

RDR-HX520/HX525/HX720/HX722/ HX725/HX727/HX920/HX925 RMT-D230P/D231P

SERVICE MANUAL

Self Diagnosis
Supported model

SHOWVIEW®

for RDR-HX520/HX720/HX722/
HX725/HX727/HX920/HX925

VIDEOplus®

for RDR-HX525/HX725

GUIDEplus®

for RDR-HX525/HX725/HX727/HX925



Photo: RDR-HX525

AEP Model

RDR-HX520/HX720/HX722/HX725/

HX727/HX920/HX925

UK Model

RDR-HX520/HX525/

HX720/HX725



DVD + ReWritable



SPECIFICATIONS

System

Laser: Semiconductor laser

Channel coverage:

PAL (B/G, D/K, I)
VHF: E2 to E12, R1 to R12, Italian A to H, Ireland A to J, South Africa 4 to 13
UHF: E21 to E69, R21 to R69, B21 to B69
CATV: S01 to S05, S1 to S20
HYPER: S21 to S41

SECAM (L) (for French RDR-HX520/
HX725/HX727/HX920 and RDR-
HX925 models only)
VHF: F2 to F10
UHF: F21 to F69
CATV: France B to Q
HYPER: S21 to S41

The above channel coverage merely ensures the channel reception within these ranges. It does not guarantee the ability to receive signals in all circumstances. For details, see "Receivable channels"

Video reception: Frequency synthesizer system

Audio reception: Split carrier system
Aerial out: 75-ohm asymmetrical aerial socket

Timer: Clock; Quartz locked/Timer indication: 24-hour cycle (digital)/Power back-up duration: 1 hour

Video recording format: MPEG-2,
MPEG-1

Audio recording format/applicable bit rate: Dolby Digital 2 ch
256 kbps/128 kbps (in EP and SLP mode)

Inputs and outputs

LINE 2 OUT

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

(VIDEO): Phono jack/1.0 Vp-p

(S VIDEO): 4-pin mini DIN/Y: 1.0 Vp-p,
C: 0.3 Vp-p (PAL)

LINE 2 IN

(AUDIO): Phono jack/2 Vrms/more than
22 kilohms

(VIDEO): Phono jack/1.0 Vp-p

(S VIDEO): 4-pin mini DIN/Y: 1.0 Vp-p,
C: 0.3 Vp-p (PAL)

LINE 1 - TV: 21-pin

CVBS IN/OUT

S-Video/RGB OUT (upstream)

LINE 3/DECODER: 21-pin

CVBS IN/OUT

S-Video/RGB IN

(RGB signal cannot be recorded, except
with French RDR-HX520/HX725/HX727/
HX920 and RDR-HX925 models.)

S-Video OUT (downstream)

Decoder

DV IN: 4-pin/i.LINK S100

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

COMPONENT VIDEO OUT

(Y, P_B/C_B, P_R/C_R):

Phono jack/Y: 1.0 Vp-p, P_B/C_B: 0.7 Vp-p,
P_R/C_R: 0.7 Vp-p

G-LINK: mini jack

(for French RDR-HX525/HX725/HX727
and RDR-HX725 models only)

General

Power requirements: 220-240 V AC, 50/
60 Hz

Power consumption:

RDR-HX520/HX525: 42 W
RDR-HX720/HX722/HX725/HX727/
HX920/HX925: 44 W

Dimensions (approx.):

430 × 65 × 328 mm (width/height/
depth) incl. projecting parts

Hard disk drive capacity:

RDR-HX520/HX525: 80 GB
RDR-HX720/HX722/HX725/
HX727: 160 GB
RDR-HX920/HX925: 250 GB

Mass (approx.): 4.2 kg

Operating temperature: 5°C to 35°C

Operating humidity: 25% to 80%

Supplied accessories:

Mains lead (1)
Aerial cable (1)
Remote commander (remote) (1)
Set top box controller (1)
(for French RDR-HX525/HX725/
HX727/HX925 models only)
R6 (size AA) batteries (2)

Specifications and design are subject to
change without notice.

Compatible colour systems

This recorder is designed to record using the
PAL colour system and play back using the
PAL or NTSC colour systems.

◆ **For French RDR-HX520/HX725/HX727/
HX920 and RDR-HX925 models only**

The signals of the SECAM colour system can
be received or recorded but played back in the
PAL colour system only. Recording of video
sources based on other colour systems cannot
be guaranteed.

DVD RECORDER

SONY®

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.

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

SAFETY-RELATED COMPONENT WARNING!!

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

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.

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, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
 - Keep the temperature of the soldering iron around 270°C during repairing.
 - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
 - Be careful not to apply force on the conductor when soldering or unsoldering.

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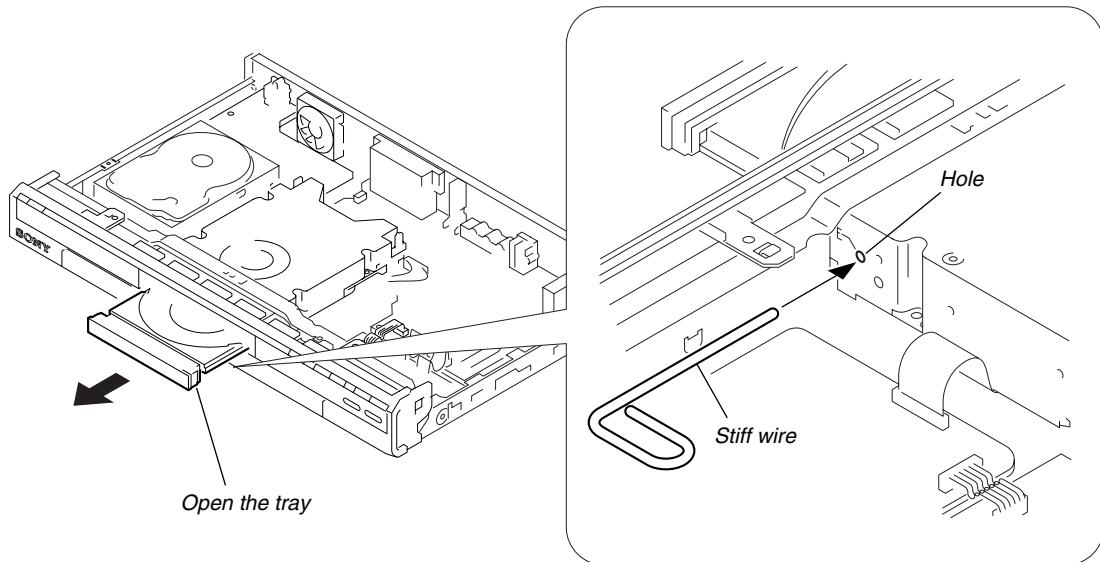
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SERVICE NOTE

1. DISK REMOVAL PROCEDURE IF THE TRAY CANNOT BE EJECTED (FORCED EJECTION)

1. Remove the case block assembly.
2. Insert the stiff wire in the hole and eject the tray.



NOTES DURING THE FORCED EJECTION

1. If the forced ejection is executed while a blank disc media (DVD±RW, ±R) exists on the tray
 - Insert a DVD-ROM (DVD test disc, DVD software available on the market, or the like) in the tray and then close the tray.
Note1: If you close the tray while it is empty, ejection of the tray becomes impossible.
Note2: If you close the tray with a CD disc inserted in it, the CD can be ejected. However, if you close the tray while it is empty, there can be a case that ejection of the tray becomes impossible.
Note3: Even if you replace the DVD drive unit while the tray remains under the state as described above, the situation cannot be improved.
2. If the tray cannot be ejected while the disc is not inserted
 - Execute the forced ejection.
 - Insert a DVD-ROM (DVD test disc, DVD software available on the market, or the like) on the tray and try to close the tray.
(There are cases that it recovers the trouble.)
3. Contents of forcedly ejected blank disc media (DVD±RW, ±R) can be damaged. (There can be a case that initialization is also impossible.)

MEMO

This section is extracted from instruction manual.
(RDR-HX520/HX720/HX722/HX920 :
2-672-836-E1(1))

SECTION 1 GENERAL

WARNING

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only. The mains lead must be changed only at a qualified service shop.

CLASS 1 LASER PRODUCT
LASER KLASSE 1
クラス 1 レーザ製品

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the laser protective housing inside the enclosure.

CAUTION

The use of optical instruments with this product will increase eye hazard. As the laser beam used in this DVD recorder is harmful to eyes, do not attempt to disassemble the cabinet. Refer servicing to qualified personnel only.



This label is located on the laser protective housing inside the enclosure.

Precautions

- This unit operates on 220 – 240 V AC, 50/60 Hz. Check that the unit's operating voltage is identical with your local power supply.
- To prevent fire or shock hazard, do not place objects filled with liquids, such as vases, on the apparatus.
- Install this system so that the mains lead can be unplugged from the wall socket immediately in the event of trouble.

ShowView is a registered trademark of Gemstar Development Corporation. The ShowView system is manufactured under licence from Gemstar Development Corporation.



Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials helps to conserve natural resources. For more detailed information about recycling of this product, please contact your local Civic Office, your household waste disposal service or the shop where you purchased the product.

Precautions

This equipment has been tested and found to comply with the limits set out in the EMC Directive using a connection cable shorter than 3 metres.

On safety

Should any solid object or liquid fall into the cabinet, unplug the recorder and have it checked by qualified personnel before operating it any further.

About the hard disk drive

The hard disk has a high storage density, which enables long recording durations and quick access to the written data. However, it can easily be damaged by shock, vibration or dust, and should be kept away from magnets. To avoid losing important data, observe the following precautions.

- Do not apply a strong shock to the recorder.
- Do not place the recorder in a location subject to mechanical vibrations or in an unstable location.
- Do not place the recorder on top of a hot surface, such as a VCR or amplifier (receiver).
- Do not move the recorder in a place subject to extreme changes in temperature (temperature gradient less than 10 °C/hour).
- Do not move the recorder with its mains lead connected.
- Do not disconnect the mains lead while the power is on.
- When disconnecting the mains lead, turn off the power and make sure that the hard disk drive is not operating (the clock is displayed in the front panel display and all recording or dubbing has stopped).
- Do not move the recorder for one minute after you have unplugged the mains lead.

- Do not attempt to replace or upgrade the hard disk by yourself, as this may result in malfunction.

If the hard disk drive should malfunction, you cannot recover lost data. The hard disk drive is only a temporary storage space.

About repairing the hard disk drive

- The contents of the hard disk drive may be checked in case of repair or inspection during a malfunction or modification. However, the contents will not be backed up or saved by Sony.
- If the hard disk needs to be formatted or replaced, it will be done at the discretion of Sony. All contents of the hard disk drive will be erased, including contents that violate copyright laws.

On power sources

- The recorder is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the recorder itself has been turned off.

• If you are not going to use the recorder for a long time, be sure to disconnect the recorder from the wall outlet. To disconnect the AC power cord (mains lead), grasp the plug itself; never pull the cord.

- Before disconnecting the AC power cord (mains lead), check that the recorder's hard disk is not operating (recording or dubbing) on the front panel display.

On placement

- Place the recorder in a location with adequate ventilation to prevent heat build-up in the recorder.
- Do not place the recorder on a soft surface such as a rug that might block the ventilation holes.
- Do not place the recorder in a confined space such as a bookshelf or similar unit.
- Do not place the recorder in a location near heat sources, or in a place subject to direct sunlight, excessive dust, or mechanical shock.
- Do not place the recorder in an inclined position. It is designed to be operated in a horizontal position only.
- Keep the recorder and discs away from equipment with strong magnets, such as microwave ovens, or large loudspeakers.
- Do not place heavy objects on the recorder.

On recording

Make trial recordings before making the actual recording.

On compensation for lost recordings

Sony is not liable and will not compensate for any lost recordings or relevant losses, including when recordings are not made due to reasons including recorder failure, or when the contents of a recording are lost or damaged as a result of recorder failure or repair undertaken on the recorder. Sony will not restore, recover, or replicate the recorded contents under any circumstances.

Copyrights

- Television programmes, films, video tapes, discs, and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission may require authorization from the cable television transmitter and/or programme owner.
- This product incorporates copyright protection technology that is protected by U.S. patent and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

Copy guard function

Since the recorder has a copy guard function, programmes received through an external tuner (not supplied) may contain copy protection signals (copy guard function) and as such may not be recordable, depending on the type of signal.

IMPORTANT NOTICE

Caution: This recorder 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 panels and projection televisions are especially susceptible to this.

If you have any questions or problems concerning your recorder, please consult your nearest Sony dealer.

→continued 3

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About this manual

Check your model name

The instructions in this manual are for 4 models: RDR-HX520, RDR-HX720, RDR-HX722, and RDR-HX920. Check your model name by looking at the front panel of the recorder.

- In this manual, the internal hard disk drive is written as "HDD," and "disc" is used as a general reference for the HDD, DVDs, or CDs unless otherwise specified by the text or illustrations.
- Icons, such as [DVD], listed at the top of each explanation indicate what kind of media can be used with the function being explained.
- Instructions in this manual describe the controls on the remote. You can also use the controls on the recorder if they have the same or similar names as those on the remote.
- The on-screen display illustrations used in this manual may not match the graphics displayed on your TV screen.
- The explanations regarding DVDs in this manual refer to DVDs created on this recorder. The explanations do not apply to DVDs that are created on other recorders and played back on this recorder.

Quick Guide to Disc Types

Recordable and playable discs

Type	Disc Logo	Icon used in this manual	Formatting (new discs)	Compatibility with other players (finalising)
Hard disk drive (internal)			Formatting unnecessary	Dub HDD contents to a DVD to play on other DVD players
DVD+RW	 DVD+Rewritable DVD+Rewritable		Automatically formatted in +VR mode (DVD+RW VIDEO)	Playable on DVD+RW compatible players (automatically finalised)
DVD-RW	VR mode			Format in VR mode (page 27) Playable only on VR mode compatible players (finalisation unnecessary)
	Video mode	 		Format in Video mode (page 27) Playable on most DVD players (finalisation necessary) (page 36)
DVD+R	 DVD+R DVD+R DL		Automatically formatted in +VR mode (DVD+R VIDEO)	Playable on most DVD players (finalisation necessary) (page 36)
DVD-R	VR mode			Format in VR mode (page 27)* Formatting is performed using the "Disc Information" display. Playable only on DVD-R in VR mode compatible players (finalisation necessary) (page 36)
	Video mode	 R 4.7		Automatically formatted in Video mode Playable on most DVD players (finalisation necessary) (page 36)

Usable disc versions (as of March 2006)

- 8x-speed or slower DVD+RWs
- 6x-speed or slower DVD-RWs (Ver.1.1, Ver.1.2 with CPRM²)
- 16x-speed or slower DVD+Rs
- 16x-speed or slower DVD-Rs (Ver.2.0, Ver.2.1 with CPRM²)
- 8x-speed or slower DVD+R DL (Double Layer) discs

*DVD+RW, "DVD-RW," "DVD+R," "DVD+R DL," and "DVD-R" are trademarks.

*1 When an unformatted DVD-R is inserted into this recorder, it is automatically formatted in Video mode. To format a new DVD-R in VR mode, format using the "Disc Information" display (page 27).

*2 CPRM (Content Protection for Recordable Media) is a coding technology that protects copyrights for images.

Discs that cannot be recorded on

- 8 cm discs
- DVD-R DL (Dual Layer) discs

Playable discs

Type	Disc Logo	Icon used in this manual	Characteristics
DVD VIDEO			Discs such as movies that can be purchased or rented This recorder also recognizes DVD-R Dual Layer (Video mode) discs as DVD Video compatible discs.
VIDEO CD			VIDEO CDs or CD-Rs/CD-RWs in VIDEO CD/Super VIDEO CD format
CD			Music CDs or CD-Rs/CD-RWs in music CD format
DATA DVD	—		DVD+RWs/DVD+Rs/DVD-RWs/DVD-Rs/DVD-ROMs containing either JPEG image files or DivX video files
DATA CD	—		CD-ROMs/CD-Rs/CD-RWs containing either MP3 audio tracks, JPEG image files or DivX video files
8 cm DVD+RW/DVD-RW/DVD-R	—	—	8 cm DVD+RW, DVD-RW, and DVD-R recorded with a DVD video camera (Still images recorded with a DVD video camera cannot be played.)

*DVD VIDEO¹ and *CD² are trademarks. DivX, DivX Certified, and associated logos are trademarks of DivX, Inc. and are used under license. DivX[®] is a video file compression technology, developed by DivX, Inc.

Discs that cannot be played

- PHOTO CDs
- CD-ROMs/CD-Rs/CD-RWs that are recorded in a format different from the formats mentioned in the table above.
- Data part of CD-Extras
- DVD-ROMs/DVD+RWs/DVD-RWs/DVD+Rs/DVD-Rs that do not contain DVD Video, DivX video or JPEG image files.
- DVD Audio discs
- DVD-RAMs
- HD layer on Super Audio CDs
- DVD VIDEOS with a different region code (page 11).
- DVDs that were recorded on a different recorder and not correctly finalised.

Maximum recordable number of titles

Disc	Number of titles*
HDD	300
DVD-RW/DVD-R	99
DVD+RW/DVD+R	49
DVD+R DL	49

* The maximum length for one title is eight hours.

Note on playback operations of DVD VIDEOS/VIDEO CDs

Some playback operations of DVD VIDEOS/VIDEO CDs may be intentionally set by software producers. Since this recorder plays DVD VIDEOS/VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. See the instructions supplied with the DVD VIDEOS/VIDEO CDs.

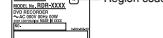
Region code (DVD VIDEO only)

Your recorder has a region code printed on the rear of the unit and will only play DVD VIDEOS (playback only) labelled with identical region codes. This system is used to protect copyrights. DVD VIDEOS labelled will also play on this recorder.

If you try to play any other DVD VIDEO, the message "Playback prohibited by region code." will appear on the TV screen.

Depending on the DVD VIDEO, no region

code indication may be labelled even though playing the DVD VIDEO is prohibited by area restrictions.



Note on DualDiscs

A DualDisc is a two sided disc product which mates DVD recorded material on one side with digital audio material on the other side. However, since the audio material side does not conform to the Compact Disc (CD) standard, playback on this product is not guaranteed.

Notes

- Some DVD+RWs/DVD+Rs, DVD-RWs/DVD-Rs, or CD-RWs/CD-Rs cannot be played on this recorder 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 finalised. For more information, see the operating instructions for the recording device.
- You cannot mix VR mode and Video mode on the same DVD-RW. To change the disc's format, reformat the disc (page 38). Note that the disc's contents will be erased after reformatting.
- You cannot shorten the time required for recording even with high-speed discs.
- It is recommended that you use discs with "For Video" printed on their packaging.
- You cannot add new recordings to DVD+Rs, DVD-Rs, or DVD-RWs (Video mode) that contain recordings made on other DVD equipment.
- In some cases, you may not be able to add new recordings to DVD+RWs that contain recordings made on other DVD equipment. If you do add a new recording, note that this recorder will rewrite the DVD menu.
- You cannot edit recordings on DVD+RWs, DVD-RWs (Video mode), DVD+Rs, or DVD-Rs that are made on other DVD equipment.
- If the disc contains PC data unrecognizable by this recorder, the data may be erased.
- You may not be able to record on some recordable discs, depending on the disc.

Music discs encoded with copyright protection technologies

This product is designed to play back discs that conform to the Compact Disc (CD) standard.

Recently, various music discs encoded with copyright protection technologies are being 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.

Hookups and Settings

Hooking Up the Recorder

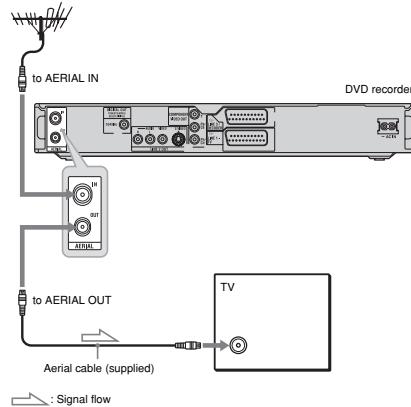
Follow steps 1 through 6 to hook up and adjust the settings of the recorder. Do not connect the mains lead until you reach "Step 4: Connecting the Mains Lead" on page 16.

Notes

- See "Specifications" (page 106) for a list of supplied accessories.
- Plug in cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.
- You cannot connect this recorder to a TV that does not have a SCART or video input jack.
- Be sure to disconnect the mains lead of each component before connecting.

Step 1: Connecting the Aerial Cable

Connect the aerial cable by following the steps below.



- Disconnect the aerial cable from your TV, and connect it to AERIAL IN on the rear panel of the recorder.
- Connect AERIAL OUT of the recorder to the aerial input of your TV using the supplied aerial cable.

12

When playing "wide screen" images

Some recorded images may not fit your TV screen. To change the picture size, see page 88.

If you are connecting to a VCR

Connect your VCR to the LINE 3/ DECODER jack on the recorder (page 21).

Notes

- Do not connect more than one type of video cord between the recorder and your TV at the same time.
- When you connect the recorder to your TV via the SCART jacks, the TV's input source is set to the recorder automatically when you start playback. If necessary, press TV \Rightarrow to return the input to the TV.
- For correct SMARTLINK connection, you will need a SCART cord that has the full 21 pins. Refer to your TV's instruction manual as well for this connection.
- If you connect this recorder to a TV with SMARTLINK, set "Easy Setup - Line1 Output" to "Video."

About the SMARTLINK features (for SCART connections only)

If the connected TV (or other connected equipment such as a set top box) complies with SMARTLINK, NextView Link^③, MEGALOGIC^①, EASYLINK^②, CINEMALINK^④, Q-Link^⑤, EURO VIEW LINK^⑥, or T-V LINK^⑦, you can enjoy the following SMARTLINK features.

- Preset Download
You can download the tuner preset data from your TV to this recorder, and tune the recorder according to that data in "Easy Setup." This greatly simplifies the "Easy Setup" procedure. Be careful not to disconnect the cables or exit the "Easy Setup" function during this procedure (page 20).
- TV Direct Rec
You can easily record what you are watching on your TV (page 28).
- One Touch Play
You can turn on the recorder and start playback with one touch of the \triangleright (play) button (page 53).

One Touch Menu

You can turn on the recorder and TV, set the TV to the recorder's programme position, and display the Title List menu with one touch of the TITLE LIST button (page 53).

One Touch Timer

You can turn on the recorder and TV, set the TV to the recorder's programme position, and display the timer programming menu with one touch of the TIMER button (page 44).

Automatic Power Off

The recorder will turn off automatically if the recorder is not used after you turn off the TV.

NextView Download

You can easily set the timer by using the NextView Download function on your TV. See your TV's instruction manual.

^① "MEGALOGIC" is a registered trademark of Grundig Corporation.

^② "EASYLINK" and "CINEMALINK" are trademarks of Philips Corporation.

^③ "Q-Link" and "NextView Link" are trademarks of Panasonic Corporation.

^④ "EURO VIEW LINK" is a trademark of Toshiba Corporation.

^⑤ "T-V LINK" is a trademark of JVC Corporation.

Hints

The SMARTLINK features are available only when "Video" is selected in "Line1 Output."

The SMARTLINK features are not available while the power is off when "Power save standby" is set to "On" (page 96).

Not all TVs respond to the functions above.

Notes

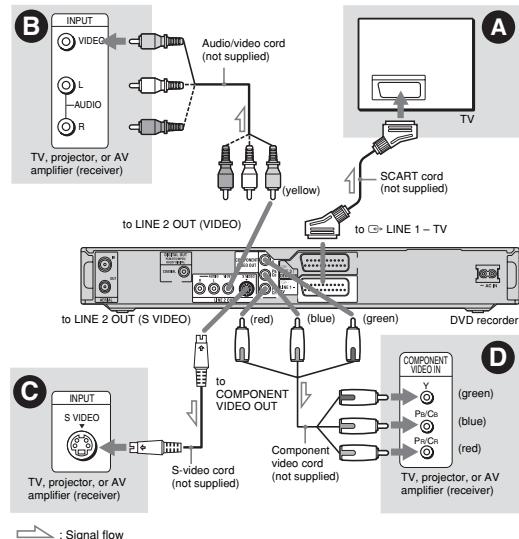
The SMARTLINK features are available only when "Video" is selected in "Line1 Output."

The SMARTLINK features are not available while the power is off when "Power save standby" is set to "On" (page 96).

Not all TVs respond to the functions above.

Step 2: Connecting the Video Cords

Select one of the following patterns, A through D, according to the input jack on your TV monitor, projector, or AV amplifier (receiver). This will enable you to view pictures.



SCART input jack

When you set "Easy Setup - Line1 Output" to "S Video" or "RGB" (page 20), use a SCART cord that conforms to the selected signal.

Video input jack

You will enjoy standard quality images.

S VIDEO input jack

You will enjoy high quality images.

Component video input jacks (Y, Pb/Cb, Pr/Cr)

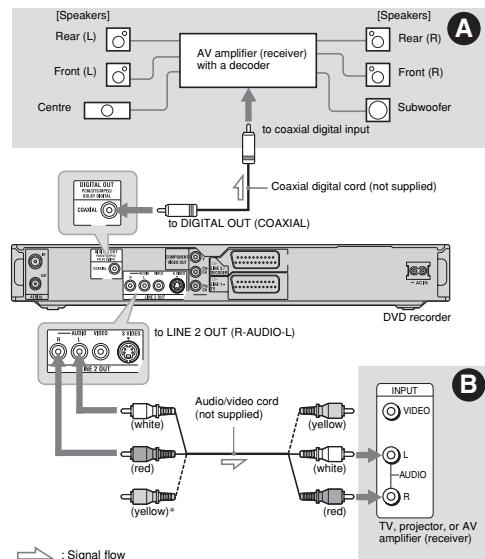
You will enjoy accurate colour reproduction and high quality images.

If your TV accepts progressive 525p/625p format signals, you must use this connection and set "Component Out" in the "Video" setup to "On" (page 88). Then set "Progressive Output" of the "Video Output" to "On" in the "Video" setup to send progressive video signals. For details, see "Progressive Output" on page 88.

→ continued 13

Step 3: Connecting the Audio Cords

Select one of the following patterns, A or B, according to the input jack on your TV monitor, projector, or AV amplifier (receiver). This will enable you to listen to sound.



* The yellow plug is used for video signals (page 13).

Digital audio input jack

If your AV amplifier (receiver) has a Dolby^①

Digital, DTS^②, or MPEG audio decoder and

a digital input jack, use this connection. You

can enjoy Dolby Digital (5.1ch), DTS

(5.1ch), and MPEG audio (5.1ch) surround

effects.

Audio L/R (left/right) input jacks

This connection will use your TV's or stereo

amplifier's (receiver's) two speakers for

sound.

Hints

For correct speaker location, see the operating instructions supplied with the connected components.

14

→ continued 15

Notes

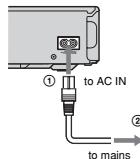
- Do not connect your TV's audio output jacks to the LINE IN (R-AUDIO-L) jacks at the same time. This will cause unwanted noise to come from your TV's speakers.
- With connection ②, do not connect the LINE IN (R-AUDIO-L) and LINE 2 OUT (R-AUDIO-L) jacks to your TV's audio output jacks at the same time. This will cause unwanted noise to come from your TV's speakers.
- With connection ③, after you have completed the connection, make the appropriate settings under "Easy Setup - Audio Connection" (page 20). Otherwise, no sound or a loud noise will come from your speakers.

¹ Manufactured under license from Dolby Laboratories.
"Dolby" and the double-D symbol are trademarks of Dolby Laboratories.
²"DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

Step 4: Connecting the Mains Lead

Connect the supplied mains lead to the AC IN terminal of the recorder. Then plug the recorder and TV mains leads (power cords) into the mains. After you connect the mains lead, **you must wait for a short while before operating the recorder**. You can operate the recorder once the front panel display lights up and the recorder enters standby mode.

If you connect additional equipment to this recorder (page 21), be sure to connect the mains lead after all connections are complete.



Step 5: Preparing the Remote

You can control the recorder using the supplied remote. Insert two R6 (size AA) batteries by matching the \oplus and \ominus ends on the batteries to the markings inside the battery compartment. When using the remote, point it at the remote sensor \square on the recorder.



Notes

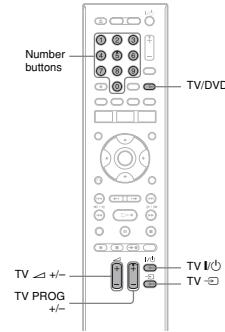
- If the supplied remote interferes with other Sony DVD recorder or player, change the command mode number for this recorder (page 18).
- Use the batteries correctly to avoid possible leakage and corrosion. Should leakage occur, do not touch the liquid with bare hands. Observe the following:
 - Do not use a new battery with an old battery, or batteries of different manufacturers.
 - Do not attempt to recharge the batteries.
 - If you do not intend to use the remote for an extended period of time, remove the batteries.
 - If battery leakage occurs, wipe out any liquid inside the battery compartment, and insert new batteries.
- Do not expose the remote sensor (marked \square on the front panel) to strong light, such as direct sunlight or a lighting apparatus. The recorder may not respond to the remote.

Controlling TVs with the remote

You can adjust the remote's signal to control your TV.

Notes

- Depending on the connected unit, you may not be able to control your TV with some or all of the buttons below.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number may be reset to the default setting. Set the appropriate code number again.



1 Hold down the TV I/O button located at the bottom of the remote.

Do not press the I/O button at the top of the remote.

2 With the TV I/O button pressed down, enter the TV's manufacturer code using the number buttons.

For instance, to enter "09," press "0" then "9." After you enter the last number, release the TV I/O button.

Code numbers of controllable TVs

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

Manufacturer	Code number
Sony	01 (default)
Hitachi	24
JVC	33
Panasonic	17, 49
Philips	06, 08
Samsung	71
Sanyo	25
Thomson	43
Toshiba	38

The remote performs the following:

Buttons	Operations
TV I/O	Turns your TV on or off
TV Δ (volume) +/-	Adjusts the volume of your TV
TV PROG +/-	Selects the programme position on your TV
TV \ominus	Switches your TV's input source

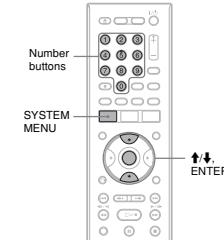
To operate the TV/DVD button (for SCART connections only)

The TV/DVD button switches between the recorder and the last input source selected on the TV. Point your remote at the recorder when using this button.

When you connect the recorder to the TV via the SCART jacks, the input source for the TV is set to the recorder automatically when you start playback. To watch another source, press the TV/DVD button to switch the TV's input source.

If you have a Sony DVD player or more than one Sony DVD recorder

If the supplied remote interferes with your other Sony DVD recorder or player, set the command mode number for this recorder and the supplied remote to one that differs from the other Sony DVD recorder or player after you have completed "Step 6: Easy Setup." The default command mode setting for this recorder and the supplied remote is DVDS.

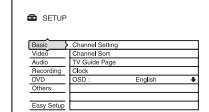


1 Check that "Easy Setup" (page 20) has been finished. If "Easy Setup" has not been finished, first perform "Easy Setup."

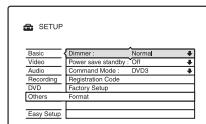
2 Press SYSTEM MENU.

The System Menu appears.

3 Select "SETUP," and press ENTER.

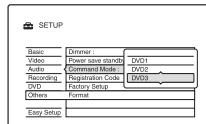


4 Select "Others," and press ENTER.



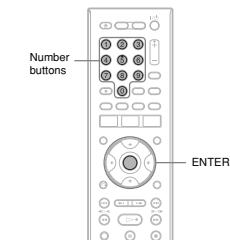
If the Command Mode for the recorder has not been changed, set the Command Mode for the remote to the default setting of DVDS. If the Command Mode for the remote is changed to DVDS1 or DVDS2, you will be unable to operate this recorder.

5 Select "Command Mode," and press ENTER.



Changing programme positions of the recorder using the remote

You can change programme positions of the recorder using the number buttons.



Example: for channel 50
Press "5," "0," then press ENTER.

6 Select a Command Mode (DVDS1, DVDS2, or DVDS3), and press ENTER.

7 Set the Command Mode for the remote so it matches the Command Mode for the recorder you set above.

Follow the steps below to set the Command Mode on the remote.

- ① Hold down ENTER.
- ② While holding down ENTER, enter the Command Mode code number using the number buttons.

Command Mode	Code number
DVDS1	number button 1
DVDS2	number button 2
DVDS3	number button 3

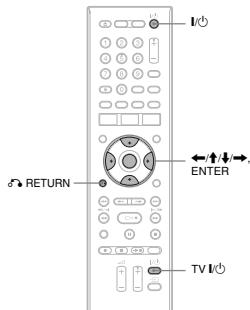
- ③ Hold down both the number and ENTER buttons at the same time for more than three seconds.

To check the Command Mode for the recorder

Press ■ on the recorder when the recorder is turned off. The Command Mode for the recorder appears in the front panel display.

Step 6: Easy Setup

Make the basic adjustments by following the on-screen instructions in "Easy Setup."



- 1 Turn on the recorder and your TV.**
Then switch the input selector on your TV so that the signal from the recorder appears on your TV screen.

The initial settings message appears.
• If this message does not appear, select "Easy Setup" from "SETUP" in the System Menu ("Settings and Adjustments" on page 83).

- 2 Press ENTER.**
Follow the on-screen instructions to make the following settings.

♦ **Easy Setup - OSD**
Select a language for the on-screen displays.

♦ **Easy Setup - Tuner System**
Select your country/region or language. The programme position order will be set according to the country/region you set. To set the programme positions manually, see page 83.
• If you live in a French speaking country that is not listed on the display, select "ELSE - English."

♦ Easy Setup - Clock

The recorder will automatically search for a clock signal. If a clock signal cannot be found, set the clock manually using $\leftarrow\uparrow\downarrow\rightarrow$, and press ENTER.

♦ Easy Setup - TV Type (page 88)

If you have a wide-screen TV, select "16:9." If you have a standard TV, select either "4:3 Letter Box" (shrink to fit) or "4:3 Pan Scan" (stretch to fit). This will determine how "wide-screen" images are displayed on your TV.

♦ Easy Setup - Component Out

If you are using the COMPONENT VIDEO OUT jack, select "On."

♦ Easy Setup - Line3 Input

If you plan to connect a decoder such as a PAY-TV/Canal Plus analogue decoder to the LINE 3/DECODER jack, select "Yes."

♦ Easy Setup - Line1 Output

To output video signals, select "Video." To output S video signals, select "S Video."

To output RGB signals, select "RGB." Select "Video" to enjoy the SMARTLINK features.

- If you set "Easy Setup - Component Out" to "On," you cannot select "RGB."
- If you set "Easy Setup - Line3 Input" to "Yes," you cannot select "S Video."

♦ Easy Setup - Audio Connection

If you connected an AV amplifier (receiver) using a coaxial cord, select "Yes : DIGITAL OUT" and set the digital output signal (page 91).

- 3 Press ENTER when "Finish" appears.**
"Easy Setup" is finished.

To return to the previous step

Press $\leftarrow\uparrow\downarrow\rightarrow$ RETURN.

Hint

- If your AV amplifier (receiver) has an MPEG audio decoder, set "MPEG" to "MPEG" (page 91).
- If you want to run "Easy Setup" again, select "Easy Setup" from "SETUP" in the System Menu (page 97).

Connecting a VCR or Similar Device

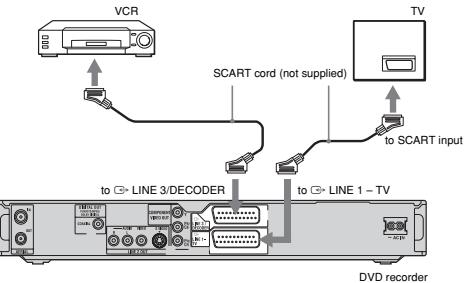
After disconnecting the recorder's mains lead from the mains, connect a VCR or similar recording device to the LINE IN jacks of this recorder.

Use the DV IN jack on the front panel if the equipment has a DV output jack (i.LINK jack) (page 77).

For details, refer to the instruction manual supplied with the connected equipment. To record on this recorder, see "Recording from connected equipment without a timer" on page 51.

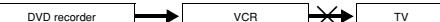
Connecting to the LINE 3/DECODER jack

Connect a VCR or similar recording device to the LINE 3/DECODER jack of this recorder.



Notes

- Pictures containing copy protection signals that prohibit any copying cannot be recorded.
- If you pass the recorder signals through a VCR, you may not receive a clear image on your TV screen.



Be sure to connect your VCR to the DVD recorder and to your TV in the order shown below. To watch video tapes, watch the tapes through a second line input on your TV.



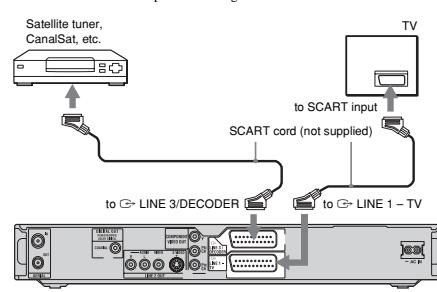
- The SMARTLINK features are not available for devices connected via the DVD recorder's LINE 3/DECODER jack.
- When you record to a VCR from this DVD recorder, do not switch the input source to TV by pressing the TV/DVD button on the remote.
- If you disconnect the recorder's mains lead, you will not be able to view the signals from the connected VCR.

→ continued 21

Connecting to a Satellite or Digital Tuner

Connect a satellite or digital tuner to this recorder using the LINE 3/DECODER jack.

Disconnect the recorder's mains lead from the mains when connecting the tuner. To use the Synchro-Rec function, see below. Do NOT set "Line3 Input" of the "Scart Setting" to "Decoder" in the "Video" setup when making this connection.



If the satellite tuner can output RGB signals

This recorder accepts RGB signals. If the satellite tuner can output RGB signals, connect the TV SCART connector on the satellite tuner to the LINE 3/DECODER jack, and set "Line3 Input" of "Scart Setting" to "Video/RGB" in the "Video" setup (page 89). Note that this connection and setup disable the SMARTLINK function. If you want to use the SMARTLINK function with a compatible set top box, see the instructions supplied with the set top box.

If you want to use the Synchro Rec function

This connection is necessary to use the Synchro-Recording function. See "Recording from connected equipment with a timer (Synchro Rec)" on page 49. Set "Line3 Input" of "Scart Setting" in the "Video" setup (page 89) according to the specifications of your satellite tuner. See your satellite tuner's instructions for more information.

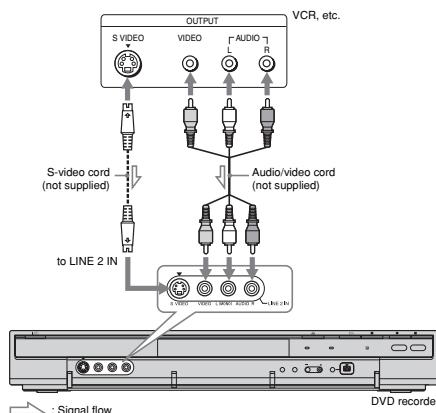
If you are using a B Sky B tuner, be sure to connect the tuner's VCR SCART jack to the LINE 3/DECODER jack. Then set "Line3 Input" of "Scart Setting" according to the specifications of the VCR SCART jack on your satellite tuner.

Notes

- Synchro-Recording does not work with some tuners. For details, see the tuner's operating instructions.
- If you disconnect the recorder's mains lead, you will not be able to view the signals from the connected tuner.

Connecting to the LINE 2 IN jacks on the front panel

Connect a VCR or similar recording device to the LINE 2 IN jacks of this recorder. If the equipment has an S-video jack, you can use an S-video cord instead of an audio/video cord.



Hint

When the connected equipment outputs only monaural sound, connect to just the L(MONO) and VIDEO input jacks on the front of the recorder. Do not connect the R input jack.

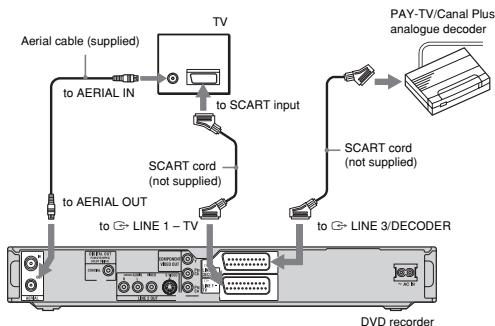
Notes

- Do not connect the yellow LINE IN (VIDEO) jack when using an S-video cord.
- Do not connect the output jack of this recorder to another equipment's input jack with the other equipment's output jack connected to the input jack of this recorder. This may cause noise (feedback).
- Do not connect more than one type of video cord between the recorder and your TV at the same time.

Connecting a PAY-TV/Canal Plus Analogue Decoder

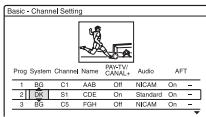
You can watch or record PAY-TV/Canal Plus analogue decoder programmes if you connect a decoder (not supplied) to the recorder. Disconnect the recorder's mains lead from the mains when connecting the decoder. Note that when you set "Line3 Input" to "Decoder" in step 5 of "Setting PAY-TV/Canal Plus analogue programme positions" (page 25), you will not be able to select "L3" because Line 3 will become a dedicated line for the decoder.

Connecting a decoder



24

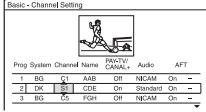
10 Select "System" using $\leftrightarrow/\rightarrow$.



11 Press \uparrow/\downarrow to select an available TV system, BG, DK, 1, or L.

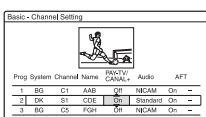
"L" is only available with French RDR-HX520 and RDR-HX920 models. To receive broadcasts in France, select "L."

12 Select "Channel" using $\leftrightarrow/\rightarrow$.



13 Select the PAY-TV/Canal Plus analogue programme position using \uparrow/\downarrow or number buttons.

14 Select "PAY-TV/ CANAL+" using \leftarrow/\rightarrow .



15 Select "On" using \uparrow/\downarrow , and press ENTER.

To return to the previous step
Press \leftrightarrow RETURN.

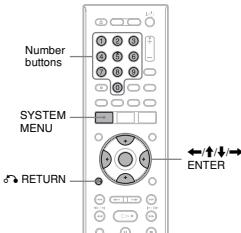
Note

If you disconnect the recorder's mains lead, you will not be able to view the signals from the connected decoder.

Setting PAY-TV/Canal Plus analogue programme positions

To watch or record PAY-TV/Canal Plus analogue programmes, set your recorder to receive the programme positions using the on-screen display.

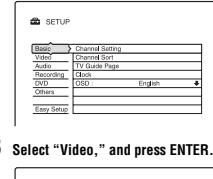
In order to set the programme positions correctly, be sure to follow all of the steps below.



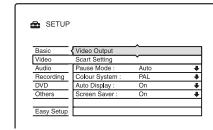
1 Press SYSTEM MENU.

The System Menu appears.

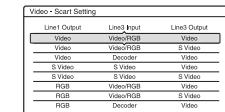
2 Select "SETUP," and press ENTER.



3 Select "Video," and press ENTER.



4 Select "Scart Setting," and press ENTER.

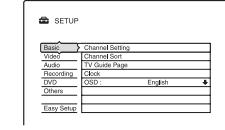


5 Press \uparrow/\downarrow to select "Video" or "RGB" for "Line3 Input," "Decoder" for "Line3 Output," and "Video" for "Line3 Output," and press ENTER.

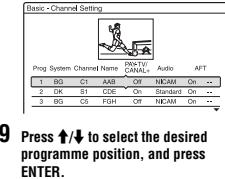
The "Video" setup display appears again.

6 Press \leftrightarrow RETURN to return the cursor to the left column.

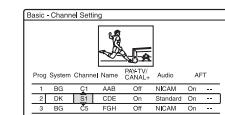
7 Select "Basic," and press ENTER.



8 Select "Channel Setting," and press ENTER.



9 Press \uparrow/\downarrow to select the desired programme position, and press ENTER.

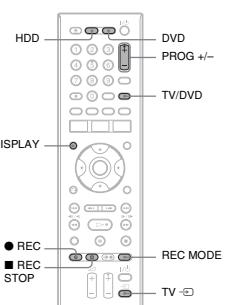


→continued 25

2. Recording a Programme

HDD +RW -RWVR +RWVideo +R -RVR
+RVideo DVD VCD CD DATA DVD

This section introduces the basic operation to record a current TV programme to the hard disk (HDD) or to a disc (DVD). For an explanation of how to make timer recordings, see page 40.



1 Press DVD.

2 Press Δ (open/close), and place a disc on the disc tray.



3 Press Δ (open/close) to close the disc tray.

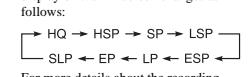
Wait until "LOAD" disappears from the front panel display.
Unused DVDs are formatted automatically.

• For DVD-RW discs
DVD-RWs are formatted in the recording format (VR mode or Video mode) set by "Format DVD-RW" in the "DVD" setup.

• For DVD-R discs
DVD-Rs are automatically formatted in Video mode. To format an unused

DVD-R in VR mode, format the disc using the "Disc Information" display (page 38) before you make a recording.
If the disc is recordable on this recorder, you can manually re-format the disc to make a blank disc (page 38).

Each time you press the button, the display on the TV screen changes as follows:



4 Press ● REC.

Recording starts.

Recording stops automatically after 8 hours of continuous recording or when the HDD or DVD is full.

To stop recording

Press ■ REC STOP.

Note that it may take a few seconds for recorder to stop recording.

To watch another TV programme while recording

If your TV is connected to the LINE 1 – TV jack, set your TV to the TV input using the TV/DVD button and select the programme you want to watch. If your TV is connected to the LINE 2 OUT or COMPONENT VIDEO OUT jacks, set the TV to TV input using the TV  button (page 17).

TV Direct Rec

If you are using the SMARTLINK connection, you can easily record what you are watching on your TV.

When the TV is turned on, press ● REC. The recorder automatically turns on and starts recording what you are watching on the TV.

◆ Note

If "TV" appears in the front panel display, you cannot turn off the TV or change the programme position during TV Direct Rec. To turn off the function, set "TV Direct Rec" to "Off" in the "Recording" setup (page 93).

About the Teletext function

Some broadcast systems ensure a Teletext service* in which the complete programmes and their data (title, date, programme position, recording start time etc.) are stored day by day. When recording a programme, the recorder automatically takes the programme name from the Teletext pages and stores it as the title name. For details, see "Auto Programme Title Labelling (TV Guide Page)" on page 86.

Note that the Teletext information will not appear on your TV screen. To view the Teletext information on your TV screen, press TV/DVD on the remote to switch the input source to your TV (page 17).

* not available in some areas

◆ Notes

- After pressing ● REC, it may take a short while to start recording.
- You cannot change the recording mode while recording.
- If there is a power failure, the programme you are recording may be erased.
- You cannot watch a PAY-TV/Canal Plus programme while recording another PAY-TV/Canal Plus programme.
- To use the TV Direct Rec function, you must first correctly set the recorder's clock.

Checking the disc status while recording

You can check the recording information such as recording time or disc type.

Press DISPLAY during recording.

The recording information appears.

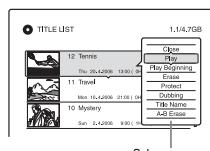


Press DISPLAY to turn off the display.

3 Select a title, and press ENTER.

The sub-menu appears.

The sub-menu displays options applicable only to the selected item. The displayed options differ depending upon the model, situation, and disc type.

**4 Select "Play," and press ENTER.**

Playback starts from the selected title.

To stop playback

Press ■ (stop).

To scroll the list display by page (Page mode)

Press / while the list display is turned on. Each time you press /, the entire Title List changes to the next/previous page of titles.

About the Title List for HDD/DVD-RWs/DVD-Rs (VR mode)

You can switch the Title List to show Original or Playlist titles.

While the Title List menu is turned on, press /.

To change the title order (Sort)

While the Title List menu is turned on, press OPTIONS to select "Sort Titles." Press / to select the item, and press ENTER.

Order	Sorted
By Date	In order of when the titles were recorded. The title that is recorded most recently is listed at the top.
By Title	In alphabetical order.
By Number	In order of recorded title number.
Unseen Title (HDD only)	In order of when the titles were recorded. The title that is recorded most recently and has not been played is listed at the top. Playlist titles are not displayed.

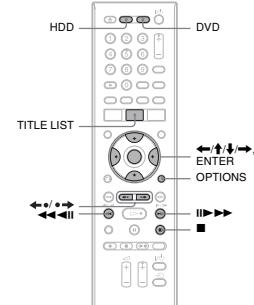
To change a title thumbnail picture (Thumbnail) (HDD/DVD-RW/DVD-R in VR mode only)

You can select a favourite scene for the thumbnail picture shown in the Title List menu.

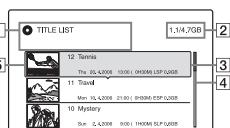
- Press TITLE LIST.
- Press / to switch the Title Lists, if necessary.
- Select a title, and press ENTER. The sub-menu appears.
- Select "Set Thumbnail," and press ENTER. The display for setting the thumbnail point appears and the title starts to play.
- While watching the playback picture, press / to select the scene you want to set for a thumbnail picture, and press ENTER. Playback pauses.
- Press ENTER if the scene is correct. If the scene is incorrect, press / to select the scene you want to set for a thumbnail picture, and press ENTER. The display asks for confirmation.
 - To change the thumbnail, press .
- Select "OK," and press ENTER. The scene is set for the title's thumbnail picture.

3. Playing the Recorded Programme (Title List)

To play a recorded title, select the title from the Title List.



Title List with Thumbnail Images
(Example: DVD+RW)

**Extended Title List****1 Disc type:**

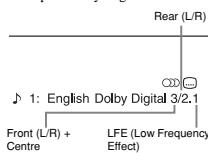
Displays the media type, HDD or DVD. Also displays the title type (Original or Playlist) for HDD or DVD-RW/DVD-R (VR mode) disc titles.

2 Disc space (remainder/total)

Disc information:
• Disc type:
• Disc space (remainder/total):

• Disc

- ② Available functions for DVD VIDEOS (angle/ audio/ subtitle, etc.), or playback data for DATA DVDs and DATA CDs
- ③ The current selected function or audio setting (appears only temporarily)
Example: Dolby Digital 5.1 ch



- ④ The current selected angle
- ⑤ Disc type/*¹/format (page 8)
- ⑥ Title type (only appears for Playlists)
- ⑦ Play mode
- ⑧ Recording mode (page 40)
- ⑨ Playing status bar²
- ⑩ Title number (chapter number^{*3}) (page 58)
(Shows either track number, scene number, album number^{*3}, or file number for CDs, VIDEO CDs, DATA DVDs, or DATA CDs.)

- ⑪ Album name appears for DATA DVDs or DATA CDs.
For CDs with CD text, press TIME/TEXT.

- ⑫ Playing time (remaining time^{*3})

^{*1} Displays Super VIDEO CDs as "SVCD," DATA CDs as "CD" and DATA DVDs as "DVD."

^{*2} Does not appear with VIDEO CDs, DATA DVDs, and DATA CDs.

^{*3} Displayed when you press TIME/TEXT repeatedly.

Hints

- If "DTS" is set to "Off" in the "Audio" setup, the DTS track selection option will not appear on the screen even if the disc contains DTS tracks (page 91).
- When "Auto Display" is set to "On" (default) in the "Video" setup (page 90), information automatically appears on the screen when the recorder is operated.

Note

- Playing time of MP3 audio tracks may not be displayed correctly.

Checking the playing/remaining time

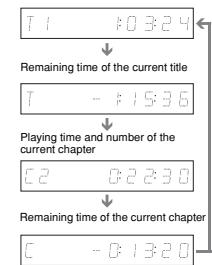
You can view the playing or time information displayed on the front panel display.

Press TIME/TEXT repeatedly.

The displays differ depending on the disc type or playing status.

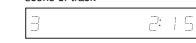
Example: When playing a DVD

Playing time and number of the current title



Example: When playing a VIDEO CD

Playing time and number of the current scene or track



Example: When playing a CD
Track playing time and the current track/index number

Remaining time of the current track

Playing time of the disc

Remaining time of the disc

CD text (when available)

Example: When playing an MP3 audio track
Playing time and number of the current track

Current album number

Example: When viewing a JPEG image
Current file number and total number of files in the current album

Current album number and total number of albums

Example: When playing a DivX video file
Current file number and playing time of the current file

Current album number

Note

- The recorder can only display the first level of a CD's text, such as the disc name.
- The letters or symbols that cannot be displayed are replaced with "■".
- Playing time of MP3 audio tracks may not be displayed correctly.

Checking the remaining disc space

You can check the remaining disc space using the "Disc Information" display.

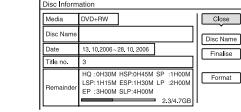
1 Insert a disc.

See "1. Inserting a Disc" on page 27.

2 Press OPTIONS to select "Disc Information," and press ENTER.

The "Disc Information" display appears. Available settings differ depending on the disc type.

Example: When a DVD+RW is inserted



"Remainder" (approximate)

- The remaining recording time in each of the recording modes
- Disc space bar
- Remaining disc space/total disc space

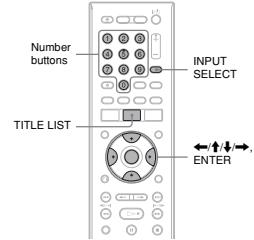
Hint

To increase disc space, see "To open up disc space" (page 64).

5. Changing the Name of a Recorded Programme

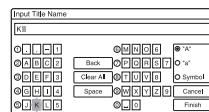
HDD **+RW** **-RWVR** **+RWVideo** **+R**
-RVR **-RWVideo**

You can label a DVD, title, or programme by entering characters. You can enter up to 64 characters for a title or disc name, but the actual number of characters displayed in the menus such as the Title List will vary. The steps below explain how to change the name of the recorded programme.



- 1 Press TITLE LIST.
- 2 Select a title, and press ENTER.
The sub-menu appears.
- 3 Select "Title Name," and press ENTER.
The display for entering characters appears.
- 4 Press $\leftrightarrow/\uparrow/\downarrow/\rightarrow$ to move the cursor to the right of the display and select "A" (upper-case), "a" (lower-case), or "Symbol," and press ENTER.
The characters for the selected type are displayed.
- 5 Press $\leftrightarrow/\uparrow/\downarrow/\rightarrow$ to select the character you want to enter, and press ENTER.
The selected character appears at the top of the display.

Example: Input Title Name



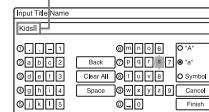
The type of characters will change according to the language you select in "Easy Setup." Some languages allow you to enter an accent mark.

To enter a letter with an accent mark, select an accent followed by the letter. Example: Select "á" and then "a" to enter "á."

To insert a space, select "Space."

6 Repeat steps 4 and 5 to enter the remaining characters.

Input row



To erase a character, move the cursor to the right of the character at the input row. Select "Back" and press ENTER.

To insert a character, move the cursor to the right of the point where you want to insert the character. Select the character and press ENTER.

To erase all of the characters, select "Clear All" and press ENTER.

7 Select "Finish," and press ENTER. To cancel the setting, select "Cancel."

To use the number buttons

You can also use the number buttons to enter characters. Refer to the number next to each row of letters on your TV screen.

1 In step 5 above, press a number button repeatedly to select a character.

Example:
Press the number 3 button once to enter "D."

Press the number 3 button three times to enter "F."

2 Press ENTER and select the next character.

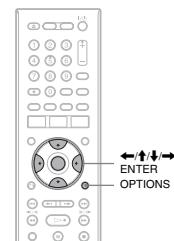
3 Select "Finish" and press ENTER.

Hint

You can switch between "A" (upper-case), "a" (lower-case), or "Symbol" by pressing INPUT SELECT.

6. Labelling and Protecting a Disc

You can execute options effective for the entire disc using the "Disc Information" display.



Labelling a disc

+RW **-RWVR** **+RWVideo** **+R** **-RVR**
-RWVideo

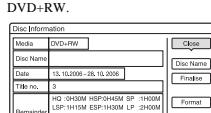
1 Insert a disc.

See "1. Inserting a Disc" on page 27.

2 Press OPTIONS to select "Disc Information," and press ENTER.

The "Disc Information" display appears. Available settings differ depending on the disc type.

Example: When the inserted disc is a DVD+RW



3 Select "Disc Name," and press ENTER.

Select the disc name in the "Input Disc Name" display (page 34).

Note

You can enter up to 64 characters for a DVD's disc name. The disc name may not appear when the disc is played on other DVD equipment.

Protecting a disc

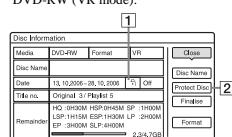
-RWVR | -RVR

1 Insert a disc.

See "1. Inserting a Disc" on page 27.

2 Press OPTIONS to select "Disc Information," and press ENTER.

The "Disc Information" display appears. Available settings differ depending on the disc type.
Example: When the inserted disc is a DVD-RW (VR mode).



[1] "On"/"Off": Indicates whether protection is set (DVD-RW/DVD-R in VR mode only)

[2] "Protect Disc"**3 Select "Protect Disc," and press ENTER.****4 Select "Protect," and press ENTER.****To cancel the protection**

Select "Unprotected" in step 4.

Hint

You can set protection for individual titles (page 64).

7. Playing the Disc on Other DVD Equipment (Finalise)

+RW | +RWVR | +RW Video | +R | -RVR

Finalising is necessary when you play discs recorded with this recorder on other DVD equipment.

When you finalise a DVD+RW, DVD-RW (Video mode), DVD+R, or DVD-R (Video mode), a DVD menu will be automatically created, which can be displayed on other DVD equipment.

Before finalising, check the differences between the disc types in the table below.

Differences between the disc types

+RW Discs are automatically finalised when removed from the recorder. However, you may need to finalise the disc for certain DVD equipment, or if the recording time is short. You can edit or record on the disc even after finalising.

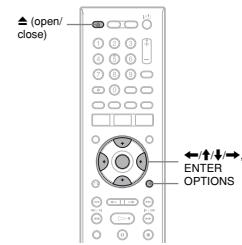
-RWVR Finalising is unnecessary when playing a disc on VR format compatible equipment. Even if your other DVD equipment is VR format compatible, you may need to finalise the disc, especially if the recording time is short. You can edit or record on the disc even after finalising.

+RW Video Finalising is necessary when playing on any equipment other than this recorder. After finalising, you cannot edit or record on the disc. If you want to record on it again, unfinalise (page 38) or reformat the disc (page 38). However, if you reformat the disc, all recorded contents will be erased.

-RVR Finalising is necessary. The disc can be played only on equipment that supports DVD-R in VR mode. After finalising you cannot edit or record on the disc using this recorder.

+R
-RVR

Finalising is necessary when playing on any equipment other than this recorder. After finalising, you cannot edit or record on the disc.

**Finalising the disc using ▲ (open/close) button****1 Make a recording.**

See "2. Recording a Programme" on page 27.

2 Press ▲ (open/close).

The display shows the approximate time required for finalising and asks for confirmation. For DVD+RWs, the recorder automatically starts finalising the disc. After finalising, the disc will be ejected automatically.

3 Select "OK," and press ENTER.

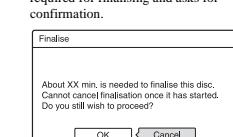
The recorder starts finalising the disc. After finalising, the disc will be ejected automatically.

