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+
GEMSTAR
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

RW DVD+ReWritable

DVD VIDEO/R/RW

COMPACT disc DIGITAL VIDEO

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: 5ºC to 35ºC
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
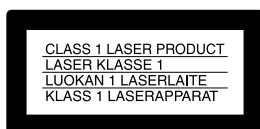
SAFETY-RELATED COMPONENT WARNING!!

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.

TABLE OF CONTENTS

5. IC PIN FUNCTION DESCRIPTION

6. SERVICE MODE

7. ADJUSTMENT

8. REPAIR PARTS LIST

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.

Hole

Stiff wire
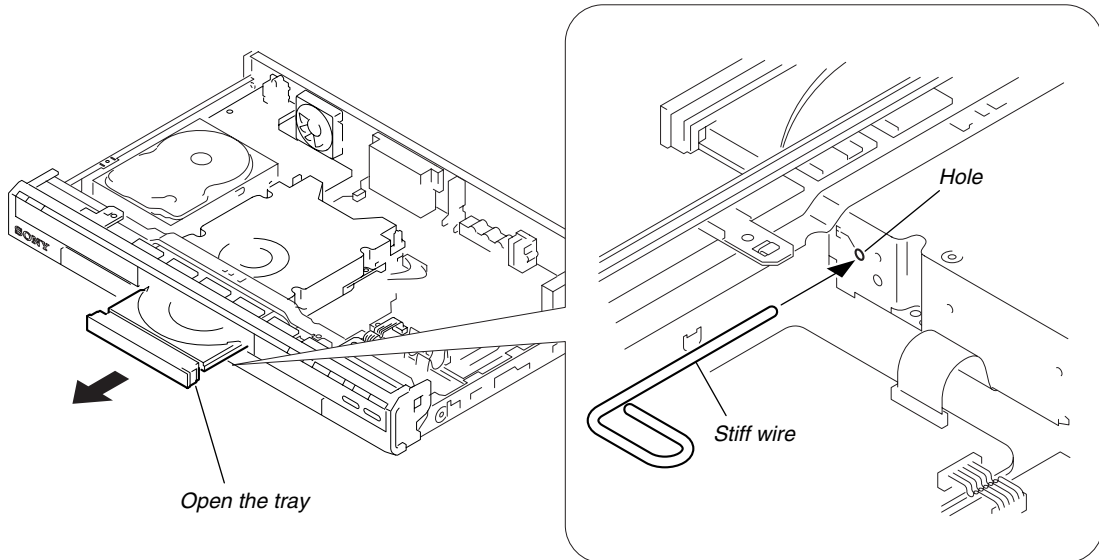
Open the tray

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

RDR-HX520/HX525/HX720/HX722/ HX725/HX727/HX920/HX925

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.

CAUTION	CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO THE BEAM.
ATTENTION	RADIATIONS LASER VISIBLES ET INVISIBLES DE CLASSE 3B QUAND OUVERT, ÉVITEZ TOUT EXPOSITION AU FAISCEAU.
ADVARSEL	SYNLIG OG USYNLIG LASERSTRÅLING AF KLASSE 3B VED ÅBNING, UNDGÅ AT UDSÆTTE DIG FOR STRÅLINGEN.
WARNING	KLASSE 3B SYNDELG OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT	BEI GEÖFFNETER ABDECKUNG IST SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG DER KLASSE 3B AUSGESETZT, NICHT DEM STRAHL AUSSETZEN.
PRECAUCIÓN	CUANDO SE ABRE HAY RADIACIÓN LÁSER DE CLASE 3B VISIBLE E INVISIBLE, EVITE LA EXPOSICIÓN A LOS RAYOS LÁSER.
VARO!	AVATTAESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LUOKAN 3B LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
注意	ここを開くと CLASS 3B の可視及び不可視レーザ光が出ます。ビームを直接見たり、触れたりしないでください。

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 the 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 will help 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 use 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 to 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. patents 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.

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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.

4

Quick Guide to Disc Types

Recordable and playable discs

Type		Disc Logo	Icon used in this manual	Formatting (new discs)	Compatibility with other DVD players (finalising)
Hard disk drive (internal)		*HDD*	HDD	Formatting unnecessary	Dub HDD contents to a DVD to play on other DVD players
DVD+RW		*RW* DVD+ReWritable / *RW* High Speed DVD+ReWritable	+RW	Automatically formatted in +VR mode (DVD+RW VIDEO)	Playable on DVD+RW compatible players (automatically finalised)
DVD-RW	VR mode	*DVD RW*	-RWVR	Format in VR mode (page 27)	Playable only on VR mode compatible players (finalisation unnecessary)
	Video mode	*DVD RW* / RW 2	-RWVideo	Format in Video mode (page 27)	Playable on most DVD players (finalisation necessary) (page 36)
DVD+R / DVD+R DL		*RW* DVD+R / *RW* DVD+R DL	+R	Automatically formatted in +VR mode (DVD+R VIDEO)	Playable on most DVD players (finalisation necessary) (page 36)
DVD-R	VR mode	*DVD R4.7*	-RVR	Format in VR mode (page 27)*1 Formatting is performed using the "Disc Information" display.	Playable only on DVD-R in VR mode compatible players (finalisation necessary) (page 36)
	Video mode		-RVideo	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 CPRM*2)
- 16x-speed or slower DVD+Rs
- 16x-speed or slower DVD-Rs (Ver.2.0, Ver.2.1 with CPRM*2)
- 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	*DVD VIDEO*	DVD	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	COMPACT disc DIGITAL VIDEO	VCD	VIDEO CDs or CD-Rs/CD-RWs in VIDEO CD/Super VIDEO CD format
CD	COMPACT disc DIGITAL AUDIO	CD	Music CDs or CD-Rs/CD-RWs in music CD format
DATA DVD	—	DATA DVD	DVD+RWs/DVD+Rs/DVD-RWs/DVD-Rs/DVD-ROMs containing either JPEG image files or DivX video files
DATA CD	—	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 VIDEO" and "CD" 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.
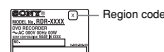
Region code

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.

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.

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.

: Signal flow
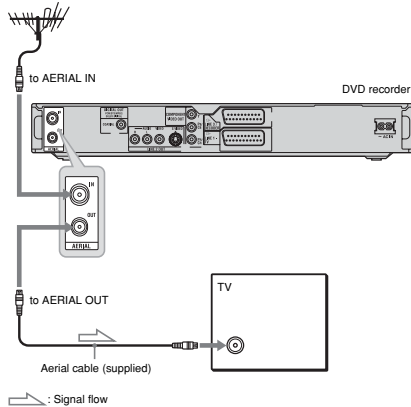
1 Disconnect the aerial cable from your TV, and connect it to AERIAL IN on the rear panel of the recorder.

2 Connect AERIAL OUT of the recorder to the aerial input of your TV using the supplied aerial cable.

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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.

: Signal flow

A 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.

B Video input jack
You will enjoy standard quality images.

C S VIDEO input jack
You will enjoy high quality images.

D Component video input jacks (Y, P_B/C_B, P_R/C_R)
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.

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 ⊖ 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[*2], Q-Link[*3], EURO VIEW LINK[*4], or T-V LINK[*5], 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 TV, set the TV's input to the recorder, and start playback with one touch of the ▷ (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.

Hint
SMARTLINK also works with TVs or other equipment having EPG Timer Control, EPG Title Download, and Now Recording functions. For details, refer to the operating instructions supplied with your TV or other equipment.

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.

14

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.

: Signal flow

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

A 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.

B Audio L/R (left/right) input jacks
This connection will use your TV's or stereo amplifier's (receiver's) two speakers for sound.

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

- 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 ⓑ, 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 ⓐ, 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.

① to AC IN
② to mains
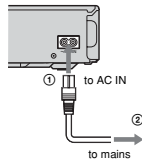
Step 5: Preparing the Remote

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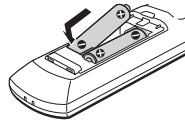
✪ **Notes**

- If the supplied remote interferes your 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 🖪 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.

Number buttons
TV/DVD
TV ⊿ +/–
TV PROG +/–
TV I/⏻
TV ⊙
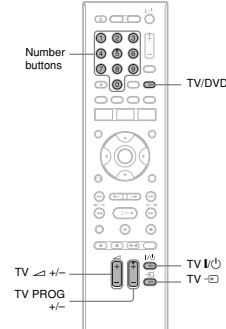
1 **Hold down the TV I/⏻ button located at the bottom of the remote.**
Do not press the I/⏻ button at the top of the remote.

---

2 **With the TV I/⏻ 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/⏻ 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/⏻	Turns your TV on or off
TV ⊿ (volume) +/–	Adjusts the volume of your TV
TV PROG +/–	Selects the programme position on your TV
TV ⊙	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 DVD3.

Number buttons
SYSTEM MENU
↑/↓, ENTER
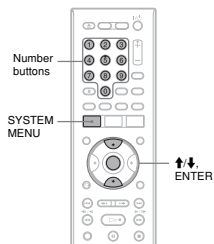
1 **Check that "Easy Setup" (page 20) has been finished. If "Easy Setup" has not been finished, first perform "Easy Setup."**

2 **Press SYSTEM MENU.**
The System Menu appears.

3 **Select "SETUP," and press ENTER.**

🖴 SETUP

Basic	Channel Setting
Video	Channel Sort
Audio	TV Guide Page
Recording	Clock
DVD	OSD : English
Others	
Easy Setup	

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

🖴 SETUP

|		
Basic	Dimmer :	Normal
Video	Power save standby	Off
Audio	Command Mode :	DVD3
Recording	Registration Code	
DVD	Factory Setup	
Others	Format	
Easy Setup		
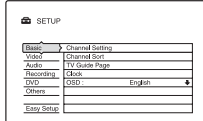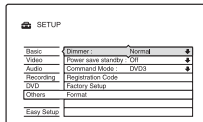
5 **Select "Command Mode," and press ENTER.**

🖴 SETUP

Basic	Dimmer :	
Video	Power save standby	DVD1
Audio	Command Mode :	DVD2
Recording	Registration Code	DVD3
DVD	Factory Setup	
Others	Format	
Easy Setup		
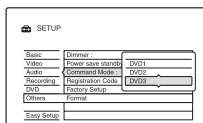
6 **Select a Command Mode (DVD1, DVD2, or DVD3), and press ENTER.**

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
DVD1	number button 1
DVD2	number button 2
DVD3	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.

If the Command Mode for the recorder has not been changed, set the Command Mode for the remote to the default setting of DVD3. If the Command Mode for the recorder is changed to DVD1 or DVD2, you will be unable to operate this recorder.

Changing programme positions of the recorder using the remote

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

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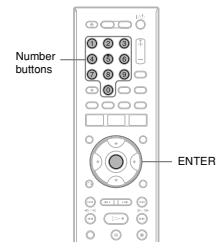
Example: for channel 50
Press "5," "0," then press ENTER.

Step 6: Easy Setup

Make the basic adjustments by following the on-screen instructions in "Easy Setup."
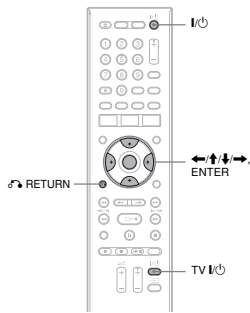
1 Turn on the recorder and your TV. Then switch the input selector on your TV so that the signal from the recorder appears on your TV screen.

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 ←/↑/↓/→, 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 ♪ RETURN.

‍ **Hints**
• 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).

20

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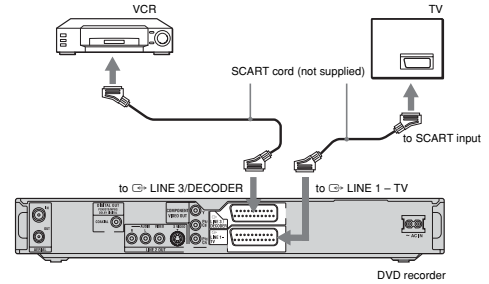
✆ **Notes**
• Pictures containing copy protection signals that prohibit any copying cannot be recorded.
• If you pass the recorder signals through a VCR, you may not receive a clear image on your TV screen.

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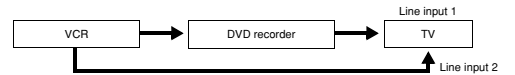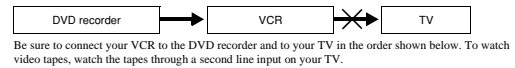
• The SMARTLINK features are not available for devices connected via the DVD recorder's LINE 3/DECODER jack.
• When you record to a VCR from this DVD recorder, do not switch the input source to TV by pressing the TV/DVD button on the remote.
• If you disconnect the recorder's mains lead, you will not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

21

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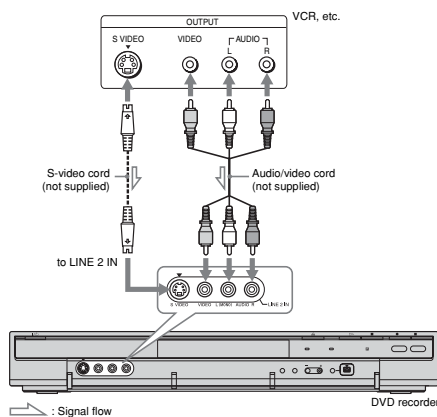
‍ **Hint**
When the connected equipment outputs only monaural sound, connect to just the L(MONO) and VIDEO input jacks on the front of the recorder. Do not connect the R input jack.

✆ **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.

22

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.
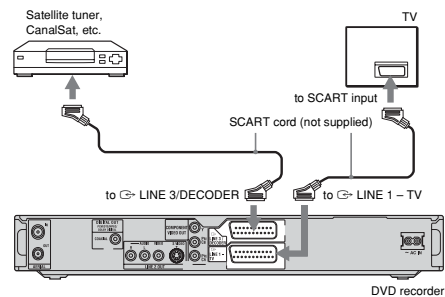
If the satellite tuner can output RGB signals
This recorder accepts RGB signals. If the satellite tuner can output RGB signals, connect the TV SCART connector on the satellite tuner to the LINE 3/DECODER jack, and set "Line3 Input" of "Scart Setting" to "Video/RGB" in the "Video" setup (page 89). Note 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.

23

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

TV

Aerial cable (supplied)

PAY-TV/Canal Plus analogue decoder

to AERIAL IN

to SCART input

SCART cord (not supplied)

SCART cord (not supplied)

to AERIAL OUT

to ⏚ LINE 1 – TV

to ⏚ LINE 3/DECODER
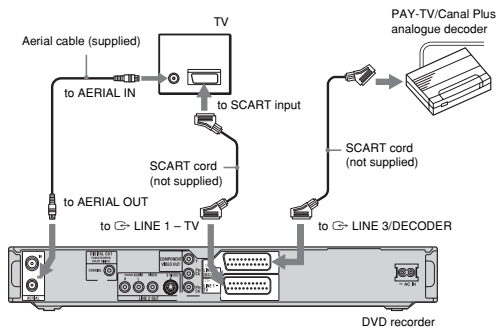
DVD recorder

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.

Number buttons

SYSTEM MENU

⏎ RETURN
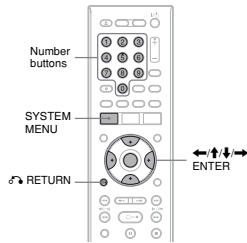
←/↑/↓/→, ENTER

1 Press SYSTEM MENU.
The System Menu appears.

2 Select "SETUP," and press ENTER.

SETUP		
Basic	Channel Setting	
Video	Channel Sort	
Audio	TV Guide Page	
Recording	Clock	
DVD	OSD :	English
Others		
Easy Setup		

3 Select "Video," and press ENTER.

SETUP		
Basic	Video Output	
Video	Scart Setting	
Audio	Pause Mode :	Auto
Recording	Colour System :	PAL
DVD	Auto Display :	On
Others	Screen Saver :	On
Easy Setup		

---
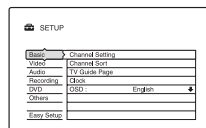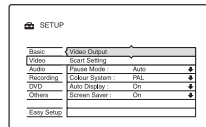
4 Select "Scart Setting," and press ENTER.

Video - Scart Setting		
Line1 Output	Line3 Input	Line3 Output
Video	Video/RGB	Video
Video	Video/RGB	S Video
Video	Decoder	Video
S Video	S Video	Video
S Video	S Video	S Video
RGB	Video/RGB	Video
RGB	Video/RGB	S Video
RGB	Decoder	Video

5 Press ↑/↓ to select "Video" or "RGB" for "Line1 Output," "Decoder" for "Line3 Input," and "Video" for "Line3 Output," and press ENTER.
The "Video" setup display appears again.

6 Press ⏎ RETURN to return the cursor to the left column.

7 Select "Basic," and press ENTER.

SETUP		
Basic	Channel Setting	
Video	Channel Sort	
Audio	TV Guide Page	
Recording	Clock	
DVD	OSD :	English
Others		
Easy Setup		
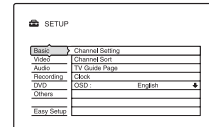
8 Select "Channel Setting," and press ENTER.

Basic - Channel Setting					
Prog	System	Channel	Name	PAY-TV/CANAL+	Audio	AFT
1	BG	C1	AAB	Off	NICAM	On
2	DK	S1	CDE	On	Standard	On
3	BG	C5	FGH	Off	NICAM	On
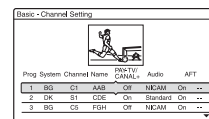
9 Press ↑/↓ to select the desired programme position, and press ENTER.

Basic - Channel Setting					
Prog	System	Channel	Name	PAY-TV/CANAL+	Audio	AFT
1	BG	C1	AAB	Off	NICAM	On
2	DK	S1	CDE	On	Standard	On
3	BG	C5	FGH	Off	NICAM	On

---

10 Select "System" using ←/→.

Basic - Channel Setting					
Prog	System	Channel	Name	PAY-TV/CANAL+	Audio	AFT
1	BG	C1	AAB	Off	NICAM	On
2	DK	S1	CDE	On	Standard	On
3	BG	C5	FGH	Off	NICAM	On
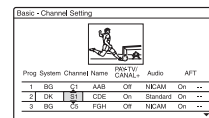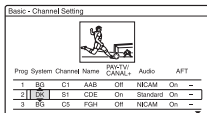
11 Press ↑/↓ to select an available TV system, BG, DK, I, or L.
"L" is only available with French RDR-HX520 and RDR-HX920 models. To receive broadcasts in France, select "L."

12 Select "Channel" using ←/→.

Basic - Channel Setting					
Prog	System	Channel	Name	PAY-TV/CANAL+	Audio	AFT
1	BG	C1	AAB	Off	NICAM	On
2	DK	S1	CDE	On	Standard	On
3	BG	C5	FGH	Off	NICAM	On
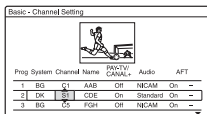
13 Select the PAY-TV/Canal Plus analogue programme position using ↑/↓ or number buttons.

14 Select "PAY-TV/ CANAL+" using ←/→.

Basic - Channel Setting					
Prog	System	Channel	Name	PAY-TV/CANAL+	Audio	AFT
1	BG	C1	AAB	Off	NICAM	On
2	DK	S1	CDE	On	Standard	On
3	BG	C5	FGH	Off	NICAM	On
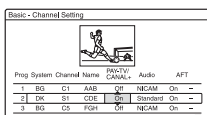
15 Select "On" using ↑/↓, and press ENTER.

To return to the previous step
Press ⏎ RETURN.

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

Eight Basic Operations
— Getting to Know Your DVD Recorder

1. Inserting a Disc

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

⏏ (open/close)

DVD

1 Press DVD.

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

Recording/playing side facing down
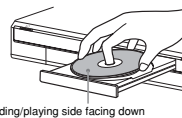
3 Press ⏏ (open/close) to close the disc tray.
Wait until "LOAD" disappears from the front panel display.
Unused DVDs are formatted automatically.
• For DVD-RW discs
DVD-RWs are formatted in the recording format (VR mode or Video mode) set by "Format DVD-RW" in the "DVD" setup.
• For DVD-R discs
DVD-Rs 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).

---

2. Recording a Programme

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

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.

HDD

DISPLAY

● REC
■ REC STOP

DVD

PROG +/−

TV/DVD

REC MODE

TV ⏻
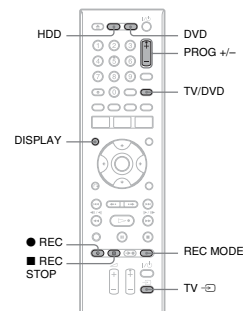
1 Press HDD or DVD.
If you want to record to a DVD, insert a recordable DVD.

2 Press PROG +/− to select the programme position or input source you want to record.

3 Press REC MODE repeatedly to select the recording mode.
Each time you press the button, the display on the TV screen changes as follows:

→ HQ → HSP → SP → LSP →
SLP ← EP ← LP ← ESP ←
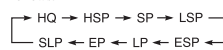
For more details about the recording mode, see page 40.

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.

1 2 3   4
DVD+RW ○ SP   1:23:45

1 Disc type/format
2 Recording status
3 Recording mode
4 Recording time

Press DISPLAY to turn off the display.

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---

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.

Sub-menu

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.

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 "Set Thumbnail," and press ENTER.
The display for setting the thumbnail point appears and the title starts to play.

4 While watching the playback picture, press ◀◀/▶▶ to select the scene you want to set for a thumbnail picture, and press ENTER.
Playback pauses.

5 Press ENTER if the scene is correct.
If the scene is incorrect, press ◀II/II▶ 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 ↑.

6 Select "OK," and press ENTER.
The scene is set for the title's thumbnail picture.

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3. Playing the Recorded Programme (Title List)

HDD +RW -RWvR -RWvideo +R
-RVR -Rvideo

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

HDD   DVD

TITLE LIST

ENTER
OPTIONS

1 Press HDD or DVD.
If you select DVD, insert a DVD (see "1. Inserting a Disc" on page 27). Playback starts automatically depending on the disc.

2 Press TITLE LIST.
To show the extended Title List, press OPTIONS to select "Display List," and press ENTER.

To turn off the Title List

Press TITLE LIST.

⚙ Hints

- After recording, the first scene of the recording (the title) is automatically set as the thumbnail picture.
- You can select "TITLE LIST" from the System Menu.

⚠ Notes

- The title names may not appear for DVDs created on other DVD recorders.
- It may take a few seconds for the thumbnail pictures to be displayed.
- After editing, the title thumbnail picture may change to the first scene of the recording (title).
- After dubbing, the title thumbnail picture set on the source recording is cancelled.

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)

3 Title information:
Displays the title number, title name, and recording date. Title size is shown in the Thumbnail list.
● (red): Indicates that the title is currently being recorded.
⟪⟫ : Indicates that the title is currently being dubbed.
⌐ : Indicates the protected title.
"NEW" (or N): Indicates that the title is newly recorded (not played back) (HDD only).
COPY : Indicates titles containing "Copy-Once" copy protection signals (HDD only) (page 73).

4 Scroll bar:
Appears when all of the titles do not fit on the list. To view the hidden titles, press ↑/↓.

5 Title's thumbnail picture:
The still images for each title are displayed.

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4. Displaying the Playing/Remaining Time and Play Information

HDD +RW -RWvR -RWvideo +R
-RVR -Rvideo DVD VCD CD
DATA DVD DATA CD

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

DISPLAY

ENTER
OPTIONS

TIME/TEXT
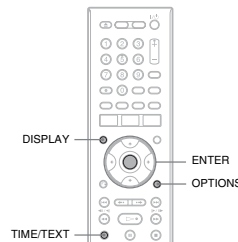
Press DISPLAY.

The displays differ depending on the disc type or playing status.
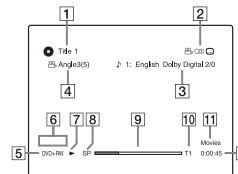
1 Title number/name
(Shows either track number, track name, scene number, or file name for CDs, VIDEO CDs, DATA DVDs, or DATA CDs.)

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1-7

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

Rear (L/R)

♪ 1: English Dolby Digital 3/2.1

Front (L/R) + Centre

LFE (Low Frequency Effect)
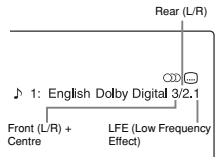
④ The current selected angle

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 bar*2

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

T 1   1:03:24
↓
Remaining time of the current title

T   – 1:15:36
↓
Playing time and number of the current chapter

C 2   0:22:30
↓
Remaining time of the current chapter

C   – 0:13:20

Example: When playing a VIDEO CD

Playing time and number of the current scene or track

3   2:15

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

✪ Notes
• 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.

Disc Information		
Media	DVD+RW	Close
Disc Name		Disc Name
Date	13, 10,2006 – 28, 10, 2006	Finalise
Title no.	3	
Remainder	HQ :0H30M HSP:0H45M SP :1H00M LSP:1H15M ESP:1H30M LP :2H00M EP :3H00M SLP:4H00M 2,3/4,7GB	Format
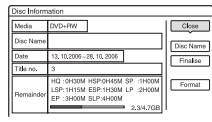
"Remainder" (approximate)
• The remaining recording time in each of the recording modes
• Disc space bar
• Remaining disc space/total disc space

✿ 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 **-RVideo**

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.

Number buttons

INPUT SELECT
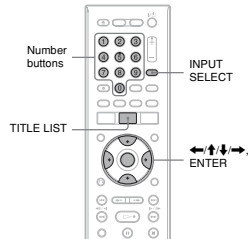
TITLE LIST

←/↑/↓/→, ENTER

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 ←/↑/↓/→ 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 ←/↑/↓/→ 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

Input Title Name
Kill

Back
Clear All
Space

"A"
"a"
Symbol
Cancel
Finish
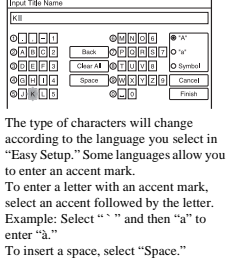
The type of characters will change according to the language you select in "Easy Setup." Some languages allow you to enter an accent mark.
To enter a letter with an accent mark, select an accent followed by the letter.
Example: Select " ` " and then "a" to enter "à."
To insert a space, select "Space."

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

Input row

Input Title Name
Kidsll

Back
Clear All
Space

"A"
"a"
Symbol
Cancel
Finish
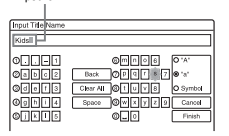
To erase a character, move the cursor to the right of the character at the input row. Select "Back" and press ENTER.
To insert a character, move the cursor to the right of the point where you want to insert the character. Select the character and press ENTER.
To erase all of the characters, select "Clear 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.
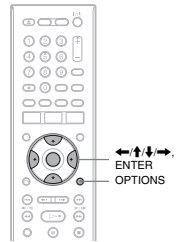
←/↑/↓/→
ENTER
OPTIONS

Labelling a disc

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

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.

Disc Information		
Media	DVD+RW	Close
Disc Name		Disc Name
Date	13, 10,2006 – 28, 10, 2006	Finalise
Title no.	3	
Remainder	HQ :0H30M HSP:0H45M SP :1H00M LSP:1H15M ESP:1H30M LP :2H00M EP :3H00M SLP:4H00M 2,3/4,7GB	Format
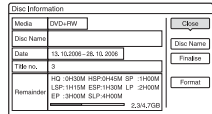
3 Select "Disc Name," and press ENTER.
Enter the disc name in the "Input Disc Name" display (page 34).

◑ 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).

```
┌─ Disc Information ──────────────────┐
│                                  ①  │
│ Media   DVD-RW  Format  VR    Close │
│ Disc Name                  Disc Name│
│ Date    13, 10, 2006~28, 10, 2006  🔒 Off ②
│ Title no.  Original 3 / Playlist 5  Protect Disc
│         HQ :0H30M HSP:0H45M SP :1H00M  Finalise
│ Remainder LSP:1H15M ESP:1H30M LP :2H00M
│         EP :3H00M SLP:4H00M    Format │
│                      2.3/4.7GB      │
└─────────────────────────────────────┘
```
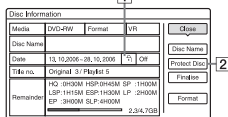
① 🔒 "On"/"Off": Indicates whether protection is set (DVD-RW/DVD-R in VR mode only)

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` `-RWVideo` `+R` `-RVR` `-RVideo`

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.
`-RWVideo`	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` `-RVideo`	Finalising is necessary when you play on any equipment other than this recorder. After finalising, you cannot edit or record on the disc.

▲ (open/close)
←/↑/↓/→,
ENTER
OPTIONS

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.

3 Select "Finalise," and press ENTER.
The display shows the approximate time required for finalising and asks for confirmation.

```
┌─ Finalise ──────────────────────┐
│                                 │
│ About XX min. is needed to finalise this disc.
│ Cannot cancel finalisation once it has started.
│ Do you still wish to proceed?   │
│                                 │
│     [ OK ]      [ Cancel ]      │
└─────────────────────────────────┘
```
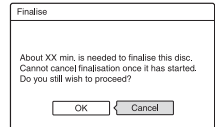
4 Select "OK," and press ENTER.
The recorder starts finalising the disc.

