DVP-F21

RMT-D137A/RMT-D137P

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
Mexico Model
Hong Kong Model
Singapore Model

SPECIFICATIONS

Specifications

System

Laser	Semiconductor laser
Signal format system	NTSC (EXCEPT AEP, UK) PAL (AEP, UK)

Audio characteristics

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

The signals from AUDIO OUT L/R jacks are measured. When you play PCM sound tracks with a 96 kHz sampling frequency, the output signal from the DIGITAL OUT (OPTICAL) jack is 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 660 nm
AUDIO OUT L/R	Phono jack	2 Vrms (50 kilohms)	Over 10 kilohms
VIDEO OUT	Phono jack	1.0 Vp-p	75 ohms, sync negative
S-VIDEO OUT	4-pin mini DIN	Luminance signal: 1.0 Vp-p Color signal: 0.286 Vp-p (NTSC) 0.3 Vp-p (PAL)	75 ohms, sync negative 75 ohms terminated

General

Power requirements	DC 10.5 V See page 3 for further information.
Power consumption	12 W
Dimensions (approx.)	252 × 60 × 183 mm (10 × 2 3/8 × 7 1/4 in.) (width/height/depth) including projecting parts
Mass (approx.)	1.5 kg (3 lb 5 oz)
Operating temperature	5°C to 35°C (41°F to 95°F)
Operating humidity	25% to 80%

AC power adaptor

Model name	AC-F21
Power requirements	100 to 240 V AC, 50/60 Hz
Output voltage	DC 10.5 V, 1.3 A in operating mode
Operating temperature	5°C to 35°C (41°F to 95°F)
Storage temperature	–20°C to 60°C (–4°F to 140°F)

Supplied accessories

- Audio/video cord (pinplug × 3 ←→ pinplug × 3) (1)
- Remote commander (remote) RMT-D137A (1) (US, CND, MX)
  RMT-D137P (1) (EXCEPT US, CND, MX)
- Size AA (R6) batteries (2)
- AC power adaptor AC-F21 (1)
- AC power cord (1)
- Jack cover for vertical installation (1)

Optional accessory

Active Speaker System SA-F21

Specifications and design are subject to change without notice.

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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-sol-dered 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 transis-tors, 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 recom-mend 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.

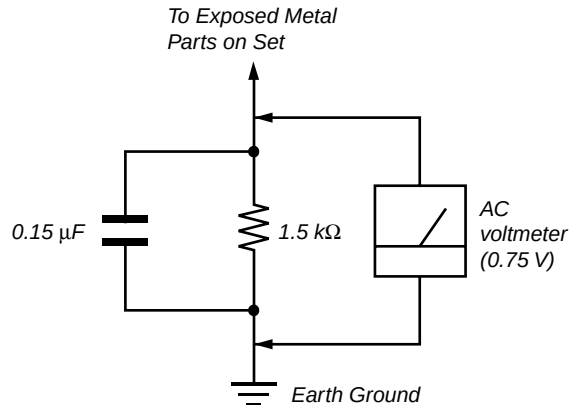
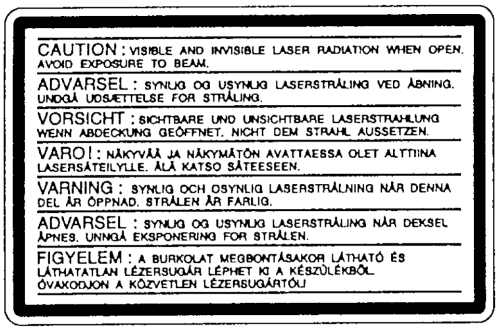


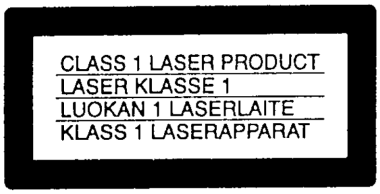
Fig. A. Using an AC voltmeter to check AC leakage.

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" indica-tion is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are ex-amples of a pas-sive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suit-able. (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 ra-diation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK 0 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 PUB-LISHED 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 COM-POSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

TABLE OF CONTENTS

SECTION 1
GENERAL

This section is extracted rom instruction manual (3-070-343-11).

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

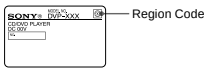
Format of discs
DVD VIDEO
VIDEO CD
Music CD

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 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/RWs other than music and VCD format CD-Rs/RWs
- Data part of CD-Extras
- DVD-ROMs
- DVD Audio discs
- DVD-RWs recorded in video recording format (VR mode)
- HD layer on SACDs

Also, the player cannot play the following discs:
- A DVD with a different region code (page 78).
- 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.

continued ➡

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 pressing ⏏ on the player to eject the disc, do no leave the disc as it is. Remove it completely from the player.
- After playing, store the disc in its case.
- If glue is present on the outer edge of the disc, wipe the edge of the disc with the side of a pen or pencil so that the glue is spread evenly along the edge before inserting the disc into the player. Be sure not to touch the playback side of the disc when wiping the edge.
- If burrs remain on the outer edge of the disc, remove them by rubbing with the side of a pen or pencil. If burrs are not removed, discs may not load properly into the player, or fragments of plastic adhering to the playback side of the disc may cause skipping in the sound.

On cleaning

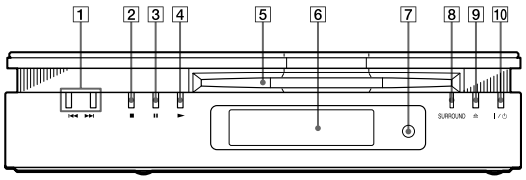
- Before playing, clean the disc with a cleaning cloth. Wipe the disc from the center out.

- 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.

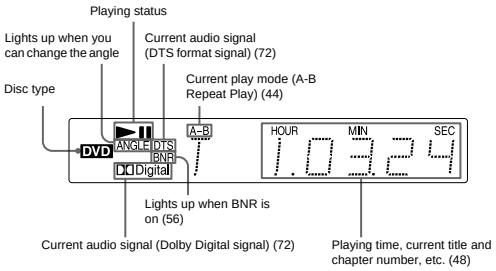
Front Panel



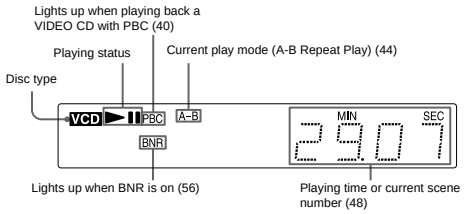
1 I◄◄ / ►►I (previous/next) buttons (37)
2 ■ (stop) button (36)
3 II (pause) button (37, 63)
4 ► (play) button (36)
5 Disc slot (36)
6 Front panel display (10)
7 R (remote sensor) (15)
8 SURROUND indicator (53)
9 ⏏ (eject) button (37)
10 I/⏻ (power) button/indicator (36)

Front Panel Display

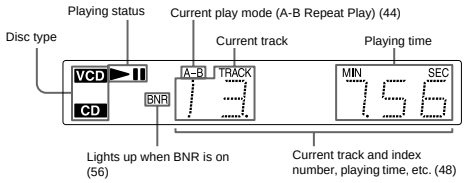
When playing back a DVD



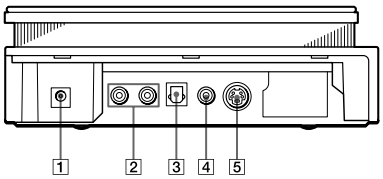
When playing back a VIDEO CD (PBC)



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

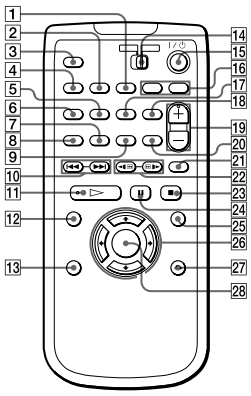


Side Panel



1 DC IN 10.5 V jack (17)
2 AUDIO OUT L/R jacks (17, 23, 24, 26)
3 DIGITAL OUT (OPTICAL) jack (24, 26, 28)
4 VIDEO OUT jack (17, 20)
5 S-VIDEO OUT jack (20)

Remote



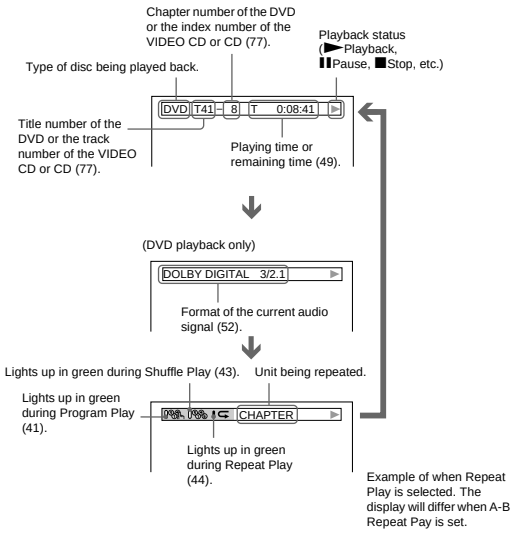
1 SEARCH MODE button (47)
2 BNR (Block Noise Reduction) button (56)
3 TIME/TEXT button (48)
4 SURROUND button (53)
5 ANGLE button (55)
6 AUDIO button (51)
7 PROGRAM button (41)
8 SHUFFLE button (43)
9 REPEAT button (44)
10 ⏮/⏭ PREV (previous) /NEXT buttons (37)
11 ▷ PLAY button (36)
12 TOP MENU button (39)
13 DISPLAY button (66)
14 TV/DVD switch (64)
15 I/⏻ (power) button (36)
16 TV operation buttons (64)
17 SUBTITLE button (55)
18 CLEAR button (41, 43, 44, 44)
19 VOL (volume) +/– buttons (64)
20 A-B button (44)
21 REPLAY button (37)
22 ◄◄/►► SCAN/SLOW buttons (46)
23 ■ STOP button (37)
24 ❚❚ PAUSE button (37)
25 MENU button (39)
26 ←/↑/↓/→ buttons (32)
27 RETURN button (40)
28 ENTER button (32)

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.

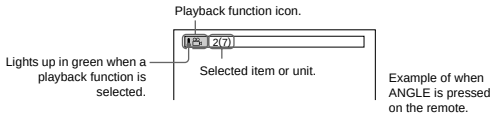
Status Bar

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



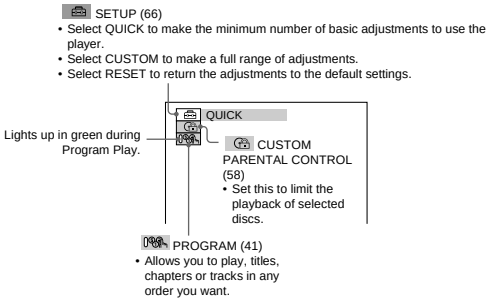
Control Bar

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 19.

Notes

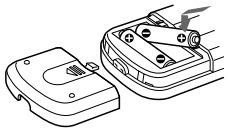
- You cannot connect this player to a TV that does not have a video input jack.
- Be sure to turn off the power of each component before connecting.

Step 1: Unpacking

Check that you have the following items:
- Audio/video cord (pinplug x 3 ⟷ pinplug x 3) (1)
- Remote commander (remote) RMT-D137A (1)
- Size AA (R6) batteries (2)
- AC power adaptor AC-F21 (1)
- AC power cord (1)
- Jack cover for vertical installation (1)

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.



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If you cannot operate the player with the remote

The player has 2 remote sensors, one at the top and one on the front (page 18). If one of the remote sensor is exposed to direct sunlight or lighting apparatus, the remote may not operate correctly. If this happens, select a remote sensor in the following way until you find one that works.

When the power is on and no disc is inserted in the player, press I◀◀ for more than 2 seconds while pressing ■.
The selected remote sensor is displayed on the front panel display as follows:

BOTH* (The player receives the remote signal at both remote sensors.) → TOP (The player receives the remote signal at the top remote sensor.) → FRONT (The player receives the remote signal at the front remote sensor.)

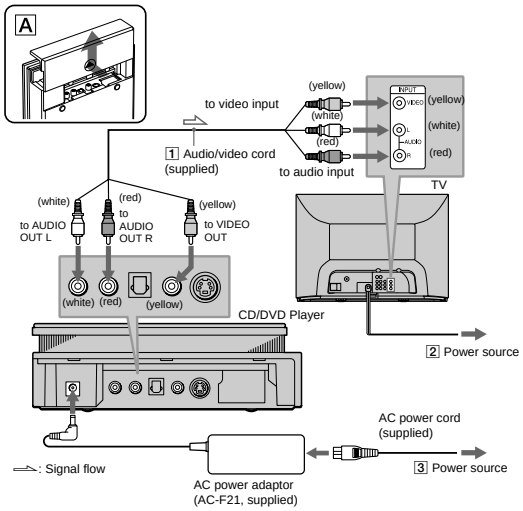
* The default setting

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

Remove the jack cover from the player (see fig. A). Connect the supplied audio/video cord and power cord in the order (1~3) shown below. Be sure to connect the power cord last.



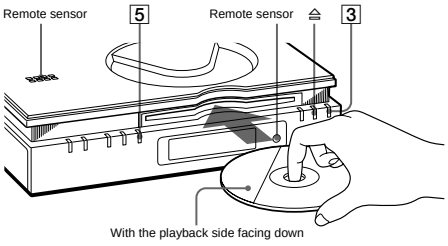
When connecting to a wide screen TV

Depending on the disc, the image may not fit your TV screen.
If you want to change the aspect ratio, please refer to page 68.

Step 4: Playing a Disc

1 Turn on the TV.

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



3 Press I/⏻ on the player.

4 Insert the disc into the disc slot with the playback side facing down.

5 Press ►.
The player begins playing the disc.

After Step 5
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 39) or VIDEO CD disc (page 40).

To stop playing
Press ■.

To take out the disc
Press ⏏ on the player, then remove the disc.

To turn off the player
Press I/⏻. The player is set to standby mode and the I/⏻ indicator lights up in red.

Hooking Up the Player

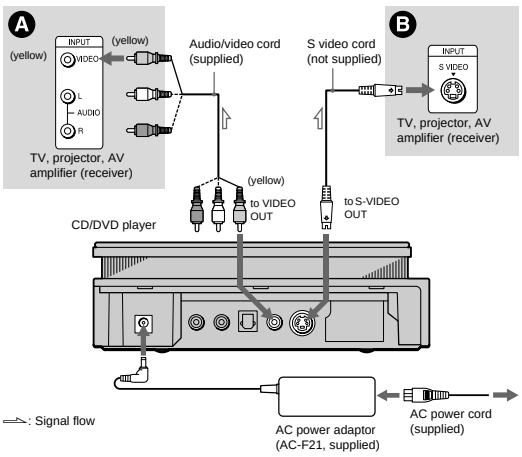
Follow Steps 1 to 5 to hook up and adjust the settings of the player.
Before you start, turn off the power, check that you have all of the supplied accessories, and insert the batteries into the remote (page 15). Remove the jack cover.

Notes

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

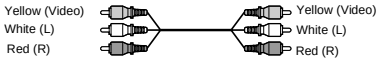
Step 1: Connecting the Video Cords

Connect this player to your TV monitor, projector, or AV amplifier (receiver) using a video cord. Select one of the patterns A or B, 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.



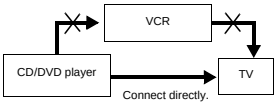
Use the red and white plugs to connect to the audio input jacks (page 23).

B If you are connecting to an S VIDEO input jack

Connect the S VIDEO cord (not supplied). You will enjoy 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 23)	TV (stereo)
B (page 24)	Stereo amplifier (receiver) (having L and R audio input jacks only, or having a digital input jack) • 2 speakers (front L and R)
B (page 24)	MD deck/DAT deck
C (page 26)	AV amplifier (receiver) with a Dolby* Surround (Pro Logic) decoder (having L and R audio input jacks only, or having a digital input jack) • 3 speakers (front L and R, and rear (monaural)) • 6 speakers (front L and R, center, rear L and R, subwoofer)
D (page 28)	AV amplifier (receiver) having a Dolby Digital or DTS** decoder, and a digital input jack • 6 speakers (front L and R, center, rear L and R, subwoofer)

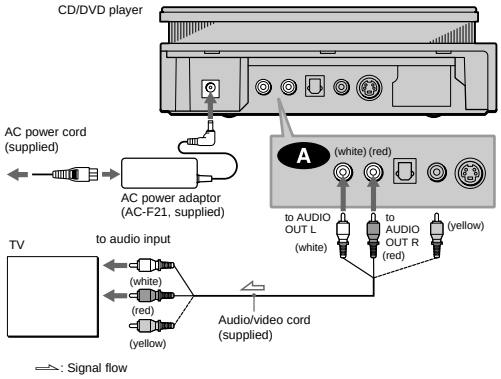
* Manufactured under license from Dolby Laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories. Confidential unpublished works. © 1992-1997 Dolby Laboratories. All rights reserved.

** "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 53)
- TVS WIDE (page 53)



The yellow plug is used for video signals (page 20).

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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, you can also connect the player directly to the MD deck or DAT deck without using your stereo amplifier (receiver).

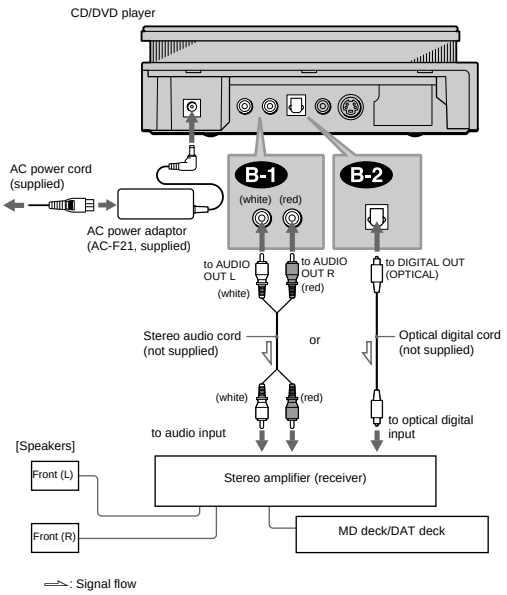
■Recommended surround sound effects for the B-1 connection only.
- TVS STANDARD (page 53)

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.



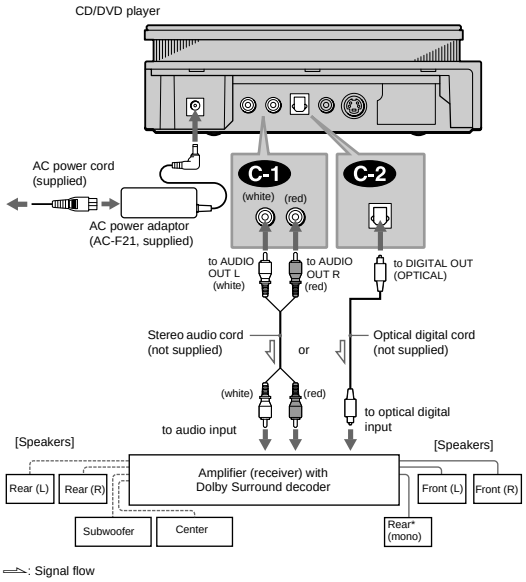
continued ➡

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 Dolby Surround (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 28.
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 72)

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



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

continued ➡

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

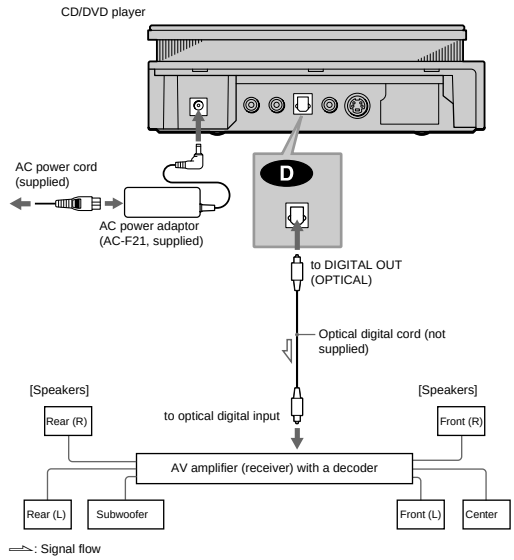
This connection will allow you to use the Dolby Digital or DTS decoder function of your AV amplifier (receiver). You are not able to enjoy the TVS sound effects of the player.

■Recommended surround sound effects using this connection with your amplifier (receiver).
• Dolby Digital (5.1ch) (page 72)
• DTS (5.1ch) (page 72)

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 32). If your AV amplifier (receiver) has a DTS decoder, set "DTS" to "ON" (page 32). Otherwise, no sound or a loud noise will come from the speakers.



Step 3: Attaching the Jack Cover

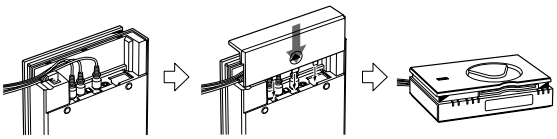
You can install the player horizontally, vertically or on the wall.

Notes

- Make sure that the connecting cords are not trapped by the jack cover.
- If you use commercially available cords, make sure that those cords are similar to the supplied cords in size. If the cords are too thick or hard, or the plug is too large, you may not be able to attach the jack cover securely.

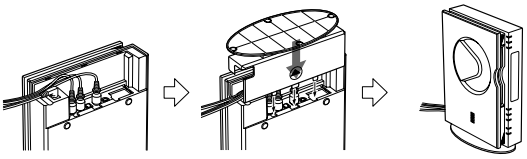
When you install the player horizontally

First, gather all the connecting cords together and let them pass through the side of the player. Then attach the jack cover carefully not to trap the cords.



When you install the player vertically

First, gather all the connecting cords together and let them pass through the side of the player. Then attach the jack cover for vertical installation (supplied) carefully not to trap the cords.

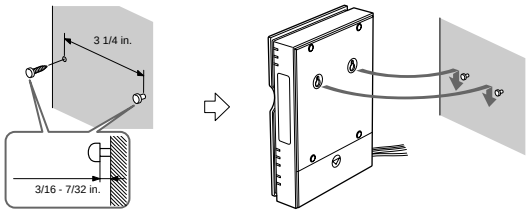


Notes

- When you place the player in a horizontal position, remove the jack cover for vertical installation.
- To move the player, hold the player itself. If you hold the flat part of the jack cover for vertical installation, it may break.
- Do not place the player in a vertical position without attaching the jack cover for vertical installation. If you do not attach it, the player will be unstable and may fall over.

When you install the player on the wall

When you install the player on the wall, ask a qualified installer to do the job. The player should be installed in the following way.
Attach the jack cover as in the same way for the horizontal installation.
Fasten screws (not supplied) to the wall at the same height 3 1/4 in. (80 mm) apart. The screws should protrude by 3/16 to 7/32 in. (4 to 5 mm).
Remove the seals covering the hanging holes. Hang the player on the screws. Push the player tightly against the wall.



Note

When you disconnect or connect the cords, take the player down from the wall.

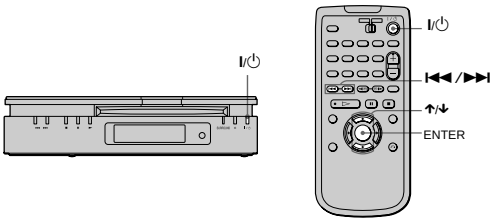
Step 4: Connecting the Power Cord

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 5: Quick Setup

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

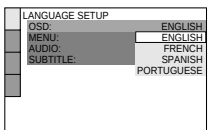


1 Turn on the TV.

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

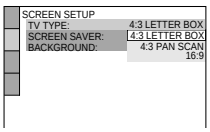
3 Press I/⏻ on the player or the remote.
“Press [ENTER] to run QUICK SETUP.” appears at the bottom of the screen. If this message does not appear, select “QUICK” under “SETUP” in the Control Menu (page 66) to run Quick Setup.

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 menu and subtitles as well.

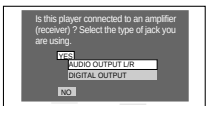
6 Press ENTER.
The Setup Display for selecting the aspect ratio of the TV to be connected appears.



7 Press ↑/↓ to select the item.

TV Type	You select	Page
4:3 standard TV	4:3 LETTER BOX or 4:3 PAN SCAN	68
A wide-screen TV or 4:3 standard TV with the wide-screen mode	16:9	68

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

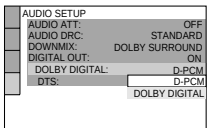


9 Press ↑/↓ to select the item, then press ENTER.
- When “NO” or “AUDIO OUTPUT L/R” is selected, Quick Setup is finished and connections are complete.
- When “DIGITAL OUTPUT” is selected, the Setup Display for “DOLBY DIGITAL” appears. Proceed to Step 10.

continued ➡

10 Press ↑/↓ to select the item.

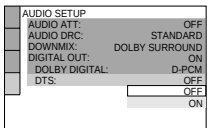
Choose the item that matches the audio connection you selected in pages 24 to 28 (B through D).



Audio Cord Connection Type	You select	Page
B-2 C-2	D-PCM	71
D	DOLBY DIGITAL (only if the amplifier/receiver has a Dolby Digital decoder)	71

11 Press ENTER.

"DTS" is selected.



12 Press ↑/↓ to select the item.

Choose the item that matches the audio connection you selected in pages 24 to 28 (B through D).

Audio Cord Connection Type	You select	Page
B-2 C-2	OFF	71
D	ON (only if the amplifier/receiver has a DTS decoder)	71

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 66).

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 24 to 28 (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 66 for using the Setup Display.

Audio Connection (pages 23 to 28)

A

No additional settings are needed.

B-1 C-1

Item	You select	Page
DOWNMIX	DOLBY SURROUND	72

• If the sound distorts even when the volume is turned down, set "AUDIO ATT" to "ON" (page 71).

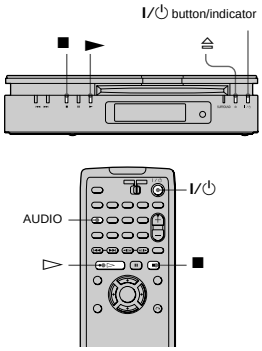
B-2 C-2 D

Item	You select	Page
DOWNMIX	DOLBY SURROUND	72
DIGITAL OUT	ON	72

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.

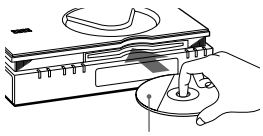
When using an amplifier (receiver)

Turn on the amplifier (receiver) and select the appropriate channel.

3 Press I/⏻.

The I/⏻ indicator (red) changes to green and the front panel display lights up.

4 Insert a disc in the player.



5 Press ► on the player or ▷ on the remote.

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 39), VIDEO CD (page 40).

To turn off the player

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

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 jack of the player.
• Set the sound to "STEREO" using the AUDIO button when you play DTS sound tracks on a CD (page 51).
• 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 (OPTICAL) jack even if "DTS" in "AUDIO SETUP" is set to "OFF" in the Setup Display (page 73), and may affect your ears or cause your speakers to be damaged.

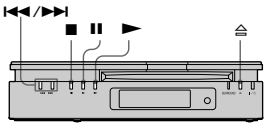
Notes on playing DVDs with a DTS sound track

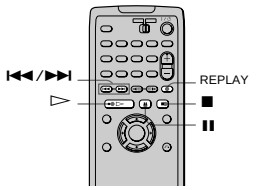
• DTS audio signals are output only through the DIGITAL OUT (OPTICAL) jack.
• If you connect the player to audio equipment without a DTS decoder, do not set "DTS" to "ON" in "AUDIO SETUP" (page 73). A loud noise may come out from the speakers, affecting your ears or causing the speakers to be damaged.
• When you play a DVD with DTS sound tracks, set "DTS" to "ON" in "AUDIO SETUP" (page 73).

Notes

• When you insert an 8-cm (3-inch) disc, insert the disc slowly at the center of the disc slot. If you cannot eject the disc, consult your nearest Sony dealer.
• No adaptor is required in order to play 8-cm (3-inch) discs on this player. If an adapter is used, damage to the player may result; therefore, never use an adapter when playing 8-cm (3-inch) discs.

Additional operations





To	Operation
Stop	Press ■
Pause	Press II
Resume play after pause	Press II or ▷ or ►
Go to the next chapter, track, or scene in continuous play mode	Press ►►I
Go back to the preceding chapter, track, or scene in continuous play mode	Press I◄◄
Stop play and remove the disc	Press ⏏
Replay a previous scene (DVD only)	Press REPLAY

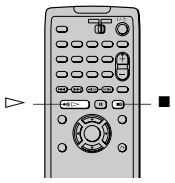
The Replay function is useful when you want to review a scene or dialog that you missed.

Note

You may not be able to use the Replay function with some scenes.

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 remove the disc, Resume Play works even if the player enters standby mode by pressing I/⏻.



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

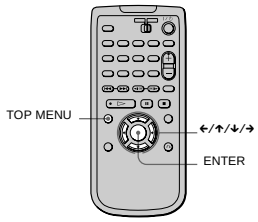
- Depending on where you stopped the disc, the player may not resume playback from exactly the same point.
- The point where you stopped playing is cleared when:
  – you disconnect the AC power cord.
  – you change the play mode.
  – you change the settings on the Setup Display.

Using the DVD's Menu DVD

Some discs have a "top menu" or a "menu."

Using the top 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 top menu.



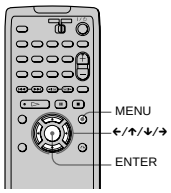
1 Press TOP MENU.
The top menu appears on the TV screen. The contents of the menu vary from disc to disc.

2 Press ←/↑/↓/→ to select the title you want to play.

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

Using the 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 menu.



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

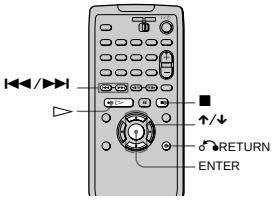
2 Press ←/↑/↓/→ to select the item you want to change.

3 To change other items, repeat Step 2.

4 Press ENTER.

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 ↑/↓.

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 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

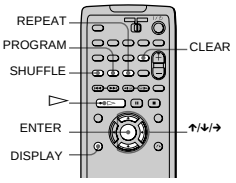
You can set the following play modes:
- Program Play (page 41)
- Shuffle Play (page 43)
- Repeat Play (page 44)
- A-B Repeat Play (page 44)

Note

- The play mode is canceled when:
  – you eject the disc.
  – the player enters standby mode by pressing I/⏻.

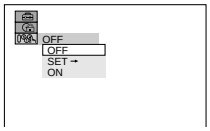
Creating your own program (Program Play)

You can play the contents of the discs in the order you want by arranging the order of the titles, chapters, or tracks to create your own program. You can program up to 99 titles, chapters, and tracks.



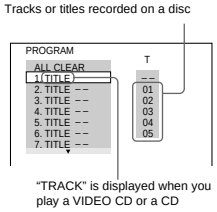
1 Press DISPLAY while the player is in stop mode.
The Control Menu is displayed.

2 Press ↑/↓ to select (PROGRAM) and press ENTER.
The options for "PROGRAM" appear.

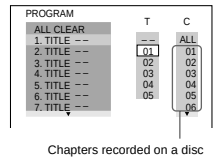


continued ➡

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

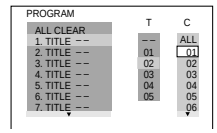


4 Press →.
The cursor moves to the title or track (in this case, "01").

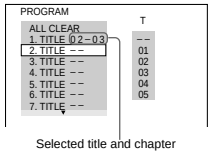


5 Select the title, chapter, or track you want to program.

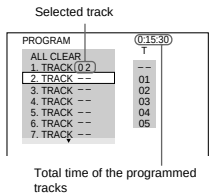
■ When playing a DVD
For example, select chapter "03" of title "02."
Press ↑/↓ to select "02" under "T," then press ENTER.



Next, press ↑/↓ to select "03" under "C," then press ENTER.



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



6 To program other titles, chapters, or tracks, repeat Steps 4 to 5.
The programmed titles, chapters, and tracks are displayed in the selected order.

7 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 or cancel a program
1 Follow Steps 1 through 3 of "Creating your own program (Program Play)."
2 Select the program number of the title, chapter, or track you want to change or cancel using ↑/↓, and press →.
3 Follow Step 5 for new programming. To cancel a program, select "--" under "T," then press ENTER.

To cancel all the titles, chapters, or tracks in the programmed order
1 Follow Steps 1 through 3 of "Creating your own program (Program Play)."
2 Press ↑ and select "ALL CLEAR."
3 Then press ENTER.

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

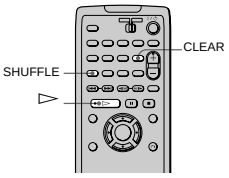
You can select "PROGRAM" directly by pressing PROGRAM.

Note

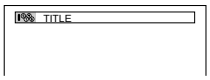
The number of titles, chapters, or tracks displayed are the same number of titles, chapters, or tracks recorded on a disc.

Playing in random order (Shuffle Play)

You can have the player "shuffle" titles, chapters, or tracks and play them in a random order. Subsequent "shuffling" may produce a different playing order.



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")
- 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")
- TRACK: Shuffles tracks and plays them in random order.

■ 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.

continued ➡

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

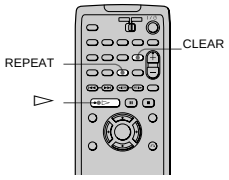
You can set the player to "shuffle" in stop mode as well. After pressing SHUFFLE to select the item you want to set, press ▷. Shuffle Play starts.

Note

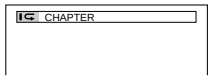
Up to 200 chapters in a disc can be played in random order when "CHAPTER" is selected.

Playing repeatedly (Repeat Play)

You can play 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.



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.
- 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.
- TRACK: Repeats the current track.

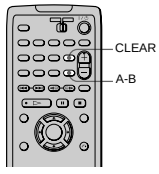
■ When Program Play is set to "ON" or Shuffle Play is activated
- ON: Repeats Program Play or Shuffle Play.

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

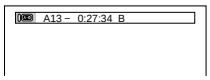
You can set the player to "repeat" in stop mode as well. After pressing REPEAT to select the item you want to set, press ▷. Repeat Play starts.

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.

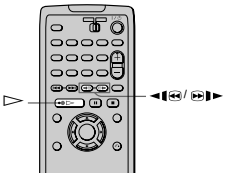
Notes

- 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.

Searching for a Scene

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

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:

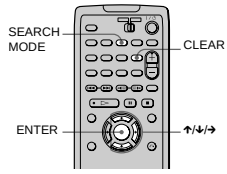
Playback direction
2❚► ⟷ 1❚►

Opposite direction (DVD only)
2◄❚ ⟷ 1◄❚

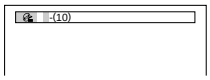
The "2❚►"/"2◄❚" playback speed is slower than "1❚►"/"1◄❚."

Searching for a Title/ Chapter/Track/Index/ Scene (Search mode) DVD VIDEO CD CD

You can search a DVD disc by title or chapter, and you can search a VIDEO CD or CD by track, index, or scene.
As title and tracks are assigned unique numbers on the disc, you can select the desired one by entering its number. Or, you can search for a scene using the time code.



1 Press SEARCH MODE during playback.
The Control Bar appears.
"--(**)" appears next to the icon on the Control Bar (** refers to a number). The number in parentheses indicates the total number of titles, tracks, scenes, etc. of the disc.



2 Press SEARCH MODE repeatedly to select the search method.

■ **When playing a DVD**
(TITLE), (CHAPTER), (TIME/TEXT), or (NUMBER INPUT)
Select "TIME/TEXT" to search for a starting point by inputting the time code.

■ **When playing a VIDEO CD**
(TRACK) or (INDEX)

■ **When playing a VIDEO CD with PBC Playback**
(SCENE)

■ **When playing a CD**
(TRACK) or (INDEX)

3 Select the number of the title, track, scene, time code, etc., you want by pressing ↑/↓ to select the digit, following by → to move the cursor.
For example, to find the scene at 2 hours, 10 minutes, and 20 seconds after the beginning, select "TIME/TEXT" in Step 2 and enter "2:10:20."

If you make a mistake
Cancel the number by pressing CLEAR, then select another number.

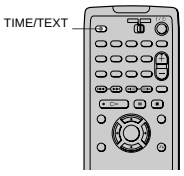
4 Press ENTER.
The player starts playback from the selected number.

If you are playing a disc and it is necessary to enter a number, select "NUMBER INPUT" in Step 2.

Viewing Information About the Disc

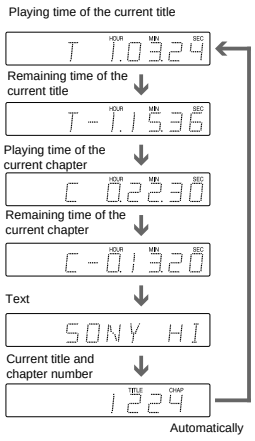
Viewing the Playing Time and Remaining Time on the Front Panel Display DVD VIDEO CD CD

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

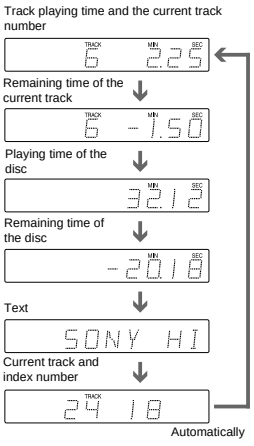


Press TIME/TEXT.
Each time you press TIME/TEXT while playing the disc, the display changes as shown in the following charts.