Finalising the disc using "Disc Information" display**1 Insert a disc.**

See "1. Inserting a Disc" on page 27.

2 Press OPTIONS to select "Disc Information," and press ENTER.

The "Disc Information" display appears. The display shows the approximate time required for finalising and asks for confirmation.

**4 Select "OK," and press ENTER.**

The recorder starts finalising the disc.

Hint

You can check whether the disc has been finalised or not. If you cannot select "Finalise" in step 3 above, the disc has already been finalised.

Notes

- Depending on the condition of the disc, recording, or the DVD equipment, discs may not play even if the discs are finalised.
- The recorder may not be able to finalise the disc if it was recorded on another recorder.

Unfinalising a disc

-RWVR | -RW Video

For DVD-RWs (Video mode)

DVD-RWs (Video mode) that have been finalised to prohibit additional recording or editing can be unfinalised to allow further recording or editing.

For DVD-RWs (VR mode)

If you cannot record or edit on a DVD-RW (VR mode) that has been finalised with other DVD equipment, unfinalise the disc.

Note

The recorder is not able to unfinalise DVD-RWs (Video mode) that have been finalised on another recorder.

1 Insert a disc.

See "1. Inserting a Disc" on page 27.

2 Press OPTIONS to select "Disc Information," and press ENTER.

The "Disc Information" display appears.

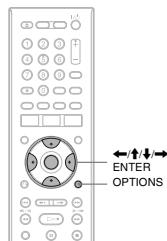
3 Select "Unfinalise," and press ENTER.

The recorder starts unfinalising the disc. Unfinalising may take several minutes.

8. Reformating a disc

+RW | +RWVR | +RW Video

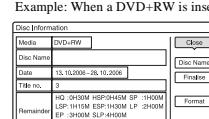
New discs are automatically formatted when inserted. If necessary, you can manually reformat a DVD+RW or DVD-RW disc to make a blank disc. For DVD-RWs, you can select a recording format (VR mode or Video mode) according to your needs (page 63).

**1 Insert a disc.**

See "1. Inserting a Disc" on page 27.

2 Press OPTIONS to select "Disc Information," and press ENTER.

Example: When a DVD+RW is inserted.

**3 Select "Format," and press ENTER.****4 Select "OK," and press ENTER.**

For DVD-RWs and unrecorded DVD-Rs (Video mode), select "VR" or "Video," and press ENTER.

All contents on the disc are erased.

Hint

By reformatting, you can change the recording format on DVD-RWs, or record again on DVD-RWs that have been finalised.

Note

On this model, 1 GB (read "gigabyte") is equivalent to 1 billion bytes. The larger the number, the larger the disc space.

Timer Recording

Before Recording

Before you start recording...

- Check that the disc has enough available space for the recording (page 33). For the HDD, DVD+RWs, and DVD-RWs, you can free up disc space by erasing titles (page 64).
- Adjust the recording picture quality and picture size if necessary (page 46).

Hint

Timer recordings will be made regardless whether or not the recorder is turned on. You can turn off the recorder without affecting the recording even after recording starts.

Note

To play a recorded disc on other DVD equipment, finalise the disc (page 36).

Recording mode

Like the standard >3 recording modes of video tapes, you can select the desired recording mode using the REC MODE button.

Recording modes with higher quality provide a more beautiful recording, but the large data volume also results in a shorter recording time.

Conversely, a longer duration provides a longer recording time, but the lower data volume results in a coarser picture quality.

Press REC MODE repeatedly to switch the recording modes.

To select the HQ+ mode, set "HQ Setting" of the "HDD Rec. Settings" to "HQ+" in the "Recording" setup (page 93). "HQ+" records pictures in higher quality than HQ on the HDD. Note that HQ+ plus appears as HQ in the front panel display and the on screen displays.

Recording mode	Approx. recording time (hours)			
	HDD		DVD*	
	RDR-HX520	RDR-HX720	RDR-HX920	HXT22
HQ+ (High quality)	8	20	33	—
HQ ↑	13	32	53	1
HSP ↑	19	46	77	1 hr. 30 min.
SP (Standard mode)	26	61	102	2
LSP ↓	33	77	127	2 hr. 30 min.
ESP ↓	39	93	153	3
LP ↓	53	124	205	4
EP ↓	79	187	308	6
SLP (Long duration)	106	249	410	8

* The recording time for DVD+R DL (Double Layer) discs is as follows:
HQ: 1 hour 48 minutes
HSP: 2 hours 42 minutes
SP: 3 hours 37 minutes
LSP: 4 hours 31 minutes
ESP: 5 hours 25 minutes
LP: 7 hours 14 minutes
EP: 10 hours 51 minutes
SLP: 14 hours 28 minutes

Notes

- The maximum continuous recording time for a single title is eight hours.
- Situations below may cause slight inaccuracies with the recording time:
 - Recording a programme with poor reception, or a programme or video source of low picture quality
 - Recording on a disc that has already been edited
 - Recording only a still picture or just sound

Recording stereo and bilingual programmes

The recorder automatically receives and records stereo and bilingual programmes based on the ZWEITON system or the NICAM system.

The HDD and a DVD-RW (VR mode) or DVD-R (VR mode) can record both main and sub sounds. You can switch between main and sub when playing the disc. For the HDD, you can select the sound track before recording. Select "Main," "Sub," or "Main+Sub" in "Bilingual Recording" of the "HDD Rec. Settings" in the "Recording" setup (page 92). A DVD+RW, DVD-RW (Video mode), DVD+R, or DVD-R (Video mode) can record only one sound track (main or sub) at a time. Select the sound track using the Setup Display before recording starts. Set "Bilingual Recording" of the "DVD Rec. Settings" to "Main" (default) or "Sub" in the "Recording" setup (page 93).

ZWEITON (German stereo) system

When a stereo based programme is received, "Stereo" appears.

When a bilingual ZWEITON based programme is received, "Main," "Sub," or "Main/Sub" appears.

NICAM system

When a stereo or bilingual NICAM based programme is received, "NICAM" appears in the front panel display.

To record a NICAM programme, be sure to set "Audio" of "Channel Setting" in the "Basic" setup to "NICAM" (default). If the sound is not clear when listening to NICAM broadcasts, set "Audio" to "Standard" (see "Channel Setting" on page 83).

Hint
You can select the audio (main or sub) while recording bilingual programmes using the AUDIO button. This does not affect the recorded sound.

Unrecordable pictures

Pictures with copy protection cannot be recorded on this recorder.

When the recorder receives a copy guard signal, the recorder continues to record but only a blank, grey coloured screen will be recorded.

Copy control signals

Copy-Free **HDD** **+RW** **-RWVR**

-RWVideo **+R** **-RVR**

-RVideo

Copy-Once **HDD**

-RWVR (CPRM*)

-RVR (CPRM*)

Copy-Never None (a blank screen is recorded)

* The recorded disc can be played only on CPRM compatible equipment (page 8).

Timer Recording

41

40

Timer Recording (Standard/ShowView)

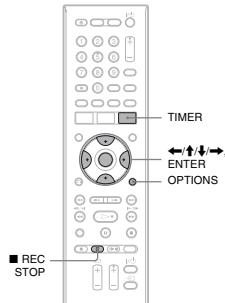
HDD **+RW** **-RWVR** **+RWVideo** **+R**
-RVR **-RVideo**

You can set the timer for a total of 40 programmes (8 programmes when using the PDC/VPS function), up to 30 days in advance.

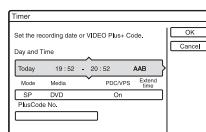
There are two methods to set the timer: the standard method and ShowView method.

- Standard: Set the date, time, and programme position of the programme manually.
- ShowView: Enter the ShowView programming number designated for each TV programme (page 44).

Setting the timer manually (Standard)



1 Press TIMER.



2 Press ↑/↓ to select the "Day and Time" or "Mode" row. Then press ENTER.

3 Select an item using ←/→ and adjust using ↑/↓. Then press ENTER.

To make additional changes to items in different rows, return to step 2. The adjustable items are listed below.

"Day and Time":

Sets the date, start time, and stop time, and selects the programme position or input source.

The date item changes as follows:

Today ← → Sat 28.10 (30 days later) ← Sun (every Sunday) ←

← Sat (every Saturday) ← Mon - Fri (Monday to Friday) ← Mon - Sat (Monday to Saturday) ← Daily ← Today

"Mode":

Selects the recording mode (page 40).

"Media":

Selects the media, HDD or DVD.

"PDC/VPS":

Set the PDC/VPS function. See "About the PDC/VPS function" below.

"Extend Time":

Sets the duration in increments of 10 minutes, for a maximum of 60 minutes when a timer recording is in progress. If the programme set to be recorded daily or weekly is extended, the manually extended time set here will be added to the subsequent timer recording times.

Note that when "PDC/VPS" is set to "On," you cannot make the "Extend Time" setting.

If you make a mistake, select the item and change the setting.

4 Select "OK," and press ENTER.

The "TIMER LIST" display (page 47) appears. The TIMER REC indicator lights up on the front panel and the recorder is ready to start recording.

Unlike a VCR, there is no need to turn off the recorder before the timer recording starts.

To stop recording during timer recording

Press ■ REC STOP.

Note that it may take a few seconds for the recorder to stop recording.

About the PDC/VPS function

PDC/VPS signals are transmitted with TV programmes in some broadcast systems. These signals ensure that timer recordings are made regardless of any broadcast delays, early starts, or broadcast interruptions.

◆ To use the PDC/VPS function

Set "PDC/VPS" to "On" in step 3 above.

When you turn on this function, the recorder starts scanning the channels before the timer recording starts. If you are watching TV when scanning starts, a message will appear on the TV screen. If you want to watch TV, switch to your TV's tuner or turn off the PDC/VPS channel scan function.

Note that if you turn off the PDC/VPS channel scan function, the timer recording will not start.

◆ To temporarily turn off PDC/VPS channel scan

Press OPTIONS and select "PDC/VPS Scan Off."

To ensure that the PDC/VPS function works properly, turn off the recorder before the timer recording starts. This will automatically turn on the PDC/VPS channel scan function while the recorder remains off.

Rec Mode Adjust

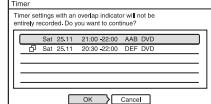
If there is not enough available disc space for the recording, the recorder automatically adjusts the recording mode to enable the entire programme to be recorded. Set "Rec Mode Adjust" of the "Timer Settings" to "On" in the "Recording" setup (page 93).

Auto Title Erase (HDD only)

If there is not enough space for a timer recording, the recorder automatically erases old titles recorded on the HDD. The oldest, played title is erased. Set "Auto Title Erase" of the "Timer Settings" to "On" in the "Recording" setup (page 93). Protected titles are not erased.

If the timer settings overlap

Overlapped timer settings are shown as follows.



To store the setting as shown, select "OK."

The programme that does not have a mark next to it has priority and the overlapped programmes start recording only after the first programme has finished.

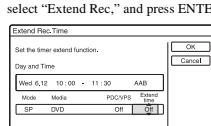
To cancel the overlapped setting, select "Cancel."

To confirm, change, or cancel a timer recording

See "Checking/Changing/Cancelling Timer Settings (Timer List)" on page 47.

To extend the recording duration time while recording

1 Press OPTIONS during recording to select "Extend Rec," and press ENTER.



2 Press ↑/↓ to select the duration time.

You can set the duration in increments of 10 minutes, for a maximum of 60 minutes.

3 Select "OK" and press ENTER.

Timer Recording

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One Touch Timer

If you use the SMARTLINK connection, you can easily display the timer programming menu.

When the TV is turned on or in standby mode, press TIMER. The recorder automatically turns on and the TV's input is switched to the recorder. The Timer programming menu appears.

Hint

If you are recording to the HDD or a DVD-RW (VR mode) at a recording mode that is SP or lower and is a 2x speed or higher disc, you can play the title as it is being recorded by selecting the programme title on the Title List (page 57).

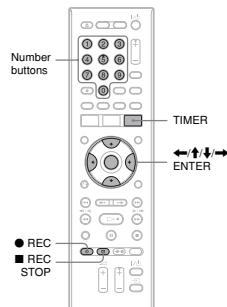
Notes

- If a message indicating that the disc is full appears on the screen, change the disc, or make available space for the recording (HDD/DVD+RW/DVD-RW only) (page 65).
- Check that the clock is correctly set before setting the timer recording. If not, the timer recording cannot be made.
- To record a satellite programme, turn on the satellite tuner and select the satellite programme you want to record. Leave the satellite tuner turned on until the recorder finishes recording. If you connect equipment with a timer function, you can use the Synchro Rec function (page 49).
- Even if the timer is set for the same daily or weekly programme, the timer recording cannot be made if it overlaps with a programme that has priority. "■" will appear next to the overlapped setting in the Timer List. Check the priority order of the settings.
- Even if the timer is set, timer recordings cannot be made while recording a programme that has priority.
- The Rec Mode Adjust function only works with a timer recording and the PDC/VPS function set to off. It does not work with Quick Timer or Synchro Rec. In addition, the Rec Mode Adjust function does not work when recording to the HDD while "Auto Title Erase" of the "Timer Settings" is set to "On" in the "Recording" setup.
- The beginning of some recordings may not be made when using the PDC/VPS function.
- You cannot extend the recording duration time when "PDC/VPS" is set to "On."

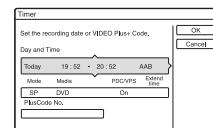
Recording TV programmes using the ShowView system

The ShowView system is a feature that simplifies setting the timer. Just enter the ShowView programming number listed in the TV programme guide. The date, time, and programme position of that programme are set automatically.

Check that the programme positions are correctly set in "Channel Setting" in the "Basic" setup (page 63).



1 Press TIMER.



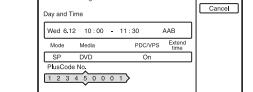
2 Select "ShowView No." using ↑/↓, and press ENTER.

3 Press the number buttons to enter the ShowView programming number, and press ENTER.

The date, start and stop times, programme position, recording mode, etc. setting appear.

- If you make a mistake before pressing ENTER, press ←/→ and re-enter the correct number.

OK



- If you want to change the setting, press ←/→ to select the item and press ↑/↓ to change the setting.

- If you want to re-enter the ShowView programming number, select "ShowView No." and press ENTER. Then re-enter the ShowView programming number.

4 Select "OK," and press ENTER.

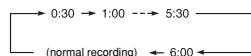
The REC indicator lights up on the front panel, and the recorder is ready to start recording.

Using the Quick Timer function

You can set the recorder to record in 30 minute increments.

Press ● REC repeatedly to set the duration.

Each press advances the time in 30 minute increments. The maximum duration is six hours.



The time counter decreases minute by minute to 0:00, then the recorder stops recording (the power does not turn off). Even if you turn off the recorder during recording, the recorder continues to record until the time counter runs out.

Note that the Quick Timer function does not work if "TV Direct Rec" is set to "On" in the "Recording" setup (page 93).

To cancel the Quick Timer

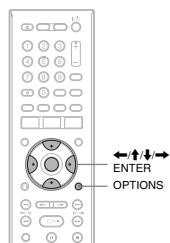
Press ● REC repeatedly until the counter appears in the front panel display. The recorder returns to normal recording mode.

Timer Recording

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Adjusting the recording picture quality and size

You can adjust the recording picture quality and picture size.



1 Before recording starts, press OPTIONS to select "Rec Settings," and press ENTER.

The adjustment display appears.

Example: Rec NR

2 Select the item you want to adjust, and press ENTER.

The adjustment display appears.

Example: Rec NR

"Rec Mode":

Selects the recording mode for the desired recording time and picture quality. For more information, see "Recording mode" on page 40.

"HDD Rec. Picture Size"/"DVD Rec. Picture Size":

Sets the picture size of the programme to be recorded.

• 4:3 (default): Sets the picture size to 4:3.

• 16:9: Sets the picture size to 16:9 (wide mode).

• Auto (HDD only): Automatically selects the actual picture size.

"DVD Rec. Picture Size" works with DVD-RWs/DVD-Rs (Video mode) when the recording mode is set to HQ, HSP, SP, LSP, or ESP. For all other recording modes, the screen size is fixed at "4:3."

For DVD-Rs/DVD-RWs (VR mode), the actual picture size is recorded regardless of the setting. For example, if a 16:9 size picture is received, the disc records the picture as 16:9 even if "DVD Rec. Picture Size" is set to "4:3."

For DVD+Rs, the screen size is fixed at "4:3."

"Rec NR" (noise reduction): Reduces noise contained in the video signal.

"Rec Video Equalizer": Adjusts the picture in greater detail.

Press ↑/↓ to select the item you want to adjust, then press ENTER.

• Contrast: Changes the contrast.

• Brightness: Changes the overall brightness.

• Colour: Makes the colours deeper or lighter.

3 Adjust the setting using ←/↑/↓/→, and press ENTER.

The default setting is underlined.

"Rec NR": (weak) Off 1 ~ 2 ~ 3 (strong)

"Rec Video Equalizer":

• Contrast: (weak) -3 ~ 0 ~ 3 (strong)

• Brightness: (dark) -3 ~ 0 ~ 3 (bright)

• Colour: (light) -3 ~ 0 ~ 3 (deep)

Repeat steps 2 and 3 to adjust any other items.

Notes

• If one programme contains two picture sizes, the selected size is recorded. However, if the 16:9 signal cannot be recorded as 16:9, it is recorded as 4:3.

• When playing a 16:9 size picture recorded as 4:3, the image is fixed to 4:3 Letter Box regardless of the setting in "TV Type" of "Video" setup (page 88).

• Remnants of images may appear on your screen when using "Rec NR."

• "Rec Video Equalizer" does not affect the input of the DV IN jack and does not work with RGB signals.

Creating chapters in a title

The recorder can automatically divide a recording (a title) into chapters by inserting chapter marks at approximately 6 minute intervals during recording. To disable this function, set "Auto Chapter" in the "Recording" setup to "Off" (page 93).

When recording to the HDD, a DVD-R (VR mode) or a DVD-RW (VR mode), you can insert and erase chapter marks manually (page 67).

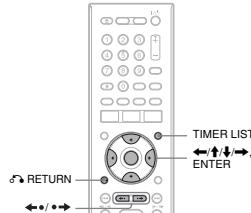
Note

When dubbing (page 71), the chapter marks in the dubbing source are not retained in the dubbed title.

Checking/Changing/Cancelling Timer Settings (Timer List)

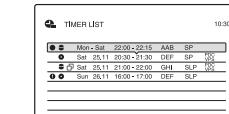


You can check, change, or cancel timer settings using the Timer List.



1 Press TIMER LIST.

The Timer List appears.



Timer information displays the recording date, time, recording mode, etc.

Indicates that the setting is overlapped by another setting.

(red): Indicates the setting is currently being recorded.

Indicates that the timer recording cannot be recorded as set, such as for a timer recording that cannot be recorded in the selected Rec mode.

Timer Recording

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→continued 47

- Indicates the setting is being recorded to the HDD.
- Indicates the setting is being recorded to a DVD.

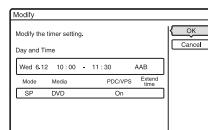
When all of the timer settings do not fit on the list, the scroll bar appears. To view the hidden timer settings, press **↑↓**.

2 Select the timer setting you want to check/change/cancel, and press ENTER.

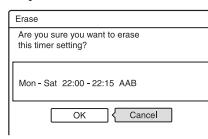
The sub-menu appears.

3 Select one of the options, and press ENTER.

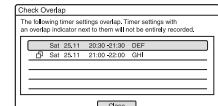
"Modify": Changes the timer setting. Select an item using **←→** and adjust using **↑↓**. Select "OK," and press ENTER.



"Erase": Erases the timer setting. Select "OK," and press ENTER.



"Check Overlap": Checks for overlapped settings. The timer setting without the mark has priority over the other settings.



Select "Close" to return to the Timer List. To change or cancel the setting, repeat steps 2 and 3 above.

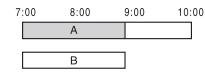
When the timer settings overlap

The programme that starts first has priority and the second programme starts recording only after the first programme has finished.



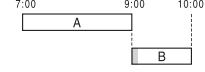
♦ When the recordings start at the same time

The programme that is set last has priority. In this example, timer setting B is set after A, so the first part of timer setting A will not be recorded.



♦ When the end time of one recording and the start time of another are the same

After finishing the previous recording, the other recording may be delayed.



To scroll the list display by page (Page mode)

Press **←→** while the list display is turned on. Each time you press **←→**, the entire Timer List changes to the next/previous page of timer settings.

To turn off the Timer List

Press TIMER LIST or RETURN.

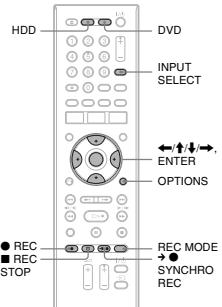
Hint While recording, you cannot modify the timer setting for the current recording, but you can extend the duration of the recording time (page 43).

Notes

- When "PDC/VPS" is set to "On" for one or more timer recordings, the start times may change in the event of a broadcast delay or early start.
- Even if the timer is set, timer recordings cannot be made while recording a programme that has priority. will appear next to the overlapped setting in the Timer List. Check the priority order of the settings.

Recording From Connected Equipment

HDD +RW -RWVR +RW_{Video} +R
-RVR +R_{Video}



Timer Recording

Recording from connected equipment with a timer (Synchro Rec)

You can set the recorder to automatically record programmes from connected equipment that has a timer function (such as a satellite tuner). Connect the equipment to the LINE 3/DECODER jack of the recorder (page 23).

When the connected equipment turns on, the recorder starts recording a programme from the LINE 3/DECODER jack.

1 Before recording, select HDD or DVD.

If you select DVD, insert a recordable DVD (see "1. Inserting a Disc" on page 27).

2 Set "Synchro Rec" to "Record to HDD" or "Record to DVD" in the "Recording" setup (page 93).

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3 Press INPUT SELECT repeatedly to select "L3."

4 Select the desired audio signal when recording a bilingual programme to the HDD or DVD-RWs/DVD-Rs (VR mode).

Press OPTIONS to select "Line Audio Input," and press ENTER. Then select "Bilingual," and press ENTER. For details about bilingual recording, see page 44.

5 Press REC MODE repeatedly to select the recording mode.

For details about the recording mode, see page 40.

6 Set the timer on the connected equipment to the time of the programme you want to record, and turn it off.

7 Press → ● SYNCHRO REC.

The SYNCHRO REC indicator lights up on the front panel. The recorder is ready to start Synchro-Recording.

The recorder automatically starts recording when it receives an input signal from the connected equipment. The recorder stops recording when the connected equipment turns off.

To stop recording

Press ■ REC STOP or → ● SYNCHRO REC.

To cancel Synchro Rec

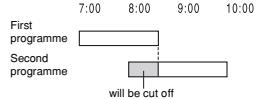
Press → ● SYNCHRO REC. The SYNCHRO REC indicator on the recorder turns off.

Notes

- The recorder starts recording only after detecting a video signal from the connected equipment. The beginning of the programme may not be recorded regardless of whether or not the recorder's power is on or off.
- During Synchro-Recording, other operations, such as normal recording, cannot be performed.
- To use the connected equipment while the recorder is standing by for Synchro-Recording, cancel Synchro-Recording by pressing → ● SYNCHRO REC. Be sure to turn off the connected equipment and press → ● SYNCHRO REC to reset Synchro-Recording before the timer recording starts.
- The Synchro Rec function does not work when "Line3 Input" of "Scart Setting" is set to "Decoder" in the "Video" setup (page 89).
- The Synchro Rec function does not work with some tuners. For details, see the tuner's operating instructions.
- While the recorder is standing by for Synchro-Recording, the Auto Clock Set function (page 87) does not work.
- To use the Synchro Rec function, you must first set the recorder's clock correctly.

If the timer settings of a Synchro-Recording and another timer recording overlap

Regardless of whether or not the programme is a Synchro Rec programme, the programme that starts first has priority and the second programme starts recording only after the first programme has finished.



Recording from connected equipment without a timer

You can record from a connected VCR or similar device. To connect a VCR or similar device, see "Connecting a VCR or Similar Device" on page 21. Use the DV IN jack on the front panel if the equipment has a DV output jack (iLINK jack).

1 Press HDD or DVD.

If you select DVD, insert a recordable DVD (see "1. Inserting a Disc" on page 27).

2 Press INPUT SELECT to select an input source according to the connection you made.

The front panel display changes as follows:

programme position → L1 → L2 → L3 → DV
↑

3 Select the desired audio signal when recording a bilingual programme to the HDD or DVD-RWs/DVD-Rs (VR mode).

Press OPTIONS to select "Line Audio Input," and press ENTER. Then select "Bilingual," and press ENTER. For details about bilingual recording, see page 44.

4 Press REC MODE repeatedly to select the recording mode.

For details about the recording mode, see page 40.

5 Insert the source tape into the connected equipment and set to playback pause.

6 Press ● REC.

This recorder starts recording.

7 Press the pause (or play) button on the connected equipment to cancel the playback pause status.

The connected equipment starts playback and the playback image is recorded by this recorder.

To stop recording, press ■ REC STOP on this recorder.

Timer Recording

If you connect a digital video camera with a DV IN jack

See "DV Dubbing" on page 77 for an explanation of how to record from the DV IN jack.

♦ Hint

You can adjust the settings for the recording picture before recording. See "Adjusting the recording picture quality and size" on page 46.

Notes

- When recording a video game image, the screen may not be clear.
- Any programme that contains a Copy-Never copy guard signal cannot be recorded. The recorder continues to record, but a blank screen will be recorded.

50

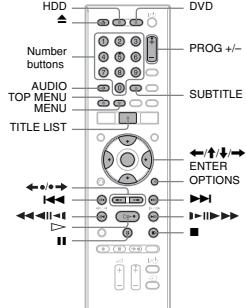
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Playback

Playing

HDD **+RW** **-RWVR** **+RVideo** **+RWVideo** **+R**
-RVR **-RVideo** **DVD** **VCD** **CD**

DATA DVD **DATA CD**

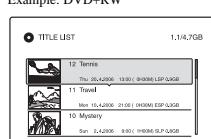


1 Press HDD or DVD.

- If you select DVD, insert a disc (see "1. Inserting a Disc" on page 27).
- If you insert a DVD VIDEO, VIDEO CD, or CD, press **▷**. Playback starts.

2 Press TITLE LIST.

For details about the Title List, see "3. Playing the Recorded Programme (Title List)" on page 29.
Example: DVD+RW



3 Select the title, and press ENTER.

The sub-menu appears.

4 Select "Play," and press ENTER.

Playback starts from the selected title.

To use the DVD's Menu

When you play a DVD VIDEO, or a finalised DVD+RW, DVD-RW (Video mode), DVD+R, or DVD-R (Video mode), you can display the disc's menu by pressing TOP MENU or MENU.

To play VIDEO CDs with PBC functions

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

When you start playing a VIDEO CD with PBC functions, the menu appears.

Select an item using the number buttons and press ENTER. Then, follow the instructions in the menu (press **▷** when "Press SELECT" appears).

The PBC function of Super VIDEO CDs does not work with this recorder. Super VIDEO CDs are played in continuous play mode only.

To change the angles

If various angles (multi-angles) for a scene are recorded on the disc, "3D" appears in the front panel display. Press OPTIONS during playback to select "Change Angle," and press ENTER.

To stop playback

Press **■**.

To playback quickly with sound (Scan Audio)

When you press **▶▶** during playback of a title recorded in the HDD, you can play quickly with dialogue or sound ("x1.3" appears).

No sound is output when you press **▶▶** two or more times to change search speed.

To resume playback from the point where you stopped (Resume Play)

When you press **▷** again after you stop playback, the recorder resumes playback from the point where you pressed **■**.

To start from the beginning, press OPTIONS to select "Play Beginning," and press ENTER. Playback starts from the beginning of the title/track/scene.

The point where you stopped playing is cleared when:

- you open the disc tray (except for HDD).
- you play another title (except for HDD).
- you switch the Title List menu to Original or Playlist (HDD/DVD-RWs/DVD-Rs in VR mode only).
- you edit the title after stopping playback.
- you change the settings on the recorder.
- you turn off the recorder (VIDEO CD/CD/DATA DVD/DATA CD only).
- you make a recording (except for HDD/DVD-RWs/DVD-Rs in VR mode).
- you disconnect the mains lead.

◆ Note

You cannot resume playback during TV Pause.

To play restricted DVDs (Parental Control)

If you play a restricted DVD, the message "Do you want to temporarily change the Parental Control level to *?" appears on your TV screen.

1 Select "OK" and press ENTER.

The display for entering your password appears.

2 Enter your four-digit password using the number buttons.

3 Press ENTER to select "OK."

The recorder starts playback.

To register or change the password, see "Parental Control (DVD VIDEO only)" on page 94.

To lock the disc tray (Child Lock)

You can lock the disc tray to prevent children from ejecting the disc.

When the recorder is turned on, hold down **■** until "LOCKED" appears in the front panel display. The **▲** (open/close) button does not work while the Child Lock is set.

To unlock the disc tray, hold down **■** until "UNLOCKED" appears in the front panel display when the recorder is turned on.

Playback

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Playback options

To check the position of the buttons below, see the illustration on page 52.
For MP3, JPEG, or DivX operations, see "Playing MP3 Audio Tracks, JPEG Image Files, or DivX® Video Files" on page 59.

Buttons	Operations
AUDIO	Selects one of the audio tracks recorded on the disc when pressed repeatedly in normal playback mode.
HDD +RW -RWVR +RVideo +RWVideo +R -RVR -RVideo DVD VCD CD	DVD : Selects the language. HDD +RWVR -RVR : Selects the main or sub sound. VCD CD : Selects stereo or monaural audio tracks.
SUBTITLE	Selects a subtitle language when pressed repeatedly.
DVD	
◀◀/▶▶ (instant replay/instant advance)	Replays the scene/briefly fast forwards the scene.
HDD +RW -RWVR +RVideo +RWVideo +R -RVR -RVideo DVD	
◀◀ (previous)▶▶ (next)	Goes to the beginning of the previous/next title/chapter/scene/track. For the HDD, you cannot go to the beginning of the previous/next title.
◀◀◀◀/▶▶▶▶ (fast reverse/fast forward)	Fast reverses/fast forwards the disc when pressed during playback. Search speed changes as follows: fast reverse fast forward ◀◀1◀◀ → 1▶▶*1 ◀◀2◀◀ → 2▶▶*2 ◀◀3*2◀◀ → 3▶▶*2 When you press and hold the button, fast forward/fast reverse continues at the selected speed until you release the button.
HDD +RW -RWVR +RVideo +RWVideo +R -RVR -RVideo DVD VCD *	*1 When you press ▶▶ once during playback of a title recorded in the HDD, you can play quickly with sound ("x1.3" appears). *2 ▶◀3 and ▶▶3 are only available for the HDD and DVDs.
◀◀◀◀◀◀/▶▶▶▶▶▶ (slow, freeze frame)	Plays in slow motion when pressed for more than one second in pause mode. Plays one frame at a time when pressed briefly in pause mode.
HDD +RW -RWVR +RVideo +RWVideo +R -RVR -RVideo DVD VCD *	* Playback direction only
■ (pause)	Pauses playback.

To resume normal playback, press **▷**.

◆ Notes

- Angles and subtitles cannot be changed with titles recorded on this recorder.
- Slideshows made with a DVD camcorder can only be played. Other play functions, such as fast forward, cannot be used.

Notes on playing DTS sound tracks on a CD

- When playing DTS-encoded CDs, excessive noise will be heard from the analogue stereo jacks. To avoid possible damage to the audio system, the consumer should take proper precautions when the analogue stereo jacks of the recorder are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external DTS decoder must be connected to the DIGITAL OUT JACK of the recorder.
- Set the sound to "Stereo" using the AUDIO button when you play DTS sound tracks on a CD (page 54).

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 the "Audio" setup (page 91).

Adjusting the picture quality

HDD **+RW** **-RWVR** **+RVideo** **+RWVideo** **+R** **-RVR** **-RVideo** **DVD** **VCD** **DATA DVD** **DATA CD** *

* DivX video file only

1 Press OPTIONS during playback to select "Video Settings," and press ENTER.

Video Settings	
Select the item you want to change.	
FNR :	2
BNR :	2
MNR :	2
Sharpness :	Off
PB Video Equalizer	

2 Select an item, and press ENTER.

The adjustment display appears.
"FNR" (frame noise reduction): Reduces noise contained in the luminance element of the video signal.
"BNR" (block noise reduction): Reduces "block noise" or mosaic like patterns in the picture.
"MNR" (mosquito noise reduction): Reduces the faint noise appearing around the outlines of the images. The noise reduction effects are automatically adjusted within each setting range according to the video bit rate and other factors.

"Sharpness": Sharpens the outlines of the images.

"PB Video Equalizer" (Playback video equalizer): Adjusts the picture in greater detail. Select an item and press ENTER.

• Contrast: changes the contrast.

• Brightness: changes the overall brightness.

• Colour: makes the colours deeper or lighter.

• Hue: changes the colour balance.

3 Press **◀▶** to adjust the setting, and press ENTER.

The default settings are underlined.

• FNR: (weak) Off 1 2 3 (strong)

• BNR: (weak) Off 1 2 3 (strong)

• MNR: (weak) Off 1 2 3 (strong)

• Sharpness*: (weak) Off 1 2 3 (strong)

• PB Video Equalizer*: (weak) Off 1 2 3 (strong)

• Brightness: (dark) -3 ~ 0 ~ 3 (bright)

• Colour: (light) -3 ~ 0 ~ 3 (deep)

• Hue: (red) -3 ~ 0 ~ 3 (green)

Repeat steps 2 and 3 to adjust any other items.

* "1" softens the outlines of the images. "2" enhances the outlines and "3" enhances them more than "2."

Playback

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Notes

- If the outlines of the images on your screen become blurred, set "BNR" and/or "MNR" to "Off."
- Depending on the disc or the scene being played, the above BNR, MNR, or FNR effects may be hard to discern. And, these functions may not work with some screen sizes.
- When using the "Sharpness" function, noise found in the title may become more apparent. In this case, it is recommended that you use the BNR function with the "Sharpness" function. If the condition still does not improve, set the "Sharpness" level to "Off."

Adjusting the delay between the picture and sound (AV SYNC)

HDD +RW -RWVR +RWVR_{Video} +R
-RVR -RVideo DVD VCD DATA DVD
DATA CD

1 Press OPTIONS during playback to select "Audio Settings," and press ENTER.

2 Select "AV SYNC", and press ENTER.
"AV SYNC":
When the video is delayed, this function delays the audio for synchronization with the video (0 to 120 milliseconds). Larger numbers indicate a longer audio delay for synchronization with the video. When dubbing to a VCR or other video recording equipment, be sure to return this setting to 0 ms (default).

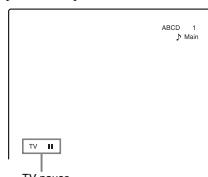
3 Press ←/→ to adjust the setting, and press ENTER.

Pausing a TV Broadcast (TV Pause)

You can pause a current TV broadcast, and then continue watching the programme at a later time. This is useful when you receive an unexpected phone call or visitor while watching TV.

1 While viewing a TV broadcast with this recorder, press II.

The picture pauses. You can pause the picture for up to three hours.



2 Press II or ▶ again to resume watching the programme.

Notes

- Paused titles are not saved to the HDD.
- This function is cancelled when:
 - (stop) is pressed.
 - PROG +/- is pressed.
 - DVD is pressed.
 - ▲ (open/close) is pressed.
 - TITLE LIST is pressed.
 - INPUT SELECT is pressed.
 - the recorder is turned off.
 - a timer recording or Synchro-Recording is started.
 - the PDC/VPS function is "On" and channel scan is started.
 - DV dubbing or regular dubbing is started.
- It may take one minute or more to resume playback of the paused programme.
- Even if you fast forward the recorded programme, there will always be a time difference of about one minute or more between the recorded programme and the current TV broadcast.

Playing from the beginning of the programme you are recording (Chasing Playback)

HDD +RW -RWVR +RWVR_{Video} +R
-RVR -RVideo DVD VCD CD
DATA DVD DATA CD

"Chasing Playback" allows you to view the recorded part of a programme while the recording is being made. You do not need to wait until the recording finishes.

Press OPTIONS while recording to select "Chasing Playback," and press ENTER.

Playback starts from the beginning of the programme you are recording.

When you fast forward to the point that you are recording, Chasing Playback returns to normal playback.

Notes

- For DVD-RWs (VR mode), this function does not work when recording:
 - on a 1x-speed DVD-RW.
 - in the HQ or HSP recording mode.
- The DVD's picture on your TV screen freezes for a few seconds when you fast forward/fast reverse or instant replay/advance the recording.
- Chasing Playback is possible from one minute or more after recording starts.
- Even if you fast forward the recorded programme, there will always be a time difference of about one minute or more between the recorded programme and the current TV broadcast.

Playing a previous recording while making another (Simultaneous Rec and Play)

HDD +RW -RWVR +RWVR_{Video} +R
-RVR -RVideo DVD VCD CD
DATA DVD DATA CD

"Simultaneous Rec and Play" allows you to view a previously recorded programme while recording programmes. Playback continues even if a timer recording starts. Using this function as follows:

- While recording to the HDD:
 - Play another title on the HDD.
 - Play a previously recorded programme on a DVD by pressing DVD.
- While recording to a DVD:
 - Play a previously recorded programme on the HDD by pressing HDD.
 - While recording to a DVD-RW (VR mode)¹:
 - Play another title on the same DVD-RW (VR mode) disc.²
- Simultaneous Rec and Play function does not work when you record:
 - on a 1x-speed DVD-RW.
 - in the HQ or HSP recording mode.

¹ Picture noise may appear depending upon the condition of the recording, or when playing a title recorded in the HQ or HSP recording mode. The picture freezes for a few seconds when you use fast forward/fast reverse or instant replay/advance.

You can also play a DVD VIDEO, VIDEO CD, Super VIDEO CD, CD, DATA DVD, or DATA CD while recording on the HDD.

Example: Play another title on the HDD while recording to the HDD.

1 While recording, press TITLE LIST to display the HDD Title List.

2 Select the title you want to play, and press ENTER.

3 Select "Play" from the sub-menu, and press ENTER.

Playback starts from the selected title.

Playback

→continued 57

Example: Play a DVD while recording to the HDD.

- 1 While recording, press DVD and insert the DVD into the recorder.
- 2 Press TITLE LIST to display the DVD Title List.
- 3 Select the title you want to play, and press ENTER.
- 4 Select "Play" from the sub-menu, and press ENTER.

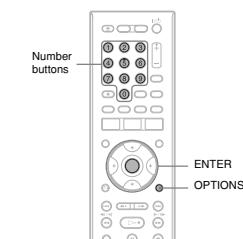
Note

You cannot play a DVD, DivX video or VIDEO CD recorded in the NTSC colour system while recording on the HDD. When playing a DivX video or VIDEO CD, be sure to set "Colour System" to "PAL" in the "Video" setup (page 90).

Searching for a Title/Chapter/Track, etc.

HDD +RW -RWVR +RWVR_{Video} +R
-RVR -RVideo DVD VCD CD
DATA DVD DATA CD

You can search a disc by title, chapter, scene or track. As titles and tracks are assigned individual numbers, select the title or track by entering its number. You can also search for a scene using the time code.



1 Press OPTIONS during playback to select a search method, and press ENTER.

- "Title Search" (for DVDs)
- "Chapter Search" (for HDD/DVDs)
- "Track Search" (for CDs/DATA CDs)
- "Search" (for VIDEO CDs)
- "Album Search" (for DATA DVDs/DATA CDs)
- "Time Search" (for HDD/DVDs/DATA DVDs*/DATA CDs*): Searches for a starting point by entering the time code.
- * DivX video file only
- * File Search" (for DATA DVDs/DATA CDs)

The display for entering the number appears.

Example: Title Search



The number in parentheses indicates the total number of titles, tracks, etc.

2 Press the number buttons to select the number of the title, chapter, track, time code, etc., you want.

For example: Time Search
To find a scene at 2 hours, 10 minutes, and 20 seconds, enter "21020."
If you make a mistake, select another number.

3 Press ENTER.

The recorder starts playback from the selected number.

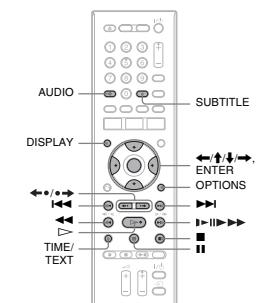
Note

"Title Search" is not applicable to the HDD.

Playing MP3 Audio Tracks, JPEG Image Files, or DivX® Video Files

DATA DVD DATA CD

You can play MP3 audio tracks, JPEG image files, and DivX video files on DATA CDs (CD-ROMs/CD-Rs/CD-RWs) or JPEG image files and DivX video files on DATA DVDs (DVD-ROMs/DVD+RWs/DVD+Rs/DVD-RWs/DVD-Rs).



1 Insert a disc.

See "1. Inserting a Disc" on page 27.

Playback

2 Press ▶.

For MP3 discs, playback starts from the first MP3 audio track on the disc. For JPEG files, a slideshow of the pictures on the disc begins. For DivX video files, playback starts from the first DivX video file on the disc. If the disc contains MP3 audio tracks, JPEG image files, and DivX video files, only the DivX video files are played back when ▶ is pressed. If the disc contains MP3 audio tracks and JPEG image files, only the JPEG image files are played back when ▶ is pressed.

To stop playback or slideshow

Press ■.

To pause playback or slideshow

Press II.

To play the beginning of the MP3 audio track or DivX video file

Press OPTIONS to select "Play Beginning," and press ENTER.

To fast forward or fast reverse an MP3 audio track or DivX video file

Press ▶◀ or ▶▶ during playback.

To go to the next or previous MP3 audio track, JPEG image file or DivX video file

Press ▶◀ or ▶▶ during playback. If you repeatedly press ▶◀ or ▶▶, you will go to the next or previous album. (Except JPEG image file)

To play DivX video file in slow motion/one frame at a time (Playback direction only)

Press ▶▶/II▶ in pause mode.

To go to the next or previous album (Except for DivX video files)

Press ▶◀/▶▶ during playback or slideshow.

To display the registration code for this recorder

Select "Registration Code" in the "Others" setup (page 96).

To rotate a picture

Press OPTIONS while the JPEG image is displayed to select "Rotate Right" or "Rotate Left," and press ENTER.

Hints

- Press AUDIO to switch between stereo or monaural audio tracks when playing MP3 audio tracks.
- You can change the audio track when playing MP3 or MPEG audio of DivX video files using the AUDIO button.
- You can display subtitles when playing DivX video files using the SUBTITLE button.
- You can rotate a JPEG image using the ←→ buttons when the image is displayed.
- Press DISPLAY repeatedly to show information about the JPEG album or image on your TV screen. Then press TIME/TEXT to toggle between the current selected image number and album number.

Notes

- Some JPEG files, especially files of three million pixels or more, may lengthen the slideshow interval.
- Rotated JPEG images will not be saved when you switch to another folder.
- Images larger than 720 × 480 will be reduced to 720 × 480 when displayed.
 - progressive JPEG image files
 - greyscale JPEG image files
 - 4:1:1 JPEG image files
- When you attempt to play a broken file or a file that does not satisfy the play conditions, [?] appears but the recorder cannot play the file.
- The recorder cannot play a DivX video file of size more than 720 (width) × 576 (height)/4 GB.

About MP3 audio tracks, JPEG image files, and DivX video files

MP3 is an audio compression technology that satisfies certain ISO/MPEG regulations. JPEG is an image compression technology. You can play MP3 (MPEG1 Audio Layer 3) format audio tracks and JPEG image files on DATA CDs (CD-ROMs/CD-Rs/CD-RWs) or JPEG image files on DATA DVDs (DVD-ROMs/DVD+RWs/DVD+Rs/DVD-RWs/DVD-Rs).

DATA CDs must be recorded according to ISO9660 Level 1, Level 2 or Joliet format for the recorder to recognize the MP3 tracks. DivX® is a video file compression technology, developed by DivX, Inc. This product is an official DivX® Certified product. You can play DATA CDs and DATA DVDs that contain DivX video files. You can also play discs recorded in MultiSession/Border.

See the instructions supplied with the disc drives and the recording software (not supplied) for details on the recording format.

Note on MultiSession/Border discs

If audio tracks and images in Music CD format or Video CD format are recorded in the first session/border, only the first session/border will be played back.

Note

The recorder may not be able to play some DATA CDs/DATA DVDs created in the Packet Write format.

MP3 audio tracks, JPEG image files, or DivX video files that the recorder can play

The recorder can play the following tracks and files:

- MP3 audio tracks with the extension ".mp3"
- JPEG image files with the extension ".jpeg" or ".jpg"
- JPEG image files that conform to the DCF® image file format.
- DivX video file with the extension ".avi" or ".divx."

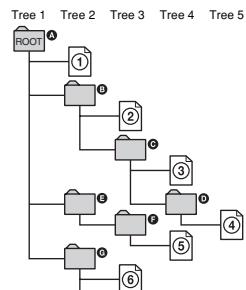
* "Design rule for Camera File system": Image standards for digital cameras regulated by JEITA (Japan Electronics and Information Technology Industries Association).

Notes

- The recorder will play any data with the extension ".mp3," ".jpeg," ".avi," or ".divx" even if they are not in MP3, JPEG, or DivX format. Playing these data may generate a loud noise which could damage your speaker system.
- The recorder does not conform to audio tracks in mp3PRO format.
- The recorder may not play a DivX video file when the file has been combined from two or more DivX video files.
- Depending on the disc, normal playback may not be possible. For example, the picture may be unclear, playback may not appear smooth, the sound may skip, and so on.
- Depending on the disc, playback may take some time to start.
- Some files cannot be played.
- The letters that cannot be displayed are replaced with "*."

About playback order of albums, tracks, and files

Albums play in the following order:

Structure of disc contents

When you insert a DATA CD/DATA DVD and press ▶, the numbered tracks (or files) are played sequentially, from ① through ⑦. For JPEG image files, press ▶▶ to go to the next album. (For instance, when you want to go from ① to ②.) Any sub-albums/tracks (or files) contained within a currently selected album take priority over the next album in the same tree. (Example: ③ contains ④ so ④ is played before ⑤.)

Hints

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

Notes

- Depending on the software you use to create the DATA DVD/DATA CD, the playback order may differ from the above illustration.
- No more than a total of 999 individual folders can be played. (Folders that do not contain JPEG/MP3/DivX files are counted as well.)
- No more than a total of 999 folders and 9999 files can be played. (Files other than JPEG/MP3/DivX files, and folders that do not contain JPEG/MP3/DivX files are counted as well.)
- No more than 999 folders and files can be recognized in a single folder. (Folders that do not contain JPEG/MP3/DivX files are counted as well.)
- Proceeding to the next or another album may take some time.
- This recorder supports MP3 audio bit rates up to 320 kbps.

Erasing and Editing**Before Editing**

This recorder offers various edit options for various disc types.

Notes

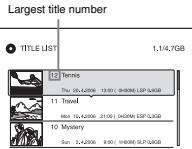
- You lose the edited contents if you remove the disc or a timer recording starts while editing.
- DVD discs created by DVD video cameras cannot be edited on this recorder.
- If a message appears and indicates that the disc's control information is full, erase or edit unnecessary titles.
- When editing a DVD+R or DVD-R, finish all editing before finalising the disc. You cannot edit a finalised disc.

	HDD	+RWVR	+RW			
	Original title	Playlist title	Original title	Playlist title	+R	+RW
					RW	RWVideo
Erase (page 64)	Yes	Yes	Yes	Yes	Yes	
Protect (page 64)	Yes	Yes	Yes	No	Yes	
Title Name (page 64)	Yes	Yes	Yes	Yes	Yes	
A-B Erase (page 65)	Yes	Yes	Yes	Yes	Yes	Yes*
Erase Titles (page 65)	Yes	Yes	Yes	Yes	Yes	Yes
Divide (page 66)	Yes	Yes	No	Yes	Yes	No
Set Thumbnail (page 64)	Yes	Yes	Yes	Yes	Yes	No
Chapter mark (page 67)	Yes	Yes	Yes	Yes	Yes	No
Create a Playlist (page 67)	Yes	No	Yes	No	No	No
Make a Playlist (page 69)	Yes	No	Yes	No	No	No
Change Order (page 69)	No	No	No	Yes	No	No
Combine (page 70)	No	Yes	No	Yes	No	No

* DVD+RW only

To open up disc space

To open up disc space on a DVD+RW or DVD-RW (Video mode), erase the title with the largest number in the title list.



For the HDD and DVD-RWs (VR mode), you can erase any title.

For DVD-Rs and DVD+Rs, the available disc space does not increase even if you erase titles.

See "Erasing and Editing a Title" on page 64 or "Erasing multiple titles (Erase Titles)" on page 65.

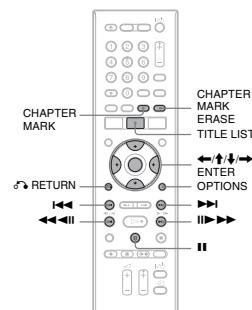
To switch between the Playlist and Title List

You can display the Playlist titles in the Title List (Playlist), or the original titles in the Title List (Original). To switch the two Title Lists, press **◀▶** while a Title List is displayed. To create and edit a Playlist, see page 67.

Erasing and Editing a Title

HDD **+RW** **-RWVR** **-RWVR** **+R**
-RVR **-RVR**

This section explains the basic edit functions. Note that editing is irreversible. To edit the HDD or DVD-RWs/DVD-Rs (VR mode) without changing the original recordings, create a Playlist title (page 67).



1 Press TITLE LIST.

For HDD titles or DVD-RWs/DVD-Rs in VR mode, press **◀▶** to switch to the Title Lists, if necessary.

2 Select a title, and press ENTER.

The sub-menu appears.

3 Select an option, and press ENTER.

You can make the following edits to the title.

"Erase": Erases the selected title. Select "OK" when asked for confirmation.

"Protect": Protects the title. "P" appears next to the protected title.

"Title Name": Allows you to enter or re-enter a title name (page 34).

"A-B Erase": Erases a section of the title (page 65).

"Divide": Divides a title into two titles (page 66).

4 Select point A using **◀▶**, and press ENTER.

Playback pauses.

5 Press ENTER if point B is correct.

If point A is incorrect, select point A using **◀▶**, and press ENTER. The display for setting point B appears.

4 Select point B using **◀▶**, and press ENTER.

Playback pauses.

5 Press ENTER if point B is correct.

If point B is incorrect, select point B using **◀▶**, and press ENTER. The display asks for confirmation.

- To reset point A, press **↑** and **RETURN**, and go to step 2.
- To reset point B, press **↑** and repeat step 4.

To preview the title without scenes to be erased, select "Preview" (except for DVD+RWs).

6 Select "OK," and press ENTER.

The scene is erased. The display for setting point A appears.

- To continue, go to step 2.
- To finish, select "Quit."

Hint

A chapter mark is inserted after the scene was erased. The chapter mark divides the title into separate chapters on either side of the mark.

Notes

- Images or sound may be momentarily interrupted at the point where you erase a section of a title.
- Sections shorter than five seconds may not be erased.
- For DVD+RWs, the erased section may be slightly different from the points you selected.

Dividing a title (Divide)

HDD **-RWVR** * **-RVR** *

If you want to dub a long title to a disc but do not want to reduce the picture quality, divide the title into two shorter titles. Note that dividing a title cannot be undone.

* Only playlist titles can be divided for DVD-RWs/DVD-Rs (VR mode).

1 Press TITLE LIST.

Press **◀▶** to switch the Title Lists, if necessary.

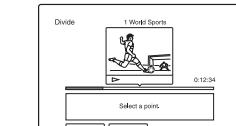
2 Select a title, and press ENTER.

The sub-menu appears.

3 Select "Divide," and press ENTER.

The display for setting the dividing point appears, and the title starts to play.

- To return to the beginning of the title, press **II** and then press **◀**.



4 Select the dividing point by pressing **◀▶**, and press ENTER.

Playback pauses.

5 Press ENTER if the dividing point is correct.

If the dividing point is incorrect, select the dividing point using **◀▶**, and press ENTER. The display asks for confirmation.

- To change the dividing point, press **↑**.

6 Select "OK," and press ENTER.

The title is divided in two.

Hint

After a title is divided, the title name prior to division is assigned to both the first and second parts.

"Set Thumbnail": Changes the title's thumbnail picture that appears in the Title List (page 30).

"Make a Playlist": Adds the entire title to the Playlist title as one scene (page 69).

Hints

- You can erase multiple titles at one time (page 65).
- You can automatically erase titles that have already played (page 93).
- You can label or re-label DVDs (page 35).

Note

DVD-KW/DVD-R (VR mode) playlist titles cannot be protected.

Erasing multiple titles (Erase Titles)

HDD **+RW** **-RWVR** **-RWVR** **+R**

-RVR **-RVR**

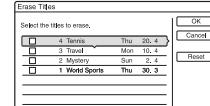
You can select and erase more than one title at one time using the OPTIONS menu.

1 Press TITLE LIST.

For HDD titles or DVD-RWs/DVD-Rs in VR mode, press **◀▶** to switch to the Title Lists, if necessary.

2 Press OPTIONS to select "Erase Titles," and press ENTER.

The display for selecting titles to be erased appears.



3 Select a title, and press ENTER.

A check mark appears in the check box next to the selected title.

- To clear the check mark, press ENTER again.
- To clear all of check marks, select "Reset."

4 Repeat step 3 to select all of the titles you want to erase.

5 When you finish selecting titles, select "OK," and press ENTER.

The list of the titles to be erased appears for confirmation.

- To change the selection, select "Change," and repeat from step 3.

6 Select "OK" and press ENTER.

The titles are erased.

To erase all titles on the disc

You can reformat the HDD, DVD+RW, or DVD-RW to make the disc or drive blank. To format the HDD, see "Format" on page 96.

To format a DVD+RW or DVD-RW disc, see "8. Reformatting a disc" on page 38.

Erasing and Editing

Erasing a section of a title (A-B Erase)

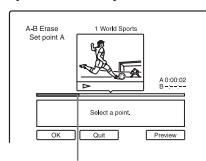
HDD **+RW** **-RWVR** **-RWVR**

You can select a section (scene) in a title and erase it. Note that erasing scenes in a title cannot be undone.

1 After step 2 of "Erasing and Editing a Title," select "A-B Erase" and press ENTER.

The display for setting point A appears. The title starts to play.

- To return to the beginning of the title, press **II** and then press **◀**.



2 Select point A using **◀▶**, and press ENTER.

Playback pauses.

→continued 65

Creating chapters manually

HDD **-RWVR** **-RVR**

You can manually insert a chapter mark at any point you like during playback or recording.

Press CHAPTER MARK at the point where you want to divide the title into chapters.

Each time you press the button, "Marking..." appears on the screen and the scenes to the left and right of the mark become separate chapters.

To erase chapter marks

You can combine two chapters by erasing the chapter mark during playback.

Press **◀▶** to search for a chapter number, and while displaying the chapter containing the chapter mark you want to erase, press CHAPTER MARK ERASE. The current chapter combines with the previous chapter.

Notes

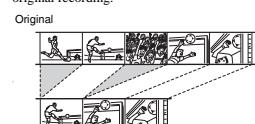
- When dubbing, any chapter marks you enter will be erased.
- To insert a chapter mark manually during recording, set "Auto Chapter" to "Off" in the "Recording" setup.

Creating and Editing a Playlist

HDD **-RWVR** **-RVR**

Playlist edit allows you to edit or re-edit without changing the actual recordings. You can create up to 97 Playlist titles.

Example: You have recorded the final few matches of a football tournament on a DVD-RW/DVD-R (VR mode). You want to create a digest with the goal scenes and other highlights, but you also want to keep the original recording.



In this case, you can compile highlight scenes as a Playlist title. You can even rearrange the scene order within the Playlist title. The Playlist title calls up data from the original titles for playback. When an original title is used for a Playlist title, the original title cannot be edited and erased.

Note

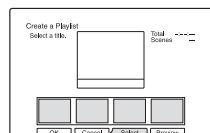
Playlist titles containing titles recorded with the "Copy-Once" copy protection signal cannot be dubbed or moved (page 75).

Erasing and Editing

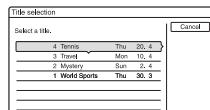
1 Press TITLE LIST.

If the Title List (Original) appears, press **◀**.

2 Press OPTIONS to select "Create a Playlist," and press ENTER.



3 Select "Select," and press ENTER.



4 Select the title you want to include in the Playlist title, and press ENTER.

The display for setting the start point (IN) appears. The title starts to play.

- To return to the beginning of the title, press **II** and then press **◀▶**.



5 Select the IN point using **◀▶, and press ENTER.**

Playback pauses.

6 Press ENTER if the IN point is correct.

If the IN point is incorrect, select the IN point using **◀▶**, and press ENTER. The display for setting the end point (OUT) appears.

7 Select the OUT point using **◀▶, and press ENTER.**

Playback pauses.

8 Press ENTER if the OUT point is correct.

If the OUT point is incorrect, select the OUT point using **◀▶**, and press ENTER.

The selected scene is added to the scene list.

- To add more scenes, go to step 5.

9 When you finish adding scenes, press **↓.**



10 Select the scene you want to re-edit, and press ENTER.

The sub-menu appears.
"Move": Changes the scene order using **◀▶** and press ENTER.
"Erase": Deletes the scene. When asked for confirmation, select "OK."
• To add more scenes, press **↑** and go to step 5.
• To add more scenes from another title, select "Select" and go to step 4.
• To preview all of the captured scenes in the listed order, select "Preview."

11 When you finish editing the scene list, select "OK," and press ENTER.

The title of the created Playlist is added to the Title List (Playlist). The title name is the title name of the first scene.

⌚ Hint

When a Playlist title is created, the IN and OUT points will become chapter marks, and each scene will become a chapter.

⌚ Note

The picture may pause when the edited scene is played.

To add the entire title to the Playlist title as one scene (Make a Playlist)

1 Press TITLE LIST.

Moving a Playlist title (Change Order)

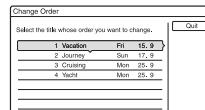
-RWVR -RVR

You can change the Playlist title order within the Title List (Playlist).

1 Press TITLE LIST.

If the Title List (Original) appears, press **◀**.

2 Press OPTIONS to select "Change Order," and press ENTER.



3 Select the title you want to move, and press ENTER.

4 Select a new location for the title using **↑↓, and press ENTER.**

The title moves to the new location.
• To move more titles, go to step 3.
• To finish, select "Quit," and press ENTER.

Erasing and Editing

Combining multiple Playlist titles (Combine)

HDD -RWVR -RVR

1 Press TITLE LIST.

If the Title List (Original) menu appears, press **◀**.

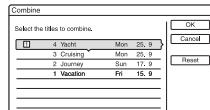
2 Press OPTIONS to select "Combine," and press ENTER.

The display for selecting titles appears.

3 Select a title, and press ENTER.

A number indicating the order in which you selected the title appears.

To cancel the selection, press ENTER again.

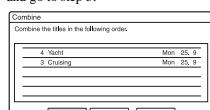


4 Repeat step 3 to select all of the titles you want to combine.

To cancel all of the selections, select "Reset."

5 Select "OK," and press ENTER.

The list of titles to be combined appears. To change the selection, select "Change" and go to step 3.