🔆 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` `-RWVideo`

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. Reformatting a disc

`+RW` `-RWVR` `-RWVideo`

New discs are automatically formatted when inserted. If necessary, you can manually re-format 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).
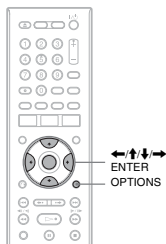
←/↑/↓/→,
ENTER
OPTIONS

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.

```
┌─ Disc Information ──────────────────┐
│ Media   DVD+RW                Close │
│ Disc Name                  Disc Name│
│ Date    13, 10, 2006~28, 10, 2006  Finalise
│ Title no.  3                  Format │
│         HQ :0H30M HSP:0H45M SP :1H00M
│ Remainder LSP:1H15M ESP:1H30M LP :2H00M
│         EP :3H00M SLP:4H00M         │
│                      2.3/4.7GB      │
└─────────────────────────────────────┘
```
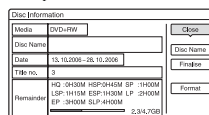
3 Select "Format," and press ENTER.

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.

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	HDD			DVD*
	RDR-HX520	RDR-HX720/HX722	RDR-HX920	
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

Approx. recording time (hours)

* 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	Recordable discs
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 (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)

TIMER
←/↑/↓/→
ENTER
OPTIONS

■ REC STOP
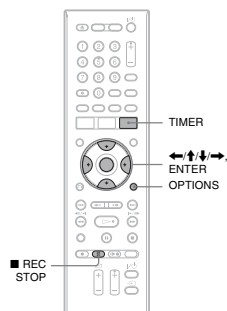
1 Press TIMER.
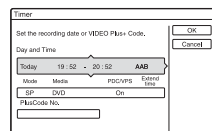
2 Press ↑/↓ to select the "Day and Time" or "Mode" row. Then press ENTER.

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":
Sets 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.
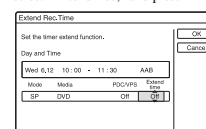
2 Press ↑/↓ to select the duration time. You can set the duration in increments of 10 minutes, for a maximum of 60 minutes.

3 Select "OK" and press ENTER.

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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 function 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 83).

Number buttons

TIMER

←/↑/↓/→, ENTER

● REC
● REC STOP

1 Press TIMER.

Timer

Set the recording date or VIDEO Plus+ Code.
OK
Cancel

Day and Time

Today 19:52 ~ 20:52 AAB

| Mode | Media | PDC/VPS | Extend time |
| SP | DVD | On | |

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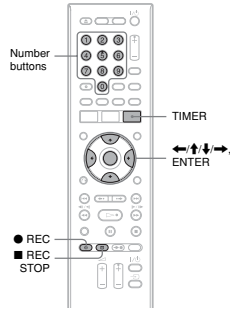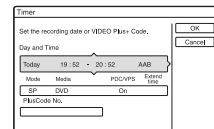
2 Select "ShowView No." using ↑/↓, and press ENTER.

---

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.

Timer

Set the recording date or VIDEO Plus+ Code.
OK
Cancel

Day and Time

Wed 6.12 10:00 ~ 11:30 AAB

| Mode | Media | PDC/VPS | Extend time |
| SP | DVD | On | |

PlusCode No.
1 2 3 4 5 0 0 0 1
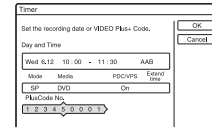
- If you want to change the setting, press ←/→ to select the item and press ↑/↓ to change the setting.
- If you want to re-enter the ShowView programming number, select "ShowView No.," and press ENTER. Then re-enter the ShowView programming number.

4 Select "OK," and press ENTER.

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

To stop recording during timer recording

Press ■ REC STOP.
Note that it may take a few seconds for the recorder to stop recording.

If the timer settings overlap

See page 43.

To extend the recording duration time while recording

See page 43.

To confirm, change, or cancel a timer recording

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

Hint

The Rec Mode Adjust function also works with this timer method (page 43).

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.

0:30 → 1:00 - - → 5:30
↑   ↓
(normal recording) ← 6:00

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.

Adjusting the recording picture quality and size

You can adjust the recording picture quality and picture size.
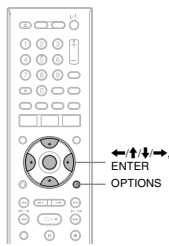
←/↑/↓/→, ENTER
OPTIONS

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

Rec Settings

Select the item you want to change.

Rec Mode :	SP
HDD Rec. Picture Size:	4 : 3
DVD Rec. Picture Size:	4 : 3
Rec NR :	2
Rec Video Equalizer	
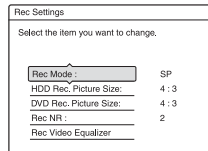
2 Select the item you want to adjust, and press ENTER.

The adjustment display appears.

Example: Rec NR

Rec NR

Off   1   2   3
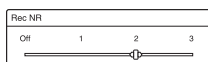
"Rec Mode":
Selects the recording mode for the desired recording time and picture quality. For more information, see "Recording mode" on page 40.

"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+RWs/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)

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

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

TIMER LIST
←/↑/↓/→, ENTER
⮐ RETURN
⏮ ● / ● ⏭

1 Press TIMER LIST.

The Timer List appears.

TIMER LIST   10:30

	Mon - Sat	22:00 - 22:15	AAB	SP
	Sat 25.11	20:30 - 21:30	DEF	SP
	Sat 25.11	21:00 - 22:00	GHI	SLP
	Sun 26.11	16:00 - 17:00	DEF	SLP

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.
❶:
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.

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⊜ :
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.

Modify
Modify the timer setting.
Day and Time
Wed 6.12   10 : 00 - 11 : 30   AAB
Mode   Media   PDC/VPS   Extend time
SP   DVD   On
OK
Cancel
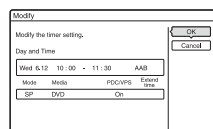
"Erase":
Erases the timer setting. Select "OK," and press ENTER.

Erase
Are you sure you want to erase this timer setting?

Mon - Sat 22:00 - 22:15 AAB
OK   Cancel
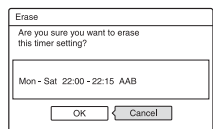
"Check Overlap":
Checks for overlapped settings.
The timer setting without the ⬚ mark has priority over the other settings.

Check Overlap
The following timer settings overlap. Timer settings with an overlap indicator next to them will not be entirely recorded.
⬚ Sat 25.11 20:30 -21:30 DEF
⬚ Sat 25.11 21:00 -22:00 GHI
Close
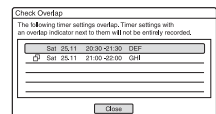
Select "Close" to return to the Timer List.
To change or cancel the setting, repeat steps 2 and 3 above.

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.

7:00   8:00   9:00   10:00
A
will be cut off — B
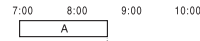
◆ **When the recordings start at the same time**
The programme that is set last has priority. In this example, timer setting B is set after A, so the first part of timer setting A will not be recorded.

7:00   8:00   9:00   10:00
A
B
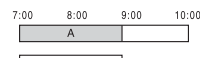
◆ **When the end time of one recording and the start time of another are the same**
After finishing the previous recording, the other recording may be delayed.
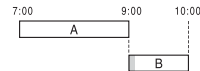
7:00   9:00   10:00
A
B

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.

z Hint 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.
• 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.

Recording From Connected Equipment

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

HDD · DVD · INPUT SELECT · ←/↑/↓/→, ENTER · OPTIONS · ● REC · ■ REC STOP · REC MODE · → ● SYNCHRO REC
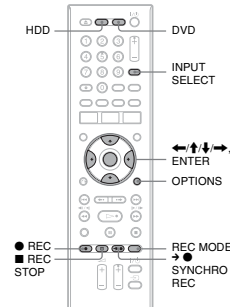
Recording from connected equipment with a timer (Synchro Rec)

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).**

continued

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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 41.

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.
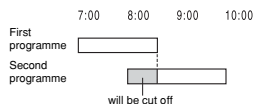
7:00   8:00   9:00   10:00
First programme
Second programme
will be cut off

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 (i.LINK 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
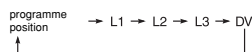
3 **Select the desired audio signal when recording a bilingual programme to the HDD or DVD-RWs/DVD-Rs (VR mode).**
Press OPTIONS to select "Line Audio Input," and press ENTER. Then select "Bilingual," and press ENTER.
For details about bilingual recording, see page 41.

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.

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.

z Hint 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.

Timer Recording

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Playing

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

HDD — DVD
Number buttons — PROG +/–
AUDIO
TOP MENU — SUBTITLE
MENU
TITLE LIST
←/↑/↓/→
ENTER
OPTIONS
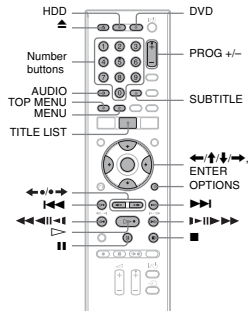
1 Press HDD or DVD.
- If you select DVD, insert a disc (see "1. Inserting a Disc" on page 27).
- If you insert a DVD VIDEO, VIDEO CD, or CD, press ▷. Playback starts.

2 Press TITLE LIST.
For details about the Title List, see "3. Playing the Recorded Programme (Title List)" on page 29.
Example: DVD+RW
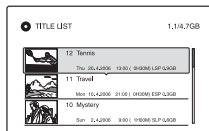
◉ TITLE LIST   1.1/4.7GB
12 Tennis
       Thu 35.4.2006 13:00 (0H30M) LSP /L3GB
11 Travel
       Mon 10.4.2006 21:00 (0H30M) ESP /L3GB
10 Mystery
       Sun 2.4.2006   9:00 (1H00M) SLP /L3GB

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, "⊕" 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.

One Touch Play
If you use the SMARTLINK connection, you can easily start playing.
Press ▷. The recorder and your TV automatically turn on and the TV's input is switched to the recorder. Playback starts automatically.

One Touch Menu
If you use the SMARTLINK connection, you can easily display the Title List.
Press TITLE LIST. The recorder and your TV automatically turn on and the TV's input is switched to the recorder. The Title List appears.

✿ Hints
- You can also use the ▷ button in step 3 (page 52) to start playback.
- Even if you select "Factory Setup" in the "Others" setup (page 96), the Child Lock remains set.

Playback

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 HDD -RWVR -RVR DVD VCD CD	Selects one of the audio tracks recorded on the disc when pressed repeatedly in normal playback mode. DVD : Selects the language. HDD -RWVR -RVR : Selects the main or sub sound. VCD CD : Selects stereo or monaural audio tracks.
SUBTITLE DVD	Selects a subtitle language when pressed repeatedly.
←•/•→ (instant replay/instant advance) HDD +RW -RWVR -RWVideo +R -RVR -RVideo DVD	Replays the scene/briefly fast forwards the scene.
I◁◁ (previous)/▷▷I (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.
◁◁ ◁II/II▷/▷▷ (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. *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.
◁◁ ◁II/II▷/▷▷ (slow, freeze frame) HDD +RW -RWVR -RWVideo +R -RVR -RVideo DVD VCD*	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. * Playback direction only
II (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 -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
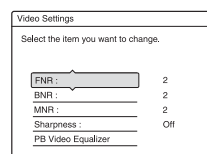
2 Select an item, and press ENTER.
The adjustment display appears.
"FNR" (frame noise reduction): Reduces noise contained in the luminance element of the video signal.
"BNR" (block noise reduction): Reduces "block noise" or mosaic like patterns in the picture.
"MNR" (mosquito noise reduction): Reduces 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":
- Contrast: (weak) –3 ~ 0 ~ 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` `-RWVideo` `+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 ❙❙.
The picture pauses. You can pause the picture for up to three hours.

```
              ABCD      1
              ♪ Main
```

```
    TV   ❙❙
```
TV pause
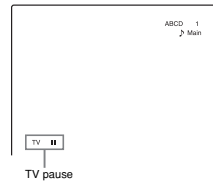
2 Press ❙❙ or ▷ again to resume watching the programme.

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` `-RWVR`

"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` `-RWVideo` `+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. Use 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]

[*1] Simultaneous Rec and Play function does not work when you record:
  – on a 1x-speed DVD-RW.
  – in the HQ or HSP recording mode.
[*2] 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.

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.
Playback starts from the selected title.

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` `-RWVideo` `+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.

Number buttons
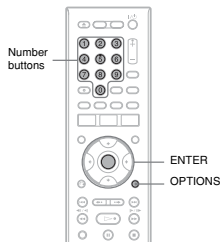
ENTER
OPTIONS

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

```
                    Title : – (21)
```

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).

AUDIO   SUBTITLE

DISPLAY
                               ←/↑/↓/→,
                               ENTER
                               OPTIONS
                          ▶▶❙
←•/•▶
                          ❙❙◀▶ ▶▶
◀◀
▷
TIME/   ■
TEXT   ❙❙

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

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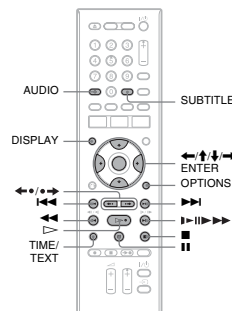
2 Press ▷.

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 ❚❚.

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 ◀◀/▶▶ 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 ❙▶/❙❙▶ 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.
- The following images are not 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," ".jpg," ".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

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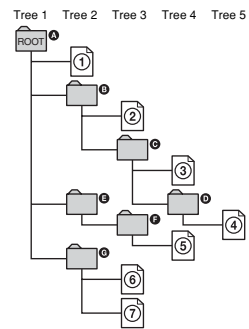
When you insert a DATA CD/DATA DVD and press ▷, the numbered tracks (or files) are played sequentially, from ① through ⑦. For JPEG image files, press •▶ to go to the next album. (For instance, when you want to go from ① to ②.) Any sub-albums/tracks (or files) contained within a currently selected album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

Edit features	HDD		-RWVR -RVR		+RW -RWVideo +R -RVideo
	Original title	Playlist title	Original title	Playlist title	
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*
Erase Titles (page 65)	Yes	Yes	Yes	Yes	Yes
Divide (page 66)	Yes	Yes	No	Yes	No
Set Thumbnail (page 64)	Yes	Yes	Yes	Yes	No
Chapter mark (page 67)	Yes	Yes	Yes	Yes	No
Create a Playlist (page 67)	Yes	No	Yes	No	No
Make a Playlist (page 69)	Yes	No	Yes	No	No
Change Order (page 69)	No	No	No	No	No
Combine (page 70)	No	Yes	No	Yes	No

* DVD+RW only

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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.

Largest title number
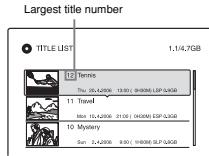
For the HDD and DVD-RWs (VR mode), you can erase any title.
For DVD-Rs and DVD+Rs, the available disc space does not increase even if you erase titles.
See "Erasing and Editing a Title" on page 64 or "Erasing multiple titles (Erase Titles)" on page 65.

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] [-RWVideo] [+R]
[-RVR] [-RVideo]

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).
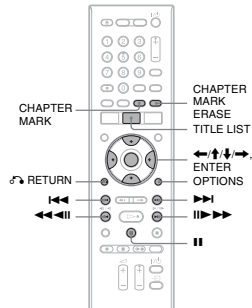
1 Press TITLE LIST.
For HDD titles or DVD-RWs/DVD-Rs in VR mode, press ◄/► to switch the Title Lists, if necessary.

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. " " 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).

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

Erasing multiple titles (Erase Titles)

[HDD] [+RW] [-RWVR] [-RWVideo] [+R]
[-RVR] [-RVideo]

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 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 a section of a title (A-B Erase)

[HDD] [+RW] [-RWVR] [-RVR]

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 ❚❚ and then press ◄◄.

Playback point

2 Select point A using ◄◄/►► , and press ENTER.
Playback pauses.

---

3 Press ENTER if point A 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 ❚❚ and then press ◄◄.
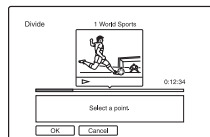
4 Select the dividing point by pressing ◄◄/►►, and press ENTER.
Playback pauses.

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.

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.
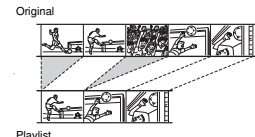
Original

Playlist

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 73).

1 Press TITLE LIST.

If the Title List (Original) appears, press ←.

2 Press OPTIONS to select "Create a Playlist," and press ENTER.
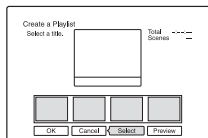
3 Select "Select," and press ENTER.
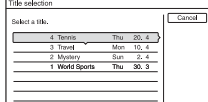
4 Select the title you want to include in the Playlist title, and press ENTER.

The display for setting the start point (IN) appears. The title starts to play.
• To return to the beginning of the title, press ‖ 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 ↓.
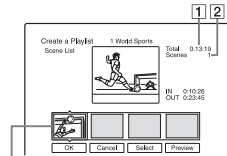
① Total duration of the selected scene
② Total number of scenes
③ Selected scene

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": Erases 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. If the Title List (Playlist) appears, press →.
2 Select the title and press ENTER. The sub-menu appears.
3 Select "Make a Playlist," and press ENTER.
The selected title is added to the Title List (Playlist).
The title name is the same as the Original title name.

To play the Playlist title

1 Press TITLE LIST. If the Title List (Original) appears, press ←.
2 Select a title, and press ENTER. The sub-menu appears.
3 Select "Play," and press ENTER.

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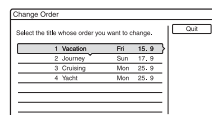
3 Select the title you want to move, and press ENTER.

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.

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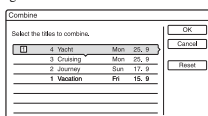
4 Repeat step 3 to select all of the titles you want to combine.

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.
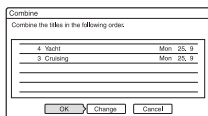
6 Select "OK," and press ENTER.

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   -RWVideo   +R
-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, set "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 / -RWVideo / +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/16x-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).

1-17

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

Speed[*2]	6x	6x	8x	8x	2.4x
Rec. mode	High-speed DVD-RW	High-speed DVD+RW	High-speed DVD-R	High-speed DVD+R	DVD+R (Double Layer)
HQ	Approx. 10 min.	Approx. 10 min.	Approx. 8 min.	Approx. 8 min.	Approx. 25 min.
HSP	Approx. 6 min. 40 sec.	Approx. 6 min. 40 sec.	Approx. 5 min.	Approx. 5 min.	Approx. 16min. 40 sec.
SP	Approx. 5 min.	Approx. 5 min.	Approx. 3 min. 45 sec.	Approx. 3 min. 45 sec.	Approx. 12min. 30 sec.
LSP	Approx. 4 min.	Approx. 4 min.	Approx. 3 min.	Approx. 3 min.	Approx. 10 min.
ESP	Approx. 3 min. 20 sec.	Approx. 3 min. 20 sec.	Approx. 2 min. 30 sec.	Approx. 2 min. 30 sec.	Approx. 8 min. 20 sec.
LP	Approx. 2 min. 30 sec.	Approx. 2 min. 30 sec.	Approx. 2 min.	Approx. 2 min.	Approx. 6 min. 15 sec.
EP	Approx. 1 min. 40 sec.[*3]	Approx. 60 min.[*3]	Approx. 1 min. 15 sec.[*3]	Approx. 60 min.[*3]	Approx. 60 min.[*3]
SLP	Approx. 1 min. 15 sec.[*3]	Approx. 60 min.[*3]	Approx. 56 sec.[*3]	Approx. 60 min.[*3]	Approx. 60 min.[*3]

[*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 from the HDD to a DVD 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
Copy-Free (No copy protection signal)	HDD → +RW -RWVR RWVideo +R -RVR -RVideo
Copy-Once	HDD → -RWVR * -RVR *
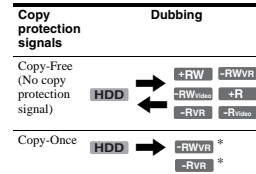
* CPRM-compatible DVD-RWs/DVD-Rs (VR mode) only
CPRM (Content Protection for Recordable Media) is a coding technology that protects copyrights for images.

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 Press TITLE LIST.
Press ←/→ to switch the Title Lists, if necessary.

4 Select a title, and press ENTER.
The sub-menu appears.

5 Select "Dubbing," and press ENTER.
The display for selecting the dubbing mode appears.
If a title with COPY (page 73) is selected in the title list, a confirmation display is displayed.
To "Move," select "OK."

```
                           1   2   3
 Title Dubbing      2.1GB      4.6GB
 This title will be dubbed.
 Set the dub mode.
 1 World Cup Final     Rec Mode: SP   4
        Dub Mode      Start
 5      SP 2.1GB       Cancel
```
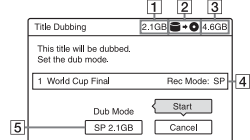
[1] Size of the title (approximate)
This is displayed in red when the size exceeds the available space on the dubbing target media.

[2] Direction of dubbing

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

[4] Information about the title to be dubbed

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

6 Select "Dub Mode."

7 Select a dubbing mode using ↑/↓.

Fast* → HQ → HSP → SP → LSP
SLP ← EP ← LP ← ESP ←

* From the HDD to a DVD only.
Appears when High-speed Dubbing is available for the title (page 71).

8 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.

```
 Title Dubbing
 
 There is not enough memory.
 The dubbing mode will be adjusted.
 Do you want to continue?
 
        OK         Cancel
```
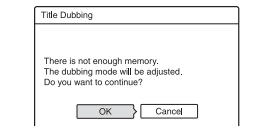
Select "OK" and go to step 8.
To manually select another dubbing mode, select "Cancel," and go to step 7.

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.

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."

```
                              1  2  3
 Dub Selected Titles   0.2GB      0.6GB
 Select title(s) in the order
 you want to dub then.
  4  1 World Cup Final   Wed  1,11       OK
     2 World Tour-Asia 1 Mon  6,11      Cancel
     3 World Tour-Asia 2 Wed  10,11
     4 World Tour-Asia 3 Thu  16,11      Reset
 
 6  5
```
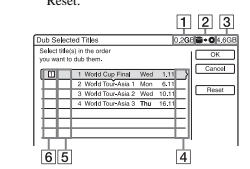
[1] Total size of the selected titles
This is displayed in red when the size exceeds the available space on the dubbing target media.

[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.

```
 Dub Selected Titles
 
 There is not enough memory.
 The dubbing mode will be adjusted.
 Do you want to continue?
 
        OK         Cancel
```
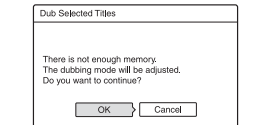
Select "OK" and go to step 9.
To manually select another dubbing mode, select "Cancel," and go to step 8.

Dubbing (HDD ↔ DVD)

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.

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

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 i.LINK, see "About i.LINK" 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.

ϔ **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.

Hookups

: Signal flow

1 **Press HDD or DVD to select the recording destination.**
If you select DVD, insert a disc (see "1. Inserting a Disc" on page 27).

2 **Insert the source DV/Digital8 format tape into your digital video camera.**
For the recorder to record or edit, your digital video camera must be set to video playback mode.

⚠ **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 i.LINK" 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 i.LINK 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).

---

3 **Press INPUT SELECT on the remote repeatedly to select "DV."**
The front panel display changes as follows:

programme
position → L1 → L2 → L3 → DV
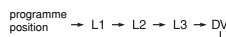
4 **Press REC MODE on the remote repeatedly to select the recording mode.**
The recording mode changes as follows:

→ HQ → HSP → SP → LSP
  SLP ← EP ← LP ← ESP ←
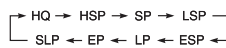
For details about the recording mode, see page 40.

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 original sound only. Normally select this when dubbing a DV format tape.
"Mix": 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).

ϔ **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 at 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 -RVideo

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.

ϔ **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.

⚠ **Notes**
• When a blank space between the recordings on the tape continues for more than five minutes, One Touch Dubbing ends automatically.
• The recorder records a blank for five minutes before it stops dubbing. To stop the blank recording, press ■ REC STOP.

Program Edit

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

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.

```
Scene Selection

Do you want to select a scene?

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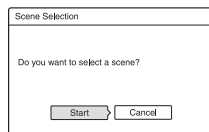
• If you have previously saved a programme, the display asks if you want to edit an existing programme or to create a new programme. To resume editing the existing programme, select "Saved Data," and go to step 9.

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

```
DV EDIT
Set IN point                Total
                            Scenes

         Controlling...  IN   0:00:15
                         OUT  0:00:00

     OK        Quit
```
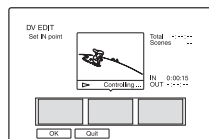
4 Select the IN point using ◄◄/►►, and press ENTER.
Playback pauses.

5 Press ENTER if the IN point is correct.
If the IN point is incorrect, select the IN point using ◄II/II►, 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 ◄II/II►, 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.

```
                                    1  2
DV EDIT
Scene List                Total  0:00:22
                          Scenes         3

0:00:30÷0:00:52
0:H00:022S

     OK        Quit
                           3
```
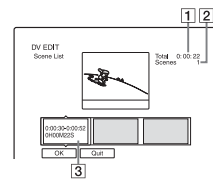
1 Total duration of the programme
2 Total number of scenes
3 Scene information block

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.

```
Title Name

Enter the title name.

DV 11.10.03 13:30 - 12.11.03 16:46

        OK            Enter
```
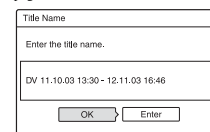
11 Select "OK," and press ENTER.
The title name is fixed, and the display asks if you want to start recording.
To change the disc media, select "Media" and press ♠/♣. To change the dubbing mode, select "Dub Mode" and press ♠/♣.
Data capacity required for the dubbing. This is displayed in red when the size exceeds the available space on the dubbing target media.

```
DV Dubbing         2.1GB 📼→💿 4,6GB

Change the dubbing mode if necessary.
Select "Start" to start dubbing.

   Media    Dub Mode      Start
   DVD     SP 2.1GB       Quit
```
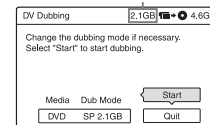
12 Select "Start," and press ENTER.
The recorder starts recording the tape contents as programmed.

To stop during recording
Press ■ REC STOP.
Note that it may take a few seconds for the recorder to stop recording.

DV Dubbing

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.

```
DV Dubbing

There is not enough memory.
The dubbing mode will be adjusted.
Do you want to continue?

     OK          Cancel
```
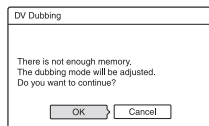
Select "OK" and go to step 12.
If you do not want to change the dubbing mode, select "Cancel." However, note that dubbing will end before the programme is finished.

✦ **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.

```
🏠 SETUP

Basic       Channel Setting
Video       Channel Sort
Audio       TV Guide Page
Recording   Clock
DVD         OSD          English
Others
Easy Setup
```

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.

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

```
Basic - Channel Setting

     Prog  System  Channel  Name  PAY-TV/  Audio  AFT
                                  CANAL+
      1    BG      C1       AAB   Off      NICAM  On  --
      2    DK      S1       CDE   On       Standard On  --
      3    BG      C5       FGH   Off      NICAM  On  --
```

2 Press ♠/♣ to select the programme position, and press ENTER.

```
Basic - Channel Setting

     Prog  System  Channel  Name  PAY-TV/  Audio  AFT
                                  CANAL+
      1    BG      C1       AAB   Off      NICAM  On  --
      2    DK      S1       CDE   On       Standard On  --
      3    BG      C5       FGH   Off      NICAM  On  --
```
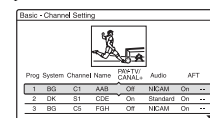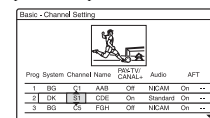
3 Select the item you want to change using ◄/►, and change the settings using ♠/♣ and press ENTER.

