

# RDR-GX7

RMT-D203A

## SERVICE MANUAL

US Model  
Canadian Model

**Self Diagnosis**  
Supported model



### SPECIFICATIONS

#### System

- Laser  
Semiconductor laser
- Format  
NTSC
- Channel coverage  
VHF: 2 to 13  
UHF: 14 to 69  
CATV: A-8 to A-1, A to W, W+1 to W+84
- Video reception  
Frequency synthesizer system
- Audio reception  
Split carrier system
- Antenna  
75-ohm antenna terminal for VHF/UHF
- Timer  
Clock: Quartz locked  
Timer indication: 12-hour cycle (digital)  
Power back-up duration: 1 hour
- Video recording format  
MPEG Video
- Audio recording format/applicable bit rate  
Dolby Digital/2 ch, 256 kbps

#### Audio characteristics (Playback)

- Frequency response  
DVD (PCM 96 kHz): 4 Hz to 44 kHz ( $\pm 1.0$  dB)/DVD (PCM 48 kHz): 4 Hz to 22 kHz ( $\pm 0.5$  dB)/CD: 4 Hz to 20 kHz ( $\pm 0.5$  dB)
- Signal-to-noise ratio (S/N ratio)  
DVD: 115 dB (LINE OUT (AUDIO L/R) 2 jacks only)
- Harmonic distortion  
DVD: 0.002 %
- Dynamic range  
DVD: 110 dB/CD: 100 dB
- Wow and flutter  
DVD: Less than detected value (0.001% W PEAK)

#### Audio characteristics (Recording/ Playback)

- Frequency response  
DVD (Dolby Digital 48 kHz): 10 Hz-20 kHz ( $\pm 1.0$  dB)
- Signal-to-noise ratio  
DVD: 96 dB
- Harmonic distortion  
DVD: 0.004 %
- Dynamic range  
DVD: 96 dB
- The signals from LINE OUT (AUDIO L/R) jack are measured. When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack are converted to 48 kHz sampling frequency.

#### Inputs and outputs

- LINE OUT 1/2 (AUDIO)  
Phono jack  
Output level: 2 Vrms  
Load impedance: 10 kilohms
- (VIDEO)  
Phono jack  
Output level: 1.0 Vp-p
- (S VIDEO)  
4-pin mini DIN  
Output level: Y: 1.0 Vp-p, C: 0.286 Vp-p (NTSC)
- LINE IN 1/2/3 (AUDIO)  
Phono jack  
Input level: 2 Vrms  
Input impedance: more than 22 kilohms
- (VIDEO)  
Phono jack  
Input level: 1.0 Vp-p

- (S VIDEO)  
4-pin mini DIN  
Input level: Y: 1.0 Vp-p, C: 0.286 Vp-p (NTSC)
- DV IN  
4-pin  
i.LINK S100
- DIGITAL OUT (OPTICAL)  
Optical output jack  
Output level:  $-18$  dBm (wave length: 660 nm)
- DIGITAL OUT (COAXIAL)  
Phono jack  
Output level: 0.5 Vp-p  
Load impedance: 75 ohms
- COMPONENT VIDEO OUT (Y, Pb, Pr)  
Phono jack/Y: 1.0 Vp-p/Pb, Pr: interlace\* = 0.648 Vp-p, progressive or interlace\*\* = 0.7 Vp-p
- \* Component Black Level is On
- \*\* Component Black Level is Off
- CONTROL S IN  
Mini jack

#### General

- Power requirements  
120 V AC, 60 Hz
- Power consumption  
43 W
- Dimensions (approx.)  
430 × 89 × 381 mm  
(17 × 3 <sup>5</sup>/<sub>8</sub> × 15 in.) (width/height/depth) incl. projecting parts
- Mass (approx.)  
5.6 kg (11.16 lb)
- Operating temperature  
5 °C to 35 °C (41 °F to 95 °F)
- Operating humidity  
25 % to 80 %

- Supplied accessories  
Audio/video cord (1)  
Power cord (1)  
Antenna cable (1)  
Remote commander (remote) (1)  
Size AA(R6) batteries (2)

Specifications and design are subject to change without notice.

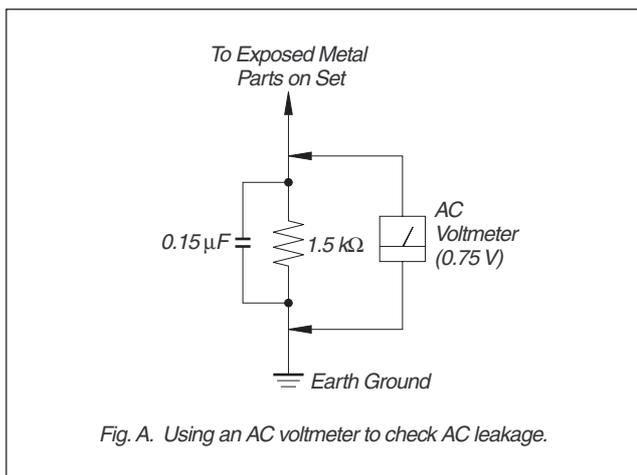
## DVD RECORDER

# SONY®

## SAFETY CHECK-OUT

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

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



### WARNING!!

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

### CAUTION:

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

### CAUTION

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

### SAFETY-RELATED COMPONENT WARNING!!

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

### LEAKAGE TEST

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

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

### Unleaded solder

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

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



### : LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.

Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.

Soldering irons using a temperature regulator should be set to about 350°C.

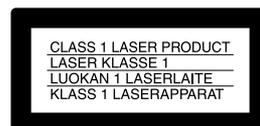
Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!

- Strong viscosity

Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.

- Usable with ordinary solder

It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.



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

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

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## SERVICE NOTE

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

1. Pull out the power cord.
2. Remove the top case.
3. Prepare a hexagonal wrench or L-shaped stiff wire. (See Fig.1.1)
4. Insert a hexagonal wrench (or hard wire) into a hole on the side of the DVD drive in the right angle. (See Fig. 1-1. and 1-2.)  
**Note:** If a hexagonal wrench (or hard wire) is not inserted in at the right angle, belt may be damaged.
5. Press the rack to open the tray a little.
6. Pull out the tray slowly and gently.

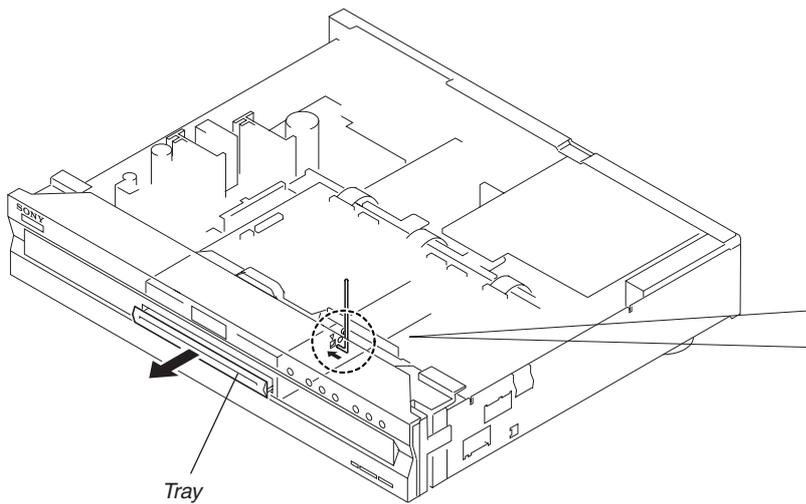


Fig. 1-1

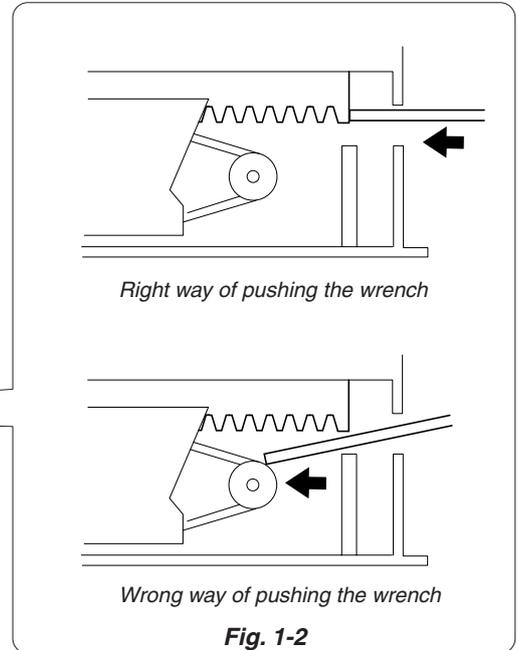


Fig. 1-2

### 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

# SECTION 1 GENERAL

This section is extracted from instruction manual. (RDR-GX7 : 3-081-195-71)

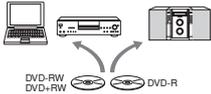
## Features

This recorder can play DVDs or CDs, record on DVD-R, DVD-RWs or DVD+RWs, and by using a variety of editing functions, you can enjoy editing recorded programs and other images.

### Recording

#### Dual RW compatible (page 35)

The recorder is compatible with rewritable disc types, DVD-RW and DVD+RW, and the write-once type, DVD-R. These available disc types accommodate a wide range of uses, such as recording programs and creating personal video libraries. These discs can be played back on a wide variety of other DVD equipment.



#### Various recording/timer recording functions (page 35)

In addition to the usual recording functions, such as Timer Recording and VCR Plus+, Synchro Rec allows synchronized recording with a set top box or similar device.

#### Automatic searching for recording space (page 37)

The recorder automatically searches for available blank space on the disc after you press the Rec button. No searching is required on your part – a feature possible only with a DVD recorder.

#### Adjustments for both recording and playback picture (page 46, 60)

The recorder allows you to adjust the picture quality of input sources, such as a VCR, which can then be recorded on a DVD. For instance, if you want to create an archive of your VHS tapes, you can adjust the recording picture quality to compensate for the quality of the tapes. Various picture quality adjustments are also available for DVD-Video software playback.

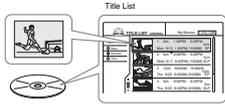
## Playback

### Easy playback with the Title List menu (page 53)

The recorder will display all of the titles you recorded on a disc in a list display, called the "Title List." By selecting a title from the Title List menu, you can easily start playing or editing the disc. Moreover, you can have the recorder show the title's contents using thumbnail images.

The recorder also automatically takes program label information from the XDS (Extended Data Service)\* and displays it as the title name.

\*not available in some areas



### TV Virtual Surround Settings, "TVS" (page 58)

Using only your TV's stereo speakers, the recorder is capable of reproducing dynamic surround sound from DVD-Video software's multi-channel audio signals. There are four surround modes to choose from.

### Editing a disc

#### Playlist edit (DVD-RW in VR mode only) (page 67)

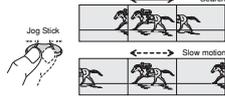
You can edit not only the recorded original title, but also perform advanced edit functions by creating a Playlist on the same disc. Since a Playlist does not require much disc space, you can create numerous Playlist titles. A Playlist edit can be redone as many times as you like, as the original title remains unchanged.

#### Chapter Marking function (page 67)

On DVD-RWs in VR mode, you can manually insert chapter marks to divide a title into chapters which will enable you to quickly find specific scenes for playback or editing. For other disc types and recording formats, the recorder automatically creates chapter marks at specified intervals while recording.

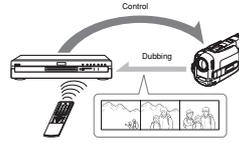
#### Quick Search function (page 52)

The remote has a Jog Stick for the recorder's main operations. You can search forward or backwards, or play at various speeds by using just your thumb. The feature helps you find scenes easily, which is especially useful for both playback and editing.



## DV Edit

Only one iLINK cable is required to transfer contents from a digital video camera to the DVD recorder. Since the recorder controls the digital video camera, dubbing and editing are easy to perform.



### One Touch Dubbing function (page 78)

One press on the ONE TOUCH DUB button is enough to complete the procedure. The recorder controls the digital video camera from start to finish – from playing the DV/Digital8 format tape to stop and rewind. The entire tape contents are dubbed to a DVD in the process.

### Program Edit (page 79)

This function allows you to select scenes on a DV/Digital8 format tape and save them on recordable DVDs, including non-rewritable DVD-Rs. The recorder controls the digital video camera to record the contents of a DV/Digital8 format tape to the disc as programmed. The recorder will remember which scenes you selected and saves this information as a program. You can call up a program at any time and make additional copies of the program to DVDs.

### Advanced Program Edit (page 81)

This function takes advantage of a DVD's random access capabilities to enable fast and flexible editing. The recorder copies the entire contents of a DV/Digital8 format tape to a DVD-RW in VR mode, whereupon the contents are automatically divided into chapters. The chapters are displayed as scenes in a scene list where you can instantly delete or rearrange the scenes at will. The recorder remembers which scenes you selected, and saves this information as a program. You can call up a program at any time and make additional copies of the program to a DVD.

### Auto Scene Chaptering (DVD-RW in VR mode only) (page 78, 79, 81)

While copying a DV/Digital8 format tape to a DVD-RW, the recorder automatically inserts chapter marks at each point where you started recording on your digital video camera. This enables you to quickly find the scenes you want during playback and editing.

## About This Manual

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 meanings of the icons used in this manual are described below.

Icon	Meaning
	Functions available for DVD VIDEOs or DVD-Rs
	Functions available for DVD-RWs formatted in VR mode on this recorder
	Functions available for DVD-RWs formatted in Video mode on this recorder
	Functions available for DVD-Rs
	Functions available for music CDs or CD-Rs/CD-RWs in music CD format

### Notes

- The on-screen display illustrations used in this manual may not match the graphics displayed on your TV screen.
- The explanations regarding discs in this manual refer to discs created on this recorder. The explanations do not apply to discs that are created on other recorders and played back on this recorder.

## DVD Recorder Basics

"What can I expect from DVD recording?" is a natural question for anyone new to the experience. This section explains the basic steps involved with DVD recording.

### Step 1: Select the disc type

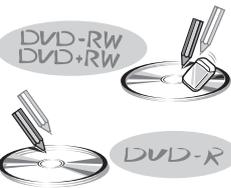
Unlike a video tape which is sold by length, such as 60 min. or 120 min., recordable DVDs are sold by type. Select the disc type by following the chart on the back cover, as each type has different features.

This recorder can record on the following type of discs.



When you want to record repeatedly on the same disc, or when you want to edit the disc after recording, select either the rewritable DVD-RW or DVD+RW type disc.

When you want to save recordings without any alteration, a non-rewritable DVD-R can be your choice.



**Note**  
There are other differences besides just being rewritable/non-rewritable.

See "Quick Guide to DVD Disc Types" on the back cover to select a disc most suitable for your needs.

### Step 2: Format the disc to start recording

Insert the disc in the recorder. Unlike a VCR, the recorder automatically starts formatting when an unused disc is inserted. This is necessary to prepare the disc for recording.

#### When using a DVD-RW

This type of disc can be formatted in either DVD Video format (Video mode) or DVD Video Recording format (VR mode). Video mode discs can be played back on a variety of other DVD equipment. VR mode discs allow for more varied editing.

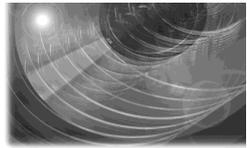
#### When using a DVD+RW

These discs will be formatted in DVD+RW Video format. This type of disc can be played back on a variety of other DVD equipment.

**When using a DVD-R**  
These discs will be formatted in DVD-Video format. This type of disc can be played back on a variety of other DVD equipment.

- Notes**
- You cannot mix two formats in one DVD-RW.
  - You can change a DVD-RW's format to the other format. However, the disc's contents will be lost when reformatting.
  - Not all discs can be played on other DVD equipment.

**When formatting is complete, you are ready to record on the disc.**



### Step 3: Digital Recording

Record a program. When using the timer, you'll find familiar, convenient features as found on conventional VCRs, such as VCR Plus+. You can also dub and edit the contents of connected video equipment such as a digital video camera.

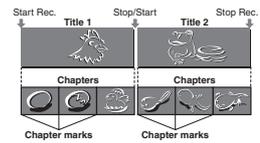


### Step 4: Playing the recorded contents

You can select the title you want to play from a displayed menu, and immediately start playback. Recorded contents are more accessible on a disc than on a tape, the procedure is simple, and unlike conventional VCRs, no rewinding is necessary!

#### What are titles and chapters?

DVD contents consist of sections, called titles, and smaller sub-sections called chapters. On this recorder, a title is created between the points where you start and stop a recording. Chapters are created automatically at specified intervals, or can be created manually (DVD-RWs in VR mode only).



Go to the next page.

### Step 5: Editing the recorded disc

You will find editing discs a lot easier than a conventional tape, and the recorder offers numerous edit functions, possible only with DVDs.

**Quick and easy edits on the displayed menu**  
Editing is performed by simply selecting titles and scenes from the displayed menus.

#### Protection of individual titles

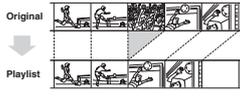
With conventional VCRs, you had to protect an entire tape to save the recordings from erasure or alteration. This recorder allows you to individually protect recorded titles (except for Playlist titles).

#### Edit and save on a single disc

**– Playlist edit (DVD-RWs in VR mode only)**  
To edit a conventional tape without affecting the original recording, you had to connect another VCR, copy the master tape using the two VCRs and one more tape, and start editing the copied tape.

With this recorder, you can create a Playlist (playback information) on the same disc, and edit the Playlist without changing the original recording(s). A Playlist does not take up much disc space, and all you need is one recorder and one disc.

Example: You have recorded a few football games on a DVD-RW in VR mode. You want to save the original recording, but you also want to create a digest by putting the goal scenes together. In this case, you can create a Playlist by selecting just the goal scenes, leaving the original recording as it is.



You've got your own DVD!



### Playing on other DVD equipment

For your DVD to play on other equipment, finalizing may be necessary in some cases. If so, finish up all your editing and recording first, and then finalize the disc.

#### When using a DVD-RW in VR mode

Although finalizing is generally unnecessary when playing the disc on VR mode compatible equipment, playback on some equipment requires a finalized disc. You can still edit and record on the disc even after finalizing.

#### When using a DVD-RW

The recorder automatically finalizes a disc before ejecting it. Finalizing in this case still allows you to further edit or record on the disc.

#### When using a DVD-RW in Video mode

The disc needs to be finalized first to enable playback on anything other than this recorder. No more editing or recording can be made on the disc once it has been finalized. To enable recording on the disc again, you will need to format it again. (Reformatting will erase all previous contents.)

#### When using a DVD-R

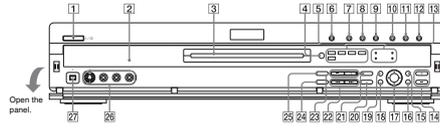
You will need to finalize the disc to play it on equipment other than this recorder. You cannot edit or record on the disc once it has been finalized.

## Guide to Parts and Controls

For more information, see the pages in parentheses.

### Front panel

Buttons on the recorder have the same function as the buttons on the remote if they have the same or similar names.

