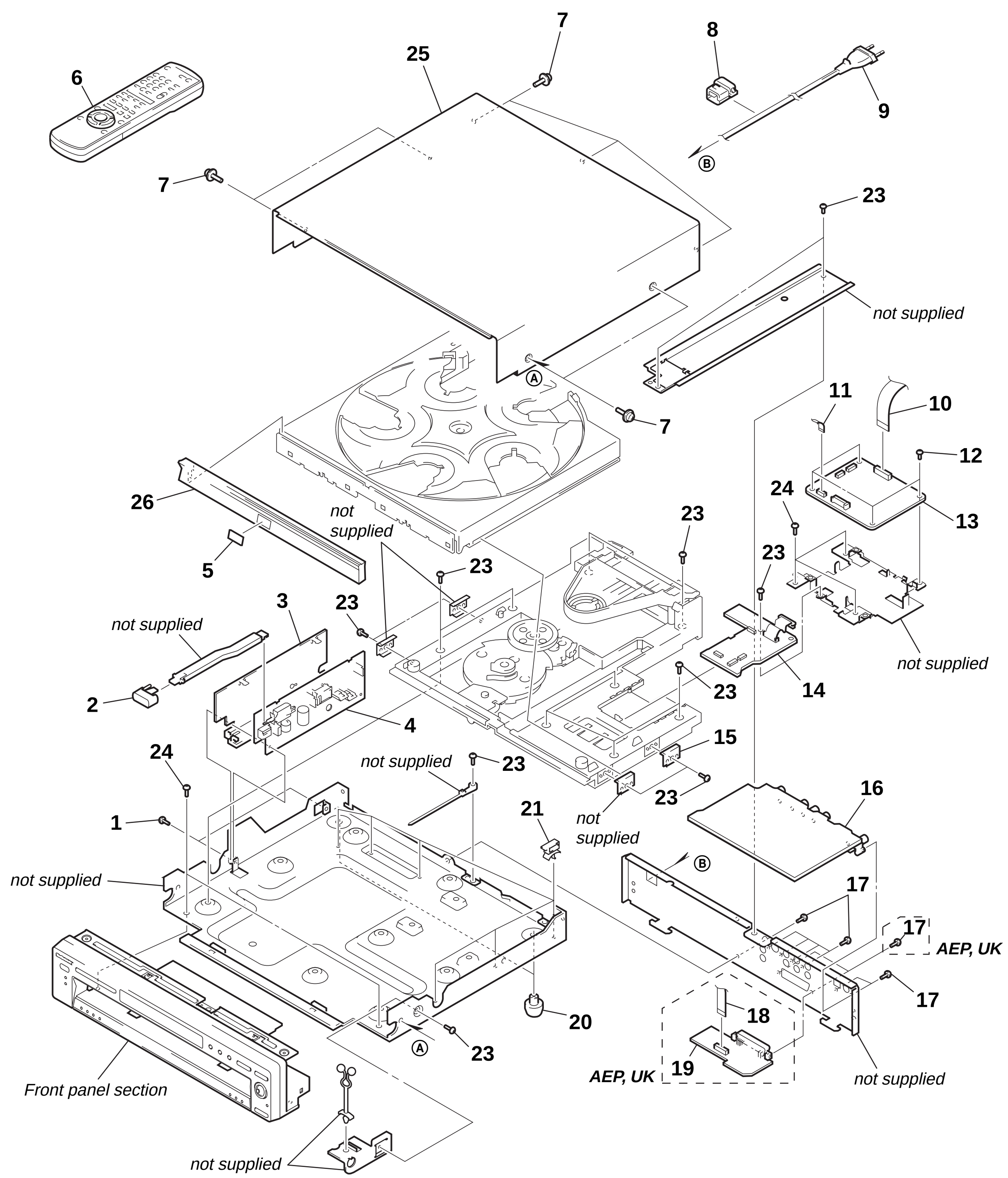
## 8-1. EXPLODED VIEWS

NOTE:
- -XX and -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 (WHITE) . . . (RED)
  ↑ Parts Color ↑ Cabinet's Color
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.
- Abbreviation
  AUS: Australian
  CND: Canadian

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

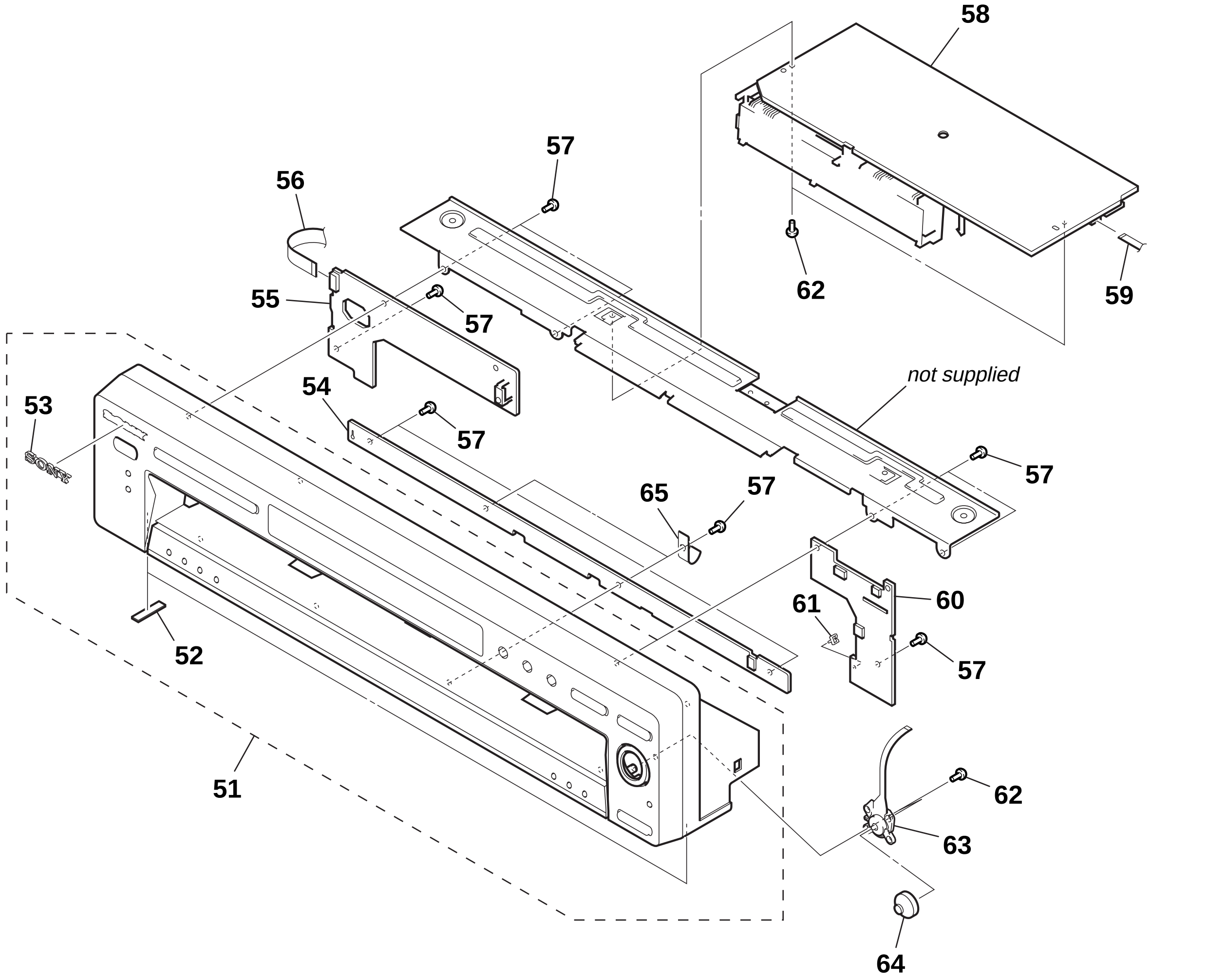
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

### 8-1-1. MAIN ASSEMBLY




| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | 3-062-340-01 | +BV SUMITITE B3 EXT W (3X8) | |
| 2 | 3-067-232-11 | BUTTON (POWER) (BLACK) | |
| 2 | 3-067-232-21 | BUTTON (POWER) (GREY) | |
| 3 | 3-061-954-01 | COVER, PWB | |
| * 4 | 1-468-590-11 | POWER BLOCK (MPN4901) | (AEP, UK, AUS, PX) |
| * 4 | 1-468-591-11 | POWER BLOCK (MPN4801) (US, CND) | |
| 5 | 3-067-237-01 | EMBLEM (V), DVD (BLACK) | |
| 5 | 3-067-237-11 | EMBLEM (V), DVD (GREY) | |
| 6 | 1-476-604-21 | COMMANDER, STANDARD (RMT-D130A) | (US, CND, PX) |
| 6 | 1-476-605-41 | COMMANDER, STANDARD (RMT-D130P) | (AEP, UK) |
| 6 | 1-476-605-51 | COMMANDER, STANDARD (RMT-D130O) | (AUS) |
| 7 | 3-710-901-41 | SCREW, TAPPING (BLACK) | |
| 7 | 3-710-901-61 | SCREW, TAPPING (GREY) | |
| 8 | 4-966-267-12 | BUSHING (FBS001), CORD | |
| ⚠9 | 1-769-744-91 | CORD, POWER (AEP, UK, PX) | |
| ⚠9 | 1-783-531-31 | CORD, POWER (US, CND) | |
| ⚠9 | 1-790-588-11 | CORD, POWER (AUS) | |
| 10 | 1-757-749-11 | CABLE, FLEXIBLE FLAT (FAM-008) | |
| 11 | 1-757-750-11 | CABLE, FLEXIBLE FLAT (FCM-014) | |
| 12 | 3-055-791-01 | SUMITITE (B3) (RING), +BV | |
| * 13 | A-6065-678-A | MB-98 BOARD, COMPLETE (US, CND, PX) | |
| * 13 | A-6065-685-A | MB-98 BOARD, COMPLETE (AEP, UK) | |
| * 13 | A-6065-692-A | MB-98 BOARD, COMPLETE (AUS) | |
| * 14 | A-6065-680-A | CN-142 BOARD, COMPLETE | (US, CND, AUS, PX) |
| * 14 | A-6065-687-A | CN-142 BOARD, COMPLETE (AEP, UK) | |
| 15 | 4-957-280-31 | BRACKET (GUIDE B1) | |
| * 16 | A-6065-679-A | AV-57 BOARD, COMPLETE | (US, CND, AUS, PX) |
| * 16 | A-6065-686-A | AV-57 BOARD, COMPLETE (AEP, UK) | |
| 17 | 3-970-608-51 | SUMITITE (B3), +BV | |
| 18 | 1-757-748-11 | CABLE, FLEXIBLE FLAT (FAE-006) (AEP, UK) | |
| * 19 | A-6065-682-A | ER-16 BOARD, COMPLETE (AEP, UK) | |
| 20 | 3-957-819-01 | FOOT | |
| 21 | 4-215-927-01 | CLAMP | |
| 23 | 3-970-608-11 | SUMITITE (B3), +BV | |
| 24 | 3-970-608-01 | SUMITITE (B3), +BV | |
| 25 | 3-070-697-01 | CASE, UPPER (BLACK) | |
| 25 | 3-070-697-11 | CASE, UPPER (GREY) | |
| 26 | 3-066-134-01 | COVER, TRAY (BLACK) | |
| 26 | 3-066-134-11 | COVER, TRAY (GREY) | |

