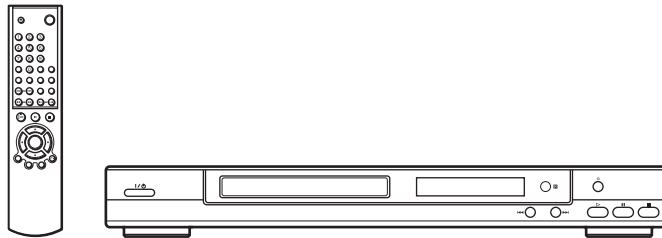


XD-AX10

RM-Z400A/Z400E

SERVICE MANUAL



*Canadian Model
AEP Model
UK Model
E Model
Singapore Model
Middle East Model
Australian Model
New Zealand Model
Hong Kong Model
Saudi Arabia Model
Russian Model*

SPECIFICATIONS

System

Laser: Semiconductor laser

Signal format system: NTSC/PAL

Audio characteristics

Frequency response: DVD VIDEO (PCM 96 kHz): 2 Hz to 44 kHz (± 1.0 dB)/DVD VIDEO (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 (LINE OUT (L/R) AUDIO jacks only)

Harmonic distortion: 0.003 %

Dynamic range: DVD VIDEO: 103 dB/CD: 99 dB

Wow and flutter: Less than detected value ($\pm 0.001\%$ W PEAK)

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

Outputs/Inputs

(**Jack name:** Jack type/Output or Input level/Load impedance)

LINE OUT (AUDIO): Phono jack/2 Vrms/10 kilohms

DIGITAL OUT (COAXIAL): Phono jack/0.5 Vp-p/75 ohms

COMPONENT VIDEO OUT

(**Y, Pb, Pr:**)

Phono jack/Y: 1.0 Vp-p/Pb, Pr:

0.65 Vp-p/75 ohms

(**Y, Pb/Cb, Pr/Cr:**)

Phono jack/Y: 1.0 Vp-p/Pb/Cb, Pr/Cr:

0.7 Vp-p/75 ohms

LINE OUT (VIDEO): Phono jack/1.0 Vp-p/75 ohms

S VIDEO OUT: 4-pin mini DIN/Y:

1.0 Vp-p, C: 0.286 Vp-p (NTSC)/75 ohms

1.0 Vp-p, C: 0.3 Vp-p (PAL)/75 ohms

General

Power requirements:

120 V AC, 60 Hz

110 to 240 V AC, 50/60 Hz

220 to 240 V AC, 50/60 Hz

See page 1-1 for further information.

Power consumption: 13 W

Dimensions (approx.): 430 × 55.5 × 234 mm (17 × 2 ³/₁₆ × 9 ¹/₄ in.) (width/height/depth) incl. projecting parts

Mass (approx.): 2.2 kg (4 lb 14 oz)

Operating temperature: 5 °C to 35 °C (41 °F to 95 °F)

Operating humidity: 25 % to 80 %

Supplied accessories

Check that you have the following items:

- Audio/video cord (pinplug × 3 ↔ pinplug × 3) (1)
- Remote commander (remote) (1)
- Size AA (R6) batteries (2)
- A plug adaptor is included with some models.

Specifications and design are subject to change without notice.



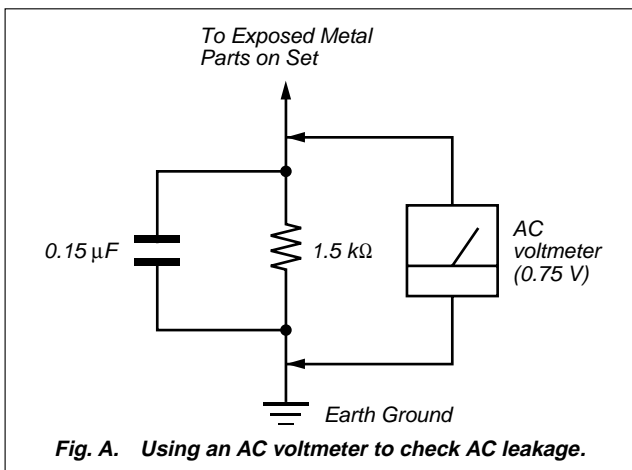
CD/DVD PLAYER



SAFETY CHECK-OUT

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

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



WARNING!!

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

CAUTION:

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

CAUTION

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

SAFETY-RELATED COMPONENT WARNING!!

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

LEAKAGE TEST

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

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

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.

(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)



: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
Soldering irons using a temperature regulator should be set to about 350°C.
Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

CLASS 1 LASER PRODUCT
LASER KLASSE 1
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

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

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

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

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>	<u>Section</u>	<u>Title</u>	<u>Page</u>
SERVICE NOTE			2. DISASSEMBLY		
1.	Disc Removal Procedure (at POWER OFF)	5	2-1.	Disassembly	2-1
2.	How to Service MB-108 Board	5	2-2.	Upper Case	2-1
1. GENERAL			2-3.	Tray Cover	2-2
	Precautions	1-1	2-4.	Front Panel Section	2-2
	About this Manual	1-1	2-5.	Mechanism Deck	2-3
	This Player Can Play the Following Discs	1-1	2-6.	Optical Pick-up	2-3
	Notes about the Discs	1-1	2-7.	ER-21 Board (AEP, UK, Russian)	2-4
	Index to Parts and Controls	1-2	2-8.	MB-108 Board	2-4
	Guide to On-Screen Displays (Control Bar)	1-3	2-9.	Power Block	2-5
	Hookups	1-3	2-10.	AF-98 Board	2-5
	Hooking Up the Player	1-3	2-11.	Internal Views	2-6
	Step 1: Unpacking	1-3	2-12.	Circuit Boards Location	2-7
	Step 2: Inserting Batteries into the Remote	1-3	3. BLOCK DIAGRAMS		
	Step 3: Connecting the Video Cords	1-3	3-1.	Overall Block Diagram	3-1
	Step 4: Connecting the Audio Cords	1-4	3-2.	RF/Servo Block Diagram	3-3
	Step 5: Connecting the Power Cord	1-5	3-3.	Signal Processor Block Diagram	3-5
	Step 6: Quick Setup	1-5	3-4.	System Control Block Diagram	3-7
	Playing Discs	1-6	3-5.	Video Block Diagram	3-9
	Playing Discs	1-6	3-6.	Audio Block Diagram	3-11
	Resuming Playback from the Point		3-7.	Interface Control Block Diagram	3-13
	Where You Stopped the Disc (Disc Resume)	1-6	3-8.	Power 1 Block Diagram	3-15
	Using the DVD's Menu	1-6	3-9.	Power 2 Block Diagram	3-17
	Playing VIDEO CDs With PBC Functions		3-10.	Power 3 Block Diagram	3-19
	(PBC Playback)	1-7	4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS		
	Playing an MP3 Audio Track	1-7	4-1.	Frame Schematic Diagram	4-3
	Various Play Mode Functions (Program Play,		4-2.	Printed Wiring Boards and Schematic Diagrams	4-5
	Shuffle Play, Repeat Play, A-B Repeat Play)	1-7		• MB-108 Printed Wiring Board	4-5
	Searching for a Scene	1-8		• MB-108 (System Control) Schematic Diagram	4-9
	Searching for a Particular Point on a Disc			• MB-108 (RF AMP, Servo Error Process)	
	(Scan, Slow-motion Play, Search, Freeze Frame) ...	1-8		Schematic Diagram	4-11
	Searching for a Title/Chapter/Track/Scene, etc.			• MB-108 (ARP, Servo DSP) Schematic Diagram	4-13
	(Search mode)	1-9		• MB-108 (AV Decoder) Schematic Diagram	4-15
	Viewing Information About the Disc	1-9		• MB-108 (Audio D/A Converter)	
	Checking the Playing Time and Remaining Time	1-9		Schematic Diagram	4-17
	Sound Adjustments	1-10		• MS-128 Printed Wiring Board	4-19
	Changing the Sound	1-10		• MS-128 (Loading Motor) Schematic Diagram	4-20
	Virtual Surround Settings	1-10		• AF-98 Printed Wiring Board	4-21
	Enjoying Movies	1-10		• AF-98 (Video Out) Schematic Diagram	4-23
	Displaying the Subtitles	1-10		• AF-98 (Audio Out) Schematic Diagram	4-25
	Adjusting the Playback Picture (PICTURE MODE)	1-10		• AF-98 (Regulator) Schematic Diagram	4-27
	Changing the Angles	1-11		• AF-98 (IF CON) Schematic Diagram	4-29
	Locking Discs	1-11		• SW-384 (Function Switch) Schematic Diagram	4-32
	Limiting Playback by Children			• ER-21 Printed Wiring Board	4-33
	(PARENTAL CONTROL)	1-11		• ER-21 (Euro AV) Schematic Diagram	4-35
	Settings and Adjustments	1-12		• Power Supply Block (HS8S2U)	
	Using the Setup Display	1-12		Printed Wiring Board	4-37
	Setting the Display or Sound Track Language			• Power Supply Block (HS8S2U)	
	(LANGUAGE SETUP)	1-12		Schematic Diagram	4-39
	Settings for the Display (SCREEN SETUP)	1-12		• Power Supply Block (ETXNY410M0F)	
	Custom Settings (CUSTOM SETUP)	1-12		Printed Wiring Board	4-41
	Settings for the Sound (AUDIO SETUP)	1-13		• Power Supply Block (ETXNY410M0F)	
	Additional Information	1-13		Schematic Diagram	4-43
	Troubleshooting	1-13		• Power Supply Block (ETXNY410E0F)	
	Self-diagnosis Function			Printed Wiring Board	4-45
	(When letters/numbers appear in the display)	1-14		• Power Supply Block (ETXNY410E0F)	
	Glossary	1-14		Schematic Diagram	4-47
	Language Code List	1-14		Waveforms	4-49

<u>Section</u>	<u>Title</u>	<u>Page</u>
5.	IC PIN FUNCTION DESCRIPTION	
5-1.	System Control Pin Function (MB-108 BOARD IC104)	5-1
6.	TEST MODE	
6-1.	General Description	6-1
6-2.	Starting Test Mode	6-1
6-3.	Syscon Diagnosis	6-1
6-4.	Drive Auto Adjustment	6-6
6-5.	Drive Manual Operation	6-8
6-6.	Mecha Aging	6-11
6-7.	Emergency History	6-11
6-8.	Version Information	6-12
6-9.	Video Level Adjustment	6-12
6-10.	If Con Self Diagnostic Function	6-12
6-11.	Troubleshooting	6-19
7.	ELECTRICAL ADJUSTMENT	
7-1.	Power Supply Check	7-1
7-2.	Adjustment of Video System	7-2
	1. Video Level Adjustment (MB-108 Board)	7-2
	2. Checking S Video Output S-Y (Except AEP, UK, RUS)	7-2
	3. Checking S Video Output S-C (Except AEP, UK, RUS)	7-2
	4. Checking Component Video Output Y (Except AEP, UK, RUS)	7-2
	5. Checking Component Video Output B-Y (Except AEP, UK, RUS)	7-3
	6. Checking Component Video Output R-Y (Except AEP, UK, RUS)	7-3
	7. Checking RGB Output R (AEP, UK, RUS)	7-3
	8. Checking RGB Output G (AEP, UK, RUS)	7-3
	9. Checking RGB Output B (AEP, UK, RUS)	7-4
7-3.	Adjustment Related Parts Arrangement	7-6
8.	REPAIR PARTS LIST	
8-1.	Exploded Views	8-1
	8-1-1. Front Panel Section	8-1
	8-1-2. Chassis Section	8-2
	8-1-3. Mechanism Deck Section	8-3
8-2.	Electrical Parts List	8-4

SERVICE NOTE

1. DISC REMOVAL PROCEDURE (at POWER OFF)

- 1) Open dust cover to access to a hole insert a tapering driver into the aperture of the unit bottom, and move the lever of chuck cam in the direction of arrow **(A)**. (See Fig. 1)
- 2) Draw out the tray in the direction of arrow **(B)**, and remove a disc. (See Fig. 1)

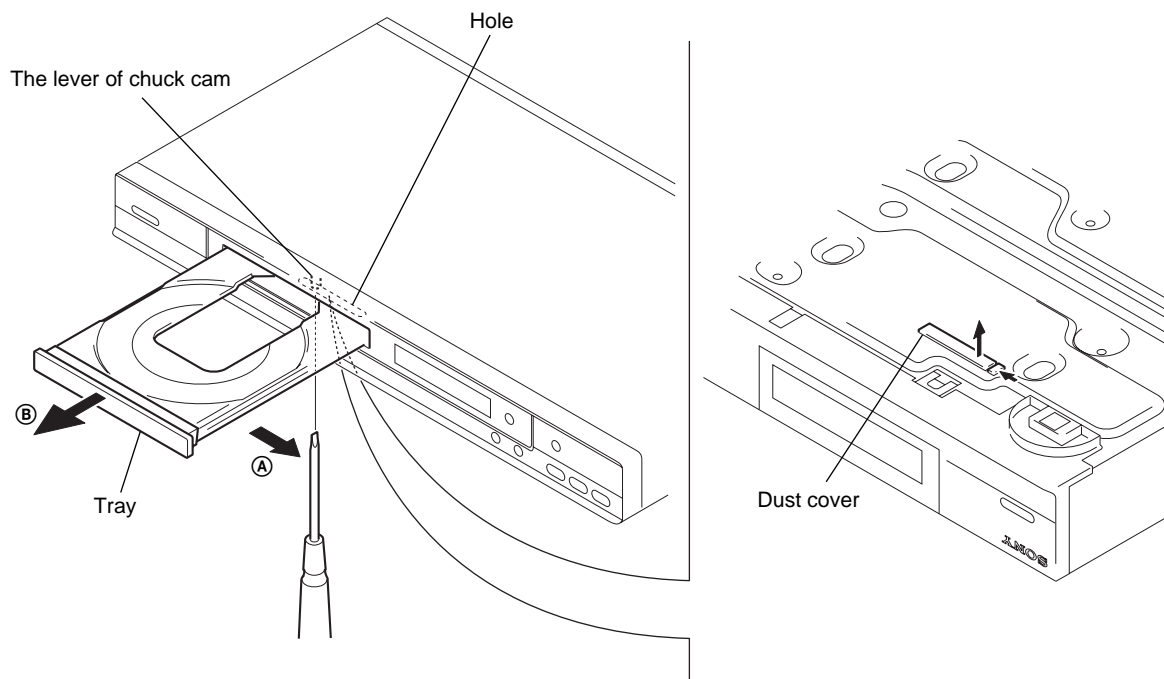


Fig. 1

2. HOW TO SERVICE MB-108 BOARD

• Jig

- 1) Remove the upper case from the set. (Refer to section 2-2)
- 2) Remove the MB-108 board. (Refer to section 2-8)
- 3) Set the MB-108 board and CK-122 board to the stand as shown in Fig. 3.

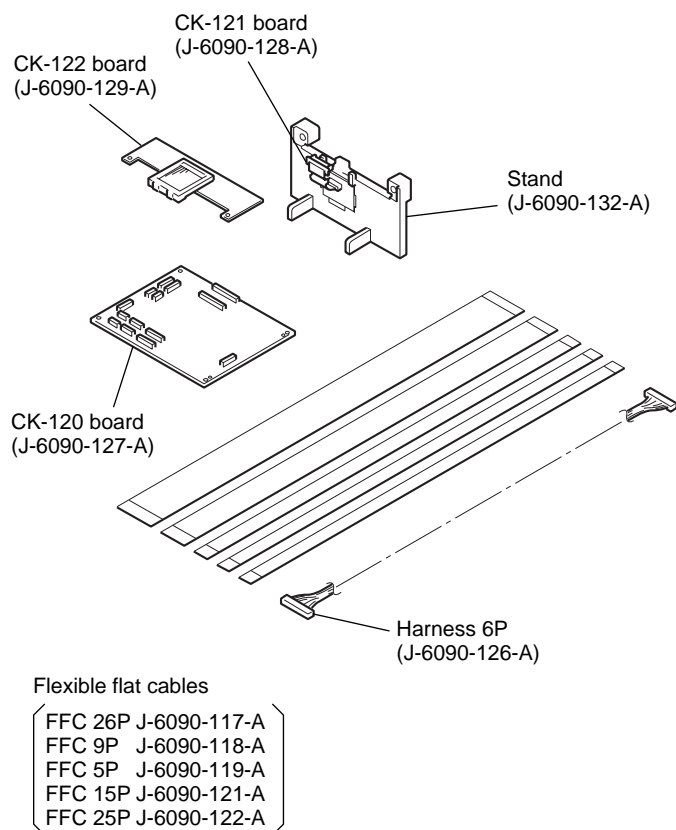


Fig. 2

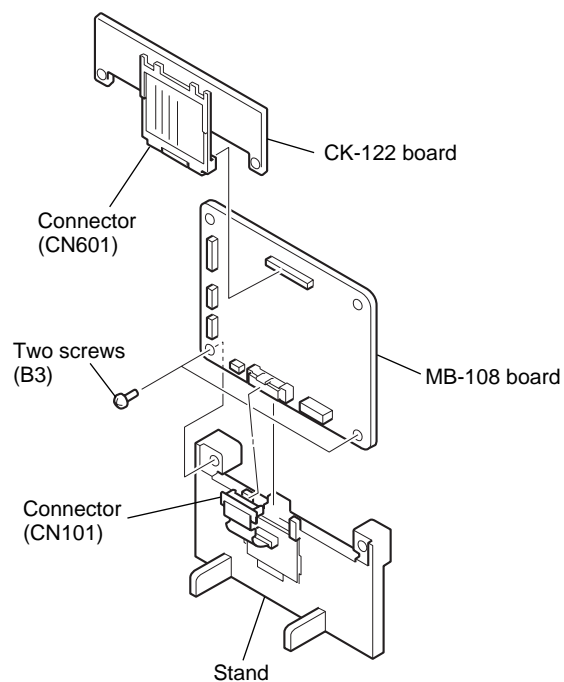


Fig. 3

- 4) Set the board in the place where the MB-108 board is removed, as shown in Fig. 4.

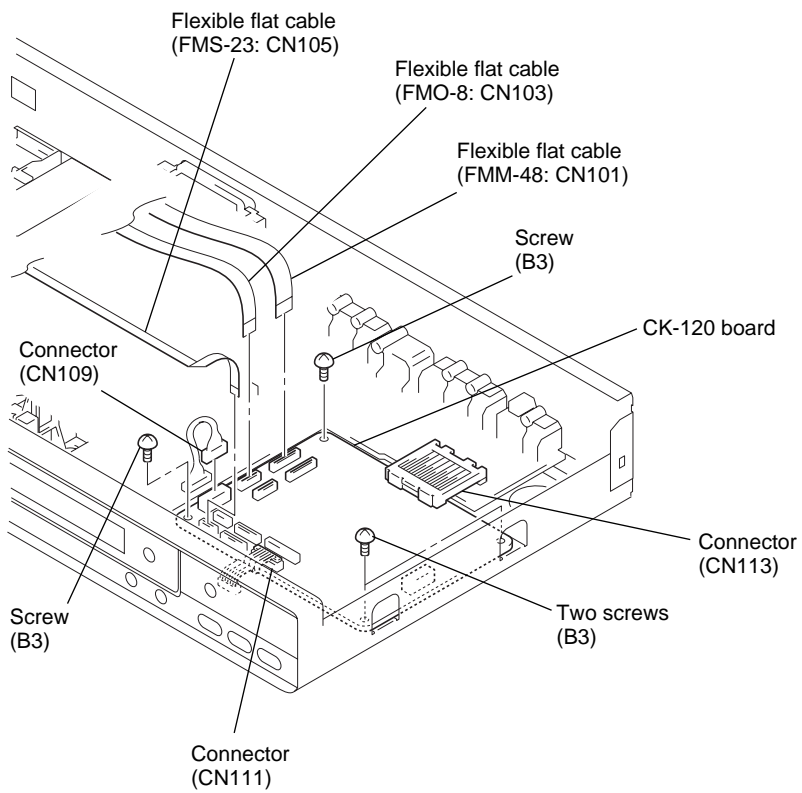


Fig. 4

- 5) Set five flexible flat cables and the harness as shown in Fig. 5.

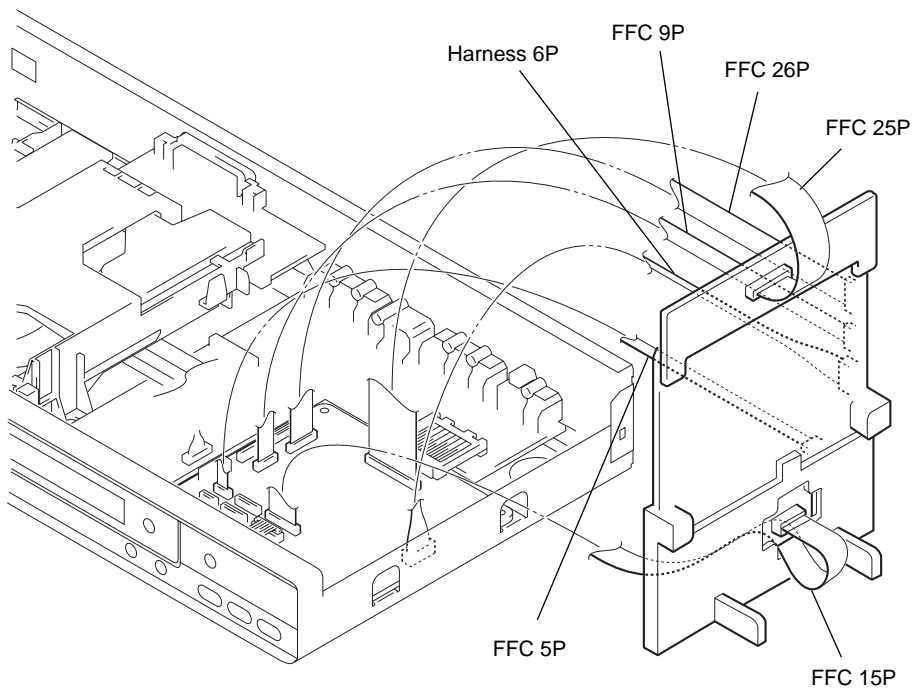


Fig. 5.

- 6) Set is finished.

SECTION 1 GENERAL

This section is extracted from instruction manual (3-081-707-11).

Precautions

- The power requirements and power consumption of this player are indicated on the back of the player. Check that the player's operating voltage is identical with your local power supply.

Power requirements →



On safety

- Caution – The use of optical instruments with this product will increase eye hazard.
- To prevent fire or shock hazard, do not place objects filled with liquids, such as vases, on the apparatus.
- Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources

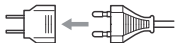
- The player is not disconnected from the AC power source as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord, grasp the plug itself; never pull the cord.
- Should the AC power cord need to be changed, have it done at a qualified service shop only.

On placement

- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug that might block the ventilation holes.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust, or mechanical shock.

For the model supplied with the AC plug adaptor

If the AC plug of your unit does not fit into the wall outlet, attach the supplied AC plug adaptor.



On operation

- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.
- When you move the player, take out any discs. If you don't, the disc may be damaged.

On adjusting volume

Do not turn up the volume while listening to a section with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level section is played.

On cleaning

Clean the cabinet, panel, and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene.

On cleaning discs

Do not use a commercially available cleaning disc. It may cause a malfunction.

IMPORTANT NOTICE

Caution: This player is capable of holding a still video image or on-screen display image on your television screen indefinitely. If you leave the still video image or on-screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Plasma Display Panel televisions and projection televisions are susceptible to this.

If you have any questions or problems concerning your player, please consult your nearest Aiwa dealer.

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 meaning of the icons used in this manual is described below:

Icon	Meaning
	Functions available for DVD VIDEOS and DVD-RWs/ DVD-Rs in video mode or DVD+RWs/DVD+Rs
	Functions available for VIDEO CDs, Super VCDs, or CD-Rs/ CD-RWs in video CD format or Super VCD format
	Functions available for music CDs or CD-Rs/CD-RWs in music CD format
	Functions available for DATA CDs (CD-ROMs/CD-Rs/CD-RWs containing MP3* audio tracks)

* MP3 (MPEG 1 Audio Layer 3) is a standard format defined by ISO/MPEG which compresses audio data.

This Player Can Play the Following Discs

Format of discs
DVD VIDEO
VIDEO CD
Music CD

The "DVD VIDEO" is a trademark.

Region code

Your player has a region code printed on the back of the unit and only will play DVD VIDEO discs (playback only) labeled with identical region codes. This system is used to protect copyrights.

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:

- All CD-ROMs (including PHOTO CDs)/ CD-Rs/CD-RWs other than those recorded in the following formats:
 - music CD format
 - video CD format
 - MP3 format that conforms to ISO9660* Level 1/Level 2, or its extended format, Joliet

- Data part of CD-Extras
- DVD-RWs in VR mode
- DVD-ROMs
- DVD Audio discs
- HD layer on Super Audio CDs
- Super VCDs in PAL format

* A logical format of files and folders on CD-ROMs, defined by ISO (International Standard Organization).

Also, the player cannot play the following discs:

- A DVD with a different region code.
- 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.

Notes

- Notes about DVD-RWs/DVD-Rs, DVD+RWs/ DVD+Rs or CD-Rs/CD-RWs**
Some DVD-RWs/DVD-Rs, DVD+RWs/ DVD+Rs, or CD-Rs/CD-RWs cannot be played on this player due to the recording quality or physical condition of the disc, or the characteristics of the recording device and authoring software.
The disc will not play if it has not been correctly finalized. For more information, see the operating instructions for the recording device. Note that discs created in the Packet Write format cannot be played.

Music discs encoded with copyright protection technologies

This product is designed to playback discs that conform to the Compact Disc (CD) standard. Recently, various music discs encoded with copyright protection technologies are marketed by some record companies. Please be aware that among those discs, there are some that do not conform to the CD standard and may not be playable by this product.

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

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



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

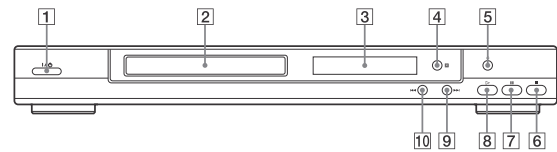


- Do not use solvents such as benzene, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.

Index to Parts and Controls

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

Front panel



- 1 (on/standby) button (25)

2 Disc tray (25)

3 Front panel display (10)

4 (remote sensor) (15)

5 (open/close) button (25)
- 6 (stop) button (26)

7 (pause) button (26)

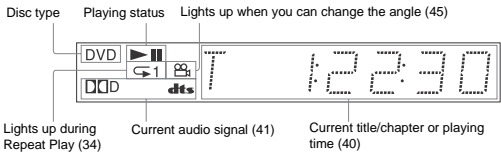
8 (play) button (25)

9 (next) button (26, 36)

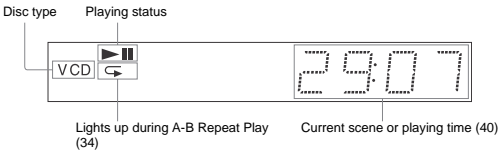
10 (previous) button (26, 36)

Front panel display

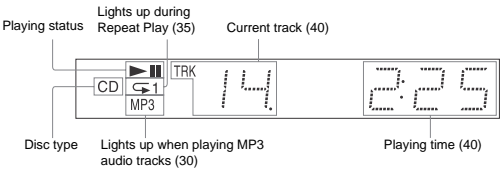
When playing back a DVD



When playing back a VIDEO CD with Playback Control (PBC) (29)



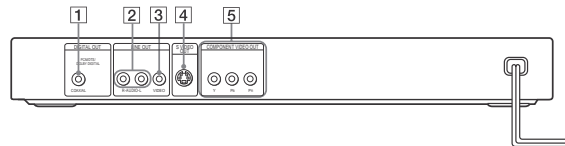
When playing back a CD, DATA CD (MP3 audio), or VIDEO CD (without PBC)



→continued 9

10

Rear panel



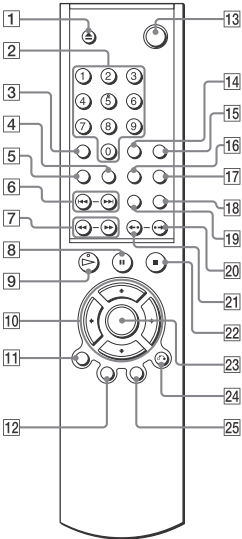
- 1 DIGITAL OUT (COAXIAL) jack (20, 21, 22)

2 LINE OUT L/R (AUDIO) jacks (19, 20, 21)

3 LINE OUT (VIDEO) jack (16)
- 4 S VIDEO OUT jack (16)

5 COMPONENT VIDEO OUT jacks (16)

Remote



- 1 OPEN/CLOSE button (26)

2 Number buttons (28)
The number 5 button has a tactile dot.*

3 CLEAR button (32)

4 SUBTITLE button (44)

5 AUDIO button (41)

6 PREV/NEXT (previous/next) buttons (26)

7 SCAN/SLOW buttons (36)

8 PAUSE button (26)

9 PLAY button (25)
The button has a tactile dot.*

10 buttons (28)

11 DISPLAY button (13)

12 TOP MENU button (28)

13 (on/standby) button (25)

14 TIME/TEXT button (39)

15 PICTURE MODE button (44)

16 ANGLE button (45)

17 SUR (surround) button (42)

18 SEARCH MODE button (37)

19 REPEAT button (34)

20 INSTANT SEARCH/STEP button (26, 37)

21 INSTANT REPLAY/STEP button (26, 37)

22 STOP button (26)

23 ENTER button (23)

24 RETURN button (29)

25 MENU button (28, 30)

* Use the tactile dot as a reference when operating the player.

→continued 11

12

Guide to On-Screen Displays (Control Bar)

The following explains the Control Bar. The Control Bar is used for making adjustments to the settings or displaying information during playback.

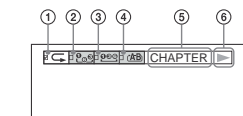
The displayed contents differ according to the type of disc being played. The numbers in parentheses indicate reference pages.

Displaying the Control Bar during playback

The following displays appear when the DISPLAY button is pressed repeatedly during playback. You can select the setting that suits the current playback item and view the related information.

Display 1

The following play modes ①-④ can be set. A check mark is indicated when activated. Example: When Repeat Play is selected. (The display will differ when A-B Repeat Play is set.)

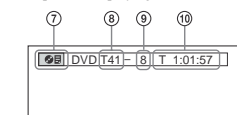


- ① Repeat Play (34)
- ② Shuffle Play (33)
- ③ Program Play (32)
- ④ A-B Repeat Play (35)
- ⑤ Unit being repeated in this example
- ⑥ Playback status (▶ Playback, || Pause, ■ Stop, etc.)

Display 2

The following playback information is displayed.

Example: When playing a DVD



Display 3 (DVD playback only)

The diagram shows a horizontal bar with the text 'DOLBY DIGITAL 3/2.1'. Above the bar is number 11. Below the bar is label 11 Format of the current audio signal (41).

No display

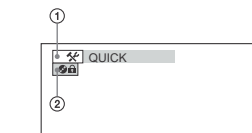
Return to Display 1

Displaying the Control Bar in stop mode

The following displays appear when the DISPLAY button is repeatedly pressed during stop mode. You can make basic adjustments and customize the player to suit your viewing preferences.

Display 1

The following settings can be made.



Display 2

Select QUICK to make the minimum number of basic adjustments for using the player.

Select CUSTOM to make a full range of adjustments.

Select RESET to return the SETUP adjustments to the default settings.

Select PARENTAL CONTROL (46)

Set this to limit the playback of selected discs on this player.

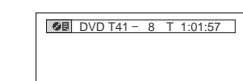
Display 2

Shows the same information as Display 1 during playback.



Display 3

Shows the same information as Display 2 during playback.



→ continued 13

14

Hookups

Hooking Up the Player

Follow Steps 1 to 6 to hook up and adjust the settings of the player.

Notes

- Plug cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.
- You cannot connect this player to a TV that does not have a video input jack.
- Be sure to disconnect the power of each component before connecting.

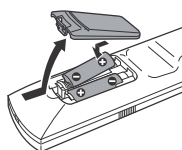
Step 1: Unpacking

Check that you have the following items:

- Audio/video cord (pinplug × 3 ↔ pinplug × 3) (1)
- Remote commander (remote) (1)
- Size AA (R6) batteries (2)
- A plug adaptor is included with some models.

Step 2: Inserting Batteries into the Remote

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

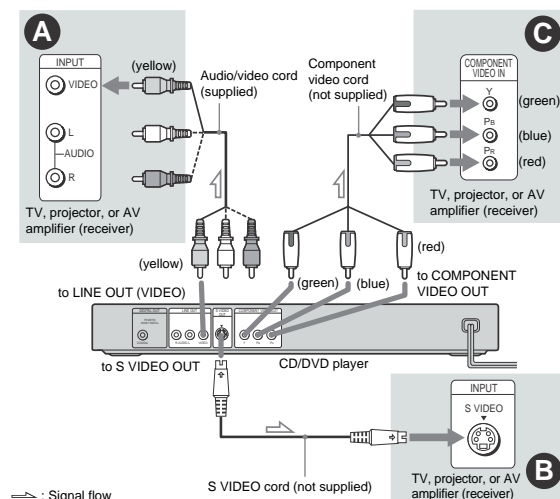


Notes

- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct light from the sun or a 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: Connecting the Video Cords

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



A If you are connecting to a video input jack

Connect the yellow plug 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 19). (Do this if you are connecting to a TV only.)

B If you are connecting to an S VIDEO input jack

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



C If you are connecting to a monitor, projector, or AV amplifier (receiver) having component video input jacks (Y, Pb, Pr)

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

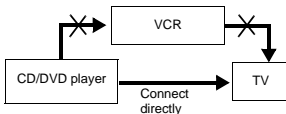


When connecting to a wide screen TV

Depending on the disc, the image may not fit your TV screen. If you want to change the aspect ratio, please refer to page 51.

Note

Connect the player directly to the TV. If you pass the player signals via the VCR, you may not receive a clear image on the TV screen.



Hookups

Step 4: Connecting the Audio Cords

Refer to the chart below to select the connection that best suits your system. Be sure to also read the instructions for the components you wish to connect.

Select a connection

Select one of the following connections, **A** through **D**.

Components to be connected	Connection	Your setup (example)
TV • Surround effects: Virtual Surround WIDE (page 42)	A (page 19)	
Stereo amplifier (receiver) and two speakers or MD deck/DAT deck	B (page 20)	
AV amplifier (receiver) having a Dolby® Surround (Pro Logic) decoder and 3 to 6 speakers • Surround effects: Dolby Surround (Pro Logic) (page 58)	C (page 21)	
AV amplifier (receiver) with digital input jacks having a Dolby Digital or DTS® decoder and 6 speakers • Surround effects: – Dolby Digital (5.1ch) (page 58) – DTS (5.1ch) (page 58)	D (page 22)	

* Manufactured under license from Dolby Laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories.

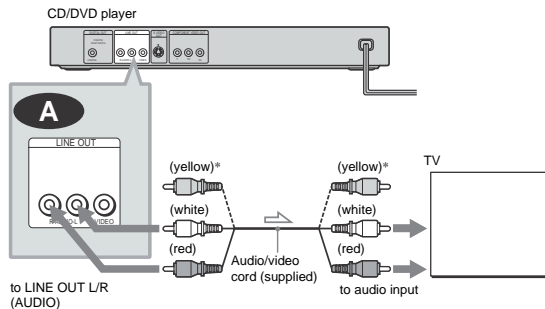
** "DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

17

18

A Connecting to your TV

This connection will use your TV speakers for sound.



— : Signal flow

* The yellow plug is used for video signals (page 16).

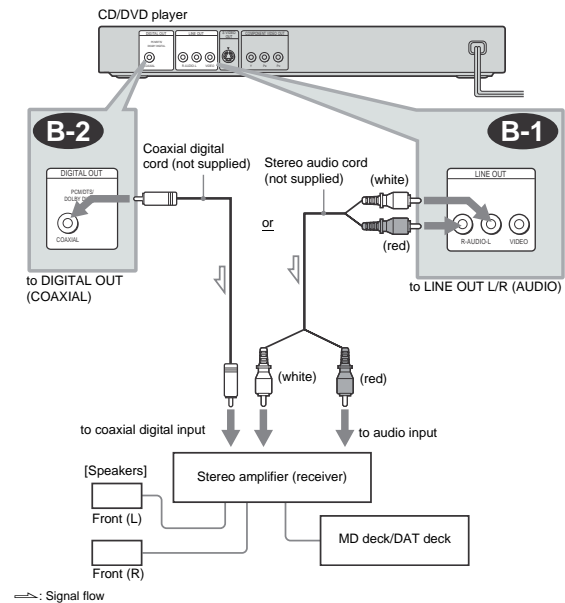
Hint

When connecting to a monaural TV, use a stereo-mono conversion cord (not supplied). Connect the LINE OUT L/R (AUDIO) jacks to the TV's audio input jack.

Hookups

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

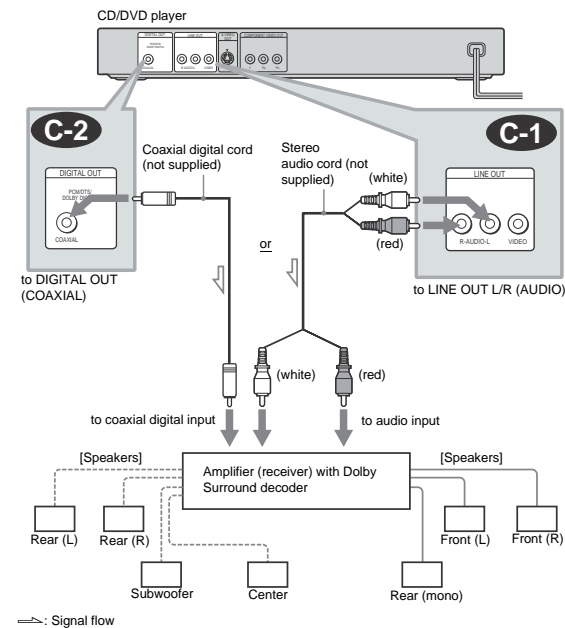
If the stereo amplifier (receiver) has audio input jacks L and R only, use **B-1**. If the amplifier (receiver) has a digital input jack, or when connecting to an MD deck or DAT deck, use **B-2**. In this case, you can also connect the player directly to the MD deck or DAT deck without using your stereo amplifier (receiver).



— : Signal flow

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

You can enjoy the Dolby Surround effects only when playing Dolby Surround audio or multi-channel audio (Dolby Digital) discs.
If your amplifier (receiver) has L and R audio input jacks only, use **C-1**. If your amplifier (receiver) has a digital input jack, use **C-2**.

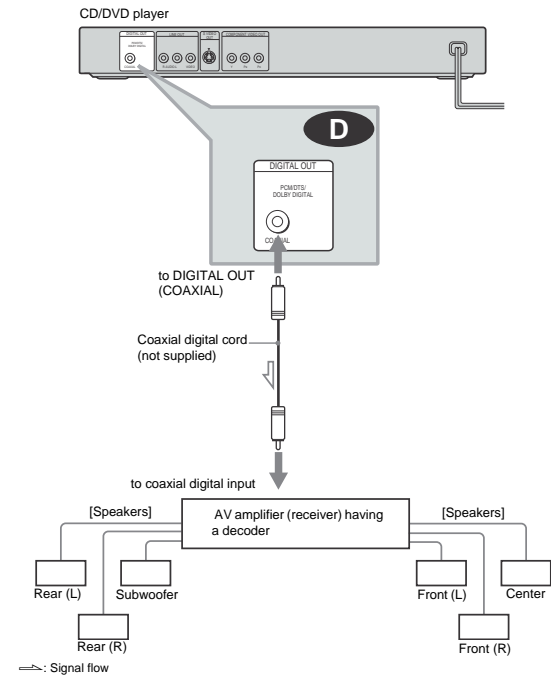


Note

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

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

This connection will allow you to use the Dolby Digital or DTS decoder function of your AV amplifier (receiver).



Note

After you have completed the connection, be sure to set "DOLBY DIGITAL" to "DOLBY DIGITAL" and "DTS" to "ON" (page 23) in Quick Setup.

continued 21

22

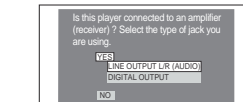
Step 5: Connecting the Power Cord

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

Step 6: Quick Setup

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

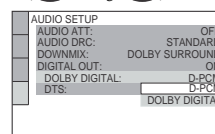
- Turn on the TV.
- Press **I/⏻**.
- Switch the input selector on your TV so that the signal from the player appears on the TV screen.
"Press [ENTER] to run QUICK SETUP" appears at the bottom of the screen. If this message does not appear, select "QUICK" under "SETUP" in the Control Bar to run Quick Setup (page 50).
- Press **ENTER** without inserting a disc.
The Setup Display for selecting the language used in the on-screen display appears.
- Press **↑/↓** to select a language.
The player uses the language selected here to display the menu and subtitles as well.
- Press **ENTER**.
The Setup Display for selecting the aspect ratio of the TV to be connected appears.
- Press **↑/↓** to select the setting that matches your TV type.
 - If you have a 4:3 standard TV
 - 4:3 LETTER BOX or 4:3 PAN SCAN (page 51)
 - If you have a wide-screen TV or a 4:3 standard TV with a wide-screen mode
 - 16:9 (page 51)
- Press **ENTER**.
The Setup Display for selecting the type of jack used to connect your amplifier (receiver) appears.



- Press **↑/↓** to select the type of jack (if any) you are using to connect to an amplifier (receiver), then press **ENTER**.
Choose the item that matches the audio connection you selected on pages 19 to 22 (**A** through **D**).

- If you connect just a TV and nothing else, select "NO." Quick Setup is finished and connections are complete.
- Select "LINE OUTPUT L/R (AUDIO)." Quick Setup is finished and connections are complete.
- Select "DIGITAL OUTPUT." The Setup Display for "DOLBY DIGITAL" appears.

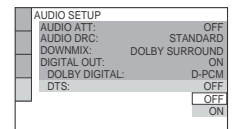
- Press **↑/↓** to select the type of Dolby Digital signal you wish to send to your amplifier (receiver).
Choose the signal that matches the audio connection you selected on pages 20 to 22 (**B** through **D**).



- D-PCM (page 54)
- DOLBY DIGITAL (only if the amplifier (receiver) has a Dolby Digital decoder) (page 54)

- Press **ENTER**.

"DTS" is selected.



- Press **↑/↓** to select whether or not you wish to send a DTS signal to your amplifier (receiver).
Choose the item that matches the audio connection you selected on pages 20 to 22 (**B** through **D**).

- OFF (page 54)
- ON (only if the amplifier (receiver) has a DTS decoder) (page 54)

- Press **ENTER**.

Quick Setup is finished. All connections and setup operations are complete.

Enjoying the surround sound effects

To enjoy the surround sound effects of this player or your amplifier (receiver), set the following items as described below for the audio connection you selected on pages 20 to 22 (**B** through **D**). Each of these is the default setting and does not need to be adjusted when you first connect the player. Refer to page 49 for using the Setup Display.

Audio Connection (pages 19 to 22)

- No additional settings are needed.
- Set "DOWNMIX" to "DOLBY SURROUND" (page 54)
- If the sound distorts even when the volume is turned down, set "AUDIO ATT" to "ON" (page 53)
- Set "DOWNMIX" to "DOLBY SURROUND" (page 54)
- Set "DIGITAL OUT" to "ON" (page 54)

continued 23

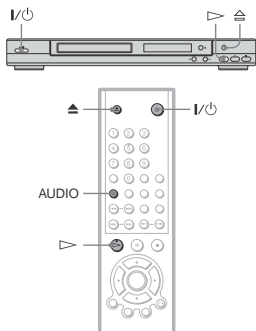
24

Playing Discs

Playing Discs DVD VCD CD

DATA 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 Press I/⏻.
The player turns on.
- 3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.
 - ◆ When using an amplifier (receiver) Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the player.

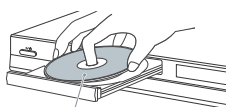
To unlock the disc tray

When the player is in standby mode, press ⏮ RETURN, ENTER, and then I/⏻ again.

Note

Even if you select "RESET" under "SETUP" in the Control Bar (page 50), the disc tray remains locked.

- 4 Press ⏮ on the player, and place a disc on the disc tray.



With the playback side facing down

- 5 Press ▷.

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

Depending on the disc, a menu may appear on the TV screen. For DVDs, see page 28. For VIDEO CDs, see page 29.

To turn off the player

Press I/⏻. The player enters standby mode.

Hint

You can have the player turn off automatically whenever you leave it in stop mode for more than 30 minutes. To turn on this function, set "AUTO POWER OFF" in "CUSTOM SETUP" to "ON" (page 52).

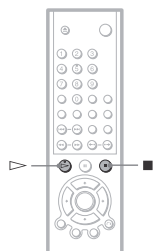
Notes on playing DTS sound tracks on a CD

- 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 41).

→ continued 25

Resuming Playback from the Point Where You Stopped the Disc (Disc Resume) DVD VCD

The player stores the point where you stopped the disc for up to 6 discs and resumes playback the next time you insert the same disc. When you store a resume playback point for the seventh disc, the resume playback point for the first disc is deleted.



- 1 While playing a disc, press ■ to stop playback.
"RESUME" appears on the front panel display.
- 2 Press ▷.
The player starts playback from the point where you stopped the disc in Step 1.

Hints

- To play from the beginning of the disc, press ■ twice, then press ▷.
- For CDs, and DATA CDs, the player remembers the resume playback point for the current disc unless the disc tray is opened, the power cord is disconnected, or only for DATA CDs, the player enters standby mode.

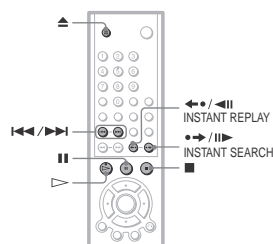
→ continued 27

- Do not play DTS sound tracks without first connecting the player to an audio component having a built-in DTS decoder. The player outputs the DTS signal via the DIGITAL OUT (COAXIAL) jack even if "DTS" in "AUDIO SETUP" is set to "OFF" in the Setup Display (page 54), and may affect your ears or cause your speakers to be damaged.