When playing a DVD



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



When playing VIDEO CDs with PBC functions, the scene number or the playing time is displayed.

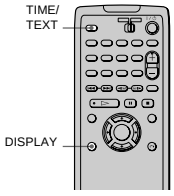
The playing time and remaining time of the current chapter, title, track, scene, or disc will also appear on your TV screen. See the following section "Checking the Playing Time and Remaining Time" for instructions on how to read this information.

Note

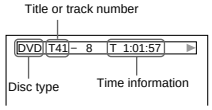
Depending on the type of disc being played and the playing mode, the above mentioned disc information may not be displayed.

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 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**

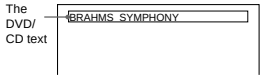
- T **:**
  Playing time of the current track
- T–**:**
  Remaining time of the current track
- D **:**
  Playing time of the current disc
- D–**:**
  Remaining time of the current disc

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

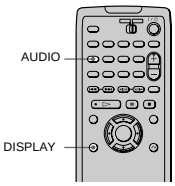
- Only letters of the alphabet can be displayed.
- This player can only display the first level of DVD/CD text, such as the disc's name or title.

Sound Adjustments

Changing the Sound

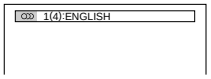
DVD VIDEO CD CD

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 81 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.

Sound Adjustments

continued ➡

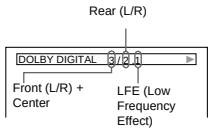
Checking the audio signal format

DVD

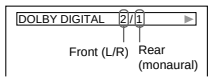
If you press DISPLAY twice during playback, the format of the current audio signal (Dolby Digital, DTS, PCM, etc.) appears as shown below.

Example

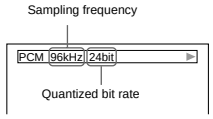
- Dolby Digital 5.1 ch



- 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.

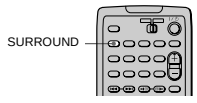
- Front (L)
- Front (R)
- Center
- Rear (L)
- Rear (R)
- Rear (Monaural): This signal can be either the Dolby Surround Sound processed signals or the Dolby Digital sound's monaural rear audio signals.
- LFE (Low Frequency Effect) signal

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 73).

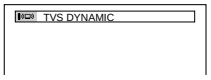
TV Virtual Surround Sound Settings (TVS) DVD VIDEO CD CD

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 AUDIO OUT L/R 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 (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

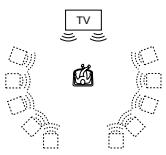
In Step 2, select "OFF."

TVS 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 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.



Sound Adjustments

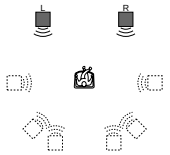
continued ➡

TVS 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 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 SURROUND indicator on the player lights up.

Notes

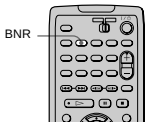
- When you select an effect, the sound cuts off for a moment.
- When the playing signal does not contain a signal for the rear speakers (page 52), the surround effects may be difficult to hear.
- When you select one of the TVS modes, turn off the surround setting of the connected TV or amplifier (receiver).
- 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 (OPTICAL) jack, sound will come from your speakers but it will not have the TVS effect.

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

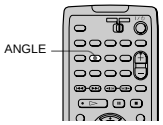
Select "OFF" in Step 2.

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.

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.

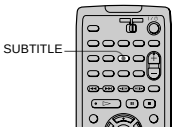
2 Press ANGLE repeatedly to select the angle number.
The scene changes to the selected angle.

Note

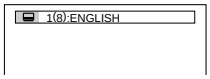
Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

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 81 to see which language the code represents.

To turn off the subtitles

Select "OFF" in Step 2.

continued ➡

Locking Discs (Custom Parental Control, Parental Control)

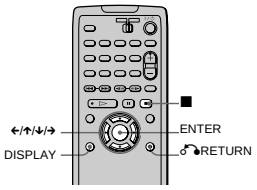
You can set two kinds of playback restrictions for the desired disc.
- Custom Parental Control
  You can set the playback restrictions so that the player will not play inappropriate discs.
- Parental Control
  Playback of some DVDs can be limited according to a predetermined level such as the age of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

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

Custom Parental Control

DVD VIDEO CD CD

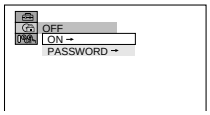
You can set the same Custom Parental Control password for up to 50 discs. When you set the fifty-first disc, the first disc is canceled.



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

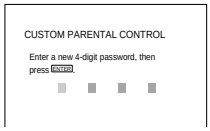
2 Press DISPLAY while the player is in stop mode.
The Control Menu is displayed.

3 Press ↑/↓ to select (CUSTOM PARENTAL CONTROL), then press ENTER.
The options for "CUSTOM PARENTAL CONTROL" appear.



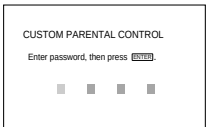
4 Press ↑/↓ to select "ON →," then press ENTER.

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



Enter a 4-digit password by pressing ↑/↓ to select the digit, followed by → to move the cursor. 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 by pressing ↑/↓ to select the digit, followed by → to move the cursor. 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 Follow Steps 1 through 3 of "Custom Parental Control."

2 Press ↑/↓ to select "OFF →," then press ENTER.

3 Enter your 4-digit password using ↑/↓ to select the digit, followed by → to move the cursor. Then press ENTER.

To change the password

1 Follow Steps 1 through 3 of "Custom Parental Control."

2 Press ↑/↓ to select "PASSWORD →," then press ENTER.
The display for entering the password appears.

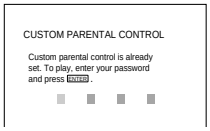
3 Enter your 4-digit password using ↑/↓ to select the digit, followed by → to move the cursor. Then press ENTER.

4 Enter a new 4-digit password using ↑/↓ to select the digit, followed by → to move the cursor. Then press ENTER.

5 To confirm your password, re-enter it using ↑/↓ to select the digit, followed by → to move the cursor. 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.



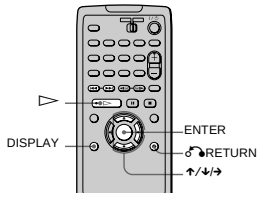
2 Enter your 4-digit password using ↑/↓ to select the digit, followed by → to move the cursor. Then press ENTER.
The player is ready for playback.

If you forget your password, enter the 6-digit number "199703" when the "CUSTOM PARENTAL CONTROL" display asks you for your password, then press ENTER. (Press → after the 4th digit to allow the entire 6-digit number to be entered.) The display will ask you to enter a new 4-digit password.

continued ➡

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.

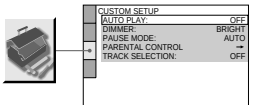


1 Press DISPLAY while the player is in stop mode.
The Control Menu is displayed.

2 Press ↑/↓ to select (SETUP), then press ENTER.

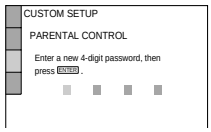
3 Press ↑/↓ to select "CUSTOM," then press ENTER.
The Setup Display appears.

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



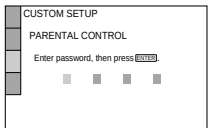
5 Press ↑/↓ to select "PARENTAL CONTROL →," then press ENTER.

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

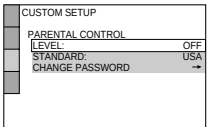


Enter a 4-digit password using ↑/↓ to select the digit, followed by → to move the cursor. Then press ENTER.
The display for confirming the password appears.

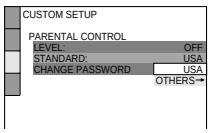
■ When you have already registered a password
The display for entering the password appears.



6 Enter or re-enter your password using ↑/↓ to select the digit, followed by → to move the cursor. Then press ENTER.
The display for setting the playback limitation level and changing the password appears.

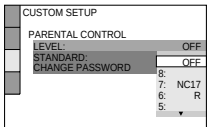


7 Press ↑/↓ to select "STANDARD," then press ENTER.
The selection items for "STANDARD" are displayed.

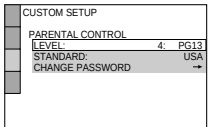


8 Press ↑/↓ to select a geographic area as the playback limitation level, then press ENTER.
The area is selected.
When you select "OTHERS →," select and enter the standard code in the table on page 62 using ↑/↓.

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
Set "LEVEL" to "OFF" in Step 10.

continued ➡

To change the password

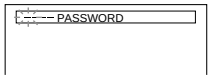
1 Follow Steps 1 through 6 of "Limiting playback by children (Parental Control)."

2 Select "CHANGE PASSWORD →" using ↓, then press ENTER.
The display for entering the password appears.

3 Follow Step 6 to enter a new password.

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 ↑/↓ to select the digit, followed by → to move the cursor. 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," then press ENTER. (Press → after the 4th digit to allow the entire 6 digit number to be entered.) The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password in Step 6, insert 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

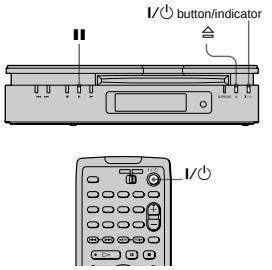
Operation Sound Effects

(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 I/⏻ on the player or the remote.
The I/⏻ indicator lights up in green.
When there is a disc in the player, press ⏏ and remove the disc.

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.

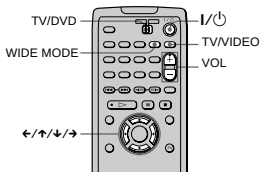
Controlling Your TV, etc. with the Supplied Remote

By adjusting the remote signal, you can control your TV or Sony Active Speaker System SA-F21 (not supplied) with the supplied remote.

Notes

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

Controlling TVs with the remote



1 Slide the TV/DVD switch to "TV."

2 Hold down I/⏻, and enter your TV's manufacturer's code (see the table) using ←/↑/↓/→.

3 Release I/⏻.

Manufacturer's codes of controllable TVs

Manufacturer	Press ←/↑/↓/→ to input code
Sony (default)	↑↑
Fisher	↑↓
General Electric	↑←
JVC	↓↑
Magnavox	↑→
Panasonic	→→
Philips	↑→
Quasar	→↓
RCA	↑←
Samsung	↓→
Sanyo	↑↓
Sears	→← or ↑← or ↑↓
Sharp	→↓
Teknika	↑→
Toshiba	→←
Zenith	→↑

Controlling the TV

When you set the TV/DVD switch to "TV," you can control your TV using the buttons below.

By pressing	You can
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
WIDE MODE	Switch to or from the wide mode of a Sony wide TV

Controlling Active Speaker System SA-F21

When you set the TV/DVD switch to "DVD," you can adjust the volume using VOL +/–.

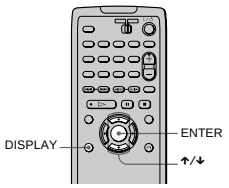
There are some Sony audio products you can adjust the volume with the supplied remote.

Using the Setup Display

DVD VIDEO CD

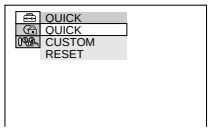
By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things. For details on each Setup Display item see page 67 through 73. For an overall list of Setup Display items, see page 82.

How to use the Setup Display

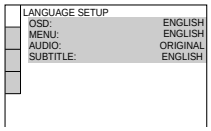


1 Press DISPLAY on the remote when the player is in stop mode.
The Control Menu appears.

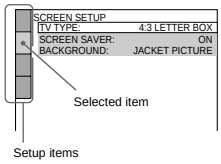
2 Press ↑/↓ to select (SETUP) and press ENTER.
The options for "SETUP" appear.



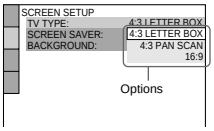
3 Press ↑/↓ to select "CUSTOM" and press ENTER.
The Setup Display appears.



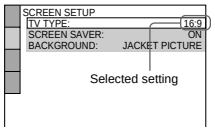
4 Press ↑/↓ to select the setup item from the displayed list: "LANGUAGE SETUP," "SCREEN SETUP," "CUSTOM SETUP," or "AUDIO SETUP." Then press ENTER.
The selected setup item appears.
Example: "SCREEN SETUP"



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 32).
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 82 to 83 (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 I/⏻ when resetting the player.

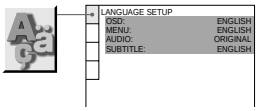
Setting the Display or Sound Track Language

(LANGUAGE SETUP)

DVD VIDEO 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 66).



■OSD (On-Screen Display)

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

■MENU (DVD only)

You can select the desired language for the 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 ➡

If you select "OTHERS →" in "MENU," "SUBTITLE," and "AUDIO," select and enter the language code from the list using ↑/↓ to select the digit, followed by → to move the cursor (page 81). After you have made a selection, the language code (4 digits) is displayed the next time you select "OTHERS →."

Note

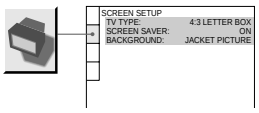
When you select a language that is not recorded on the DVD, one of the recorded languages will be automatically selected (except for the "OSD").

Settings for the Display

(SCREEN SETUP) DVD VIDEO CD

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 66).
The default settings are underlined.



■TV TYPE

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

4:3 LETTER BOX	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.

ON	Turns on the screen saver.
OFF	Turns off the screen saver.

■BACKGROUND

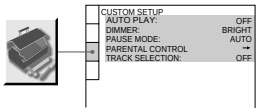
Selects the background color or picture on the TV screen in stop mode or while playing a CD.

JACKET PICTURE	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

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 66).
The default settings are underlined.



■AUTO PLAY

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

OFF	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 I/⏻ 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.

BRIGHT	Makes the front panel display bright.
DARK	Makes the front panel display dark.
OFF	Turns off the lighting of the front panel display.
AUTO	Turn on the front panel display for a few seconds when a button on the player or remote is pressed.

■PAUSE MODE (DVD only)

Selects the picture in pause mode.

AUTO	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 60).

■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.

OFF	No priority given.
AUTO	Priority given.

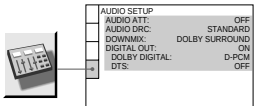
Notes

- 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 67).
- If you set “DTS” to “OFF” (page 73), 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 66).
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 following jacks:
– AUDIO OUT L/R jacks

OFF	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.

continued ➡

■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:
– AUDIO OUT L/R jacks
– DIGITAL OUT (OPTICAL) jack only when “DOLBY DIGITAL” is set to “D-PCM” in “DIGITAL OUT” (page 73).

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 “Rear (L),” “Rear (R),” or “Rear (Monaural)” are recorded in Dolby Digital format. For details on the rear signal components, see “Changing the Sound” (page 51). This function affects the output of the following jacks:
– AUDIO OUT L/R jacks
– DIGITAL OUT (OPTICAL) jack when “DOLBY DIGITAL” is set to “D-PCM” in “DIGITAL OUT” (page 73).

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.

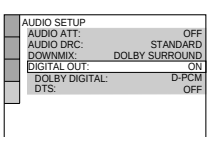
■DIGITAL OUT

Selects if audio signals are output via the DIGITAL OUT (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 (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 an optical digital cord via the DIGITAL OUT (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 24.
Select “DOLBY DIGITAL” and “DTS” after setting “DIGITAL OUT” to “ON.”



■DOLBY DIGITAL

Selects the Dolby Digital signals output via the DIGITAL OUT (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 72).
DOLBY DIGITAL	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder. 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 (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. 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 (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 adaptor and AC power cord are 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 20).
➡ 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 20).

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 24, 26, 28).
➡ 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 (OPTICAL) jack, check the audio settings (page 71).

Sound is noisy.

➡ The disc is dirty or flawed.
➡ When playing a CD with DTS sound tracks, noise will come from the AUDIO OUT L/R jacks (page 36).

Sound distortion occurs.

➡ Set "AUDIO ATT" in "AUDIO SETUP" to "ON" (page 71).

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 remote sensor of the player is exposed to strong light. Select another remote sensor (page 15).
➡ The batteries in the remote are weak.

The disc does not play.

➡ There is no disc inside.
➡ The disc is turned over. Insert the disc with the playback side facing down in the disc slot.
➡ 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 41). 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 38).
➡ The disc automatically displays the menu.

The player starts playing the disc automatically.

➡ The DVD features an auto playback function.
➡ "AUTO PLAY" in "CUSTOM SETUP" is set to "TIMER" (page 70).

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 67).

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.

continued ➡

The player does not operate properly.

➡ When static electricity, etc., causes the player to operate abnormally, disconnect the AC power cord once, then connect it again.

Nothing is displayed on the front panel display.

➡ "DIMMER" in "CUSTOM SETUP" is set to "OFF." Set "DIMMER" to "BRIGHT" or "DARK" (page 70). If you set to "AUTO," the display turns on only when you operate the player.

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 76.)

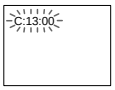
The disc cannot be removed and "LOCKED" appears on the front panel display.

➡ 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

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 22, 73)
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 71)
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 22, 73)
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 47)
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 58)
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.

continued ➡

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 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 53)
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.

Specifications

System

Laser	Semiconductor laser
Signal format system	NTSC

Audio characteristics

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

The signals from AUDIO OUT L/R jacks are measured. When you play PCM sound tracks with a 96 kHz sampling frequency, the output signal from the DIGITAL OUT (OPTICAL) jack is 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 660 nm
AUDIO OUT L/R	Phono jack	2 Vrms (50 kilohms)	Over 10 kilohms
VIDEO OUT	Phono jack	1.0 Vp-p	75 ohms, sync negative
S-VIDEO OUT	4-pin mini DIN	Luminance signal: 1.0 Vp-p Color signal: 0.286 Vp-p	75 ohms, sync negative 75 ohms terminated

General

Power requirements	DC 10.5 V See page 3 for further information.
Power consumption	12 W
Dimensions (approx.)	252 × 60 × 183 mm (10 × 2 3/8 × 7 1/4 in.) (width/height/depth) including projecting parts
Mass (approx.)	1.5 kg (3 lb 5 oz)
Operating temperature	5°C to 35°C (41°F to 95°F)
Operating humidity	25% to 80%

continued ➡

AC power adaptor

Model name	AC-F21
Power requirements	100 to 240 V AC, 50/60 Hz
Output voltage	DC 10.5 V, 1.3 A in operating mode
Operating temperature	5°C to 35°C (41°F to 95°F)
Storage temperature	–20°C to 60°C (–4°F to 140°F)

Supplied accessories

See page 15.

Optional accessory

Active Speaker System SA-F21

Specifications and design are subject to change without notice.

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Language Code List

For details, see page 51, 55, 67.
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				
1181	Frisian	1345	Malagasy				

1703 Not specified

List of Setup Display Items

The default settings are underlined.

LANGUAGE SETUP (page 67)

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

SCREEN SETUP (page 68)

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

CUSTOM SETUP (page 70)

AUTO PLAY	OFF TIMER DEMO1 DEMO2
DIMMER	BRIGHT DARK OFF AUTO
PAUSE MODE	AUTO FRAME
PARENTAL CONTROL ➡	
TRACK SELECTION	OFF AUTO

AUDIO SETUP (page 71)

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

Index

Sony Corporation Printed in Japan

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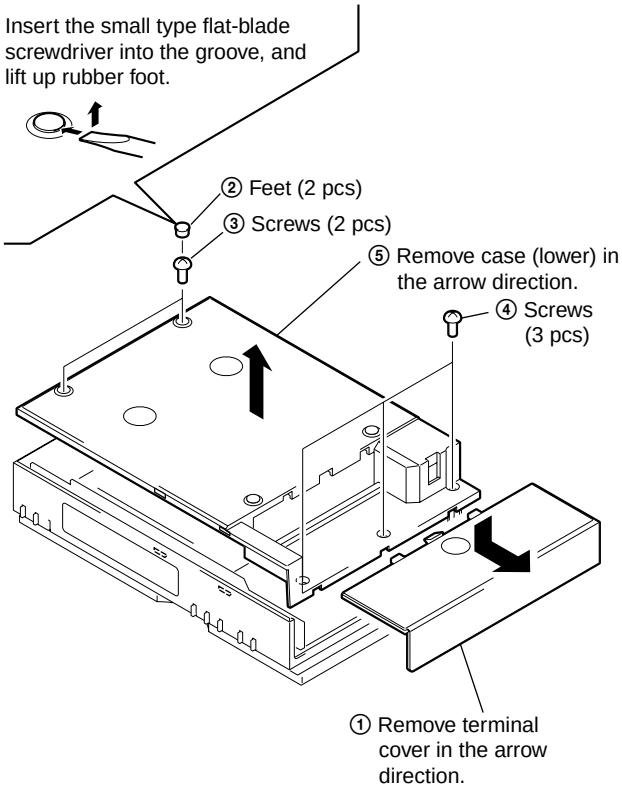
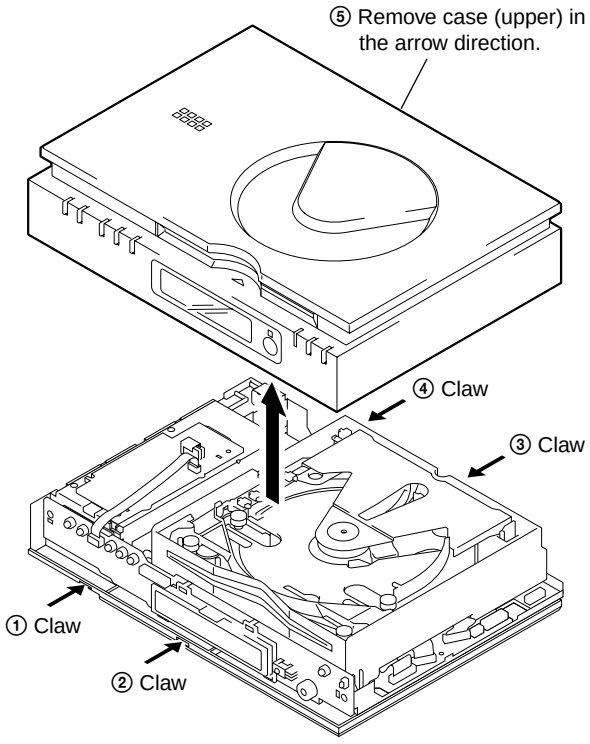
SECTION 2
DISASSEMBLY

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

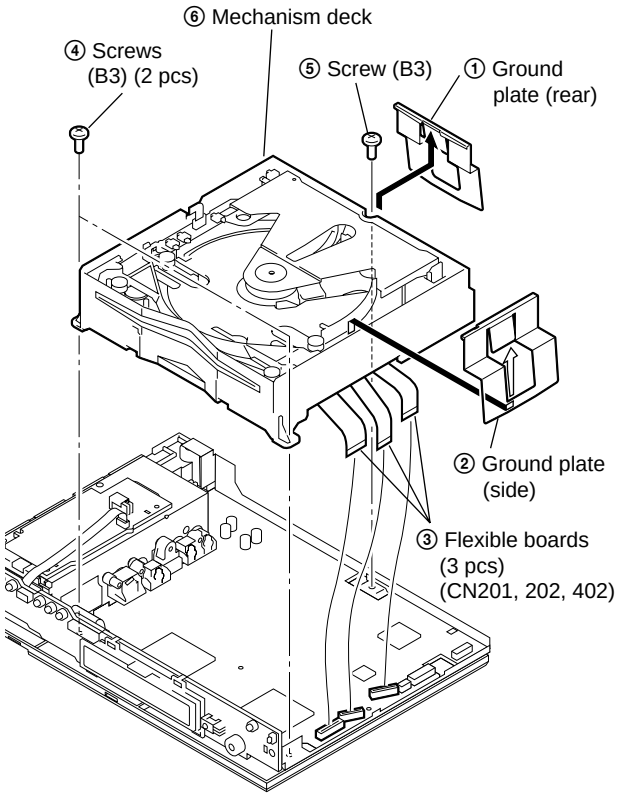
2-1. TERMINAL COVER, LOWER CASE



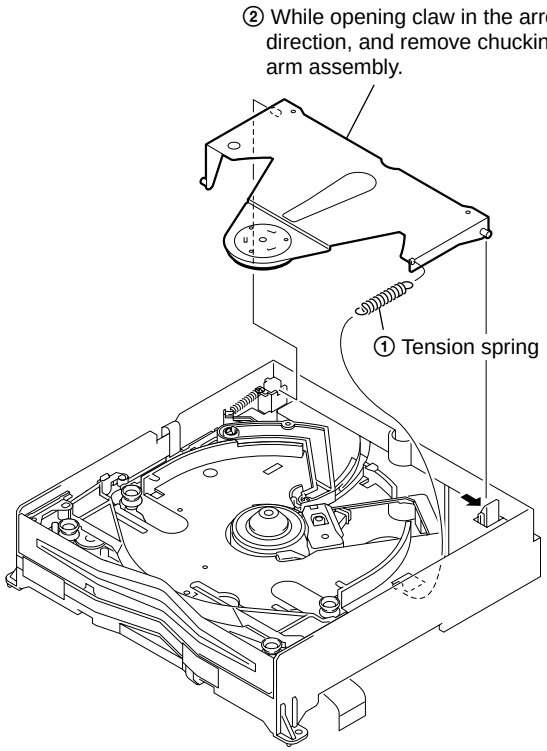
2-2. UPPER CASE



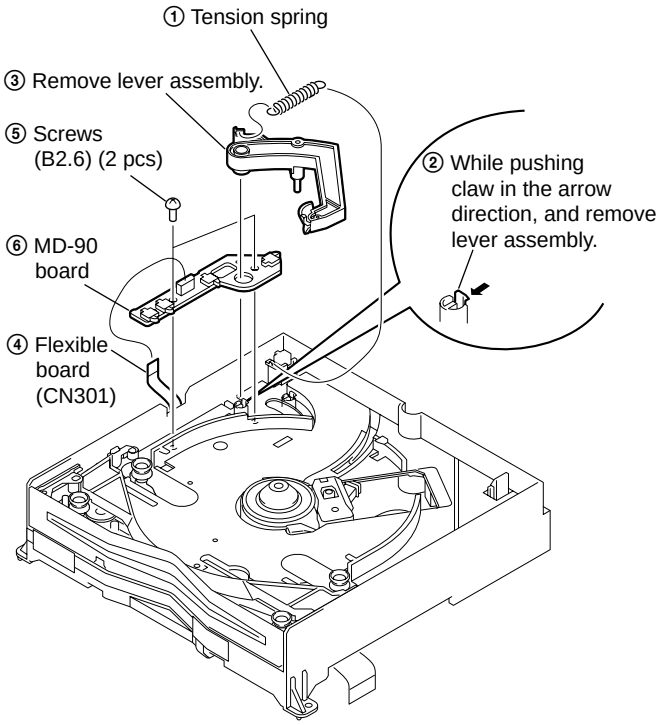
2-3. MECHANISM DECK



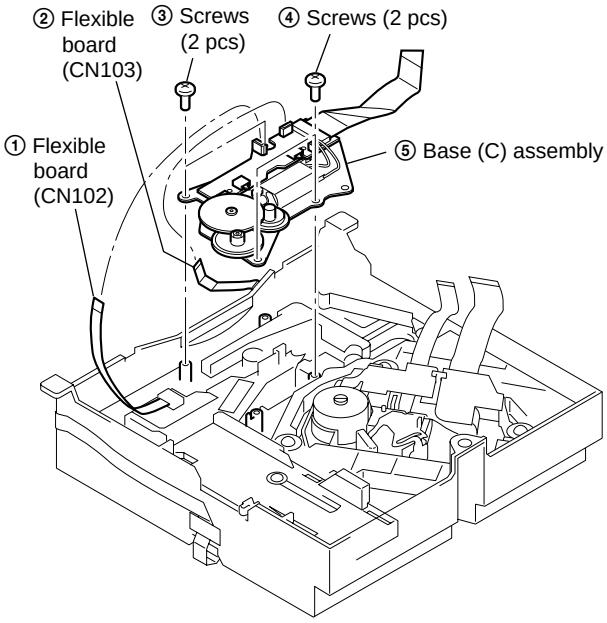
2-4. CHUCKING ARM BLOCK



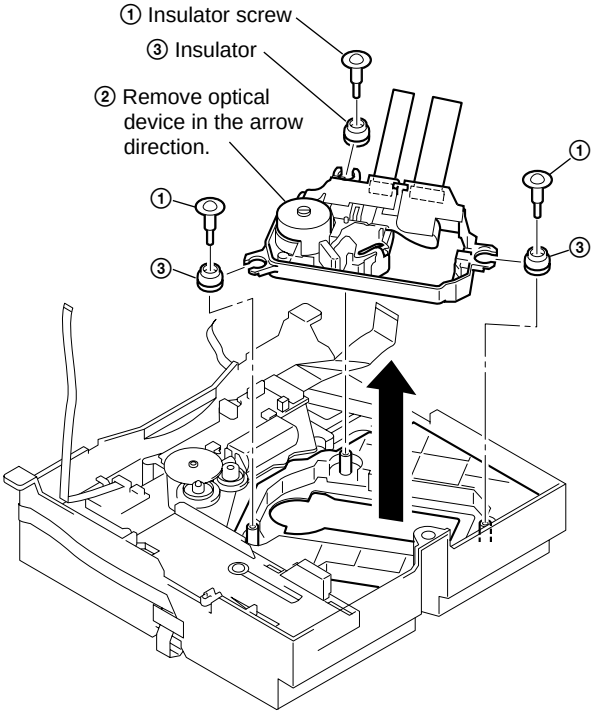
2-5. MD-90, BOARD, LEVER ASSEMBLY



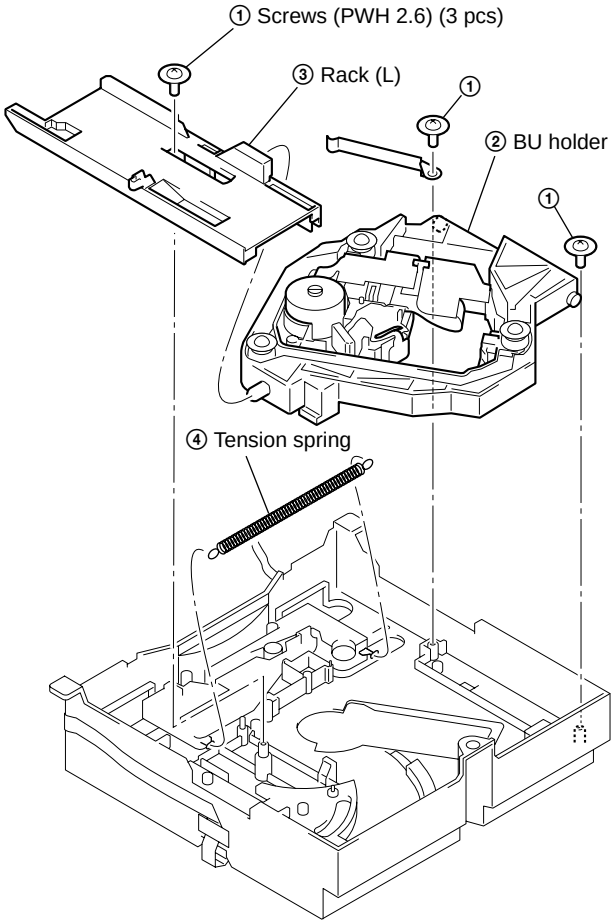
2-6. BASE (C) ASSEMBLY



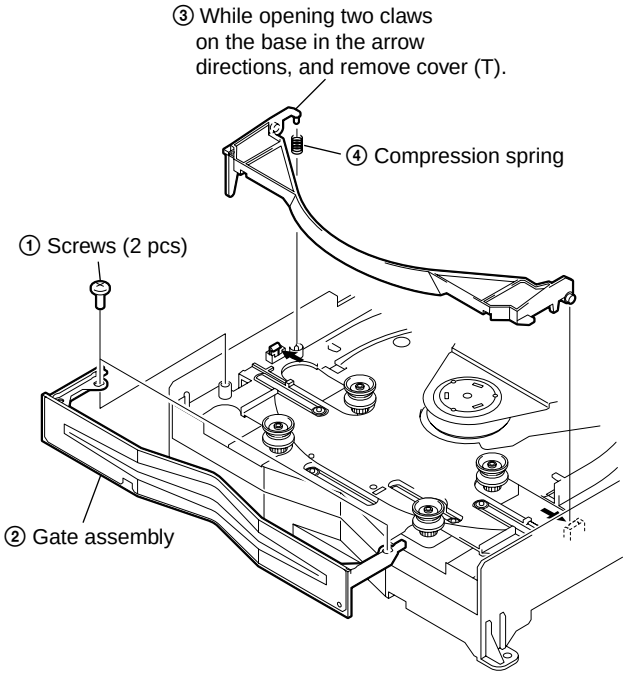
2-7. OPTICAL DEVICE



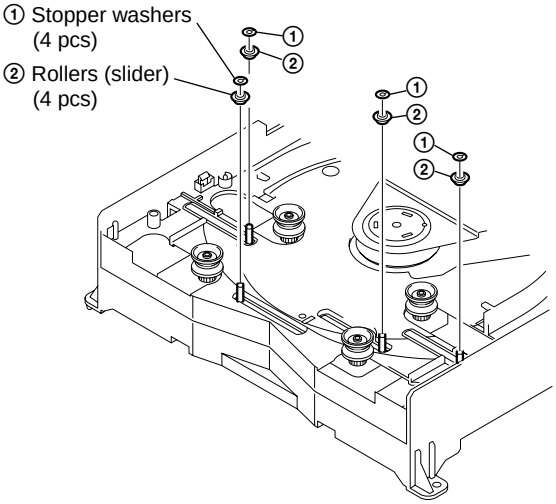
2-8. BU HOLDER



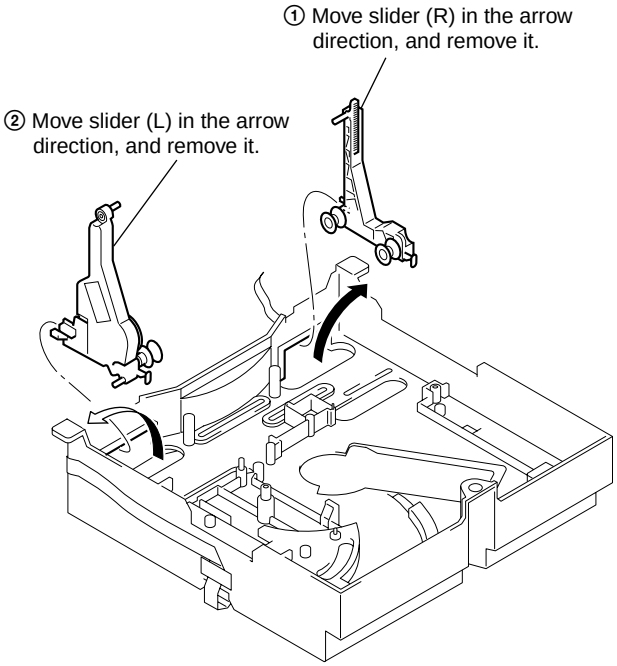
2-9. GATE ASSEMBLY, COVER (T)



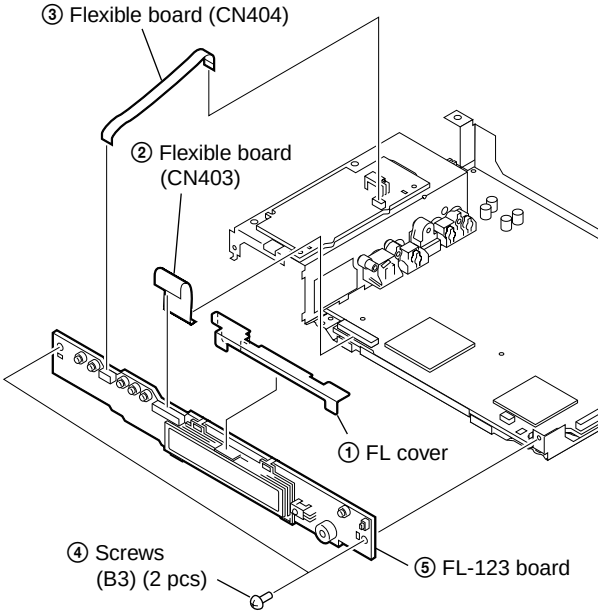
2-10. ROLLER (SLIDER)