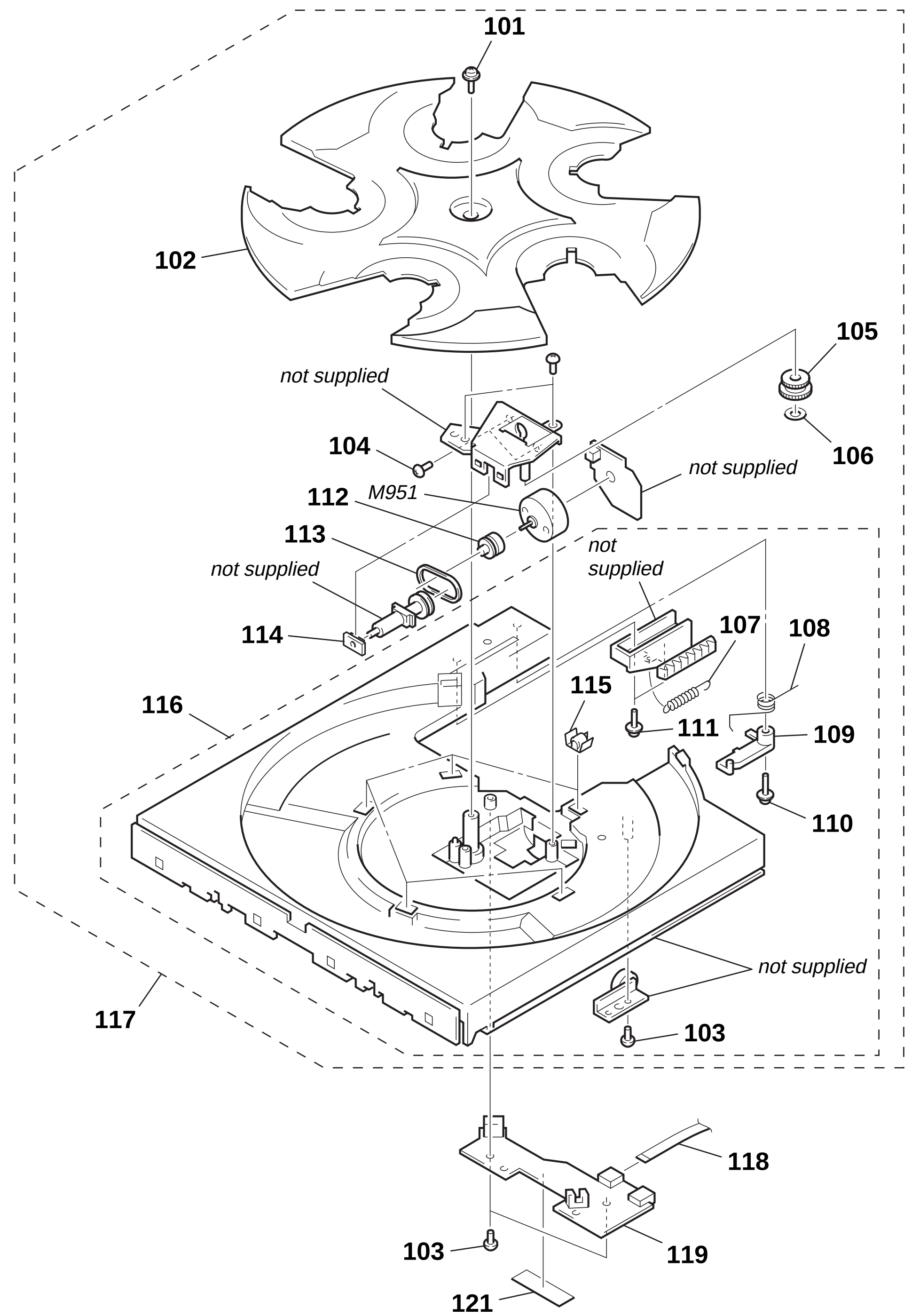
## 8-1-2. FRONT PANEL ASSEMBLY




| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 51 | X-3951-416-1 | FRONT PANEL ASSY (BLACK) | |
| 51 | X-3951-417-1 | FRONT PANEL ASSY (GREY) | |
| 52 | 3-059-349-11 | LEG CUSHION | |
| 53 | 3-943-995-01 | EMBLEM (NO.5), SONY (BLACK) | |
| 53 | 3-943-995-31 | EMBLEM (NO.5), SONY (GREY) | |
| * 54 | A-6065-675-A | SW-353 BOARD, COMPLETE (US, CND, AUS, PX) | |
| * 54 | A-6065-691-A | SW-353 BOARD, COMPLETE (AEP, UK) | |
| * 55 | A-6065-674-A | FR-178 BOARD, COMPLETE (US, CND, AUS, PX) | |
| * 55 | A-6065-690-A | FR-178 BOARD, COMPLETE (AEP, UK) | |
| 56 | 1-757-753-11 | CABLE, FLEXIBLE FLAT (FIR-001) | |
| 57 | 4-951-620-01 | SCREW (2.6X8), +BVTP | |
| * 58 | A-6065-681-A | IF-81 BOARD, COMPLETE (US, CND, AUS, PX) | |
| * 58 | A-6065-688-A | IF-81 BOARD, COMPLETE (AEP, UK) | |
| 59 | 1-757-752-11 | CABLE, FLEXIBLE FLAT (FIF-001) | |
| * 60 | A-6065-673-A | FL-119 BOARD, COMPLETE (US, CND, AUS, PX) | |
| * 60 | A-6065-689-A | FL-119 BOARD, COMPLETE (AEP, UK) | |
| * 61 | 3-742-419-01 | CLAMP, HARNESS | |
| 62 | 3-970-608-11 | SUMITITE (B3), +BV | |
| 63 | 1-786-131-11 | SWITCH, TACTILE | |
| 64 | 3-067-238-11 | CURSOR STICK (BLACK) | |
| 64 | 3-067-238-21 | CURSOR STICK (GREY) | |
| 65 | 3-067-741-01 | LEAF SPRING (GROUND), BOTTOM | |

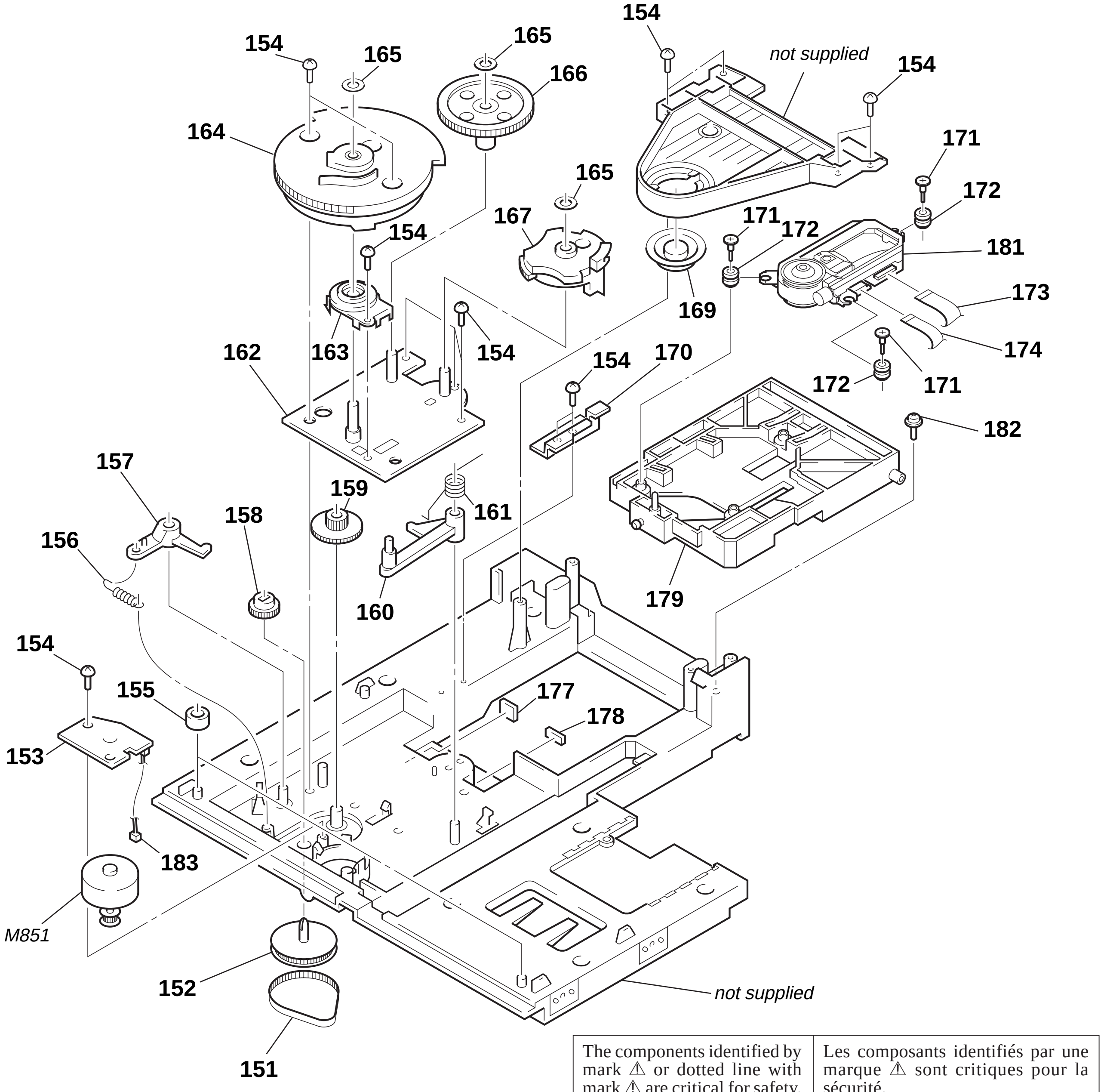


## 8-1-3. TABLE ASSEMBLY




| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 101 | 7-685-648-79 | SCREW (M3X12), TAPPING | |
| 102 | 3-062-119-03 | TABLE (ROTARY) | |
| 103 | 3-970-608-11 | SUMITITE (B3), +BV | |
| 104 | 7-621-773-93 | SCREW +B 2.6X3 | |
| 105 | 3-051-063-01 | GEAR (DRIVE) | |
| 106 | 3-325-697-21 | WASHER | |
| 107 | 4-957-294-11 | SPRING (D.T), TENSION | |
| 108 | 3-069-092-01 | SPRING (RACK DISENGAGEMENT) | |
| 109 | 4-957-291-11 | LEVER (RACK RELEASE) | |
| 110 | 4-957-868-11 | SCREW (+PTPWH 2.6X20) | |
| 111 | 3-066-708-01 | SCREW (+PTPWH 2.6X10) | |
| 112 | 3-051-061-01 | PULLEY (MOTOR) | |
| 113 | 3-051-076-01 | BELT (RM) | |
| * 114 | 4-957-278-01 | BEARING (ROTARY A) | |
| 115 | X-4947-960-1 | ROLLER ASSY | |
| 116 | A-6062-390-D | TABLE (LOADING) ASSY | |
| 117 | A-6062-388-D | TABLE ASSY | |
| 118 | 1-757-751-11 | CABLE, FLEXIBLE FLAT (FCS-005) | |
| * 119 | A-6065-676-A | SE-122 BOARD, COMPLETE (US, CND, AUS, PX) | |
| * 119 | A-6065-683-A | SE-122 BOARD, COMPLETE (AEP, UK) | |
| 121 | 3-941-343-21 | TAPE (A) | |
| M951 | 1-541-632-11 | MOTOR, DC (TURN TABLE) | |

## 8-1-4. CHASSIS ASSEMBLY




| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié. |
|---|---|

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 151 | 4-944-490-01 | BELT (TIMING) | |
| 152 | X-3951-493-1 | ASSY, PULLEY | |
| * 153 | A-6065-677-A | LM-63 BOARD, COMPLETE (US, CND, AUS, PX) | |
| * 153 | A-6065-684-A | LM-63 BOARD, COMPLETE (AEP, UK) | |
| 154 | 3-970-608-11 | SUMITITE (B3), +BV | |
| * 155 | 4-951-619-01 | CUSHION (A) | |
| 156 | 4-962-087-01 | SPRING (S), TENSION | |
| 157 | 3-061-963-01 | LEVER, SET | |
| 158 | 4-934-375-01 | GEAR (LOADING B) | |
| 159 | 4-957-303-01 | GEAR (LOADING C) | |
| 160 | 3-061-962-01 | LEVER, LOCK | |
| 161 | 4-957-281-11 | SPRING (LOCK LEVER) | |
| 162 | X-3950-723-1 | BRACKET (GEAR) ASSY | |
| 163 | 1-466-996-21 | ENCODER, ROTARY (LOADING) | |
| 164 | 4-957-288-01 | GEAR (MAIN) | |
| 165 | 4-957-283-11 | WASHER (5), STOPPER | |
| 166 | 4-957-287-01 | GEAR (REV) | |
| 167 | 4-957-286-11 | GEAR (U/D) | |
| 169 | 3-056-532-11 | PULLEY, CHUCKING | |
| 170 | 3-051-082-01 | STOPPER (BU) | |
| 171 | 4-981-923-01 | SCREW (M), STEP | |
| 172 | 3-053-847-11 | INSULATOR | |
| 173 | 1-757-754-11 | CABLE, FLEXIBLE FLAT (FMM-036) | |
| 174 | 1-757-755-11 | CABLE, FLEXIBLE FLAT (FMD-025) | |
| * 177 | 4-981-731-01 | CUSHION (U/D) | |
| * 178 | 4-981-731-11 | CUSHION (U/D) | |
| 179 | 3-066-138-01 | HOLDER, BU | |
| ⚠181 | 8-820-144-06 | OPTICAL PICK-UP KHM-240AAA/J1RP | |
| 182 | 7-685-648-79 | SCREW (M3X12), TAPPING | |
| 183 | 1-961-112-11 | HARNESS, BOARD IN (LE-054) | |
| M851 | A-4660-977-A | MOTOR ASSY, LOADING | |