6 Select "OK," and press ENTER.

The titles are combined.

⌚ Hint

After titles are combined, the title name is the title name of the first title prior to combination.

⌚ Note

When the number of chapters in the title to be combined exceeds the limit, the chapters at the end are combined into a single chapter.

Dividing a Playlist title (Divide)

HDD -RWVR -RVR

You can divide a Playlist title. For operations, see page 66.

Dubbing (HDD ↔ DVD)

Before Dubbing

HDD +RW -RWVR -RVR
-RVR -RVideo

In this section, "dubbing" refers to "copying a recorded title on the internal hard disk drive (HDD) to another disc, or vice versa." You can select to dub one title at a time (Title Dubbing – see "Dubbing a single title (Title Dubbing)" on page 74), or multiple titles all at once (Multiple Title Dubbing – see "Dubbing multiple titles (Dub Selected Titles)" on page 75). Before you start, read the following precautions, which are common to both dubbing methods.

If you want to record from a digital video camera connected to the DV IN jack, see "DV Dubbing" on page 77. To record from equipment connected to the LINE IN jacks, see "Recording from connected equipment without a timer" on page 51.

Before you start...

- You cannot record both the main and sub sound on DVD+RWs, DVD-RWs (Video mode), DVD+Rs, or DVD-Rs (Video mode). For bilingual programmes, see "Bilingual Recording" of "DVD Rec. Settings" to either "Main" (default) or "Sub" in the "Recording" setup (page 93).
- The chapter marks in the dubbing source are not retained in the dubbed title. When "Auto Chapter" is set to "On" in the "Recording" setup, chapter marks are automatically inserted at approximately 6 minute intervals.

⌚ Hints

- When you dub a Playlist title, it is recorded as an Original title.
- When dubbed from a DVD to the HDD, the picture size and the sound types originally recorded are retained.

⌚ Notes

- You cannot make a recording while dubbing.
- To play a dubbed disc on other DVD equipment, finalise the disc (page 36).

- You cannot dub from DVD VIDEOS to the HDD.
- Thumbnails that you have set for the originally recorded title (page 30) will not be retained in the dubbed title.

- When dubbing to a DVD+R DL disc, the video may be momentarily interrupted at the point where the layers switch.

About "Dub Mode"

With this recorder, the recording mode for dubbing is displayed as "Dub Mode." Three dubbing methods are available: High-speed Dubbing, Original Dubbing, and Rec Mode Conversion Dubbing. Read the following and select according to the required time, disc space, and picture quality.

Dubbing at high-speed (High-speed Dubbing)

HDD → +RW / -RWVR / -RVR
+R / -RVR / -RVideo

Allows you to dub what you have stored in the HDD to a high-speed DVD (8x-speed DVD+RWs/6x-speed DVD-RWs/16x-speed DVD+Rs/10x-speed DVD-Rs, or slower versions of each disc type), without changing the recording mode.

Set "Dub Mode" to "Fast" in the steps of "Dubbing a single title (Title Dubbing)" (page 74) or "Dubbing multiple titles (Dub Selected Titles)" (page 75).

When dubbing multiple titles, you can select "Fast" if there are one or more titles that can be dubbed at high speed in the selected titles. However, titles that cannot be dubbed at high speed are dubbed in the Original Dubbing mode.

The minimum required time is as follows (approximate).

Dubbing (HDD ↔ DVD)

Required times for High-speed Dubbing from HDD to DVD (for 60-minute programme)*¹

Speed*	6x	6x	8x	8x	2.4x
Rec. mode	DVD+RW	DVD+RW	DVD+RW	DVD+RW	DVD+R (Layer)
HQ	Approx. 10 min.	Approx. 10 min.	Approx. 8 min.	Approx. 8 min.	25 min.
HSP	Approx. 6 min.	Approx. 6 min.	Approx. 5 min.	Approx. 5 min.	16 min.
SP	Approx. 5 min.	Approx. 5 min.	Approx. 3 min.	Approx. 3 min.	12 min.
LSP	Approx. 4 min.	Approx. 4 min.	Approx. 3 min.	Approx. 3 min.	10 min.
ESP	Approx. 3 min.	Approx. 3 min.	Approx. 2 min.	Approx. 2 min.	8 min.
LP	Approx. 2 min.	Approx. 2 min.	Approx. 2 min.	Approx. 2 min.	30 sec.
EP	Approx. 1 min.	Approx. 1 min.	Approx. 1 min.	Approx. 1 min.	30 sec.
SLP	Approx. 1 min.	Approx. 1 min.	Approx. 56 sec.	Approx. 60 sec.	60 sec.

*¹ The values in the above table are for reference only. Actual times for dubbing also require time for creating disc's control information and other data.

*² This is the maximum recording speed of this recorder. The recording speed cannot exceed the value indicated in the above table even when using discs that support higher recording speeds. In addition, depending on the disc condition, the recorder may be unable to record at the maximum recording speed indicated in the table.

*³ High-speed dubbing is not available when dubbing titles recorded in EP and SLP mode to DVD+RWs and DVD+Rs.

Notes

- High-speed Dubbing is not available for the following titles:
 - Titles recorded in HQ+.
 - Titles that contain both main and sub sounds (except DVD-RWs/DVD-Rs (VR mode)).
 - Titles recorded in mixed picture size (4:3 and 16:9 etc.) (except DVD-RWs/DVD-Rs (VR mode)).
 - Dubbing from DVD to HDD
 - Dubbing 16:9 size title from HDD to DVD+RW/DVD+R
 - When dubbing a title with a picture size of 16:9 recorded in LP, EP, or SLP mode to a DVD+RW or DVD-R in Video mode.
 - When dubbed to a DVD-RW (Video mode)/DVD+RW/DVD+R/DVD-R (Video mode), the "seams" that are left over from editing may remain on the disc. If you edit a title, use the Original Dubbing or Rec Mode Conversion Dubbing method. This will smooth out the "seams."

Original Dubbing

HDD ↔ +RW / -RWVR / +RWVideo / +R / -RVR / -RVideo

Original Dubbing allows you to make smooth dubbings by de-emphasizing the "seams" that are left over from editing. In this case, the recording mode is set to the same recording mode that the source title was recorded in. To set the "Dub Mode" to "Original," you must make your selection from the "Dub Selected Titles" display (page 75). Note that you cannot select "Original" when using the Dubbing method explained in "Dubbing a single title (Title Dubbing)" (page 74).

Note

If the recording mode of the dubbing source title is unknown when dubbing from a DVD to the HDD, "Dub Mode" is automatically set to "SP" in the "Dub Selected Titles" display (page 75).

Rec Mode Conversion Dubbing

HDD ↔ +RW / -RWVR / +RWVideo / +R / -RVR / -RVideo

Allows you to dub from the HDD to a DVD or vice versa, in a dubbing mode that differs from the original recordings. For example, when you dub an HQ title (data size is large) in SP mode, you can reduce the data size, saving more titles using less space. Select a mode different from the original recording in "Dub Mode" in the steps of "Dubbing a single title (Title Dubbing)" (page 74) or "Dubbing multiple titles (Dub Selected Titles)" (page 75). When dubbing multiple titles, all of the selected titles will be recorded in same recording mode.

Hint

Dubbing in the recording mode of the source title smoothes out the "seams" that are left over from editing.

Notes

- For a title whose picture size (16:9 or 4:3) is mixed:
 - When dubbed from the HDD to DVD-RWs/DVD-Rs (Video mode), the picture size is determined by the setting in "DVD Rec. Picture Size" (page 46).
 - When dubbed from the HDD to DVD-RWs/DVD-Rs (Video mode) in LP, EP or SLP mode, the picture size is always 4:3.
 - When dubbed from HDD to DVD+RW or DVD+R, the picture size is always 4:3.
- The picture quality will not improve even if a title is converted to a recording mode of better picture quality.

Dubbing restriction

You cannot dub movies and other DVD VIDEOs to the HDD. Also, when dubbing from a DVD to the HDD, a grey, blank screen will be recorded for scenes that contain a copy protection signal.

Copy protection signals **Dubbing**



* CPRM-compatible DVD-RWs/DVD-Rs (VR mode) only
CPRM (Content Protection for Recordable Media) is a coding technology that protects copyrights for images.

Move

HDD → -RWVR / -RVR

Titles containing "Copy-Once" copy protection signals can be moved only from HDD to DVD-RW/DVD-R (VR mode)* (after the title is moved, the original title in the HDD is erased). The "Move" function is performed using the same procedure as dubbing (page 74). Titles containing "Copy-Once" copy protection signals are indicated with **COPY**.

Notes

- The following titles in the HDD cannot be moved.
 - Protected titles
 - Playlist titles
 - Original titles referenced from the playlist
- When dubbing (Move) is stopped partway, no part of the title will be moved to the dubbing target. However, note that this will decrease the free disc space for DVD+Rs/DVD-Rs.
- Even if you erase a scene that contains a copy protection signal, the recording restrictions on that title are retained.

* CPRM-compatible DVD-RWs/DVD-Rs (VR mode) only.

Dubbing (HDD) → (DVD)

Dubbing

HDD +RW / -RWVR / +RWVideo / +R / -RVR / -RVideo

Dubbing a single title (Title Dubbing)

1 Insert the DVD that you are going to dub to or from.

2 Press HDD or DVD to select the source.

3 Select TITLE LIST.

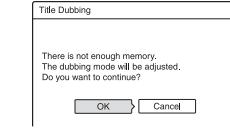
Press **↔/→** to switch the Title Lists, if necessary.

4 Select "Start," and press ENTER.

The remaining time of dubbing appears in the front panel display.

To automatically adjust the dubbing mode

If there is not enough available space on the target disc, the recorder automatically selects a dubbing mode with lower picture quality according to the available space. If there is insufficient disc space in the selected dubbing mode, the following display appears after step 8.



Select "OK" and go to step 8.

To manually select another dubbing mode, select "Cancel," and go to step 7.

To stop dubbing

Press OPTIONS to select "Stop Dubbing," and press ENTER. When asked for confirmation, select "OK," and press ENTER.

When dubbing (Move) is stopped partway, no part of the title will be moved to the dubbing target. However, note that this will decrease the free disc space for DVD+Rs/DVD-Rs.

Hint

You can turn off the recorder during dubbing. The recorder completes dubbing even after being turned off.

5 Dubbing mode and the space that remains after dubbing (approximate)

- Size of the title (approximate)
- Direction of dubbing
- Available space on the disc to be dubbed (approximate)
- Information about the title to be dubbed
- Dubbing mode and the space that remains after dubbing (approximate)

Dubbing multiple titles (Dub Selected Titles)

A maximum of 30 selected titles can be dubbed at once.

1 Insert the DVD that you are going to dub to or from.

2 Press HDD or DVD to select the source.

3 Press TITLE LIST.

Press **↔/→** to switch the Title Lists, if necessary.

4 Press OPTIONS to select "Dub Selected Titles," and press ENTER.

5 Select titles in the order you want to dub, and press ENTER.

The titles are numbered in the selected order.

• To cancel the selection, press ENTER again.

• To cancel all of the selections, select "Reset."



- Total size of the selected titles
- This is displayed in red when the space exceeds the available space on the dubbing target media.

2 Direction of dubbing

3 Available space on the disc to be dubbed (approximate)

4 "PL": Indicates a Playlist title.

5 **COPY**: Indicates titles containing "Copy-Once" copy protection signals (page 73). When you select a title with **COPY**, the display asks for confirmation. To "Move," select "OK."

6 Order of dubbing

6 Repeat step 5 to select all of the titles you want to dub.

7 Select "OK," and press ENTER.

The display for selecting the dubbing mode appears.

8 Select a dubbing mode using **↑/↓**.

Fast* → Original → HQ → HSP → SP

↑ SLP ← EP ← LP ← ESP ← LSP ←

* From the HDD to a DVD only.

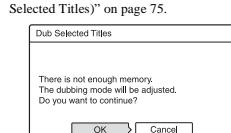
Appears when available for the title (page 71).

9 Select "Start," and press ENTER.

The remaining time of dubbing appears in the front panel display.

To automatically adjust the dubbing mode

If there is not enough available space on the target disc, the recorder automatically selects a dubbing mode with lower picture quality according to the available space. The same dubbing mode is set for all of the titles. If disc space is insufficient for the selected dubbing mode, the following display appears after step 9 of "Dubbing multiple titles (Dub Selected Titles)" on page 75.



Select "OK" and go to step 9.

To manually select another dubbing mode, select "Cancel," and go to step 8.

To stop dubbing

Press OPTIONS to select "Stop Dubbing," and press ENTER. When asked for confirmation, select "OK," and press ENTER. When dubbing (Move) is stopped partway, no part of the title will be moved to the dubbing target. However, note that this will decrease the free disc space for DVD+Rs/DVD-Rs.

Hint

You can turn off the recorder during dubbing. The recorder completes dubbing even after being turned off.

DV Dubbing

Before DV Dubbing

This section explains dubbing with a digital video camera via the DV IN jack on the front panel. If you want to dub by way of the LINE IN jacks, see "Recording from connected equipment without a timer" on page 51. The DV IN jack on this recorder conforms to the i.LINK standard. Follow the instructions in "Preparing for DV dubbing," and then move on to the section on dubbing. For more information about iLINK, see "About iLINK" on page 107.

Preparing for DV dubbing

You can connect a digital video camera to the DV IN jack on the recorder to record or edit from a DV/Digital8 format tape. Operation is straightforward because the recorder will fast forward and rewind the tape for you – you do not need to operate your digital video camera. Do the following to start using the "DV Edit" functions of this recorder.

See the instruction manual supplied with the digital video camera as well before connecting.

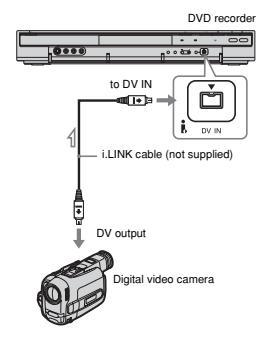
Hint

If you plan to do additional editing on a disc after the initial dub, use the DV IN jack and record on a DVD-RW/DVD-R (VR mode) or HDD.

Notes

- You cannot make a recording while DV dubbing.
- The DV IN jack is for input only. It will not output signals.
- You cannot use the DV IN jack when:
 - signal input to the DV IN jack on the front panel or recorder operation cannot be performed correctly when using a digital video camera (see "About iLINK" on page 107). Connect the camera to the LINE IN jack and follow the instructions of "Recording from connected equipment without a timer" on page 51.
 - the input signal is not in DVC-SD format. Do not connect a MICRO MV format digital video camera even if it has an iLINK jack.
 - the images on the tape contain copy protection signals, which limit recording.
- If you want to play the disc on other DVD equipment, finalise the disc (page 36).

Hookups



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3 Press INPUT SELECT on the remote repeatedly to select "DV."

The front panel display changes as follows:

programme position → L1 → L2 → L3 → DV

4 Press REC MODE on the remote repeatedly to select the recording mode.

The recording mode changes as follows:

→ HQ → HSP → SP → LSP
└ SLP ← EP ← LP ← ESP ←

For details about the recording mode, see page 40.

5 Press OPTIONS on the remote to select "DV Audio Input," and press ENTER. Then, select the setting for the audio input.

"Stereo1" (default): Records both stereo 1 and 2.
"Stereo2": Records additional audio only.

Select "Mix" or "Stereo2" only if you have added a second audio channel when recording with your digital video camera. You are ready to start dubbing. Select one of the dubbing methods on the following pages.

6 Adjust the dubbing picture quality and size.

Before dubbing starts, press OPTIONS to select "Rec Settings," and adjust the recording settings (page 46).

Hint

You can turn off the recorder during dubbing. The recorder completes dubbing even after being turned off.

Notes

- You cannot connect more than one piece of digital video equipment to the recorder.
- You cannot control the recorder using another device or another recorder of the same model.
- You cannot record date, time, or the contents of the cassette memory onto the disc.
- If you record from a DV/Digital8 format tape that is recorded in multiple sound tracks, such as a tape with multiple sampling frequencies (48 kHz, 44.1 kHz, or 32 kHz), no sound or an unnatural sound will be output when playing back the sampling frequency switch point on the disc.
- In order to use this recorder's "Auto Chapter" setting (page 79, 80), be sure to correctly set the clock on your digital video camera before shooting.
- The recorded picture may be momentarily affected or the start and end points of a programme may be different from what you have set if the source DV/Digital8 format tape is in any of the following conditions. In this case, see "Recording from connected equipment without a timer" (page 51).
 - There is a blank space in the recorded portion of the tape.
 - The tape's time code is not sequential.
 - If the picture size or the recording mode on the tape being dubbed changes.

Recording an Entire DV Format Tape (One Touch Dubbing)

HDD +RW -RWVR -RWVideo +R -RVR -RVideos

You can record the entire contents of a DV/Digital8 format tape onto a disc with a single press of the ONE-TOUCH DUB button on the recorder. The recorder controls the digital video camera for the whole process, and completes the recording.

How chapters are created

The contents dubbed to the HDD or DVD become a single title. When "Auto Chapter" is set to "On" in the "Recording" setup, this title is divided into chapters. When dubbing to the HDD or a DVD-RW/DVD-R (VR mode), each shooting session on the tape becomes a chapter on the disc. For other discs, the recorder divides the title into chapters at approximately 6 minute intervals.

Follow steps 1 to 6 of "Preparing for DV dubbing" on page 77, and press ONE-TOUCH DUB on the recorder.

The recorder rewinds the tape and then starts recording the tape contents. When the recording is finished, the recorder rewinds the tape in the digital video camera.

To stop during recording

Press ■ REC STOP.

Note that it may take a few seconds for the recorder to stop recording.

Hints

- If you set "Finalise Disc" of "One Touch Dubbing" to "Auto" in the "DVD" setup (page 95), the recorded disc (except DVD-RW (VR mode)) will automatically be finalised after recording is finished.
- You can play back a previously recorded title on the HDD while One Touch Dubbing is in progress.

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Program Edit

HDD +RW -RWVR +RW Video +R
-RVR -RVDS

You can select scenes from a DV/Digital8 format tape, and then automatically record selected scenes to the HDD or a DVD.

To use this function, do the following:

Connect your digital video camera and prepare for recording

Select and edit the scenes you want to dub

Using the recorder's remote control, fast forward or rewind the tape to select the scenes. At this point, the selected scenes are not copied to the disc. The recorder only remembers the IN and OUT points of the scenes that you selected for dubbing. You can also erase or change the order of the scenes.

Dub the selected scenes

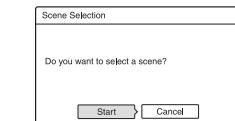
After you have selected the scenes, the recorder will fast forward and rewind the tape automatically and record the scenes to the HDD or a DVD.

◆ How chapters are created

The contents dubbed to the HDD or DVD become a single title. When "Auto Chapter" is set to "On" in the "Recording" setup, this title is divided into chapters. When dubbing to the HDD or a DVD-RW/DVD-R (VR mode), each shooting session on the tape and each selected scene becomes a chapter on the disc. For other discs, the recorder divides the title into chapters at approximately 6 minute intervals.

1 Follow steps 1 to 6 of "Preparing for DV dubbing" on page 77, and press SYSTEM MENU.

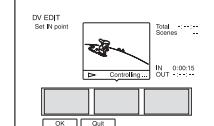
2 Select "DV EDIT," and press ENTER.
The display asks if you want to start selecting scenes.



- If you have previously saved a programme, the display asks if you want to edit an existing programme or to create a new programme. To resume editing the existing programme, select "Saved Data," and go to step 9.

3 Select "Start," and press ENTER.
The display for setting the IN point (start of the scene) appears.

The scene starts to play.



4 Select the IN point using <>/>, and press ENTER.

Playback pauses.

5 Press ENTER if the IN point is correct.
If the IN point is incorrect, select the IN point using <>/>, and press ENTER. The display for setting the OUT point (end of the scene) appears.

6 Select the OUT point using <>/>, and press ENTER.

Playback pauses.

7 Press ENTER if the OUT point is correct.

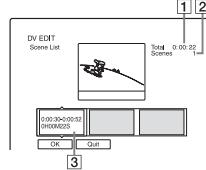
If the OUT point is incorrect, select the OUT point using <>/>, and press ENTER.

The selected scene is added to the scene information block.

- To add more scenes, go to step 4.

8 When you finish adding scenes, press ↓.

The scene list is displayed.



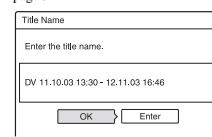
- Total duration of the programme
- Total number of scenes
- Scene information block

9 Select the scene information block you want to edit using <>/>, and press ENTER.

The sub-menu appears.
"Move": Changes the scene order using <>/> and ENTER.
"Erase": Erases the scene. When asked for confirmation, select "OK."
"Preview": Plays the selected scene.
To add more scenes, press ↑ and go to step 4.

10 When you finish editing the scene list, select "OK," and press ENTER.

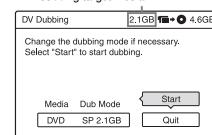
The display for entering the title name appears. To enter a new name, select "Enter," and follow the explanations on page 34.



11 Select "OK," and press ENTER.

The title name is fixed, and the display asks if you want to start recording. To change the disc media, select "Media" and press ↑/↓. To change the dubbing mode, select "Dub Mode" and press ↑/↓.

Data capacity required for the dubbing. This is displayed in red when the size exceeds the available space on the dubbing target media.



12 Select "Start," and press ENTER.

The recorder starts recording the tape contents as programmed.

DV Dubbing

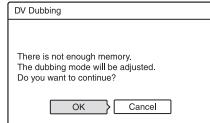
To stop during recording

Press ■ REC STOP.

Note that it may take a few seconds for the recorder to stop recording.

To automatically adjust the dubbing mode

If there is not enough available space on the target disc, the recorder automatically selects a dubbing mode with lower picture quality according to the available space. The same dubbing mode is set for all of the titles. If disc space is insufficient for the selected dubbing mode, the following display appears after step 12.



Select "OK" and go to step 12.

If you do not want to change the dubbing mode, select "Cancel." However, note that dubbing will end before the programme is finished.

Notes

- If you set the beginning of the tape as the IN point and the end point as the OUT point, the IN and OUT points may move slightly during dubbing.
- You cannot set a scene to be shorter than one second.

Settings and Adjustments

Aerial Reception and Language Settings (Basic)

The "Basic" setup helps you to make tuner, clock, and programme position settings for the recorder.

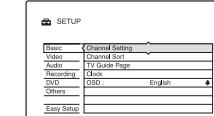
1 Press SYSTEM MENU while the recorder is in stop mode.

2 Select "SETUP," and press ENTER.

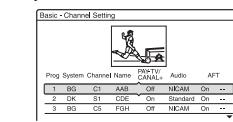
3 Select "Basic," and press ENTER.

The options for "Basic" appear. The default settings are underlined.

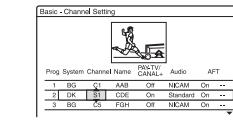
To turn off the display, press SYSTEM MENU repeatedly.



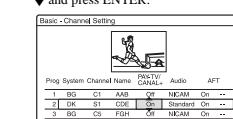
1 Select "Channel Setting" in "Basic," and press ENTER.



2 Press ↑/↓ to select the programme position, and press ENTER.



3 Select the item you want to change using <>/>, and change the settings using ↑/↓ and press ENTER.



4 To preset another programme position, repeat from step 2.

Settings and Adjustments

Channel Setting

Presets programme positions manually. If some programme positions could not be set using the "Easy Setup" function, you can set them manually.

If there is no sound or if the picture is distorted, the wrong tuner system may have been preset during "Easy Setup." Set the correct tuner system manually in the steps below.

* "L" is only available with French RDR-HX520 and RDR-HX920 models.

System
Select an available TV system (page 84).

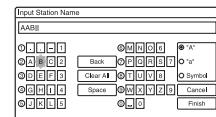
BG	Select this when in West European countries, except those listed in "Receivable channels" on page 84.
DK	Select this when in East European countries.
I	Select this when in Great Britain/Ireland.
L*	Select this when in France.

Channel

- Press **↑↓** repeatedly until the programme position you want is displayed. The programme positions are scanned in the order shown in the table below.
- If you know the number of the programme position you want, press the number buttons. For example, for programme position 5, first press "0" and then press "5."
 - To disable a programme position, enter "00." The disabled programme positions will be skipped when you press PROG **+/-**.
 - To select a cable or satellite programme position, press **↑↓** until the programme position you want is displayed.

Name

Changes or enters a new station name (up to 5 characters). The recorder must receive programme position information (for instance, SMARTLINK information) for station names to appear automatically.



To enter characters, see page 34.

PAY-TV / CANAL+

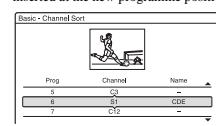
Sets the PAY-TV/Canal Plus channels. For details, see page 25.

Audio

Select "NICAM" or "Standard."

NICAM	Normally, select this.
Standard	Select this if the sound from NICAM broadcasts is not clear.

- 3** Press **↑↓** until the selected programme position row moves to the desired programme position.
The selected programme position is inserted at the new programme position.



- 4** Press ENTER to confirm the setting.
5 To change the programme position of another station, repeat from step 2.

Auto Programme Title Labelling (TV Guide Page)

Some broadcast systems provide a Teletext service* in which complete programmes and their data (title, date, programme position, recording start time, etc.) are stored day by day. A TV guide page corresponds to each day of the week. When recording a programme, the recorder automatically takes the programme name from the Teletext pages and stores it as the title name. The TV guide page numbers depend entirely on the broadcast itself and may be subject to change. If so, you may have to set those TV guide page numbers manually in the TV Guide Page menu.

* Not available in some areas.

- 1** Select "TV Guide Page" in "Basic," and press ENTER.
The TV Guide Page menu appears.

AFT

Select "On" to turn on AFT.

On	Turns on the Auto Fine Tuning function. Normally, select this.
Off	Allows you to adjust the pictures manually.

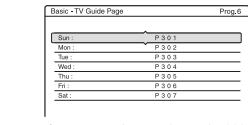
- If the Auto Fine Tuning function does not work effectively, select "Off" and press **→**. Press **↑↓** to obtain a clearer picture, and press **←**.

◆ Receivable channels

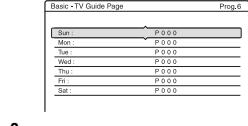
TV system	Channel coverage
BG (West European Countries, except those listed below)	E2 – E12 VHF Italia A – H VHF E21 – E69 UHF
DK (East European Countries)	R1 – R12 VHF R21 – R69 UHF S1 – S20 CATV S21 – S41 HYPER S01 – S05 CATV
I (Great Britain/Ireland)	Ireland A – J VHF South Africa 4 – 13 VHF B21 – B69 UHF S1 – S20 CATV S21 – S41 HYPER S01 – S05 CATV
L* (France)	F2 – F10 VHF F21 – F69 UHF B – Q CATV S21 – S41 HYPER

* "L" is only available with French RDR-HX520 and RDR-HX920 models. To receive broadcasts in France, select "L."

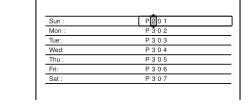
- 2** Select the programme position for which you want to set or change the TV guide page using PROG **+/-** or number buttons.
- The TV guide page numbers (Example: P301) appear automatically when the recorder detects them.



- If no page numbers are detected (P000), you have to set the appropriate TV guide page number manually.



- 3** Select the TV guide page number you want to modify, and press ENTER.



- 4** Press the number buttons or **←/→↑↓** to enter the TV guide page number, and press ENTER to confirm the setting.

- If you make a mistake, re-enter the correct number.
- To return to the original settings, press **♂/RETURN**.

- 5** To set or change another TV guide page number, repeat steps 3 and 4 above.

Hint

To view Teletext information on your TV screen during a broadcast, switch to your TV's tuner by pressing TV/DVD.

◆ Tuning the French CATV channels

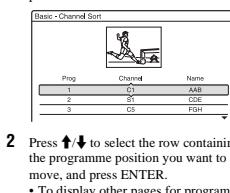
This recorder can scan the CATV channels B to Q and the HYPER frequency channels S21 to S41. On the Channel Set menu, the channels are indicated as S1 to S44. For example, channel B is indicated by Channel Set number S1, and channel Q is indicated by Channel Set number S23 (see the table below). If the CATV channel you want to preset is indicated by its frequency (for example, 152.75 MHz), refer to the table below to find the corresponding channel number.

Corresponding channel	Channel Set number	Receiveable Frequency range (MHz)
S25	S28	331.25–339.25
S26	S29	339.25–347.25
S27	S30	347.25–355.25
S28	S31	355.25–363.25
S29	S32	363.25–371.25
S30	S33	371.25–379.25
S31	S34	379.25–387.25
S32	S35	387.25–395.25
S33	S36	395.25–403.25
S34	S37	403.25–411.25
S35	S38	411.25–419.25
S36	S39	419.25–427.25
S37	S40	427.25–435.25
S38	S41	435.25–443.25
S39	S42	443.25–451.25
S40	S43	451.25–459.25
S41	S44	459.25–467.25

Channel Sort

After the programme positions have been set, you can change the order of each programme position in the display list.

- 1** Select "Channel Sort" in "Basic," and press ENTER.



- 2** Press **↑↓** to select the row containing the programme position you want to move, and press ENTER.
- To display other pages for programme positions 4 to 99, press **↑↓** repeatedly.

Notes

- In step 4 above, enter "000" if you do not want to use the TV guide page number for automatic labelling. The recorder will instead store a default title name (programme position, start time - stop time).

Refer to the Teletext information on your TV screen to obtain the TV guide page number with programme titles and their start times.

If the Teletext TV guide has a page which always shows the programmes for the current day, this page should be input for all days.

If you start recording more than three minutes before the programme is scheduled to start, the correct label information may not be transferred.

Note that this function may not work correctly with programmes broadcast from some stations. If the broadcast system updates the Teletext information at the moment recording starts, the title label may not correspond to the recorded programme. In this case, you may have to manually enter the correct title (page 34).

Hint

If you set "Auto Adjust" to "On," the Auto Clock Set function is activated whenever the recorder is turned off.

Note

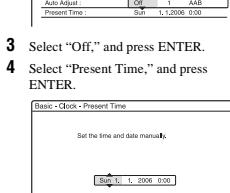
The Auto Clock Set function does not work while the recorder is standing by for Syncro-Recording.

To set the clock manually

If the Auto Clock Set function did not set the clock correctly for your local area, try another station for the Auto Clock Set function or set the clock manually.

- 1** Select "Clock" in "Basic," and press ENTER.

- 2** Select "Auto Adjust," and press ENTER.



- 3** Select "Off," and press ENTER.

- 4** Select "Present Time," and press ENTER.



- 5** Press **↑↓** to set the day, and press **→**. Set the month, year, hour, and minutes in sequence. Press **←/→** to select the item to be set, then press **↑↓** to set the numbers. The day of the week is set automatically.

To change the numbers, press **←** to return to the item to be changed, and press **↑↓**.

- 6** Press ENTER to start the clock.

OSD (On-Screen Display)

Switches the display language on the screen.

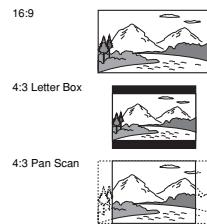
Video Settings (Video)

Video settings will adjust items related to the image, such as size and colour. Choose the settings according to the type of TV, tuner, or decoder connected to the DVD recorder.

- 1 Press SYSTEM MENU while the recorder is in stop mode.**
- 2 Select "SETUP," and press ENTER.**
- 3 Select "Video," and press ENTER.**

The "Video" setup appears with the following options. The default settings are underlined.

SETUP	
Basic	<u>Video Output</u>
Video	Scan Setting
Auto	Pause Mode
DVD	<u>Progressive</u>
DVD	Auto Display
Others	Screen Saver
Easy Setup	



◆ Note

Depending on the disc, "4:3 Letter Box" may be selected automatically instead of "4:3 Pan Scan" or vice versa.

◆ Component Out

Selects whether or not to output video signals from the COMPONENT VIDEO OUT jacks.

On	Outputs the component video signals. Select this when you want to view progressive signals.
Off	Outputs no signals.

◆ Notes

- When you set "Line1 Output" to "RGB," you cannot set "Component Out" to "On."
- When you connect the recorder to a monitor or projector via only the COMPONENT VIDEO OUT jacks, do not select "Off." If you select "Off" in this case, the picture may not appear.

◆ Progressive Output

If your TV accepts progressive (525p/625p) format signals, set "Progressive Output" to "On." You will enjoy accurate colour reproduction and high quality images.

- 1 Select "Progressive Output," and press ENTER.**
- 2 Select "On," and press ENTER.** The display asks for confirmation.
- 3 Select "Start," and press ENTER.** The video switches to a progressive signal for 5 seconds.
- 4 If video signal appears OK, select "Yes," and press ENTER.** If picture is distorted, select "No," and press ENTER.

Video Output

◆ TV Type

Selects the picture size when playing back a title recorded from 16:9 size video (page 46) or a 16:9 size commercial DVD video. Select the playback picture size according to the type of connected TV (wide-screen/wide mode TV or conventional 4:3 screen TV).

16:9	Select this when connecting to a wide-screen TV or TV with a wide mode function.
4:3 Letter Box	Select this when connecting to 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 connecting to a 4:3 screen TV. Automatically displays a wide picture on the entire screen and cuts off the portions that do not fit.

88

Colour System

Selects the colour system when playing VIDEO CDs (including Super VIDEO CDs) / DivX video files.

PAL	Plays a disc in PAL colour system.
NTSC	Plays a disc in NTSC colour system.

Auto Display

On	Automatically displays information on the screen when the recorder is turned on, etc.
Off	Displays information only when DISPLAY is pressed.

Screen Saver

The screen saver image appears when you do not use the recorder for more than 10 minutes while an on-screen display, such as the System Menu, is displayed on your TV screen. The screen saver image helps prevent your display device from becoming damaged (ghosting).

On	Turns on the screen saver function.
Off	Turns off the function.

Audio Settings (Audio)

The "Audio" setup allows you to adjust the sound according to the playback and connection conditions.

- 1 Press SYSTEM MENU while the recorder is in stop mode.**

- 2 Select "SETUP," and press ENTER.**

- 3 Select "Audio," and press ENTER.** The "Audio" setup appears with the following options. The default settings are underlined.

SETUP	
Basic	<u>Auto ATT</u> OFF
Video	Auto Connection
Audio	<u>Audio SRC</u> Standard
DVD	Downmix Dolby Surround
DTS	
Others	
Easy Setup	

Audio ATT (attenuation)

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

This function affects the output of the following jacks:

- LINE 2 OUT R-AUDIO-L jacks
- LINE 1 - TV jack
- LINE 3/DECODER jack

On	Select this when the playback sound from the speakers is distorted.
Off	Normally select this position.

◆ Progressive Mode

DVD software can be divided into two types: film based software and video based software. Video based software is derived from TV and displays images at 25 frames/50 fields (30 frames/60 fields) per second. Film based software is derived from film and displays images at 24 frames per second. Some DVD software contains both Video and Film.

In order for these images to appear natural on your screen when output in progressive mode (50 or 60 frames per second), the progressive video signal needs to be converted to match the type of DVD software that you are watching.

You can fine-tune the progressive 525p/625p video signal that is output when you set "Progressive Output" to "On."

Note that you must connect to a progressive format TV using the COMPONENT VIDEO OUT jacks (page 13).

Auto	Automatically detects the software type (Film-based or Video-based) and selects the appropriate conversion mode. Normally select this position.
Video	Fixes the conversion mode to the mode for Video-based software.

◆ TV Type

When picture noise appears after you set the recorder to progressive format, hold down ■ and press PROGRAM – (minus) on the unit.

Scart Setting

Sets the method of inputting/outputting signals from the SCART jacks on the rear panel of the recorder. Select an option for each of the items below according to the combination of jacks and methods that you are going to use.

◆ Line1 Output

Selects a method of outputting video signals for the LINE 1 - TV jack.

RGB	Outputs RGB signals.
Video	Outputs video signals.
S Video	Outputs S-video signals.

◆ Notes

- If your TV does not accept S-video or RGB signals, no picture appears on the TV screen even if you select "S Video" or "RGB." See the instructions supplied with your TV.
- You cannot select "RGB" when "Component Out" above is set to "On."
- SMARTLINK is available only when "Video" is selected.

◆ Line3 Input

Selects a method of inputting video signals for the LINE 3/DECODER jack. The picture will not be clear if this setting does not match the type of video input signal.

Video/RGB	Inputs video signals or RGB signals.
Decoder	Select this when connecting to a PAY-TV/Canal Plus analogue decoder. If you connect to a cable box/satellite receiver such as CanalSat, do not select this option.
S Video	Inputs S-video signals.

Settings and Adjustments

Audio Connection

The following setup items switch the method of outputting audio signals when you connect a component such as an amplifier (receiver) with a digital input jack.

For connection details, see "Step 3: Connecting the Audio Cords" on page 15. Select "Dolby Digital," "MPEG," "DTS," and "48kHz/96kHz PCM" after setting "Digital Out" to "On."

If you connect a component that does not accept the selected audio signal, a loud noise (no sound) will come out from the speakers, and may affect your ears or cause speaker damage.

- 1 Select "Audio Connection" in "Audio," and press ENTER.**

Audio - Audio Connection	
Digital Out	<u>Dolby Digital</u> DTS
Dolby Digital	
MPEG	
DTS	
48kHz/96kHz PCM	<u>48kHz/16bit</u> 96kHz/24bit

- 2 Select "Digital Out," and press ENTER.**

On	Normally select this position.
Off	The influence of the digital circuit upon the analogue circuit is minimal.

- 3 Select "On," and press ENTER.**

- 4 Set the digital output signal.**

- Dolby Digital (HDD/DVDs only) Selects the type of Dolby Digital signal.

D-PCM	Select this when the recorder is connected to an audio component lacking a built-in Dolby Digital decoder. The surround effects of output signals are determined by the "Downmix" setting item in the "Audio" setup.
Dolby Digital	Select this when the recorder is connected to an audio component with a built-in Dolby Digital decoder.

◆ Note

"48kHz/96kHz PCM" setting has no effect when audio signals are output from the LINE 2 OUT (R-AUDIO-L) jacks or LINE 1 - TV/LINE 3/DECODER jack. If the sampling frequency is 96kHz, signals are simply converted to analogue signals and output.

Settings and Adjustments

Audio DRC (Dynamic Range Control) (DVDs only)

Selects the dynamic range (difference between soft and loud sounds) setting when playing a DVD that conforms to Audio DRC. This affects the output from the following jacks:

- LINE 2 OUT R-AUDIO-L jacks
- LINE 1 - TV jack
- LINE 3/DECODER jack
- DIGITAL OUT (COAXIAL) jack only when "Dolby Digital" is set to "D-PCM" (page 91).

Standard	Normally select this position.
TV Mode	Makes low sounds clear even if you turn the volume down.
Wide Range	Gives you the feeling of being at a live performance.

Downmix (DVDs only)

Switches the method for mixing down to two 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 "4. Displaying the Playing/Remaining Time and Play Information" on page 31. This function affects the output of the following jacks:

- LINE 2 OUT R-AUDIO-L jacks
- LINE 1 - TV jack
- LINE 3/DECODER jack
- DIGITAL OUT (COAXIAL) jack when "Dolby Digital" is set to "D-PCM" (page 91).

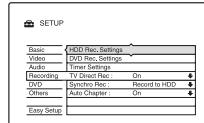
Dolby Surround	Normally select this position. Multi-channel audio signals are output to two channels for enjoying surround sounds.
Normal	Multi-channel audio signals are downmixed to two channels for use with your stereo.

Recording Settings (Recording)

The "Recording" setup allows you to adjust recording settings.

- 1 Press **SYSTEM MENU** while the recorder is in stop mode.
- 2 Select "**SETUP**," and press **ENTER**.
- 3 Select "**Recording**," and press **ENTER**.

The "Recording" setup appears with the following options. The default settings are underlined.

**HDD Rec. Settings****♦ Bilingual Recording**

Selects the sound to be recorded on the HDD.

Main	Records the main sound for the bilingual programme.
Sub	Records the sub sound for the bilingual programme.
Main+Sub	Records the main and sub sounds for the bilingual programme.

◆ Note

If you set the recording mode to be changed while dubbing from a DVD to the HDD, the sound recorded in the source (DVD) is applied regardless of this setting.

♦ HQ Setting

Selects the HQ mode used for recording on the HDD (page 40).

HQ+	Records in higher quality (approximate 15 Mbps).
HQ	Records in the standard HQ mode.

DVD Rec. Settings**♦ Bilingual Recording (for all recordable discs except DVD-RWs/DVD-Rs in VR mode)**

Selects the sound to be recorded on the recordable disc. This setting is not necessary when recording on DVD-RWs/DVD-Rs (VR mode) that record both the main and sub sounds.

Main	Records the main sound for the bilingual programme.
Sub	Records the sub sound for the bilingual programme.

Timer Settings**♦ Rec Mode Adjust**

On	Automatically adjusts the recording mode to enable the entire programme to be recorded (page 43).
Off	TURNS OFF THE FUNCTION.

♦ Auto Title Erase (HDD only)

On	Automatically erases old titles recorded on the HDD (page 43).
Off	TURNS OFF THE FUNCTION.

TV Direct Rec (HDD/DVD+RW/DVD-RW/DVD+R/DVD-R only)

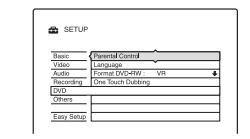
On	Allows you to easily record what you are watching on the TV using SMARTLINK.
Off	TURNS OFF THE TV DIRECT REC FUNCTION.

Disc Settings (DVD)

The "DVD" setup allows you to adjust parental control, language and other DVD related settings.

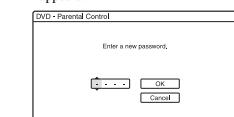
- 1 Press **SYSTEM MENU** while the recorder is in stop mode.
- 2 Select "**SETUP**," and press **ENTER**.
- 3 Select "**DVD**," and press **ENTER**.

The "DVD" setup appears with the following options. The default settings are underlined.

**Parental Control (DVD VIDEO only)**

Playback of some DVD VIDEOS can be limited according to a predetermined level, such as the age of the users. Scenes may be blocked or replaced with different scenes.

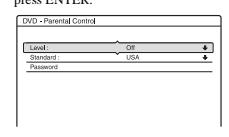
- 1 Select "Parental Control" in "DVD," and press **ENTER**.
• If you have not entered a password, the display for registering a new password appears.



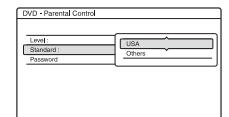
- When you have already registered a password, the display for entering the password appears.



- 2 Enter your four-digit password using the number buttons, then select "OK" and press **ENTER**.



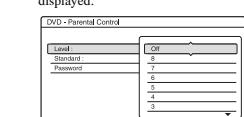
- 3 Select "Standard," and press **ENTER**. The selection items for "Standard" are displayed.



- 4 Select a geographic area as the playback limitation level, and press **ENTER**. The area is selected.

- When you select "Others," press the number buttons to select and enter an area code in the table (page 112). Then select "OK" and press **ENTER**.

- 5 Select "Level," and press **ENTER**. The selection items for "Level" are displayed.



- The lower the value, the stricter the limitation.
Discs rated higher than the selected level will be restricted.

- 6 Select the level, and press **ENTER**. The Parental Control setting is complete.

To cancel the Parental Control setting for the disc, set "Level" to "Off" in step 6. To change the password, select "Password" in step 3, and press **ENTER**.

When the display for registering a password appears, enter a new four-digit password using the number buttons, then select "OK" and press **ENTER**.

◆ Notes

If you forget your password, you will have to reset it by selecting "Parental Control" of "Factory Setup" in the "Others" setup (page 96).

• When you play discs which do not have the Parental Control function, playback cannot be limited on this recorder.

• 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.

Language (DVD VIDEO only)**♦ DVD Menu**

Switches the language for the DVD menu.

♦ Audio

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

♦ Subtitle

Switches the language of the subtitles recorded on the disc.

When you select "Audio Follow," the subtitle language changes according to the language you selected for the sound track.

Synchro Rec

Selects the recording destination used for Synchro-Recording (page 49).

Record to HDD	Records to the HDD.
Record to DVD	Records to DVDs.

Auto Chapter

Selects whether to automatically divide a recording (a title) into chapters during recording or dubbing.

On	Inserts chapter marks at approximately 6 minute intervals.
Off	No chapter mark is inserted.

◆ Notes

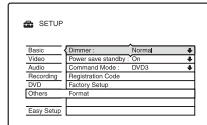
- The actual chapter mark interval may vary depending on the amount of information contained in the video to be recorded.
- Chapter marks are automatically inserted where the recordings start on the tape when "Auto Chapter" is set to "On" during DV dubbing to the HDD or a DVD-RW/DVD-R (VR mode).

Remote Control Settings/ Factory Settings (Others)

The "Others" setup allows you to set up other operational settings.

- 1 Press SYSTEM MENU while the recorder is in stop mode.
- 2 Select "SETUP," and press ENTER.
- 3 Select "Others," and press ENTER.

The "Others" setup appears with the following options. The default settings are underlined.



Dimmer

Adjusts the lighting of the front panel display.

Normal	Bright lighting.
Save Power	Low lighting. Turns off the lighting when the power is off.

Power save standby

Selects whether this recorder is in power save mode when the power is off (standby).

On	Sets to power save mode. Normally, select this.
Off	Does not set to power save mode.

Format

Notes

- Power Save mode does not function when there is a timer setting with "PDC/VPS" set to "On" in the Timer List, even if "Power save standby" is set to "On."
- The SMARTLINK features are not available while the power is off when "Power save standby" is set to "On."
- To reduce the number of times that the fan turns on automatically, set "Power save standby" to "On."

Command Mode

Changes the Command Mode of the recorder if other DVD equipment is assigned the same Command Mode. For details, see "If you have a Sony DVD player or more than one Sony DVD recorder" on page 18.

Registration Code

Displays the registration code of DivX video files for this recorder.
For more information, go to <http://www.divx.com/vod> on the Internet.

Factory Setup

Allows you to select the setup settings by group, and return them to their default settings. Note that all of your previous settings will be lost.

- 1 Select "Factory Setup" in "Others," and press → or ENTER.
The display for selecting a group of settings appears.
- 2 Select the group of settings you want to return to default from "Basic," "Video," "Audio," "Recording," "DVD," "Others," "Parental Control," and "All," and press → or ENTER.
- 3 Select "Start," and press ENTER.
The selected settings return to their default settings.
- 4 Press ENTER when "Finish" appears.

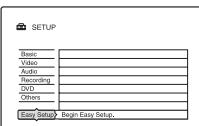
Format

You can erase all titles recorded on the HDD.

Easy Setup (Resetting the Recorder)

Select this to run the "Easy Setup" programme.

- 1 Press SYSTEM MENU while the recorder is in stop mode.
- 2 Select "SETUP," and press ENTER.
- 3 Select "Easy Setup," and press ENTER.



- 4 Select "Start."

- 5 Follow the instructions for "Easy Setup" (page 20) from step 2.

Additional Information

Troubleshooting

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

Power

The power does not turn on.

- Check that the mains lead is connected securely.

Picture

There is no picture.

- Re-connect all connecting cords securely.
- The connecting cords are damaged.
- Check the connection to your TV (page 12).
- Switch the input selector on your TV (such as to "VCR") so that the signal from the recorder appears on the TV screen.
- Check that "Scart Setting" in the "Video" setup is set to the appropriate item that conforms to your system (page 89).
- If you connect the recorder to your TV via only the COMPONENT VIDEO OUT jacks, set "Component Out" in the "Video" setup to "On" (page 88).
- This recorder cannot record NTSC signals.
- When playing a double-layer DVD, the video and audio may be momentarily interrupted at the point where the layers switch.

Picture noise appears.

- If the picture output signal from your recorder passes 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 programmes could affect picture quality. If you still experience this problem even when you connect your recorder directly to your TV, try connecting your recorder to your TV's S VIDEO input.
- You have set the recorder to progressive format even though your TV cannot accept the progressive signal. In this case, hold down ■, and press PROGRAM - (minus) on the unit and the recorder is set to normal (interlace) format.
- You are playing a DVD recorded in a colour system that is different from your TV.
- Noise may appear in the pictures recorded on the HDD, which is due to the characteristics of HDD, and is not a malfunction.
- When playing a double-layer DVD, the video and audio may be momentarily interrupted at the point where the layers switch.

- ##### TV programme reception does not fill the screen.
- Set the channel manually in "Channel Setting" in the "Basic" setup (page 83).
 - Select the correct source using the INPUT SELECT button, or select a channel of any TV programme using the PROG +/- buttons.

- ##### TV programme pictures are distorted.
- Reorient the TV aerial.
 - Adjust the picture (see the TV's instruction manual).
 - Place the recorder and TV farther apart.
 - Place the TV and any bunched aerial cables farther apart.
 - The aerial cable is connected to the AERIAL OUT jack on the recorder.
Connect the cable to the AERIAL IN jack.

TV channels cannot be changed.

- The channel is disabled (page 84).
- A timer recording started, which changed the channels.

The picture from equipment connected to the recorder's input jack does not appear on the screen.

- If the equipment is connected to the LINE 1 - TV jack, select "L1" in the front panel display by pressing PROG +/- or INPUT SELECT.
- If the equipment is connected to the LINE 2 IN jacks, select "L2" in the front panel display by pressing PROG +/- or INPUT SELECT.
- If the equipment is connected to the LINE 3/DECODER jack, select "L3" in the front panel display by pressing PROG +/- or INPUT SELECT.
- If the equipment is connected to the DV IN jack, (this is usually for a digital video camera connection), select "DV" in the front panel display by pressing INPUT SELECT.

The playback picture or TV programme from the equipment connected through the recorder is distorted.

- If the playback picture output from a DVD player, VCR, or tuner goes through your recorder before reaching your TV, the copy-protection signal applied to some programmes could affect picture quality. Disconnect the playback equipment in question and connect it directly to your TV.

The picture does not fill the screen.

- Set "TV Type" of the "Video Output" in the "Video" setup in accordance with the screen size of your TV (page 88).

The picture does not fill the screen, even though the picture size is set in "TV Type" of the "Video Output" in the "Video" setup.

- The picture size of the title is fixed.

The picture is black and white.

- Check that "Line1 Output" of the "Scart Setting" in the "Video" setup is set to the appropriate item that conforms to your system (page 89).
- If you are using a SCART cord, be sure to use one that is fully wired (21 pins).

Sound

There is no sound.

- Re-connect all connections securely.
- The connecting cord is damaged.
- The input source setting on the amplifier or the connection to the amplifier is incorrect.
- The recorder is in reverse play, fast-forward, slow motion, or pause mode.
- If the audio signal does not come through the DIGITAL OUT (COAXIAL) jack, check the "Audio Connection" settings in the "Audio" setup (page 90).
- The recorder supports only MP3 audio and MPEG audio for DivX video files. Press AUDIO and select MP3 audio or MPEG audio.

Sound distortion occurs.

- Set "Audio ATT" in the "Audio" setup to "On" (page 90).

Sound is noisy.

- When playing a CD with DTS sound tracks, noise will come from the LINE 2 OUT R-AUDIO-L jacks, LINE 1 - TV jack, or LINE 3/DECODER jack (page 55).

The sound volume is low.

- The sound volume is low on some DVDs. The sound volume may improve if you set "Audio DRC" in the "Audio" setup to "TV Mode" (page 92).
- Set "Audio ATT" in the "Audio" setup to "Off" (page 90).

An alternate audio track cannot be recorded or played.

- When recording from connected equipment, set "Line Audio Input" in OPTIONS menu to "Bilingual" (page 51).
- Multilingual tracks (main and sub) cannot be recorded on DVD+RWs, DVD-RWs (Video mode), DVD+Rs, or DVD-Rs (Video mode). To record the language, set "Bilingual Recording" of the "DVD Rec. Settings" in the "Recording" setup to "Main" or "Sub" before recording (page 93). To record both the main and sub sounds, record on DVD-RWs/DVD-Rs (VR mode).
- Any discs other than the HDD or DVD-RWs/DVD-Rs (VR mode) cannot be used for recording both main and sub sounds. To record on the HDD, set "Bilingual Recording" of the "HDD Rec. Settings" in the "Recording" setup to "Main+Sub" (page 92).
- If you have connected an AV amplifier to the DIGITAL OUT (COAXIAL) jack and want to change the audio track for HDD/DVD-RWs/DVD-Rs (VR mode) during playback, set "Dolby Digital" of the "Audio Connection" in the "Audio" setup to "D-PCM" (page 91).

Playback

The recorder does not play any type of disc (except HDD).

- The disc is upside down. Insert the disc with the labelled side facing up.
- The disc is not correctly inserted.
- Moisture has condensed inside the recorder. In this case, if the recorder is on, leave it on (if it is off, leave it off) for about an hour until the moisture evaporates.
- If the disc was recorded on another recorder and was not finalised (page 36), the recorder cannot play the disc.

The recorder does not start playback from the beginning.

- Resume play was activated (page 53).
- You have inserted a DVD whose Title menu or DVD menu automatically appears on the TV screen when it is first inserted. Use the menu to start playback.

The recorder starts playing automatically.

- The DVD VIDEO features an auto playback function.

Playback stops automatically.

- If the DVD has an auto pause signal, the recorder stops playback at the auto pause signal.

Some functions such as Stop, Search, or Slow-motion Play cannot be performed.

- Depending on the DVD, you may not be able to do some of the operations above. See the instruction manual supplied with the disc.

The language for the sound track cannot be changed.

- Multilingual tracks are not recorded on the DVD being played.
- The DVD VIDEO prohibits the changing of the language for the sound track.
- Try changing the language using the DVD VIDEO's menu.

The subtitle language cannot be changed or turned off.

- Multilingual subtitles are not recorded on the DVD VIDEO.
- The DVD VIDEO prohibits changing of the subtitles.
- Try changing the subtitle using the DVD VIDEO's menu.
- The subtitles cannot be changed for the titles recorded on this recorder.

The angles cannot be changed.

- Multi-angles are not recorded on the DVD VIDEO being played.
- You are trying to change the angles when "ANGLE" does not appear on the TV screen (page 52).
- The DVD VIDEO prohibits changing angles.
- Try changing the angle using the DVD VIDEO's menu.
- The angles cannot be changed for the titles recorded on this recorder.
- The angles cannot be changed during slow motion playback or when playback is paused.

The DivX video files do not play.

- The file is not created in DivX format.
- The file has an extension other than ".avi" or ".divx."
- The DATA CD (DivX video)/DATA DVD (DivX video) is not created in a DivX format that conforms to ISO 9660 Level 1/Level 2 or Joliet.
- The DivX video file is larger than 720 (width) × 576 (height).

The MP3 audio tracks do not play.

- The MP3 audio tracks are not recorded in a format that the recorder can play (page 59).

The JPEG image files do not play.

- The JPEG image files are not recorded in a format that the recorder can play (page 59).
- Progressive JPEG images cannot be played.

TV Pause does not work.

- You are recording to the HDD or the HDD is full.

Recording/Timer recording/Editing

The programme position cannot be changed from the programme position you are recording.

- Set the TV's input source to "TV."

Recording does not start immediately after you press REC.

- Operate the recorder only after "LOAD," "FORMAT," or "INFOWRITE" disappears from the front panel display.

Nothing was recorded even though you set the timer setting correctly.

- There was a power failure during recording.
- The recorder's internal clock stopped due to a power failure that lasted for more than 1 hour. Reset the clock (page 87).
- The channel was disabled after the timer recording was set. See "Channel Setting" on page 83.
- Disconnect the mains lead from the mains, and connect it again.
- "PDC/VPS Scan Off" was selected in the OPTIONS menu (page 43).
- The programme contains copy protection signals that restrict copying.
- Other timer setting overlapped the timer setting (page 48).
- There is no DVD inside the recorder.
- There is not enough disc space for the recording.
- The recorder was in the process of dubbing (HDD→DVD).
- The recorder was in the process of DV Dubbing.

Recording does not stop immediately after you press REC STOP.

- It will take a few seconds for the recorder to input disc data before recording can stop.

Additional Information

Recording does not stop after you press REC STOP.

- Press REC STOP.

Timer recording is not complete or did not start from the beginning.

- There was a power failure during recording. If the power recovers when there is a timer recording, the recorder resumes recording. Should the power failure continue for more than 1 hour, reset the clock (page 87).
- Other timer setting overlapped the timer setting (page 48).
- Disc space was not enough.
- The PDC/VPS function is working.

Contents previously recorded were erased.

- Data that is not playable on this recorder but was recorded on a DVD with a PC will be erased from the disc when the disc is inserted.
- "Auto Title Erase" of the "Timer Settings" in the "Recording" setup is set to "On" (page 93).

The PDC/VPS function does not operate.

- Check that the clock and date are set correctly.
- Check that the PDC/VPS time you set is the correct one (there might be a mistake in the TV programme guide). If the broadcast you wanted to record did not send the good PDC/VPS information, the recorder will not start recording.
- If the reception is poor, the PDC/VPS signal might be altered and the recorder might not start recording.
- "PDC/VPS Scan Off" is selected (page 43).

Recording from the equipment with a timer

Nothing was recorded even though you set the Synchro-Rec setting correctly.

- You forgot to turn off the connected equipment. Turn off the connected equipment and set the recorder to Synchro-Rec standby mode (page 49).
- The recorder was not set to the Synchro-Recording standby mode. Press → REC to set the Synchro-Recording standby mode. Press → REC to set the Synchro-Recording indicator lights up on the front panel (page 49).
- The equipment is not connected to the LINE 3/DECODER jack of the recorder.
- The recorder is connected to the TV output jack of the connected equipment.

Synchro-Recording does not complete.

- The timer setting for the connected equipment overlapped the recorder's timer setting (page 50).
- There was a power failure during the recording.

The recorder automatically starts recording when the satellite receiver is turned on.

- The Synchro-Rec function was activated. Turn off the satellite receiver and cancel the Synchro-Rec function (page 49).

Dubbing

You dubbed a title, but the title did not appear in the HDD Title List.

- The title contained a copy protection signal, so it was moved (page 73).

High-speed dubbing is not possible.

- The title cannot be dubbed at high-speed (page 72). Even if A-B erasure is performed so that a title does not contain mixed picture sizes, it is still treated as a title with mixed picture sizes.

Display

The clock has stopped.

- Set the clock again (page 87).
- The clock stopped due to a power failure that lasted for more than 1 hour. Reset the clock (page 87).

The TIMER REC indicator is flashing.

- The disc does not have enough space.
- Insert a recordable disc inside the recorder.
- The inserted DVD is protected (page 36).

The recording mode indication is incorrect.

- When the recording or dubbing is less than three minutes, the recording mode indication may be displayed incorrectly. The actual recording itself is correctly made in the selected recording mode.
- After playing titles recorded in EP and SLP mode, the recording mode indication may change depending on the recorded programme.

The clock does not appear in the front panel display when the recorder is turned off.

- "Dimmer" in the "Others" setup is set to "Save Power" (page 96).

Remote control

The remote does not function.

- Batteries are weak.
- The remote is too far from the recorder.
- The remote's manufacturer code returned to the default setting when you replaced the batteries. Reset the code (page 17).
- The remote is not pointed at the remote sensor on the recorder.
- Different command modes are set for the recorder and remote. Set the same command mode (page 18). The default command mode setting for this recorder and the supplied remote is DVD3.
- Press REC (stop) on the unit while the recorder is turned off to check the current command mode.