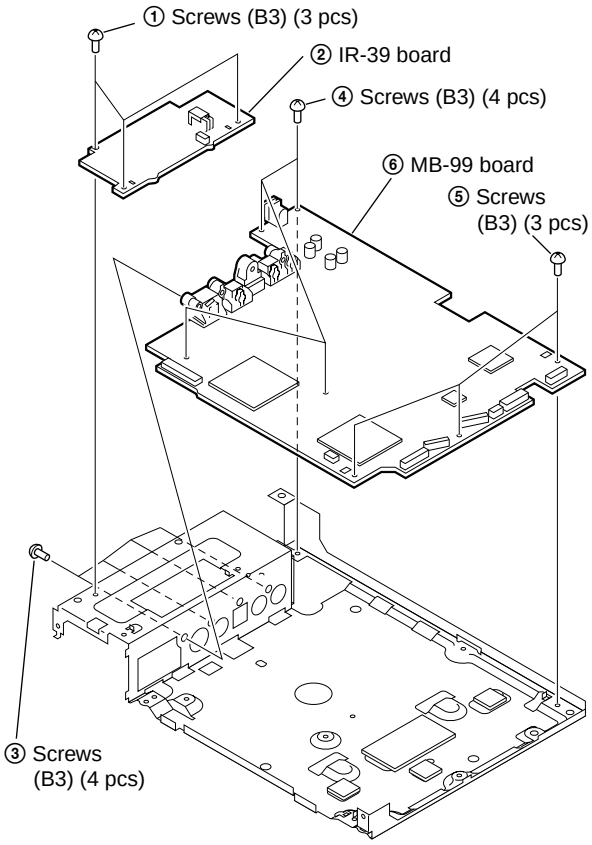
2-11. SLIDER (L), SLIDER (R)



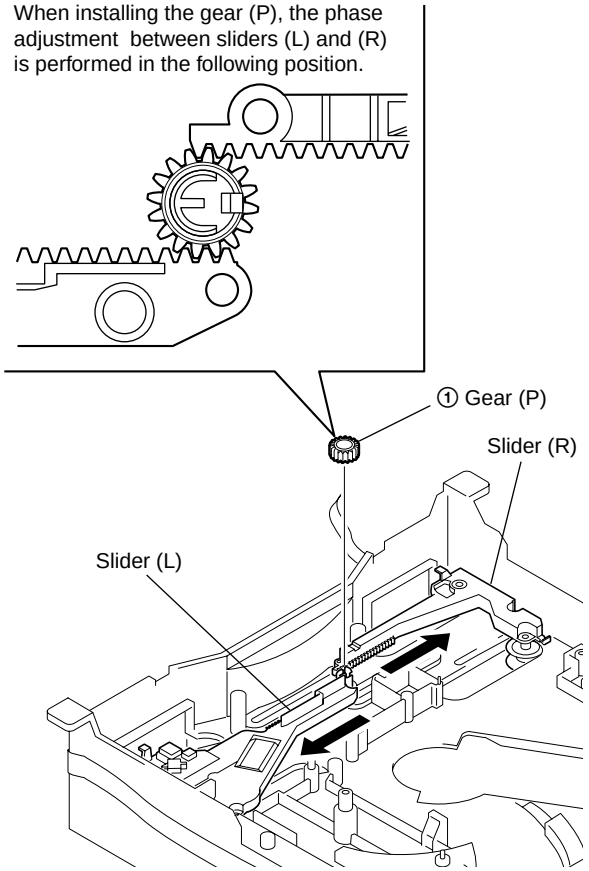
2-12. FL-123 BOARD



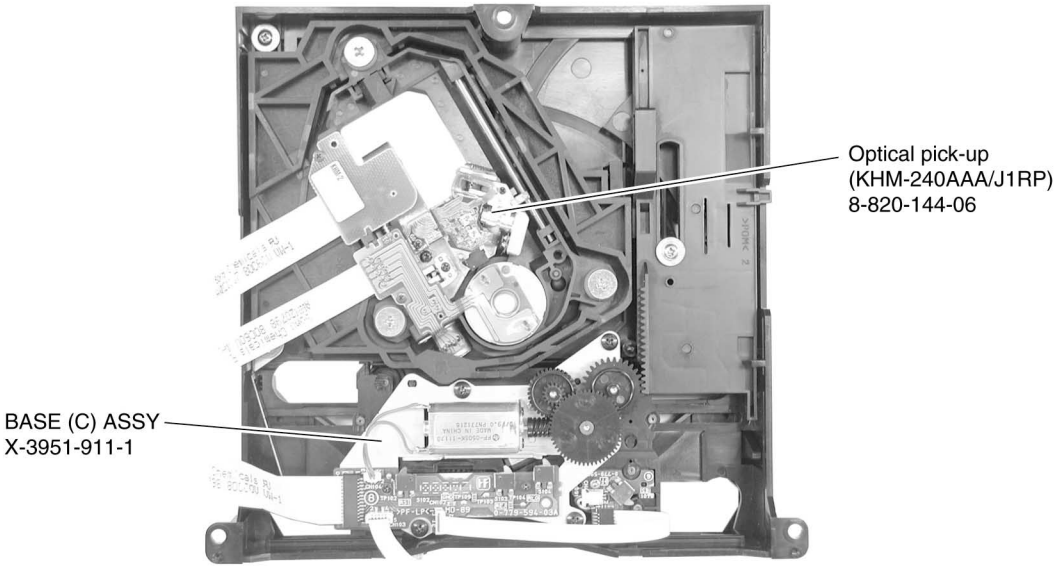
2-13. MB-99, IR-39 BOARDS

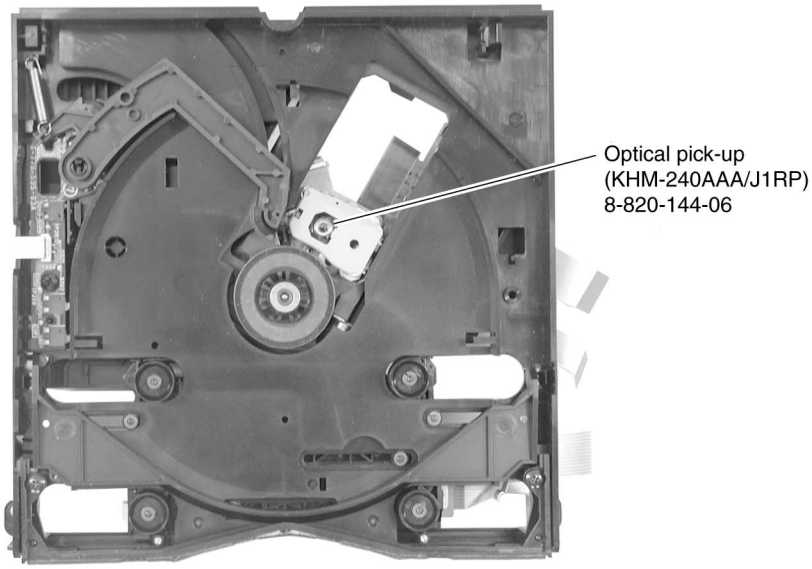


2-14. Sliders (L) and (R) Phase Adjustment

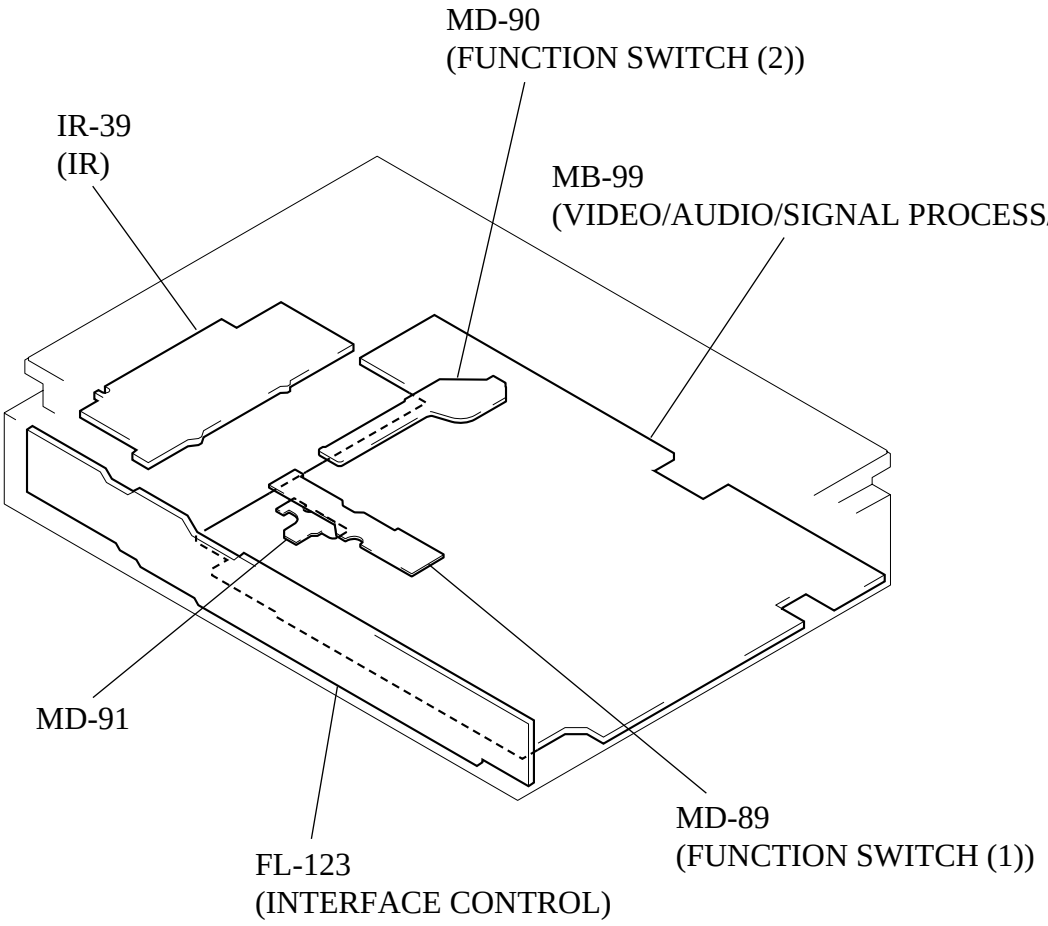


2-15. INTERNAL VIEWS



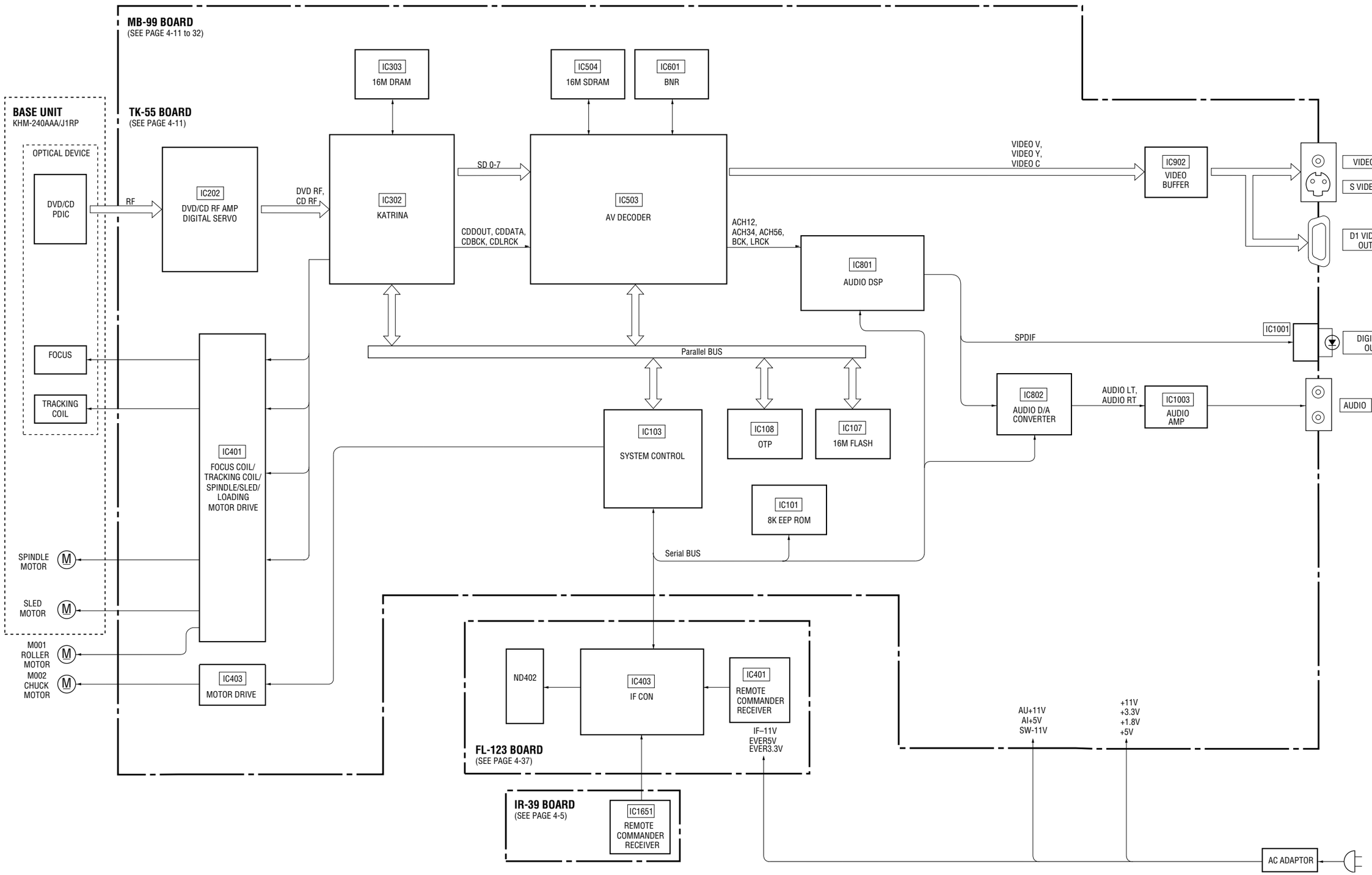


2-16. CIRCUIT BOARDS LOCATION

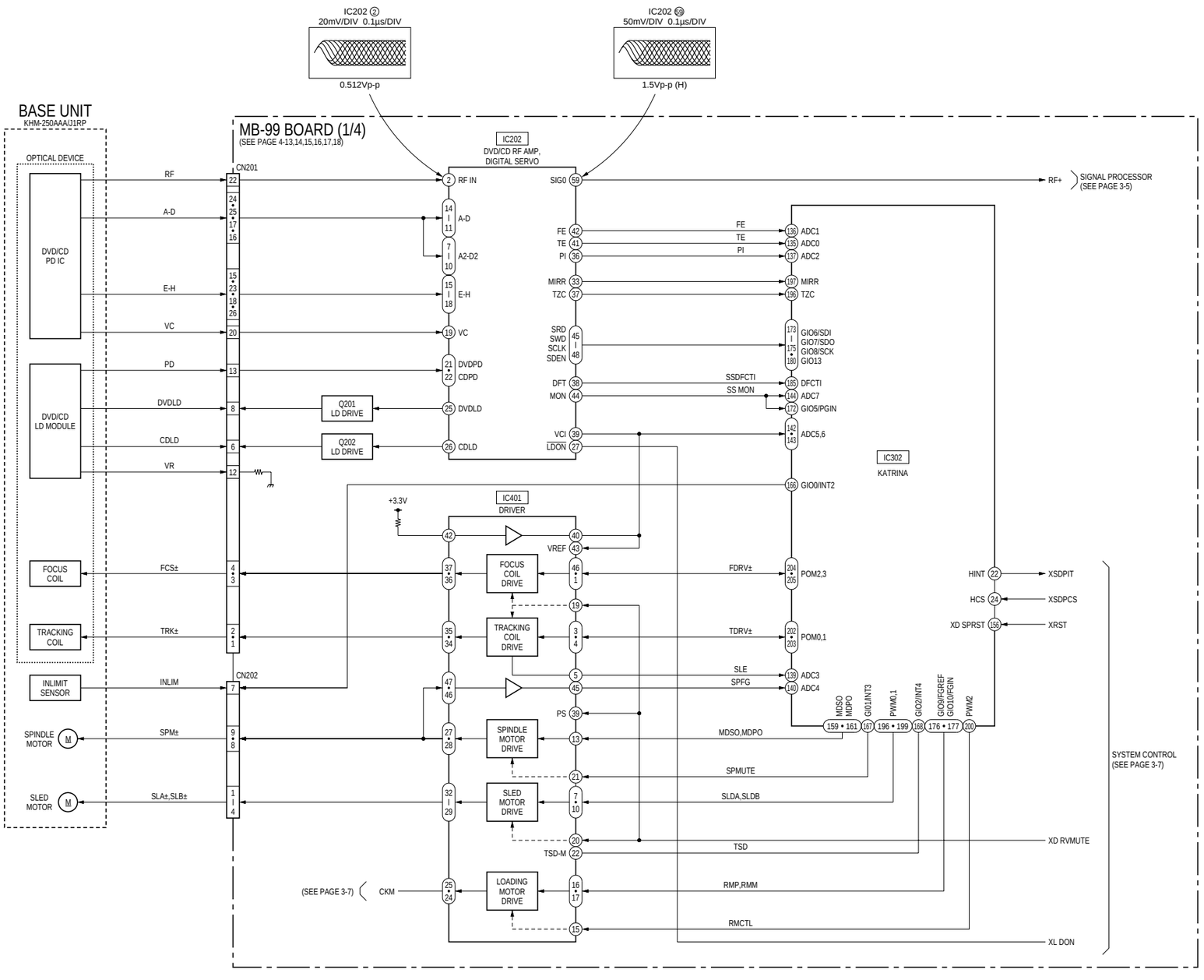


SECTION 3
BLOCK DIAGRAMS

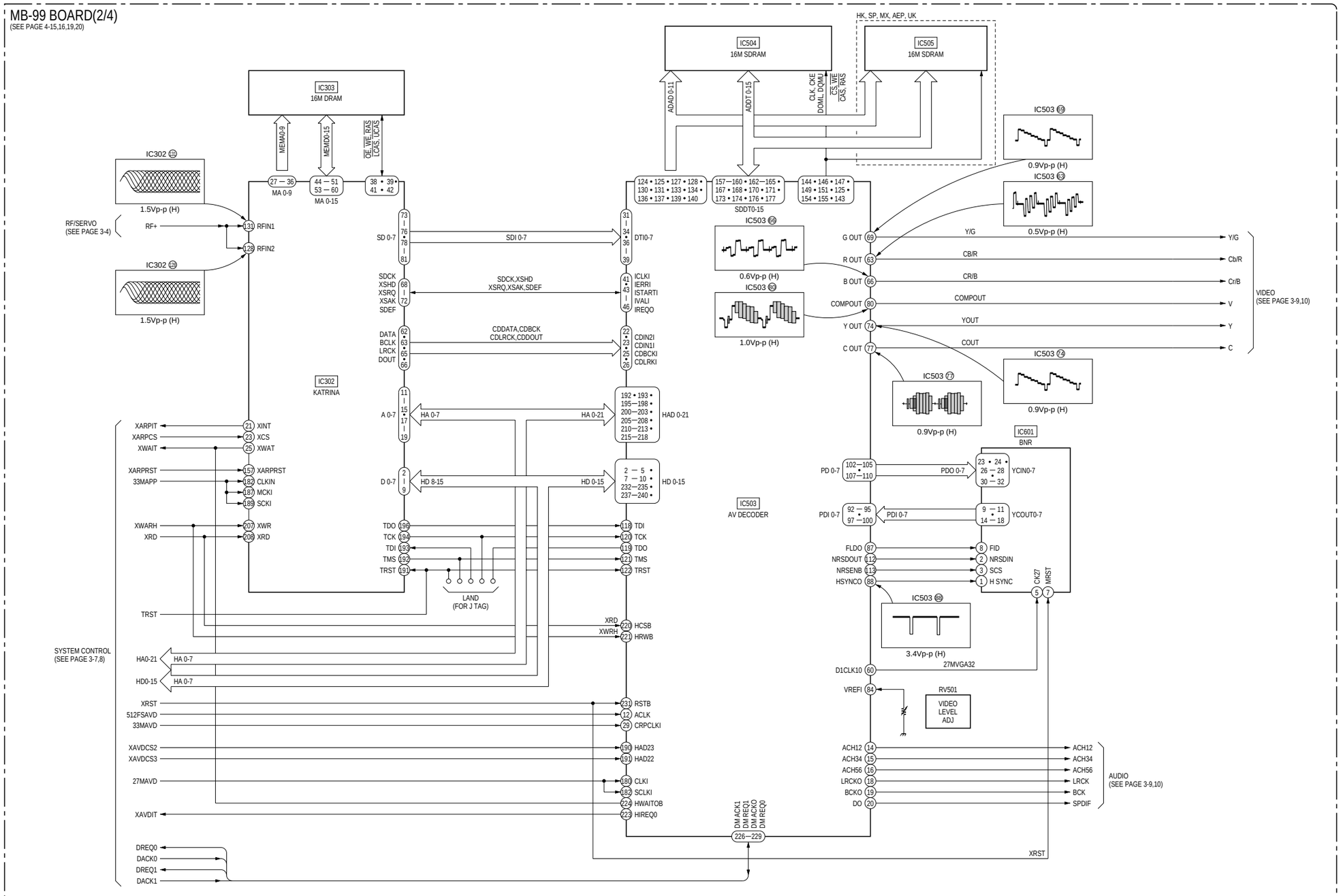
3-1. OVERALL BLOCK DIAGRAM



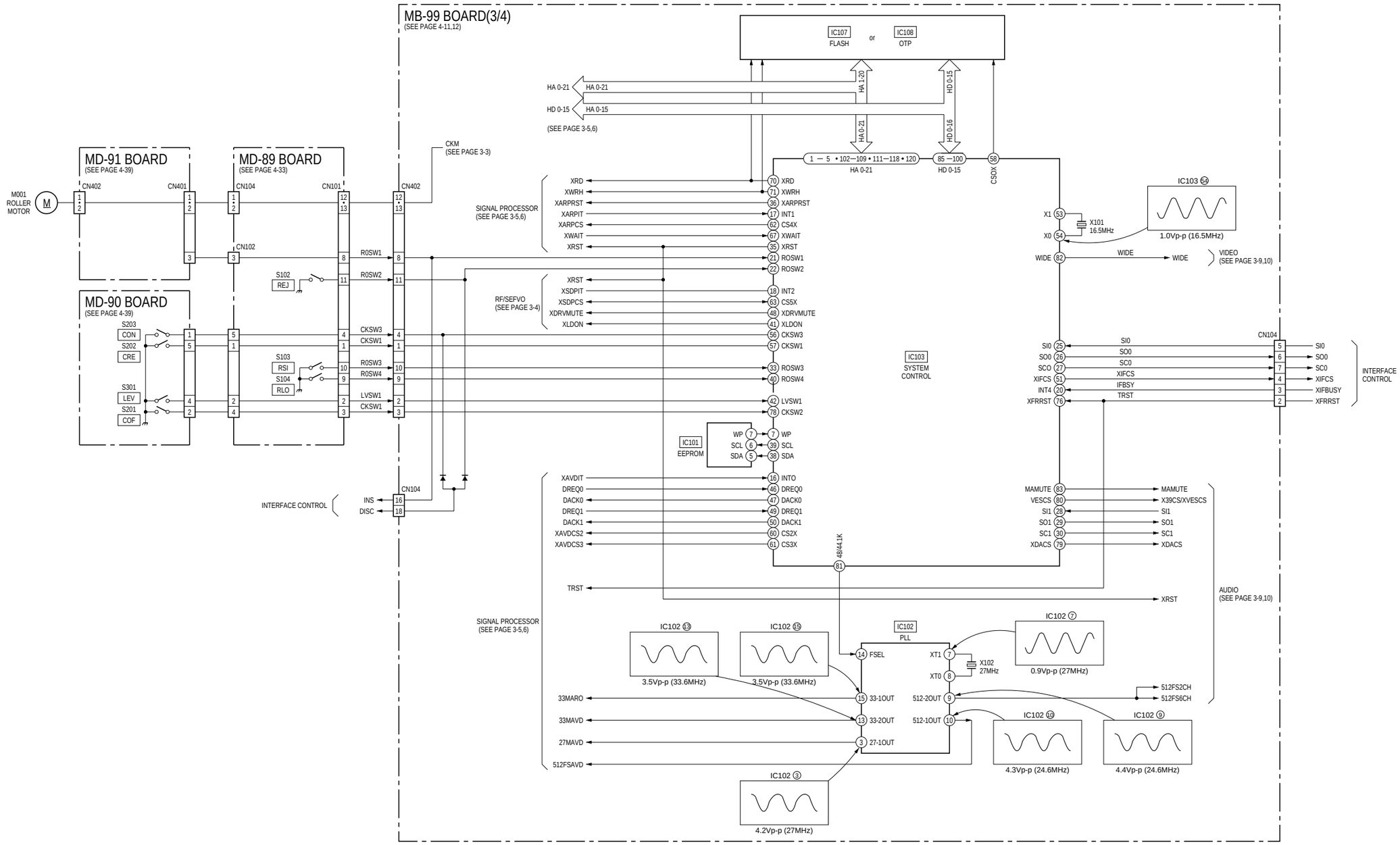
3-2. RF/SERVO BLOCK DIAGRAM



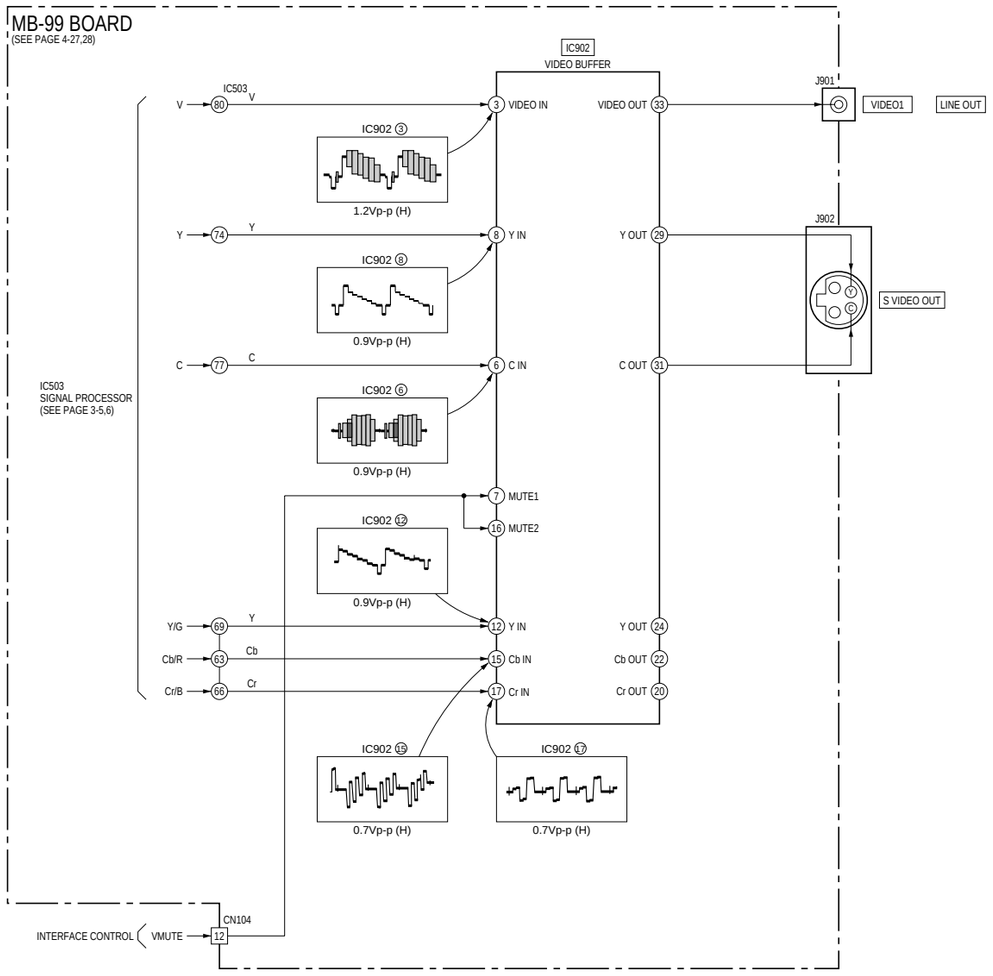
3-3. SIGNAL PROCESSOR BLOCK DIAGRAM



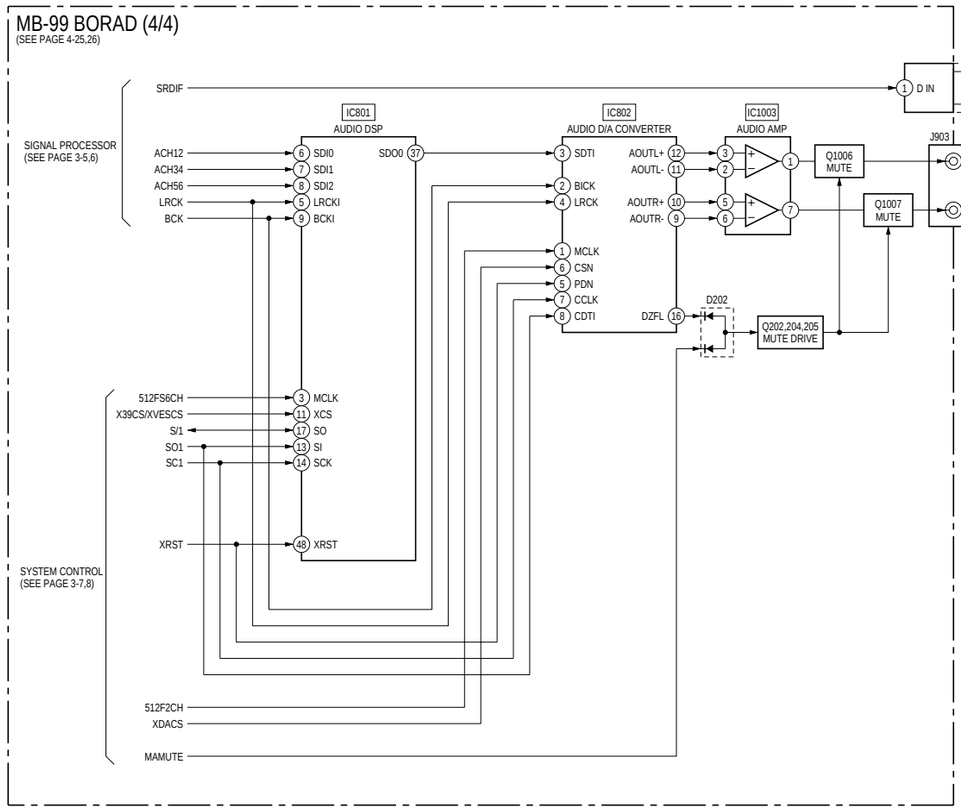
3-4. SYSTEM CONTROL BLOCK DIAGRAM



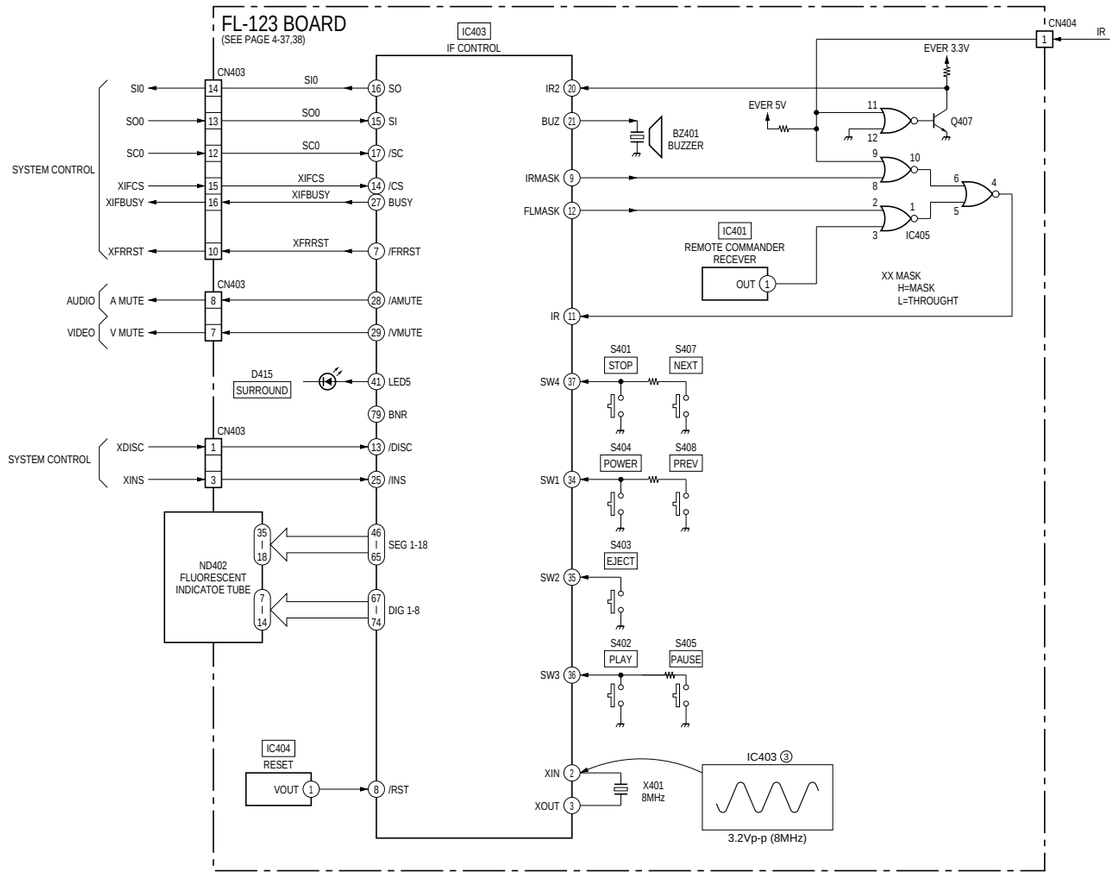
3-5. VIDEO BLOCK DIAGRAM



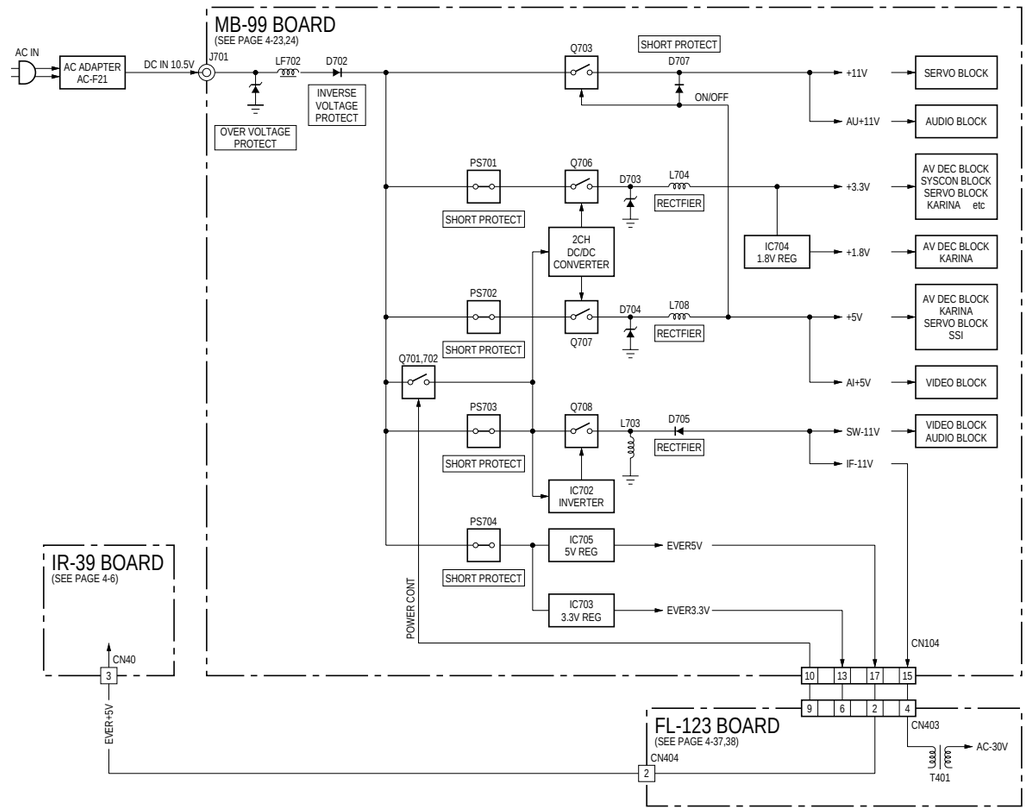
3-6. AUDIO BLOCK DIAGRAM



3-7. INTERFACE CONTROL BLOCK DIAGRAM



3-8. POWER 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:

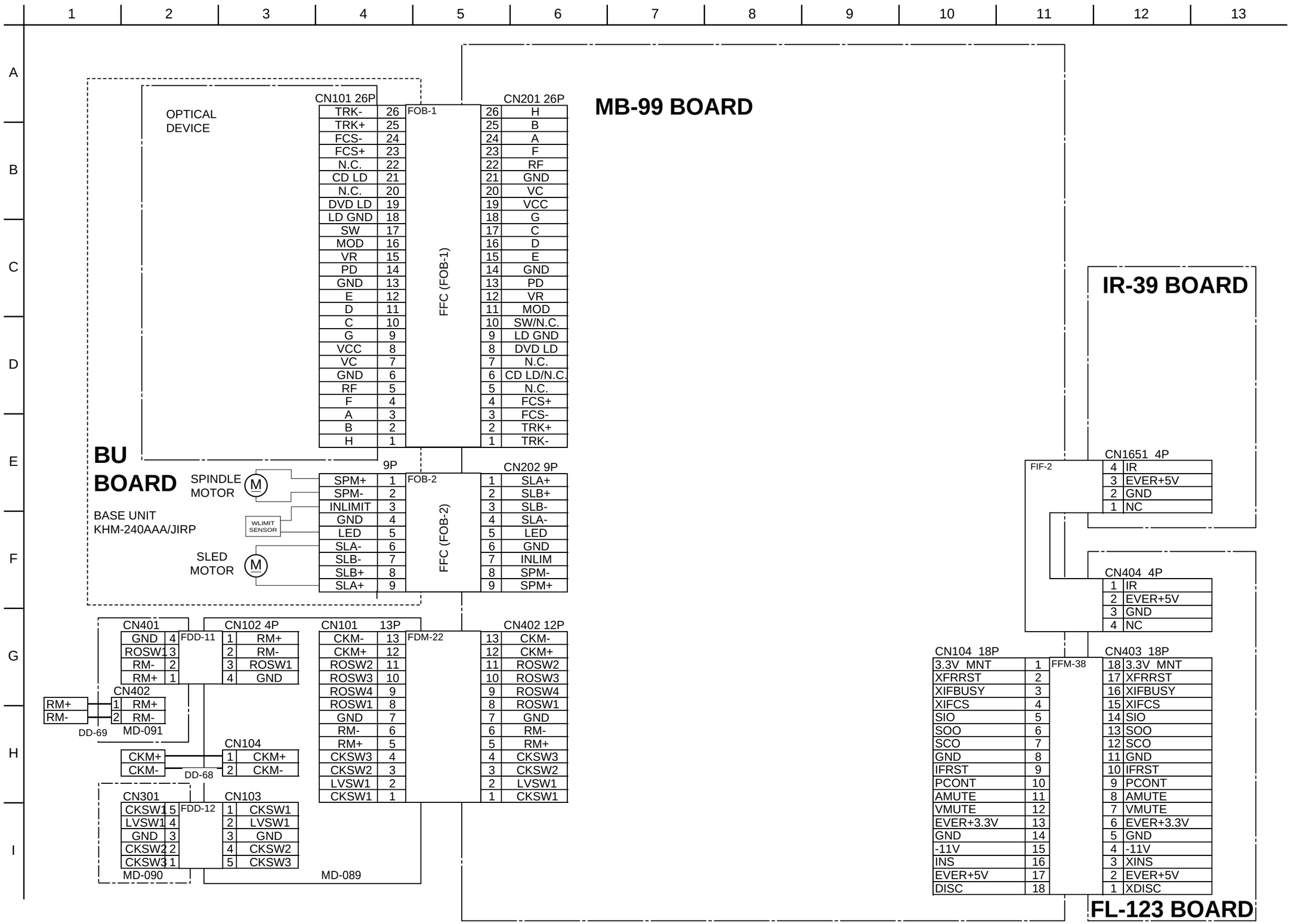
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4 W (Chip resistors : 1/10 W) un-less otherwise specified.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- 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 refer-ence disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10M)
- Voltage variations may be noted due to normal production tolerances.