## 8-2. ELECTRICAL PARTS LIST

NOTE:
- 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.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Not all of the parts for POWER BLOCK (MPN4801, MPN4901) are listed.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH
- Abbreviation
  AUS: Australian
  CND: Canadian

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

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

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

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | A-6065-679-A | AV-57 BOARD, COMPLETE (US, CND, AUS, PX) | | | |
| * | A-6065-686-A | AV-57 BOARD, COMPLETE (AEP, UK) | | | |
| | | ********************** | | | |
| | | (Ref.No.: 1,000 Series) | | | |
| | | < CAPACITOR > | | | |
| C101 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C102 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C103 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C104 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C105 | 1-165-176-11 | CERAMIC CHIP | 0.047uF | 10% | 16V |
| C106 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C107 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C108 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C111 | 1-104-664-11 | ELECT | 47uF | 20% | 16V (AEP, UK) |
| C112 | 1-104-664-11 | ELECT | 47uF | 20% | 16V (AEP, UK) |
| C113 | 1-104-664-11 | ELECT | 47uF | 20% | 16V (AEP, UK) |
| C115 | 1-104-664-11 | ELECT | 47uF | 20% | 16V (AEP, UK) |
| C116 | 1-104-664-11 | ELECT | 47uF | 20% | 16V (AEP, UK) |
| C203 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C204 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C205 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C207 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C208 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C209 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C210 | 1-164-739-11 | CERAMIC CHIP | 560PF | 5% | 50V |
| C211 | 1-164-739-11 | CERAMIC CHIP | 560PF | 5% | 50V |
| C212 | 1-164-218-11 | CERAMIC CHIP | 180PF | 0.25PF | 50V |
| C213 | 1-164-218-11 | CERAMIC CHIP | 180PF | 0.25PF | 50V |
| C214 | 1-164-218-11 | CERAMIC CHIP | 180PF | 0.25PF | 50V |
| C215 | 1-164-218-11 | CERAMIC CHIP | 180PF | 0.25PF | 50V |
| C216 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C217 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C218 | 1-126-934-11 | ELECT | 220uF | 20% | 16V |
| C219 | 1-126-960-11 | ELECT | 1uF | 20% | 50V |
| C220 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C221 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C222 | 1-126-960-11 | ELECT | 1uF | 20% | 50V (AEP, UK) |
| C225 | 1-164-230-11 | CERAMIC CHIP | 220PF | 5% | 50V |
| C228 | 1-164-230-11 | CERAMIC CHIP | 220PF | 5% | 50V |
| C235 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C236 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C237 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C238 | 1-126-933-11 | ELECT | 100uF | 20% | 16V |
| C239 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C240 | 1-126-933-11 | ELECT | 100uF | 20% | 16V |
| C241 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C242 | 1-126-934-11 | ELECT | 220uF | 20% | 16V |
| C243 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C244 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C245 | 1-126-933-11 | ELECT | 100uF | 20% | 16V |
| C246 | 1-126-933-11 | ELECT | 100uF | 20% | 16V |
| | | < CONNECTOR > | | | |
| CN101 | 1-815-149-11 | CONNECTOR, FPC/FFC (1mm PIC) 21P | | | (AEP, UK) |
| CN201 | 1-815-390-11 | CONNECTOR, FFC/FPC 25P | | | |
| CN202 | 1-506-472-11 | PIN, CONNECTOR 7P | | | |
| * CN203 | 1-506-475-11 | PIN, CONNECTOR 10P | | | |
| CN204 | 1-506-480-11 | PIN, CONNECTOR 15P | | | |
| | | < DIODE > | | | |
| D101 | 8-719-071-15 | DIODE HZM6.8ZWA1TL | | | |
| D102 | 8-719-071-15 | DIODE HZM6.8ZWA1TL | | | |
| D201 | 8-719-914-43 | DIODE DAN202K-T-146 | | | |
| D202 | 8-719-914-44 | DIODE DAP202K-T-146 | | | |
| D203 | 8-719-914-44 | DIODE DAP202K-T-146 (AEP, UK) | | | |
| | | < FERRITE BEAD > | | | |
| FB201 | 1-469-324-21 | FERRITE | 0uH | | |
| FB202 | 1-469-324-21 | FERRITE | 0uH | | |
| FB203 | 1-469-324-21 | FERRITE | 0uH | | |
| FB204 | 1-469-324-21 | FERRITE | 0uH | | |
| FB205 | 1-469-324-21 | FERRITE | 0uH | | |
| FB206 | 1-469-324-21 | FERRITE | 0uH | | |
| | | < IC > | | | |
| IC101 | 8-759-667-17 | IC L79M05TLL-SONY-TL | | | |
| IC102 | 8-759-826-45 | IC LA73050-TLM (US, CND, AUS, PX) | | | |
| IC102 | 8-759-826-46 | IC LA73051-TLM (AEP, UK) | | | |
| IC201 | 8-749-017-31 | IC GP1FA550TZ (DIGITAL OUT-OPTICAL) | | | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| IC202 | 8-759-711-59 | IC NJM78L05UA-TE1 | | | | |
| IC203 | 8-759-909-71 | IC BA4558F-E2 | | | | |
| | | < JACK > | | | | |
| J101 | 1-815-359-11 | JACK, PIN (3P) (LINE OUT) (AEP, UK) | | | | |
| J101 | 1-815-363-11 | JACK, PIN (6P) (LINE OUT) | | | | (US, CND, AUS, PX) |
| J102 | 1-815-361-11 | JACK, PIN 3P (COMPONENT VIDEO OUT) | | | | (US, CND, AUS, PX) |
| J103 | 1-815-424-11 | TERMINAL, S (1P) (S VIDEO OUT) | | | | |
| J201 | 1-793-446-21 | JACK, PIN 1P (DIGITAL OUT-COAXIAL) | | | | |
| | | < JUMPER RESISTOR > | | | | |
| JR101 | 1-216-295-11 | SHORT | 0 | | | |
| JR103 | 1-216-295-11 | SHORT | 0 | | | |
| JR104 | 1-216-295-11 | SHORT | 0 | | | |
| JR105 | 1-216-295-11 | SHORT | 0 | | | |
| JR106 | 1-216-295-11 | SHORT | 0 | | | |
| JR107 | 1-216-295-11 | SHORT | 0 | | | |
| JR108 | 1-216-295-11 | SHORT | 0 | | | |
| JR109 | 1-216-295-11 | SHORT | 0 | | | |
| | | < COIL > | | | | |
| L101 | 1-412-064-11 | INDUCTOR | 100uH | | | |
| L201 | 1-414-183-41 | INDUCTOR | 10uH | | | |
| L202 | 1-414-183-41 | INDUCTOR | 10uH | | | |
| | | < IC LINK > | | | | |
| ⚠PS201 | 1-576-509-21 | RINK, IC (1.0A) | | | | |
| ⚠PS202 | 1-576-509-21 | RINK, IC (1.0A) | | | | |
| | | < TRANSISTOR > | | | | |
| Q104 | 8-729-421-19 | TRANSISTOR | UN2213-TX | | | |
| Q105 | 8-729-424-08 | TRANSISTOR | UN2111-TX | | | |
| Q106 | 8-729-216-22 | TRANSISTOR | 2SA1162-YG-TE85L | | | (AEP, UK) |
| Q201 | 8-729-230-49 | TRANSISTOR | 2SC2712-YG-TE85L | | | |
| Q202 | 8-729-421-19 | TRANSISTOR | UN2213-TX | | | |
| Q203 | 8-729-027-53 | TRANSISTOR | DTC124TKA-T146 | | | |
| Q204 | 8-729-216-22 | TRANSISTOR | 2SB709A-QRS-TX | | | |
| Q205 | 8-729-421-19 | TRANSISTOR | UN2213-TX (AEP, UK) | | | |
| Q206 | 8-729-046-97 | TRANSISTOR | 2SD1938 (F)-T (TX).SO | | | |
| Q207 | 8-729-046-97 | TRANSISTOR | 2SD1938 (F)-T (TX).SO | | | |
| Q208 | 8-729-027-53 | TRANSISTOR | DTC124TKA-T146 (AEP, UK) | | | |
| Q209 | 8-729-216-22 | TRANSISTOR | 2SB709A-QRS-TX (AEP, UK) | | | |
| | | < RESISTOR > | | | | |
| R101 | 1-216-295-11 | SHORT | 0 | | | |
| R102 | 1-216-295-11 | SHORT | 0 | | | |
| R103 | 1-216-295-11 | SHORT | 0 | | | |
| R107 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R108 | 1-216-049-11 | RES-CHIP | 1K | 5% | 1/10W | (AEP, UK) |
| R113 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R114 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | (US, CND, AUS, PX) |
| R115 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | |
| R116 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R117 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | |
| R118 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | (US, CND, AUS, PX) |
| R119 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | (US, CND, AUS, PX) |
| R120 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | (US, CND, AUS, PX) |
| R121 | 1-216-295-11 | SHORT | 0 (US, CND, AUS, PX) | | | |
| R122 | 1-216-295-11 | SHORT | 0 | | | |
| R123 | 1-216-295-11 | SHORT | 0 | | | |
| R124 | 1-216-295-11 | SHORT | 0 | | | |
| R125 | 1-216-295-11 | SHORT | 0 (US, CND, AUS, PX) | | | |
| R126 | 1-216-295-11 | SHORT | 0 (US, CND, AUS, PX) | | | |
| R127 | 1-216-295-11 | SHORT | 0 (US, CND, AUS, PX) | | | |
| R201 | 1-216-295-11 | SHORT | 0 | | | |
| R202 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R203 | 1-216-295-11 | SHORT | 0 | | | |
| R204 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | |
| R205 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R206 | 1-216-049-11 | RES-CHIP | 1K | 5% | 1/10W | |
| R207 | 1-216-049-11 | RES-CHIP | 1K | 5% | 1/10W | |
| R208 | 1-216-049-11 | RES-CHIP | 1K | 5% | 1/10W | |
| R210 | 1-216-295-11 | SHORT | 0 | | | |
| R212 | 1-216-295-11 | SHORT | 0 | | | |
| R213 | 1-208-798-11 | METAL CHIP | 4.7K | 0.5% | 1/10W | |
| R214 | 1-208-798-11 | METAL CHIP | 4.7K | 0.5% | 1/10W | |
| R215 | 1-208-798-11 | METAL CHIP | 4.7K | 0.5% | 1/10W | |
| R216 | 1-208-798-11 | METAL CHIP | 4.7K | 0.5% | 1/10W | |
| R217 | 1-208-800-11 | METAL CHIP | 5.6K | 0.5% | 1/10W | |
| R218 | 1-208-800-11 | METAL CHIP | 5.6K | 0.5% | 1/10W | |
| R219 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R220 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R221 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R222 | 1-216-065-91 | RES-CHIP | 4.7K | 5% | 1/10W | |
| R223 | 1-216-065-91 | RES-CHIP | 4.7K | 5% | 1/10W | (AEP, UK) |
| R224 | 1-208-800-11 | METAL CHIP | 5.6K | 0.5% | 1/10W | |
| R225 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R226 | 1-208-800-11 | METAL CHIP | 5.6K | 0.5% | 1/10W | |
| R227 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R228 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R229 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W | |
| R230 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R231 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R232 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R233 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W | |
| R234 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W | |
| R235 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | (AEP, UK) |
| R236 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | (AEP, UK) |
| R237 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W | (AEP, UK) |
| R238 | 1-216-065-91 | RES-CHIP | 4.7K | 5% | 1/10W | (US, CND, AUS, PX) |
| R239 | 1-216-065-91 | RES-CHIP | 4.7K | 5% | 1/10W | |
| R240 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | (AEP, UK) |