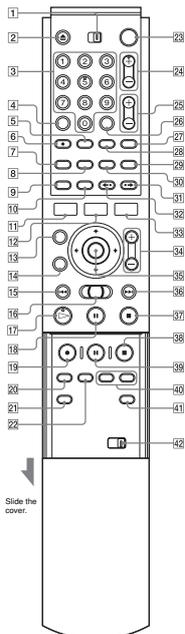


- 1 **⏻ (on/standby) button/indicator (22, 39)**  
Turns the recorder on and off. Lights up in green when the power is on.
- 2 **Front panel display (14, 57)**  
Displays the playing status, title/chapter/time, etc.
- 3 **Disc tray (38)**  
Opens to accept a disc.
- 4 **Ⓜ (remote sensor) (22)**  
Accepts the remote control signal.
- 5 **Disc type indicators**  
Lights up to indicate the disc/format type of the current disc.
- 6 **⏪ (open/close) button (38)**  
Opens or closes the disc tray.
- 7 **▶ (play) button/indicator (50)**  
Plays a disc.
- 8 **⏸ (pause) button/indicator (52)**  
Pauses playing a disc.
- 9 **⏹ (stop) button (51)**  
Stops playing a disc.
- 10 **⏻ (REC) button/indicator (38)**  
Starts recording.
- 11 **⏸ (REC PAUSE) button/indicator (39)**  
Pauses recording.
- 12 **■ (REC STOP) button (39)**  
Stops recording.
- 13 **⏻ (SYNCHRO) REC indicator (47)**  
Lights up when the Synchro Rec function is set to on.
- 14 **TIMER REC indicator (40)**  
Lights up when a timer recording is set.
- 15 **FINALIZED indicator (73)**  
Lights up when an inserted disc has been finalized.
- 16 **PROGRESSIVE indicator (51)**  
Lights up when outputting progressive signals.
- 17 **ZOOM +/- buttons (32)**  
Switches the information displayed in the Title List menu.
- 18 **CURSOR MODE button (32)**  
Switches the cursor/page mode in the Title List, etc.
- 19 **TOOLS button (32)**  
Displays the TOOLS menu.
- 20 **⏪/⏩/↔/ENTER button (33)**  
Selects items or settings.
- 21 **RETURN button (33)**  
Returns to the previously selected display, etc.
- 22 **SYSTEM MENU button (31)**  
Displays the System Menu on the TV screen.
- 23 **ONE TOUCH DUB button (78)**  
Records the contents of a DV/Digital8 format tape with a single touch of the button.
- 24 **REC MODE button (38)**  
Selects the recording mode.
- 25 **⏪/⏩/↔/ENTER buttons (52)**  
Goes to the next title/chapter/track, or goes back to the previous title/chapter/track.
- 26 **CHANNEL +/- buttons (38)**  
Selects the channel or input line.
- 27 **PROGRESSIVE button (51)**  
Switches the output signal, progressive or interface.
- 28 **INPUT SELECT button (38, 75, 88)**  
Selects equipment connected to the line inputs.
- 29 **LINE 2 IN (S VIDEO/VIDEO/AUDIO L/R) jacks (88)**  
Connects external equipment.
- 30 **DV IN jack (76)**  
Connects digital equipment with a DV jack.

→ continued

### Remote

Buttons on the remote have the same function as the buttons on the recorder if they have the same or similar names. Buttons with an orange dot next to them can be used with your TV when the TV/DVD switch is set to TV.

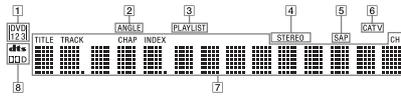


- 1 **TV/DVD switch (26)**  
Switches the remote control to TV or DVD.
- 2 **⏪ (OPEN/CLOSE) button (38)**  
Opens or closes the disc tray. Note that it may take a few seconds for the disc tray to open after you have recorded or edited a disc.
- 3 **Number buttons (38, 44)**  
Select a number such as a channel or a title number. The number 5 button has a tactile dot.\*
- 4 **CLEAR button (44)**  
Cancels an entered number when used with this recorder.
- 5 **SUBTITLE button (60)**  
Changes the subtitles while playing a disc.
- 6 **AUDIO button (57)**  
Changes the sound while playing a disc. The button has a tactile dot.\*
- 7 **TIMER button (40, 44)**  
Displays the Timer programming menu on the TV screen.
- 8 **TOP MENU button (51)**  
Displays the disc's menu on the TV screen.
- 9 **DISPLAY button (40, 56)**  
Displays disc information or playing/recording status on the TV screen.
- 10 **TIME/TEXT button (56)**  
Displays the time information of the disc.
- 11 **SYSTEM MENU button (31)**  
Displays the System Menu on the TV screen.
- 12 **TITLE LIST button (32, 53, 64)**  
Displays the Title List menu on the TV screen.
- 13 **CURSOR MODE button (32)**  
Switches the cursor/page mode in the Title List, etc.
- 14 **RETURN button (33)**  
Returns to the previously selected display, etc.
- 15 **⏪ (PREV) button (52)**  
Goes back to the previous title/chapter/track.
- 16 **⏪/⏩/↔ (search) Jog Slick (52)**  
Searches fast-forward or reverses a scene (while playing a disc), or plays a disc in slow motion or frame by frame (in the pause mode).
- 17 **▶ (PLAY) button (50)**  
Plays a disc. The button has a tactile dot.\*
- 18 **⏸ (PAUSE) button (52)**  
Pauses playing a disc.
- 19 **⏻ (REC) button (38)**  
Starts recording.
- 20 **REC MODE button (38)**  
Selects the recording mode.
- 21 **INPUT SELECT button (38, 75, 88)**  
Selects equipment connected to the line inputs.
- 22 **SYNCHRO REC button (47)**  
Synchronizes the recorder and the timer recording set on the connected external equipment.
- 23 **⏻ (on/standby) button (38)**  
Turns the recorder on and off.
- 24 **CH (channel) +/- buttons (38)**  
Selects the channel or input line.
- 25 **VOL (volume) +/- buttons (26)**  
Adjusts the volume of your TV or AV amplifier (receiver).
- 26 **SET button (34)**  
Use to enter the number selected with the number buttons [3].
- 27 **TV/VIDEO button (26)**  
Switches your TV's input source.
- 28 **ANGLE button (59)**  
Changes the angles when playing a DVD VIDEO.
- 29 **WIDE MODE button (26)**  
Changes the wide mode settings of your TV.
- 30 **MENU button (51)**  
Displays the disc's menu on the TV screen.
- 31 **↔ (INSTANT SEARCH) button (52)**  
Briefly fast forwards the current scene.
- 32 **⏪ (INSTANT REPLAY) button (52)**  
Replays the current scene.
- 33 **TOOLS button (32)**  
Displays the TOOLS menu.
- 34 **ZOOM +/- buttons (32)**  
Switches the information displayed in the Title List menu.
- 35 **⏪/⏩/↔/ENTER button (33)**  
Selects items or settings.
- 36 **⏩ (NEXT) button (52)**  
Goes to the next title/chapter/track.
- 37 **⏹ (STOP) button (51)**  
Stops playing a disc.
- 38 **■ (REC STOP) button (39)**  
Stops recording.
- 39 **⏸ (REC PAUSE) button (39)**  
Pauses recording.
- 40 **CHAPTER MARK/ERASE buttons (67)**  
Inserts/erases a chapter mark in the recorded title.
- 41 **SUR (surround) button (58)**  
Selects the surround mode.
- 42 **COMMAND MODE switch (DVD 1.2.3) (28)**  
Switches the command mode for this recorder. Match the switch to the same command mode set in the Options Setup (page 99).

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

→ continued

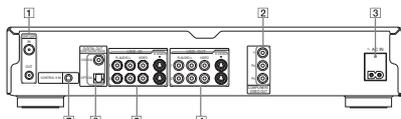
## Front panel display



- 1 Command mode indicator (28, 99)**  
Indicates the selected remote command mode.
- 2 ANGLE indicator (59)**  
Lights up when you can change the angle.
- 3 PLAYLIST indicator (32)**  
Lights up when the Playlist is selected.
- 4 STEREO indicators (39)**  
Lights up when receiving a stereo program.
- 5 SAP (Second Audio Program) indicator (39)**  
Lights up when receiving a SAP signal.
- 6 CATV indicator**  
Lights up when receiving a Cable TV programs.
- 7 Displays the following (57):**
  - Playing time/remaining time
  - Current title/chapter/track/index number
  - Recording time
  - Clock
  - Channel
- 8 Audio signal indicators (58)**  
Lights up when playing Dolby Digital or DTS sound tracks.

**Hint**  
You can turn off the front panel display by setting "Dimmer" to "Display Off" in Options Setup (page 99).

## Rear panel



- 1 VHF/UHF IN/OUT jacks (16)**  
Connects antenna cables.
- 2 COMPONENT VIDEO OUT (Y, Pb, Pr) jacks (18)**  
Connects equipment having component video input jacks.
- 3 AC IN terminal (22)**  
Connects the power cord.
- 4 LINE OUT (S VIDEO/VIDEO/AUDIO L/R) 1/2 jacks (18, 20)**  
Connects the input of external equipment using an audio/video or S VIDEO cord.
- 5 LINE IN (S VIDEO/VIDEO/AUDIO L/R) 1/3 jacks (29)**  
Connects the output of external equipment using an audio/video or S VIDEO cord.
- 6 DIGITAL OUT (COAXIAL/OPTICAL) jacks (20)**  
Connects an amplifier (receiver) having a digital input jack.
- 7 CONTROL S IN jack (18)**  
Connects equipment having a CONTROL S jack.

# Basic Hookups and Settings

- Quick Overview ..... page 15
- Step 1: Unpacking ..... page 16
- Step 2: Connecting the Antenna Cable ..... page 16
- Step 3: Connecting the Video Cords ..... page 18
- Step 4: Connecting the Audio Cords ..... page 19
- Step 5: Connecting the Power Cord ..... page 22
- Step 6: Preparing the Remote ..... page 22
- Step 7: Easy Setup ..... page 22
- Setting up the VCR Plus<sup>®</sup> System ..... page 25
- Setting Up the Remote ..... page 26
- Connecting a VCR or Similar Recording Device to the LINE Jacks ..... page 29
- Connecting to a Satellite Receiver or a Cable Box ..... page 30

## Quick Overview

A quick overview presented in this guide will give you enough information to start using the recorder.

- Step 1: Unpacking
- Step 2: Connecting the Antenna Cable
- Step 3: Connecting the Video Cords
- Step 4: Connecting the Audio Cords
- Step 5: Connecting the Power Cord
- Step 6: Preparing the Remote
- Step 7: Easy Setup

- Notes**
- You cannot connect this recorder to a TV that does not have a video input jack.
  - Be sure to disconnect the power cord of each component before connecting.

## Step 1: Unpacking

- Check that you have the following items:
- Audio/video cord (pinplug × 3 ↔ pinplug × 3) (1)
  - Power cord (1)
  - Antenna cable (1)
  - Remote commander (remote) (1)
  - Size AA (R6) batteries (2)

## Step 2: Connecting the Antenna Cable

Select one of the following antenna hookups that best suits you below. Do not connect the power cord until you reach "Step 5: Connecting the Power Cord" (page 22).

If you have	Use
Antenna only (no cable TV), or cable without cable box	Hookup 1 (page 16)
Cable box with many scrambled channels	Hookup 2 (page 17)
Cable box with a few scrambled channels	Hookup 3 (page 17)

### Note to CATV system installer (in USA)

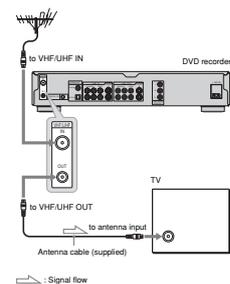
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

### Notes

- If your antenna is a flat cable (300-ohm twin lead cable), use an external antenna connector (not supplied) to connect the antenna to the recorder.
- If you have separate cables for VHF and UHF antennas, use a UHF/VHF band mixer (not supplied) to connect the antenna to the recorder.

### Hookup 1: Antenna only (no cable TV), or cable without cable box

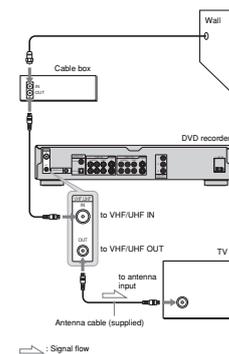
Use this hookup if you are using a VHF/UHF antenna or separate VHF and UHF antennas. Also use this hookup if you watch cable channels without cable box. With this hookup, you can record any non-scrambled channel by selecting the channel on the recorder.



Signal flow

### Hookup 2: Connecting a cable box with many scrambled channels

Use this hookup if your cable system scrambles all or most channels. With this hookup, you can record any unscrambled channel by selecting the channel on the cable box. Be sure that the cable box is turned on. You cannot record one channel while watching another channel.



Signal flow

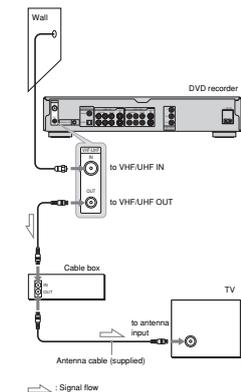
**Hint**  
If the cable box has the audio/video output jacks, connect them to the LINE IN 1 or 3 jacks of this recorder. You can record unscrambled channels by setting the recorder's input to "L1" or "L3".

### Note

When connecting the cable box with the antenna hookup only, set the recorder to the channel where the signal from the cable box appears on the TV screen.

### Hookup 3: Connecting a cable box with only a few scrambled channels

Use this hookup if your cable system scrambles only a few channels. With this hookup, you can record any non-scrambled channel by selecting the channel on the recorder. You cannot record scrambled channels that require a cable box.



Signal flow

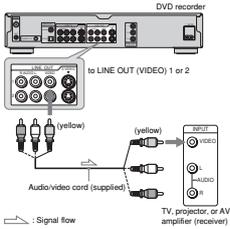
### Step 3: Connecting the Video Cords

Connect this recorder to your TV monitor, projector, or AV amplifier (receiver) using a video cord. 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. Audio connections are explained in "Step 4: Connecting the Audio Cords" (page 19).

**If you are connecting to a VCR**  
Connect your VCR to the LINE IN (VIDEO) jack on the recorder (page 29).

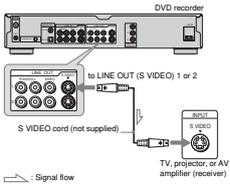
#### A Connecting to a video input jack

Connect the yellow plug of the audio/video cord (supplied) to the yellow (video) jacks. You will enjoy standard quality images. Use the red and white plugs to connect to the audio input jacks (page 20).



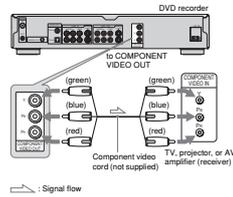
#### B Connecting to an S VIDEO input jack

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



### C Connecting to component video input jacks (Y, Pb, Pr)

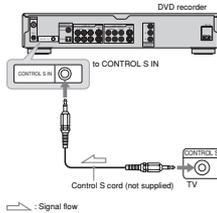
Connect the component via the COMPONENT VIDEO OUT jacks using a component video cord (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate color reproduction and high quality images. If your TV accepts progressive (480p) format signals, you must use this connection and then press PROGRESSIVE on the front panel to accept progressive video signals. See "Using the PROGRESSIVE button" (page 51) for more information.



**When connecting to a standard 4:3 screen TV**  
Depending on the disc, the image may not fit your TV screen. To change the aspect ratio, see page 94.

#### If your TV has a CONTROL S jack

You can control the recorder by operating the remote toward the TV. This feature is convenient when you placed the recorder and the TV away from each other.  
After connecting the recorder to other equipment in pattern **A**, **B**, or **C** above, connect the CONTROL S IN jack to your TV's CONTROL S (OUT) jack using a control S cord (not supplied). Refer to the instructions supplied with the TV to be connected.



### Step 4: Connecting the Audio Cords

Select the connection that best suits your system. Be sure to read the instructions for the components you wish to connect.

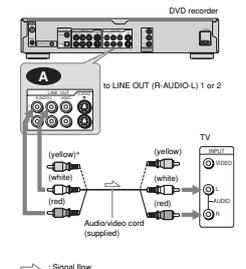
Connection	Your setup
<b>A</b> TV • Surround effects: Dynamic, Wide	
<b>B</b> Stereo amplifier (receiver) and two speakers • Surround effects: Standard MD deck/DAT deck • Surround effects: None	
<b>C</b> AV amplifier (receiver) having a Dolby Surround (Pro Logic) decoder <sup>1</sup> and 3 to 6 speakers • Surround effects: Dolby Surround (Pro Logic)	
<b>D</b> AV amplifier (receiver) with a digital input jack having a Dolby Digital or DTS <sup>2</sup> decoder and 6 speakers • Surround effects: Dolby Digital (5.1ch), DTS (5.1ch)	

<sup>1</sup> Manufactured under license from Dolby laboratories.  
<sup>2</sup> "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories.  
<sup>3</sup> "DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

→ continued

#### A Connecting to your TV

This connection will use your TV's speakers for sound.



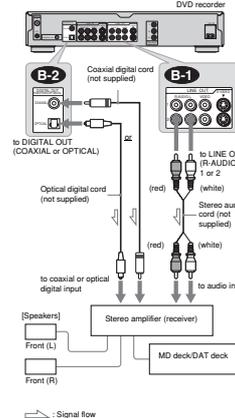
\* The yellow plug is used for video signals (page 18).

**Hint**  
When connecting to a monaural TV, use a stereo-mono conversion cord (not supplied). Connect the LINE OUT (R-AUDIO-L) 1/2 jacks to the TV's audio input jack.

**Note**  
Do not connect the LINE IN (AUDIO L/R) jacks to your TV's audio output jacks at the same time.

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

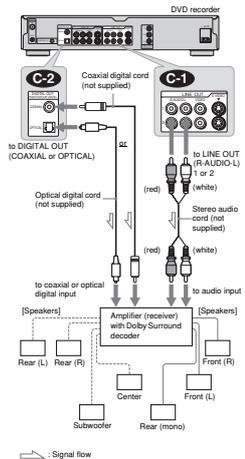
If your stereo amplifier (receiver) only has audio input jacks L and R, use **B-1**. If your amplifier (receiver) has a digital input jack, or when connecting to an MD deck or DAT deck, use **B-2**. In this case, you can also connect the recorder directly to the MD deck or DAT deck without using your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



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

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

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

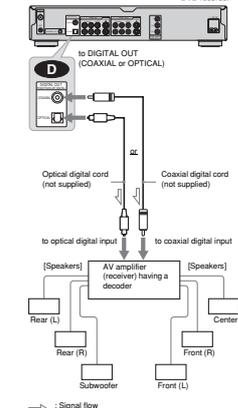


**Hint**  
For correct speaker location, see the operating instructions of the connected components.

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

#### D Connecting to an AV amplifier (receiver) with a digital input jack and 3 to 6 speakers

If your AV amplifier (receiver) has a Dolby Digital or DTS decoder and a digital input jack, use this connection. Note that the surround sound effects of this recorder cannot be used with this connection.

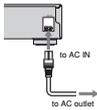


**Hint**  
For correct speaker location, see the operating instructions of the connected components.

**Note**  
After you have completed the connection, be sure to set "Dolby Digital" to "Dolby Digital" and "DTS" to "On" under "Audio" in Easy Setup (page 24). Otherwise, no sound or a loud noise will come from your speakers.

## Step 5: Connecting the Power Cord

Connect the supplied power cord to the AC IN terminal of the recorder. Then plug the recorder and TV power cords into an AC outlet. After you connect the power cord, 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 (pages 29 to 30), be sure to connect the power cord after all connections are complete.