Notes on playing DVDs with a DTS sound track

- DTS audio signals are output only through the DIGITAL OUT (COAXIAL) jack.
- When you play a DVD with DTS sound tracks, set "DTS" to "ON" in "AUDIO SETUP" (page 54).
- If you connect the player to audio equipment without a DTS decoder, do not set "DTS" to "ON" in "AUDIO SETUP" (page 54). A loud noise may come out from the speakers, affecting your ears or causing the speakers to be damaged.

Additional operations



To	Operation
Stop	Press ■
Pause	Press II
Resume play after pause	Press II or ▷
Go to the next chapter, track, or scene in continuous play mode	Press ►►
Go back to the previous chapter, track, or scene in continuous play mode	Press ◄◄

Notes

- "DISC RESUME" in "CUSTOM SETUP" must be set to "ON" (default) for this function to work (page 53).
- The resume playback point for the current disc is cleared when:
 - you change the play mode.
 - you change the settings on the Setup Display.
- This function may not work with some discs.
- Resume Play does not work during Shuffle Play and Program Play.
- If "DISC RESUME" in "CUSTOM SETUP" is set to "ON" and you play a recorded disc such as DVD-RW, the player may play other recorded discs from the same resume point. To play from the beginning, press ■ twice and then press ▷.

26

To	Operation
Stop play and remove the disc	Press ⏮
Replay the previous scene*	Press ◀/▶/◀▶ INSTANT REPLAY during playback
Briefly fast forward the current scene**	Press ▶▶/◀▶ INSTANT SEARCH during playback

* For DVD VIDEOS and DVD-RWs/DVD-Rs only

** For DVD VIDEOS and DVD-RWs/DVD-Rs or DVD+RWs only

Hints

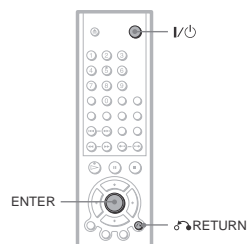
- The Instant Replay function is useful when you want to review a scene or dialog that you missed.
- The Instant Search function is useful when you want to pass over a scene that you don't want to watch.

Note

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

Locking the disc tray (Child Lock)

You can lock the disc tray to prevent children from opening it.

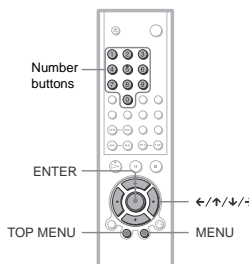


When the player is in standby mode, press ⏮ RETURN, ENTER, and I/⏻ in this order on the remote.

The player turns on and "LOCKED" appears on the front panel display. The ⏮ button on the player or the remote does not work while the Child Lock is set.

Using the DVD's Menu DVD

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 button. When you play DVDs that allow you to select items such as the language for the subtitles and the language for the sound, select these items using the MENU button.

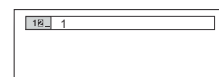


- 1 Press TOP MENU or MENU.

The disc's menu appears on the TV screen. The contents of the menu vary from disc to disc.

- 2 Press ◀/▶/◀▶ or the number buttons to select the item you want to play or change.

If you press the number buttons, the following display appears. Press the number buttons to select the item you want.



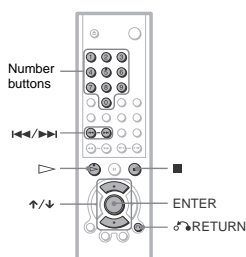
- 3 Press ENTER.

28

Playing VIDEO CDs with PBC Functions (PBC Playback)

VCD

PBC (Playback Control) allows you to play VIDEO CDs interactively by following the menu on the TV screen.



1 Start playing a VIDEO CD with PBC functions.

The menu for your selection appears.

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

3 Press ENTER.

4 Follow the instructions in the menu for interactive operations.

Refer to the instructions supplied with the disc, as the operating procedure may differ depending on the VIDEO CD.

To return to the menu

Press ⏮ RETURN.

Hint

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

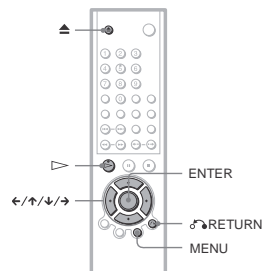
Notes

- 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 ⏭.
- The PBC functions of Super VCDs do not work with this player. Super VCDs are played in continuous play mode only.

Playing Discs

Playing an MP3 Audio Track DATA CD

You can play back DATA CDs (CD-ROMs/CD-Rs/CD-RWs) recorded in MP3 (MPEG1 Audio Layer 3) format.



1 Press ▲ and place a DATA CD on the disc tray.

2 Press ▷.

The disc tray closes, and the player starts to play the first MP3 audio track in the first album on the disc.

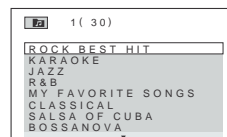
Notes

- This player can play MP3 audio tracks recorded in the following sampling frequencies: 32 kHz, 44.1 kHz, 48 kHz.
- The playback order may be different from the edited order. See "The Playback order of MP3 audio tracks" on the next page for details.

Selecting an album and track

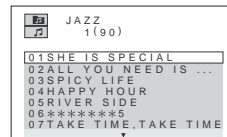
1 Press MENU.

The list of MP3 albums recorded on the DATA CD appears.



2 Select an album using ↑/↓ and press ENTER.

The list of tracks contained in the album appears.



3 Select a track using ↑/↓ and press ENTER.

The selected track starts playing. When a track or album is being played, its title is shaded.

To go to the next or previous page

Press → or ←.

To return to the previous display

Press ⏮ RETURN.

To turn off the display

Press MENU.

Notes

- Only the letters in the alphabet and numbers can be used for album or track names. Anything else is displayed as an " * ".
- ID3 tags cannot be displayed.

About MP3 audio tracks

You can play MP3 audio tracks on CD-ROMs or CD-Rs/CD-RWs. However, the discs must be recorded according to ISO9660 level 1, level 2, or Joliet format for the player to recognize the tracks.

You can also play discs recorded in Multi Session.

See the instructions of the CD-R/CD-RW device or recording software (not supplied) for details on the recording format.

To play a Multi Session CD

This player can play Multi Session CDs when an MP3 audio track is located in the first session. Any subsequent MP3 audio tracks, recorded in the later sessions, can also be played back.

When audio tracks and images in music CD format or video CD format are recorded in the first session, only the first session will be played back.

Notes

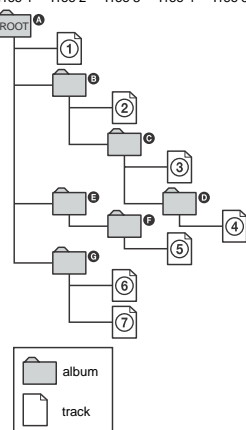
- If you put the extension ".MP3" to data not in MP3 format, the player cannot recognize the data properly and will generate a loud noise which could damage your speaker system.
- The player cannot play audio tracks in MP3PRO format.

The Playback order of MP3 audio tracks

The playback order of albums and tracks recorded on a DATA CD is as follows.

◆Structure of disc contents

Tree 1 Tree 2 Tree 3 Tree 4 Tree 5



When you insert a DATA CD and press ▷, the numbered tracks are played sequentially, from ① through ⑦. Any sub-albums/tracks contained within a currently selected album take priority over the next album in the same tree. (Example: ② contains ③ so ③ is played before ④.)

When you press MENU and the list of MP3 albums appears (page 30), the albums are arranged in the following order: ① → ② → ③ → ④ → ⑤ → ⑥ → ⑦. Albums that do not contain tracks (such as album ⑥) do not appear in the list.

Hints

- If you add numbers (01, 02, 03, etc.) to the front of the track file names, the tracks will be played in that order.
- Since a disc with many trees takes longer to start playback, it is recommended that you create albums of no more than two trees.

Notes

- Depending on the software you use to create the DATA CD, the playback order may differ from the illustration above.
- The playback order above may not be applicable if there are more than a total of 200 albums and tracks in the DATA CD.
- The player can recognize up to 100 albums (the player will count just albums, including albums that do not contain MP3 audio tracks). The player will not play any albums beyond the first 100 albums. Of the first 100 albums, the player will play no more than a combined total of 200 albums and tracks.

29

30

Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play)

You can set the following play modes:

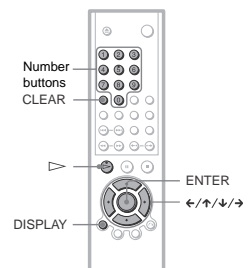
- Program Play (page 32)
- Shuffle Play (page 33)
- Repeat Play (page 34)
- A-B Repeat Play (page 35)

Note

The play mode is canceled when:
– you open the disc tray.
– the player enters standby mode by pressing I/P.

Creating your own program (Program Play) DVD VCD CD

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



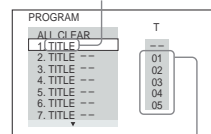
1 Press DISPLAY twice while the player is in stop mode.

The following Control Bar appears.



2 Press ←/→ to select PROGRAM, then press ENTER.

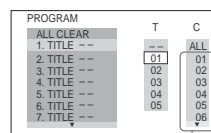
"TRACK" is displayed when you play a VIDEO CD or CD.



Titles or tracks recorded on a disc

3 Press →.

The cursor moves to the title or track row "T" (in this case, "01").



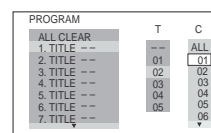
Chapters recorded on a disc

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

◆ When playing a DVD

For example, select chapter "03" of title "02."

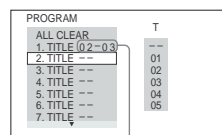
Press ↑/↓ or the number buttons to select "02" under "T," then press ENTER.



31

32

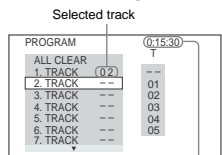
Next, press \uparrow/\downarrow or the number buttons to select "03" under "C," then press ENTER.



Selected title and chapter

◆ When playing a VIDEO CD or CD

For example, select track "02." Press \uparrow/\downarrow or the number buttons to select "02" under "T," then press ENTER.



Total time of the programmed tracks

5 To program other titles, chapters, or tracks, repeat Steps 3 to 4.

The programmed titles, chapters, and tracks are displayed in the selected order.

6 Press \triangleright to start Program Play.

Program Play begins. When the program ends, you can restart the same program again by pressing \triangleright .

To stop Program Play

Press CLEAR.

To turn off the display

Press DISPLAY repeatedly until the display is turned off.

To change or cancel a program

- Follow Steps 1 and 2 of "Creating your own program (Program Play)."
- Select the program number of the title, chapter, or track you want to change or cancel using \uparrow/\downarrow or the number buttons, and press \rightarrow .

To return to normal play

Press CLEAR, or select "OFF" in Step 2.

⚡ Hints

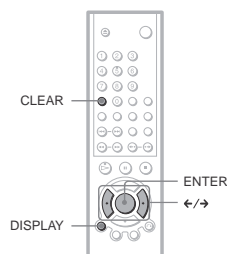
- You can set Repeat Play while the player is stopped. After selecting the "REPEAT" option, press \triangleright . Repeat Play starts.
- You can also select "REPEAT" from the Control Bar (page 13).

Note

You cannot use this function with VIDEO CDs with PBC playback.

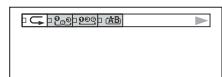
Repeating a specific portion (A-B Repeat Play) DVD VCD CD

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 Press DISPLAY during playback.

The following Control Bar appears.



2 Press \leftarrow/\rightarrow to select A-B (A-B REPEAT).

- Follow Step 4 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

- Follow Steps 1 and 2 of "Creating your own program (Program Play)."
- Press \uparrow and select "ALL CLEAR."
- Press ENTER.

⚡ Hint

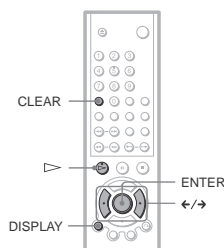
You can do Repeat Play or Shuffle Play of the programmed titles, chapters, or tracks. During Program Play, follow the steps of "Repeat Play" (page 34) or "Shuffle Play" (page 33).

Notes

- When playing Super VCDs, the total time of the programmed tracks does not appear on the screen.
- You cannot use this function with VIDEO CDs with PBC playback.

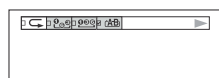
Playing in random order (Shuffle Play) DVD VCD CD

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



1 Press DISPLAY during playback.

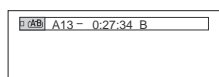
The following Control Bar appears.



→ continued 33

3 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.

The starting point (point A) is set.



4 When you reach the ending point (point B), press ENTER again.

The set points are displayed and the player starts repeating this specific portion.

To return to normal play

Press CLEAR.

To turn off the Control Bar

Press DISPLAY repeatedly until the Control Bar is turned off.

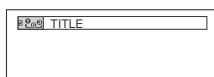
Note

When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Program Play are canceled.

Playing Discs

Playing Discs

2 Press \leftarrow/\rightarrow to select SHUFFLE , then press ENTER repeatedly to select the item to be shuffled.



◆ When playing a DVD

- TITLE
- CHAPTER

◆ When playing a VIDEO CD or CD

- TRACK

◆ When Program Play is activated

- ON: shuffles titles, chapters, or tracks selected in Program Play.

To return to normal play

Press CLEAR, or select "OFF" in Step 2.

To turn off the Control Bar

Press DISPLAY repeatedly until the Control Bar is turned off.

⚡ Hints

- You can set Shuffle Play while the player is stopped. After selecting the "SHUFFLE" option, press \triangleright . Shuffle Play starts.
- Up to 200 chapters in a disc can be played in random order when "CHAPTER" is selected.

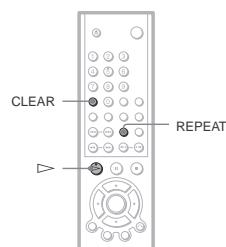
Note

You cannot use this function with VIDEO CDs with PBC playback.

Playing repeatedly (Repeat Play) DVD VCD CD DATA CD

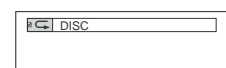
You can play all of the titles or tracks on a disc or a single title, chapter, or track repeatedly.

You can use a combination of Shuffle or Program Play modes.



1 Press REPEAT during playback.

The following display appears.



2 Press REPEAT repeatedly to select the item to be repeated.

◆ When playing a DVD

- 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

- DISC: repeats all of the tracks.
- TRACK: repeats the current track.

◆ When playing a DATA CD (MP3 audio)

- DISC: repeats all of the albums.
- ALBUM: repeats the current album.
- TRACK: repeats the current track.

◆ When Program Play or Shuffle Play is activated

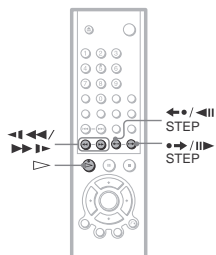
- ON: repeats Program Play or Shuffle Play.

34

Searching for a Scene

Searching for a Particular Point on a Disc (Scan, Slow-motion Play, Search, Freeze Frame)

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



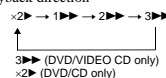
Note

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

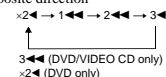
Locating a point quickly by playing a disc in fast forward or fast reverse (Scan) DVD VCD CD

Press \lll or \ggg while playing a disc. When you find the point you want, press \triangleright to return to normal speed. Each time you press \lll or \ggg during scan, the playback speed changes. With each press the indication changes as follows:

Playback direction



Opposite direction



The " $\times 2$ "/" $\times 2$ " playback speed is about twice the normal speed. The " $\times 3$ "/" $\times 3$ " playback speed is faster than " $\times 2$ "/" $\times 2$ " and the " $\times 2$ "/" $\times 2$ " playback speed is faster than " $\times 1$ "/" $\times 1$ ".

Watching frame by frame (Slow-motion play) DVD VCD

Press \lll or \ggg when the player is in pause mode. To return to the normal speed, press \triangleright . Each time you press \lll or \ggg during Slow-motion play, the playback speed changes. Two speeds are available. With each press the indication changes as follows:

Playback direction



Opposite direction (DVD only)



The " $\times 2$ "/" $\times 2$ " playback speed is slower than " $\times 1$ "/" $\times 1$ ".

To locate a point quickly using the PREV (previous)/NEXT button (Search) DVD VCD CD DATA CD

You can search for a particular point on a disc using \lll / \ggg on the player. During playback, press and hold \ggg on the player to locate a point in the playback direction, or press and hold \lll to locate a point in the opposite direction. When you find the point you want, release the button to return to normal playback speed.

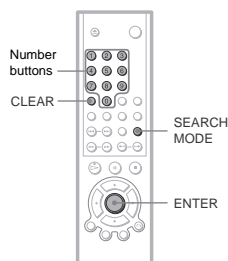
Playing one frame at a time (Freeze Frame) **DVD VCD**

When the player is in the pause mode, press **STEP** to go to the next frame. Press **STEP** to go to the preceding frame (DVD only). If you hold the button down, you can view the frames in succession. To return to normal playback, press **ENTER**.

Searching for a Title/Chapter/Track/Scene, etc. (Search mode) **DVD VCD CD**

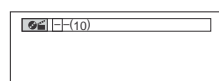
DATA CD

You can search a DVD by title or chapter, and you can search a VIDEO CD/CD by track, index, or scene. As titles 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.

The following display appears. “--(**)” appears next to the icon (**) refers to a number). The number in parentheses indicates the total number of titles, tracks, indexes, scenes, etc. of the disc.



2 Press SEARCH MODE repeatedly to select the search method.

◆ When playing a DVD

- ◆ TITLE
- ◆ CHAPTER
- ◆ TIME/TEXT
- ◆ NUMBER INPUT

Select “TIME/TEXT” to search for a starting point by inputting the time code.

◆ When playing a VIDEO CD without PBC playback

- ◆ TRACK
- ◆ INDEX

◆ When playing a VIDEO CD with PBC Playback

- ◆ SCENE
- ◆ INDEX

◆ When playing a CD

- ◆ TRACK
- ◆ INDEX

◆ When playing a DATA CD (MP3 audio)

- ◆ ALBUM
- ◆ TRACK

3 Select the number of the title, track, scene, time code, etc. you want by pressing the number buttons to select the digit.

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.

Hint

When the display is turned off, you can search for a chapter (DVD) or track (CD) by pressing the number buttons and ENTER.

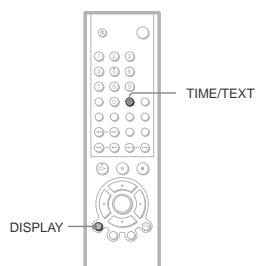
→ continued 37

38

Viewing Information About the Disc

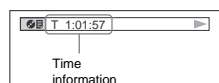
Checking the Playing Time and Remaining Time **DVD VCD CD DATA CD**

You can check the playing time and remaining time of the current title, chapter, or track. Also, you can check the DVD/CD text or track name (MP3 audio) recorded on the disc.



1 Press TIME/TEXT during playback.

The following display appears.



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 *: *: * (hours: minutes: seconds)
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)

- ◆ *: *: * (minutes: seconds)
Playing time of the current scene

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

- ◆ T *: *: * (minutes: seconds)
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

◆ When playing a DATA CD (MP3 audio)

- ◆ *: *: * (minutes: seconds)
Playing time of the current track

◆ When playing a Super VCD

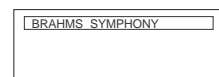
- ◆ T *: *: * (minutes: seconds)
Playing time of the current track

To check the DVD/CD text or track name (MP3 audio)

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

The DVD/CD text appears only when text is recorded in the disc. You cannot change the text. If the disc does not contain text, “NO TEXT” appears.

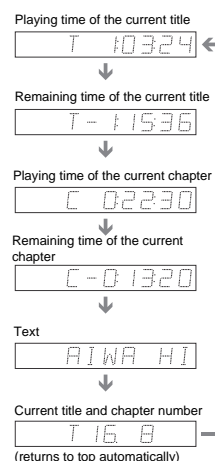
For DATA CDs, only the track name of the MP3 audio track appears.



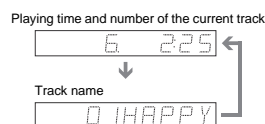
Checking the information on the front panel display

You can view the time information and text displayed on the TV screen also on the front panel display. The information on the front panel display changes as follows when you change the time information on your TV screen.

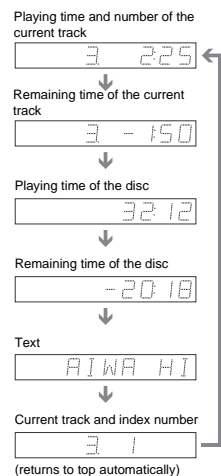
When playing a DVD



When playing a DATA CD (MP3 audio)



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



Hints

- When playing VIDEO CDs with PBC functions, the scene number or the playing time are displayed.
- Long text that does not fit in a single line will scroll across the front panel display.
- You can also check the time information and text using the Control Bar (page 13).

Notes

- Depending on the type of disc being played, the DVD/CD text or track name may not be displayed.
- The player can only display the first level of the DVD/CD text, such as the disc name or title.
- Playing time of MP3 audio tracks may not be displayed correctly.

→ continued 39

40

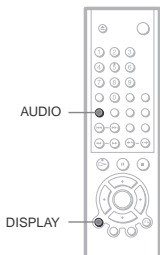
Sound Adjustments

Changing the Sound **DVD**

VCD CD DATA CD

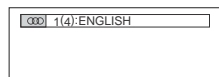
When playing a DVD recorded in multiple audio formats (PCM, Dolby Digital, or DTS), you can change the audio format. If the DVD is recorded with multilingual tracks, you can also change the language.

With CDs, DATA 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. 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 hear the instruments from both speakers by selecting the left channel.



1 Press AUDIO during playback.

The following display appears. 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 indicate a language code. Refer to "Language Code List" on page 60 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, CD, or DATA CD (MP3 audio)

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)

◆ When playing a Super VCD

The default setting is underlined.
 • 1:STEREO: The stereo sound of the audio track 1
 • 1:1/L: The sound of the left channel of the audio track 1 (monaural)
 • 1:2/R: The sound of the right channel of the audio track 1 (monaural)
 • 2:STEREO: The stereo sound of the audio track 2
 • 2:1/L: The sound of the left channel of the audio track 2 (monaural)
 • 2:2/R: The sound of the right channel of the audio track 2 (monaural)

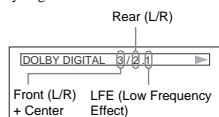
Sound Adjustments

Checking the audio signal format **DVD**

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

Example:

Dolby Digital 5.1 ch



→continued 41

42

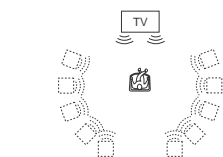
To cancel the setting

Select "OFF" in Step 2.

◆ WIDE

Creates 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 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.



□ Virtual speaker

◆ NIGHT

Large sounds, such as explosions, are suppressed, but the quieter sounds are unaffected. This feature is useful when you want to hear the dialog and enjoy the surround sound effects of "WIDE" at low volume.

Notes

- When the playing signal does not contain a signal for the rear speakers, the surround effects will be difficult to hear.
- When you select one of the Virtual Surround 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.
- Not all discs will respond to the "NIGHT" function in the same way.

Sound Adjustments

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

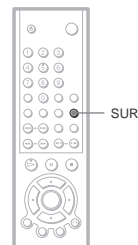
Notes

- 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 54).
- While playing a Super VCD on which the audio track 2 is not recorded, no sound will come out when you select "2:STEREO," "2:1/L," or "2:2/R."

Virtual Surround Settings

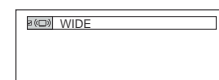
DVD

When you connect a stereo TV or 2 front speakers, 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. If the player is set up to output the signal from the DIGITAL OUT (COAXIAL) jack, the surround effect will only be heard when "DOLBY DIGITAL" is set to "D-PCM" (page 54).



1 Press SUR during playback.

The following display appears.



2 Press SUR repeatedly to select one of the Virtual Surround sounds.

Refer to the following explanations given for each item.

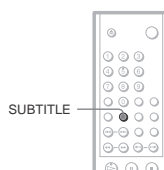
- WIDE
- NIGHT

Enjoying Movies

Displaying the Subtitles

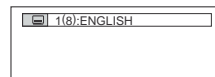
DVD

If subtitles are recorded on the discs, you can change the subtitles or turn them on and off whenever you want while playing a DVD.



1 Press SUBTITLE during playback.

The following display appears. 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 a language code. Refer to "Language Code List" on page 60 to see which language the code represents.

To turn off the subtitles

Select "OFF" in Step 2.

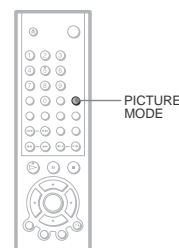
Note

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

Adjusting the Playback Picture (PICTURE MODE) **DVD**

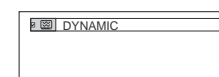
VCD

You can adjust the video signal of the DVD or VIDEO CD from the player to obtain the picture quality you want. Choose the setting that best suits the program you are watching.



1 Press PICTURE MODE during playback.

The following display appears.



2 Press PICTURE MODE repeatedly to select the setting you want.

The default setting is underlined.

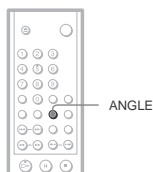
- STANDARD: displays a standard picture.
- DYNAMIC: produces a bold dynamic picture by increasing the picture contrast and the color intensity.
- CINEMA: enhances details in dark areas by increasing the black level.

Hint

When you watch a movie, "CINEMA" is recommended.

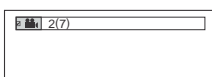
Changing the Angles DVD

If various angles (multi-angles) for a scene are recorded on the DVD, "ANGLE" appears in the front panel display. This means that you can change the viewing angle.



1 Press ANGLE during playback.

The number of the angle appears on the display.
The number in parentheses indicates the total number of angles.



2 Press ANGLE repeatedly to select the angle number.

The scene changes to the selected angle.

Note

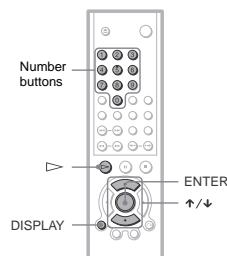
Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

Locking Discs

Limiting Playback by Children (PARENTAL CONTROL)

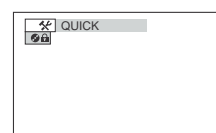
DVD

The "PARENTAL CONTROL" function allows you to set a playback limitation level. Playback of some DVDs can be limited according to a predetermined level such as the age of the users. Scenes may be blocked or replaced with different scenes.



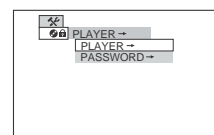
1 Press DISPLAY while the player is in stop mode.

The following Control Bar appears.



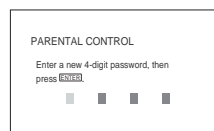
2 Press \uparrow/\downarrow to select "PARENTAL CONTROL", then press ENTER.

The options for "PARENTAL CONTROL" appear.



3 Press \uparrow/\downarrow to select "PLAYER →", then press ENTER.

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



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

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

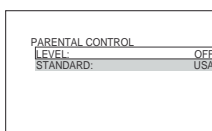


45

46

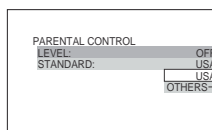
4 Enter or re-enter your 4-digit password using the number buttons, then press ENTER.

The display for setting the playback limitation level appears.



5 Press \uparrow/\downarrow to select "STANDARD," then press ENTER.

The selection items for "STANDARD" are displayed.

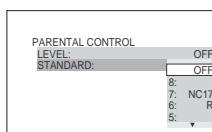


6 Press \uparrow/\downarrow to select a geographic area as the playback limitation level, then press ENTER.

The area is selected.
When you select "OTHERS →," select and enter a standard code in the table on page 48 using the number buttons.

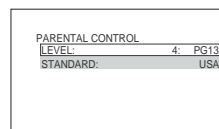
7 Press \uparrow/\downarrow to select "LEVEL," then press ENTER.

The selection items for "LEVEL" are displayed.



8 Select the level you want using \uparrow/\downarrow , then press ENTER.

Parental Control setting is complete.



The lower the value, the stricter the limitation.

To turn off the Parental Control function

Set "LEVEL" to "OFF" in Step 8.

To play a disc for which Parental Control is set

1 Insert the disc and press \triangleright .
The display for entering your password appears.

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

Hint

If you forget your password, remove the disc and repeat Steps 1 to 3 of "Limiting Playback by Children (PARENTAL CONTROL)." When you are asked to enter your password, enter "199703" using the number buttons, then press ENTER. The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password, replace the disc in the player and press \triangleright . When the display for entering your password appears, enter your new password.

Notes

- When you play discs which do not have the Parental Control function, playback cannot be limited on this player.
- Depending on the disc, you may be asked to change the parental control level while playing the disc. In this case, enter your password, then change the level. If the Resume Play mode is canceled, the level returns to the previous level.

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
India	2248	Sweden	2499
Indonesia	2238	Switzerland	2086
Italy	2254	Thailand	2528
Japan	2276	United Kingdom	2184

If you make a mistake entering your password

Press \leftarrow before you press ENTER and input the correct number.

If you make a mistake

Press \leftarrow RETURN.

To turn off the display

Press DISPLAY repeatedly until the display is turned off.

Changing the password

1 Press DISPLAY while the player is in stop mode.

The Control Bar appears.

2 Press \uparrow/\downarrow to select "PARENTAL CONTROL", then press ENTER.

The options for "PARENTAL CONTROL" appear.

3 Press \uparrow/\downarrow to select "PASSWORD →", then press ENTER.

The display for entering the password appears.

4 Enter your 4-digit password using the number buttons, then press ENTER.

5 Enter a new 4-digit password using the number buttons, then press ENTER.

6 To confirm your password, re-enter it using the number buttons, then press ENTER.

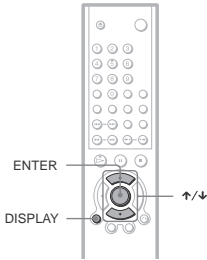
Settings and Adjustments

Using the Setup Display

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 pages from 50 to 54.

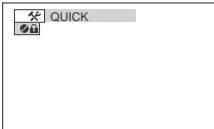
Note

Playback settings stored in the disc take priority over the Setup Display settings and not all the functions described may work.



1 Press DISPLAY when the player is in stop mode.

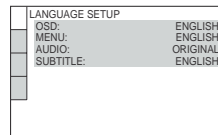
The Control Bar appears.



2 Press \uparrow/\downarrow to select [SETUP] , then press ENTER.

3 Press \uparrow/\downarrow to select "CUSTOM," then press ENTER.

The Setup Display appears.

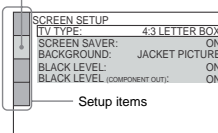


4 Press \uparrow/\downarrow to select the setup item from the displayed list:

"LANGUAGE SETUP," "SCREEN SETUP," "CUSTOM SETUP," or "AUDIO SETUP." Then press ENTER.

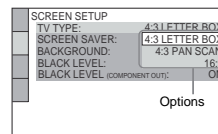
The Setup item is selected.
Example: "SCREEN SETUP"

Selected item



5 Select an item using \uparrow/\downarrow , then press ENTER.

The options for the selected item appear.
Example: "TV TYPE"

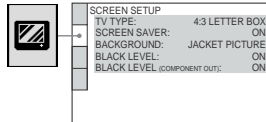


Settings and Adjustments

Settings for the Display (SCREEN SETUP)

Choose settings according to the TV to be connected.

Select "SCREEN SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 49). 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

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 or DATA CD (MP3 audio) for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press [STOP] 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 or DATA CD (MP3 audio).

JACKET PICTURE	The jacket picture (still picture) appears, 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.
BLUE	The background color is blue.
BLACK	The background color is black.

◆ BLACK LEVEL

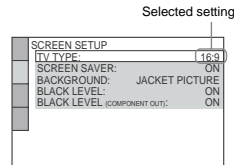
Selects the black level (setup level) for the video signals output from the jacks other than COMPONENT VIDEO OUT.

ON	Sets the black level of the output signal to the standard level.
OFF	Lowers the standard black level. Use this when the picture becomes too white.

Settings and Adjustments

6 Select a setting using \uparrow/\downarrow , then press ENTER.

The setting is selected and setup is complete.
Example: "16:9"



To turn off the display

Press DISPLAY repeatedly until the display is turned off.

To enter the Quick Setup mode

Select "QUICK" in Step 3. Follow from Step 5 of the Quick Setup explanation to make basic adjustments (page 23).

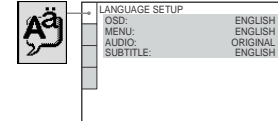
To reset all of the "SETUP" settings

If you select "RESET" in Step 3, you can reset all of the "SETUP" settings on pages 50 to 54 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 Bar. Do not press [STOP] when resetting the player.

Setting the Display or Sound Track Language (LANGUAGE SETUP)

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

Select "LANGUAGE SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 49).



◆ OSD (On-Screen Display)

Switches the display language on the screen.

◆ MENU (DVD only)

You can select the desired language for the disc's menu.

◆ AUDIO (DVD only)

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

◆ SUBTITLE (DVD only)

Switches the language of the subtitle recorded on the DVD.

When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language you selected for the sound track.

Hint

If you select "OTHERS \rightarrow " in "MENU," "SUBTITLE," or "AUDIO," select and enter a language code from "Language Code List" on page 60 using the number buttons.

Note

When you select a language in "MENU," "SUBTITLE," or "AUDIO" that is not recorded on the DVD, one of the recorded languages will be automatically selected.

\rightarrow continued 49

50

◆ BLACK LEVEL (COMPONENT OUT)

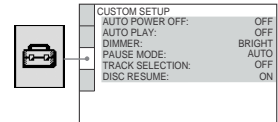
Selects the black level (setup level) for the video signals output from the COMPONENT VIDEO OUT jacks.

ON	Sets the black level of the output signal to the standard level.
OFF	Lowers the standard black level. Use this when the picture becomes too white.

Custom Settings (CUSTOM SETUP)

Use this to set up playback related and other settings.

Select "CUSTOM SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 49). The default settings are underlined.



◆ AUTO POWER OFF

Switches the Auto Power Off setting on or off.

OFF	Switches this function off.
ON	The player enters standby mode when left in stop mode for more than 30 minutes.

◆ AUTO PLAY

Switches the Auto Play setting on or off. This function is useful when the player is connected to a timer (not supplied).

OFF	Switches this function off.
ON	Automatically starts playback when the player is turned on.

◆ DIMMER

Adjusts the lighting of the front panel display.

BRIGHT	Makes the lighting bright.
DARK	Makes the lighting dark.

\rightarrow continued 51

52

◆ 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.

◆ 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 50).
- If you set "DTS" to "OFF" (page 54), 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.

◆ DISC RESUME (DVD/VIDEO CD only)

Switches the Disc Resume setting on or off. Resume playback can be stored in memory for up to 6 different DVD/VIDEO CD discs (page 27).

ON	Stores the resume settings in memory for up to six discs. (The settings remain in memory even if you select OFF.)
OFF	Does not store the resume settings in memory. Playback restarts at the resume point only for the current disc in the player.

Additional Information

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 Aiwa dealer (for customers in the U.S.A. only).

Power

The power is not turned on.

- Check that the AC power cord is connected securely.

Picture

There is no picture/picture noise appears.

- Re-connect the connecting cord securely.
- The connecting cords are damaged.
- Check the connection to your TV (page 16) and switch the input selector on your TV so that the signal from the player appears on the TV screen.
- The disc is dirty or flawed.
- If the picture output from your player goes through your VCR to get to your TV or if you are connected to a combination TV/VIDEO player, 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 16).

Even though you set the aspect ratio in "TV TYPE" or "SCREEN SETUP," the picture does not fill the screen.

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

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. To use the display, see "Using the Setup Display" (page 49). The default settings are underlined.

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

◆ AUDIO ATT (attenuation)

If the playback sound is distorted, set this item to "ON." The player reduces the audio output level.

This function affects the output of the LINE OUT L/R (AUDIO) jacks.

OFF	Normally, select this position.
ON	Select this when the playback sound from the speakers is distorted.

◆ AUDIO DRC (Dynamic Range Control) (DVD only)

Makes the sound clear when the volume is turned down when playing a DVD that conforms to "AUDIO DRC." This affects the output from the following jacks:

- LINE OUT L/R (AUDIO) jacks
- DIGITAL OUT (COAXIAL) jack only when "DOLBY DIGITAL" is set to "D-PCM" (page 54).

STANDARD	Normally select this position.
TV MODE	Makes the low sounds clear even if you turn the volume down.
WIDE RANGE	Gives you the feeling of being at a live performance.

Settings and Adjustments

◆ DOWNMIX (DVD only)

Switches the method for mixing down to 2 channels when you play a DVD which has rear sound elements (channels) or is recorded in Dolby Digital format. For details on the rear signal components, see "Checking the audio signal format" (page 41). This function affects the output of the following jacks:

- LINE OUT L/R (AUDIO) jacks
- DIGITAL OUT (COAXIAL) jack when "DOLBY DIGITAL" is set to "D-PCM" (page 54).

DOLBY SURROUND	Normally, select this position. Multi-channel audio signals are output to two channels for enjoying surround sounds.
NORMAL	Multi-channel audio signals are downmixed to two channels for use with your stereo.

◆ DIGITAL OUT

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

ON	Normally select this position. When you select "ON," see "Setting the digital output signal" for further settings.
OFF	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 a component such as an amplifier (receiver) or MD deck with a digital input jack.

For connection details, see page 18.

Select "DOLBY DIGITAL" and "DTS" after setting "DIGITAL OUT" to "ON."

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

→ continued 53

54

Sound

There is no sound.

- Re-connect the connecting cord securely.
- The connecting cord is damaged.
- The player is connected to the wrong input jack on the amplifier (receiver) (page 20, 21, 22).
- The amplifier (receiver) input is not correctly set.
- The player is in pause mode or in Slow-motion Play mode.
- The player is in fast forward or fast reverse mode.
- If the audio signal does not come through the DIGITAL OUT (COAXIAL) jack, check the audio settings (page 54).
- While playing a Super VCD on which the audio track 2 is not recorded, no sound will come out when you select "2:STEREO," "2:1/L," or "2:2/R."

Sound is noisy.

- When playing a CD with DTS sound tracks, noise will come from the LINE OUT L/R (AUDIO) jacks (page 25) or DIGITAL OUT (COAXIAL) jack.

Sound distortion occurs.

- Set "AUDIO ATT" in "AUDIO SETUP" to "ON" (page 53).

The sound volume is low.

- The sound volume is low on some DVDs. The sound volume may improve if you set "AUDIO DRC" to "TV MODE" (page 53).
- Set "AUDIO ATT" in "AUDIO SETUP" to "OFF" (page 53).

Operation

The remote does not function.

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

The disc does not play.

- The disc is turned over. Insert the disc with the playback side facing down on the disc tray.
- The disc is skewed.
- The player cannot play certain discs (page 7).
- The region code on the DVD does not match the player.
- Moisture has condensed inside the player (page 3).
- The player cannot play a recorded disc that is not correctly finalized (page 7).

The MP3 audio track cannot be played (page 30).

- The DATA CD is not recorded in the MP3 format that conforms to ISO9660 Level 1/Level 2 or Joliet.
- The MP3 audio track does not have the extension ".MP3."
- The data is not formatted in MP3 even though it has the extension ".MP3."
- The data is not MPEG1 Audio Layer 3 data.
- The player cannot play audio tracks in MP3PRO format.

The title of the MP3 audio album or track is not correctly displayed.

- The player can only display numbers and alphabet. Other characters are displayed as "??".

The disc does not start playing from the beginning.

- Program Play, Shuffle Play, Repeat Play, or A-B Repeat Play has been selected (page 32).
- Resume play has taken effect (page 27).

The player starts playing the disc automatically.

- The disc features an auto playback function.
- "AUTO PLAY" in "CUSTOM SETUP" is set to "ON" (page 52).

Playback stops automatically.

- While playing discs with an auto pause signal, the player stops playback at the auto pause signal.

If you connect a component that does not conform to the selected audio signal, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged.

◆ DOLBY DIGITAL (DVD only)

Selects the type of Dolby Digital signal.

D-PCM	Select this when the player is connected to an audio component without 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 54).
DOLBY DIGITAL	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder.

◆ DTS (DVD only)

Selects whether or not to output DTS signals.

OFF	Select this when the player is connected to an audio component without a built-in DTS decoder.
ON	Select this when the player is connected to an audio component with a built-in DTS decoder.

You cannot perform some functions such as Stop, Search, 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.

The language for the sound track cannot be changed.

- Try using the DVD's menu instead of the direct selection button on the remote (page 28).
- 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 or turned off.

- Try using the DVD's menu instead of the direct selection button on the remote (page 28).
- Multilingual subtitles are not recorded on the DVD being played.
- The DVD prohibits the changing of the subtitles.

The angles cannot be changed.

- Try using the DVD's menu instead of the direct selection button on the remote (page 28).
- Multi-angles are not recorded on the DVD being played.
- The angle can only be changed when the "CQ" indicator lights up on the front panel display (page 10).
- The DVD prohibits changing of the angles.

The player does not operate properly.

- When static electricity, etc., causes the player to operate abnormally, unplug 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 57.)

→ continued 55

56

The disc tray does not open and “LOCKED” appears on the front panel display.
➔ Child Lock is set (page 26).

The disc tray does not open and “TRAY LOCKED” appears on the front panel display.
➔ Contact your Aiwa dealer or local authorized Aiwa service facility.

“Data error” appears on the TV screen when playing a DATA CD.
➔ The MP3 audio track you want to play is broken.
➔ The data is not MPEG 1 Audio Layer 3 data.

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 50) with a combination of a letter and four 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 Aiwa dealer or local authorized Aiwa service facility and give the 5-character service number. Example: E 61 10

Additional Information

Glossary

Chapter (page 10)

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

Dolby Digital (page 22, 54)
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 21)
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, 54)
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 6)
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 17GB.

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 a multi-channel format, such as Dolby Digital, 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.

DVD-RW (page 6)
A DVD-RW is a recordable and rewritable disc that is the same size as a DVD VIDEO. The DVD-RW has two different modes: VR mode and Video mode. DVD-RWs created in Video mode have the same format as a DVD VIDEO, while discs created in VR (Video Recording) mode allow the contents to be programmed or edited.

DVD+RW (page 6)
A DVD+RW (plus RW) is a recordable and rewritable disc. DVD+RWs use a recording format that is comparable to the DVD VIDEO format.

Index (CD)/Video Index (VIDEO CD) (page 37)
A number that divides a track into sections to easily locate the point you want on a CD or VIDEO CD. Depending on the disc, no index may be recorded.

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 CD or VIDEO CD (the length of a song).

Language Code List

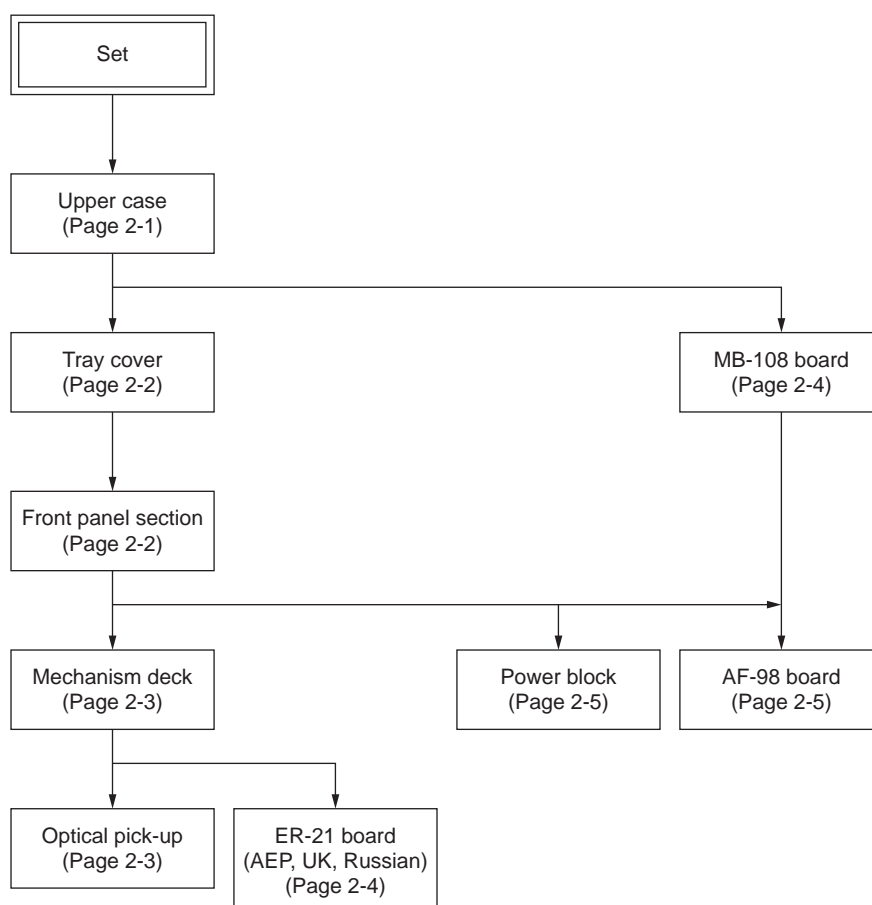
For details, see pages 41, 44, 50.
The language spellings conform to the ISO 639: 1988 (E/F) standard.