```
Basic - Channel Setting

     Prog  System  Channel  Name  PAY-TV/  Audio  AFT
                                  CANAL+
      1    BG      C1       AAB   Off      NICAM  On  --
      2    DK      S1       CDE   On       Standard On  --
      3    BG      C5       FGH   Off      NICAM  On  --
```
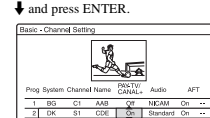
4 To preset another programme position, repeat from step 2.

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.

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

Settings and Adjustments

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.
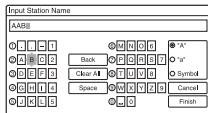
To enter characters, see page 34.

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.

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	
	S1 – S20 CATV	
	S21 – S41 HYPER	
	S01 – S05 CATV	
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."

◆ 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.

Corre-sponding channel	Channel Set number	Receivable Frequency range (MHz)
B	S1	116.75–124.75
C	S2	124.75–132.75
D	S3	132.75–140.75
D	S4	140.75–148.75
E	S5	148.75–156.75
F	S6	156.75–164.75
F	S7	164.75–172.75
G	S8	172.75–180.75
H	S9	180.75–188.75
H	S10	188.75–196.75
I	S11	196.75–204.75
J	S12	204.75–212.75
J	S13	212.75–220.75
K	S14	220.75–228.75
L	S15	228.75–236.75
L	S16	236.75–244.75
M	S17	244.75–252.75
N	S18	252.75–260.75
N	S19	260.75–268.75
O	S20	268.75–276.75
P	S21	276.75–284.75
P	S22	284.75–292.75
Q	S23	292.75–300.75
S21	S24	299.25–307.25
S22	S25	307.25–315.25
S23	S26	315.25–323.25
S24	S27	323.25–331.25

Corre-sponding channel	Channel Set number	Receivable 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.
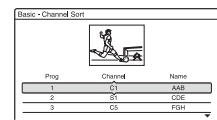
2 Press ↑/↓ to select the row containing the programme position you want to move, and press ENTER.
• To display other pages for programme positions 4 to 99, press ↑/↓ repeatedly.

Settings and Adjustments

---

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.
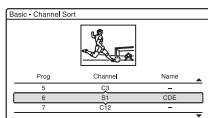
4 Press ENTER to confirm the setting.

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.

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.
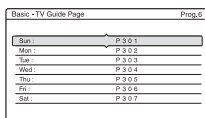
• If no page numbers are detected (P000), you have to set the appropriate TV guide page number manually.
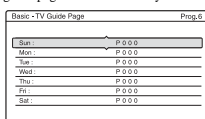
3 Select the TV guide page number you want to modify, and press ENTER.
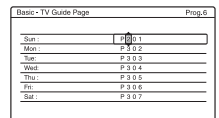
4 Press the number buttons or ←/↑/↓/→ to enter the TV guide page number, and press ENTER to confirm the setting.
• If you make a mistake, re-enter the correct number.
• To return to the original settings, press ⏎ RETURN.

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.

✪ 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).

Clock

Auto Adjust
Turns on the Auto Clock Set function when a programme position in your local area broadcasts a time signal.

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

2 Select "Auto Adjust," and press ENTER.
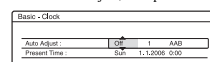
3 Select "On," and press →.

4 Press ↑/↓ repeatedly until the programme position of the station that carries a time signal appears, and press ENTER.
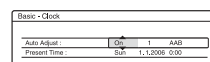
• If the recorder does not receive a time signal from any station, "Auto Adjust" returns to "Off" automatically and the menu for setting the clock manually appears on the screen.

☼ 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 Synchro-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.
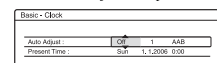
3 Select "Off," and press ENTER.

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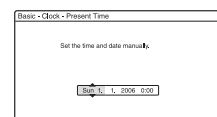
5 Press ↑/↓ to set the day, and press →. Set the month, year, hour, and minutes in sequence. Press ←/→ to select the item to be set, then press ↑/↓ to set the numbers. The day of the week is set automatically.

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.

Settings and Adjustments

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      Video Output
Video      Scart Setting
Audio      Pause Mode :    Auto
Recording  Colour System : PAL
DVD        Auto Display :  On
Others     Screen Saver :  On

Easy Setup
```
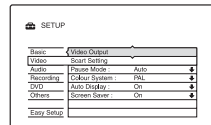
Video Output

◆ **TV Type**
Sets 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.

16:9

4:3 Letter Box
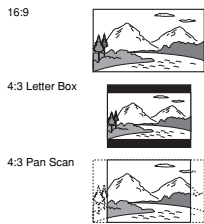
4:3 Pan Scan

❂ **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.

◆ **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. |

❂ **Note**
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.

❂ **Note**
Input signals are recorded in video mode when "Video/RGB" is selected (only French RDR-HX520 and RDR-HX920 models can record in video or RGB).

◆ **Line3 Output**
Selects a method of outputting video signals for the LINE 3/DECODER jack.

| Video | Outputs video signals. |
| S Video | Outputs S-video signals. |

Pause Mode (HDD/DVDs only)
Selects the picture quality in pause mode.

| Auto | The picture, including subjects that move dynamically, is output with no jitter. Normally select this position. |
| Frame | The picture, including subjects that do not move dynamically, is output in high resolution. |

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      Audio ATT :      Off
Video      Audio Connection
Audio      Audio DRC        Standard
Recording  Downmix :        Dolby Surround
DVD
Others

Easy Setup
```
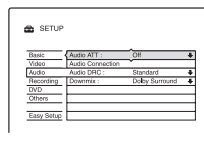
Audio ATT (attenuation)
If the playback sound is distorted, set this item to "On." The recorder reduces the audio output level.
This function affects the output of the following jacks:
– LINE 2 OUT R-AUDIO-L jacks
– LINE 1 – TV jack
– LINE 3/DECODER jack

| On | Select this when the playback sound from the speakers is distorted. |
| Off | Normally select this position. |

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 (or 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 :         On
Dolby Digital :       D-PCM
MPEG :                PCM
DTS :                 Off
48kHz/96kHz PCM :     48kHz/16bit
```
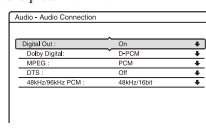
2 Select "Digital Out," and press ENTER.

| 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. |

• **MPEG (DVD VIDEOs only)**
Selects the type of MPEG audio signal.

| PCM | Select this when the recorder is connected to an audio component without a built-in MPEG decoder. If you play MPEG audio sound tracks, the recorder outputs stereo signals via the DIGITAL OUT (COAXIAL) jack. |
| MPEG | Select this when the recorder is connected to an audio component with a built-in MPEG decoder. |

• **DTS (DVD VIDEOs only)**
Selects whether or not to output DTS signals.

| On | Select this when the recorder is connected to an audio component with a built-in DTS decoder. |
| Off | Select this when the recorder is connected to an audio component without a built-in DTS decoder. |

• **48kHz/96kHz PCM (DVD VIDEOs only)**
Selects the sampling frequency of the audio signal.

| 48kHz/16bit | The audio signals of DVD VIDEOs are converted to 48 kHz/16 bit and output. |
| 96kHz/24bit | All signals containing 96 kHz/24 bit are output without conversion. However, the signals are output at 48 kHz/16 bit if copyright-protected signals are contained. |

❂ **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)

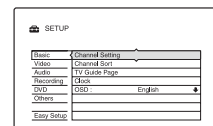The "Recording" setup allows you to adjust recording settings.

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.

```
 SETUP

 Basic      HDD Rec, Settings
 Video      DVD Rec, Settings
 Audio      Timer Settings
 Recording  TV Direct Rec :      On          ◆
 DVD        Synchro Rec :        Record to HDD ◆
 Others     Auto Chapter :       On          ◆

 Easy Setup
```
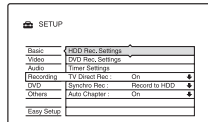
HDD Rec. Settings

◆ **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.

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).

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.

```
 SETUP

 Basic      Parental Control
 Video      Language
 Audio      Format DVD-RW :   VR    ◆
 Recording  One Touch Dubbing
 DVD
 Others

 Easy Setup
```
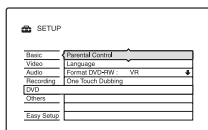
Parental Control (DVD VIDEO only)

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.

```
 DVD - Parental Control

    Enter a new password.

          [ - - - - ]    OK

                        Cancel
```
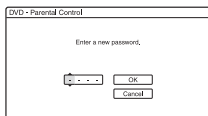
• When you have already registered a password, the display for entering the password appears.
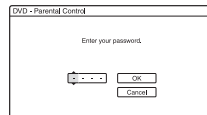
```
 DVD - Parental Control

    Enter your password.

          [ - - - - ]    OK

                        Cancel
```

2 Enter your four-digit password using the number buttons, then select "OK" and press ENTER.

```
 DVD - Parental Control

 Level :             Off        ◆
 Standard :          USA        ◆
 Password
```
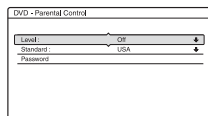
3 Select "Standard," and press ENTER.
The selection items for "Standard" are displayed.

```
 DVD - Parental Control

 Level :
 Standard :          USA
 Password            Others
```
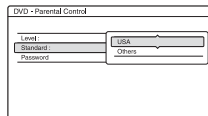
4 Select a geographic area as the playback limitation level, and press ENTER.
The area is selected.
• When you select "Others," press the number buttons to select and enter an area code in the table (page 112). Then select "OK" and press ENTER.

---

5 Select "Level," and press ENTER.
The selection items for "Level" are displayed.

```
 DVD - Parental Control

 Level :            Off
 Standard :         8
 Password           7
                    6
                    5
                    4
                    3
```
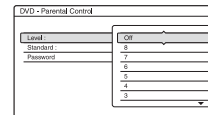
The lower the value, the stricter the limitation.
Discs rated higher than the selected level will be restricted.

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.

☺ Hint
If you select "Others" in "DVD Menu," "Subtitle," or "Audio," select and enter a language code from "Language Code List" on page 112 using the number buttons.

☺ Note
If you select a language in "DVD Menu," "Subtitle," or "Audio" that is not recorded on the DVD VIDEO, one of the recorded languages will be automatically selected.

Format DVD-RW (DVD-RW only)

The recorder automatically starts formatting in VR mode or Video mode, whichever is selected below, when a new, unformatted DVD-RW is inserted.

VR	Automatically formats the disc in VR mode.
Video	Automatically formats the disc in Video mode.

One Touch Dubbing

Displays the following options for the One Touch Dub function.

◆ **Finalise Disc (for all recordable discs except DVD-RW in VR mode)**
Selects whether or not to finalise the disc automatically following One Touch Dubbing (page 79).

Auto	Automatically finalises the disc following One Touch Dubbing.
Manual	Allows you to finalise the disc manually.

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.

```
🏠 SETUP
Basic      Dimmer :           Normal      ↕
Video      Power save standby  On         ↕
Audio      Command Mode :      DVD3       ↕
Recording  Registration Code
DVD        Factory Setup
Others     Format

Easy Setup
```
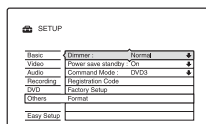
Dimmer
Adjusts the lighting of the front panel display.

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.

✪ 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.

```
🏠 SETUP
Basic
Video
Audio
Recording
DVD
Others

Easy Setup   Begin Easy Setup.
```
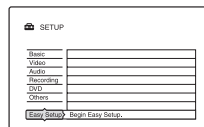
4 Select "Start."

5 Follow the instructions for "Easy Setup" (page 20) from step 2.

Settings and Adjustments

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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.
➟ Even if your TV is compatible with progressive format (525p/625p) signals, the image may be affected when you set the recorder to progressive format. 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).

Additional Information

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➟continued 99

1-24

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 "⌐⌐" 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 ■.
➜ 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 ➜ ● SYNCHRO REC to have the recorder stand by for recording. Make sure the SYNCHRO REC 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 ■ (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/ᵠ 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

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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 I/⏻ 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 I/⏻ 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 I/⏻ 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	There is a problem in the HDD. ➜ Contact your nearest Sony dealer or local authorized service facility. The DVD is dirty. ➜ Clean the disc with a soft cloth.
C 31	The DVD/CD is not inserted correctly. ➜ Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the recorder has performed the self-diagnosis function. ➜ Contact your nearest Sony dealer or local authorized Sony service facility and give the five-character service number. Example: E 61 10

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 pad, 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 benzine, 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.

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 "Receivable 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)

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.

About i.LINK

The DV IN jack on this recorder is i.LINK-compliant for digital video cameras. This section describes the i.LINK standard and its features.

What is i.LINK?
i.LINK is a digital serial interface for handling digital video, digital audio and other data in two directions between equipment having the i.LINK jack, and for controlling other equipment.
i.LINK-compatible equipment can be connected by a single i.LINK cable. Possible applications are operations and data transactions with various digital AV equipment. When two or more i.LINK-compatible equipment are connected to this recorder in a daisy chain, operations and data transactions are possible with not only the equipment that this recorder is connected to but also with other devices via the directly connected equipment.
Note, however, that the method of operation sometimes varies according to the characteristics and specifications of the equipment to be connected, and that operations and data transactions are sometimes not possible on some connected equipment.

✆ Note
Normally, only one piece of equipment can be connected to this recorder by the i.LINK cable (DV connecting cable). When connecting this recorder to i.LINK-compatible equipment having two or more i.LINK jacks (DV jacks), see the instruction manual of the equipment to be connected.

About the name "i.LINK"

i.LINK 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.

i.LINK baud rate

i.LINK'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 i.LINK 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.

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).

i.LINK and 🎇 are trademarks.

Guide to Parts and Controls

For more information, see the pages in parentheses.

Remote
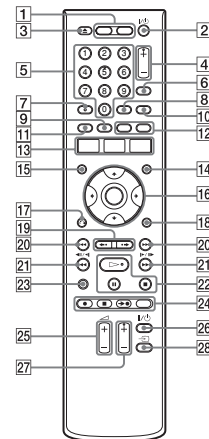
1 HDD button (27)
DVD button (27)

2 [/(¹) (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 |◄◄/►►| (previous/next) buttons (54)

21 ◄◄◄◄|| ◄|/|► ||►►► (search/slow/freeze frame) buttons (54)

22 ▷ (play) button (52)
|| (pause) button (54)
■ (stop) button (52)
The ▷ button has a tactile dot*.

23 TIME/TEXT button (31)

24 ● REC button (27)
■ REC STOP button (27)
→● SYNCHRO REC button (49)
REC MODE button (27)

25 TV ∠ (volume) +/– buttons (17)

26 TV [/(¹) (on/standby) button (17)

27 TV PROG (programme) +/– buttons (17)
The + button has a tactile dot*.

28 TV ⌐⊕ button (17)

* Use the tactile dot as a reference when operating the recorder.
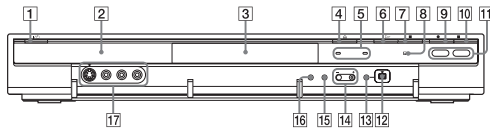
Front panel

1 [/(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
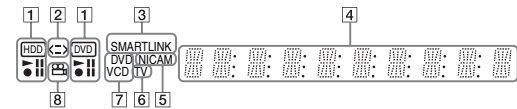
1 HDD/DVD indicators
Displays the selected media and the playing/recording status.

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."

ﾞϔ' 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).

• Clock
• Programme position
• TV Direct Rec indication (27):
"TV" appears in the right most two digits.

5 NICAM indicator (41)

6 TV indicator (27)

7 Disc type*

8 ⦾ᴿ (angle) indicator (52)

Rear panel
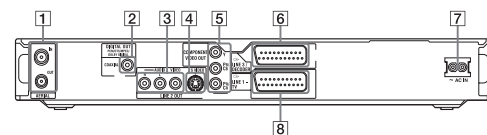
1 AERIAL IN/OUT jacks (12)

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, Pʙ/Cʙ, Pʀ/Cʀ) jacks (13)

6 LINE 3/DECODER jack (13)

7 AC IN terminal (16)

8 LINE 1 – TV jack (13)

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	Oriya	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		Pushto	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	Laothian	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
2079	Canada	2254	Italy	2424	Philippines		Kingdom
2090	Chile	2276	Japan	2436	Portugal		
2092	China	2304	Korea	2489	Russia		
2115	Denmark	2363	Malaysia	2501	Singapore		

112

1-28E

NOTE: The following flow chart shows the disassembly procedure.

```
┌──────────────┐
│     Set      │
└──────────────┘
        │
        ▼
┌──────────────┐
│  Case block  │
│   assembly   │
│  (Page 2-2)  │
└──────────────┘
        │
    ┌───┴────────┬────────────┬────────────┬────────────┬────────────┐
    ▼            ▼            ▼            ▼            ▼            ▼
┌──────────┐┌──────────┐┌──────────┐┌──────────┐┌──────────┐┌──────────┐
│Tray cover││  Front   ││   HDD    ││   DVD    ││ RD-060   ││ D.C. fan │
│ assembly ││  panel   ││(Page 2-4)││  drive   ││  board   ││(Page 2-7)│
│(Page 2-2)││ section  ││          ││(Page 2-4)││(Page 2-6)││          │
│          ││(Page 2-3)││          ││          ││          ││          │
└──────────┘└──────────┘└──────────┘└──────────┘└──────────┘└──────────┘
                  │            │            │
                  ▼            ▼            ▼
            ┌──────────┐┌──────────┐┌──────────┐
            │ FR-240   ││  Power   ││ AV-103   │
            │ board,   ││  supply  ││  board   │
            │ FL-159   ││  block   ││(Page 2-5)│
            │  board   ││(Page 2-6)││          │
            │(Page 2-3)││          ││          │
            └──────────┘└──────────┘└──────────┘
```
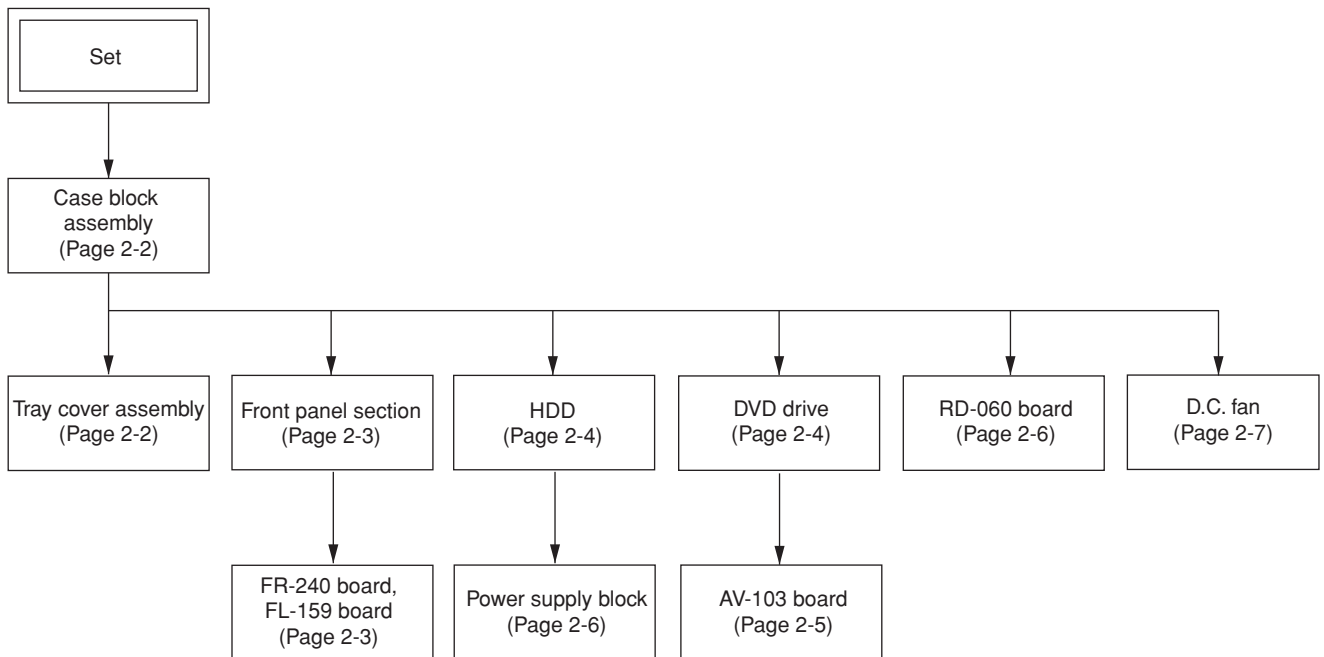
NOTE: Follow the disassembly procedure in the numerical order given.

2-1. CASE BLOCK ASSEMBLY

② *Three tapping screws (+BV 3 × 8)*

③ *Case block assembly*

① *Two tapping screws*

2-2. TRAY COVER ASSEMBLY

③ *Two claws*

④ *Tray cover assembly*

② *Open the tray*

Hole

① *The stiff wire*

2-3. FRONT PANEL SECTION

① Four claws

② Three claws

③ Front panel section

2-4. FR-240 BOARD, FL-159 BOARD

③ Connector (CN3101)

⑨ FL-159 board

⑦ Three tapping screws (+BV 3 × 8)

(CN3102)

(CN3001)

⑧ FL cover

④ Flexible flat cable (FLR-007)

① Flexible flat cable (FAR-004) (CN3003)

② Connector (CN3005)

⑤ Three tapping screws (+BV 3 × 8)

⑥ FR-240 board

2-5. HDD

④ *Four screws*
(HDD damper screw)

⑤ *Tapping screw*
(+BV 3 × 8)

⑪ *Four tapping screws*
(6-3UNCX5)

⑫ *Lead*

⑩ *Harness*
(PH077)

⑦ *Two dampers*

⑧

⑬ *HDD bracket*

⑨ *Connector*

⑥ *Two dampers*

③ *Connector*

② *Connector*
(CN1)

⑭ *HDD*

① *The wire pin that holds*
the harness is set up.

2-6. DVD DRIVE

④ *Four tapping screws*
(+BV 3 × 8)

② *Connector*
(CN2)

⑤ *Remove the DVD section*
in the direction of the arrow.

⑥ *Two Non-HALOGENE tapes*

⑦ *Flexible flat cable*
(FRD-010)

⑨ *DVD drive*

⑧ *Harness (PD-138)*

③ *Flexible flat cable*
(FRD-010) (CN101)

① *The wire pin that holds*
the harness is set up.

2-7. AV-103 BOARD

① The wire pin that holds the harness is set up.

② Connector (CN103)

③ The wire pin that holds the harness is set up.

④ Connector (CN701)

⑤ The wire pin that holds the harness is set up.

⑥ Flexible flat cable (FAR-004) (CN602)

⑬ Panel rear, D.C fan

⑪ Eight tapping screws (+BV 3 × 10)

⑭ Five tapping screws (+BV 3 × 8)

⑦ Connector (CN3)

⑧ Connector (CN601)

⑫ Screw (+B 3 × 3)

⑭ Remove the AV-103 board in the direction of the arrow.

⑨ Flexible flat cable (FRA-003) (CN501)

⑩ Flexible flat cable (FRA-005) (CN502)

2-8. POWER SUPPLY BLOCK

④ *Four tapping screws (+BV 3 × 8)*

⑤ *Remove the Power supply block in the direction of the arrow.*

③ *Tapping screw (+BV 3 × 10)*

② *Connector (CN3)*

① *Connector (CN2)*

2-9. RD-060 BOARD

⑨ *Four tapping screws (+BV 3 × 8)*

⑩ *RD-060 board*

⑧ *Connector (CN203)*

④ *Flexible flat cable (FRA-003) (CN604)*

③ *Flexible flat cable (FRA-005) (CN603)*

② *Flexible flat cable (FRA-004) (CN602)*

⑦ *Flexible flat cable (FRD-010) (CN101)*

⑥ *Connector (CN601)*

⑤ *Connector (CN701)*

① *The wire pin that holds the harness is set up.*

2-10. D.C. FAN

④ *Remove the D.C. fan in the direction of the arrow.*

② *Connector (CN103)*

③ *Two tapping screws (+BV 3 × 10)*

① *The wire pin that holds the harness is set up.*

2-11. CIRCUIT BOARDS LOCATION

Power supply block

AV-103 board

FL-159 board

FR-240 board

RD-060 board

SECTION 3
BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM

AV-103 BOARD

J702
LINE 2 OUT
S VIDEO | VIDEO | AUDIO L | AUDIO R

TU401
AERIAL
IN
OUT

TUNER

IC702
VIDEO AMP SELECTOR

TU VIDEO
TUDV

AUDIO

IC1401
EURO MSP

SIF

TU SCL,TU SDA

X1401
18.432MHz

V,C,Y

Y,CB,CR

RECVY,RECCCR

C
Y

J703
COMDONGNT VIDEO OUT
Y - CB - CR

J301
DIGITAL OUT
COAXIAL

RD-060 BOARD

IC803
VIDEO SELECTOR

Y,R/C
2

Y,C,Y/G,CR/R,CB/B

RECVY,RECCCR

Y,C,Y/G,CR/R,CB/B

SPDIFO

IDE D0-D15

ADE A0-A4
7

AT2 DATA[0-15]

IC201
HDD DRIVE

HT +/-
HR +/-

DVD
UNIT

HDD
UNIT

FL-159
BOARD (1/2)

J3001
LINE 2 IN
S VIDEO
VIDEO
AUDIO L
(MONO)
AUDIO R

Y2
C2

V2

L2

R2

TUL,TUR

IC802
AUDIO SELECTOR

DAL,DAR

IC302

MUTING

DAL,DAR

AOUT L +/-,AOUT R +/-
AIN L +/-,AIN R +/-

IC803
AUDIO ADC/DAC

AODATAI
ADATAO

768FSCHG
384FS48K

12

DDATA[0-31]

DADRS[0-12]

IC105,106
256Mbit
DDR

10
6

IC202,203
AMP

CN802
LINE1-TV

V1

V/Y OUT
AVLINK
L1,R1

L1,R1 OUT

IC606
RESET

OUT

UNSW4V

IC605
AND GATE

SCLK[0],RX[0]
RISMSTATUS2
XSYSRST

IC103
RISM3

IC604
AND GATE

TX[0]

3

HDATA[0-15]

IC501
FLASH MEMORY
(128Mbit)

CN801
LINE3/DECODE

V3

R,G,B

V/Y,C OUT

L3,R3

L3,R3 OUT

XPAMUTE

TU SCL,TU SDA

IC605
REAL TIME
CLOCK

X603
32.76kHz

X801
27MHz

IC802
PLL

2

FSEL
FSEL
3

VMCLK
A768 FS48K
A768 FS441K

IC502
SUPER AND
MEMORY
(128Mbit)

HADRS[6-31]

HCS[0]

PHYD0[0-7]

FR-240 BOARD (1/2)

IC3002
REMOTE COMMANDER RECEIVER

IC604
EEP ROM

IC301
VIDEO
DECODER

CLOCK,SYNC

*1

5V

FUNCTION
KEY

HDD,DVD
TIMER REC
SYNCHRO REC

IC3001
LED DRIVE

AVLINK
BUFFER

IC603
IT CONTROL

IC606
RESET

IC601
P FAIL DET

UNSW6V

IC701
PHY

24,576MHz

POWER

FLUORESCENT
INDICATOR TUBE

IC3101
FLD DRIVE

FR-159 BOARD (2/2)

X602
10MHz

SW5V
UNSW4V
UNSW3V

SWITCHING REGULATOR
(SRV-1855EK)

TPA+/-,TPB+/-

DV IN

FL-240 BOARD (2/2)

D101

G LINK

IC1102

IC1103

16MHz

*2

POWER
REGULATOR

SW12V
SW4V
SW5V
UNSW12V
UNSW6V
UNSW6V
UNSW-8V

UNSW12V
UNSW6V
UNSW-8V

D101
RECT

AC IN
F101

FAN

*1 HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925
*2 HX525/HX725/HX727/HX925

RDR-HX520/HX525/HX720/HX722/
HX725/HX727/HX920/HX925

3-2. AV-103 BLOCK DIAGRAM

3-3. RD-060 BLOCK DIAGRAM

RDR-HX520/HX525/HX720/HX722/
HX725/HX727/HX920/HX925

3-4. POWER BLOCK DIAGRAM

SECTION 4
SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

4-1. FRAME SCHEMATIC DIAGRAM

POWER

FAN

AV-103

FA-117
HARNESS
l=405

PH-077
HARNESS
l=290

PD-138
HARNESS
l=150

DVD-
DRIVE

B TO B

FRA-003
FFC 1.0mm
l=50

FRA-004
FFC 1.0mm
l=50

FRA-005
FFC 1.0mm
l=50

FAR-004
FFC 1.0mm
l=230

ATA1 DRIVE

FRD-004
FFC 0.5mm
l=250

RD-060

SATA

ATA2 HDD

RF-117
HARNESS
l=90

RH-054
HARNESS
l=300

SATA

FLR-007
FFC 1.0mm
l=120

FR-240

SATA-HDD

FL-159

4-1

4-2

RDR-HX520/HX525/HX720/HX722/ HX725/HX727/HX920/HX925
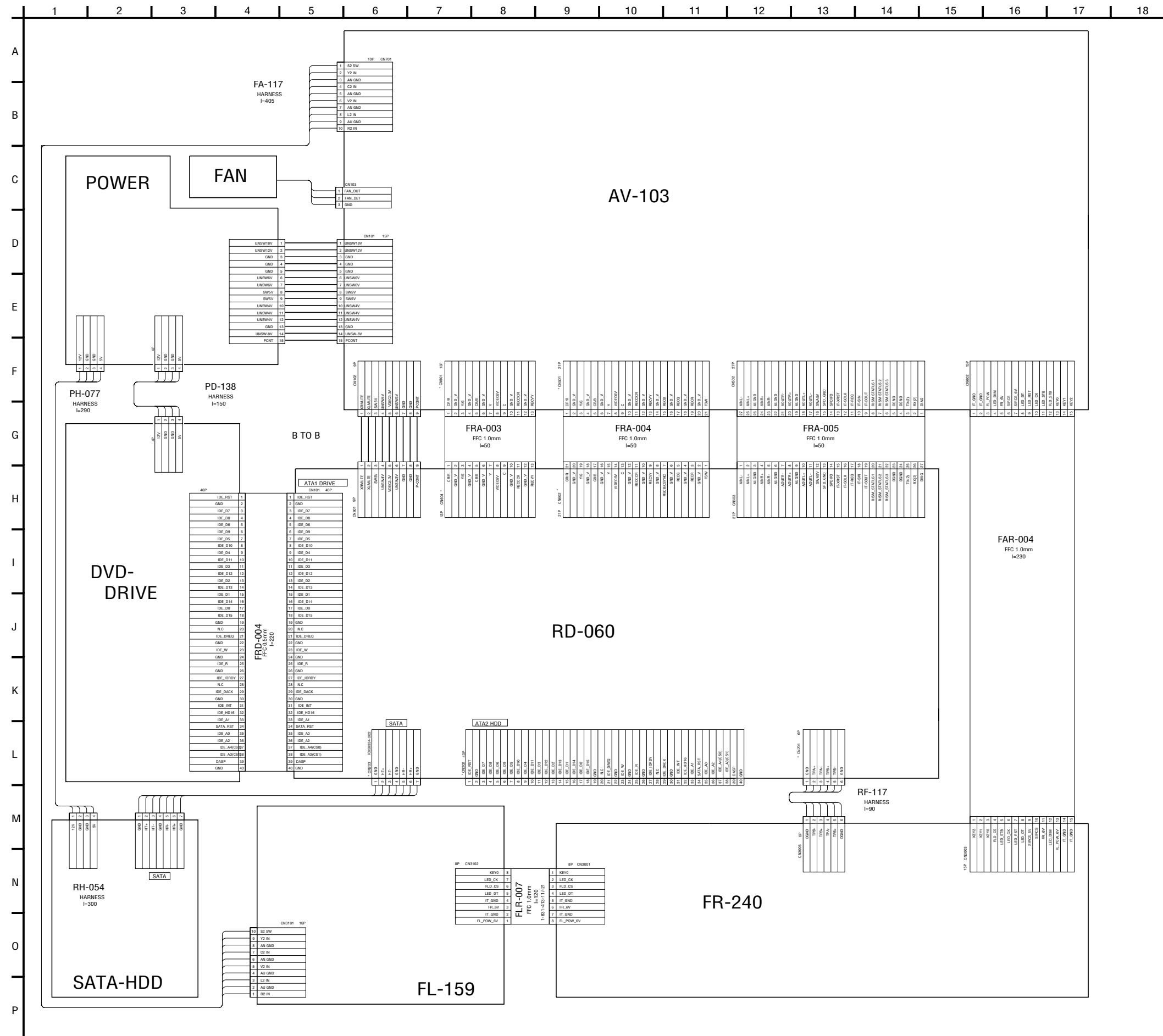
4-2. SCHEMATIC DIAGRAMS

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. pF : μμF.
  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.
  kΩ=1000Ω, MΩ=1000kΩ.
• 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, be-cause 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+ : B+ Line
• B− : 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 toler-ances.