## Step 6: Preparing the Remote

You can control the recorder using the supplied remote. Insert two Size AA (R6) 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 with your other Sony DVD recorder or player, change the command mode number for this recorder. For details, see page 28.
- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct sunlight or a lighting apparatus. Doing so may cause a malfunction.
- If you do not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

## Step 7: Easy Setup

Follow the steps below to make the minimum number of basic adjustments for using the recorder. If you do not complete Easy Setup, it will appear each time you turn on your recorder. Make the settings below in the following order.

### OSD Language Setup



### Clock Setup



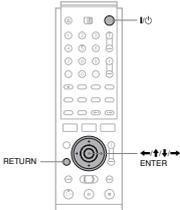
### Tuner and Channel Setup



### TV Type Setup



### Audio Connection Setup

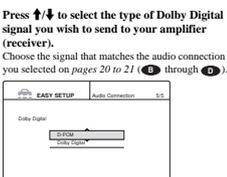


- Turn on the TV.**
- Press I/O.**  
The recorder turns on and the power indicator on the front panel lights up in green.
- Switch the input selector on your TV so that the signal from the recorder appears on your TV screen.**  
\*Initial settings necessary to operate the DVD recorder will be made. You can change them later using Setup. If this message does not appear, select "Easy Setup" from "SETUP" in the System Menu to run Easy Setup. For details, see "Settings and Adjustments" on page 90.

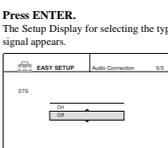
- Press ENTER.**  
The Setup Display for selecting the type of jack used to connect to your amplifier (receiver) appears.



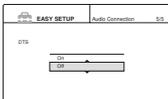
- Press to select the type of jack (if any) you are using to connect to an amplifier (receiver), then press ENTER.**  
Choose the item that matches the audio connection you selected on pages 20 to 21 ( through ).



- Press to select the type of Dolby Digital signal you wish to send to your amplifier (receiver).**  
Choose the signal that matches the audio connection you selected on pages 20 to 21 ( through ).



- Press ENTER.**  
The Setup Display for selecting the type of DTS signal appears.



- Press to select whether or not you wish to send a DTS signal to your amplifier (receiver) and press ENTER.**  
Choose the item that matches the audio connection you selected on pages 20 to 21 ( through ).

- Press ENTER when "Finish" appears.**  
Easy Setup is finished. All connections and setup operations are complete.



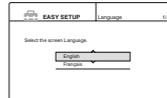
### To return to the previous step

Press RETURN.  
**Hint**  
If you want to run Easy Setup again, select "Easy Setup" in the Setup Display (page 100).

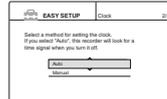
### Notes

- If there are only a few channels in your area that carry time signals, setting the clock automatically may take up to about 20 minutes after the recorder turns off. If nothing happens even after you wait about 20 minutes, set the clock manually in "Clock" of "Settings" (page 93).
- If you use the antenna connection Hookup 2 (page 17), make sure you leave the cable box on.
- To record TV programs using the timer, you must set the clock accurately.

- Press ENTER.**  
The Setup Display for selecting the language used in the on-screen display appears.



- Press to select a language, then press ENTER.**  
The Setup Display for clock setting appears.

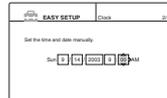


- Press to select the item that matches the antenna connection you selected on page 16 (Hookup 1, 2, or 3).**

◆ Hookup 1 and 3  
Select "Auto," then press ENTER.  
The recorder automatically sets the clock by searching for a channel that carries a time signal and sets your time zone and Daylight Saving Time (if applicable).

To activate the Auto Clock function, turn off the recorder after finishing Easy Setup.  
If your clock is set to the wrong time zone or Daylight Saving Time, you can adjust these settings (page 93).  
If your clock cannot be set automatically, set the clock manually (page 93).

- Hookup 2**  
Select "Manual," then press ENTER.  
Set the clock manually using and press ENTER.



Once the clock is set, the Tuner Preset display appears.

- Press to select the item that matches the antenna connection you selected on page 16 (Hookup 1, 2, or 3).**



- ◆ Hookup 1 and 2
- Antenna
- ◆ Hookup 3
- Cable

- Press ENTER.**  
The Tuner Preset function automatically starts searching for all of the receivable channels and presets them.



To set the channels manually, see page 92.

After the Tuner Preset is finished, the Setup Display for selecting the aspect ratio of the connected TV appears.



- Press to select the setting that matches your TV type.**

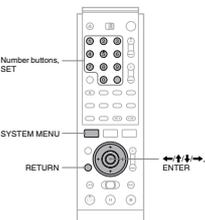
- ◆ If you have a 4:3 standard TV
- 4:3 Letter Box  
Displays a wide picture with bands on the upper and lower sections of the screen.
- 4:3 Pan Scan  
Automatically displays a wide picture on the entire screen and cuts off the sections that do not fit.
- ◆ If you have a wide-screen TV or a 4:3 standard TV with a wide-screen mode
- 16:9

For details, see "TV type" on page 94.

→ continued

## Setting Up the VCR Plus® System

Setting up your recorder involves coordinating the TV channel number (the number you turn on to your TV or recorder to watch a program) with the guide channel (the number that's assigned to that channel in your TV program guide).  
To find the guide channel numbers, look at the "Channel Line-up Chart" in the program guide for your area that features VCR PlusCode numbers.  
Use the Channel Line-up Chart to check that the guide channel numbers match the TV channel your recorder receives. If not, you need to coordinate these numbers using the following procedure. If the guide and TV channel numbers are the same, you can skip this procedure.



- Press SYSTEM MENU while the recorder is stopped.**  
The System Menu appears.



- Press to select "SETUP," then press ENTER.**  
The Setup Display appears.

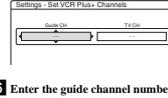


- Press to select "Settings," then press ENTER.**

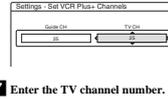
- Press to select "Set VCR Plus Channels," then press ENTER.**  
The display for setting VCR Plus channels appears.



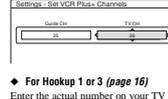
- Press to select "Guide CH - TV CH," then press ENTER.**



- Enter the guide channel number assigned in the program guide using the number buttons, then press SET.**



- Enter the TV channel number.**



- ◆ For Hookup 1 or 3 (page 16)  
Enter the actual number on your TV (and recorder) using the number buttons, then press SET.
- ◆ For Hookup 2 (page 17)  
Enter the cable box output channel (usually 2, 3, or 4) using the number buttons, then press SET.

- Repeat steps 5 to 7 for each channel number that does not match.**

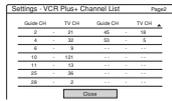
- Press SYSTEM MENU repeatedly to exit the menu.**

**To return to the previous step**  
Press RETURN.

→ continued

### To check the channel settings

When displaying the "Set VCR Plus+ Channels" menu, press **↑↓** to select "Channel List," then press ENTER. The display lists the channels whose guide channel number is not as same as the TV channel number.



To go to the next page, press **↓**.  
To return to the previous page, press **↑**.

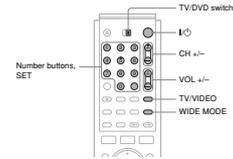
## Setting Up the Remote

You can control your TV with the supplied remote by adjusting the remote control's signal. If you connected the recorder to an AV amplifier (receiver), you can also control the volume with the supplied remote.

### Notes

- Depending on the connected unit, you may not be able to control your TV or AV amplifier (receiver) 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.

### Controlling TVs with the remote



- Slide the TV/DVD switch to TV.
- Hold down I/O.
- Enter your TV's manufacturer code (see "Code numbers of controllable TVs" below) using the number buttons.
- Release I/O.

When the TV/DVD switch is set to TV, the remote performs the following:

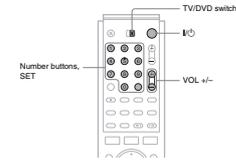
I/O	Turns your TV on or off
VOL +/-	Adjusts the volume of your TV
CH +/-	Selects the channel on your TV
WIDE MODE	Switches to or from the wide mode of a Sony wide-screen TV
TV/VIDEO	Switches your TV's input source
Number buttons and SET	Selects the channel on your TV

### 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	00 (default)
Akai	04
AOC	04
Centurion	12
Coronado	09
Curtis-Matthes	12
Dajron	12
Emerson	03, 04, 14
Fisher	11
General Electric	06, 10
Gold Star	03, 04, 17
Hitachi	02, 03
J.C.Penney	04, 12
JVC	09
KMC	03
Magnavox	03, 08, 12
Marantz	04, 13
MGA/Mitsubishi	04, 12, 13, 17
NEC	04, 12
Panasonic	06, 19
Philco	03, 04
Philips	08, 21
Pioneer	16
Portland	03
Proscan	10
Quasar	06, 18
Radio Shack	05, 14
RCA	04, 10
Sampo	12
Samsung	03, 12, 20
Sanyo	11, 14
Scott	12
Sears	07, 10, 11
Sharp	03, 05, 18
Sylvania	08, 12
Toshiba	03, 08, 14
Toshiba	07
Wards	03, 04, 12
Yox	12
Zenith	15

### Controlling the volume of your AV amplifier (receiver) with the remote



- Slide the TV/DVD switch to DVD.
  - Hold down I/O, and enter the manufacturer code (see the table below) for your AV amplifier (receiver) using the number buttons.
  - Release I/O.
- The VOL +/- buttons control the AV amplifier's volume.
- If you want to control the TV's volume: Slide the TV/DVD switch to TV.

**Hint**  
If you want to control the TV's volume even when the TV/DVD switch is set to DVD, repeat the steps above and enter the code number 90 (default).

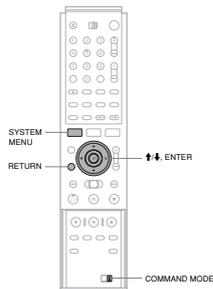
### Code numbers of controllable AV amplifiers (receivers)

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

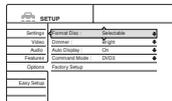
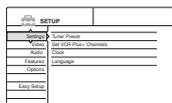
Manufacturer	Code number
Sony	80, 88, 89, 91
Denon	84, 85, 86
Kenwood	92, 93
Onkyo	81, 82, 83
Pioneer	99
Sansui	87
Technics	97, 98
Yamaha	94, 95, 96

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

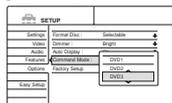
If the supplied remote interferes with your other Sony DVD recorder or player, set the command mode number for this recorder and the supplied remote to one that differs from the other Sony DVD recorder or player. The default command mode setting for this recorder and the supplied remote is DVD3.



- Press SYSTEM MENU. The System Menu appears.
- Press **↑↓** to select "SETUP," then press ENTER.
- Press **↑↓** to select "Options," then press ENTER.



- Press **↑↓** to select "Command Mode," then press ENTER.



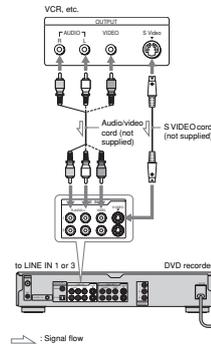
- Press **↑↓** to select the Command mode (DVD1, DVD2, or DVD3), then press ENTER.
- Slide the COMMAND MODE switch on the remote so it matches the mode you selected above.

To return to the previous step  
Press RETURN.

## Connecting a VCR or Similar Recording Device to the LINE Jacks

You can use this recorder as the source player or as the recording deck. After disconnecting the recorder's power cord from an AC outlet, connect a VCR or similar recording device to the LINE jacks of this recorder. Use the DV IN jack on the front panel if the equipment has a DV output jack (iLINK jack) (page 75). See also the instruction manual supplied with the connected equipment.

**How to connect to record on this recorder**  
Connect a VCR or similar recording device to the LINE IN jacks of this recorder. See "Recording from connected equipment" on page 88.

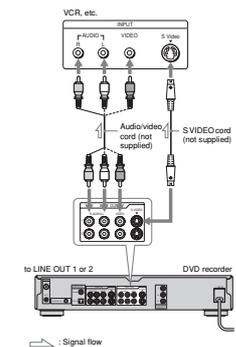


**Hint**  
You can also use the LINE 2 IN jacks on the front panel of the recorder (page 85).

- Do not connect the yellow LINE IN (VIDEO) jack when using an S VIDEO cord (not supplied).
- Pictures containing copy protection signals that prohibit any copying cannot be recorded.

### How to connect to record on other equipment

Connect a VCR or similar recording device to the LINE OUT jacks of this recorder.



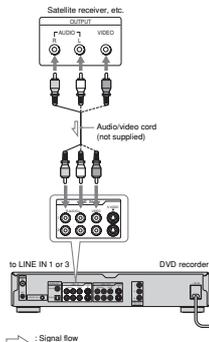
- If you pass the recorder signals via the VCR, you may not receive a clear image on the TV screen.



- Do not connect the yellow LINE IN (VIDEO) jack when using an S VIDEO cord (not supplied).

## Connecting to a Satellite Receiver or a Cable Box

Connect a satellite receiver, digital cable box, or a cable box to this recorder using the LINE IN 1/3 jacks. Disconnect the recorder's AC power cord from an AC outlet when connecting the box.  
To record on this recorder, see page 88. To use the Synchro Rec function, see below.



**If you want to use the Synchro Rec function**  
Connect a satellite receiver to LINE IN 1 jacks of this recorder. See "Recording from External Equipment with a Timer (Synchro Rec)" on page 47.  
Refer to your satellite receiver's instructions for more information.

### Notes

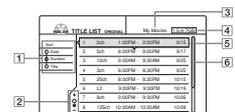
- Synchro Recording does not work with some boxes. For details, refer to the box's operating instructions.
- When connecting the LINE IN jacks to the cable box, be sure to also connect the recorder's antenna to the cable box.

## Title List

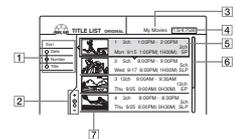
The recorder uses list displays for some operations. The most frequently used is the Title List menu.

The Title List menu appears when you press TITLE LIST or when you select "TITLE LIST" from the System Menu, and displays all of the titles on the disc.  
To show the list in greater details (zoom), press ZOOM+. To return to the previous display, press ZOOM-.

Standard Title List



"Zoomed" Title List



- 1 Sort buttons (page 54): Sorts the title order.
- 2 Zooming indicator (page 54): Shows the current zoom status.
- 3 Disc name (page 72)
- 4 Disc space (remainder/total)
- 5 Title information (page 54): Displays the title number, title name, and recording date.
- 6 Scroll bar: Appears when all the titles do not fit on the list. To view the hidden titles, press  $\updownarrow$ .
- 7 Title's thumbnail picture (page 54)

### Notes

- The letters that cannot be displayed are replaced with "??".
- The Title List does not appear when you play DVD VIDEOS, CDs, CD-Rs, or CD-RWs.
- The Title List may not appear for discs created on other DVD recorders.
- On this model, 1 GB is equivalent to 1 billion bytes.

## About the types of Title List menus

The appearance of the Title List menu differs according to the disc type and recording format.

• **For DVD-RWs, DVD-Rs, DVD-RWs (Video mode):**  
The Title List menu appears and displays the titles on the disc.

• **For DVD-RWs (VR mode):**  
The Title List (Original) or Title List (Playlist) menu appears and displays the Original or Playlist titles on the disc. The "PLAYLIST" indicator lights up on the front panel display when the Title List (Playlist) menu is selected.

**To switch the Title List menu for a DVD-RW (VR mode)**  
The recorder displays either the Original or Playlist Title List. Follow the steps below.

- 1 Press TITLE LIST.  
The Title List menu appears.
- 2 Press TOOLS.  
The TOOLS menu appears.
- 3 Press  $\updownarrow$  to select either "Original" or "Playlist," whichever is not displayed, then press ENTER.  
The display switches to the selected Title List menu.

**To scroll the list display by page (Page mode)**

Press CURSOR MODE while the list display is turned on. The display enters Page mode. Each time you press  $\updownarrow$ , the entire Title List changes to the next/previous page of titles.  
To return to the Cursor mode, press CURSOR MODE again.

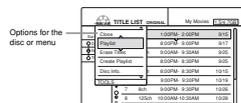
### Notes

- When you turn off the list display, the Page mode is canceled.
- When all the titles on the disc fit on a single page, you cannot select the Page mode.

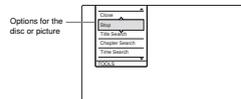
## TOOLS

The TOOLS menu appears when you press TOOLS, and displays options applicable to the entire disc or recorder.

Example 1: When you press TOOLS while the Title List menu is turned on.



Example 2: When you press TOOLS while a DVD is playing.

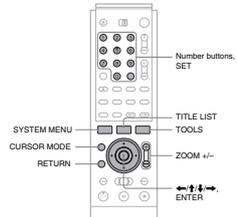


## Operating the Recorder

The recorder's overall operation is simple. Generally, most operations can be performed by pressing only  $\leftarrow$ ,  $\rightarrow$ ,  $\updownarrow$ , and ENTER. Once you know the common procedure, you will find the recorder easy to operate.

## Guide to Displays

The recorder uses the following four types of displays for most operations: System Menu, Title List, TOOLS, and Sub-menu. It also has a Disc Information display for checking the status of the inserted disc, and an on-screen keyboard that enables you to label a title or disc.



## System Menu

The System Menu appears when you press SYSTEM MENU, and provides entries to all of the recorder's main functions.



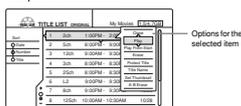
- 1 **TITLE LIST (page 53, 64):**  
Turns on the Title List menu, which shows recorded titles on the disc.
- 2 **TIMER (page 40):**  
Allows you to set a new timer recording setting.
- 3 **TIMER LIST (page 42):**  
Turns on the Timer List menu, which allows you to check, change, or cancel timer settings.
- 4 **DV/DS EDIT (page 79):**  
Activates the DV Edit function, which allows you to record and edit the contents of a DV/Digital8 format tape.
- 5 **SETUP (page 91):**  
Turns on the Setup Display, which allows you to set up the recorder to suit your preferences.

- Guide to Displays ..... page 31
- How to Use the Displays ..... page 33
- How to Enter Characters ..... page 34

## Sub-menu

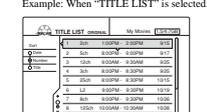
The sub-menu appears when you select an item from the displayed list menu and press ENTER. The sub-menu displays options applicable only to the selected item.

Example: The Title List menu



## How to Use the Displays

Use the displays in the following way. The procedure is common to many of the operations.

- 1 Press SYSTEM MENU.  
The System Menu appears with entries to the main functions.
- 2 Press  $\updownarrow$  to select a function, then press ENTER.  
The display for the selected function appears.  
Example: When "TITLE LIST" is selected.  

- Using the TOOLS menu  
Use the TOOLS menu to display options for the entire disc.  
1 Press TOOLS.  
The TOOLS menu appears.  
2 Press  $\updownarrow$  to select the option, then press ENTER.
- Using the sub-menu  
The sub-menu displays options for a specific title.  
1 Press  $\updownarrow$  to select the title on the list, then press ENTER.  
The sub-menu appears.  
2 Press  $\updownarrow$  to select the option, then press ENTER.
- 3 Press RETURN repeatedly to turn off the list display.

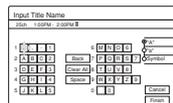
**To return to the previous display**  
Press RETURN.