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	1461 Rhaeto-Romance	1540 Tatar
1130 Bhutani	1298 Greenlandic	1481 Romance	1543 Twi
1142 Greek	1299 Cambodian	1482 Kirundi	1557 Ukrainian
1144 English	1300 Kannada	1483 Romanian	1564 Urdu
1145 Esperanto	1301 Korean	1489 Russian	1572 Uzbek
1149 Spanish	1305 Kashmiri	1491 Kinyarwanda	1581 Vietnamese
1150 Estonian	1307 Kurdish	1495 Sanskrit	1587 Volapük
1151 Basque	1311 Kirghiz	1498 Sindhi	1613 Wolof
1157 Persian	1313 Latin	1499 Sinhalese	1632 Xhosa
1165 Finnish	1326 Lingala	1501 Sangho	1665 Yoruba
1166 Fiji	1327 Lachian	1502 Serbo-Croatian	1684 Chinese
1171 Faroese	1332 Lithuanian	1503 Singalese	1697 Zulu
1174 French	1334 Latvian; Lettish	1505 Slovak	
1181 Frisian	1345 Malagasy	1506 Slovenian	1703 Not specified

SECTION 2 DISASSEMBLY

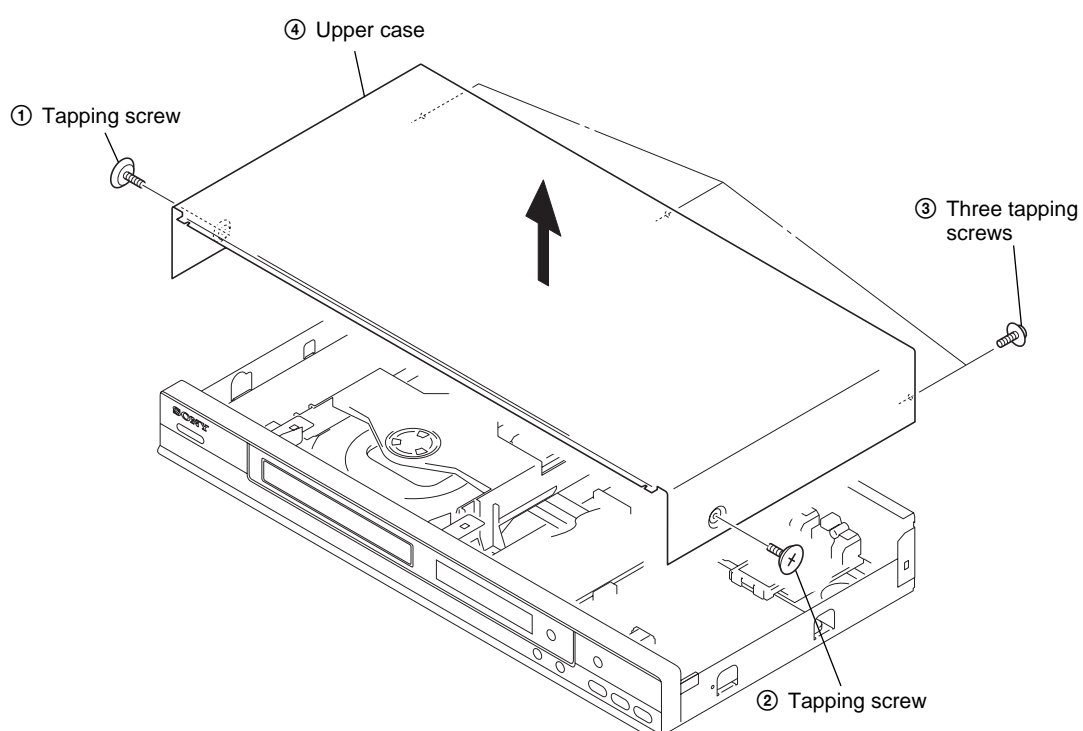
2-1. DISASSEMBLY

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

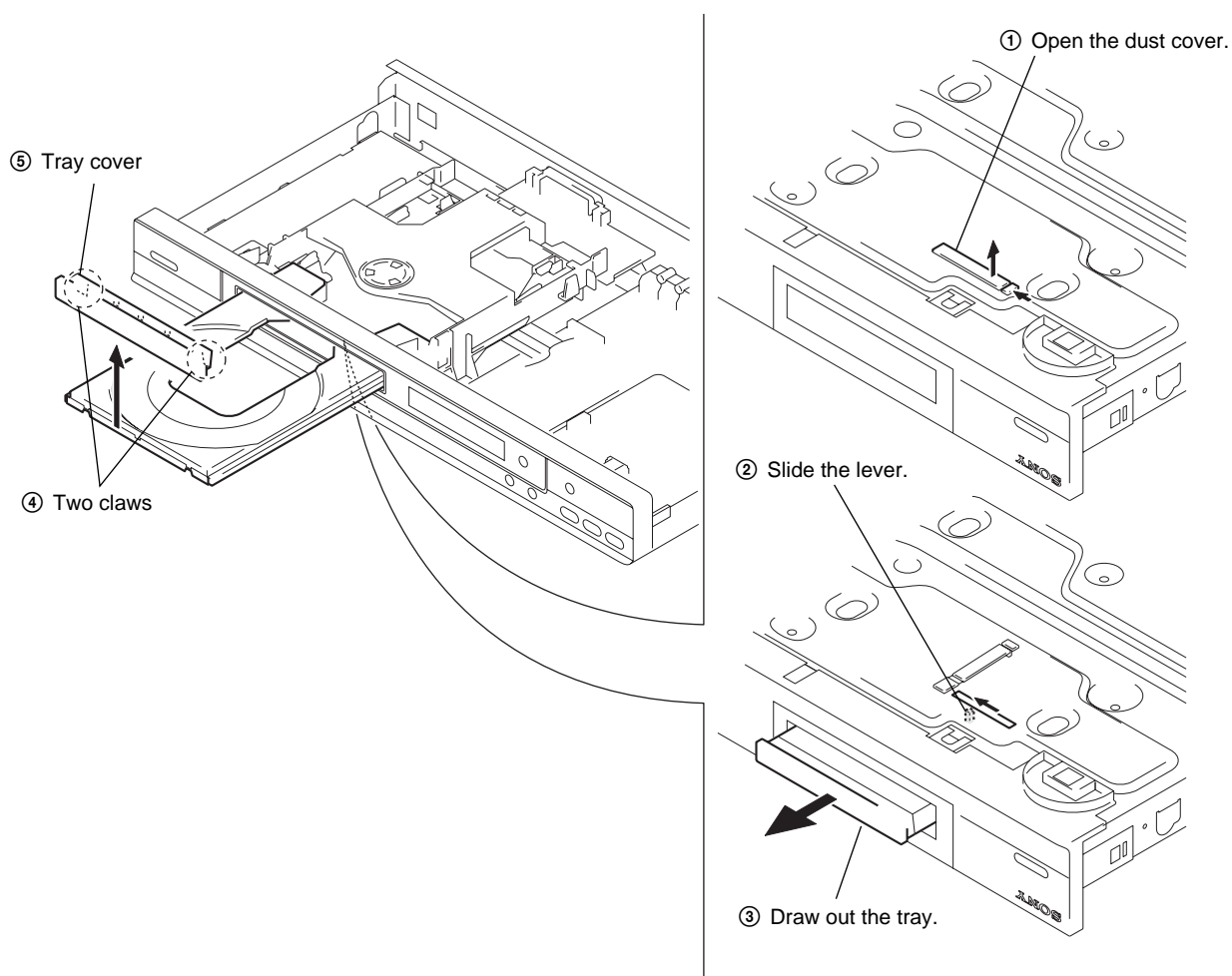


Note: Follow the disassembly procedure in the numerical order given.

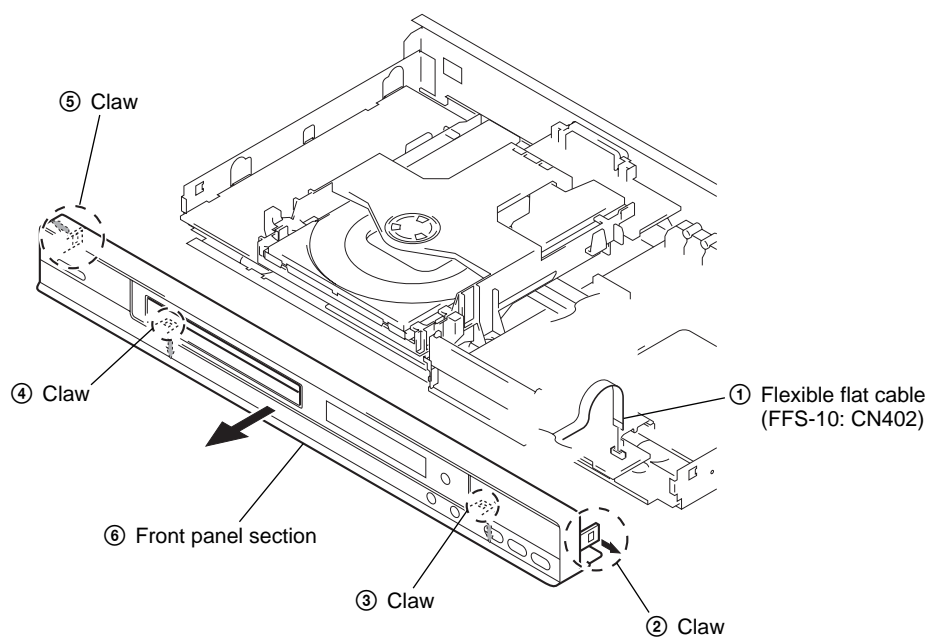
2-2. UPPER CASE



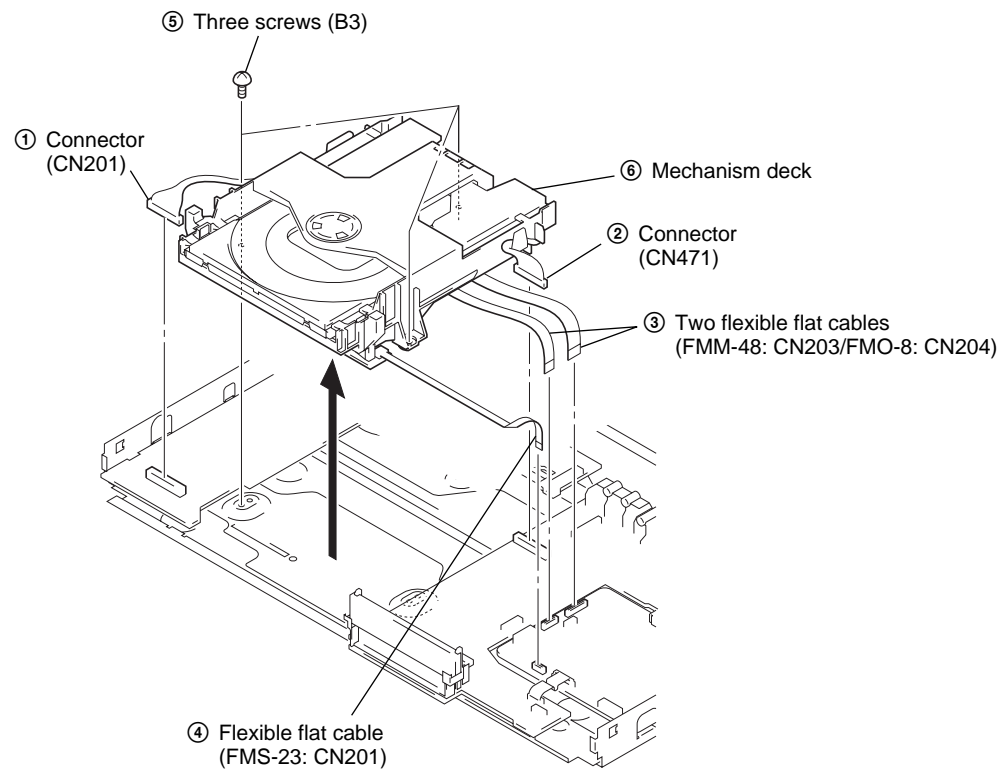
2-3. TRAY COVER



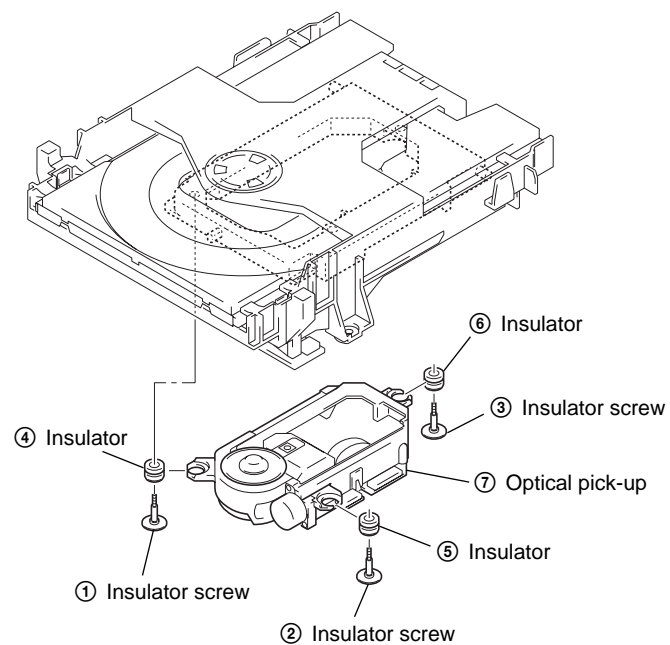
2-4. FRONT PANEL SECTION



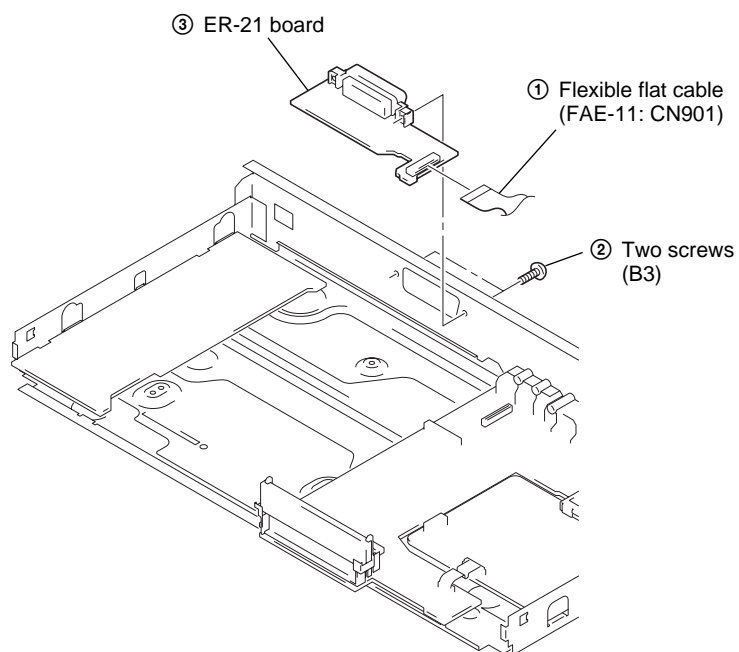
2-5. MECHANISM DECK



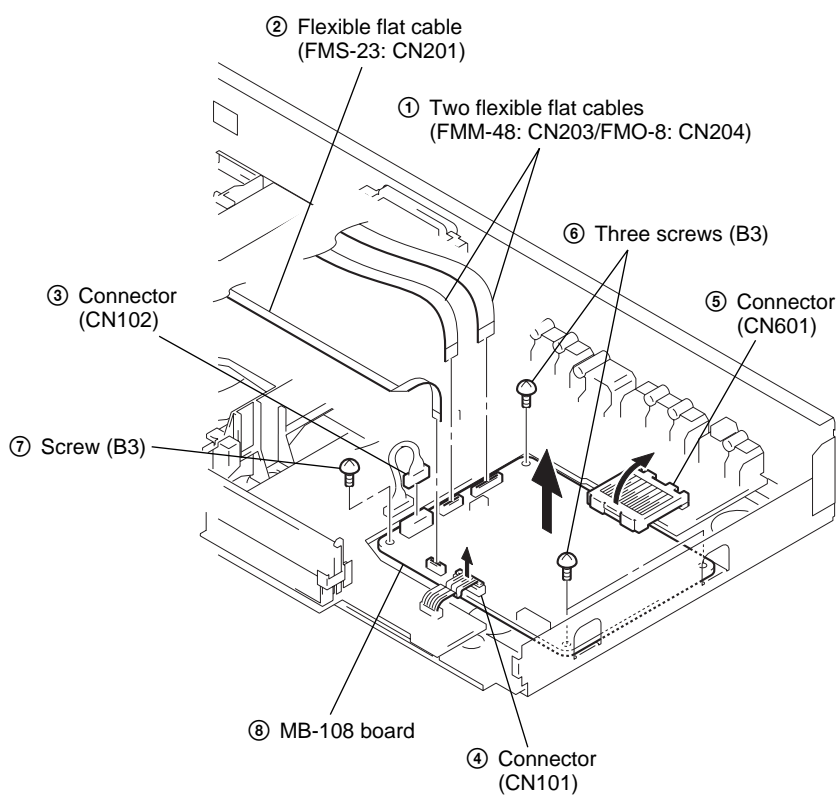
2-6. OPTICAL PICK-UP



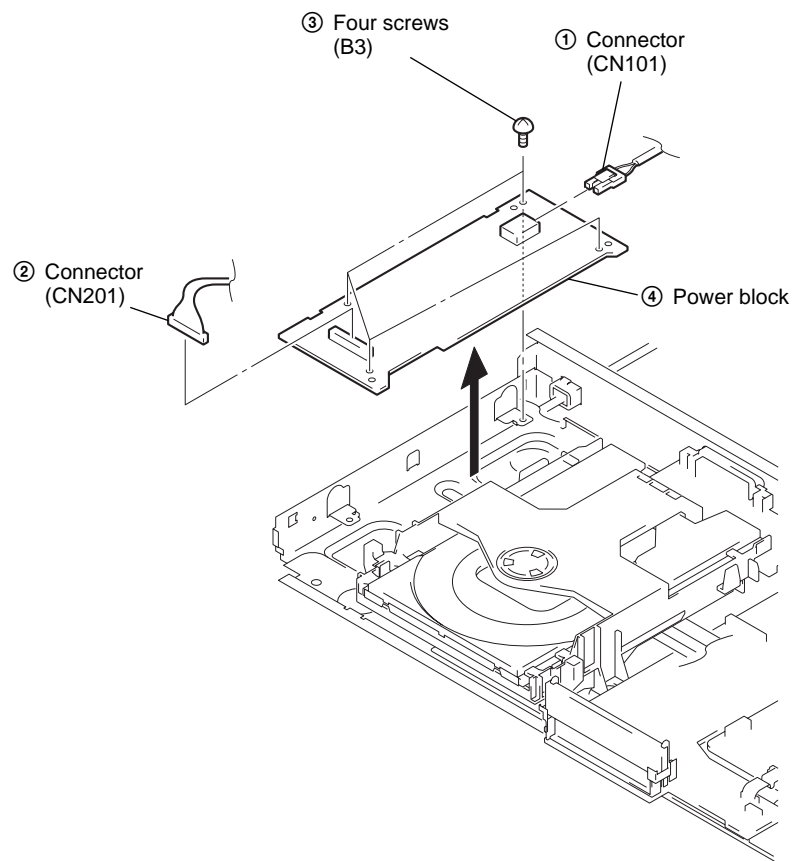
2-7. ER-21 BOARD (AEP, UK, RUSSIAN)