| | |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R241 | 1-216-065-91 | RES-CHIP | 4.7K | 5% | 1/10W (AEP, UK) |
| R242 | 1-216-097-11 | RES-CHIP | 100K | 5% | 1/10W |
| R243 | 1-216-097-11 | RES-CHIP | 100K | 5% | 1/10W (AEP, UK) |
| R244 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W (US, CND, AUS, PX) |
| R245 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R246 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W (US, CND, AUS, PX) |
| R247 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R252 | 1-216-295-11 | SHORT | 0 (US, CND, AUS, PX) | | |
| R253 | 1-216-295-11 | SHORT | 0 | | |
| R254 | 1-216-295-11 | SHORT | 0 (US, CND, AUS, PX) | | |
| R255 | 1-216-295-11 | SHORT | 0 | | |
| R256 | 1-216-295-11 | SHORT | 0 | | |
| R260 | 1-216-295-11 | SHORT | 0 | | |
| R261 | 1-216-295-11 | SHORT | 0 | | |
| R262 | 1-216-295-11 | SHORT | 0 | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | A-6065-680-A | CN-142 BOARD, COMPLETE | | | (US, CND, AUS, PX) |
| * | A-6065-687-A | CN-142 BOARD, COMPLETE (AEP, UK) | | | |
| | | ************************ | | | |
| | | | | | (Ref.No.: 1,000 Series) |
| | | < CAPACITOR > | | | |
| C301 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C302 | 1-124-234-00 | ELECT | 22uF | 20% | 16V |
| C303 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C304 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C305 | 1-124-248-00 | ELECT | 22uF | 20% | 35V |
| C307 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C308 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C309 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C310 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| | | < CONNECTOR > | | | |
| CN301 | 1-794-196-11 | CONNECTOR, FFC/FPC 11P | | | |
| CN302 | 1-815-458-21 | CONNECTOR, BOARD TO BOARD 15P | | | |
| CN303 | 1-506-487-11 | PIN, CONNECTOR 8P | | | |
| CN304 | 1-506-485-11 | PIN, CONNECTOR 6P | | | |
| CN305 | 1-506-486-11 | PIN, CONNECTOR 7P | | | |
| CN306 | 1-785-694-11 | CONNECTOR, FFC/FPC 7P | | | |
| | | < DIODE > | | | |
| D301 | 8-719-069-54 | DIODE UDZSTE-175.1B | | | |
| | | < EARTH TERMINAL > | | | |
| * ET301 | 1-537-738-21 | TERMINAL, EARTH | | | |
| | | < FERRITE BEAD > | | | |
| FB301 | 1-216-295-11 | SHORT | 0 | | |
| FB302 | 1-216-295-11 | SHORT | 0 | | |
| FB303 | 1-216-295-11 | SHORT | 0 | | |
| FB304 | 1-216-295-11 | SHORT | 0 | | |
| FB309 | 1-216-295-11 | SHORT | 0 | | |
| FB311 | 1-469-324-21 | FERRITE | 0uH | | |
| FB312 | 1-469-324-21 | FERRITE | 0uH | | |
| FB313 | 1-469-324-21 | FERRITE | 0uH | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | < IC > | | | |
| IC301 | 8-759-832-05 | IC BA18BC0FP-E2 | | | |
| IC303 | 8-759-598-69 | IC BA6956AN | | | |
| | | < TRANSISTOR > | | | |
| Q301 | 8-729-026-49 | TRANSISTOR | 2SA1037AK-T146-QR | | |
| | | < RESISTOR > | | | |
| R311 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R312 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R313 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R315 | 1-216-295-11 | SHORT | 0 | | |
| R316 | 1-216-025-11 | RES-CHIP | 100 | 5% | 1/10W |
| R318 | 1-216-295-11 | SHORT | 0 | | |
| R319 | 1-216-025-11 | RES-CHIP | 100 | 5% | 1/10W |
| R320 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | A-6065-682-A | ER-16 BOARD, COMPLETE (AEP, UK) | | | |
| | | ********************** | | | |
| | | | | | (Ref.No.: 1,000 Series) |
| | | < CAPACITOR > | | | |
| C903 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C905 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C907 | 1-104-664-11 | ELECT | 47uF | 20% | 16V |
| C913 | 1-127-715-91 | CERAMIC CHIP | 0.22uF | 10% | 16V |
| C914 | 1-127-715-91 | CERAMIC CHIP | 0.22uF | 10% | 16V |
| C943 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C945 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C962 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C963 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C973 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| | | < CONNECTOR > | | | |
| CN901 | 1-815-149-11 | CONNECTOR, FPC/FFC (1mm PIC) 21P | | | |
| | | < JACK > | | | |
| CNJ902 | 1-251-780-11 | SOCKET, PIN (21P) (LINE 1 (RGB)-TV) | | | |
| | | < DIODE > | | | |
| D901 | 8-719-988-61 | DIODE 1SS355TE-17 | | | |
| D907 | 8-719-914-44 | DIODE DAP202K-T-146 | | | |
| D917 | 8-719-071-15 | DIODE HZM6.8ZWA1TL | | | |
| D918 | 8-719-071-15 | DIODE HZM6.8ZWA1TL | | | |
| D919 | 8-719-071-15 | DIODE HZM6.8ZWA1TL | | | |
| D920 | 8-719-071-15 | DIODE HZM6.8ZWA1TL | | | |
| D929 | 8-719-056-82 | DIODE UDZ-TE-17-6.2B | | | |
| D930 | 8-719-977-40 | DIODE UDZ-TE-17-13B | | | |
| | | < FERRITE BEAD > | | | |
| FB907 | 1-414-553-11 | FERRITE | 0uH | | |
| FB908 | 1-414-553-11 | FERRITE | 0uH | | |
| FB909 | 1-414-553-11 | FERRITE | 0uH | | |
| FB910 | 1-414-553-11 | FERRITE | 0uH | | |
| FB911 | 1-414-233-22 | FERRITE | 0uH | | |
| FB912 | 1-414-233-22 | FERRITE | 0uH | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | < IC > | | | |
| IC901 | 8-759-826-47 | IC LA73052-TLM | | | |
| | | < JUMPER RESISTOR > | | | |
| JR901 | 1-216-295-11 | SHORT | 0 | | |
| JR902 | 1-216-295-11 | SHORT | 0 | | |
| JR903 | 1-216-295-11 | SHORT | 0 | | |
| JR904 | 1-216-295-11 | SHORT | 0 | | |
| JR905 | 1-216-295-11 | SHORT | 0 | | |
| JR906 | 1-216-295-11 | SHORT | 0 | | |
| | | < COIL > | | | |
| L905 | 1-412-064-11 | INDUCTOR | 100uH | | |
| | | < TRANSISTOR > | | | |
| Q901 | 8-729-421-19 | TRANSISTOR | UN2213-TX | | |
| Q902 | 8-729-422-27 | TRANSISTOR | 2SD601A-QRS-TX | | |
| Q903 | 8-729-424-08 | TRANSISTOR | UN2111-TX | | |
| Q906 | 8-729-421-19 | TRANSISTOR | UN2213-TX | | |
| Q907 | 8-729-424-08 | TRANSISTOR | UN2111-TX | | |
| Q908 | 8-729-421-22 | TRANSISTOR | UN2211-TX | | |
| | | < RESISTOR > | | | |
| R905 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W |
| R906 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W |
| R907 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W |
| R908 | 1-216-105-91 | RES-CHIP | 220K | 5% | 1/10W |
| R909 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R910 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R911 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R912 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R914 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R915 | 1-216-049-11 | RES-CHIP | 1K | 5% | 1/10W |
| R916 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R917 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R918 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W |
| R924 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R926 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R927 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W |
| R928 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W |
| R929 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W |
| R939 | 1-216-017-91 | RES-CHIP | 47 | 5% | 1/10W |
| R940 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W |
| R941 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W |
| R942 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W |
| R943 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W |
| R950 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-6065-673-A | FL-119 BOARD, COMPLETE (US, CND, AUS, PX) | |
| * | A-6065-689-A | FL-119 BOARD, COMPLETE (AEP, UK) | |

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(Ref.No.: 3,000 Series)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < CONNECTOR > | |
| CN601 | 1-815-569-11 | CONNECTOR, FFC/FPC 7P | |
| * CN602 | 1-564-013-11 | PIN, CONNECTOR 3P | |
| CN603 | 1-815-467-11 | CONNECTOR, FFC/FPC 5P | |
| | | < RESISTOR > | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R601 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W |
| R602 | 1-216-063-91 | RES-CHIP | 3.9K | 5% | 1/10W |
| R603 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R604 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W |
| | | < SWITCH > | | | |
| S601 | 1-771-349-21 | SWITCH, KEYBOARD (EXCHANGE) | | | |
| S602 | 1-771-349-21 | SWITCH, KEYBOARD (DISC SKIP) | | | |
| S603 | 1-771-349-21 | SWITCH, KEYBOARD (DISPLAY) | | | |
| S604 | 1-771-349-21 | SWITCH, KEYBOARD (OPEN/CLOSE ⏏) | | | |
| S605 | 1-771-349-21 | SWITCH, KEYBOARD (NEXT ►►I) | | | |
| S606 | 1-771-349-21 | SWITCH, KEYBOARD (PREV I◄◄ ) | | | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-6065-674-A | FR-178 BOARD, COMPLETE (US, CND, AUS, PX) | |
| * | A-6065-690-A | FR-178 BOARD, COMPLETE (AEP, UK) | |

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(Ref.No.: 3,000 Series)