Note:	**Note:**
The components identi-fied by mark ⚠ or dotted line with mark 0 are criti-cal 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.

4-1. FRAME SCHEMATIC DIAGRAM

FRAME SCHEMATIC DIAGRAM



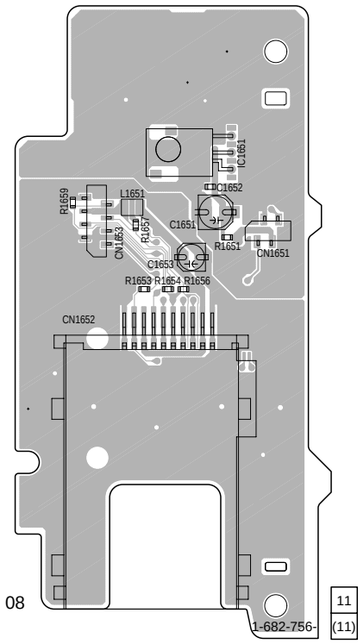
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

IR-39 (IR) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

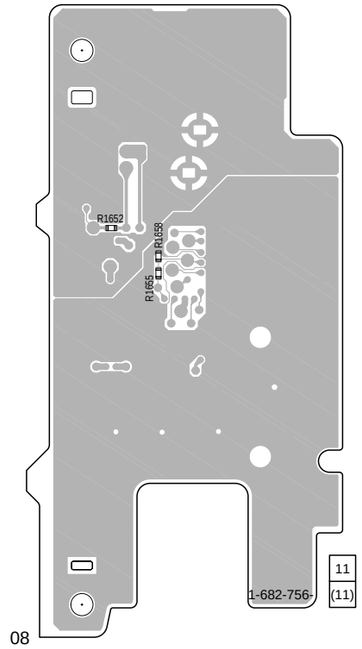
– Ref. No.: IR-39 board; 50,000 series –

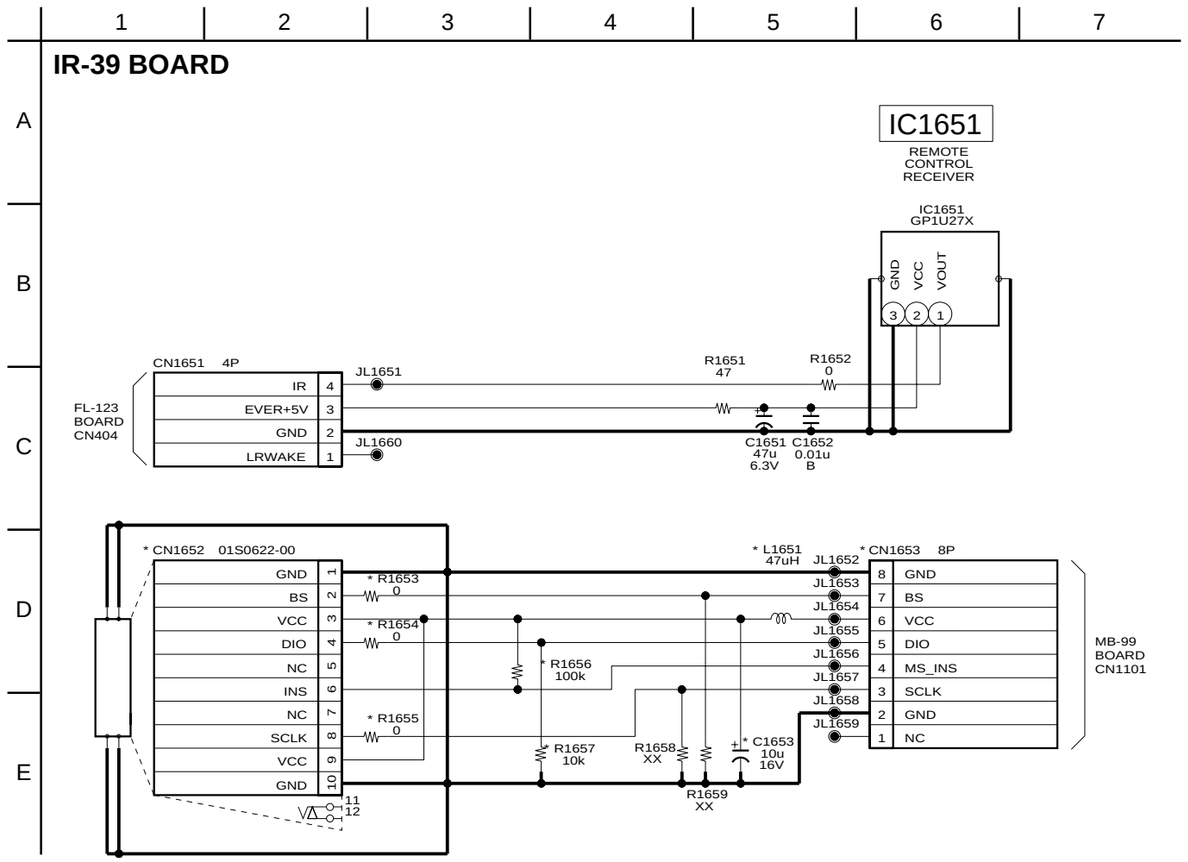
There are a few cases that the part isn't mounted in this model is printed on this diagram.

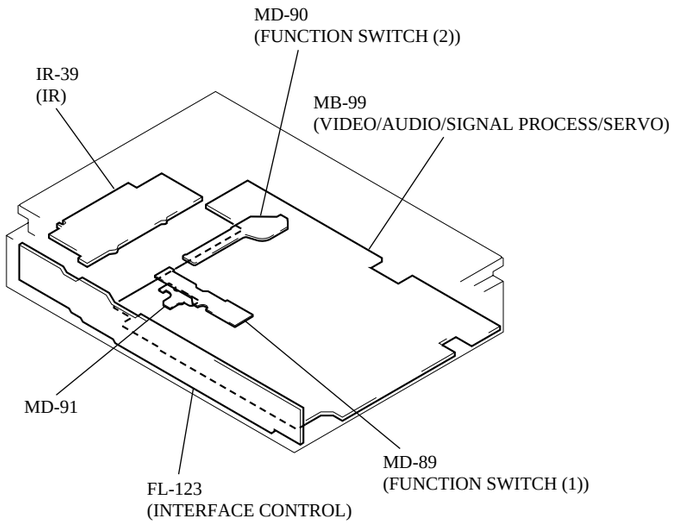
IR-39 BOARD (SIDE A)



IR-39 BOARD (SIDE B)







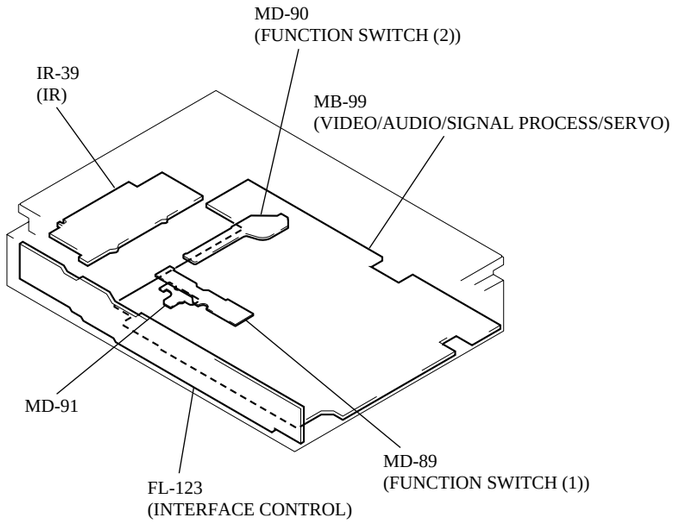
MB-99 (VIDEO/AUDIO/SIGNAL PROCESS/SERVO) PRINTED WIRING BOARD

– Ref. No.: MB-99 board; 60,000 series –

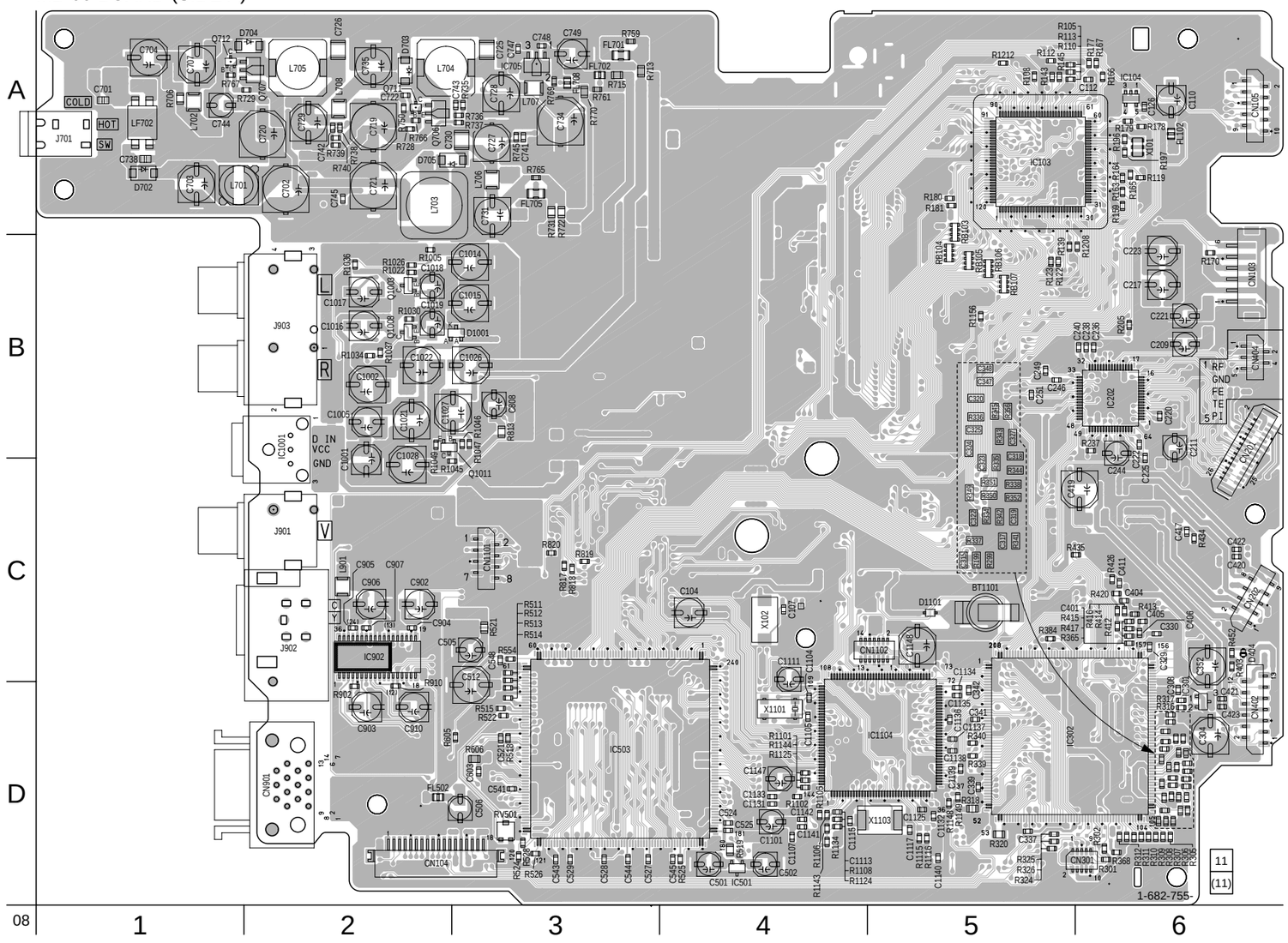
There are a few cases that the part isn't mounted in this model is printed on this diagram.

MB-99 BOARD (SIDE A)

CN103	F2
CN104	B4
CN105	F1
CN201	F2
CN202	F3
CN402	F4
CN901	B4
D404	F3
D702	A1
D703	B1
D704	B1
D705	B1
D1001	C2
IC103	E1
IC202	F2
IC301	F4
IC302	E4
IC501	D4
IC503	C4
IC705	C1
IC902	B3
IC1001	B2
Q706	B1
Q707	B1
Q711	B1
Q712	A1
Q1003	B2
Q1011	C3



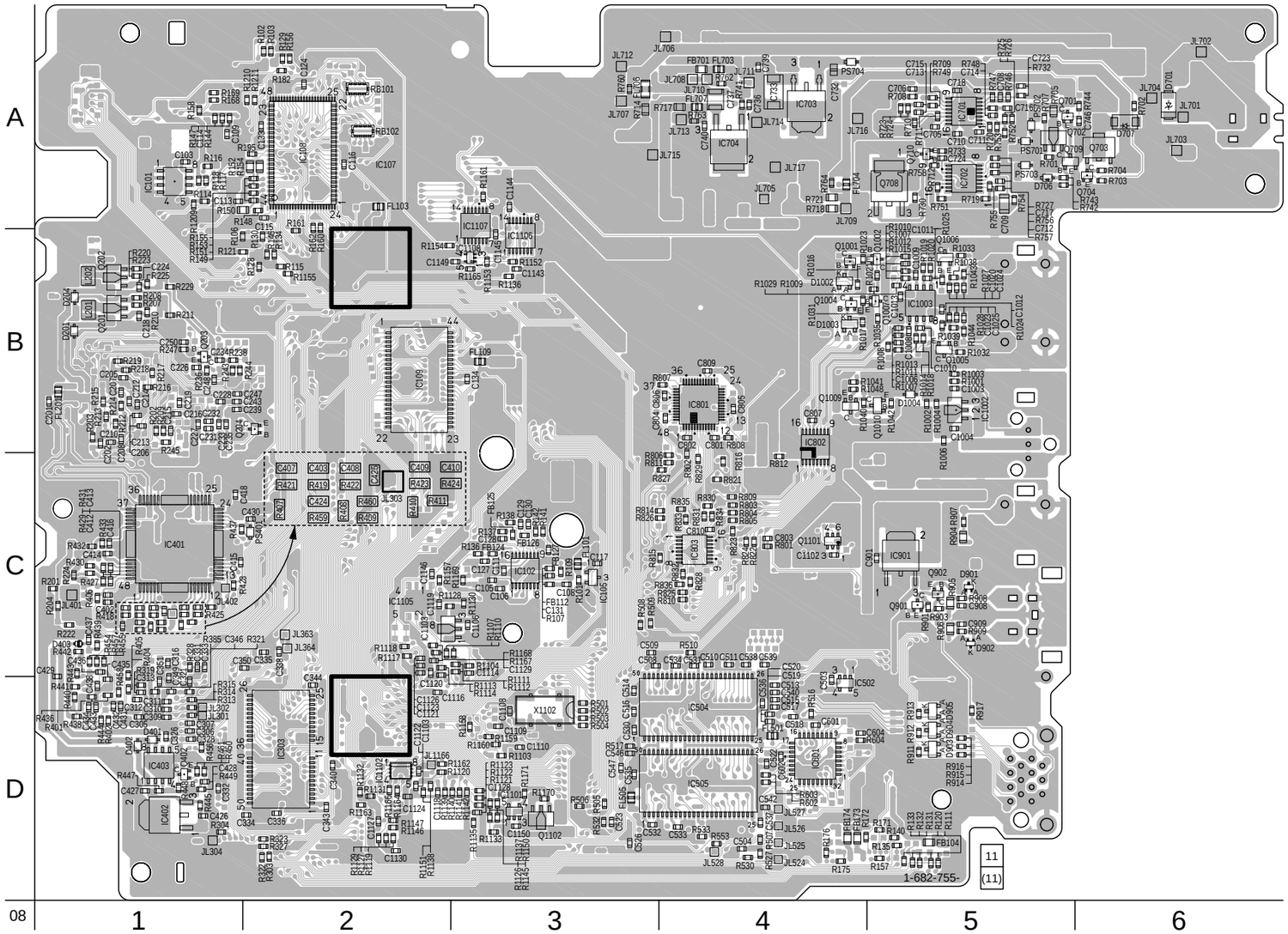
MB-99 BOARD (SIDE A)



MB-99 BOARD (SIDE B)

D403	C1
D701	A6
D706	A5
D707	A6
D901	C5
D902	C5
D903	D5
D904	D5
D905	D5
D1002	B4
D1004	B5
IC101	A1
IC102	C3
IC107	A2
IC303	D2
IC401	C1
IC403	D1
IC502	D4
IC504	D4
IC601	D4
IC701	A5
IC702	A5
IC703	A4
IC704	A4
IC801	B4
IC802	B4
IC901	C5
IC1002	B5
IC1003	B5
Q201	B1
Q202	B1
Q402	D1
Q701	A5
Q702	A6
Q703	A6
Q704	A6
Q708	A5
Q709	A5
Q710	A5
Q901	C5
Q902	C5
Q1001	B4
Q1002	B5
Q1005	B5
Q1006	B5
Q1009	B4
Q1010	B5

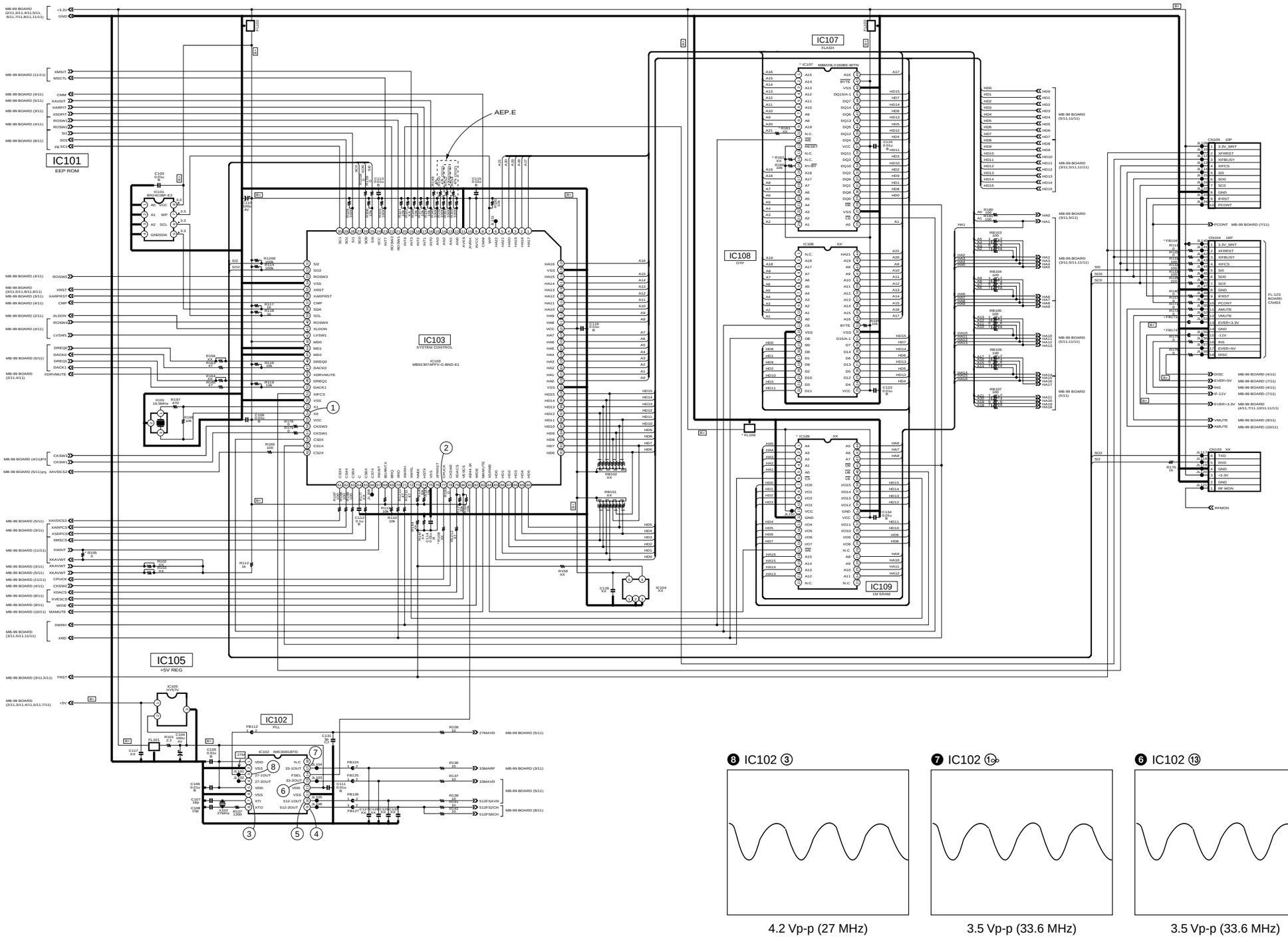
MB-99 BOARD (SIDE B)



MB-99 (SYSTEM CONTROL) SCHEMATIC DIAGRAM • See page 4-7, 9 for printed wiring board.

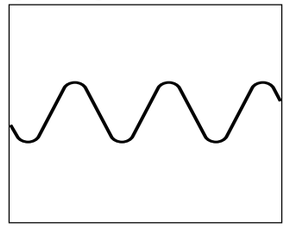
– Ref. No.: MB-99 board; 60,000 series –

MB-99 BOARD (1/11)



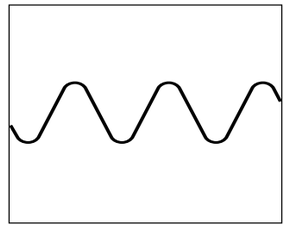
• Waveforms

❶ IC103 ㊹



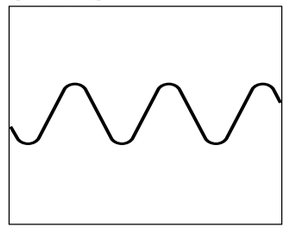
1.0 Vp-p (16.5 MHz)

❷ IC103 ㊼



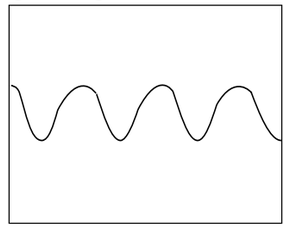
4.3 Vp-p (H)

❸ IC102 ⑦



0.9 Vp-p (27 MHz)

❹ IC102 ⑨



4.4 Vp-p (24.6 MHz)

❽ IC102 ③

4.2 Vp-p (27 MHz)

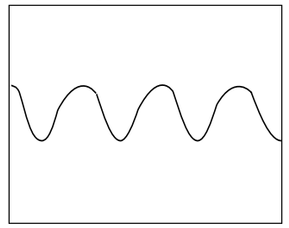
❼ IC102 ⑮

3.5 Vp-p (33.6 MHz)

❻ IC102 ⑬

3.5 Vp-p (33.6 MHz)

❺ IC102 ⑩



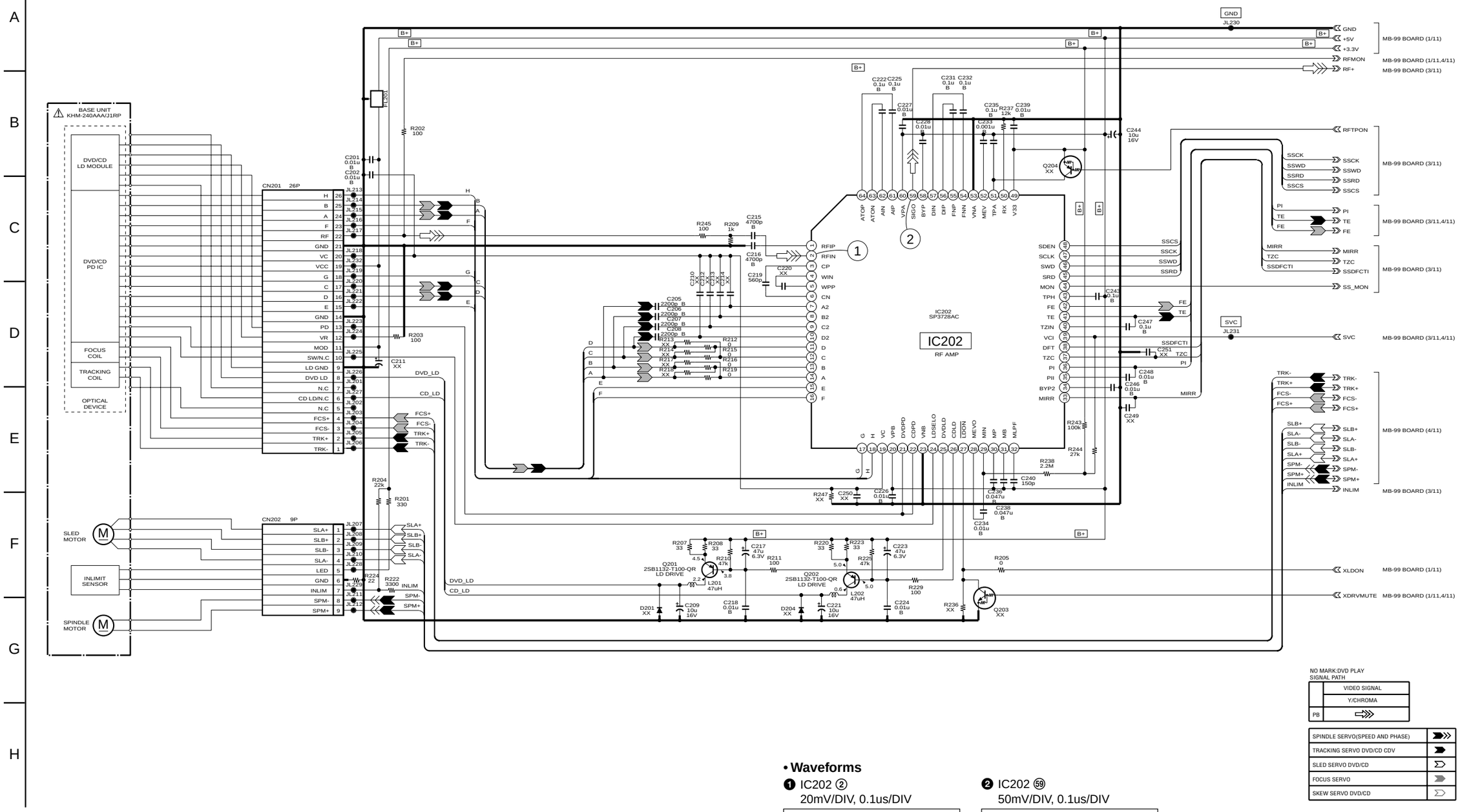
4.3 Vp-p (24.6 MHz)

SYSTEM CONTROL
MB-99

MB-99 (RF SERVO) SCHEMATIC DIAGRAM **• See page 4-7 for printed wiring board.**

– Ref. No.: MB-99 board; 60,000 series –

MB-99 BOARD (2/11)



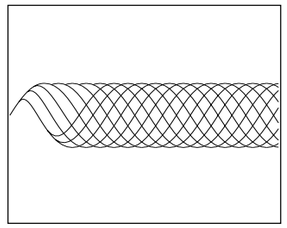
NO MARK:DVD PLAY SIGNAL PATH

	VIDEO SIGNAL
	Y/CHROMA
PB	

SPINDLE SERVO(SPEED AND PHASE)	
TRACKING SERVO DVD/CD CDV	
SLED SERVO DVD/CD	
FOCUS SERVO	
SKEW SERVO DVD/CD	

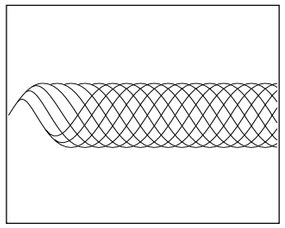
• Waveforms

❶ IC202 ② 20mV/DIV, 0.1us/DIV



0.512 Vp-p

❷ IC202 ⑲ 50mV/DIV, 0.1us/DIV

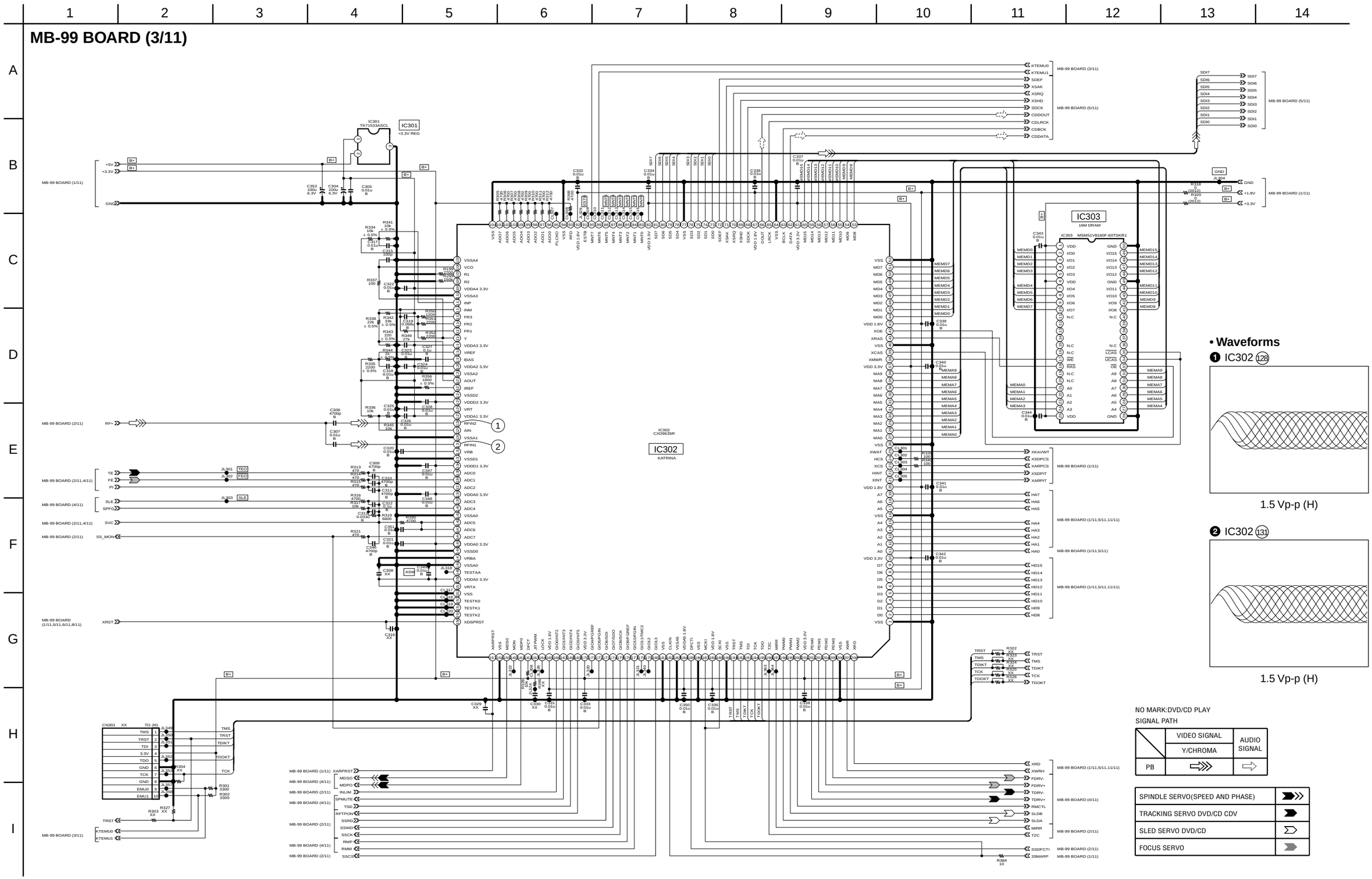


1.5 Vp-p

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark 0 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.

MB-99 (SIGNAL PROCESS) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-99 board; 60,000 series –

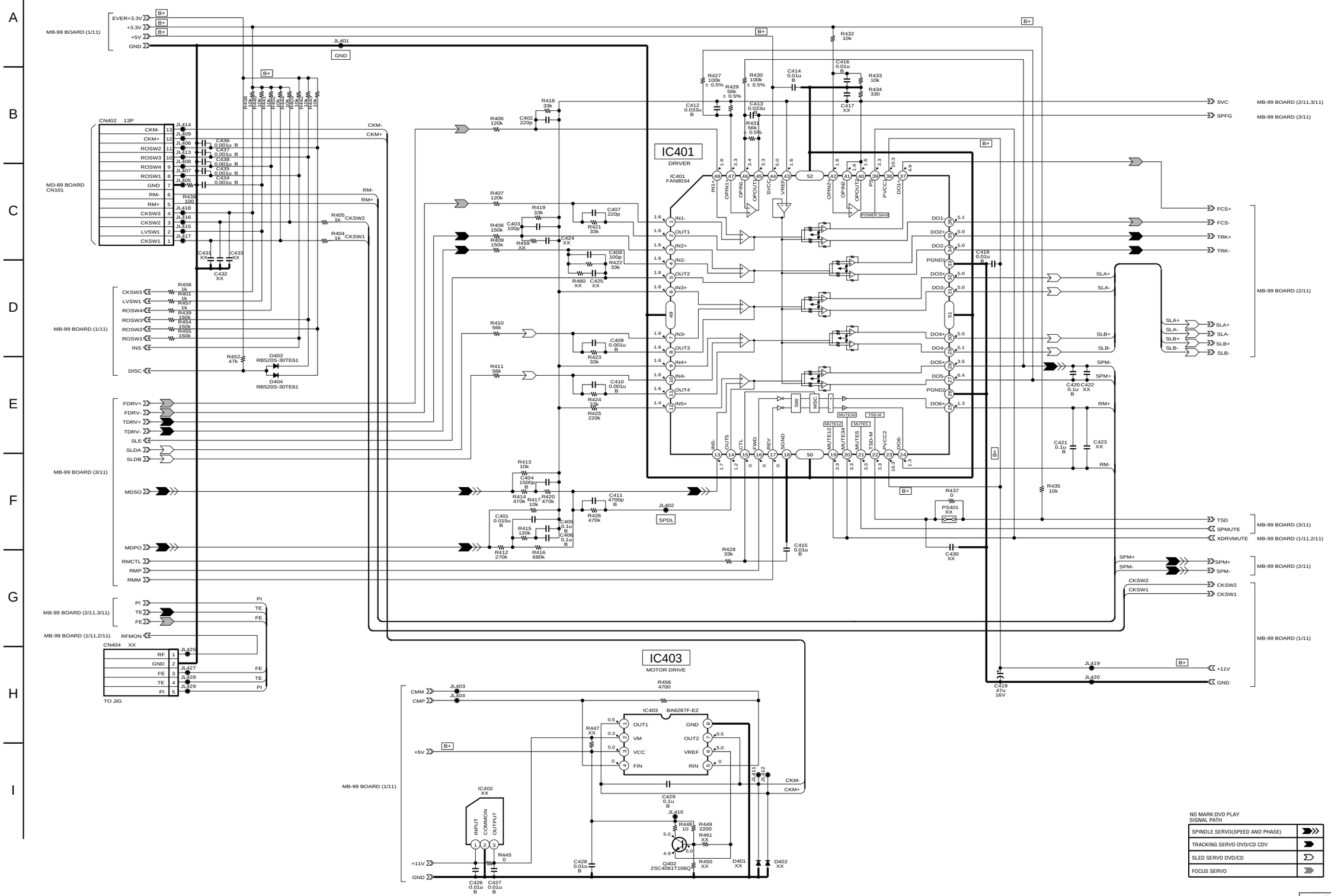


SIGNAL PROCESS (KATRINA)
MB-99

MB-99 (SERVO) SCHEMATIC DIAGRAM • See page 4-9 for printed wiring board.