Others

The recorder does not operate properly.

- Restart the recorder. Press down I/O on the recorder for more than ten seconds until "WELCOME" appears in the front panel display.
- When static electricity, etc., causes the recorder to operate abnormally, turn off the recorder and wait until the clock appears in the front panel display. Then, unplug the recorder and after leaving it off for a while, plug it in again.

Five numbers or letters are displayed in the front panel display.

- The self-diagnosis function was activated (see the table on page 104).

The disc tray does not open after you press OPEN/CLOSE.

- It may take a few seconds for the disc tray to open after you have recorded or edited a DVD. This is because the recorder is adding disc data to the disc.

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

- The disc tray is locked. Cancel the Child Lock (page 53).

The disc tray does not open and "TRAY LOCKED" appears in the front panel display.

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

Additional Information

The disc tray does not open and you cannot remove the disc after you press ▲ (open/close).

→ Turn off the recorder. Once the clock appears in the front panel display, disconnect the mains lead. (If the recorder does not turn off or if the clock does not appear in the front panel display, disconnect the mains lead anyway.) Connect the mains lead again while pressing down ▲ on the recorder, and release the button when the disc tray opens. Then keep ▲ on the recorder pressed for about ten seconds until "WELCOME" appears in the front panel display.

"RECOVERY" appears in the front panel display.

→ The recorder's recovery function was activated when the recorder was turned on because the power was turned off or failed during recording. Leave the recorder on until "RECOVERY" disappears from the front panel display.

"HDD ERROR" appears in the front panel display.

→ The hard disk error occurred. Press down ▲ on the recorder for ten seconds until "WELCOME" appears in the front panel display. If this does not resolve the problem, format the recorder's HDD by pressing down the HDD button on the recorder for more than ten seconds until "FORMAT" appears in the front panel display. Note that all the contents recorded on the HDD will be erased. If this does not fix the problem, contact your nearest Sony dealer.

"FAN ERROR" appears in the front panel display.

→ Check that the vent on the rear of the recorder is not blocked. Then, immediately disconnect the mains lead. Leave the recorder off for a while, then re-connect the mains lead, and press ▲ on the recorder.

Mechanical sound is heard when the recorder is off.

- While the recorder is adjusting the clock for the Auto Clock Set function or scanning the programme positions for the PDC/VPS function, operational noises (such as the internal fan) may be heard, even when the power is off. This is not a malfunction.
- To reduce the number of times that the fan turns on automatically, set "Power save standby" to "On" in the "Others" setup (page 96).

Self-diagnosis Function (When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the recorder from malfunctioning, a five-character service number (e.g., C 13 00) with a combination of a letter and four numbers appears in 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	<p>There is a problem in the HDD.</p> <p>→ Contact your nearest Sony dealer or local authorized service facility.</p> <p>The DVD is dirty.</p> <p>→ Clean the disc with a soft cloth</p>
C 31	<p>The DVD/CD is not inserted correctly.</p> <p>→ Re-insert the disc correctly.</p>
E XX	<p>To prevent a malfunction, the (xx is a number) recorder has performed the self-diagnosis function.</p> <p>→ Contact your nearest Sony dealer or local authorized Sony service facility and give the five-character service number. Example: E 61 10</p>

Notes About This Recorder

On operation

- If the recorder 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 recorder. Should this occur, the recorder may not operate properly. In this case, if the recorder is on, leave it on (if it is off, leave it off) for about an hour until the moisture evaporates.
- When you move the recorder, 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 pads, scouring powder or solvent such as alcohol or benzine.

About repairing the hard disk drive

- It may be necessary to access data stored on the hard disk for testing purposes; there is no intention to copy or store the data, titles or any other information.
- If replacement or initialization (format) is required, the hard disk will be formatted at our discretion. In this case, please note that all of the contents recorded there will be erased (including any data found to violate copyright law).

On cleaning discs, disc/lens cleaners

Do not use a commercially available cleaning disc or disc/lens cleaner (wet or spray type). These may cause the recorder to malfunction.

Notes about the discs

- To keep the disc clean, handle the disc by its edge. Do not touch the surface. Dust, fingerprints, or scratches on the disc may cause it to malfunction.



- 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 centre out.



- Do not use solvents such as benzene, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.
- Do not use the following discs.
 - A disc that has a non-standard shape (e.g., card, heart).
 - A disc with a label or sticker on it.
 - A disc that has cellophane tape or sticker adhesive on it.

Additional Information

Specifications

System

Laser: Semiconductor laser

Channel coverage:

PAL (B/G, D/K, I)
VHF: E2 to E12, R1 to R12, Italian A to H, Ireland A to J, South Africa 4 to 13
UHF: E21 to E69, R21 to R69, B21 to B69
CATV: S01 to S05, S1 to S20
HYPER: S21 to S41

SECAM (L) (for French RDR-HX520 and RDR-HX920 models only)
VHF: F2 to F10
UHF: F21 to F69
CATV: France B to Q
HYPER: S21 to S41

The above channel coverage merely ensures the channel reception within these ranges. It does not guarantee the ability to receive signals in all circumstances. For details, see "Receiveable channels" (page 84).

Video reception: Frequency synthesizer system

Audio reception: Split carrier system

Aerial out: 75-ohm asymmetrical aerial socket

Timer: Clock: Quartz locked/Timer indication: 24-hour cycle (digital)/Power back-up duration: 1 hour

Video recording format: MPEG-2, MPEG-1

Audio recording format/applicable bit rate: Dolby Digital 2 ch 256 kbps/128 kbps (in EP and SLP mode)

Dimensions (approx.): 430 × 65 × 328 mm (width/height/depth) incl. projecting parts

Hard disk drive capacity: RDR-HX520: 80 GB

RDR-HX720/HX722/HX920: 44 W

Mass (approx.): 4.2 kg

Operating temperature: 5°C to 35°C

Operating humidity: 25% to 80%

Inputs and outputs

LINE 2 OUT

(AUDIO): Phono jack/2 Vrms/10 kilohms
(VIDEO): Phono jack/1.0 Vp-p
(S VIDEO): 4-pin mini DIN/Y: 1.0 Vp-p, C: 0.3 Vp-p (PAL)

LINE 2 IN

(AUDIO): Phono jack/2 Vrms/more than 22 kilohms
(VIDEO): Phono jack/1.0 Vp-p

(S VIDEO): 4-pin mini DIN/Y: 1.0 Vp-p, C: 0.3 Vp-p (PAL)

LINE 1 - TV: 21-pin

CVBS IN/OUT
S-Video/RGB OUT (upstream)
LINE 3/DECODER: 21-pin
CVBS IN/OUT
S-Video/RGB IN
(RGB signals cannot be recorded, except with French RDR-HX520 and RDR-HX920 models.)
S-Video OUT (downstream)
Decoder

DV IN: 4-pin/i.LINK S100

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

COMPONENT VIDEO OUT (Y, Pb/Cb, Pr/Cr):

Phono jack/Y: 1.0 Vp-p, Pb/Cb: 0.7 Vp-p, Pr/Cr: 0.7 Vp-p

General

Power requirements: 220-240 V AC, 50/60 Hz

Power consumption:

RDR-HX520: 42 W

RDR-HX720/HX722/HX920: 44 W

Dimensions (approx.):

430 × 65 × 328 mm (width/height/depth) incl. projecting parts

Hard disk drive capacity:

RDR-HX520: 80 GB

RDR-HX720/HX722: 160 GB

RDR-HX920: 250 GB

Mass (approx.):

4.2 kg

Operating temperature:

5°C to 35°C

Operating humidity:

25% to 80%

Supplied accessories:

Mains lead (1)
Aerial cable (1)
Remote commander (remote) (1)
R6 (size AA) batteries (2)

Specifications and design are subject to change without notice.

Compatible colour systems

This recorder is designed to record using the PAL colour system and play back using the PAL or NTSC colour systems.

For French RDR-HX520 and RDR-HX920 models only

The signals of the SECAM colour system can be received or recorded but played back in the PAL colour system only. Recording of video sources based on other colour systems cannot be guaranteed.

Note

Normally, only one piece of equipment can be connected to this recorder by the iLINK cable (DV connecting cable). When connecting this recorder to iLINK-compatible equipment having two or more iLINK jacks (DV jacks), see the instruction manual of the equipment to be connected.

About the name "iLINK"

iLINK is a more familiar term for IEEE 1394 data transport bus proposed by SONY, and is a trademark approved by many corporations. IEEE 1394 is an international standard standardized by the Institute of Electrical and Electronics Engineers.

iLINK baud rate

iLINK's maximum baud rate varies according to the equipment. Three maximum baud rates are defined:

S100 (approx. 100 Mbps)*

S200 (approx. 200 Mbps)

S400 (approx. 400 Mbps)

The baud rate is listed under "Specifications" in the instruction manual of each equipment. It is also indicated near the iLINK jack on some equipment.

The maximum baud rate of equipment on which it is not indicated such as this unit is "S100."

When units are connected to equipment having a different maximum baud rate, the baud rate sometimes differs from the indicated baud rate.

* What is Mbps?

Mbps stands for megabits per second, or the amount of data that can be sent or received in one second. For example, a baud rate of 100 Mbps means that 100 megabits of data can be sent in one second.

Additional Information

i.LINK functions on this recorder

For details on how to dub when this recorder is connected to other video equipment having DV jacks, see page 77.

The DV jack on this recorder can only input DVC-SD signals. It cannot output signals. The DV jack will not accept MICRO MV signals from equipment such as a MICRO MV digital video camera with an i.LINK jack.

For further precautions, see the notes on page 77.

For details on precautions when connecting this recorder, also see the instruction manuals for the equipment to be connected.

Required i.LINK cable

Use the Sony i.LINK 4-pin-to-4-pin cable (during DV dubbing).

iLINK and  are trademarks.

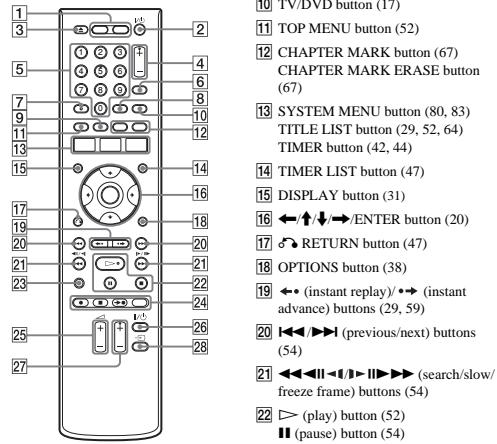
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Additional Information

Guide to Parts and Controls

For more information, see the pages in parentheses.

Remote

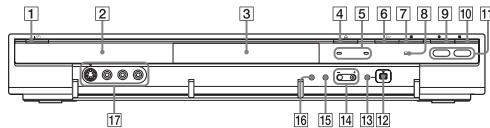


- 1** HDD button (27)
DVD button (27)
- 2**  (on/standby) button (20)
- 3**  (open/close) button (27)
- 4** PROG (programme) +/- buttons (27)
The + button has a tactile dot*.
- 5** Number buttons (44, 58)
The number 5 button has a tactile dot*.
- 6** INPUT SELECT button (51, 77)
- 7** AUDIO button (54)
The AUDIO button has a tactile dot*.
- 8** SUBTITLE button (54)
- 9** MENU button (52)
- 10** TV/DVD button (17)
- 11** TOP MENU button (52)
- 12** CHAPTER MARK button (67)
CHAPTER MARK ERASE button (67)
- 13** SYSTEM MENU button (80, 83)
TITLE LIST button (29, 52, 64)
TIMER button (42, 44)
- 14** TIMER LIST button (47)
- 15** DISPLAY button (31)
- 16** /ENTER button (20)
- 17**  RETURN button (47)
- 18** OPTIONS button (38)
- 19** /  (instant replay)/  (instant advance) buttons (29, 59)
- 20** /// (search/slow freeze frame) buttons (54)
- 21**  (play) button (52)
- 22**  (pause) button (54)
- 23**  (stop) button (52)
- The  button has a tactile dot*.
- 24** TIME/TEXT button (31)
- 25** REC button (27)
- 26** REC STOP button (27)
- 27**  SYNCHRO REC button (49)
- 28** REC MODE button (27)
- 29** TV  (volume) +/- buttons (17)
- 30** TV  (on/standby) button (17)
- 31** TV PROG (programme) +/- buttons (17)
The + button has a tactile dot*.
- 32** TV  button (17)

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

→ continued 109

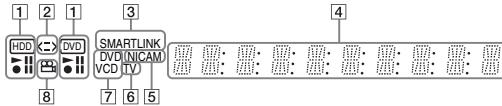
Front panel



- 1**  (on/standby) button (20)
- 2** Front panel display (111)
- 3** Disc tray (27)
- 4**  (open/close) button (27)
- 5** TIMER REC indicator (42)
SYNCHRO REC indicator (49)
- 6**  (play) button (52)
- 7**  (stop) button (52)
- 8**  (remote sensor) (17)
- 9** REC button (27)
- 10** REC STOP button (27)
- 11** HDD button/indicator (27)
DVD button/indicator (27)
- 12**  DV IN jack (77)
- 13** ONE-TOUCH DUB button (79)
- 14** PROGRAM +/- buttons (27)
The + button has a tactile dot*.
- 15** INPUT SELECT button (49, 77)
- 16** REC MODE button (27)
- 17** LINE 2 IN (S VIDEO/VIDEO/L(MONO) AUDIO R) jacks (22)

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

Front panel display

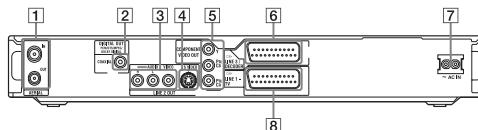


- 1** HDD/DVD indicators
Displays the selected media and the playing/recording status.
- 2** Dubbing direction indicator
- 3** SMARTLINK indicator (14)
- 4** Displays the following:
 - Playing time/remaining time
 - Current title/chapter/track/index number
 - Recording time/recording mode
- * Displays DATA CDs as "CD."

 **Hint**
You can turn off the front panel display when the recorder is turned off by setting "Dimmer" to "Save Power" in the "Others" setup (page 96).

Additional Information

Rear panel



- 1** AERIAL IN/OUT jacks (12)
- 2** DIGITAL OUT(COAXIAL) jack (15)
- 3** LINE 2 OUT (R-AUDIO-L/VIDEO) jacks (13, 15)
- 4** LINE 2 OUT (S VIDEO) jack (13)
- 5** COMPONENT VIDEO OUT (Y, Pb/Cb, Pr/Cr) jacks (13)
- 6** LINE 3/DECODER jack (13)
- 7** AC IN terminal (16)
- 8** LINE 1 - TV jack (13)

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Language Code List

For details, see page 95.

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;	1248 Indonesian	1393 Occitan	1528 Thai
Bangla	1253 Icelandic	1403 (Afan)Oromo	1529 Tigrinya
1067 Tibetan	1254 Italian	1408 Orya	1531 Turkmen
1070 Breton	1257 Hebrew	1417 Punjabi	1532 Tagalog
1079 Catalan	1261 Japanese	1428 Polish	1534 Setswana
1093 Corsican	1269 Yiddish	1435 Pashto;	1535 Tonga
1097 Czech	1283 Javanese	Pushko	1538 Turkish
1103 Welsh	1287 Georgian	1436 Portuguese	1539 Tsonga
1105 Danish	1297 Kazakh	1463 Quechua	1540 Tatar
1109 German	1298 Greenlandic	1481 Rhaeto-	1543 Twi
1130 Bhutani	1299 Cambodian	Romance	1557 Ukrainian
1142 Greek	1300 Kannada	1482 Kirundi	1564 Urdu
1144 English	1301 Korean	1483 Romanian	1572 Uzbek
1145 Esperanto	1305 Kashmiri	1489 Russian	1581 Vietnamese
1149 Spanish	1307 Kurdish	1491 Kinyarwanda	1587 Volapük
1150 Estonian	1311 Kirghiz	1495 Sanskrit	1613 Wolof
1151 Basque	1313 Latin	1498 Sindhi	1632 Xhosa
1157 Persian	1326 Lingala	1501 Sangho	1665 Yoruba
1165 Finnish	1327 Laotian	1502 Serbo-	1684 Chinese
1166 Fiji	1332 Lithuanian	Croatian	1697 Zulu
1171 Faroese	1334 Latvian;	1503 Singhalese	
1174 French	Lettish	1505 Slovak	
1181 Frisian	1345 Malagasy	1506 Slovenian	
		1703 Not specified	

Area Code

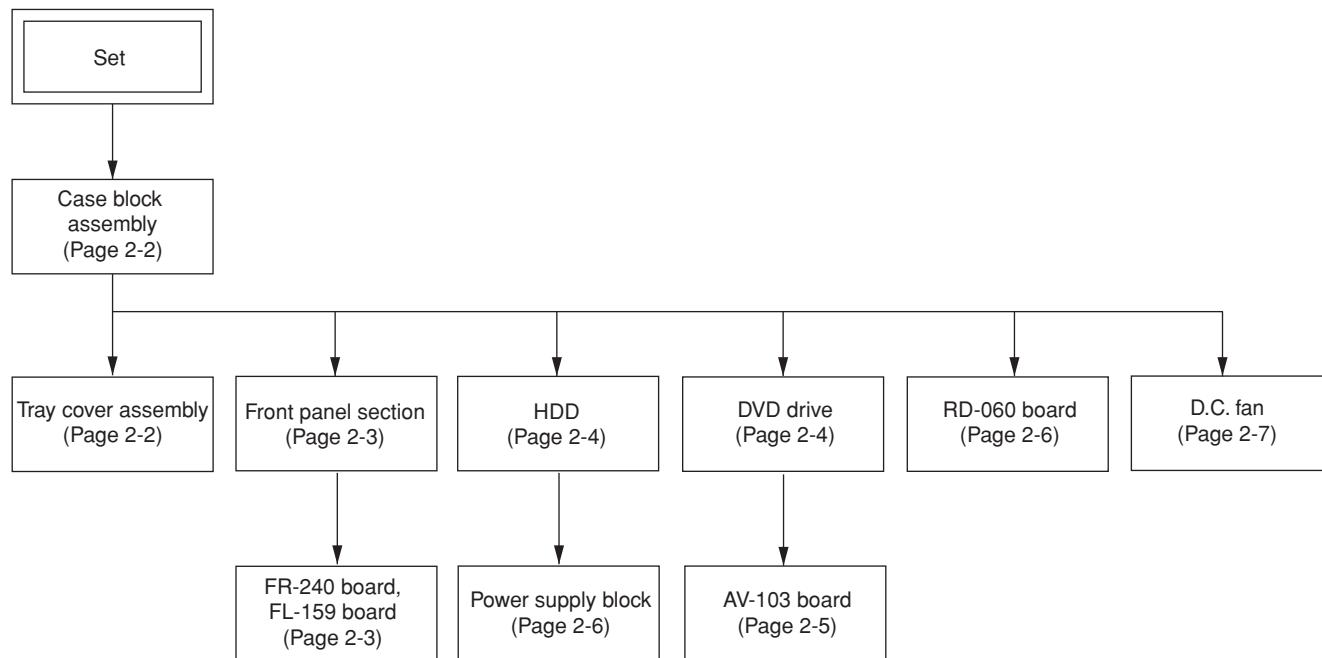
For details, see page 94.

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

**RDR-HX520/HX525/HX720/HX722/
HX725/HX727/HX920/HX925**

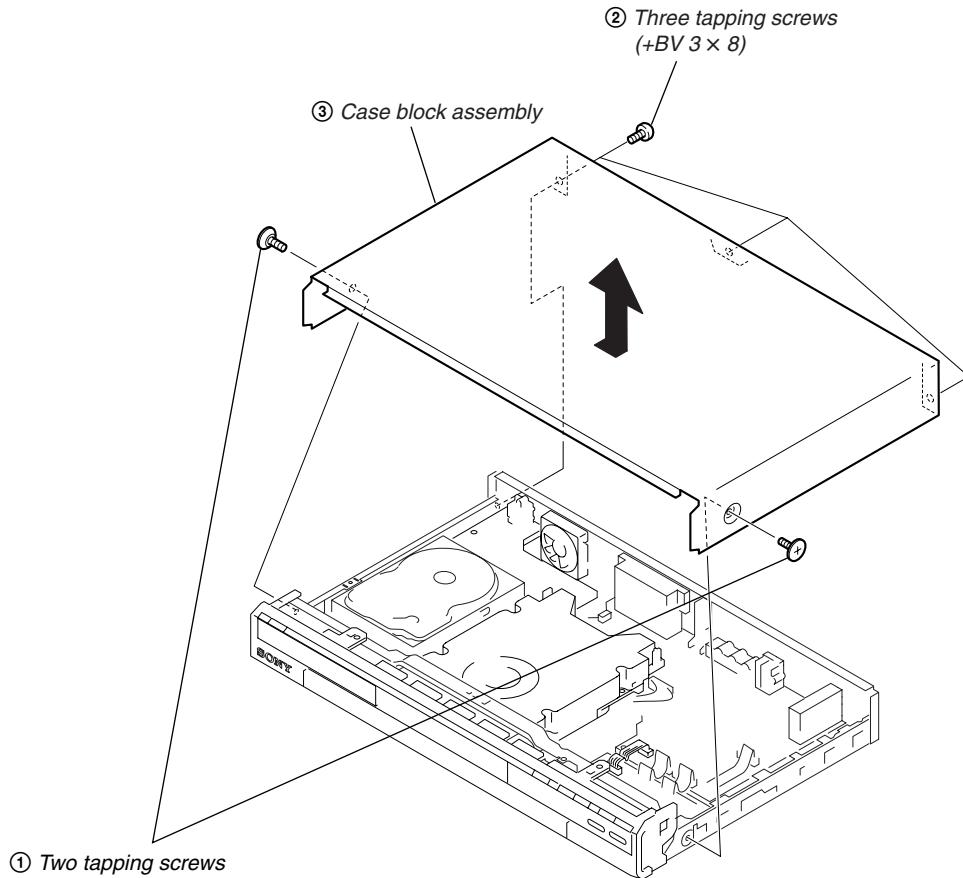
**SECTION 2
DISASSEMBLY**

NOTE: The following flow chart shows the disassembly procedure.

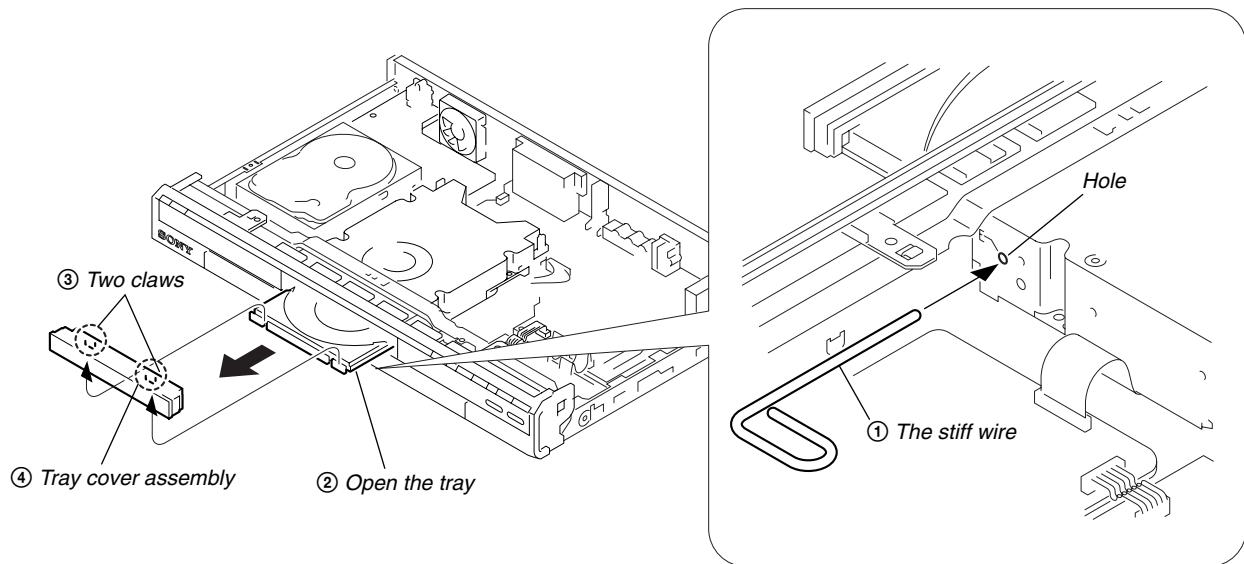


NOTE: Follow the disassembly procedure in the numerical order given.