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

① X1401

54.3 ns — 3.5 Vp-p

⑦ J703 COMPONENT PB

H — 1.0 Vp-p

② X602

100 ns — 4.6 Vp-p

⑧ J703 COMPONENT PR

H — 1.0 Vp-p

③ X603

30.5 μs — 1.2 Vp-p

⑨ J703 S-VIDEO Y

H — 1.7 Vp-p

④ J702 S-VIDEO C

H — 1.3 Vp-p

⑩ CN805 ⑲, ㊵

H — 2.0 Vp-p

⑤ J702 S-VIDEO Y

H — 1.7 Vp-p

⑪ X1101

62.5 ns — 5.1 Vp-p

⑥ J702 VIDEO

H — 1.0 Vp-p

RD-060 BOARD

① X201

40 ns — 1.7 Vp-p

② X301

69.8 ns — 2.0 Vp-p

③ X701

40.7 ns — 4.0 Vp-p

④ X801

37 ns — 2.0 Vp-p
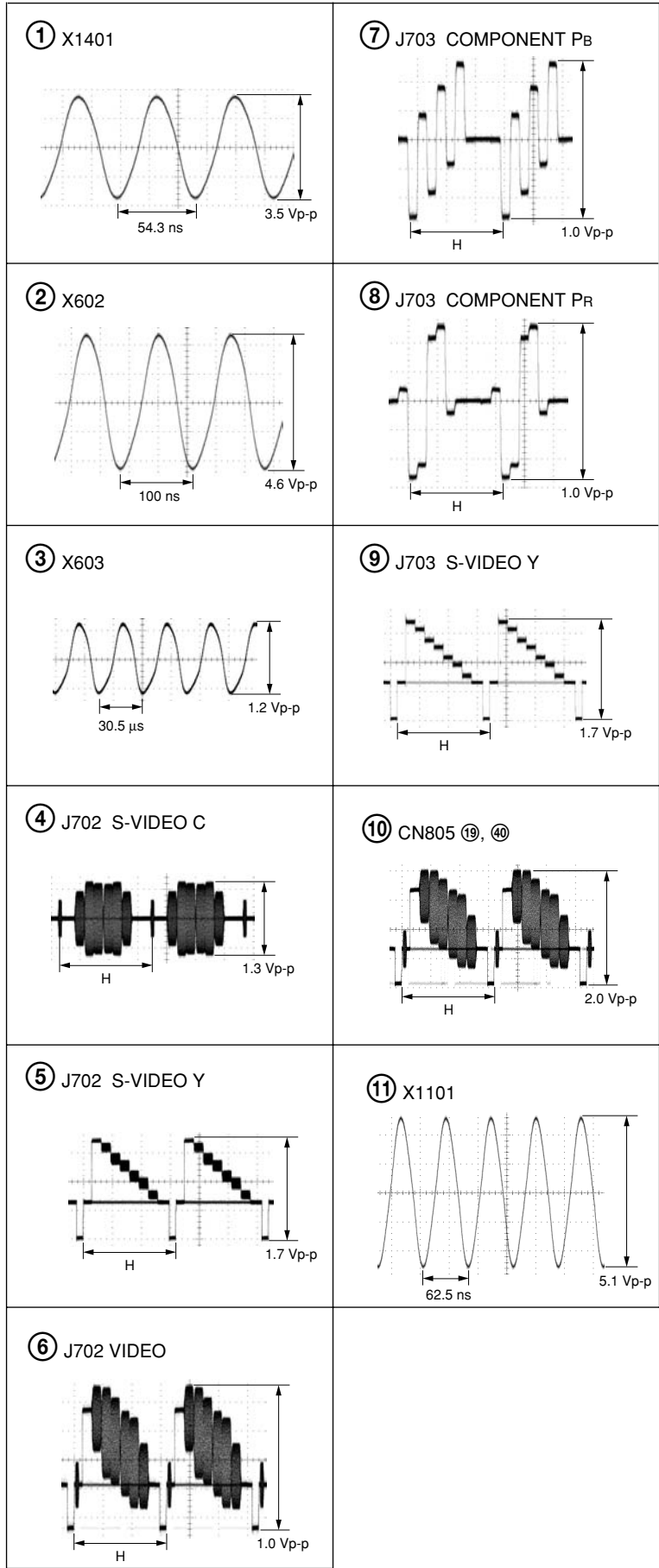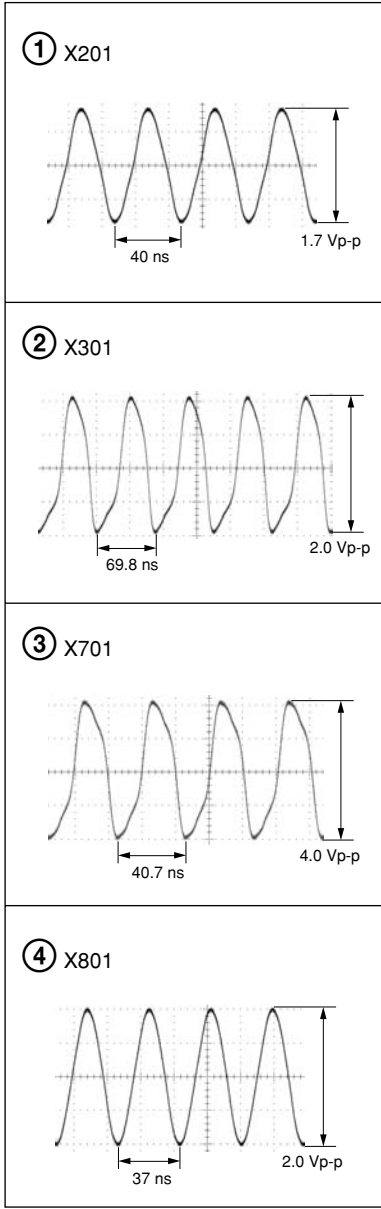
AV-103 BOARD(1/8)
POWER
-REF.NO.: SERIES-

NO MARK:REC/PB MODE

(HX525/HX725/HX727/HX925)

PS102 0.63A

CN101 15P

UNSW18V	1
UNSW12V	2
GND	3
GND	4
GND	5
UNSW6V	6
UNSW6V	7
SW5V	8
SW5V	9
UNSW4V	10
UNSW4V	11
UNSW4V	12
GND	13
UNSW-8V	14
PCONT	15

JL101
JL102
JL103
JL104
JL105
JL106
JL107
JL108
JL109
JL110
JL112
JL111
JL113
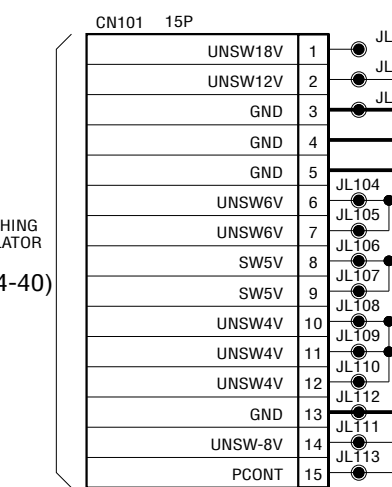
TO SWITCHING REGULATOR CN3 (PAGE 4-40)

R111 10k

R160 0
R135 0
R137 0
R140 0
R154 0
PS103 0.63A
R142 0

UNSW5V-V
GND-V
UNSW-8V-V
UNSW-8V-V
GND-V
UNSW6V-A
UNSW12V-A
UNSW12V-A
UNSW6V-A
UNSW-8V-A
GND-A
XRMUTE
XLMUTE
VA_PCONT
PCONT
FAN_DET
FAN_HI
FAN_CONT
UNSW6V-I
GND-V

① TO(6/8)
② TO(7/8)
③ TO(3/8)
④ TO(3/8,5/8)
⑤ TO(5/8)

DC FAN CN103 3P

FAN_OUT	1
FAN_DET	2
GND	3

JL116
JL121

R101 0

IC102 VDEC 3.3V REG

IC102 SI-3033KS-TL

C117 100p

IC107 FAN DRIVE

IC107 TK11100CSCB-G

IC104 UNSW5V REG

IC104 TK73400AU3G0L-C

R144 0
R145 0
R146 0
R148 0

GND-I
UNSW5V-I
UNSW6V-T
GND-T

⑥ TO(4/8)

(HX525/HX725/HX727/HX925)

CN102 9P

XRMUTE	1
XLMUTE	2
SW5V	3
UNSW4V	4
VDEC3.3V	5
UNSW3V	6
GND	7
GND	8
PCONT	9

JL124
JL125
JL126
JL127
JL128
JL129
JL130

TO RD-060 BOARD(5/7) CN601 (PAGE 4-33)

C124 470u 10V

D101 EC21QS03L-TE12L

SW5V-S
GND-T
GND-I

⑦ TO(8/8)

GND-I

⑧ TO(2/8)

C105 1u 10V
C106 10u 6.3V
C120 1u 25V
C119 1u B 25V
C118 0.01u B
R115 8200 ±0.5%
Q101 MUN2213T1 SWITCH
C123 47u 25V
R120 0
R121 39k ±0.5%
R122 12k ±0.5%
C114 1u 10V
R113 120k ±0.5%
R114 15k ±0.5%
C123
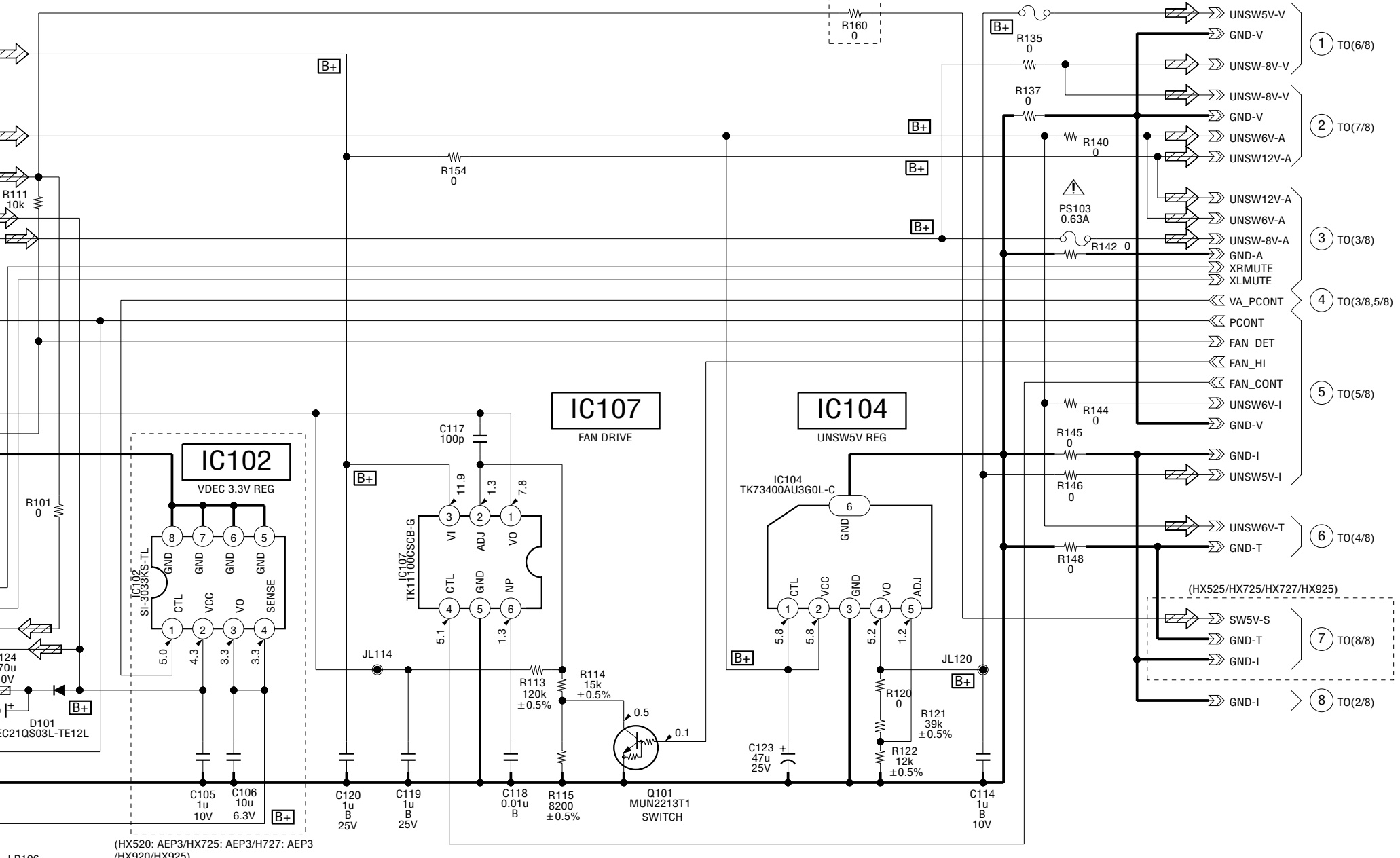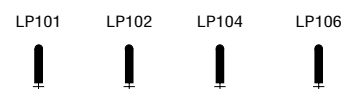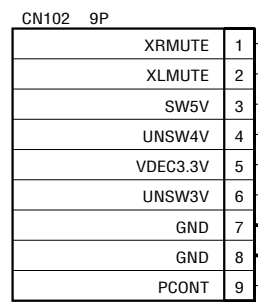
(HX520: AEP3/HX725: AEP3/H727: AEP3 /HX920/HX925)

LP101 LP102 LP104 LP106

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

1 2 3 4 5 6 7 8 9 10

AV-103 BOARD(2/8)
AUDIO IN

NO MARK:REC/PB MODE

CN502 27P

27	AINL-
26	AINL+
25	AUGND
24	AINR+
23	AINR-
22	AUGND
21	AOUTR-
20	AOUTR+
19	AUGND
18	AOUTL+
17	AOUTL-
16	SWA5V
15	SPD_GND
14	SPDIFO
13	XITRST5
12	ITSCK5
11	ITREQ5
10	ITSDI5
9	ITSDO5
8	RISM STATUS 5_1
7	RISM STATUS 5_2
6	RISM_RTS_0
5	DGND
4	DGND
3	TX(2)
2	RX(2)
1	DIAG
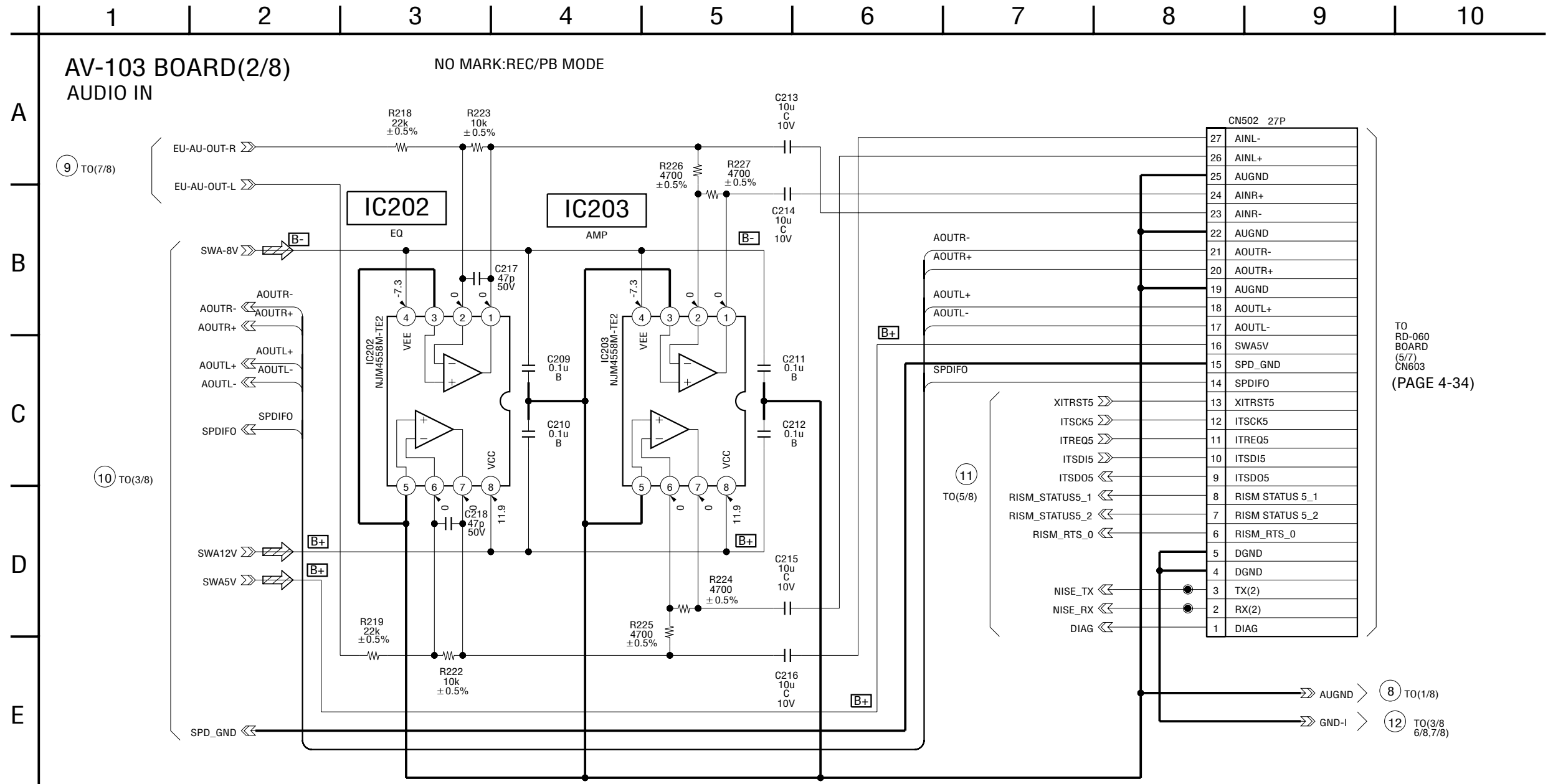
TO
RD-060
BOARD
(5/7)
CN603

(PAGE 4-34)

R218
22k
±0.5%

R223
10k
±0.5%

C213
10u
C
10V

EU-AU-OUT-R

EU-AU-OUT-L

R226
4700
±0.5%

R227
4700
±0.5%

C214
10u
C
10V

IC202
EQ

IC203
AMP

AOUTR-
AOUTR+

AOUTL+
AOUTL-

SPDIFO

SWA-8V

AOUTR-
AOUTR+
AOUTR+
AOUTR-

AOUTL+
AOUTL+
AOUTL-

SPDIFO
SPDIFO

SWA12V

SWA5V

R219
22k
±0.5%

R222
10k
±0.5%

R224
4700
±0.5%

R225
4700
±0.5%

C215
10u
C
10V

C216
10u
C
10V

SPD_GND

C217
47p
50V

C209
0.1u
B

C210
0.1u
B

C211
0.1u
B

C212
0.1u
B

C218
47p
50V

-7.3

-7.3

VEE

VEE

VCC

VCC

11.9

11.9

0

0

0

0

0

0

4 3 2 1

4 3 2 1

5 6 7 8

5 6 7 8

IC202
NJM4558M-TE2

IC203
NJM4558M-TE2

XITRST5
ITSCK5
ITREQ5
ITSDI5
ITSDO5
RISM_STATUS5_1
RISM_STATUS5_2
RISM_RTS_0

NISE_TX
NISE_RX
DIAG

(9) TO(7/8)

(10) TO(3/8)

(11) TO(5/8)

(8) TO(1/8)

(12) TO(3/8
6/8,7/8)

AUGND

GND-I

B-

B-

B+

B+

B+

B+

B+

AV-103 BOARD(3/8)
AUDIO OUT

NO MARK:REC/PB MODE

R342, R344, R362
4.7k   100k   xx   HX520: AEP3/HX725: AEP3/HX727: AEP3/HX920/HX925
xx   xx   4.7k   HX520: AEP1.2,UK/HX525/HX720/HX722/HX725: AEP1,UK/HX727: AEP1

IC302
LINE OUT

IC303
5V REG

DIGITAL OUT

COAXIAL

J301

(HX520: AEP3/HX725: AEP3/HX727: AEP3/HX920/HX925)

AUDIO OUT
AV-103 (3/8)

RDR-HX520/HX525/HX720/HX722/ HX725/HX727/HX920/HX925

AV-103 BOARD(4/8)
TUNER

NO MARK:REC/PB MODE

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

AV-103 BOARD(5/8)
IT CONTROLLER
-REF.NO.: SERIES-

NO MARK:REC/PB MODE
R   :REC MODE
P   :PB MODE
*   :Cannot be measured

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

IT CONTROLLER
AV-103 (5/8)

For Schematic Diagram
• Refer to page 4-4 for waveforms.

AV-103 BOARD(6/8)
VIDEO IN/OUT
-REF.NO.: SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

IC702
VIDEO IN/OUT
IC702
LA73036M-TBA-E

IC701
-3.3V REG

IC701
TK72233GMCL-G
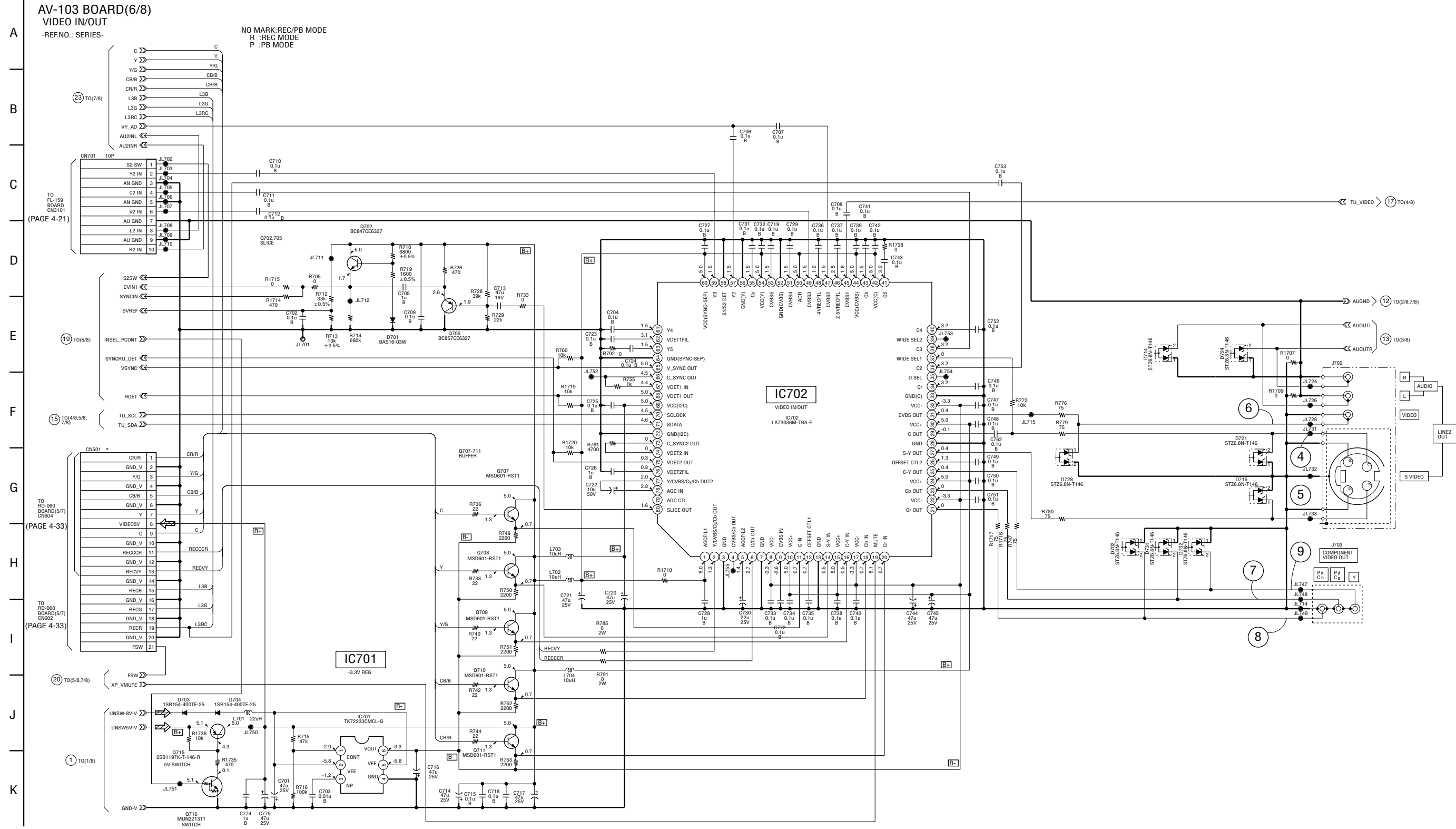
CN501
13P: EXCEPT HX520: AEP3/HX725: AEP3/HX727: AEP3/HX920/HX925
21P: HX520: AEP3/HX725: AEP3/HX727: AEP3/HX920/HX925

For Schematic Diagram
• Refer to page 4-4 for waveforms.
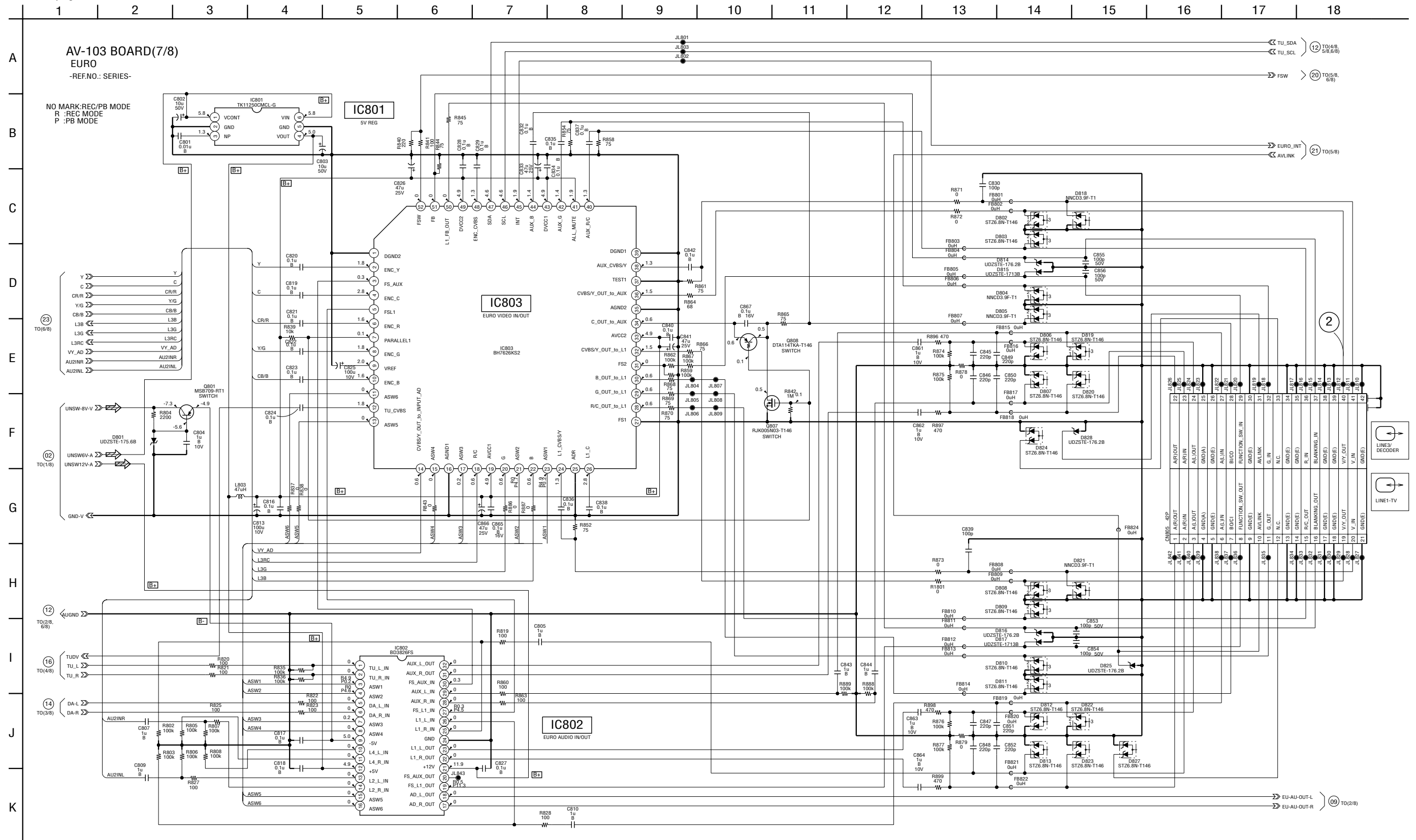
AV-103 BOARD(7/8)
EURO
-REF.NO.: SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