– Ref. No.: MB-99 board; 60,000 series –

MB-99 BOARD (4/11)



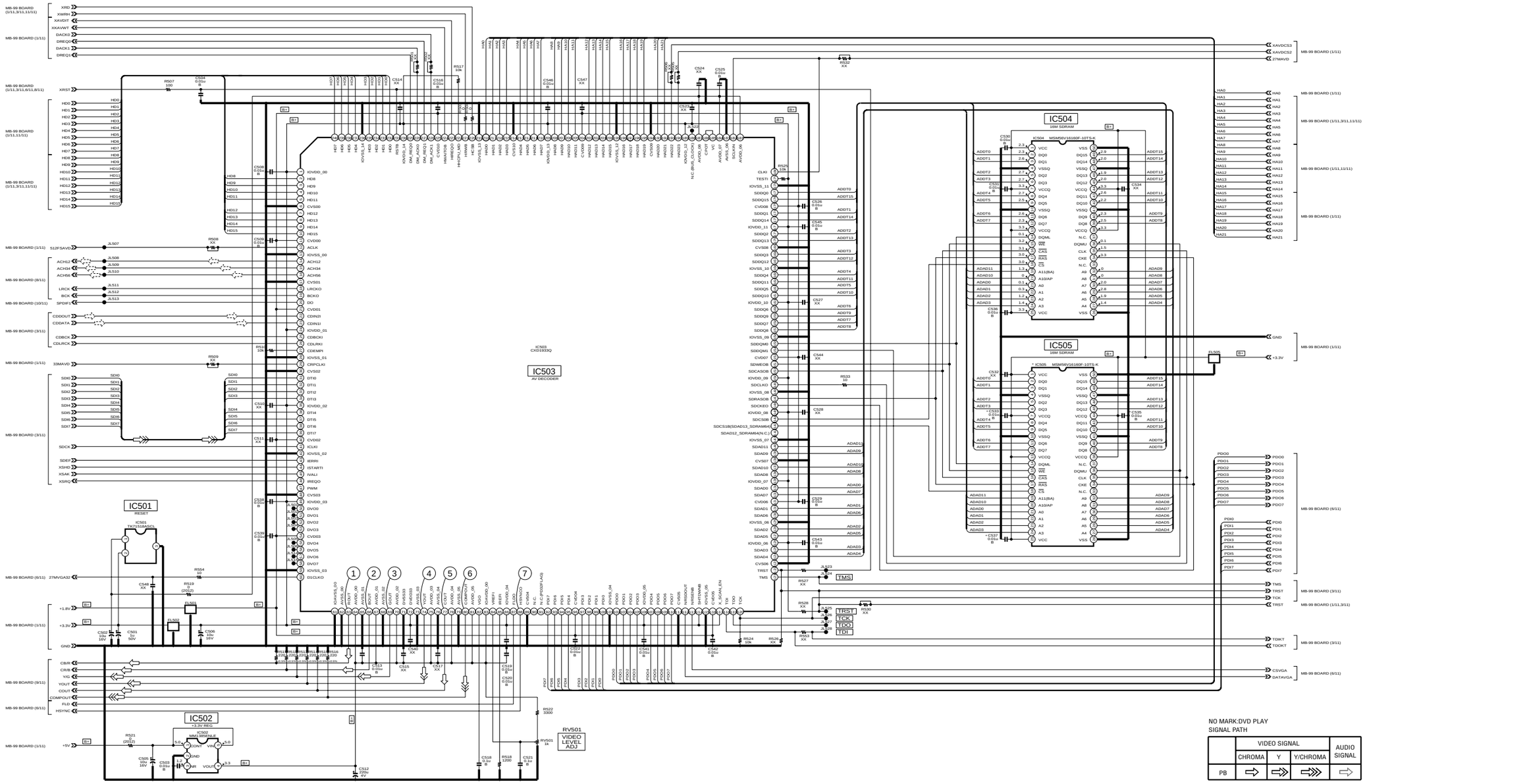
NO MARK:DVD PLAY SIGNAL PATH

SPINDLE SERVO(SPEED AND PHASE)	
TRACKING SERVO DVD/CD CDV	
SLED SERVO DVD/CD	
FOCUS SERVO	

MB-99 (SIGNAL PROCESS) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-99 board; 60,000 series –

MB-99 BOARD (5/11)

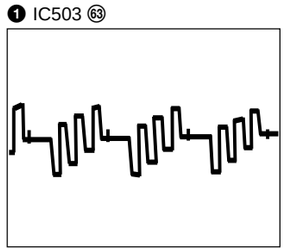


NO MARK:DVD PLAY
SIGNAL PATH

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

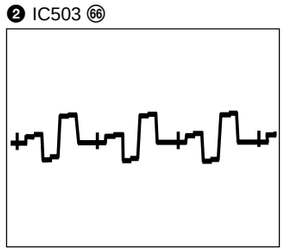
• **Waveforms**

❶ IC503 ⑥③



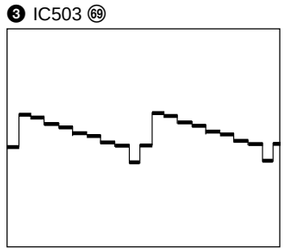
0.5 Vp-p (H)

❷ IC503 ⑥⑥



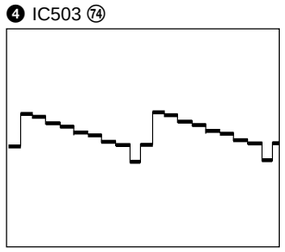
0.6 Vp-p (H)

❸ IC503 ⑥⑨



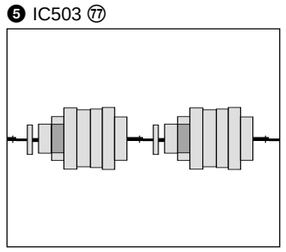
0.9 Vp-p (H)

❹ IC503 ⑦④



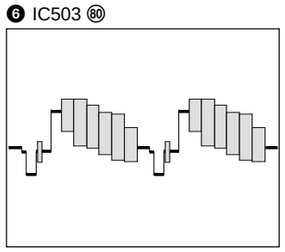
0.9 Vp-p (H)

❺ IC503 ⑦⑦



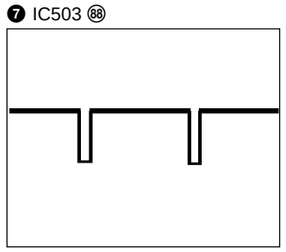
0.9 Vp-p (H)

❻ IC503 ⑧⓪



1.0 Vp-p (H)

❼ IC503 ⑧⑧

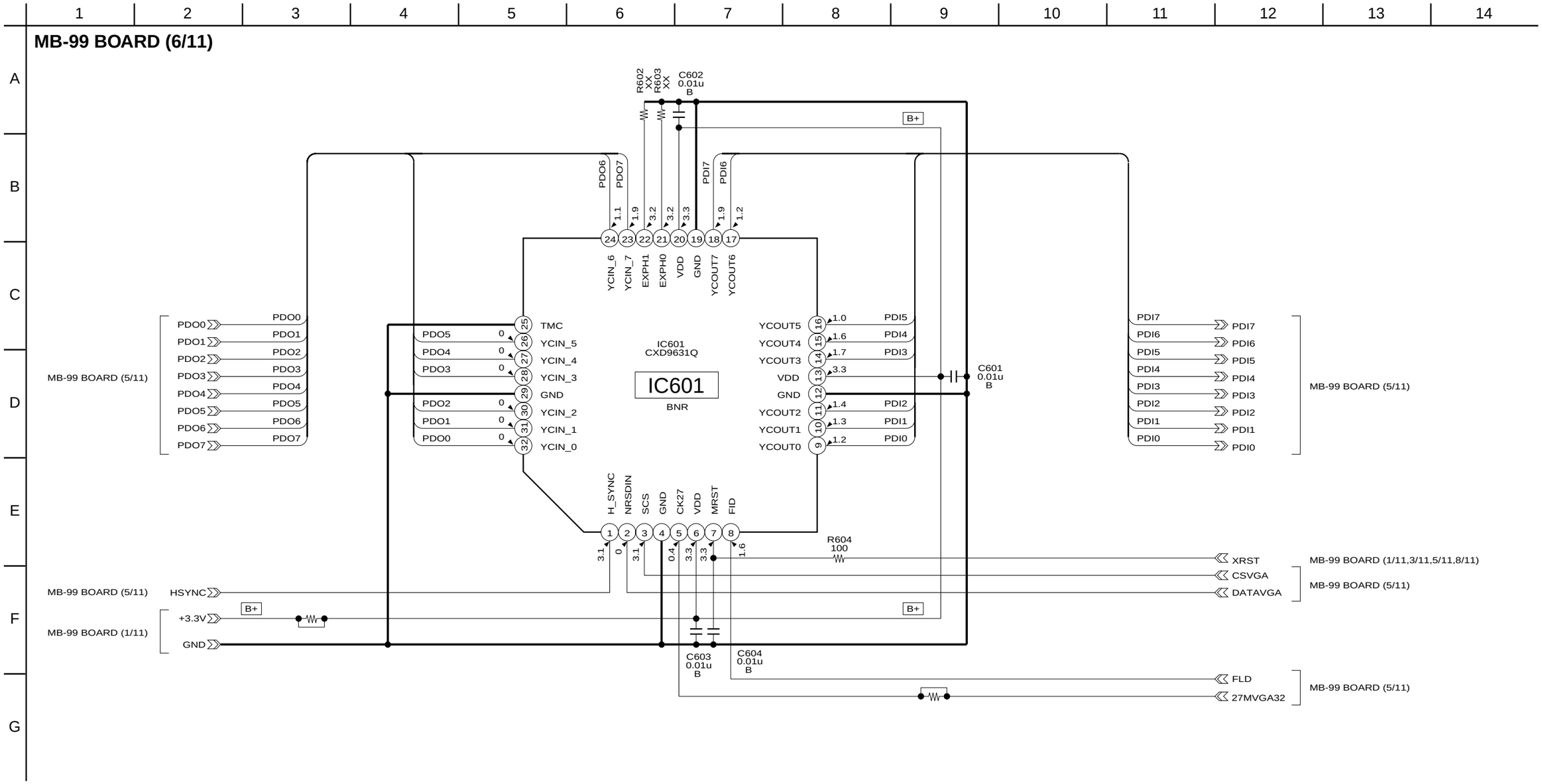


3.4 Vp-p (H)

MB-99 (SIGNAL PROCESS) SCHEMATIC DIAGRAM **• See page 4-9 for printed wiring board.**

– Ref. No.: MB-99 board; 60,000 series –

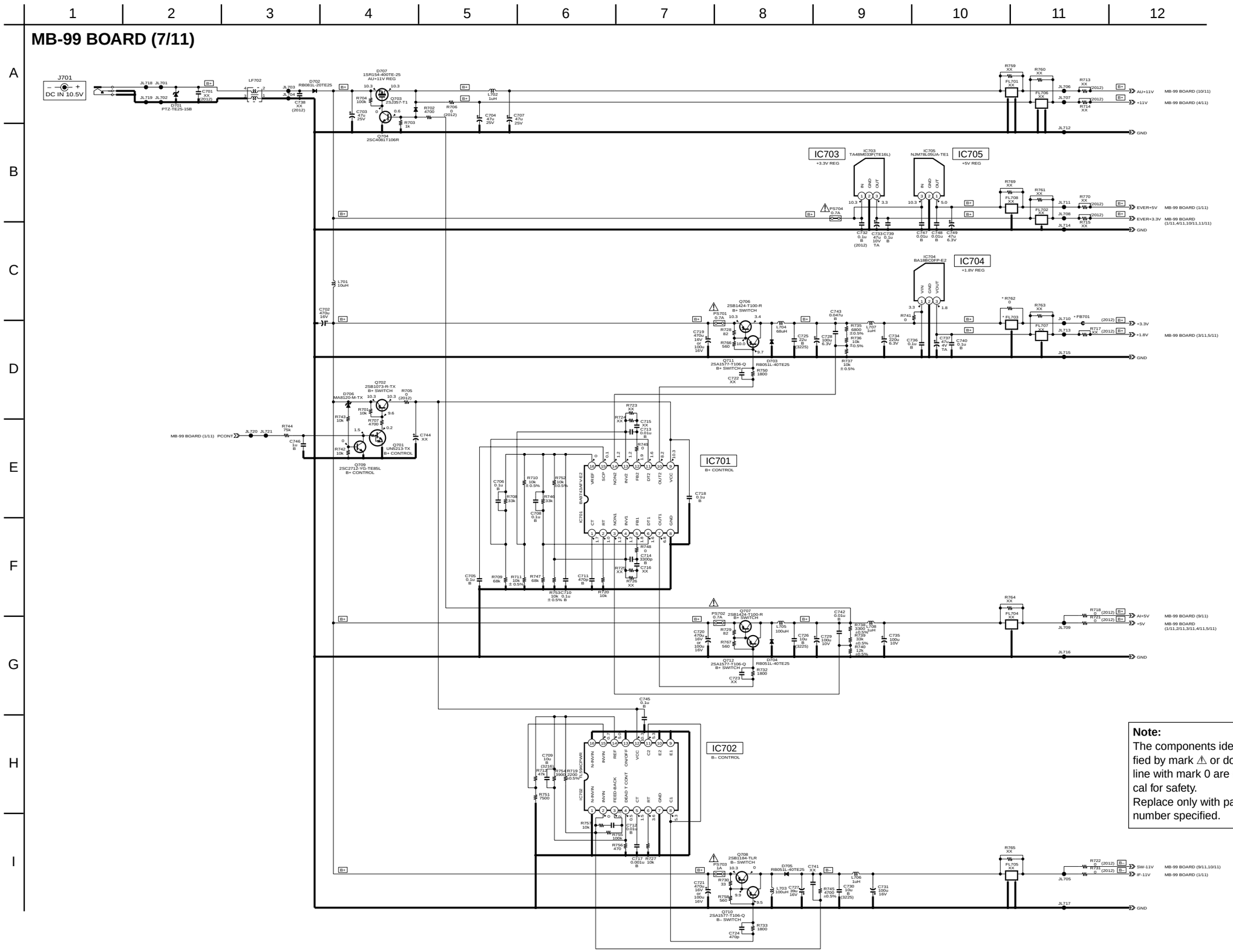
MB-99 BOARD (6/11)



MB-99 (POWER) SCHEMATIC DIAGRAM **• See page 4-9 for printed wiring board.**

– Ref. No.: MB-99 board; 60,000 series –

MB-99 BOARD (7/11)

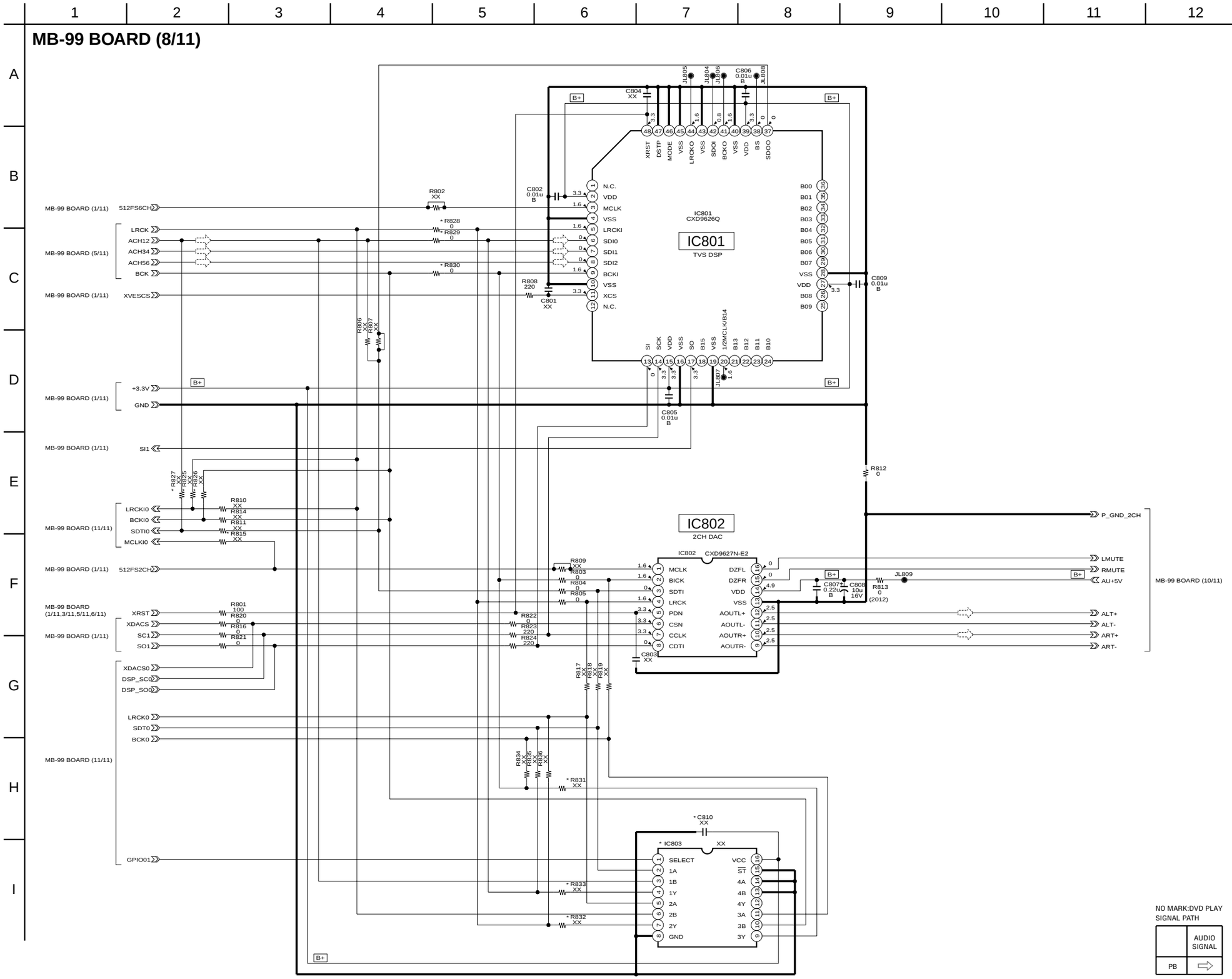


Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark 0 are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

MB-99 (AV OUT) SCHEMATIC DIAGRAM **• See page 4-9 for printed wiring board.**

– Ref. No.: MB-99 board; 60,000 series –

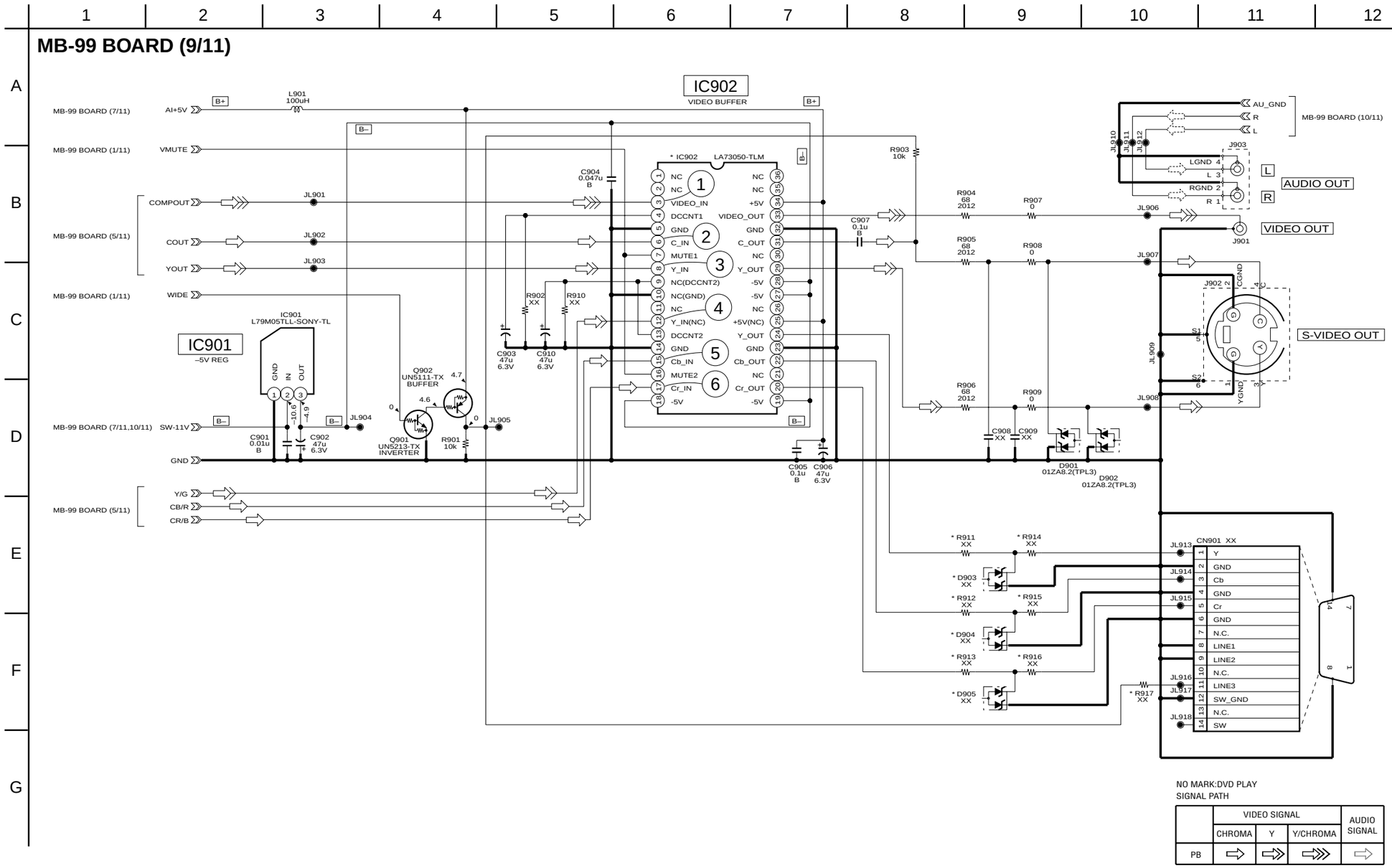
MB-99 BOARD (8/11)



MB-99 (VIDEO) SCHEMATIC DIAGRAM • **See page 4-7 for printed wiring board.**

– Ref. No.: MB-99 board; 60,000 series –

MB-99 BOARD (9/11)

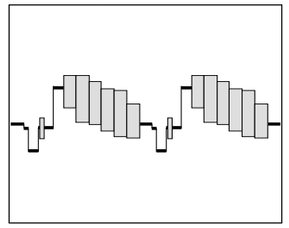


NO MARK:DVD PLAY
SIGNAL PATH

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

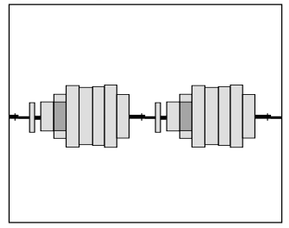
• **Waveforms**

❶ IC902 ③



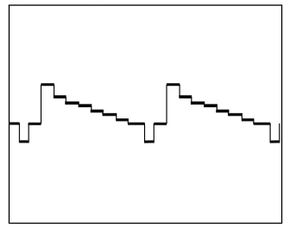
1.2 Vp-p (H)

❷ IC902 ⑥



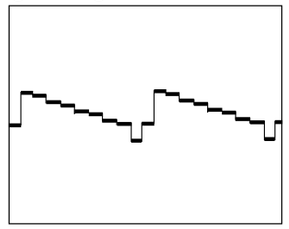
0.9 Vp-p (H)

❸ IC902 ⑧



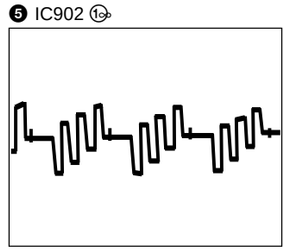
0.9 Vp-p (H)

❹ IC902 ⑫



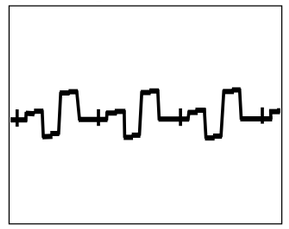
0.9 Vp-p (H)

❺ IC902 ⑯



0.7 Vp-p (H)

❻ IC902 ⑰

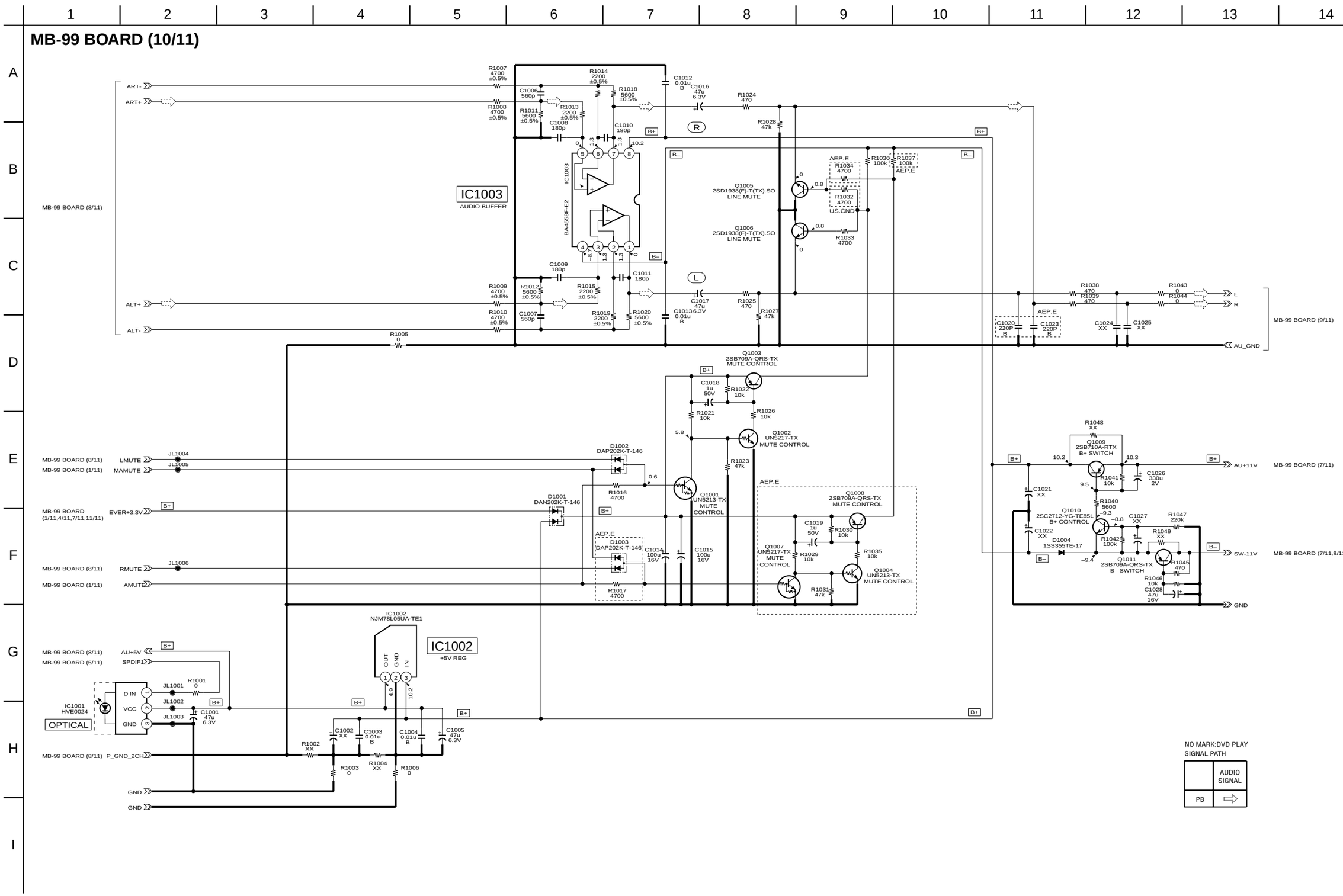


0.7 Vp-p (H)

MB-99 (AUDIO) SCHEMATIC DIAGRAM **• See page 4-9 for printed wiring board.**

– Ref. No.: MB-99 board; 60,000 series –

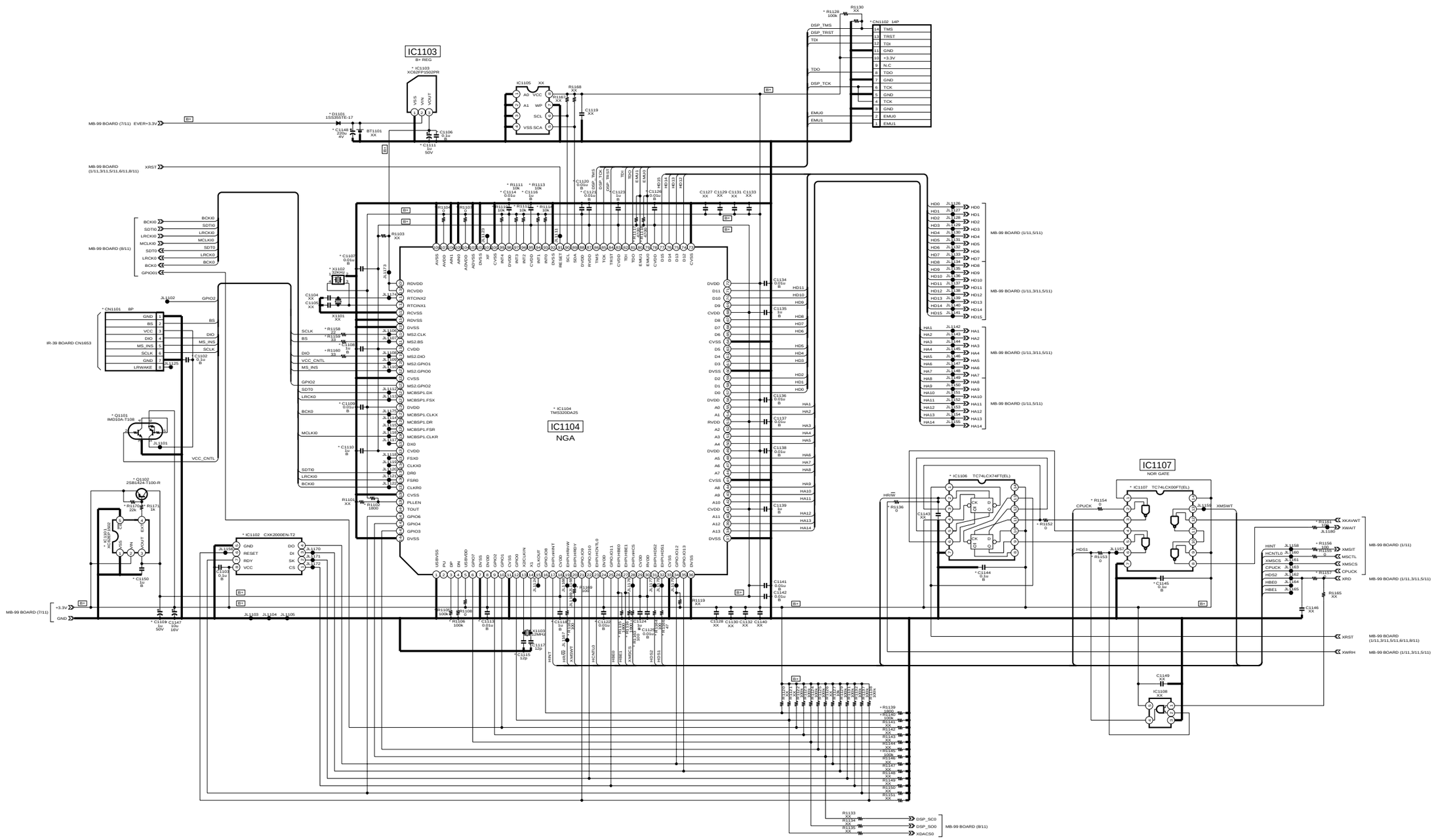
MB-99 BOARD (10/11)



MB-99 (AVMS) SCHEMATIC DIAGRAM • **See page 4-7 for printed wiring board.**

– Ref. No.: MB-99 board; 60,000 series –

MB-99 BOARD (11/11)

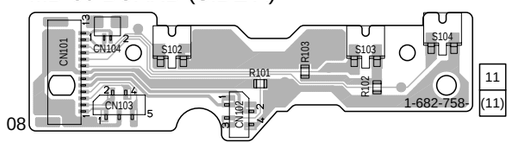


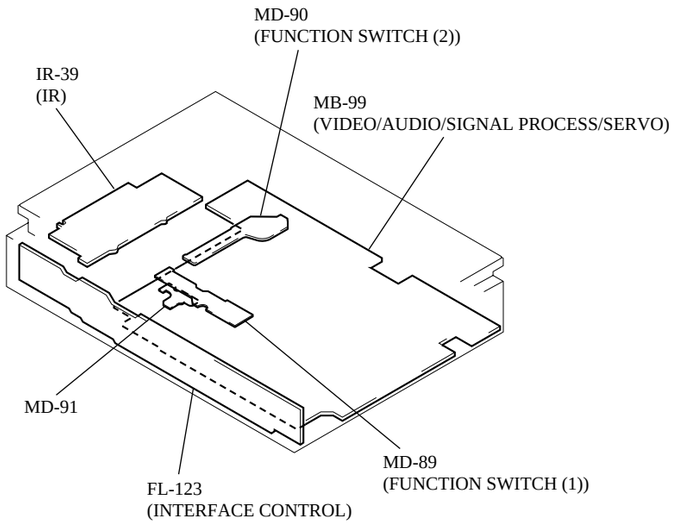
MD-89 (FUNCTION SWITCH 1) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

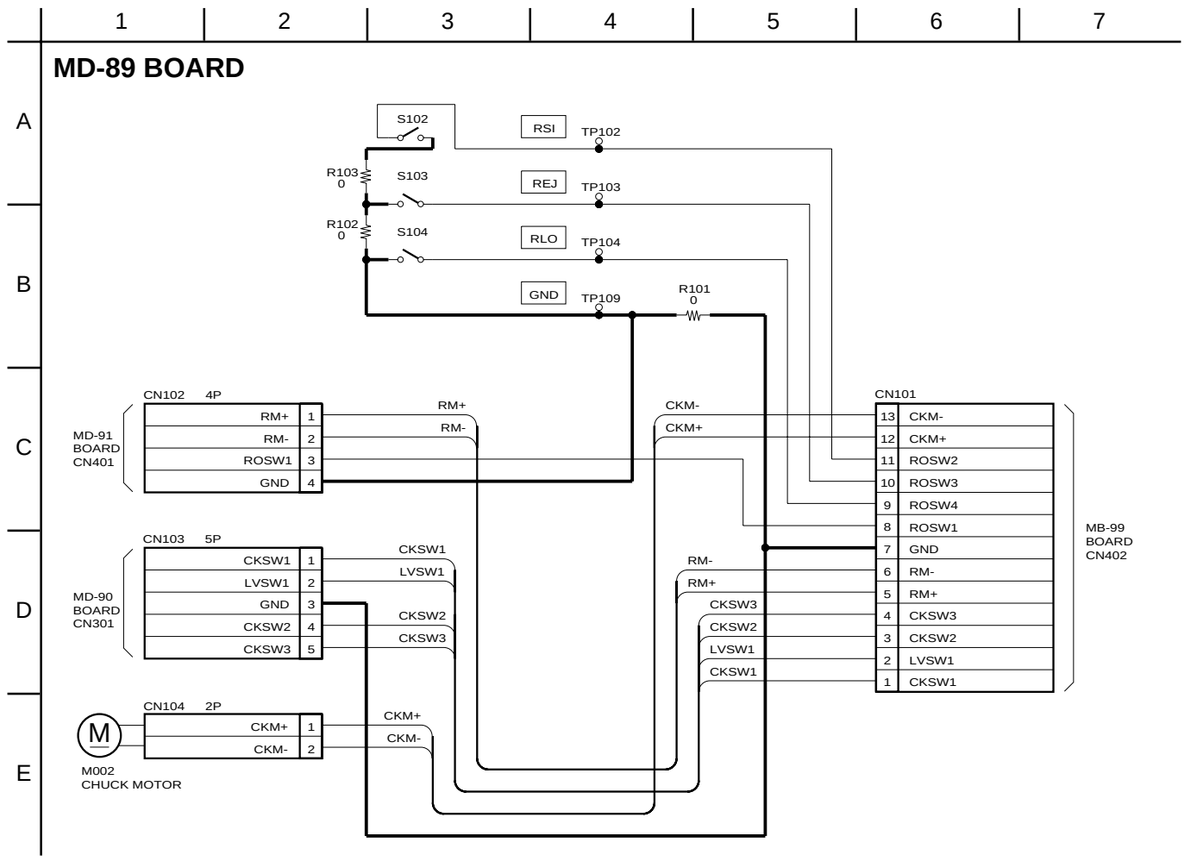
– Ref. No.: MD-89 board; 20,000 series –