## How to Enter Characters

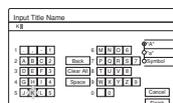
You can label a title, disc, or program by entering characters. You can enter up to 64 characters for a title/disc/program name, but the actual number of characters displayed in the menus such as the Title List will vary. When the display for entering characters appears, follow the steps below.

- 1 Press **←/→/↑/↓** to move the cursor to the right of the screen and select "A" (uppercase), "a" (lower-case), or "Symbol," then press **ENTER**. The characters of the selected type are displayed.

Example: Input Title Name



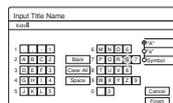
- 2 Press **←/→/↑/↓** to select a character you want to enter, then press **ENTER**. The selected character appears at the top of the display.



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

To insert a space between the characters, select "Space."

- 3 Repeat steps 1 and 2 to enter all the characters for the name.



- ◆ To erase a character

- 1 Press **←/→/↑/↓** to move the cursor to the input row.
- 2 Press **←/→** to move the cursor to the right of the character you want to erase.
- 3 Press **←/→/↑/↓** to select "Back," then press **ENTER**.

- ◆ To insert a character

- 1 Press **←/→/↑/↓** to move the cursor to the input row.
- 2 Press **←/→/↑/↓** to move the cursor to the right of the point where you want to insert a character.
- 3 Press **←/→/↑/↓** to select the character you want to insert, then press **ENTER**.

- ◆ To erase all the characters

Press **←/→/↑/↓** to select "Clear All," then press **ENTER**.

- 4 Press **←/→/↑/↓** to select "Finish," then press **ENTER**. To cancel the setting, select "Cancel."

### To use the number buttons

You can also use the number buttons to enter characters.

- 1 In step 2 above, press the number buttons repeatedly to select the character you want to enter. Example: Press the number 3 button once to enter "D." Press the number 3 button three times to enter "F."
- 2 Select the next character, or press **SET**.
- 3 Repeat steps 1 and 2 to enter all of the characters for the name.
- 4 Press **←/→/↑/↓** to select "Finish," then press **ENTER**.

## Recording/Timer Recording

This section covers the basics of DVD recording, and the available methods for setting the timer.

### Before Recording

This recorder can record on various discs. Before you record, read the following and select the disc type according to your needs.

#### Recordable discs

This recorder can record on the following discs.

##### ◆ Disc type

DVD-RW <sup>1</sup> Ver. 1.1 Ver. 1.1 with CPRM <sup>2</sup>	
DVD-RW <sup>1</sup>	
DVD-R <sup>1</sup> Ver. 2.0	

<sup>1</sup> DVD-RW, "DVD-RW," and "DVD-R" are trademarks.

<sup>2</sup> CPRM (Content Protection for Recordable Media) is a coding technology that protects copyrights for images.

DVD-RWs and DVD-RWs are rewritable. DVD-Rs are non-rewritable.

The recorder cannot record on the following discs:

- 8 cm discs
- DVD-R
- DVD-RW (Ver. 1.0)
- DVD-RAM
- CD-R/CD-RW

##### Notes

- The following type of high-speed discs can be used for recording: up to 2x-speed DVD-RWs (Revision 1.0), up to 4x-speed DVD-Rs (Revision 1.0), or up to 4x-speed DVD-RWs. Note that high-speed discs will not record at higher speed. You cannot record on the disc if it is not 1x-speed compatible.
- Use a disc with CPRM to record Copy-Once TV programs (page 36).
- It is recommended that you use discs with "For Video" printed on their packing.
- You cannot add new recordings to DVD-Rs and DVD-RWs (Video mode) that contain recordings made on other DVD recorders. In some cases, you may not be able to add new recordings to DVD-RW that contain recordings made on other DVD recorders. If you do add a new recording, note that this recorder will rewrite the DVD menu. If the disc contains PC data unrecognizable by this recorder, the data will be erased.

- Before Recording ..... page 35
- Recording TV programs **CH** **TV** **DISC** ..... page 38
- Timer Recording **CH** **TV** **DISC** **TV** ..... page 40
- Adjusting the Recording Picture Quality and Size **CH** **TV** **DISC** **TV** ..... page 46
- Recording from External Equipment with a Timer (Synchro Rec) **CH** **TV** **DISC** **TV** ..... page 47

Recording/Timer Recording

### About recording formats

When you insert an unused disc, the recorder automatically starts formatting. Since available functions differ depending on the disc type, select the disc that best suits your needs using the chart below.

You can preset the format for unused DVD-RWs in Options Setup. When "Format Disc" is set to either "VR" or "Video" (page 99), the recorder starts formatting in the selected mode without asking for confirmation. Select "Selectable" if you want to select the mode each time you insert an unused DVD-RW.

#### Differences between the disc types

See pages in parentheses for details.

Disc type	Characteristics
<b>CH</b> <b>TV</b> <b>DISC</b> <b>TV</b> DVD-RW DVD-R	<ul style="list-style-type: none"> <li>– Automatically creates chapters at specified intervals (page 97)</li> <li>– Simple editing (erasing titles/changing title name) (page 64)</li> </ul>
<b>CH</b> <b>TV</b> <b>VR</b>	<ul style="list-style-type: none"> <li>– Creates chapters manually or automatically (page 67)</li> <li>– Various editing options using a created Playlist (page 67)</li> <li>– Records Copy-Once programs provided that the disc has CPRM</li> </ul>

##### Notes

- To play a recorded disc on other DVD equipment, you need to finalize the disc. For details on finalizing, see page 75.
- You cannot mix the two formats on one DVD-RW. To change the disc's format, reformat the disc (page 74). Note that the disc's contents will be erased after reformatting.

### Recording mode

While the recorder is stopped, you can select one of six recording modes by pressing **REC MODE** repeatedly for the desired recording time and picture quality. The picture quality generally improves as the recording time decreases.

Recording mode	Recording time (minute)
HQ	60
HSP	90
SP (Standard mode)	120
LP	180
EP	240
SLP	360

##### Notes

- The recording times are an estimate and actual times may differ.
- Situations below may cause slight inaccuracies with the recording time:
  - Recording a program with poor reception, or a program or video source of low picture quality
  - Recording on a disc that has already been edited
  - Recording only a still picture or just sound

### Unrecordable pictures

Pictures with copy protection cannot be recorded on this recorder. When the recorder receives a copy guard signal while recording, the recorder stops recording and a message appears on your TV screen.

#### About pictures with Copy Control Signals

Broadcasts that contain Copy Control Signals may have one of the following three signal types, Copy-Free, Copy-Once, and Copy-Never. This recorder limits the recording according to copy protection signal as shown below.

If you want to record a Copy-Once program, use a DVD-RW with CPRM in VR mode.

##### ◆ Available recording options

	Copy-Free	Copy-Once	Copy-Never
DVD-RW (Ver.1.1)	○	—	—
DVD-RW (Ver.1.1 with CPRM VR mode Video mode)	○	○*	—
DVD-RW	○	—	—
DVD-R (Ver.2.0)	○	—	—

\* The recorded disc can be played only on CPRM compatible equipment.

### Checking the available disc space (Disc Info.)

When recording on a used disc, make sure that there is enough disc space for recording. With DVD-RWs or DVD-RWs, you can free up disc space by erasing titles.

- 1 Press **TOOLS** while the disc is in the recorder. The **TOOLS** menu appears.

- 2 Press **↑/↓** to select "Disc Info.," then press **ENTER**. The Disc Information display appears.

Items in the display differ depending on the disc type or recording format. Note that the remaining disc space indicator is an estimate and actual available space may differ.

Example: DVD-RW (VR mode)

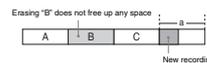


- 1 **Disc Name**
- 2 **Media:**  
Disc type
- 3 **Format:**  
Recording format type (DVD-RW only)
- 4 **Title no.:**  
Total number of titles
- 5 **Protected:**  
Indicates whether protection is set (DVD-RW in VR mode only)
- 6 **Date:**  
Dates when the oldest and the most recent titles are recorded
- 7 **Continuous Rem. Time/Remainder:**
  - The longest continuous recording time in each of the recording modes (approximate)
  - Disc space bar (approximate)
  - Remaining disc space/total disc space (approximate)
- 8 **Disc setting buttons**
  - Disc Name: Labels the disc (page 72)
  - Protect Disc: Protects the disc (DVD-RW in VR mode only) (page 72)
  - Finalize: Finalizes the disc/Creates a DVD menu (page 73)
  - Unfinalize: Unfinalizes the disc if it has already been finalized (DVD-RW in VR mode only) (page 73)
  - Erase All: Erases all titles on the disc (page 73)
  - Format: Reformats the disc (page 74)

### CH

#### ◆ How programs are recorded on a DVD-R

A new program is recorded on the last space [a] only. Check that the remaining disc space is large enough for the recording.

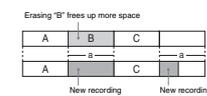


You cannot free up disc space on a DVD-R. Erasing a title will only hide the title name in the Title List menu. The erased titles will still take up space on the disc.

### CH

#### ◆ How programs are recorded on a DVD-RW (VR mode)

A program is recorded on the free disc space [a]. Check that the total remaining disc space is large enough for recording.



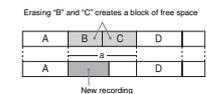
#### ◆ To free up disc space

You can free up disc space by erasing titles. The original title used for a Playlist cannot be erased. To erase a title, see page 65. To erase multiple titles, see page 65.

### CH

#### ◆ How programs are recorded on a DVD-RW (Video mode) or DVD+RW

The recorder searches for the largest block of space [a] and records there. Check that there is a continuous free block large enough for the recording. If not, the recording will stop.



#### ◆ To check or free up disc space

For DVD-RWs (Video mode) and DVD+RWs only, you can check free disc space and title location, and also erase titles using the Disc Map display (see below).

##### Hint

You can erase all of the disc's titles (other than protected titles) at once

- When you erase titles, the title order may change depending on the disc type or format.
- After finalizing, you cannot record further on a DVD-RW (Video mode) or DVD+R.

→ continued

Recording/Timer Recording

→ continued

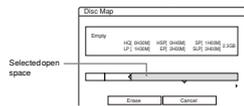
### To free up disc space using the Disc Map display (DVD-RWs in Video mode, DVD+RWs only)

The Disc Map display in the TOOLS menu allows you to check the disc status and erase titles on the disc.

- 1 Press **TITLE LIST** while the disc is in the recorder.
- 2 Press **TOOLS**.
- 3 Press **↔** to select "Disc Map" from the TOOLS menu, then press **ENTER**. The Disc Map display appears.

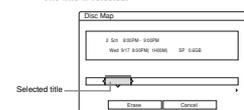
#### ◆ To check free disc space

Press **↔** to select an open space. The remaining space and the longest recording time in each of the recording modes appears.



#### ◆ To free up disc space by erasing a title using the Disc Map

- 1 Press **↔** to select the title you want to erase, then press **ENTER**. The title is selected.



To cancel the selection, press **ENTER** again. Repeat step 1 to erase multiple titles.

- 2 Press **↓** to select "Erase," then press **ENTER**. The display asks for confirmation.
- 3 Press **↔** to select "OK." All of the selected titles are erased, freeing up disc space. If you want to change your selection, select "Change."
- 4 Press **RETURN** repeatedly to turn off the Title List menu.

#### Note

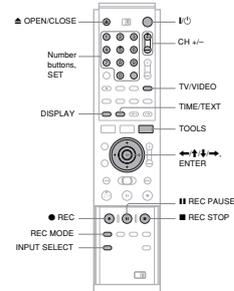
You cannot erase a title during playback or recording.

## Recording TV programs

◀ RW VR ▶ RW VIDEO ▶ RW ▶ R ▶

#### Before you start...

- Check that the disc has enough available space for the recording (page 37).
- Adjust the recording picture quality and picture size if necessary (page 46).



- 1 Press **I/O**. The recorder turns on and the power indicator on the front panel lights up in green.
- 2 Turn on the TV, and switch the input selector on your TV so that the signal from the recorder appears on the TV screen.
  - ◆ When using an amplifier (receiver) Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the recorder.

- 3 Press **▲ OPEN/CLOSE**, and place a recordable disc on the disc tray.



With the recording side facing down

- 4 Press **▲ OPEN/CLOSE** to close the disc tray. Wait until "LOAD" disappears from the front panel display. If you use an unused DVD, formatting starts automatically.

When using an unused DVD-RW, select the recording format, VR or Video.

- 5 Press **CH +/-** to select the channel or input source you want to record.

- 6 Press **REC MODE** repeatedly to select the recording mode.

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

HQ → HSP → SP → LP → EP → SLP

For more details of the recording mode, see page 36.

- 7 Press **REC**. Recording starts. Recording continues until you stop the recording or the disc is full.

**To stop recording**  
Press **REC STOP**. Note that it may take a few seconds for recording to stop.

**To pause recording**  
Press **REC PAUSE**. To restart recording, press the button again.

**To watch another TV program while recording**  
Set the TV to TV input using the TV/VIDEO button.

- Hints**
- You can also start and stop recording using the TOOLS menu. Press **TOOLS** and select "Record" or "Rec Stop," then press **ENTER**.
  - You can stop recording from the Title List menu as well. Select the title you are currently recording and press **ENTER**. Then select "Rec Stop" from the sub-menu.
  - If you do not want to watch TV while recording, you can turn off the TV. When using a cable box, make sure to leave it on.
  - To select a channel, you can also use the number buttons and SET button in step 5 above.
  - If you record from equipment connected to the recorder's input jack, you can also use the INPUT SELECT button to select "L1," "L2," "L3" or "DV" in step 5. For details, see "Recording from connected equipment" (page 38).
  - You can also select the recording mode using the TOOLS menu (page 46).

### Checking the disc status while recording

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

- 1 Press **DISPLAY** twice during recording. The recording information appears.



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

- 2 Press **DISPLAY** to turn off the display.

### Creating chapters in a title

The recorder can automatically divide a recording (a title) into chapters by inserting chapter marks at 6 or 15 minute intervals during recording. Select the interval, "6Min" (default) or "15Min" in "Auto Chapter" of Features Setup (page 97).

**Hint**  
You can make chapters manually when playing DVD-RWs (VR mode). For details, see page 67.

#### Notes

- If "Auto Chapter" is set to "Off" in Features Setup, no chapters are automatically created.
- When no more chapter marks can be added, you may not be able to make additional recordings or edit the disc.

## Timer Recording

You can set the timer for a total of 30 programs up to one month in advance.

There are two setting methods: the manual setting and VCR Plus+ setting.
 

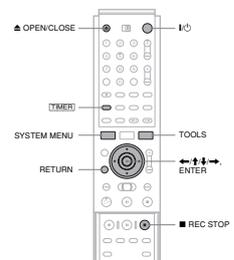
- Standard: Set the date, time, and channel of the program manually.
- VCR Plus+: Enter the PlusCode number designated for each TV program (page 44).

#### Before you start...

- Check that the disc has enough available space for the recording (page 37).
- Adjust the recording picture quality and picture size if necessary (page 46).

### Setting the timer manually (Standard)

◀ RW VR ▶ RW VIDEO ▶ RW ▶ R ▶

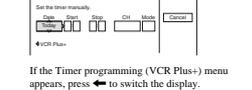


- 1 Press **I/O**.
- 2 Turn on the TV, and switch the input selector on your TV so that the signal from the recorder appears on the TV screen.
  - ◆ When using an amplifier (receiver) Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the recorder.
- 3 Press **▲ OPEN/CLOSE**, and place a recordable disc on the disc tray.

- 4 Press **▲ OPEN/CLOSE** to close the disc tray. Wait until "LOAD" disappears from the front panel display. If you use an unused DVD, formatting starts automatically.

When using an unused DVD-RW, select the recording format, VR or Video.

- 5 Press **TIMER**. The Timer programming (Standard) menu appears.



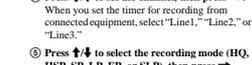
If the Timer programming (VCR Plus+) menu appears, press **↔** to switch the display.

- 6 Set the following items using **↔** and **ENTER**.
  - 1 Press **↔** to set the date, then press **ENTER**. Each time you press **↔**, the item changes as follows.

Today ↔ Tomorrow ↔ ..... ↔ Tue 10/28 (1 month later) ↔ Sun (every Sunday) ↔ ..... ↔ Sat (every Saturday) ↔ Mon-Fri (Monday to Friday) ↔ Mon-Sat (Monday to Saturday) ↔ Sun-Sat (Sunday to Saturday) ↔ Today

- 2 Press **↔** to set the start time, then press **ENTER**.
- 3 Press **↔** to set the stop time, then press **ENTER**.
- 4 Press **↔** to set the channel, then press **ENTER**. When you set the timer for recording from connected equipment, select "Line1," "Line2," or "Line3."

- 5 Press **↔** to select the recording mode (HQ, HSP, SP, LP, EP, or SLP), then press **ENTER**.



◆ If you make a mistake Press **↔** to select the item you want to change.

◆ To exit without saving the current setting Press **↔** to select "Cancel," then press **ENTER**.

- 7 Press **↔** to select "OK," then press **ENTER**. The Timer List menu appears. The TIMER REC indicator lights up on the front panel and the recorder is ready to start recording.

#### Notes

- After pressing **REC**, it may take a short while to start recording.
- While recording or during recording pause, you cannot change the recording mode.
- If there is a power failure, the program you are recording may be erased.
- When you use Hookap 2 (page 17), you cannot watch a cable TV program while recording another cable TV program.

### Using the Quick Timer function

You can set the recorder to record in 30 minute increments by pressing just the **REC** button.

Press **REC** repeatedly to set the duration time. Each press advances the time in 30 minute increments. The maximum duration is six hours.

0:30 → 1:00 → 1:30 → 2:00 → 2:30 → 3:00 → (normal recording)

The time counter decreases minute by minute to 0:00, then the recorder stops recording (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.

#### To cancel the Quick Timer

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

### Recording a stereo program and SAP

The recorder automatically receives and records a stereo program and SAP.

◆ Stereo programs When a stereo program is received, the "STEREO" indicator lights up on the front panel display. If there is noise in the stereo program, set "Auto Stereo" in Audio Setup to "Off" (page 95). The sound will be recorded in monaural but with less noise.

◆ SAP (Second Audio Program) When a SAP (Second Audio Program) is received, the "SAP" indicator lights up on the front panel display. To record only SAP sound, set "Tuner Audio" in Audio Setup to "SAP" (page 95).

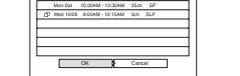
- 8 Press **RETURN** to turn off the Timer List, or press **TIMER** and repeat from step 5 to enter additional timer settings. Unlike a VCR, there is no need to turn off the recorder before the timer recording starts.

### To stop recording during timer recording

Press **REC STOP**.

### If the timer settings overlap

Overlapped timer settings are shown as follows.



To store the setting, press **↔** to select "OK," then press **ENTER**. The programs are recorded in order of priority (page 43). To cancel or change the setting, select "Cancel."

### To confirm, change, or cancel timer recording

See "Checking/Changing/Canceling timer settings (Timer List)" (page 42).

#### Hints

- For recording over the next day, leave the starting date setting as it is, and enter the ending time in the setting. The date will automatically change to the next day.
- You can also display the timer programming items by:
  - selecting "TIMER" from the System Menu.
  - selecting "Set Timer" from the TOOLS menu while the Timer List menu is displayed.
- You can also use the recorder even when the recorder stands by for recording. To remind you of the timer setting, a message appears on your TV screen five minutes before the timer recording starts.