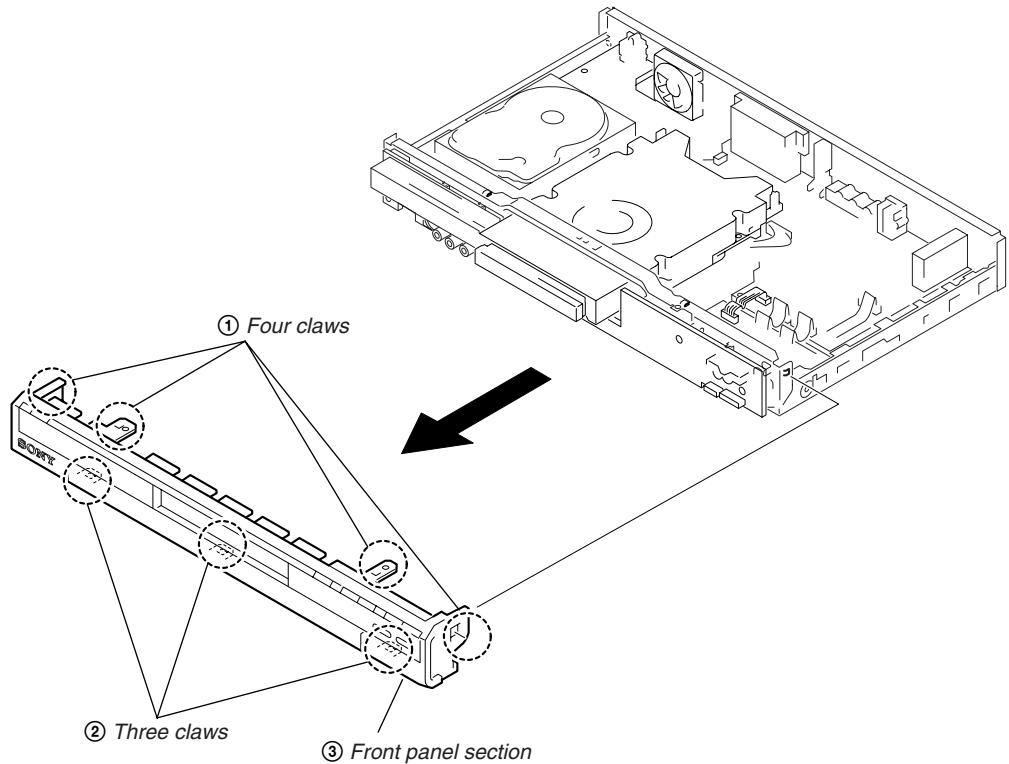
2-1. CASE BLOCK ASSEMBLY



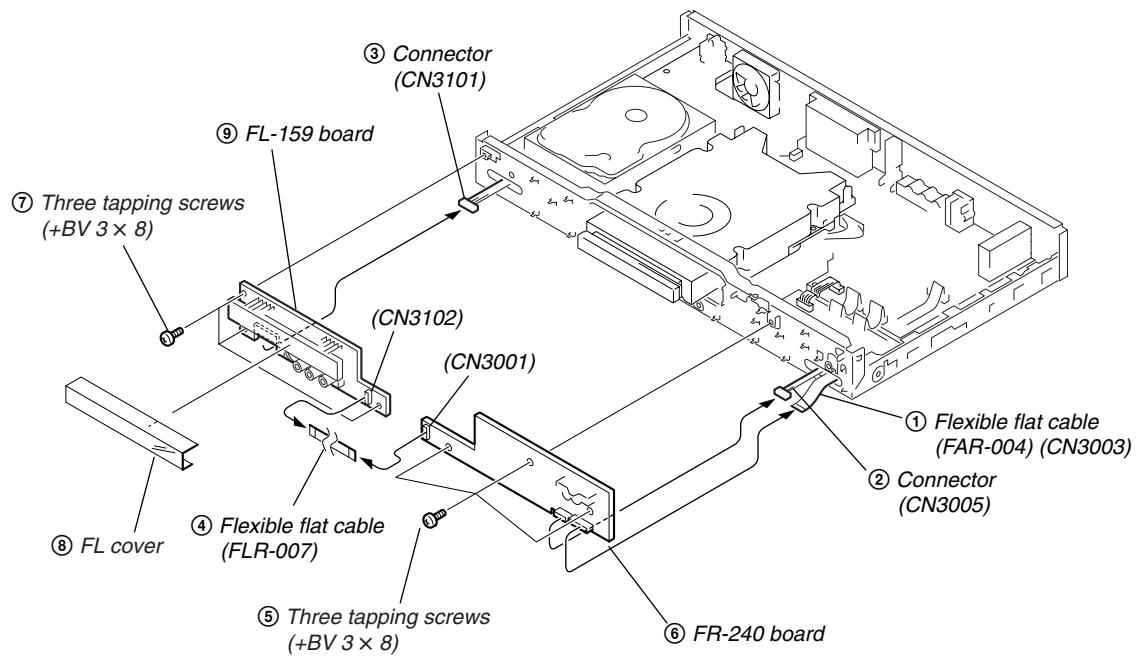
2-2. TRAY COVER ASSEMBLY



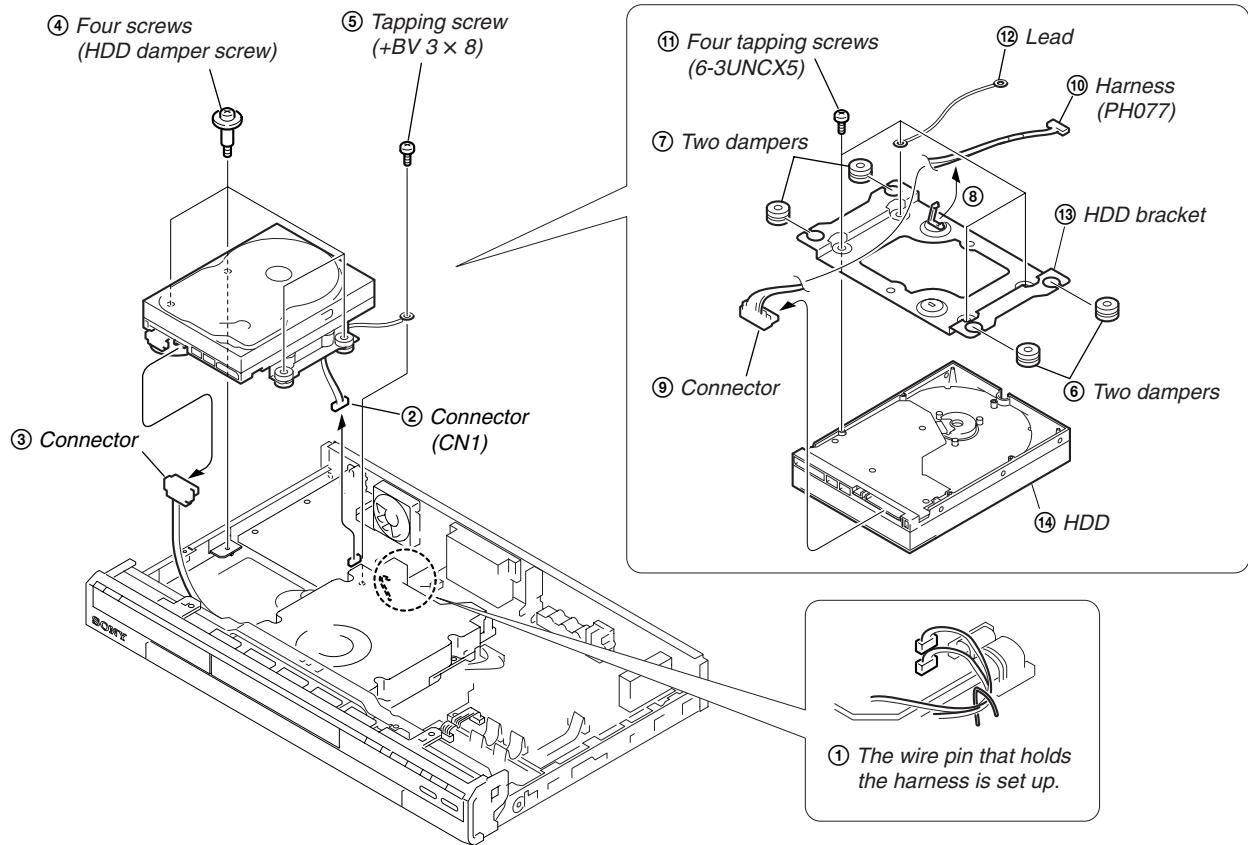
2-3. FRONT PANEL SECTION



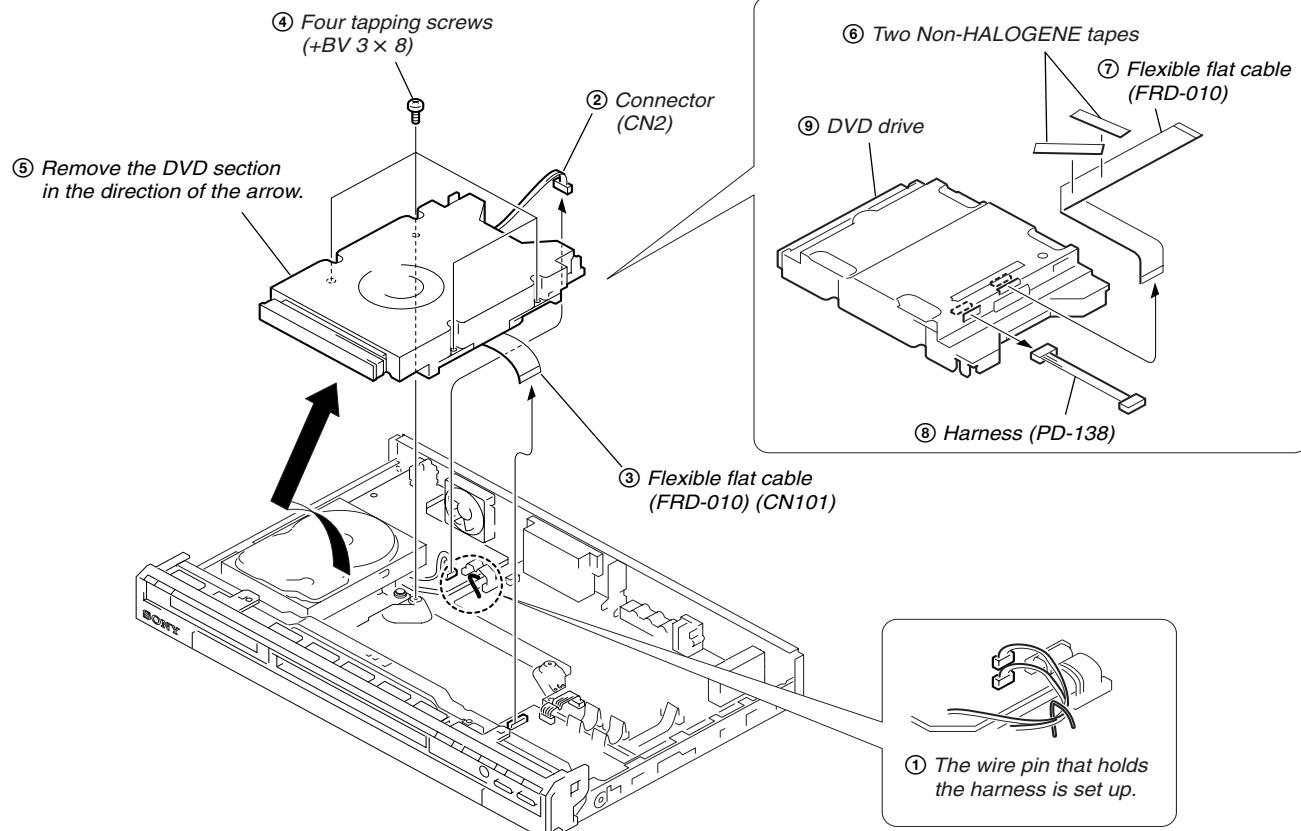
2-4. FR-240 BOARD, FL-159 BOARD



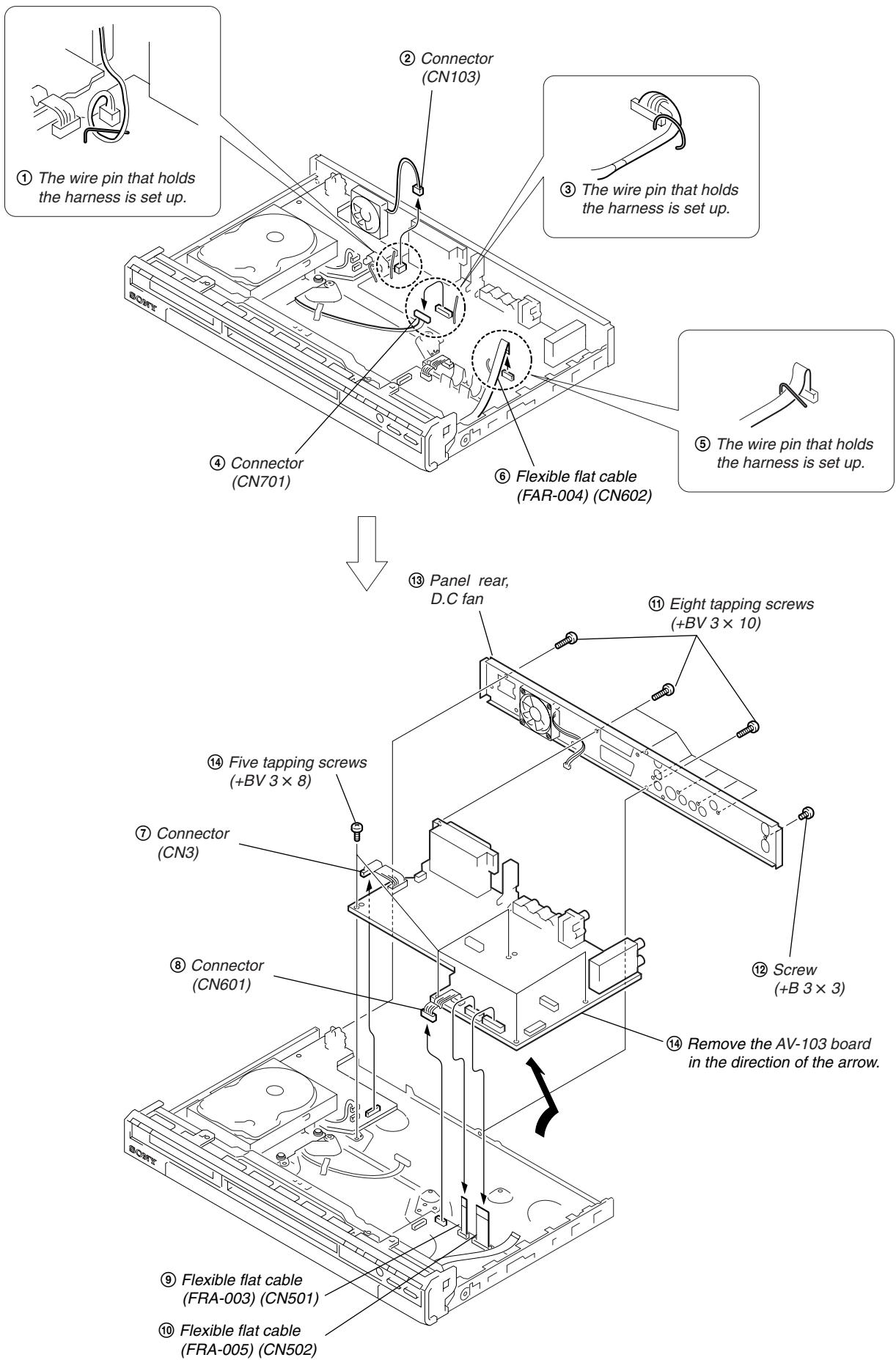
2-5. HDD



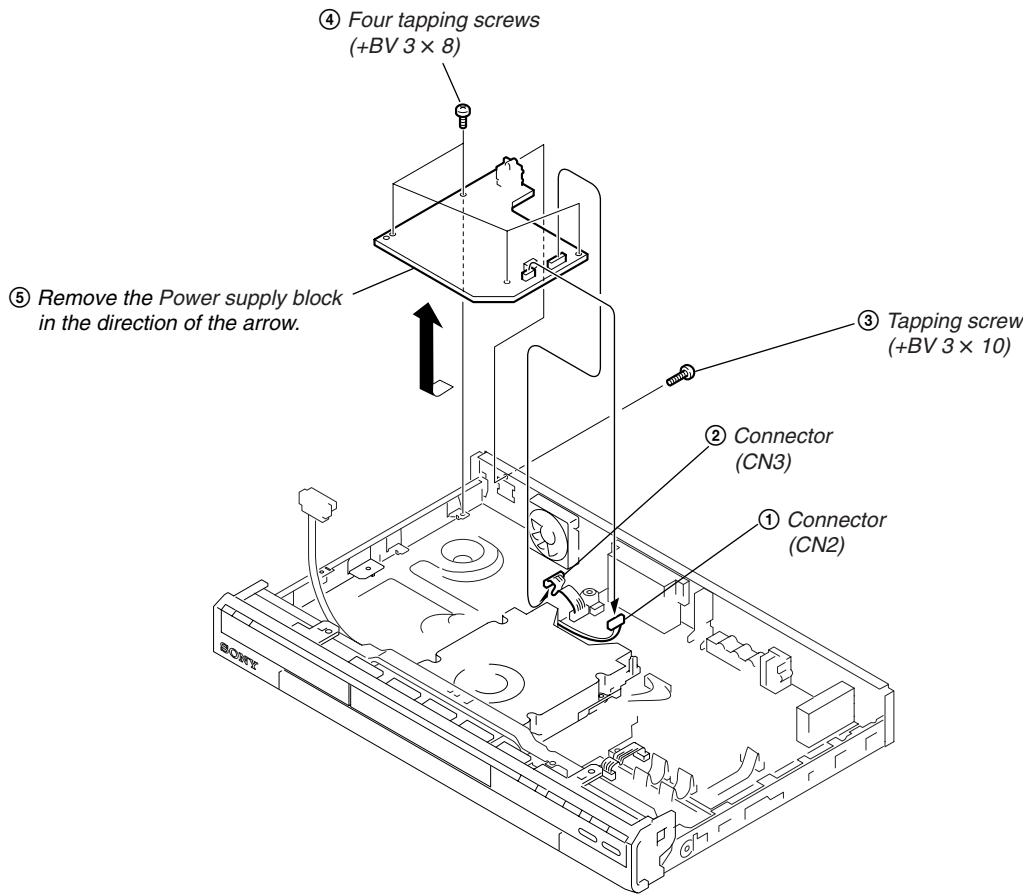
2-6. DVD DRIVE



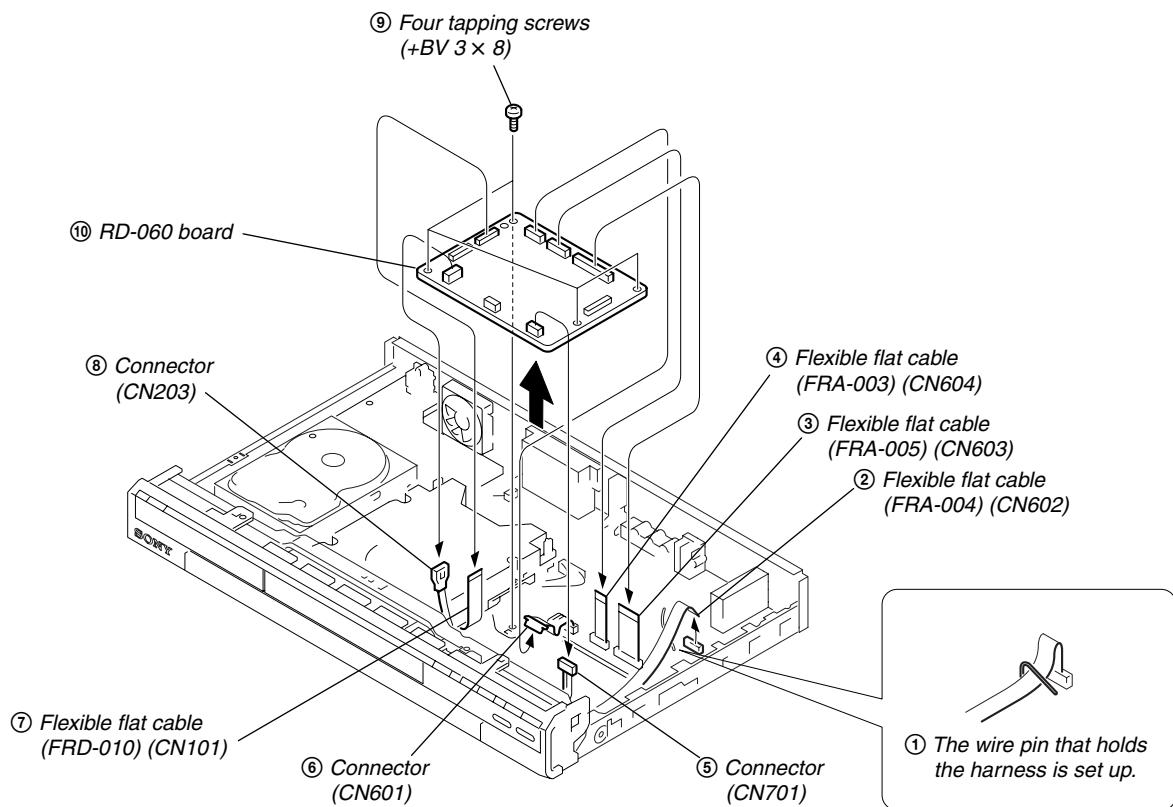
2-7. AV-103 BOARD



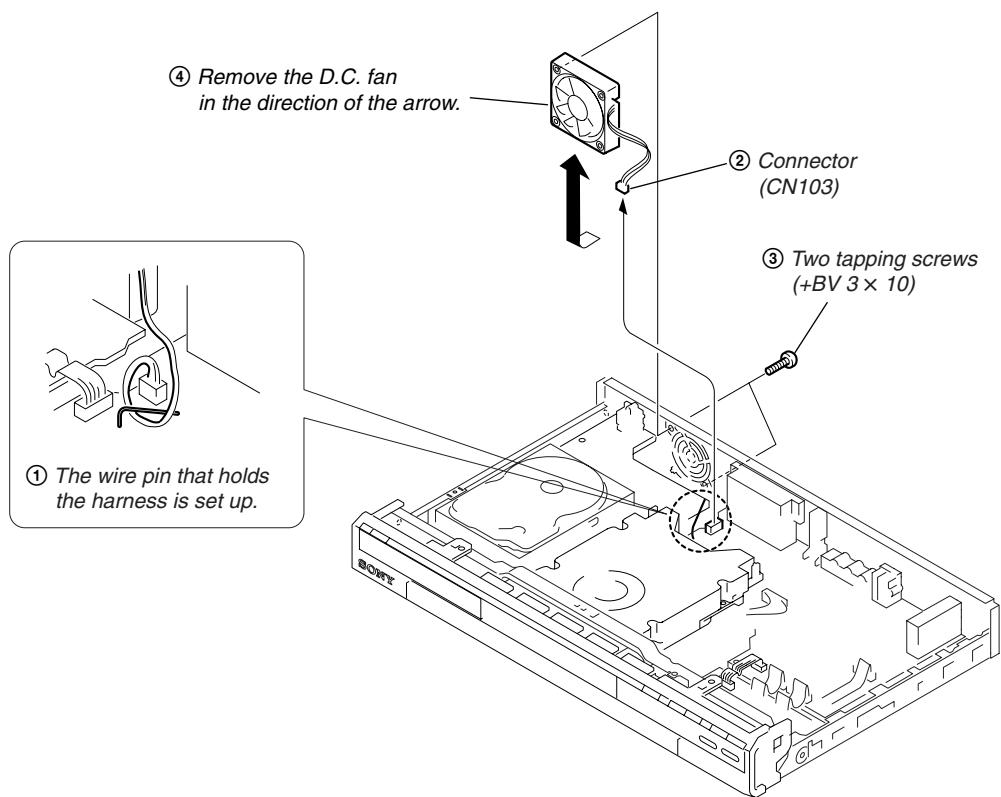
2-8. POWER SUPPLY BLOCK



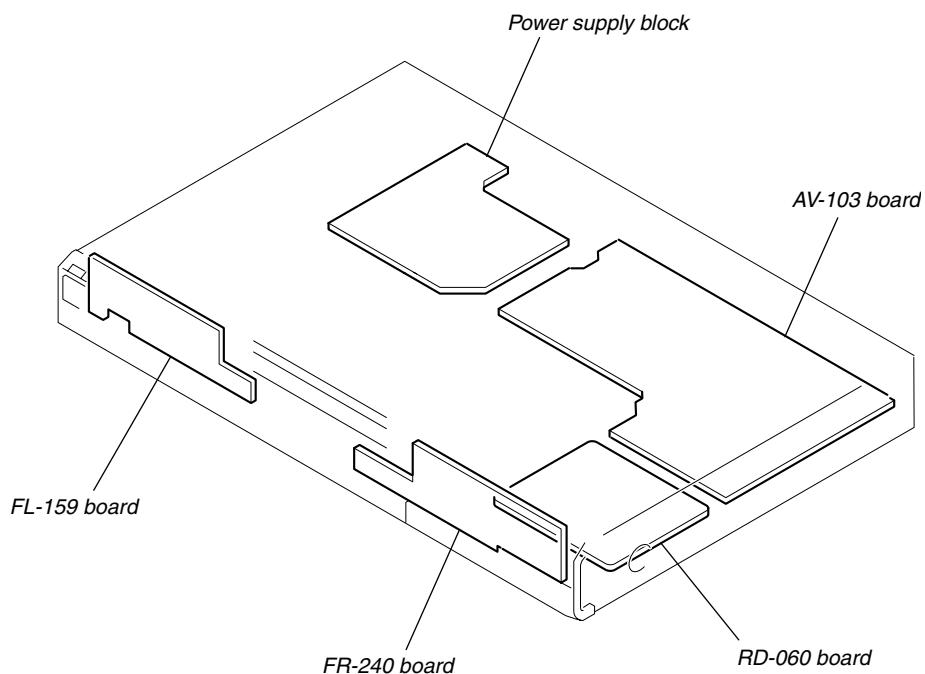
2-9. RD-060 BOARD



2-10. D.C. FAN

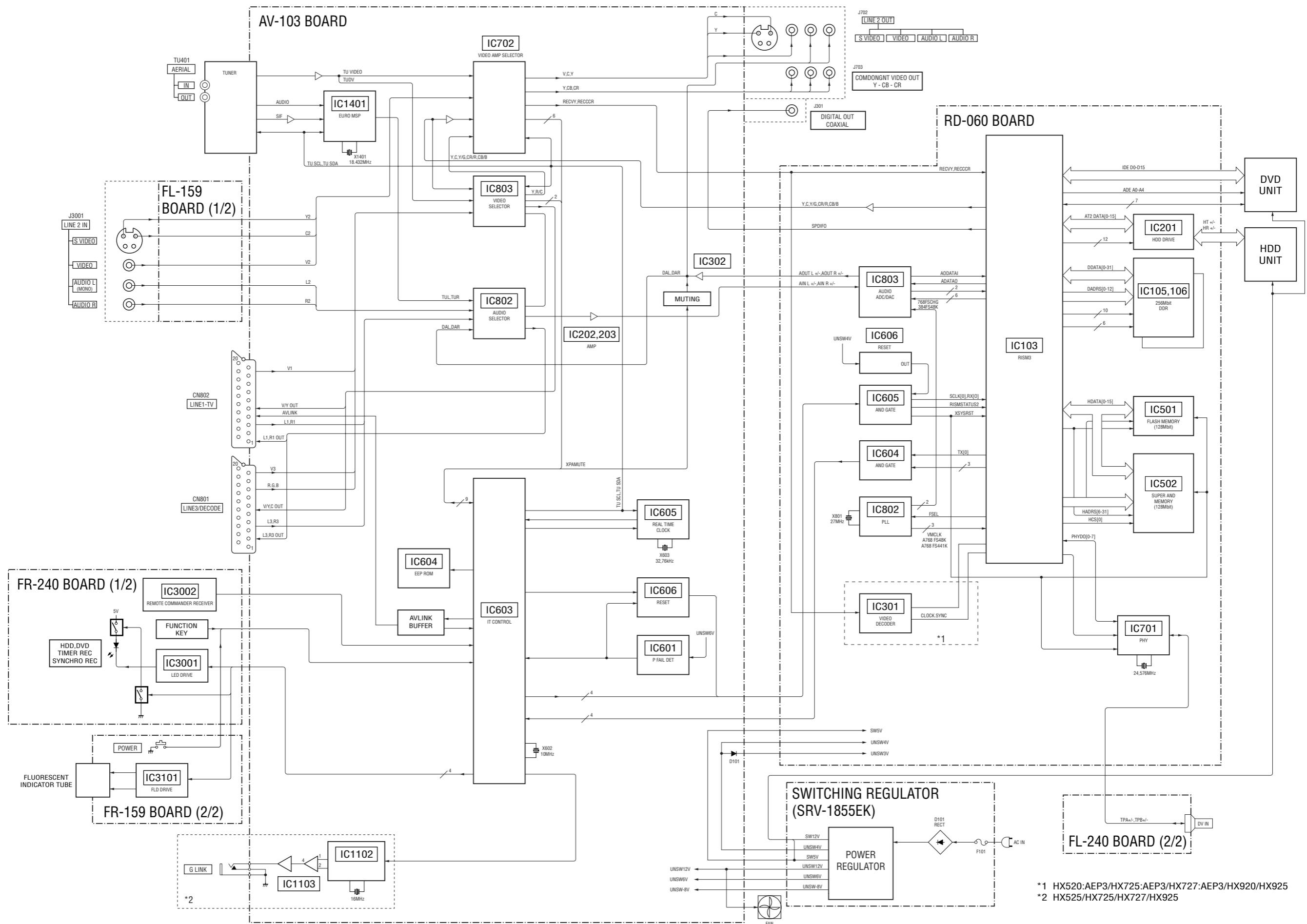


2-11. CIRCUIT BOARDS LOCATION

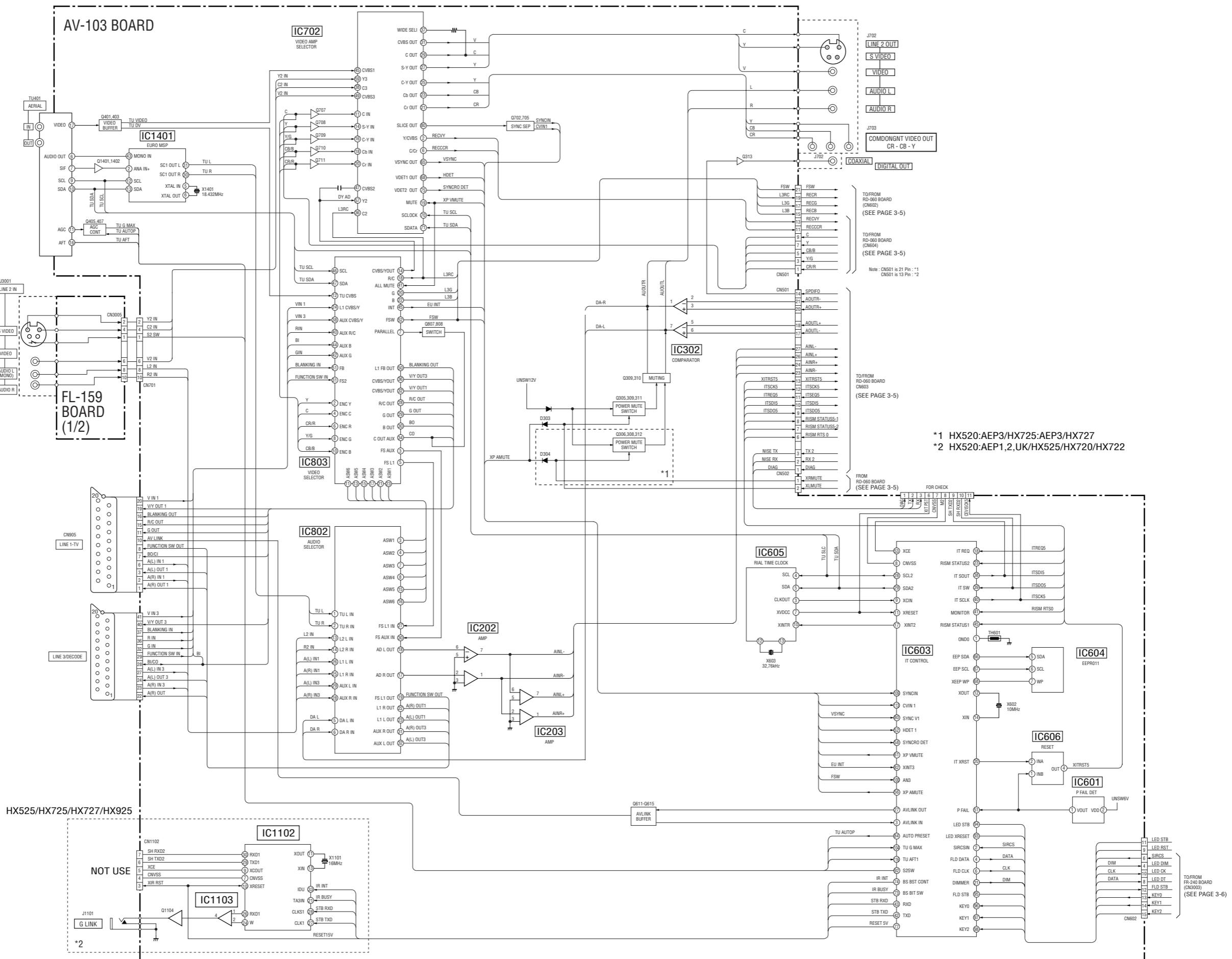


**SECTION 3
BLOCK DIAGRAMS**

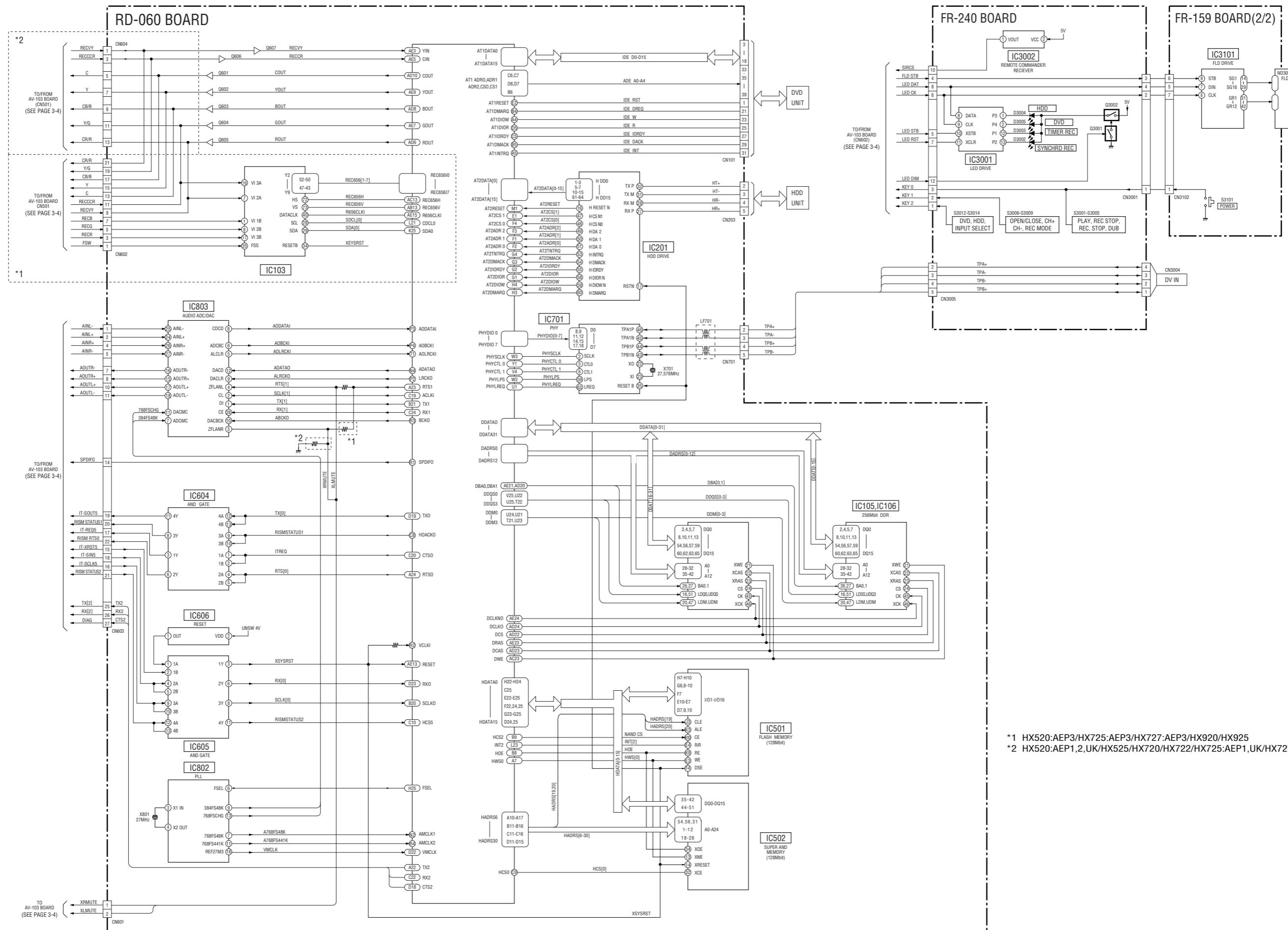
3-1. OVERALL BLOCK DIAGRAM



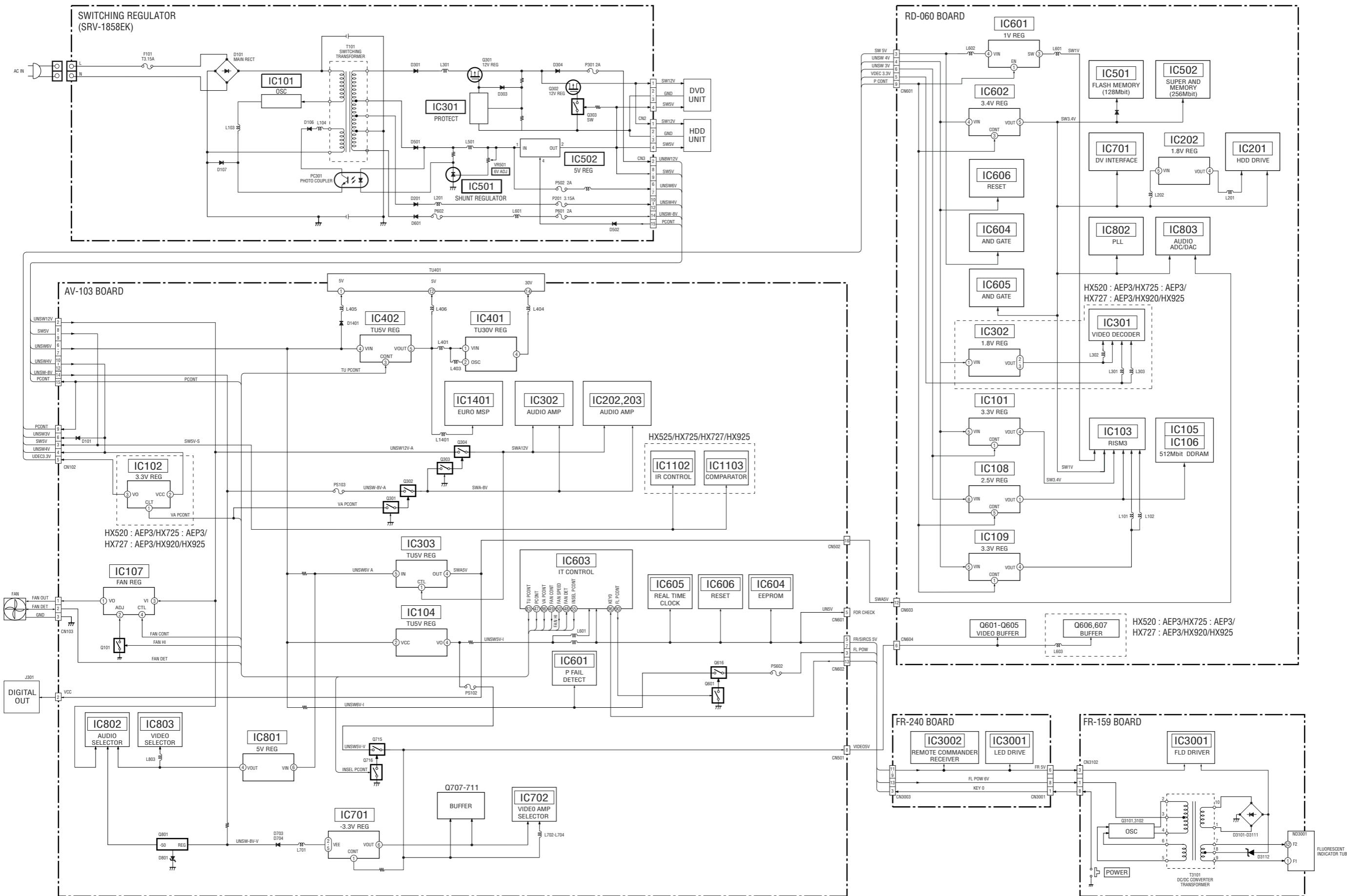
3-2. AV-103 BLOCK DIAGRAM



3-3. RD-060 BLOCK DIAGRAM



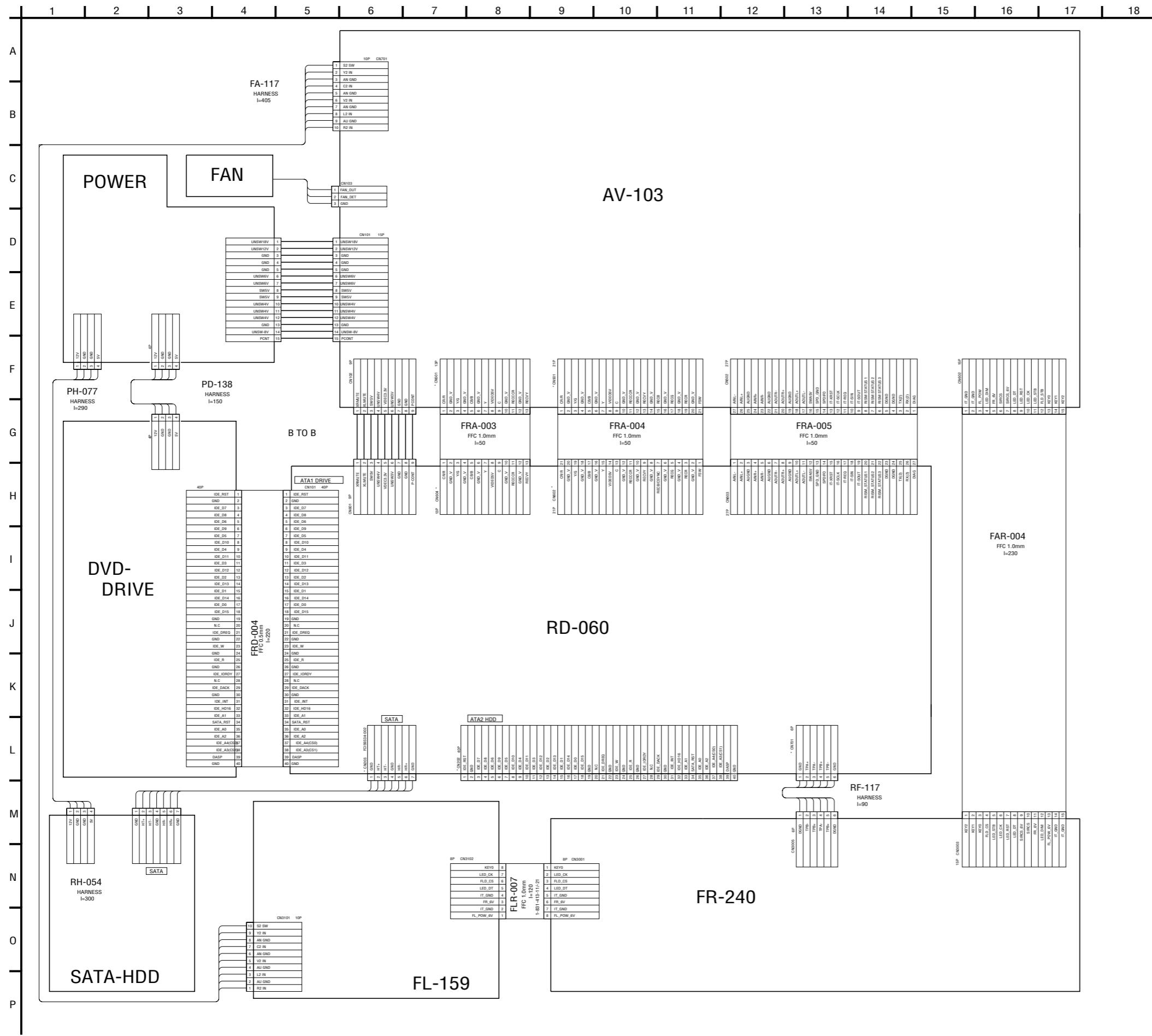
3-4. POWER BLOCK DIAGRAM



SECTION 4

SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

4-1. FRAME SCHEMATIC DIAGRAM



4-2. SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS (In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

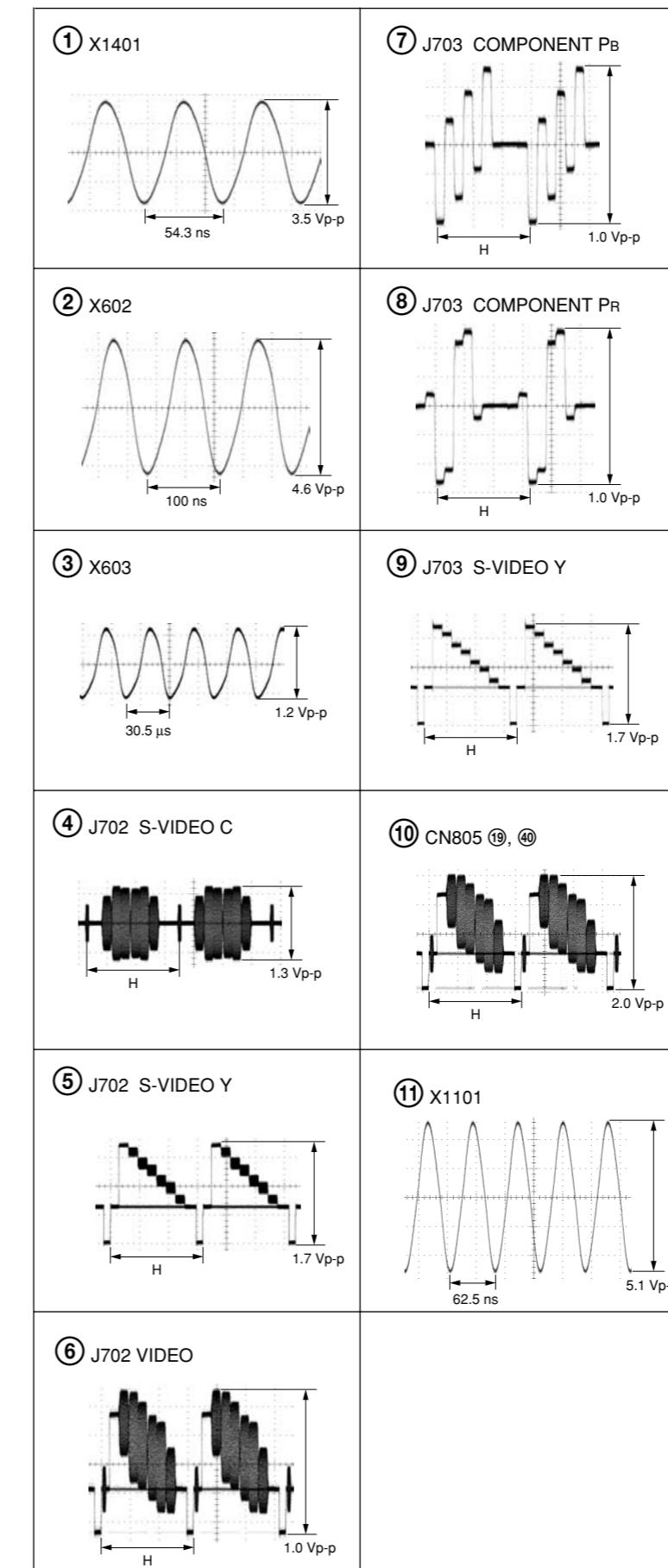
- All capacitors are in μF unless otherwise noted. $\text{pF} : \mu\mu\text{F}$.
50V or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4 W (Chip resistors : 1 / 10 W) un-less otherwise specified.
 $\text{k}\Omega=1000\Omega$, $\text{M}\Omega=1000\text{k}\Omega$.
- 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 variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : non flammable 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 signals on DVD reference disc.
- Readings are taken with a digital multimeter (DC 10MW).
- Voltage variations may be noted due to normal production tolerances.

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

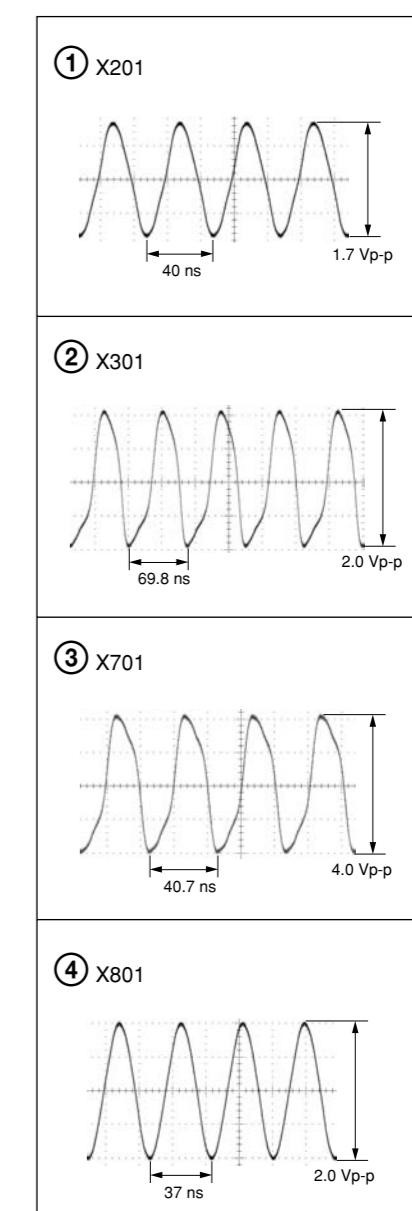
When indicating parts by reference number, please include the board name.

WAVEFORMS

AV-103 BOARD



RD-060 BOARD



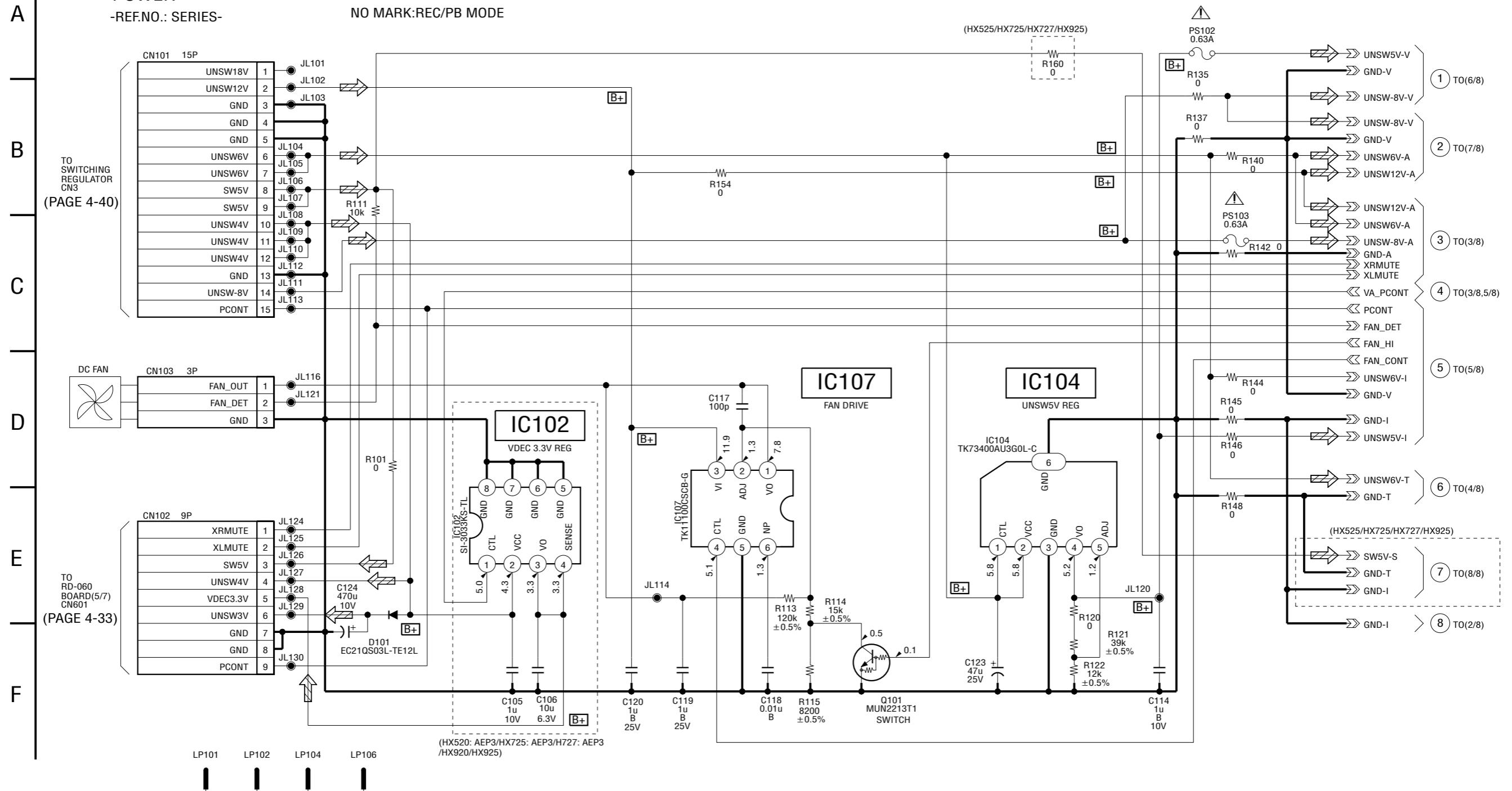
1 2 3 4 5 6 7 8 9 10 11

AV-103 BOARD(1/8)

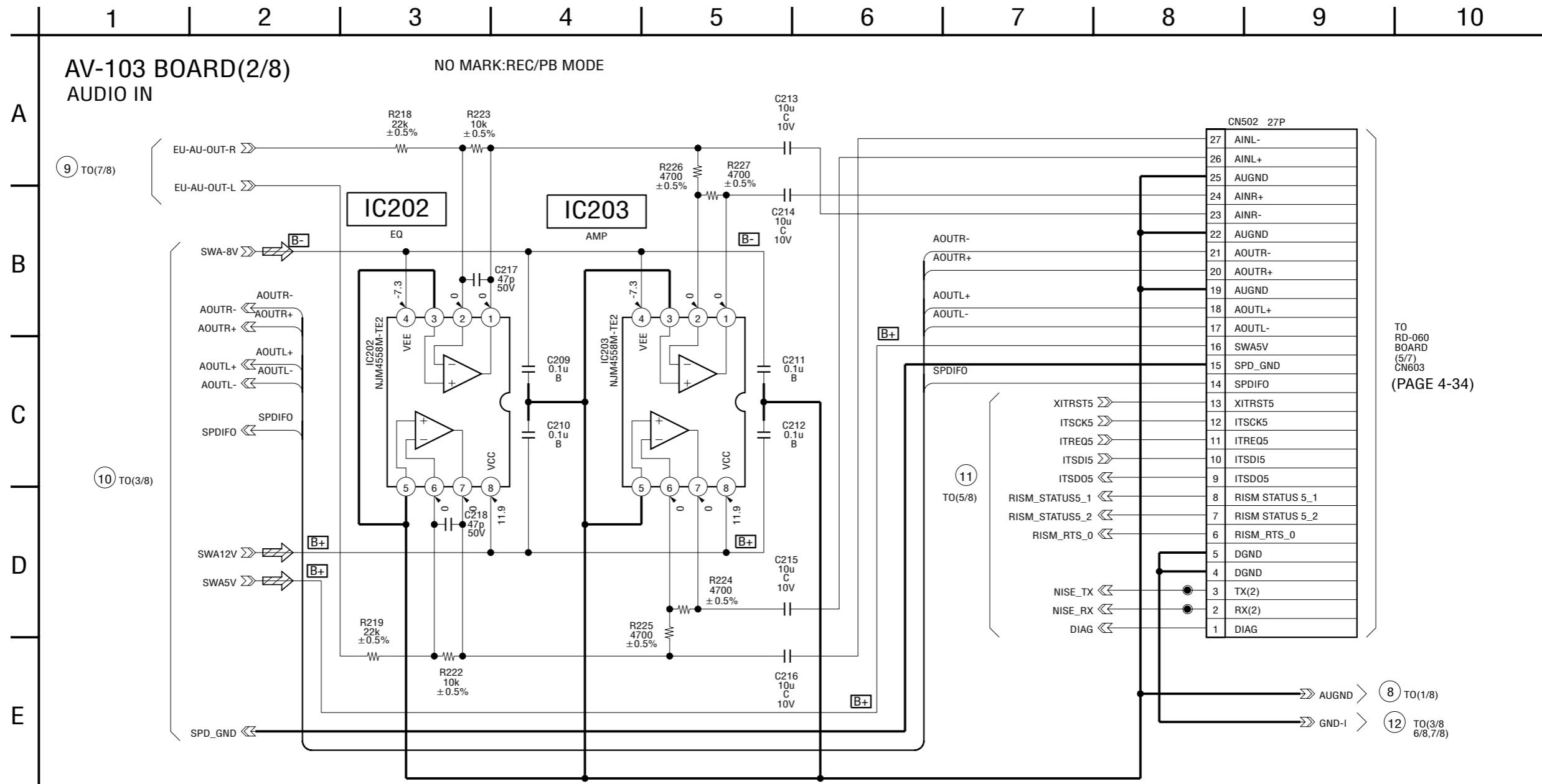
POWER

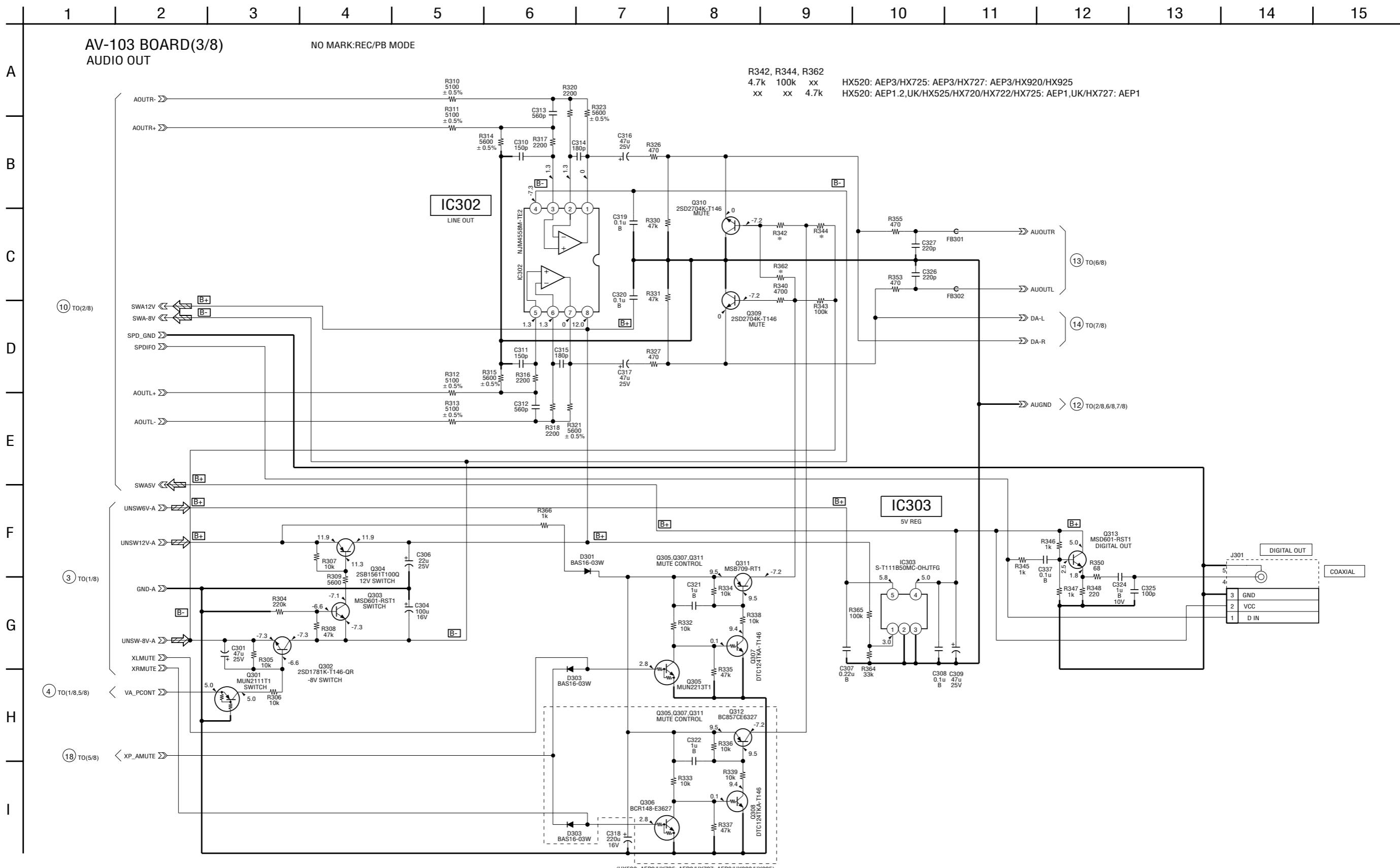
-REF.NO.: SERIES-

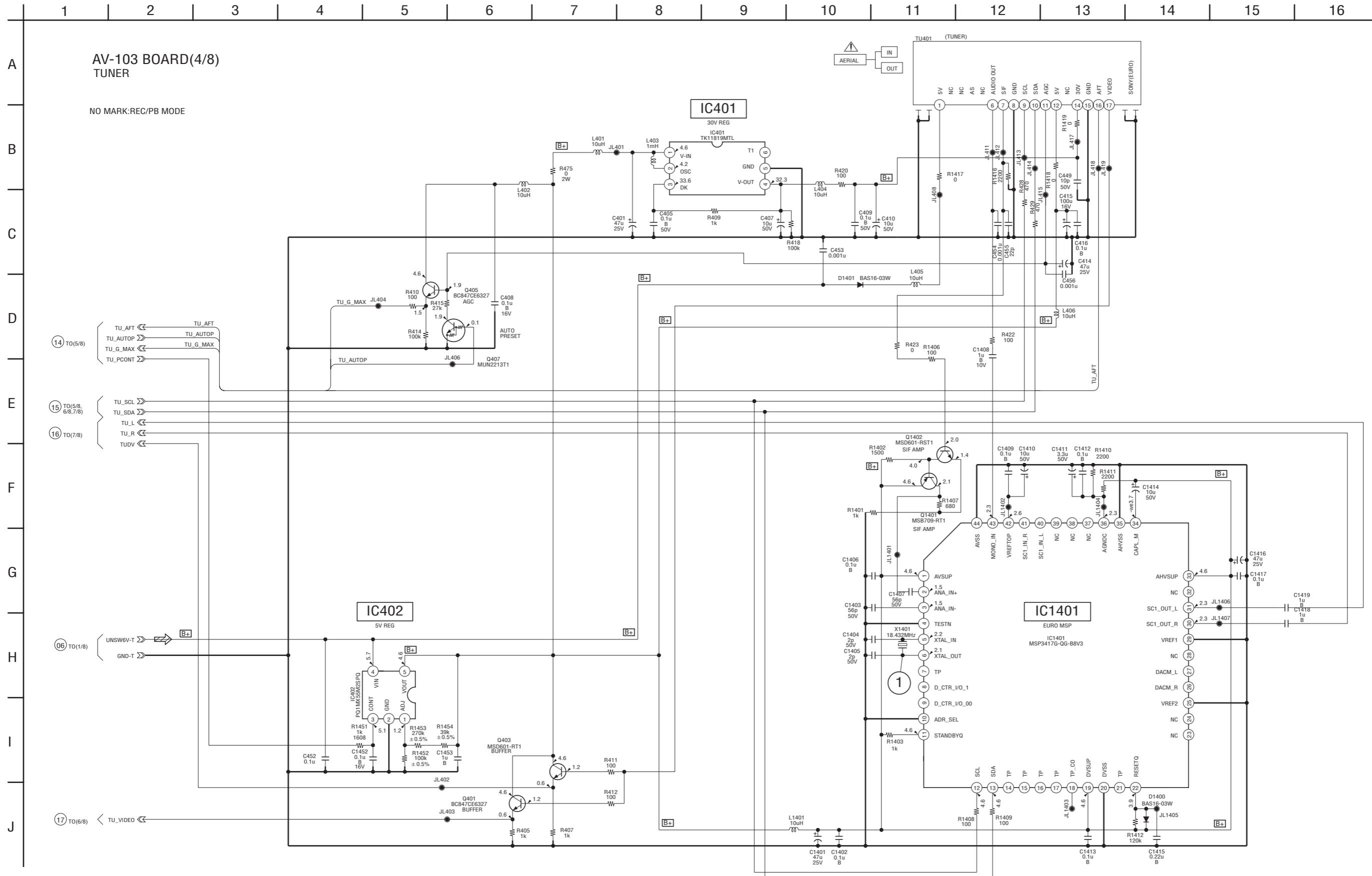
NO MARK:REC/PB MODE



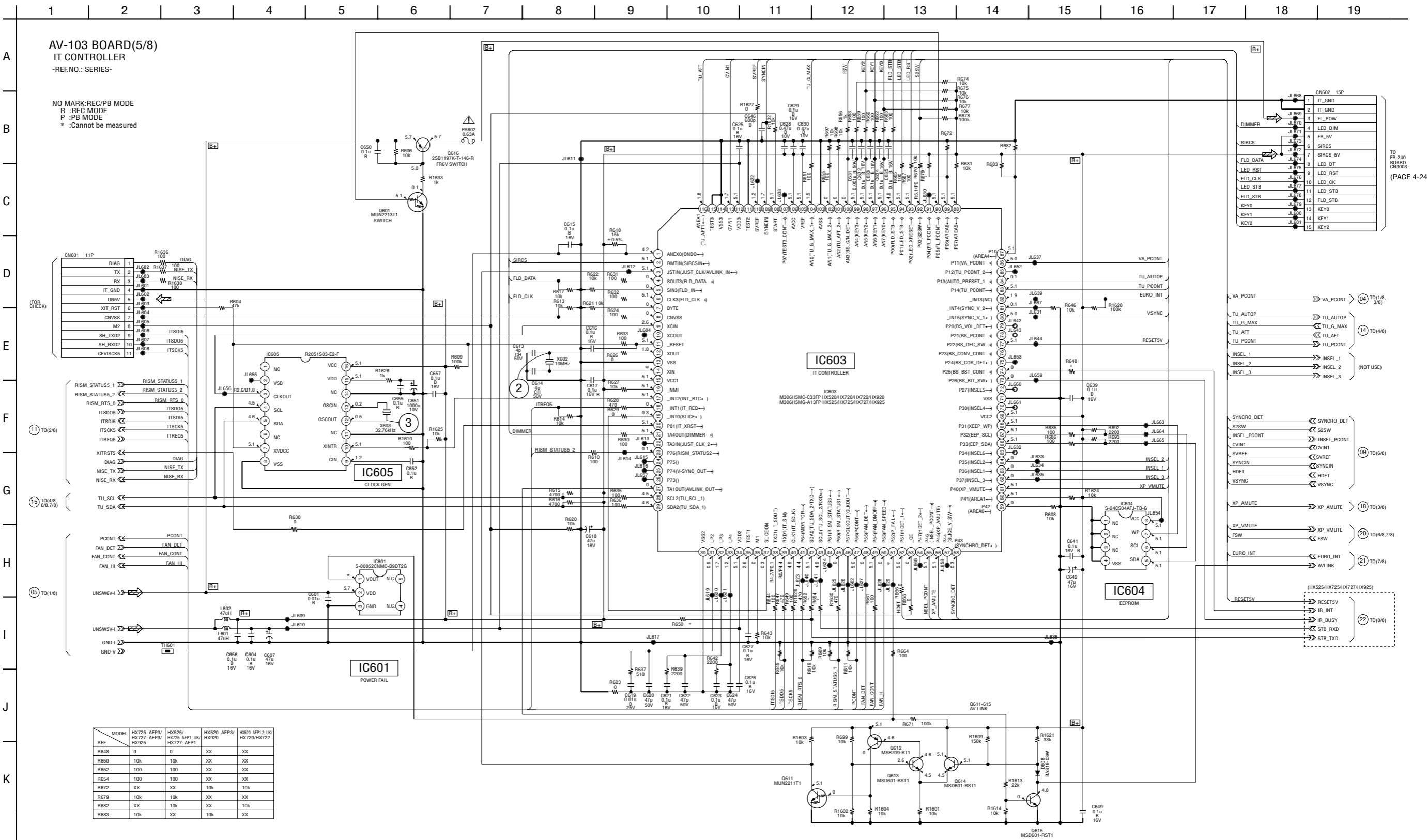
Note : The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.







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

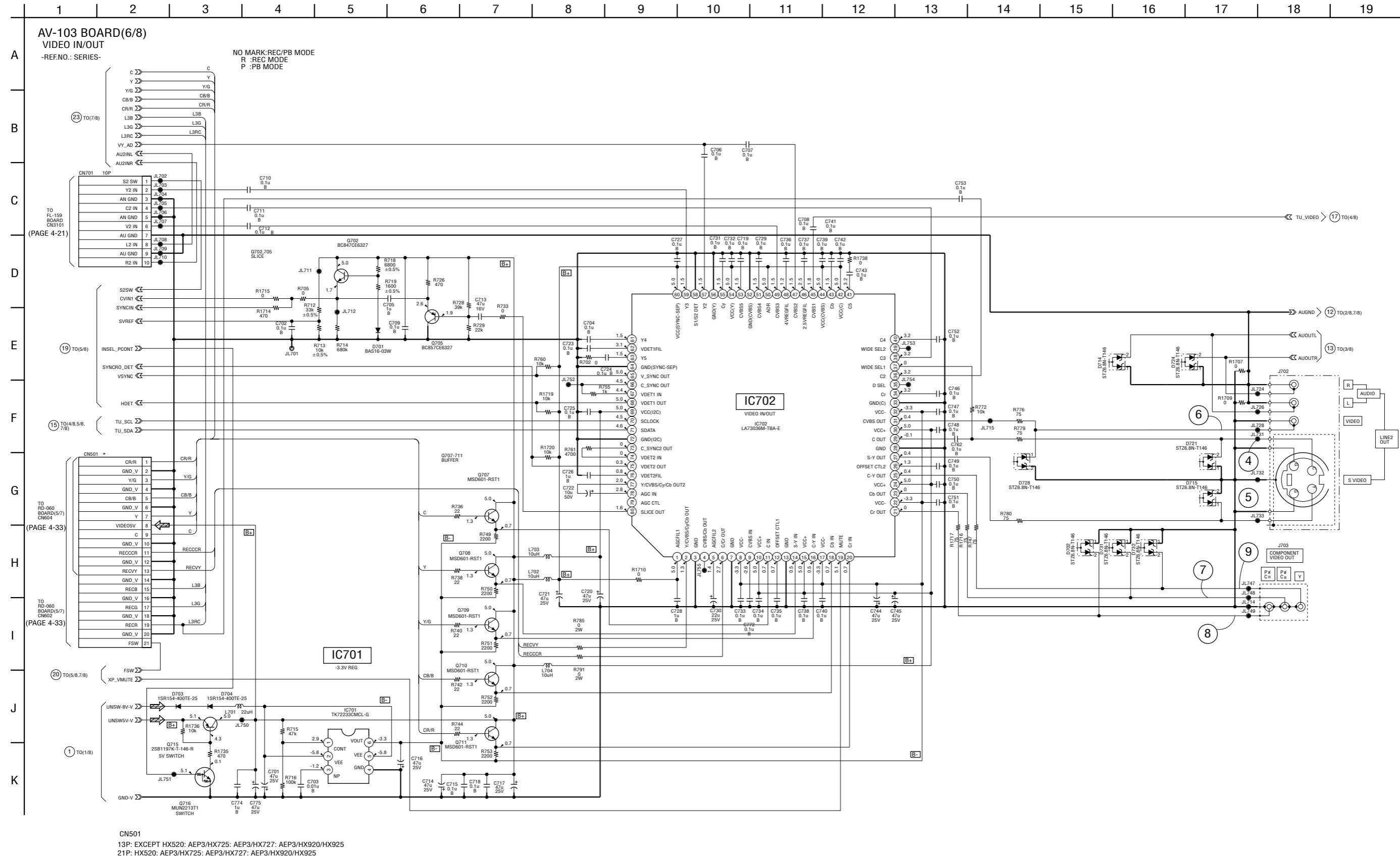


Note : The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

RDR-HX520/HX525/HX720/HX722/ HX725/HX727/HX920/HX925

For Schematic Diagram

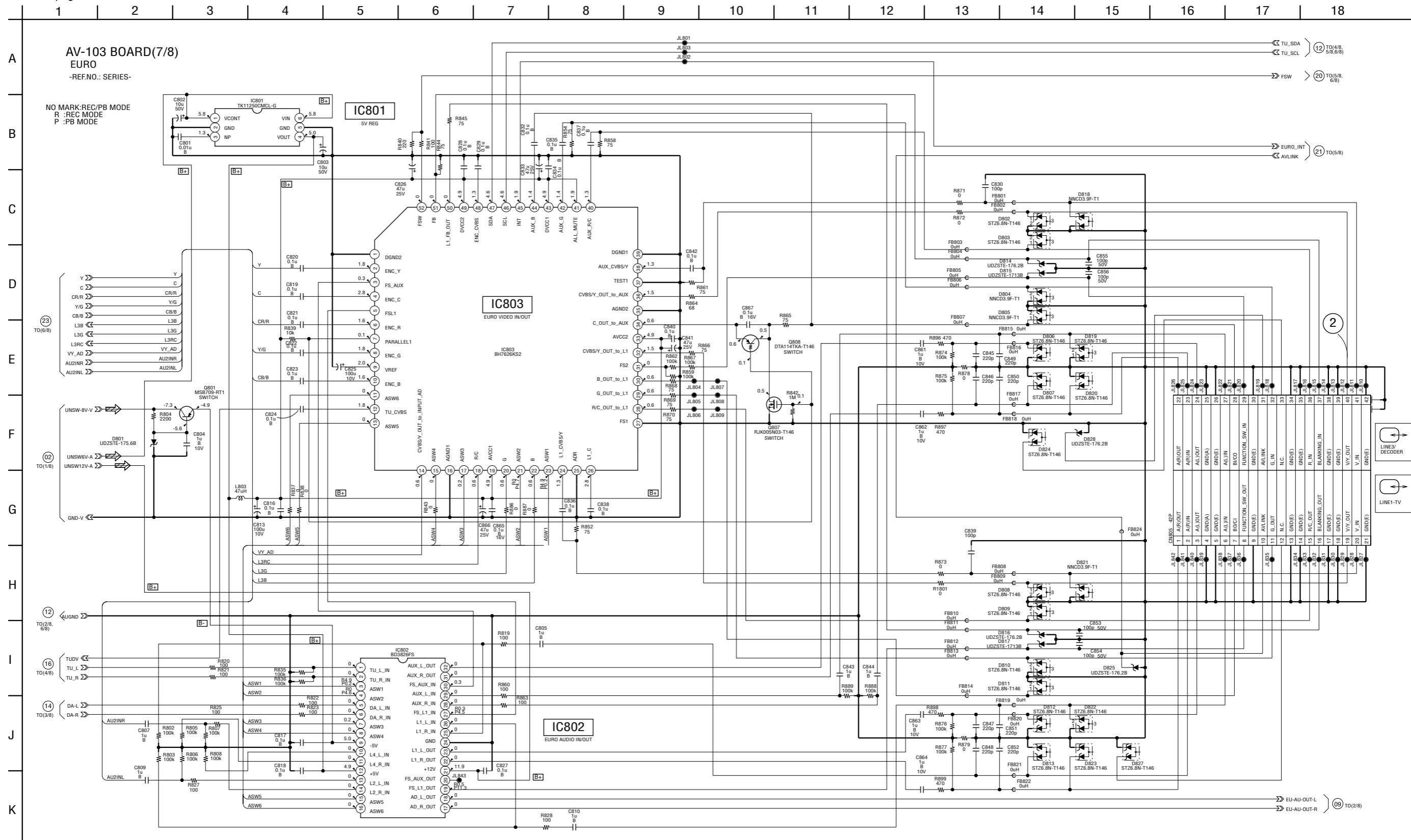
- Refer to page 4-4 for waveforms.



CN501
13P: EXCEPT HX520: AEP3/HX725: AEP3/HX727: AEP3/HX920/HX921
21P: HX520: AEP3/HX725: AEP3/HX727: AEP3/HX920/HX925

For Schematic Diagram

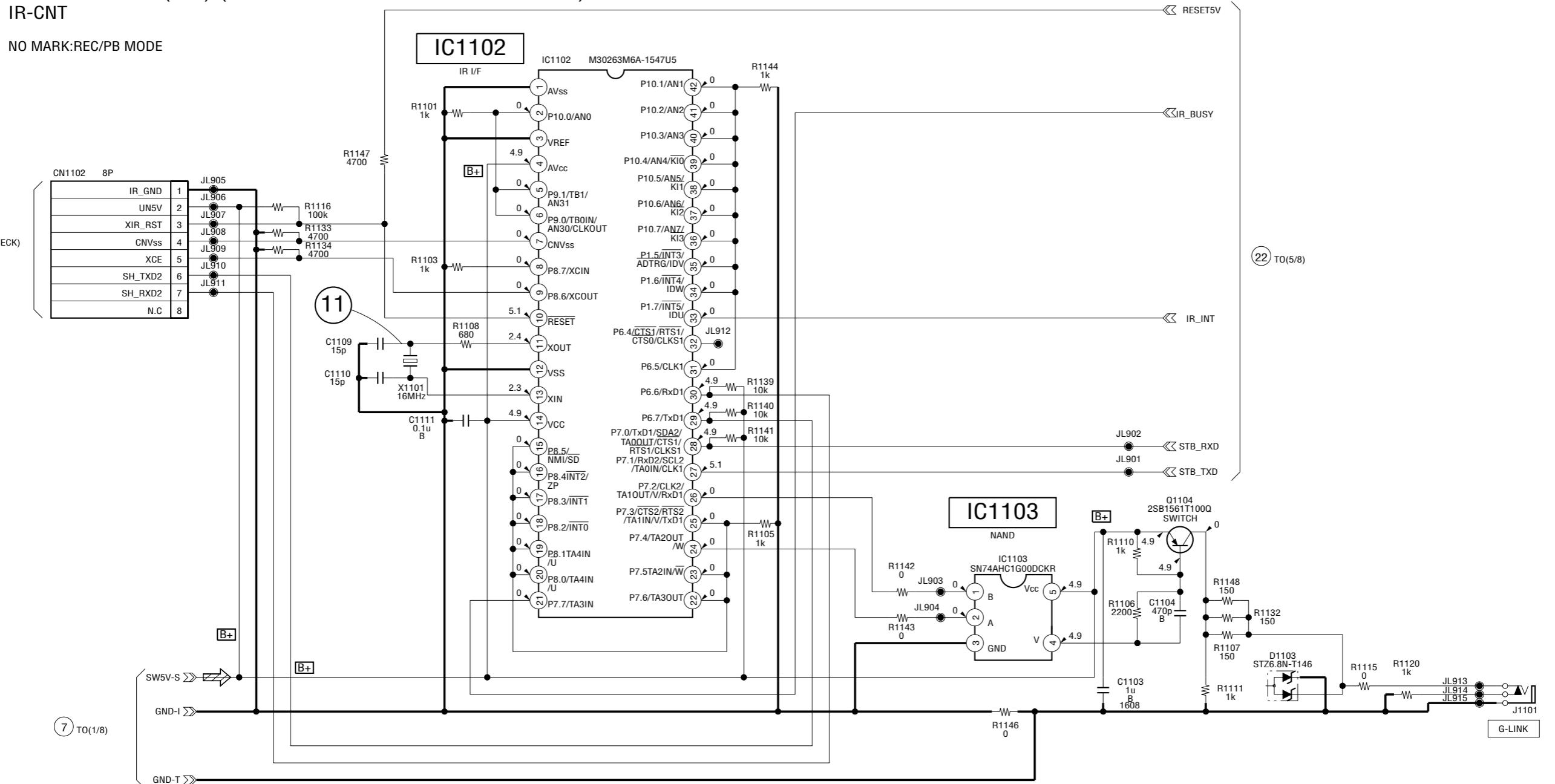
- Refer to page 4-4 for waveforms.

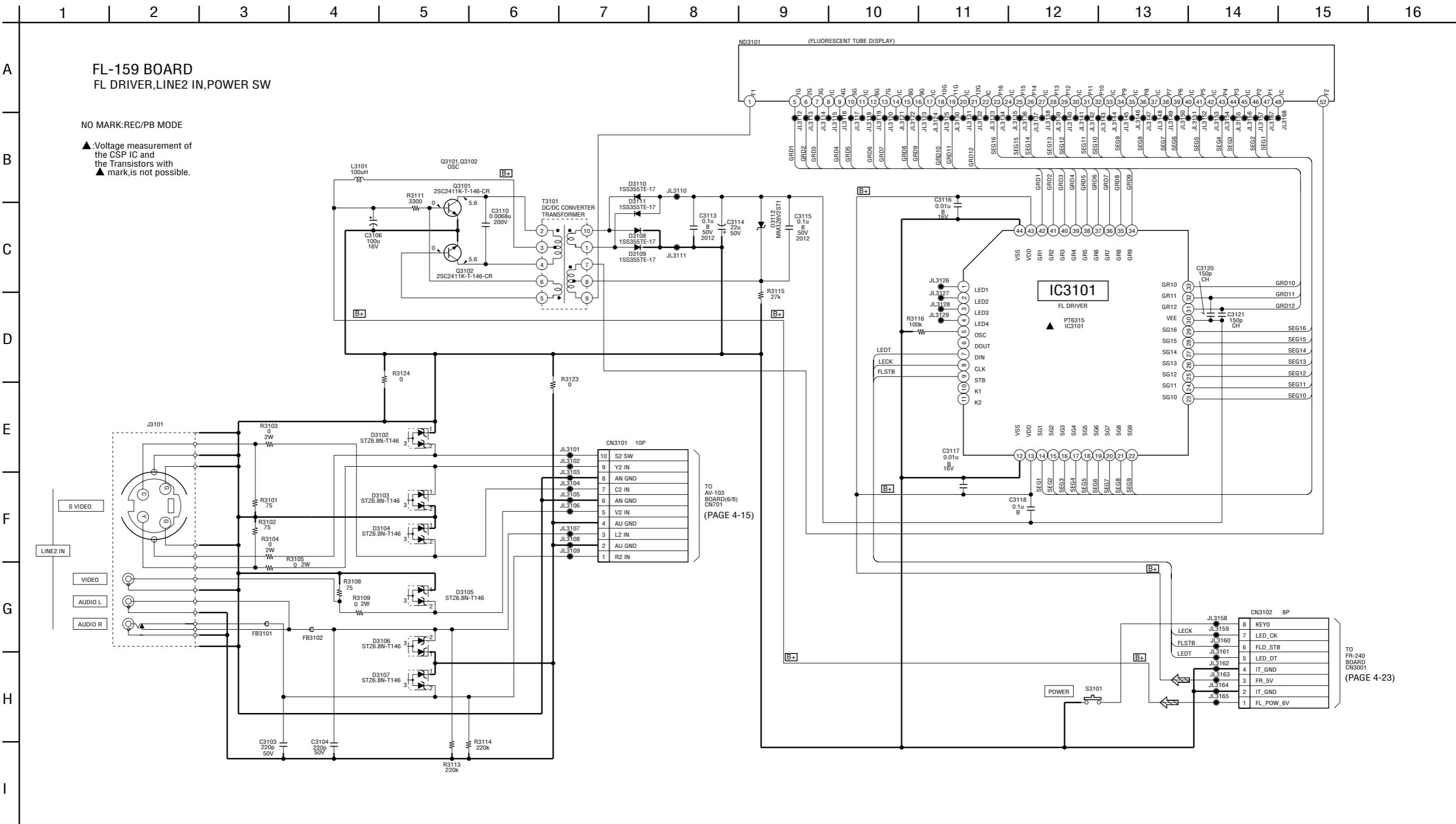


For Schematic Diagram
• Refer to page 4-4 for waveforms.

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

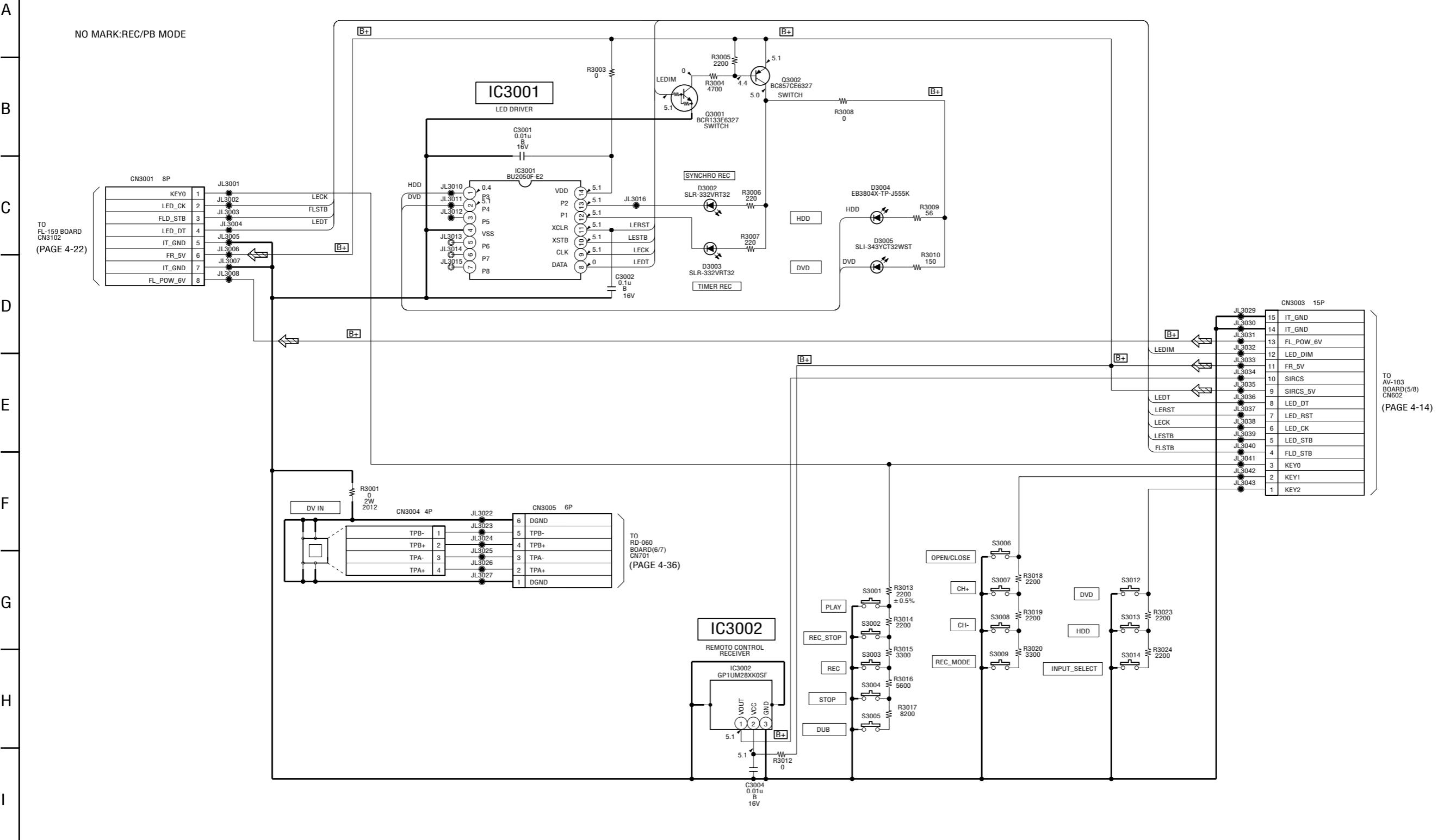
AV-103 BOARD(8/8) (RDR-HX525/HX725/HX727/HX925)





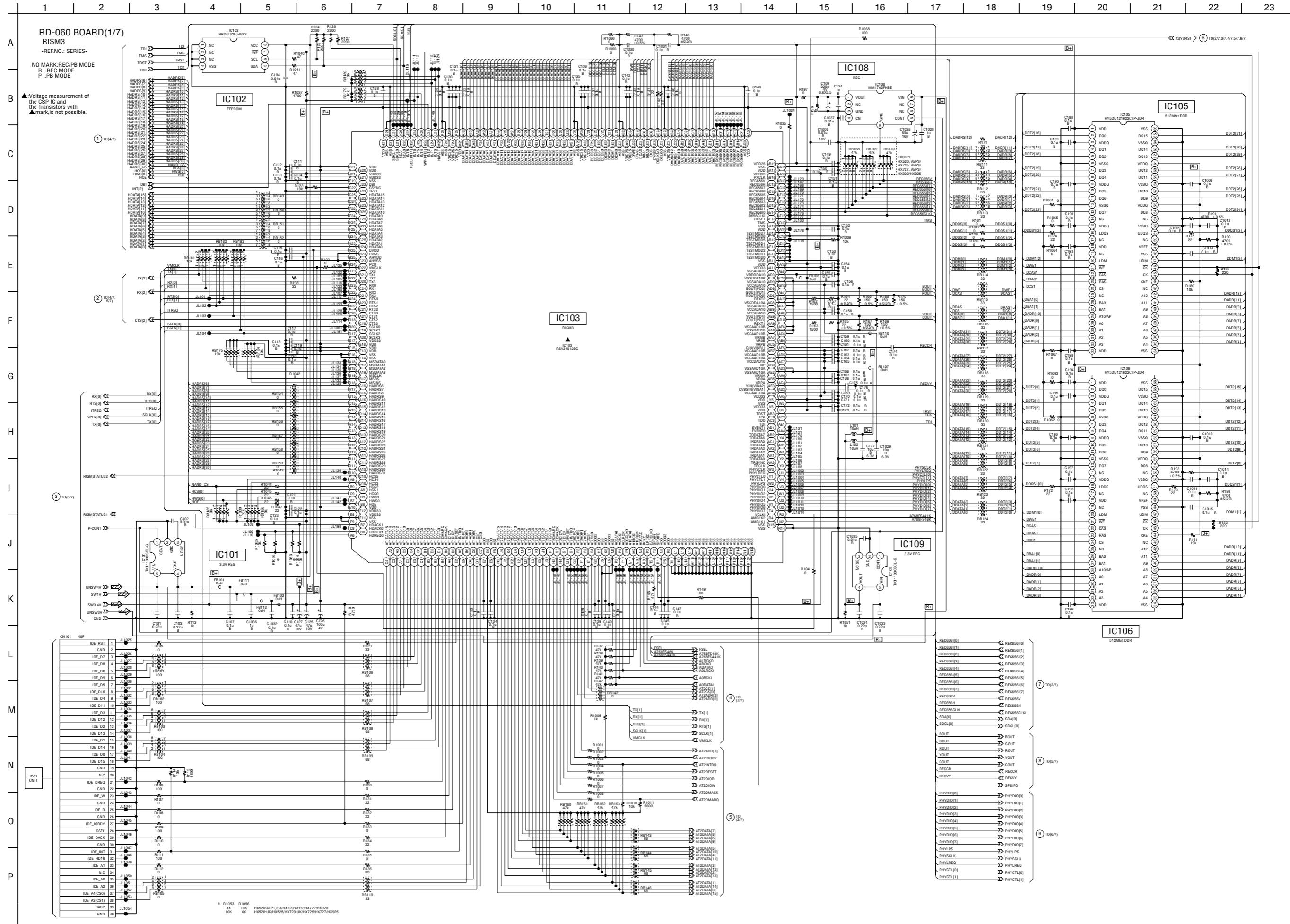
1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15

FR-240 BOARD
DV, REMOCON RECEIVER, FUNCTION SW, LED



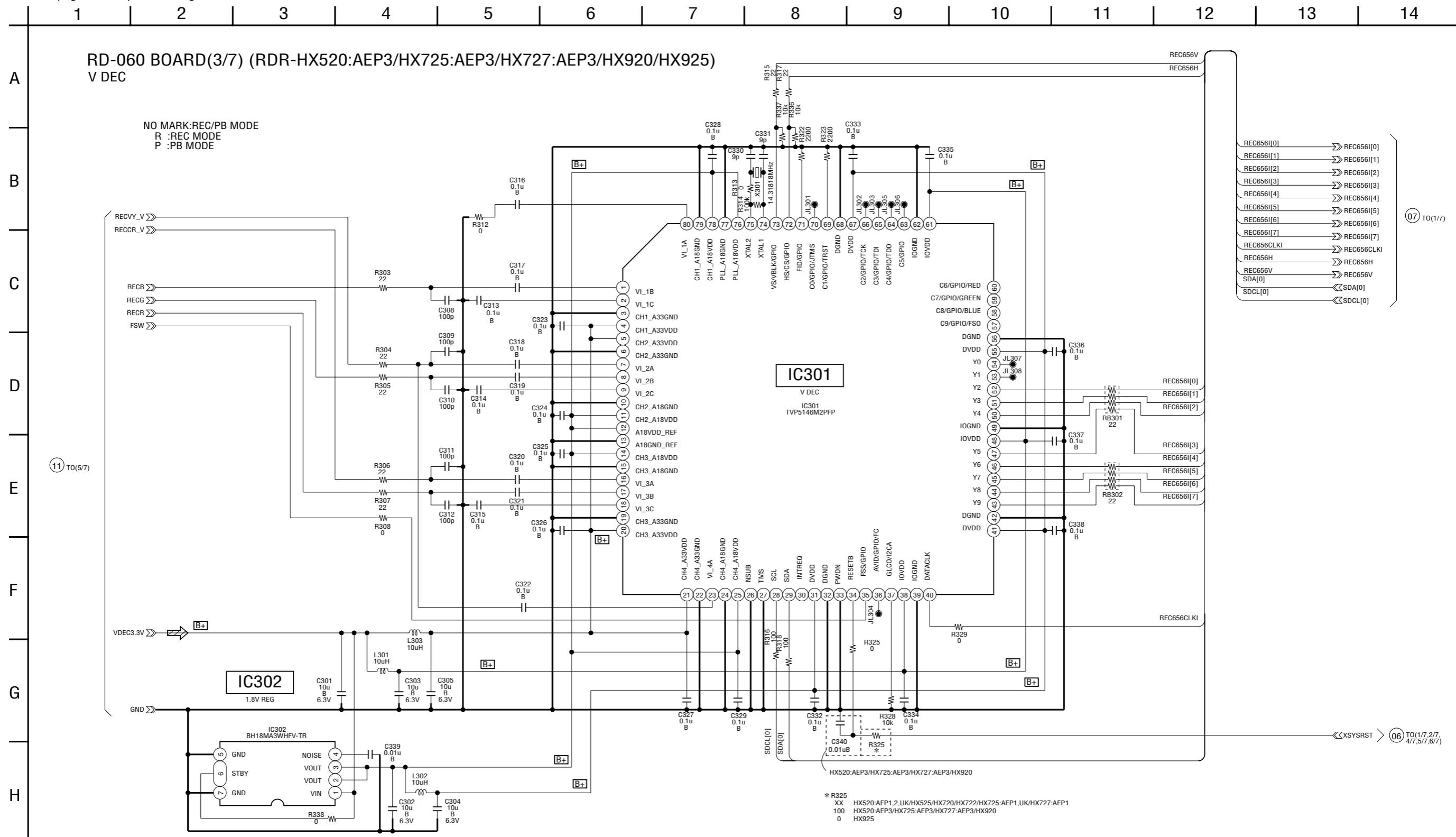
For Schematic Diagram

• Refer to page 4-41 for printed wiring board.