IC801
5V REG

IC803
EURO VIDEO IN/OUT

IC802
EURO AUDIO IN/OUT

RDR-HX520/HX525/HX720/HX722/
HX725/HX727/HX920/HX925

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)
IR-CNT

NO MARK:REC/PB MODE

RESET5V

IC1102
IR I/F

IC1102　M30263M6A-1547U5

(FOR CHECK)

CN1102　8P

IR_GND	1
UN5V	2
XIR_RST	3
CNVss	4
XCE	5
SH_TXD2	6
SH_RXD2	7
N.C	8

JL905
JL906
JL907
JL908
JL909
JL910
JL911

R1116 100k
R1133 4700
R1134 4700

R1101 1k
R1147 4700
R1103 1k
R1108 680

C1109 15p
C1110 15p
X1101 16MHz
C1111 0.1u B

1 AVss
2 P10.0/AN0
3 VREF
4 AVcc
5 P9.1/TB1/AN31
6 P9.0/TB0IN/AN30/CLKOUT
7 CNVss
8 P8.7/XCIN
9 P8.6/XCOUT
10 RESET
11 XOUT
12 VSS
13 XIN
14 VCC
15 P8.5/NMI/SD
16 P8.4INT2/ZP
17 P8.3/INT1
18 P8.2/INT0
19 P8.1TA4IN/U
20 P8.0/TA4IN/U
21 P7.7/TA3IN

42 P10.1/AN1
41 P10.2/AN2
40 P10.3/AN3
39 P10.4/AN4/KI0
38 P10.5/AN5/KI1
37 P10.6/AN6/KI2
36 P10.7/AN7/KI3
35 P1.5/INT3/ADTRG/IDV
34 P1.6/INT4/IDW
33 P1.7/INT5/IDU
32 P6.4/CTS1/RTS1/CTS0/CLKS1
31 P6.5/CLK1
30 P6.6/RxD1
29 P6.7/TxD1
28 P7.0/TxD1/SDA2/TA0OUT/CTS1/RTS1/CLKS1
27 P7.1/RxD2/SCL2/TA0IN/CLK1
26 P7.2/CLK2/TA1OUT/V/RxD1
25 P7.3/CTS2/RTS2/TA1IN/V/TxD1
24 P7.4/TA2OUT/W
23 P7.5TA2IN/W
22 P7.6/TA3OUT

R1144 1k
R1139 10k
R1140 10k
R1141 10k
R1105 1k

JL912
JL902
JL901

IR_BUSY
IR_INT
STB_RXD
STB_TXD

22 TO(5/8)

IC1103
NAND

IC1103
SN74AHC1G00DCKR

1 B
2 A
3 GND
5 Vcc
4 V

R1142 0
R1143 0
JL903
JL904

R1110 1k
R1106 2200
C1104 470p B
R1111 1k
C1103 1u B 1608

Q1104
2SB1561T100Q
SWITCH

R1148 150
R1132 150
R1107 150

D1103 STZ6.8N-T146

R1115 0
R1120 1k

JL913
JL914
JL915
J1101

G-LINK

SW5V-S
GND-I
GND-T

R1146 0

7 TO(1/8)

FL-159 BOARD
FL DRIVER,LINE2 IN,POWER SW

NO MARK:REC/PB MODE

▲:Voltage measurement of
the CSP IC and
the Transistors with
▲ mark,is not possible.

ND3101   (FLUORESCENT TUBE DISPLAY)

L3101
100uH

Q3101,Q3102
OSC

R3111
3300

Q3101
2SC2411K-T-146-CR

C3106
100u
16V

C3110
0.0068u
200V

5.6

Q3102
2SC2411K-T-146-CR

5.6

T3101
DC/DC CONVERTER
TRANSFORMER

D3110
1SS355TE-17
D3111
1SS355TE-17
JL3110

D3108
1SS355TE-17
D3109
1SS355TE-17
JL3111

C3113
0.1u
B
50V
2012

C3114
22u
50V

D3112
MMA3Z0V2ST1

C3115
0.1u
B
50V
2012

B+

C3116
0.01u
B
15V

IC3101
FL DRIVER

PT6315
IC3101

C3120
150p
CH

GRD10
GRD11
GRD12

C3121
150p
CH

SEG16
SEG15
SEG14
SEG13
SEG12
SEG11
SEG10

R3124
0

R3123
0

R3115
27k

R3116
100k

JL3126
JL3127
JL3128
JL3129

LED1
LED2
LED3
LED4
OSC
DOUT
DIN
CLK
STB
K1
K2

LEDT
LECK
FLSTB

C3117
0.01u
15V

C3118
0.1u
B

J3101

R3103
0
2W
D3102
STZ6.8N-T146

R3101
75

R3102
75

R3104
0
2W

R3105
0 2W

D3103
STZ6.8N-T146

D3104
STZ6.8N-T146

CN3101   10P

JL3101   10 S2 SW
JL3102   9 Y2 IN
JL3103   8 AN GND
JL3104   7 C2 IN
JL3105   6 AN GND
JL3106   5 V2 IN
JL3107   4 AU GND
JL3108   3 L2 IN
JL3109   2 AU GND
         1 R2 IN

TO
AV-103
BOARD(6/8)
CN701

(PAGE 4-15)

S VIDEO

LINE2 IN

VIDEO

AUDIO L

AUDIO R

R3108
75

R3109
0 2W

D3105
STZ6.8N-T146

FB3101

FB3102

D3106
STZ6.8N-T146

D3107
STZ6.8N-T146

C3103
220p
50V

C3104
220p
50V

R3114
220k

R3113
220k

POWER   S3101

CN3102   8P

JL3158   8 KEY0
JL3159   7 LED_CK
JL3160   6 FLD_STB
JL3161   5 LED_DT
JL3162   4 IT_GND
JL3163   3 FR_5V
JL3164   2 IT_GND
JL3165   1 FL_POW_6V

LECK
FLSTB
LEDT

TO
FR-240
BOARD
CN3001

(PAGE 4-23)

FL DRIVER, LINE2 IN, POWER SW
FL-159

RDR-HX520/HX525/HX720/HX722/HX725/HX727/HX920/HX925

FR-240 BOARD
DV,REMOCON RECEIVER,FUNCTION SW,LED

NO MARK:REC/PB MODE

For Schematic Diagram
• Refer to page 4-41 for printed wiring board.

RD-060 BOARD(1/7)
RISM3

RISM3
RD-060 (1/7)

For Schematic Diagram
• Refer to page 4-41 for printed wiring board.

RD-060 BOARD(2/7)
HDD DRIVE

NO MARK:REC/PB MODE
  R :REC MODE
  P :PB MODE
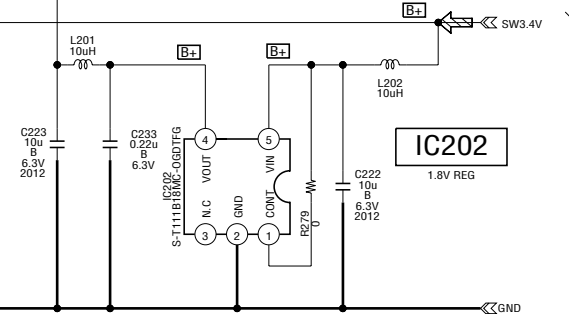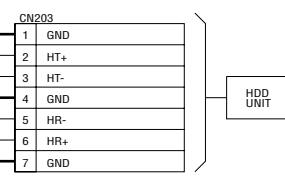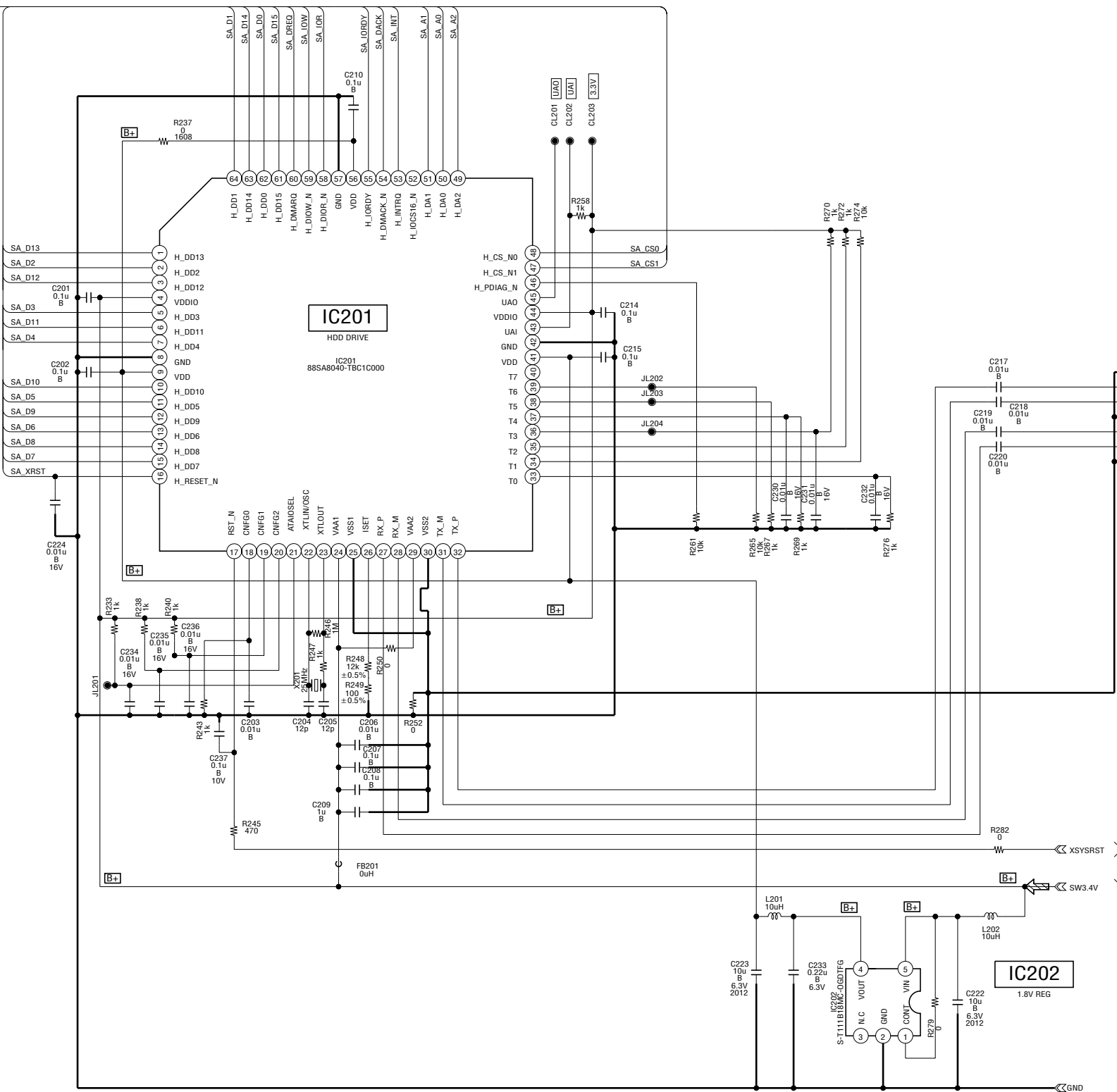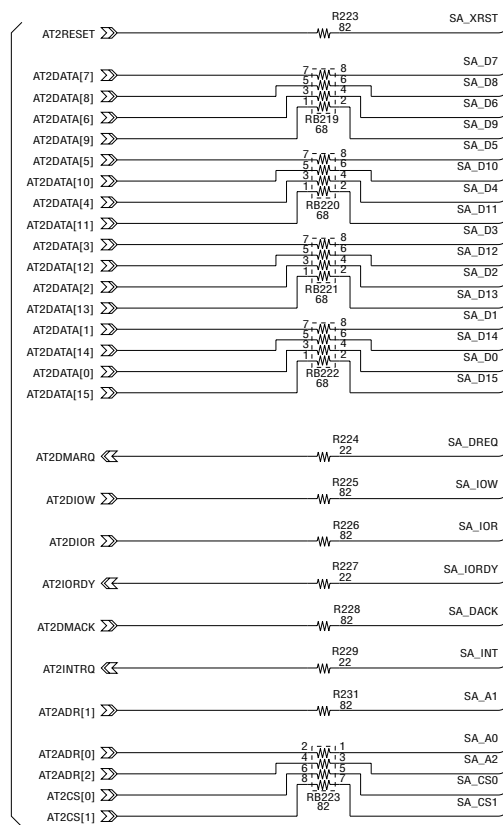
IC201
HDD DRIVE

IC201
88SA8040-TBC1C000

IC202
1.8V REG

For Schematic Diagram
• Refer to page 4-41 for printed wiring board.

RD-060 BOARD(3/7) (RDR-HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)
V DEC

NO MARK:REC/PB MODE
R   :REC MODE
P   :PB MODE

IC301
V DEC

IC301
TVP5146M2PFP

IC302
1.8V REG

IC302
BH18MA3WHFV-TR

HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920

＊ R325
XX   HX520:AEP1,2,UK/HX525/HX720/HX722/HX725:AEP1,UK/HX727:AEP1
100   HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920
0   HX925

For Schematic Diagram
• Refer to page 4-41 for printed wiring board.

RD-060 BOARD(4/7)
FLASH ROM,SUPER AND

NO MARK:REC/PB MODE

▲:Voltage measurement of the CSP IC
and the Transistors with ▲ mark,is
not possible.

IC501
SUPER AND 128M bit

IC501
HN29V128A0ABP-5E

IC502
256M FLASH MEMORY

IC502
S29GL256N90TFIR20

HMS[0]
TMS
TDI
DBI
NAND_CS
HOE
HCS[0]
INT[2]
HDATA[0]
HDATA[1]
HDATA[2]
HDATA[3]
HDATA[4]
HDATA[5]
HDATA[6]
HDATA[7]
HDATA[8]
HDATA[9]
HDATA[10]
HDATA[11]
HDATA[12]
HDATA[13]
HDATA[14]
HDATA[15]
TCK
TRST
HADRS[30]
HADRS[29]
HADRS[28]
HADRS[27]
HADRS[26]
HADRS[25]
HADRS[24]
HADRS[23]
HADRS[13]
HADRS[12]
HADRS[9]
HADRS[10]
HADRS[11]
HADRS[22]
HADRS[21]
HADRS[20]
HADRS[19]
HADRS[18]
HADRS[17]
HADRS[16]
HADRS[15]
HADRS[8]
HADRS[7]
HADRS[6]
HADRS[14]
XSYSRST
CTS[2]
RX[2]
TX[2]
INT[2]

SW3.4V
GND
FL501
D503
RB551V-30TE-17
C501 10u B 6.3V
C502 0.1u B
C508 10u B 6.3V

For Schematic Diagram
• Refer to page 4-41 for printed wiring board.

RD-060 BOARD(5/7)
AV-CN/POWER
-REF.NO.:10000 SERIES-

NO MARK:REC/PB MODE

RDR-HX520/HX525/HX720/HX722/HX725/HX727/HX920/HX925

For Schematic Diagram
• Refer to page 4-41 for printed wiring board.

RD-060 BOARD(6/7)

DV-PHY

06 TO (1/7,2/7,3/7 4/7,5/7)

XSYSRST

PHYLPS

PHYLREQ

R733 33

C705 0.01u B

R705 10k

CL701

R709 100

C710 0.01u B

R713 10k

B+

B+

64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49

DGND LREQ TEST SPD DVDD LPS LKON DGND DVDD RESETB AVDD AGND AGND IC(AL) DIRECT AGND

CN701 6P

6	GND
5	TPB-
4	TPB+
3	TPA-
2	TPA+
1	GND

TO
FR-240 BOARD
CN3005
(PAGE 4-23)

09 TO(1/7)

PHYSCLK

R703 100

1 DGND
2 SCLK
3 IC(DL)
4 DVDD
5 CTL0
6 CTL1
7 DGND
8 D0
9 D1
10 DVDD
11 D2
12 D3
13 DGND
14 D4
15 D5
16 DGND

IC701

DV INVERFACE

IC701
UPD72852AGB-8EU-A

TpBIAS1 48
AVDD 47
TpA1p 46
TpA1n 45
TpB1p 44
TpB1n 43
AGND 42
TpBIAS0 41
AVDD 40
TpA0p 39
TpA0n 38
TpB0p 37
TpB0n 36
AGND 35
RI1 34
AGND 33

C712 0.01u B

CL702
CL703
CL704
CL705

JL706
JL707
JL708

C713 0.01u B

C714 0.01u B 16V

R718 56 ±0.5%
R719 56 ±0.5%
R721 56 ±0.5%
R722 56 ±0.5%

R723 5100 ±0.5%

LF701 0uH

CL711
CL712
CL713
CL714

C716 270p CH

C715 1u B 10V

R717 9100 ±0.5%

C702 0.01u B

PHYCTL[0]
PHYCTL[1]

RB703 47

PHYDIO[0]
PHYDIO[1]
PHYDIO[2]
PHYDIO[3]

C703 0.01u B

RB702 47

PHYDIO[4]
PHYDIO[5]
PHYDIO[6]
PHYDIO[7]

RB701 47

D6 D7 SUS/RES DVDD DGND XO XI AGND AVDD PC0 PC1 PC2 IC(AL) CMC AVDD CPS

17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

R701 0 2W

B+

R706 1k

R710 10k
R711 10k
R712 10k

R714 10k

B+

C704 0.01u B

C708 0.01u B

C711 0.01u B

SW3.4V

FL702

B+

X701 24.576MHz

R715 10k

10 TO(5/7)

GND

C701 10u B 6.3V

C706 9p

C707 9p

1 2 3 4 5 6 7 8 9 10 11

A B C D E F G

For Schematic Diagram
• Refer to page 4-4 for waveforms.
• Refer to page 4-41 for printed wiring board.

RD-060 BOARD(7/7)
PLL/AUDIO-AD-DA

NO MARK:REC/PB MODE

IC802
ICS650G-42LFT

IC802
PLL

IC803
WM8590GEDS/RV

IC803
AUDIO ADC/DAC

(NOT USE) REF27M1

C806 0.01u B
C807 15p CH
C808 15p CH
R816 47
R821 2200
X801 27MHz
FSEL
A768FS48K
R817 33
B+
FL801
C803 10u B

A768FS441K

HX520:AEP3/HX725:AEP3/
HX727:AEP3/HX920/HX925

VMCLK
RTS[1]
RX[1]
R812 10k
R811 10k

02 TO(1/5)

TX[1]
SCLK[1]
FSEL
A768FS48K
A768FS441K
A0LRCKI
A0BCKI
A0DATAI
ALRCKO
ABCKO
ADATAO
SW3.4V
GND

04 TO(1/7)

10 TO(5/7)

C804 10u B 6.3V
C805 0.1u B

IC802 pins:
1 3.4 VDD
2 GND
3 1.5 X1_IN
4 1.5 X2_OUT
5 REF27M1
6 3.4 FSEL
7 1.6 768FS48K
8 GND
16 1.8 REF27M3
15 REF27M2 JL802
14 3.4 VDD
13 1.7 768FSCHG
12 GND
11 1.7 768FS441K
10 3.4 VDD
9 1.7 384FS48K

R823 15
R825 68
R826 33
R827 100
B+

C810 0.01u B
C811 0.01u B

IC803 pins:
1 3.4 DI
2 3.4 CL
3 0 ZFLANR
4 2.8 ZFLANL
5 1.7 ADCLR
6 1.7 ADCBC
7 1.7 ADCMC
8 1.3 ADCD
9 1.7 DACLR
10 1.7 DACBCK
11 1.7 DACMC
12 1.3 DACD
13 3.4 DVDD
14 DGND
28 CE 3.4
27 AINR- 2.5
26 AINR+ 2.5
25 AINL- 2.5
24 AINL+ 2.5
23 AVDD 5.0
22 REFP 5.0
21 VMID 2.5
20 REFN
19 AGND
18 AOUTL- 2.5
17 AOUTL+ 2.5
16 AOUTR- 2.5
15 AOUTR+ 2.5

XLMUTE
XRMUTE
AINR-
AINR+
AINL-
AINL+

EXCEPT
HX520:AEP3/HX725:AEP3/
HX727:AEP3/HX920/HX925
R836 0

B+
SWA5V
12 TO(5/7)

C817 47u 10V
C816 0.22u B

R839 0
R840 0
R841 0
R842 0

AOUTL-
AOUTL+
AOUTR-
AOUTR+
AGND

C809 0.01u B
C812 0.22u B
C813 10u 16V

RDR-HX520/HX525/HX720/HX722/
HX725/HX727/HX920/HX925

⚠ SWITCHING REGULATOR
(SRV-1858EK)

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

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

1-867-082-

34
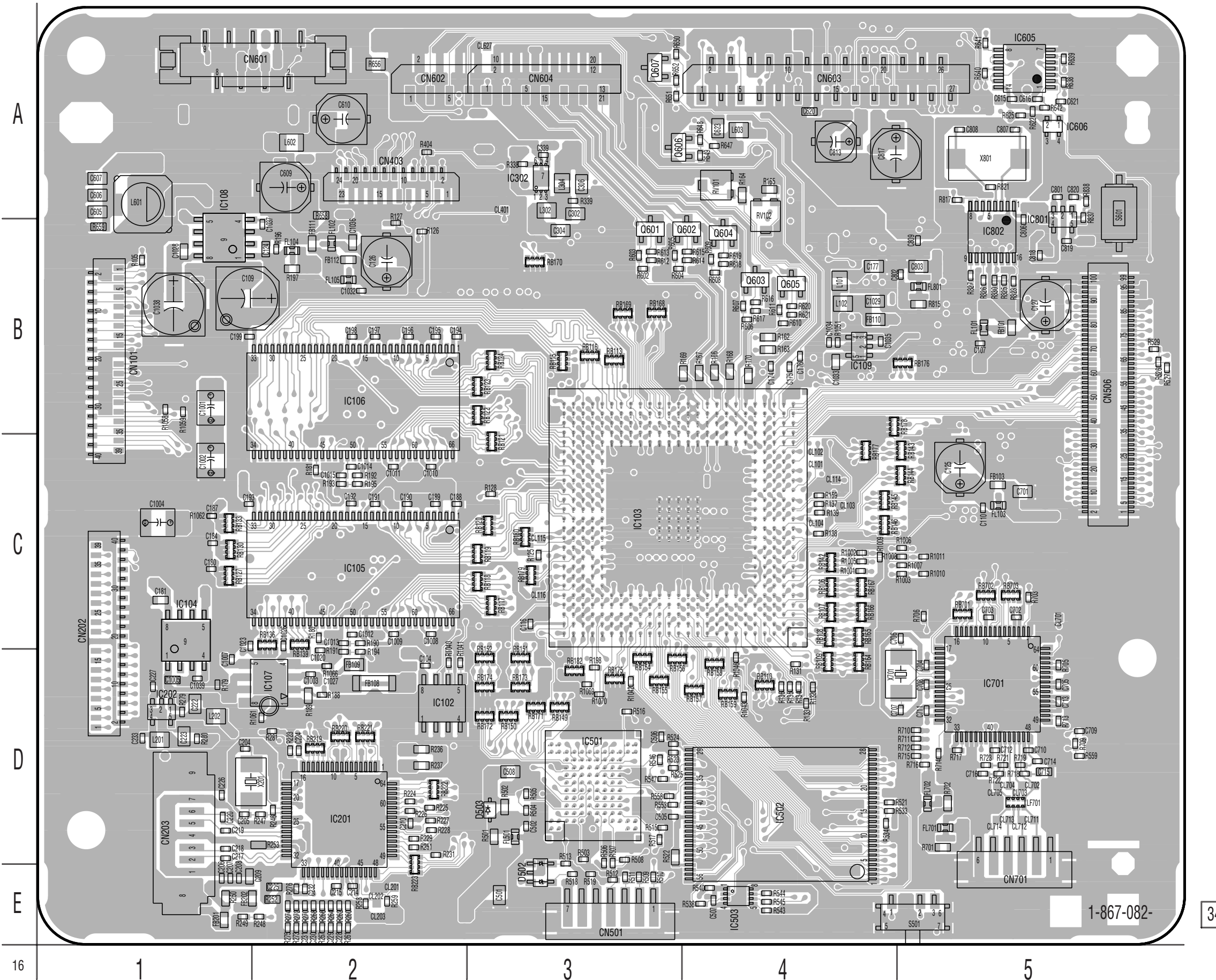
RD-060 BOARD (SIDE B)

· 🔲 : Uses unleaded solder.

RD-060 BOARD (SIDE B)

IC101	B-5
IC601	B-1
IC602	A-2
IC604	A-5
IC803	A-4

A

B

C

D

E

5 4 3 2 1

16

34
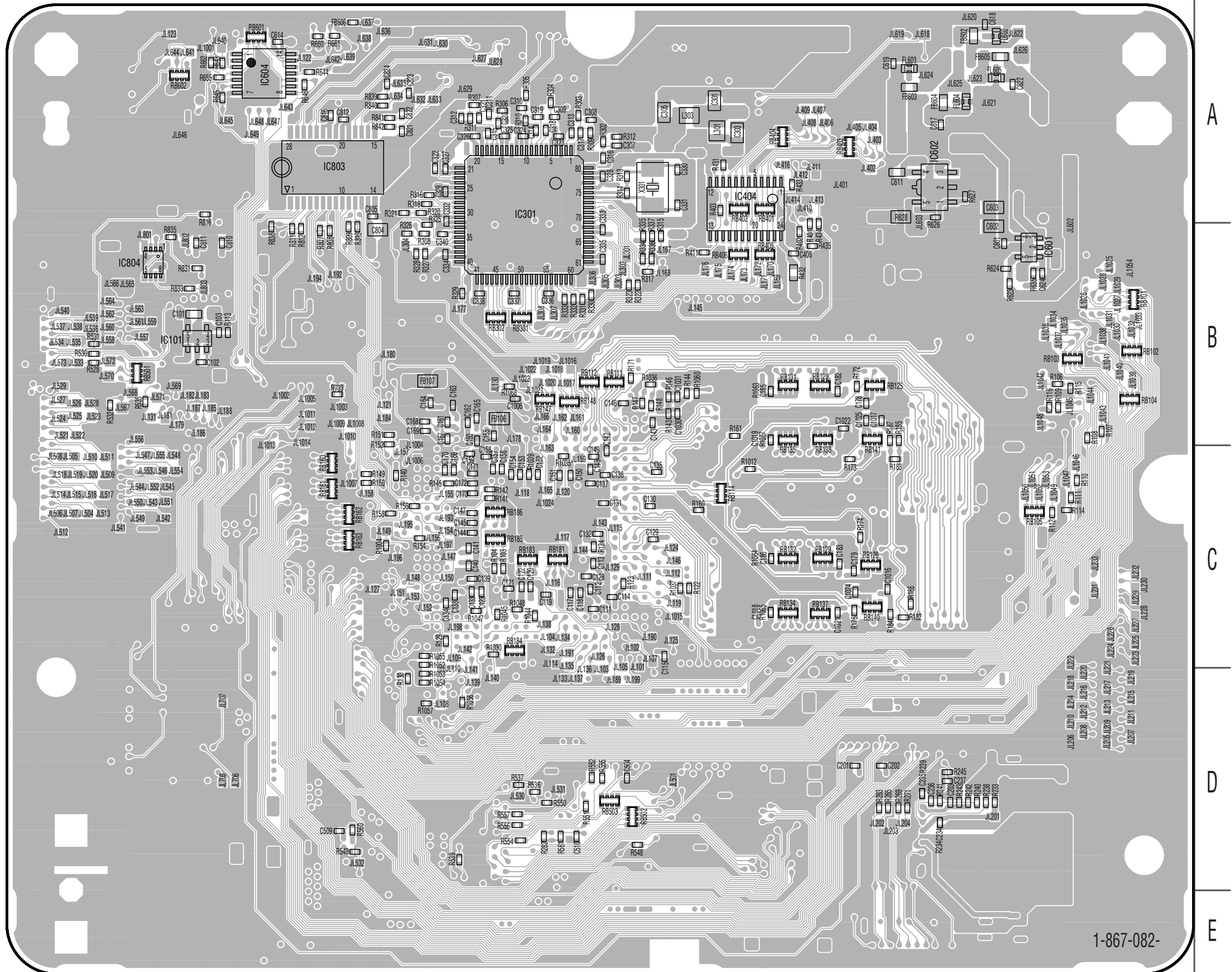
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**SECTION 5
IC PIN FUNCTION DESCRIPTION**

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 sacrt 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 strove signal for LED driver
95	FLD_CS	O	Output of FLD driver strove 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(PD0)	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

5-12E

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

All parts are mounted on the RD-060 board.