#### Notes

- If "The disc is full or nearly full" appears on the screen, change the disc, or make available space for the recording (DVD-RW/DVD-RW only).
- Check that the clock is correctly set before setting the timer recording. If not, the timer recording cannot be made.
- To record a satellite program, turn on the satellite receiver and select the satellite program you want to record. Leave the satellite receiver turned on until the recorder finishes recording. If you connect equipment with a timer function, you can use the Synchro Rec function (page 47).

### Rec Mode Adjust

If there is not enough available disc space for the recording, the recorder automatically selects the recording mode to enable the program to be recorded. This function is normally set to on.

#### ◆ To cancel the function

- 1 Press **TOOLS** while the Timer List is displayed.
- 2 Press **↔** to select "Rec Mode Adjust," then press **ENTER**.
- 3 Press **↔** to select "Off," then press **ENTER**.

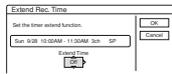
#### Note

This function only works with a timer recording. It does not function with Quick Timer or Synchro Rec.

### To extend the recording duration time

You can extend the recording duration while recording.

- 1 Press **TOOLS** during recording.
- 2 Press **↑/↓** to select "Extend Rec. Time," then press **ENTER**. The following display appears.



- 3 Press **↑/↓** to select the duration time, then press **ENTER**. You can set the duration in increments of 10 minutes, up to 60 minutes.
- 4 Press **←/→** to select "OK," then press **ENTER**.

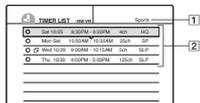
**Hint**  
You can also extend the recording duration time using "Extend Rec" in the sub-menu of the Timer List.

### Checking/changing/canceling timer settings (Timer List)



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

- 1 Press **SYSTEM MENU**. The System Menu appears.
- 2 Press **↑/↓** to select "TIMER LIST," then press **ENTER**. The Timer List menu appears.



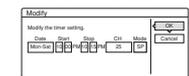
- 1 **Disc name**  
To enter a disc name, see "Labeling a disc (Disc Name)" (page 72).
- 2 **Timer information:**  
Displays the recording date, time, recording mode, etc.
  - **□** indicates the overlapped setting.
  - **○** (red) indicates the setting currently being recorded.
  - **●** (grey) indicates that the setting cannot be recorded in the selected recording mode.

- 3 Press **↑/↓** to select the setting you want to check/change/cancel, then press **ENTER**. The sub-menu appears.

- 4 Press **↑/↓** to select one of the following items.
  - Modify
  - Erase
  - Check Overlap

- ◆ To modify the setting

- 1 Select "Modify," then press **ENTER**. The display for modifying appears.



- 2 Press **←/→** to select the item and change the setting. To undo the change, press **←/→** to select "Cancel," then press **ENTER** or **RETURN**. To change another setting, repeat step 2.
- 3 Press **←/→** to select "OK," then press **ENTER**.

- ◆ To erase the setting

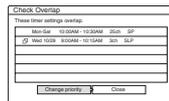
- 1 Select "Erase," then press **ENTER**. The display asks for confirmation.



If you do not want to erase the setting, select "Cancel," then press **ENTER** or **RETURN**.

- ◆ To check for overlapped settings

- 1 Select "Check Overlap," then press **ENTER**. The display for confirming overlapped settings appears. The timer setting set most recently is listed at the top and has priority. You may not be able to record the program that has low priority.



To change a priority, press **←/→** to select "Change priority." For details, see "Changing the priority of overlapped settings" below.

- 2 Press **←/→** to select "Close."

To change or cancel the setting, press **RETURN** to return to the Timer List menu, and repeat steps 3 and 4 above.

- 5 Press **RETURN** to turn off the Timer List.

**Hint**  
While recording, you cannot modify the timer setting for the current recording, but you can extend the recording duration of the recording time (page 42).

#### Note

Even if the timer is set for the same program daily or weekly, the timer recording cannot be made if it overlaps with the program that has priority. A **□** mark will appear next to the overlapped setting in the Timer List. Check the priority order of the settings.

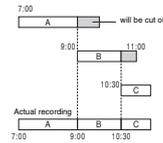
### Changing the priority of overlapped settings

The recorder records the programs according to priority if the timer settings overlap. The timer setting set last has priority. If the timer settings overlap, the program that has priority will be recorded. A timer recording of lower priority will be canceled, start from the middle, or stop on the way. Check the overlapped timer settings and change the priority if necessary.

#### When the timer settings overlap

If the timer is set using the manual or VCR Plus+ setting, the program set last has priority.

Example: you set the timer in order of A, B, and C (setting C has first priority)



If you give priority to setting B over setting C, program B will be entirely recorded and program C is recorded only after program B has finished.



**Hint**  
You can change the priority of a timer setting during recording.

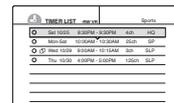
#### Note

If the end time of one recording and the start time of another are the same, the beginning or end of a program of lower priority may be cut. Example: you made the timer setting A after B



- 1 Press **SYSTEM MENU**. The System Menu appears.

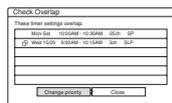
- 2 Press **↑/↓** to select "TIMER LIST," then press **ENTER**. The Timer List menu appears.



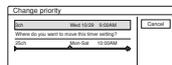
→ continued

- 3 Press **↑/↓** to select the setting for which you want to change a priority order, then press **ENTER**. The sub-menu appears.

- 4 Press **↑/↓** to select "Check Overlap," then press **ENTER**. The display for confirming overlapped settings appears.



- 5 Press **←/→** to select "Change priority," then press **ENTER**. The display for changing priority appears.



- 6 Press **↑/↓** to move the timer setting where you want, then press **ENTER**. The program moves to its new location in the list. A program higher up in the list has higher priority. To return to the Timer List, select "Cancel."

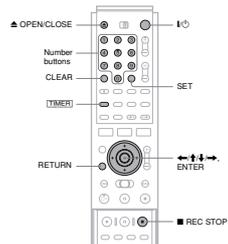
- 7 Press **RETURN** to turn off the Timer List.

### Recording TV programs using the VCR Plus+ system



The VCR Plus+ system is a feature that simplifies setting timer recordings. Just enter the PlusCode number listed in the TV program guide. The date, time, and channel of that program are set automatically.

Check that the TV and guide channels are correctly set in "Set VCR Plus+ Channels" in "Settings" (page 93).



- 1 Press **I/O**.
- 2 Turn on the TV, and switch the input selector on your TV so that the signal from the recorder appears on the TV screen.
  - ◆ When using an amplifier (receiver)  
Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the recorder.
- 3 Press **OPEN/CLOSE**, and place a recordable disc on the disc tray.
- 4 Press **OPEN/CLOSE** to close the disc tray. Wait until "LOAD" disappears from the front panel display. If you use an unused DVD, formatting starts automatically. When using an unused DVD-RW, select the recording format, VR or Video.

- 5 Press **TIMER**.

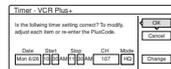
The Timer programming (VCR Plus+) menu appears.



If the Timer programming (Standard) menu appears, press **←** to switch the display.

- 6 Press the number buttons to enter the PlusCode number, then press **SET**.
  - ◆ If you make a mistake  
Press **CLEAR** and re-enter the correct number.
  - ◆ To cancel the setting  
Press **←/→** to select "Cancel," then press **ENTER**.

- 7 Press **←/→** to select "OK," then press **ENTER**. The date, start and stop times, channel, and recording mode appears.



- ◆ If you want to change the setting
  - 1 Press **←/→** to select the item you want to change.
  - 2 Press **↑/↓** to change the setting.

To cancel the setting, select "Cancel." To re-enter the PlusCode number, select "Change."

- 8 Press **←/→** to select "OK," then press **ENTER**. The **TIMER REC** indicator lights up on the front panel, and the recorder is ready to start recording.

- 9 Press **RETURN** to turn off the display. To record from a decoder or other source, leave the connected equipment turned on.

To stop recording during timer recording  
Press **REC STOP**.

If the timer settings overlap  
See page 41.

To confirm, change, or cancel timer recording  
See "Checking/changing/canceling timer settings (Timer List)" (page 42).

#### Hints

- The Rec Mode Adjust function also works with this timer setting method (page 41).
- You can extend the recording duration time during recording (page 42).
- You can also display the timer programming menu by:
  - selecting "TIMER" from the System Menu.
  - selecting "Set Timer" from the **TOOLS** menu while the Timer List menu is displayed.

#### Notes

- Check the clock set before setting the timer recording. If not, the timer recording cannot be made.
- You can also use the recorder even when the recorder stands by for recording. To remind you of the timer setting, a message appears on your TV screen five minutes before the timer recording starts.



- Discs that cannot be played on this recorder**
- The recorder cannot play the following discs:
- All CD-ROMs (including PHOTO CDs)
  - CD-Rs/CD-RWs, other than those recorded in the music CD format
  - Data part of CD-Extras
  - VIDEO CDs
  - Super VCDs
  - DVD-ROMs
  - DVD Audio discs
  - DVD-RAMs
  - HD layer on Super Audio CDs
  - DVD VIDEOS with a different region code (page 49)
  - A disc recorded in a color system other than NTSC, such as PAL or SECAM

- Notes on playing DTS sound tracks on a CD**
- When playing DTS-encoded CDs, excessive noise will be heard from the analog stereo jacks. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo jacks of the recorder are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel decoder system must be connected to the digital jack of the recorder.
  - Set the sound to "Stereo" using the AUDIO buttons when you play DTS sound tracks on a CD (page 57).
  - Do not play DTS sound tracks without first connecting the recorder to an audio component having a built-in DTS decoder. The recorder outputs the DTS signal via the DIGITAL OUT (COAXIAL or OPTICAL) jack even if "DTS" is set to "Off" in the Audio Setup (page 96), and may affect your ears or cause your speakers to be damaged.

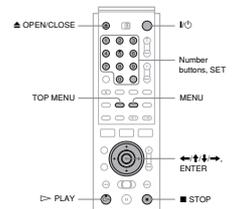
- Notes on playing DVDs with a DTS sound track**
- DTS audio signals are output only through the DIGITAL OUT (COAXIAL or OPTICAL) jack.
  - When you play a DVD with DTS sound tracks, set "DTS" to "On" in the Audio Setup (page 96).
  - If you connect the recorder to audio equipment without a built-in DTS decoder, do not set "DTS" to "On" in the Audio Setup (page 96). A loud noise may come out from the speakers, affecting your ears or causing the speakers to be damaged.

- Notes**
- The following type of high-speed discs can be played back on this recorder: up to 2x-speed DVD-RWs (Revision 1.0), up to 4x-speed DVD-Rs (Revision 1.0), or up to 4x-speed DVD-RWs/DVD-Rs.
  - DVD-RWs, DVD-RWs/Rs, or CD-RWs recorded on another recording device cannot be played on this recorder if they have not been correctly finalized. Some discs cannot be played due to the recording quality or physical condition of the disc, or the characteristics of the recording device and authoring software.

## Playing Discs



Depending on the disc, some operations may differ, or certain restrictions may apply. Refer to the operating instructions supplied with your disc.



- Press OPEN/CLOSE.**  
The recorder turns on and the power indicator lights up to green.
- Turn on the TV, and switch the input selector on your TV so that the signal from the recorder appears on the TV screen.**  
  - When using an amplifier  
Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the recorder.
- Press OPEN/CLOSE to open the disc tray.**
- Place a disc on the disc tray.**



- Press OPEN/CLOSE to close the disc tray.**  
Wait until "LOAD" disappears in the front panel display.

- When playing a DVD-RW/DVD-R/DVD-R You can select the title from the Title List menu. See "Selecting a Recorded Title on a Disc" (page 53).
- If a menu appears on the TV screen. See "Using the DVD's Menu" below.

- Press PLAY.**  
The recorder starts playback.

**To adjust the volume**  
Adjust the volume of your TV or amplifier (receiver).

**To stop playback**  
Press STOP.

**To turn off the recorder**  
Press OFF.

You can also start or stop playback using the TOOLS menu.

**To play a DVD VIDEO for which Parental Control is set**  
When the message "Do you want temporarily change parental control to \*?" appears on the TV screen, follow the steps below.

- Press **ENTER** to select "OK," then press **ENTER**. The display for entering your password appears.



- Enter your four digit password using the number buttons. The cursor moves to "OK."
- Press **ENTER** to select "OK." The recorder starts playback.

To register or change the password, see "Parental Control (DVD VIDEO only)" (page 97).

## Using the DVD's Menu



When you play a DVD VIDEO which contains several titles, you can select the title you want using the TOP MENU or MENU button. When you play DVD VIDEOS that allow you to select items such as the language for the subtitles and the language for the sound, select these items using the MENU button.

- Press TOP MENU or MENU.**  
The disc's menu appears on the TV screen. The contents of the menu vary from disc to disc.
- Press **ENTER** or the number buttons to select the item you want to play or change.

- Press **ENTER**.

**Hint**  
If you are playing a finalized DVD-R, DVD-RW, or DVD-RW (Video mode), you can display the menu with the TOP MENU or MENU button. See "Finalizing a disc (Finalize)" (page 73) for more information about finalizing and DVD menus.

## Using the PROGRESSIVE button

You can fine-tune the Progressive 480p video signal output when you press PROGRESSIVE on the front panel (the PROGRESSIVE indicator lights up) and connect the recorder using the COMPONENT VIDEO OUT jacks to a TV that is able to accept the video signal in progressive format. Press PROGRESSIVE repeatedly to toggle the displays as follows:

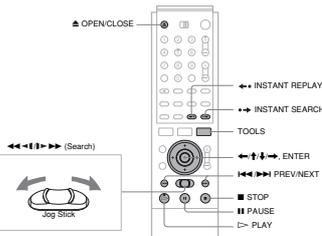
- INTERLACE (the PROGRESSIVE indicator turns off)
- PROGRESSIVE (the PROGRESSIVE indicator lights up)
- INTERLACE  
Select this when you are connected to a standard (Interlace format) TV.
- PROGRESSIVE  
Select this when you are connected to a TV compatible with progressive signals. The recorder outputs video signals in progressive format.

**Conversion modes**  
DVD software can be divided into two types: film based software and video based software. Video based software is derived from the TV, such as dramas and sit-coms, and displays images at 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 (60 frames per second), the progressive video signal needs to be converted to match the type of DVD software that you are watching. The title recorded on this recorder is Video based software. If you want to set the conversion mode for Video based software regardless of the software type, set "Progressive Mode" in Video Setup to "Video" (page 95).

**Notes**

- When you play video based software with progressive signals, sections of some types of images may appear unnatural due to the conversion process when output through the COMPONENT VIDEO OUT jacks. Images from the LINE OUT (S VIDEO) I/L and LINE OUT (VIDEO) I/L jacks are unaffected as they are output in the normal (interlace) format.
- If you have set the recorder to progressive format even though your TV is not compatible with progressive format (480p) signals, you cannot view pictures. Some video signals recorded on the disc may not be converted in progressive format. In either of these cases, set the recorder to interlace format.

## Basic operations/Changing the playback speed



To:	Operations	Discs
Pause	Press <b>PAUSE</b> . To resume playback, press <b>PAUSE</b> or <b>PLAY</b> .	All discs
Locate the beginning of the title/chapter/track	During playback, press <b>NEXT</b> or <b>PREV</b> . <ul style="list-style-type: none"> <li><b>NEXT</b>: Goes to the next title/chapter/track.</li> <li><b>PREV</b>: Goes back to the beginning of the previous title/chapter/track.</li> </ul> For DVD-RWs (VR mode), you can manually add chapter marks (page 67).	All discs
Stop play and remove the disc	Press <b>OPEN/CLOSE</b> .	All discs
Replay the previous scene	Press <b>INSTANT REPLAY</b> . This function is useful when you want to review a scene or dialogue you missed.	DVD, DVD-R, DVD-RW, DVD-RW/R, CD-RW, CD-R
Briefly fast forward the current scene	Press <b>INSTANT SEARCH</b> . This function is useful for skipping a scene you do not want to watch.	DVD, DVD-R, DVD-RW, DVD-RW/R, CD-RW, CD-R
Fast forward/fast reverse (search)	During playback, briefly push the Jog Stick to the left or right. Each time you push the Jog Stick, the search speed changes as follows:  fast reverse <b>FR1</b> ← → <b>FF1</b> <b>FR2</b> ← ← → → <b>FF2</b> <b>FR3*</b> ← ← ← → → → <b>FF3*</b>  To resume to the normal speed, press <b>PLAY</b> . When you push and hold the Jog Stick down to the left or right, fast forward/fast reverse continues at the selected speed until you release the Jog Stick. Actual speeds may differ with some discs or recording modes. * Music CD cannot be played at FR3/FF3.	All discs
Frame by frame (Slow-motion play)	Push <b>FR1</b> or <b>FF1</b> on the Jog Stick for more than one second when the recorder is in pause mode. To return to the normal speed, press <b>PLAY</b> .	DVD, DVD-R, DVD-RW, DVD-RW/R, CD-RW, CD-R
Watch one frame at a time (Freeze Frame)	Push <b>FR1</b> or <b>FF1</b> on the Jog Stick briefly when the recorder is in pause mode. To return to the normal speed, press <b>PLAY</b> .	DVD, DVD-R, DVD-RW, DVD-RW/R, CD-RW, CD-R

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

When you stop the disc, the recorder remembers the point where you pressed **STOP**.

- For DVDs: Resume Play works as long as you do not open the disc tray (you may turn off the recorder).
- For CDs: Resume Play works as long as you do not turn off the recorder or open the disc tray.

- While playing a disc, press STOP to stop playback.**  
"RESUME" appears on the front panel display. If "RESUME" does not appear, Resume Play is not available.
- Press PLAY.**  
The recorder starts playback from the point where you stopped the disc in step 1.

- To play from the beginning of the disc  
Reset the resume point using the TOOLS menu. Press TOOLS and press **ENTER** to select "Reset Resume," then press **ENTER**.
- To play from the beginning of the title  
You can locate the beginning of the title/track using the TOOLS menu. Press TOOLS and press **ENTER** to select "Play From Start," then press **ENTER**. Playback automatically starts from the beginning of the title.

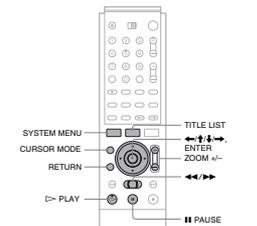
**Notes**

- Depending on the disc, the recorder may not resume playback from where you stopped the disc.
- Depending on where you stopped the disc, the recorder may not resume playback from exactly the same point.
- The point where you stopped playing is cleared when:
  - you open the disc tray.
  - you play another title.
  - you switch the Title List menu (Original or Playlist).
  - you edit the disc, such as erasing a title.
  - you change the settings on the recorder.
  - you turn off the recorder (CD only).
  - you make a recording (except for DVD-RWs in VR mode).

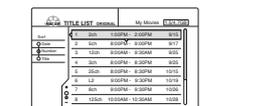
## Selecting a Recorded Title on a Disc



The Title List menu displays all the titles recorded on the disc and you can select the one you want to play. For details, see also page 22.



- Insert a disc and press TITLE LIST.**  
The Title List menu appears. For a DVD-RW (VR mode), select "Original" or "Playlist" using the TOOLS menu (page 32).