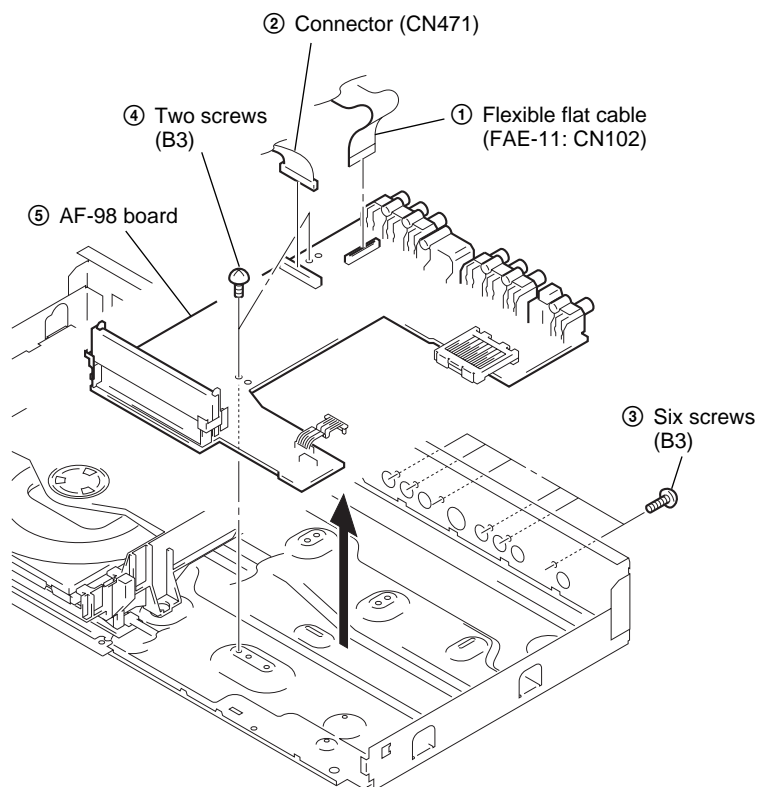
2-8. MB-108 BOARD



2-9. POWER BLOCK



2-10. AF-98 BOARD

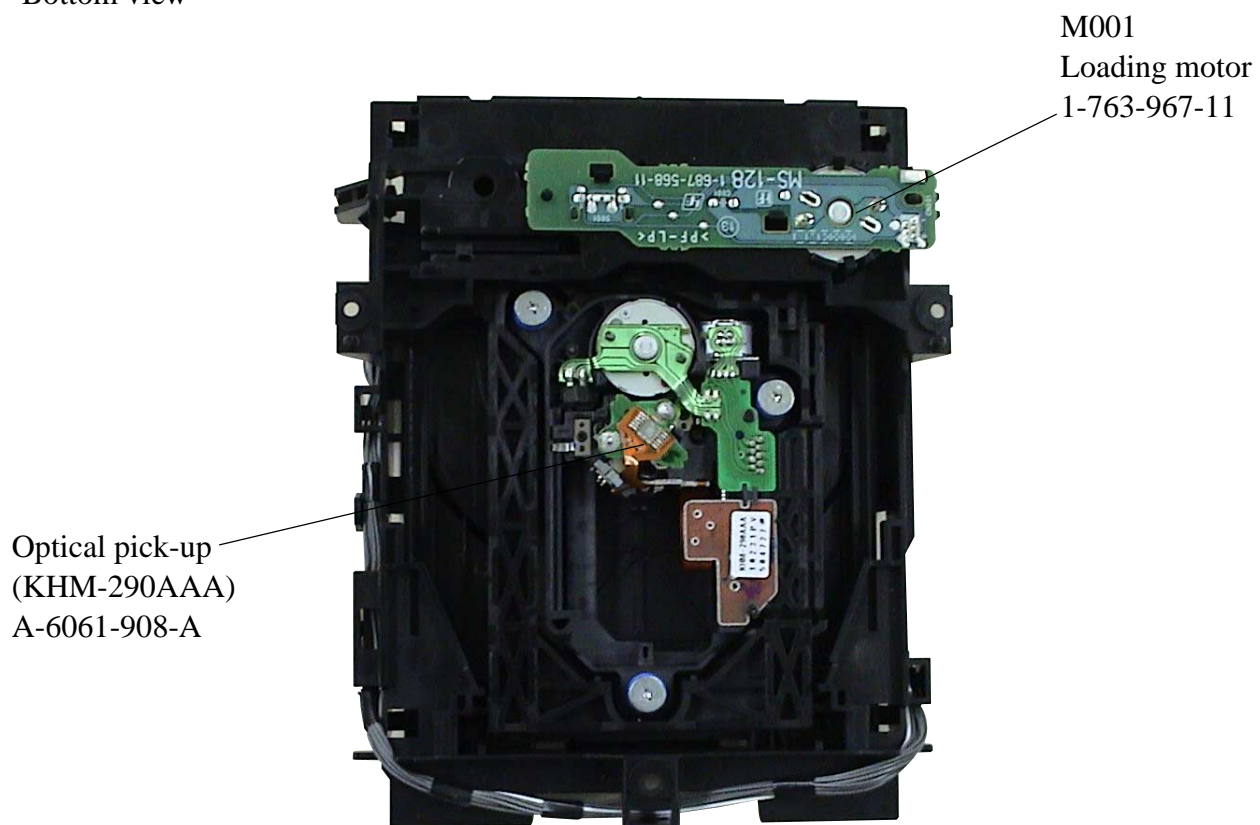


2-11. INTERNAL VIEWS

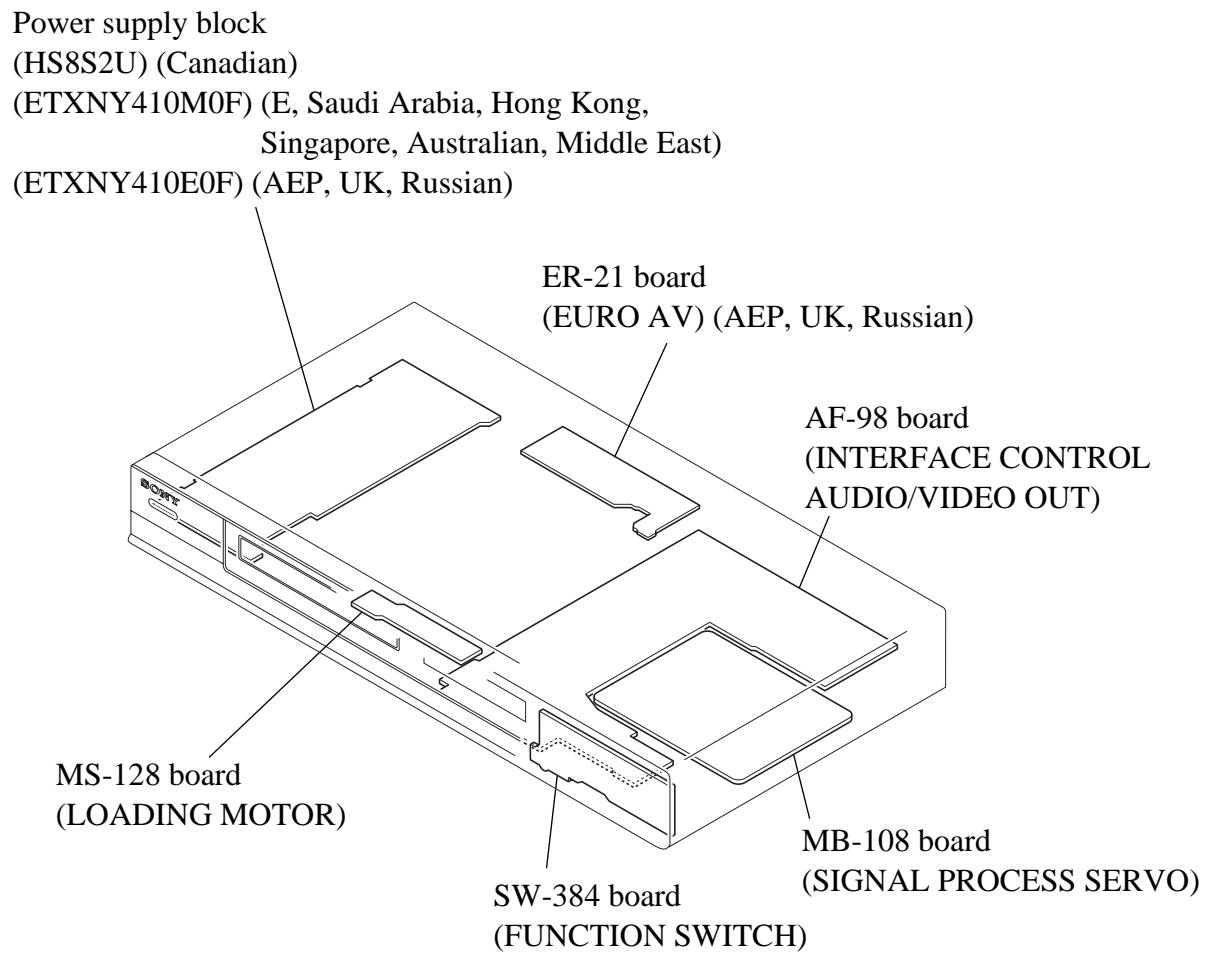
— Top view —



— Bottom view —

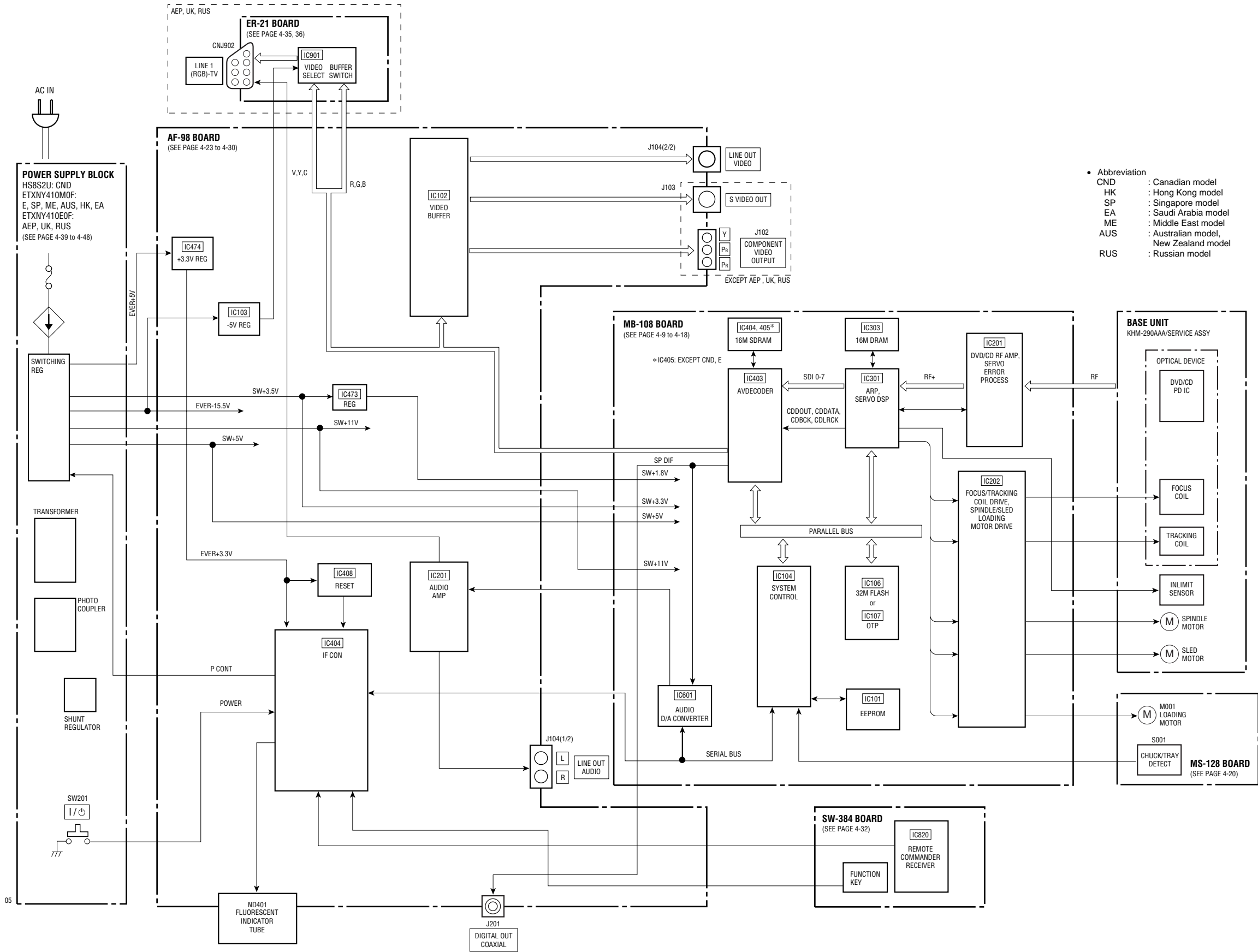


2-12. CIRCUIT BOARDS LOCATION

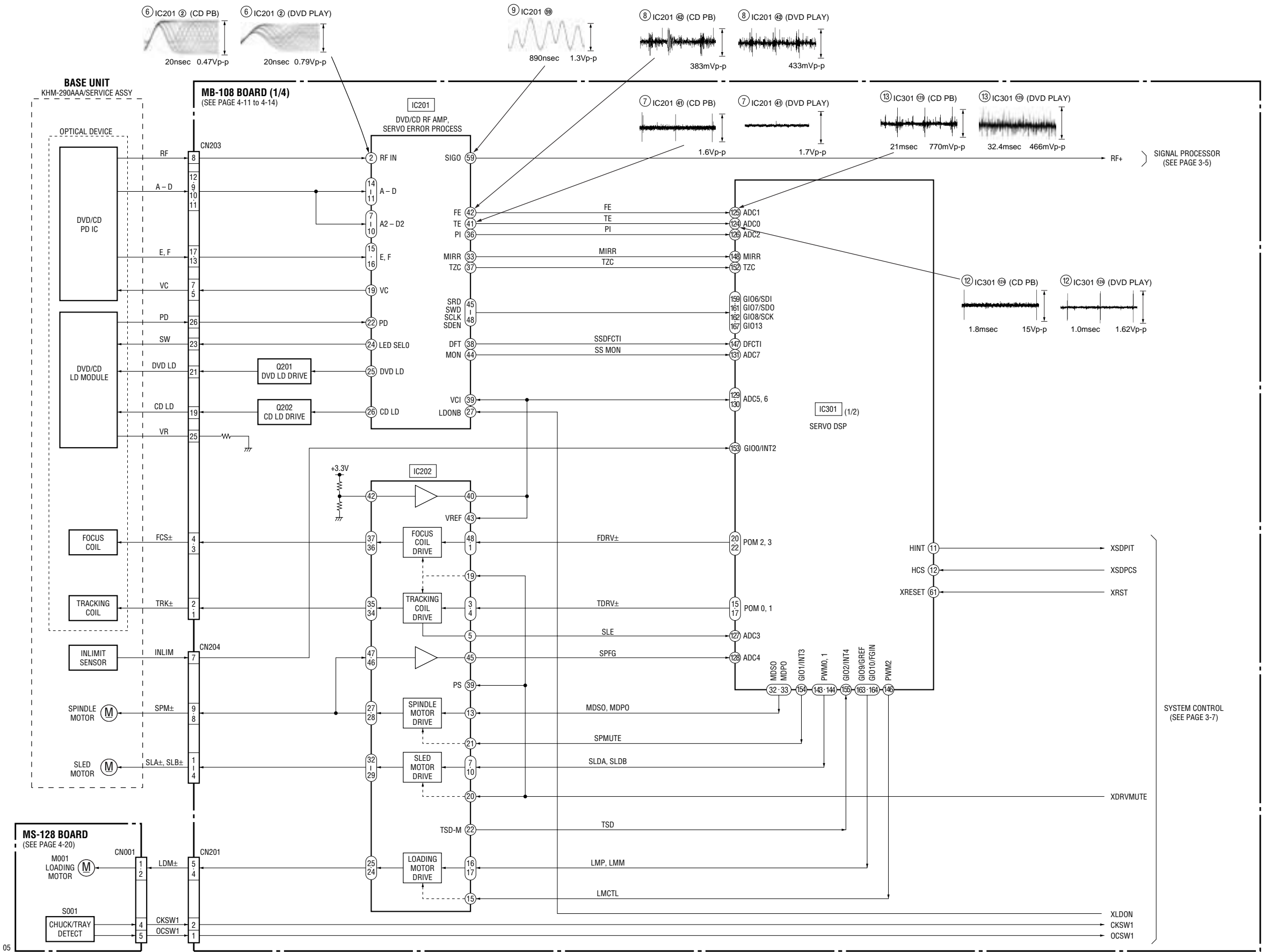


SECTION 3 BLOCK DIAGRAMS

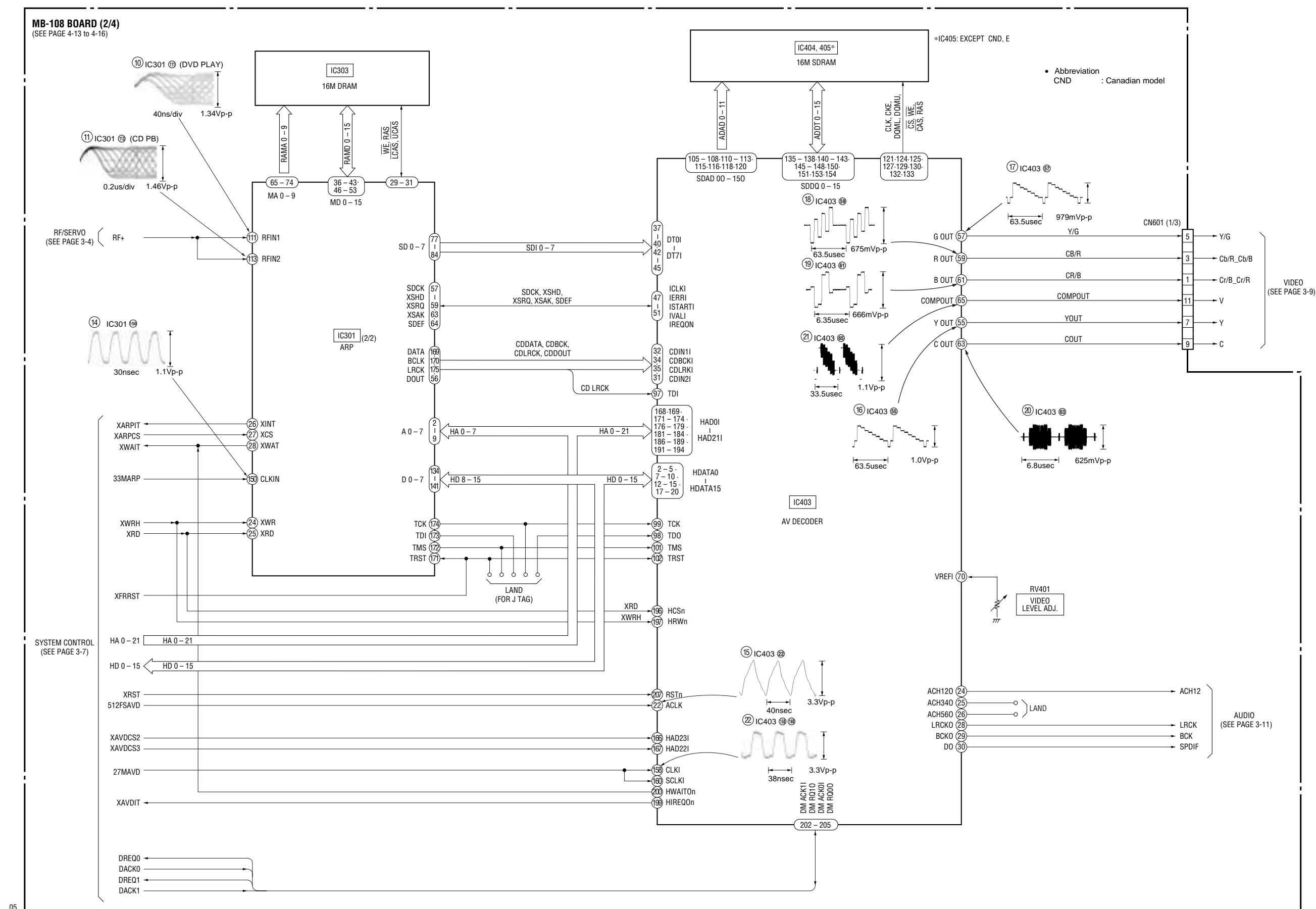
3-1. OVERALL BLOCK DIAGRAM



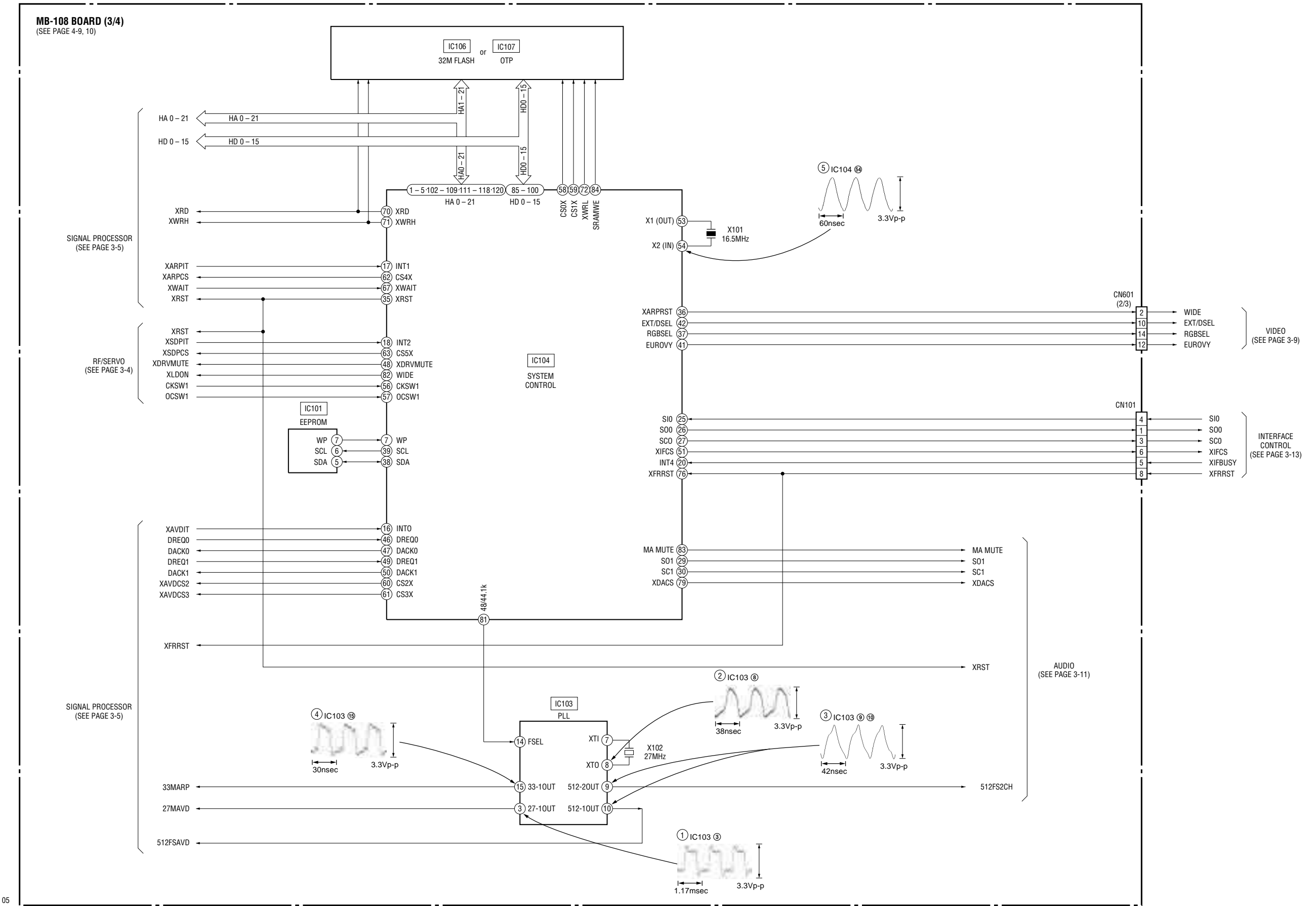
3-2. RF/SERVO BLOCK DIAGRAM



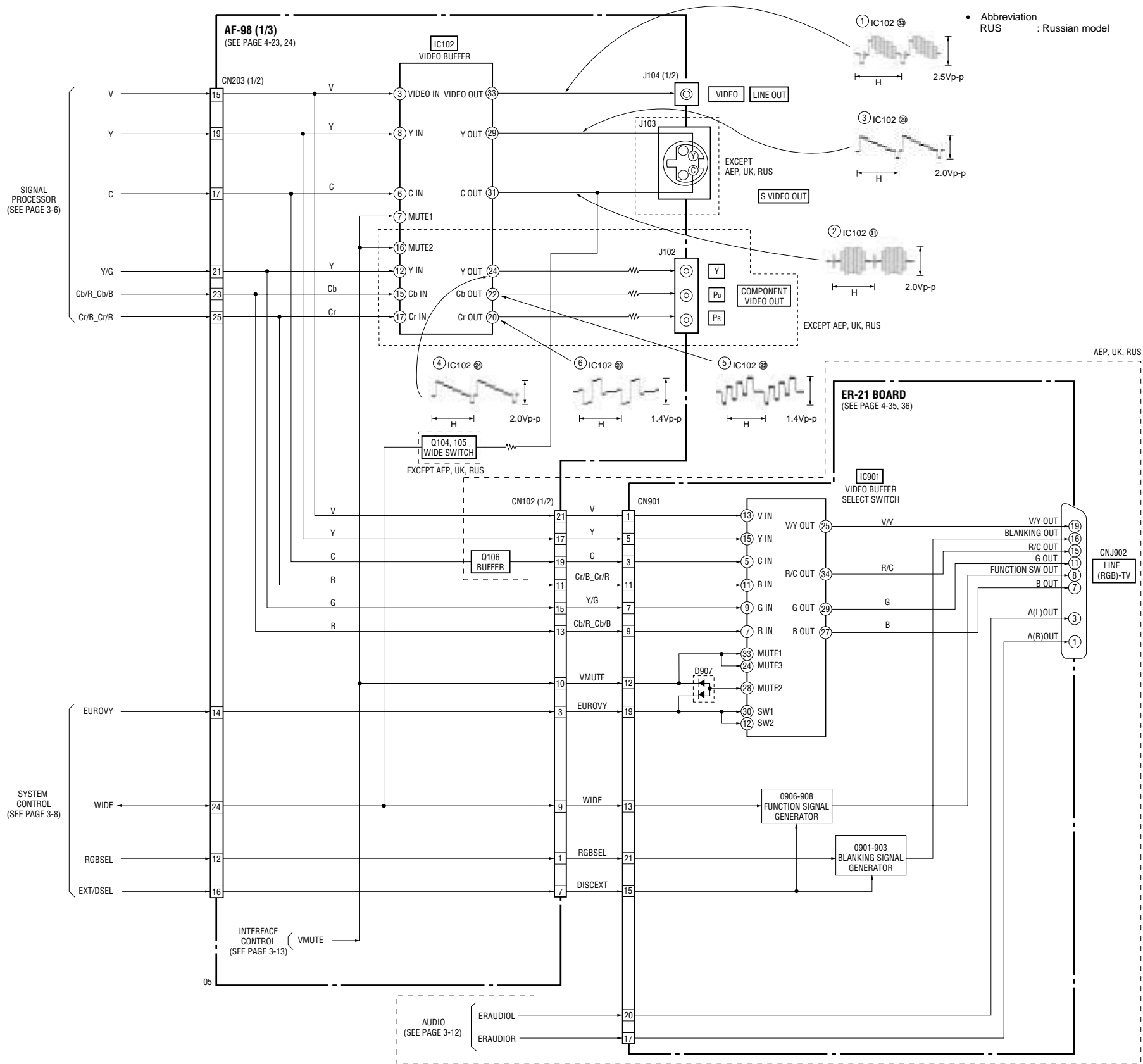
3-3. SIGNAL PROCESSOR BLOCK DIAGRAM



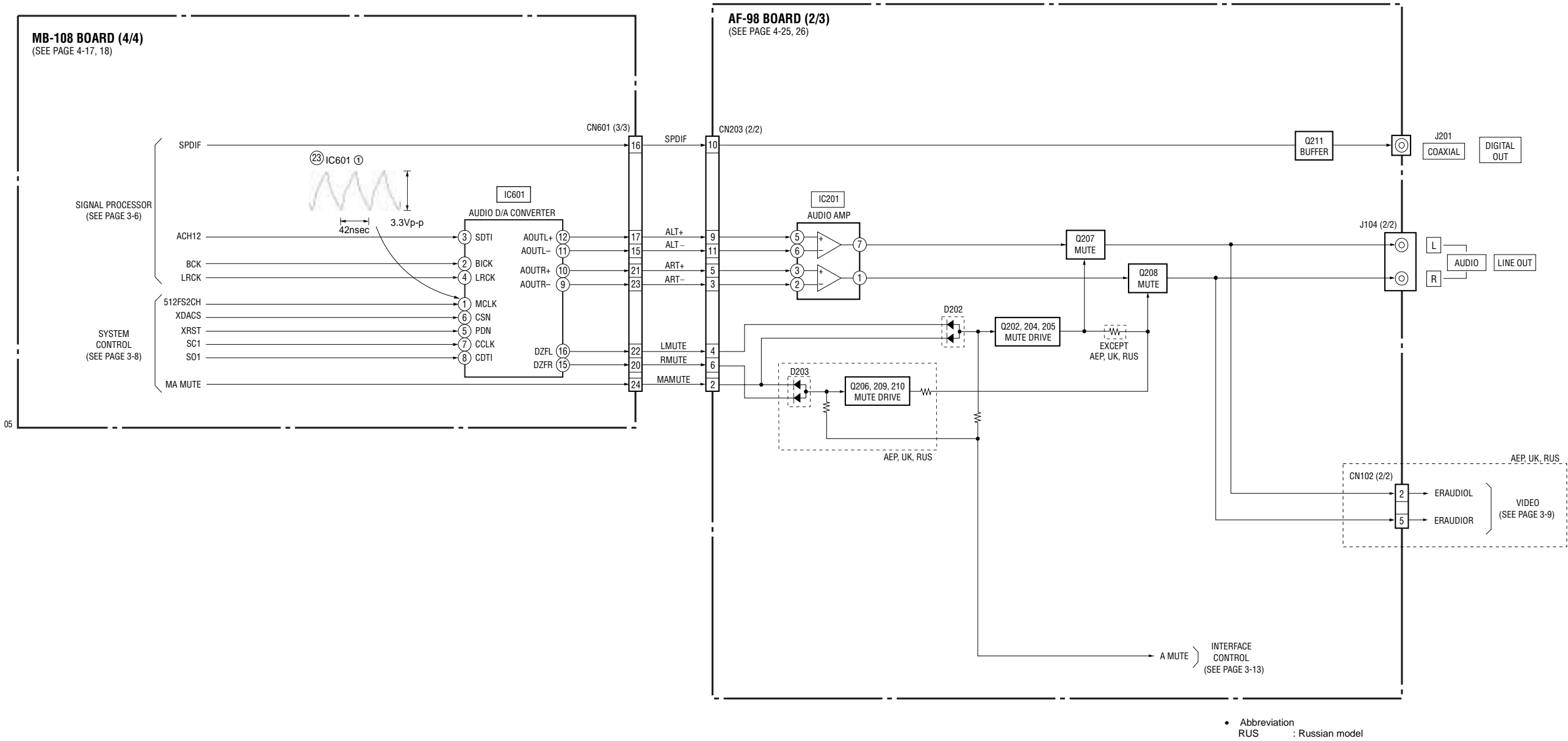
3-4. SYSTEM CONTROL BLOCK DIAGRAM



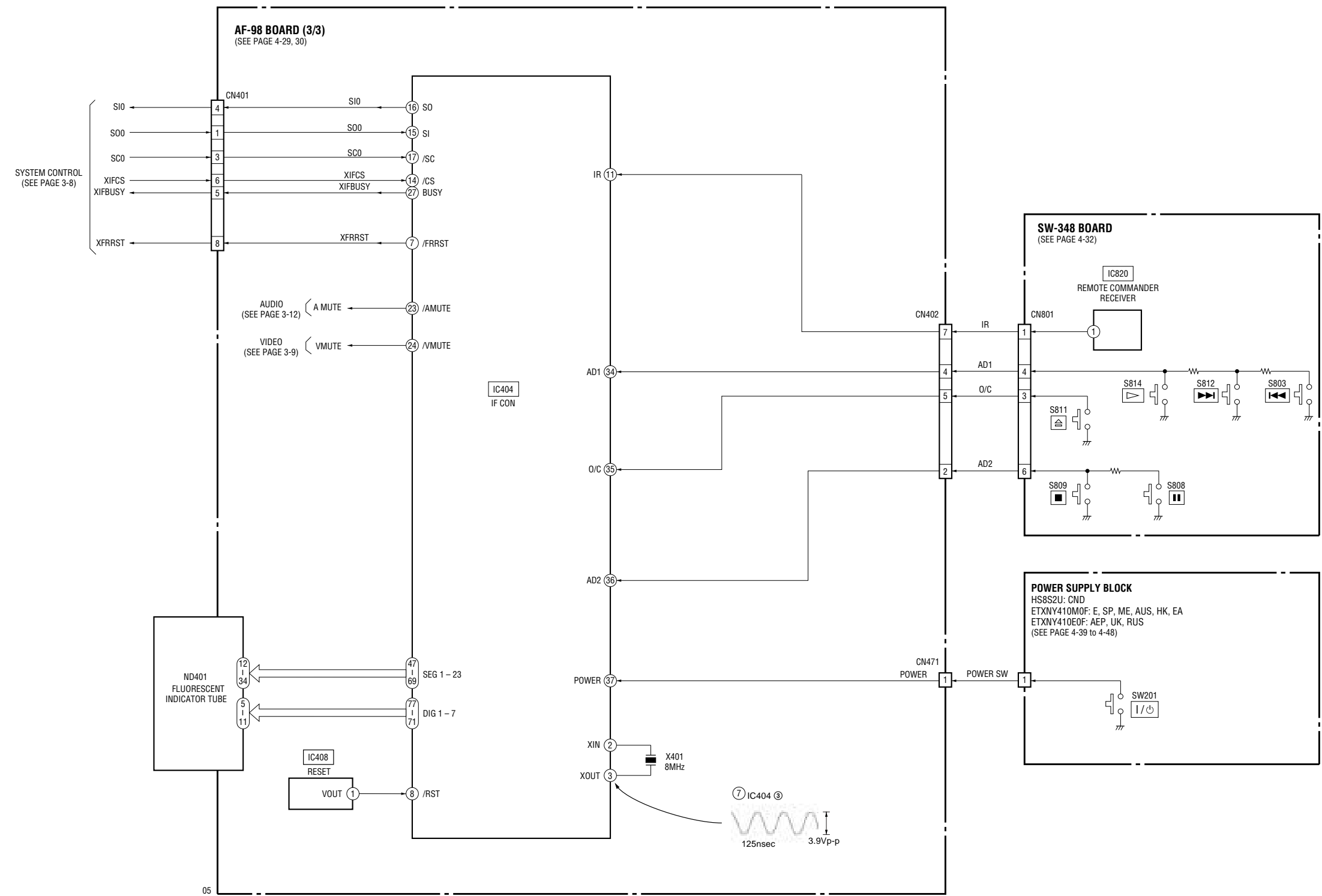
3-5. VIDEO BLOCK DIAGRAM



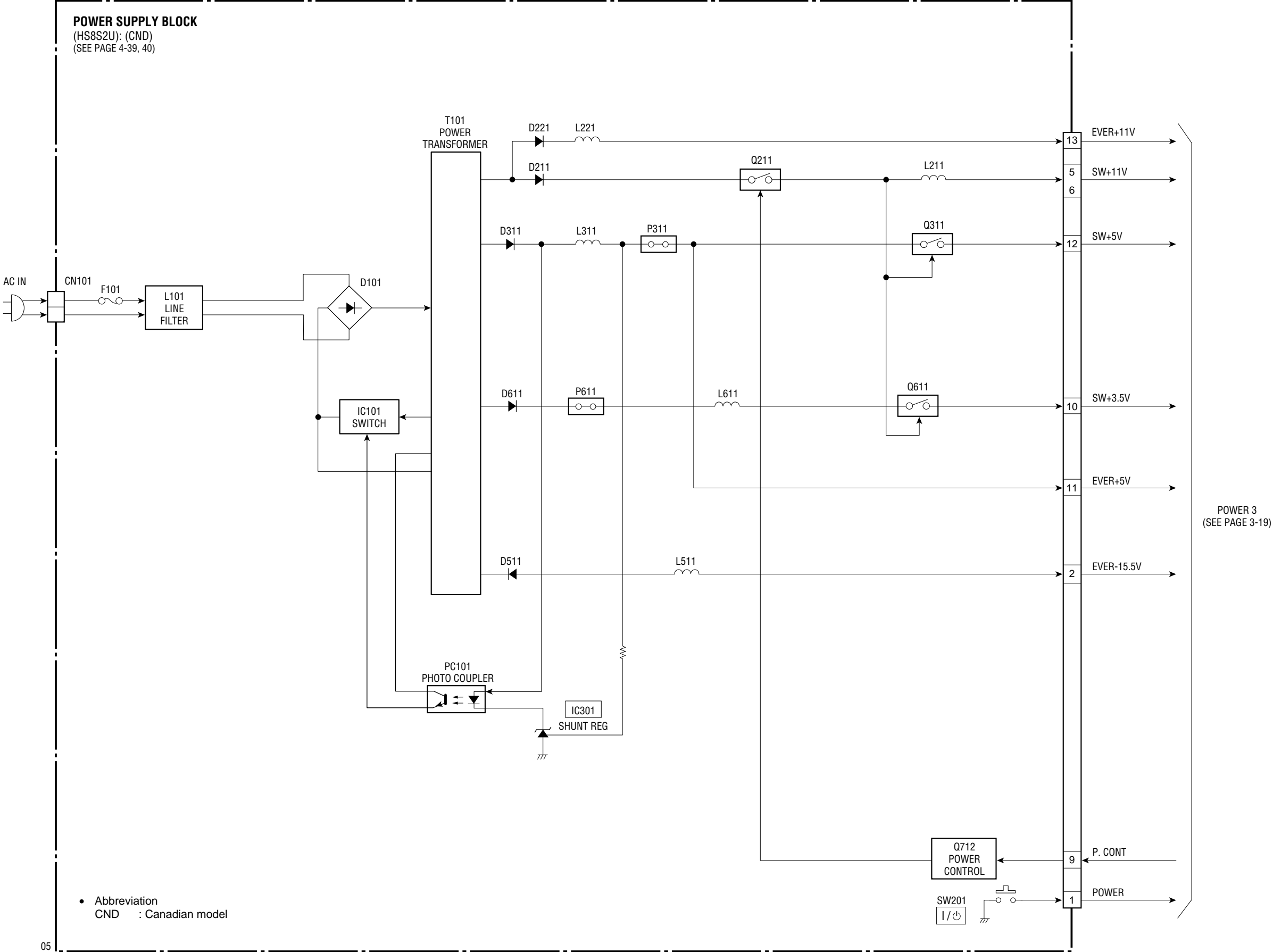
3-6. AUDIO BLOCK DIAGRAM



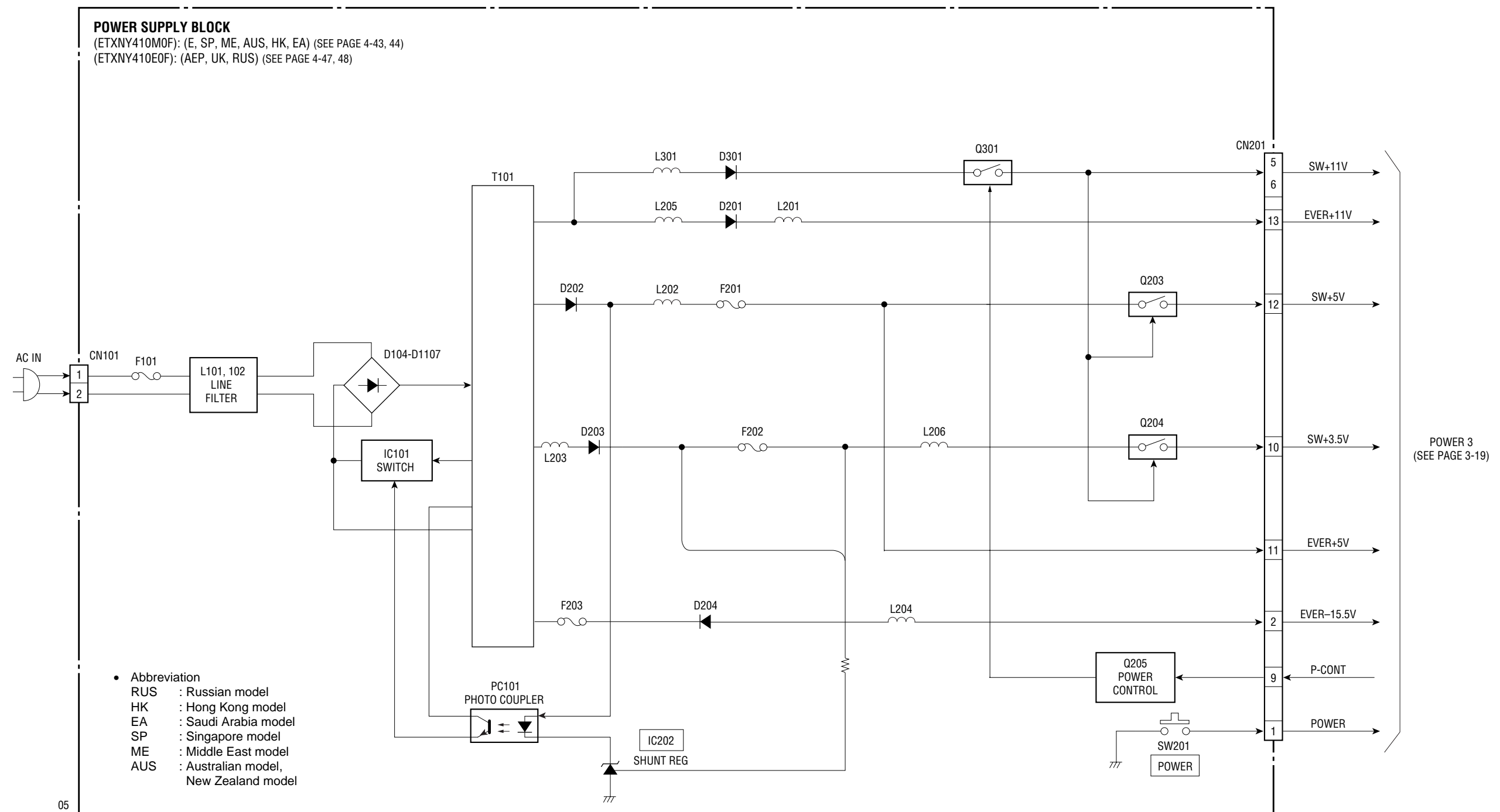
3-7. INTERFACE CONTROL BLOCK DIAGRAM



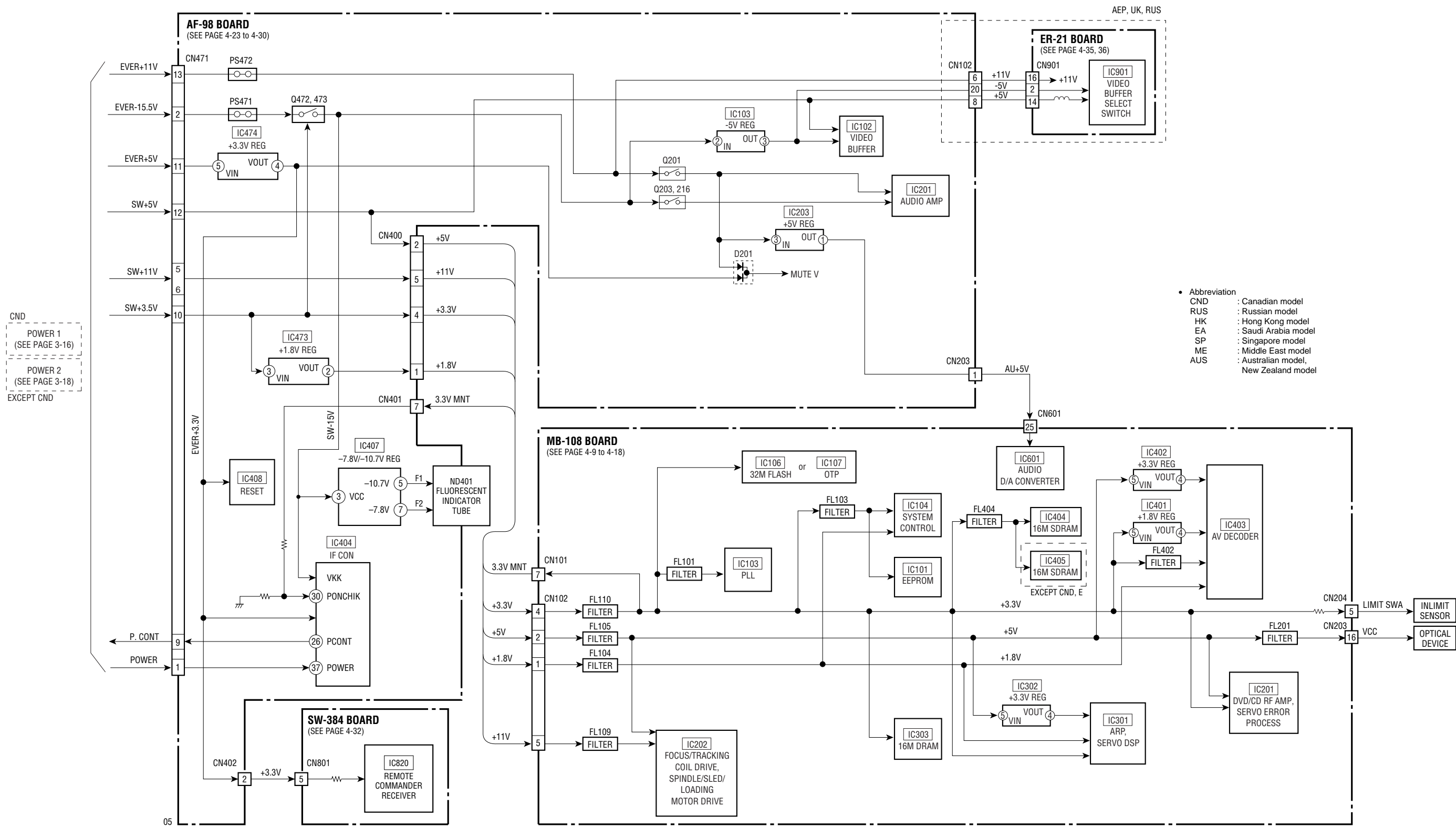
3-8. POWER 1 BLOCK DIAGRAM



3-9. POWER 2 BLOCK DIAGRAM



3-10. POWER 3 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 note 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:

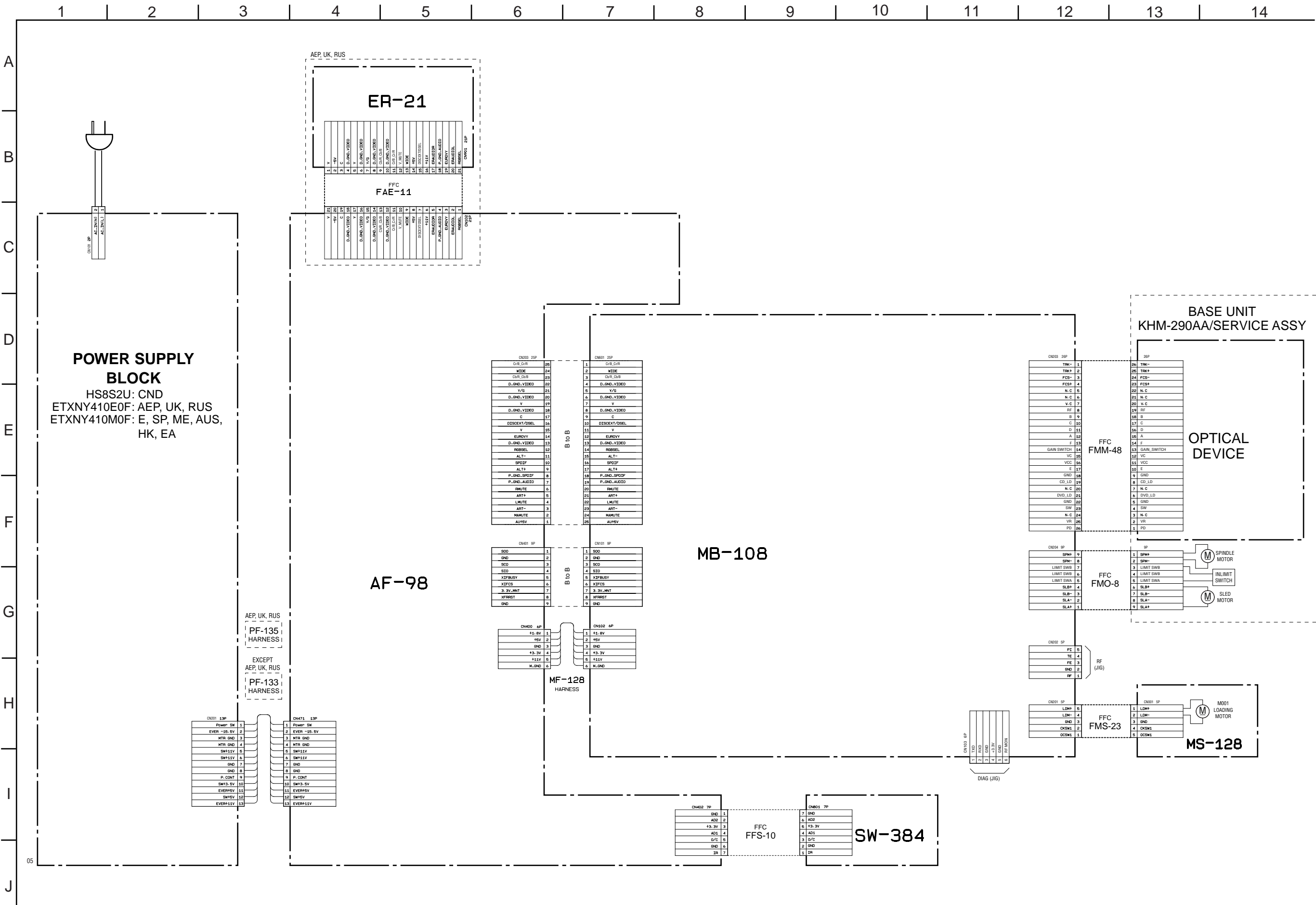
- Caution when replacing chip parts.
 New parts must be attached after removal of chip.
 Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, $\frac{1}{4}$ W (Chip resistors : $\frac{1}{10}$ W) unless otherwise specified.
 k Ω : 1000 Ω , M Ω : 1000k Ω .
- All capacitors are in μ F unless otherwise noted. pF : μ F 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+ Line.
-  : B- Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10M Ω).
- Voltage variations may be noted due to normal production tolerances.

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

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

- Abbreviation
 CND : Canadian model
 HK : Hong Kong model
 SP : Singapore model
 EA : Saudi Arabia model
 ME : Middle East model
 AUS : Australian model,
 New Zealand model
 RUS : Russian model


4-1. FRAME SCHEMATIC DIAGRAM



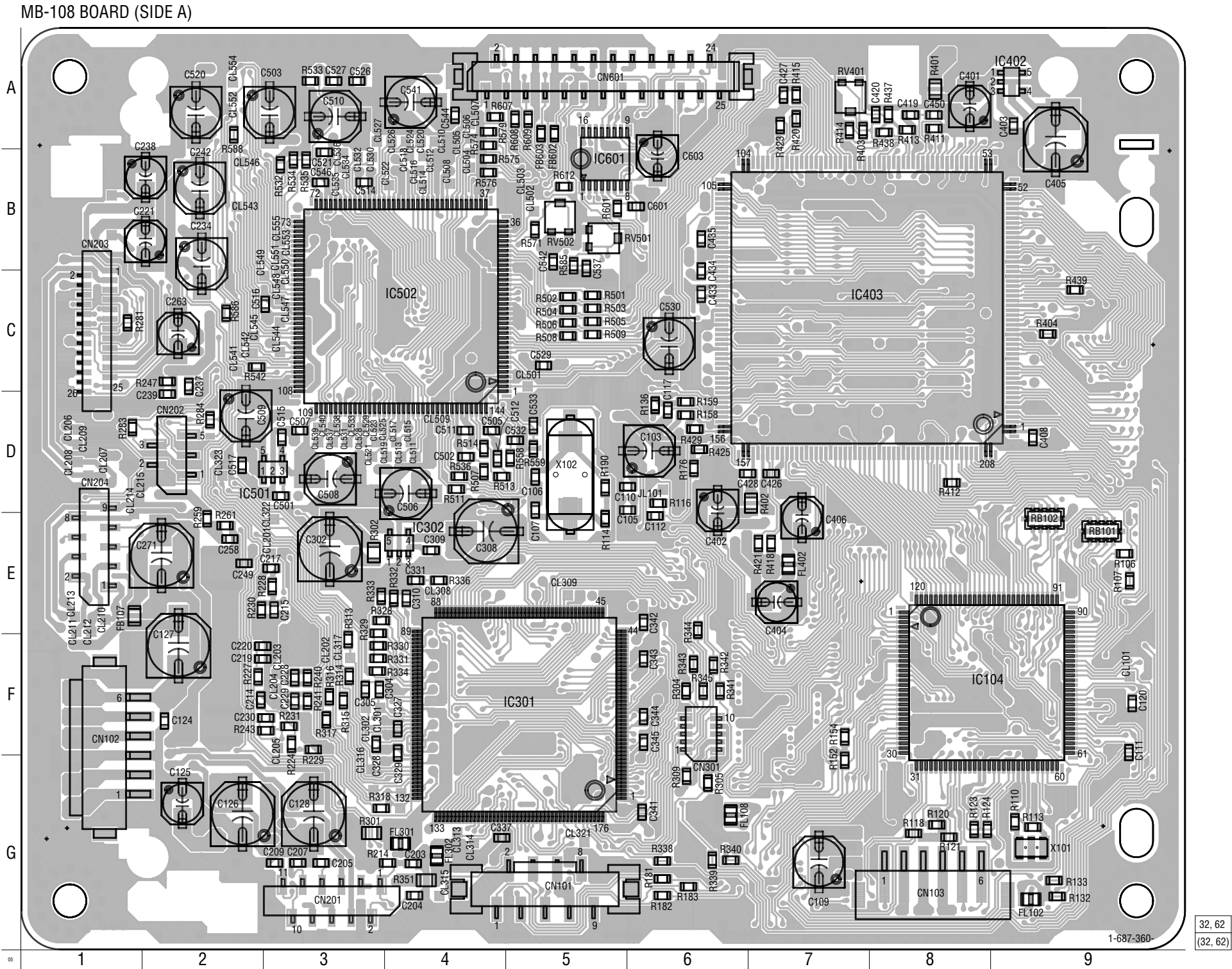
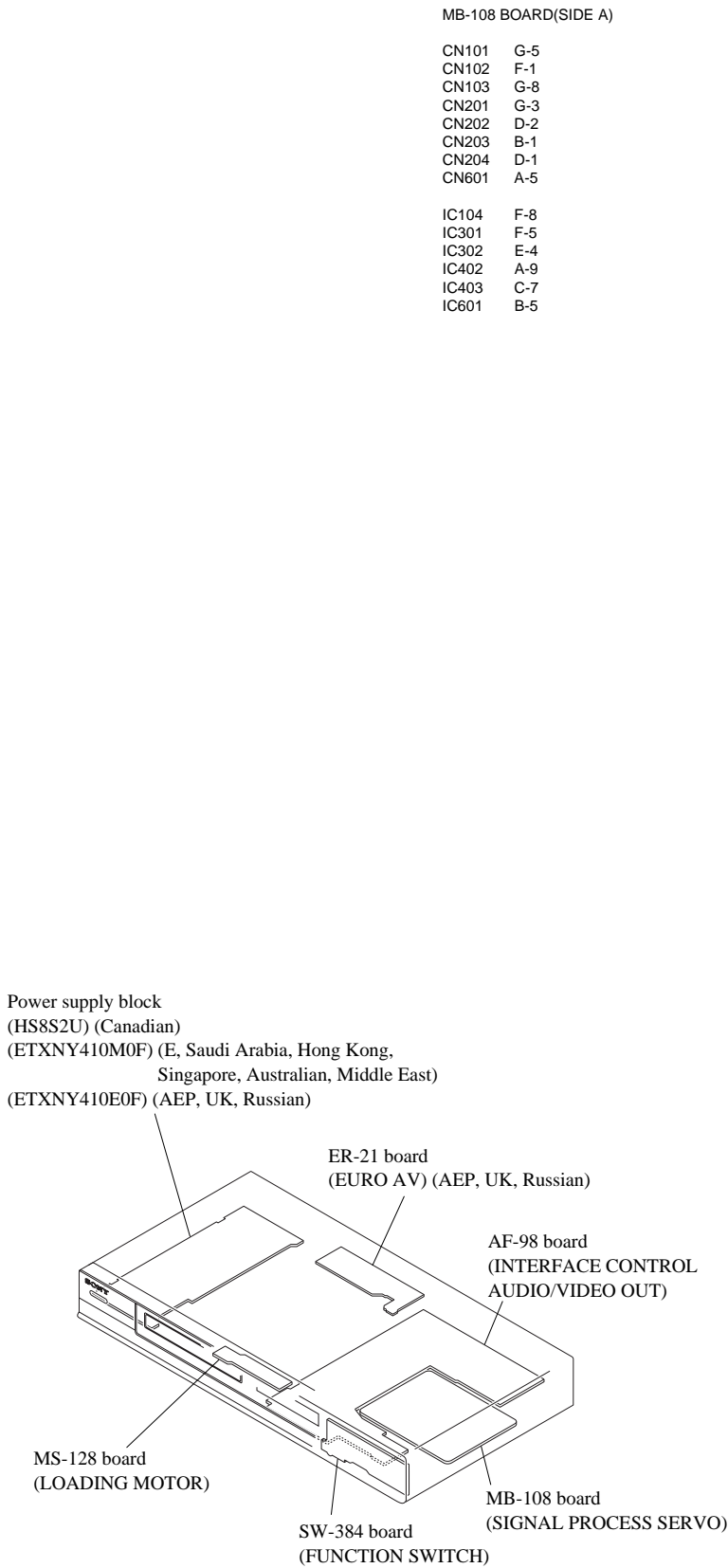
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

MB-108 (SIGNAL PROCESS, SERVO) PRINTED WIRING BOARD

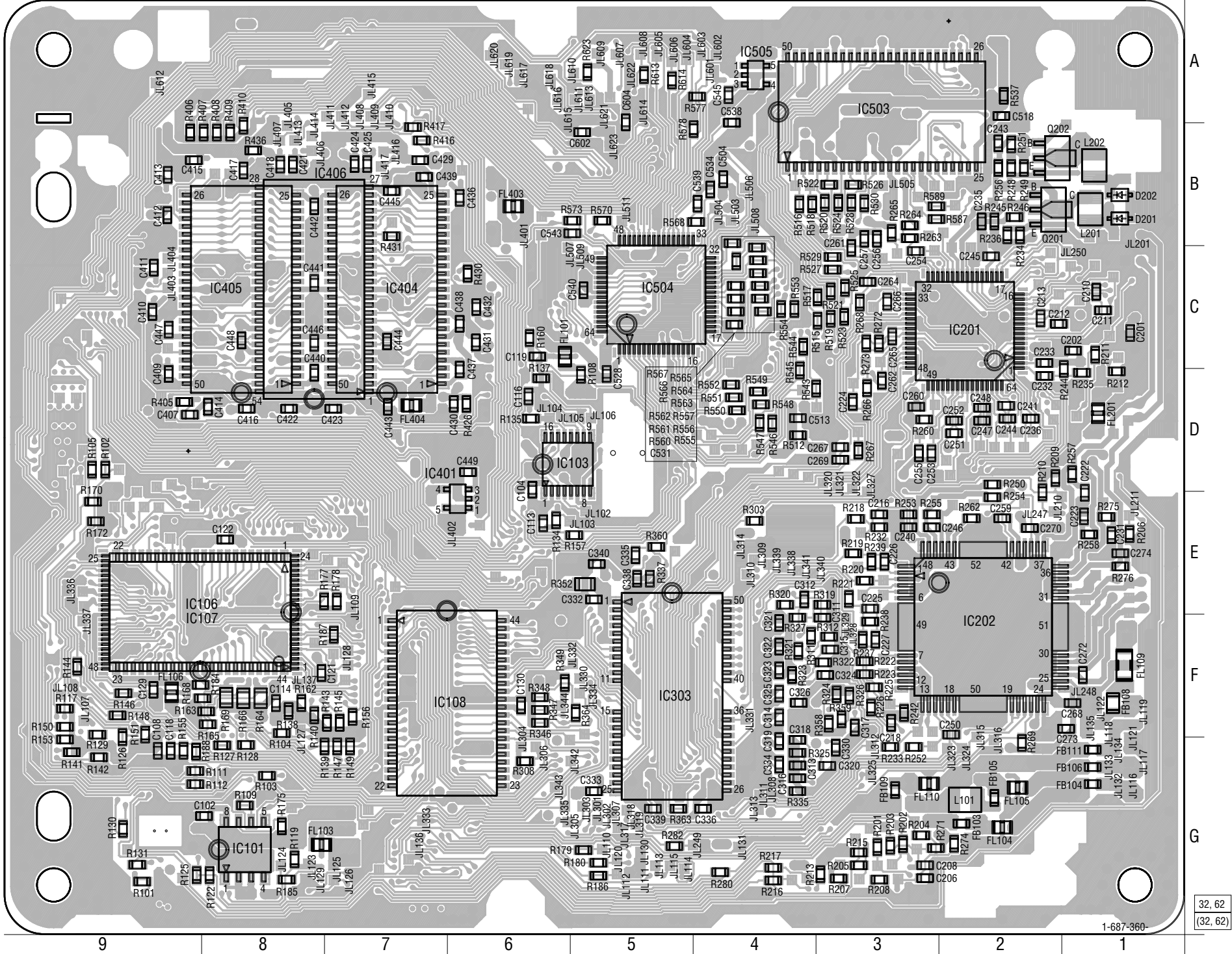
– Ref. No.: MB-108 board; 1,000 series –

: Uses unleaded solder.

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



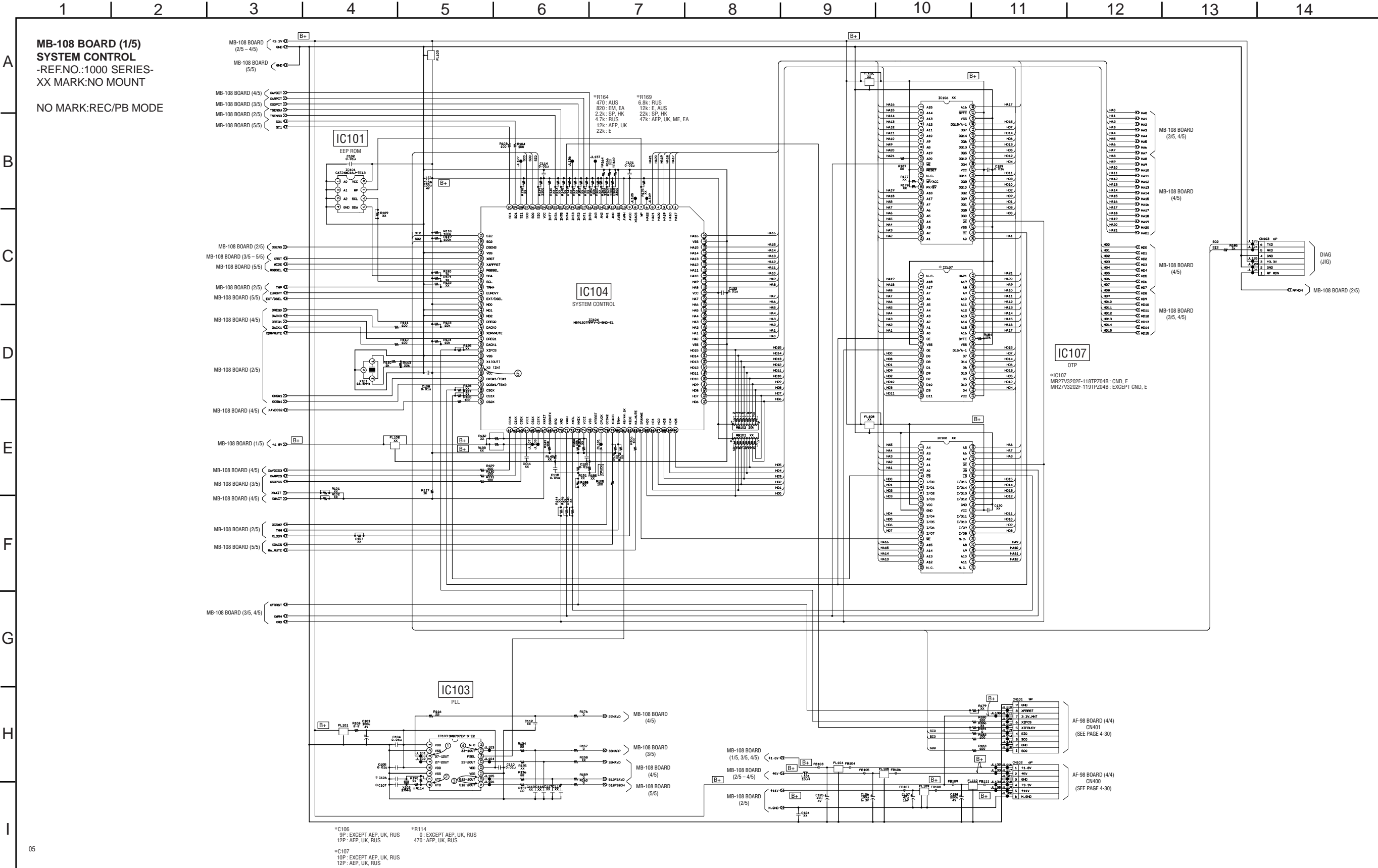
MB-108 BOARD (SIDE B)



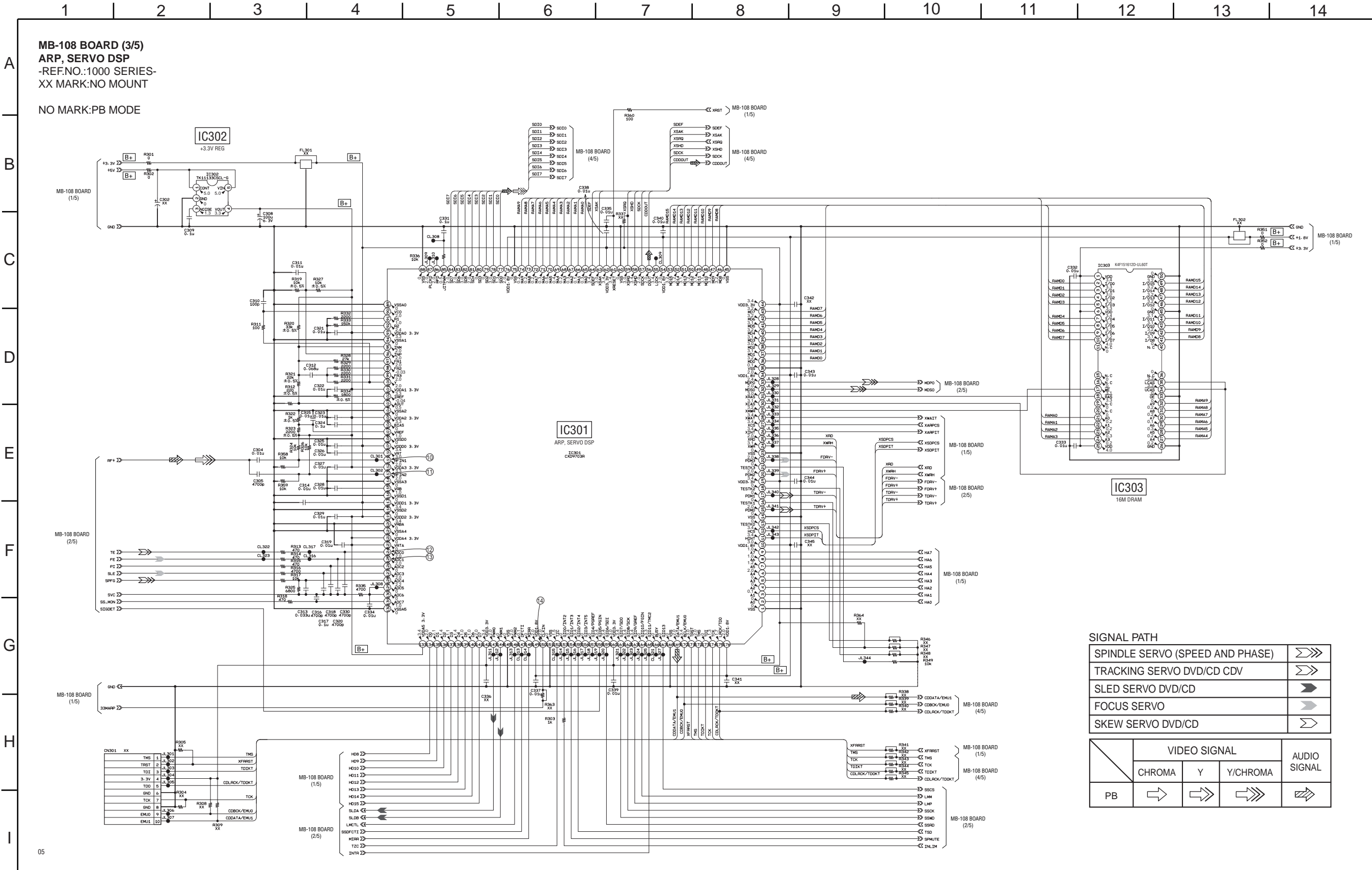
MB-108 BOARD(SIDE B)

IC101	G-8
IC103	D-6
IC107	E-9
IC201	C-2
IC202	F-2
IC303	F-5
IC401	D-7
IC404	C-7
IC405	C-8
Q201	B-2
Q202	B-2

MB-108 (SYSTEM CONTROL) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board, and see page 4-49 for waveforms.
– Ref. No.: MB-108 board; 1,000 series –

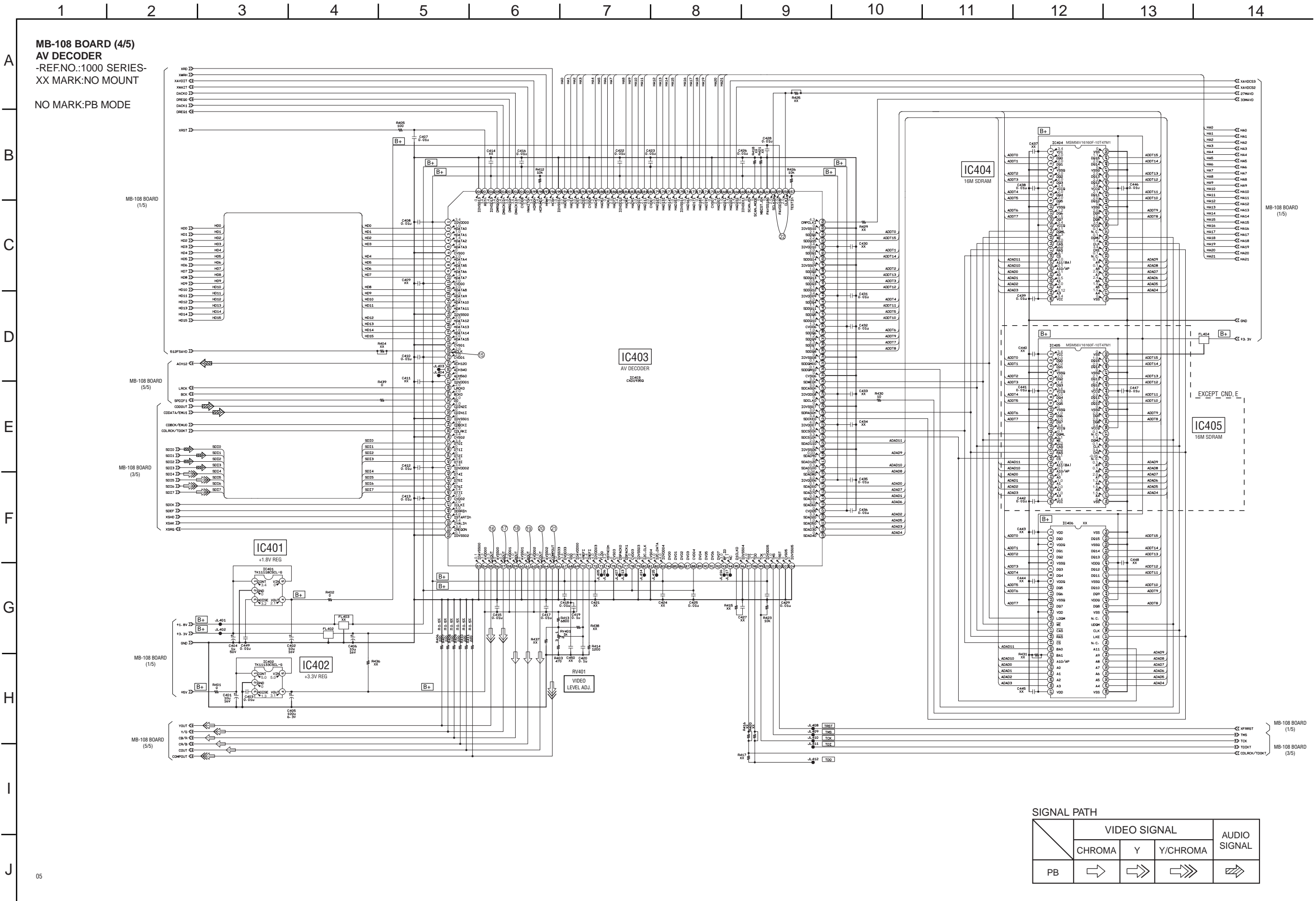


MB-108 (ARP, SERVO DSP) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board, and see page 4-49 for waveforms.
– Ref. No.: MB-108 board; 1,000 series –

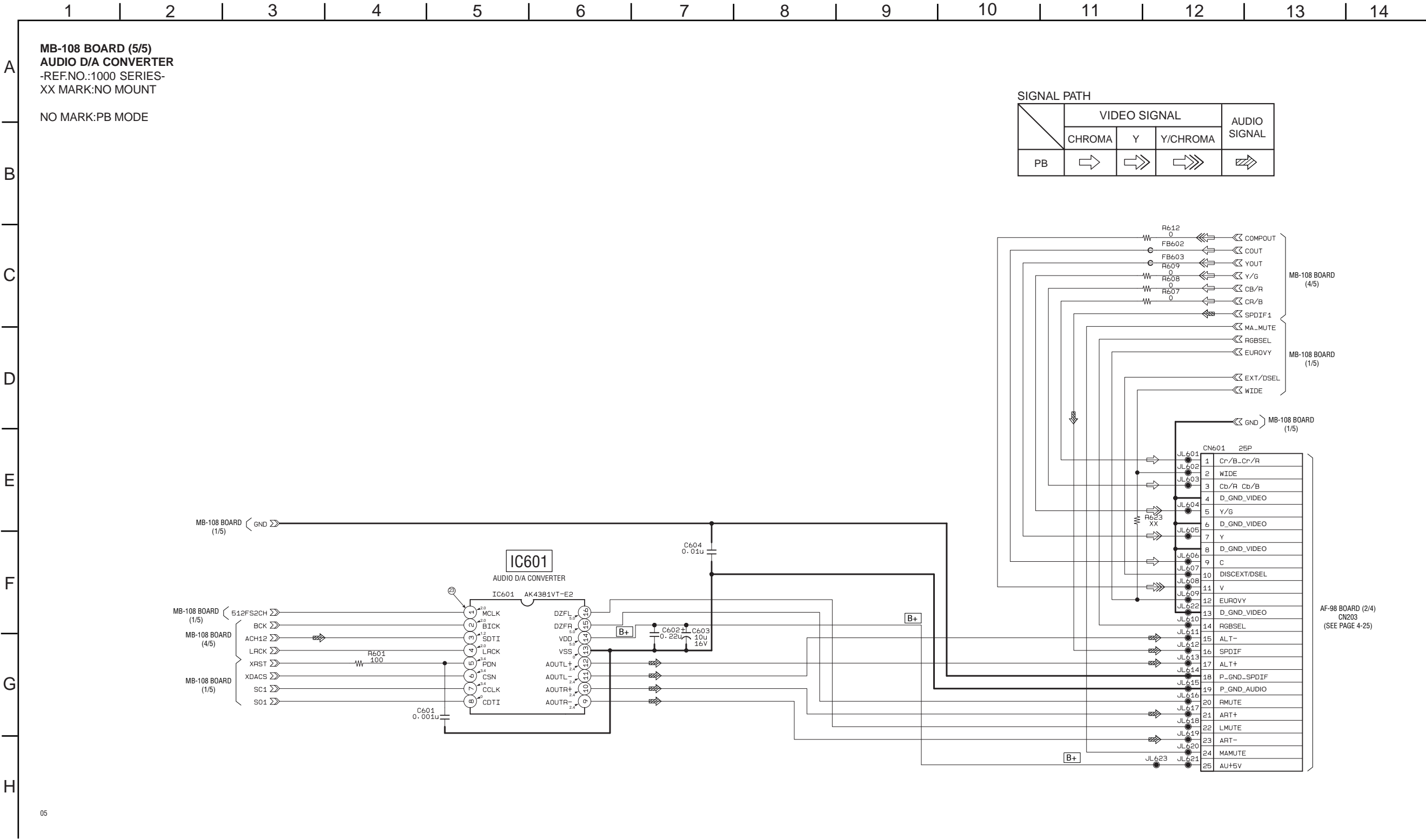


MB-108 (AV DECODER) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board, and see page 4-49 for waveforms.