For IC301, only AEP3 is used.

When NG is displayed as the result of the DEVICE TEST, the IC or its peripheral is defective.

6-2. Screen Transition in the Service Mode

MAIN MENU

```
<< MAIN MENU >>
1) Version No.
2) Display Color
3) Total Tme
       ≀
9) HDD MODE

MODEL          ***
SYSCON Version [***]
HDD Serial ID [***]
HDD Sony ID [***]
```

< 1 >

<RETURN>

```
<< Version No. >>
MODEL MRX1534EC
Region Code [*]
SYSCON Version [***]
ITcon Version [***]
Drive Version [***]
```

< RETURN >
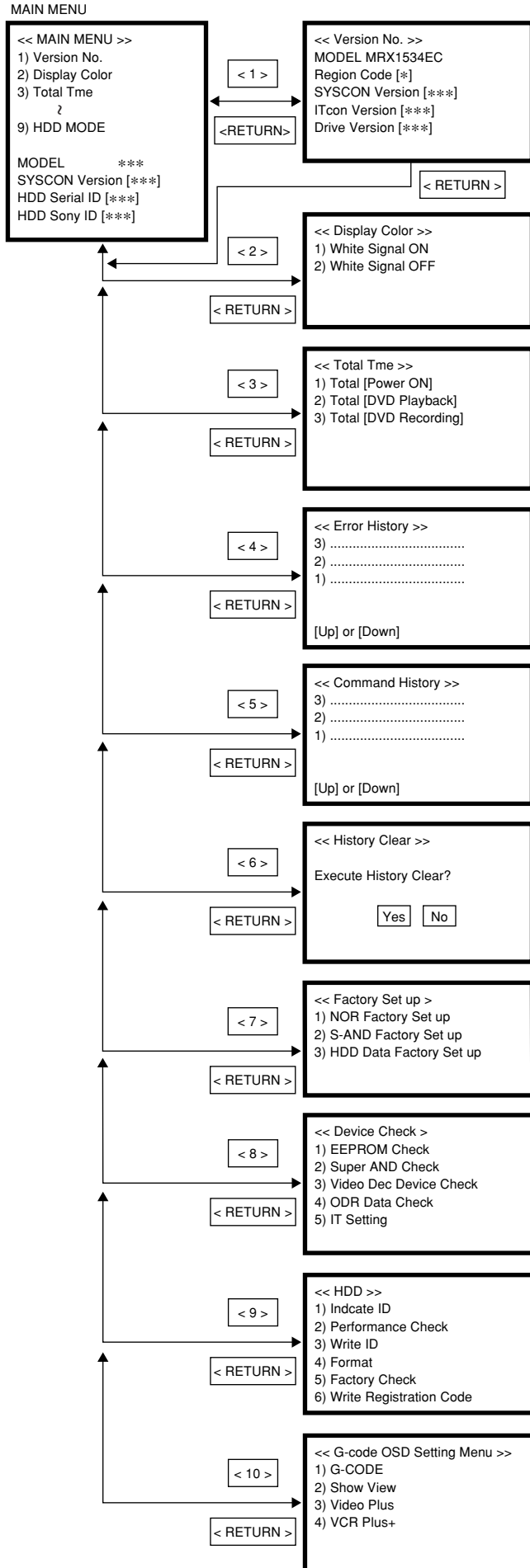
Verifying version number of the respective software of the main unit

< 2 >

< RETURN >

```
<< Display Color >>
1) White Signal ON
2) White Signal OFF
```

Setting ON/OFF of the PAL 100% white signal output

< 3 >

< RETURN >

```
<< Total Tme >>
1) Total [Power ON]
2) Total [DVD Playback]
3) Total [DVD Recording]
```

Reading the accumulative operating hours of the drive
• Total power-on hours
• Total DVD playback hours
• Total DVD recording hours
* Display format: ○○ hours △△ minutes

< 4 >

< RETURN >

```
<< Error History >>
3) ...................................
2) ...................................
1) ...................................



[Up] or [Down]
```

Displaying the error history in the past in the error code
* Maximum 20 errors can be displayed.

< 5 >

< RETURN >

```
<< Command History >>
3) ...................................
2) ...................................
1) ...................................



[Up] or [Down]
```

Displaying history of the buttons pressed in the past.
* Pressed buttons for 400 commands at a maximum can be stored.

< 6 >

< RETURN >

```
<< History Clear >>

Execute History Clear?

   Yes    No
```

Clearing the Error History and the Command History

< 7 >

< RETURN >

```
<< Factory Set up >
1) NOR Factory Set up
2) S-AND Factory Set up
3) HDD Data Factory Set up
```

Returning the Set Ups of various functions to default

< 8 >

< RETURN >

```
<< Device Check >
1) EEPROM Check
2) Super AND Check
3) Video Dec Device Check
4) ODR Data Check
5) IT Setting
```

Diagnostic checks in the Service Mode

< 9 >

< RETURN >

```
<< HDD >>
1) Indcate ID
2) Performance Check
3) Write ID
4) Format
5) Factory Check
6) Write Registration Code
```

< 10 >

< RETURN >

```
<< G-code OSD Setting Menu >>
1) G-CODE
2) Show View
3) Video Plus
4) VCR Plus+
```

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 V± 0.07 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 V±0.07 Vp-p.

1.0 ±0.07 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 corrected 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 V±0.07 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 V±0.07 Vp-p.

1.0 ± 0.07Vp-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 mV±30 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 mV±30 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-⑲ (terminated in 75Ω)
Instrument	Oscilloscope
Specification	1.0 V±0.07Vp-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 V±0.07 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 mV±50 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 mV±50 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 mV±50 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 mV±50 mVp-p.

Fig. 7-6

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

8-1-1. OVERALL SECTION

not supplied

not supplied

Chasiss setion
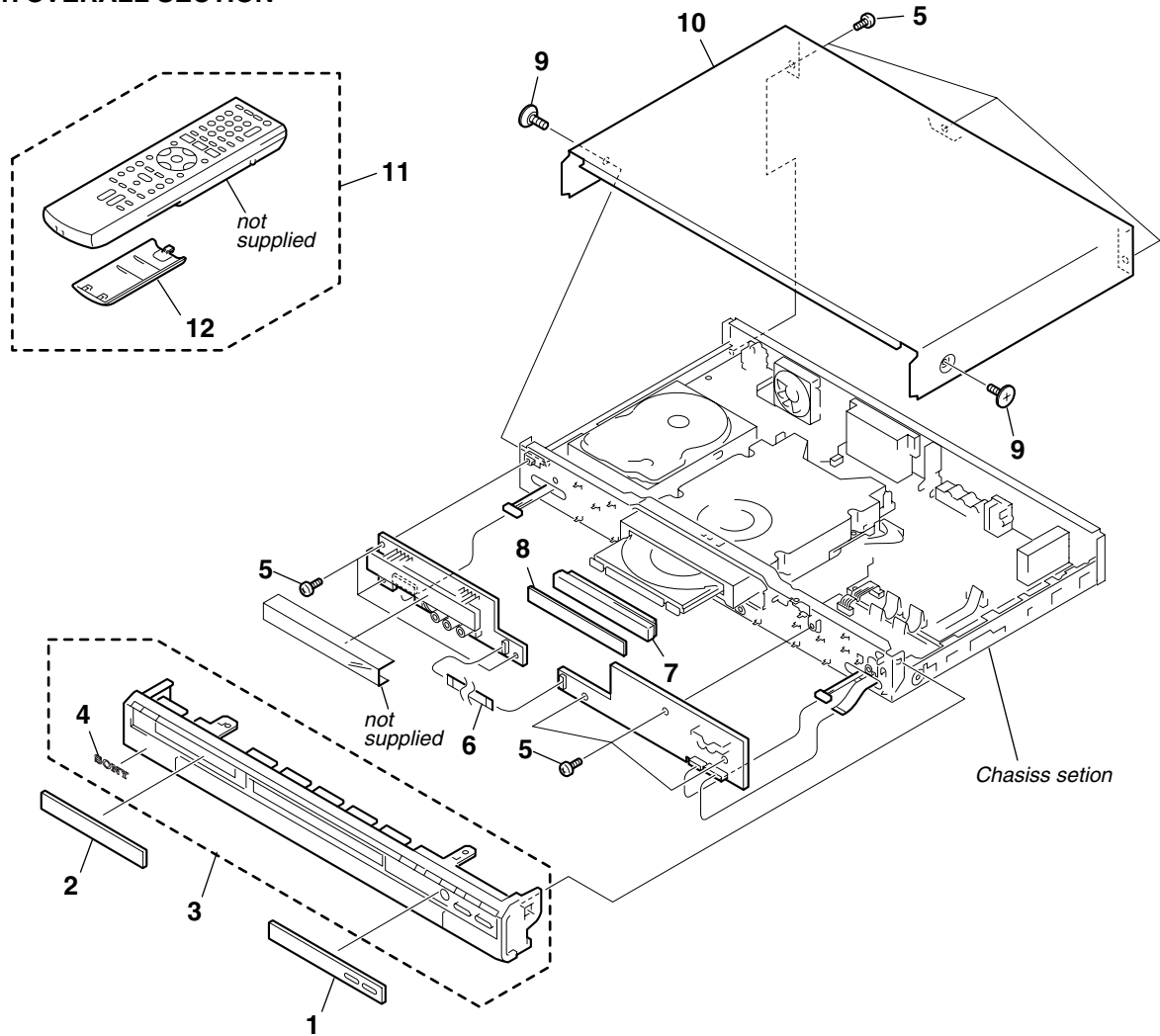
Ref. No.	Part No.	Description	Remarks
1	2-658-528-21	WINDOW (R) (HX520/HX525/HX720/HX722/HX725/HX727)	
1	2-658-528-41	WINDOW (R) (HX920/HX925)	
2	2-658-529-01	WINDOW (L) (HX920/HX925)	
2	2-658-529-21	WINDOW (L) (HX520/HX525/HX720/HX722/HX725/HX727)	
3	X-2108-947-1	PANEL ASSY, FRONT (BLACK) (HX725)	
3	X-2108-948-1	PANEL ASSY, FRONT (SILVER) (HX720:AEP)	
3	X-2108-949-1	PANEL ASSY, FRONT (SILVER) (HX525)	
3	X-2108-950-1	PANEL ASSY, FRONT (SILVER) (HX725:UK)	
3	X-2108-951-1	PANEL ASSY, FRONT (SILVER) (HX520:AEP)	
3	X-2108-952-1	PANEL ASSY, FRONT (SILVER) (HX727)	
3	X-2109-931-1	PANEL ASSY, FRONT (SILVER) (HX520:UK)	
3	X-2109-932-1	PANEL ASSY, FRONT (SILVER) (HX720:UK)	
3	X-2108-953-1	PANEL ASSY, FRONT (BLACK) (HX720:AEP)	
3	X-2108-954-1	PANEL ASSY, FRONT (SILVER) (HX925)	
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)	
4	3-066-225-11	SONY BADGE (5-A) (SILVER)	
4	3-066-225-01	SONY BADGE (5-A) (BLACK)	
5	3-077-331-01	+BV3 (3-CR)	
* 6	1-831-413-11	CABLE, FLEXIBLE FLAT (FLR-007)	
7	X-2108-963-1	COVER ASSY, TRAY	
8	X-2108-958-1	ASSY, WINDOW (TRAY) (HX525/HX720/HX722/HX725/HX727)	
8	X-2108-959-1	ASSY, WINDOW (TRAY) (HX920/HX925)	
9	3-070-883-31	SCREW, TAPPING (BLACK)	
9	3-070-883-41	SCREW, TAPPING (SILVER)	
10	A-1176-233-A	CASE BLOCK ASSY (SILVER) (SERVICE USE)	
10	A-1176-321-A	CASE BLOCK ASSY (BLACK) (SERVICE USE)	
11	1-479-557-11	REMOTE COMMANDER (RMT-D231P) (HX525/HX725/HX727/HX925)	
11	1-479-558-11	REMOTE COMMANDER (RMT-D230P) (HX520/HX720/HX722/HX920)	
12	2-658-476-01	COVER, BATTERY	

8-1-2. CHASSIS SECTION

Ref. No.	Part No.	Description	Remarks
51	A-1183-523-A	RD-060 BOARD, COMPLETE (HX520:AEP1,2)	
51	A-1183-524-A	RD-060 BOARD, COMPLETE (HX525)	
51	A-1183-525-A	RD-060 BOARD, COMPLETE (HX520:AEP3)	
51	A-1183-526-A	RD-060 BOARD, COMPLETE (HX725:AEP1)	
51	A-1183-527-A	RD-060 BOARD, COMPLETE (HX725:UK)	
51	A-1183-528-A	RD-060 BOARD, COMPLETE (HX727:AEP1)	
51	A-1183-530-A	RD-060 BOARD, COMPLETE (HX725:AEP3)	
51	A-1183-531-A	RD-060 BOARD, COMPLETE (HX925)	
51	A-1183-532-A	RD-060 BOARD, COMPLETE (HX920)	
51	A-1185-667-A	RD-060 BOARD, COMPLETE (HX720:AEP2)	
51	A-1185-668-A	RD-060 BOARD, COMPLETE (HX722)	
51	A-1194-638-A	RD-060 BOARD, COMPLETE (HX520:UK)	
51	A-1194-639-A	RD-060 BOARD, COMPLETE (HX720:UK)	
51	A-1194-640-A	RD-060 BOARD, COMPLETE (HX727:AEP3)	
52	3-077-331-01	+BV3 (3-CR)	
* 53	1-831-411-11	CABLE, FLEXIBLE FLAT (FRA-005)	
* 54	1-831-410-11	CABLE, FLEXIBLE FLAT (FRA-003)	
		(HX520:AEP1,2,UK/HX525/HX720/	
		HX722/HX725:AEP1,UK/HX727)	

Ref. No.	Part No.	Description	Remarks
* 54	1-831-511-11	CABLE, FLEXIBLE FLAT (FRA-004)	
		(HX520:AEP3/HX725:AEP3/HX920/HX925)	
55	3-087-675-01	6-32UNCX5	
56	3-089-380-01	DAMPER	
57	2-159-920-01	SCREW, HDD DAMPER	
⚠ 58	1-797-413-11	DRIVE, DVD DRW-V35A	
59	A-1192-736-A	HDD(SATA-160GB) ASSY (720/722/725/727)	
59	A-1192-748-A	HDD(SATA-80GB) ASSY (520/525)	
59	A-1192-749-A	HDD(SATA-250GB) ASSY (920/925)	
60	1-832-951-12	CABLE, FLEXIBLE FLAT (FRD-010)	
61	3-077-331-31	+BV3 (3-CR)	
62	3-088-023-01	+B3 (3-CR)	
63	1-787-290-21	FAN, D.C	
* 64	1-831-414-11	CABLE, FLEXIBLE FLAT (FAR-004)	
⚠ 65	1-468-961-11	POWER SUPPLY BLOCK	
⚠ TU401	8-597-558-00	TUNER, FSS BTF-DC441	
		(HX520:AEP1,2,UK/HX525/HX720/HX722/	
		HX725:AEP1,UK/HX727:AEP1)	
⚠ 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: μF

- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: μH
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...

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

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
	Not supplied	AV-103 BOARD, COMPLETE			
		***********************			
		< CAPACITOR >			
C105	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C106	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C114	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C117	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C118	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C119	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C120	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C123	1-126-947-11	ELECT	47uF	20%	35V
C124	1-128-396-11	ELECT CHIP	470uF	20%	10V
C209	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C210	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C211	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C212	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C213	1-100-966-91	CERAMIC CHIP	10uF	20%	10V
C214	1-100-966-91	CERAMIC CHIP	10uF	20%	10V
C215	1-100-966-91	CERAMIC CHIP	10uF	20%	10V
C216	1-100-966-91	CERAMIC CHIP	10uF	20%	10V
C217	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C218	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C301	1-126-947-11	ELECT	47uF	20%	35V
C304	1-126-933-11	ELECT	100uF	20%	16V
C306	1-104-662-91	ELECT	22uF	20%	25V
C307	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C308	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C309	1-126-947-11	ELECT	47uF	20%	35V
C310	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C311	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C312	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C313	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C314	1-164-218-11	CERAMIC CHIP	180PF	5%	50V
C315	1-164-218-11	CERAMIC CHIP	180PF	5%	50V
C316	1-126-947-11	ELECT	47uF	20%	35V
C317	1-126-947-11	ELECT	47uF	20%	35V
C318	1-126-934-11	ELECT	220uF	20%	16V
C319	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C320	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C321	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C322	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C324	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C325	1-162-927-11	CERAMIC CHIP	100PF	5%	50V

Ref. No.	Part No.	Description			Remarks
C326	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C327	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C337	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C401	1-126-947-11	ELECT	47uF	20%	35V
C405	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C407	1-126-964-11	ELECT	10uF	20%	50V
C408	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C409	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C410	1-126-964-11	ELECT	10uF	20%	50V
C414	1-126-947-11	ELECT	47uF	20%	35V
C415	1-126-933-11	ELECT	100uF	20%	16V
C416	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C449	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C452	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C453	1-115-416-11	CERAMIC CHIP	0.001uF	5%	25V
C454	1-115-416-11	CERAMIC CHIP	0.001uF	5%	25V
C455	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C456	1-115-416-11	CERAMIC CHIP	0.001uF	5%	25V
C601	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C604	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C607	1-126-947-11	ELECT	47uF	20%	35V
C613	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V
C614	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V
C615	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C616	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C617	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C618	1-126-947-11	ELECT	47uF	20%	35V
C619	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C620	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C621	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C622	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C623	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C624	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C625	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C626	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C627	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C628	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C629	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C630	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C631	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C632	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C633	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C634	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C635	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C639	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V

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	22uF	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
C865	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C866	1-126-947-11	ELECT	47uF	20%	35V
C867	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1103	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
		(HX525/HX725/HX727/HX925)			
C1104	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
		(HX525/HX725/HX727/HX925)			
C1109	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
		(HX525/HX725/HX727/HX925)			
C1110	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
		(HX525/HX725/HX727/HX925)			
C1111	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
		(HX525/HX725/HX727/HX925)			
C1401	1-126-947-11	ELECT	47uF	20%	35V
C1402	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1403	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C1404	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V
C1405	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V
C1406	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1407	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C1408	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1409	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1410	1-126-964-11	ELECT	10uF	20%	50V
C1411	1-126-962-11	ELECT	3.3uF	20%	50V
C1412	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1413	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1414	1-126-964-11	ELECT	10uF	20%	50V
C1415	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C1416	1-126-947-11	ELECT	47uF	20%	35V
C1417	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1418	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1419	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1452	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1453	1-165-908-11	CERAMIC CHIP	1uF	10%	10V

< CONNECTOR >

Ref. No.	Part No.	Description	Remarks
CN101	1-815-458-21	CONNECTOR, BOARD TO BOARD 15P	
CN103	1-794-509-11	PIN, CONNECTOR (PC BOARD) 3P	
* CN601	1-764-643-21	PIN, CONNECTOR (SMD) 11P	
CN602	1-774-767-51	CONNECTOR, FFC/FPC 15P	
* CN701	1-770-468-21	PIN, CONNECTOR (PC BOARD) 10P	
* CN1102	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD) 8P	
		(HX525/HX725/HX727/HX925)	

< DIODE >

Ref. No.	Part No.	Description	
D101	8-719-073-34	DIODE	EC21QS03L-TE12L
D301	6-501-115-01	DIODE	BAS16-03W
D303	6-501-115-01	DIODE	BAS16-03W
D304	6-501-115-01	DIODE	BAS16-03W
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	
D608	6-501-115-01	DIODE	BAS16-03W
D701	6-501-115-01	DIODE	BAS16-03W
D702	8-719-067-40	DIODE	STZ6.8N-T146
D703	8-719-053-18	DIODE	1SR154-400TE-25
D704	8-719-053-18	DIODE	1SR154-400TE-25
D714	8-719-067-40	DIODE	STZ6.8N-T146
D715	8-719-067-40	DIODE	STZ6.8N-T146
D721	8-719-067-40	DIODE	STZ6.8N-T146
D724	8-719-067-40	DIODE	STZ6.8N-T146
D728	8-719-067-40	DIODE	STZ6.8N-T146
D731	8-719-067-40	DIODE	STZ6.8N-T146

Ref. No.	Part No.	Description	Remarks
D732	8-719-067-40	DIODE STZ6.8N-T146	
D801	8-719-069-55	DIODE UDZSTE-175.6B	
D802	8-719-067-40	DIODE STZ6.8N-T146	
D803	8-719-067-40	DIODE STZ6.8N-T146	
D804	6-501-486-01	DIODE NNCD3.9F-T1B	
D805	6-501-486-01	DIODE NNCD3.9F-T1B	
D806	8-719-067-40	DIODE STZ6.8N-T146	
D807	8-719-067-40	DIODE STZ6.8N-T146	
D808	8-719-067-40	DIODE STZ6.8N-T146	
D809	8-719-067-40	DIODE STZ6.8N-T146	
D810	8-719-067-40	DIODE STZ6.8N-T146	
D811	8-719-067-40	DIODE STZ6.8N-T146	
D812	8-719-067-40	DIODE STZ6.8N-T146	
D813	8-719-067-40	DIODE STZ6.8N-T146	
D814	8-719-069-56	DIODE UDZSTE-176.2B	
D815	8-719-083-63	DIODE UDZSTE-1713B	
D816	8-719-069-56	DIODE UDZSTE-176.2B	
D817	8-719-083-63	DIODE UDZSTE-1713B	
D818	6-501-486-01	DIODE NNCD3.9F-T1B	
D819	8-719-067-40	DIODE STZ6.8N-T146	
D820	8-719-067-40	DIODE STZ6.8N-T146	
D821	6-501-486-01	DIODE NNCD3.9F-T1B	
D822	8-719-067-40	DIODE STZ6.8N-T146	
D823	8-719-067-40	DIODE STZ6.8N-T146	
D824	8-719-067-40	DIODE STZ6.8N-T146	
D825	8-719-069-56	DIODE UDZSTE-176.2B	
D827	8-719-067-40	DIODE STZ6.8N-T146	
D828	8-719-069-56	DIODE UDZSTE-176.2B	
D1103	8-719-067-40	DIODE STZ6.8N-T146	
		(HX525/HX725/HX727/HX925)	
D1400	6-501-115-01	DIODE BAS16-03W	
D1401	6-501-115-01	DIODE BAS16-03W	

< FERRITE BEAD >

Ref. No.	Part No.	Description	Remarks
FB301	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB302	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB801	1-500-283-11	INDUCTOR, FERRITE BEAD	
FB802	1-469-876-11	INDUCTOR, FERRITE BEAD	
FB803	1-469-796-21	FERRITE, CHIP	
FB804	1-469-796-21	FERRITE, CHIP	
FB805	1-469-796-21	FERRITE, CHIP	
FB806	1-469-796-21	FERRITE, CHIP	
FB807	1-469-796-21	FERRITE, CHIP	
FB808	1-500-283-11	INDUCTOR, FERRITE BEAD	
FB809	1-469-876-11	INDUCTOR, FERRITE BEAD	
FB810	1-469-796-21	FERRITE, CHIP	
FB811	1-469-796-21	FERRITE, CHIP	
FB812	1-469-796-21	FERRITE, CHIP	
FB813	1-469-796-21	FERRITE, CHIP	
FB814	1-469-796-21	FERRITE, CHIP	
FB815	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB816	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB817	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB818	1-414-228-11	INDUCTOR, FERRITE BEAD	
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	

AV-103

Ref. No.	Part No.	Description		Remarks
		< IC >		
IC102	6-702-889-01	IC SI-3033KS-TL		
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)		
IC104	6-708-913-01	IC TK73400AU3G0L-C		
IC107	6-707-208-01	IC TK11100CSCB-G		
IC202	8-759-100-96	IC uPC4558G2		
IC203	8-759-100-96	IC uPC4558G2		
IC302	8-759-100-96	IC uPC4558G2		
IC303	6-705-313-01	IC S-T111B50MC-OHJTFG		
IC401	8-749-925-00	IC TK11819MTL		
IC402	6-706-237-01	IC PQ1MX55M2SPQ		
IC601	6-706-673-01	IC S-80852CNMC-B9DT2G		
IC603	6-806-620-01	IC M306H5MG-A13FP		
		(HX525/HX725/HX727/HX925)		
IC603	6-806-673-01	IC M306H5MC-C33FP		
		(HX520/HX720/HX722/HX920)		
* IC604	6-708-842-01	IC S-24CS04AFJ-TB-G		
* IC605	6-708-948-01	IC R2051S03-E2-F		
IC701	6-708-957-01	IC TK72233CMCL-G		
* IC702	6-708-890-01	IC LA73036M-TBA-E		
IC801	6-705-338-01	IC TK11250CMCL-G		
IC802	6-708-892-01	IC BD3826FS		
IC803	6-708-887-01	IC BH7626KS2		
IC1102	6-806-080-01	IC M30263M6A-703FP		
		(HX525/HX725/HX727/HX925)		
IC1103	8-759-649-43	IC SN74AHC1G00DCKR		
		(HX525/HX725/HX727/HX925)		
IC1401	6-702-714-01	IC MSP3417G-QG-B8V3		
		< JACK >		
J702	1-818-363-11	JACK BLOCK, PIN (LINE2 OUT)		
J703	1-818-063-11	JACK, PIN (3P) (COMPONENT VIDEO OUT)		
J1101	1-764-188-31	JACK (SMALL TYPE) (DIA. 3.5) (G-LINK)		
		(HX525/HX725/HX727/HX925)		
		< COIL >		
L401	1-414-856-11	INDUCTOR	10uH	
L402	1-469-967-21	INDUCTOR	10uH	
L403	1-414-858-31	INDUCTOR	1mH	
L404	1-414-856-11	INDUCTOR	10uH	
L405	1-414-856-11	INDUCTOR	10uH	
L406	1-414-856-11	INDUCTOR	10uH	
L601	1-412-533-21	INDUCTOR	47uH	
L602	1-412-533-21	INDUCTOR	47uH	
L701	1-412-060-11	INDUCTOR	22uH	
L702	1-469-967-21	INDUCTOR	10uH	
L703	1-469-967-21	INDUCTOR	10uH	
L704	1-469-967-21	INDUCTOR	10uH	
L803	1-414-743-21	INDUCTOR	47uH	
L1401	1-414-856-11	INDUCTOR	10uH	
		< IC LINK >		
⚠ PS102	1-576-570-21	FUSE, MICRO (1608 TYPE)		
⚠ PS103	1-576-570-21	FUSE, MICRO (1608 TYPE)		
⚠ PS602	1-576-570-21	FUSE, MICRO (1608 TYPE)		

Ref. No.	Part No.	Description		Remarks
		< TRANSISTOR >		
Q101	8-729-421-19	TRANSISTOR		UN2213
Q301	8-729-424-08	TRANSISTOR		UN2111
Q302	8-729-921-80	TRANSISTOR		2SD1781K-T146-QR
Q303	6-550-286-01	TRANSISTOR		BC847CE6327
Q304	8-729-045-17	TRANSISTOR		2SB1561T100Q
Q305	6-551-199-01	TRANSISTOR		BCR148-E6327
Q306	6-551-199-01	TRANSISTOR		BCR148-E6327
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)		
Q307	8-729-027-53	TRANSISTOR		DTC124TKA-T146
Q308	8-729-027-53	TRANSISTOR		DTC124TKA-T146
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)		
Q309	6-551-287-01	TRANSISTOR		2SD2704K-T146
Q310	6-551-287-01	TRANSISTOR		2SD2704K-T146
Q311	6-550-280-01	TRANSISTOR		BC857CE6327
Q312	6-550-280-01	TRANSISTOR		BC857CE6327
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)		
Q313	6-550-286-01	TRANSISTOR		BC847CE6327
Q401	6-550-286-01	TRANSISTOR		BC847CE6327
Q403	8-729-010-25	TRANSISTOR		MSD601-RT1
Q405	6-550-286-01	TRANSISTOR		BC847CE6327
Q407	6-551-199-01	TRANSISTOR		BCR148-E6327
Q601	6-551-199-01	TRANSISTOR		BCR148-E6327
Q611	8-729-421-22	TRANSISTOR		UN2211
Q612	6-550-280-01	TRANSISTOR		BC857CE6327
Q613	6-550-286-01	TRANSISTOR		BC847CE6327
Q614	6-550-286-01	TRANSISTOR		BC847CE6327
Q615	6-550-286-01	TRANSISTOR		BC847CE6327
Q616	8-729-904-87	TRANSISTOR		2SB1197K-R
Q702	6-550-286-01	TRANSISTOR		BC847CE6327
Q705	6-550-280-01	TRANSISTOR		BC857CE6327
Q707	6-550-286-01	TRANSISTOR		BC847CE6327
Q708	6-550-286-01	TRANSISTOR		BC847CE6327
Q709	6-550-286-01	TRANSISTOR		BC847CE6327
Q710	6-550-286-01	TRANSISTOR		BC847CE6327
Q711	6-550-286-01	TRANSISTOR		BC847CE6327
Q715	8-729-904-87	TRANSISTOR		2SB1197K-R
Q716	6-551-199-01	TRANSISTOR		BCR148-E6327
Q801	6-550-280-01	TRANSISTOR		BC857CE6327
Q807	6-550-683-01	TRANSISTOR		RJK005N03-T146
Q808	8-729-027-24	TRANSISTOR		DTA114TKA-T146
Q1104	8-729-045-17	TRANSISTOR		2SB1561T100Q
		(HX525/HX725/HX727/HX925)		
Q1401	6-550-280-01	TRANSISTOR		BC857CE6327
Q1402	6-550-286-01	TRANSISTOR		BC847CE6327