- Press **ENTER** to select the title, then press **ENTER**. The sub-menu appears.
- Press **ENTER** to select "Play," then press **ENTER**. Playback starts from the selected title on the disc.

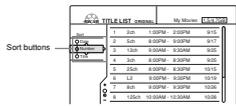
**Hints**

- You can also display the Title List menu using the System Menu. Press SYSTEM MENU and select "TITLE LIST," then press **ENTER** (page 32).
- You can select Page mode by pressing CURSOR MODE (page 32). In Page mode, you can change the page of the Title List using **ENTER**.
- You can also use the **PLAY** button to start playback.
- To change the title name, see "Labeling a title (Title Name)" (page 64).

### To change the title order (Sort)

You can sort the titles according to date, number, or title.

- Press **←** while the Title List menu is turned on. The Sort buttons are selected.



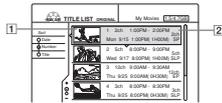
- Press **↑/↓** to select date, number, or title, then press **ENTER**. The titles are sorted in selected order.

Order	Sorted
Date	in order of date (when the titles were recorded). The title that is recorded most recently is listed at the top.
Number	in order of recorded title number.
Title	in alphabetical order.

### To show the list in greater detail (Zoom)

Press **ZOOM+** while the Title List menu is turned on to view detailed information about the title. To return to the normal Title List menu, press **ZOOM-**.

Example: DVD-RW (VR mode)



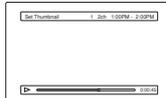
- Title's thumbnail picture
- Title information: Displays the title number, title name, date/time of recording, channel, and recording mode\*.
  - \* F indicates that the title is protected.
  - (red) indicates that the title is being recorded.

\*The displayed recording mode refers to the mode selected when the program was recorded on this recorder.

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

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

- Press **TITLE LIST** while a disc is in the recorder. The Title List menu appears.
- Press **↑/↓** to select a title whose thumbnail picture you want to change, then press **ENTER**. The sub-menu appears.
- Press **↑/↓** to select "Set Thumbnail," then press **ENTER**. The display for setting a thumbnail picture appears. The selected title starts to play in the background.



- While watching the thumbnail picture, press **▶** **PLAY**, **⏸** **PAUSE**, or **◀** **◀** to select the scene you want to set for a thumbnail picture, then press **ENTER**. Playback pauses at the selected scene, and the display asks for confirmation.



To change the selection, select "Change."

- Press **←/→** to select "OK," then press **ENTER**. The scene is set for the title's thumbnail picture.
- Press **RETURN** to turn off the display.

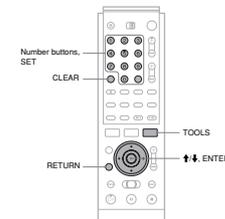
**Hint**  
After recording, the first scene of the recording (the title) is automatically set for the thumbnail picture.

**Notes**  
• Title thumbnail pictures are displayed only on this recorder.  
• It may take a few seconds for the thumbnail pictures to be displayed.

## Searching for a Title/Chapter/Track



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



- Press **TOOLS** during playback. The **TOOLS** menu appears.
- Press **↑/↓** to select the search method, then press **ENTER**.
  - Title Search (for DVDs)
  - Chapter Search (for DVDs)
  - Track Search (for CDs)
  - Time Search (for DVDs): Searches for a starting point by entering the time code.

The display for entering the number appears. Example: Title Search



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

- 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 Press **CLEAR** to cancel the number, then select another number.

- Press **SET**. The recorder starts playback from the selected title/chapter/track/scene.

### To cancel searching

Press **RETURN**.

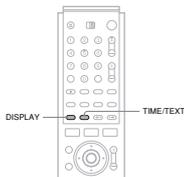
#### Notes

- You cannot search for a still picture on a DVD-RW (VR mode) using Time Search.
- If you enter a number that does not exist, the current selection does not change.

## Checking the Play Information and Playing Time



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



### Press **DISPLAY** repeatedly.

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

- Title/track information (Display 1)
- Title play mode/time information (Display 2)
- (Display off)

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

#### • Display 1

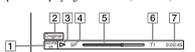
Example: When playing a DVD VIDEO



- Title/track number/name
- Available disc functions (angle/audio/subtitle, etc.)
- The current selected function or audio setting (appears only temporarily)

#### • Display 2

Example: When playing a DVD-RW (VR mode)



- Disc type/format (page 35)
- Title type (Original or Playlist) (page 32)
- Play mode
- Recording mode\* (page 36)
- Playing status bar
- Title number (page 53)
- Playing time

\*The displayed recording mode refers to the mode selected when the program was recorded on this recorder.

### To check the remaining time

Press **TIME/TEXT** repeatedly while the Display 2 is displayed above. Each time you press the button, the display changes in the following order.

- When playing a DVD
  - Playing time of disc current title (hours: minutes: seconds)
  - Remaining time of the current title
  - Playing time of the current chapter
  - Remaining time of the current chapter
  - Disc name (DVD-RW/DVD-R/DVD-R only)
- When playing a CD
  - Playing time of the current track (minutes: seconds)
  - Remaining time of the current track
  - Playing time of the current disc
  - Remaining time of the current disc
  - Disc name

### To check the disc name (except DVD VIDEO)

Press **TIME/TEXT** repeatedly while the Display 2 is displayed. The text appears only when text is recorded on a CD, or if you input the disc's name. To label a DVD-RW/DVD-R/DVD-R, see "Labeling a disc (Disc Name)" (page 72).



**Hint**  
What "Auto Display" is set to "On" (default) in Options Setup (page 99), playback information automatically appears for several seconds after starting playback.

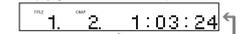
## Checking the playing time on the front panel display

You can view the playing or time information and text displayed on the TV screen also on the front panel display. Press **TIME/TEXT** repeatedly.

Each press of the button changes the information as follows:

#### • When playing a DVD

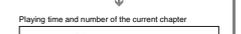
Title playing time and the current title/chapter number



Remaining time of the current title



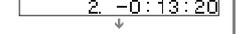
Playing time and number of the current chapter



Remaining time of the current chapter



Disc name



#### • 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



Disc name



**Hint**  
Long text that does not fit in a single line will scroll across the front panel display.

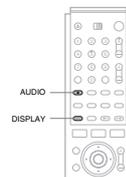
**Notes**  
• Depending on the type of disc being played, the disc's text may not be displayed.  
• The recorder can only display the first level of a CD's text, such as the disc name.  
• The letters or symbols that cannot be displayed are replaced with "•".

## Selecting the Sound



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

With CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can listen to the instruments only from both speakers, by selecting the left channel.



### Press **AUDIO** repeatedly during playback to select one of the audio options.

The following display appears.

Example: DVD VIDEO



#### • When playing a DVD VIDEO

Depending on the DVD VIDEO, the choice of language varies. When four numbers are displayed, they indicate a language code. To see which language the code represents, see "Language Code List" (page 108). When the same language is displayed two or more times, the DVD VIDEO is recorded in multiple audio formats.

#### • When playing a DVD-RW in VR mode

The types of sound tracks recorded on a disc are displayed. The default setting is underlined.

For a disc recorded on this recorder, the sound can be selected only if recorded from equipment connected to the LINE IN jacks.

Example:

- L: Main (main sound)
- T: Sub (sub sound)
- 1: Main/Sub (main and sub sound)

- ◆ **When playing a CD**  
The default setting is underlined.
- ◆ **Stereo**: The standard stereo sound
- ◆ **L:R**: The sound of the left channel (monaural)
- ◆ **2:R**: The sound of the right channel (monaural)

**Notes**

- ◆ Depending on the disc, you may not be able to change the audio format.
- ◆ When playing a DVD-RW in VR mode: If you connected to an AV amplifier (receiver) using the DIGITAL-OUT (COAXIAL or OPTICAL) jack and want to switch between the sound tracks, set "Dolby Digital" in Audio Setup to "D-PCM".

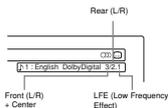
**Checking the audio signal format**

When playing a DVD, you can check the format of the current audio signal (Dolby Digital, DTS, PCM, etc.).

**Press DISPLAY.**

The following display appears.

Example: Dolby Digital 5.1 ch



**About audio signals**

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

**Note**

If "DTS" is set to "OFF" in Audio Setup, the DTS track selection option will not appear on the screen even if the disc contains DTS tracks (page 96).

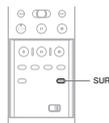
**TV Virtual Surround Settings (TVS)**

**DVD**

When you connect a stereo TV or two front speakers, TVS (TV Virtual Surround) lets you enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers (L, R, right) without using actual rear speakers.

If the recorder is set up to output the signal from the DIGITAL OUT (OPTICAL or COAXIAL) jack, the surround effect will only be heard when "Dolby Digital" in Audio Setup is set to "D-PCM" (page 96).

TVS was developed by Sony to produce surround sound for home use using just a stereo TV.



**Press SUR repeatedly during playback to select one of the TVS sounds.**

Refer to the following explanations given for each item.

- ◆ **Off**
- ◆ **Dynamic**
- ◆ **Wide**
- ◆ **Night**
- ◆ **Standard**

**TV Virtual Surround modes**

**◆ Dynamic**

Creates one set of virtual rear speakers from the sound of the actual front speakers (L, R) as shown below. This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.



**◆ Wide**

Creates five sets of virtual rear speakers from the sound of the actual front speakers (L, R) as shown below. This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

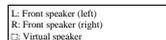


**◆ Night**

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

**◆ Standard**

Creates three sets of virtual rear speakers from the sound of the actual front speakers (L, R) as shown below. This mode is effective when you use two separate front speakers.



**To cancel the setting**

Select "Off".

**▼ Hint**

You can select the TVS mode from the TOOLS menu (page 61).

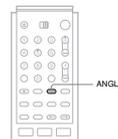
**Notes**

- ◆ When the playing signal does not contain a signal for the rear speakers, the surround effects will be difficult to hear.
- ◆ When you select one of the surround modes, turn off the surround setting of the connected TV or amplifier (receiver).
- ◆ Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings.
- ◆ Not all discs will respond to the "Night" function in the same way.
- ◆ The TVS function cannot be used with discs recorded on this recorder.

**Changing the Angles**

**DVD**

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



**Press ANGLE repeatedly during playback to select an angle.**

The scene changes to the selected angle.



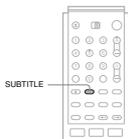
**Notes**

- ◆ Depending on the DVD VIDEO, you may not be able to change the angles even if multi-angles are recorded on the disc.
- ◆ You cannot change the angles when playing a disc recorded on this recorder.

**Displaying the Subtitles**

**DVD**

If subtitles are recorded on a disc you can change the subtitle language or turn the subtitles on and off whenever you want during playback.



**Press SUBTITLE repeatedly during playback to select a setting.**



Depending on the DVD VIDEO, the choice of language varies. When four numbers are displayed, they indicate a language code. To see which language the code represents, see "Language Code List" (page 108).

**To turn off the subtitles**

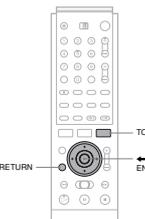
Select "Off".

**Notes**

- ◆ Depending on the DVD VIDEO, you may not be able to change the subtitle language even if multilingual subtitles are recorded on it. You also may not be able to turn them off.
- ◆ You cannot change the subtitles when playing a disc recorded on this recorder.

**Adjusting the Playback Picture and Sound**

You can adjust the video/audio signal from the recorder to obtain the picture or sound quality you want.



**Adjusting the picture quality**

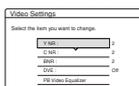
**◆ RW VR | RW VIDEO | RW | R | DVD**

**1 Press TOOLS during playback.**

The TOOLS menu appears.

**2 Press ↑/↓ to select "Video Settings," then press ENTER.**

The following display appears.



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

The adjustment display appears.

Example: Y NR



**◆ Y NR (luminance noise reduction)**

Reduces noise contained in the luminance element of the video signal.

**◆ C NR (chroma noise reduction)**

Reduces noise contained in the color element of the video signal.

**◆ BNR (block noise reduction)**

Reduces "block noise" or mosaic like patterns in the picture.

**◆ DVE (digital video enhancer)**

Sharpens the outlines of the images.

**◆ PB Video Equalizer (Playback 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.
- ◆ Color: makes the colors deeper or lighter.
- ◆ Hue: changes the color balance.

**4 Press ←/→ to adjust the setting, then press ENTER.**

The larger the number, the greater the effect. The default settings are underlined.

Items	Settings
Y NR	Off 1 <u>2</u> 3
C NR	Off 1 <u>2</u> 3
BNR	Off 1 <u>2</u> 3
DVE	Off 1 <u>2</u> 3
PB Video Equalizer	
Contrast	-3 - <u>0</u> 3
Brightness	-3 - <u>0</u> 3
Color	-3 - <u>0</u> 3
Hue	-3 - <u>0</u> 3

**5 Repeat steps 3 and 4 to adjust any other items.**

**6 Press RETURN to turn off the display.**

**Notes**

- ◆ If the outlines of the images on your screen become blurred, set "BNR" to "Off".
- ◆ Depending on the disc or the scene being played, the BNR effect may be hard to discern. The BNR function may not work with some screen sizes.
- ◆ When playing a disc recorded in SLP recording mode, the BNR setting may have little effect.

**Adjusting the sound quality**

**◆ RW VR | RW VIDEO | RW | R | DVD**

**1 Press TOOLS.**

The TOOLS menu appears.

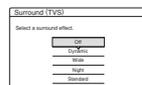
**2 Press ↑/↓ to select "Audio Settings," then press ENTER.**

The following display appears.



**3 Press ↑/↓ to select the item, then press ENTER.**

Example: Surround (TVS)



**◆ Surround (DVD VIDEO only)**

Selects one of the surround modes. For more information, see "TV Virtual Surround Settings (TVS)" (page 58).

◆ **Off (default)**

◆ **Dynamic**

◆ **Wide**

◆ **Night**

◆ **Standard**

**◆ Audio Filter (all discs)**

Selects the digital filter to reduce noise above 22.05 kHz (Fs\* is 44.1 kHz), 24 kHz (Fs is 48 kHz), or 48 kHz (Fs is above 96 kHz).

- ◆ Sharp (default): Provides a wide frequency range and spatial feeling.
- ◆ Slow: Provides smooth and warm sound.
- ◆ Sampling frequency of audio source

This function outputs output signals from the LINE OUT (AUDIO L/R) 1/2 jacks.

**4 Press ←/↑/↓/→ to select the option, then press ENTER.**

**5 Press RETURN to turn off the display.**

**Note**

There may be little effect by changing the Audio Filter depending on the disc or playback environment.

# Editing a DVD

This section introduces the basics of DVD editing, and explains both edit functions for the recording on a disc and the edit functions for the entire disc.

- Before Editing ..... page 62
- Basic Editing ..... page 64
- Advanced Editing (Playlist Edit) ..... page 67
- Labeling, Protecting, or Finalizing the Disc ..... page 72

## Before Editing

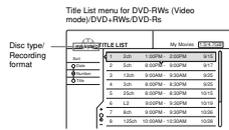
This recorder offers various edit options. Before you edit, read the following to see what is available for your disc. Note that you may lose the edited contents if you remove the disc or a timer recording starts while editing.

### Checking the disc type, recording format, and title type

Press TITLE LIST, and check the disc type and recording format indicated at the top of the Title List menu. If the disc is a VR mode disc, check also the title type. Original or Playlist. If you edit an original title instead of a Playlist title by mistake, it is irreversible. You will be unable to recover the erased title, or revert the edited title to the previous status.

### Edit options for DVD-RWs (Video mode)/DVD-RWs/DVD-Rs

You can perform simple edits. Since Video mode titles are actual recordings on the disc, you cannot undo the edits you have done.



Basic edit functions available with Video mode titles:

- Setting protection against erasure (page 64).
- Labeling a title (page 64).
- Erasing a title (page 65).
- Erasing multiple titles (page 65).

- Notes**
- Once the disc is finalized, you cannot edit or record on the disc (except for DVD-RWs in VR mode and DVD-RWs).
  - You cannot create a Playlist (see below) on a DVD-RWs (Video mode), DVD-RW, or DVD-Rs.

## Edit options for DVD-RWs (VR mode)

You have two options for a DVD-RW (VR mode): editing either the original recording (called the "Original"), or the playback information created from the Original (called a "Playlist"). Since each is different in nature and offers different merits, read the following and select the one that better suits your needs.

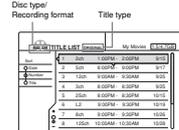
### Editing the "Original"

Basic edit functions available with Originals:

- Labeling a title (page 64).
- Setting protection against erasure (page 64).
- Erasing a title (page 65).
- Erasing multiple titles (page 65).
- Erasing a section of a title (A-B Erase) (page 66).

All edits made to the original title are final. If you plan to return an unaltered original recording, create and edit a Playlist (see below).

The Title List (Original) menu displays all the original titles on the disc.



**Note**  
Original titles provide a source for the created Playlist. If you use an original title for a Playlist, you will be unable to erase the original title.

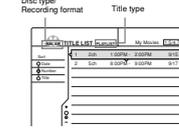
### Editing the "Playlist"

A Playlist is a group of Playlist titles created from the original title for editing purposes. When you create a Playlist, only the control information necessary for playback, such as the playback order, is stored on the disc.

Example: You have recorded the final few matches of a football tournament on a DVD-RW (VR mode). You want to create a digest with the goal scenes and other highlights, but you also want to keep the original recording. In this case, you can collect the scenes of the highlights, and create playback information (a Playlist title). You can even rearrange the scene order within the Playlist title.

The above is only an example. Try using the Playlist's various edit functions, or use them in conjunction with an Original edit. Devise your own ways of editing with Playlists and Originals.

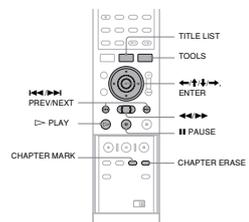
The Title List (Playlist) menu displays the Playlist titles on the disc.



## Basic Editing

This section explains the basic edit functions. Note that these edits are irreversible to the original status. If you want to edit a DVD-RW (VR mode) without changing the original recordings, create a Playlist (page 67).

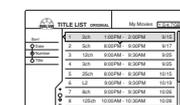
- Notes**
- If "No new data can be added to this disc" appears on the screen, erase any unwanted titles before editing.
  - For DVD-Rs/DVD-RWs (Video mode): Finish all the editing before finalizing the disc. You cannot edit a finalized disc.
  - For original titles in DVD-RWs (VR mode): Original titles provide a source for derived Playlist. When you use an original title for a Playlist, you will be unable to erase or edit the original title.



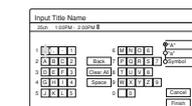
### Labeling a title (Title Name)

You can enter up to 64 characters for a name. The title name will be displayed in the Title List menu.

- 1 Press TITLE LIST. The Title List menu appears. If you are using a DVD-RW (VR mode), press TOOLS and select either "Original" or "Playlist" from the TOOLS menu to change the Title List, if necessary.



- 2 Press  $\uparrow/\downarrow$  to select the title, then press ENTER. The sub-menu appears.
- 3 Press  $\uparrow/\downarrow$  to select "Title Name," then press ENTER. The display for entering a title name appears.

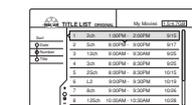


- 4 When you finish entering the title name, press  $\leftarrow/\rightarrow$  to select "Finish." A new Title List menu appears with the title of the entered name.