– Ref. No.: MB-108 board; 1,000 series –



MB-108 (AUDIO D/A CONVERTER) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board, and see page 4-49 for waveforms.
– Ref. No.: MB-108 board; 1,000 series –



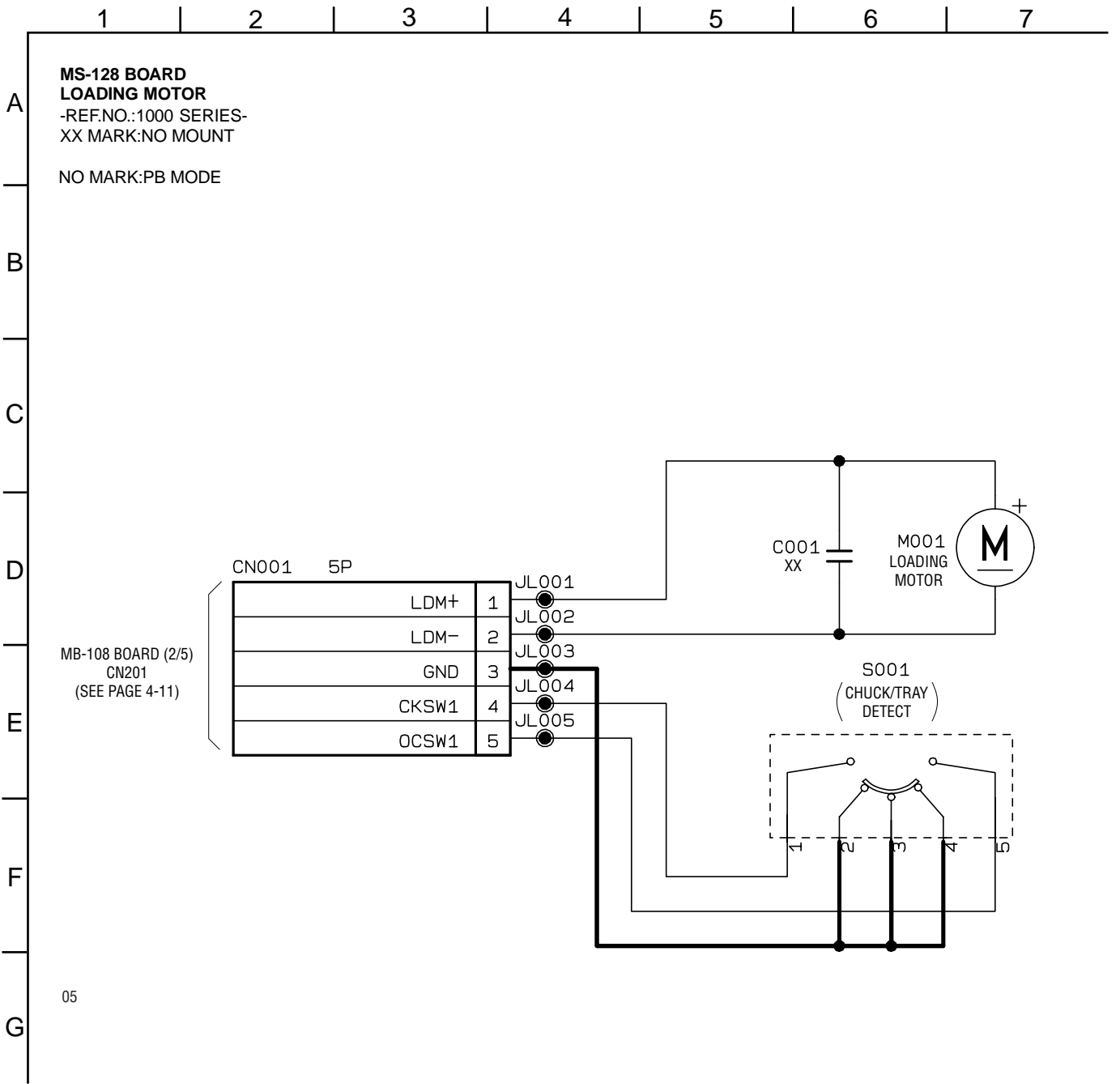
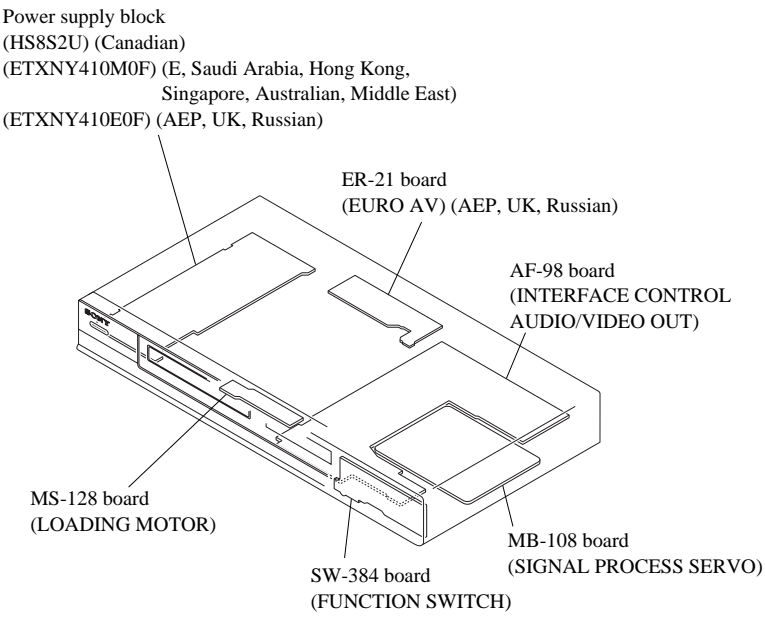
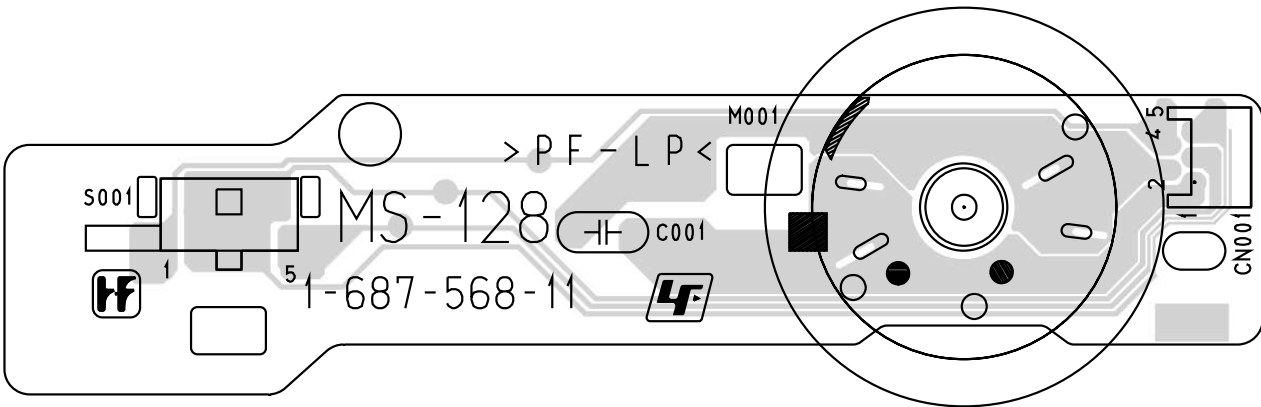
MS-128 (LOADING MOTOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: MS-128 board; 1,000 series –

: Uses unleaded solder.


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

MS-128 BOARD



AF-98 (INTERFACE CONTROL AUDIO/VIDEO OUT) PRINTED WIRING BOARD

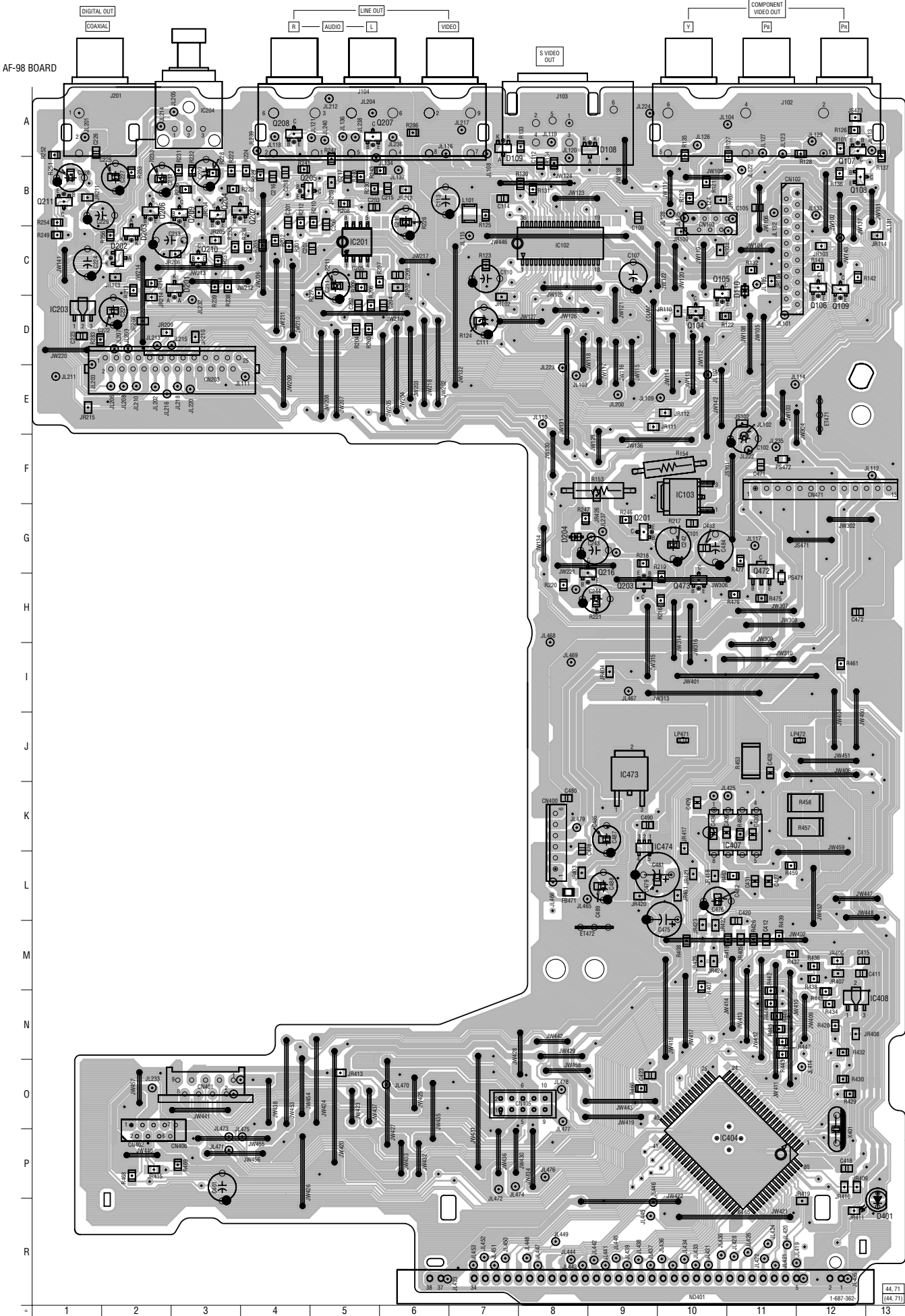
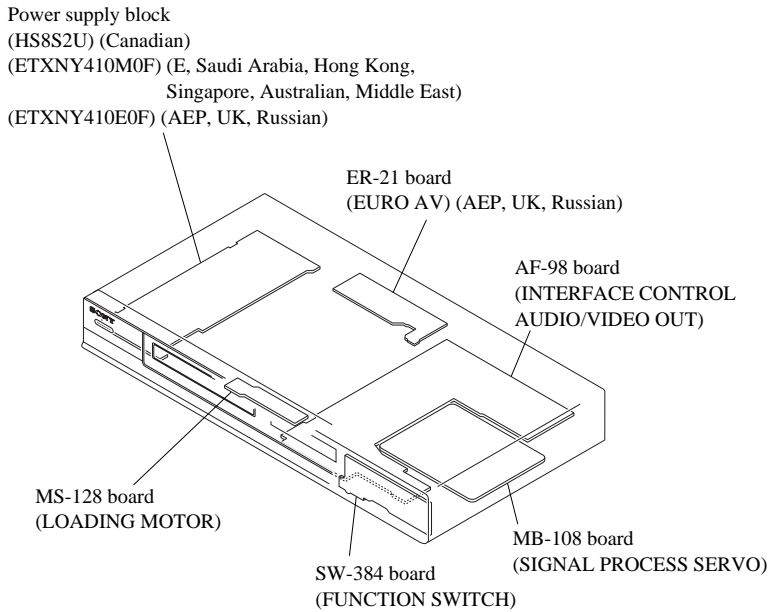
– Ref. No.: AF-98 board; 2,000 series –

: Uses unleaded solder.

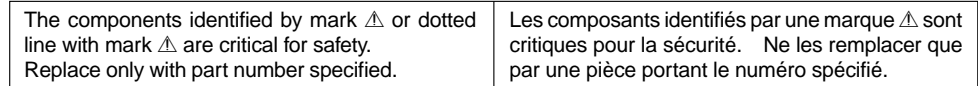
There are a few cases that the part isn't mounted in this model is printed on this diagram.

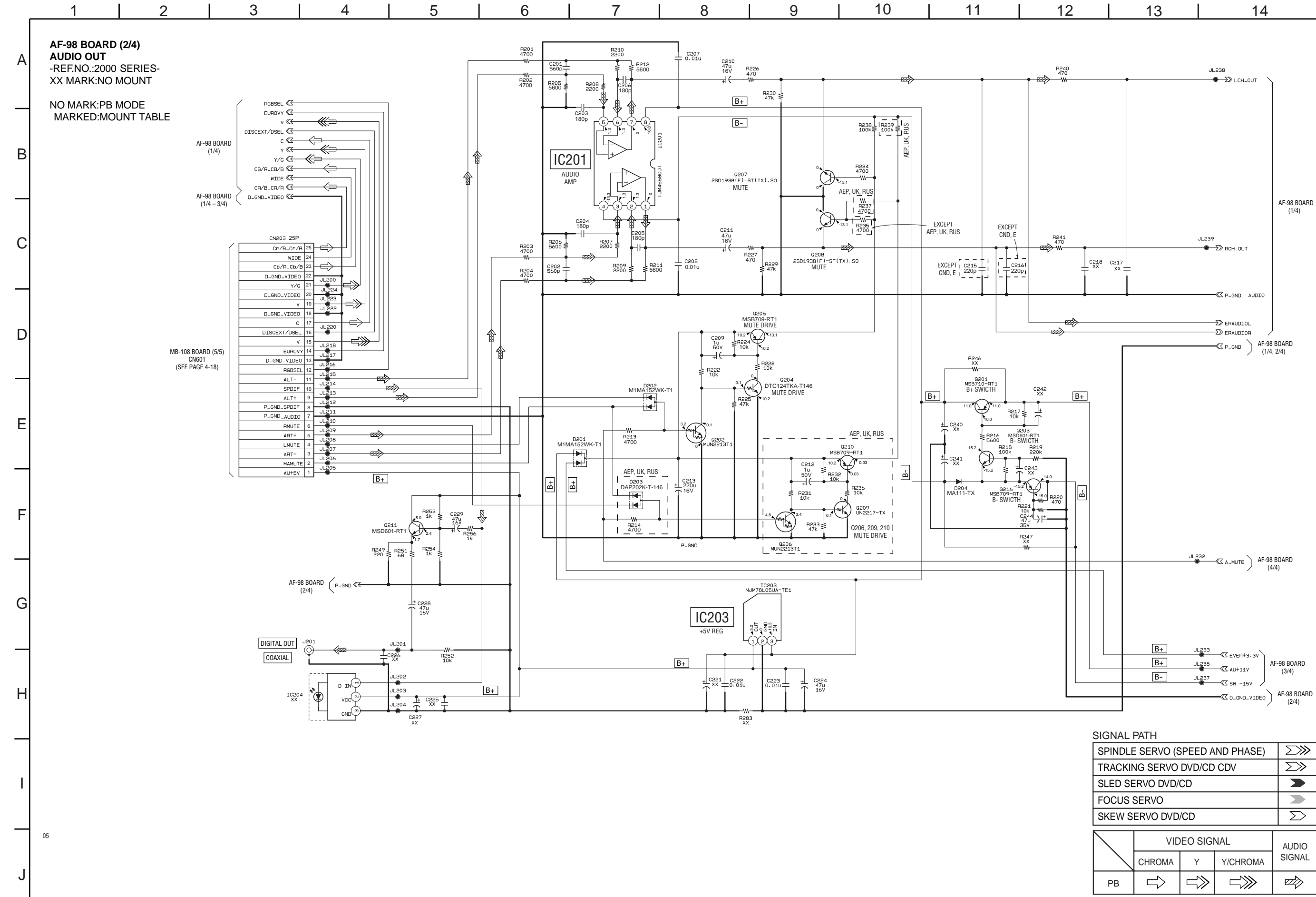
AF-98 BOARD

CN102	B-12
CN203	E-3
CN400	K-8
CN401	O-3
CN402	P-2
CN471	F-12
D108	A-9
D109	A-7
D201	C-3
D202	C-2
D203	C-2
D204	G-8
IC102	C-8
IC103	F-10
IC201	C-5
IC203	D-1
IC404	P-11
IC407	K-10
IC408	N-12
IC473	J-9
IC474	K-10
Q104	D-10
Q105	C-10
Q106	D-11
Q201	G-8
Q202	D-4
Q203	H-9
Q204	B-3
Q205	B-5
Q206	B-2
Q207	A-6
Q208	A-4
Q209	B-3
Q210	C-3
Q211	B-11
Q216	H-9
Q472	G-11
Q473	H-10

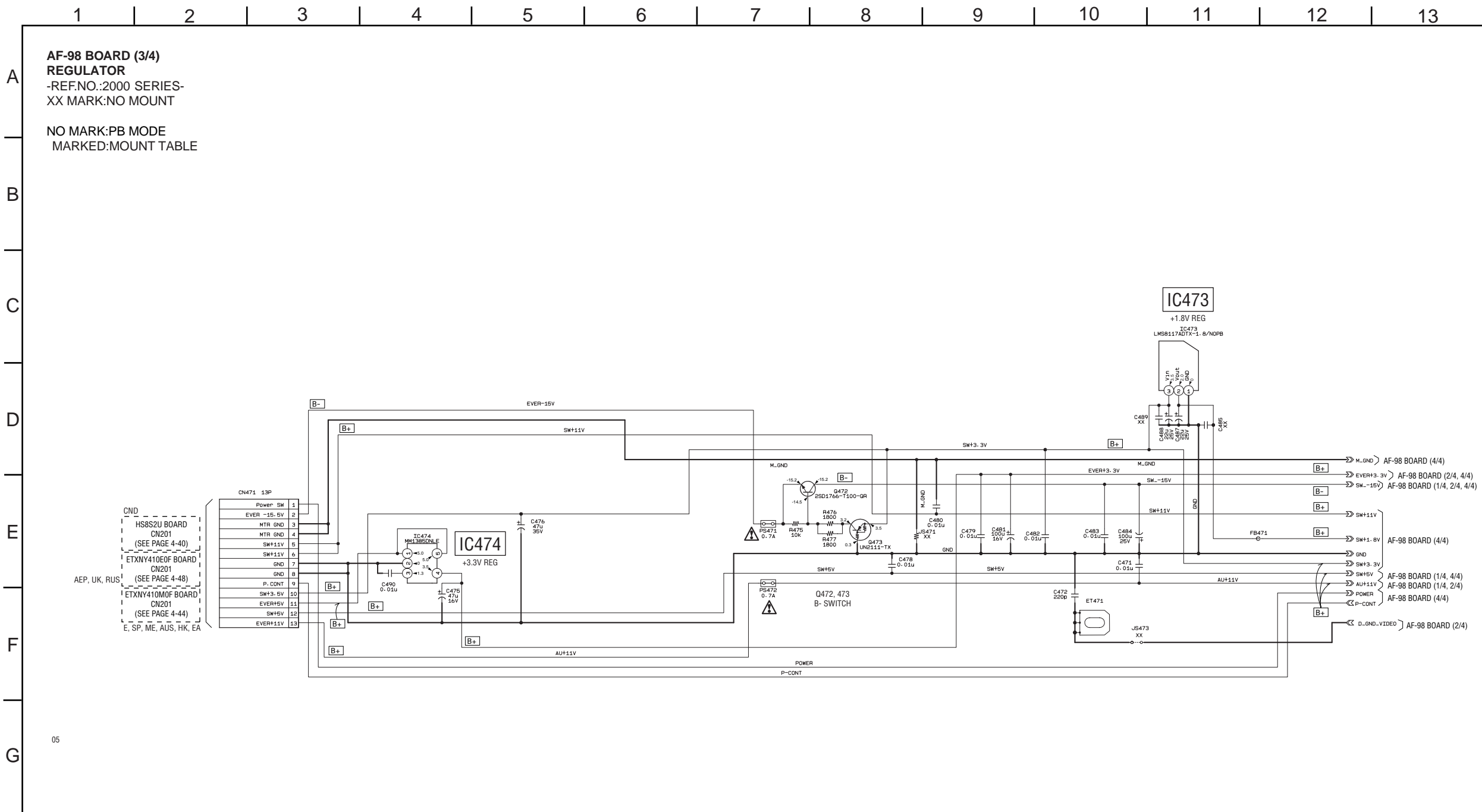


– Ref. No.: AF-98 board; 2,000 series –





AF-98 (REGULATOR) SCHEMATIC DIAGRAM • See page 4-21 for printed wiring board.
– Ref. No.: AF-98 board; 2,000 series –

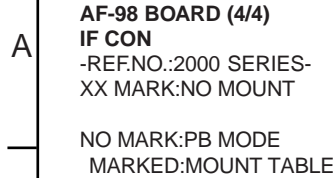


The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

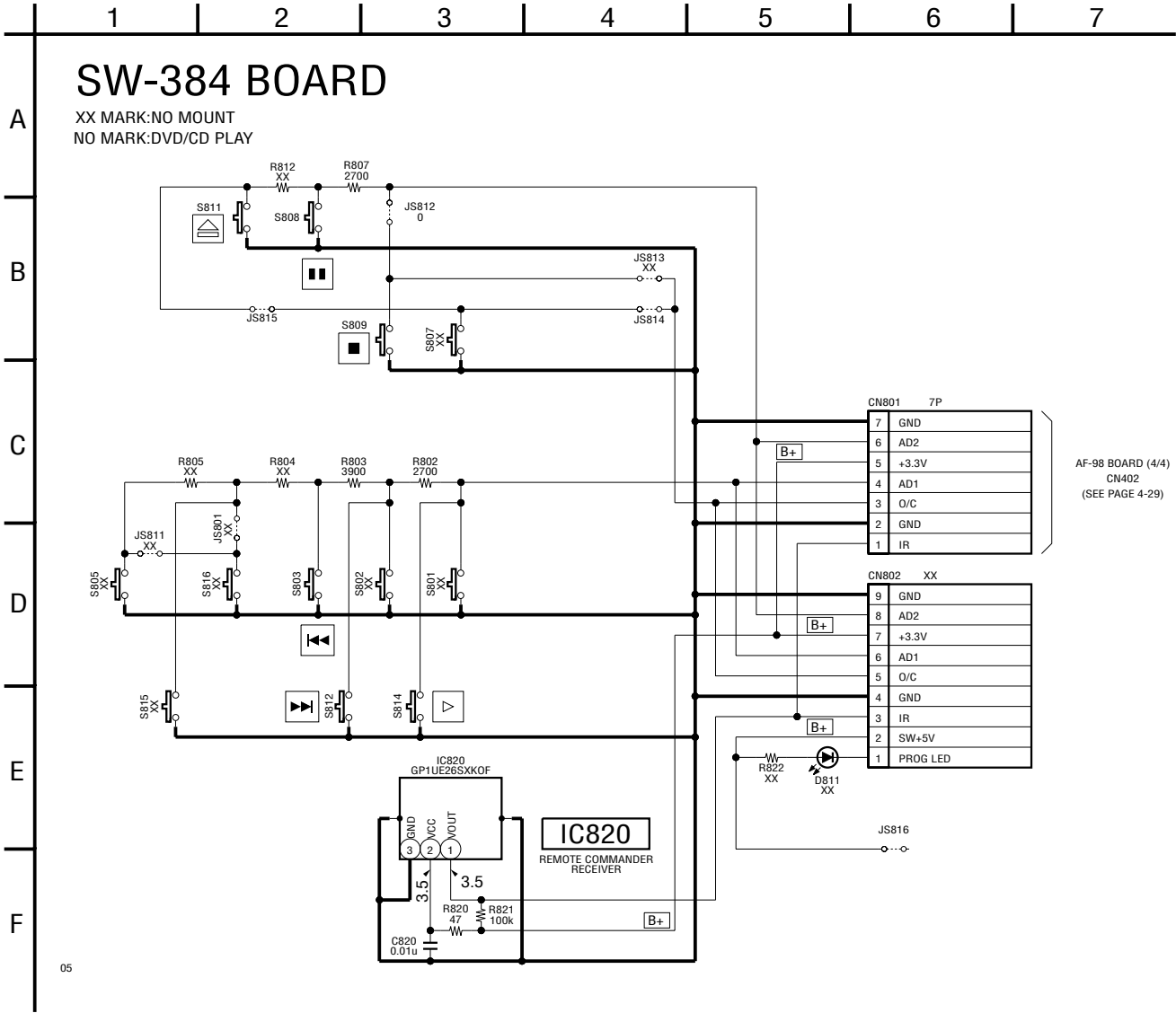
Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

4-29

4-30



SW-384 (FUNCTION SWITCH) SCHEMATIC DIAGRAM
– Ref. No.: SW-384 board; 1,000 series –




Note: Printed wiring board of the SW-384 board is not shown.

ER-21 (EURO AV) PRINTED WIRING BOARD

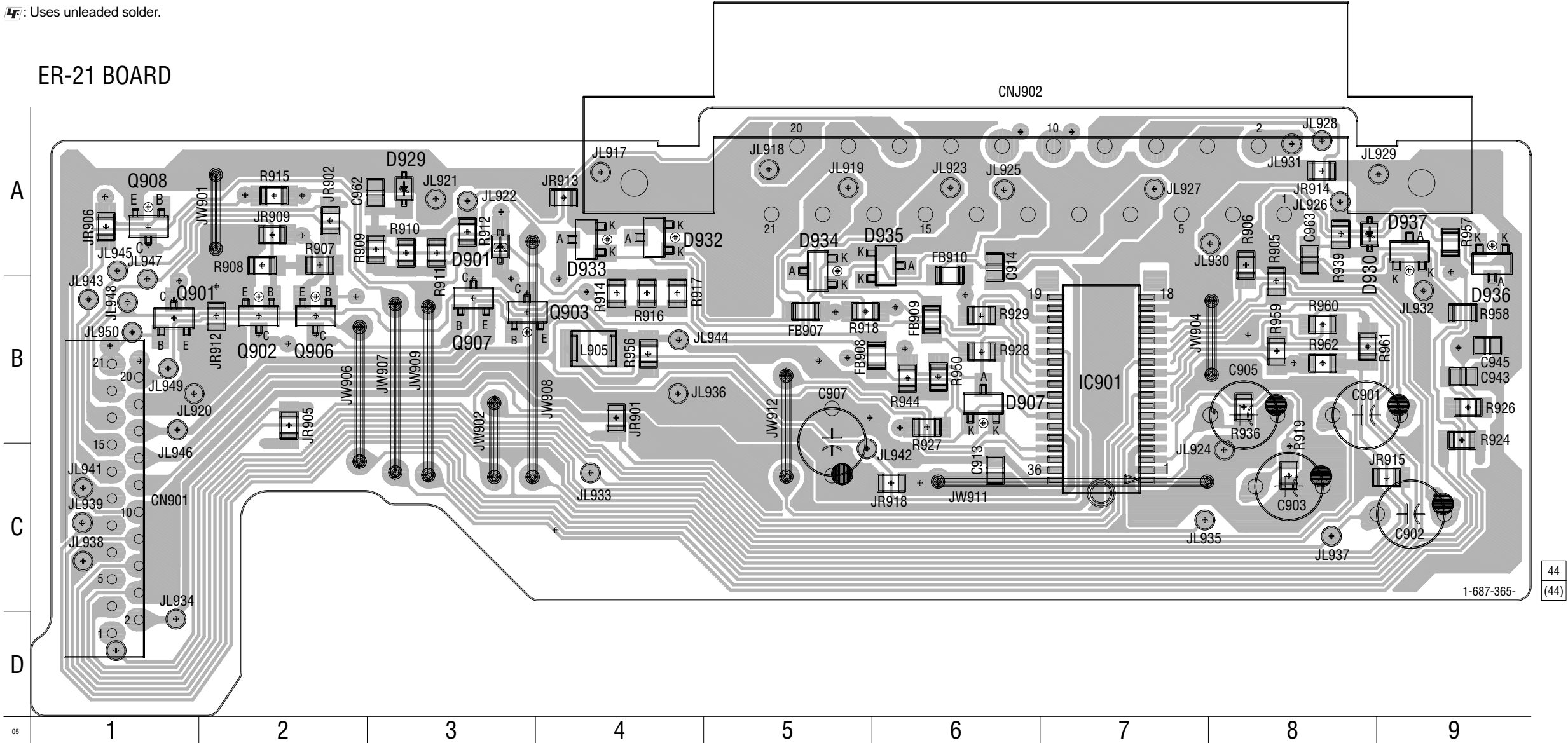
– Ref. No.: ER-21 board; 9,000 series –

– AEP, UK, RUS –

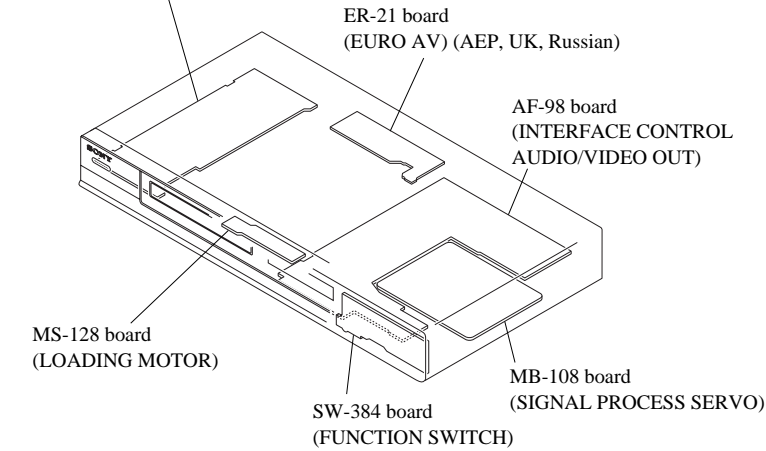
 : Uses unleaded solder.

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

LINE (RGB) -TV



Power supply block
(HS8S2U) (Canadian)
(ETXNY410M0F) (E, Saudi Arabia, Hong Kong,
Singapore, Australian, Middle East)
(ETXNY410E0F) (AEP, UK, Russian)



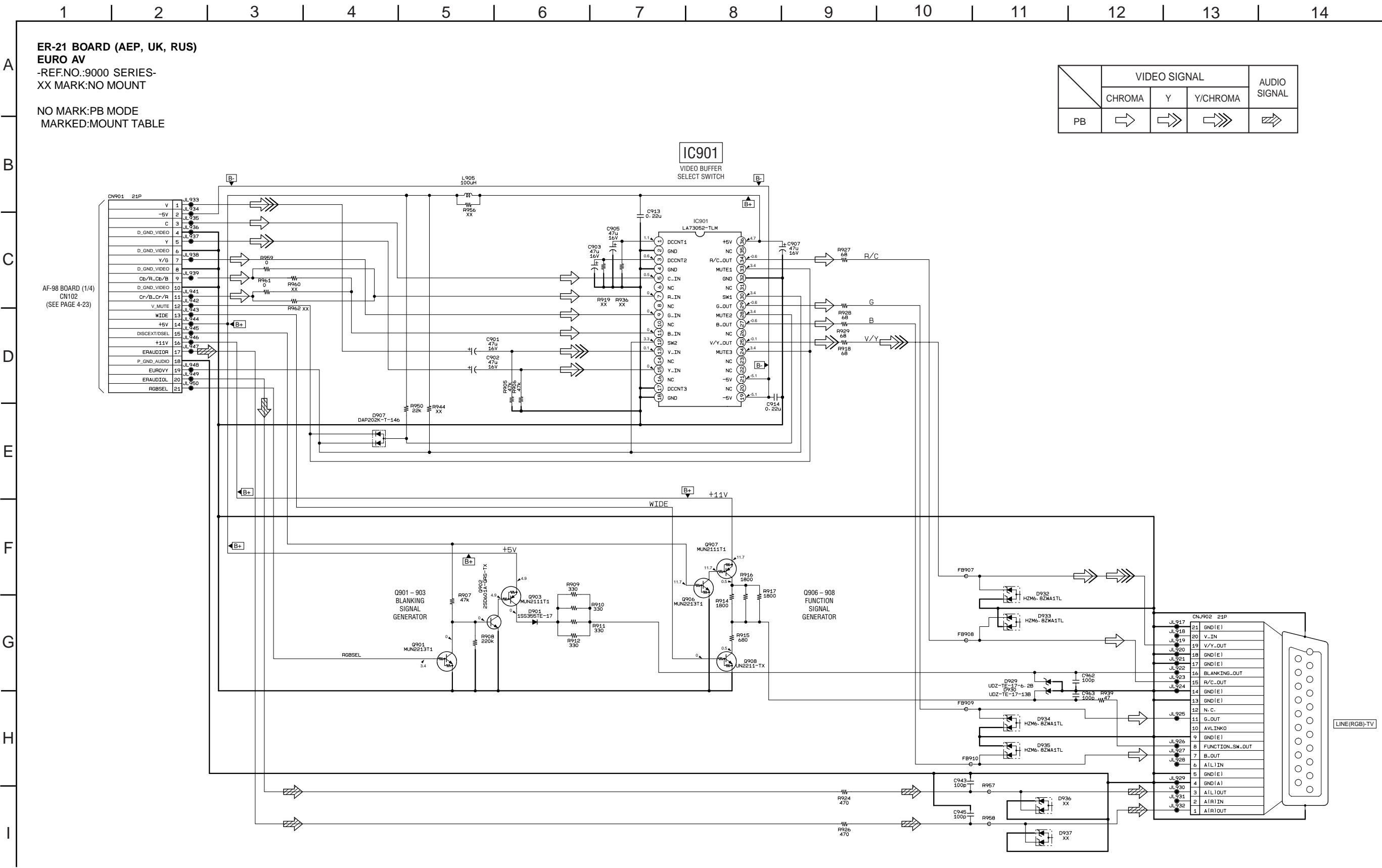
ER-21 BOARD

CN901	C-1
D901	A-3
D907	B-6
D929	A-3
D930	A-5
D932	A-4
D933	A-4
D934	A-5
D935	A-6
IC901	B-7
Q901	B-1
Q902	B-2
Q903	B-4
Q906	B-2
Q907	B-3
Q908	A-1

ER-21 (EURO AV) SCHEMATIC DIAGRAM

– Ref. No.: ER-21 board; 9,000 series –


– AEP, UK, RUS –



POWER SUPPLY BLOCK (HS8S2U) PRINTED WIRING BOARD

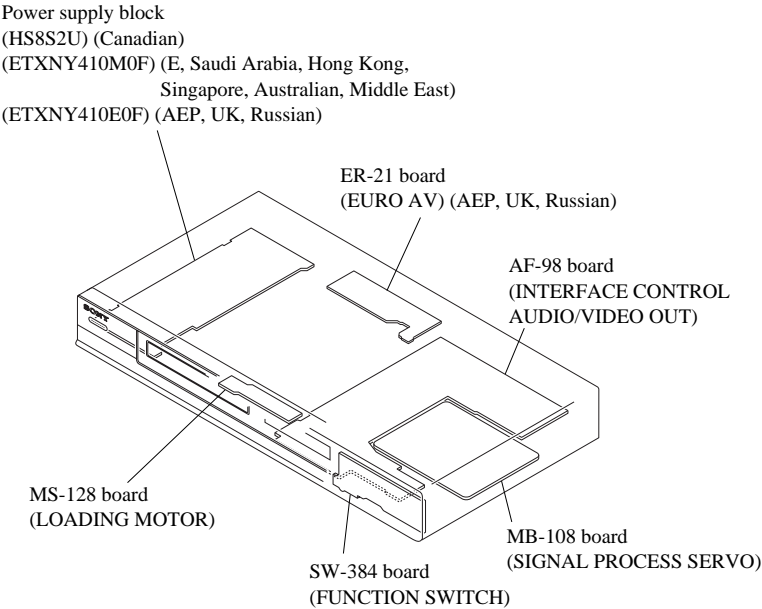
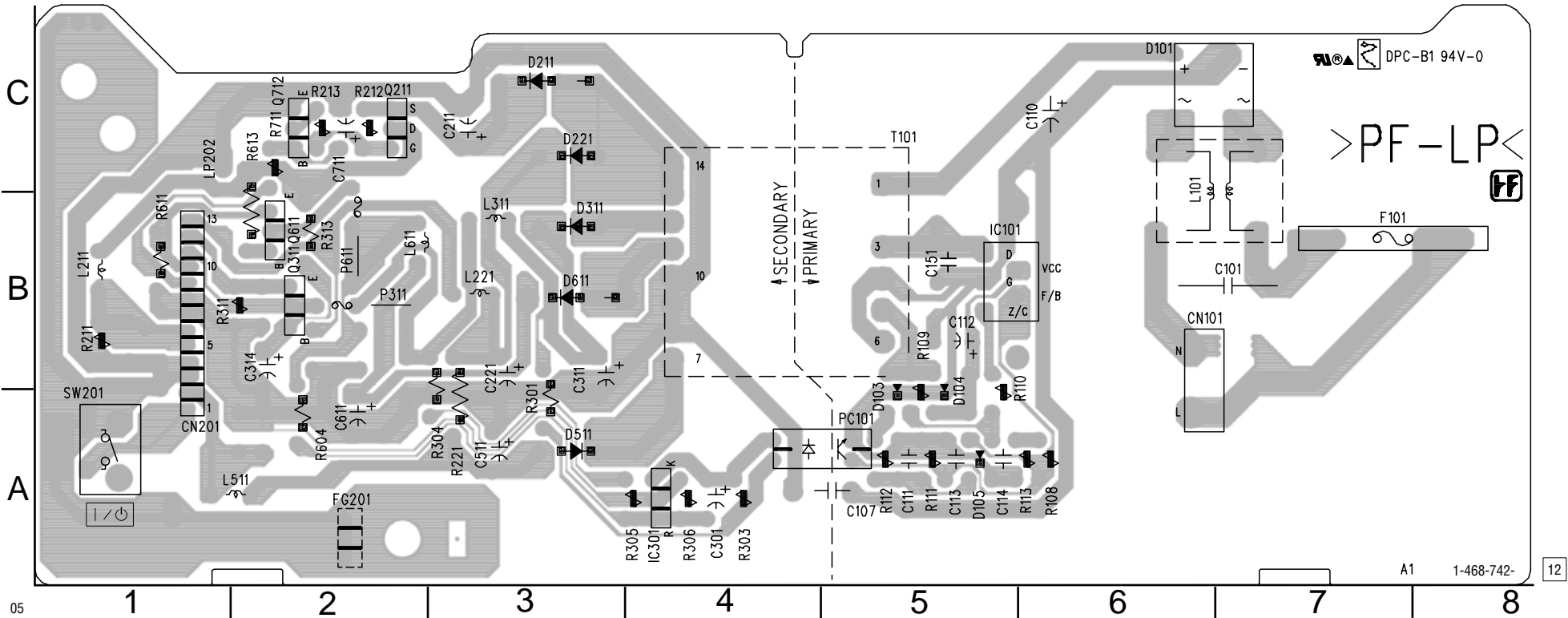
– Ref. No.: HS8S2U board; 1,000 series –

– CND –

: Uses unleaded solder.