Ref. No.	Part No.	Description				Remarks
		< RESISTOR >				
R101	1-216-295-91	SHORT CHIP	0			
R111	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R113	1-218-897-11	METAL CHIP	120K	0.5%	1/10W	
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.
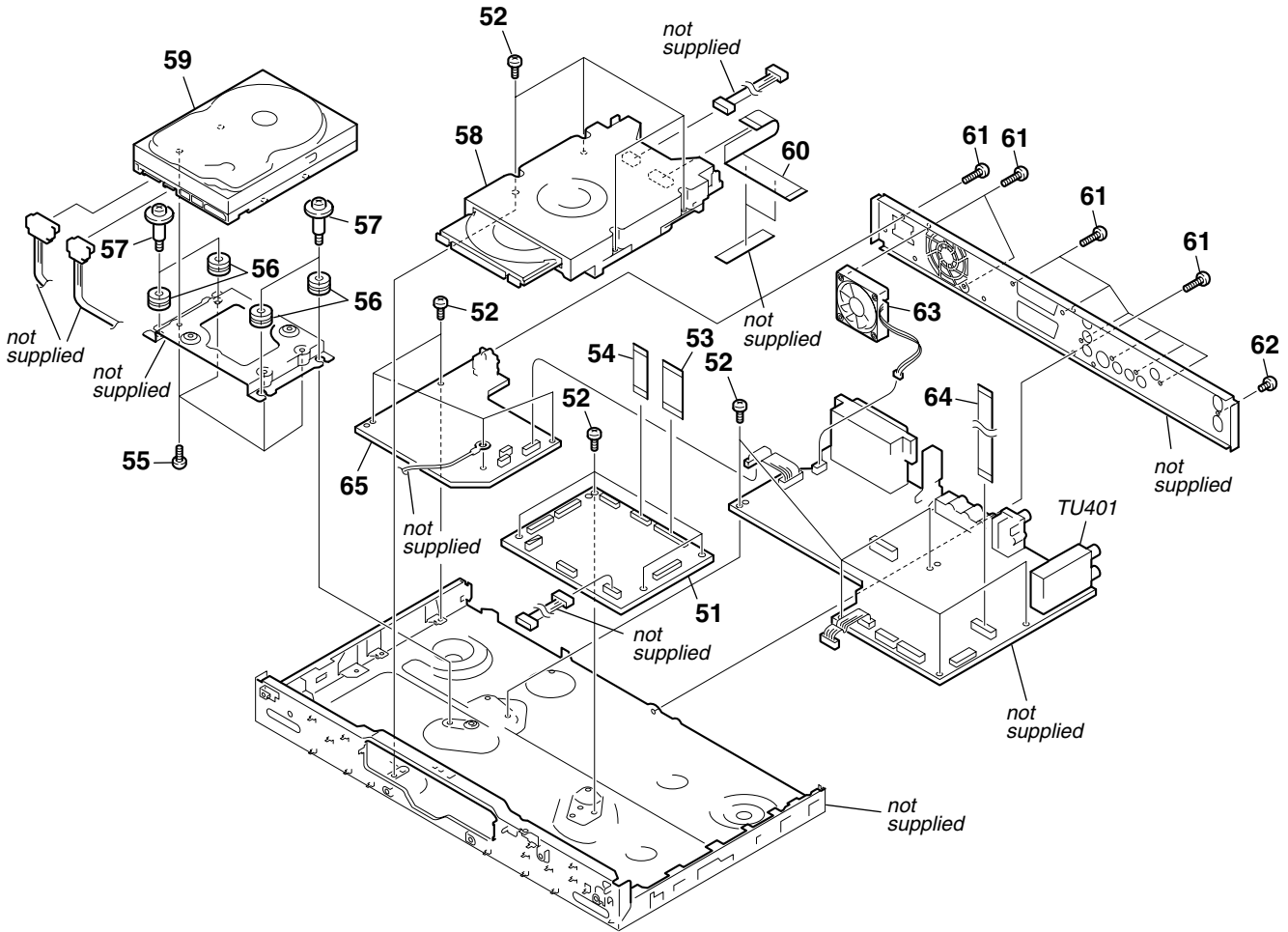
Ref. No.	Part No.	Description			Remarks
R140	1-216-295-91	SHORT CHIP	0		
R142	1-216-295-91	SHORT CHIP	0		
R144	1-216-295-91	SHORT CHIP	0		
R145	1-216-295-91	SHORT CHIP	0		
R146	1-216-295-91	SHORT CHIP	0		
R148	1-216-295-91	SHORT CHIP	0		
R154	1-216-295-91	SHORT CHIP	0		
R160	1-216-864-11	SHORT CHIP	0		
		(HX525/HX725/HX727/HX925)			
R218	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R219	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R222	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R223	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R224	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R225	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R226	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R227	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R304	1-216-849-11	METAL CHIP	220K	5%	1/10W
R305	1-216-833-11	METAL CHIP	10K	5%	1/10W
R306	1-216-833-11	METAL CHIP	10K	5%	1/10W
R307	1-216-833-11	METAL CHIP	10K	5%	1/10W
R308	1-216-841-11	METAL CHIP	47K	5%	1/10W
R309	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R310	1-218-864-11	METAL CHIP	5.1K	0.5%	1/10W
R311	1-218-864-11	METAL CHIP	5.1K	0.5%	1/10W
R312	1-218-864-11	METAL CHIP	5.1K	0.5%	1/10W
R313	1-218-864-11	METAL CHIP	5.1K	0.5%	1/10W
R314	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R315	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R316	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R317	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R318	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R320	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R321	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R323	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R326	1-216-817-11	METAL CHIP	470	5%	1/10W
R327	1-216-817-11	METAL CHIP	470	5%	1/10W
R330	1-216-841-11	METAL CHIP	47K	5%	1/10W
R331	1-216-841-11	METAL CHIP	47K	5%	1/10W
R332	1-216-833-11	METAL CHIP	10K	5%	1/10W
R333	1-216-833-11	METAL CHIP	10K	5%	1/10W
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
R334	1-216-833-11	METAL CHIP	10K	5%	1/10W
R335	1-216-841-11	METAL CHIP	47K	5%	1/10W
R336	1-216-833-11	METAL CHIP	10K	5%	1/10W
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
R337	1-216-841-11	METAL CHIP	47K	5%	1/10W
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
R338	1-216-833-11	METAL CHIP	10K	5%	1/10W
R339	1-216-833-11	METAL CHIP	10K	5%	1/10W
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
R340	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R342	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
R343	1-216-845-11	METAL CHIP	100K	5%	1/10W
R344	1-216-845-11	METAL CHIP	100K	5%	1/10W
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
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
R353	1-216-817-11	METAL CHIP	470	5%	1/10W
R355	1-216-817-11	METAL CHIP	470	5%	1/10W
R362	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
		(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
R364	1-216-839-11	METAL CHIP	33K	5%	1/10W
R365	1-216-845-11	METAL CHIP	100K	5%	1/10W
R366	1-216-821-11	METAL CHIP	1K	5%	1/10W
R405	1-216-821-11	METAL CHIP	1K	5%	1/10W
R407	1-216-821-11	METAL CHIP	1K	5%	1/10W
R409	1-216-821-11	METAL CHIP	1K	5%	1/10W
R410	1-216-809-11	METAL CHIP	100	5%	1/10W
R411	1-216-809-11	METAL CHIP	100	5%	1/10W
R412	1-216-809-11	METAL CHIP	100	5%	1/10W
R414	1-216-845-11	METAL CHIP	100K	5%	1/10W
R415	1-216-838-11	METAL CHIP	27K	5%	1/10W
R418	1-216-845-11	METAL CHIP	100K	5%	1/10W
R420	1-216-809-11	METAL CHIP	100	5%	1/10W
R422	1-216-809-11	METAL CHIP	100	5%	1/10W
R423	1-216-864-11	SHORT CHIP	0		
R428	1-216-817-11	METAL CHIP	470	5%	1/10W
R429	1-216-817-11	METAL CHIP	470	5%	1/10W
R475	1-216-864-11	SHORT CHIP	0		
R604	1-216-841-11	METAL CHIP	47K	5%	1/10W
R606	1-216-833-11	METAL CHIP	10K	5%	1/10W
R608	1-216-833-11	METAL CHIP	10K	5%	1/10W
R609	1-216-845-11	METAL CHIP	100K	5%	1/10W
R610	1-216-809-11	METAL CHIP	100	5%	1/10W
R611	1-216-833-11	METAL CHIP	10K	5%	1/10W
R613	1-216-833-11	METAL CHIP	10K	5%	1/10W
R614	1-216-833-11	METAL CHIP	10K	5%	1/10W
R615	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R616	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R617	1-216-833-11	METAL CHIP	10K	5%	1/10W
R618	1-218-875-11	METAL CHIP	15K	0.5%	1/10W
R619	1-216-833-11	METAL CHIP	10K	5%	1/10W
R620	1-216-833-11	METAL CHIP	10K	5%	1/10W
R621	1-216-833-11	METAL CHIP	10K	5%	1/10W
R622	1-216-833-11	METAL CHIP	10K	5%	1/10W
R623	1-216-864-11	SHORT CHIP	0		
R624	1-216-809-11	METAL CHIP	100	5%	1/10W
R626	1-216-864-11	SHORT CHIP	0		
R627	1-216-833-11	METAL CHIP	10K	5%	1/10W
R628	1-216-817-11	METAL CHIP	470	5%	1/10W
R629	1-216-864-11	SHORT CHIP	0		
R630	1-216-809-11	METAL CHIP	100	5%	1/10W
R631	1-216-809-11	METAL CHIP	100	5%	1/10W
R632	1-216-809-11	METAL CHIP	100	5%	1/10W
R633	1-216-809-11	METAL CHIP	100	5%	1/10W
R635	1-216-809-11	METAL CHIP	100	5%	1/10W
R636	1-216-809-11	METAL CHIP	100	5%	1/10W
R637	1-218-289-11	METAL CHIP	510	5%	1/10W
R638	1-216-864-11	SHORT CHIP	0		
R639	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R642	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R643	1-216-833-11	METAL CHIP	10K	5%	1/10W
R644	1-216-809-11	METAL CHIP	100	5%	1/10W

Ref. No.	Part No.	Description				Remarks
R645	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R646	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R647	1-216-817-11	METAL CHIP	470	5%	1/10W	
R648	1-216-864-11	SHORT CHIP	0			
		(HX525/HX725/HX727/HX925)				
R649	1-216-809-11	METAL CHIP	100	5%	1/10W	
R650	1-216-833-11	METAL CHIP	10K	5%	1/10W	
		(HX525/HX725/HX727/HX925)				
R651	1-216-809-11	METAL CHIP	100	5%	1/10W	
R652	1-216-809-11	METAL CHIP	100	5%	1/10W	
		(HX525/HX725/HX727/HX925)				
R654	1-216-809-11	METAL CHIP	100	5%	1/10W	
		(HX525/HX725/HX727/HX925)				
R655	1-216-809-11	METAL CHIP	100	5%	1/10W	
R656	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R658	1-216-809-11	METAL CHIP	100	5%	1/10W	
R659	1-216-809-11	METAL CHIP	100	5%	1/10W	
R660	1-216-809-11	METAL CHIP	100	5%	1/10W	
R661	1-216-809-11	METAL CHIP	100	5%	1/10W	
R662	1-216-809-11	METAL CHIP	100	5%	1/10W	
R663	1-216-809-11	METAL CHIP	100	5%	1/10W	
R664	1-216-809-11	METAL CHIP	100	5%	1/10W	
R665	1-216-809-11	METAL CHIP	100	5%	1/10W	
R666	1-216-864-11	SHORT CHIP	0			
R667	1-216-809-11	METAL CHIP	100	5%	1/10W	
R668	1-216-864-11	SHORT CHIP	0			
R669	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R670	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R671	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R672	1-216-833-11	METAL CHIP	10K	5%	1/10W	
		(HX520/HX720/HX722/HX920)				
R674	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R675	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R676	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R677	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	
R678	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R679	1-216-833-11	METAL CHIP	10K	5%	1/10W	
		(HX525/HX725/HX727/HX925)				
R681	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R682	1-216-833-11	METAL CHIP	10K	5%	1/10W	
		(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R683	1-216-833-11	METAL CHIP	10K	5%	1/10W	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R685	1-216-809-11	METAL CHIP	100	5%	1/10W	
R686	1-216-809-11	METAL CHIP	100	5%	1/10W	
R692	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R693	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R697	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R698	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R699	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R702	1-216-864-11	SHORT CHIP	0			
R705	1-216-864-11	SHORT CHIP	0			
R712	1-218-883-11	METAL CHIP	33K	0.5%	1/10W	
R713	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	
R714	1-216-855-11	METAL CHIP	680K	5%	1/10W	
R715	1-216-841-11	METAL CHIP	47K	5%	1/10W	
R716	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R718	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W	

Ref. No.	Part No.	Description				Remarks
R719	1-218-852-11	METAL CHIP	1.6K	0.5%	1/10W	
R726	1-216-817-11	METAL CHIP	470	5%	1/10W	
R728	1-216-840-11	METAL CHIP	39K	5%	1/10W	
R729	1-216-837-11	METAL CHIP	22K	5%	1/10W	
R733	1-216-864-11	SHORT CHIP	0			
R736	1-216-801-11	METAL CHIP	22	5%	1/10W	
R738	1-216-801-11	METAL CHIP	22	5%	1/10W	
R740	1-216-801-11	METAL CHIP	22	5%	1/10W	
R742	1-216-801-11	METAL CHIP	22	5%	1/10W	
R744	1-216-801-11	METAL CHIP	22	5%	1/10W	
R747	1-218-285-11	METAL CHIP	75	5%	1/10W	
R749	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R750	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R751	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R752	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R753	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R755	1-216-821-11	METAL CHIP	1K	5%	1/10W	
R760	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R761	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	
R772	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R776	1-218-285-11	METAL CHIP	75	5%	1/10W	
R779	1-218-285-11	METAL CHIP	75	5%	1/10W	
R780	1-218-285-11	METAL CHIP	75	5%	1/10W	
R785	1-216-864-11	SHORT CHIP	0			
R791	1-216-864-11	SHORT CHIP	0			
R802	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R803	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R804	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R805	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R806	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R807	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R808	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R819	1-216-809-11	METAL CHIP	100	5%	1/10W	
R820	1-216-809-11	METAL CHIP	100	5%	1/10W	
R821	1-216-809-11	METAL CHIP	100	5%	1/10W	
R822	1-216-809-11	METAL CHIP	100	5%	1/10W	
R823	1-216-809-11	METAL CHIP	100	5%	1/10W	
R825	1-216-809-11	METAL CHIP	100	5%	1/10W	
R827	1-216-809-11	METAL CHIP	100	5%	1/10W	
R828	1-216-809-11	METAL CHIP	100	5%	1/10W	
R835	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R836	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R837	1-216-864-11	SHORT CHIP	0			
R838	1-216-864-11	SHORT CHIP	0			
R839	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R840	1-216-813-11	METAL CHIP	220	5%	1/10W	
R841	1-216-809-11	METAL CHIP	100	5%	1/10W	
R842	1-216-857-11	METAL CHIP	1M	5%	1/10W	
R843	1-216-864-11	SHORT CHIP	0			
R844	1-218-285-11	METAL CHIP	75	5%	1/10W	
R845	1-218-285-11	METAL CHIP	75	5%	1/10W	
R852	1-218-285-11	METAL CHIP	75	5%	1/10W	
R854	1-218-285-11	METAL CHIP	75	5%	1/10W	
R858	1-218-285-11	METAL CHIP	75	5%	1/10W	
R859	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R860	1-216-809-11	METAL CHIP	100	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
R865	1-218-285-11	METAL CHIP	75	5%	1/10W
R866	1-218-285-11	METAL CHIP	75	5%	1/10W
R867	1-216-845-11	METAL CHIP	100K	5%	1/10W
R868	1-218-285-11	METAL CHIP	75	5%	1/10W
R869	1-218-285-11	METAL CHIP	75	5%	1/10W
R870	1-218-285-11	METAL CHIP	75	5%	1/10W
R871	1-216-864-11	SHORT CHIP	0		
R872	1-216-864-11	SHORT CHIP	0		
R873	1-216-864-11	SHORT CHIP	0		
R874	1-216-845-11	METAL CHIP	100K	5%	1/10W
R875	1-216-845-11	METAL CHIP	100K	5%	1/10W
R876	1-216-845-11	METAL CHIP	100K	5%	1/10W
R877	1-216-845-11	METAL CHIP	100K	5%	1/10W
R878	1-216-295-91	SHORT CHIP	0		
R879	1-216-295-91	SHORT CHIP	0		
R886	1-216-864-11	SHORT CHIP	0		
R887	1-216-864-11	SHORT CHIP	0		
R888	1-216-845-11	METAL CHIP	100K	5%	1/10W
R889	1-216-845-11	METAL CHIP	100K	5%	1/10W
R896	1-216-817-11	METAL CHIP	470	5%	1/10W
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
		(HX525/HX725/HX727/HX925)			
R1105	1-216-821-11	METAL CHIP	1K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1106	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1107	1-216-029-00	RES-CHIP	150	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1108	1-216-819-11	METAL CHIP	680	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1110	1-216-821-11	METAL CHIP	1K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1111	1-216-821-11	METAL CHIP	1K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1115	1-216-864-11	SHORT CHIP	0		
		(HX525/HX725/HX727/HX925)			
R1116	1-216-845-11	METAL CHIP	100K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1120	1-216-821-11	METAL CHIP	1K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1132	1-216-029-00	RES-CHIP	150	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1133	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1134	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1139	1-216-833-11	METAL CHIP	10K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1140	1-216-833-11	METAL CHIP	10K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1141	1-216-833-11	METAL CHIP	10K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1142	1-216-864-11	SHORT CHIP	0		
		(HX525/HX725/HX727/HX925)			
R1143	1-216-864-11	SHORT CHIP	0		
		(HX525/HX725/HX727/HX925)			
R1144	1-216-821-11	METAL CHIP	1K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1146	1-216-864-11	SHORT CHIP	0		
R1147	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1148	1-216-029-00	RES-CHIP	150	5%	1/10W
		(HX525/HX725/HX727/HX925)			
R1401	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1402	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R1403	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1406	1-216-809-11	METAL CHIP	100	5%	1/10W
R1407	1-216-819-11	METAL CHIP	680	5%	1/10W
R1408	1-216-809-11	METAL CHIP	100	5%	1/10W
R1409	1-216-809-11	METAL CHIP	100	5%	1/10W
R1410	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1411	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1412	1-216-846-11	METAL CHIP	120K	5%	1/10W
R1416	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1417	1-216-864-11	SHORT CHIP	0		
R1418	1-216-864-11	SHORT CHIP	0		
R1419	1-216-864-11	SHORT CHIP	0		
R1451	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1452	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R1453	1-218-905-11	METAL CHIP	270K	0.5%	1/10W
R1454	1-218-885-11	METAL CHIP	39K	0.5%	1/10W
R1601	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1602	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1603	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1604	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1609	1-216-847-11	METAL CHIP	150K	5%	1/10W
R1610	1-216-809-11	METAL CHIP	100	5%	1/10W
R1613	1-216-837-11	METAL CHIP	22K	5%	1/10W
R1614	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1621	1-216-839-11	METAL CHIP	33K	5%	1/10W
R1624	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1625	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1626	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1627	1-216-864-11	SHORT CHIP	0		
R1628	1-216-845-11	METAL CHIP	100K	5%	1/10W
R1629	1-216-817-11	METAL CHIP	470	5%	1/10W
R1630	1-216-817-11	METAL CHIP	470	5%	1/10W
R1632	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1633	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1636	1-216-809-11	METAL CHIP	100	5%	1/10W
R1637	1-216-809-11	METAL CHIP	100	5%	1/10W
R1638	1-216-809-11	METAL CHIP	100	5%	1/10W
R1707	1-216-295-91	SHORT CHIP	0		
R1709	1-216-295-91	SHORT CHIP	0		
R1710	1-216-864-11	SHORT CHIP	0		
R1714	1-216-817-11	METAL CHIP	470	5%	1/10W
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

Ref. No.	Part No.	Description			Remarks
R1736	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1738	1-216-864-11	SHORT CHIP	0		
R1801	1-216-864-11	SHORT CHIP	0		
		< THERMISTOR >			
TH601	1-803-384-11	THERMISTOR (1608)			
		< TUNER UNIT >			
⚠ TU401	8-597-558-00	TUNER, FSS BTF-DC441			
		(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
⚠ TU401	8-597-559-00	TUNER, FSS BTF-DF441			
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
		< VIBRATOR >			
* X602	1-813-700-21	VIBRATOR, CRYSTAL (10MHz)			
* X603	1-813-698-11	VIBRATOR, CRYSTAL (32.76KHz)			
X1101	1-781-589-21	VIBRATOR, CRYSTAL (16MHz)			
		(HX525/HX725/HX727/HX925)			
* X1401	1-813-713-31	VIBRATOR, CRYSTAL (18.432MHZ)			

	Not supplied	FL-159 BOARD, COMPLETE			
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		< CAPACITOR >			
C3103	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C3104	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C3106	1-125-972-91	ELECT	100uF	20%	16V
C3110	1-106-363-00	MYLAR	0.0068uF	5%	200V
C3113	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C3114	1-128-131-11	ELECT	22uF	20%	50V
C3115	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C3116	1-107-726-91	CERAMIC CHIP	0.01uF	10%	16V
C3117	1-107-726-91	CERAMIC CHIP	0.01uF	10%	16V
C3118	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C3120	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C3121	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
		< CONNECTOR >			
CN3101	1-774-729-21	PIN, CONNECTOR (PC BOARD) 10P			
		< DIODE >			
D3102	8-719-067-40	DIODE STZ6.8N-T146			
D3103	8-719-067-40	DIODE STZ6.8N-T146			
D3104	8-719-067-40	DIODE STZ6.8N-T146			
D3105	8-719-067-40	DIODE STZ6.8N-T146			
D3106	8-719-067-40	DIODE STZ6.8N-T146			
D3107	8-719-067-40	DIODE STZ6.8N-T146			
D3108	8-719-988-61	DIODE 1SS355TE-17			
D3109	8-719-988-61	DIODE 1SS355TE-17			
D3110	8-719-988-61	DIODE 1SS355TE-17			
D3111	8-719-988-61	DIODE 1SS355TE-17			
D3112	8-719-056-82	DIODE UDZ-TE-17-6.2B			
		< FERRITE BEAD >			
FB3101	1-414-228-11	INDUCTOR, FERRITE BEAD			
FB3102	1-414-228-11	INDUCTOR, FERRITE BEAD			

Ref. No.	Part No.	Description			Remarks
		< IC >			
IC3101	8-759-643-83	IC uPD16315GB-3BS			
		< JACK >			
J3101	1-780-049-11	TERMINAL BOARD (S TERMINAL+3P)			
		< COIL >			
L3101	1-412-537-31	INDUCTOR	100uH		
		< FLUORESCENT INDICATOR TUBE >			
* ND3101	1-519-849-21	INDICATOR TUBE, FLUORESCENT			
		< TRANSISTOR >			
Q3101	8-729-901-88	TRANSISTOR	2SC2411K-CR		
Q3102	8-729-901-88	TRANSISTOR	2SC2411K-CR		
		< RESISTOR >			
R3101	1-218-285-11	METAL CHIP	75	5%	1/10W
R3102	1-218-285-11	METAL CHIP	75	5%	1/10W
R3103	1-216-864-11	SHORT CHIP	0		
R3104	1-216-864-11	SHORT CHIP	0		
R3105	1-216-864-11	SHORT CHIP	0		
R3108	1-218-285-11	METAL CHIP	75	5%	1/10W
R3109	1-216-864-11	SHORT CHIP	0		
R3111	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R3113	1-216-849-11	METAL CHIP	220K	5%	1/10W
R3114	1-216-849-11	METAL CHIP	220K	5%	1/10W
R3115	1-216-838-11	METAL CHIP	27K	5%	1/10W
R3116	1-216-845-11	METAL CHIP	100K	5%	1/10W
R3123	1-216-295-91	SHORT CHIP	0		
R3124	1-216-295-91	SHORT CHIP	0		
		< SWITCH >			
S3101	1-771-410-21	SWITCH, TACTILE (POWER)			
		< TRANSFORMER >			
* T3101	1-445-017-11	TRANSFORMER, DC-DC CONVERTER			

	Not supplied	FR-240 BOARD, COMPLETE			
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		< CAPACITOR >			
C3001	1-107-726-91	CERAMIC CHIP	0.01uF	10%	16V
C3002	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3004	1-107-726-91	CERAMIC CHIP	0.01uF	10%	16V
		< CONNECTOR >			
CN3003	1-815-383-11	CONNECTOR, FPC/FFC 15P			
CN3004	1-785-828-21	CONNECTOR, SQUARE TYPE 4P (DV IN)			
CN3005	1-573-806-21	PIN, CONNECTOR (1.5MM) (SMD) 6P			
		< DIODE >			
D3002	8-719-077-79	DIODE SLR-332VRT32 (SYNCHRO REC)			
D3003	8-719-077-79	DIODE SLR-332VRT32 (TIMER REC)			
D3004	6-500-176-01	DIODE EB3804X-TP-J555K (HDD)			
D3005	8-719-084-27	DIODE SLI-343YCT32WST (DVD)			

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
		< IC >			
IC3001	6-706-783-01	IC BU2050F-E2			
* IC3002	6-600-500-01	IC GP1UM28XK0SF			
		< TRANSISTOR >			
Q3001	8-729-421-22	TRANSISTOR	UN2211		
Q3002	6-550-280-01	TRANSISTOR	BC857CE6327		
		< RESISTOR >			
R3001	1-216-295-91	SHORT CHIP	0		
R3003	1-216-864-11	SHORT CHIP	0		
R3004	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R3005	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R3006	1-216-813-11	METAL CHIP	220	5%	1/10W
R3007	1-216-813-11	METAL CHIP	220	5%	1/10W
R3008	1-216-864-11	SHORT CHIP	0		
R3009	1-216-806-11	METAL CHIP	56	5%	1/10W
R3010	1-216-811-11	METAL CHIP	150	5%	1/10W
R3012	1-216-864-11	SHORT CHIP	0		
R3013	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R3014	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R3015	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R3016	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R3017	1-216-832-11	METAL CHIP	8.2K	5%	1/10W
R3018	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R3019	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R3020	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R3023	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R3024	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
		< SWITCH >			
S3001	1-771-410-21	SWITCH, TACTILE (PLAY)			
S3002	1-771-410-21	SWITCH, TACTILE (REC STOP)			
S3003	1-771-410-21	SWITCH, TACTILE (REC)			
S3004	1-771-410-21	SWITCH, TACTILE (STOP)			
S3005	1-771-410-21	SWITCH, TACTILE (DUB)			
S3006	1-771-410-21	SWITCH, TACTILE (OPEN/CLOSE)			
S3007	1-771-410-21	SWITCH, TACTILE (CH +)			
S3008	1-771-410-21	SWITCH, TACTILE (CH -)			
S3009	1-771-410-21	SWITCH, TACTILE (REC MODE)			
S3012	1-771-410-21	SWITCH, TACTILE (DVD)			
S3013	1-771-410-21	SWITCH, TACTILE (HDD)			
S3014	1-771-410-21	SWITCH, TACTILE (INPUT SELECT)			

Ref. No.	Part No.	Description			Remarks
	A-1183-523-A	RD-060 BOARD, COMPLETE (HX520:AEP1,2)			
	A-1183-524-A	RD-060 BOARD, COMPLETE (HX525)			
	A-1183-525-A	RD-060 BOARD, COMPLETE (HX520:AEP3)			
	A-1183-526-A	RD-060 BOARD, COMPLETE (HX725:AEP1)			
	A-1183-527-A	RD-060 BOARD, COMPLETE (HX725:UK)			
	A-1183-528-A	RD-060 BOARD, COMPLETE (HX727:AEP1)			
	A-1183-530-A	RD-060 BOARD, COMPLETE (HX725:AEP3)			
	A-1183-531-A	RD-060 BOARD, COMPLETE (HX925)			
	A-1183-532-A	RD-060 BOARD, COMPLETE (HX920)			
	A-1185-667-A	RD-060 BOARD, COMPLETE (HX720:AEP2)			
	A-1185-668-A	RD-060 BOARD, COMPLETE (HX722)			
	A-1194-638-A	RD-060 BOARD, COMPLETE (HX520:UK)			
	A-1194-639-A	RD-060 BOARD, COMPLETE (HX720:UK)			
	A-1194-640-A	RD-060 BOARD, COMPLETE (HX727:AEP3)			
		*************************			
		< CAPACITOR >			
C101	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C102	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C103	1-165-887-91	CERAMIC CHIP	0.22uF	10%	6.3V
C104	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C107	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C109	1-126-246-11	ELECT CHIP	220uF	20%	4V
C110	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C111	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C112	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C113	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C114	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C115	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C116	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C117	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C118	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C119	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C120	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C121	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C122	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C123	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C124	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C125	1-128-994-21	ELECT CHIP	47uF	20%	10V
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