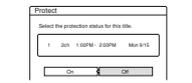
### Protecting a title (Protect Title)

You can set protection for a title so that the title cannot be erased.

- 1 Press TITLE LIST. The Title List menu appears. If you are using a DVD-RW (VR mode), press TOOLS and select "Original" from the TOOLS menu.



- 2 Press  $\uparrow/\downarrow$  to select the title, then press ENTER. The sub-menu appears.
- 3 Press  $\uparrow/\downarrow$  to select "Protect Title," then press ENTER. The following display appears.



- 4 Press  $\leftarrow/\rightarrow$  to select "On," then press ENTER. The protection is set.

- To cancel the protection**
- 1 Select the protected title in step 2.
  - 2 Press  $\uparrow/\downarrow$  to select "Protect Title," then press ENTER.
  - 3 Press  $\leftarrow/\rightarrow$  to select "Off," then press ENTER.

**To protect the entire disc**  
See page 72.

**Note**  
You cannot protect Playlist titles.

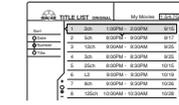
### Erasing a title (Erase)

You can erase titles individually using the sub-menu.

**Far DVD-Rs:** Note that erasing titles on a DVD-R does not increase available disc space.

**Far DVD-RWs (VR mode):** Note that you are unable to erase the original title if there is a Playlist title derived from the original title.

- 1 Press TITLE LIST. The Title List menu appears. If you are using a DVD-RW (VR mode), press TOOLS and select either "Original" or "Playlist" from the TOOLS menu to change the Title List, if necessary.



- 2 Press  $\uparrow/\downarrow$  to select the title you want to erase, then press ENTER. The sub-menu appears.
- 3 Press  $\uparrow/\downarrow$  to select "Erase," then press ENTER. The display asks for confirmation.
- 4 Press  $\leftarrow/\rightarrow$  to select "OK," then press ENTER. The title is erased.
  - ◆ When the selected title is protected
    - To continue the procedure, press  $\leftarrow/\rightarrow$  to select "Change."
    - The protection display appears. Select "Off" by pressing  $\leftarrow/\rightarrow$ , then press ENTER.
    - To cancel the procedure, select "Close" by pressing  $\leftarrow/\rightarrow$ , then press ENTER.

Advanced edit functions available with the Playlist:

- Labeling a title (page 64).
- Erasing a title (page 65).
- Erasing multiple titles (page 65).
- Erasing a section of a title (A-B Erase) (page 66).
- Creating a Playlist title from selected titles and scenes (page 67).
- Rearranging the title order (page 70).
- Dividing a title into multiple titles (page 70).
- Combining multiple titles into one title (page 71).

- ◆ When the selected title is referred to by a Playlist
  - Select "Close" as you are unable to delete an original title that is referred to by a Playlist.
  - If you want to delete the original title, first delete the Playlist title. Then, delete the original title.

**Hint**  
If you are using a DVD-RW (Video mode) or DVD-RW, you can erase a title using the Disc Map (page 38).

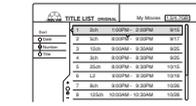
### Erasing multiple titles (Erase Titles)

You can erase more than two titles at one time using the TOOLS menu.

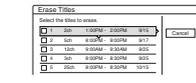
**Far DVD-Rs:** Note that erasing titles on a DVD-R does not increase available disc space.

**Far DVD-RWs (VR mode):** Note that you are unable to erase the original title if there is a Playlist title derived from the original title.

- 1 Press TITLE LIST. The Title List menu appears. If you are using a DVD-RW (VR mode), press TOOLS and select either "Original" or "Playlist" from the TOOLS menu to change the Title List, if necessary.



- 2 Press TOOLS. The TOOLS menu appears.
- 3 Press  $\uparrow/\downarrow$  to select "Erase Titles," then press ENTER. The display for selecting titles to be erased appears.



- 4 Press  $\uparrow/\downarrow$  to select the title, then press ENTER. A check mark appears in the check box next to the selected title. To clear the check mark, press ENTER again.

To list all of the titles to be erased, select "List." To clear all the check marks, select "Reset All."

**5 Repeat step 4 to select all the titles you want to erase.**

The display asks for confirmation.

- ◆ **When the selected title is protected**  
The display asks for confirmation.  
• To continue the procedure, press **ENTER** to select "Change."  
The protection display appears. Select "Off" by pressing **ENTER**, then press **ENTER**.  
• To cancel the procedure, select "Close" by pressing **ENTER**, then press **ENTER**.

◆ **When the selected title is referred to by a Playlist**  
Select "Close" as you are unable to delete an original title that is referred to by a Playlist. If you want to delete the original title, first delete the Playlist title. Then, delete the original title.

**6 Press **ENTER** to select "OK," then press **ENTER**.**

The display asks for confirmation. To return to the display for selecting titles, select "View All."

**7 Press **ENTER** to select "OK," then press **ENTER**.**

**Hint**  
If you are using a DVD-RW (Video mode) or DVD-RW, you can erase a title using the Disc Map (page 38).

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

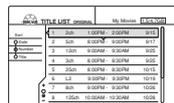
**CRW VR**

You can erase a section of a title using the sub-menu.

◆ **For original titles in a DVD-RW (VR mode):**  
Note that you are unable to erase the original title if there is a Playlist title derived from the original title.

**1 Press TITLE LIST.**

The Title List menu appears. If you are using a DVD-RW (VR mode), press **TOOLS** and select either "Original" or "Playlist" from the **TOOLS** menu to change the Title List, if necessary.

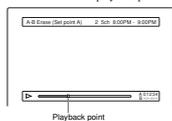


**2 Press **ENTER** to select the title, then press **ENTER**.**

The sub-menu appears.

**3 Press **ENTER** to select "A-B Erase," then press **ENTER**.**

The display for setting point A appears. The selected title plays in the background. The slider indicates the current playback point.



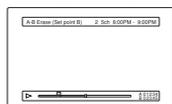
◆ **When the selected title is protected**  
The display asks for confirmation.

- To continue the procedure, press **ENTER** to select "Change."  
The protection display appears. Select "Off" by pressing **ENTER**, then press **ENTER**.  
• To cancel the procedure, select "Close" by pressing **ENTER**, then press **ENTER**.

◆ **When the selected title is referred to by a Playlist**  
Select "Close" as you are unable to delete an original title that is referred to by a Playlist. If you want to delete a section of the original title, first delete the Playlist title. Then, delete the section.

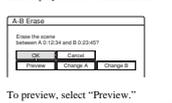
**4 While watching the playback picture, set point A using **PLAY**, **PAUSE**, and **ENTER**, then press **ENTER**.**

The display for setting point B appears, and the title continues to play in the background.



**5 While watching the playback picture, set point B using **PLAY**, **PAUSE**, and **ENTER**, then press **ENTER**.**

The display asks for confirmation.



To preview, select "Preview."  
To reset either point A or B, select "Change A" or "Change B."

**6 Press **ENTER** to select "OK," then press **ENTER**.**

The scene is erased, and the display asks whether to erase another scene.

**7 To exit, press **ENTER** to select "No," then press **ENTER**.**

The display returns to the Title List menu. To continue, select "Yes" and repeat the steps above.

**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.

**Creating chapters manually**

**CRW VR**

You can manually insert a chapter mark at any point you like.

Press **CHAPTER MARK** during playback 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 scene to the left and right of the mark becomes a chapter.



**To erase chapter marks**

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

- 1 Press **PREV** or **NEXT** to search for a chapter number.
- 2 Press **CHAPTER ERASE** while displaying the chapter you want to erase. The current playing chapter combines with the previous chapter.

**Notes**

- Playback may momentarily stop when inserting a chapter mark.
- A message will appear when no more chapter marks can be added. In this case, you may not be able to record or edit the disc.

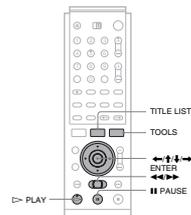
**Advanced Editing (Playlist Edit)**

This section explains how to create a Playlist, and then covers available edit functions for the created Playlist.

Playlist titles can be created from scenes that are selected original titles or other Playlist titles. Since edits to the Playlist does not affect the original title, you can redo editing as many times as you like. To create a Playlist title, you will do the following.

1. Select a title or titles for editing
2. "Capture" multiple scenes from the selected title(s)
3. Confirm the scenes on the Scene List
4. If necessary, edit the scenes on the Scene List
5. Connect scenes to create a "Playlist" title

Editing a DVD



**Creating a Playlist title from other titles**

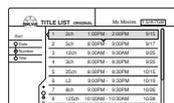
**CRW VR**

Collect your favourite scenes from original titles or other Playlist titles to create a new Playlist title. You can rearrange the order of the scenes, delete scenes, or edit the scenes as well.

**1 Press TITLE LIST.**

The Title List (Original) menu or the Title List (Playlist) menu appears.  
Example: The Title List (Original) menu.

→ continued

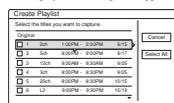


**2 Press **TOOLS**.**

The **TOOLS** menu appears.

**3 Press **ENTER** to select "Create Playlist," then press **ENTER**.**

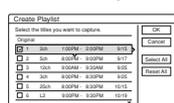
The display for selecting titles appears.



**4 Press **ENTER** to select the title you want to include in the Playlist title, then press **ENTER**.**

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

To clear the check mark, press **ENTER** again.



To select all of the titles, select "Select All."

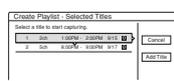
**5 Repeat step 4 when adding more titles.**

To go to the next page, press **ENTER**.

To clear all the check marks, select "Reset All."

**6 Press **ENTER** to select "OK," then press **ENTER**.**

The list of selected titles appears.



To add another title, select "Add Title."

**7 Press **ENTER** to select one of the titles, then press **ENTER**.**

The sub-menu appears.

◆ **To add the entire title as one scene to the Playlist title**

Select "Capture All" and go to step 14.

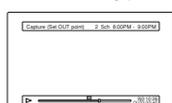
**8 Press **ENTER** to select "Capture," then press **ENTER**.**

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



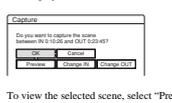
**9 While watching the playback picture, select the start of the scene using **PLAY**, **PAUSE**, and **ENTER**, then press **ENTER**.**

The display for setting the end point (OUT) appears, and the title continues to play in the background.



**10 While watching the playback picture, select the end point of the scene using **PLAY**, **PAUSE**, and **ENTER**, then press **ENTER**.**

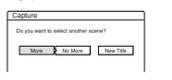
The display asks for confirmation.



To view the selected scene, select "Preview."  
To reset either the IN or OUT point, select "Change IN" or "Change OUT."

**11 Press **ENTER** to select "OK," then press **ENTER**.**

The selected portion is captured as a scene, and the display asks whether to continue scene capture.



**12 Press **ENTER** to select an option on the screen, then press **ENTER**.**

To capture a scene from the same title, select "More," and repeat the steps above.

To capture a scene from another title, select "New Title," and repeat the steps above.

**13 To end scene capture, press **ENTER** to select "No More" and press **ENTER**.**

The display returns to the list of selected titles.

◆ **To check the captured scenes in a single title**

1 Press **ENTER** to select a title from the list of selected titles, then press **ENTER**.

The sub-menu appears.

2 Press **ENTER** to select "Check Scenes," then press **ENTER**.

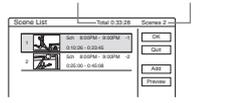
The thumbnail pictures of the captured scenes within the title appear.



**14 Press **ENTER** to select "Scene List," then press **ENTER**.**

The Scene List menu appears with all of the selected scenes.

Total duration of the selected scene    Total number of scenes



◆ **To change the scene order (Move)**

1 Press **ENTER** to select the scene you want to move, then press **ENTER**.

The sub-menu appears.

2 Press **ENTER** to select "Move," then press **ENTER**.

The display for selecting the insertion point appears.



3 Press **ENTER** to select the insertion point, then press **ENTER**.

The scene moves to its new position, and the display returns to the Scene List menu.

◆ **To erase the scene (Erase)**

1 Press **ENTER** to select the scene you want to erase, then press **ENTER**.

The sub-menu appears.

2 Press **ENTER** to select "Erase," then press **ENTER**.

3 When the display asks for confirmation, press **ENTER** to select "OK," then press **ENTER**.

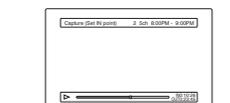
◆ **To change the scene contents (Change IN/Change OUT)**

1 Press **ENTER** to select the scene you want to change, then press **ENTER**.

The sub-menu appears.

2 Press **ENTER** to select "Change IN," then press **ENTER**.

The display for setting the IN point appears.



3 Repeat steps 9 to 14.

To reset the OUT point, select "Change OUT," then repeat steps 10 to 14.

The display returns to the Scene List menu.

◆ **To add another scene**

Press **ENTER** to select "Add," then press **ENTER**. Repeat steps above.

◆ **To preview the entire Playlist title**

Press **ENTER** to select "Preview," then press **ENTER**. The captured scenes start to play in the listed order. When the playback is finished, the display returns to the Scene List menu.

13 Press **ENTER** to select "OK," then press **ENTER**.

The scenes are connected to create a new Playlist title, and the display for entering the title name appears.

◆ **To enter a new name**

Select "Enter" and follow the explanations on page 34.

◆ **To use the default name**

Press **ENTER** to select "OK," then press **ENTER**. A new Title List menu appears with the title of the entered name.

◆ **Hint**

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

**Notes**

- You can capture, move, or change the IN and OUT points for a maximum of 50 scenes per title.
- The picture may pause when the edited scene is played.

→ continued

## Moving a Playlist title (Move Title)

**◀ RW VR**

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

### 1 Press TITLE LIST.

The Title List menu appears.

If the Title List (Original) menu appears, press TOOLS, and select "Playlist" from the TOOLS menu.



### 2 Press ← to select the sort buttons.

### 3 Press ↑/↓ to select "Number," then press ENTER.

### 4 Press ↑/↓ to select the title you want to move, then press ENTER.

The sub-menu appears.

### 5 Press ↑/↓ to select "Move Title," then press ENTER.

The display for moving titles appears.

### 6 Press ↑/↓ to select the new location, then press ENTER.

The title moves to its new location, and the display returns to the new Title List (Playlist) menu.

## Dividing a Playlist title (Divide Title)

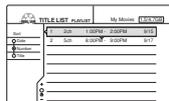
**◀ RW VR**

You can divide a Playlist title into two Playlist titles. For example, if a Playlist title contains two football matches, you can divide the title where the first match ends.

### 1 Press TITLE LIST.

The Title List menu appears.

If the Title List (Original) menu appears, press TOOLS, and select "Playlist" from the TOOLS menu.

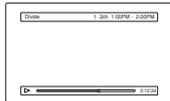


### 2 Press ↑/↓ to select the title, then press ENTER.

The sub-menu appears.

### 3 Press ↑/↓ to select "Divide Title" then press ENTER.

The display setting the dividing point appears. The selected title starts to play in the background.



### 4 While watching the picture on the screen, move the playback point using ▷ PLAY, || PAUSE, and ◀◀▶▶.

### 5 Press ENTER at the point where you want to divide the title.

The display asks for confirmation.



To change the dividing point, select "Change."

### 6 Press ← to select "OK," then press ENTER.

The display asks if you want to enter a new name.

#### ◆ To enter a new name

Select "Yes" and follow the explanations on page 34.

#### ◆ To use the same name as before

Select "No." The title is divided and the Title List menu appears with the two divided titles.

## Combining multiple Playlist titles (Combine Titles)

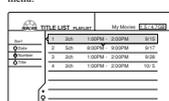
**◀ RW VR**

You can add new contents to an existing Playlist title by combining the title with other Playlist titles.

### 1 Press TITLE LIST.

The Title List menu appears.

If the Title List (Original) menu appears, press TOOLS, and select "Playlist" from the TOOLS menu.

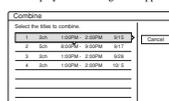


### 2 Press TOOLS.

The TOOLS menu appears.

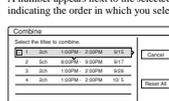
### 3 Press ↑/↓ to select "Combine Titles," then press ENTER.

The display for selecting titles appears.



### 4 Press ↑/↓ to select the title, then press ENTER.

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



### To cancel the selection, move the cursor to the selected title by pressing ↑/↓, then press ENTER again.

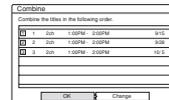
### 5 Repeat step 4 to select all the titles you want to combine.

To list the titles to be combined, select "List."

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

### 6 Press → to select "OK," then press ENTER.

The display asks for confirmation.



To change the selection, select "Change."

### 7 Press ← to select "OK," then press ENTER.

The display for selecting a title name from among the selected titles appears.

To enter a new name, select "Enter Text," and follow the explanations on page 34.

### 8 Press ↑/↓ to select a name, then press ENTER.

The titles are combined, and the display returns to the Title List menu.

## Additional Playlist edit functions

**◀ RW VR**

You can also do the following edits for Playlists.

- Label a Playlist title (page 64).

- Erase a Playlist title (page 65).

- Erase multiple Playlist titles (page 65).

- Erase a section of a Playlist title (A-B Erase) (page 66).

- Create chapters in a title (page 67).

To perform these edits, press TITLE LIST \* and then follow the same steps for these functions explained in "Basic Editing" (page 64).

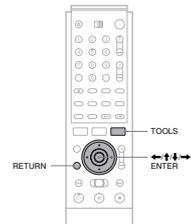
\* If the Title List (Original) menu appears, press TOOLS and select "Playlist" from the TOOLS menu.

### Note

Erasing Playlist titles will not free up disc space.

## Labeling, Protecting, or Finalizing the Disc

Using the Disc Information display, you can label, protect, or finalize your disc. You can even erase the entire disc except for the protected titles. This section explains settings effective for the entire disc.



## Labeling a disc (Disc Name)

**◀ RW VR ◀ RW VIDEO ▶ RW ▶ R**

You can enter up to 64 characters for a disc name (the actual number of displayed characters will vary). The disc name will be displayed in the Title List, etc.

### 1 Press TOOLS while the disc is in the recorder.

The TOOLS menu appears.

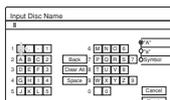
### 2 Press ↑/↓ to select "Disc Info.," then press ENTER.

The Disc Information display appears. Example: When the inserted disc is a DVD-RW (VR mode).



### 3 Press ↑/↓ to select "Disc Name," then press ENTER.

The display for entering a disc name appears.



### 4 Enter a name by following the explanation on page 34.

The Disc Information display appears with the new disc name.



### 5 Press RETURN to turn off the display.

### Note

The disc name will not appear when the disc is played on a different recorder.

## Protecting a disc (Protect Disc)

**◀ RW VR**

You can protect an entire disc. To protect individual titles, see page 64.

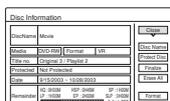
Note that this protection is effective only for inadvertent edit commands and erasure.

### 1 Press TOOLS while the disc is in the recorder.

The TOOLS menu appears.

### 2 Press ↑/↓ to select "Disc Info.," then press ENTER.

The Disc Information display appears.



### 3 Press ↑/↓ to select "Protect Disc," then press ENTER.

The display for setting disc protection appears.



### 4 Press ←/→ to select "Protect," then press ENTER.

The display returns to the Disc Information display.

### 5 Press RETURN to turn off the display.

## To cancel the disc protection

### 1 Repeat steps 1 to 3 above.

The display for setting disc protection appears.