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

POWER SUPPLY BLOCK
(HS8S2U) (CND)

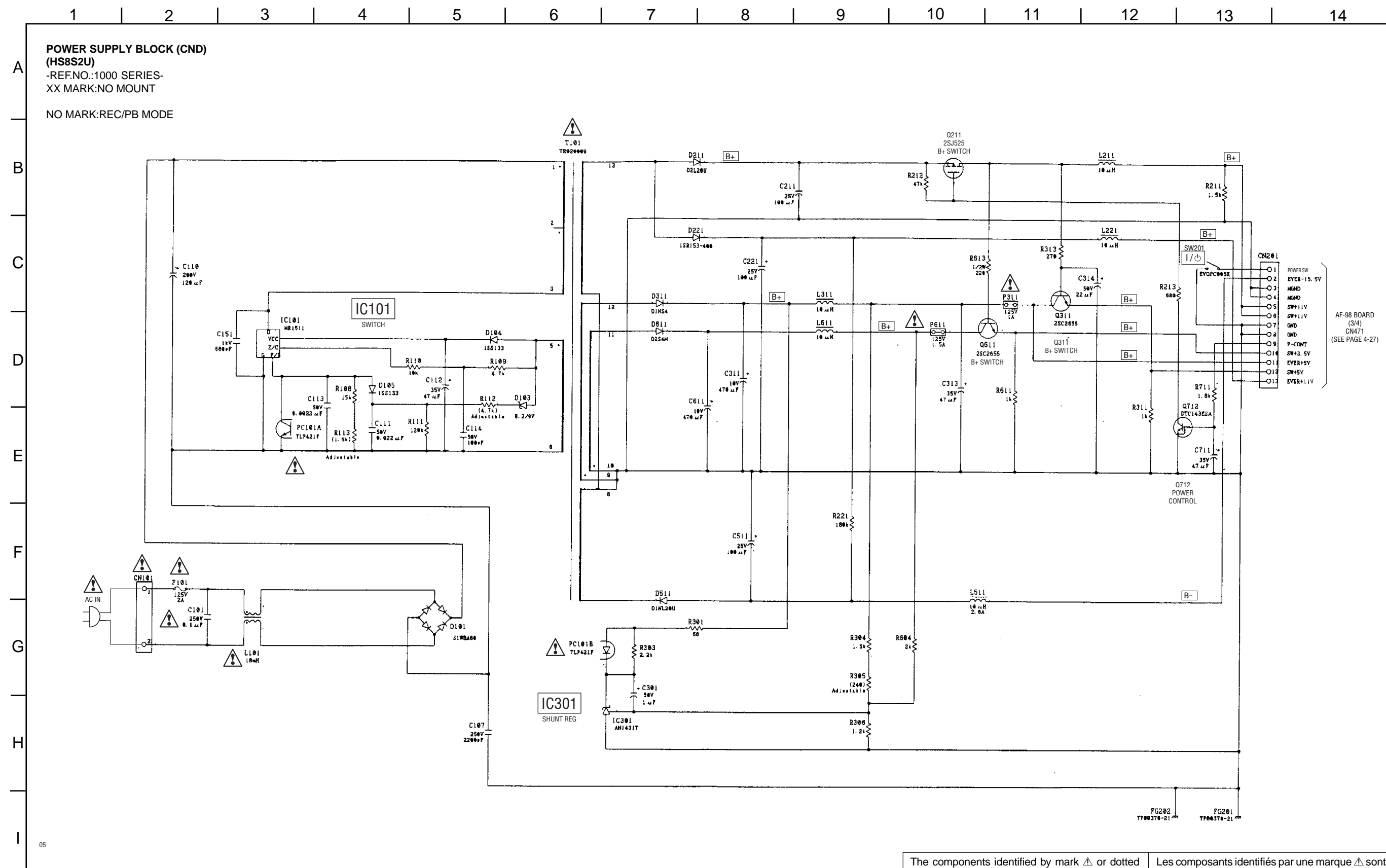



POWER SUPPLY BLOK (HS8S2U)	
CN201	A-1
D101	C-6
D103	A-5
D104	A-5
D105	A-5
D211	C-3
D221	C-3
D311	B-3
D511	A-3
D611	B-3
IC101	B-5
IC301	A-4
Q211	C-2
Q311	B-2
Q611	B-2
Q712	C-2


POWER SUPPLY BLOCK (HS8S2U) SCHEMATIC DIAGRAM

– Ref. No.: HS8S2U board; 1,000 series –

- CND -



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

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

POWER SUPPLY BLOCK (ETXNY410M0F) PRINTED WIRING BOARD

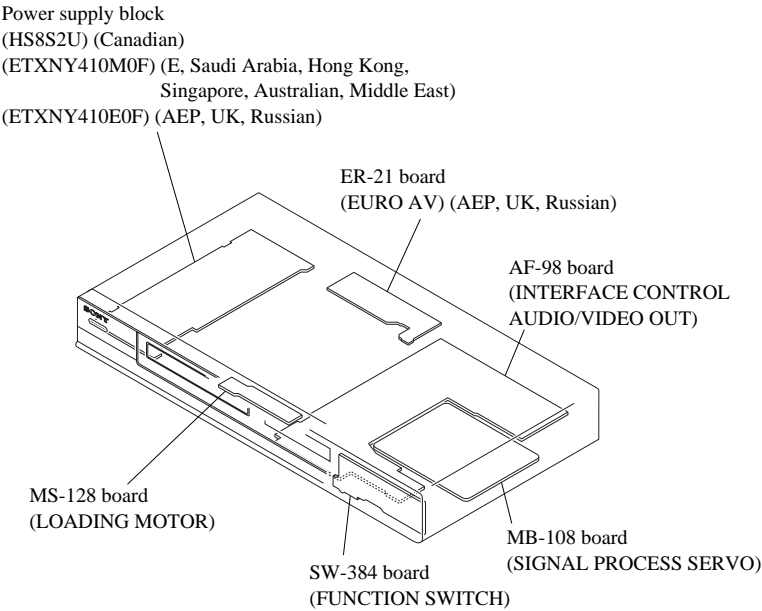
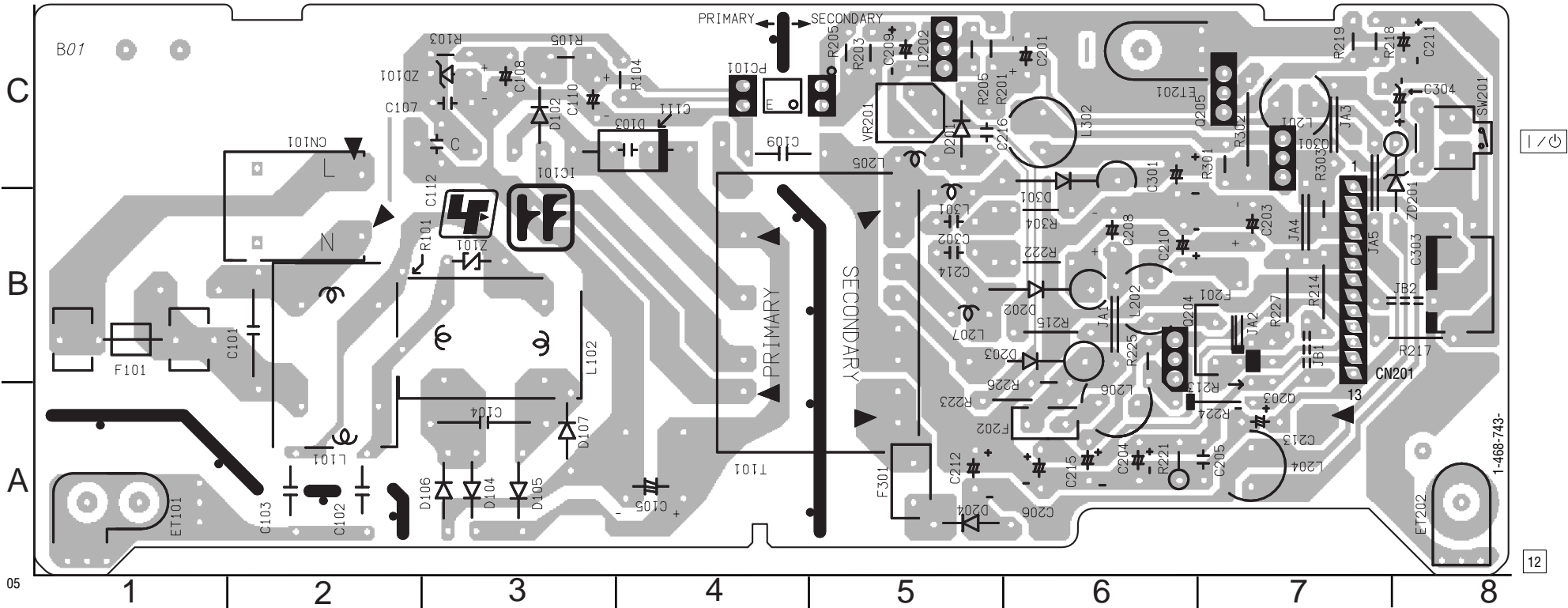
– Ref. No.: ETXNY410M0F board; 5,000 series –

– E, SP, ME, AUS, HK, EA –

: Uses unleaded solder.

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

POWER SUPPLY BLOCK
(ETXNY410M0F) (E, SP, ME, AUS, HK, EA)




POWER SUPPLY BLOK
(ETXNY410M0F)

CN201	B-7
D102	C-3
D103	C-4
D104	A-3
D105	A-3
D106	A-3
D107	A-3
D201	C-5
D202	B-6
D203	B-5
D204	A-5
D301	B-6
IC101	C-3
IC202	C-5
Q203	A-7
Q204	B-6
Q205	C-6
Q301	C-7

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14

B



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

4-45

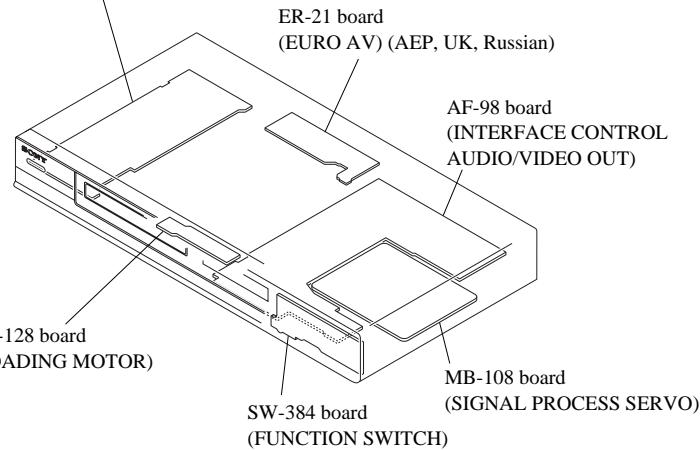
4-46

Power supply block
(HS8S2U) (Canadian)
(ETXNY410M0F) (E, Saudi Arabia, Hong Kong,
Singapore, Australian, Middle East)
(ETXNY410E0F) (AEP, UK, Russian)

POWER SUPPLY BLOK
(ETXNY410E0F)

CN201 B-7

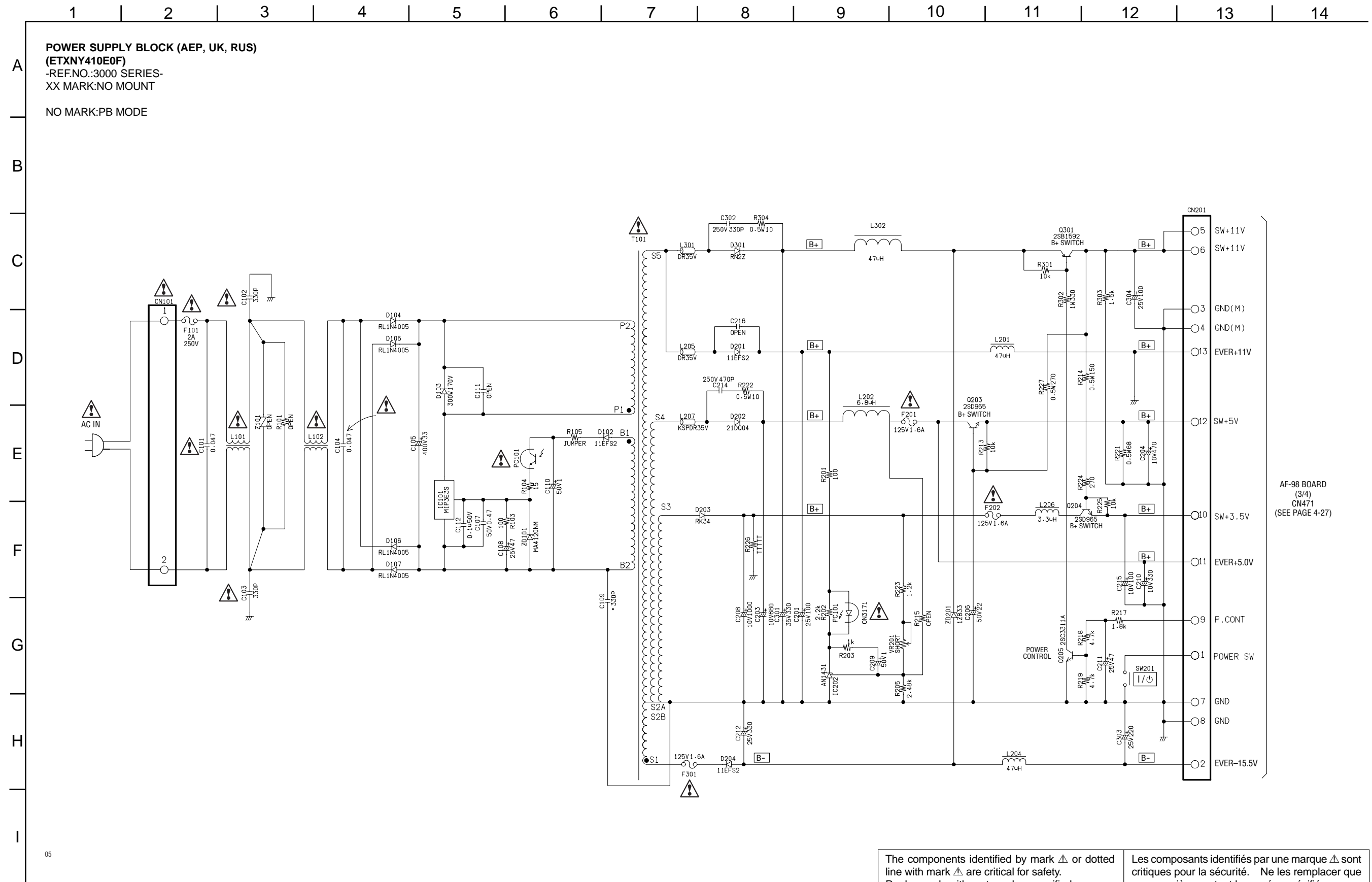
D102	C-3
D103	C-4
D104	A-3
D105	A-3
D106	A-3
D107	A-3
D201	C-5
D202	B-6
D203	B-5
D204	A-5
D301	B-6
IC101	C-3
IC202	C-5
Q203	A-7
Q204	B-6
Q205	C-6
Q301	C-7



POWER SUPPLY BLOCK (ETXNY410E0F) SCHEMATIC DIAGRAM

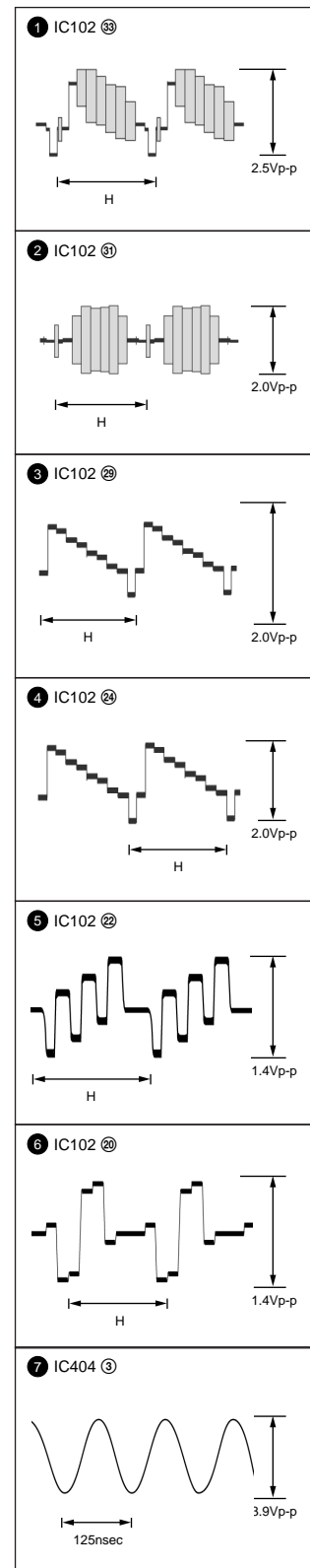
– Ref. No.: ETXNY410E0F board; 3,000 series –

– AEP, UK, RUS –

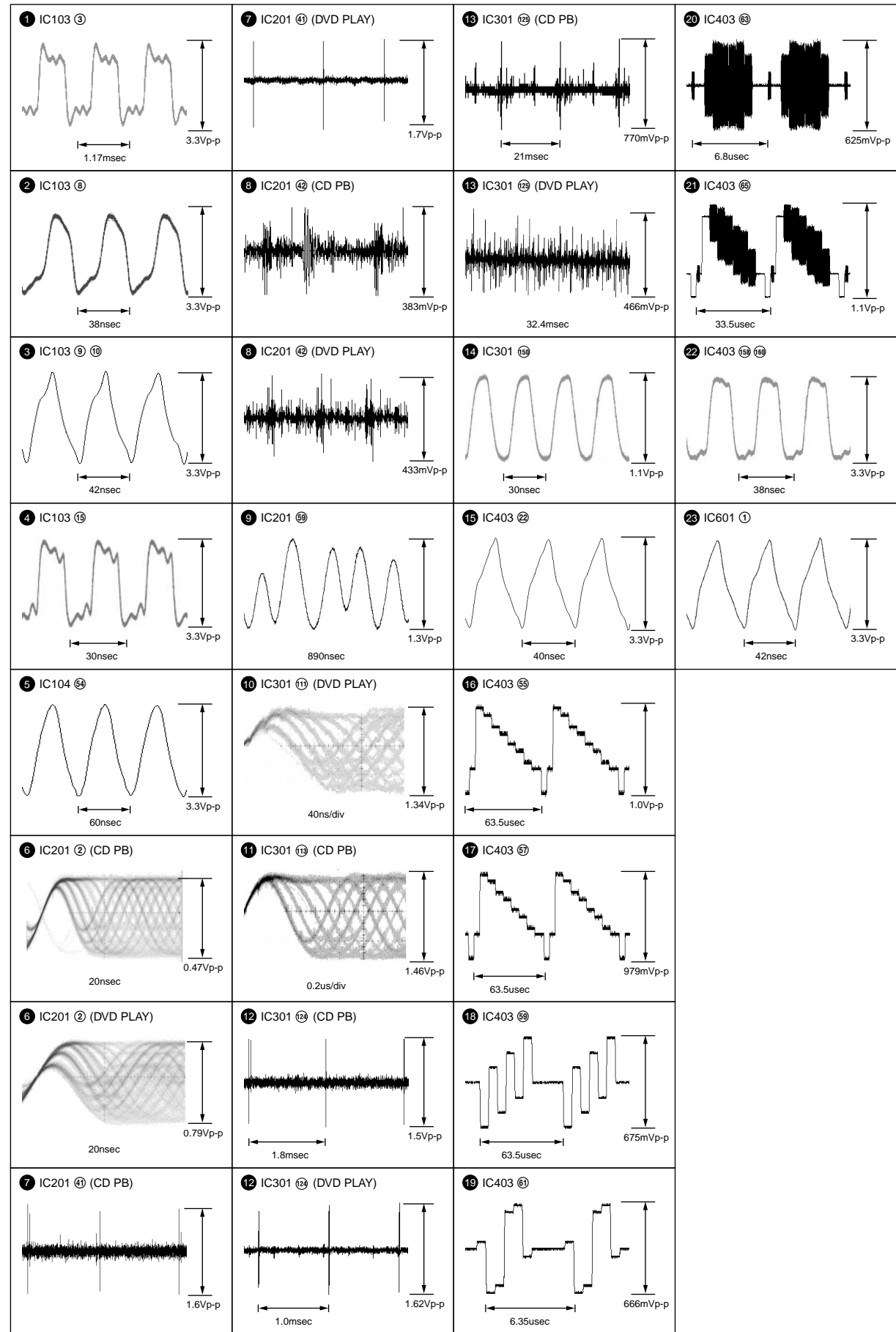


• Waveforms

AF-98 BOARD



MB-108 BOARD



SECTION 5

IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL PIN FUNCTION (MB-108 BOARD IC104)

Pin No.	Pin name	I/O	Function
1-5	HA17 to HA21	O	Address bus A17 to A21
6	HA22	-	Not used
7	WP	O	I2C EEPROM write protect output
8	XSACS	-	Not used
9	AVCC	-	Power supply (+3.3 V)
10	AVRH	-	Reference power supply (+3.3 V)
11	AVSS	-	Ground
12	AN0	I	Set of mode 0
13	AN1	I	Set of mode 1
14	AN2	I	Set of mode 2
15	AN3	-	Not used
16	INT0	I	AV DEC Interrupt input
17	INT1	I	ARP Interrupt input
18	INT2	I	SDSP Interrupt input
19	INT3	-	Not used
20	INT4	I	IF CON Interrupt input
21	INT5	-	Not used
22	INT6	-	Not used
23	INT7	-	Not used
24	VCC	-	Power supply (+3.3 V)
25	SI0	I	Serial bus 0 (data input)
26	SO0	O	Serial bus 0 (data output)
27	SC0	O	Serial bus 0 (clock output)
28	SI1	-	Not used
29	SO1	O	Serial bus 1 (data output)
30	SC1	O	Serial bus 1 (clock output)
31	SI2	I	Serial bus 2 (data input)
32	SO2	O	Serial bus 2 (data output)
33	DSNS	-	Not used
34	VSS	-	Ground
35	XRST	O	System reset signal output
36	XARPRST	O	WIDE Select signal output
37	RGBSEL	O	VIDEO Select signal output
38	SDA	I/O	I2C data input/output

Pin No.	Pin name	I/O	Function
39	SCL	O	I2C clock output
40	TRM+	-	Not used
41	EUROVY	O	Euro VIDEO signal output
42	EXT/DSEL	O	Line input/output select signal output
43	MD0	I	Input of mode select 0 (fixed at "H")
44	MD1	I	Input of mode select 1 (fixed at "L")
45	MD2	I	Input of mode select 2 (fixed at "L")
46	DREQ0	I	AV DEC DMA -REQ0 input
47	DACK0	O	AV DEC DMA -ACK0 output
48	XDRV/MUTE	O	Drive mute signal output
49	DREQ1	I	AV DEC DMA -REQ1 input
50	DACK1	O	AV DEC DMA -ACK1 output
51	XIFCS	O	IF CON Chip select signal output
52	VSS	-	Ground
53	X1 (OUT)	O	Clock output (16.5 MHz)
54	X2 (IN)	I	Clock input (16.5 MHz)
55	VCC	-	Power supply (+3.3 V)
56	CKSW1/TSW1	I	Chuck Sensor input
57	OCSW1/TSW2	I	Tray Sensor input
58	CS0X	O	External ROM chip select signal output
59	CS1X	O	Extranal RAM chip select signal output
60	CS2X	O	AV DEC Chip select signal output
61	CS3X	O	AV DEC Chip select signal output
62	CS4X	O	ARP Chip select signal output
63	CS5X	O	SDSP Chip select signal output
64	VCCI	-	Power supply (+1.8 V)
65	CS6X	-	Not used
66	CS7X	-	Not used
67	XWAIT	I	Wait signal input
68	BGRNTX	I	Test terminal (fixed at "H")
69	BRQ	-	Not used
70	XRD	O	Read enable signal output
71	XWRH	O	High order-byte write enable signal output
72	XWRL	O	Lower order-byte write enable signal output

Pin No.	Pin name	I/O	Function
73	NMIX	I	Non Maskable Interrupt input (fixed at "H")
74	VCCI	-	Power supply (+1.8 V)
75	VSS	-	Ground
76	XFRST	I	IF CON Reset signal input
77	CPUCK	O	CPU clock signal output
78	OCSW2	-	Not used
79	XDACS	O	DAC (2ch) chip select signal output
80	TRM-	-	Not used
81	48/44.1K	O	PLL FS control signal output
82	WIDE	O	Laser diode mute signal output
83	MA_MUTE	O	Audio mute signal output
84	SRAMWE	O	SRAM write enable signal output
85 to 92	HD0 to HD7	I/O	Data bus D0 to D7 (16 bit only)
93 to 100	HD8 to HD15	I/O	Data bus D8 to D15 (16 bit) , D0 to D7 (8 bit)
101	VSS	-	Ground
102 to 109	HA0 to HA7	O	Address bus A00 to A07
110	VCC	-	Power supply (+3.3 V)
111 to 118	HA8 to HA15	O	Address bus A08 to A15
119	VSS	-	Ground
120	HA16	O	Address bus A16

SECTION 6 TEST MODE

6-1. GENERAL DESCRIPTION

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

6-2. STARTING TEST MODE

Press the **[TOP MENU]**, **[CLEAR]**, **[I/⏻]** keys on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then "DIAG STARTING START" will be displayed on the fluorescent display tube and the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed. Last Off at the lower right of screen indicates the information code concerning the last power off.

To execute each function, select the desired menu and press its number on the remote commander.

To exit from the Test Mode, press the **[I/⏻]** key.

```

Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emergency Hisory
5. Version Information
6. Video Level Adjustment
    Exit: POWER Key
-
Model    :DPX-30xxxx
Revision:x.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 items continuous check

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 **[▶▶]** key to go to the next item, or **[◀◀]** key to repeat the same check again. To quit the diagnosis and return to the Check Menu screen, press **[■]** or **[ENTER]** key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```

### Syscon Diagnosis ###

3-2. 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 **[■]** key to quit the diagnosis, or **[◀◀]** key to repeat the same item where an error occurred, or **[▶▶]** key to continue the check from the item next to faulty item.

* In "All item continuous check", pressing stop or enter will not quit the diagnosis.

Selecting [2] and subsequent items calls the submenu screen of each item.

When "—" is displayed in the submenu, it means that the test is not supported in the model.

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 submenu items continuous check

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 (IC106 or 107) 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 (IC106 or 107) 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.

(2-5) Region

Region code is displayed.

Error: Not detected.

The region code determined from the model code is displayed.

(2-6) M't check

Mount resistance is checked.

Error 22: The region code does not accord.

Check whether the region code that is deduced from model resistance and destination resistance accords with the region code that is deduced from region resistance value.

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.

(3-3) ———

Check no support.

(3-4) ———

Check no support.

(3-5) ———

Check no support.

(3-6) VENC Check

Data write → read, and accord check

Error 52: Write and read data discord.

Accessing to the SYSCON may be defective.

(3-7) ———

Check no support.

(3-8) EX RAM Check

Test Data write → read, and accord check

Error 02: The external RAM used in the system control is checked.

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.

(4-3) ———

Check no support.

(4-4) RF Amp (SSI) W/R Check

Data write → read and accord check

Error 13: RF Amp register write, and read data discord
Implement 8-bit shift operation of the 0x01 to the readable/writable register of the RF Amp. If once write data do not accord with read data, it is NG.

5. Data Supply System

(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 (IC301) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus

Data write → other address read discord check

Error 10: ARP ↔ RAM address bus error

Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).

Before starting the test, all addresses of RAM (IC303) are cleared to 0x0000.

First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.

If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
### Syscon Diagnosis ###

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

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

(5-5) ARP RAM Check

Data write → read, and accord check

Error 11: ARP RAM read data discord

The program code data stored in ROM are copied to all areas of RAM (IC303) connected to the ARP (IC301) 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) 1935 RAM

Data write → read, and accord check

Error 14: AVD RAM read data discord

The program code data stored in ROM (IC106 or 107) are copied to all areas of RAM (IC404, IC405) connected to the AVD (IC403) 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 14, and the test is suspended.

During the test, OSD display becomes blank as the OSD area is also checked.

(6-3) 1935 SP

ROM → AVD RAM → Video OUT

Error: Not detected.


The data including sub picture streams in ROM (IC106 or IC107) are transferred to the RAM (IC404, IC405) in AVD (IC403), and output as video signals from the AVD (IC403). 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 Output

- (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).
- (7-3) Composite Out (AEP, UK, RUS Model)
EURO-AV Composite video output check
AVD color bar command write → Video (EURO-AV Composite) OUT
Error: Not detected.
With the Component of video output turned off, the color bar signals are output from the EURO-AV terminal.
- (7-4) Y/C Out (AEP, UK, RUS Model)
EURO-AV Y/C video output check
AVD color bar command write → Video (EURO-AV Y/C) OUT
Error: Not detected.
With the Y/C of video output turned on, the color bar signals are output from the EURO-AV terminal.
- (7-5) RGB Out (AEP, UK, RUS Model)
EURO-AV RGB video output check
AVD color bar command write → Video (EURO-AV RGB) OUT
Error: Not detected.
With the RGB of video output turned on, the color bar signals are output from the EURO-AV terminal.
- (7-6) Component Out (AEP, UK, RUS Model)
EURO-AV Component video output check
AVD color bar command write → Video (EURO-AV Component) OUT
Error: Not detected.
With the Component of video output turned on, the color bar signals are output from the EURO-AV terminal.
- (7-7) Euro AV Through (AEP, UK, RUS Model)
AV Through output On/Off
Error: Not detected.
AV Through output is turned on.

8. Audio Output

- (8-2) ARP → 1935
Data flow from supply system DRAM to SDRAM of AV Decoder is tested.
Error 15 : ARP → 1935 video NG
16 : ARP → 1935 audio NG
- (8-3) ———
Check no support.
- (8-4) Test Tone
Pink noise output
Error: not detected
In the models without DD output, the test tone is output from L and R of 2-channel only.
After turning on all outputs, each time the  key is pressed, the output channel is switched for individual channel checking.

Diagnosis Check Items List

- 2) Version
(2-2) Revision
(2-3) ROM Check Sum
(2-4) Model Type
(2-5) Region
(2-6) M't Check
- 3) Peripheral
(3-2) EEPROM Check
(3-3) ——— (Function not supported)
(3-4) ——— (Function not supported)
(3-5) ——— (Function not supported)
(3-6) VENC Check
(3-7) ——— (Function not supported)
(3-8) EX RAM check
- 4) Servo
(4-2) Servo DSP Check
(4-3) ——— (Function not supported)
(4-4) RF Amp (SSI) W/R Check
- 5) Data Supply System
(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) 1935 RAM
(6-3) 1935 SP
- 7) Video Output
(7-2) Color Bar
(7-3) Composite Out (AEP, UK, RUS Model)
(7-4) Y/C Out (AEP, UK, RUS Model)
(7-5) RGB Out (AEP, UK, RUS Model)
(7-6) Component Out (AEP, UK, RUS Model)
(7-7) Euro AV Through (AEP, UK, RUS Model)
- 8) Audio Output
(8-2) ARP → 1935
(8-3) ——— (Function not supported)
(8-4) Test Tone

Error Codes List

00: Error not detected
01: RAM write/read data discord
03: EEPROM NG
04: Flash memory clear error
05: Flash memory write error
06: Flash memory read data discord
08: ARP register read data discord
09: ARP \longleftrightarrow RAM data bus error
10: ARP \longleftrightarrow RAM address bus error
11: ARP RAM read data discord
12: Servo DSP NG
13: RF Amp NG
14: 1935 SDRAM NG
15: ARP \rightarrow 1935 video NG
16: ARP \rightarrow 1935 audio NG
1A: System call error (Function not supported)
1B: System call error (Parameter error)
1C: System call error (Illegal ID number)
20: System call error (Time out)
22: Resistance installation error
90: Error occurred
91: User verification NG
92: Diagnosis cancelled.

6-4. DRIVE AUTO ADJUSTMENT

DVD reference disc

Single Layer

HLX-503 (J-6090-069-A) (NTSC)

HLX-504 (J-6090-088-A) (NTSC)

HLX-506 (J-6090-077-A) (PAL)

Dual Layer

HLX-501 (J-6090-071-A) (NTSC)

HLX-505 (J-6090-089-A) (NTSC)

HLX-507 (J-6090-078-A) (PAL)

TEST CD

YEDS-18 (3-702-101-01)

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 and DVD (dual layer) 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.

0. ALL

You will be asked if EEPROM data are initialized or not, and for this prompt, select **[0]**. First, the servo setting data in EEPROM, are cleared to initialize. Then, **[1]**. DVD-SL disc, **[2]**. CD disc, and **[3]**. DVD-DL disc are adjusted in this order. Each time one disc was adjusted, it is ejected, and therefore exchange the disc following the message. You can exit the adjustment by pressing the **[■]** 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 Single Layer Disc

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 Reset
2. Disc Check Memory SL
3. Set Disc Type SL
4. Spdl Start
5. LD ON
6. Focus Error Check
7. Focus ON 0 with PI Level Measure
8. Auto Track Offset Adjust L0
9. Trv Level Check
10. Tracking ON
11. CLVA ON
12. Sled ON
13. Auto Focus Balance Adjust
14. Auto Loop Filter Offset Adjust
15. Auto Focus Gain Adjust L0
16. Auto Focus Balance Adjust L0
17. EQ Boost Adjust
18. Auto Loop Filter Offset Adjust
19. Auto Track Gain Adjust
20. RF Level Measure
21. Jitter Measure
22. Eep Copy Loop Filter Offset
23. 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 Reset
2. Disc Check Memory CD
3. Set Disc Type CD
4. Spdl Start
5. LD ON
6. Focus Error Check
7. Fcs ON 0 with PI Level Measure
8. Auto Track Offset Adjust L0
9. Trv Level Check
10. Tracking ON
11. CLVA ON
12. Sled ON
13. Auto focus Balance Adjust
14. Auto Loop Filter Offset Adjust
15. Auto Focus Gain Adjust L0
16. Auto Focus Balance Adjust L0
17. Eq Boost Adjust
18. Auto Loop Filter Offset Adjust
19. Auto Track Gain Adjust
20. Copy Adjustment Data to LCD
21. RF Level Measure
22. Jitter Measure
23. All Servo Stop

3. DVD Dual Layer Disc

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

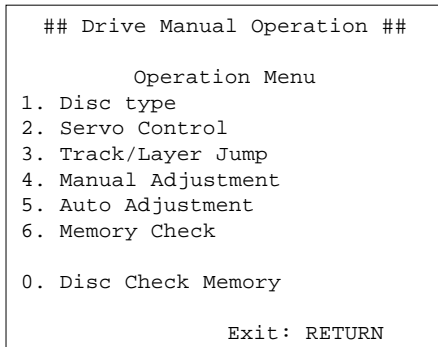
1. Sled Reset
2. Disc Check Memory DL
3. Set Disc Type DL
DVD DL Layer 1 Adjust
4. Spdl Start
5. LD ON
6. Fcs ON 1 with PI Level Measure
7. Auto Track Offset Adjust L1
8. Tracking ON
9. Clva ON
10. Sled ON
11. Auto Focus Balance Adjust
12. Auto Focus Gain Adjust L1
13. Auto Focus Balance Adjust L1
14. Eq Boost Adjust L1
15. Auto Track Gain Adjust L1
16. Jitter Measure
DVD DL Layer 0 Adjust
17. Focus Jump (L1 → L0)
18. Auto Track Offset Adjust L0
19. Tracking ON
20. Clva ON
21. Sled ON
22. Auto Focus Balance Adjust
23. Auto Focus Gain Adjust L0
24. Auto Focus Balance Adjust L0
25. Eq Boost Adjust L0
26. Auto Track Gain Adjust L0
27. Jitter Measure
28. All Servo Stop

4. LCD

LCD disc is not adjusted because the adjusted data of CD are reflected, and SACD (hybrid disc) is not adjusted because the adjusted data of CD and DVD-DL 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.



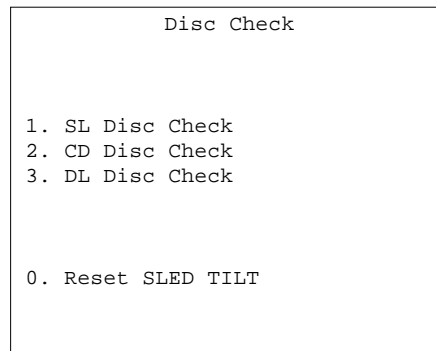
In using the manual operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type screen.
The Disc Type must be set performed 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 [■] button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

- | | |
|-----------------|--|
| [I/O] | : Power OFF |
| [■] | : Servo stop |
| [△] | : Stop+Eject/Loading |
| [↶] (RETURN) | : Return to Operation Menu or Test Mode Menu |
| [▶▶], [◀◀] | : Transition between sub modes of menu |
| [1] to [9], [0] | : Selection of menu and items |
| Cursor [↑]/[↓] | : Increase/Decrease in manually adjusted value |

0. Disc Check Memory

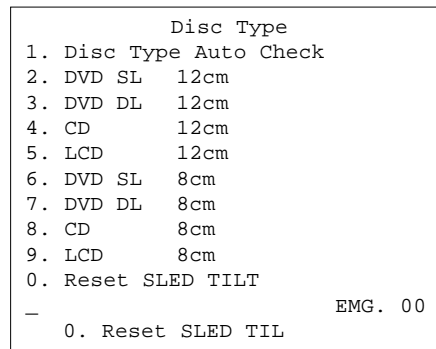


On this screen, the mirror time is measured and written to the EEPROM to check the disc type. First, set a DVD SL disc and press [1], then set a CD disc and press [2], and finally set a DVD DL disc and press [3]. The measured mirror time is displayed respectively.

The adjustment must be executed more than once after default data were written.

From this screen, you can go to another mode by pressing [▶▶] or [◀◀] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

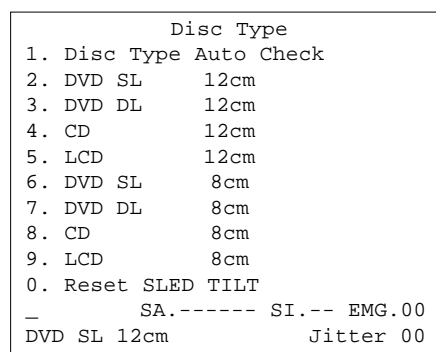
1. Disc Type



On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry "Disc Check Memory". Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.

In performing manual operation, the disc type must be set.

Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.



Display when DVD SL 12cm disc was selected

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

Display when CD 12cm disc was selected

- [0] Reset SLED TILT : Reset the Sled and Tilt to initial position.(Reset the Sled only to initial position because the Tilt mechanism is not available in this model.)
- [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		Jitter FF

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.(Reset the Sled only to initial position because the Tilt mechanism is not available in this model.)
- [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.
When PLL is not locked (cannot be locked), the sled servo is not turned ON. The display keeps OFF.
- [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

Track/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		Jitter FF

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:Up/Down		
1. TRK. Offset		
2. Focus Gain		
3. TRK. Gain		
4. Focus Offset		
5. Focus Balance		
6. L.F. Offset		
7. Analog FRSW		
8. PLL Dac Gain		
9. EQ BOOST		
0. TRK. Balance		
— SA.----- SI.-- EMG. 00		
DVD SL 12cm		Jitter FF

On this screen, each item can be adjusted manually. Select the desired number [1] to [0] 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] Analog FRSW : Sets select switch of analog feedback circuit.
- [8] PLL Dac Gain : Adjusts D/A converter gain of PLL.
- [9] EQ BOOST : Adjusts boost amount of boost of equalizer.
- [0] TRK. Balance : Adjusts tracking balance

5. Auto Adjustment

Auto Adjustment		
1. Auto TRK. Offset		
2. Auto FCS 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		
9. Auto TRK. Balance		
— SA.----- SI.-- EMG. 00		
DVD SL 12 cm		Jitter FF

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
- [9] Auto TRK. : Adjusts tracking balance.

6. Memory Check

The display images is shown as below, and three screens in total can be selected.

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
_UP : Last Data					
DOWN : Next Data					
CLEAR: Default Setpage.1/3					

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	--	--
TE Gain	xx	xx	--	--	--
PI Level	xx	--	xx	xx	--
_UP : Prev Data					
DOWN : Next Data					
CLEAR: Default Setpage.2/3					

```

EEPROM Data 3      -- DL --
                  CD LCD  SL  L0  L1
Analog FRSW   xx  xx   xx  xx  xx
PLL Dac Gain  xx  xx   xx  xx  xx
Mirror Time   xx  xx   xx  xx  xx
TRK. Balance

    THR A&L:    xx  xx  xx/xxxx  xx

_UP   : Prev Data
DOWN  : First Data
CLEAR : DefaultSet page.3/3

```

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.

Data of "THR A & L" on the third page cannot be changed if default setting is once mode.

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 **[▷]** key, and the aging will start. During aging, the number of the repeat cycle is displayed. Aging can be aborted at any time by pressing the **[■]** key. After the operation has stopped, unload the disc and press again the **[■]** key or the **[↵]** (RETURN) key to return to the Test Mode Menu.

6-7. EMERGENCY HISTORY

```

### EMG. History ###

Laser Hours      CD  xxhxxm
                  DVD  xxhxxm

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 pad from **[1]** to **[9]**.

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 **[TOP MENU]** and **[CLEAR]** keys in this order.
- ⊙ Initializing set up data
Press **[MENU]** and **[CLEAR]** keys in this order.
The data have been initialized when "Set Up Initialized" message is displayed. The EMG. History display screen will be restored soon.

6-8. VERSION INFORMATION

```
### Version Infomation ###

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

SYScon.      Ver:x.xxx(xxxx)
             Model   xx
             Region  0x

Servo DSP Ver: x.xxx
AVD ucode Ver: xxxxxxxx
Exit : RETURN
```

The ROM version, region code, 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 Downloading

After downloading ROM data, sometimes it happens that checksum is not the same as that of ROM data that has been downloaded. In such a case, go back to the menu screen 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 Download 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.

6-10. IF CON SELF DIAGNOSTIC FUNCTION

1. AF-98 BOARD (IF CON) TEST MODE

The AF-98 board (IF CON) test mode is the IF CON self diagnostic mode. The IF CON can diagnose the functions of the AF-98 board that the IF CON controls. Normally, the IF CON makes a serial communication with the SYSTEM CONTROL and operates following the commands from the SYSTEM CONTROL, but in the Test mode, the IF CON operates independently from the SYSTEM CONTROL.

In the Test mode, the following functions can be checked.

1. Button function
2. Remote commander receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Click shuttle function
5. Fluorescent display tube lighting check
 - Grid check
 - Anode check
6. LED control function

In the Test mode, the set operates same as usual, except voltage monitoring, communication monitoring, display of fluorescent display tube, and LED control.

1. The routine that monitors +3.3 V (P-CONT) of MB-108 board is not provided.
2. The monitoring timer for serial communication with the SYSTEM CONTROL is not provided. The set is not placed in the Standby mode, even if the communication with SYSTEM CONTROL is normal.
3. Display of fluorescent display tube (normally, display is made following the commands from SYSTEM CONTROL)
4. LED control (Normally, control is made following the commands from SYSTEM CONTROL)

2. OPERATION OF SELF CHECK MODE

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

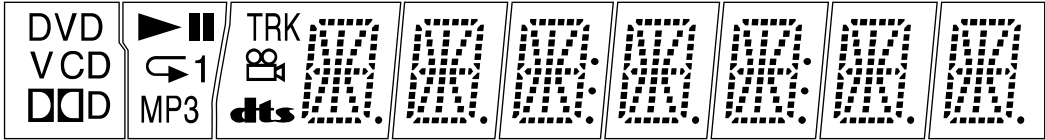
2-1. Self Check Mode Transition Processing

At the AC Power ON after reset of IF CON is released with the MB-108 board are not connected to the AF-98 board, or while pressing the [■] key on the main unit with the IF CON in STANDBY mode, enter [↵] (RETURN) → [DISPLAY] on the remote commander, and the main unit transits to the Self Check Mode.