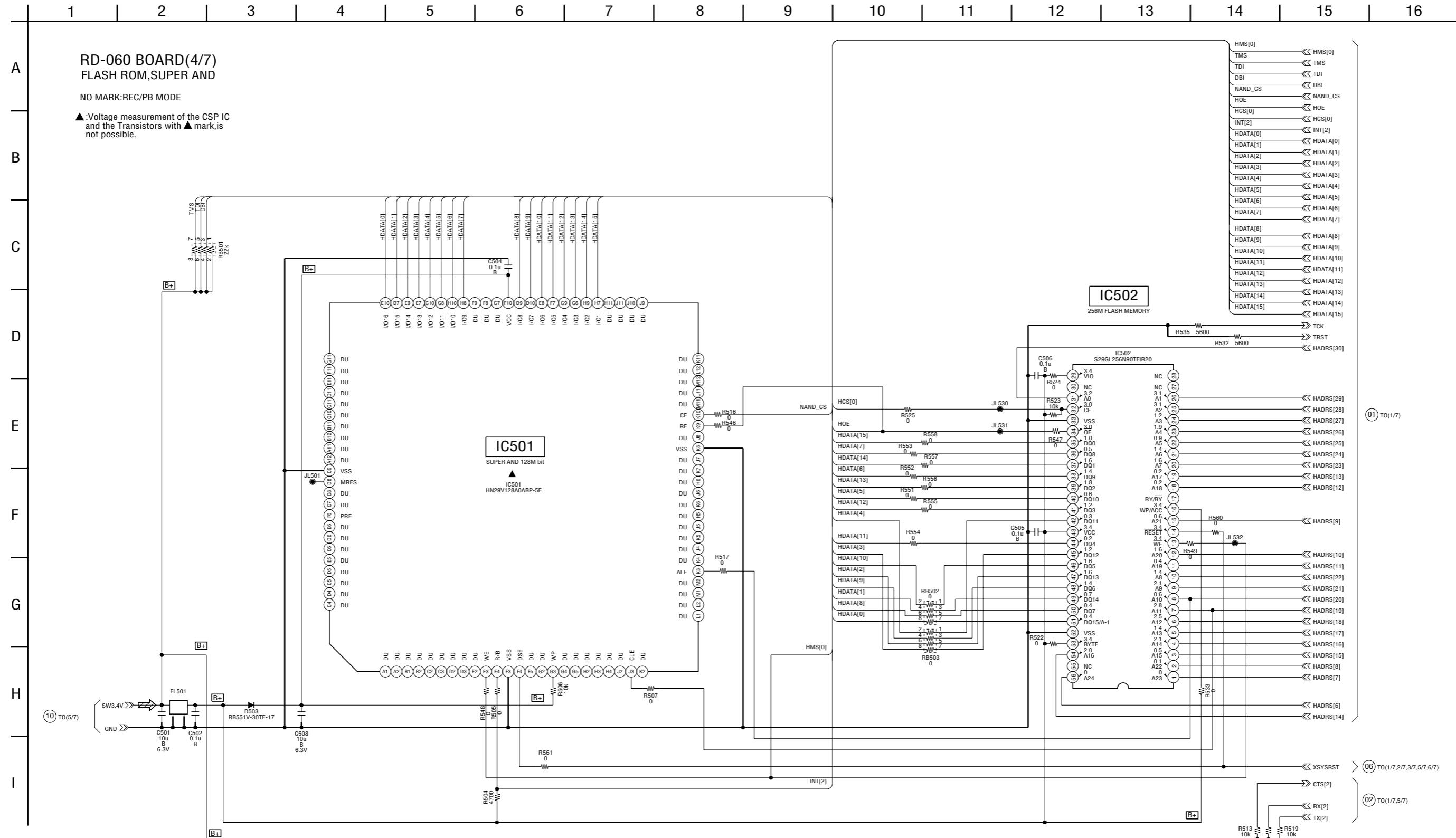
For Schematic Diagram

• Refer to page 4-41 for printed wiring board.



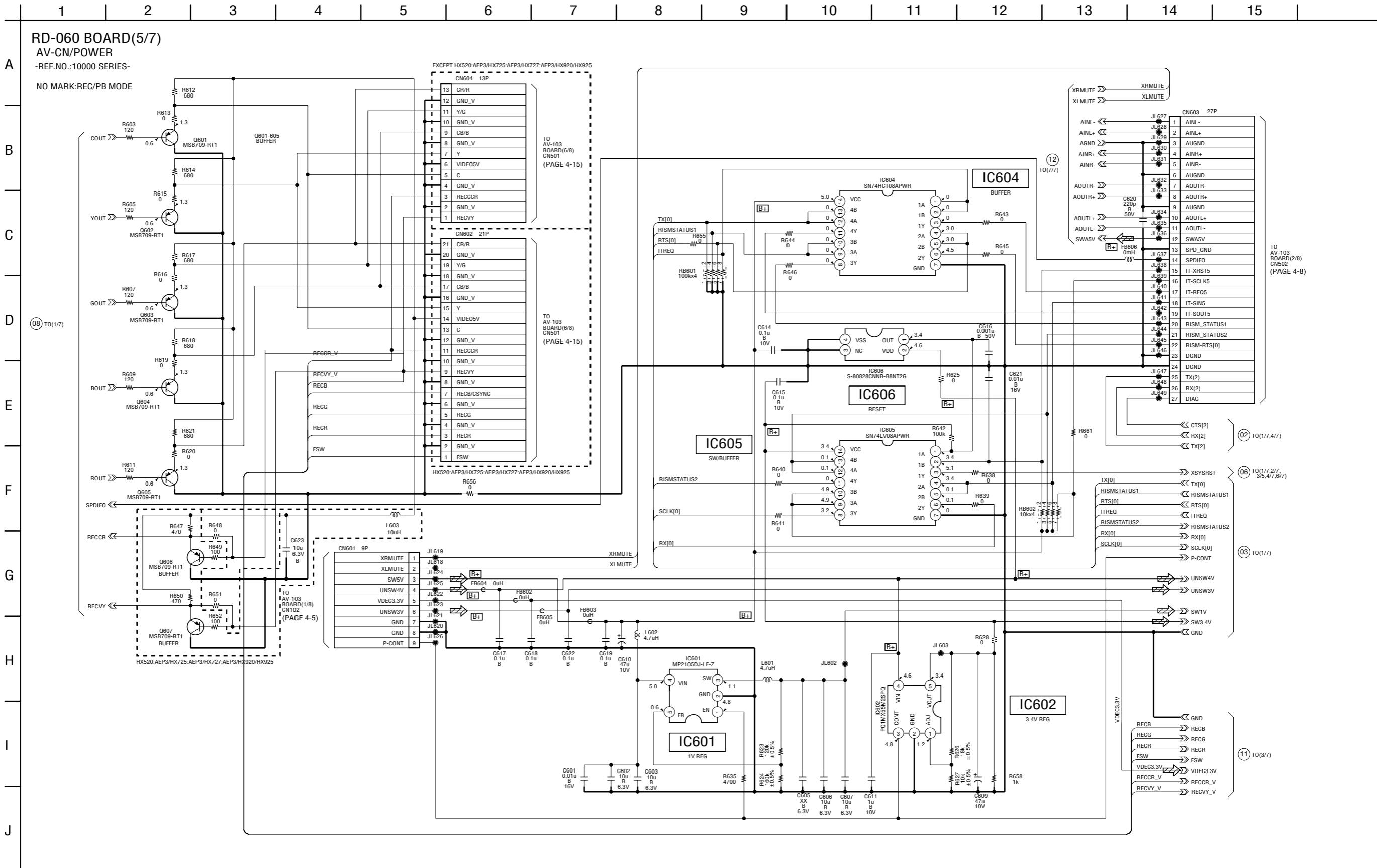
RDR-HX520/HX525/HX720/HX722/ HX725/HX727/HX920/HX925

For Schematic Diagram

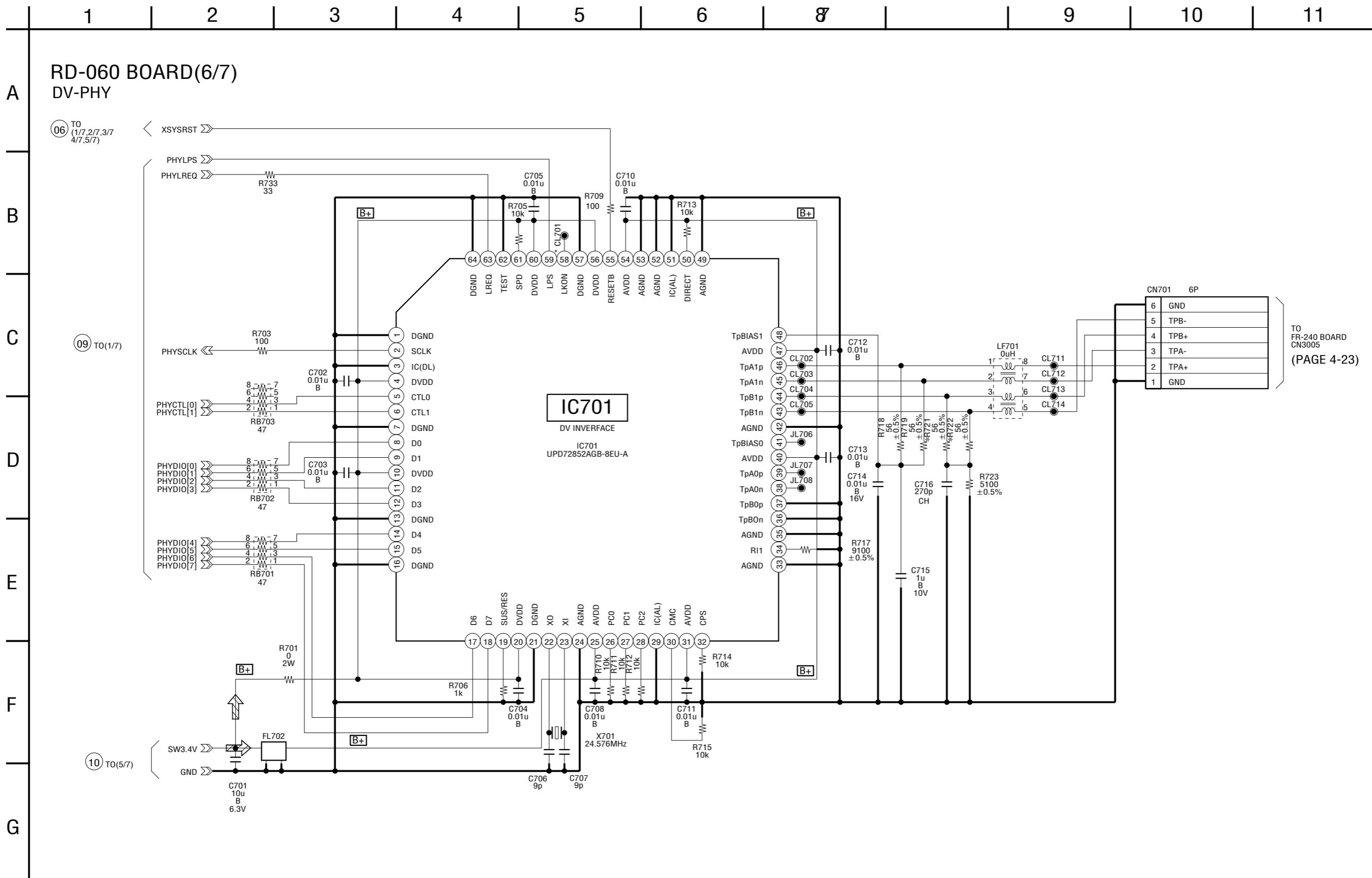


For Schematic Diagram

• Refer to page 4-41 for printed wiring board.

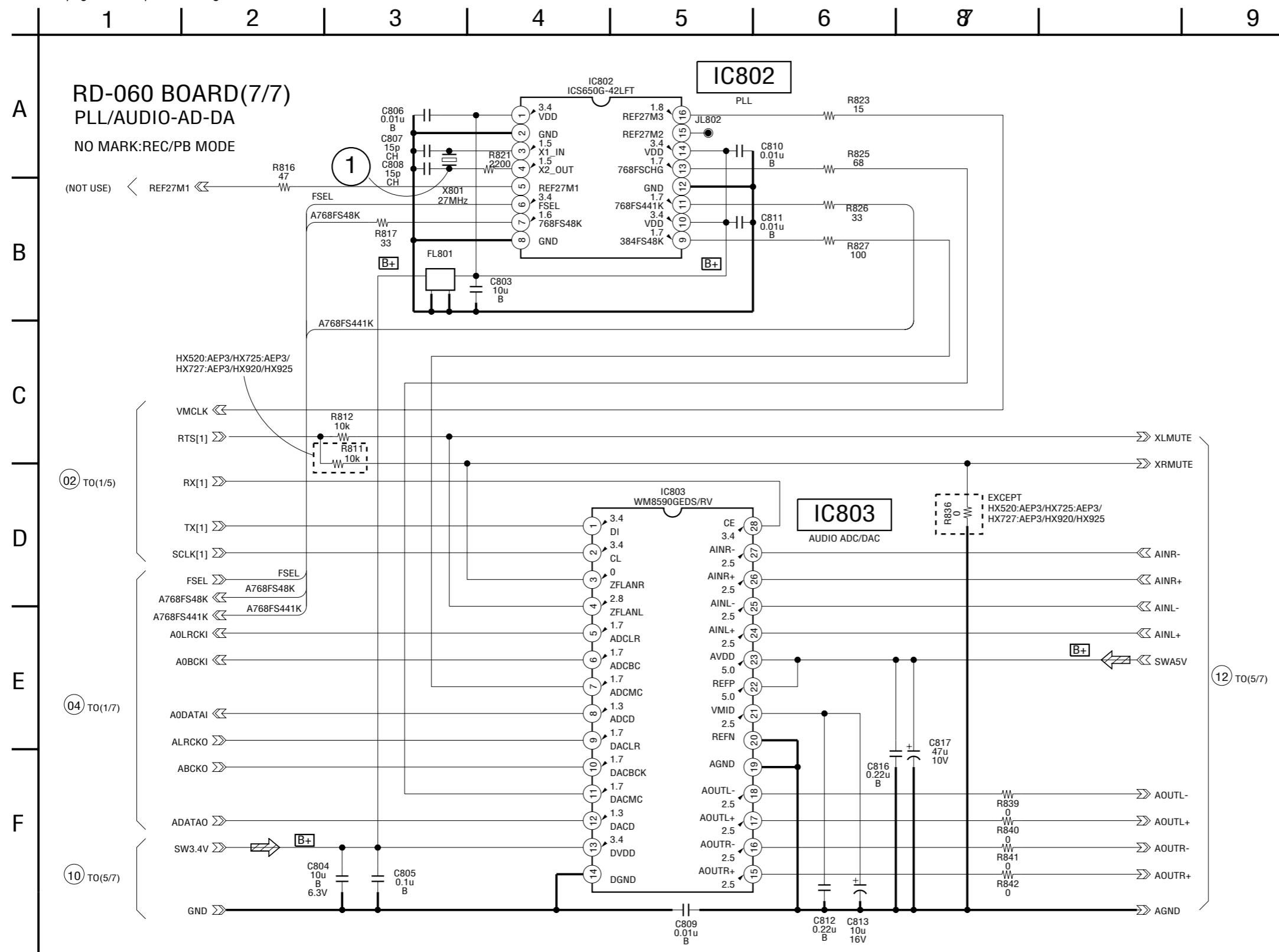


For Schematic Diagram

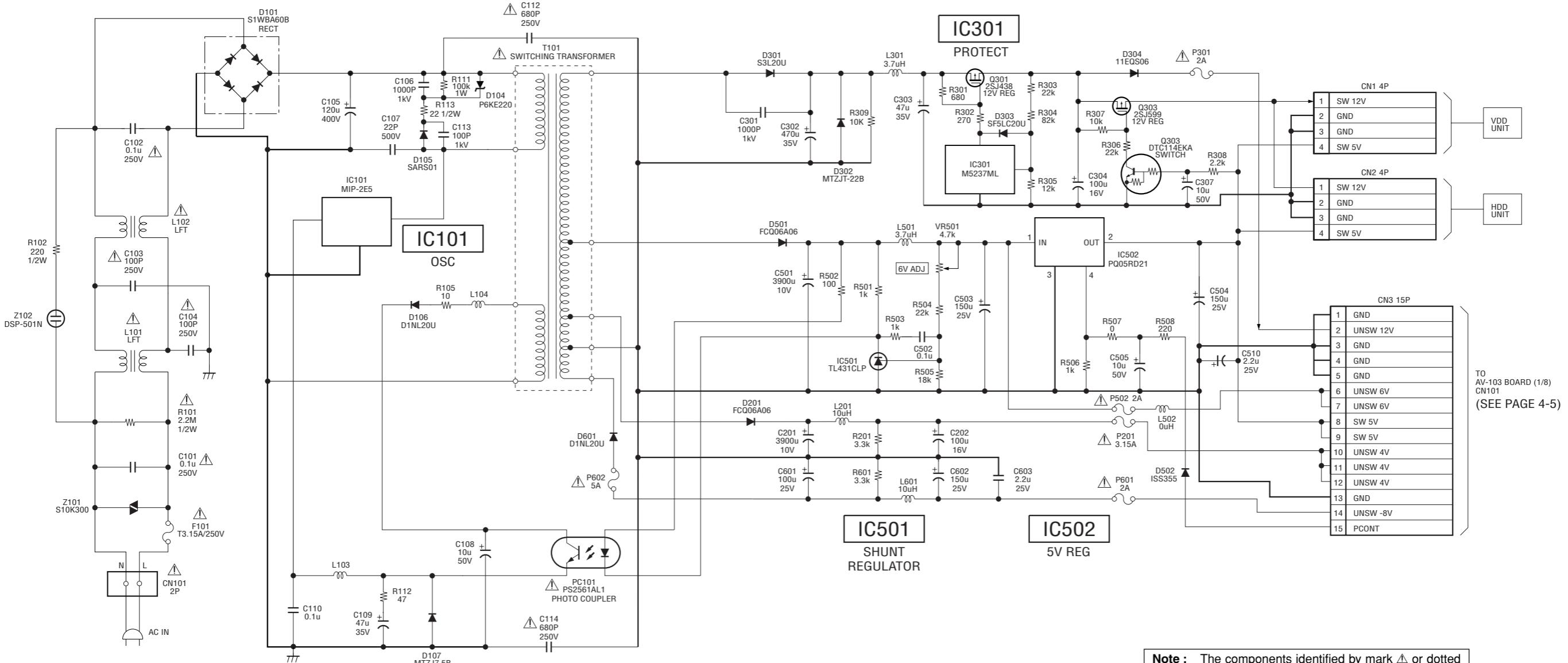


For Schematic Diagram

- Refer to page 4-4 for waveforms.
 - Refer to page 4-41 for printed wiring board



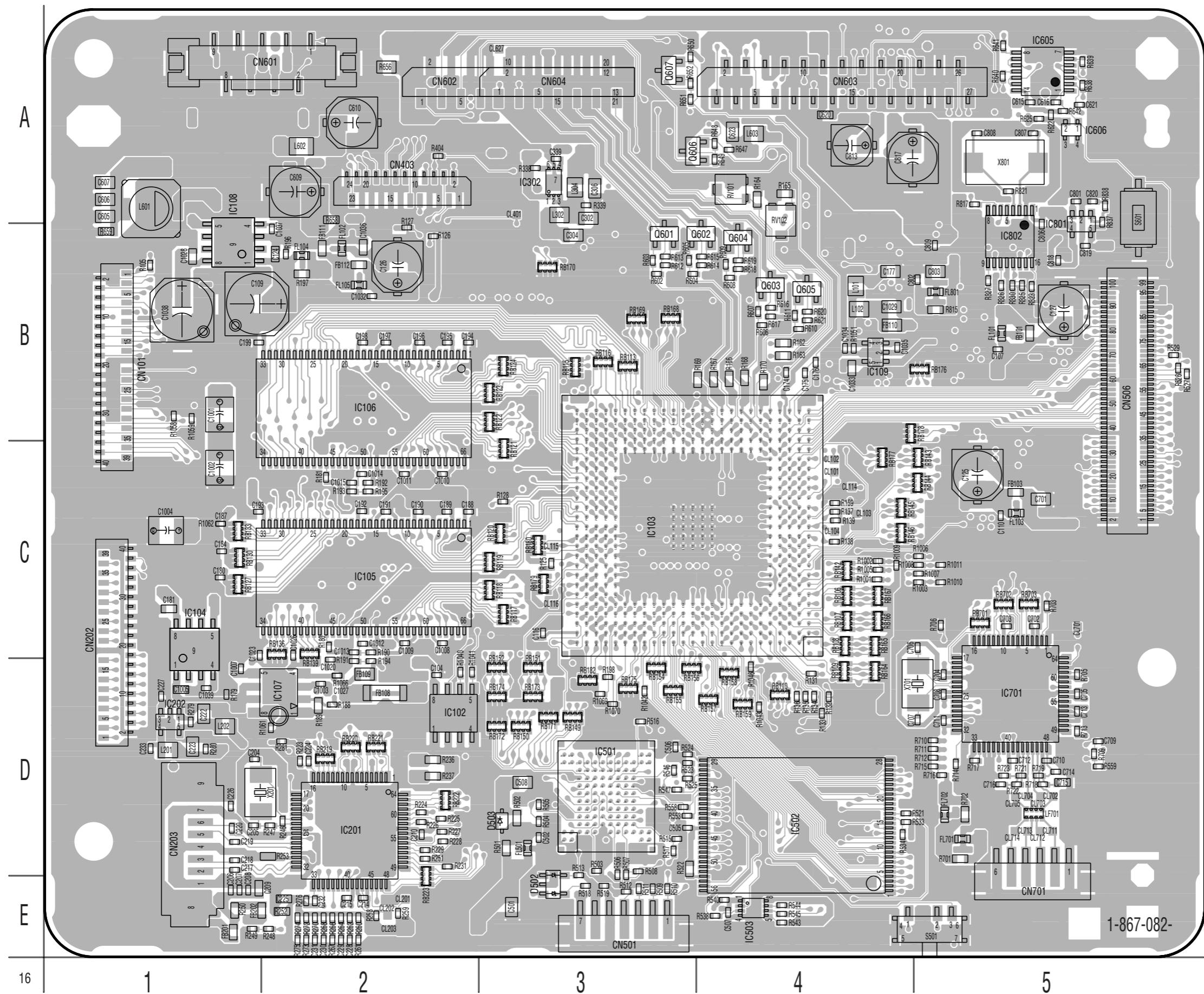
**⚠ SWITCHING REGULATOR
(SRV-1858EK)**



4-3. PRINTED WIRING BOARDS

RD-060 BOARD (SIDE A)

-  : Uses unleaded solder



RD-060 BOARD (SIDE A)

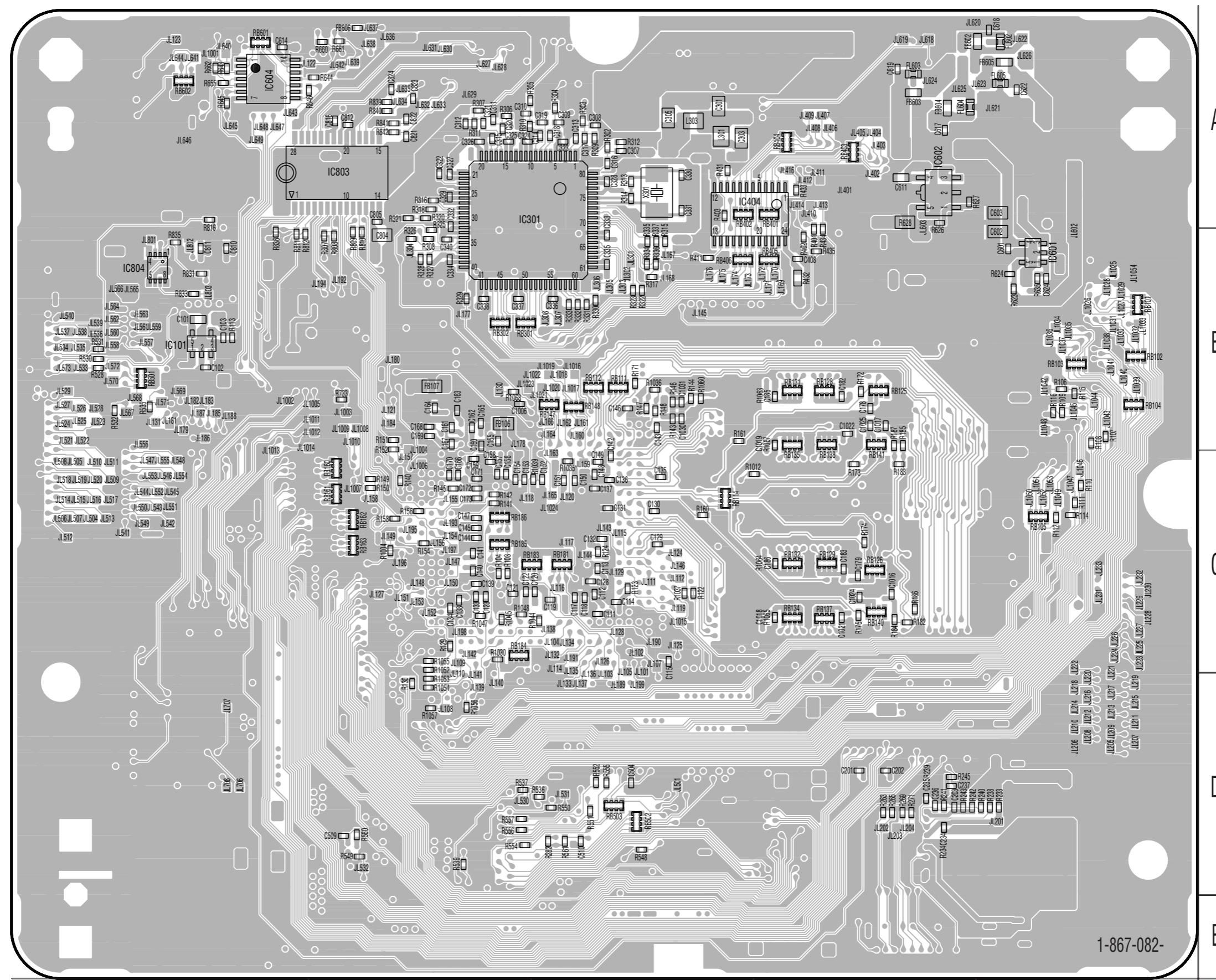
CN101	B-1
CN601	A-1
CN603	A-4
CN604	A-3
CN701	E-5
D503	D-3
IC103	C-3
IC105	C-2
IC106	B-2
IC108	A-1
IC109	B-4
IC501	D-3
IC502	D-4
IC605	A-5
IC606	A-5
IC701	D-5
IC802	B-5
Q601	B-3
Q602	B-4
Q603	B-4
Q604	B-4
Q605	B-4
Q606	A-3

RD-060 BOARD (SIDE B)

•  : Uses unleaded solder.

RD-060 BOARD (SIDE B)

IC101 B-5
IC601 B-1
IC602 A-2
IC604 A-5
IC803 A-4



5

4

3

2

1

16

34

SECTION 5**IC PIN FUNCTION DESCRIPTION****5-1. IT CONTROL IC****(IC603: M306H5MG-A13FP, M306H5MC-C33FP, M306H5FGFP (AV-103 BOARD))**

Pin No.	Pin Name	I/O	Function
1	ONDO	I	Detection of board temperature
2	SIRCSIN	I	Input of remote control signal
3	AVLINK-IN	I	Input of AV LINK scart signal
4	FLD_DATA	O	Output of FLD data signal
5	FLD_IN	I	Fixed at "L"
6	FLD_CLK	O	Output of FLD clock signal
7	BYTE	I	Fixed at "L"
8	CNVSS	I	Connected to GND when the flash is overwritten is VCC
9	XCIN	I	Input of sub-clock signal (32.768KHz)
10	XCOUT	O	Not used
11	_RESET	I	Input of system reset signal input
12	XOUT	O	Output of main-clock signal (10MHz)
13	VSS	—	Digital GND
14	XIN	I	Input of main-clock signal (10MHz)
15	VCC1	—	Power supply input (Digital 5.0V)
16	_NMI	I	Fixed at "H"
17	INT_RTC	I	Input of RTC INT signal from Real Time Clock
18	_IT_REQ	I	Input of communication request signal with system controller
19	SLICE	I	Input of slicer operation detection from 37 pin
20	IT_XRST	O	Output communication reset signal with RISM 3
21	DIMMER	O	Output of LED power supply switch
22	JUST_CLK_2	O	Not used
23	RISM_STATUS2	O	Output of communication status 2 signal with system controller
24	P75	O	Not used
25	P74	O	Not used
26	P73	O	Not used
27	AVLINK-OUT	O	Output of AV LINK signal
28	TU_SCL_1	O	Output of IIC clock signal
29	TU_SDA_1	O	Input/output IIC data signal
30	VSS2	—	Analog GND
31	LP2	O	Output of filter signal 2 (for Fsc)
32	LP3	O	Output of filter signal 3 (forVPS)
33	LP4	O	Output of filter signal 4 (for PDC)
34	VDD2	—	Power supply input (Analog 5V)
35	TEST1	—	Fixed at "L"
36	M1	—	Fixed at "L"
37	SLICEON	O	Output of slicer operation detection
38	IT_SOUT	O	Output of serial TXD 1 signal with system controller
39	IT_SIN	I	Input of serial RXD 1 signal with system controller
40	IT_SCLK	O	Output of serial CLK 1 signal with system controller
41	MONITOR	I	Input of RTS signal with system controller
42	TXD	O	
43	RXD	O	
44	RISM_STATUS3	O	Not used
45	RISM_STATUS1	I	Input of communication status 1 signal with system controller
46	CLKOUT	—	Digital GND
47	PCONT	O	Output of switch system power control signal
48	FAN_DET	I	Input of fan stopping detect signal
49	FAN_ONOFF	O	Output of fan on/off signal ("H":fan on)
50	FAN_SPEED	O	Output of fan direction speed switching signal ("H":high speed)

Pin No.	Pin Name	I/O	Function
51	P_FAIL	I	Input of UNSW6V power off detection signal
52	HDET_1	I	Detection of IN SEL output video signal
53	CE	I	Fixed at "L" (when the flash is overwritten is VCC)
54	HDET_2	O	Not used
55	INSEL_PCONT	O	Output of IC's power supply signal ("H":INSEL)
56	XP_AMUTE	O	Output of muting signal for audio
57	SLICE_V_SW	O	Not used
58	SYNCHRO_DET	—	Detection of selection signal from component video signal
59	AREA0	I	Fixed at "L"
60	AREA1	I	Fixed at "H"
61	XP_VMUTE	O	Output of muting signal for video
62	INSEL_3	O	Not used
63	INSEL1	O	Not used
64	INSEL2	O	Not used
65	INSEL6	O	Not used
66	EEP_SDA	O	Output of IIC data signal with EEPROM
67	EEP_SCL	O	Output of IIC clock signal with EEPROM
68	XEEP_WP	O	Output of IIC writing protect signal with EEPROM
69	VCC2	—	Power supply input (Digital 5V)
70	INSEL4	O	Not used
71	VSS	—	Digital GND
72	INSEL5	O	Not used
73	BS_BIT_SW	O	Output of busy signal for IR control IC
74	BS_BST_CONT	O	Output of INT signal for IR control IC
75	BS_COR_DET	O	Not used
76	BS_CONV_CONT	O	Not used
77	BS_DEC_SW	O	Output of reset signal for IR control IC
78	BS_PCONT	O	Not used
79	BS_VOL_DET	O	Not used
80	SYNC_V_1	I	Input of vertical synchronous signal
81	SYNC_V_2	I	Fixed at "L"
82	NC	I	Input of scart IC's interpolate signal
83	TU_PCONT_1	O	Output of tuner power supply control signal ("H":Power on)
84	AUTO_PRESET_1	O	Output of RF gain control signal
85	TU_PCONT2	O	Not used
86	VA_PCONT	O	Output of power control signal for audio/video
87	AREA4	I	Fixed at "H" or "L". Input of area detection signal
88	AREA5	I	Fixed at "L" or "H". Input of area detection signal
89	AREA6	I	Fixed at "H" or "L". Input of area detection signal
90	FL_PCONT	O	Output of FLD grid power on signal
91	FR_PCONT	O	Not used
92	S2SW	I	Detection of line 2 S-video signal
93	LED_XRESET	O	Output of reset signal for LED and FLD driver
94	LED_STB	O	Output of strobe signal for LED driver
95	FLD_CS	O	Output of FLD driver strobe signal
96	KEY0	I	Input of switching signal 0
97	KEY1	I	Input of switching signal 1
98	KEY2	I	Input of switching signal 2
99	KEY3	I	Fixed at "H"
100	FSW	I	Input of blanking signal for EURO scart
101	TU_AFT_2	I	Fixed at "L"
102	TU_G_MAX_2	I	Fixed at "L"
103	AVSS	—	Analog GND

Pin No.	Pin Name	I/O	Function
104	TU_G_MAX_1	I	Input of tuner gain signal
105	VREF	I	Power supply input (Analog 5V)
106	AVCC	—	Power supply input (Analog 5V)
107	TEST3_CONT	O	Not used
108	START	I	Input of oscillation selection signal
109	SYNCIN	I	Input composite video signal
110	SVREF	I	When slice the vertical synchronous signal input slice power
111	TEST2	I	Fixed at GND
112	VDD3	—	Power supply input (Analog 5V)
113	CVIN1	I	Input of component video signal
114	VSS3	—	Analog GND
115	TEST3	I	Fixed at “L”
116	TU_AFT1	I	Input of tuner ATF control signal

5-2. MAIN CONTROL IC (IC103: R8A34012BG (RD-060 BOARD))

Pin No.	Pin Name	I/O	Function
A1	AT1DATA[11]	I/O	Input/output of data 11 for DVD
A2	AT1DATA[12]	I/O	Input/output of data 12 for DVD
A3	AT1DATA[14]	I/O	Input/output of data 14
A4	AT1DIOW	O	Output of DVD write signal
A5	AT1INTRQ	I	Input of IRQ signal
A6	HDREQ[0]	—	Fixed at “L”
A7	HWS[0]	O	Output of write strove signal 0
A8	HCS[1]	—	Fixed at “H”
A9	HCS[4]	—	Fixed at “H”
A10	HADRS[30]	O	Output of address 30
A11	HADRS[26]	O	Output of address 26
A12	HADRS[22]	O	Output of address 22
A13	HADRS[21]	O	Output of address 21
A14	HADRS[17]	O	Output of address 17
A15	HADRS[13]	O	Output of address 13
A16	HADRS[10]	O	Output of address 10
A17	HADRS[7]	O	Output of address 7
A18	MSDATA[0]	—	Fixed at “L”
A19	MSDATA[3]	—	Fixed at “L”
A20	SCLK[3]	—	Not usedd
A21	CTS[1]	—	Fixed at “H”
A22	TX[2]	O	Output of UART(CSIO)/GPIO
A23	RTS[1]	O	Output of UART(CSIO)/GPIO
A24	RTS[0]	O	Output of UART(CSIO)/GPIO
A25	DVDD		Power supply input (Digital 1.0V)
AA1	TRDATA[1]	O	Not used
AA2	TRDATA[3]	O	Not used
AA3	TRSYNC	O	Not used
AA4	EVENT[0]	O	Not used
AA5	VDD33	—	Power supply input (Digital 3.4V)
AA6	VRMA	—	Fixed at “L”
AA7	VRMB	—	Fixed at “L”
AA8	VSSDAD10		Analog GND
AA9	RREF1(REXT1)	—	Fixed at “L”
AA10	REF2(REXT2)	—	Fixed at “L”
AA11	VDD33	—	Power supply input (Digital 3.4V)
AA12	VDD	—	Power supply input (Digital 1.0V)
AA13	VSS		Digital GND
AA14	VDD	—	Power supply input (Digital 1.0V)
AA15	VSS		Digital GND
AA16	VDD33	—	Power supply input (Digital 3.4V)
AA17	VDD	—	Power supply input (Digital 1.0V)
AA18	DADRS[3]	O	Output of address 3 for SDRAM
AA19	DADRS[10]	O	Output of address 10 for SDRAM
AA20	VDD	—	Power supply input (Digital 1.0V)
AA21	DDATA[8]	I/O	Input/output of data 8 for SDRAM
AA22	VDD25	—	Power supply input (Digital 2.5V)
AA23	DDATA[10]	I/O	Input/output of data 10 for SDRAM
AA24	DDATA[3]	I/O	Input/output of data 3 for SDRAM
AA25	DDATA[4]	I/O	Input/output of data 4 for SDRAM
AB1	TRDATA[4]	O	Not used
AB2	TRDATA[7]	O	Not used
AB3	TRST	I	Fixed at “L”

Pin No.	Pin Name	I/O	Function
AB4	VCCAAD10A	—	Power supply input (Analog 3.3V)(ADC)
AB5	VROA	—	Fixed at “L”
AB6	VROB	—	Fixed at “L”
AB7	VCCAAD10B	—	Power supply input (Analog 3.3V)(ADC)
AB8	VCCADA10	—	Power supply input (Analog 3.3V)(DAC)
AB9	VCCADA10	—	Power supply input (Analog 3.3V)(DAC)
AB10	VCCADA10	—	Power supply input (Analog 3.3V)(DAC)
AB11	VSS		Digital GND
AB12	TESTMOD[5]	O	Fixed at “L”
AB13	REC656V	I	Input of vertical synchronization signal
AB14	REC656O[1]	O	Not used
AB15	REC656O[3]	O	Not used
AB16	PXCLK	O	Not used
AB17	REC656O[7]	O	Not used
AB18	DADRS[5]	O	Output of address 5 for SDRAM
AB19	VDD25	—	Power supply input (Digital 2.5V)(I/O)
AB20	DADRS[7]	O	Output of address 7 for SDRAM
AB21	DADRS[9]	O	Output of address 9 for SDRAM
AB22	DADRS[12]	O	Output of address 12 for SDRAM
AB23	VSS		Digital GND
AB24	DDATA[1]	I/O	Input/output of data 1 for SDRAM
AB25	DDATA[2]	I/O	Input/output of data 2 for SDRAM
AC1	TRDATA[5]	O	Not used
AC2	TCK	I	Fixed at “L”
AC3	TDO	O	Not used
AC4	VRPA	—	Fixed at “L”
AC5	VRPB	—	Fixed at “L”
AC6	VSSAAD10B		Analog GND
AC7	VCCDAD10		Power supply input (Digital 3.3V)(ADC)
AC8	VSSDDA10A	—	Digital GND
AC9	VDDDDA10	—	Power supply input (Digital 1.0V)
AC10	VSSDDA10B	—	Digital GND
AC11	TESTMOD[1]	O	Digital GND
AC12	TESTMOD[6]	O	Digital GND
AC13	REC656H	I	Input of horizontal synchronization signal
AC14	REC656I[1]	I	Input of digital video signal [1]
AC15	REC656O[2]	O	Not used
AC16	REC656O[4]	O	Not used
AC17	REC656I[7]	I	Input of digital video signal [7]
AC18	DADRS[4]	O	Output of address 4 for SDRAM
AC19	DADRS[6]	O	Output of address 6 for SDRAM
AC21	DADRS[8]	O	Output of address 8 for SDRAM
AC20	VSS		Digital GND
AC22	DADRS[11]	O	Output of address 11 for SDRAM
AC23	DWE	O	Output of write enable signal
AC24	VDD25	—	Power supply input (Digital 2.5V)
AC25	DDATA[0]	I/O	Input/output of data 0 for SDRAM
AD1	EVENT[1]	O	Not used
AD2	VINA1	I	Input of analog video (CVBS)
AD3	VSSAAD10A		Analog GND
AD4	NC		Not used
AD5	VCCAAD10B	—	Power supply input (Analog 3.3V)(DAC)
AD6	ROUT(PDO)	O	Output of analog video signal (red)

Pin No.	Pin Name	I/O	Function
AD7	VSSADA10	—	Analog GND
AD8	BOUT(PD2)	O	Output of analog video signal (blue)
AD9	VSSADA10	—	Analog GND
AD10	COUT(PD3)	O	Output of analog video signal (chroma)
AD11	TESTMOD[2]	O	Digital GND
AD12	TESTMOD[7]	O	Digital GND
AD13	TMS	I	Input of SDI-ICE/JTAG TMS
AD14	REC656O[0]	O	Not used
AD15	REC656I[2]	I	Input of digital video signal [2]
AD16	REC656I[4]	I	Input of digital video signal [4]
AD17	REC656O[5]	O	Not used
AD18	REC656O[6]	O	Not used
AD19	DADRS[1]	O	Output of address 1 for SDRAM
AD20	DBA[1]		Output of bank address 1 for SDRAM
AD21	VDD25	—	Power supply input (Analog 2.5V)
AD22	DCS	O	Output of chip select signal
AD23	DCAS	O	Output of CAS signal for SDRAM
AD24	DCLKO	O	Output of clock signal
AD25	VSS		Digital GND
AE1	TD1	I	Not used
AE2	VSSAAD10A		Analog GND
AE3	VINA2	I	Input of analog video signal (Y)
AE4	VCCAAD10A	—	Power supply input (Analog 3.3V)(DAC)
AE5	CIN (VINB1)	I	Input of analog video signal (C)
AE6	VSSAAD10B		Analog GND
AE7	GOUT(PD1)	O	Output of analog video signal (green)
AE8	VSSADA10	—	Analog GND (DAC)
AE9	YOUT(PD4)	O	Output of analog video signal (Y)
AE10	TESTMOD[0]	O	Digital GND
AE11	TESTMOD[3]	O	Digital GND
AE12	TESTMOD[4]	O	Digital GND
AE13	RESET	I	Input of hardware reset signal
AE14	REC656I[0]	I	Input of digital video signal [0]
AE15	R656CLKI	I	Input of clock signal
AE16	REC656I[3]	I	Input of digital video signal [3]
AE17	REC656I[5]	I	Input of digital video signal [5]
AE18	REC656I[6]	I	Input of digital video signal [6]
AE19	DADRS[2]	O	Output of address 2 for SDRAM
AE20	DADRS[0]	O	Output of address 0 for SDRAM
AE21	DBA[0]	O	Output of bank address 0 for SDRAM
AE22	VSS		Digital GND
AE23	DRAS	O	Output of RAS signal for SDRAM
AE24	DCLKNO	O	Output of negative clock signal
AE25	DVREF	I	Input of reference voltage
B1	AT1DATA[4]	I/O	Input/output of data 4 for DVD
B2	AT1DATA[3]	I/O	Input/output of data 3 for DVD
B3	AT1DATA[1]	I/O	Input/output of data 1 for DVD
B4	AT1DMAREQ	I	Input of request signal from DMA
B5	AT1DMACK	O	Input of ACK signal from DMA
B6	AT1ADR[2]	O	Output of devise address 2 for DVD
B7	HDACK[1]	—	Fixed at "H"
B8	HOE	O	Output of output enable signal
B9	HCS[2]	O	Output of chip select signal/GPIO 2

Pin No.	Pin Name	I/O	Function
B10	HADRS[31]	O	Output of address 31
B11	HADRS[27]	O	Output of address 27
B12	HADRS[23]	O	Output of address 23
B13	HADRS[20]	O	Output of address 20
B14	HADRS[16]	O	Output of address 16
B15	HADRS[12]	O	Output of address 12
B16	HADRS[8]	O	Output of address 8
B17	MSBS	—	Fixed at “L”
B18	MSDATA[2]	—	Fixed at “L”
B19	MSCLK	—	Fixed at “L”
B20	SCLK[0]	O	Output of UART(CSIO)/GPIO
B21	TX[1]	O	Output of UART(CSIO)/GPIO
B22	RTS[2]	—	Fixed at “H”
B23	DVSS		Digital GND
B24	PCO	O	Not used
B25	AHVDD		Power supply input (Analog 3.3V)
C1	AT1DATA[5]	I/O	Input/output of data 5 for DVD
C2	AT1DATA[10]	I/O	Input/output of data 10 for DVD
C3	AT1DATA[13]	I/O	Input/output of data 13 for DVD
C4	AT1DATA[15]	I/O	Input/output of data 15 for DVD
C5	AT1IORDY	I	Input of I/O ready signal
C6	AT1ADR[0]	O	Output of devise address 0 for DVD
C7	AT1CS[0]	O	Output of chip select signal 0 for DVD
C8	HDACK[0]	—	Output of transfer acknowledge signal/GPIO 0
C9	HCS[0]	O	Output of chip select signal 0
C10	HCS[5]	—	Output of chip select signal/GPIO 5
C11	HADRS[28]	O	Output of address 28
C12	HADRS[24]	O	Output of address 24
C13	HADRS[19]	O	Output of address 19
C14	HADRS[15]	O	Output of address 15
C15	HADRS[11]	O	Output of address 11
C16	HADRS[6]	O	Output of address 6
C17	MSDATA[1]	—	Fixed at “L”
C18	CTS[3]	—	Not used
C19	SCLK[1]	O	Output of UART(CSIO)/GPIO
C20	CTS[0]	O	Output of UART(CSIO)/GPIO
C21	RTS[3]	—	Not used
C22	RX[2]	O	Output of UART(CSIO)/GPIO
C23	AHVSS		Digital GND
C24	RX[1]	O	Output of UART(CSIO)/GPIO
C25	HDATA[15]	—	Input/output of data 15
D1	AT1DATA[6]	I/O	Input/output of data 6
D2	AT1DATA[9]	I/O	Input/output of data 9 for DVD
D3	AT1DATA[2]	I/O	Input/output of data 2 for DVD
D4	AT1DATA[0]	I/O	Input/output of data 0
D5	AT1DIOR	O	Output of I/O read signal
D6	AT1ADR[1]	O	Output of devise address 1 for DVD
D7	AT1CS[1]	O	Output of chip select signal 1 for DVD
D8	HDREQ[1]	—	Fixed at “L”
D9	HWS[1]	O	Fixed at “H”
D10	HCS[3]	—	Fixed at “H”
D11	HADRS[29]	O	Output of address 29
D12	HADRS[25]	O	Output of address 25

Pin No.	Pin Name	I/O	Function
D13	HADRS[18]	O	Output of address 18
D14	HADRS[14]	O	Output of address 14
D15	HADRS[9]	O	Output of address 9
D16	MSINS	—	Fixed at "L"
D17	SCLK[2]	—	Fixed at "H"
D18	CTS[2]	O	Output of UART(CSIO)/GPIO
D19	TX[0]	O	Output of UART(CSIO)/GPIO
D20	TX[3]	O	Fixed at "H"
D21	RX[3]	O	Fixed at "H"
D22	VMCLK	I	Input of 27MHz system clock
D23	RX[0]	O	Output of UART(CSIO)/GPIO
D24	HDATA[13]	—	Input/output of data 13
D25	HDATA[10]	—	Input/output of data 10
E1	AT2CS[1]	O	Output of chip select signal for HDD driver
E2	AT1RESET	O	Output of reset signal
E3	AT1DATA[7]	I/O	Input/output of data 7 for DVD
E4	AT1DATA[8]	I/O	Input/output of data 8 for DVD
E5	VDD	—	Power supply input (Digital 1.0V)
E6	VSS		Digital GND
E7	VDD	—	Power supply input (Digital 1.0V)
E8	VDD33	—	Power supply input (Digital 3.3V)
E9	VSS		Digital GND
E10	VDD	—	Power supply input (Digital 1.0V)
E11	VSS		Digital GND
E12	VDD33	—	Power supply input (Digital 3.3V)
E13	VDD	—	Power supply input (Digital 1.0V)
E14	VSS		Digital GND
E15	VDD	—	Power supply input (Digital 1.0V)
E16	VSS		Digital GND
E17	VDD33	—	Power supply input (Digital 3.3V)
E18	VDD	—	Power supply input (Digital 1.0V)
E19	VSS		Digital GND
E20	VDD	—	Power supply input (Digital 1.0V)
E21	VDD33	—	Power supply input (Digital 3.3V)
E22	HDATA[4]	I/O	Input/output of data 4
E22	HDATA[14]	I/O	Input/output of data 14
E23	HDATA[12]	I/O	Input/output of data 12
E24	HDATA[9]	I/O	Input/output of data 9
E25	HDATA[8]	I/O	Input/output of data 8
F1	AT2ADR[1]	O	Output of device address 1 for HDD driver
F2	AT2ADR[0]	O	Output of device address 0 for HDD driver
F3	AT2ADR[2]	O	Output of device address 2 for HDD driver
F4	AT2CS[0]	O	Output of chip select signal for HDD driver
F5	VSS		Digital GND
F21	VDD	—	Power supply input (Digital 1.0V)
F22	HDATA[11]	I/O	Input/output of data 11
F23	TEST	—	Fixed at GND
F24	HDATA[7]	I/O	Input/output of data 7
F25	HDATA[5]	I/O	Input/output of data 5
G1	AT2DIOR	O	Output of I/O read signal
G2	AT2IORDY	I	Input of I/O ready signal
G3	AT2DMACK	O	Output of ACK signal from DMA
G4	AT2INTRQ	I	Input of IRQ signal

Pin No.	Pin Name	I/O	Function
G5	VDD33	—	Power supply input (Digital 3.3V)
G21	VSS		Digital GND
G22	CSYNC	—	Fixed at "H"
G23	HDATA[6]	—	Input/output of data 6
G24	HDATA[3]	—	Input/output of data 3
G25	HDATA[2]	—	Input/output of data 2
H1	AT2DATA[0]	I/O	Input/output of data 0 for HDD driver
H2	AT2DATA[15]	I/O	Input/output of data 15 for HDD driver
H3	AT2DMAREQ	I	Input of request signal from DMA
H4	AT2DIOW	O	Output of I/O write signal
H5	VDD	—	Power supply input (Digital 1.0V)
H21	VDD	—	Power supply input (Digital 1.0V)
H22	HDATA[4]	—	Input/output of data 4
H23	HDATA[1]	—	Input/output of data 1
H24	HDATA[0]	—	Input/output of data 0
H25	INT[7]	O	Output of interrupt request/GPIO
J1	AT2DATA[2]	I/O	Input/output of data 2 for HDD driver
J2	AT2DATA[13]	I/O	Input/output of data 13 for HDD driver
J3	AT2DATA[1]	I/O	Input/output of data 1 for HDD driver
J4	AT2DATA[14]	I/O	Input/output of data 14 for HDD driver
J5	VSS		Digital GND
J21	VDD33	—	Power supply input (Digital 3.3V)
J22	INT[8]	—	Not used
J23	DBI	I	Input of SDI-ICE/JTAG TRST
J24	INT[6]	—	Fixed at "H"
J25	INT[5]	—	Fixed at "H"
K1	AT2DATA[4]	I/O	Input/output of data 4 for HDD driver
K2	AT2DATA[11]	I/O	Input/output of data 11 for HDD driver
K3	AT2DATA[3]	—	Input/output of data 3 for HDD driver
K4	AT2DATA[12]	I/O	Input/output of data 12 for HDD driver
K5	VDD	—	Power supply input (Digital 1.0V)
K21	VSS		Digital GND
K22	INT4		Fixed at "H"
K23	WP(INT3)		Fixed at "H"
K24	SDA[1]	—	Fixed at "H"
K25	SDA[0]	—	Fixed at "H"
L1	AT2DATA[6]	I/O	Input/output of data 6 for HDD driver
L2	AT2DATA[9]	—	Input/output of data 9 for HDD driver
L3	AT2DATA[5]	—	Input/output of data 5 for HDD driver
L4	AT2DATA[10]	I/O	Input/output of data 10 for HDD driver
L5	VDD33	—	Power supply input (Digital 3.3V)
L11	VSS		Digital GND
L12	VSS		Digital GND
L13	VSS		Digital GND
L14	VSS		Digital GND
L15	VSS		Digital GND
L21	SDCL[0]	—	Fixed at "H"
L22	SDCL[1]	—	Fixed at "H"
L23	INT[2]	I	Input of interrupt request/GPIO
L24	INT[1]	—	Fixed at "H"
L25	INT[0]	—	Fixed at "H"
M1	AT2RESET	O	Output of reset signal
M2	A1BCKI	I	Fixed at "H"

Pin No.	Pin Name	I/O	Function
M3	AT2DATA[7]	I/O	Input/output of data 7 for HDD driver
M4	AT2DATA[8]	I/O	Input/output of data 8 for HDD driver
M5	VSS		Digital GND
M11	VSS		Digital GND
M12	VSS		Digital GND
M13	VSS		Digital GND
M14	VSS		Digital GND
M15	VSS		Digital GND
M21	VDD	—	Power supply input (Digital 1.0V)
M22	DDATA[30]	I/O	Input/output of data 30 for SDRAM
M23	DDATA[31]	I/O	Input/output of data 31 for SDRAM
M24	VDD25	—	Power supply input (Digital 2.5V)
M25	HWAIT	—	Fixed at "H"
N	VDD	—	Power supply input (Digital 1.0V)
N1	A1DDATAI	I	Fixed at "H"
N2	AMCLK1	I	Input of audio master clock (36.864MHz)
N3	A1LRCKI	I	Fixed at "H"
N4	ADATAO	O	Output of digital audio signal
N5	VDD	—	Power supply input (Digital 1.0V)
N11	VSS		Digital GND
N12	VSS		Digital GND
N13	VSS		Digital GND
N14	VSS		Digital GND
N15	VSS		Digital GND
N21	DDATA[21]	I/O	Input/output of data 21 for SDRAM
N22	DDATA[28]	I/O	Input/output of data 28 for SDRAM
N23	DDATA[29]	I/O	Input/output of data 29 for SDRAM
N24	DDATA[22]	I/O	Input/output of data 22 for SDRAM
N25	DDATA[23]	I/O	Input/output of data 23 for SDRAM
P1	ADCCLKI	O	Not used
P2	LRCKO	O	Output of audio L/R clock signal
P3	A0DATAI	I	Output of digital audio signal
P4	A0BCKI	I	Input of audio bit clock signal
P5	VDD	—	Power supply input (Digital 3.3V)
P11	VSS		Digital GND
P12	VSS		Digital GND
P13	VSS		Digital GND
P14	VSS		Digital GND
P15	VSS		Digital GND
P21	DDATA[18]	I/O	Input/output of data 18 for SDRAM
P22	DDATA[26]	I/O	Input/output of data 26 for SDRAM
P23	DDATA[27]	I/O	Input/output of data 27 for SDRAM
P24	DDATA[19]	I/O	Input/output of data 19 for SDRAM
P25	DDATA[20]	I/O	Input/output of data 20 for SDRAM
R1	SPDIFO	O	Input of digital audio signal
R2	VCLKI	I	Input of clock signal (27MHz) (Video decoder)
R3	BCKO	O	Output of audio bit clock signal
R4	AMCLK2	I	Input of audio master clock (33.8688MHz)
R5	VDD	—	Power supply input (Digital 1.0V)
R11	VSS		Digital GND
R12	VSS		Digital GND
R13	VSS		Digital GND
R14	VSS		Digital GND

Pin No.	Pin Name	I/O	Function
R15	VSS		Digital GND
R21	DDATA[25]	I/O	Input/output of data 25 for SDRAM
R22	VDD25	—	Power supply input (Digital 2.5V)
R23	VSS		Digital GND
R24	DDATA[16]	I/O	Input/output of data 16 for SDRAM
R25	DDATA[17]	I/O	Input/output of data 17 for SDRAM
T1	A0LRCKI	I	Input of audio L/R clock signal
T2	DACCLKO	O	Not used
T3	SPDIFI	I	Fixed at "H"
T4	PHYDIO[7]	I/O	Input/output of data 7 for PHY
T5	VSS		Digital GND
T21	DDM[2]	O	Output of data mask signal 2 for SDRAM
T22	DDQS[3]	I	Output of data strobe signal 3 for SDRAM
T23	DDATA[24]	I/O	Input/output of data 24 for SDRAM
T24	VDD25	—	Power supply input (Digital 2.5V)
T25	VSS		Digital GND
U1	PHYLREQ	O	
U2	PHYDIO[6]	—	Input/output of data 6 for PHY
U3	PHYDIO[4]	—	Input/output of data 4 for PHY
U4	PHYDIO[1]	—	Input/output of data 1 for PHY
U5	VDD	—	Power supply input (Digital 1.0V)
U21	DDM[1]	O	Output of data mask signal 1 for SDRAM
U22	DDQS[1]	O	Output of data strobe signal 1 for SDRAM
U23	DDM[3]	O	Output of data mask signal 3 for SDRAM
U24	DDM[0]	O	Output of data mask signal 0 for SDRAM
U25	DDQS[2]	O	Output of data strobe signal 2 for SDRAM
V1	PHYDIO[5]	I/O	Input/output of data 5 for PHY
V2	PHYDIO[3]	I/O	Input/output of data 3 for PHY
V3	PHYDIO[0]	I/O	Input/output of data 0 for PHY
V4	PHYCTL[1]	O	Not used
V5	VDD33	—	Power supply input (Analog 3.3V)(DAC)
V21	VDD	—	Power supply input (Digital 1.0V)
V22	VDD25	—	Power supply input (Digital 2.5V)
V23	DDATA[15]	I/O	Input/output of data 15 for SDRAM
V24	DDATA[7]	I/O	Input/output of data 7 for SDRAM
V25	DDQS[0]	—	Output of data strobe signal 0
W1	PHYDIO[2]	I/O	Input/output of data 2 for PHY
W2	PHYLPS	O	
W3	PHYSCLK	I	Input of clock signal
W4	TRDATA[2]	O	Not used
W5	VSS		Digital GND
W21	DDATA[14]	I/O	Input/output of data 14 for SDRAM
W22	DDATA[13]	I/O	Input/output of data 13 for SDRAM
W23	VSS		Digital GND
W24	VDD25	—	Power supply input (Digital 2.5V)
W25	DDATA[6]	—	Input/output data 6 for SDRAM
Y1	PHYCTL[0]	O	
Y2	TRDATA[0]	O	Not used
Y3	TRCLK	O	Not used
Y4	TRDATA[6]	O	Not used
Y5	VDD	—	Power supply input (Digital 1.0V)
Y21	DDATA[9]	I/O	Input/output of data 9 for SDRAM
Y22	DDATA[11]	I/O	Input/output of data 11 for SDRAM

Pin No.	Pin Name	I/O	Function
Y23	DDATA[12]	I/O	Input/output of data 12 for SDRAM
Y24	DDATA[5]	I/O	Input/output of data 5 for SDRAM
Y25	VSS		Digital GND

**SECTION 6
SERVICE MODE**

**RDR-HX520/HX525/HX720/HX722/
HX725/HX727/HX920/HX925**

This is the diagnostics to locate cause of fault.