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

MD-89 BOARD (SIDE A)







FL-123 (INTERFACE CONTROL) PRINTED WIRING BOARD

– Ref. No.: FL-123 board; 40,000 series –

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

FL-123 BOARD (SIDE A)

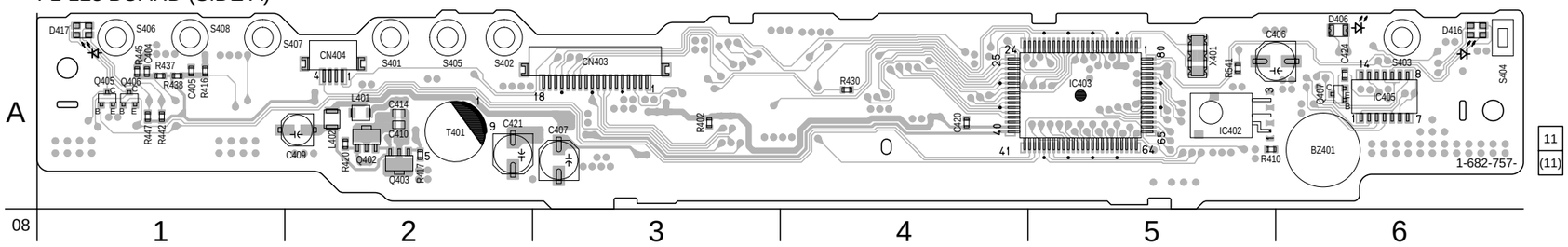
CN403 A3
CN404 A2

D406 A6
D416 A6

IC402 A5
IC403 A5
IC405 A6

Q402 A2
Q403 A2
Q405 A1
Q407 A6

FL-123 BOARD (SIDE A)



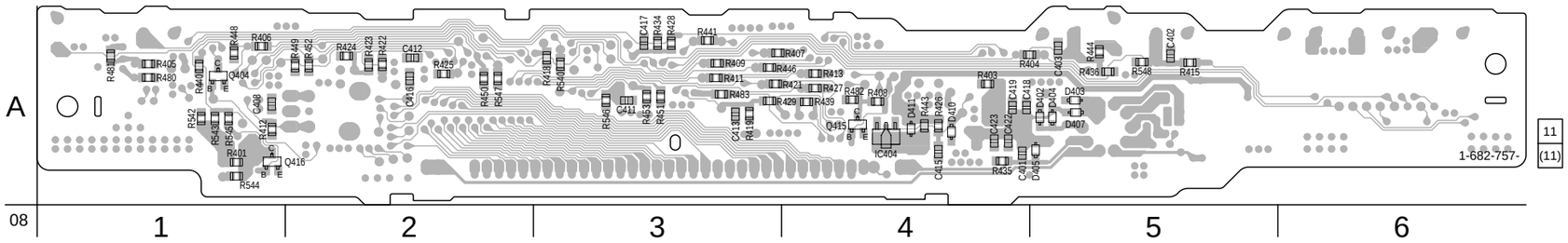
FL-123 BOARD (SIDE B)

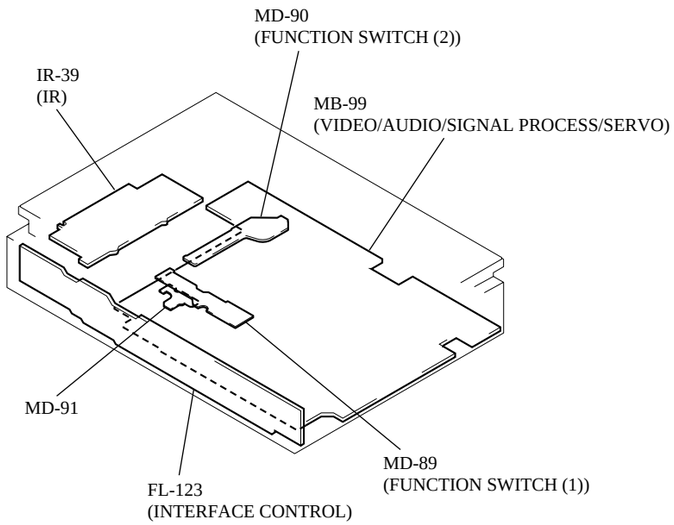
D402 A5
D403 A5
D404 A5
D405 A5
D407 A5

IC404 A4

Q404 A1

FL-123 BOARD (SIDE B)



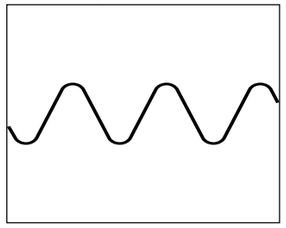


FL-123 (INTERFACE CONTROL) SCHEMATIC DIAGRAM

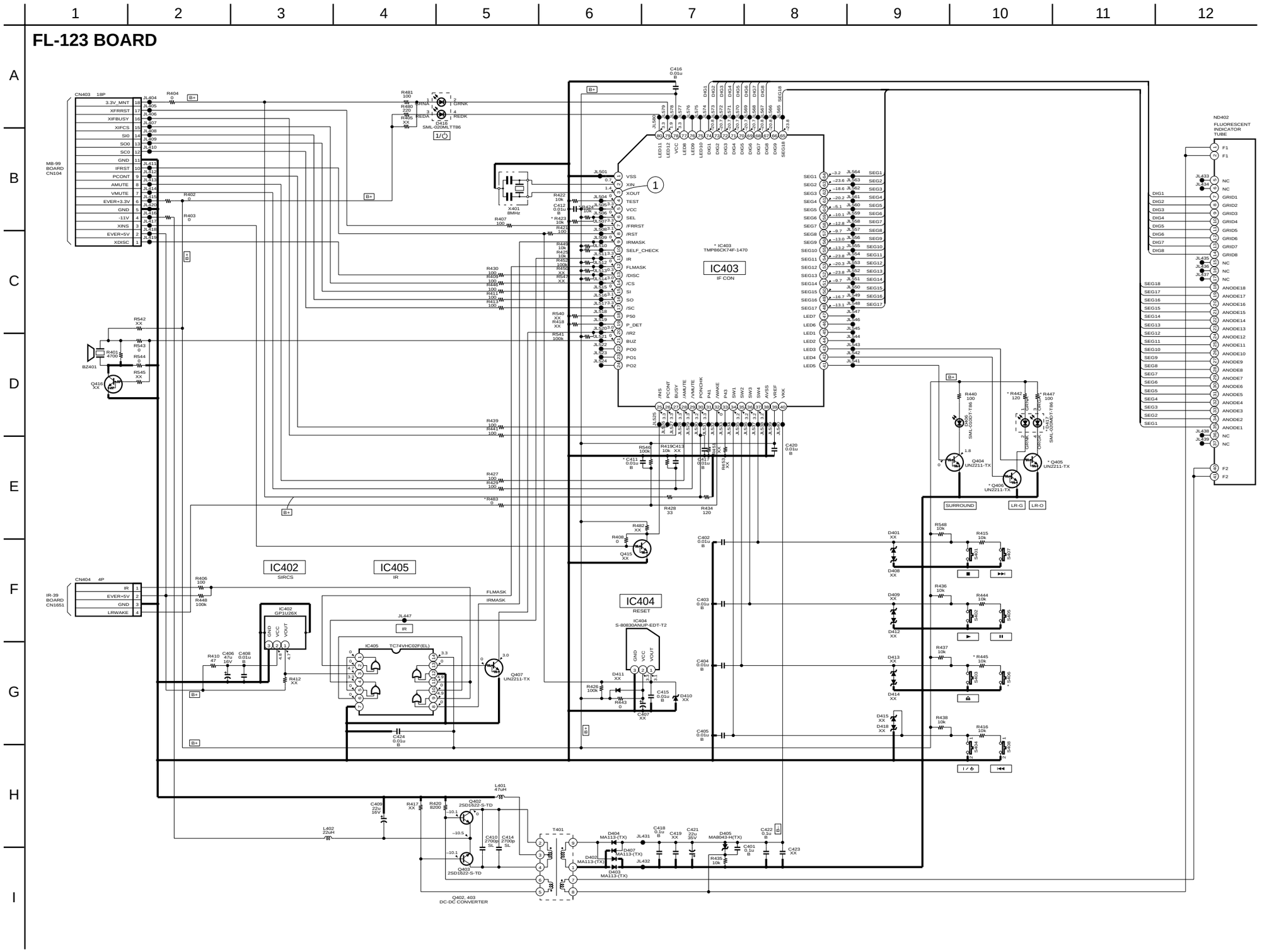
– Ref. No.: FL-123 board; 40,000 series –

• Waveforms

❶ IC403 ③



3.2 Vp-p (8 MHz)

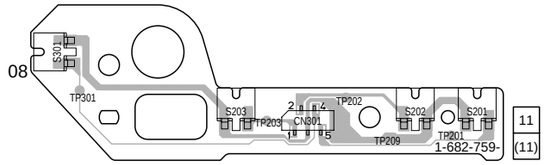


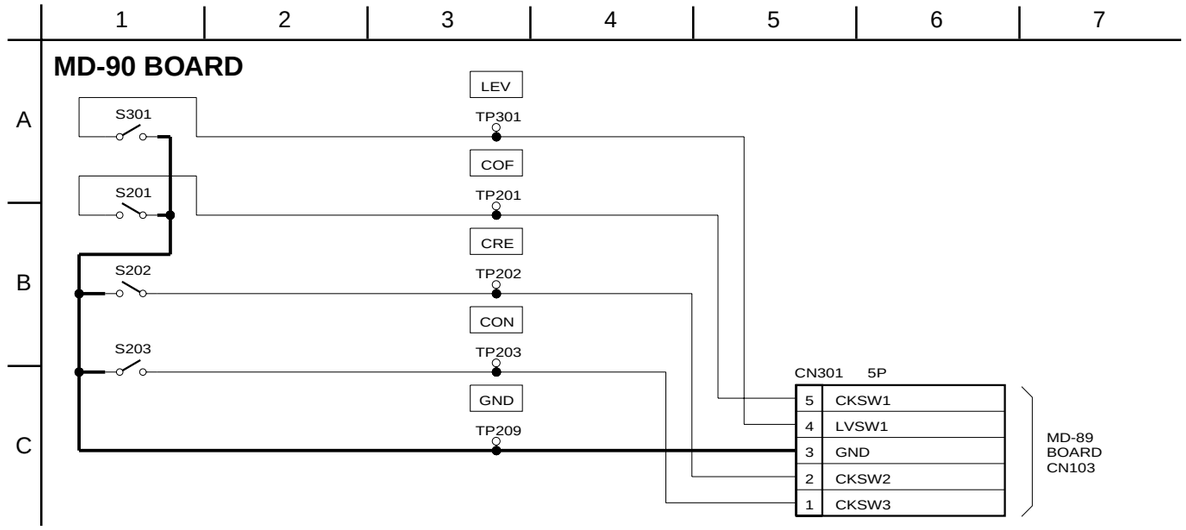
MD-90 (FUNCTION SWITCH) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: MD-90 board; 30,000 series –

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

MD-90 BOARD (SIDE A)



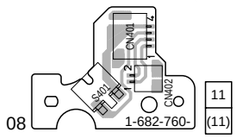


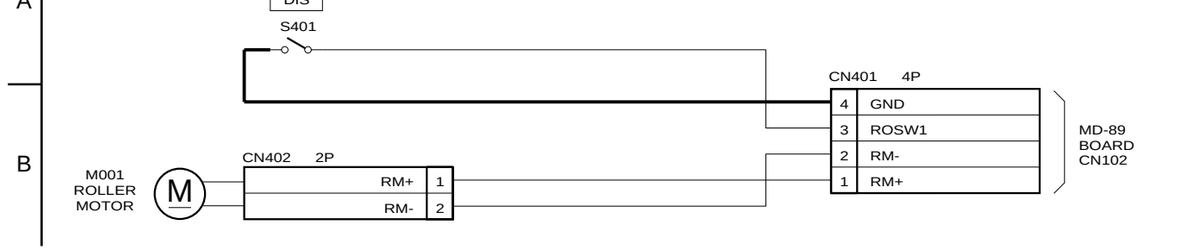
MD-91 (SWITCH) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

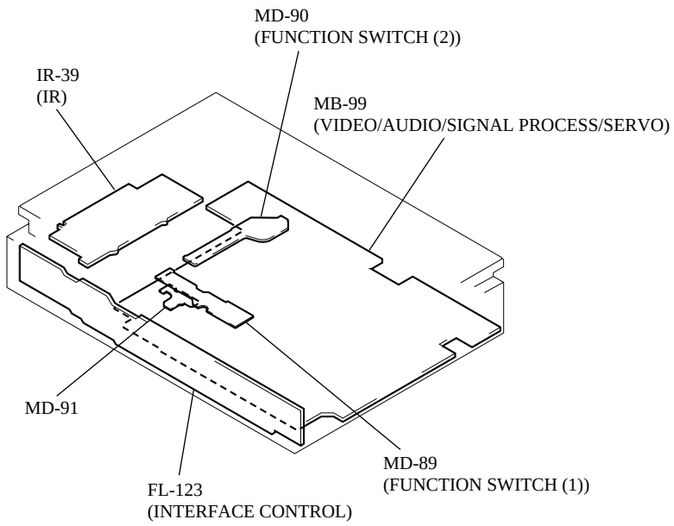
– Ref. No.: MD-91 board; 10,000 series –

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

MD-91 BOARD (SIDE A)







5-1. SYSTEM CONTROL PIN FUNCTION (MB-99 BOARD IC103)

Pin No.	Pin Name	I/O	Function
1	HA17	O	
2	HA18	O	
3	HA19	O	
4	HA20	O	
5	HA21	O	
6	HA22	O	reserved
7	WP	O	IIC EEPROM Write Protect
8	RM–	O	Roller Motor Drive
9	AVcc		
10	AVRH		
11	A/D GND		
12	Region	I	A/D Input
13	Model	I	A/D Input
14	AN2	I	A/D Input
15	AN3	I	A/D Input
16	XAVDIT	I	AV decorder Interrupt
17	XARPIT	I	Katrina ARP Interrupt
18	XSDPIT	I	Katrina SDSP Interrupt
19	NC (GPO)	I	MS Interrupt
20	XIFBSY	I	IFcon Busy
21	ROSW1	I	Roller SW1
22	ROSW2	I	Roller SW2
23	NC (GPO)	O	Amadeus Control
24	Vcc		
25	SI0	I	ch0 Serial Input
26	SO0	O	ch0 Serial Output
27	SC0	O	ch0 Serial Clock
28	SI1	I	ch1 Serial Input
29	SO1	O	ch1 Serial Output
30	SC1	O	ch1 Serial Clock
31	SI2	I	ch2 Serial Input
32	SO2	O	ch2 Serial Output
33	ROSW3	I	Roller SW3
34	Vss		
35	XRST	O	System Reset Output
36	XARPRST	O	ARP Reset Output
37	RM+	O	Roller Motor Drive
38	SDA	I/O	IIC Data
39	SCL	I/O	IIC Clock
40	ROSW4	I	Roller SW3
41	XLDON	O	Laser Diode Mute
42	LVSW1	I	Lever SW1
43	MD0	I	
44	MD1	I	
45	MD2	I	
46	DREQ0	I	ch0 DMA REQ
47	DACK0	O	ch0 DMA ACK
48	XDRVMUTE	O	Drive Mute
49	DREQ1	I	ch1 DMA REQ
50	DACK1	O	ch1 DMA ACK
51	XIFCS	O	Ifcon CS
52	Vss		GND
53	X'tal (16.5MHz)		Clock Output
54	X'tal (16.5MHz)		Clock Input
55	Vcc		Power Supply
56	CKSW3	I	Chacking SW3
57	CKSW1	I	Chacking SW1
58	XROMCS	O	External ROM Chip Select
59	PA1/CS1x	O	External RAM Chip Select
60	XAVDCS2	O	AVD SDRAM CS
61	XAVDCS3	O	AVD R-BUS Reg. CS
62	XARPCS	O	Katrina-ARP CS
63	XSDPCS	O	Katrina-SDSP CS

Pin No.	Pin Name	I/O	Function
64			
65	PA6/CS6x	O	MS CS
66	CS7	O	reserved (dummy for AVD DMA)
67	XWAIT	I	External WAIT Signal Input
68	P81/BGRNTx	I	External Bus Open Acknowledge Input
69	P82/BRQ	I	External Bus Open Request Input
70	XRD	O	
71	XWRH	O	/External SRAM Upper Byte
72	P85/LBx/WR1x	O	/External SRAM Lower Byte
73	NMIx	I	
74	HSTx	I	
75	Vss		
76	XFRRST	I	5G_FR Reset Input
77	CPUCK	O	5G_FR Clock Output (33/66MHz)
78	CKSW2	I	Chacking SW2
79	XDACS	O	2ch DAC CS
80	VES_CS	O	uDSP CS
81	48/44.1K	O	PLL-IC control
82	WIDE	O	
83	MAMUTE	O	Main Audio Mute
84	P97/WRx	O	External SRAM WE
85	HD0	I/O	
86	HD1	I/O	
87	HD2	I/O	
88	HD3	I/O	
89	HD4	I/O	
90	HD5	I/O	
91	HD6	I/O	
92	HD7	I/O	
93	HD8	I/O	
94	HD9	I/O	
95	HD10	I/O	
96	HD11	I/O	
97	HD12	I/O	
98	HD13	I/O	
99	HD14	I/O	
100	HD15	I/O	
101	Vss		
102	HA0	O	
103	HA1	O	
104	HA2	O	
105	HA3	O	
106	HA4	O	
107	HA5	O	
108	HA6	O	
109	HA7	O	
110	Vcc		
111	HA8	O	
112	HA9	O	
113	HA10	O	
114	HA11	O	
115	HA12	O	
116	HA13	O	
117	HA14	O	
118	HA15	O	
119	Vss		
120	HA16	O	

5-2. SYSTEM CONTROL PIN FUNCTION (FL-123 BOARD IC403)

Pin No.	Pin Name	I/O	Function
1	VSS	—	GND
2	XIN	—	Resonator connecting pin for high-frequency clock
3	XOUT	—	Resonator connecting pin for high-frequency clock
4	TEST	I	Pin for shipping test (Low lebel) (internally pulled down)
5	VCC	—	Vcc (EVER3.3 V)
6	SEL	I	Model selection L: 1470/H: 1475 (Not used)
7	/FRRST	O	System control reset (L: RESET)
8	/RST	I	Reset signal input (internally pulled up)
9	IRMASK	O	IR signal mask control for IR39 (L: OFF/H: mask ON)
10	SEF_CHECK	I	Self-check mode selection (L: self-check/H: normal operation)
11	IR	I	Remote control input
12	FLMASK	O	IR signal mask control for FL123 (L: OFF/H: mask ON)
13	/DISC	I	Disc sensor input (monitored at standby mode)
14	/CS	I	Serial communication CS
15	SI	I	Serial communication SI
16	SO	O	Serial communication SO
17	/SC	I	Serial comunication clock
18	P50	O	Not used
19	P_DET	O	Not used
20	/IR2	I	Remote control receiving 2 (For IR signal noise judgement of IR39)
21	BUZ	O	Buzzer driving pulse (1 kHz/2 kHz)
22	P00	O	Not used
23	P01	O	Not used
24	P02	O	Not used
25	/INS	I	Disc INS signal (monitored at standby mode)
26	PCONT	O	Power control
27	BUSY	O	Serial communication IFcon busy
28	/AMUTE	O	AMUTE
29	/VMUTE	O	VMUTE
30	PONCHK	I	System control power voltage check
31	P41	O	Not used
32	/WAKE	I	WAKE sensor (For 1475 only)
33	P43	O	Not used
34	SW1	I	“Button input X2 (POWER, PREV)”
35	SW2	I	“Button input X2 (EJECT, LR-SEL)”
36	SW3	I	“Button input X2 (PLAY, PAUSE)”
37	SW4	I	“Button input X2 (STOP, NEXT)”
38	AVSS	—	Analog reference GND for A/D converter
39	VAREF	—	Analog reference voltage for A/D converter
40	VKK	I	Power supply for fluorescent display driver
41	LED5	O	(LED_VES) (internally pulled down)
42	LED4	O	(LED_LR-GRN) for 1475 only (internally pulled down)
43	LED3	O	(LED_LR_ORG) for 1475 only (internally pulled down)
44	LED2	O	Not used (internally pulled down)
45	LED1	O	Not used (internally pulled down)
46	LED6	O	Not used (Vkk internally pulled down)
47	LED7	O	Not used (Vkk internally pulled down)
48	SEG17	O	Fluorescent display drive (Vkk internally pulled down)
49	SEG16	O	Fluorescent display drive (Vkk internally pulled down)
50	SEG15	O	Fluorescent display drive (Vkk internally pulled down)
51	SEG14	O	Fluorescent display drive (Vkk internally pulled down)
52	SEG13	O	Fluorescent display drive (Vkk internally pulled down)
53	SEG12	O	Fluorescent display drive (Vkk internally pulled down)
54	SEG11	O	Fluorescent display drive (Vkk internally pulled down)
55	SEG10	O	Fluorescent display drive (Vkk internally pulled down)
56	SEG9	O	Fluorescent display drive (Vkk internally pulled down)
57	SEG8	O	Fluorescent display drive (Vkk internally pulled down)
58	SEG7	O	Fluorescent display drive (Vkk internally pulled down)
59	SEG6	O	Fluorescent display drive (Vkk internally pulled down)
60	SEG5	O	Fluorescent display drive (Vkk internally pulled down)
61	SEG4	O	Fluorescent display drive (Vkk internally pulled down)
62	SEG3	O	Fluorescent display drive (Vkk internally pulled down)
63	SEG2	O	Fluorescent display drive (Vkk internally pulled down)
64	SEG1	O	Fluorescent display drive (Vkk internally pulled down)
65	SEG18	O	Fluorescent display drive (Vkk internally pulled down)
66	DIG9	O	Not used
67	DIG8	O	Fluorescent display drive (Vkk internally pulled down)
68	DIG7	O	Fluorescent display drive (Vkk internally pulled down)
69	DIG6	O	Fluorescent display drive (Vkk internally pulled down)
70	DIG5	O	Fluorescent display drive (Vkk internally pulled down)
71	DIG4	O	Fluorescent display drive (Vkk internally pulled down)
72	DIG3	O	Fluorescent display drive (Vkk internally pulled down)
73	DIG2	O	Fluorescent display drive (Vkk internally pulled down)
74	DIG1	O	Fluorescent display drive (Vkk internally pulled down)
75	LED10	O	Not used (Vkk internally pulled down)
76	LED9	O	Not used (Vkk internally pulled down)
77	LED8	O	Not used (Vkk internally pulled down)
78	VCC	—	Power supply (Vcc)
79	LED12	O	LED drive (Dimmer control disable) (LED_PWR)
80	LED11	O	LED drive (Dimmer control disable) (LED_PWR)

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).

Note: Since the remote commander belongs to this model has no number buttons, use other DVD remote commander with number buttons on it.

6-2. STARTING TEST MODE

Press the [TOPMENU], [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 ST" 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 numbers 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-14XXX
Revision : 1.xxx    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/Read 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	
DVP-F21	UC	5	0
	MX	5	2
	CE1	5	3
	CE2	5	4
	GA	5	7
	AU	5	a
	CN	5	c

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

3. Peripheral

(3-2) 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.

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, 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.

```
    ### 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
_
```

(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
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
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.

8. Audio

(8-2) ARP → 1930
Error 14: ARP → 1932 video NG
15: ARP → 1932 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
(7-4) Y/C Out

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: 1932 SDRAM NG
14: ARP → 1932 video NG
15: ARP → 1932 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, 1. DVD-SL disc, 2. CD disc, 3. DVD-DL disc, and 4. LCD disc (SACD disc) are adjusted in this order. Each time one disc was adjusted, it is ejected, and therefore exchange the disc following the message. Though the message to confirm whether the discs is to be adjusted is not displayed except for LCD disk (SACD disk), you can exit the adjustment by pressing 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], insert DVD single layer disc, 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], insert CD disc, 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], insert DVD dual layer disc, 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

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

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

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, ejecting the disc 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. SACD    12 cm
6. DVD SL  8 cm
7. DVD DL  8 cm
8. CD      8 cm
9. SACD    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. 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. (Trk/Sled Servo OFF)
←	Fj (L0 → L1)	Focus jump reverse. (Trk/Sled Servo OFF)
↑	Lj (L1 → L0)	Layer jump forward. (Trk/Sled Servo ON)
↓	Lj (L0 → L1)	Layer jump reverse. (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.

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

```
      ### EMG. 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.

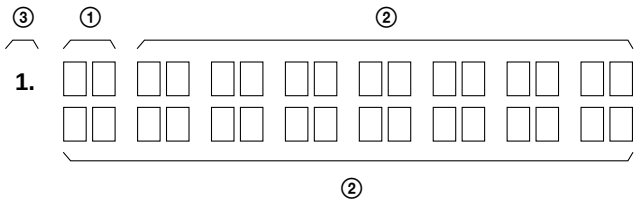
Clearing History Information

◎ 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



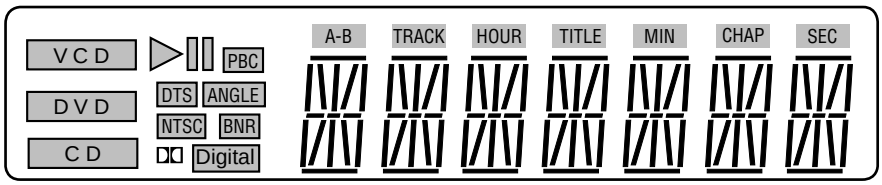
①: Emergency Code
②: Don’t Care (These codes are used for verification of software designing.)
③: Historical order 1 to 9

Emergency Codes List

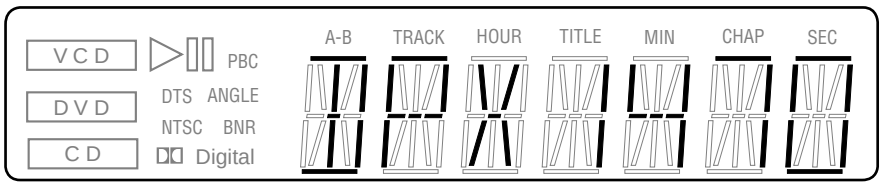
10: Communication to IC202 (MB-99 board) failed.
11: Each servo for focus, tracking, and spindle is unlocked.
12: Communication to EEPROM, IC101 (MB-99 board) failed.
13: Writing of hours meter data to EEPROM, IC101 (MB-99 board) failed.
14: Communication to Servo DSP IC302 (MB-99 board) failed, or Servo 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.

FLD Auto Self Check

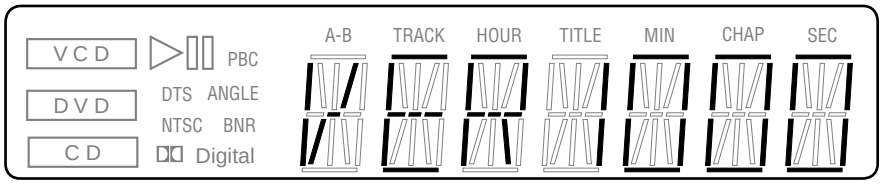
① FLD and LED all ON (for 5 seconds)



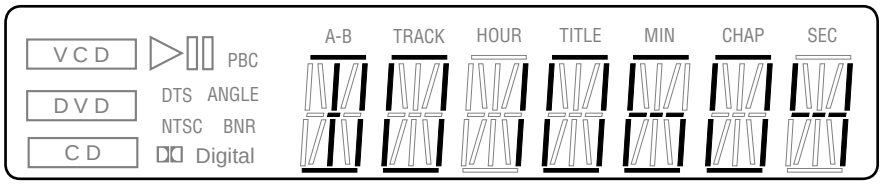
② Model display (for 2 seconds)



③ Version display (for 2 seconds)



④ ROM creation date display (for 2 seconds)



Repeat above steps 1 to 4.

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
_
```

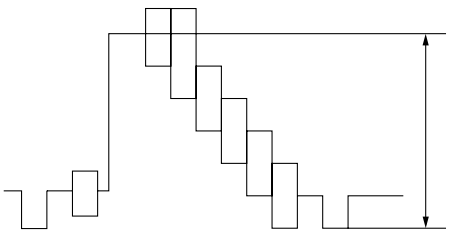
The ROM version, region code, OPT type, etc. are displayed if [5] is selected in the Test Mode Menu. The parenthesized hexadecimal number in the version number field indicates the checksum value of the ROM.

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 [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) connector (75 Ω terminated)
Measuring instrument: Oscilloscope
Adjustment device: RV501 on MB-99 board
Specified value: $1.0\ ^{+0.04}_{-0.02}$ Vp-p



6-10. IF CON Function Check Mode

1. Button function

When any button except [POWER] of the main unit is pressed in the Test mode, the unit exits from the Self Check mode of the fluorescent display tube.
While a button is pressed, the function name of that button is displayed on the FLD, and when stops pressing the button, “Nothing” is displayed. When two buttons are pressed simultaneously, “DOUBLE” is displayed. As for the name of the button refer to the following table.
For the button with LED, whenever it presses, turning on the light and turning off are repeated.

Port	Number	Function Name	Key Code	Input Voltage Detection Range		
				MIN	TYP	MAX
SW1	0	POWER	00	0.00	—	1.10
34p	1	PREV	0B	1.11	1.65	2.20
SW2	0	EJECT	09	0.00	—	1.10
35p						
SW3	0	PLAY	0A	0.00	—	1.10
36p	1	PAUSE	02	1.11	1.65	2.20
SW4	0	STOP	01	0.00	—	1.10
37p	1	NEXT	0C	1.11	1.65	2.20

The direction buttons on the remote commander are functioned as buttons to entering the specific mode.

[↑] : Fluorescent display Grid check
[↓] : LED check (Not used)
[←] : All lights up
[→] : Fluorescent display Anode check

All buttons are judged with the voltage of A/D port. The reference voltage of A/D port is EVER +3.3 V. To reject chattering, measure the voltage twice and the same values are obtained, this voltage is judged as the A/D port voltage. The dead zone is provided for the IF CON button judgment voltage. When a voltage within the range of dead zone is input, “IGNORE” is displayed.

2. Remote commander receiving function

If the unit is received a command of the remote commander when “NOTHING” is displayed, the function name of the code of the remote commander is displayed on the display. The code which the unit can receive is only DVD category.
The [DISPLAY] button on the remote commander functions as switch of the button name display and code display. In the code display mode, “REM NO.xx” is displayed. The received code is displayed with hexadecimal notation into the “xx” column. When the unit has not received the command, “FF” is displayed.

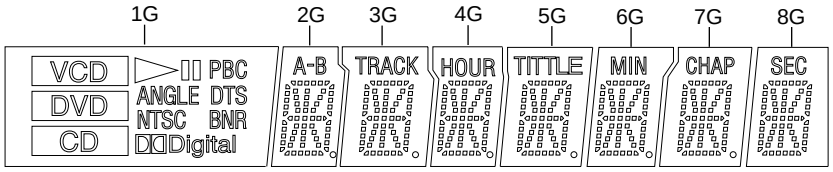
3. SYSTEM CONTROL - IF CON serial communication

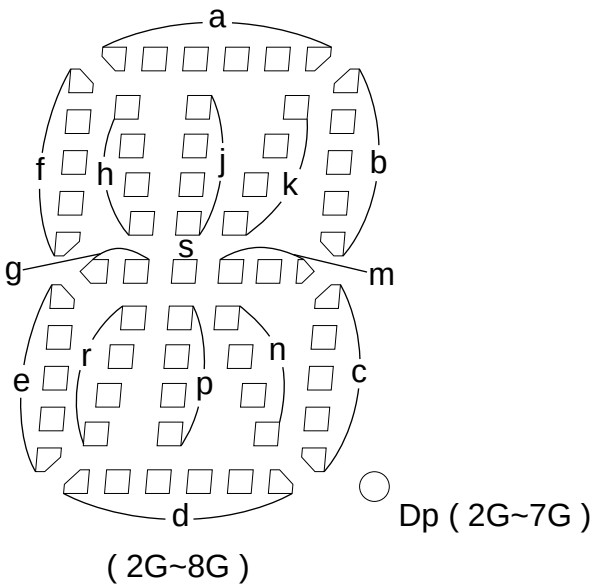
The IF CON and SYSTEM CONTROL are usually performing both-directions communication in a cycle of 24 ms. This mode checks in simple whether this communication is performed normally. When “NOTHING” is displayed and the character portion of [VCR], [DVD] and [CD] has gone out on the left side of the display, this state means that communication with SYSTEM CONTROL is performed normally. If the character portion is lit up, this state means the communication is not performed correctly. After the test mode is executed (until initialization of the MB-89 board is completed), communication is not performed for several seconds. Although the character portion may light up in these intervals, but this is normal.

4. Fluorescent display tube lighting check

Fluorescent display tube lighting check can also be performed roughly by automatic mode. But when checking in detail, use this mode.

When [STOP] and [PLAY] buttons are pressed simultaneously, all segments of the fluorescent display are turned on. The ↩ button of the remote commander can also turn on all segments.





(2G~8G)

(Grid)

(Anode)

	1G	2G	3G	4G	5G	6G	7G	8G
P1	DVD	a	a	a	a	a	a	a
P2	CD	h	h	h	h	h	h	h
P3	VCD	j	j	j	j	j	j	j
P4	Digital	k	k	k	k	k	k	k
P5	▷	b	b	b	b	b	b	b
P6	II	f	f	f	f	f	f	f
P7	PBC	m	m	m	m	m	m	m
P8	DTS	s	s	s	s	s	s	s
P9	ANGLE	g	g	g	g	g	g	g
P10	NTSC	e	e	e	e	e	e	e
P11	BNR	n	n	n	n	n	n	n
P12	-	p	p	p	p	p	p	p
P13	-	r	r	r	r	r	r	r
P14	-	c	c	c	c	c	c	c
P15	-	d	d	d	d	d	d	d
P16	-	Dp	Dp	Dp	Dp	Dp	Dp	-
P17	-	A-	TRACK	HOUR	TITLE	MIN	CHAP	SEC
P18	-	B	-	-	-	-	-	-

5. Grid check (↑ button: Grid check mode)

This check mode makes it turn on one grid of the arbitrary grids of fluorescent display at a time. (All anodes of applicable grid are turned on.) During this check mode, grid of one somewhere surely lights up. The CLICK SHUTTLE of remote commander is used for movement of grid. However, since there is no CLICK SHUTTLE in remote commander of supplied accessory, it can correspond by the remote commander for DVD with CLICK SHUTTLE.

6. Anode check (→ button: Anode check mode)

This check mode makes it turn on one anode of the arbitrary anodes of fluorescent display at a time. (Applicable anodes of all grids are turned on.) If CLICK SHUTTLE is rotated clockwise, the check will begin from P1 and will move with P2, P3 .... After the check of the last anode finishes, it returns to P1. During this check mode, one anode in all grids surely lights up.
The CLICK SHUTTLE of remote commander is used for movement of anode. However, since there is no CLICK SHUTTLE in remote commander of supplied accessory, it can correspond by the remote commander for DVD with CLICK SHUTTLE.

7. LED control

Whenever EJECT button is pressed, SUROUND LED (D406) repeats on and off.

6-11. TROUBLESHOOTING

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.

2. Power is not Supplied

① Red LED does not light when AC is supplied (standby)
The power (EVER +5 V) is not supplied.
The X401 does not oscillate.
FTC connecting between FL-123 and MB-99 boards is faulty.