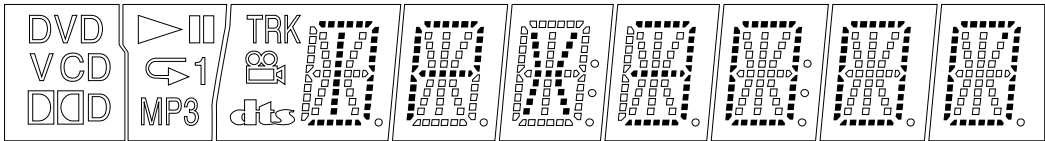
2-2. Operation of Auto Self Check

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

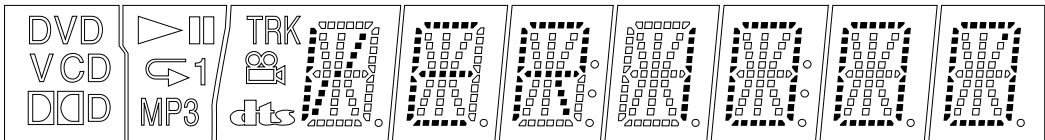
(1) FLD and LED all ON (for 5 seconds)



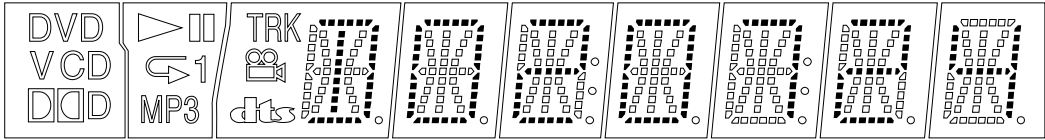
(2) MODEL display (for 2 seconds)



(3) Version display (for 2 seconds)



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



2-3. Each Self Check Function

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

Input Voltage [V]	IC404: Pin No. (Signal)			
	Pin ③④ (AD1)	Pin ③⑤ (O/C)	Pin ③⑥ (AD2)	Pin ③⑦ (POWER)
0 – 0.21	PLAY	OPEN/CLOSE	STOP	POWER
0.63 – 0.86	NEXT	–	PAUSE	–
1.23 – 1.55	PREVIOUS	–	–	–
1.9 – 2.25	–	–	–	–
2.63 – 2.86	–	–	–	–

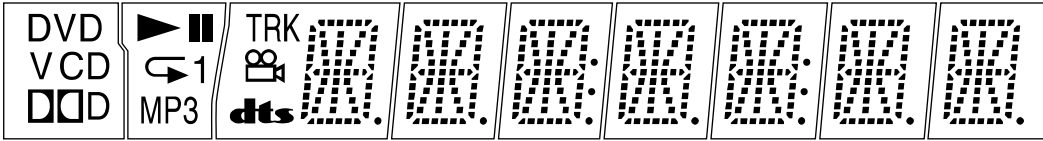
2-3-1. FLD and LED All ON

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

- ◀ key on the remote commander

2-3-1-2. Operation and Display

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



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

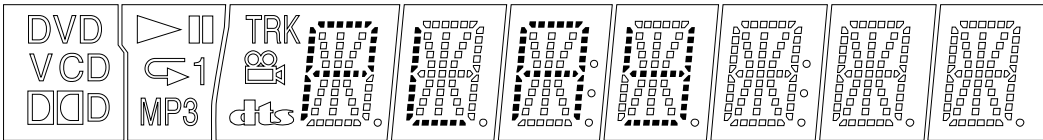
2-3-2-1. Transition Keys in Self Check Mode


- Keys on the main unit except keys transited in Self Check Mode

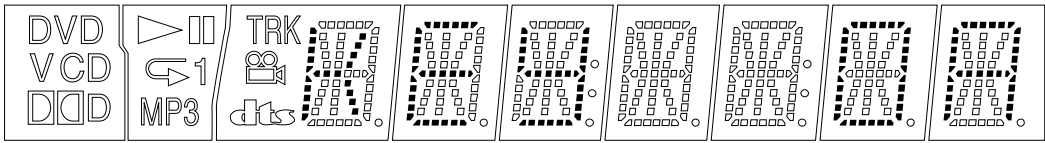
2-3-2-2. Operation and Display

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

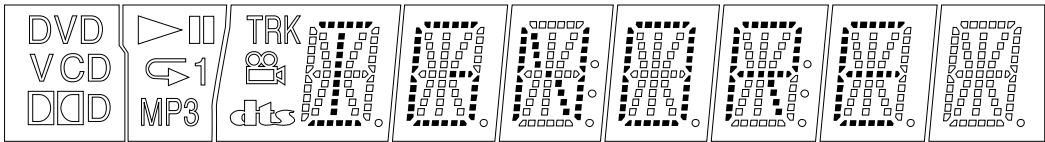
FLD display (at input of ▶ key on the main unit)



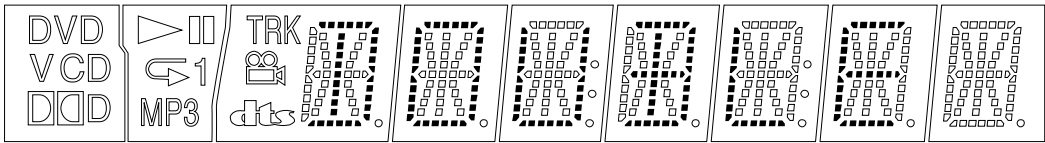
Key code display (at input of  key, Key code: 0Ah)



At input of faulty voltage



When key is pressed double





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

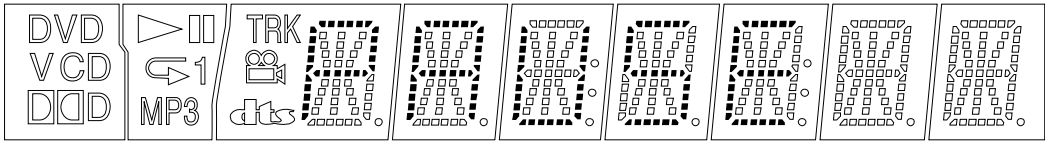
2-3-3-1. Transition Keys in Self Check Mode


- Remote commander keys except keys transited in Self Check Mode

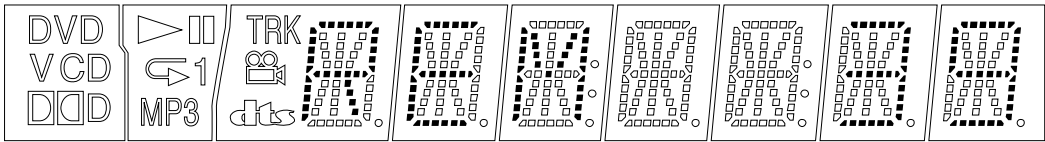
2-3-3-2. Operation and Display

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

Remote commander key name display (at input of  key)



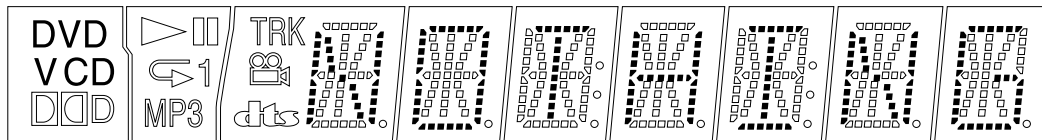
Remote commander key code display (at input of  key, Key code: 39h)



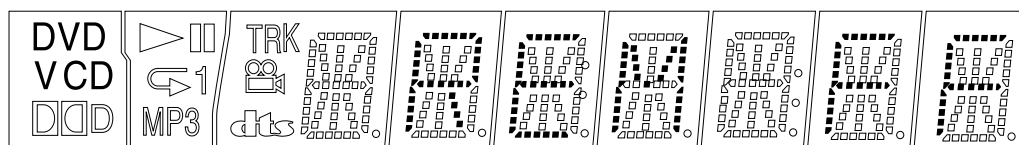
2-3-4. Communication Monitoring Display

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

Communication error display (at no input of key and remote commander)



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



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

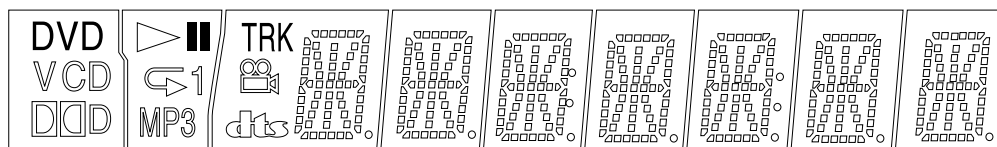
2-3-5-1. Transition Keys in Self Check Mode

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

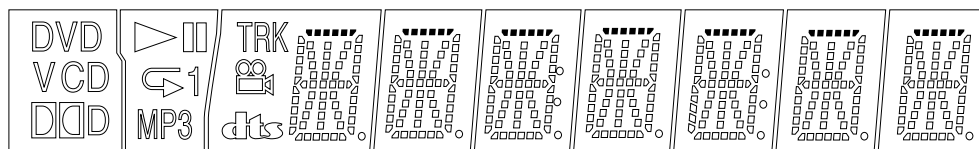
2-3-5-2. Operation and Display

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

Display at the start of Anode Test




↓ (Input in CW direction)




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

Operation Test

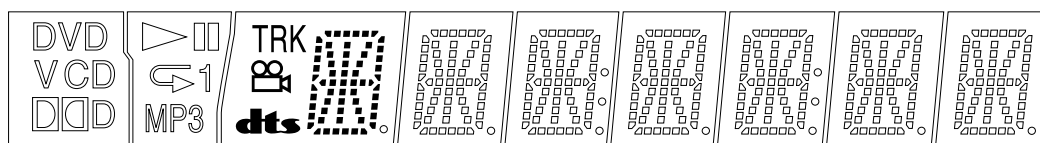
2-3-6-1. Transition Keys in Self Check Mode

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

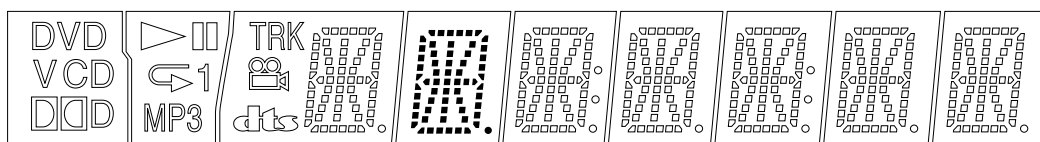
2-3-6-2. Operation and Display

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

Display at the start of Grid Test




↓ (Input in CW direction)



2-3-7. LED Test Display

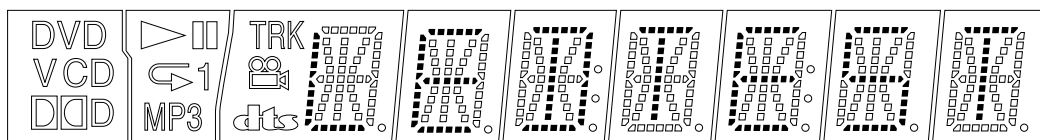
2-3-7-1. Transition Keys in Self Check Mode

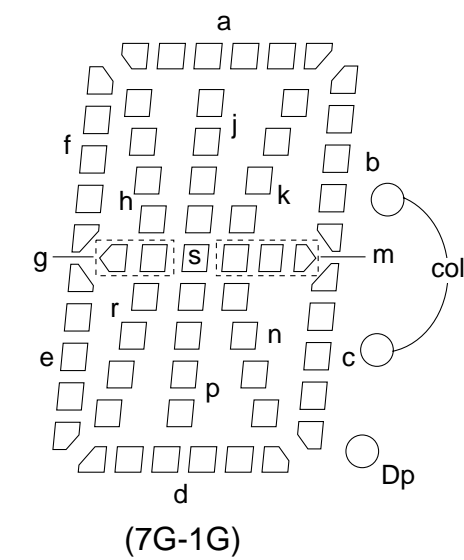
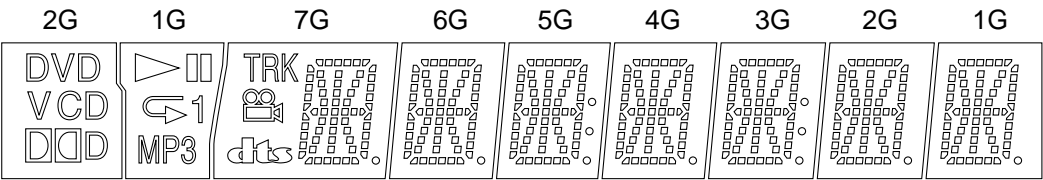
-  key on the remote commander
- SHUTTLE on the remote commander during Grid Test display
(This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

2-3-7-2. Operation and Display

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

- FLD display during LED Test





ANODE CONNECTION

	7G	6G	5G	4G	3G	2G	1G
P1	TRK		col		col	DVD	⏮
P2	a	a	a	a	a	a	a
P3	h	h	h	h	h	h	h
P4	j	j	j	j	j	j	j
P5	k	k	k	k	k	k	k
P6	b	b	b	b	b	b	b
P7	f	f	f	f	f	f	f
P8	m	m	m	m	m	m	m
P9	s	s	s	s	s	s	s
P10	g	g	g	g	g	g	g
P11	e	e	e	e	e	e	e
P12	n	n	n	n	n	n	n
P13	p	p	p	p	p	p	p
P14	r	r	r	r	r	r	r
P15	c	c	c	c	c	c	c
P16	d	d	d	d	d	d	d
P17	dts					DDD	MP3
P18						V	⏮
P19	Ⓜ					CD	1
P20	Dp	Dp	Dp	Dp	Dp	Dp	Dp

6-11. TROUBLESHOOTING

6-11-1. Cannot Enter Test Mode

You cannot enter the Test mode when either button has been pressed by any reason with the board assembled in the front panel. In this state, the power does not turn on even under normal condition (the unit is kept in standby state), and also no button is active and the remote commander is not accepted. In this case, disconnect the MB-108 board and AF-98 board, and with the SELF CHECK (pin ⑩) of IF CON (IC404) on the AF-98 board kept in low state, supply AC, and the IF CON self-diagnosis mode will be forcibly activated. The IF CON (IC404) checks the SELF CHECK port only after the power on reset (only at AC supply, not in standby state). If any button is pressed, its name is displayed on the fluorescent display tube. But, if other than "NOTHING" is displayed though no button is pressed, it means that any button has been pressed.

6-11-2. Faults in Test Mode (MB-108 board)

1. The test mode menu is not displayed.

1-1. Board visual check

Check that the ICs of SYSCON (IC104), ROM (IC106 or IC107), AVD (IC403), ARP & SERVO (IC301) are working correctly.

Check that outside appearance of the ICs is normal.

Check that IC pins are not short-circuited.

Check that there is no soldering error.

Check that outside appearance of the capacitors and resistors is normal.

1-2. Power supply voltage check

Check the power voltage of the power connector (CN102).

Check the power voltage of SYSCON (IC104).

Check the power voltage of ROM (IC106 or IC107).

Check the power voltage of AVD (IC403).

Check the power voltage of ARP & SERVO (IC301).

If the power voltage has any abnormality →

Check that the power supply lines are not shorted.

Check that there is no soldering error.

If any abnormality cannot be found still →

Check that each IC is working normally.

1-3. Clock signal check

Measure the clock signal frequency at CPUCK (CL101) of SYSCON (IC104) with an oscilloscope.

If the 8.25 MHz signal appears. → Check the machine according to section 1-3-1

If the 33 MHz signal appears. → Check the machine according to section 1-3-2.

If other frequencies are output.

R110 and R113 have defective soldering, X101 crystal oscillator is defective.

If the measurement point is fixed to either "H" or "L". →

Observe XFRRST (pin-⑦⑨) of SYSCON (IC104) with an oscilloscope.

If the measurement point is "L", check the following items.

If the IC has defective soldering, if the IC is short-circuited.

If the measurement point is "H",

→ Component X101 or SYSCON (IC104) is defective.

1-3-1. When the 8.25 MHz signal appears at CPUCK

• Check the XRD, XWRH and CS0X signal.

Observe XRD (pin-⑦⑨), XWRH (pin-⑦①), and CS0X (pin-⑤⑨) of SYSCON (IC104) with an oscilloscope.

If these pins are fixed to either "L" (0V) or "H" (3.3V), or if these pins stay in the center voltage, check the followings.

Check if the signal line does not have the defective soldering.

Check if the signal line is short-circuited with other signal lines.

If you cannot find any problem → SYSCON (IC104) is defective.

• HA [0 to 21] signal and HD [0 to 15] signal check

Observe HA [0 to 21] (pins-⑩② to ⑩⑨, ⑩① to ⑩⑩, ① to ⑤) of SYSCON (IC104) and HD [0 to 15] (pins-⑤⑤ to ⑩⑩) with an oscilloscope.

If these pins are fixed to either "L" (0V) or "H" (3.3V), or if the HA pin stays in the center voltage, check the followings. (HD stays in the center voltage when it is normal.)

→ Check if the signal line does not have the defective soldering, or is short-circuited with other signal line or SYSCON (IC104) is defective.

• Reset signal check

Check if XFRRST (pin-⑦⑨) of SYSCON (IC104) normal or not.

The signal starts up at the same time as Vcc → Defective soldering.

If the trouble does not apply to any of the above-described phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

1-3-2. When the 33 MHz signal appears at CPUCK

• WAIT signal check

Observe XWAIT (pin-⑥7) of SYSCON (IC104) with an oscilloscope.

If it is fixed to “L” (0V). → Observe CS2X to CS5X (pins-⑥0 to ⑥3).

If CS2X or CS3X is “L”. → AVD (IC403) has defective soldering or AVD is defective.

If CS4X or CS5X is “L”. → ARP & SERVO (IC301) has defective soldering or ARP & SERVO is defective.

If any one of the above is not “L”. → XWAIT or CSnX is short-circuited or has the defective soldering or AVD (IC403) is defective or ARP & SERVO (IC301) is defective.

Center voltage → The XWAIT line has defective soldering or is short-circuited or AVD (IC403) is defective or ARP & SERVO (IC301) is defective or SYSCON (IC104) is defective.

• CSnX signal check

Observe CS0X to CS5X (pins-⑤8 to ⑥3) of SYSCON (IC104) with an oscilloscope.

If they are fixed to “L” (0V) or if to center voltage → Check that the ICs do not have the defective soldering or is short-circuited with the other signal lines or SYSCON (IC104) is defective.

CS0X: ROM (IC106 or IC107)

CS2X, CS3X: AVD (IC403)

CS4X, CS5X: ARP & SERVO (IC301)

If the trouble symptom does not apply to any of the above phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

2. Test mode menu is displayed but the machine stops when menu is selected

2-1. AVD (IC403) check

Observe SDCLKO (pin-②7) of AVD (IC403) with an oscilloscope.

95 MHz → No problem

27 MHz → Observe the XRST, HA, HD, XRD, XWRH, INT and CS signal waveform at the respective pins of AVDEC, AVD (IC403) is defective.

If the signal is other than the above frequencies → AVD (IC403) 27MHz signal line (CLKI (pin-①50), SCLKIN (pin-①50)) is short-circuited, IC mount is defective, AVD (IC403) is defective, PLL (IC103) is defective.

2-2. INT signal check

Observe INT0 to 2 (pins-①6 to ①8) of SYSCON (IC104) with an oscilloscope.

If they are fixed to “L” (0V) or fixed to the center voltage → Check that the ICs do not have the defective soldering, or are short-circuited, SYSCON (IC104) is defective, or the following ICs are not defective.

INT0: AVD (IC403)

INT1, INT2: ARP & SERVO (IC301)

2-3. If any abnormality cannot be confirmed by the above-described checks, check the CS signal that is currently output.

The CS signal other than CS0X is being output. → IC mount is defective or the IC is defective depending on the moving CS signal.

CS2X, CS3X: AVD (IC403)

CS4X, CS5X: ARP & SERVO (IC301)

If the trouble is not applicable to any of the above phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

3. If the message “SDSP No Ack” appears after the menu is displayed.

3-1. ARP & SERVO clock signal check

Check frequency of CLKIN (pin-①50)

33 MHz → Normal

Frequency other than 33 MHz → CLKIN is short-circuited or defective soldering or PLL (IC103) is defective or ARP & SERVO (IC301) is defective

3-2. ARP & SERVO (IC301) PLL oscillation check

Observe PLCKO (pin-⑧7) of ARP & SERVO (IC301) with an oscilloscope.

If the pin is fixed to either “L” (0V) or “H” (3.3V).

If XRST is fixed to “L”. XRST has the defective soldering. In all other cases. ARP & SERVO (IC301) is defective

If it is oscillating.

HA [0 to 7] are HD [8 to 15] are short-circuited, check XSDSPIT and XSDSPCS or ARP & SERVO (IC301) is defective.

4. If trouble occurs at the specific item of the “Diag All Check”.

IC mount of the NG item is defective or IC is defective.

5. Picture and audio are not output.

Check connection of CN601

Check for the defective connection of flat cable and check of damage of the flat cable.

6. Picture is output but audio is not output.

Check the audio data output (at pins-②4, ②8, and ②9) of AVD (IC403)

The audio data is not output. → AVD (IC403) or audio DAC (IC601) mount is defective or power supply is defective or AVD (IC403) or audio DAC (IC601) is defective.

PLL (IC103) 512fs output check

If the frequency or waveform has abnormality. → The signal line has defective soldering or the signal line is short-circuited with other signal lines or PLL (IC103) is defective.

7. Audio is output but picture is not output.

Observe pins-⑤5, ⑤7, ⑤9, ⑥1, ⑥3 and ⑥5 of AVD (IC403) with an oscilloscope.

If the analog signal is not output. → The signal line has the defective soldering or is short-circuited or parts are defective or AVD (IC403) is defective.

6-11-3. Drive Auto Adjustment stops due to error.

The ARP & SERVO (IC301) analog circuit of MB-108 board is defective or RF-Amp (IC201) or M-Driver (IC202) peripheral circuit is defective or optical pickup block is defective or flat cable connection is defective

6-11-4. The product itself is defective.

- If MB-108 does not have any problem,
The board other than MB-108 board is defective or connection is defective or optical pickup block is defective or mechanism deck is defective

1. FL display does not light when the POWER button is pressed.

1-1. Check the EVER -15.5V (pin-②), EVER+5.0V (pin-①), EVER+11V (pin-⑬) voltage at CN201 of the power supply block

If voltage is abnormal. → The power supply block is defective.

1-2. Check if the fuse on the AF-98 board has blown or not.

If the fuse has blown → Replace the fuse.

1-3. Check the P.CONT (pin-⑨) at CN471 of the AF-98 board when the POWER button is pressed.

If it remains at "L",

→ The signal line has the defective soldering or it is short-circuited with other signal lines or capacitor or resistor is defective or IFCON is defective or connection between the power supply block and the AF-98 board is defective, or connector installation is defective, or the power supply block is defective.

1-4. Check if the button is kept depressed in the IFCON self mode.

If the button is kept depressed. → The front panel is defective, or AF-98 board is defective.

1-5. Check PONCHK (pin-③⑩) of IFCON (IC404) on the AF-98 board.

If it is 0.5 V or more. → The power supply is defective, or AF-98 board is defective.

1-6. Check ND401 (pin-① & pin-③⑨) on the AF-98 board.

If no voltage supply → Voltage driver (IC407) defective, or the AF-98 board is defective.

2. FL display light once and becomes not light when POWER button is pressed.

2-1. Check CN201 voltage of the power supply block when the FL display light on.

If voltage is abnormal. → The power supply block is defective, or the AF-98 board is defective, or MB-108 board is defective

2-2. Check XFRRST (pin-⑧) at CN101 on the MB-108 board.

If it is fixed to "L". → The signal line has defective soldering, or is short-circuited with other signal lines, or parts are defective.

2-3. Check XIFBSY (pin-⑤), XIFCS (pin-⑥), S10 (pin-④), SO0 (pin-①) and SC0 (pin-③) at CN101

If they are fixed to "H" or "L".

→ The signal line has defective soldering, or is short-circuited with other signal line, or parts are defective, or SYSCON (IC104) is defective

If they change between "L/H".

Connector installation is defective, or the AF-98 board is defective, or SYSCON (IC104) is defective.

If they stay in the center voltage.

Poor connection of flexible wiring board such as it is inserted in an angle diagonally, or defective soldering, or is short-circuited with other signal line.

2-4. Check PONCHK (pin-③⑩) of IFCON (IC404) on the AF-98 board.

If rise-up time from 0.5 V to 1.5 V or more takes longer time, or it does not exceed 1.5 V or more. → The AF-98 board is defective.

3. Both picture and audio are not output.

Connection between the power supply block and the AF-98 board is defective, or connection between the AF-98 board and the MB-108 board is defective, or connector installation is defective, or AF-98 board is defective.

4. Picture is not normal. (Block noise or others appear.)

The MB-108 board AVD (IC403) or SDRAM (IC404, IC405) is defective, or ARP & SERVO (IC301) is defective.

SECTION 7

ELECTRICAL ADJUSTMENT

In making adjustment, refer to 7-6. Adjustment Related Parts Arrangement.

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

Use the reference disc for PAL for check, and use the reference disc for NTSC for adjustment.

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

Instruments required:

- 1) Color monitor TV
- 2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
- 3) Frequency counter (over 8 digits)
- 4) Digital voltmeter
- 5) Standard commander (RM-Z400A/Z400E)
- 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. POWER SUPPLY BLOCK

HS8S2U: CND

ETXNY410M0F: E, SP, ME, AUS, HK, EA

ETXNY410E0F: AEP, UK, RUS

Mode	E-E
Instrument	Digital voltmeter
EVER +5.0 V Check	
Test point	CN201 pin ⑪
Specification	5.0 ± 0.3 Vdc
SW +3.5 V Check	
Test point	CN201 pin ⑩
Specification	3.5 ± 0.2 Vdc
SW +5 V Check	
Test point	CN201 pin ⑫
Specification	5.0 ± 0.3 Vdc
SW +11 V Check	
Test point	CN201 pin ⑤, ⑥
Specification	11.0 ± 1.0 Vdc
EVER +11 V Check	
Test point	CN201 pin ⑬
Specification	11.2 ± 1.0 Vdc
EVER -15.5 V Check	
Test point	CN201 pin ②
Specification	-15.5 ± 1.0 Vdc

Checking method:

- 1) Confirm that each voltage satisfies the specification.

Note

Because the heatsink installed on the power supply board is a part of the primary side, never touch it to avoid electrical shock.

- Abbreviation
 - CND: Canadian model
 - HK : Hong Kong model
 - SP : Singapore model
 - EA : Saudi Arabia model
 - ME : Middle East model
 - AUS : Australian model,
 - New Zealand model
 - RUS : Russian model

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-108 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	RV401
Specification	$1.00^{+0.04}_{-0.02}$ 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 RV401 to attain $1.00^{+0.04}_{-0.02}$ Vp-p.



Figure 7-1

2. Checking S Video Output S-Y (EXCEPT AEP, UK, RUS)

<Purpose>

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

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.00 ± 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 1.00 ± 0.05 Vp-p.



Figure 7-2

3. Checking S Video Output S-C (EXCEPT AEP, UK, RUS)

<Purpose>

This checks whether the S video output 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".

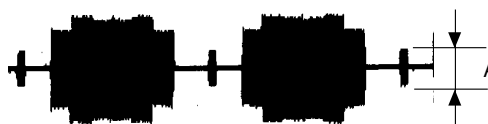


Figure 7-3

4. Checking Component Video Output Y (EXCEPT AEP, UK, RUS)

<Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.00 ± 0.05 Vp-p

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the Y level is 1.00 ± 0.05 Vp-p.



Figure 7-4

5. Checking Component Video Output B-Y (EXCEPT AEP, UK, RUS)

<Purpose>

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, component input projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P _B) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	A=700 \pm 50 mVp-p (others) A=646 \pm 50 mVp-p (For CND)

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the B-Y level is A.

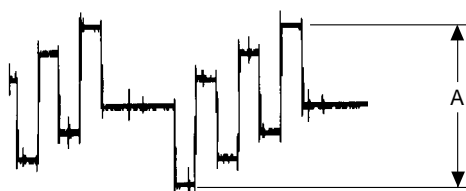


Figure 7-5

6. Checking Component Video Output R-Y (EXCEPT AEP, UK, RUS)

<Purpose>

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, component input projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P _R) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	A=700 \pm 50 mVp-p (others) A=646 \pm 50 mVp-p (For CND)

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the R-Y level is A.

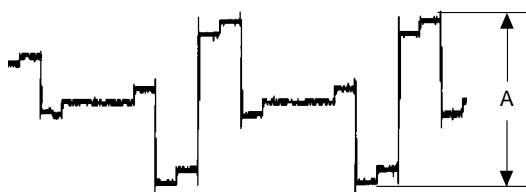


Figure 7-6

7. Checking RGB Output R (AEP, UK, RUS)

<Purpose>

This checks RGB output R. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	Play
Signal	Check the Color-bar (100%) signal on DVD reference disc
Test point	LINE (RGB)-TV connector pin ⑩ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 \pm 100 mVp-p

Checking method:

- 1) Confirm that the R level is 700 \pm 100 mVp-p.

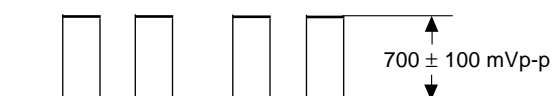


Figure 7-7

8. Checking RGB Output G (AEP, UK, RUS)

<Purpose>

This checks RGB output G. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	Play
Signal	Check the Color-bar (100%) signal on DVD reference disc
Test point	LINE (RGB)-TV connector pin ⑪ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 \pm 100 mVp-p

Checking method:

- 1) Confirm that the G level is 700 \pm 100 mVp-p.

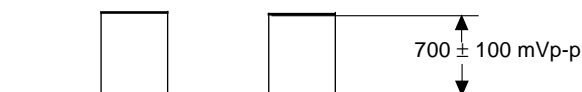


Figure 7-8

9. Checking RGB Output B (AEP, UK, RUS)

<Purpose>

This checks RGB output B. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	Play
Signal	Check the Color-bar (100%) signal on DVD reference disc
Test point	LINE (RGB)-TV connector pin ⑦ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 100 mVp-p

Checking method:

- 1) Confirm that the B level is 700 ± 100 mVp-p.

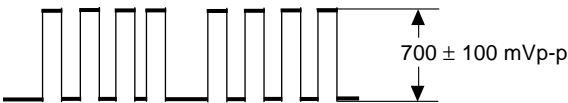
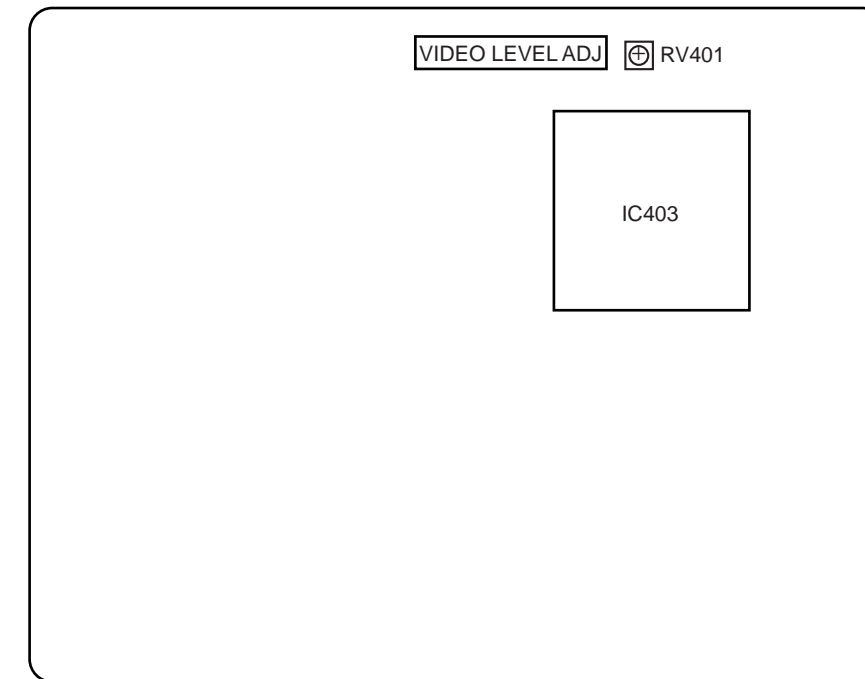


Figure 7-9

7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

MB-108 BOARD (SIDE A)

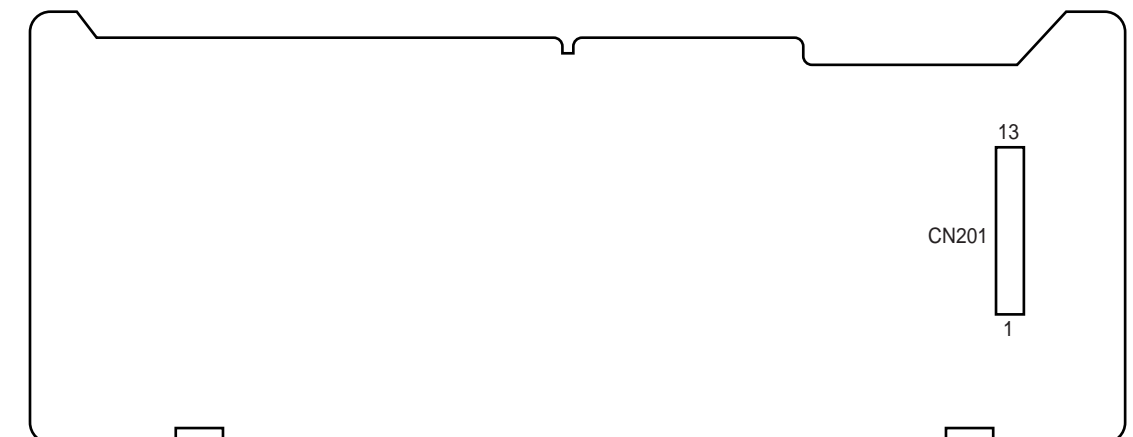


POWER SUPPLY BLOCK

HS8S2U BOARD (SIDE A): CND

ETXNY410M0F BOARD (SIDE A): E, SP, ME, AUS, HK, EA

ETXNY410E0F BOARD (SIDE A): AEP, UK, RUS



SECTION 8

REPAIR PARTS LIST

8-1. EXPLODED VIEWS

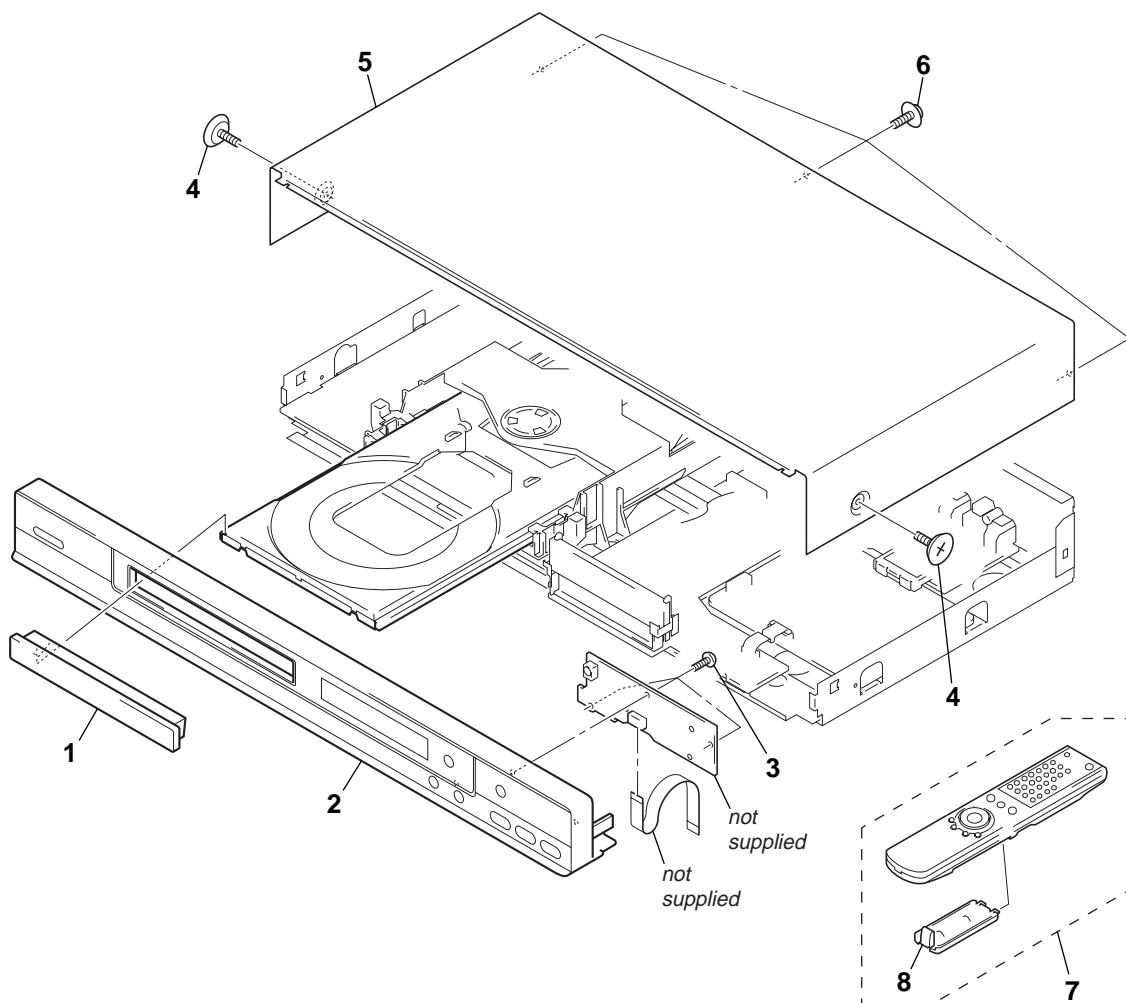
NOTE:

- -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.
- Abbreviation
 AUS : Australian model, EA : Saudi Arabia model RUS : Russian model
 New Zealand model HK : Hong Kong model SP : Singapore model
 CND : Canadian model ME : Middle East model
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.

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

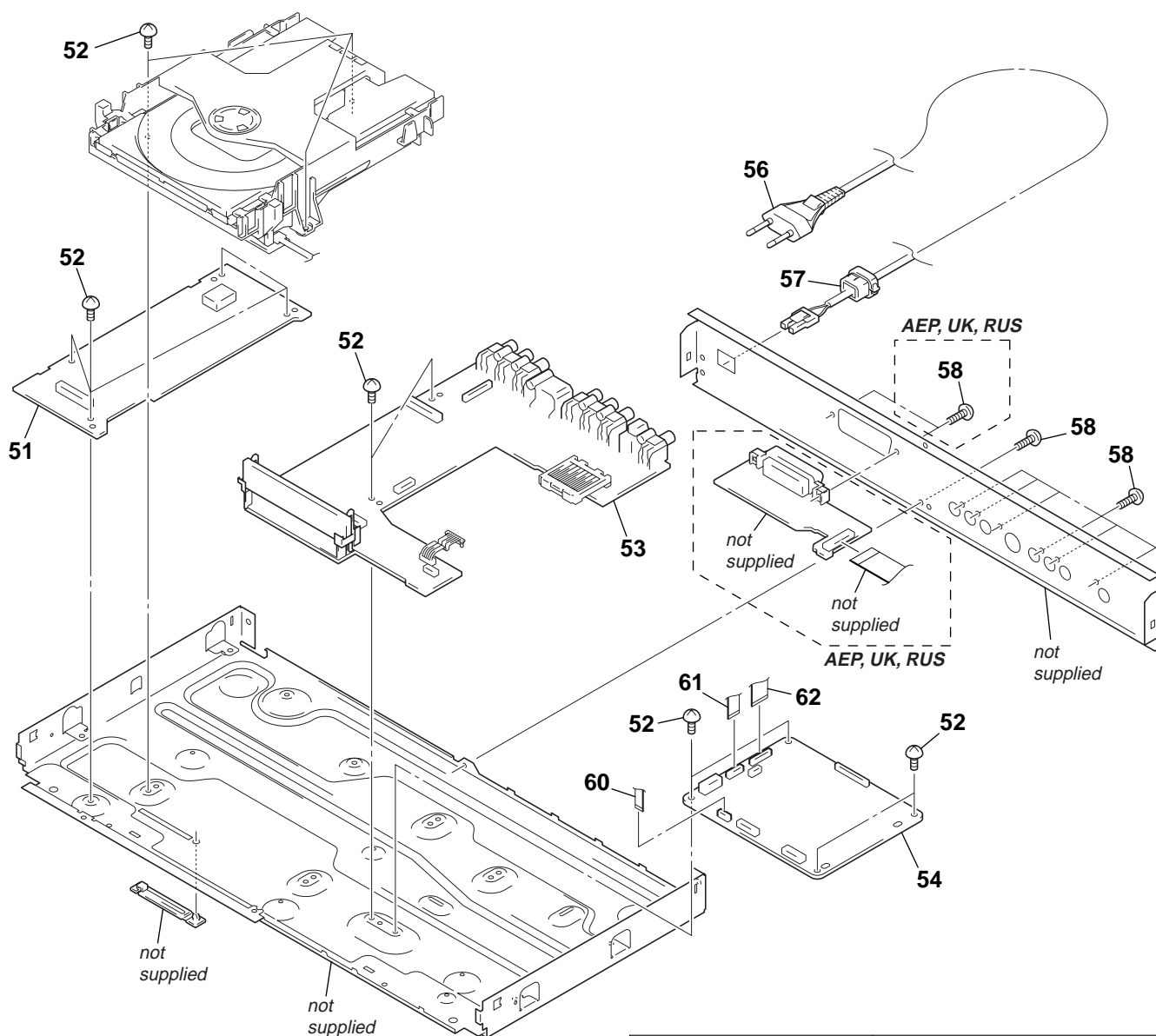
Les composants identifiés par une marque Δ sont critiques pour la sécurité.
 Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	3-081-713-02	COVER, TRAY (EXCEPT AEP, UK, RUS)		5	3-080-912-42	CASE, UPPER (CND)	
1	3-081-713-13	COVER, TRAY (AEP, UK, RUS)		5	3-081-173-31	CASE, UPPER (AEP, UK, RUS)	
2	X-3953-272-2	PANEL ASSY, FRONT (EXCEPT AEP, UK, RUS)		6	3-710-901-11	SCREW, TAPPING	
2	X-3953-281-2	PANEL ASSY, FRONT (AEP, UK, RUS)		7	1-477-885-11	REMOTE COMMANDER (RM-Z400A) (CND, E)	
3	4-951-620-01	SCREW (2.6X8), +BVTP		7	1-477-885-31	REMOTE COMMANDER (RM-Z400E)	(EXCEPT CND, E)
4	3-070-883-11	SCREW, TAPPING					
5	3-080-912-41	CASE, UPPER (E, EA, HK, ME, SP, AUS)		8	3-071-119-31	COVER, BATTERY (for RM-Z400A/E)	

8-1-2. CHASSIS SECTION

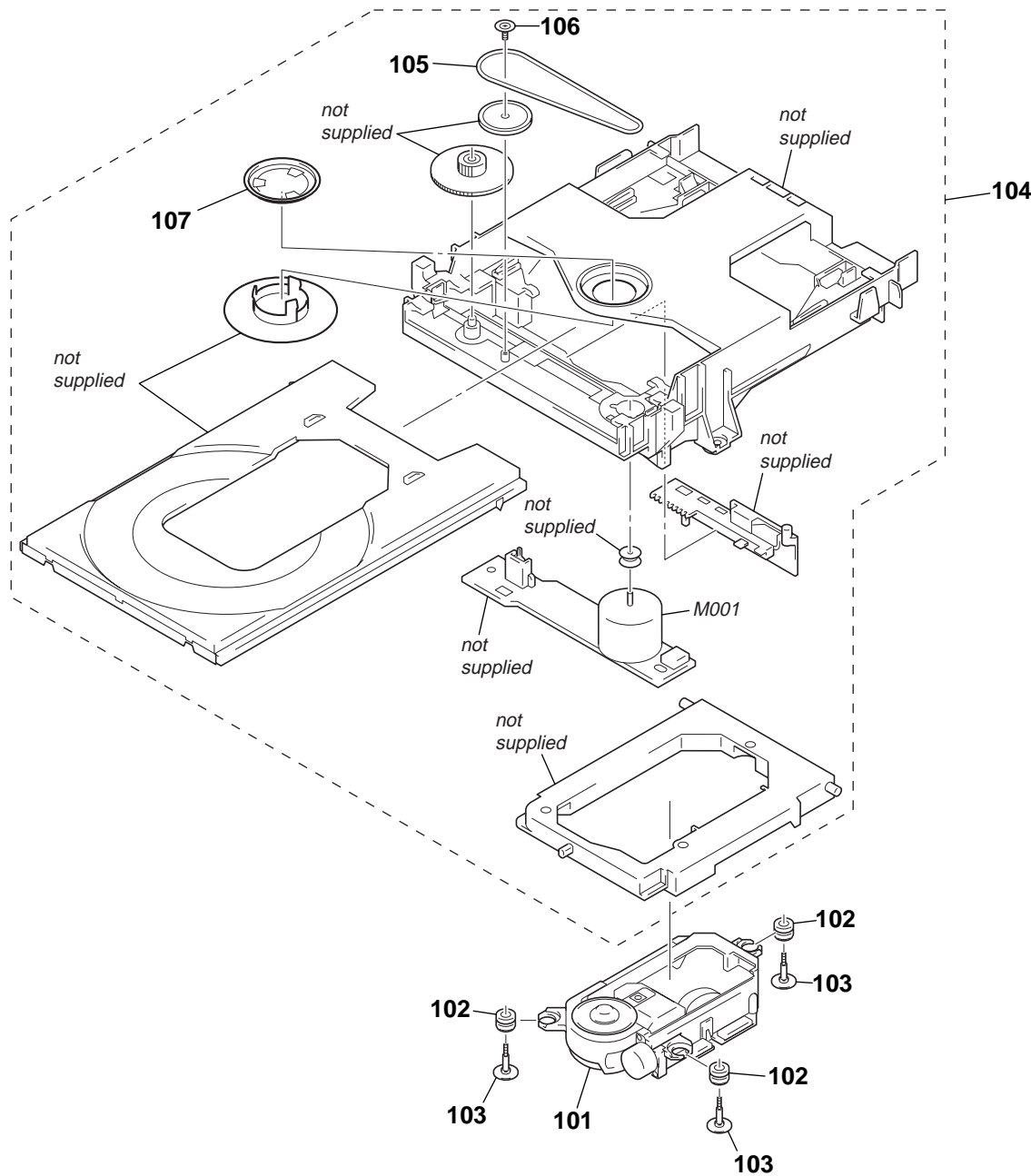


The components identified by mark ▲ or dotted line with mark ▲ are critical for safety. Replace only with part number specified.

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
▲ 51	1-468-742-12	POWER SUPPLY BLOCK (HS8S2U) (CND)		54	A-6061-626-A	MB-108AM (E32) BOARD, COMPLETE (E)	
▲ 51	1-468-743-12	POWER SUPPLY BLOCK (ETXNY410M0F)	(E, EA, HK, SP, AUS, ME)	54	A-6061-635-A	MB-108AM (ME2) BOARD, COMPLETE	(EA, ME)
▲ 51	1-468-744-12	POWER SUPPLY BLOCK (ETXNY410E0F)	(AEP, UK, RUS)	54	A-6071-121-A	MB-108AR (EC1) BOARD, COMPLETE (RUS)	
52	3-970-608-01	SUMITITE (B3), +BV		▲ 56	1-574-127-52	CORD, POWER (AEP, UK, RUS)	
53	A-6061-582-A	AF-98AM (U) BOARD, COMPLETE (CND, E)		▲ 56	1-769-744-92	CORD, POWER (E, EA, HK, ME, SP)	
53	A-6061-597-A	AF-98AM (GA) BOARD, COMPLETE	(EA, HK, ME, SP, AUS)	▲ 56	1-790-588-12	CORD, POWER (AUS)	
53	A-6061-616-A	AF-98AR (E) BOARD, COMPLETE	(AEP, UK, RUS)	▲ 56	1-823-597-11	CORD, POWER (CND)	
54	A-6061-584-A	MB-108AM (U2) BOARD, COMPLETE (CND)		57	3-073-182-02	BUSHING, CODE (EXCEPT AEP, UK, RUS)	
54	A-6061-599-A	MB-108AM (AU2) BOARD, COMPLETE (AUS)		57	3-073-182-12	BUSHING, CODE (AEP, UK, RUS)	
54	A-6061-606-A	MB-108AM (HK2) BOARD, COMPLETE	(HK, SP)	58	3-970-608-51	SUMITITE (B3), +BV	
54	A-6061-615-A	MB-108AR (EC1) BOARD, COMPLETE	(AEP, UK)	60	1-824-955-11	FLAT FLEXIBLE CABLE FMS-23	
				61	1-824-954-11	FLAT FLEXIBLE CABLE FMO-8	
				62	1-824-953-11	FLAT FLEXIBLE CABLE FMM-48	

8-1-3. MECHANISM DECK SECTION



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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
\triangle 101	A-6061-908-A	SERVICE ASSY, KHM-290AAA		105	3-080-478-01	BELT	
102	3-053-847-11	INSULATOR		106	4-974-711-01	SCREW (2X5) (P TYIGHT), (+) PTTWH	
103	3-080-534-01	INSULATOR SCREW		107	3-080-476-01	YOKE	
104	A-6061-320-A	LOADING ASSY (T)		M001	1-763-967-11	MOTOR, DC (LOADING)	

8-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable
- Not all of the parts for POWER SUPPLY BLOCK (HS8S2U, ETXNY410M0F, ETXNY410E0F) 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. . : μ A. . uPA. . : μ PA. .
 uPB. . : μ PB. . uPC. . : μ PC. .
 uPD. . : μ PD. .