The diagnostics can be executed using the remote commander and a monitor.

To enter the service mode, connect the VIDEO OUT connector of the main unit to the monitor. While pressing the “△” (Open/Close) button and the “▷” (PLAY) button at the same time, connect the AC power cord to the power outlet. (Keep pressing the above buttons until a message, “WELCOME” appears on the display panel of the main unit.)

While the diagnostics is in progress, either “OK” or “NG” appears on the monitor screen to enable the judgment whether the respective devices or the peripheral are normal or have any abnormality.

When an abnormality is detected, the diagnostics is stopped at that moment and you can select to keep running the diagnostics or to stop it.

6-1. Check Item

Checking item	IC name	REF
EEPROM	IC M24C32-WMN6T	IC102
VIDEO DEC	IC TVP5147M1PFP	IC301
DDR	IC K4H511638C-UCB3T	IC105
DDR	IC K4H511638C-UCB3T	IC106

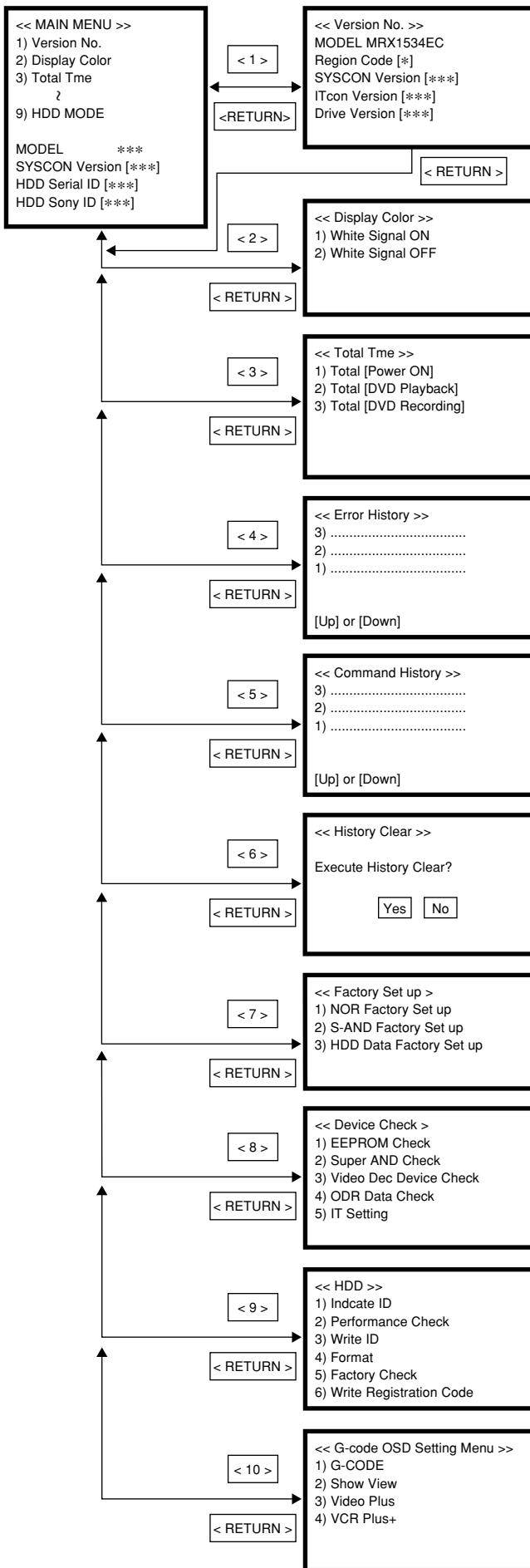
When NG is displayed as the result of the DEVICE TEST, the IC or its peripheral is defective.

All parts are mounted on the RD-060 board.

For IC301, only AEP3 is used.

6-2. Screen Transition in the Service Mode

MAIN MENU



Verifying version number of the respective software of the main unit

Setting ON/OFF of the PAL 100% white signal output

Reading the accumulative operating hours of the drive

- Total power-on hours
 - Total DVD playback hours
 - Total DVD recording hours
- * Display format: ○○ hours ΔΔ minutes

Displaying the error history in the past in the error code

* Maximum 20 errors can be displayed.

Displaying history of the buttons pressed in the past.

* Pressed buttons for 400 commands at a maximum can be stored.

Clearing the Error History and the Command History

Returning the Set Ups of various functions to default

Diagnostic checks in the Service Mode

6-3. Items and Description of Service Mode Menu

- 1) When the key “1” is pressed down, the monitor display moves to the Version No. check menu screen.
- 2) When the key “2” is pressed down, the monitor display moves to the Display Color check menu screen.
- 3) When the key “3” is pressed down, the monitor display moves to the Total Time check menu screen.
- 4) When the key “4” is pressed down, the monitor display moves to the Error History check menu screen.
- 5) When the key “5” is pressed down, the monitor display moves to the Command History check menu screen.
- 6) When the key “6” is pressed down, the monitor display moves to the History Clear check menu screen.
- 7) When the key “7” is pressed down, the monitor display moves to the Factory Set Up check menu screen.
- 8) When the key “8” is pressed down, the monitor display moves to the hard disk check menu screen.
- 9) When the key “9” is pressed down, the monitor display moves to the hard disk check menu screen.
- 0) When the key “0” is pressed down, the monitor display moves to the G-code Setting menu screen.

```
<< MAIN MENU >>
1) Version No.
2) Display Color
3) Total Time
4) Error History
5) Command History
6) History Clear
7) Factory Set Up
8) Device Check
9) HDD MODE
0) G-code Setting
MODEL    ***
SYSCON Version [***]
HDD Serial ID [***]
Sony ID [***]
```

6-4. Device Check Menu (Diagnostic Test)

- 1) When the key “1” is pressed down, the EEPROM device check will be executed. (The EEPROM device is checked whether it is mounted or not, and the I2C communication between Rism3 (IC103) and EEPROM is checked.)
- 2) Key “2” is not used.
- 3) When the key “3” is pressed down, the Video Dec device check will be executed. (The Video Dec device is checked whether it is mounted or not, and the I2C communication between Rism3 (IC103) and Video Dec is checked.) (It is used for the AEP3 destination only.)
- 4) When the key “4” is pressed down, the DDR Data device check will be executed. (The DDR device is checked whether it is mounted or not, and the electrical signal connection between Rism3 (IC103) and DDR device is checked.)
- 5) When the key “5” is pressed down, IC603 of the AV board will be patched.
(Never press the key “5” unless otherwise specified.)

```
<< Device check >>
1) EEPROM Check
2) Super AND Check      → Not used
3) Video Dec Device Check → It is used for the AEP3
4) DDR Date Check        destination only.
5) IT Setting
```

Check result display: IC105 check result/IC106 check result

Display Message	Meaning of Display
DATA OK/OK	Both IC105 and IC106 are OK.
DATA OK/NG	IC105: OK, IC106: NG (NG: No Good)
DATA NG/OK	IC105: NG, IC106: OK
DATA NG/NG	Both IC105 and IC106 are NG.

6-5. Hard Disk Check Menu

- 1) When the key “1” is pressed down, the ID check will be executed as shown below.
Indicate ID : HDD information read-out
MODEL : Model name of the product
Serial No. : HDD serial No.
Model No. : HDD model No.
F/W Rev : HDD software version
- 2) When the key “2” is pressed down, Performance Check will be executed as shown below.
Performance Check: Power ON/OFF test and Read/Verify of all tracks
- 3) When the key “3” is pressed down, Write ID will be executed as shown below.
Write ID: NOR Flash HDD information write
- 4) When the key “4” is pressed down, Format will be executed as shown below.
Format : Full erase of HDD
- 5) When the key “5” is pressed down, Factory Check will be executed as shown below.
Factory Check: Aging test in the same way as in the factory.
- 6) When the key “6” is pressed down, the Write Registration Code will be executed as shown below.
Write Registration Code: Writing the DIVX Registration Code
- 7) When the “RETURN” key is pressed down, the monitor display will return to the menu screen.

<< HDD MODE >>
1) Indicate ID
2) Peformance Check
3) Write ID
4) Format
5) Factory Check
6) Write Registration Code

7-1. Video System Adjustment

Preparing for Adjustment

1. Equipments

- Oscilloscope
- Reference Disk
 - HLX-507 (PAL single layer disc) J-6090-077-A
 - HLX-506 (PAL dual layer disc) J-6090-078-A

1. Video Output Level Check

<Purpose>

This check is made to satisfy the PAL signal standard. If it is adjusted incorrectly, brightness will be too bright or too dark.

Mode	PLAY
Signal	Color bars
Test point	Output (VIDEO) connector (terminated in 75Ω)
Instrument	Oscilloscope
Specification	$1.0 \text{ V} \pm 0.07 \text{ Vp-p}$

Check method:

- 1) Insert the PAL reference disc and play back the 100% color bars.
- 2) Confirm that the video level is $1.0 \text{ V} \pm 0.07 \text{ Vp-p}$.



Fig. 7-1

2. S-Video Output S-Y Check

<Purpose>

This check confirms that the S-video Y-signal output has the rated amplitude. If it adjusted incorrectly, the playback video signal will not be displayed correctly even when the S-video cable is connected.

Mode	PLAY
Signal	Color bars
Test point	S-VIDEO OUTPUT (S-Y) connector (terminated in 75Ω)
Instrument	Oscilloscope
Specification	$1.0 \text{ V} \pm 0.07 \text{ p-p}$

Check method:

- 1) Insert the PAL reference disc and play back the 100% color bars.
- 2) Confirm that the video level is $1.0 \text{ V} \pm 0.07 \text{ Vp-p}$.



Fig. 7-2.

3. S-Video Output S-C Check

<Purpose>

This check confirms that the S-video output S-C conforms to the PAL standard. If it adjusted incorrectly, the playback color will not be too dark or too thin.

Mode	PLAY
Signal	Color bars
Test point	S-VIDEO OUTPUT (S-C) connector (terminated in 75Ω)
Instrument	Oscilloscope
Specification	$300 \text{ mV} \pm 30 \text{ mVp-p}$

Check method:

- 1) Insert the PAL reference disc and play back the 100% color bars.
- 2) Confirm that the burst signal level is $300 \text{ mV} \pm 30 \text{ mVp-p}$.



Fig. 7-3.

4. Component Video Output Y Check

<Purpose>

This check confirms that the component Y signal output has the rated amplitude. If this signal level is not correct, brightness of the video signal will not be too dark or too thin when the COMPONENT connector output signal is connected to a projector having COMPONENT input.

Mode	PLAY
Signal	Color bars
Test point	D1/D2 VIDEO OUTPUT connector pin-⑯ (terminated in 75Ω)
Instrument	Oscilloscope
Specification	$1.0 \text{ V} \pm 0.07 \text{ Vp-p}$

Check method:

- 1) Insert the PAL reference disc and play back the 100% color bars.
- 2) Confirm that the Y signal level is $1.0 \text{ V} \pm 0.07 \text{ Vp-p}$.



Fig. 7-4.

5. Component Video Output B-Y Check

<Purpose>

This check confirms that the B-Y signal of the component video conforms to the PAL standard. If this signal level is not correct, color of the video signal will have different color when the COMPONENT connector output signal is connected to a projector having COMPONENT input.

Mode	PLAY
Signal	Color bars
Test point	D1/D2 VIDEO OUTPUT connector pin-⑦ (terminated in 75Ω)
Instrument	Oscilloscope
Specification	$700 \text{ mV} \pm 50 \text{ mVp-p}$

Check method:

- 1) Insert the PAL reference disc and play back the 100% color bars.
- 2) Confirm that the burst signal level is $700 \text{ mV} \pm 50 \text{ mVp-p}$.

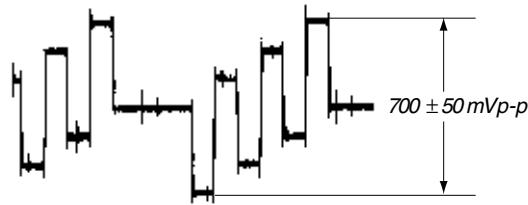


Fig. 7-5.

6. Component Video Output R-Y Check

<Purpose>

This check confirms that the R-Y signal of the component video conforms to the PAL standard. If this signal level is not correct, color of the video signal will have different color when the COMPONENT connector output signal is connected to a projector having COMPONENT input.

Mode	PLAY
Signal	Color bars
Test point	D1/D2 VIDEO OUTPUT connector pin-⑮ (terminated in 75Ω)
Instrument	Oscilloscope
Specification	$700 \text{ mV} \pm 50 \text{ mVp-p}$

Check method:

- 1) Insert the PAL reference disc and play back the 100% color bars.
- 2) Confirm that the burst signal level is $700 \text{ mV} \pm 50 \text{ mVp-p}$.

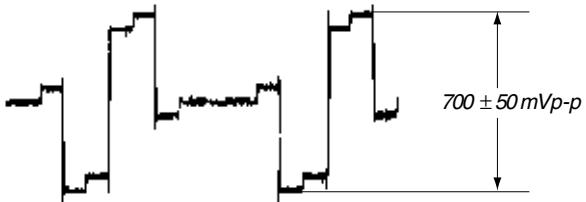


Fig. 7-6

**RDR-HX520/HX525/HX720/HX722/
SECTION 8 HX725/HX727/HX920/HX925
REPAIR PARTS LIST**

8-1. EXPLODED VIEWS

NOTE:

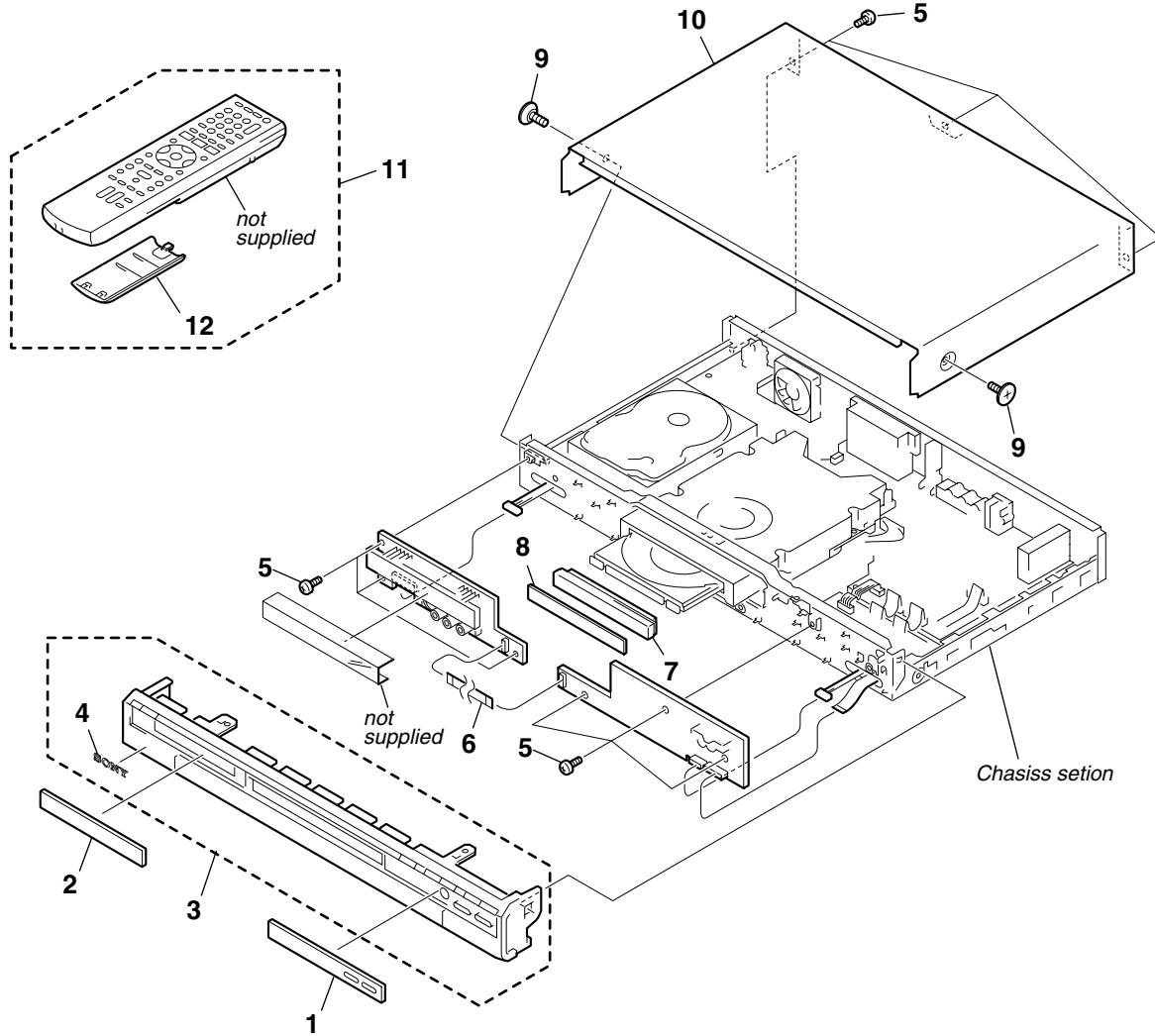
- XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.
- Color Indication of Appearance Parts
Example:

KNOB, BALANCE (WHITE) . . . (RED)
 ↑ ↑
 Parts Color Cabinet's Color

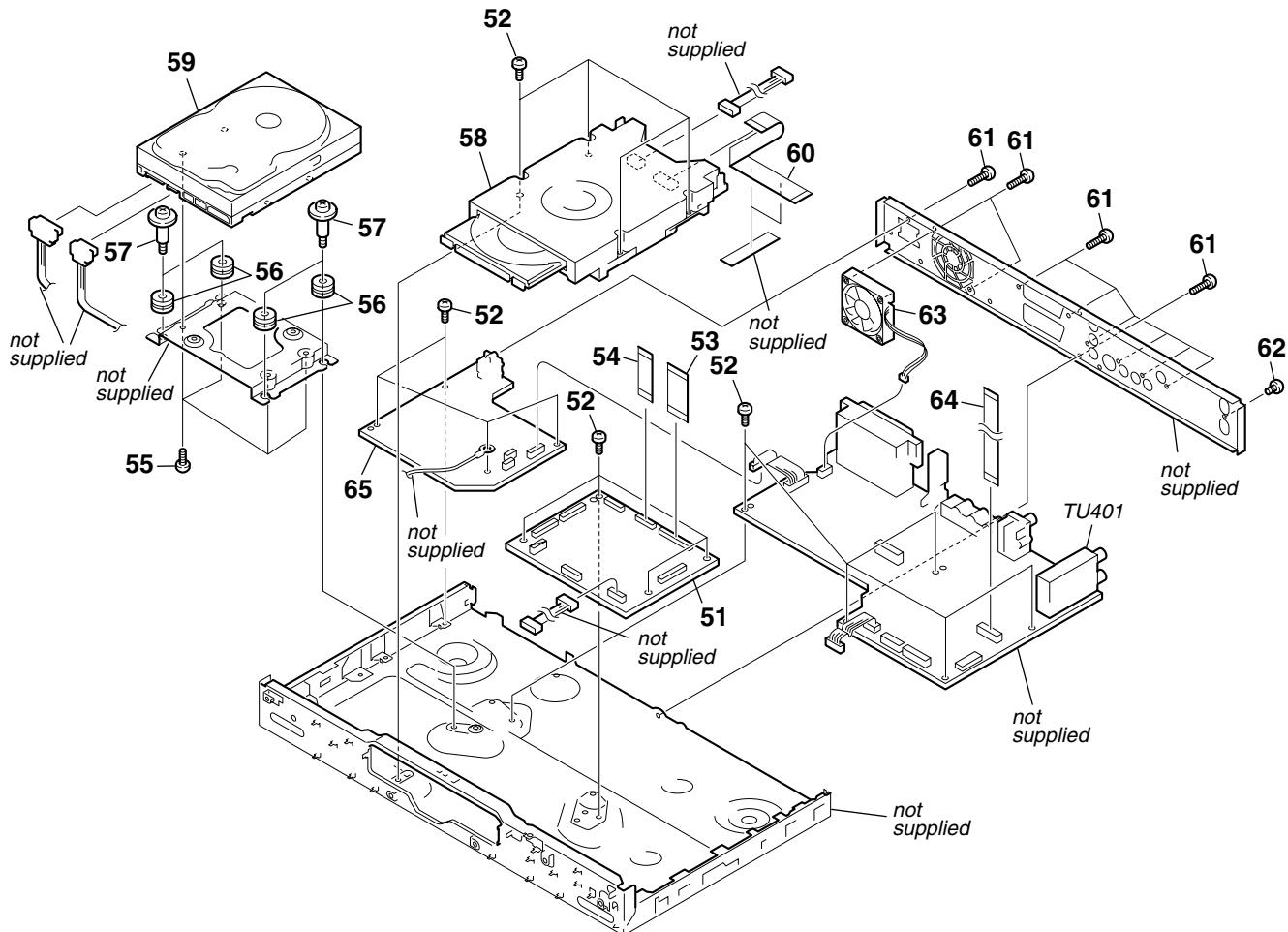
The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

8-1-1. OVERALL SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	2-658-528-21	WINDOW (R) (HX520/HX525/HX720/HX722/HX725/HX727)		4	3-066-225-11	SONY BADGE (5-A) (SILVER)	
1	2-658-528-41	WINDOW (R) (HX920/HX925)		4	3-066-225-01	SONY BADGE (5-A) (BLACK)	
2	2-658-529-01	WINDOW (L) (HX920/HX925)		5	3-077-331-01	+BV3 (3-CR)	
2	2-658-529-21	WINDOW (L) (HX520/HX525/HX720/HX722/HX725/HX727)		* 6	1-831-413-11	CABLE, FLEXIBLE FLAT (FLR-007)	
3	X-2108-947-1	PANEL ASSY, FRONT (BLACK) (HX725)		7	X-2108-963-1	COVER ASSY, TRAY	
3	X-2108-948-1	PANEL ASSY, FRONT (SILVER) (HX720:AEP)		8	X-2108-958-1	ASSY, WINDOW (TRAY) (HX525/HX720/HX722/HX725/HX727)	
3	X-2108-949-1	PANEL ASSY, FRONT (SILVER) (HX525)		8	X-2108-959-1	ASSY, WINDOW (TRAY) (HX920/HX925)	
3	X-2108-950-1	PANEL ASSY, FRONT (SILVER) (HX725:UK)		9	3-070-883-31	SCREW, TAPPING (BLACK)	
3	X-2108-951-1	PANEL ASSY, FRONT (SILVER) (HX520:AEP)		9	3-070-883-41	SCREW, TAPPING (SILVER)	
3	X-2108-952-1	PANEL ASSY, FRONT (SILVER) (HX727)		10	A-1176-233-A	CASE BLOCK ASSY (SILVER) (SERVICE USE)	
3	X-2109-931-1	PANEL ASSY, FRONT (SILVER) (HX520:UK)		10	A-1176-321-A	CASE BLOCK ASSY (BLACK) (SERVICE USE)	
3	X-2109-932-1	PANEL ASSY, FRONT (SILVER) (HX720:UK)		11	1-479-557-11	REMOTE COMMANDER (RMT-D231P) (HX525/HX725/HX727/HX925)	
3	X-2108-953-1	PANEL ASSY, FRONT (BLACK) (HX720:AEP)		11	1-479-558-11	REMOTE COMMANDER (RMT-D230P) (HX520/HX720/HX722/HX920)	
3	X-2108-954-1	PANEL ASSY, FRONT (SILVER) (HX925)		12	2-658-476-01	COVER, BATTERY	
3	X-2108-955-1	PANEL ASSY, FRONT (SILVER) (HX920)					
3	X-2108-956-1	PANEL ASSY, FRONT (SILVER) (HX722)					
3	X-2108-962-1	PANEL ASSY, FRONT (SILVER) (HX725:AEP)					

8-1-2. CHASSIS SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	A-1183-523-A	RD-060 BOARD, COMPLETE (HX520:AEP1,2)		* 54	1-831-511-11	CABLE, FLEXIBLE FLAT (FRA-004)	
51	A-1183-524-A	RD-060 BOARD, COMPLETE (HX525)				(HX520:AEP3/HX725:AEP3/HX920/HX925)	
51	A-1183-525-A	RD-060 BOARD, COMPLETE (HX520:AEP3)		55	3-087-675-01	6-32UNCX5	
51	A-1183-526-A	RD-060 BOARD, COMPLETE (HX725:AEP1)		56	3-089-380-01	DAMPER	
51	A-1183-527-A	RD-060 BOARD, COMPLETE (HX725:UK)		57	2-159-920-01	SCREW, HDD DAMPER	
51	A-1183-528-A	RD-060 BOARD, COMPLETE (HX727:AEP1)		△ 58	1-797-413-11	DRIVE, DVD DRW-V35A	
51	A-1183-530-A	RD-060 BOARD, COMPLETE (HX725:AEP3)		59	A-1192-736-A	HDD(SATA-160GB) ASSY (720/722/725/727)	
51	A-1183-531-A	RD-060 BOARD, COMPLETE (HX925)		59	A-1192-748-A	HDD(SATA-80GB) ASSY (520/525)	
51	A-1183-532-A	RD-060 BOARD, COMPLETE (HX920)		59	A-1192-749-A	HDD(SATA-250GB) ASSY (920/925)	
51	A-1185-667-A	RD-060 BOARD, COMPLETE (HX720:AEP2)		60	1-832-951-12	CABLE, FLEXIBLE FLAT (FRD-010)	
51	A-1185-668-A	RD-060 BOARD, COMPLETE (HX722)		61	3-077-331-31	+BV3 (3-CR)	
51	A-1194-638-A	RD-060 BOARD, COMPLETE (HX520:UK)		62	3-088-023-01	+B3 (3-CR)	
51	A-1194-639-A	RD-060 BOARD, COMPLETE (HX720:UK)		63	1-787-290-21	FAN, D.C	
51	A-1194-640-A	RD-060 BOARD, COMPLETE (HX727:AEP3)		* 64	1-831-414-11	CABLE, FLEXIBLE FLAT (FAR-004)	
52	3-077-331-01	+BV3 (3-CR)		△ 65	1-468-961-11	POWER SUPPLY BLOCK	
* 53	1-831-411-11	CABLE, FLEXIBLE FLAT (FRA-005)	(HX520:AEP1,2,UK/HX525/HX720/HX722/HX725:AEP1,UK/HX727)	△ TU401	8-597-558-00	TUNER, FSS BTF-DC441	(HX520:AEP1,2,UK/HX525/HX720/HX722/HX725:AEP1,UK/HX727:AEP1)
* 54	1-831-410-11	CABLE, FLEXIBLE FLAT (FRA-003)		△ TU401	8-597-559-00	TUNER, FSS BTF-DF441	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)

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

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, -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.
- CAPACITORS:
uF: μ F

- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- COILS
uH: μ H
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA..., μ PA...,
uPB..., μ PB..., uPC..., μ PC...,
uPD..., μ PD...

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

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

Ref. No.	Part No.	Description			Remarks		Ref. No.	Part No.	Description			Remarks	
Not supplied		AV-103 BOARD, COMPLETE			*****		C326	1-164-230-11	CERAMIC CHIP	220PF	5%	50V	
< CAPACITOR >													
C105	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	C407	1-126-964-11	ELECT	10uF	20%	50V	
C106	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	C408	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C114	1-165-908-11	CERAMIC CHIP	1uF	10%	10V	C409	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V		
C117	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	C410	1-126-964-11	ELECT	10uF	20%	50V		
C118	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C414	1-126-947-11	ELECT	47uF	20%	35V		
C119	1-100-591-91	CERAMIC CHIP	1uF	10%	25V	C415	1-126-933-11	ELECT	100uF	20%	16V		
C120	1-100-591-91	CERAMIC CHIP	1uF	10%	25V	C416	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C123	1-126-947-11	ELECT	47uF	20%	35V	C449	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V		
C124	1-128-396-11	ELECT CHIP	470uF	20%	10V	C452	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C209	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C453	1-115-416-11	CERAMIC CHIP	0.001uF	5%	25V		
C210	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C454	1-115-416-11	CERAMIC CHIP	0.001uF	5%	25V		
C211	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C455	1-162-919-11	CERAMIC CHIP	22PF	5%	50V		
C212	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C456	1-115-416-11	CERAMIC CHIP	0.001uF	5%	25V		
C213	1-100-966-91	CERAMIC CHIP	10uF	20%	10V	C601	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V		
C214	1-100-966-91	CERAMIC CHIP	10uF	20%	10V	C604	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C215	1-100-966-91	CERAMIC CHIP	10uF	20%	10V	C607	1-126-947-11	ELECT	47uF	20%	35V		
C216	1-100-966-91	CERAMIC CHIP	10uF	20%	10V	C613	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V		
C217	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	C614	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V		
C218	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	C615	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C301	1-126-947-11	ELECT	47uF	20%	35V	C616	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C304	1-126-933-11	ELECT	100uF	20%	16V	C617	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C306	1-104-662-91	ELECT	22uF	20%	25V	C618	1-126-947-11	ELECT	47uF	20%	35V		
C307	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	C619	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V		
C308	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C620	1-162-923-11	CERAMIC CHIP	47PF	5%	50V		
C309	1-126-947-11	ELECT	47uF	20%	35V	C621	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C310	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	C622	1-162-923-11	CERAMIC CHIP	47PF	5%	50V		
C311	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	C623	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C312	1-164-739-11	CERAMIC CHIP	560PF	5%	50V	C624	1-162-923-11	CERAMIC CHIP	47PF	5%	50V		
C313	1-164-739-11	CERAMIC CHIP	560PF	5%	50V	C625	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C314	1-164-218-11	CERAMIC CHIP	180PF	5%	50V	C626	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C315	1-164-218-11	CERAMIC CHIP	180PF	5%	50V	C627	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C316	1-126-947-11	ELECT	47uF	20%	35V	C628	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V		
C317	1-126-947-11	ELECT	47uF	20%	35V	C629	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C318	1-126-934-11	ELECT	220uF	20%	16V	C630	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V		
C319	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C631	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V		
C320	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C632	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C321	1-165-908-11	CERAMIC CHIP	1uF	10%	10V	C633	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C322	1-165-908-11	CERAMIC CHIP	1uF	10%	10V	C634	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)					C635	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C324	1-165-908-11	CERAMIC CHIP	1uF	10%	10V	C639	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		
C325	1-162-927-11	CERAMIC CHIP	100PF	5%	50V								

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Ref. No.	Part No.	Description		Remarks	Ref. No.	Part No.	Description		Remarks	
C641	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C751	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C642	1-126-947-11	ELECT	47uF	20%	35V	C752	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C646	1-162-963-11	CERAMIC CHIP	680PF	10%	50V	C753	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C649	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C762	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C650	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C772	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C651	1-126-926-11	ELECT	1000uF	20%	10V	C774	1-165-908-11	CERAMIC CHIP	1uF	10% 10V
C652	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C775	1-126-947-11	ELECT	47uF	20% 35V
C655	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C801	1-107-726-91	CERAMIC CHIP	0.01uF	10% 16V
C656	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C802	1-126-964-11	ELECT	10uF	20% 50V
C657	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C803	1-126-964-11	ELECT	10uF	20% 50V
C701	1-126-947-11	ELECT	47uF	20%	35V	C804	1-165-908-11	CERAMIC CHIP	1uF	10% 10V
C702	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C805	1-165-908-11	CERAMIC CHIP	1uF	10% 10V
C703	1-107-726-91	CERAMIC CHIP	0.01uF	10%	16V	C807	1-165-908-11	CERAMIC CHIP	1uF	10% 10V
C704	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C809	1-165-908-11	CERAMIC CHIP	1uF	10% 10V
C705	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C810	1-165-908-11	CERAMIC CHIP	1uF	10% 10V
C706	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C813	1-104-658-91	ELECT	100uF	20% 10V
C707	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C816	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C708	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C817	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C709	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C818	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C710	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C819	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C711	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C820	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C712	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C821	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C713	1-107-696-91	ELECT	47uF	20%	16V	C822	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C714	1-126-947-11	ELECT	47uF	20%	35V	C823	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C715	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C824	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C716	1-126-947-11	ELECT	47uF	20%	35V	C825	1-104-658-91	ELECT	100uF	20% 10V
C717	1-126-947-11	ELECT	47uF	20%	35V	C826	1-126-947-11	ELECT	47uF	20% 35V
C718	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C827	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C719	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C828	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C720	1-126-947-11	ELECT	47uF	20%	35V	C829	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C721	1-126-947-11	ELECT	47uF	20%	35V	C830	1-162-927-11	CERAMIC CHIP	100PF	5% 50V
C722	1-126-964-11	ELECT	10uF	20%	50V	C832	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C723	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C833	1-126-947-11	ELECT	47uF	20% 35V
C724	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C834	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C725	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C835	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C726	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C836	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C727	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C837	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C728	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C838	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C729	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C839	1-162-927-11	CERAMIC CHIP	100PF	5% 50V
C730	1-104-662-91	ELECT	220uF	20%	25V	C840	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C731	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C841	1-126-947-11	ELECT	47uF	20% 35V
C732	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C842	1-107-826-11	CERAMIC CHIP	0.1uF	10% 16V
C733	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C843	1-165-908-11	CERAMIC CHIP	1uF	10% 10V
C734	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C844	1-165-908-11	CERAMIC CHIP	1uF	10% 10V
C735	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C845	1-164-230-11	CERAMIC CHIP	220PF	5% 50V
C736	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C846	1-164-230-11	CERAMIC CHIP	220PF	5% 50V
C737	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C847	1-164-230-11	CERAMIC CHIP	220PF	5% 50V
C738	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C848	1-164-230-11	CERAMIC CHIP	220PF	5% 50V
C739	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C849	1-164-230-11	CERAMIC CHIP	220PF	5% 50V
C740	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C850	1-164-230-11	CERAMIC CHIP	220PF	5% 50V
C741	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C851	1-164-230-11	CERAMIC CHIP	220PF	5% 50V
C742	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C852	1-164-230-11	CERAMIC CHIP	220PF	5% 50V
C743	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C853	1-162-927-11	CERAMIC CHIP	100PF	5% 50V
C744	1-126-947-11	ELECT	47uF	20%	35V	C854	1-162-927-11	CERAMIC CHIP	100PF	5% 50V
C745	1-126-947-11	ELECT	47uF	20%	35V	C855	1-162-927-11	CERAMIC CHIP	100PF	5% 50V
C746	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C856	1-162-927-11	CERAMIC CHIP	100PF	5% 50V
C747	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C861	1-165-908-11	CERAMIC CHIP	1uF	10% 10V
C748	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C862	1-165-908-11	CERAMIC CHIP	1uF	10% 10V
C749	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C863	1-165-908-11	CERAMIC CHIP	1uF	10% 10V
C750	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C864	1-165-908-11	CERAMIC CHIP	1uF	10% 10V

Ref. No.	Part No.	Description	Remarks			Ref. No.	Part No.	Description	Remarks
C865	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	D732	8-719-067-40	DIODE	STZ6.8N-T146
C866	1-126-947-11	ELECT	47uF	20%	35V	D801	8-719-069-55	DIODE	UDZSTE-175.6B
C867	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	D802	8-719-067-40	DIODE	STZ6.8N-T146
C1103	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V (HX525/HX725/HX727/HX925)	D803	8-719-067-40	DIODE	STZ6.8N-T146
C1104	1-162-962-11	CERAMIC CHIP	470PF	10%	50V (HX525/HX725/HX727/HX925)	D804	6-501-486-01	DIODE	NNCD3.9F-T1B
C1109	1-162-917-11	CERAMIC CHIP	15PF	5%	50V (HX525/HX725/HX727/HX925)	D805	6-501-486-01	DIODE	NNCD3.9F-T1B
C1110	1-162-917-11	CERAMIC CHIP	15PF	5%	50V (HX525/HX725/HX727/HX925)	D806	8-719-067-40	DIODE	STZ6.8N-T146
C1111	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (HX525/HX725/HX727/HX925)	D807	8-719-067-40	DIODE	STZ6.8N-T146
C1401	1-126-947-11	ELECT	47uF	20%	35V	D808	8-719-067-40	DIODE	STZ6.8N-T146
C1402	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	D809	8-719-067-40	DIODE	STZ6.8N-T146
C1403	1-162-924-11	CERAMIC CHIP	56PF	5%	50V	D810	8-719-067-40	DIODE	STZ6.8N-T146
C1404	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V	D811	8-719-067-40	DIODE	STZ6.8N-T146
C1405	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V	D812	8-719-067-40	DIODE	STZ6.8N-T146
C1406	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	D813	8-719-067-40	DIODE	STZ6.8N-T146
C1407	1-162-924-11	CERAMIC CHIP	56PF	5%	50V	D814	8-719-069-56	DIODE	UDZSTE-176.2B
C1408	1-165-908-11	CERAMIC CHIP	1uF	10%	10V	D815	8-719-083-63	DIODE	UDZSTE-1713B
C1409	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	D816	8-719-069-56	DIODE	UDZSTE-176.2B
C1410	1-126-964-11	ELECT	10uF	20%	50V	D817	8-719-083-63	DIODE	UDZSTE-1713B
C1411	1-126-962-11	ELECT	3.3uF	20%	50V	D818	6-501-486-01	DIODE	NNCD3.9F-T1B
C1412	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	D819	8-719-067-40	DIODE	STZ6.8N-T146
C1413	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	D820	8-719-067-40	DIODE	STZ6.8N-T146
C1414	1-126-964-11	ELECT	10uF	20%	50V	D821	6-501-486-01	DIODE	NNCD3.9F-T1B
C1415	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V	D822	8-719-067-40	DIODE	STZ6.8N-T146
C1416	1-126-947-11	ELECT	47uF	20%	35V	D823	8-719-067-40	DIODE	STZ6.8N-T146
C1417	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	D824	8-719-067-40	DIODE	STZ6.8N-T146
C1418	1-165-908-11	CERAMIC CHIP	1uF	10%	10V	D825	8-719-069-56	DIODE	UDZSTE-176.2B
C1419	1-165-908-11	CERAMIC CHIP	1uF	10%	10V	D827	8-719-067-40	DIODE	STZ6.8N-T146
C1452	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	D828	8-719-069-56	DIODE	UDZSTE-176.2B
C1453	1-165-908-11	CERAMIC CHIP	1uF	10%	10V	D1103	8-719-067-40	DIODE	STZ6.8N-T146 (HX525/HX725/HX727/HX925)
< CONNECTOR >									
CN101	1-815-458-21	CONNECTOR, BOARD TO BOARD 15P				FB301	1-414-228-11	INDUCTOR, FERRITE BEAD	
CN103	1-794-509-11	PIN, CONNECTOR (PC BOARD) 3P				FB302	1-414-228-11	INDUCTOR, FERRITE BEAD	
* CN601	1-764-643-21	PIN, CONNECTOR (SMD) 11P				FB801	1-500-283-11	INDUCTOR, FERRITE BEAD	
CN602	1-774-767-51	CONNECTOR, FFC/FPC 15P				FB802	1-469-876-11	INDUCTOR, FERRITE BEAD	
* CN701	1-770-468-21	PIN, CONNECTOR (PC BOARD) 10P				FB803	1-469-796-21	FERRITE, CHIP	
* CN1102	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD) 8P (HX525/HX725/HX727/HX925)				FB804	1-469-796-21	FERRITE, CHIP	
< DIODE >									
D101	8-719-073-34	DIODE EC21QS03L-TE12L				FB805	1-469-796-21	FERRITE, CHIP	
D301	6-501-115-01	DIODE BAS16-03W				FB806	1-469-796-21	FERRITE, CHIP	
D303	6-501-115-01	DIODE BAS16-03W				FB807	1-469-796-21	FERRITE, CHIP	
D304	6-501-115-01	DIODE BAS16-03W (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				FB808	1-500-283-11	INDUCTOR, FERRITE BEAD	
D608	6-501-115-01	DIODE BAS16-03W				FB809	1-469-876-11	INDUCTOR, FERRITE BEAD	
D701	6-501-115-01	DIODE BAS16-03W				FB810	1-469-796-21	FERRITE, CHIP	
D702	8-719-067-40	DIODE STZ6.8N-T146				FB811	1-469-796-21	FERRITE, CHIP	
D703	8-719-053-18	DIODE 1SR154-400TE-25				FB812	1-469-796-21	FERRITE, CHIP	
D704	8-719-053-18	DIODE 1SR154-400TE-25				FB813	1-469-796-21	FERRITE, CHIP	
D714	8-719-067-40	DIODE STZ6.8N-T146				FB814	1-469-796-21	FERRITE, CHIP	
D715	8-719-067-40	DIODE STZ6.8N-T146				FB815	1-414-228-11	INDUCTOR, FERRITE BEAD	
D721	8-719-067-40	DIODE STZ6.8N-T146				FB816	1-414-228-11	INDUCTOR, FERRITE BEAD	
D724	8-719-067-40	DIODE STZ6.8N-T146				FB817	1-414-228-11	INDUCTOR, FERRITE BEAD	
D728	8-719-067-40	DIODE STZ6.8N-T146				FB818	1-414-228-11	INDUCTOR, FERRITE BEAD	
D731	8-719-067-40	DIODE STZ6.8N-T146				FB819	1-414-228-11	INDUCTOR, FERRITE BEAD	
						FB820	1-414-228-11	INDUCTOR, FERRITE BEAD	
						FB821	1-414-228-11	INDUCTOR, FERRITE BEAD	
						FB822	1-414-228-11	INDUCTOR, FERRITE BEAD	
						FB824	1-469-796-21	FERRITE, CHIP	

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
< IC >				< TRANSISTOR >			
IC102	6-702-889-01	IC SI-3033KS-TL (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)		Q101	8-729-421-19	TRANSISTOR	UN2213
IC104	6-708-913-01	IC TK73400AUJ3G0L-C		Q301	8-729-424-08	TRANSISTOR	UN2111
IC107	6-707-208-01	IC TK11100CSCB-G		Q302	8-729-921-80	TRANSISTOR	2SD1781K-T146-QR
IC202	8-759-100-96	IC uPC4558G2		Q303	6-550-286-01	TRANSISTOR	BC847CE6327
IC203	8-759-100-96	IC uPC4558G2		Q304	8-729-045-17	TRANSISTOR	2SB1561T100Q
IC302	8-759-100-96	IC uPC4558G2		Q305	6-551-199-01	TRANSISTOR	BCR148-E6327
IC303	6-705-313-01	IC S-T111B50MC-OHJTFG		Q306	6-551-199-01	TRANSISTOR	BCR148-E6327
IC401	8-749-925-00	IC TK11819MTL		Q307	8-729-027-53	TRANSISTOR	DTC124TKA-T146
IC402	6-706-237-01	IC PQ1MX55M2SPQ		Q308	8-729-027-53	TRANSISTOR	DTC124TKA-T146
IC601	6-706-673-01	IC S-80852CNMC-B9DT2G		Q309	6-551-287-01	TRANSISTOR	2SD2704K-T146
IC603	6-806-620-01	IC M306H5MG-A13FP (HX525/HX725/HX727/HX925)		Q310	6-551-287-01	TRANSISTOR	2SD2704K-T146
IC603	6-806-673-01	IC M306H5MC-C33FP (HX520/HX720/HX722/HX920)		Q311	6-550-280-01	TRANSISTOR	BC857CE6327
* IC604	6-708-842-01	IC S-24CS04AFJ-TB-G		Q312	6-550-280-01	TRANSISTOR	BC857CE6327
* IC605	6-708-948-01	IC R2051S03-E2-F		Q313	6-550-286-01	TRANSISTOR	BC847CE6327
IC701	6-708-957-01	IC TK72233CMCL-G		Q401	6-550-286-01	TRANSISTOR	BC847CE6327
* IC702	6-708-890-01	IC LA73036M-TBA-E		Q403	8-729-010-25	TRANSISTOR	MSD601-RT1
IC801	6-705-338-01	IC TK11250CMCL-G		Q405	6-550-286-01	TRANSISTOR	BC847CE6327
IC802	6-708-892-01	IC BD3826FS		Q407	6-551-199-01	TRANSISTOR	BCR148-E6327
IC803	6-708-887-01	IC BH7626KS2		Q601	6-551-199-01	TRANSISTOR	BCR148-E6327
IC1102	6-806-080-01	IC M30263M6A-703FP (HX525/HX725/HX727/HX925)		Q611	8-729-421-22	TRANSISTOR	UN2211
IC1103	8-759-649-43	IC SN74AHC1G00DCKR (HX525/HX725/HX727/HX925)		Q612	6-550-280-01	TRANSISTOR	BC857CE6327
IC1401	6-702-714-01	IC MSP3417G-QG-B8V3		Q613	6-550-286-01	TRANSISTOR	BC847CE6327
< JACK >				Q614	6-550-286-01	TRANSISTOR	BC847CE6327
J702	1-818-363-11	JACK BLOCK, PIN (LINE2 OUT)		Q615	6-550-286-01	TRANSISTOR	BC847CE6327
J703	1-818-063-11	JACK, PIN (3P) (COMPONENT VIDEO OUT)		Q616	8-729-904-87	TRANSISTOR	2SB1197K-R
J1101	1-764-188-31	JACK (SMALL TYPE) (DIA. 3.5) (G-LINK) (HX525/HX725/HX727/HX925)		Q702	6-550-286-01	TRANSISTOR	BC847CE6327
< COIL >				Q705	6-550-280-01	TRANSISTOR	BC857CE6327
L401	1-414-856-11	INDUCTOR	10uH	Q707	6-550-286-01	TRANSISTOR	BC847CE6327
L402	1-469-967-21	INDUCTOR	10uH	Q708	6-550-286-01	TRANSISTOR	BC847CE6327
L403	1-414-858-31	INDUCTOR	1mH	Q709	6-550-286-01	TRANSISTOR	BC847CE6327
L404	1-414-856-11	INDUCTOR	10uH	Q710	6-550-286-01	TRANSISTOR	BC847CE6327
L405	1-414-856-11	INDUCTOR	10uH	Q711	6-550-286-01	TRANSISTOR	BC847CE6327
L406	1-414-856-11	INDUCTOR	10uH	Q715	8-729-904-87	TRANSISTOR	2SB1197K-R
L601	1-412-533-21	INDUCTOR	47uH	Q716	6-551-199-01	TRANSISTOR	BCR148-E6327
L602	1-412-533-21	INDUCTOR	47uH	Q801	6-550-280-01	TRANSISTOR	BC857CE6327
L701	1-412-060-11	INDUCTOR	22uH	Q807	6-550-683-01	TRANSISTOR	RJK005N03-T146
L702	1-469-967-21	INDUCTOR	10uH	Q808	8-729-027-24	TRANSISTOR	DTA114TKA-T146
L703	1-469-967-21	INDUCTOR	10uH	Q1104	8-729-045-17	TRANSISTOR	2SB1561T100Q (HX525/HX725/HX727/HX925)
L704	1-469-967-21	INDUCTOR	10uH	Q1401	6-550-280-01	TRANSISTOR	BC857CE6327
L803	1-414-743-21	INDUCTOR	47uH	Q1402	6-550-286-01	TRANSISTOR	BC847CE6327
L1401	1-414-856-11	INDUCTOR	10uH	< RESISTOR >			
< IC LINK >				R101	1-216-295-91	SHORT CHIP	0
△PS102	1-576-570-21	FUSE, MICRO (1608 TYPE)		R111	1-216-833-11	METAL CHIP	10K 5% 1/10W
△PS103	1-576-570-21	FUSE, MICRO (1608 TYPE)		R113	1-218-897-11	METAL CHIP	120K 0.5% 1/10W
△PS602	1-576-570-21	FUSE, MICRO (1608 TYPE)		R114	1-218-875-11	METAL CHIP	15K 0.5% 1/10W
				R115	1-218-869-11	METAL CHIP	8.2K 0.5% 1/10W
				R120	1-216-864-11	SHORT CHIP	0
				R121	1-218-885-11	METAL CHIP	39K 0.5% 1/10W
				R122	1-218-873-11	METAL CHIP	12K 0.5% 1/10W
				R135	1-216-295-91	SHORT CHIP	0
				R137	1-216-295-91	SHORT CHIP	0

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

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R140	1-216-295-91	SHORT CHIP	0	R353	1-216-817-11	METAL CHIP	470 5% 1/10W
R142	1-216-295-91	SHORT CHIP	0	R355	1-216-817-11	METAL CHIP	470 5% 1/10W
R144	1-216-295-91	SHORT CHIP	0	R362	1-216-829-11	METAL CHIP	4.7K 5% 1/10W
R145	1-216-295-91	SHORT CHIP	0	(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
R146	1-216-295-91	SHORT CHIP	0	R364	1-216-839-11	METAL CHIP	33K 5% 1/10W
R148	1-216-295-91	SHORT CHIP	0	R365	1-216-845-11	METAL CHIP	100K 5% 1/10W
R154	1-216-295-91	SHORT CHIP	0	R366	1-216-821-11	METAL CHIP	1K 5% 1/10W
R160	1-216-864-11	SHORT CHIP	0	R405	1-216-821-11	METAL CHIP	1K 5% 1/10W
			(HX525/HX725/HX727/HX925)	R407	1-216-821-11	METAL CHIP	1K 5% 1/10W
R218	1-218-879-11	METAL CHIP	22K 0.5% 1/10W	R409	1-216-821-11	METAL CHIP	1K 5% 1/10W
R219	1-218-879-11	METAL CHIP	22K 0.5% 1/10W	R410	1-216-809-11	METAL CHIP	100 5% 1/10W
R222	1-218-871-11	METAL CHIP	10K 0.5% 1/10W	R411	1-216-809-11	METAL CHIP	100 5% 1/10W
R223	1-218-871-11	METAL CHIP	10K 0.5% 1/10W	R412	1-216-809-11	METAL CHIP	100 5% 1/10W
R224	1-218-863-11	METAL CHIP	4.7K 0.5% 1/10W	R414	1-216-845-11	METAL CHIP	100K 5% 1/10W
R225	1-218-863-11	METAL CHIP	4.7K 0.5% 1/10W	R415	1-216-838-11	METAL CHIP	27K 5% 1/10W
R226	1-218-863-11	METAL CHIP	4.7K 0.5% 1/10W	R418	1-216-845-11	METAL CHIP	100K 5% 1/10W
R227	1-218-863-11	METAL CHIP	4.7K 0.5% 1/10W	R420	1-216-809-11	METAL CHIP	100 5% 1/10W
R304	1-216-849-11	METAL CHIP	220K 5% 1/10W	R422	1-216-809-11	METAL CHIP	100 5% 1/10W
R305	1-216-833-11	METAL CHIP	10K 5% 1/10W	R423	1-216-864-11	SHORT CHIP	0
R306	1-216-833-11	METAL CHIP	10K 5% 1/10W	R428	1-216-817-11	METAL CHIP	470 5% 1/10W
R307	1-216-833-11	METAL CHIP	10K 5% 1/10W	R429	1-216-817-11	METAL CHIP	470 5% 1/10W
R308	1-216-841-11	METAL CHIP	47K 5% 1/10W	R475	1-216-864-11	SHORT CHIP	0
R309	1-216-830-11	METAL CHIP	5.6K 5% 1/10W	R604	1-216-841-11	METAL CHIP	47K 5% 1/10W
R310	1-218-864-11	METAL CHIP	5.1K 0.5% 1/10W	R606	1-216-833-11	METAL CHIP	10K 5% 1/10W
R311	1-218-864-11	METAL CHIP	5.1K 0.5% 1/10W	R608	1-216-833-11	METAL CHIP	10K 5% 1/10W
R312	1-218-864-11	METAL CHIP	5.1K 0.5% 1/10W	R609	1-216-845-11	METAL CHIP	100K 5% 1/10W
R313	1-218-864-11	METAL CHIP	5.1K 0.5% 1/10W	R610	1-216-809-11	METAL CHIP	100 5% 1/10W
R314	1-218-865-11	METAL CHIP	5.6K 0.5% 1/10W	R611	1-216-833-11	METAL CHIP	10K 5% 1/10W
R315	1-218-865-11	METAL CHIP	5.6K 0.5% 1/10W	R613	1-216-833-11	METAL CHIP	10K 5% 1/10W
R316	1-216-825-11	METAL CHIP	2.2K 5% 1/10W	R614	1-216-833-11	METAL CHIP	10K 5% 1/10W
R317	1-216-825-11	METAL CHIP	2.2K 5% 1/10W	R615	1-216-829-11	METAL CHIP	4.7K 5% 1/10W
R318	1-216-825-11	METAL CHIP	2.2K 5% 1/10W	R616	1-216-829-11	METAL CHIP	4.7K 5% 1/10W
R320	1-216-825-11	METAL CHIP	2.2K 5% 1/10W	R617	1-216-833-11	METAL CHIP	10K 5% 1/10W
R321	1-218-865-11	METAL CHIP	5.6K 0.5% 1/10W	R618	1-218-875-11	METAL CHIP	15K 0.5% 1/10W
R323	1-218-865-11	METAL CHIP	5.6K 0.5% 1/10W	R619	1-216-833-11	METAL CHIP	10K 5% 1/10W
R326	1-216-817-11	METAL CHIP	470 5% 1/10W	R620	1-216-833-11	METAL CHIP	10K 5% 1/10W
R327	1-216-817-11	METAL CHIP	470 5% 1/10W	R621	1-216-833-11	METAL CHIP	10K 5% 1/10W
R330	1-216-841-11	METAL CHIP	47K 5% 1/10W	R622	1-216-833-11	METAL CHIP	10K 5% 1/10W
R331	1-216-841-11	METAL CHIP	47K 5% 1/10W	R623	1-216-864-11	SHORT CHIP	0
R332	1-216-833-11	METAL CHIP	10K 5% 1/10W	R624	1-216-809-11	METAL CHIP	100 5% 1/10W
R333	1-216-833-11	METAL CHIP	10K 5% 1/10W	R626	1-216-864-11	SHORT CHIP	0
			(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R627	1-216-833-11	METAL CHIP	10K 5% 1/10W
R334	1-216-833-11	METAL CHIP	10K 5% 1/10W	R628	1-216-817-11	METAL CHIP	470 5% 1/10W
R335	1-216-841-11	METAL CHIP	47K 5% 1/10W	R629	1-216-864-11	SHORT CHIP	0
R336	1-216-833-11	METAL CHIP	10K 5% 1/10W	R630	1-216-809-11	METAL CHIP	100 5% 1/10W
			(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R631	1-216-809-11	METAL CHIP	100 5% 1/10W
R337	1-216-841-11	METAL CHIP	47K 5% 1/10W				
			(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R632	1-216-809-11	METAL CHIP	100 5% 1/10W
R338	1-216-833-11	METAL CHIP	10K 5% 1/10W	R633	1-216-809-11	METAL CHIP	100 5% 1/10W
			(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R635	1-216-809-11	METAL CHIP	100 5% 1/10W
R339	1-216-833-11	METAL CHIP	10K 5% 1/10W	R636	1-216-809-11	METAL CHIP	100 5% 1/10W
			(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R637	1-218-289-11	METAL CHIP	510 5% 1/10W
R340	1-216-829-11	METAL CHIP	4.7K 5% 1/10W	R638	1-216-864-11	SHORT CHIP	0
R342	1-216-829-11	METAL CHIP	4.7K 5% 1/10W	R639	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
			(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R642	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
R343	1-216-845-11	METAL CHIP	100K 5% 1/10W	R643	1-216-833-11	METAL CHIP	10K 5% 1/10W
R344	1-216-845-11	METAL CHIP	100K 5% 1/10W				
			(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R644	1-216-809-11	METAL CHIP	100 5% 1/10W
R345	1-216-821-11	METAL CHIP	1K 5% 1/10W				
R346	1-216-821-11	METAL CHIP	1K 5% 1/10W				
R347	1-216-821-11	METAL CHIP	1K 5% 1/10W				
R348	1-216-813-11	METAL CHIP	220 5% 1/10W				
R350	1-216-807-11	METAL CHIP	68 5% 1/10W				