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | < CAPACITOR > | | | |
| C701 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C702 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C703 | 1-124-465-00 | ELECT | 0.47uF | 20% | 50V |
| | | < CONNECTOR > | | | |
| CN701 | 1-793-097-11 | CONNECTOR, FFC/FPC 11P | | | |
| | | < DIODE > | | | |
| D701 | 8-719-056-06 | DIODE SLR-342DCT31 (SURROUND) | | | |
| D702 | 8-719-056-06 | DIODE SLR-342DCT31 (DISC SELECT-1) | | | |
| D703 | 8-719-056-06 | DIODE SLR-342DCT31 (DISC SELECT-2) | | | |
| D704 | 8-719-056-06 | DIODE SLR-342DCT31 (DISC SELECT-3) | | | |
| D705 | 8-719-056-06 | DIODE SLR-342DCT31 (DISC SELECT-4) | | | |
| D706 | 8-719-056-06 | DIODE SLR-342DCT31 (DISC SELECT-5) | | | |
| D707 | 8-719-056-07 | DIODE SLR-342MCT31 (POWER ON) | | | |
| D708 | 8-719-059-98 | DIODE SLR-342VCT31 (STANDBY) | | | |
| D709 | 8-719-056-06 | DIODE SLR-342DCT31 (BNR) | | | |
| | | < IC > | | | |
| IC701 | 8-752-842-96 | IC NJU3711M (TE2) | | | |
| IC702 | 8-749-011-05 | IC GP1U28X | | | |
| | | < TRANSISTOR > | | | |
| Q701 | 1-801-806-11 | TRANSISTOR | DTC144EKA-T146 | | |
| Q702 | 1-801-806-11 | TRANSISTOR | DTC144EKA-T146 | | |
| | | < RESISTOR > | | | |
| R701 | 1-216-047-91 | RES-CHIP | 820 | 5% | 1/10W |
| R702 | 1-216-047-91 | RES-CHIP | 820 | 5% | 1/10W |
| R703 | 1-216-047-91 | RES-CHIP | 820 | 5% | 1/10W |
| R704 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R705 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R706 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R707 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W |
| R708 | 1-216-047-91 | RES-CHIP | 820 | 5% | 1/10W |
| R710 | 1-216-063-91 | RES-CHIP | 3.9K | 5% | 1/10W |
| R711 | 1-216-047-91 | RES-CHIP | 820 | 5% | 1/10W |
| R712 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R714 | 1-216-047-91 | RES-CHIP | 820 | 5% | 1/10W |
| R716 | 1-216-047-91 | RES-CHIP | 820 | 5% | 1/10W |
| R717 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R718 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R719 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W |
| R722 | 1-216-017-91 | RES-CHIP | 47 | 5% | 1/10W |
| | | < SWITCH > | | | |
| S701 | 1-771-349-21 | SWITCH, KEYBOARD (DISC SELECT-1) | | | |
| S702 | 1-771-349-21 | SWITCH, KEYBOARD (DISC SELECT-2) | | | |
| S703 | 1-771-349-21 | SWITCH, KEYBOARD (DISC SELECT-3) | | | |
| S704 | 1-771-349-21 | SWITCH, KEYBOARD (DISC SELECT-4) | | | |
| S705 | 1-771-349-21 | SWITCH, KEYBOARD (DISC SELECT-5) | | | |
| S706 | 1-771-349-21 | SWITCH, KEYBOARD (SURROUND) | | | |
| S707 | 1-771-349-21 | SWITCH, KEYBOARD (BNR) | | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | A-6065-681-A | IF-81 BOARD, COMPLETE (US, CND, AUS, PX) | | | |
| * | A-6065-688-A | IF-81 BOARD, COMPLETE (AEP, UK) | | | |
| | | ********************** | | | |
| | | | | | (Ref.No.: 1,000 Series) |
| | 3-066-136-01 | HOLDER, FL (U) | | | |
| | 3-066-137-01 | HOLDER, FL (L) | | | |
| | | < BUZZER > | | | |
| BZ401 | 1-529-986-11 | BUZZER, VOLTAGE | | | |
| | | < CAPACITOR > | | | |
| C402 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C417 | 1-162-968-11 | CERAMIC CHIP | 0.0047uF | 10% | 50V |
| C419 | 1-126-934-11 | ELECT | 220uF | 20% | 16V |
| C420 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C421 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C422 | 1-115-339-11 | CERAMIC CHIP | 0.1uF | 10% | 50V |
| C425 | 1-128-131-11 | ELECT | 22uF | 20% | 50V |
| C427 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C428 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C430 | 1-164-392-11 | CERAMIC CHIP | 390PF | 5% | 50V |
| C431 | 1-115-339-11 | CERAMIC CHIP | 0.1uF | 10% | 50V |
| C432 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C436 | 1-164-392-11 | CERAMIC CHIP | 390PF | 5% | 50V |
| C437 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| | | < CONNECTOR > | | | |
| CN401 | 1-506-489-11 | PIN, CONNECTOR 10P | | | |
| CN402 | 1-815-569-11 | CONNECTOR, FFC/FPC 7P | | | |
| CN403 | 1-793-097-11 | CONNECTOR, FFC/FPC 11P | | | |
| CN404 | 1-506-487-11 | PIN, CONNECTOR 8P | | | |
| CN405 | 1-815-468-11 | PIN, CONNECTOR (PC BOARD) | | | |
| | | < DIODE > | | | |
| D403 | 8-719-041-97 | DIODE MA113- (TX) | | | |
| D404 | 8-719-041-97 | DIODE MA113- (TX) | | | |
| D405 | 8-719-041-97 | DIODE MA113- (TX) | | | |
| D406 | 8-719-041-97 | DIODE MA113- (TX) | | | |
| D412 | 8-719-422-62 | DIODE MA8062-L-TX | | | |
| | | < IC > | | | |
| IC402 | 8-759-525-43 | IC TC74HCT08AF (EL) | | | |
| IC404 | 6-800-032-01 | IC HD64F3664H-V01 | | | |
| IC405 | 8-759-684-35 | IC S-80830ANUP-EDT-T2 | | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | < JUMPER RESISTOR > | | | |
| JR401 | 1-216-295-11 | SHORT | 0 | | |
| JR403 | 1-216-295-11 | SHORT | 0 | | |
| JR404 | 1-216-295-11 | SHORT | 0 | | |
| JR405 | 1-216-295-11 | SHORT | 0 | | |
| JR406 | 1-216-295-11 | SHORT | 0 | | |
| JR407 | 1-216-295-11 | SHORT | 0 | | |
| JR408 | 1-216-295-11 | SHORT | 0 | | |
| JS402 | 1-216-295-11 | SHORT | 0 | | |
| | | < COIL > | | | |
| L401 | 1-408-978-21 | INDUCTOR | 47uH | | |
| | | < FLUORESCENT INDICATOR > | | | |
| ND401 | 1-518-750-11 | VACUUM FLUORESCENT DISPLAYS | | | |
| | | < TRANSISTOR > | | | |
| Q401 | 8-729-056-46 | TRANSISTOR | 2SC5053T100Q | | |
| Q402 | 8-729-056-46 | TRANSISTOR | 2SC5053T100Q | | |
| Q406 | 8-729-903-46 | TRANSISTOR | 2SB1132-T100-QR | | |
| Q407 | 8-729-027-23 | TRANSISTOR | DTA114EKA-T146 | | |
| Q408 | 8-729-900-53 | TRANSISTOR | DTC114EKA-T146 | | |
| | | < RESISTOR > | | | |
| R401 | 1-216-065-91 | RES-CHIP | 4.7K | 5% | 1/10W |
| R402 | 1-216-025-11 | RES-CHIP | 100 | 5% | 1/10W |
| R403 | 1-216-025-11 | RES-CHIP | 100 | 5% | 1/10W |
| R404 | 1-216-025-11 | RES-CHIP | 100 | 5% | 1/10W |
| R407 | 1-216-013-00 | METAL CHIP | 33 | 5% | 1/10W |
| R408 | 1-216-027-00 | METAL CHIP | 120 | 5% | 1/10W |
| R410 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R411 | 1-216-295-11 | SHORT | 0 | | |
| R412 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R413 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R414 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R416 | 1-216-097-11 | RES-CHIP | 100K | 5% | 1/10W |
| R417 | 1-216-049-11 | RES-CHIP | 1K | 5% | 1/10W |
| R418 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R419 | 1-216-049-11 | RES-CHIP | 1K | 5% | 1/10W |
| R420 | 1-216-025-11 | RES-CHIP | 100 | 5% | 1/10W |
| R421 | 1-216-097-11 | RES-CHIP | 100K | 5% | 1/10W |
| R422 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R423 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R424 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R425 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R426 | 1-216-063-91 | RES-CHIP | 3.9K | 5% | 1/10W |
| R427 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R429 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R430 | 1-216-065-91 | RES-CHIP | 4.7K | 5% | 1/10W |
| R431 | 1-216-065-91 | RES-CHIP | 4.7K | 5% | 1/10W |
| R432 | 1-216-065-91 | RES-CHIP | 4.7K | 5% | 1/10W |
| R433 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W |
| R444 | 1-216-025-11 | RES-CHIP | 100 | 5% | 1/10W |
| R446 | 1-216-097-11 | RES-CHIP | 100K | 5% | 1/10W |
| R447 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R448 | 1-216-097-11 | RES-CHIP | 100K | 5% | 1/10W |
| R449 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R450 | 1-216-097-11 | RES-CHIP | 100K | 5% | 1/10W |
| R490 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | < SWITCH > | | | |
| S401 | 1-771-349-21 | SWITCH, KEYBOARD (■) | | | |
| S402 | 1-771-349-21 | SWITCH, KEYBOARD (❚❚) | | | |
| S403 | 1-771-349-21 | SWITCH, KEYBOARD (▷) | | | |
| | | < TRANSFORMER > | | | |
| T401 | 1-437-376-11 | TRANSFORMER, DC-DC CONVERTER | | | |
| | | < VIBRATOR > | | | |
| X401 | 1-781-472-21 | VIBRATOR, CERAMIC (8MHz) | | | |

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| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | A-6065-677-A | LM-63 BOARD, COMPLETE | | | (US, CND, AUS, PX) |
| * | A-6065-684-A | LM-63 BOARD, COMPLETE (AEP, UK) | | | |
| | | ********************** | | | |
| | | | | | (Ref.No.: 1,000 Series) |
| | | < HARNESS > | | | |
| B851 | 1-961-112-11 | HARNESS, BOARD IN (LE-054) | | | |
| | | < MOTOR > | | | |
| M851 | 1-541-632-11 | MOTOR, DC | | | |