CAPACITORS

uF: μ F

COILS

uH: μ H

Abbreviation

AUS : Australian model,
 New Zealand model
 CND : Canadian model

EA : Saudi Arabia model
 HK : Hong Kong model
 ME : Middle East model

RUS : Russian model
 SP : Singapore model

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

Les composants identifiés par une marque Δ 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	Remark	Ref. No.	Part No.	Description	Remark
	A-6061-582-A	AF-98AM (U) BOARD, COMPLETE (CND, E)		C411	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
	A-6061-597-A	AF-98AM (GA) BOARD, COMPLETE (SP, ME, AUS, HK, EA)		C415	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
	A-6061-616-A	AF-98AR (E) BOARD, COMPLETE (AEP, UK, RUS)		C418	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
	*****			C420	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
		(Ref.No.2,000 Series)		C423	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
	< CAPACITOR >			C424	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C101	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	C426	1-163-021-91	CERAMIC CHIP 0.01uF 10%	50V
C102	1-124-589-11	ELECT 47uF 20%	16V	C427	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C107	1-126-947-11	ELECT 47uF 20%	35V	C428	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C109	1-165-176-11	CERAMIC CHIP 0.047uF 10%	16V	C471	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C110	1-126-947-11	ELECT 47uF 20%	35V	C472	1-164-230-11	CERAMIC CHIP 220PF 5%	50V
C111	1-126-947-11	ELECT 47uF 20%	35V	C475	1-124-589-11	ELECT 47uF 20%	16V
C112	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	C476	1-126-947-11	ELECT 47uF 20%	35V
		(EXCEPT AEP, UK, RUS)		C478	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C113	1-126-947-11	ELECT 47uF 20%	35V	C479	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C114	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V	C480	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C201	1-164-739-11	CERAMIC CHIP 560PF 5%	50V	C481	1-119-774-11	ELECT 100uF 20%	16V
C202	1-164-739-11	CERAMIC CHIP 560PF 5%	50V	C482	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C203	1-164-218-11	CERAMIC CHIP 180PF 5%	50V	C483	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C204	1-164-218-11	CERAMIC CHIP 180PF 5%	50V	C484	1-104-665-11	ELECT 100uF 20%	25V
C205	1-164-218-11	CERAMIC CHIP 180PF 5%	50V	C487	1-104-662-91	ELECT 22uF 20%	25V
C206	1-164-218-11	CERAMIC CHIP 180PF 5%	50V	C488	1-104-662-91	ELECT 22uF 20%	25V
				C490	1-162-974-11	CERAMIC CHIP 0.01uF	50V
				< CONNECTOR >			
C207	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	CN102	1-815-149-11	CONNECTOR, FPC/FFC (1MM PIC) 21P (AEP, UK, RUS)	
C208	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	CN402	1-815-382-11	CONNECTOR, FPC/FFC 7P	
C209	1-126-960-11	ELECT 1uF 20%	50V	CN471	1-573-911-11	PIN, CONNECTOR 13P	
C210	1-126-947-11	ELECT 47uF 20%	35V	< DIODE >			
C211	1-126-947-11	ELECT 47uF 20%	35V	D108	8-719-071-15	DIODE HZM6.8ZWA1TL (EXCEPT AEP, UK, RUS)	
C212	1-126-960-11	ELECT 1uF 20%	50V	D109	8-719-071-15	DIODE HZM6.8ZWA1TL (EXCEPT AEP, UK, RUS)	
		(AEP, UK, RUS)		D201	8-719-050-38	DIODE M1MA152WK-T1	
C213	1-126-934-11	ELECT 220uF 20%	16V	D202	8-719-050-37	DIODE M1MA152WA-T1	
C215	1-164-230-11	CERAMIC CHIP 220PF 5%	50V	D203	8-719-914-44	DIODE DAP202K (AEP, UK, RUS)	
		(EXCEPT CND, E)		D204	8-719-404-50	DIODE MA111-TX	
C216	1-164-230-11	CERAMIC CHIP 220PF 5%	50V	< EARTH TERMINAL >			
		(EXCEPT CND, E)		* ET471	1-537-738-21	TERMINAL, EARTH	
C222	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	* ET472	1-537-738-21	TERMINAL, EARTH	
C223	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V				
C224	1-126-947-11	ELECT 47uF 20%	35V				
C228	1-126-947-11	ELECT 47uF 20%	35V				
C229	1-126-947-11	ELECT 47uF 20%	35V				
C244	1-126-947-11	ELECT 47uF 20%	35V				
C401	1-126-947-11	ELECT 47uF 20%	35V				

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< FERRITE BEAD >				JR410	1-216-295-00	SHORT CHIP	0
				JR411	1-216-295-00	SHORT CHIP	0
FB471	1-216-295-00	SHORT CHIP	0	JR413	1-216-295-00	SHORT CHIP	0
< IC >				JR415	1-216-295-00	SHORT CHIP	0
IC102	8-759-826-45	IC LA73050-TLM (EXCEPT AEP, UK, RUS)		JR417	1-216-295-00	SHORT CHIP	0
IC102	8-759-826-46	IC LA73051-TLM (AEP, UK, RUS)		JR418	1-216-295-00	SHORT CHIP	0
IC103	8-759-662-86	IC NJM79M05DL1A (TE2)		JR419	1-216-295-00	SHORT CHIP	0
IC201	6-701-937-01	IC TJM4558CDT		JR420	1-216-295-00	SHORT CHIP	0
IC203	8-759-711-59	IC NJM78L05UA-TE1		JR421	1-216-295-00	SHORT CHIP	0
IC404	6-802-966-01	IC TMP86CK74AFG-4NB5		JR422	1-216-295-00	SHORT CHIP	0
IC407	6-703-743-01	IC AN13992A		JR423	1-216-295-00	SHORT CHIP	0
IC408	6-703-742-01	IC S-80830CNUA-B8PT2G		JR424	1-216-295-00	SHORT CHIP	0
IC473	6-701-875-01	IC LMS8117ADTX-1.8/NOPB		JR425	1-216-295-00	SHORT CHIP	0
IC474	8-759-666-12	IC MM1385DNLE		JR426	1-216-295-00	SHORT CHIP	0
< JACK >				< JUMPER RESISTOR >			
J102	1-793-445-11	JACK, PIN 3P (COMPONENT VIDEO OUT) (EXCEPT AEP, UK, RUS)		JS102	1-216-295-91	SHORT CHIP	0 (AEP, UK, RUS)
J103	1-794-198-11	CONNECTOR, S TERMINAL (S VIDEO OUT) (EXCEPT AEP, UK, RUS)		< FLUORESCENT INDICATOR >			
J104	1-815-358-11	JACK, PIN (3P) (LINE OUT AUDIO L/R, VIDEO)		ND401	1-518-876-11	VACUUM FLUORESCENT DISPLAY	
J201	1-793-446-21	JACK, PIN 1P (DIGITAL OUT COAXIAL)		< IC LINK >			
< JUMPER RESISTOR >				△PS471	1-576-508-21	IC LINK (0.7A/50V)	
JR101	1-216-295-00	SHORT CHIP	0	△PS472	1-576-508-21	IC LINK (0.7A/50V)	
JR102	1-216-295-00	SHORT CHIP	0	< TRANSISTOR >			
JR103	1-216-295-00	SHORT CHIP	0	Q104	8-729-421-19	TRANSISTOR	UN2213 (EXCEPT AEP, UK, RUS)
JR104	1-216-295-00	SHORT CHIP	0	Q105	8-729-424-08	TRANSISTOR	UN2111 (EXCEPT AEP, UK, RUS)
JR107	1-216-295-00	SHORT CHIP	0	Q106	8-729-216-22	TRANSISTOR	2SA1162-G (AEP, UK, RUS)
JR108	1-216-295-00	SHORT CHIP	0	Q201	8-729-010-08	TRANSISTOR	MSB710-R
JR109	1-216-295-00	SHORT CHIP	0	Q202	8-729-421-19	TRANSISTOR	UN2213
JR110	1-216-295-00	SHORT CHIP	0	Q203	8-729-010-25	TRANSISTOR	MSD601-RT1
JR111	1-216-295-00	SHORT CHIP	0	Q204	8-729-027-53	TRANSISTOR	DTC124TKA-T146
JR112	1-216-295-00	SHORT CHIP	0	Q205	8-729-010-05	TRANSISTOR	MSB709-RT1
JR113	1-216-295-00	SHORT CHIP	0	Q206	8-729-421-19	TRANSISTOR	UN2213 (AEP, UK, RUS)
JR114	1-216-295-00	SHORT CHIP	0	Q207	6-550-137-01	TRANSISTOR	2SD1938 (F)-ST (TX).SO
JR115	1-216-295-00	SHORT CHIP	0 (EXCEPT AEP, UK, RUS)	Q208	6-550-137-01	TRANSISTOR	2SD1938 (F)-ST (TX).SO
JR202	1-216-295-00	SHORT CHIP	0	Q209	8-729-027-53	TRANSISTOR	DTC124TKA-T146 (AEP, UK, RUS)
JR203	1-216-295-00	SHORT CHIP	0	Q210	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX (AEP, UK, RUS)
JR204	1-216-295-00	SHORT CHIP	0	Q211	8-729-010-25	TRANSISTOR	MSD601-RT1
JR205	1-216-295-00	SHORT CHIP	0	Q216	8-729-010-05	TRANSISTOR	MSB709-RT1
JR206	1-216-295-00	SHORT CHIP	0	Q472	8-729-048-28	TRANSISTOR	2SD1766-T100-QR
JR208	1-216-295-00	SHORT CHIP	0	Q473	8-729-424-08	TRANSISTOR	UN2111
JR209	1-216-295-00	SHORT CHIP	0	< RESISTOR >			
JR210	1-216-295-00	SHORT CHIP	0	R121	1-216-073-91	RES-CHIP	10K 5% 1/10W (EXCEPT AEP, UK, RUS)
JR211	1-216-295-00	SHORT CHIP	0	R122	1-216-049-11	RES-CHIP	1K 5% 1/10W (AEP, UK, RUS)
JR212	1-216-295-00	SHORT CHIP	0	R125	1-216-295-00	SHORT CHIP	0
JR214	1-216-295-00	SHORT CHIP	0	R127	1-216-021-00	RES-CHIP	68 5% 1/10W (EXCEPT AEP, UK, RUS)
JR215	1-216-295-00	SHORT CHIP	0	R128	1-216-021-00	RES-CHIP	68 5% 1/10W (EXCEPT AEP, UK, RUS)
JR401	1-216-295-00	SHORT CHIP	0				
JR403	1-216-295-00	SHORT CHIP	0				
JR404	1-216-295-00	SHORT CHIP	0				
JR405	1-216-295-00	SHORT CHIP	0				
JR406	1-216-295-00	SHORT CHIP	0				
JR407	1-216-295-00	SHORT CHIP	0				
JR408	1-216-295-00	SHORT CHIP	0				
JR409	1-216-295-00	SHORT CHIP	0				

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

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

Ref. No.	Part No.	Description	Remark		
R129	1-216-073-91	RES-CHIP	10K	5%	1/10W (EXCEPT AEP, UK, RUS)
R130	1-216-021-00	RES-CHIP	68	5%	1/10W
R132	1-216-295-00	SHORT CHIP	0		
R133	1-216-021-00	RES-CHIP	68	5%	1/10W (EXCEPT AEP, UK, RUS)
R134	1-216-021-00	RES-CHIP	68	5%	1/10W (EXCEPT AEP, UK, RUS)
R135	1-216-021-00	RES-CHIP	68	5%	1/10W (EXCEPT AEP, UK, RUS)
R136	1-216-295-00	SHORT CHIP	0		
R143	1-216-295-00	SHORT CHIP	0		
△ R153	1-215-860-11	METAL OXIDE	33	5%	1W
△ R154	1-215-860-11	METAL OXIDE	33	5%	1W
R201	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R202	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R203	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R204	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W
R205	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R206	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R207	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R208	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R209	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R210	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R211	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R212	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R213	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R214	1-216-065-91	RES-CHIP	4.7K	5%	1/10W (AEP, UK, RUS)
R216	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R217	1-216-073-91	RES-CHIP	10K	5%	1/10W
R218	1-216-097-11	RES-CHIP	100K	5%	1/10W
R219	1-216-105-91	RES-CHIP	220K	5%	1/10W
R220	1-216-041-00	RES-CHIP	470	5%	1/10W
R221	1-216-073-91	RES-CHIP	10K	5%	1/10W
R222	1-216-073-91	RES-CHIP	10K	5%	1/10W
R224	1-216-073-91	RES-CHIP	10K	5%	1/10W
R225	1-216-089-91	RES-CHIP	47K	5%	1/10W
R226	1-216-041-00	RES-CHIP	470	5%	1/10W
R227	1-216-041-00	RES-CHIP	470	5%	1/10W
R228	1-216-073-91	RES-CHIP	10K	5%	1/10W
R229	1-216-089-91	RES-CHIP	47K	5%	1/10W
R230	1-216-089-91	RES-CHIP	47K	5%	1/10W
R231	1-216-073-91	RES-CHIP	10K	5%	1/10W (AEP, UK, RUS)
R232	1-216-073-91	RES-CHIP	10K	5%	1/10W (AEP, UK, RUS)
R233	1-216-089-91	RES-CHIP	47K	5%	1/10W (AEP, UK, RUS)
R234	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R235	1-216-065-91	RES-CHIP	4.7K	5%	1/10W (EXCEPT AEP, UK, RUS)
R236	1-216-073-91	RES-CHIP	10K	5%	1/10W (AEP, UK, RUS)
R237	1-216-065-91	RES-CHIP	4.7K	5%	1/10W (AEP, UK, RUS)
R238	1-216-097-11	RES-CHIP	100K	5%	1/10W
R239	1-216-097-11	RES-CHIP	100K	5%	1/10W (AEP, UK, RUS)

Ref. No.	Part No.	Description	Remark		
R240	1-216-041-00	RES-CHIP	470	5%	1/10W
R241	1-216-041-00	RES-CHIP	470	5%	1/10W
R249	1-216-033-00	RES-CHIP	220	5%	1/10W
R251	1-216-021-00	RES-CHIP	68	5%	1/10W
R252	1-216-073-91	RES-CHIP	10K	5%	1/10W
R253	1-216-049-11	RES-CHIP	1K	5%	1/10W
R254	1-216-049-11	RES-CHIP	1K	5%	1/10W
R256	1-216-049-11	RES-CHIP	1K	5%	1/10W
R286	1-216-295-00	SHORT CHIP	0		
R407	1-216-013-00	RES-CHIP	33	5%	1/10W
R408	1-216-073-91	RES-CHIP	10K	5%	1/10W
R418	1-216-027-00	RES-CHIP	120	5%	1/10W
R428	1-216-025-11	RES-CHIP	100	5%	1/10W
R429	1-216-073-91	RES-CHIP	10K	5%	1/10W
R430	1-216-073-91	RES-CHIP	10K	5%	1/10W
R432	1-216-073-91	RES-CHIP	10K	5%	1/10W
R434	1-216-097-11	RES-CHIP	100K	5%	1/10W
R437	1-216-073-91	RES-CHIP	10K	5%	1/10W
R438	1-216-073-91	RES-CHIP	10K	5%	1/10W
R442	1-216-025-11	RES-CHIP	100	5%	1/10W
R443	1-216-025-11	RES-CHIP	100	5%	1/10W
R444	1-216-025-11	RES-CHIP	100	5%	1/10W
R445	1-216-025-11	RES-CHIP	100	5%	1/10W
R446	1-216-025-11	RES-CHIP	100	5%	1/10W
R447	1-216-025-11	RES-CHIP	100	5%	1/10W
R453	1-218-616-91	METAL CHIP	15	5%	1W
R457	1-218-628-11	METAL CHIP	150	5%	1W
R458	1-218-628-11	METAL CHIP	150	5%	1W
R459	1-216-298-00	RES-CHIP	2.2	5%	1/10W
R460	1-216-073-91	RES-CHIP	10K	5%	1/10W
R468	1-216-073-91	RES-CHIP	10K	5%	1/10W
R469	1-216-073-91	RES-CHIP	10K	5%	1/10W
R475	1-216-073-91	RES-CHIP	10K	5%	1/10W
R476	1-216-055-00	RES-CHIP	1.8K	5%	1/10W
R477	1-216-055-00	RES-CHIP	1.8K	5%	1/10W

< VIBRATOR >

X401 1-781-472-21 VIBRATOR, CERAMIC (8MHz)

ER-21 BOARD (AEP, UK, RUS)

(Ref.No.9,000 Series)

< CAPACITOR >

C901	1-126-947-11	ELECT	47uF	20%	35V
C902	1-126-947-11	ELECT	47uF	20%	35V
C903	1-126-947-11	ELECT	47uF	20%	35V
C905	1-126-947-11	ELECT	47uF	20%	35V
C907	1-126-947-11	ELECT	47uF	20%	35V
C913	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C914	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C943	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C945	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C962	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C963	1-162-927-11	CERAMIC CHIP	100PF	5%	50V

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

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< CONNECTOR >				R912	1-216-037-00	RES-CHIP 330 5%	1/10W
CN901	1-815-387-11	CONNECTOR, FPC/FFC 21P		R914	1-216-053-00	RES-CHIP 1.5K 5%	1/10W
				R915	1-216-043-91	RES-CHIP 560 5%	1/10W
< JACK >				R916	1-216-053-00	RES-CHIP 1.5K 5%	1/10W
CNJ902	1-251-780-11	SOCKET, PIN (21P) (LINE (RGB)-TV)		R917	1-216-053-00	RES-CHIP 1.5K 5%	1/10W
				R918	1-216-021-00	RES-CHIP 68 5%	1/10W
				R924	1-216-041-00	RES-CHIP 470 5%	1/10W
				R926	1-216-041-00	RES-CHIP 470 5%	1/10W
< DIODE >				R927	1-216-021-00	RES-CHIP 68 5%	1/10W
D901	8-719-988-61	DIODE 1SS355TE-17		R928	1-216-021-00	RES-CHIP 68 5%	1/10W
D907	8-719-914-44	DIODE DAP202K		R929	1-216-021-00	RES-CHIP 68 5%	1/10W
D929	8-719-056-82	DIODE UDZ-TE-17-6.2B		R939	1-216-017-91	RES-CHIP 47 5%	1/10W
D930	8-719-977-40	DIODE DTZ13B		R950	1-216-081-00	RES-CHIP 22K 5%	1/10W
D932	8-719-071-15	DIODE HZM6.8ZWA1TL					
D933	8-719-071-15	DIODE HZM6.8ZWA1TL		R957	1-414-233-22	INDUCTOR, FERRITE BEAD	
D934	8-719-071-15	DIODE HZM6.8ZWA1TL		R958	1-414-233-22	INDUCTOR, FERRITE BEAD	
D935	8-719-071-15	DIODE HZM6.8ZWA1TL		R959	1-216-295-91	SHORT CHIP 0	
< FERRITE BEAD >				R961	1-216-295-91	SHORT CHIP 0	
FB907	1-469-796-21	FERRITE, CHIP		A-6061-584-A	MB-108AM (U2) BOARD, COMPLETE (CND)		
FB908	1-469-796-21	FERRITE, CHIP		A-6061-599-A	MB-108AM (AU2) BOARD, COMPLETE (AUS)		
FB909	1-469-796-21	FERRITE, CHIP		A-6061-606-A	MB-108AM (HK2) BOARD, COMPLETE		
FB910	1-469-796-21	FERRITE, CHIP			(SP, HK)		
< IC >				A-6061-615-A	MB-108AR (EC1) BOARD, COMPLETE		
					(AEP, UK)		
IC901	8-759-826-47	IC LA73052-TLM		A-6061-626-A	MB-108AM (E32) BOARD, COMPLETE (E)		
< JUMPER RESISTOR >				A-6061-635-A	MB-108AM (ME2) BOARD, COMPLETE		
					(ME, EA)		
JR901	1-216-295-91	SHORT CHIP 0		A-6071-121-A	MB-108AR (EC1) BOARD, COMPLETE (RUS)		
JR902	1-216-295-91	SHORT CHIP 0		*****			
JR905	1-216-295-91	SHORT CHIP 0		(Ref.No.1,000 Series)			
JR906	1-216-295-91	SHORT CHIP 0		< CAPACITOR >			
JR909	1-216-295-91	SHORT CHIP 0		C102	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
JR912	1-216-295-91	SHORT CHIP 0		C103	1-126-209-11	ELECT CHIP 100uF 20%	4V
JR913	1-216-295-91	SHORT CHIP 0		C104	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
JR914	1-216-295-91	SHORT CHIP 0		C105	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
JR915	1-216-295-91	SHORT CHIP 0		C106	1-162-914-11	CERAMIC CHIP 9PF 0.5PF	50V
JR918	1-216-295-91	SHORT CHIP 0		(EXCEPT AEP, UK, RUS)			
< COIL >				C106	1-162-916-11	CERAMIC CHIP 12PF 5%	50V
				(AEP, UK, RUS)			
L905	1-412-064-11	INDUCTOR 100uH		C107	1-162-915-11	CERAMIC CHIP 10PF 0.5PF	50V
				(EXCEPT AEP, UK, RUS)			
< TRANSISTOR >				C107	1-162-916-11	CERAMIC CHIP 12PF 5%	50V
				(AEP, UK, RUS)			
Q901	8-729-421-19	TRANSISTOR UN2213		C108	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
Q902	8-729-422-27	TRANSISTOR 2SD601A-Q		C109	1-126-209-11	ELECT CHIP 100uF 20%	4V
Q903	8-729-424-08	TRANSISTOR UN2111		C110	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
Q906	8-729-421-19	TRANSISTOR UN2213		C114	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
Q907	8-729-424-08	TRANSISTOR UN2111		C118	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
Q908	8-729-421-22	TRANSISTOR UN2211		C120	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
< RESISTOR >				C121	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
R905	1-216-089-91	RES-CHIP 47K 5%	1/10W	C122	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
R906	1-216-089-91	RES-CHIP 47K 5%	1/10W	C125	1-126-208-21	ELECT CHIP 47uF 20%	4V
R907	1-216-089-91	RES-CHIP 47K 5%	1/10W	(AEP, UK, RUS)			
R908	1-216-105-91	RES-CHIP 220K 5%	1/10W	C125	1-126-607-11	ELECT CHIP 47uF 20%	4V
R909	1-216-037-00	RES-CHIP 330 5%	1/10W	(EXCEPT AEP, UK, RUS)			
R910	1-216-037-00	RES-CHIP 330 5%	1/10W	C126	1-126-206-11	ELECT CHIP 100uF 20%	6.3V
R911	1-216-037-00	RES-CHIP 330 5%	1/10W	C127	1-126-204-11	ELECT CHIP 47uF 20%	16V
				C128	1-126-246-11	ELECT CHIP 220uF 20%	4V
				C129	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
				C201	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
				C202	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V

MB-108

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
C203	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C311	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C204	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C312	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C210	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	C313	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C211	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	C314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C212	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	C315	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C213	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	C316	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C214	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V	C317	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C215	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	C318	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C216	1-164-230-11	CERAMIC CHIP	220PF	5%	50V	C319	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C218	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V	C320	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C219	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C321	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C220	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C322	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C221	1-124-779-00	ELECT CHIP	10uF	20%	16V	C323	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C225	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	C324	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C226	1-164-230-11	CERAMIC CHIP	220PF	5%	50V	C325	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C228	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C326	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C229	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C230	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	C328	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C232	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C329	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C233	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C330	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C234	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	C331	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C235	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C332	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C236	1-164-230-11	CERAMIC CHIP	220PF	5%	50V	C333	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C238	1-124-779-00	ELECT CHIP	10uF	20%	16V	C334	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C240	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C335	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C241	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C337	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C242	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	C338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C243	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C339	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C244	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C340	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C245	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C343	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C246	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C344	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C247	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C401	1-124-779-00	ELECT CHIP	10uF	20%	16V
C248	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C402	1-124-779-00	ELECT CHIP	10uF	20%	16V
C249	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C403	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C250	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C404	1-126-193-11	ELECT CHIP	1uF	20%	50V
C251	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C405	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C252	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C406	1-124-779-00	ELECT CHIP	10uF	20%	16V
C253	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C407	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C254	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	C408	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C255	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C256	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	C412	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C257	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C258	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C415	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C259	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C416	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C260	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C417	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C261	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	C418	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C262	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C419	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C263	1-124-779-00	ELECT CHIP	10uF	20%	16V	C420	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C264	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V	C422	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C265	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C423	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C266	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C425	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C270	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C426	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C271	1-126-204-11	ELECT CHIP	47uF	20%	16V	C428	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C272	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C429	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C273	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C431	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C304	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C432	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C305	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	C435	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C308	1-126-206-11	ELECT CHIP	100uF	20%	6.3V	C436	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C309	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C438	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C310	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	C439	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
C441	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (EXCEPT CND, E)	IC405	6-702-610-01	IC MSM56V16160F-10T47M1	(EXCEPT CND, E)		
C442	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (EXCEPT CND, E)	IC601	6-703-704-01	IC AK4381VT-E2			
C446	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	< COIL >					
C447	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (EXCEPT CND, E)	L101	1-414-410-21	INDUCTOR	10uH		
C449	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	L201	1-412-031-11	INDUCTOR	47uH		
C601	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	L202	1-412-031-11	INDUCTOR	47uH		
C602	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V	< TRANSISTOR >					
C603	1-124-779-00	ELECT CHIP	10uF	20%	16V	Q201	8-729-903-46	TRANSISTOR	2SB1132-P		
C604	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	Q202	8-729-903-46	TRANSISTOR	2SB1132-P		
< CONNECTOR >						< RESISTOR >					
CN101	1-816-339-21	CONNECTOR, BOARD TO BOARD 9P				R103	1-216-809-11	METAL CHIP	100	5%	1/10W
* CN102	1-770-154-11	PIN, CONNECTOR (PC BOARD) 6P				R104	1-216-809-11	METAL CHIP	100	5%	1/10W
CN201	1-779-353-21	CONNECTOR, FFC/FPC 5P				R105	1-216-809-11	METAL CHIP	100	5%	1/10W
CN202	1-779-353-21	CONNECTOR, FFC/FPC 5P				R106	1-216-809-11	METAL CHIP	100	5%	1/10W
CN203	1-815-507-21	CONNECTOR, FFC/FPC 26P				R108	1-216-789-11	METAL CHIP	2.2	5%	1/10W
CN601	1-816-369-21	CONNECTOR, BOARD TO BOARD 25P				R110	1-216-821-11	METAL CHIP	1K	5%	1/10W
< FERRITE BEAD >						R111	1-216-809-11	METAL CHIP	100	5%	1/10W
FB103	1-400-382-11	EMI FERRITE (SMD) (1608)				R112	1-216-809-11	METAL CHIP	100	5%	1/10W
FB104	1-400-382-11	EMI FERRITE (SMD) (1608)				R113	1-216-837-11	METAL CHIP	22K	5%	1/10W
FB105	1-400-382-11	EMI FERRITE (SMD) (1608)				R114	1-216-817-11	METAL CHIP	470	5%	1/10W
FB106	1-400-382-11	EMI FERRITE (SMD) (1608)				(AEP, UK, RUS)					
FB107	1-469-324-21	FERRITE, EMI (SMD) (2012)				R114	1-216-864-11	SHORT CHIP	0 (EXCEPT AEP, UK, RUS)		
FB108	1-469-324-21	FERRITE, EMI (SMD) (2012)				R116	1-216-801-11	METAL CHIP	22	5%	1/10W
FB109	1-400-382-11	EMI FERRITE (SMD) (1608)				R117	1-216-821-11	METAL CHIP	1K	5%	1/10W
FB111	1-400-382-11	EMI FERRITE (SMD) (1608)				R118	1-216-845-11	METAL CHIP	100K	5%	1/10W
FB602	1-469-784-11	BEAD, FERRITE (SMD)				R119	1-216-845-11	METAL CHIP	100K	5%	1/10W
FB603	1-469-784-11	BEAD, FERRITE (SMD)				R120	1-216-821-11	METAL CHIP	1K	5%	1/10W
< FILTER >						R121	1-216-821-11	METAL CHIP	1K	5%	1/10W
FL101	1-234-177-21	FILTER, CHIP EMI				R123	1-216-833-11	METAL CHIP	10K	5%	1/10W
FL103	1-234-177-21	FILTER, CHIP EMI				R124	1-216-833-11	METAL CHIP	10K	5%	1/10W
FL104	1-234-177-21	FILTER, CHIP EMI				R128	1-216-809-11	METAL CHIP	100	5%	1/10W
FL105	1-234-177-21	FILTER, CHIP EMI				R129	1-216-809-11	METAL CHIP	100	5%	1/10W
FL109	1-233-893-21	FILTER, CHIP EMI				R130	1-216-809-11	METAL CHIP	100	5%	1/10W
FL110	1-234-177-21	FILTER, CHIP EMI				R131	1-216-809-11	METAL CHIP	100	5%	1/10W
FL201	1-234-177-21	FILTER, CHIP EMI				R134	1-216-801-11	METAL CHIP	22	5%	1/10W
FL402	1-234-177-21	FILTER, CHIP EMI				R136	1-216-801-11	METAL CHIP	22	5%	1/10W
FL404	1-234-177-21	FILTER, CHIP EMI				R137	1-216-801-11	METAL CHIP	22	5%	1/10W
< IC >						R139	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
IC101	8-759-699-33	IC M24C16-MN6T (A)				R141	1-216-833-11	METAL CHIP	10K	5%	1/10W
IC103	6-701-877-01	IC SM8707EV-G-E2				R150	1-216-833-11	METAL CHIP	10K	5%	1/10W
IC104	6-701-837-01	IC MB91307RPFV-G-BND-E1				R156	1-216-833-11	METAL CHIP	10K	5%	1/10W
IC107	6-803-345-01	IC MR27V3202F-118TPZ04B (CND, E)				R157	1-216-864-11	SHORT CHIP	0		
IC107	6-803-346-01	IC MR27V3202F-119TPZ04B	(EXCEPT CND, E)			R159	1-216-864-11	SHORT CHIP	0		
IC201	6-703-445-01	IC SP3726A				R160	1-216-864-11	SHORT CHIP	0		
IC202	6-701-878-01	IC FAN8034L				R163	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
IC301	6-701-876-01	IC CXD9703R				R164	1-216-041-00	RES-CHIP	470	5%	1/10W (AUS)
IC302	6-702-302-01	IC TK11133CSCL-G				R164	1-216-047-91	RES-CHIP	820	5%	1/10W (ME, EA)
IC303	6-701-969-01	IC K4F151612D-UL60T				R164	1-216-057-00	RES-CHIP	2.2K	5%	1/10W (SP, HK)
IC401	6-702-300-01	IC TK11118CSCL-G				R164	1-216-065-91	RES-CHIP	4.7K	5%	1/10W (RUS)
IC402	6-702-302-01	IC TK11133CSCL-G				R164	1-216-075-00	RES-CHIP	12K	5%	1/10W (AEP, UK)
IC403	8-752-416-45	IC CXD1935Q				R164	1-216-081-00	RES-CHIP	22K	5%	1/10W (E)
IC404	6-702-610-01	IC MSM56V16160F-10T47M1									

MB-108

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R165	1-216-827-11	METAL CHIP	3.3K	5%	1/10W	R254	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R166	1-216-047-91	RES-CHIP	820	5%	1/10W	R255	1-218-889-11	METAL CHIP	56K	0.5%	1/10W
R168	1-216-827-11	METAL CHIP	3.3K	5%	1/10W	R256	1-216-809-11	METAL CHIP	100	5%	1/10W
R169	1-216-069-00	RES-CHIP	6.8K	5%	1/10W	R259	1-216-833-11	METAL CHIP	10K	5%	1/10W
					(RUS)	R260	1-216-834-11	METAL CHIP	12K	5%	1/10W
R169	1-216-075-00	RES-CHIP	12K	5%	1/10W	R261	1-216-833-11	METAL CHIP	10K	5%	1/10W
					(E, AUS)	R262	1-216-815-11	METAL CHIP	330	5%	1/10W
						R263	1-216-861-11	METAL CHIP	2.2M	5%	1/10W
R169	1-216-081-00	RES-CHIP	22K	5%	1/10W	R264	1-216-845-11	METAL CHIP	100K	5%	1/10W
					(SP, HK)						
R169	1-216-089-91	RES-CHIP	47K	5%	1/10W	R265	1-216-838-11	METAL CHIP	27K	5%	1/10W
					(AEP, UK, ME, EA)	R269	1-216-833-11	METAL CHIP	10K	5%	1/10W
R176	1-216-864-11	SHORT CHIP	0			R273	1-216-864-11	SHORT CHIP	0		
R180	1-216-809-11	METAL CHIP	100	5%	1/10W	R281	1-216-864-11	SHORT CHIP	0		
R181	1-216-864-11	SHORT CHIP	0			R282	1-216-864-11	SHORT CHIP	0		
R182	1-216-809-11	METAL CHIP	100	5%	1/10W	R284	1-216-833-11	METAL CHIP	10K	5%	1/10W
R183	1-216-809-11	METAL CHIP	100	5%	1/10W	R301	1-216-295-91	SHORT CHIP	0		
R184	1-216-833-11	METAL CHIP	10K	5%	1/10W	R302	1-216-295-91	SHORT CHIP	0		
R185	1-216-821-11	METAL CHIP	1K	5%	1/10W	R303	1-216-821-11	METAL CHIP	1K	5%	1/10W
R206	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R311	1-216-809-11	METAL CHIP	100	5%	1/10W
R207	1-216-809-11	METAL CHIP	100	5%	1/10W	R312	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R210	1-216-815-11	METAL CHIP	330	5%	1/10W	R313	1-216-817-11	METAL CHIP	470	5%	1/10W
R211	1-216-809-11	METAL CHIP	100	5%	1/10W	R314	1-216-817-11	METAL CHIP	470	5%	1/10W
R212	1-216-809-11	METAL CHIP	100	5%	1/10W	R315	1-216-817-11	METAL CHIP	470	5%	1/10W
R213	1-216-833-11	METAL CHIP	10K	5%	1/10W	R316	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R214	1-216-833-11	METAL CHIP	10K	5%	1/10W	R317	1-216-833-11	METAL CHIP	10K	5%	1/10W
R216	1-216-821-11	METAL CHIP	1K	5%	1/10W	R318	1-216-817-11	METAL CHIP	470	5%	1/10W
R217	1-216-821-11	METAL CHIP	1K	5%	1/10W	R319	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R218	1-216-846-11	METAL CHIP	120K	5%	1/10W	R320	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R219	1-216-846-11	METAL CHIP	120K	5%	1/10W	R321	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R220	1-216-847-11	METAL CHIP	150K	5%	1/10W	R322	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R221	1-216-847-11	METAL CHIP	150K	5%	1/10W	R323	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R222	1-216-842-11	METAL CHIP	56K	5%	1/10W	R324	1-216-833-11	METAL CHIP	10K	5%	1/10W
R223	1-216-842-11	METAL CHIP	56K	5%	1/10W	R325	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R224	1-216-850-11	METAL CHIP	270K	5%	1/10W	R326	1-216-833-11	METAL CHIP	10K	5%	1/10W
R225	1-216-833-11	METAL CHIP	10K	5%	1/10W	R327	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R226	1-216-853-11	METAL CHIP	470K	5%	1/10W	R328	1-216-838-11	METAL CHIP	27K	5%	1/10W
R227	1-216-846-11	METAL CHIP	120K	5%	1/10W	R329	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R229	1-216-833-11	METAL CHIP	10K	5%	1/10W	R330	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R230	1-216-839-11	METAL CHIP	33K	5%	1/10W	R331	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R231	1-216-855-11	METAL CHIP	680K	5%	1/10W	R332	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R232	1-216-839-11	METAL CHIP	33K	5%	1/10W	R333	1-216-847-11	METAL CHIP	150K	5%	1/10W
R233	1-216-853-11	METAL CHIP	470K	5%	1/10W	R334	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R234	1-211-981-11	METAL CHIP	33	0.5%	1/10W	R335	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R235	1-216-809-11	METAL CHIP	100	5%	1/10W	R336	1-216-833-11	METAL CHIP	10K	5%	1/10W
R236	1-211-981-11	METAL CHIP	33	0.5%	1/10W	R349	1-216-833-11	METAL CHIP	10K	5%	1/10W
R238	1-216-839-11	METAL CHIP	33K	5%	1/10W	R351	1-216-295-91	SHORT CHIP	0		
R239	1-216-839-11	METAL CHIP	33K	5%	1/10W	R352	1-216-295-91	SHORT CHIP	0		
R240	1-216-839-11	METAL CHIP	33K	5%	1/10W	R358	1-216-833-11	METAL CHIP	10K	5%	1/10W
R241	1-216-839-11	METAL CHIP	33K	5%	1/10W	R359	1-216-833-11	METAL CHIP	10K	5%	1/10W
R242	1-216-849-11	METAL CHIP	220K	5%	1/10W	R360	1-216-809-11	METAL CHIP	100	5%	1/10W
R243	1-216-853-11	METAL CHIP	470K	5%	1/10W	R401	1-216-295-91	SHORT CHIP	0		
R244	1-216-821-11	METAL CHIP	1K	5%	1/10W	R402	1-216-295-91	SHORT CHIP	0		
R245	1-216-841-11	METAL CHIP	47K	5%	1/10W	R403	1-216-817-11	METAL CHIP	470	5%	1/10W
R246	1-216-809-11	METAL CHIP	100	5%	1/10W	R405	1-216-809-11	METAL CHIP	100	5%	1/10W
R248	1-216-803-11	METAL CHIP	33	5%	1/10W	R406	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R249	1-216-803-11	METAL CHIP	33	5%	1/10W	R407	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R250	1-218-895-11	METAL CHIP	100K	0.5%	1/10W	R408	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R251	1-216-841-11	METAL CHIP	47K	5%	1/10W	R409	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R252	1-216-839-11	METAL CHIP	33K	5%	1/10W	R410	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R253	1-218-889-11	METAL CHIP	56K	0.5%	1/10W	R411	1-218-831-11	METAL CHIP	220	0.5%	1/10W

POWER SUPPLY BLOCK (ETXNY410M0F)

Ref. No.	Part No.	Description	Remark		
R412	1-216-833-11	METAL CHIP	10K	5%	1/10W
R413	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R414	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R423	1-216-833-11	METAL CHIP	10K	5%	1/10W
R426	1-216-833-11	METAL CHIP	10K	5%	1/10W
R430	1-216-797-11	METAL CHIP	10	5%	1/10W
R439	1-216-864-11	SHORT CHIP	0		
R601	1-216-809-11	METAL CHIP	100	5%	1/10W
R607	1-216-864-11	SHORT CHIP	0		
R608	1-216-864-11	SHORT CHIP	0		
R609	1-216-864-11	SHORT CHIP	0		
R612	1-216-864-11	SHORT CHIP	0		
< COMPOSITION CIRCUIT BLOCK >					
RB102	1-233-270-11	NETWORK, RES (8 GANG) 10K			
< VARIABLE RESISTOR >					
RV401	1-223-583-41	RES, ADJ, CARBON (3 TYPE) 1K			
< VIBRATOR >					
X101	1-795-174-11	VIBRATOR, CERAMI (16.5MHz)			
X102	1-781-867-21	VIBRATOR, CRYSTAL (27MHz) (AEP, UK, RUS)			
X102	1-795-630-11	VIBRATOR, CRYSTAL (27MHz)			
(EXCEPT AEP, UK, RUS)					
MS-128 BOARD					

(Ref.No.1,000 Series)					
< CONNECTOR >					
CN001	1-815-412-11	CONNECTOR, FFC/FPC 5P			
< SWITCH >					
S001	1-786-509-11	SWITCH, ROTARY (CHUCK/TRAY DETECT)			
SW-384 BOARD					

(Ref.No.1,000 Series)					
< CAPACITOR >					
C820	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
< CONNECTOR >					
CN801	1-815-569-11	CONNECTOR, FFC/FPC 7P			
< IC >					
IC820	6-703-744-01	IC GP1UE26SXK0F			
< JUMPER RESISTOR >					
JR801	1-216-295-91	SHORT CHIP	0		
JR802	1-216-295-91	SHORT CHIP	0		
JR803	1-216-295-91	SHORT CHIP	0		
< JUMPER RESISTOR >					
JS812	1-216-295-91	SHORT CHIP	0		

POWER SUPPLY BLOCK (ETXNY410E0F)

Ref. No.	Part No.	Description	Remark		
< RESISTOR >					
R802	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R803	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R807	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R820	1-216-017-91	RES-CHIP	47	5%	1/10W
R821	1-216-097-11	RES-CHIP	100K	5%	1/10W
< SWITCH >					
S803	1-762-196-21	SWITCH, TACT (EXCEPT AEP, UK, RUS)			
S803	1-762-875-21	SWITCH, TACT (AEP, UK, RUS)			
S808	1-762-196-21	SWITCH, TACT (EXCEPT AEP, UK, RUS)			
S808	1-762-875-21	SWITCH, TACT (AEP, UK, RUS)			
S809	1-762-196-21	SWITCH, TACT (EXCEPT AEP, UK, RUS)			
S809	1-762-875-21	SWITCH, TACT (AEP, UK, RUS)			
S811	1-762-196-21	SWITCH, TACT (EXCEPT AEP, UK, RUS)			
S811	1-762-875-21	SWITCH, TACT (AEP, UK, RUS)			
S812	1-762-196-21	SWITCH, TACT (EXCEPT AEP, UK, RUS)			
S812	1-762-875-21	SWITCH, TACT (AEP, UK, RUS)			
S814	1-762-196-21	SWITCH, TACT (EXCEPT AEP, UK, RUS)			
S814	1-762-875-21	SWITCH, TACT (AEP, UK, RUS)			
△	1-468-742-12	POWER SUPPLY BLOCK (HS8S2U) (CND)			

(Ref.No.1,000 Series)					
< IC LINK >					
△ P311	9-885-024-66	PROTECTOR (1A/125V)			
△ P611	9-885-024-67	PROTECTOR (1.5A/125V)			
△	1-468-743-12	POWER SUPPLY BLOCK (ETXNY410M0F)			
(E, SP, ME, AUS, HK, EA)					

(Ref.No.5,000 Series)					
< FUSE >					
△ F101	9-885-020-87	CATRIDGE FUSE (2A/250V)			
△ F201	9-885-020-85	CATRIDGE FUSE (1.6A/125V)			
△ F301	9-885-020-85	CATRIDGE FUSE (1.6A/125V)			
△	1-468-744-12	POWER SUPPLY BLOCK (ETXNY410E0F)			
(AEP, UK, RUS)					

(Ref.No.3,000 Series)					
< FUSE >					
△ F101	9-885-020-87	CATRIDGE FUSE (2A/250V)			
△ F201	9-885-020-85	CATRIDGE FUSE (1.6A/125V)			
△ F301	9-885-020-85	CATRIDGE FUSE (1.6A/125V)			

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

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

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	

△ 51	1-468-742-12	POWER SUPPLY BLOCK (HS8S2U) (CND)	
△ 51	1-468-743-12	POWER SUPPLY BLOCK (ETXNY410M0F) (E, EA, HK, SP, AUS, ME)	
△ 51	1-468-744-12	POWER SUPPLY BLOCK (ETXNY410E0F) (AEP, UK, RUS)	
△ 56	1-574-127-52	CORD, POWER (AEP, UK, RUS)	
△ 56	1-769-744-92	CORD, POWER (E, EA, HK, ME, SP)	
△ 56	1-790-588-12	CORD, POWER (AUS)	
△ 56	1-823-597-11	CORD, POWER (CND)	
60	1-824-955-11	FLAT FLEXIBLE CABLE FMS-23	
61	1-824-954-11	FLAT FLEXIBLE CABLE FMO-8	
62	1-824-953-11	FLAT FLEXIBLE CABLE FMM-48	
△ 101	A-6061-908-A	SERVICE ASSY, KHM-290AAA	
M001	1-763-967-11	MOTOR, DC (LOADING)	

ACCESSORIES & PACKING MATERIALS

	1-477-885-11	REMOTE COMMANDER (RM-Z400A) (CND, E)	
	1-477-885-31	REMOTE COMMANDER (RM-Z400E) (EXCEPT CND, E)	
△	1-569-008-22	ADAPTOR, CONVERSION 2P (E, EA)	
△	1-770-019-51	ADAPTOR, CONVERSION PLUG (UK, HK)	
	1-823-364-21	CORD, CONNECTION (AUDIO/VIDEO CORD) (1.5m) (EXCEPT AEP, RUS)	
	3-071-119-31	COVER, BATTERY (for RM-Z400A/E)	
	3-081-707-12	MANUAL, INSTRUCTION (ENGLISH) (CND)	
	3-081-707-22	MANUAL, INSTRUCTION (FRENCH) (CND)	
	3-081-707-33	MANUAL, INSTRUCTION (SPANISH) (E)	
	3-081-707-41	MANUAL, INSTRUCTION (ENGLISH) (EA, HK, ME, SP, AUS)	
	3-081-707-51	MANUAL, INSTRUCTION (TRADITIONAL CHINESE) (HK)	
	3-081-707-61	MANUAL, INSTRUCTION (ARABIC) (EA, ME)	
	3-081-707-71	MANUAL, INSTRUCTION (ARABIC) (ME)	
	3-081-708-12	MANUAL, INSTRUCTION (ENGLISH) (AEP, UK)	
	3-081-708-22	MANUAL, INSTRUCTION (FRENCH) (AEP)	
	3-081-708-32	MANUAL, INSTRUCTION (GERMAN) (AEP)	
	3-081-708-42	MANUAL, INSTRUCTION (ITALIAN) (AEP)	
	3-081-708-52	MANUAL, INSTRUCTION (SPANISH) (AEP)	
	3-081-708-62	MANUAL, INSTRUCTION (DUTCH) (AEP)	
	3-081-708-71	MANUAL, INSTRUCTION (RUSSIAN) (RUS)	