Ref. No.	Part No.	Description		Remarks	Ref. No.	Part No.	Description		Remarks		
R645	1-216-833-11	METAL CHIP	10K	5%	1/10W	R719	1-218-852-11	METAL CHIP	1.6K	0.5%	1/10W
R646	1-216-833-11	METAL CHIP	10K	5%	1/10W	R726	1-216-817-11	METAL CHIP	470	5%	1/10W
R647	1-216-817-11	METAL CHIP	470	5%	1/10W	R728	1-216-840-11	METAL CHIP	39K	5%	1/10W
R648	1-216-864-11	SHORT CHIP	0		(HX525/HX725/HX727/HX925)	R729	1-216-837-11	METAL CHIP	22K	5%	1/10W
R649	1-216-809-11	METAL CHIP	100	5%	1/10W	R733	1-216-864-11	SHORT CHIP	0		
R650	1-216-833-11	METAL CHIP	10K	5%	1/10W	R736	1-216-801-11	METAL CHIP	22	5%	1/10W
			(HX525/HX725/HX727/HX925)			R738	1-216-801-11	METAL CHIP	22	5%	1/10W
R651	1-216-809-11	METAL CHIP	100	5%	1/10W	R740	1-216-801-11	METAL CHIP	22	5%	1/10W
R652	1-216-809-11	METAL CHIP	100	5%	1/10W	R742	1-216-801-11	METAL CHIP	22	5%	1/10W
			(HX525/HX725/HX727/HX925)			R744	1-216-801-11	METAL CHIP	22	5%	1/10W
R654	1-216-809-11	METAL CHIP	100	5%	1/10W	R747	1-218-285-11	METAL CHIP	75	5%	1/10W
			(HX525/HX725/HX727/HX925)			R749	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R655	1-216-809-11	METAL CHIP	100	5%	1/10W	R750	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R656	1-216-821-11	METAL CHIP	1K	5%	1/10W	R751	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R658	1-216-809-11	METAL CHIP	100	5%	1/10W	R752	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R659	1-216-809-11	METAL CHIP	100	5%	1/10W	R753	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R660	1-216-809-11	METAL CHIP	100	5%	1/10W	R755	1-216-821-11	METAL CHIP	1K	5%	1/10W
R661	1-216-809-11	METAL CHIP	100	5%	1/10W	R760	1-216-833-11	METAL CHIP	10K	5%	1/10W
R662	1-216-809-11	METAL CHIP	100	5%	1/10W	R761	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R663	1-216-809-11	METAL CHIP	100	5%	1/10W	R772	1-216-833-11	METAL CHIP	10K	5%	1/10W
R664	1-216-809-11	METAL CHIP	100	5%	1/10W	R776	1-218-285-11	METAL CHIP	75	5%	1/10W
R665	1-216-809-11	METAL CHIP	100	5%	1/10W	R779	1-218-285-11	METAL CHIP	75	5%	1/10W
R666	1-216-864-11	SHORT CHIP	0		(HX520/HX720/HX722/HX920)	R780	1-218-285-11	METAL CHIP	75	5%	1/10W
R667	1-216-809-11	METAL CHIP	100	5%	1/10W	R785	1-216-864-11	SHORT CHIP	0		
R668	1-216-864-11	SHORT CHIP	0			R791	1-216-864-11	SHORT CHIP	0		
R669	1-216-833-11	METAL CHIP	10K	5%	1/10W	R802	1-216-845-11	METAL CHIP	100K	5%	1/10W
R670	1-216-833-11	METAL CHIP	10K	5%	1/10W	R803	1-216-845-11	METAL CHIP	100K	5%	1/10W
R671	1-216-845-11	METAL CHIP	100K	5%	1/10W	R804	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R672	1-216-833-11	METAL CHIP	10K	5%	1/10W	R805	1-216-845-11	METAL CHIP	100K	5%	1/10W
			(HX520/HX720/HX722/HX920)			R806	1-216-845-11	METAL CHIP	100K	5%	1/10W
R674	1-216-833-11	METAL CHIP	10K	5%	1/10W	R807	1-216-845-11	METAL CHIP	100K	5%	1/10W
R675	1-216-833-11	METAL CHIP	10K	5%	1/10W	R808	1-216-845-11	METAL CHIP	100K	5%	1/10W
R676	1-216-833-11	METAL CHIP	10K	5%	1/10W	R819	1-216-809-11	METAL CHIP	100	5%	1/10W
R677	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R820	1-216-809-11	METAL CHIP	100	5%	1/10W
R678	1-216-845-11	METAL CHIP	100K	5%	1/10W	R821	1-216-809-11	METAL CHIP	100	5%	1/10W
R679	1-216-833-11	METAL CHIP	10K	5%	1/10W	R822	1-216-809-11	METAL CHIP	100	5%	1/10W
			(HX525/HX725/HX727/HX925)			R823	1-216-809-11	METAL CHIP	100	5%	1/10W
R681	1-216-833-11	METAL CHIP	10K	5%	1/10W	R825	1-216-809-11	METAL CHIP	100	5%	1/10W
R682	1-216-833-11	METAL CHIP	10K	5%	1/10W	R827	1-216-809-11	METAL CHIP	100	5%	1/10W
			(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			R828	1-216-809-11	METAL CHIP	100	5%	1/10W
R683	1-216-833-11	METAL CHIP	10K	5%	1/10W	R835	1-216-845-11	METAL CHIP	100K	5%	1/10W
			(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			R836	1-216-845-11	METAL CHIP	100K	5%	1/10W
R685	1-216-809-11	METAL CHIP	100	5%	1/10W	R837	1-216-864-11	SHORT CHIP	0		
R686	1-216-809-11	METAL CHIP	100	5%	1/10W	R838	1-216-864-11	SHORT CHIP	0		
R692	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R839	1-216-833-11	METAL CHIP	10K	5%	1/10W
R693	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R840	1-216-813-11	METAL CHIP	220	5%	1/10W
R697	1-216-833-11	METAL CHIP	10K	5%	1/10W	R841	1-216-809-11	METAL CHIP	100	5%	1/10W
R698	1-216-833-11	METAL CHIP	10K	5%	1/10W	R842	1-216-857-11	METAL CHIP	1M	5%	1/10W
R699	1-216-833-11	METAL CHIP	10K	5%	1/10W	R843	1-216-864-11	SHORT CHIP	0		
R702	1-216-864-11	SHORT CHIP	0		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R844	1-218-285-11	METAL CHIP	75	5%	1/10W
R705	1-216-864-11	SHORT CHIP	0			R845	1-218-285-11	METAL CHIP	75	5%	1/10W
R712	1-218-883-11	METAL CHIP	33K	0.5%	1/10W	R852	1-218-285-11	METAL CHIP	75	5%	1/10W
R713	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R854	1-218-285-11	METAL CHIP	75	5%	1/10W
R714	1-216-855-11	METAL CHIP	680K	5%	1/10W	R858	1-218-285-11	METAL CHIP	75	5%	1/10W
R715	1-216-841-11	METAL CHIP	47K	5%	1/10W	R859	1-216-845-11	METAL CHIP	100K	5%	1/10W
R716	1-216-845-11	METAL CHIP	100K	5%	1/10W	R860	1-216-809-11	METAL CHIP	100	5%	1/10W
R718	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W	R861	1-218-285-11	METAL CHIP	75	5%	1/10W
						R862	1-216-845-11	METAL CHIP	100K	5%	1/10W
						R863	1-216-809-11	METAL CHIP	100	5%	1/10W
						R864	1-216-807-11	METAL CHIP	68	5%	1/10W

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description		Remarks
R865	1-218-285-11	METAL CHIP	75	5%	1/10W	R1142	1-216-864-11	SHORT CHIP	0	(HX525/HX725/HX727/HX925)
R866	1-218-285-11	METAL CHIP	75	5%	1/10W	R1143	1-216-864-11	SHORT CHIP	0	(HX525/HX725/HX727/HX925)
R867	1-216-845-11	METAL CHIP	100K	5%	1/10W	R1144	1-216-821-11	METAL CHIP	1K	5% 1/10W (HX525/HX725/HX727/HX925)
R868	1-218-285-11	METAL CHIP	75	5%	1/10W	R1146	1-216-864-11	SHORT CHIP	0	(HX525/HX725/HX727/HX925)
R869	1-218-285-11	METAL CHIP	75	5%	1/10W	R1147	1-216-829-11	METAL CHIP	4.7K	5% 1/10W (HX525/HX725/HX727/HX925)
R870	1-218-285-11	METAL CHIP	75	5%	1/10W	R1148	1-216-029-00	RES-CHIP	150	5% 1/10W (HX525/HX725/HX727/HX925)
R871	1-216-864-11	SHORT CHIP	0			R1401	1-216-821-11	METAL CHIP	1K	5% 1/10W
R872	1-216-864-11	SHORT CHIP	0			R1402	1-216-823-11	METAL CHIP	1.5K	5% 1/10W
R873	1-216-864-11	SHORT CHIP	0			R1403	1-216-821-11	METAL CHIP	1K	5% 1/10W
R874	1-216-845-11	METAL CHIP	100K	5%	1/10W	R1406	1-216-809-11	METAL CHIP	100	5% 1/10W
R875	1-216-845-11	METAL CHIP	100K	5%	1/10W	R1407	1-216-819-11	METAL CHIP	680	5% 1/10W
R876	1-216-845-11	METAL CHIP	100K	5%	1/10W	R1408	1-216-809-11	METAL CHIP	100	5% 1/10W
R877	1-216-845-11	METAL CHIP	100K	5%	1/10W	R1409	1-216-809-11	METAL CHIP	100	5% 1/10W
R878	1-216-295-91	SHORT CHIP	0			R1410	1-216-825-11	METAL CHIP	2.2K	5% 1/10W
R879	1-216-295-91	SHORT CHIP	0			R1411	1-216-825-11	METAL CHIP	2.2K	5% 1/10W
R886	1-216-864-11	SHORT CHIP	0			R1412	1-216-846-11	METAL CHIP	120K	5% 1/10W
R887	1-216-864-11	SHORT CHIP	0			R1416	1-216-825-11	METAL CHIP	2.2K	5% 1/10W
R888	1-216-845-11	METAL CHIP	100K	5%	1/10W	R1417	1-216-864-11	SHORT CHIP	0	
R889	1-216-845-11	METAL CHIP	100K	5%	1/10W	R1418	1-216-864-11	SHORT CHIP	0	
R896	1-216-817-11	METAL CHIP	470	5%	1/10W	R1419	1-216-864-11	SHORT CHIP	0	
R897	1-216-817-11	METAL CHIP	470	5%	1/10W					
R898	1-216-817-11	METAL CHIP	470	5%	1/10W					
R899	1-216-817-11	METAL CHIP	470	5%	1/10W					
R1101	1-216-821-11	METAL CHIP	1K	5%	1/10W					
					(HX525/HX725/HX727/HX925)					
R1103	1-216-821-11	METAL CHIP	1K	5%	1/10W	R1451	1-216-821-11	METAL CHIP	1K	5% 1/10W
					(HX525/HX725/HX727/HX925)	R1452	1-218-895-11	METAL CHIP	100K	0.5% 1/10W
R1105	1-216-821-11	METAL CHIP	1K	5%	1/10W	R1453	1-218-905-11	METAL CHIP	270K	0.5% 1/10W
					(HX525/HX725/HX727/HX925)	R1454	1-218-885-11	METAL CHIP	39K	0.5% 1/10W
R1106	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R1601	1-216-833-11	METAL CHIP	10K	5% 1/10W
					(HX525/HX725/HX727/HX925)	R1602	1-216-833-11	METAL CHIP	10K	5% 1/10W
R1107	1-216-029-00	RES-CHIP	150	5%	1/10W	R1603	1-216-833-11	METAL CHIP	10K	5% 1/10W
					(HX525/HX725/HX727/HX925)	R1604	1-216-833-11	METAL CHIP	10K	5% 1/10W
R1108	1-216-819-11	METAL CHIP	680	5%	1/10W	R1609	1-216-847-11	METAL CHIP	150K	5% 1/10W
					(HX525/HX725/HX727/HX925)	R1610	1-216-809-11	METAL CHIP	100	5% 1/10W
R1110	1-216-821-11	METAL CHIP	1K	5%	1/10W					
					(HX525/HX725/HX727/HX925)	R1613	1-216-837-11	METAL CHIP	22K	5% 1/10W
R1111	1-216-821-11	METAL CHIP	1K	5%	1/10W	R1614	1-216-833-11	METAL CHIP	10K	5% 1/10W
					(HX525/HX725/HX727/HX925)	R1621	1-216-839-11	METAL CHIP	33K	5% 1/10W
R1115	1-216-864-11	SHORT CHIP	0			R1624	1-216-833-11	METAL CHIP	10K	5% 1/10W
					(HX525/HX725/HX727/HX925)	R1625	1-216-833-11	METAL CHIP	10K	5% 1/10W
R1116	1-216-845-11	METAL CHIP	100K	5%	1/10W	R1626	1-216-821-11	METAL CHIP	1K	5% 1/10W
					(HX525/HX725/HX727/HX925)	R1627	1-216-864-11	SHORT CHIP	0	
R1120	1-216-821-11	METAL CHIP	1K	5%	1/10W	R1628	1-216-845-11	METAL CHIP	100K	5% 1/10W
					(HX525/HX725/HX727/HX925)	R1629	1-216-817-11	METAL CHIP	470	5% 1/10W
R1132	1-216-029-00	RES-CHIP	150	5%	1/10W	R1630	1-216-817-11	METAL CHIP	470	5% 1/10W
					(HX525/HX725/HX727/HX925)	R1632	1-216-833-11	METAL CHIP	10K	5% 1/10W
R1133	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R1633	1-216-821-11	METAL CHIP	1K	5% 1/10W
					(HX525/HX725/HX727/HX925)	R1636	1-216-809-11	METAL CHIP	100	5% 1/10W
R1134	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R1637	1-216-809-11	METAL CHIP	100	5% 1/10W
					(HX525/HX725/HX727/HX925)	R1638	1-216-809-11	METAL CHIP	100	5% 1/10W
R1139	1-216-833-11	METAL CHIP	10K	5%	1/10W					
					(HX525/HX725/HX727/HX925)	R1707	1-216-295-91	SHORT CHIP	0	
R1140	1-216-833-11	METAL CHIP	10K	5%	1/10W	R1709	1-216-295-91	SHORT CHIP	0	
					(HX525/HX725/HX727/HX925)	R1710	1-216-864-11	SHORT CHIP	0	
R1141	1-216-833-11	METAL CHIP	10K	5%	1/10W	R1714	1-216-817-11	METAL CHIP	470	5% 1/10W
					(HX525/HX725/HX727/HX925)	R1715	1-216-864-11	SHORT CHIP	0	
						R1716	1-218-285-11	METAL CHIP	75	5% 1/10W
						R1717	1-218-285-11	METAL CHIP	75	5% 1/10W
						R1719	1-216-833-11	METAL CHIP	10K	5% 1/10W
						R1720	1-216-833-11	METAL CHIP	10K	5% 1/10W
						R1735	1-216-817-11	METAL CHIP	470	5% 1/10W

AV-103**FL-159****FR-240**

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>			<u>Remarks</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>			<u>Remarks</u>	
R1736	1-216-833-11	METAL CHIP	10K	5%	1/10W			< IC >				
R1738	1-216-864-11	SHORT CHIP	0			IC3101	8-759-643-83	IC	uPD16315GB-3BS			
R1801	1-216-864-11	SHORT CHIP	0					< JACK >				
		< THERMISTOR >										
TH601	1-803-384-11	THERMISTOR (1608)				J3101	1-780-049-11	TERMINAL BOARD (S TERMINAL+3P)				
		< TUNER UNIT >						< COIL >				
△TU401	8-597-558-00	TUNER, FSS BTF-DC441 (EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				L3101	1-412-537-31	INDUCTOR	100uH			
△TU401	8-597-559-00	TUNER, FSS BTF-DF441 (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)						< FLUORESCENT INDICATOR TUBE >				
		< VIBRATOR >				* ND3101	1-519-849-21	INDICATOR TUBE, FLUORESCENT				
* X602	1-813-700-21	VIBRATOR, CRYSTAL (10MHz)						< TRANSISTOR >				
* X603	1-813-698-11	VIBRATOR, CRYSTAL (32.76KHz)				Q3101	8-729-901-88	TRANSISTOR	2SC2411K-CR			
X1101	1-781-589-21	VIBRATOR, CRYSTAL (16MHz) (HX525/HX725/HX727/HX925)				Q3102	8-729-901-88	TRANSISTOR	2SC2411K-CR			
* X1401	1-813-713-31	VIBRATOR, CRYSTAL (18.432MHz)						< RESISTOR >				
Not supplied		FL-159 BOARD, COMPLETE				R3101	1-218-285-11	METAL CHIP	75	5%	1/10W	
		*****				R3102	1-218-285-11	METAL CHIP	75	5%	1/10W	
		< CAPACITOR >				R3103	1-216-864-11	SHORT CHIP	0			
C3103	1-164-230-11	CERAMIC CHIP	220PF	5%	50V	R3104	1-216-864-11	SHORT CHIP	0			
C3104	1-164-230-11	CERAMIC CHIP	220PF	5%	50V	R3105	1-216-864-11	SHORT CHIP	0			
C3106	1-125-972-91	ELECT	100uF	20%	16V	R3108	1-218-285-11	METAL CHIP	75	5%	1/10W	
C3110	1-106-363-00	MYLAR	0.0068uF	5%	200V	R3109	1-216-864-11	SHORT CHIP	0			
C3113	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V	R3111	1-216-827-11	METAL CHIP	3.3K	5%	1/10W	
C3114	1-128-131-11	ELECT	22uF	20%	50V	R3113	1-216-849-11	METAL CHIP	220K	5%	1/10W	
C3115	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V	R3114	1-216-849-11	METAL CHIP	220K	5%	1/10W	
C3116	1-107-726-91	CERAMIC CHIP	0.01uF	10%	16V	R3115	1-216-838-11	METAL CHIP	27K	5%	1/10W	
C3117	1-107-726-91	CERAMIC CHIP	0.01uF	10%	16V	R3116	1-216-845-11	METAL CHIP	100K	5%	1/10W	
C3118	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V	R3123	1-216-295-91	SHORT CHIP	0			
C3120	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	R3124	1-216-295-91	SHORT CHIP	0			
C3121	1-164-217-11	CERAMIC CHIP	150PF	5%	50V			< SWITCH >				
		< CONNECTOR >				S3101	1-771-410-21	SWITCH, TACTILE (POWER)				
		< DIODE >						< TRANSFORMER >				
CN3101	1-774-729-21	PIN, CONNECTOR (PC BOARD) 10P				* T3101	1-445-017-11	TRANSFORMER, DC-DC CONVERTER				
Not supplied		FR-240 BOARD, COMPLETE						*****				
		*****						< CAPACITOR >				
D3102	8-719-067-40	DIODE	STZ6.8N-T146			C3001	1-107-726-91	CERAMIC CHIP	0.01uF	10%	16V	
D3103	8-719-067-40	DIODE	STZ6.8N-T146			C3002	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
D3104	8-719-067-40	DIODE	STZ6.8N-T146			C3004	1-107-726-91	CERAMIC CHIP	0.01uF	10%	16V	
D3105	8-719-067-40	DIODE	STZ6.8N-T146					< CONNECTOR >				
D3106	8-719-067-40	DIODE	STZ6.8N-T146									
D3107	8-719-067-40	DIODE	STZ6.8N-T146			CN3003	1-815-383-11	CONNECTOR, FPC/FFC 15P				
D3108	8-719-988-61	DIODE	1SS355TE-17			CN3004	1-785-828-21	CONNECTOR, SQUARE TYPE 4P (DV IN)				
D3109	8-719-988-61	DIODE	1SS355TE-17			CN3005	1-573-806-21	PIN, CONNECTOR (1.5MM) (SMD) 6P				
D3110	8-719-988-61	DIODE	1SS355TE-17					< DIODE >				
D3111	8-719-988-61	DIODE	1SS355TE-17									
D3112	8-719-056-82	DIODE	UDZ-TE-17-6.2B			D3002	8-719-077-79	DIODE	SLR-332VRT32 (SYNCHRO REC)			
		< FERRITE BEAD >				D3003	8-719-077-79	DIODE	SLR-332VRT32 (TIMER REC)			
		< DIODE >				D3004	6-500-176-01	DIODE	EB3804X-TP-J555K (HDD)			
		< FERRITE BEAD >				D3005	8-719-084-27	DIODE	SLI-343YCT32WST (DVD)			
FB3101	1-414-228-11	INDUCTOR, FERRITE BEAD										
FB3102	1-414-228-11	INDUCTOR, FERRITE BEAD										

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

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
< IC >											
IC3001	6-706-783-01	IC	BU2050F-E2			A-1183-523-A	RD-060 BOARD, COMPLETE (HX520:AEP1,2)				
* IC3002	6-600-500-01	IC	GP1UM28XK0SF			A-1183-524-A	RD-060 BOARD, COMPLETE (HX525)				
< TRANSISTOR >											
Q3001	8-729-421-22	TRANSISTOR	UN2211			A-1183-525-A	RD-060 BOARD, COMPLETE (HX520:AEP3)				
Q3002	6-550-280-01	TRANSISTOR	BC857CE6327			A-1183-526-A	RD-060 BOARD, COMPLETE (HX725:AEP1)				
< RESISTOR >											
R3001	1-216-295-91	SHORT CHIP	0			A-1183-527-A	RD-060 BOARD, COMPLETE (HX725:UK)				
R3003	1-216-864-11	SHORT CHIP	0			A-1183-528-A	RD-060 BOARD, COMPLETE (HX727:AEP1)				
R3004	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	A-1183-530-A	RD-060 BOARD, COMPLETE (HX725:AEP3)				
R3005	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	A-1183-531-A	RD-060 BOARD, COMPLETE (HX925)				
R3006	1-216-813-11	METAL CHIP	220	5%	1/10W	A-1183-532-A	RD-060 BOARD, COMPLETE (HX920)				
< CAPACITOR >											
R3007	1-216-813-11	METAL CHIP	220	5%	1/10W	C101	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
R3008	1-216-864-11	SHORT CHIP	0			C102	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
R3009	1-216-806-11	METAL CHIP	56	5%	1/10W	C103	1-165-887-91	CERAMIC CHIP	0.22uF	10%	6.3V
R3010	1-216-811-11	METAL CHIP	150	5%	1/10W	C104	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
R3012	1-216-864-11	SHORT CHIP	0			C107	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
R3013	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W	C109	1-126-246-11	ELECT CHIP	220uF	20%	4V
R3014	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	C110	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
R3015	1-216-827-11	METAL CHIP	3.3K	5%	1/10W	C111	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
R3016	1-216-830-11	METAL CHIP	5.6K	5%	1/10W	C112	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
R3017	1-216-832-11	METAL CHIP	8.2K	5%	1/10W	C113	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
< SWITCH >											
S3001	1-771-410-21	SWITCH, TACTILE (PLAY)				C114	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
S3002	1-771-410-21	SWITCH, TACTILE (REC STOP)				C115	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
S3003	1-771-410-21	SWITCH, TACTILE (REC)				C116	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
S3004	1-771-410-21	SWITCH, TACTILE (STOP)				C117	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
S3005	1-771-410-21	SWITCH, TACTILE (DUB)				C118	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
S3006	1-771-410-21	SWITCH, TACTILE (OPEN/CLOSE)				C119	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
S3007	1-771-410-21	SWITCH, TACTILE (CH +)				C120	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
S3008	1-771-410-21	SWITCH, TACTILE (CH -)				C121	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
S3009	1-771-410-21	SWITCH, TACTILE (REC MODE)				C122	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
S3012	1-771-410-21	SWITCH, TACTILE (DVD)				C123	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
S3013	1-771-410-21	SWITCH, TACTILE (HDD)				C124	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
S3014	1-771-410-21	SWITCH, TACTILE (INPUT SELECT)				C125	1-128-994-21	ELECT CHIP	47uF	20%	10V
< CERAMIC CHIP >											
						C126	1-126-209-11	ELECT CHIP	100uF	20%	4V
						C127	1-128-994-21	ELECT CHIP	47uF	20%	10V
						C128	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C129	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C130	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C131	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C132	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C133	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C134	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C135	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C136	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C137	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C138	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C139	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C140	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C141	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C142	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C143	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C144	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C145	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C146	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C147	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
						C148	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks		
C330	1-164-849-11	CERAMIC CHIP	9PF (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	C805	1-125-777-11	CERAMIC CHIP	0.5PF 0.01uF 10%	50V 10V	
C331	1-164-849-11	CERAMIC CHIP	9PF (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	C806	1-164-943-81	CERAMIC CHIP	0.5PF 0.01uF 10%	50V 16V	
C332	1-125-777-11	CERAMIC CHIP	0.1uF (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	C807	1-164-854-11	CERAMIC CHIP	0.1uF 15PF 5%	10% 50V	
C333	1-125-777-11	CERAMIC CHIP	0.1uF (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	C808	1-164-854-11	CERAMIC CHIP	0.1uF 15PF 5%	10% 50V	
C334	1-125-777-11	CERAMIC CHIP	0.1uF (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	C809	1-164-943-81	CERAMIC CHIP	0.01uF 0.01uF 10%	10% 16V	
C335	1-125-777-11	CERAMIC CHIP	0.1uF (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	C810	1-164-943-81	CERAMIC CHIP	0.01uF 0.01uF 10%	10% 16V	
C336	1-125-777-11	CERAMIC CHIP	0.1uF (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	C811	1-164-943-81	CERAMIC CHIP	0.01uF 0.22uF 10%	10% 6.3V	
C337	1-125-777-11	CERAMIC CHIP	0.1uF (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	C812	1-165-887-91	CERAMIC CHIP	0.22uF 10uF 20%	10% 16V	
C338	1-125-777-11	CERAMIC CHIP	0.1uF (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	C813	1-124-779-00	ELECT CHIP	0.22uF 10uF 10%	10% 6.3V	
C339	1-164-943-81	CERAMIC CHIP	0.01uF (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	C816	1-165-887-91	CERAMIC CHIP	0.22uF 10uF 10%	10% 6.3V	
C340	1-164-943-81	CERAMIC CHIP	0.01uF (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920)	C817	1-128-994-21	ELECT CHIP	0.1uF 47uF 20%	10% 10V	
C501	1-137-710-11	CERAMIC CHIP	10uF 20% 6.3V	C1006	1-164-943-81	CERAMIC CHIP	0.01uF 0.1uF 10%	10% 16V	
C502	1-125-777-11	CERAMIC CHIP	0.1uF 10% 10V	C1008	1-125-777-11	CERAMIC CHIP	0.1uF 10%	10% 10V	
C505	1-125-777-11	CERAMIC CHIP	0.1uF 10% 10V	C1009	1-125-777-11	CERAMIC CHIP	0.1uF 10%	10% 10V	
C506	1-125-777-11	CERAMIC CHIP	0.1uF 10% 10V	C1010	1-125-777-11	CERAMIC CHIP	0.1uF 10%	10% 10V	
C601	1-164-943-81	CERAMIC CHIP	0.01uF 10% 16V	C1011	1-125-777-11	CERAMIC CHIP	0.1uF 10%	10% 10V	
C602	1-137-710-11	CERAMIC CHIP	10uF 20% 6.3V	C1012	1-125-777-11	CERAMIC CHIP	0.1uF 10%	10% 10V	
C603	1-137-710-11	CERAMIC CHIP	10uF 20% 6.3V	C1013	1-125-777-11	CERAMIC CHIP	0.1uF 10%	10% 10V	
C606	1-137-710-11	CERAMIC CHIP	10uF 20% 6.3V	C1014	1-125-777-11	CERAMIC CHIP	0.1uF 10%	10% 10V	
C607	1-137-710-11	CERAMIC CHIP	10uF 20% 6.3V	C1015	1-125-777-11	CERAMIC CHIP	0.1uF 10%	10% 10V	
C609	1-128-994-21	ELECT CHIP	47uF 20% 10V	C1028	1-165-908-11	CERAMIC CHIP	1uF 10%	10% 10V	
C610	1-128-994-21	ELECT CHIP	47uF 20% 10V	C1029	1-137-710-11	CERAMIC CHIP	10uF 20%	20% 6.3V	
C611	1-165-908-11	CERAMIC CHIP	1uF 10% 10V	C1030	1-125-777-11	CERAMIC CHIP	0.1uF 10%	10% 10V	
C614	1-125-777-11	CERAMIC CHIP	0.1uF 10% 10V	C1031	1-125-777-11	CERAMIC CHIP	0.1uF 10%	10% 10V	
C615	1-125-777-11	CERAMIC CHIP	0.1uF 10% 10V	C1032	1-125-777-11	CERAMIC CHIP	0.1uF 10%	10% 10V	
C616	1-164-937-11	CERAMIC CHIP	0.001uF 10% 50V	C1033	1-127-715-91	CERAMIC CHIP	0.22uF 10%	10% 16V	
C617	1-125-777-11	CERAMIC CHIP	0.1uF 10% 10V	C1034	1-165-887-91	CERAMIC CHIP	0.22uF 10%	10% 6.3V	
C618	1-125-777-11	CERAMIC CHIP	0.1uF 10% 10V	C1035	1-164-943-81	CERAMIC CHIP	0.01uF 10%	10% 16V	
C619	1-125-777-11	CERAMIC CHIP	0.1uF 10% 10V	C1036	1-165-908-11	CERAMIC CHIP	1uF 10%	10% 10V	
C620	1-162-960-11	CERAMIC CHIP	220PF 10% 50V	C1037	1-164-943-81	CERAMIC CHIP	0.01uF 10%	10% 16V	
C621	1-164-943-81	CERAMIC CHIP	0.01uF 10% 16V	* C1038	1-112-833-11	ELECT CHIP	68uF 20%	20% 16V	
C622	1-125-777-11	CERAMIC CHIP	0.1uF 10% 10V	< CONNECTOR >					
C623	1-137-710-11	CERAMIC CHIP	10uF 20% 6.3V (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	CN101	1-818-857-51	CONNECTOR, FFC/FPC 40P			
C701	1-137-710-11	CERAMIC CHIP	10uF 20% 6.3V	CN601	1-816-339-21	CONNECTOR, BOARD TO BOARD 9P			
C702	1-164-943-81	CERAMIC CHIP	0.01uF 10% 16V	CN701	1-573-806-21	PIN, CONNECTOR (1.5MM) (SMD) 6P			
< FERRITE BEAD >									
C703	1-164-943-81	CERAMIC CHIP	0.01uF 10% 16V	FB101	1-400-794-21	EMI FERRITE (SMD) (1608)			
C704	1-164-943-81	CERAMIC CHIP	0.01uF 10% 16V	FB103	1-400-794-21	EMI FERRITE (SMD) (1608)			
C705	1-164-943-81	CERAMIC CHIP	0.01uF 10% 16V	FB106	1-469-670-21	FERRITE, EMI (SMD) (2012)			
C706	1-164-849-11	CERAMIC CHIP	9PF 0.5PF 50V	FB107	1-469-670-21	FERRITE, EMI (SMD) (2012)			
C707	1-164-849-11	CERAMIC CHIP	9PF 0.5PF 50V	FB110	1-469-670-21	FERRITE, EMI (SMD) (2012)			
C708	1-164-943-81	CERAMIC CHIP	0.01uF 10% 16V	FB111	1-400-794-21	EMI FERRITE (SMD) (1608)			
C710	1-164-943-81	CERAMIC CHIP	0.01uF 10% 16V	FB112	1-400-794-21	EMI FERRITE (SMD) (1608)			
C711	1-164-943-81	CERAMIC CHIP	0.01uF 10% 16V	FB602	1-400-794-21	EMI FERRITE (SMD) (1608)			
C712	1-164-943-81	CERAMIC CHIP	0.01uF 10% 16V	FB603	1-400-794-21	EMI FERRITE (SMD) (1608)			
C713	1-164-943-81	CERAMIC CHIP	0.01uF 10% 16V	FB604	1-400-794-21	EMI FERRITE (SMD) (1608)			
C714	1-164-943-81	CERAMIC CHIP	0.01uF 10% 16V	FB605	1-400-794-21	EMI FERRITE (SMD) (1608)			
C715	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V	FB606	1-469-084-21	FERRITE 0mH			
< FLUORESCENT INDICATOR >									
FL501	1-234-867-11	FILTER, EMI REMOVAL (SMD)							
FL702	1-234-867-11	FILTER, EMI REMOVAL (SMD)							
FL801	1-234-867-11	FILTER, EMI REMOVAL (SMD)							

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
< IC >				R108	1-218-990-81	SHORT CHIP	0
IC101	6-702-302-01	IC TK11133CSCL-G		R109	1-218-941-81	RES-CHIP	100 5% 1/16W
IC102	6-704-573-01	IC M24C32-WMN6T (B)		R110	1-218-990-81	SHORT CHIP	0
IC103	6-708-896-01	IC R8A34012BG		R111	1-218-941-81	RES-CHIP	100 5% 1/16W
IC105	6-708-305-01	IC K4H511638C-UCB3T		R112	1-218-990-81	SHORT CHIP	0
IC106	6-708-305-01	IC K4H511638C-UCB3T		R113	1-218-953-11	RES-CHIP	1K 5% 1/16W
IC108	6-708-935-01	IC MM1762FHB		R114	1-218-965-11	RES-CHIP	10K 5% 1/16W
IC109	6-702-302-01	IC TK11133CSCL-G		R115	1-218-962-11	RES-CHIP	5.6K 5% 1/16W
IC201	6-806-103-01	IC 88SA8040-TBC1C000		R116	1-218-961-11	RES-CHIP	4.7K 5% 1/16W
IC202	6-705-311-01	IC S-T111B18MC-OGDTFG		R123	1-218-965-11	RES-CHIP	10K 5% 1/16W
* IC301	6-708-848-01	IC TVP5146M2PFP (HX520:AEP3/HX725:AEP3/HX920/HX925)		R124	1-218-957-11	RES-CHIP	2.2K 5% 1/16W
IC302	6-708-882-01	IC BH18MA3WHFV-TR (HX520:AEP3/HX725:AEP3/HX920/HX925)		R125	1-218-957-11	RES-CHIP	2.2K 5% 1/16W
* IC502	6-708-924-01	IC S29GL256N90TFIR20		R126	1-218-957-11	RES-CHIP	2.2K 5% 1/16W
IC601	6-708-889-01	IC MP2105DJ-LF-Z		R127	1-218-957-11	RES-CHIP	2.2K 5% 1/16W
IC602	6-706-237-01	IC PQ1MX55M2SPQ		R128	1-218-990-81	SHORT CHIP	0
IC604	8-759-660-23	IC SN74HCT08APWR		R129	1-218-935-11	RES-CHIP	33 5% 1/16W
IC605	8-759-548-99	IC SN74LV08APWR		R130	1-218-990-81	SHORT CHIP	0
IC606	6-703-224-01	IC S-80828CNNB-B8NT2G		R131	1-218-933-11	RES-CHIP	22 5% 1/16W
IC701	6-706-365-01	IC uPD72852AGB-8EU-A		R132	1-218-933-11	RES-CHIP	22 5% 1/16W
* IC802	6-708-929-01	IC ICS650G-42LFT		R133	1-218-990-81	SHORT CHIP	0
IC803	6-708-888-01	IC WM8590GEDS/RV		R134	1-218-933-11	RES-CHIP	22 5% 1/16W
< COIL >				R135	1-218-990-81	SHORT CHIP	0
L101	1-469-555-21	INDUCTOR 10uH		R136	1-218-935-11	RES-CHIP	33 5% 1/16W
L102	1-469-555-21	INDUCTOR 10uH		R137	1-218-973-11	RES-CHIP	47K 5% 1/16W
L201	1-469-555-21	INDUCTOR 10uH		R138	1-218-973-11	RES-CHIP	47K 5% 1/16W
L202	1-469-555-21	INDUCTOR 10uH		R139	1-218-973-11	RES-CHIP	47K 5% 1/16W
L301	1-469-555-21	INDUCTOR 10uH		R140	1-218-973-11	RES-CHIP	47K 5% 1/16W
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				R141	1-218-973-11	RES-CHIP	47K 5% 1/16W
L302	1-469-555-21	INDUCTOR 10uH		R142	1-218-973-11	RES-CHIP	47K 5% 1/16W
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				R143	1-208-699-11	METAL CHIP	4.7K 0.5% 1/16W
L303	1-469-555-21	INDUCTOR 10uH		R145	1-218-973-11	RES-CHIP	47K 5% 1/16W
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				R146	1-208-699-11	METAL CHIP	4.7K 0.5% 1/16W
L601	1-419-630-21	INDUCTOR 4.7uH		R147	1-218-933-11	RES-CHIP	22 5% 1/16W
L602	1-400-073-21	INDUCTOR 4.7uH		R148	1-218-933-11	RES-CHIP	22 5% 1/16W
L603	1-469-555-21	INDUCTOR 10uH		R149	1-218-939-11	RES-CHIP	68 5% 1/16W
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				R160	1-218-990-81	SHORT CHIP	0
< LINE FILTER >				R161	1-218-990-81	SHORT CHIP	0
LF701	1-400-476-11	COMMON MODE CHOKE COIL		R162	1-218-851-11	METAL CHIP	1.5K 0.5% 1/10W
< TRANSISTOR >				R163	1-218-851-11	METAL CHIP	1.5K 0.5% 1/10W
Q601	6-550-280-01	TRANSISTOR BC857CE6327		R164	1-211-977-11	METAL CHIP	22 0.5% 1/10W
Q602	6-550-280-01	TRANSISTOR BC857CE6327		R165	1-211-977-11	METAL CHIP	22 0.5% 1/10W
Q603	6-550-280-01	TRANSISTOR BC857CE6327		R166	1-218-827-11	METAL CHIP	150 0.5% 1/10W
Q604	6-550-280-01	TRANSISTOR BC857CE6327		R167	1-218-827-11	METAL CHIP	150 0.5% 1/10W
Q605	6-550-280-01	TRANSISTOR BC857CE6327		R168	1-218-827-11	METAL CHIP	150 0.5% 1/10W
Q606	6-550-280-01	TRANSISTOR BC857CE6327		R169	1-218-827-11	METAL CHIP	150 0.5% 1/10W
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				R170	1-218-827-11	METAL CHIP	150 0.5% 1/10W
Q607	6-550-280-01	TRANSISTOR BC857CE6327		R171	1-218-935-11	RES-CHIP	33 5% 1/16W
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				R172	1-218-933-11	RES-CHIP	22 5% 1/16W
< RESISTOR >				R173	1-218-933-11	RES-CHIP	22 5% 1/16W
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				R174	1-218-933-11	RES-CHIP	22 5% 1/16W
R103	1-218-990-81	SHORT CHIP 0		R175	1-218-933-11	RES-CHIP	22 5% 1/16W
R104	1-218-990-81	SHORT CHIP 0		R180	1-218-965-11	RES-CHIP	10K 5% 1/16W
R105	1-218-990-81	SHORT CHIP 0		R181	1-218-965-11	RES-CHIP	10K 5% 1/16W
R106	1-218-941-81	RES-CHIP 100 5% 1/16W		R182	1-218-945-11	RES-CHIP	220 5% 1/16W
R107	1-218-990-81	SHORT CHIP 0		R183	1-218-945-11	RES-CHIP	220 5% 1/16W
				R190	1-208-699-11	METAL CHIP	4.7K 0.5% 1/16W
				R191	1-208-699-11	METAL CHIP	4.7K 0.5% 1/16W
				R192	1-208-699-11	METAL CHIP	4.7K 0.5% 1/16W
				R193	1-208-699-11	METAL CHIP	4.7K 0.5% 1/16W
				R196	1-218-953-11	RES-CHIP	1K 5% 1/16W

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks	
R197	1-216-864-11	SHORT CHIP	0	R318	1-218-941-81	RES-CHIP	100 5% 1/16W	
R198	1-218-933-11	RES-CHIP	22 5% 1/16W	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R322	1-218-957-11	RES-CHIP	2.2K 5% 1/16W
R223	1-218-940-11	RES-CHIP	82 5% 1/16W	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R323	1-218-957-11	RES-CHIP	2.2K 5% 1/16W
R224	1-218-933-11	RES-CHIP	22 5% 1/16W	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R325	1-218-941-81	RES-CHIP	100 5% 1/16W
R225	1-218-940-11	RES-CHIP	82 5% 1/16W	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R325	1-218-990-81	SHORT CHIP	0 (HX925)
R226	1-218-940-11	RES-CHIP	82 5% 1/16W	R328	1-218-965-11	RES-CHIP	10K 5% 1/16W	
R227	1-218-933-11	RES-CHIP	22 5% 1/16W	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R329	1-218-990-81	SHORT CHIP	0
R228	1-218-940-11	RES-CHIP	82 5% 1/16W	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R336	1-218-965-11	RES-CHIP	10K 5% 1/16W
R229	1-218-933-11	RES-CHIP	22 5% 1/16W	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R337	1-218-965-11	RES-CHIP	10K 5% 1/16W
R231	1-218-940-11	RES-CHIP	82 5% 1/16W	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R338	1-218-990-81	SHORT CHIP	0
R233	1-218-953-11	RES-CHIP	1K 5% 1/16W	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R504	1-218-961-11	RES-CHIP	4.7K 5% 1/16W
R237	1-216-864-11	SHORT CHIP	0	R513	1-218-965-11	RES-CHIP	10K 5% 1/16W	
R238	1-218-953-11	RES-CHIP	1K 5% 1/16W	R518	1-218-965-11	RES-CHIP	10K 5% 1/16W	
R240	1-218-953-11	RES-CHIP	1K 5% 1/16W	R519	1-218-965-11	RES-CHIP	10K 5% 1/16W	
R243	1-218-953-11	RES-CHIP	1K 5% 1/16W	R522	1-216-864-11	SHORT CHIP	0	
R245	1-218-949-11	RES-CHIP	470 5% 1/16W	R523	1-218-965-11	RES-CHIP	10K 5% 1/16W	
R246	1-218-989-11	RES-CHIP	1M 5% 1/16W	R524	1-218-990-81	SHORT CHIP	0	
R247	1-218-953-11	RES-CHIP	1K 5% 1/16W	R525	1-218-990-81	SHORT CHIP	0	
R248	1-208-709-11	METAL CHIP	12K 0.5% 1/16W	R532	1-218-962-11	RES-CHIP	5.6K 5% 1/16W	
R249	1-218-941-11	RES-CHIP	100 5% 1/16W	R533	1-218-990-81	SHORT CHIP	0	
R250	1-216-864-11	SHORT CHIP	0	R535	1-218-962-11	RES-CHIP	5.6K 5% 1/16W	
R252	1-216-864-11	SHORT CHIP	0	R547	1-218-990-81	SHORT CHIP	0	
R258	1-218-953-11	RES-CHIP	1K 5% 1/16W	R549	1-218-990-81	SHORT CHIP	0	
R261	1-218-965-11	RES-CHIP	10K 5% 1/16W	R551	1-218-990-81	SHORT CHIP	0	
R265	1-218-965-11	RES-CHIP	10K 5% 1/16W	R552	1-218-990-81	SHORT CHIP	0	
R267	1-218-953-11	RES-CHIP	1K 5% 1/16W	R553	1-218-990-81	SHORT CHIP	0	
R269	1-218-953-11	RES-CHIP	1K 5% 1/16W	R554	1-218-990-81	SHORT CHIP	0	
R270	1-218-953-11	RES-CHIP	1K 5% 1/16W	R555	1-218-990-81	SHORT CHIP	0	
R272	1-218-953-11	RES-CHIP	1K 5% 1/16W	R556	1-218-990-81	SHORT CHIP	0	
R274	1-218-965-11	RES-CHIP	10K 5% 1/16W	R557	1-218-990-81	SHORT CHIP	0	
R276	1-218-953-11	RES-CHIP	1K 5% 1/16W	R558	1-218-990-81	SHORT CHIP	0	
R279	1-218-990-81	SHORT CHIP	0	R560	1-218-990-81	SHORT CHIP	0	
R282	1-218-990-81	SHORT CHIP	0	R603	1-218-942-11	RES-CHIP	120 5% 1/16W	
R303	1-218-933-11	RES-CHIP	22 5% 1/16W (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R605	1-218-942-11	RES-CHIP	120 5% 1/16W	
R304	1-218-933-11	RES-CHIP	22 5% 1/16W (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R607	1-218-942-11	RES-CHIP	120 5% 1/16W	
R305	1-218-933-11	RES-CHIP	22 5% 1/16W (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R609	1-218-942-11	RES-CHIP	120 5% 1/16W	
R306	1-218-933-11	RES-CHIP	22 5% 1/16W (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R611	1-218-942-11	RES-CHIP	120 5% 1/16W	
R307	1-218-933-11	RES-CHIP	22 5% 1/16W (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R612	1-218-951-11	RES-CHIP	680 5% 1/16W	
R308	1-218-990-81	SHORT CHIP	0 (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R613	1-218-990-81	SHORT CHIP	0	
R312	1-218-990-81	SHORT CHIP	0 (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R614	1-218-951-11	RES-CHIP	680 5% 1/16W	
R313	1-218-990-81	SHORT CHIP	0 (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R615	1-218-990-81	SHORT CHIP	0	
R314	1-218-977-11	RES-CHIP	100K 5% 1/16W (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R616	1-218-990-81	SHORT CHIP	0	
R315	1-218-933-11	RES-CHIP	22 5% 1/16W (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R617	1-218-951-11	RES-CHIP	680 5% 1/16W	
R316	1-218-941-81	RES-CHIP	100 5% 1/16W (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R618	1-218-951-11	RES-CHIP	680 5% 1/16W	
R317	1-218-933-11	RES-CHIP	22 5% 1/16W (HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	R619	1-218-990-81	SHORT CHIP	0	
*				R620	1-218-990-81	SHORT CHIP	0	
				R621	1-218-951-11	RES-CHIP	680 5% 1/16W	
				R623	1-218-978-11	RES-CHIP	120K 5% 1/16W	
				R624	1-208-940-81	METAL CHIP	160K 0.5% 1/16W	
				R625	1-218-990-81	SHORT CHIP	0	

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description		Remarks	
R626	1-208-713-11	METAL CHIP	18K	0.5%	1/16W	R836	1-218-990-81	SHORT CHIP	0	(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	
R627	1-208-911-11	METAL CHIP	10K	0.5%	1/16W	R839	1-218-990-81	SHORT CHIP	0		
R628	1-216-295-91	SHORT CHIP	0			R840	1-218-990-81	SHORT CHIP	0		
R635	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R841	1-218-990-81	SHORT CHIP	0		
R638	1-218-990-81	SHORT CHIP	0			R842	1-218-990-81	SHORT CHIP	0		
R639	1-218-990-81	SHORT CHIP	0			R1001	1-218-990-81	SHORT CHIP	0		
R640	1-218-990-81	SHORT CHIP	0			R1002	1-218-990-81	SHORT CHIP	0		
R641	1-218-990-81	SHORT CHIP	0			R1003	1-218-990-81	SHORT CHIP	0		
R642	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1004	1-218-990-81	SHORT CHIP	0		
R643	1-218-990-81	SHORT CHIP	0			R1005	1-218-990-81	SHORT CHIP	0		
R644	1-218-990-81	SHORT CHIP	0			R1006	1-218-990-81	SHORT CHIP	0		
R645	1-218-990-81	SHORT CHIP	0			R1007	1-218-990-81	SHORT CHIP	0		
R646	1-218-990-81	SHORT CHIP	0			R1008	1-218-990-81	SHORT CHIP	0		
R647	1-218-949-11	RES-CHIP	470	5%	1/16W	R1009	1-218-953-11	RES-CHIP	1K	5%	1/16W
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)						R1010	1-218-965-11	RES-CHIP	10K	5%	1/16W
R648	1-218-990-81	SHORT CHIP	0			R1011	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)						R1012	1-218-990-81	SHORT CHIP	0		
R649	1-218-941-81	RES-CHIP	100	5%	1/16W	R1030	1-218-965-11	RES-CHIP	10K	5%	1/16W
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)						R1035	1-218-990-81	SHORT CHIP	0		
R650	1-218-949-11	RES-CHIP	470	5%	1/16W	R1037	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)						R1039	1-218-965-11	RES-CHIP	10K	5%	1/16W
R651	1-218-990-81	SHORT CHIP	0			R1040	1-218-937-11	RES-CHIP	47	5%	1/16W
(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)						R1041	1-218-937-11	RES-CHIP	47	5%	1/16W
R652	1-218-941-81	RES-CHIP	100	5%	1/16W	R1042	1-218-990-81	SHORT CHIP	0		
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)						R1043	1-218-990-81	SHORT CHIP	0		
R655	1-218-990-81	SHORT CHIP	0			R1044	1-218-933-11	RES-CHIP	22	5%	1/16W
R656	1-216-295-91	SHORT CHIP	0			R1045	1-218-933-11	RES-CHIP	22	5%	1/16W
R658	1-216-821-11	METAL CHIP	1K	5%	1/10W	R1046	1-218-933-11	RES-CHIP	22	5%	1/16W
R661	1-218-990-81	SHORT CHIP	0			R1047	1-218-933-11	RES-CHIP	22	5%	1/16W
R701	1-216-864-11	SHORT CHIP	0			R1051	1-218-953-11	RES-CHIP	1K	5%	1/16W
R703	1-218-941-81	RES-CHIP	100	5%	1/16W	R1053	1-218-965-11	RES-CHIP	10K	5%	1/16W
R705	1-218-965-11	RES-CHIP	10K	5%	1/16W	(HX520:UK/HX525/HX720:UK/HX725/HX727/HX925)					
R706	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1054	1-218-965-11	RES-CHIP	10K	5%	1/16W
R709	1-218-941-81	RES-CHIP	100	5%	1/16W	R1055	1-218-965-11	RES-CHIP	10K	5%	1/16W
R710	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1056	1-218-965-11	RES-CHIP	10K	5%	1/16W
R711	1-218-965-11	RES-CHIP	10K	5%	1/16W	(HX520:AEP1,2,3/HX720:AEP2/HX722/HX920)					
R712	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1060	1-218-990-81	SHORT CHIP	0		
R713	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1061	1-218-990-81	SHORT CHIP	0		
R714	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1062	1-218-990-81	SHORT CHIP	0		
R715	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1063	1-218-990-81	SHORT CHIP	0		
R717	1-208-910-11	METAL CHIP	9.1K	0.5%	1/16W	R1064	1-218-990-81	SHORT CHIP	0		
R718	1-218-938-11	RES-CHIP	56	5%	1/16W	R1065	1-218-990-81	SHORT CHIP	0		
R719	1-218-938-11	RES-CHIP	56	5%	1/16W	R1066	1-218-990-81	SHORT CHIP	0		
R721	1-218-938-11	RES-CHIP	56	5%	1/16W	R1067	1-218-990-81	SHORT CHIP	0		
R722	1-218-938-11	RES-CHIP	56	5%	1/16W	R1068	1-218-941-81	RES-CHIP	100	5%	1/16W
R723	1-218-864-11	METAL CHIP	5.1K	0.5%	1/10W	< COMPOSITION CIRCUIT BLOCK >					
R733	1-218-935-11	RES-CHIP	33	5%	1/16W	RB101	1-234-372-11	RES, NETWORK	100 (1005X4)		
R811	1-218-965-11	RES-CHIP	10K	5%	1/16W	RB102	1-234-372-11	RES, NETWORK	100 (1005X4)		
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)						RB103	1-234-372-11	RES, NETWORK	100 (1005X4)		
R812	1-218-965-11	RES-CHIP	10K	5%	1/16W	RB104	1-234-372-11	RES, NETWORK	100 (1005X4)		
R816	1-218-937-11	RES-CHIP	47	5%	1/16W	RB105	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)		
R817	1-218-935-11	RES-CHIP	33	5%	1/16W	RB106	1-234-702-11	RES, NETWORK	68 (1005X4)		
R821	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	RB107	1-234-702-11	RES, NETWORK	68 (1005X4)		
R823	1-218-931-11	RES-CHIP	15	5%	1/16W	RB108	1-234-702-11	RES, NETWORK	68 (1005X4)		
R825	1-218-939-11	RES-CHIP	68	5%	1/16W	RB109	1-234-702-11	RES, NETWORK	68 (1005X4)		
R826	1-218-935-11	RES-CHIP	33	5%	1/16W	RB110	1-242-963-21	RES, NETWORK	33 (1005X4)		
R827	1-218-941-81	RES-CHIP	100	5%	1/16W						

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
RB111	1-242-963-21	RES, NETWORK	33 (1005X4)	RB601	1-234-381-21	RES, NETWORK	100K (1005X4)
RB112	1-242-963-21	RES, NETWORK	33 (1005X4)	RB602	1-234-378-21	RES, NETWORK	10K (1005X4)
RB113	1-242-963-21	RES, NETWORK	33 (1005X4)	RB701	1-234-371-21	RES, NETWORK	47 (1005X4)
RB114	1-242-963-21	RES, NETWORK	33 (1005X4)	RB702	1-234-371-21	RES, NETWORK	47 (1005X4)
RB115	1-242-963-21	RES, NETWORK	33 (1005X4)	RB703	1-234-371-21	RES, NETWORK	47 (1005X4)
RB116	1-242-963-21	RES, NETWORK	33 (1005X4)				< VIBRATOR >
RB117	1-242-963-21	RES, NETWORK	33 (1005X4)	X201	1-813-210-11	VIBRATOR, CRYSTAL (NX5032GA)	
RB118	1-242-963-21	RES, NETWORK	33 (1005X4)	X301	1-781-940-41	VIBRATOR, CRYSTAL (14.318MHz) (HX520:AEP3/HX725:AEP3/HX920/HX925)	
RB119	1-242-963-21	RES, NETWORK	33 (1005X4)	* X701	1-813-695-11	VIBRATOR, CRYSTAL (24.576MHz)	
RB120	1-242-963-21	RES, NETWORK	33 (1005X4)	X801	1-781-867-21	VIBRATOR, CRYSTAL (27MHz)	
RB121	1-242-963-21	RES, NETWORK	33 (1005X4)				
RB122	1-242-963-21	RES, NETWORK	33 (1005X4)				
RB123	1-242-963-21	RES, NETWORK	33 (1005X4)				
RB124	1-242-963-21	RES, NETWORK	33 (1005X4)				
RB142	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)				
RB143	1-234-702-11	RES, NETWORK	68 (1005X4)				<CAPACITOR>
RB144	1-234-702-11	RES, NETWORK	68 (1005X4)	△ C101	METALLIZED	0.1uF	250V
RB145	1-234-702-11	RES, NETWORK	68 (1005X4)	△ C102	METALLIZED	0.1uF	250V
RB146	1-234-702-11	RES, NETWORK	68 (1005X4)	△ C103	CERAMIC	100pF	250V
RB149	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)	△ C104	CERAMIC	100pF	250V
RB150	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)	△ C112	CERAMIC	680pF	250V
RB151	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)	△ C114	CERAMIC	680pF	250V
RB152	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)				< FUSE >
RB154	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)				
RB155	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)				
RB156	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)	△ F101	FUSE T3.15A/250V		
RB157	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)	△ P201	CHIP,FUSE 3.15A		
RB158	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)	△ P301	CHIP,FUSE 2A		
RB159	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)	△ P502	CHIP,FUSE 2A		
RB160	1-234-380-21	RES, NETWORK	47K (1005X4)	△ P601	CHIP,FUSE 2A		
RB161	1-234-380-21	RES, NETWORK	47K (1005X4)	△ P602	CHIP,FUSE 5A		
RB162	1-234-380-21	RES, NETWORK	47K (1005X4)				< CONNECTOR >
RB163	1-234-380-21	RES, NETWORK	47K (1005X4)				
RB168	1-234-380-21	RES, NETWORK	47K (1005X4)	△ CN101	AC-INLET		
(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)							
RB169	1-234-380-21	RES, NETWORK	47K (1005X4)				< COIL >
(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)							
RB170	1-234-380-21	RES, NETWORK	47K (1005X4)	△ L101	LINE FILTER 0.4A		
(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				△ L102	LINE FILTER 0.4A		
RB175	1-234-378-21	RES, NETWORK	10K (1005X4)				< RESISTOR >
RB179	1-234-378-21	RES, NETWORK	10K (1005X4)				
RB180	1-234-378-21	RES, NETWORK	10K (1005X4)	△ R101	CARBON 220	1/2W	
RB181	1-234-378-21	RES, NETWORK	10K (1005X4)				
RB182	1-234-378-21	RES, NETWORK	10K (1005X4)				< VARISTOR >
RB183	1-234-378-21	RES, NETWORK	10K (1005X4)	△ Z101	VARISTOR S10K300		
RB184	1-234-378-21	RES, NETWORK	10K (1005X4)				
RB185	1-234-378-21	RES, NETWORK	10K (1005X4)				< PHOTO COUPLER >
RB186	1-234-378-21	RES, NETWORK	10K (1005X4)				
RB219	1-234-702-11	RES, NETWORK	68 (1005X4)	△ PC101	PHOTO COUPLER PS2561AL		
RB220	1-234-702-11	RES, NETWORK	68 (1005X4)				< TRANSFORMER >
RB221	1-234-702-11	RES, NETWORK	68 (1005X4)				
RB222	1-234-702-11	RES, NETWORK	68 (1005X4)	△ T101	SWITCHING TRANSFORMER		
RB223	1-242-962-21	RES, NETWORK	82X4 (1005)				
RB301	1-234-370-21	RES, NETWORK	22 (1005X4)				
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)							
RB302	1-234-370-21	RES, NETWORK	22 (1005X4)				
(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)							
RB501	1-234-379-21	RES, NETWORK	22K (1005X4)				
RB502	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)				
RB503	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)				

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

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>
***** ACCESSION & PACKING MATERIALS *****			
	1-479-557-11	REMOTE COMMANDER (RMT-D231P) (HX525/HX725/HX727/HX925)	
	1-479-558-11	REMOTE COMMANDER (RMT-D230P) (HX520/HX720/HX722/HX920)	
△	1-575-131-82	CORD, POWER (AEP)	
	1-759-586-22	CONTROLLER, VIDEO (AV MOUSE) (HX525/HX725/HX727/HX925)	
	1-696-593-11	CORD, CONNECTION (PAL)	
△	1-827-946-21	CORD, POWER (UK)	
	2-672-836-11	MANUAL, INSTRUCTION (FRENCH) (HX520:AEP)	
	2-672-836-21	MANUAL, INSTRUCTION (GERMAN) (HX520:AEP)	
	2-672-836-31	MANUAL, INSTRUCTION (ITALIAN) (HX520:AEP)	
	2-672-836-41	MANUAL, INSTRUCTION (DUTCH)(HX520:AEP)	
	2-672-836-51	MANUAL, INSTRUCTION (SPANISH) (HX520:AEP)	
	2-672-836-61	MANUAL, INSTRUCTION (PORTUGUESE) (HX720:AEP/HX722/HX920)	
	2-672-836-71	MANUAL, INSTRUCTION (DANISH) (HX720:AEP/HX722/HX920)	
	2-672-836-81	MANUAL, INSTRUCTION (SWEDISH) (HX720:AEP/HX722/HX920)	
	2-672-836-91	MANUAL, INSTRUCTION (FINNISH) (HX720:AEP/HX722/HX920)	
	2-672-837-11	MANUAL, INSTRUCTION (FRENCH) (HX725:AEP/HX727/HX925)	
	2-672-837-21	MANUAL, INSTRUCTION (GERMAN) (HX725:AEP/HX727/HX925)	
	2-672-837-31	MANUAL, INSTRUCTION (ITALIAN) (HX725:AEP/HX727/HX925)	
	2-672-837-41	MANUAL, INSTRUCTION (DUTCH) (HX725:AEP/HX727/HX925)	
	2-672-837-51	MANUAL, INSTRUCTION (SPANISH) (HX725:AEP/HX727/HX925)	
	2-672-838-11	MANUAL, INSTRUCTION (ENGLISH) (HX525/HX725:UK)	
	2-686-263-11	MANUAL, INSTRUCTION (ENGLISH) (HX520:UK/HX720:UK)	

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

**RDR-HX520/HX525/HX720/HX722/
HX725/HX727/HX920/HX925**