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| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | A-6065-678-A | MB-98 BOARD, COMPLETE (US, CND, PX) | | | |
| * | A-6065-685-A | MB-98 BOARD, COMPLETE (AEP, UK) | | | |
| * | A-6065-692-A | MB-98 BOARD, COMPLETE (AUS) | | | |
| | | ********************** | | | |
| | | | | | (Ref.No.: 2,000 Series) |
| | | < CAPACITOR > | | | |
| C103 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C104 | 1-126-209-11 | ELECT CHIP | 100uF | 20% | 4V |
| C105 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C106 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C107 | 1-162-914-11 | CERAMIC CHIP | 9PF | 0.5PF | 50V |
| | | | | | (US, CND, AUS, PX) |
| C107 | 1-162-917-11 | CERAMIC CHIP | 15PF | 5% | 50V |
| | | | | | (AEP, UK) |
| C108 | 1-162-914-11 | CERAMIC CHIP | 9PF | 0.5PF | 50V |
| | | | | | (US, CND, AUS, PX) |
| C108 | 1-162-917-11 | CERAMIC CHIP | 15PF | 5% | 50V |
| | | | | | (AEP, UK) |
| C109 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C110 | 1-126-209-11 | ELECT CHIP | 100uF | 20% | 4V |
| C111 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C112 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C113 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C114 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C115 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C116 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C118 | 1-126-607-11 | ELECT CHIP | 47uF | 20% | 4V |
| C121 | 1-126-206-11 | ELECT CHIP | 100uF | 20% | 6.3V |
| C122 | 1-126-204-11 | ELECT CHIP | 47uF | 20% | 16V |
| C123 | 1-126-246-11 | ELECT CHIP | 220uF | 20% | 4V |
| C124 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C201 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C202 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C205 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C206 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C207 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C208 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C209 | 1-124-779-00 | ELECT CHIP | 10uF | 20% | 16V |
| C215 | 1-162-968-11 | CERAMIC CHIP | 0.0047uF | 10% | 50V |
| C216 | 1-162-968-11 | CERAMIC CHIP | 0.0047uF | 10% | 50V |
| C217 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C218 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C219 | 1-164-739-11 | CERAMIC CHIP | 560PF | 5% | 50V |
| C221 | 1-124-779-00 | ELECT CHIP | 10uF | 20% | 16V |
| C222 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C223 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C224 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C225 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C226 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C227 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C228 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C231 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C232 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C233 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C234 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C235 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C236 | 1-165-176-11 | CERAMIC CHIP | 0.047uF | 10% | 16V |
| C238 | 1-165-176-11 | CERAMIC CHIP | 0.047uF | 10% | 16V |
| C239 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C240 | 1-164-217-11 | CERAMIC CHIP | 150PF | 5% | 50V |
| C243 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C244 | 1-124-779-00 | ELECT CHIP | 10uF | 20% | 16V |
| C246 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C247 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C248 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C304 | 1-126-206-11 | ELECT CHIP | 100uF | 20% | 6.3V |
| C305 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C306 | 1-162-968-11 | CERAMIC CHIP | 0.0047uF | 10% | 50V |
| C307 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C309 | 1-162-968-11 | CERAMIC CHIP | 0.0047uF | 10% | 50V |
| C310 | 1-162-968-11 | CERAMIC CHIP | 0.0047uF | 10% | 50V |
| C311 | 1-162-968-11 | CERAMIC CHIP | 0.0047uF | 10% | 50V |
| C312 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C313 | 1-164-677-11 | CERAMIC CHIP | 0.033uF | 10% | 16V |
| C315 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C317 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C318 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C319 | 1-110-563-11 | CERAMIC CHIP | 0.068uF | 10% | 16V |
| C320 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C321 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C322 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C323 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C324 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C325 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C326 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C327 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C328 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C331 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C332 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C333 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C334 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C335 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C336 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C337 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C338 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C339 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C340 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C341 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C342 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C343 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C344 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C346 | 1-162-968-11 | CERAMIC CHIP | 0.0047uF | 10% | 50V |
| C347 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C348 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C349 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C350 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C351 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C352 | 1-126-204-11 | ELECT CHIP | 47uF | 20% | 16V |
| C401 | 1-164-245-11 | CERAMIC CHIP | 0.015uF | 10% | 25V |
| C402 | 1-164-230-11 | CERAMIC CHIP | 220PF | 5% | 50V |
| C403 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C404 | 1-162-965-11 | CERAMIC CHIP | 0.0015uF | 10% | 50V |
| C405 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C406 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C407 | 1-164-230-11 | CERAMIC CHIP | 220PF | 5% | 50V |
| C408 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C409 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C410 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C411 | 1-162-968-11 | CERAMIC CHIP | 0.0047uF | 10% | 50V |
| C412 | 1-164-677-11 | CERAMIC CHIP | 0.033uF | 10% | 16V |
| C413 | 1-164-677-11 | CERAMIC CHIP | 0.033uF | 10% | 16V |
| C414 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C415 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C416 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C417 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C418 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C419 | 1-126-204-11 | ELECT CHIP | 47uF | 20% | 16V |
| C420 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C421 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C427 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C428 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C501 | 1-126-193-11 | ELECT | 1uF | 20% | 50V |
| C502 | 1-124-779-00 | ELECT CHIP | 10uF | 20% | 16V |
| C503 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C504 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C505 | 1-124-779-00 | ELECT CHIP | 10uF | 20% | 16V |
| C506 | 1-124-779-00 | ELECT CHIP | 10uF | 20% | 16V |
| C508 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C509 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C510 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C512 | 1-126-246-11 | ELECT CHIP | 220uF | 20% | 4V |
| C513 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C514 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C516 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C518 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C519 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C520 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C521 | 1-107-826-11 | CERAMIC CHIP | 0.1uF | 10% | 16V |
| C522 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C523 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C524 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C525 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C526 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C528 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C529 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C530 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C531 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C532 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V (AEP, UK, AUS) |
| C533 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V (AEP, UK, AUS) |
| C534 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C535 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V (AEP, UK, AUS) |
| C536 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C537 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V (AEP, UK, AUS) |
| C538 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C539 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C540 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C541 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C542 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C544 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C545 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C546 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C547 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C601 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C602 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C603 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C604 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C802 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C807 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C810 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C811 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C812 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C813 | 1-127-715-91 | CERAMIC CHIP | 0.22uF | 10% | 16V |
| C816 | 1-124-779-00 | ELECT CHIP | 10uF | 20% | 16V |
| | | < CONNECTOR > | | | |
| CN101 | 1-815-459-21 | CONNECTOR, BOARD TO BOARD 15P | | | |
| * CN103 | 1-770-470-21 | PIN, CONNECTOR (PC BOARD) 6P | | | |
| CN201 | 1-815-507-11 | CONNECTOR, FFC/FPC 26P | | | |
| CN202 | 1-779-935-11 | CONNECTOR, FFC/FPC 9P | | | |
| CN402 | 1-774-766-11 | CONNECTOR, FFC/FPC 11P | | | |
| CN801 | 1-815-396-21 | CONNECTOR, FFC/FPC 25P | | | |
| | | < FERRITE BEAD > | | | |
| FB102 | 1-469-324-21 | FERRITE | 0uH | | |
| FB103 | 1-469-324-21 | FERRITE | 0uH | | |
| FB104 | 1-469-324-21 | FERRITE | 0uH | | |
| FB105 | 1-469-324-21 | FERRITE | 0uH | | |
| FB106 | 1-469-324-21 | FERRITE | 0uH | | |
| FB107 | 1-469-324-21 | FERRITE | 0uH | | |
| FB108 | 1-469-324-21 | FERRITE | 0uH | | |
| FB109 | 1-469-784-11 | FERRITE | 0uH | | |
| FB110 | 1-469-324-21 | FERRITE | 0uH | | |
| FB112 | 1-469-784-11 | FERRITE | 0uH | | |
| | | < FILTER > | | | |
| FL101 | 1-234-177-21 | FILTER, CHIP EMI | | | |
| FL102 | 1-234-177-21 | FILTER, CHIP EMI | | | |
| FL103 | 1-234-177-21 | FILTER, CHIP EMI | | | |
| FL104 | 1-233-893-21 | FILTER, CHIP EMI | | | |
| FL105 | 1-234-177-21 | FILTER, CHIP EMI | | | |
| FL106 | 1-234-177-21 | FILTER, CHIP EMI | | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| FL108 | 1-234-177-21 | FILTER, CHIP EMI | | | |
| FL201 | 1-234-177-21 | FILTER, CHIP EMI | | | |
| FL501 | 1-234-177-21 | FILTER, CHIP EMI | | | |
| FL502 | 1-234-177-21 | FILTER, CHIP EMI | | | |
| FL505 | 1-234-177-21 | FILTER, CHIP EMI | | | |
| | | < IC > | | | |
| IC101 | 8-759-640-41 | IC BR24C08F-E2 | | | |
| IC102 | 8-759-831-81 | IC IMIC6001BTD (AEP, UK) | | | |
| IC102 | 8-759-831-82 | IC SM8707AV-E2 (US, CND, AUS, PX) | | | |
| IC103 | 8-759-829-75 | IC MB91307APFV-G-BND-E1 | | | |
| IC107 | Note | | | | |
| IC108 | Note | | | | |
| IC202 | 8-759-828-02 | IC SP3728AC | | | |
| IC301 | 8-759-832-31 | IC TK71533ASCL | | | |
| IC302 | 8-759-828-01 | IC CXD9635R | | | |
| IC303 | 8-759-643-10 | IC GM71V18160CT-6TR | | | |
| IC401 | 8-759-826-42 | IC FAN8034 | | | |
| IC501 | 8-759-832-30 | IC TK71518ASCL | | | |
| IC502 | 8-759-599-45 | IC MM1385ENLE | | | |
| IC503 | 8-752-409-87 | IC CXD1933Q | | | |
| IC504 | 8-759-683-76 | IC K4S161622D-TC80T | | | |
| IC505 | 8-759-683-76 | IC K4S161622D-TC80T (AEP, UK, AUS) | | | |
| IC601 | 8-759-826-43 | IC CXD9631Q | | | |
| IC801 | 8-759-825-34 | IC CXD9626Q | | | |
| IC802 | 8-759-825-32 | IC CXD9627N-E2 | | | |
| | | < COIL > | | | |
| L201 | 1-412-031-11 | INDUCTOR CHIP | 47uH | | |
| L202 | 1-412-031-11 | INDUCTOR CHIP | 47uH | | |
| | | < TRANSISTOR > | | | |
| Q201 | 8-729-903-46 | TRANSISTOR | 2SB1132-T100-QR | | |
| Q202 | 8-729-903-46 | TRANSISTOR | 2SB1132-T100-QR | | |
| | | < RESISTOR > | | | |
| R101 | 1-216-789-11 | METAL CHIP | 2.2 | 5% | 1/16W |
| R107 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W (AEP, UK) |
| R107 | 1-216-864-91 | SHORT | 0 (US, CND, AUS, PX) | | |
| R109 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R111 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W |
| R112 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R113 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R114 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W |
| R116 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R117 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R118 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R119 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R120 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R121 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R123 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R124 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R125 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R126 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R127 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R128 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R129 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R130 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R133 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R134 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R136 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R137 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R138 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R141 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R142 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R143 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R145 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R146 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R149 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W |
| R150 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W (AUS) |
| R150 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W (AEP, UK) |
| R151 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W |
| R152 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W |
| R153 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W |
| R154 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W (AUS) |
| R154 | 1-216-089-11 | RES-CHIP | 47K | 5% | 1/10W (AEP, UK) |
| R155 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W |
| R156 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R157 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R160 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R161 | 1-216-864-91 | SHORT | 0 | | |
| R162 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R163 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R164 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W |
| R165 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W |
| R166 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W |
| R167 | 1-216-864-91 | SHORT | 0 | | |
| R168 | 1-216-864-91 | SHORT | 0 | | |
| R170 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R174 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R175 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R176 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R177 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R178 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R179 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R181 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R182 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W |
| R199 | 1-216-826-11 | METAL CHIP | 2.7K | 5% | 1/16W |
| R201 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W |
| R202 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W |
| R203 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W |
| R204 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R205 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W |
| R206 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W |
| R207 | 1-216-803-11 | METAL CHIP | 33 | 5% | 1/16W |
| R208 | 1-216-803-11 | METAL CHIP | 33 | 5% | 1/16W |
| R209 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R210 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R211 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W |
| R212 | 1-216-864-91 | SHORT | 0 | | |
| R215 | 1-216-864-91 | SHORT | 0 | | |

Note: Part number has not been determined yet. It will be noticed later.