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 exceeds 0.1 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 is abnormal (slow rising from 0.1 V to more than 1.5 V, or voltage not rising to more than 1.5 V).
The SYSTEM CONTROL is faulty.

SECTION 7
ELECTRICAL ADJUSTMENT

In making adjustment, refer to 7-4. 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) Single or dual trace oscilloscope, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital voltmeter
5) Standard commander (RMT-D126A/D126E/D126P)
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) Extension Cable (J-6090-107-A)

7-1. POWER SUPPLY CHECK

1. MB-99 Boards

Mode	E-E
Instrument	Digital voltmeter
① EVER +3.3 V Check	
Test point	JL708
Specification	3.3 ± 0.1 Vdc
② SW +3.3 V Check	
Test point	JL710
Specification	3.3 ± 0.2 Vdc
③ +5 V Check	
Test point	JL709
Specification	5.0 ± 0.3 Vdc
④ SW +11 V Check	
Test point	JL706, JL707
Specification	10.5 ± 0.5 Vdc
⑤ EVER +5 V Check	
Test point	JL711
Specification	5.0 ± 0.2 Vdc
⑥ SW –11 V Check	
Test point	JL705
Specification	–11.0 ± 1.0 Vdc
⑦ +1.8 V Check	
Test point	JL713
Specification	1.8 ± 0.1 Vdc

Checking method:

1) Confirm that each voltage satisfies the specification.

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-99 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 (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 level to 1.0 $^{+0.04}_{-0.02}$ Vp-p by RV501.

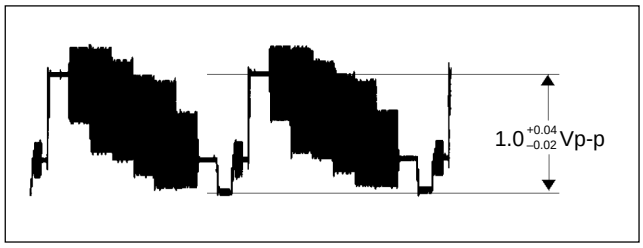


Figure 7-1

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 an S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) 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 S-Y level is 1.0 ± 0.05 Vp-p.

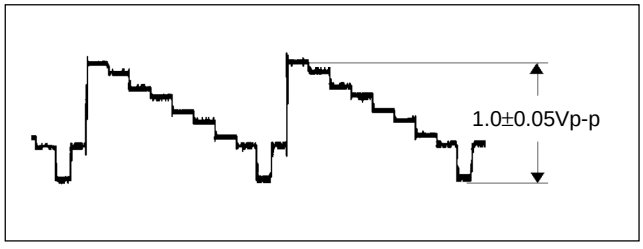


Figure 7-2

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 (75 Ω terminated)
Instrument	Oscilloscope
Specification	A = 286 ± 30 mVp-p (NTSC) 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” meets the specification.

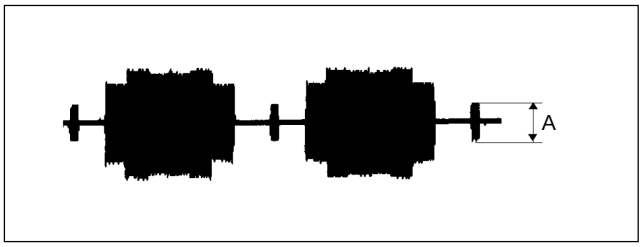
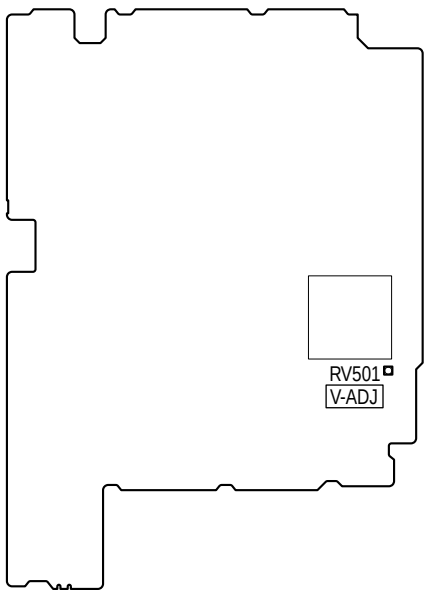


Figure 7-3

7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

MB-99 BOARD (SIDE A)



SECTION 8
REPAIR PARTS LIST

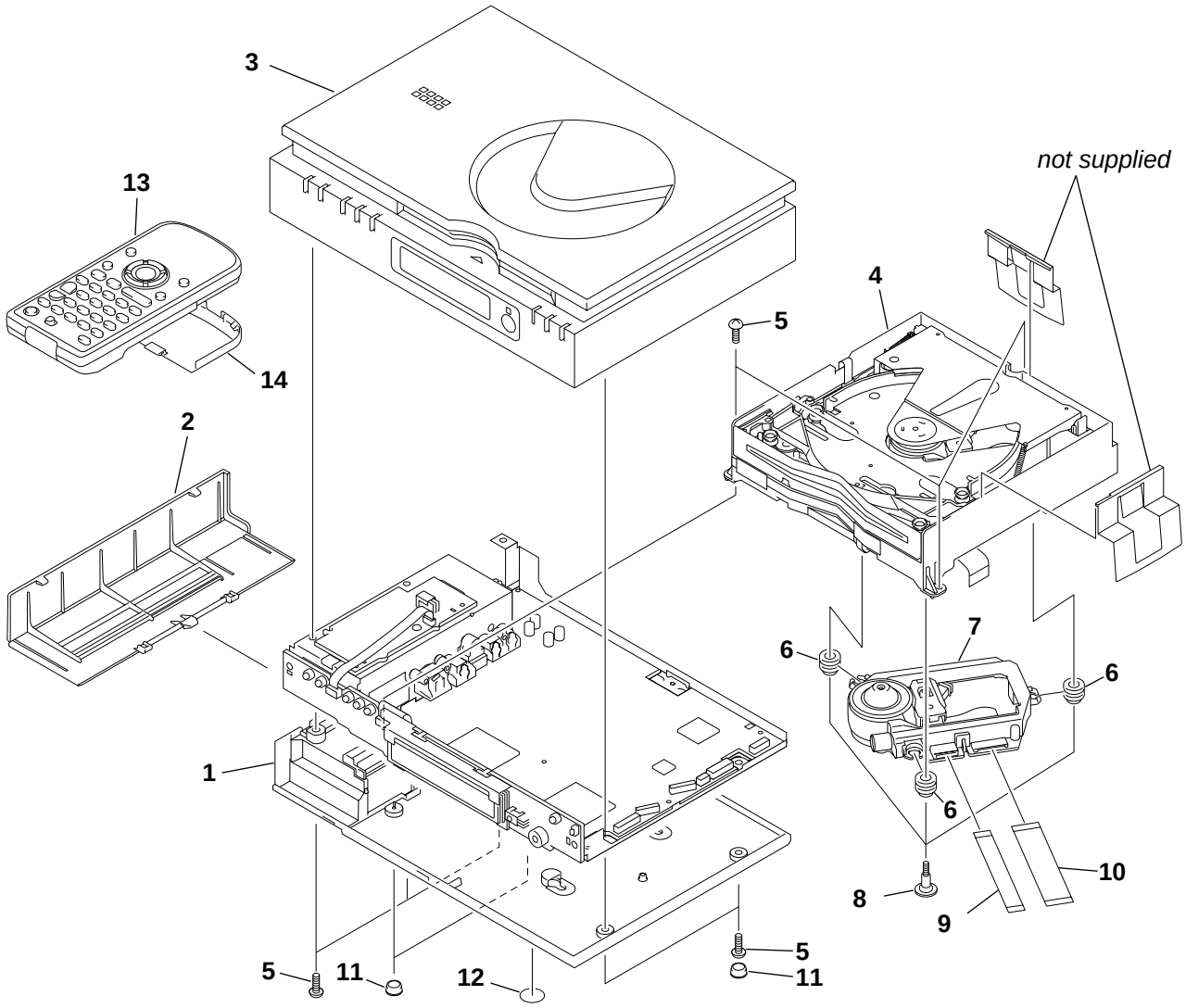
8-1. EXPLODED VIEWS

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

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

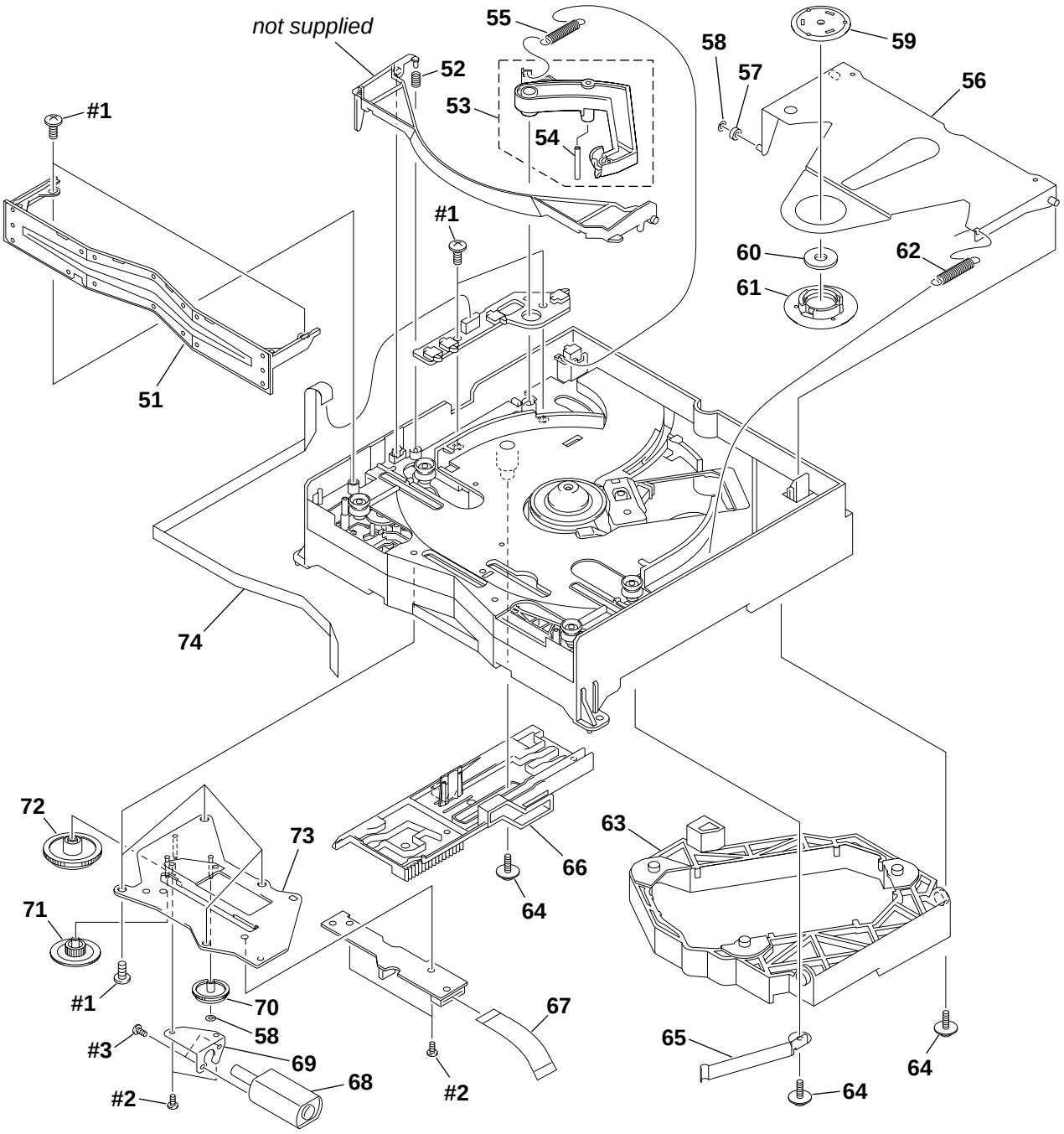
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1. CASE ASSEMBLY



Ref.No.	Part No.	Description	Remarks
1	3-070-471-01	CASE, LOWER (US, CND) (Silver)	
1	3-070-471-11	CASE, LOWER (US, CND) (Black)	
1	3-070-471-51	CASE, LOWER (EXCEPT US, CND)	
2	3-070-472-01	COVER, TERMINAL (Silver)	
2	3-070-472-11	COVER, TERMINAL (Black)	
3	X-3951-902-2	CASE ASSY (S), UPPER (Silver)	
3	X-3951-928-2	CASE ASSY (S), UPPER (Black)	
4	A-6062-617-A	MD ASSY	
5	3-970-608-51	SUMITITE (B3), +BV	
6	3-053-847-11	INSULATOR	
⚠7	8-820-144-14	OPTICAL PICK-UP KHM240AAA/J1RP2	
8	3-067-344-01	INSULATOR SCREW	
9	1-823-249-11	CABLE, FLEXIBLE FLAT (FOB-2)	
10	1-823-248-11	CABLE, FLEXIBLE FLAT (FOB-1)	
11	3-070-486-01	FOOT (Silver)	
11	3-070-486-11	FOOT (Black)	
12	3-070-491-01	COVER, GATE	
13	1-476-887-11	REMOTE COMMANDER (RMT-D137A)	(US, CND, MX)
13	1-476-887-31	REMOTE COMMANDER	(EXCEPT US, CND, MX) (RMT-D137P)
14	3-709-572-0	BATTERY COVER	

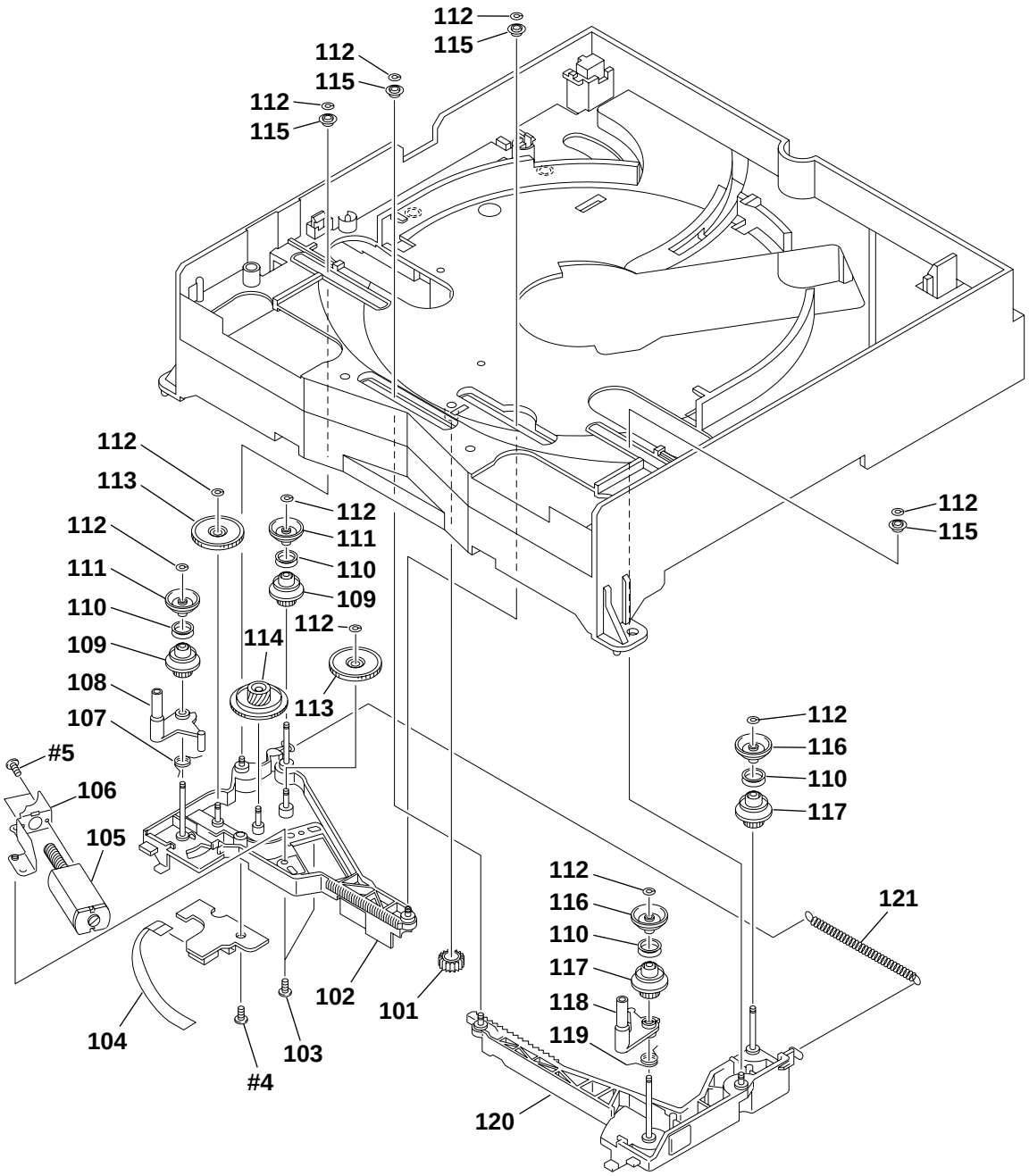
8-1-2. MECH.DECK BLOCK (1)



Ref.No.	Part No.	Description	Remarks
51	X-3951-919-1	GATE ASSY	
52	3-070-596-01	SPRING,COMPRESSION	
53	X-3951-920-1	LEVER ASSY	
54	3-703-358-05	PIN,PARALLEL (DIA.2X16)	
55	3-070-587-01	SPRING, EXTENSION	
56	X-3951-918-1	ARM ASSY,CHUCKING	
57	3-070-583-01	ROLLER (HP)	
58	3-727-176-01	WASHER, STOPPER	
59	3-070-592-01	YOKE HOLDER	
60	3-070-591-01	YOKE	
61	3-070-590-01	CHUCK PULLEY	
62	3-070-595-01	SPRING, EXTENSION	
63	3-070-579-01	HOLDER, BU	
64	4-933-134-41	SCREW (+PTPWH 2.6X5)	
65	3-070-585-01	SPRING (SLIDER)	

Ref.No.	Part No.	Description	Remarks
66	3-070-577-01	RACK (L)	
67	1-823-246-11	CABLE, FLEXIBLE FLAT (FDM-22)	
68	X-3951-914-1	MOTOR (C) ASSY	
69	3-070-576-01	BRACKET (C), MOTOR	
70	3-070-573-01	WHEEL (C), WORM	
71	3-070-574-01	GEAR (C1)	
72	3-070-575-01	GEAR (C2)	
73	X-3951-911-1	BASE (C) ASSY	
74	1-823-250-11	CABLE, FLEXIBLE FLAT (FDD-12)	

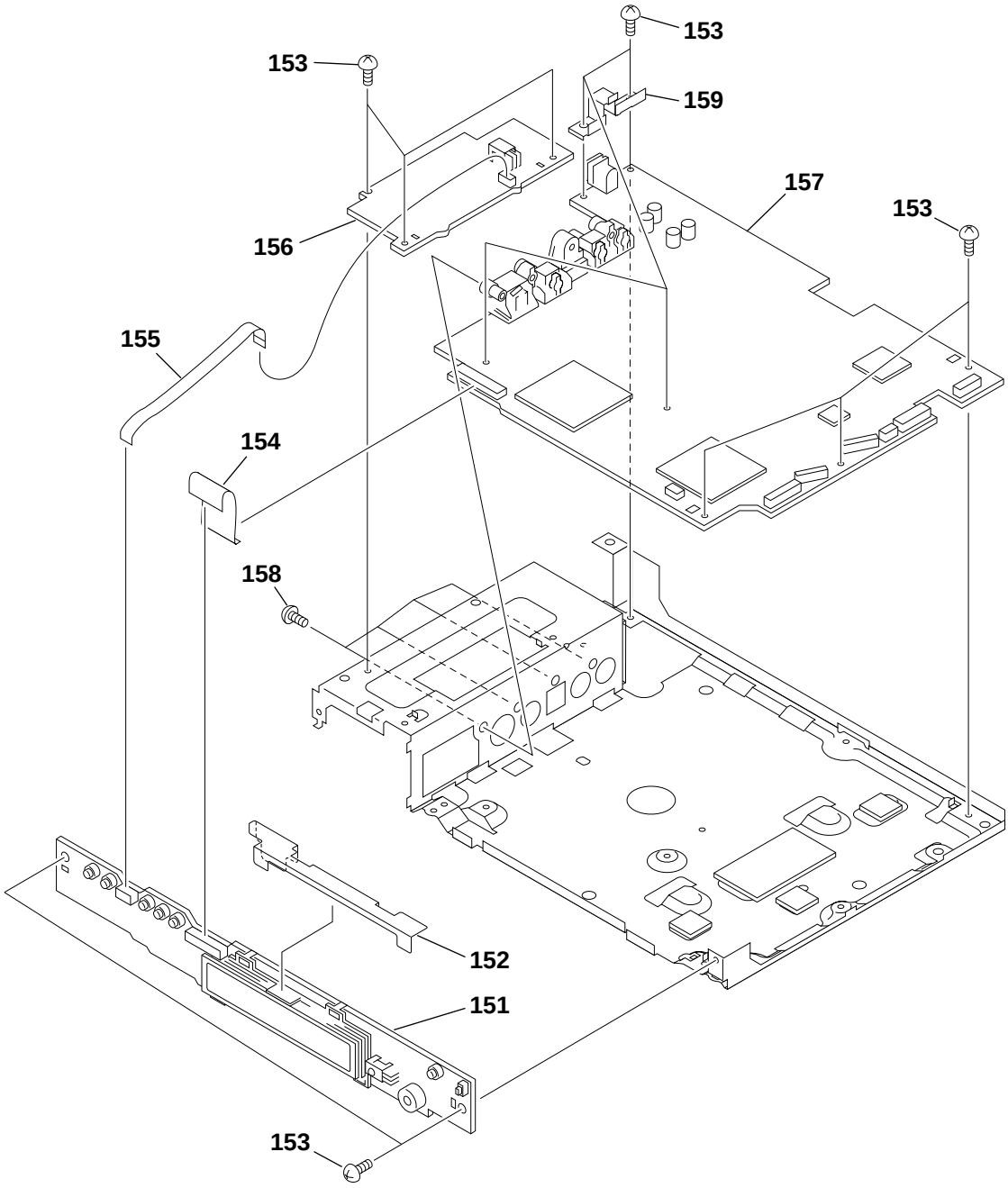
8-1-3. MECH.DECK BLOCK (2)



Ref.No.	Part No.	Description	Remarks
101	3-070-554-01	GEAR (P)	
102	X-3951-913-1	SLIDER (L) ASSY	
103	3-968-729-81	SCREW (2X3)	
104	1-823-247-11	CABLE, FLEXIBLE FLAT (FDD-11)	
105	X-3951-915-1	MOTOR (R) ASSY	
106	3-070-568-01	BRACKET (R), MOTOR	
107	3-070-594-01	SPRING (L), TORSION	
108	X-3951-917-1	STOPPER (L) ASSY	
109	3-070-555-01	ROLLER	
110	3-070-557-01	RUBBER, ROLLER	
111	3-070-556-01	CAP	
112	3-727-176-01	WASHER, STOPPER	
113	3-070-567-01	GEAR (R)	
114	3-070-566-01	WHEEL (R), WORM	
115	3-070-569-01	ROLLER (SLIDER)	

Ref.No.	Part No.	Description	Remarks
116	3-070-586-01	CAP, S	
117	3-070-558-01	ROLLER, S	
118	X-3951-916-1	STOPPER (R) ASSY	
119	3-070-593-01	SPRING (R), TORSION	
120	X-3951-912-1	SLIDER (R) ASSY	
121	3-070-582-01	SPRING, TENSION	

8-1-4. CHASSIS BLOCK



Ref.No.	Part No.	Description	Remarks
* 151	A-6065-721-A	FL-123 BOARD, COMPLETE	
152	3-071-630-01	COVER FL	
153	3-055-791-11	SUMITITE (B3) (RING), +BV	
154	1-823-268-11	CABLE, FLEXIBLE FLAT (FFM-38)	
155	1-823-269-11	CABLE, FLEXIBLE FLAT (FIF-2)	
* 156	A-6065-722-A	IR-39 (UC) BOARD, COMPLETE	(US, CND, MX, HK, SP)
* 156	A-6065-737-A	IR-39 (CE) BOARD, COMPLETE (AEP, UK)	
* 157	A-6065-720-A	MB-99 (UC) BOARD, COMPLETE (US, CND)	
157	A-6065-735-A	MB-99 (MX) COMPLETE (MX)	
* 157	A-6065-736-A	MB-99 (CE1) BOARD, COMPLETE (AEP, CE1)	(UK)
157	A-6065-738-A	MB-99 (CE2) BOARD, COMPLETE (AEP, CE2)	(AEP)
157	A-6065-739-A	MB-99 (GA) COMPLETE (HK, SP)	
158	3-970-608-51	SUMITITE (B3), +BV	

8-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts speci-fied 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 (HS13S0E, HS13S0F, HS13S0U and TOP-244U) 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

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.

Ref.No.	Part No.	Description	Remarks
	A-6065-742-A	MD-91 BOARD, COMPLETE	
		**********	
		(Ref.No.: 10,000 Series)	
		<CONNECTOR>	
CN401	1-784-856-21	CONNECTOR, FFC(LIF(NON-ZIF))4P	
* CN402	1-770-619-11	PIN, CONNECTOR 2P	
		<SWITCH>	
S401	1-762-594-51	SWITCH, PUSH (1 KEY) (DIS)	
	A-6065-740-A	MD-89 BOARD, COMPLETE	
		**********	
		(Ref.No.: 20,000 Series)	
		<CONNECTOR>	
CN101	1-784-865-01	CONNECTOR,FFC(LIF(NON-ZIF))13	
* CN102	1-778-283-11	CONNECTOR, FFC/FPC 4P	
CN103	1-779-353-21	CONNECTOR, FFC/FPC 5P	
CN104	1-784-650-21	CONNECTOR 2P	
		<RESISTOR>	
R101	1-216-295-91	SHORT 0	
R102	1-216-295-91	SHORT 0	
R103	1-216-295-91	SHORT 0	
		<SWITCH>	
S102	1-572-688-11	SWITCH, PUSH (1 KEY) (RSI)	
S103	1-762-594-51	SWITCH, PUSH (1 KEY) (REJ)	
S104	1-762-594-51	SWITCH, PUSH (1 KEY) (RLO)	
	A-6065-741-A	MD-90 BOARD, COMPLETE	
		**********	
		(Ref.No.: 30,000 Series)	
		<CONNECTOR>	
CN301	1-779-353-21	CONNECTOR, FFC/FPC 5P	
		<SWITCH>	
S201	1-762-594-51	SWITCH, PUSH (1 KEY) (COF)	
S202	1-762-594-51	SWITCH, PUSH (1 KEY) (CRE)	
S203	1-572-688-11	SWITCH, PUSH (1 KEY) (CON)	
S301	1-572-688-11	SWITCH, PUSH (1 KEY) (LEV)	

Ref.No.	Part No.	Description			Remarks
	A-6065-720-A	MB-99 (UC) BOARD, COMPLETE (US, CND)			
		**********			
	A-6065-735-A	MB-99 (MX) BOARD, COMPLETE (MX)			
		**********			
	A-6065-736-A	MB-99 (CE1) BOARD, COMPLETE (AEP, CE1), (UK)			
		**********			
	A-6065-738-A	MB-99 (CE2) BOARD, COMPLETE (AEP, CE2)			
		**********			
	A-6065-739-A	MB-99 (GA) BOARD, COMPLETE (HK, SP)			
		**********			
		(Ref.No.: 60,000 Series)			
	3-071-163-01	PLATE (MB), GROUND			
		<CAPACITOR>			
C103	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C104	1-126-209-11	ELECT CHIP	100UF	20.00%	4V
C105	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C106	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C107	1-162-918-11	CERAMIC CHIP	18PF	5.00%	50V
C108	1-162-917-11	CERAMIC CHIP	15PF	5.00%	50V
C109	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C110	1-126-209-11	ELECT CHIP	100UF	20.00%	4V
C111	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C112	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C113	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C114	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C115	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C116	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C124	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C131	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C133	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C201	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C202	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C205	1-162-966-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C206	1-162-966-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C207	1-162-966-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C208	1-162-966-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C209	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C215	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C216	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C217	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C218	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C219	1-164-739-11	CERAMIC CHIP	560PF	5.00%	50V
C221	1-124-779-00	ELECT CHIP	10UF	20.00%	16V

Ref.No.	Part No.	Description			Remarks
C222	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C223	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C224	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C225	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C226	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C227	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C228	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C231	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C232	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C233	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C234	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C235	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C236	1-165-176-11	CERAMIC CHIP	0.047UF	10.00%	16V
C238	1-165-176-11	CERAMIC CHIP	0.047UF	10.00%	16V
C239	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C240	1-164-217-11	CERAMIC CHIP	150PF	5.00%	50V
C243	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C244	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C246	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C247	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C248	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C304	1-126-206-11	ELECT CHIP	100UF	20.00%	6.3V
C305	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C306	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C307	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C309	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C310	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C311	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C312	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C313	1-164-677-11	CERAMIC CHIP	0.033UF	10.00%	16V
C315	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C317	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C318	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C319	1-110-563-11	CERAMIC CHIP	0.068UF	10.00%	16V
C320	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C321	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C322	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C323	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C324	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C325	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C326	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C327	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C328	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C331	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C332	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C333	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C334	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C335	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C336	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C337	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C338	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C339	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C340	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C341	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C342	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C343	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C344	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C346	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C347	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C348	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C349	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C350	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C351	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C352	1-126-206-11	ELECT CHIP	100UF	20.00%	6.3V
C401	1-164-245-11	CERAMIC CHIP	0.015UF	10.00%	25V
C402	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C403	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C404	1-162-965-11	CERAMIC CHIP	0.0015UF	10.00%	50V
C405	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C406	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C407	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C408	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C409	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C410	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C411	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C412	1-164-677-11	CERAMIC CHIP	0.033UF	10.00%	16V
C413	1-164-677-11	CERAMIC CHIP	0.033UF	10.00%	16V
C414	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C415	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C416	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C418	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C419	1-126-204-11	ELECT CHIP	47UF	20.00%	16V
C420	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C421	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C426	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C427	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C428	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C429	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C434	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C435	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C436	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C437	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C438	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C501	1-126-193-11	ELECT CHIP	1UF	20.00%	50V
C502	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C503	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C504	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C505	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C506	1-124-779-00	ELECT CHIP	10UF	20.00%	16V
C508	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C509	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C512	1-126-246-11	ELECT CHIP	220UF	20.00%	4V
C513	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C516	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C518	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C519	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C520	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C521	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C522	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C525	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C526	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C529	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C530	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C531	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C533	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (AEP, UK, HK, SP)
C535	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (AEP, UK, HK, SP)
C536	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V

Ref.No.	Part No.	Description			Remarks
C537	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V (AEP, UK, HK, SP)
C538	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C539	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C541	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C542	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C543	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C545	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C546	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C601	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C602	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C603	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C604	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C702	1-127-931-21	ELECT	470UF	20%	16V
C703	1-128-992-21	ELECT CHIP	47UF	20%	25V
C704	1-128-992-21	ELECT CHIP	47UF	20%	25V
C705	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C706	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C707	1-128-992-21	ELECT CHIP	47UF	20%	25V
C708	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C709	1-127-692-11	CERAMIC CHIP	10UF	10.00%	6.3V
C710	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C711	1-162-962-11	CERAMIC CHIP	470PF	10.00%	50V
C712	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C713	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C714	1-162-967-11	CERAMIC CHIP	0.0033UF	10.00%	50V
C717	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C718	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C719	1-127-931-21	ELECT	470UF	20%	16V
C720	1-127-931-21	ELECT	470UF	20%	16V
C721	1-127-931-21	ELECT	470UF	20%	16V
C724	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C725	1-135-941-11	CERAMIC CHIP	22UF	10%	6.3V
C726	1-117-808-91	CERAMIC CHIP	10UF	10.00%	10V
C727	1-135-599-11	ELECT CHIP	39UF	20%	16V
C728	1-126-206-11	ELECT CHIP	100UF	20.00%	6.3V
C729	1-128-995-21	ELECT CHIP	100UF	20%	10V
C730	1-127-692-11	CERAMIC CHIP	10UF	10%	16V
C731	1-117-681-11	ELECT CHIP	100UF	20.00%	16V
C732	1-164-004-11	CERAMIC CHIP	0.1UF	10.00%	25V
C733	1-113-642-11	TANTAL. CHIP	47UF	20.00%	10V
C734	1-128-390-11	ELECT CHIP	220UF	20.00%	6.3V
C735	1-128-995-21	ELECT CHIP	100UF	20%	10V
C736	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C737	1-110-569-21	TANTAL. CHIP	47UF	20.00%	4V
C739	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C740	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C742	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C743	1-165-176-11	CERAMIC CHIP	0.047UF	10.00%	16V
C745	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C746	1-125-837-91	CERAMIC CHIP	1UF	10%	6.3V
C747	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C748	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C749	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C802	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C805	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C806	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C807	1-115-467-11	CERAMIC CHIP	0.22UF	10.00%	10V
C808	1-124-779-00	ELECT CHIP	10UF	20.00%	16V

Ref.No.	Part No.	Description			Remarks
C809	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C901	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C902	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C903	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C904	1-165-176-11	CERAMIC CHIP	0.047UF	10.00%	16V
C905	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C906	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C907	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V
C910	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C1001	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C1003	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C1004	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C1005	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C1006	1-164-739-11	CERAMIC CHIP	560PF	5.00%	50V
C1007	1-164-739-11	CERAMIC CHIP	560PF	5.00%	50V
C1008	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V
C1009	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V
C1010	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V
C1011	1-164-218-11	CERAMIC CHIP	180PF	5.00%	50V
C1012	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C1013	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C1014	1-117-681-11	ELECT CHIP	100UF	20.00%	16V
C1015	1-117-681-11	ELECT CHIP	100UF	20.00%	16V
C1016	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C1017	1-126-205-11	ELECT CHIP	47UF	20.00%	6.3V
C1018	1-126-193-11	ELECT CHIP	1UF	20.00%	50V
C1019	1-126-193-11	ELECT CHIP	1UF	20.00%	50V (AEP, UK)
C1020	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V (AEP, UK, HK, SP)
C1023	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V (AEP, UK, HK, SP)
C1026	1-126-608-11	ELECT CHIP	330UF	20.00%	2V
C1028	1-126-204-11	ELECT CHIP	47UF	20.00%	16V
		<CONNECTOR>			
* CN103	1-770-470-21	PIN, CONNECTOR (PC BOARD) 6P			
CN104	1-770-701-11	CONNECTOR, FFC/FPC 18P			
CN105	1-770-305-11	CONNECTOR, FFC/FPC 10P			
CN201	1-815-507-21	CONNECTOR, FFC/FPC 26P			
CN202	1-779-935-11	CONNECTOR, FFC/FPC 9P			
CN402	1-778-274-11	CONNECTOR, FFC/FPC 13P			
		<DIODE>			
D403	8-719-069-29	DIODE RB520S-30TE61			
D404	8-719-069-29	DIODE RB520S-30TE61			
D701	8-719-084-56	DIODE PTZ-TE25-15B			
D702	8-719-066-33	DIODE RB081L-20TE25			
D703	8-719-066-98	DIODE RB051L-40TE25			
D704	8-719-066-98	DIODE RB051L-40TE25			
D705	8-719-066-98	DIODE RB051L-40TE25			
D706	8-719-423-32	DIODE MA8120-M-TX			
D707	8-719-053-18	DIODE 1SR154-400TE-25			
D901	8-719-062-16	DIODE 01ZA8.2(TPL3)			
D902	8-719-062-16	DIODE 01ZA8.2(TPL3)			
D1001	8-719-914-43	DIODE DAN202K-T-146			
D1002	8-719-914-44	DIODE DAP202K-T-146			
D1003	8-719-914-44	DIODE DAP202K-T-146 (AEP, UK)			
D1004	8-719-988-61	DIODE 1SS355TE-17			

Ref.No.	Part No.	Description	Remarks
		<FERRITE BEAD>	
FB104	1-216-295-91	SHORT 0 (HK, SP)	
FB104	1-469-324-21	FERRITE 0UH (Except HK, SP)	
FB112	1-469-836-21	FERRITE 0UH	
FB124	1-469-836-21	FERRITE 0UH	
FB125	1-469-836-21	FERRITE 0UH	
FB126	1-469-836-21	FERRITE 0UH	
FB127	1-469-836-21	FERRITE 0UH	
FB173	1-216-295-91	SHORT 0 (HK, SP)	
FB173	1-469-324-21	FERRITE 0UH (Except HK, SP)	
FB174	1-216-295-91	SHORT 0 (HK, SP)	
FB174	1-469-324-21	FERRITE 0UH (Except HK, SP)	
FB701	1-216-295-91	SHORT 0 (HK, SP)	
FB701	1-469-324-21	FERRITE 0UH (Except HK, SP)	
		<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	
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	
FL703	1-234-177-21	FILTER, CHIP EMI (Except HK, SP)	
		<IC>	
IC101	8-759-640-41	IC BR24C08F-E2	
IC102	8-759-831-81	IC IMIC6001BTD	
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	8-759-683-75	IC MSM51V8160F-60TSKR1	
IC401	8-759-826-42	IC FAN8034	
IC403	8-759-040-83	IC BA6287F-E2	
IC501	8-759-832-30	IC TK71518ASCL	
IC502	8-759-599-45	IC MM1385ENLE	
IC503	8-752-399-55	IC CXD1933Q	
IC504	8-759-663-74	IC HY57V161610DTC-7TR	
IC505	8-759-663-74	IC HY57V161610DTC-7TR (AEP, UK, HK, SP)	
IC601	8-759-826-43	IC CXD9631Q	
IC701	8-759-485-77	IC BA9743AFV-E2	
IC702	8-759-680-31	IC TL594CPWR	
IC704	8-759-832-05	IC BA18BC0FP-E2	
IC705	8-759-711-59	IC NJM78L05UA-TE1	
IC801	8-759-825-34	IC CXD9626Q	
IC802	8-759-825-32	IC CXD9627N-E2	
IC901	8-759-667-17	IC L79M05TLL-SONY-TL	
IC902	8-759-826-46	IC LA73051-TLM	
IC1001	8-749-016-00	IC HVE0024	
IC1002	8-759-711-59	IC NJM78L05UA-TE1	
IC1003	8-759-909-71	IC BA4558F-E2	
		<JUMPER>	
J701	1-691-452-11	JACK,DC(POLARITY UNIFIET TYPE) (DC IN)	
J901	1-785-867-31	JACK, PIN 1P (VIDEO OUT)	
J902	1-794-198-11	CONNECTOR, S TERMINAL (S-VIDEO OUT)	
J903	1-815-894-11	JACK, PIN (2P) (AUDIO OUT L/R)	
		<COIL>	
L201	1-412-031-11	INDUCTOR 47UH	
L202	1-412-031-11	INDUCTOR 47UH	
L701	1-419-097-21	INDUCTORS (POWER)	
L702	1-412-052-21	INDUCTOR 1UH	
L703	1-414-529-21	INDUCTOR 100UH	
L704	1-424-910-11	COIL, POWER	
L705	1-424-911-11	COIL, POWER	
L706	1-412-052-21	INDUCTOR 1UH	
L707	1-412-052-21	INDUCTOR 1UH	
L708	1-412-052-21	INDUCTOR 1UH	
L901	1-412-064-11	INDUCTOR 100UH	
		<LINE FILTER>	
LF702	1-424-909-11	COIL, LINE FILTER (SMD)	
		<IC LINK>	
⚠ PS701	1-576-508-21	RINK, IC	
⚠ PS702	1-576-508-21	RINK, IC	
⚠ PS703	1-576-509-21	RINK, IC	
⚠ PS704	1-576-508-21	RINK, IC	
		<TRANSISTOR>	
Q201	8-729-903-46	TRANSISTOR 2SB1132-T100-QR	
Q202	8-729-903-46	TRANSISTOR 2SB1132-T100-QR	
Q402	8-729-905-34	TRANSISTOR 2SC4081T106Q	
Q701	8-729-402-42	TRANSISTOR UN5213-TX	
Q702	8-729-422-87	TRANSISTOR 2SB1073-R-TX	
Q703	8-729-056-24	TRANSISTOR 2SJ357-T1	
Q704	8-729-905-35	TRANSISTOR 2SC4081T106R	
Q706	8-729-049-50	TRANSISTOR 2SB1424-T100-R	
Q707	8-729-049-50	TRANSISTOR 2SB1424-T100-R	
Q708	8-729-922-47	TRANSISTOR 2SB1184-TLR	
Q709	8-729-230-49	TRANSISTOR 2SC2712-YG-TE85L	
Q710	8-729-922-06	TRANSISTOR 2SA1577-T106-Q	
Q711	8-729-922-06	TRANSISTOR 2SA1577-T106-Q	
Q712	8-729-922-06	TRANSISTOR 2SA1577-T106-Q	
Q901	8-729-402-42	TRANSISTOR UN5213-TX	
Q902	8-729-015-74	TRANSISTOR UN5111-TX	
Q1001	8-729-402-42	TRANSISTOR UN5213-TX	
Q1002	8-729-422-48	TRANSISTOR UN5217-TX	
Q1003	8-729-424-02	TRANSISTOR 2SB709A-QRS-TX	
Q1004	8-729-402-42	TRANSISTOR UN5213-TX (AEP, UK)	
Q1005	8-729-046-97	TRANSISTOR 2SD1938(F)-T(TX).SO	
Q1006	8-729-046-97	TRANSISTOR 2SD1938(F)-T(TX).SO	
Q1007	8-729-422-48	TRANSISTOR UN5217-TX (AEP, UK)	
Q1008	8-729-424-02	TRANSISTOR 2SB709A-QRS-TX (AEP, UK)	
Q1009	8-729-049-31	TRANSISTOR 2SB710A-RTX	
Q1010	8-729-230-49	TRANSISTOR 2SC2712-YG-TE85L	
Q1011	8-729-424-02	TRANSISTOR 2SB709A-QRS-TX	

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Note : Part number has not been determined yet.
It will be noticed later.