RD-060

Ref. No.	Part No.	Description			Remarks
C149	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C150	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C151	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C152	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C153	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C154	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C155	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C156	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C157	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C158	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C159	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C160	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C161	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C162	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C163	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C164	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C165	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C166	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C167	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C168	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C169	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C170	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C171	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C172	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C173	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C174	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C175	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C176	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C177	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C188	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C189	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C190	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C191	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C192	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C193	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C194	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C195	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C196	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C197	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C198	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C199	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C201	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C202	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C203	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C204	1-164-852-11	CERAMIC CHIP	12PF	5%	50V
C205	1-164-852-11	CERAMIC CHIP	12PF	5%	50V
C206	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C207	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C209	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C210	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C214	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C215	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C217	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C218	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C219	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C220	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C222	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C223	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C224	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V

Ref. No.	Part No.	Description			Remarks
C230	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C231	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C232	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C233	1-165-887-91	CERAMIC CHIP	0.22uF	10%	6.3V
C234	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C235	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C236	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C237	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C301	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C302	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C303	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C304	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C305	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C308	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C309	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C310	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C311	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C312	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C313	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C314	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C315	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C316	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C317	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C318	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C319	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C320	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C321	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C322	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C323	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C324	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C325	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C326	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C327	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C328	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
C329	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			

Ref. No.	Part No.	Description				Remarks
C330	1-164-849-11	CERAMIC CHIP	9PF	0.5PF	50V	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
C331	1-164-849-11	CERAMIC CHIP	9PF	0.5PF	50V	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
C332	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
C333	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
C334	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
C335	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
C336	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
C337	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
C338	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
C339	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
C340	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920)				
C501	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	
C502	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C505	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C506	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C601	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C602	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	
C603	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	
C606	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	
C607	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	
C609	1-128-994-21	ELECT CHIP	47uF	20%	10V	
C610	1-128-994-21	ELECT CHIP	47uF	20%	10V	
C611	1-165-908-11	CERAMIC CHIP	1uF	10%	10V	
C614	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C615	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C616	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V	
C617	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C618	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C619	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C620	1-162-960-11	CERAMIC CHIP	220PF	10%	50V	
C621	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C622	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C623	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
C701	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	
C702	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C703	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C704	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C705	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C706	1-164-849-11	CERAMIC CHIP	9PF	0.5PF	50V	
C707	1-164-849-11	CERAMIC CHIP	9PF	0.5PF	50V	
C708	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C710	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C711	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C712	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C713	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C714	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C715	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	
C716	1-112-001-81	CERAMIC CHIP	270PF	5%	50V	
C803	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	
C804	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	

Ref. No.	Part No.	Description				Remarks
C805	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C806	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C807	1-164-854-11	CERAMIC CHIP	15PF	5%	50V	
C808	1-164-854-11	CERAMIC CHIP	15PF	5%	50V	
C809	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C810	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C811	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C812	1-165-887-91	CERAMIC CHIP	0.22uF	10%	6.3V	
C813	1-124-779-00	ELECT CHIP	10uF	20%	16V	
C816	1-165-887-91	CERAMIC CHIP	0.22uF	10%	6.3V	
C817	1-128-994-21	ELECT CHIP	47uF	20%	10V	
C1006	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C1008	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C1009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C1010	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C1011	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C1012	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C1013	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C1014	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C1015	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C1028	1-165-908-11	CERAMIC CHIP	1uF	10%	10V	
C1029	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	
C1030	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C1031	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C1032	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C1033	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V	
C1034	1-165-887-91	CERAMIC CHIP	0.22uF	10%	6.3V	
C1035	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
C1036	1-165-908-11	CERAMIC CHIP	1uF	10%	10V	
C1037	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V	
* C1038	1-112-833-11	ELECT CHIP	68uF	20%	16V	

< CONNECTOR >

Ref. No.	Part No.	Description
CN101	1-818-857-51	CONNECTOR, FFC/FPC 40P
CN601	1-816-339-21	CONNECTOR, BOARD TO BOARD 9P
CN701	1-573-806-21	PIN, CONNECTOR (1.5MM) (SMD) 6P

< FERRITE BEAD >

Ref. No.	Part No.	Description
FB101	1-400-794-21	EMI FERRITE (SMD) (1608)
FB103	1-400-794-21	EMI FERRITE (SMD) (1608)
FB106	1-469-670-21	FERRITE, EMI (SMD) (2012)
FB107	1-469-670-21	FERRITE, EMI (SMD) (2012)
FB110	1-469-670-21	FERRITE, EMI (SMD) (2012)
FB111	1-400-794-21	EMI FERRITE (SMD) (1608)
FB112	1-400-794-21	EMI FERRITE (SMD) (1608)
FB602	1-400-794-21	EMI FERRITE (SMD) (1608)
FB603	1-400-794-21	EMI FERRITE (SMD) (1608)
FB604	1-400-794-21	EMI FERRITE (SMD) (1608)
FB605	1-400-794-21	EMI FERRITE (SMD) (1608)
FB606	1-469-084-21	FERRITE 0mH

< FLUORESCENT INDICATOR >

Ref. No.	Part No.	Description
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)

RD-060

Ref. No.	Part No.	Description			Remarks
		< IC >			
IC101	6-702-302-01	IC TK11133CSCL-G			
IC102	6-704-573-01	IC M24C32-WMN6T (B)			
IC103	6-708-896-01	IC R8A34012BG			
IC105	6-708-305-01	IC K4H511638C-UCB3T			
IC106	6-708-305-01	IC K4H511638C-UCB3T			
IC108	6-708-935-01	IC MM1762FHBE			
IC109	6-702-302-01	IC TK11133CSCL-G			
IC201	6-806-103-01	IC 88SA8040-TBC1C000			
IC202	6-705-311-01	IC S-T111B18MC-OGDTFG			
* IC301	6-708-848-01	IC TVP5146M2PFP			
		(HX520:AEP3/HX725:AEP3/HX920/HX925)			
IC302	6-708-882-01	IC BH18MA3WHFV-TR			
		(HX520:AEP3/HX725:AEP3/HX920/HX925)			
* IC502	6-708-924-01	IC S29GL256N90TFIR20			
IC601	6-708-889-01	IC MP2105DJ-LF-Z			
IC602	6-706-237-01	IC PQ1MX55M2SPQ			
IC604	8-759-660-23	IC SN74HCT08APWR			
IC605	8-759-548-99	IC SN74LV08APWR			
IC606	6-703-224-01	IC S-80828CNNB-B8NT2G			
IC701	6-706-365-01	IC uPD72852AGB-8EU-A			
* IC802	6-708-929-01	IC ICS650G-42LFT			
IC803	6-708-888-01	IC WM8590GEDS/RV			
		< COIL >			
L101	1-469-555-21	INDUCTOR	10uH		
L102	1-469-555-21	INDUCTOR	10uH		
L201	1-469-555-21	INDUCTOR	10uH		
L202	1-469-555-21	INDUCTOR	10uH		
L301	1-469-555-21	INDUCTOR	10uH		
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
L302	1-469-555-21	INDUCTOR	10uH		
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
L303	1-469-555-21	INDUCTOR	10uH		
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
L601	1-419-630-21	INDUCTOR	4.7uH		
L602	1-400-073-21	INDUCTOR	4.7uH		
L603	1-469-555-21	INDUCTOR	10uH		
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
		< LINE FILTER >			
LF701	1-400-476-11	COMMON MODE CHOKE COIL			
		< TRANSISTOR >			
Q601	6-550-280-01	TRANSISTOR	BC857CE6327		
Q602	6-550-280-01	TRANSISTOR	BC857CE6327		
Q603	6-550-280-01	TRANSISTOR	BC857CE6327		
Q604	6-550-280-01	TRANSISTOR	BC857CE6327		
Q605	6-550-280-01	TRANSISTOR	BC857CE6327		
Q606	6-550-280-01	TRANSISTOR	BC857CE6327		
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
Q607	6-550-280-01	TRANSISTOR	BC857CE6327		
		(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)			
		< RESISTOR >			
R103	1-218-990-81	SHORT CHIP	0		
R104	1-218-990-81	SHORT CHIP	0		
R105	1-218-990-81	SHORT CHIP	0		
R106	1-218-941-81	RES-CHIP	100	5%	1/16W
R107	1-218-990-81	SHORT CHIP	0		

Ref. No.	Part No.	Description			Remarks
R108	1-218-990-81	SHORT CHIP	0		
R109	1-218-941-81	RES-CHIP	100	5%	1/16W
R110	1-218-990-81	SHORT CHIP	0		
R111	1-218-941-81	RES-CHIP	100	5%	1/16W
R112	1-218-990-81	SHORT CHIP	0		
R113	1-218-953-11	RES-CHIP	1K	5%	1/16W
R114	1-218-965-11	RES-CHIP	10K	5%	1/16W
R115	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R116	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R123	1-218-965-11	RES-CHIP	10K	5%	1/16W
R124	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R125	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R126	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R127	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R128	1-218-990-81	SHORT CHIP	0		
R129	1-218-935-11	RES-CHIP	33	5%	1/16W
R130	1-218-990-81	SHORT CHIP	0		
R131	1-218-933-11	RES-CHIP	22	5%	1/16W
R132	1-218-933-11	RES-CHIP	22	5%	1/16W
R133	1-218-990-81	SHORT CHIP	0		
R134	1-218-933-11	RES-CHIP	22	5%	1/16W
R135	1-218-990-81	SHORT CHIP	0		
R136	1-218-935-11	RES-CHIP	33	5%	1/16W
R137	1-218-973-11	RES-CHIP	47K	5%	1/16W
R138	1-218-973-11	RES-CHIP	47K	5%	1/16W
R139	1-218-973-11	RES-CHIP	47K	5%	1/16W
R140	1-218-973-11	RES-CHIP	47K	5%	1/16W
R141	1-218-973-11	RES-CHIP	47K	5%	1/16W
R142	1-218-973-11	RES-CHIP	47K	5%	1/16W
R143	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R145	1-218-973-11	RES-CHIP	47K	5%	1/16W
R146	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R147	1-218-933-11	RES-CHIP	22	5%	1/16W
R148	1-218-933-11	RES-CHIP	22	5%	1/16W
R149	1-218-939-11	RES-CHIP	68	5%	1/16W
R160	1-218-990-81	SHORT CHIP	0		
R161	1-218-990-81	SHORT CHIP	0		
R162	1-218-851-11	METAL CHIP	1.5K	0.5%	1/10W
R163	1-218-851-11	METAL CHIP	1.5K	0.5%	1/10W
R164	1-211-977-11	METAL CHIP	22	0.5%	1/10W
R165	1-211-977-11	METAL CHIP	22	0.5%	1/10W
R166	1-218-827-11	METAL CHIP	150	0.5%	1/10W
R167	1-218-827-11	METAL CHIP	150	0.5%	1/10W
R168	1-218-827-11	METAL CHIP	150	0.5%	1/10W
R169	1-218-827-11	METAL CHIP	150	0.5%	1/10W
R170	1-218-827-11	METAL CHIP	150	0.5%	1/10W
R171	1-218-935-11	RES-CHIP	33	5%	1/16W
R172	1-218-933-11	RES-CHIP	22	5%	1/16W
R173	1-218-933-11	RES-CHIP	22	5%	1/16W
R174	1-218-933-11	RES-CHIP	22	5%	1/16W
R175	1-218-933-11	RES-CHIP	22	5%	1/16W
R180	1-218-965-11	RES-CHIP	10K	5%	1/16W
R181	1-218-965-11	RES-CHIP	10K	5%	1/16W
R182	1-218-945-11	RES-CHIP	220	5%	1/16W
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
R197	1-216-864-11	SHORT CHIP	0		
R198	1-218-933-11	RES-CHIP	22	5%	1/16W
R223	1-218-940-11	RES-CHIP	82	5%	1/16W
R224	1-218-933-11	RES-CHIP	22	5%	1/16W
R225	1-218-940-11	RES-CHIP	82	5%	1/16W
R226	1-218-940-11	RES-CHIP	82	5%	1/16W
R227	1-218-933-11	RES-CHIP	22	5%	1/16W
R228	1-218-940-11	RES-CHIP	82	5%	1/16W
R229	1-218-933-11	RES-CHIP	22	5%	1/16W
R231	1-218-940-11	RES-CHIP	82	5%	1/16W
R233	1-218-953-11	RES-CHIP	1K	5%	1/16W
R237	1-216-864-11	SHORT CHIP	0		
R238	1-218-953-11	RES-CHIP	1K	5%	1/16W
R240	1-218-953-11	RES-CHIP	1K	5%	1/16W
R243	1-218-953-11	RES-CHIP	1K	5%	1/16W
R245	1-218-949-11	RES-CHIP	470	5%	1/16W
R246	1-218-989-11	RES-CHIP	1M	5%	1/16W
R247	1-218-953-11	RES-CHIP	1K	5%	1/16W
R248	1-208-709-11	METAL CHIP	12K	0.5%	1/16W
R249	1-218-941-11	RES-CHIP	100	5%	1/16W
R250	1-216-864-11	SHORT CHIP	0		
R252	1-216-864-11	SHORT CHIP	0		
R258	1-218-953-11	RES-CHIP	1K	5%	1/16W
R261	1-218-965-11	RES-CHIP	10K	5%	1/16W
R265	1-218-965-11	RES-CHIP	10K	5%	1/16W
R267	1-218-953-11	RES-CHIP	1K	5%	1/16W
R269	1-218-953-11	RES-CHIP	1K	5%	1/16W
R270	1-218-953-11	RES-CHIP	1K	5%	1/16W
R272	1-218-953-11	RES-CHIP	1K	5%	1/16W
R274	1-218-965-11	RES-CHIP	10K	5%	1/16W
R276	1-218-953-11	RES-CHIP	1K	5%	1/16W
R279	1-218-990-81	SHORT CHIP	0		
R282	1-218-990-81	SHORT CHIP	0		
R303	1-218-933-11	RES-CHIP	22	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R304	1-218-933-11	RES-CHIP	22	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R305	1-218-933-11	RES-CHIP	22	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R306	1-218-933-11	RES-CHIP	22	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R307	1-218-933-11	RES-CHIP	22	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R308	1-218-990-81	SHORT CHIP	0		
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R312	1-218-990-81	SHORT CHIP	0		
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R313	1-218-990-81	SHORT CHIP	0		
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R314	1-218-977-11	RES-CHIP	100K	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R315	1-218-933-11	RES-CHIP	22	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R316	1-218-941-81	RES-CHIP	100	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R317	1-218-933-11	RES-CHIP	22	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				

Ref. No.	Part No.	Description			Remarks
R318	1-218-941-81	RES-CHIP	100	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R322	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R323	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R325	1-218-941-81	RES-CHIP	100	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920)				
R325	1-218-990-81	SHORT CHIP	0 (HX925)		
R328	1-218-965-11	RES-CHIP	10K	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R329	1-218-990-81	SHORT CHIP	0		
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R336	1-218-965-11	RES-CHIP	10K	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R337	1-218-965-11	RES-CHIP	10K	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R338	1-218-990-81	SHORT CHIP	0		
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R504	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R513	1-218-965-11	RES-CHIP	10K	5%	1/16W
R518	1-218-965-11	RES-CHIP	10K	5%	1/16W
R519	1-218-965-11	RES-CHIP	10K	5%	1/16W
R522	1-216-864-11	SHORT CHIP	0		
R523	1-218-965-11	RES-CHIP	10K	5%	1/16W
R524	1-218-990-81	SHORT CHIP	0		
R525	1-218-990-81	SHORT CHIP	0		
R532	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R533	1-218-990-81	SHORT CHIP	0		
R535	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R547	1-218-990-81	SHORT CHIP	0		
R549	1-218-990-81	SHORT CHIP	0		
R551	1-218-990-81	SHORT CHIP	0		
R552	1-218-990-81	SHORT CHIP	0		
R553	1-218-990-81	SHORT CHIP	0		
R554	1-218-990-81	SHORT CHIP	0		
R555	1-218-990-81	SHORT CHIP	0		
R556	1-218-990-81	SHORT CHIP	0		
R557	1-218-990-81	SHORT CHIP	0		
R558	1-218-990-81	SHORT CHIP	0		
R560	1-218-990-81	SHORT CHIP	0		
R603	1-218-942-11	RES-CHIP	120	5%	1/16W
R605	1-218-942-11	RES-CHIP	120	5%	1/16W
R607	1-218-942-11	RES-CHIP	120	5%	1/16W
R609	1-218-942-11	RES-CHIP	120	5%	1/16W
R611	1-218-942-11	RES-CHIP	120	5%	1/16W
R612	1-218-951-11	RES-CHIP	680	5%	1/16W
R613	1-218-990-81	SHORT CHIP	0		
R614	1-218-951-11	RES-CHIP	680	5%	1/16W
R615	1-218-990-81	SHORT CHIP	0		
R616	1-218-990-81	SHORT CHIP	0		
R617	1-218-951-11	RES-CHIP	680	5%	1/16W
R618	1-218-951-11	RES-CHIP	680	5%	1/16W
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
R626	1-208-713-11	METAL CHIP	18K	0.5%	1/16W
R627	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R628	1-216-295-91	SHORT CHIP	0		
R635	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R638	1-218-990-81	SHORT CHIP	0		
R639	1-218-990-81	SHORT CHIP	0		
R640	1-218-990-81	SHORT CHIP	0		
R641	1-218-990-81	SHORT CHIP	0		
R642	1-218-977-11	RES-CHIP	100K	5%	1/16W
R643	1-218-990-81	SHORT CHIP	0		
R644	1-218-990-81	SHORT CHIP	0		
R645	1-218-990-81	SHORT CHIP	0		
R646	1-218-990-81	SHORT CHIP	0		
R647	1-218-949-11	RES-CHIP	470	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R648	1-218-990-81	SHORT CHIP	0		
	(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R649	1-218-941-81	RES-CHIP	100	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R650	1-218-949-11	RES-CHIP	470	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R651	1-218-990-81	SHORT CHIP	0		
	(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R652	1-218-941-81	RES-CHIP	100	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R655	1-218-990-81	SHORT CHIP	0		
R656	1-216-295-91	SHORT CHIP	0		
R658	1-216-821-11	METAL CHIP	1K	5%	1/10W
R661	1-218-990-81	SHORT CHIP	0		
R701	1-216-864-11	SHORT CHIP	0		
R703	1-218-941-81	RES-CHIP	100	5%	1/16W
R705	1-218-965-11	RES-CHIP	10K	5%	1/16W
R706	1-218-953-11	RES-CHIP	1K	5%	1/16W
R709	1-218-941-81	RES-CHIP	100	5%	1/16W
R710	1-218-965-11	RES-CHIP	10K	5%	1/16W
R711	1-218-965-11	RES-CHIP	10K	5%	1/16W
R712	1-218-965-11	RES-CHIP	10K	5%	1/16W
R713	1-218-965-11	RES-CHIP	10K	5%	1/16W
R714	1-218-965-11	RES-CHIP	10K	5%	1/16W
R715	1-218-965-11	RES-CHIP	10K	5%	1/16W
R717	1-208-910-11	METAL CHIP	9.1K	0.5%	1/16W
R718	1-218-938-11	RES-CHIP	56	5%	1/16W
R719	1-218-938-11	RES-CHIP	56	5%	1/16W
R721	1-218-938-11	RES-CHIP	56	5%	1/16W
R722	1-218-938-11	RES-CHIP	56	5%	1/16W
R723	1-218-864-11	METAL CHIP	5.1K	0.5%	1/10W
R733	1-218-935-11	RES-CHIP	33	5%	1/16W
R811	1-218-965-11	RES-CHIP	10K	5%	1/16W
	(HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R812	1-218-965-11	RES-CHIP	10K	5%	1/16W
R816	1-218-937-11	RES-CHIP	47	5%	1/16W
R817	1-218-935-11	RES-CHIP	33	5%	1/16W
R821	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R823	1-218-931-11	RES-CHIP	15	5%	1/16W
R825	1-218-939-11	RES-CHIP	68	5%	1/16W
R826	1-218-935-11	RES-CHIP	33	5%	1/16W
R827	1-218-941-81	RES-CHIP	100	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R836	1-218-990-81	SHORT CHIP	0		
	(EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)				
R839	1-218-990-81	SHORT CHIP	0		
R840	1-218-990-81	SHORT CHIP	0		
R841	1-218-990-81	SHORT CHIP	0		
R842	1-218-990-81	SHORT CHIP	0		
R1001	1-218-990-81	SHORT CHIP	0		
R1002	1-218-990-81	SHORT CHIP	0		
R1003	1-218-990-81	SHORT CHIP	0		
R1004	1-218-990-81	SHORT CHIP	0		
R1005	1-218-990-81	SHORT CHIP	0		
R1006	1-218-990-81	SHORT CHIP	0		
R1007	1-218-990-81	SHORT CHIP	0		
R1008	1-218-990-81	SHORT CHIP	0		
R1009	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1010	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1011	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R1012	1-218-990-81	SHORT CHIP	0		
R1030	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1035	1-218-990-81	SHORT CHIP	0		
R1037	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1039	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1040	1-218-937-11	RES-CHIP	47	5%	1/16W
R1041	1-218-937-11	RES-CHIP	47	5%	1/16W
R1042	1-218-990-81	SHORT CHIP	0		
R1043	1-218-990-81	SHORT CHIP	0		
R1044	1-218-933-11	RES-CHIP	22	5%	1/16W
R1045	1-218-933-11	RES-CHIP	22	5%	1/16W
R1046	1-218-933-11	RES-CHIP	22	5%	1/16W
R1047	1-218-933-11	RES-CHIP	22	5%	1/16W
R1051	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1053	1-218-965-11	RES-CHIP	10K	5%	1/16W
	(HX520:UK/HX525/HX720:UK/HX725/HX727/HX925)				
R1054	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1055	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1056	1-218-965-11	RES-CHIP	10K	5%	1/16W
	(HX520:AEP1,2,3/HX720:AEP2/HX722/HX920)				
R1060	1-218-990-81	SHORT CHIP	0		
R1061	1-218-990-81	SHORT CHIP	0		
R1062	1-218-990-81	SHORT CHIP	0		
R1063	1-218-990-81	SHORT CHIP	0		
R1064	1-218-990-81	SHORT CHIP	0		
R1065	1-218-990-81	SHORT CHIP	0		
R1066	1-218-990-81	SHORT CHIP	0		
R1067	1-218-990-81	SHORT CHIP	0		
R1068	1-218-941-81	RES-CHIP	100	5%	1/16W

< COMPOSITION CIRCUIT BLOCK >

Ref. No.	Part No.	Description	
RB101	1-234-372-11	RES, NETWORK	100 (1005X4)
RB102	1-234-372-11	RES, NETWORK	100 (1005X4)
RB103	1-234-372-11	RES, NETWORK	100 (1005X4)
RB104	1-234-372-11	RES, NETWORK	100 (1005X4)
RB105	1-234-400-21	CONDUCTOR, NETWORK	(2010X4)
RB106	1-234-702-11	RES, NETWORK	68 (1005X4)
RB107	1-234-702-11	RES, NETWORK	68 (1005X4)
RB108	1-234-702-11	RES, NETWORK	68 (1005X4)
RB109	1-234-702-11	RES, NETWORK	68 (1005X4)
RB110	1-242-963-21	RES, NETWORK	33 (1005X4)

Ref. No.	Part No.	Description	Remarks
RB111	1-242-963-21	RES, NETWORK 33 (1005X4)	
RB112	1-242-963-21	RES, NETWORK 33 (1005X4)	
RB113	1-242-963-21	RES, NETWORK 33 (1005X4)	
RB114	1-242-963-21	RES, NETWORK 33 (1005X4)	
RB115	1-242-963-21	RES, NETWORK 33 (1005X4)	
RB116	1-242-963-21	RES, NETWORK 33 (1005X4)	
RB117	1-242-963-21	RES, NETWORK 33 (1005X4)	
RB118	1-242-963-21	RES, NETWORK 33 (1005X4)	
RB119	1-242-963-21	RES, NETWORK 33 (1005X4)	
RB120	1-242-963-21	RES, NETWORK 33 (1005X4)	
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)	
RB144	1-234-702-11	RES, NETWORK 68 (1005X4)	
RB145	1-234-702-11	RES, NETWORK 68 (1005X4)	
RB146	1-234-702-11	RES, NETWORK 68 (1005X4)	
RB149	1-234-400-21	CONDUCTOR, NETWORK (2010X4)	
RB150	1-234-400-21	CONDUCTOR, NETWORK (2010X4)	
RB151	1-234-400-21	CONDUCTOR, NETWORK (2010X4)	
RB152	1-234-400-21	CONDUCTOR, NETWORK (2010X4)	
RB154	1-234-400-21	CONDUCTOR, NETWORK (2010X4)	
RB155	1-234-400-21	CONDUCTOR, NETWORK (2010X4)	
RB156	1-234-400-21	CONDUCTOR, NETWORK (2010X4)	
RB157	1-234-400-21	CONDUCTOR, NETWORK (2010X4)	
RB158	1-234-400-21	CONDUCTOR, NETWORK (2010X4)	
RB159	1-234-400-21	CONDUCTOR, NETWORK (2010X4)	
RB160	1-234-380-21	RES, NETWORK 47K (1005X4)	
RB161	1-234-380-21	RES, NETWORK 47K (1005X4)	
RB162	1-234-380-21	RES, NETWORK 47K (1005X4)	
RB163	1-234-380-21	RES, NETWORK 47K (1005X4)	
RB168	1-234-380-21	RES, NETWORK 47K (1005X4) (EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	
RB169	1-234-380-21	RES, NETWORK 47K (1005X4) (EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	
RB170	1-234-380-21	RES, NETWORK 47K (1005X4) (EXCEPT HX520:AEP3/HX725:AEP3/HX727:AEP3/HX920/HX925)	
RB175	1-234-378-21	RES, NETWORK 10K (1005X4)	
RB179	1-234-378-21	RES, NETWORK 10K (1005X4)	
RB180	1-234-378-21	RES, NETWORK 10K (1005X4)	
RB181	1-234-378-21	RES, NETWORK 10K (1005X4)	
RB182	1-234-378-21	RES, NETWORK 10K (1005X4)	
RB183	1-234-378-21	RES, NETWORK 10K (1005X4)	
RB184	1-234-378-21	RES, NETWORK 10K (1005X4)	
RB185	1-234-378-21	RES, NETWORK 10K (1005X4)	
RB186	1-234-378-21	RES, NETWORK 10K (1005X4)	
RB219	1-234-702-11	RES, NETWORK 68 (1005X4)	
RB220	1-234-702-11	RES, NETWORK 68 (1005X4)	
RB221	1-234-702-11	RES, NETWORK 68 (1005X4)	
RB222	1-234-702-11	RES, NETWORK 68 (1005X4)	
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)	

Ref. No.	Part No.	Description	Remarks
RB601	1-234-381-21	RES, NETWORK 100K (1005X4)	
RB602	1-234-378-21	RES, NETWORK 10K (1005X4)	
RB701	1-234-371-21	RES, NETWORK 47 (1005X4)	
RB702	1-234-371-21	RES, NETWORK 47 (1005X4)	
RB703	1-234-371-21	RES, NETWORK 47 (1005X4)	
		< VIBRATOR >	
X201	1-813-210-11	VIBRATOR, CRYSTAL (NX5032GA)	
X301	1-781-940-41	VIBRATOR, CRYSTAL (14.318MHz) (HX520:AEP3/HX725:AEP3/HX920/HX925)	
* X701	1-813-695-11	VIBRATOR, CRYSTAL (24.576MHz)	
X801	1-781-867-21	VIBRATOR, CRYSTAL (27MHz)	
⚠	1-468-961-11	POWER SUPPLY BLOCK ******************	
		<CAPACITOR>	
⚠ C101		METALLIZED 0.1uF 250V	
⚠ C102		METALLIZED 0.1uF 250V	
⚠ C103		CERAMIC 100pF 250V	
⚠ C104		CERAMIC 100pF 250V	
⚠ C112		CERAMIC 680pF 250V	
⚠ C114		CERAMIC 680pF 250V	
		<FUSE>	
⚠ F101		FUSE T3.15A/250V	
⚠ P201		CHIP,FUSE 3.15A	
⚠ P301		CHIP,FUSE 2A	
⚠ P502		CHIP,FUSE 2A	
⚠ P601		CHIP,FUSE 2A	
⚠ P602		CHIP,FUSE 5A	
		<CONNECTOR>	
⚠ CN101		AC-INLET	
		<COIL>	
⚠ L101		LINE FILTER 0.4A	
⚠ L102		LINE FILTER 0.4A	
		<RESISTOR>	
⚠ R101		CARBON 220 1/2W	
		<VARISTOR>	
⚠ Z101		VARISTOR S10K300	
		<PHOTO COUPLER>	
⚠ PC101		PHOTO COUPLER PS2561AL	
		<TRANSFORMER>	
⚠ T101		SWITCHING TRANSFORMER	

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
		ACCESSORY & 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