## MB-98

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R216 | 1-216-864-91 | SHORT | 0 | | | |
| R219 | 1-216-864-91 | SHORT | 0 | | | |
| R220 | 1-216-803-11 | METAL CHIP | 33 | 5% | 1/16W | |
| R223 | 1-216-803-11 | METAL CHIP | 33 | 5% | 1/16W | |
| R224 | 1-216-801-11 | METAL CHIP | 22 | 5% | 1/16W | |
| R225 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R229 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R237 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W | |
| R238 | 1-216-861-11 | METAL CHIP | 2.2M | 5% | 1/16W | |
| R245 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R246 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R299 | 1-216-847-11 | METAL CHIP | 150K | 5% | 1/16W | |
| R301 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R302 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R305 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R306 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R307 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R308 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R309 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R310 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R311 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R312 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R313 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R314 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R315 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R316 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R317 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R318 | 1-216-295-11 | SHORT | 0 | | | |
| R319 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W | |
| R320 | 1-216-295-11 | SHORT | 0 | | | |
| R321 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R328 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R329 | 1-216-295-11 | SHORT | 0 | | | |
| R330 | 1-216-295-11 | SHORT | 0 | | | |
| R334 | 1-218-871-11 | METAL CHIP | 10K | 0.5% | 1/16W | |
| R335 | 1-218-855-11 | METAL CHIP | 2.2K | 0.5% | 1/16W | |
| R336 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R337 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R338 | 1-218-879-11 | METAL CHIP | 22K | 0.5% | 1/16W | |
| R341 | 1-218-871-11 | METAL CHIP | 10K | 0.5% | 1/16W | |
| R342 | 1-218-883-11 | METAL CHIP | 33K | 0.5% | 1/16W | |
| R343 | 1-218-831-11 | METAL CHIP | 220 | 0.5% | 1/16W | |
| R344 | 1-218-847-11 | METAL CHIP | 1K | 0.5% | 1/16W | |
| R345 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R349 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W | |
| R350 | 1-216-822-11 | METAL CHIP | 1.2K | 5% | 1/16W | |
| R351 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R352 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R356 | 1-218-853-11 | METAL CHIP | 1.8K | 0.5% | 1/16W | |
| R368 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R384 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W | |
| R385 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R402 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R403 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R404 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R405 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R406 | 1-216-846-11 | METAL CHIP | 120K | 5% | 1/16W | |
| R407 | 1-216-846-11 | METAL CHIP | 120K | 5% | 1/16W | |
| R408 | 1-216-847-11 | METAL CHIP | 150K | 5% | 1/16W | |
| R409 | 1-216-847-11 | METAL CHIP | 150K | 5% | 1/16W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R410 | 1-216-842-11 | METAL CHIP | 56K | 5% | 1/16W | |
| R411 | 1-216-842-11 | METAL CHIP | 56K | 5% | 1/16W | |
| R412 | 1-216-850-11 | METAL CHIP | 270K | 5% | 1/16W | |
| R413 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R414 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W | |
| R415 | 1-216-846-11 | METAL CHIP | 120K | 5% | 1/16W | |
| R416 | 1-216-855-11 | METAL CHIP | 680K | 5% | 1/16W | |
| R417 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R418 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R419 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R420 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W | |
| R421 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R422 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R423 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R424 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R425 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W | |
| R426 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W | |
| R427 | 1-218-895-11 | METAL CHIP | 100K | 0.5% | 1/16W | |
| R428 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R429 | 1-218-889-11 | METAL CHIP | 56K | 0.5% | 1/16W | |
| R430 | 1-218-895-11 | METAL CHIP | 100K | 0.5% | 1/16W | |
| R431 | 1-218-889-11 | METAL CHIP | 56K | 0.5% | 1/16W | |
| R432 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R433 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R434 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W | |
| R435 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R436 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R438 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R439 | 1-216-864-91 | SHORT | 0 | | | |
| R454 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R455 | 1-216-864-91 | SHORT | 0 | | | |
| R456 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W | |
| R457 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W | |
| R458 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R461 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R462 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R507 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R510 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R511 | 1-218-831-11 | METAL CHIP | 220 | 0.5% | 1/16W | |
| R512 | 1-218-831-11 | METAL CHIP | 220 | 0.5% | 1/16W | |
| R513 | 1-218-831-11 | METAL CHIP | 220 | 0.5% | 1/16W | |
| R514 | 1-218-831-11 | METAL CHIP | 220 | 0.5% | 1/16W | |
| R515 | 1-218-831-11 | METAL CHIP | 220 | 0.5% | 1/16W | |
| R516 | 1-218-831-11 | METAL CHIP | 220 | 0.5% | 1/16W | |
| R517 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R518 | 1-216-822-11 | METAL CHIP | 1.2K | 5% | 1/16W | |
| R519 | 1-216-295-11 | SHORT | 0 | | | |
| R521 | 1-216-295-11 | SHORT | 0 | | | |
| R522 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R524 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R525 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R533 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W | |
| R554 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W | |
| R604 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R701 | 1-216-864-91 | SHORT | 0 | | | |
| R801 | 1-216-864-91 | SHORT | 0 | | | |
| R803 | 1-216-864-91 | SHORT | 0 | | | |
| R804 | 1-216-864-91 | SHORT | 0 | | | |
| R805 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R807 | 1-216-864-91 | SHORT | 0 | | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R808 | 1-216-864-91 | SHORT | 0 | | |
| | | < VARIABLE RESISTOR > | | | |
| RV501 | 1-223-583-11 | RES, ADJ, CARBON 1K | | | |
| | | < VIBRATOR > | | | |
| X101 | 1-795-174-11 | VIBRATOR, CERAMIC (16.5MHz) | | | |
| X102 | 1-781-867-21 | VIBRATOR, CRYSTAL (27MHz) | | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | 1-468-591-11 | POWER BLOCK (MPN4801) | | | |
| | | ********************** | | | |
| | | (Ref.No.: 4,000 Series) | | | |
| | | < CAPACITOR > | | | |
| C5 | 9-885-006-64 | ELECT | 220uF | | 200V |
| C101 | 9-885-006-67 | ELECT | 330uF | | 35V |
| C111 | 9-885-006-66 | ELECT | 33uF | | 35V |
| C301 | 9-885-006-65 | ELECT | 680uF | | 25V |
| C306 | 9-885-006-66 | ELECT | 33uF | | 35V |
| C307 | 9-885-006-66 | ELECT | 33uF | | 35V |
| C401 | 9-885-006-67 | ELECT | 330uF | | 35V |
| | | < DIODE > | | | |
| D4 | 8-719-901-33 | DIODE 1SS133 | | | |
| D5 | 8-719-063-16 | DIODE HZS9B2 | | | |
| D6 | 8-719-901-33 | DIODE 1SS133 | | | |
| D7 | 8-719-901-33 | DIODE 1SS133 | | | |
| D11 | 8-719-054-32 | DIODE ERA15-06 | | | |
| D12 | 8-719-054-32 | DIODE ERA15-06 | | | |
| D13 | 8-719-054-32 | DIODE ERA15-06 | | | |
| D14 | 8-719-054-32 | DIODE ERA15-06 | | | |
| D21 | 8-719-901-33 | DIODE 1SS133 | | | |
| D22 | 8-719-901-33 | DIODE 1SS133 | | | |
| D101 | 8-719-210-51 | DIODE 21DQ10 | | | |
| D102 | 8-719-063-04 | DIODE MTZJ6.8A | | | |
| D103 | 9-885-006-59 | DIODE HZ-18CP | | | |
| D104 | 8-719-901-33 | DIODE 1SS133 | | | |
| D110 | 8-719-901-33 | DIODE 1SS133 | | | |
| D205 | 8-719-901-33 | DIODE 1SS133 | | | |
| D301 | 9-885-006-58 | DIODE ERB83-006 | | | |
| D302 | 9-885-006-58 | DIODE ERB83-006 | | | |
| D401 | 8-719-210-51 | DIODE 21DQ10 | | | |
| D402 | 8-719-063-04 | DIODE MTZJ6.8A | | | |
| D404 | 8-719-901-33 | DIODE 1SS133 | | | |
| D410 | 8-719-901-33 | DIODE 1SS133 | | | |
| | | < FUSE > | | | |
| ⚠F1 | 1-576-418-11 | FUSE (2.5A/AC125V) | | | |
| | | < IC > | | | |
| IC302 | 8-759-234-89 | IC TA76431S | | | |
| IC303 | 8-759-651-05 | IC TA76431AS | | | |
| | | < IC LINK > | | | |
| ⚠P301 | 1-533-593-11 | LINK, IC (2A/AC60V) | | | |
| ⚠P302 | 1-533-592-11 | LINK, IC (1.6A/AC60V) | | | |
| | | < PHOTO COUPLER > | | | |
| ⚠PC1 | 9-885-006-57 | PHOTO COUPLER PC817 | | | |
| | | < TRANSISTOR > | | | |
| Q1 | 9-885-006-63 | TRANSISTOR | 2SK2638 | | |
| Q2 | 9-885-006-61 | TRANSISTOR | 2SC1741AS | | |
| Q101 | 9-885-006-60 | TRANSISTOR | 2SB1642 | | |
| Q102 | 8-729-920-70 | TRANSISTOR | 2SC1740S | | |
| Q103 | 8-729-920-70 | TRANSISTOR | 2SC1740S | | |
| Q104 | 8-729-920-68 | TRANSISTOR | 2SA933S | | |
| Q201 | 9-885-006-62 | TRANSISTOR | 2SJ525 | | |
| Q301 | 9-885-006-60 | TRANSISTOR | 2SB1642 | | |
| Q302 | 8-729-920-70 | TRANSISTOR | 2SC1740S | | |
| Q303 | 8-729-920-70 | TRANSISTOR | 2SC1740S | | |
| Q304 | 8-729-920-68 | TRANSISTOR | 2SA933S | | |
| Q401 | 8-729-018-60 | TRANSISTOR | 2SD2012 | | |
| Q402 | 8-729-920-68 | TRANSISTOR | 2SA933S | | |
| Q403 | 8-729-920-68 | TRANSISTOR | 2SA933S | | |
| Q404 | 8-729-920-70 | TRANSISTOR | 2SC1740S | | |
| | | < RESISTOR > | | | |
| R2 | 1-247-887-91 | CARBON | 220K | 5% | 1/4W |
| R3 | 1-247-887-91 | CARBON | 220K | 5% | 1/4W |
| R5 | 1-247-862-91 | CARBON | 20K | 5% | 1/4W |
| R6 | 1-247-827-91 | CARBON | 680 | 5% | 1/4W |
| R7 | 1-247-815-91 | CARBON | 220 | 5% | 1/4W |
| R8 | 1-247-867-91 | CARBON | 33K | 5% | 1/4W |
| R9 | 1-247-851-91 | CARBON | 6.8K | 5% | 1/4W |
| R10 | 1-247-850-91 | CARBON | 6.2K | 5% | 1/4W |
| R11 | 1-247-853-91 | CARBON | 8.2K | 5% | 1/4W |
| R12 | 1-247-861-91 | CARBON | 18K | 5% | 1/4W |
| R13 | 1-247-842-91 | CARBON | 3K | 5% | 1/4W |
| R17 | 1-247-827-91 | CARBON | 680 | 5% | 1/4W |
| R19 | 1-247-783-91 | CARBON | 10 | 5% | 1/4W |
| R22 | 1-247-823-91 | CARBON | 470 | 5% | 1/4W |
| R101 | 1-247-841-91 | CARBON | 2.7K | 5% | 1/4W |
| R102 | 1-247-831-91 | CARBON | 1K | 5% | 1/4W |
| R103 | 1-247-801-91 | CARBON | 56 | 5% | 1/4W |
| R104 | 1-247-838-91 | CARBON | 2K | 5% | 1/4W |
| R105 | 1-247-847-91 | CARBON | 4.7K | 5% | 1/4W |
| R106 | 1-247-838-91 | CARBON | 2K | 5% | 1/4W |
| R107 | 1-247-847-91 | CARBON | 4.7K | 5% | 1/4W |
| R108 | 1-247-833-91 | CARBON | 1.2K | 5% | 1/4W |
| R111 | 1-247-831-91 | CARBON | 1K | 5% | 1/4W |
| R112 | 1-247-847-91 | CARBON | 4.7K | 5% | 1/4W |
| R113 | 1-247-847-91 | CARBON | 4.7K | 5% | 1/4W |
| R203 | 1-247-851-91 | CARBON | 6.8K | 5% | 1/4W |
| R301 | 1-247-811-91 | CARBON | 150 | 5% | 1/4W |
| R302 | 1-247-859-91 | CARBON | 15K | 5% | 1/4W |
| R303 | 1-247-839-91 | CARBON | 2.2K | 5% | 1/4W |
| R304 | 1-247-841-91 | CARBON | 2.7K | 5% | 1/4W |
| R305 | 1-247-831-91 | CARBON | 1K | 5% | 1/4W |
| R306 | 1-247-811-91 | CARBON | 150 | 5% | 1/4W |
| R309 | 1-247-835-91 | CARBON | 1.5K | 5% | 1/4W |
| R310 | 1-247-823-91 | CARBON | 470 | 5% | 1/4W |
| R311 | 1-247-830-91 | CARBON | 910 | 5% | 1/4W |

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| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R312 | 1-247-840-91 | CARBON | 2.4K | 5% | 1/4W |
| R313 | 1-247-803-91 | CARBON | 68 | 5% | 1/4W |
| R314 | 1-247-809-91 | CARBON | 120 | 5% | 1/4W |
| R315 | 1-247-833-91 | CARBON | 1.2K | 5% | 1/4W |
| R316 | 1-247-797-91 | CARBON | 39 | 5% | 1/4W |
| R317 | 1-247-842-91 | CARBON | 3K | 5% | 1/4W |
| R318 | 1-247-833-91 | CARBON | 1.2K | 5% | 1/4W |
| R319 | 1-247-867-91 | CARBON | 33K | 5% | 1/4W |
| R322 | 1-247-797-91 | CARBON | 39 | 5% | 1/4W |
| R402 | 1-247-831-91 | CARBON | 1K | 5% | 1/4W |
| R403 | 1-247-807-91 | CARBON | 100 | 5% | 1/4W |
| R404 | 1-247-838-91 | CARBON | 2K | 5% | 1/4W |
| R405 | 1-247-847-91 | CARBON | 4.7K | 5% | 1/4W |
| R406 | 1-247-839-91 | CARBON | 2.2K | 5% | 1/4W |
| R407 | 1-247-847-91 | CARBON | 4.7K | 5% | 1/4W |
| R408 | 1-247-849-91 | CARBON | 5.6K | 5% | 1/4W |
| R411 | 1-247-831-91 | CARBON | 1K | 5% | 1/4W |
| R412 | 1-247-850-91 | CARBON | 6.2K | 5% | 1/4W |
| R413 | 1-247-850-91 | CARBON | 6.2K | 5% | 1/4W |
| | | < TRANSFORMER > | | | |
| ⚠T1 | 9-885-006-68 | TRANSFORMER | | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | 1-468-590-11 | POWER BLOCK (MPN4901) | | | |
| | | *********************** | | | |
| | | | | | (Ref.No.: 5,000 Series) |
| | | < CAPACITOR > | | | |
| C5 | 9-885-006-73 | ELECT | 150uF | | 400V |
| C101 | 9-885-006-67 | ELECT | 330uF | | 35V |
| C111 | 9-885-006-66 | ELECT | 33uF | | 35V |
| C301 | 9-885-006-65 | ELECT | 680uF | | 25V |
| C306 | 9-885-006-66 | ELECT | 33uF | | 35V |
| C307 | 9-885-006-66 | ELECT | 33uF | | 35V |
| C401 | 9-885-006-67 | ELECT | 330uF | | 35V |
| | | < DIODE > | | | |
| D4 | 8-719-901-33 | DIODE 1SS133 | | | |
| D5 | 8-719-063-16 | DIODE HZS9B2 | | | |
| D6 | 8-719-901-33 | DIODE 1SS133 | | | |
| D7 | 8-719-901-33 | DIODE 1SS133 | | | |
| D11 | 8-719-054-32 | DIODE ERA15-06 | | | |
| D12 | 8-719-054-32 | DIODE ERA15-06 | | | |
| D13 | 8-719-054-32 | DIODE ERA15-06 | | | |
| D14 | 8-719-054-32 | DIODE ERA15-06 | | | |
| D23 | 8-719-901-33 | DIODE 1SS133 | | | |
| D24 | 8-719-901-33 | DIODE 1SS133 | | | |
| D25 | 8-719-901-33 | DIODE 1SS133 | | | |
| D101 | 8-719-210-51 | DIODE 21DQ10 | | | |
| D102 | 8-719-063-04 | DIODE MTZJ6.8A | | | |
| D103 | 9-885-006-59 | DIODE HZ-18CP | | | |
| D104 | 8-719-901-33 | DIODE 1SS133 | | | |
| D110 | 8-719-901-33 | DIODE 1SS133 | | | |
| D301 | 9-885-006-58 | DIODE ERB83-006 | | | |
| D302 | 9-885-006-58 | DIODE ERB83-006 | | | |
| D313 | 8-719-901-33 | DIODE 1SS133 | | | |
| D316 | 8-719-901-33 | DIODE 1SS133 | | | |
| D401 | 8-719-210-51 | DIODE 21DQ10 | | | |
| D402 | 8-719-063-04 | DIODE MTZJ6.8A | | | |
| D404 | 8-719-901-33 | DIODE 1SS133 | | | |
| D410 | 8-719-901-33 | DIODE 1SS133 | | | |
| | | < FUSE > | | | |
| ⚠F1 | 1-576-229-11 | FUSE (T2.5A/AC250V) | | | |
| | | < IC > | | | |
| IC302 | 8-759-234-89 | IC TA76431S | | | |
| IC303 | 8-759-651-05 | IC TA76431AS | | | |
| | | < IC LINK > | | | |
| ⚠P301 | 1-533-593-11 | LINK, IC (2A/AC60V) | | | |
| ⚠P302 | 1-533-592-11 | LINK, IC (1.6A/AC60V) | | | |
| | | < PHOTO COUPLER > | | | |
| ⚠PC1 | 9-885-006-70 | PHOTO COUPLER PC123 | | | |
| ⚠PC2 | 9-885-006-70 | PHOTO COUPLER PC123 | | | |
| | | < TRANSISTOR > | | | |
| Q1 | 9-885-006-72 | TRANSISTOR | 2SK2717 | | |
| Q2 | 9-885-006-61 | TRANSISTOR | 2SC1741AS | | |
| Q20 | 8-729-920-68 | TRANSISTOR | 2SA933S | | |
| Q71 | 9-885-006-71 | TRANSISTOR | 2SB1488 | | |
| Q101 | 9-885-006-60 | TRANSISTOR | 2SB1642 | | |
| Q102 | 8-729-920-70 | TRANSISTOR | 2SC1740S | | |
| Q103 | 8-729-920-70 | TRANSISTOR | 2SC1740S | | |
| Q104 | 8-729-920-68 | TRANSISTOR | 2SA933S | | |
| Q201 | 9-885-006-62 | TRANSISTOR | 2SJ525 | | |
| Q301 | 9-885-006-60 | TRANSISTOR | 2SB1642 | | |
| Q302 | 8-729-920-70 | TRANSISTOR | 2SC1740S | | |
| Q303 | 8-729-920-70 | TRANSISTOR | 2SC1740S | | |
| Q304 | 8-729-920-68 | TRANSISTOR | 2SA933S | | |
| Q401 | 8-729-018-60 | TRANSISTOR | 2SD2012 | | |
| Q402 | 8-729-920-68 | TRANSISTOR | 2SA933S | | |
| Q403 | 8-729-920-68 | TRANSISTOR | 2SA933S | | |
| Q404 | 8-729-920-70 | TRANSISTOR | 2SC1740S | | |
| | | < RESISTOR > | | | |
| R5 | 1-247-862-91 | CARBON | 20K | 5% | 1/4W |
| R6 | 1-247-825-91 | CARBON | 560 | 5% | 1/4W |
| R7 | 1-247-830-91 | CARBON | 330 | 5% | 1/4W |
| R8 | 1-247-867-91 | CARBON | 33K | 5% | 1/4W |
| R9 | 1-247-807-91 | CARBON | 100 | 5% | 1/4W |
| R10 | 1-247-850-91 | CARBON | 6.2K | 5% | 1/4W |
| R11 | 1-247-854-91 | CARBON | 9.1K | 5% | 1/4W |
| R12 | 1-247-861-91 | CARBON | 18K | 5% | 1/4W |
| R13 | 1-247-815-91 | CARBON | 220 | 5% | 1/4W |
| R17 | 1-247-827-91 | CARBON | 680 | 5% | 1/4W |
| R19 | 1-247-783-91 | CARBON | 10 | 5% | 1/4W |
| R21 | 1-247-845-91 | CARBON | 3.9K | 5% | 1/4W |
| R23 | 1-247-879-91 | CARBON | 100K | 5% | 1/4W |
| R24 | 1-247-852-91 | CARBON | 7.5K | 5% | 1/4W |
| R25 | 1-247-873-91 | CARBON | 56K | 5% | 1/4W |
| R71 | 1-247-877-91 | CARBON | 82K | 5% | 1/4W |