Ref.No.	Part No.	Description			Remarks
		<RESISTOR>			
R101	1-216-789-11	RES-CHIP	2.2	5%	1/16W
R105	1-216-864-11	SHORT	0		
R106	1-216-833-11	RES-CHIP	10K	5%	1/16W
R107	1-216-822-11	RES-CHIP	1.2K	5%	1/16W
R109	1-216-797-11	RES-CHIP	10	5%	1/16W
R110	1-216-833-11	RES-CHIP	10K	5%	1/16W
R111	1-216-864-11	SHORT	0		
R112	1-216-821-11	RES-CHIP	1K	5%	1/16W
R113	1-216-833-11	RES-CHIP	10K	5%	1/16W
R114	1-216-845-11	RES-CHIP	100K	5%	1/16W
R115	1-216-824-11	RES-CHIP	1.8K	5%	1/16W
R116	1-216-833-11	RES-CHIP	10K	5%	1/16W
R117	1-216-821-11	RES-CHIP	1K	5%	1/16W
R118	1-216-821-11	RES-CHIP	1K	5%	1/16W
R119	1-216-833-11	RES-CHIP	10K	5%	1/16W
R120	1-216-864-11	SHORT	0		
R121	1-216-833-11	RES-CHIP	10K	5%	1/16W
R123	1-216-833-11	RES-CHIP	10K	5%	1/16W
R128	1-216-827-11	RES-CHIP	3.3K	5%	1/16W
R129	1-216-833-11	RES-CHIP	10K	5%	1/16W
R130	1-216-833-11	RES-CHIP	10K	5%	1/16W
R131	1-216-809-11	RES-CHIP	100	5%	1/16W
R132	1-216-809-11	RES-CHIP	100	5%	1/16W
R133	1-216-809-11	RES-CHIP	100	5%	1/16W
R134	1-216-833-11	RES-CHIP	10K	5%	1/16W
R135	1-216-813-11	RES-CHIP	220	5%	1/16W
R136	1-216-797-11	RES-CHIP	10	5%	1/16W
R137	1-216-797-11	RES-CHIP	10	5%	1/16W
R138	1-216-797-11	RES-CHIP	10	5%	1/16W
R139	1-216-864-11	SHORT	0		
R140	1-216-864-11	SHORT	0		
R141	1-216-797-11	RES-CHIP	10	5%	1/16W
R142	1-216-797-11	RES-CHIP	10	5%	1/16W
R143	1-216-833-11	RES-CHIP	10K	5%	1/16W
R145	1-216-833-11	RES-CHIP	10K	5%	1/16W
R146	1-216-833-11	RES-CHIP	10K	5%	1/16W
R149	1-216-827-11	RES-CHIP	3.3K	5%	1/16W
R150	1-216-057-00	RES-CHIP	2.2K	5%	1/10W (HK, SP)
R150	1-216-075-00	RES-CHIP	12K	5%	1/10W (AEP, UK)
R150	1-216-081-00	RES-CHIP	22K	5%	1/10W (MX)
R151	1-216-827-11	RES-CHIP	3.3K	5%	1/16W
R152	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R153	1-216-827-11	RES-CHIP	3.3K	5%	1/16W
R154	1-216-075-00	RES-CHIP	12K	5%	1/10W (MX)
R154	1-216-081-00	RES-CHIP	22K	5%	1/10W (HK, SP)
R154	1-216-089-91	RES-CHIP	47K	5%	1/10W (AEP, UK)
R155	1-216-827-11	RES-CHIP	3.3K	5%	1/16W
R156	1-216-833-11	RES-CHIP	10K	5%	1/16W
R157	1-216-864-11	SHORT	0		
R160	1-216-833-11	RES-CHIP	10K	5%	1/16W
R163	1-216-805-11	RES-CHIP	47	5%	1/16W
R165	1-216-805-11	RES-CHIP	47	5%	1/16W
R166	1-216-809-11	RES-CHIP	100	5%	1/16W
R167	1-216-809-11	RES-CHIP	100	5%	1/16W
R168	1-216-809-11	RES-CHIP	100	5%	1/16W
R169	1-216-809-11	RES-CHIP	100	5%	1/16W
R170	1-216-821-11	RES-CHIP	1K	5%	1/16W
R171	1-216-864-11	SHORT	0		
R172	1-216-864-11	SHORT	0		
R175	1-216-864-11	SHORT	0		
R176	1-216-864-11	SHORT	0		
R178	1-216-864-11	SHORT	0		
R179	1-216-864-11	SHORT	0		
R180	1-216-809-11	RES-CHIP	100	5%	1/16W
R181	1-216-809-11	RES-CHIP	100	5%	1/16W
R182	1-216-864-11	SHORT	0		
R195	1-216-833-11	RES-CHIP	10K	5%	1/16W
R196	1-216-833-11	RES-CHIP	10K	5%	1/16W
R197	1-216-817-11	RES-CHIP	470	5%	1/16W
R199	1-216-826-11	RES-CHIP	2.7K	5%	1/16W
R201	1-216-815-11	RES-CHIP	330	5%	1/16W
R202	1-216-809-11	RES-CHIP	100	5%	1/16W
R203	1-216-809-11	RES-CHIP	100	5%	1/16W
R204	1-216-837-11	RES-CHIP	22K	5%	1/16W
R205	1-216-864-11	SHORT	0		
R207	1-216-803-11	RES-CHIP	33	5%	1/16W
R208	1-216-803-11	RES-CHIP	33	5%	1/16W
R209	1-216-821-11	RES-CHIP	1K	5%	1/16W
R210	1-216-841-11	RES-CHIP	47K	5%	1/16W
R211	1-216-809-11	RES-CHIP	100	5%	1/16W
R212	1-216-864-11	SHORT	0		
R215	1-216-864-11	SHORT	0		
R216	1-216-864-11	SHORT	0		
R219	1-216-864-11	SHORT	0		
R220	1-216-803-11	RES-CHIP	33	5%	1/16W
R222	1-216-827-11	RES-CHIP	3.3K	5%	1/16W
R223	1-216-803-11	RES-CHIP	33	5%	1/16W
R224	1-216-801-11	RES-CHIP	22	5%	1/16W
R225	1-216-841-11	RES-CHIP	47K	5%	1/16W
R229	1-216-809-11	RES-CHIP	100	5%	1/16W
R237	1-216-834-11	RES-CHIP	12K	5%	1/16W
R238	1-216-861-11	RES-CHIP	2.2M	5%	1/16W
R243	1-216-845-11	RES-CHIP	100K	5%	1/16W
R244	1-216-838-11	RES-CHIP	27K	5%	1/16W
R245	1-216-809-11	RES-CHIP	100	5%	1/16W
R299	1-216-847-11	RES-CHIP	150K	5%	1/16W
R301	1-216-827-11	RES-CHIP	3.3K	5%	1/16W
R302	1-216-827-11	RES-CHIP	3.3K	5%	1/16W
R305	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R306	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R307	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R308	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R309	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R310	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R311	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R312	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R313	1-216-817-11	RES-CHIP	470	5%	1/16W
R314	1-216-817-11	RES-CHIP	470	5%	1/16W

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Ref.No.	Part No.	Description			Remarks
R315	1-216-817-11	RES-CHIP	470	5%	1/16W
R316	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R317	1-216-833-11	RES-CHIP	10K	5%	1/16W
R318	1-216-295-91	SHORT	0		
R319	1-216-831-11	RES-CHIP	6.8K	5%	1/16W
R320	1-216-295-91	SHORT	0		
R321	1-216-817-11	RES-CHIP	470	5%	1/16W
R328	1-216-833-11	RES-CHIP	10K	5%	1/16W
R334	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R335	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R336	1-216-833-11	RES-CHIP	10K	5%	1/16W
R337	1-216-809-11	RES-CHIP	100	5%	1/16W
R338	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R339	1-216-809-11	RES-CHIP	100	5%	1/16W
R340	1-216-809-11	RES-CHIP	100	5%	1/16W
R341	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R342	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R343	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R344	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R345	1-216-833-11	RES-CHIP	10K	5%	1/16W
R349	1-216-838-11	RES-CHIP	27K	5%	1/16W
R350	1-216-822-11	RES-CHIP	1.2K	5%	1/16W
R351	1-216-825-11	RES-CHIP	2.2K	5%	1/16W
R352	1-216-825-11	RES-CHIP	2.2K	5%	1/16W
R356	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R368	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R384	1-216-797-11	RES-CHIP	10	5%	1/16W
R385	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R401	1-216-821-11	RES-CHIP	1K	5%	1/16W
R402	1-216-833-11	RES-CHIP	10K	5%	1/16W
R403	1-216-833-11	RES-CHIP	10K	5%	1/16W
R404	1-216-821-11	RES-CHIP	1K	5%	1/16W
R405	1-216-821-11	RES-CHIP	1K	5%	1/16W
R406	1-216-846-11	RES-CHIP	120K	5%	1/16W
R407	1-216-846-11	RES-CHIP	120K	5%	1/16W
R408	1-216-847-11	RES-CHIP	150K	5%	1/16W
R409	1-216-847-11	RES-CHIP	150K	5%	1/16W
R410	1-216-843-11	RES-CHIP	68K	5%	1/16W
R411	1-216-843-11	RES-CHIP	68K	5%	1/16W
R412	1-216-850-11	RES-CHIP	270K	5%	1/16W
R413	1-216-833-11	RES-CHIP	10K	5%	1/16W
R414	1-216-853-11	RES-CHIP	470K	5%	1/16W
R415	1-216-846-11	RES-CHIP	120K	5%	1/16W
R416	1-216-855-11	RES-CHIP	680K	5%	1/16W
R417	1-216-833-11	RES-CHIP	10K	5%	1/16W
R418	1-216-839-11	RES-CHIP	33K	5%	1/16W
R419	1-216-839-11	RES-CHIP	33K	5%	1/16W
R420	1-216-853-11	RES-CHIP	470K	5%	1/16W
R421	1-216-839-11	RES-CHIP	33K	5%	1/16W
R422	1-216-839-11	RES-CHIP	33K	5%	1/16W
R423	1-216-839-11	RES-CHIP	33K	5%	1/16W
R424	1-216-839-11	RES-CHIP	33K	5%	1/16W
R425	1-216-849-11	RES-CHIP	220K	5%	1/16W
R426	1-216-853-11	RES-CHIP	470K	5%	1/16W
R427	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R428	1-216-839-11	RES-CHIP	33K	5%	1/16W
R429	1-218-889-11	METAL CHIP	56K	0.5%	1/10W
R430	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R431	1-218-889-11	METAL CHIP	56K	0.5%	1/10W
R432	1-216-833-11	RES-CHIP	10K	5%	1/16W
R433	1-216-833-11	RES-CHIP	10K	5%	1/16W
R434	1-216-815-11	RES-CHIP	330	5%	1/16W
R435	1-216-833-11	RES-CHIP	10K	5%	1/16W
R436	1-216-809-11	RES-CHIP	100	5%	1/16W
R437	1-216-864-11	SHORT	0		
R438	1-216-833-11	RES-CHIP	10K	5%	1/16W
R439	1-216-847-11	RES-CHIP	150K	5%	1/16W
R440	1-216-833-11	RES-CHIP	10K	5%	1/16W
R441	1-216-833-11	RES-CHIP	10K	5%	1/16W
R442	1-216-833-11	RES-CHIP	10K	5%	1/16W
R443	1-216-833-11	RES-CHIP	10K	5%	1/16W
R444	1-216-833-11	RES-CHIP	10K	5%	1/16W
R445	1-216-864-11	SHORT	0		
R448	1-216-797-11	RES-CHIP	10	5%	1/16W
R449	1-216-825-11	RES-CHIP	2.2K	5%	1/16W
R452	1-216-841-11	RES-CHIP	47K	5%	1/16W
R454	1-216-847-11	RES-CHIP	150K	5%	1/16W
R455	1-216-847-11	RES-CHIP	150K	5%	1/16W
R456	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R457	1-216-821-11	RES-CHIP	1K	5%	1/16W
R458	1-216-821-11	RES-CHIP	1K	5%	1/16W
R503	1-216-864-11	SHORT	0		
R504	1-216-864-11	SHORT	0		
R507	1-216-809-11	RES-CHIP	100	5%	1/16W
R510	1-216-833-11	RES-CHIP	10K	5%	1/16W
R514	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R515	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R516	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R517	1-216-833-11	RES-CHIP	10K	5%	1/16W
R518	1-216-822-11	RES-CHIP	1.2K	5%	1/16W
R519	1-216-295-91	SHORT	0		
R521	1-216-295-91	SHORT	0		
R522	1-216-827-11	RES-CHIP	3.3K	5%	1/16W
R524	1-216-833-11	RES-CHIP	10K	5%	1/16W
R525	1-216-833-11	RES-CHIP	10K	5%	1/16W
R533	1-216-797-11	RES-CHIP	10	5%	1/16W
R554	1-216-797-11	RES-CHIP	10	5%	1/16W
R604	1-216-809-11	RES-CHIP	100	5%	1/16W
R701	1-216-833-11	RES-CHIP	10K	5%	1/16W
R702	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R703	1-216-821-11	RES-CHIP	1K	5%	1/16W
R704	1-216-845-11	RES-CHIP	100K	5%	1/16W
R705	1-216-295-91	SHORT	0		
R706	1-216-295-91	SHORT	0		
R707	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R708	1-216-839-11	RES-CHIP	33K	5%	1/16W
R709	1-216-843-11	RES-CHIP	68K	5%	1/16W
R710	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R711	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R712	1-216-841-11	RES-CHIP	47K	5%	1/16W
R718	1-216-295-91	SHORT	0		
R719	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R720	1-216-833-11	RES-CHIP	10K	5%	1/16W
R721	1-216-295-91	SHORT	0		
R722	1-216-295-91	SHORT	0		
R727	1-216-833-11	RES-CHIP	10K	5%	1/16W
R728	1-216-808-11	RES-CHIP	82	5%	1/16W
R729	1-216-808-11	RES-CHIP	82	5%	1/16W

Ref.No.	Part No.	Description			Remarks
R730	1-216-803-11	RES-CHIP	33	5%	1/16W
R731	1-216-295-91	SHORT	0		
R732	1-216-824-11	RES-CHIP	1.8K	5%	1/16W
R733	1-216-824-11	RES-CHIP	1.8K	5%	1/16W
R735	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R736	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R737	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R738	1-218-859-11	METAL CHIP	3.3K	0.5%	1/10W
R739	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R740	1-218-873-11	METAL CHIP	12K	0.5%	1/10W
R741	1-216-864-11	SHORT	0		
R742	1-216-833-11	RES-CHIP	10K	5%	1/16W
R743	1-216-833-11	RES-CHIP	10K	5%	1/16W
R744	1-218-296-11	RES-CHIP	75K	5%	1/16W
R745	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R746	1-216-839-11	RES-CHIP	33K	5%	1/16W
R747	1-216-843-11	RES-CHIP	68K	5%	1/16W
R748	1-216-864-11	SHORT	0		
R749	1-216-864-11	SHORT	0		
R750	1-216-824-11	RES-CHIP	1.8K	5%	1/16W
R751	1-218-344-11	RES-CHIP	7.5K	5%	1/16W
R752	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R753	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R754	1-216-828-11	RES-CHIP	3.9K	5%	1/16W
R755	1-216-845-11	RES-CHIP	100K	5%	1/16W
R756	1-216-817-11	RES-CHIP	470	5%	1/16W
R757	1-216-833-11	RES-CHIP	10K	5%	1/16W
R758	1-216-818-11	RES-CHIP	560	5%	1/16W
R762	1-216-864-11	SHORT	0 (HK, SP)		
R766	1-216-818-11	RES-CHIP	560	5%	1/16W
R767	1-216-818-11	RES-CHIP	560	5%	1/16W
R801	1-216-809-11	RES-CHIP	100	5%	1/16W
R803	1-216-864-11	SHORT	0		
R804	1-216-864-11	SHORT	0		
R805	1-216-864-11	SHORT	0		
R808	1-216-813-11	RES-CHIP	220	5%	1/16W
R812	1-216-864-11	SHORT	0		
R813	1-216-295-91	SHORT	0		
R816	1-216-864-11	SHORT	0		
R820	1-216-864-11	SHORT	0		
R821	1-216-864-11	SHORT	0		
R822	1-216-864-11	SHORT	0		
R823	1-216-813-11	RES-CHIP	220	5%	1/16W
R824	1-216-813-11	RES-CHIP	220	5%	1/16W
R828	1-216-864-11	SHORT	0		
R829	1-216-864-11	SHORT	0		
R830	1-216-864-11	SHORT	0		
R901	1-216-833-11	RES-CHIP	10K	5%	1/16W
R903	1-216-833-11	RES-CHIP	10K	5%	1/16W
R904	1-216-021-00	RES-CHIP	68	5%	1/10W
R905	1-216-021-00	RES-CHIP	68	5%	1/10W
R906	1-216-021-00	RES-CHIP	68	5%	1/10W
R907	1-216-864-11	SHORT	0		
R908	1-216-864-11	SHORT	0		
R909	1-216-864-11	SHORT	0		
R1001	1-216-864-11	SHORT	0		
R1003	1-216-864-11	SHORT	0		
R1005	1-216-864-11	SHORT	0		
R1006	1-216-864-11	SHORT	0		

Ref.No.	Part No.	Description			Remarks
R1007	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R1008	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R1009	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R1010	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R1011	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R1012	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R1013	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R1014	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R1015	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R1016	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R1017	1-216-829-11	RES-CHIP	4.7K	5%	1/16W (AEP, UK)
R1018	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R1019	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R1020	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R1021	1-216-833-11	RES-CHIP	10K	5%	1/16W
R1022	1-216-833-11	RES-CHIP	10K	5%	1/16W
R1023	1-216-841-11	RES-CHIP	47K	5%	1/16W
R1024	1-216-817-11	RES-CHIP	470	5%	1/16W
R1025	1-216-817-11	RES-CHIP	470	5%	1/16W
R1026	1-216-833-11	RES-CHIP	10K	5%	1/16W
R1027	1-216-841-11	RES-CHIP	47K	5%	1/16W
R1028	1-216-841-11	RES-CHIP	47K	5%	1/16W
R1029	1-216-833-11	RES-CHIP	10K	5%	1/16W (AEP, UK)
R1030	1-216-833-11	RES-CHIP	10K	5%	1/16W (AEP, UK)
R1031	1-216-841-11	RES-CHIP	47K	5%	1/16W (AEP, UK)
R1032	1-216-829-11	RES-CHIP	4.7K	5%	1/16W (US, CND, MX, HK, SP)
R1033	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R1034	1-216-829-11	RES-CHIP	4.7K	5%	1/16W (AEP, UK)
R1035	1-216-833-11	RES-CHIP	10K	5%	1/16W (AEP, UK)
R1036	1-216-845-11	RES-CHIP	100K	5%	1/16W
R1037	1-216-845-11	RES-CHIP	100K	5%	1/16W (AEP, UK)
R1038	1-216-817-11	RES-CHIP	470	5%	1/16W
R1039	1-216-817-11	RES-CHIP	470	5%	1/16W
R1040	1-216-830-11	RES-CHIP	5.6K	5%	1/16W
R1041	1-216-833-11	RES-CHIP	10K	5%	1/16W
R1042	1-216-845-11	RES-CHIP	100K	5%	1/16W
R1043	1-216-864-11	SHORT	0		
R1044	1-216-864-11	SHORT	0		
R1045	1-216-817-11	RES-CHIP	470	5%	1/16W
R1046	1-216-833-11	RES-CHIP	10K	5%	1/16W
R1047	1-216-849-11	RES-CHIP	220K	5%	1/16W
R1208	1-216-864-11	SHORT	0		
R1209	1-216-845-11	RES-CHIP	100K	5%	1/16W
R1210	1-216-805-11	RES-CHIP	47	5%	1/16W
R1211	1-216-805-11	RES-CHIP	47	5%	1/16W
R1212	1-216-805-11	RES-CHIP	47	5%	1/16W
		<RESISTOR BLOCK>			
RB103	1-233-576-11	RES, CHIP	NETWORK 100		
RB104	1-233-576-11	RES, CHIP	NETWORK 100		
RB105	1-233-576-11	RES, CHIP	NETWORK 100		
RB106	1-233-576-11	RES, CHIP	NETWORK 100		

Ref.No.	Part No.	Description				Remarks
RB107	1-233-576-11	RES, CHIP	NETWORK 100			
		<VARIABLE RESISTOR>				
RV501	1-223-583-11	RES, ADJ, CARBON 1K (VIDEO LEVEL)				
		<VIBRATOR>				
X101	1-795-174-11	VIBRATOR, CERAMIC (16.5MHz)				
X102	1-781-950-11	VIBRATOR, CRYSTAL (27MHz)				
	A-6065-721-A	FL-123 BOARD, COMPLETE				
		********** (Ref.No.: 40,000 Series)				
	3-070-475-01	HOLDER, FL				
	3-070-511-01	SHEET, FL ADHESIVE				
		<BUZZER>				
BZ401	1-529-986-11	BUZZER, VOLTAGE				
		<CAPACITOR>				
C401	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V	
C402	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C403	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C404	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C405	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C406	1-126-204-11	ELECT CHIP	47UF	20.00%	16V	
C408	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C409	1-126-395-11	ELECT CHIP	22UF	20.00%	16V	
C410	1-131-746-11	CERAMIC CHIP	0.0027UF	5%	100V	
C412	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C414	1-131-746-11	CERAMIC CHIP	0.0027UF	5%	100V	
C415	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C416	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C417	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C418	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V	
C420	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
C421	1-126-400-11	ELECT CHIP	22UF	20.00%	35V	
C422	1-107-826-11	CERAMIC CHIP	0.1UF	10.00%	16V	
C424	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V	
		<CONNECTOR>				
CN403	1-770-701-11	CONNECTOR, FFC/FPC 18P				
CN404	1-770-687-11	CONNECTOR, FFC/FPC 4P				
		<DIODE>				
D402	8-719-041-97	DIODE MA113-(TX)				
D403	8-719-041-97	DIODE MA113-(TX)				
D404	8-719-041-97	DIODE MA113-(TX)				
D405	8-719-421-85	DIODE MA8043-H(TX)				
D406	8-719-079-90	DIODE SML-010DT-T86				
D407	8-719-041-97	DIODE MA113-(TX)				
D416	8-719-067-82	DIODE SML-020MLTT86				
		<IC>				
IC402	8-749-011-03	IC GP1U26X				
IC403	6-800-643-01	IC TMP86CK74F-3FP0				
IC404	8-759-684-35	IC S-80830ANUP-EDT-T2				
IC405	8-759-186-26	IC TC74VHC02F(EL)				

Ref.No.	Part No.	Description			Remarks
		<COIL>			
L401	1-410-389-31	INDUCTOR	47UH		
L402	1-412-060-11	INDUCTOR	22UH		
		<INDICATOR>			
ND402	1-518-764-11	INDICATOR TUBE, FLUORESCENT			
		<TRANSISTOR>			
Q402	8-729-808-01	TRANSISTOR 2SD1622-S-TD			
Q403	8-729-808-01	TRANSISTOR 2SD1622-S-TD			
Q404	8-729-421-22	TRANSISTOR UN2211-TX			
Q407	8-729-421-22	TRANSISTOR UN2211-TX			
		<RESISTOR>			
R401	1-216-829-11	RES-CHIP	4.7K	5%	1/16W
R402	1-216-864-11	SHORT	0		
R403	1-216-864-11	SHORT	0		
R404	1-216-864-11	SHORT	0		
R406	1-216-809-11	RES-CHIP	100	5%	1/16W
R407	1-216-809-11	RES-CHIP	100	5%	1/16W
R408	1-216-864-11	SHORT	0		
R409	1-216-809-11	RES-CHIP	100	5%	1/16W
R410	1-216-805-11	RES-CHIP	47	5%	1/16W
R411	1-216-809-11	RES-CHIP	100	5%	1/16W
R413	1-216-809-11	RES-CHIP	100	5%	1/16W
R415	1-216-833-11	RES-CHIP	10K	5%	1/16W
R416	1-216-833-11	RES-CHIP	10K	5%	1/16W
R419	1-216-833-11	RES-CHIP	10K	5%	1/16W
R420	1-216-832-11	RES-CHIP	8.2K	5%	1/16W
R421	1-216-809-11	RES-CHIP	100	5%	1/16W
R422	1-216-833-11	RES-CHIP	10K	5%	1/16W
R423	1-216-833-11	RES-CHIP	10K	5%	1/16W
R425	1-216-833-11	RES-CHIP	10K	5%	1/16W
R426	1-216-845-11	RES-CHIP	100K	5%	1/16W
R427	1-216-809-11	RES-CHIP	100	5%	1/16W
R428	1-216-803-11	RES-CHIP	33	5%	1/16W
R429	1-216-809-11	RES-CHIP	100	5%	1/16W
R430	1-216-809-11	RES-CHIP	100	5%	1/16W
R434	1-216-810-11	RES-CHIP	120	5%	1/16W
R435	1-216-833-11	RES-CHIP	10K	5%	1/16W
R436	1-216-833-11	RES-CHIP	10K	5%	1/16W
R437	1-216-833-11	RES-CHIP	10K	5%	1/16W
R438	1-216-833-11	RES-CHIP	10K	5%	1/16W
R439	1-216-809-11	RES-CHIP	100	5%	1/16W
R440	1-216-811-11	RES-CHIP	150	5%	1/16W
R441	1-216-809-11	RES-CHIP	100	5%	1/16W
R443	1-216-864-11	SHORT	0		
R444	1-216-833-11	RES-CHIP	10K	5%	1/16W
R446	1-216-809-11	RES-CHIP	100	5%	1/16W
R448	1-216-845-11	RES-CHIP	100K	5%	1/16W
R449	1-216-833-11	RES-CHIP	10K	5%	1/16W
R452	1-216-845-11	RES-CHIP	100K	5%	1/16W
R480	1-216-818-11	RES-CHIP	560	5%	1/16W
R481	1-216-809-11	RES-CHIP	100	5%	1/16W
R541	1-216-845-11	RES-CHIP	100K	5%	1/16W
R543	1-216-864-11	SHORT	0		
R544	1-216-864-11	SHORT	0		
R546	1-216-845-11	RES-CHIP	100K	5%	1/16W
R548	1-216-833-11	RES-CHIP	10K	5%	1/16W

Ref.No.	Part No.	Description	Remarks
		<SWITCH>	
S401	1-771-349-21	SWITCH, KEYBOARD (■)	
S402	1-771-349-21	SWITCH, KEYBOARD (▶)	
S403	1-771-349-21	SWITCH, KEYBOARD (⏏)	
S404	1-786-269-11	SWITCH, KEYBOARD (I/⏻)	
S405	1-771-349-21	SWITCH, KEYBOARD (❚❚)	
S407	1-771-349-21	SWITCH, KEYBOARD (▶▶I)	
S408	1-771-349-21	SWITCH, KEYBOARD (I◀◀)	
		<TRANSFORMER>	
T401	1-437-490-11	TRANSFORMER, DC-DC CONVERTER	
		<VIBRATOR>	
X401	1-767-261-21	VIBRATOR, CERAMIC (8MHz)	
	A-6065-722-A	IR-39 (UC) BOARD, COMPLETE	(US, CND, MX, HK, SP)
		**********	
	A-6065-737-A	IR-39 (CE) BOARD, COMPLETE	(AEP, UK)
		**********	(Ref.No.: 50,000 Series)
		<CAPACITOR>	
C1651	1-126-205-11	ELECT CHIP 47UF 20.00% 6.3V	
C1652	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
		<CONNECTOR>	
* CN1651	1-778-283-11	CONNECTOR, FFC/FPC 4P	
		<IC>	
IC1651	8-749-011-22	IC GP1U27X	
		<RESISTOR>	
R1651	1-216-805-11	RES-CHIP 47 5% 1/16W	
R1652	1-216-864-11	SHORT 0	
		MISCELLANEOUS	
		**********	
⚠7	8-820-144-14	DEVICE,OPTICAL KHM240AAA/J1RP2	
9	1-823-249-12	FLEXIBLE BOARD (FOB-2)	
10	1-823-248-12	FLEXIBLE BOARD (FOB-1)	
67	1-823-246-11	CABLE, FLEXIBLE FLAT (FDM-22)	
74	1-823-250-11	CABLE, FLEXIBLE FLAT (FDD-12)	
104	1-823-247-11	CABLE, FLEXIBLE FLAT (FDD-11)	
154	1-823-268-11	CABLE, FLEXIBLE FLAT (FFM-38)	
155	1-823-269-11	CABLE, FLEXIBLE FLAT (FIF-2)	
901	1-476-887-11	COMMANDER, REMOTE (RMT-D137A)	(US, CND, MX)
901	1-476-887-31	COMMANDER, REMOTE (RMT-D137P)	(AEP, UK, MK, SP)
⚠903	1-476-866-11	ADAPTOR, AC	
⚠904	1-790-107-22	CORD, POWER (US, CND, MX)	
⚠904	1-791-638-11	CORD, POWER (AEP, UK, HK, SP)	
905	1-751-271-12	CORD, CONNECTION	

Ref.No.	Part No.	Description	Remarks
		ACCESSORIES AND PACKING MATERIALS	
		**********	
	X-3951-903-1	STAND ASSY (Silver)	
	X-3951-929-1	STAND ASSY (Black)	
⚠	1-476-866-11	ADAPTOR,AC	
	1-476-887-11	COMMANDER, REMOTE (RMT-D137A)	(US, CND, MX)
	1-476-887-31	COMMANDER, REMOTE (RMT-D137P)	(AEP, UK, HK, SP)
	1-573-291-12	CONNECTOR, CONVERSION (AEP, UK)	
	1-751-271-12	CORD, CONNECTION	
⚠	1-770-019-12	ADAPTOR, CONVERSION, PLUG (3P) (UK)	
⚠	1-790-107-22	CORD,POWER (US, CND, MX)	
⚠	1-791-638-11	CORD,POWER (AEP, UK)	
	3-070-343-11	MANUAL,INSTRUCTION (ENGLISH)	(US, CND)
	3-070-343-21	MANUAL,INSTRUCTION (FRENCH)	(US, CND)
	3-070-343-31	MANUAL,INSTRUCTION (SPANISH) (MX)	
	3-070-343-41	MANUAL,INSTRUCTION (SPANISH) (AEP)	
	3-070-343-51	MANUAL,INSTRUCTION	(PORTUGUESE) (AEP)
	3-070-343-61	MANUAL,INSTRUCTION (DANISH) (AEP)	
	3-070-343-71	MANUAL,INSTRUCTION (FINNISH) (AEP)	
	3-070-343-81	MANUAL,INSTRUCTION (SWEDISH) (AEP)	
	3-070-344-11	MANUAL,INSTRUCTION (ENGLISH)	(UK, HK, SP)
	3-070-344-21	MANUAL,INSTRUCTION (FRENCH) (AEP)	
	3-070-344-31	MANUAL,INSTRUCTION (GERMAN) (AEP)	
	3-070-344-41	MANUAL,INSTRUCTION (ITALIAN) (AEP)	
	3-070-344-51	MANUAL,INSTRUCTION (DUTCH) (AEP)	
	3-070-344-61	MANUAL,INSTRUCTION	(TRADITIONAL CHINESE) (HK)
	3-070-344-71	MANUAL,INSTRUCTION	(SIMPLIFIED CHINESE) (SP)
		HARDWARE LIST	
		**********	
#1	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S	
#2	7-627-554-58	SCREW, PRECISION +P2X2.8	
#3	7-627-554-37	SCREW, PRECISION +P2X1.8 TYPE1	
#4	7-685-104-19	SCREW +P2X6 TYPE2 NON-SLIT	
#5	7-627-850-08	SCREW, PRECISION +P1.4X2	

The components identified by mark ⚠ or dotted line with mark ⚠ are criti-cal 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.

9-929-710-11

Sony Corporation
Home Video Campany

2001I0800-1

Published by Quality Assurance Dept.