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| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R72 | 1-247-871-91 | CARBON | 47K | 5% | 1/4W |
| R73 | 1-247-871-91 | CARBON | 47K | 5% | 1/4W |
| R74 | 1-247-897-91 | CARBON | 560K | 5% | 1/4W |
| R75 | 1-247-897-91 | CARBON | 560K | 5% | 1/4W |
| R101 | 1-247-841-91 | CARBON | 2.7K | 5% | 1/4W |
| R102 | 1-247-831-91 | CARBON | 1K | 5% | 1/4W |
| R103 | 1-247-801-91 | CARBON | 56 | 5% | 1/4W |
| R104 | 1-247-838-91 | CARBON | 2K | 5% | 1/4W |
| R105 | 1-247-847-91 | CARBON | 4.7K | 5% | 1/4W |
| R106 | 1-247-838-91 | CARBON | 2K | 5% | 1/4W |
| R107 | 1-247-847-91 | CARBON | 4.7K | 5% | 1/4W |
| R108 | 1-247-833-91 | CARBON | 1.2K | 5% | 1/4W |
| R111 | 1-247-831-91 | CARBON | 1K | 5% | 1/4W |
| R112 | 1-247-847-91 | CARBON | 4.7K | 5% | 1/4W |
| R113 | 1-247-847-91 | CARBON | 4.7K | 5% | 1/4W |
| R203 | 1-247-851-91 | CARBON | 6.8K | 5% | 1/4W |
| R301 | 1-247-830-91 | CARBON | 330 | 5% | 1/4W |
| R302 | 1-247-849-91 | CARBON | 5.6K | 5% | 1/4W |
| R303 | 1-247-839-91 | CARBON | 2.2K | 5% | 1/4W |
| R304 | 1-247-841-91 | CARBON | 2.7K | 5% | 1/4W |
| R305 | 1-247-831-91 | CARBON | 1K | 5% | 1/4W |
| R306 | 1-247-811-91 | CARBON | 150 | 5% | 1/4W |
| R309 | 1-247-835-91 | CARBON | 1.5K | 5% | 1/4W |
| R310 | 1-247-823-91 | CARBON | 470 | 5% | 1/4W |
| R311 | 1-247-830-91 | CARBON | 910 | 5% | 1/4W |
| R312 | 1-247-768-91 | CARBON | 2.4 | 5% | 1/4W |
| R313 | 1-247-831-91 | CARBON | 1K | 5% | 1/4W |
| R314 | 1-247-833-91 | CARBON | 1.2K | 5% | 1/4W |
| R315 | 1-247-831-91 | CARBON | 1K | 5% | 1/4W |
| R317 | 1-247-842-91 | CARBON | 3K | 5% | 1/4W |
| R318 | 1-247-833-91 | CARBON | 1.2K | 5% | 1/4W |
| R319 | 1-247-867-91 | CARBON | 33K | 5% | 1/4W |
| R321 | 1-247-823-91 | CARBON | 470 | 5% | 1/4W |
| R322 | 1-247-809-91 | CARBON | 120 | 5% | 1/4W |
| R402 | 1-247-831-91 | CARBON | 1K | 5% | 1/4W |
| R403 | 1-247-807-91 | CARBON | 100 | 5% | 1/4W |
| R404 | 1-247-838-91 | CARBON | 2K | 5% | 1/4W |
| R405 | 1-247-847-91 | CARBON | 4.7K | 5% | 1/4W |
| R406 | 1-247-839-91 | CARBON | 2.2K | 5% | 1/4W |
| R407 | 1-247-847-91 | CARBON | 4.7K | 5% | 1/4W |
| R408 | 1-247-849-91 | CARBON | 5.6K | 5% | 1/4W |
| R411 | 1-247-831-91 | CARBON | 1K | 5% | 1/4W |
| R412 | 1-247-850-91 | CARBON | 6.2K | 5% | 1/4W |
| R413 | 1-247-850-91 | CARBON | 6.2K | 5% | 1/4W |
| | | < SWITCH > | | | |
| ⚠SW1 | 9-885-006-69 | SWITCH (POWER) | | | |
| | | < TRANSFORMER > | | | |
| ⚠T1 | 9-885-006-74 | TRANSFORMER | | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | A-6065-676-A | SE-122 BOARD, COMPLETE (US, CND, AUS, PX) | | | |
| * | A-6065-683-A | SE-122 BOARD, COMPLETE (AEP, UK) | | | |
| | | *********************** | | | |
| | | (Ref.No.: 1,000 Series) | | | |
| | | < CAPACITOR > | | | |
| C501 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| | | < CONNECTOR > | | | |
| CN502 | 1-573-383-11 | PIN, CONNECTOR (PC BOARD) 2P | | | |
| CN503 | 1-815-569-11 | CONNECTOR, FFC/FPC 7P | | | |
| | | < JUMPER RESISTOR > | | | |
| JR501 | 1-216-295-11 | SHORT | 0 | | |
| | | < PHOTO INTERRUPTER > | | | |
| PH501 | 8-749-924-30 | PHOTO REFLECTOR GP2S28 | | | |
| PH502 | 8-749-924-18 | PHOTO INTERRUPTER RPI-1391 | | | |
| | | < TRANSISTOR > | | | |
| Q501 | 8-729-120-28 | TRANSISTOR | 2SC2412K-T-146-QR | | |
| | | < RESISTOR > | | | |
| R501 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R502 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W |
| R503 | 1-216-049-11 | RES-CHIP | 1K | 5% | 1/10W |
| R504 | 1-216-027-00 | METAL CHIP | 120 | 5% | 1/10W |
| R505 | 1-216-043-91 | RES-CHIP | 560 | 5% | 1/10W |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | A-6065-675-A | SW-353 BOARD, COMPLETE (US, CND, AUS, PX) | | | |
| * | A-6065-691-A | SW-353 BOARD, COMPLETE (AEP, UK) | | | |
| | | *********************** | | | |
| | | (Ref.No.: 3,000 Series) | | | |
| | | < CONNECTOR > | | | |
| * CN651 | 1-564-013-11 | PIN, CONNECTOR 3P | | | |
| | | < RESISTOR > | | | |
| R651 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R652 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R653 | 1-216-063-91 | RES-CHIP | 3.9K | 5% | 1/10W |
| R654 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W |
| R655 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| | | < SWITCH > | | | |
| S651 | 1-771-349-21 | SWITCH, KEYBOARD (TITLE) | | | |
| S652 | 1-771-349-21 | SWITCH, KEYBOARD (DVD MENU) | | | |
| S653 | 1-771-349-21 | SWITCH, KEYBOARD ( RETURN) | | | |
| S654 | 1-771-349-21 | SWITCH, KEYBOARD (ONE/ALL) | | | |
| S655 | 1-771-349-21 | SWITCH, KEYBOARD (REPEAT) | | | |
| S656 | 1-771-349-21 | SWITCH, KEYBOARD (SHUFFLE) | | | |
| S657 | 1-771-349-21 | SWITCH, KEYBOARD (LOAD) | | | |

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|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | MISCELLANEOUS<br>************** | |
| ⚠9 | 1-769-744-91 | CORD, POWER (AEP, UK, PX) | |
| ⚠9 | 1-783-531-31 | CORD, POWER (US, CND) | |
| ⚠9 | 1-790-588-11 | CORD, POWER (AUS) | |
| 10 | 1-757-749-11 | CABLE, FLEXIBLE FLAT (FAM-008) | |
| 11 | 1-757-750-11 | CABLE, FLEXIBLE FLAT (FCM-014) | |
| 18 | 1-757-748-11 | CABLE, FLEXIBLE FLAT (FAE-006) (AEP, UK) | |
| 56 | 1-757-753-11 | CABLE, FLEXIBLE FLAT (FIR-001) | |
| 59 | 1-757-752-11 | CABLE, FLEXIBLE FLAT (FIF-001) | |
| 63 | 1-786-131-11 | SWITCH, TACTILE | |
| 118 | 1-757-751-11 | CABLE, FLEXIBLE FLAT (FCS-005) | |
| 163 | 1-466-996-21 | ENCODER, ROTARY | |
| 173 | 1-757-754-11 | CABLE, FLEXIBLE FLAT (FMM-036) | |
| 174 | 1-757-755-11 | CABLE, FLEXIBLE FLAT (FMD-025) | |
| ⚠181 | 8-820-144-06 | OPTICAL PICK-UP KHM-240AAA/J1RP | |
| 183 | 1-961-112-11 | HARNESS, BOARD IN (LE-054) | |
| M851 | A-4660-977-A | MOTOR ASSY, LOADING | |
| M951 | 1-541-632-11 | MOTOR, DC (TURN TABLE) | |

ACCESSORIES & PACKING MATERIALS
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| | | | |
|---|---|---|---|
| | 1-476-604-21 | COMMANDER, STANDARD (RMT-D130A) | (US, CND, PX) |
| | 1-476-605-41 | COMMANDER, STANDARD (RMT-D130P) | (AEP, UK) |
| | 1-476-605-51 | COMMANDER, STANDARD (RMT-D130O) | (AUS) |
| ⚠ | 1-569-008-21 | ADAPTOR, CONVERSION 2P (PX) | |
| | 1-751-271-12 | CORD, CONNECTION | (STEREO AV CABLE 1.5m) |
| ⚠ | 1-770-019-11 | ADAPTOR, CONVERSION PLUG 3P (UK) | |
| | 3-067-827-11 | MANUAL, INSTRUCTION (ENGLISH) | (US, CND, PX) |
| | 3-067-827-21 | MANUAL, INSTRUCTION (FRENCH) (CND) | |
| | 3-067-827-31 | MANUAL, INSTRUCTION (ENGLISH) (UK) | |
| | 3-067-827-41 | MANUAL, INSTRUCTION (FRENCH) (AEP) | |
| | 3-067-827-51 | MANUAL, INSTRUCTION (GERMAN) (AEP) | |
| | 3-067-827-61 | MANUAL, INSTRUCTION (ITALIAN) (AEP) | |
| | 3-067-827-71 | MANUAL, INSTRUCTION (DUTCH) (AEP) | |
| | 3-067-827-81 | MANUAL, INSTRUCTION (SPANISH) (AEP) | |
| | 3-067-827-91 | MANUAL, INSTRUCTION (ENGLISH) (AUS) | |

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9-929-704-11

**Sony Corporation**
**Home Video Campany**



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