### 2 Press ←/→ to select "Don't Protect."

The display returns to the Disc Information display.

### 3 Press RETURN to turn off the display.

## Finalizing a disc (Finalize)

**◀ RW VR ◀ RW VIDEO ▶ RW ▶ R**

Finalizing is necessary when you play discs recorded with this recorder on other DVD equipment. Before finalizing, check the differences between the disc types on the table below.

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

When a finalized disc is in the recorder, the FINALIZED indicator lights up on the front panel.

## Differences between the disc types

**◀ RW VR** Finalizing is unnecessary when playing a disc on VR format compatible equipment. You may need to finalize the disc depending on the DVD equipment, or if the recording time is short. You can edit or record on the disc even after finalizing.

**▶ RW** Finalizing is unnecessary, since DVD-RWs are automatically finalized when removed from the recorder. However, you may need to finalize the disc by following the steps below for certain DVD equipment, or if the recording time is short. You can edit or record on the disc even after finalizing.

**◀ RW VIDEO** Finalizing is necessary when playing on equipment other than this recorder. After finalizing, you cannot edit or record on the disc. If you want to record on it again, reformat the disc (page 74). However, all contents recorded on the disc will be erased.

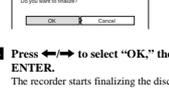
**▶ R** Finalizing is necessary when playing on equipment other than this recorder. After finalizing, you cannot edit or record on the disc.

### 1 Press TOOLS while the disc is in the recorder.

The TOOLS menu appears.

### 2 Press ↑/↓ to select "Disc Info.," then press ENTER.

The Disc Information display appears.



### 3 Press ↑/↓ to select "Finalize," then press ENTER.

The display shows the approximate time required for finalizing and asks for confirmation.

### 4 Press ← to select "OK," then press ENTER.

The recorder starts finalizing the disc.

## To unfinalize a disc

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

Select "Unfinalize" in step 3 above.

Hint You do not need to finalize a disc again once the disc has been finalized with this recorder.

Note Depending on the condition of the disc, recording, or the DVD equipment, discs may not play even when the discs are finalized.

\* The recorder may not be able to finalize the disc if it was recorded on another recorder.

## Erasing all the titles on the disc (Erase All)

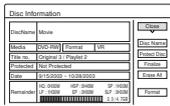
**◀ RW VR ◀ RW VIDEO ▶ RW**

You can erase all the titles on the disc except the titles you have set protection.

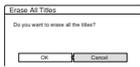
### 1 Press TOOLS while the disc is in the recorder.

The TOOLS menu appears.

- 2 Press **↑/↓** to select "Disc info.," then press **ENTER**.  
The Disc Information display appears.



- 3 Press **↑/↓** to select "Erase All," then press **ENTER**.  
The display asks for confirmation. When there is a protected title on the disc, a list of protected titles appears.



- 4 Press **←/→** to select "OK," then press **ENTER**.  
The titles are erased.

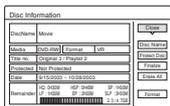
### Reformatting a disc (Format)

**←RW VR** **←RW VCR** **←RW**

By reformatting, you can change the recording format of DVD-RWs, or record again on DVD-RWs (Video mode) that have been finalized. Make sure nothing important is left on the disc, as all the disc contents will be erased. For DVD-RWs, reformat the disc if you want to create a blank disc.

- 1 Press **TOOLS** while the disc is in the recorder.  
The **TOOLS** menu appears.

- 2 Press **↑/↓** to select "Disc Info.," then press **ENTER**.  
The Disc Information display appears.



- 3 Press **↑/↓** to select "Format," then press **ENTER**.  
The display asks for confirmation.

- 4 Press **←/→** to select "OK," then press **ENTER**.

- ◆ When you place a DVD-RW and set "Format Disc" to "Selectable" in Options Setup.  
The display asks you to select the recording format.



- Press **←/→** to select "VR" or "Video," then press **ENTER**.

The recorder starts formatting the disc.

#### Notes

- Even when you have set protection for the title, all the contents will be erased after formatting the disc.
- A protected disc cannot be reformatted (DVD-RW in VR mode only).

# Connecting a Digital Video Camera or Other Equipment

You can record from connected equipment, such as a digital video camera.

- Before Recording/Editing ..... page 75
- Available DV Dubbing Functions ..... page 77
- Recording an Entire DV/Digital8 Format Tape (ONE TOUCH DUB) **←RW VR** **←RW VCR** **←RW** ..... page 78
- Program Edit **←RW VR** **←RW VCR** **←RW** ..... page 79
- Advanced Program Edit **←RW VR** ..... page 81
- Re-editing the "program" in the DV/D8 Edit List **←RW VR** ..... page 84
- Creating a Copy of the Edited Contents (Copy Dubbing) **←RW VR** **←RW VCR** **←RW** ..... page 86
- Recording From Equipment Connected to the LINE IN Jacks **←RW VR** **←RW VCR** **←RW** ..... page 88

## Before Recording/Editing

The recorder has a DV IN jack that inputs digital signals, and LINE jacks that input/output analogue signals. The DV IN jack on this recorder conforms to the iLINK standard. You can connect other equipment that has an iLINK (DV) jack. For more information, see "About iLINK" (page 106).

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 in VR mode.

#### ◆When recording from the DV IN jack

See "Preparing for recording using the DV IN jack" below.

#### ◆When recording from the LINE IN jacks

See "Recording From Equipment Connected to the LINE IN Jacks" (page 88).

## Preparing for recording using the DV IN jack

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 smooth 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 also the instruction manual supplied with the digital video camera before connecting.

#### ◆If you connect a digital video camera but cannot use the DV Edit functions

See "Recording from connected equipment" (page 88).

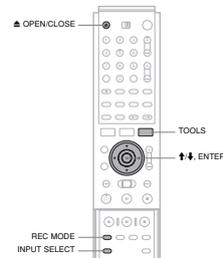
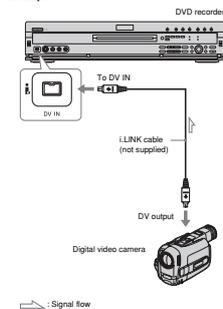
#### Notes

- The DV IN jack on this recorder is for input only. If you want to have the recorder output signals, for example, when you use this recorder as a source player, connect other equipment to this recorder's LINE OUT jacks.
- Only DV-SD format signals can be input to the DV IN jack on this recorder. Do not connect a MICRO MV format digital video camera even if it has an iLINK jack.
- Recording may be limited if the images on the tape contain copyright protection signals.

Connecting a Digital Video Camera or Other Equipment

→ continued

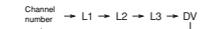
### Hookups



- 3 Press **OPEN/CLOSE** to close the disc tray.  
Wait until "LOAD" disappears from the front panel display. If you use an unused DVD, formatting starts automatically. When using an unused DVD-RW, select the recording format, VR or Video.

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

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



- 6 Press **REC MODE** on the remote repeatedly to select the recording mode.  
The recording mode changes as follows:



- 7 Select the audio input for the digital video camera using the **TOOLS** menu.

- 1 Press **TOOLS**.
  - 2 Press **↑/↓** to select "DV/D8 Audio Input," then press **ENTER**.
  - 3 Press **↑/↓** to select the item, then press **ENTER**.
    - Stereo1 (default)
    - Mix (both stereo 1 and stereo 2)
    - Stereo2
- You are ready to start recording.

#### Hints

- You can adjust the settings for the recording picture before recording. See "Adjusting the Recording Picture (Quality and Size)" (page 86).
- If you plan to re-edit the "program" (page 77), insert a DVD-RW and format it in VR mode.

#### Notes

- You cannot connect more than two pieces of digital video equipment to the recorder.
- Depending on the digital video equipment, you may not be able to control the equipment.
- 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 with a sound track that is recorded in multiple sampling frequencies (48 kHz, 44.1 kHz, or 32 kHz), no sound will be output when playing back the switched point on the disc.
- In order to use this recorder's Auto Scene Chaptering feature, be sure to correctly set the clock on your digital video camera before shooting.
- The recorded picture may be momentarily affected if the picture size of the source image changes, or if there is nothing recorded on the tape.

## Available DV Dubbing Functions

#### ◆One Touch Dub (page 78)

Records the entire contents of a DV/Digital8 format tape to a disc of your choice with a single touch of the ONE TOUCH DUB button.

#### ◆Program Edit (page 79)

Allows you to select scenes from a DV/Digital8 format tape, and then record the selected scenes to a disc of your choice. As you select the scenes, you will create a "program" (see below), which will then be used to dub the selected scenes to a disc. Before you dub the scenes, you can rearrange the order and make other changes using the "Scene List" (see below).

#### ◆Advanced Program Edit (page 81)

Allows you to select scenes from a DV/Digital8 format tape by first recording the entire contents of the tape to a DVD-RW (VR mode), whereupon you can easily create a "program" (see below). By first copying the entire contents of the tape to a disc, the start and stop points on the tape automatically become scenes (you can also select scenes manually). These scenes are displayed in a "scene list" (see below). You can then delete, rearrange, or select new scenes to create a "program." Once the "program" is complete, you will use it to copy the scenes to a disc of your choice from the "DV/D8 Edit List" (see below). Furthermore, you can also automatically create a Playlist of the edited scenes and save it on the DVD-RW (VR mode) you used to originally record the entire contents of the tape.

#### ◆Re-editing the "program" in the DV/D8 Edit List (DVD-RW in VR mode only) (page 84)

Allows you to select the "program" (see below) created during One Touch Dub or Advanced Program Edit from the "DV/D8 Edit List" (see below), and make further edits before copying the contents to a disc. You can delete or create new scenes, or rearrange the order of existing scenes.

#### ◆Copy Dubbing (page 86)

Allows you to make duplicate copies of the "programs" (see below) in the "DV/D8 Edit List" (see below) to a disc of your choice. When making copies, you will need the original DV/Digital8 format tapes used to create the "program."

#### About "programs"

"Programs" are automatically created whenever you make a One Touch Dub, Program Edit, or Advanced Program Edit. These programs are stored in the "DV/D8 Edit List" (see below) and contain editing information such as which scenes have been selected, moved, or deleted.

Programs are useful when you want to make duplicates of the edited contents because you do not have to select the same scenes again from the tape – just select the program. You can also re-edit the program to create different variations of the original program. Note that programs contain only the start and stop points of the scenes; they do not contain the actual scenes themselves so you need to use the original DV/Digital8 format tapes to copy a program to a disc.

#### ◆About the "DV/D8 Edit List"

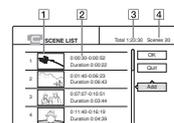
The "DV/D8 Edit List" contains the "programs." If you re-edit the program, the re-edited program is stored in the DV/D8 Edit List, but the original program is lost. You can store up to 20 programs in the DV/D8 Edit List.



- 1 Disc mark
- 2 Program name
- 3 Total playing time
- 4 Date of editing or recording

#### ◆About the "Scene List"

The contents of the programs are contained in the "Scene List." A thumbnail of each scene, as well as the length of the scene is displayed in the list. You can add or delete scenes, or change the order of the scenes. 50 scenes can be made for each program.



- 1 Thumbnail picture
- 2 Time information
- 3 Total duration of the program
- 4 Total number of scenes

#### Note

After you make a dubbing, do not throw away or record over your tapes. You will need them later to make additional edits or copies.

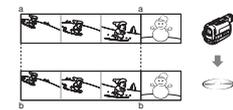
Connecting a Digital Video Camera or Other Equipment

## Recording an Entire DV/Digital8 Format Tape (ONE TOUCH DUB)

—RW VR —RW VIDEO —+RW —R

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. The recorder controls the digital video camera for the whole process, and completes the recording.

Example for all disc types



When using a DVD-RW (VR mode), chapter marks [b] are marked where the recordings start on the tape [a] (Auto Scene Chaptering).  
For other discs, the recorder marks chapters either in 6 or 15 minute intervals depending on the setting in "Auto Chapter" in Features Setup (page 97).

Follow steps 1 to 7 of "Preparing for recording using the DV IN jack" (page 75), then press **ONE TOUCH DUB** on the front panel of 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, and turns off.

To stop during recording

Press **REC STOP**.

### Hints

- The date and time of the recording made with your digital video camera is assigned as the program name in the DV/D8 Edit List (page 84) (example: DV 10:25:03 10:00PM - 10:31:03 11:30PM).
- If you set "Finalize Disc" to "Auto" in Features Setup (page 98), the recorded disc will automatically be finalized after recording is finished.

### Notes

- The recorder does not start One Touch Dub when you set "Add to Edit List" to "On" (default) in Features Setup (page 98) and there are already twenty programs on the recorder. In this case, the recorder beeps and the front panel display lights up. Delete unnecessary programs from the DV/D8 Edit List menu (page 84) and repeat the steps above.
- When a blank space on the tape continues for more than five minutes, One Touch Dub ends automatically.
- This function may not work with certain digital video cameras. In this case, follow the instructions of "Recording From Equipment Connected to the LINE IN Jacks" (page 88).
- In order for a One Touch Dub recording to be added to the DV/D8 Edit List, "Add to Edit List" in Features Setup must be set to "On" (default) (page 98).

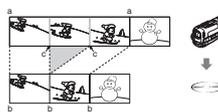
The recorder automatically records a blank for five minutes before it stops dubbing. When you press **REC STOP**, the recorder stops recording, rewinds the tape, and turns off.

## Program Edit

—RW VR —RW VIDEO —+RW —R

You can select scenes from a DV/Digital8 format tape, and then automatically record selected scenes to a disc of your choice.

Example for DVD-RWs (VR mode)



When using a DVD-RW (VR mode), chapter marks [b] are marked where the recordings start on the tape [a] (Auto Scene Chaptering). Chapter marks are also inserted at the IN points of the selected scenes [c].

For other discs, the recorder marks chapters either in 6 or 15 minute intervals depending on the setting in "Auto Chapter" in Features Setup (page 97).

To use this function, you will do the following:

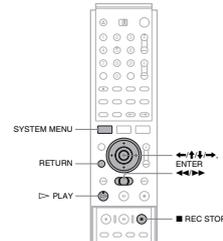
1. Connect your digital video camera and prepare for recording

2. Select and edit the scenes you want to dub

Using the recorder's remote control, you will 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 reset, erase, or change the order of the scenes.

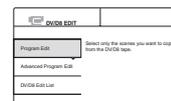
3. Dub the selected scenes to a disc

After you have selected the scenes, the recorder will fast forward and rewind the tape automatically and record the scenes to a disc of your choice.

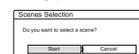


1. Follow steps 1 to 7 of "Preparing for recording using the DV IN jack" (page 75), then press **SYSTEM MENU**.

2. Press **ENTER** to select "DV/D8 EDIT," then press **ENTER**. The DV/D8 Edit menu appears.



3. Press **ENTER** to select "Program Edit," then press **ENTER**. The display asks whether to start selecting scenes.



4. If you have previously saved a program The display asks whether to edit an existing program or to create a new program. To resume editing the existing program, select "Saved Data."

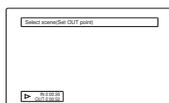
5. Press **ENTER** to select "Start," then press **ENTER**. The display for setting the IN point (start of the scene on the tape) appears.

6. Press **PLAY** to start playback of the tape in your digital video camera. The scene starts to play in the background.



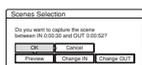
6. While watching the playback picture, search for the IN point by pressing **←** or **→**, then press **ENTER**.

The display for setting the OUT point (end of the scene on the tape) appears. The scene starts to play in the background from the IN point.



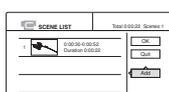
7. While watching the playback picture, search for the OUT point by pressing **←** or **→**, then press **ENTER**.

The display asks whether to add the selected scene to the Scene List menu.

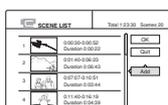


To preview the scene, select "Preview." To reset either the IN or OUT point, select "Change IN" or "Change OUT." Repeat from step 5.

8. Press **ENTER** to select "OK," then press **ENTER**. A new Scene List menu appears with the selected scene.



9. Press **ENTER** to select "Add" and press **ENTER**. Then repeat steps 5 to 9 to select all the scenes you want to include. You can add up to 50 scenes to a title.



To edit the Scene List, select a scene by pressing **←** or **→**, then press **ENTER**. When the sub-menu appears, select an edit option you want to apply to the scene.

◆ To erase the scene

1. Press **ENTER** to select "Erase," then press **ENTER**.

2. When the display asks for confirmation, press **ENTER** to select "OK," then press **ENTER**.

◆ To move the scene

1. Press **ENTER** to select "Move," then press **ENTER**.

The display for selecting the scene insertion point appears.

2. Press **ENTER** to select the point, then press **ENTER**.

The scene moves to the selected location.

◆ To reset the start or end of the scene

Press **ENTER** to select "Change IN" or "Change OUT," then press **ENTER**.

◆ To preview the scene

Press **ENTER** to select "Preview," then press **ENTER**.

To cancel, press **←** or **→** to select "Quit" in the Scene List menu, then press **ENTER**.

10. When you finish editing the Scene List, press **ENTER** to select "OK," then press **ENTER**.

The display for entering a title name appears.



To enter a new name, select "Enter," and follow the explanations on page 34.

11. To use the default name, press **ENTER** to select "OK," then press **ENTER**.

The default title name is fixed, and the display asks whether to start recording. If you want to change the recording mode, press **←** or **→** to move the cursor, then press **ENTER** to select the mode.



12. Press **ENTER** to select "Start," then press **ENTER**.

The recorder starts recording the tape contents as programmed. To quit recording, press **REC STOP**.

13. When the recording is finished, press **ENTER** to select "Close."

The display returns to the DV/D8 Edit menu.

14. Press **RETURN** repeatedly to turn off the display.

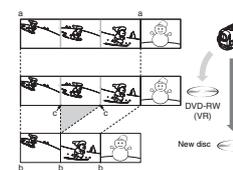
### Notes

- The disc may not be recorded as programmed if the tape's time code is not sequential or there are blanks between the recordings on the tape. In this case, follow the instructions of "Recording From Equipment Connected to the LINE IN Jacks" (page 88).
- The start and end points of a program may be different from what you have set if the source DV/Digital8 format tape is in any of the following conditions:
  - Recording mode was changed during the recording.
  - There is a blank space in the recorded portion of the tape.
  - 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 change slightly during dubbing.
- You cannot set a scene shorter than one second.
- This function may not work with certain digital video cameras. In this case, follow the instructions of "Recording From Equipment Connected to the LINE IN Jacks" (page 88).

## Advanced Program Edit

—RW VR

You can quickly edit a DV/Digital8 format tape by first copying the entire contents of the tape to a DVD-RW (VR mode) and then select the scenes you want from the disc. After you select the scenes, you can change discs and record the scenes to another disc of your choice. If necessary, you can also create a Playlist title of the selected scenes in the DVD-RW (VR mode).



When dubbing to a DVD-RW (VR mode), chapter marks [b] are marked where the recordings start on the tape [a] (Auto Scene Chaptering). Chapter marks are also inserted at the IN points of the selected scenes [c].

To use this function, you will do the following:

1. Connect your digital video camera and prepare for recording

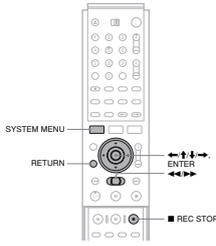
2. Record the entire contents of the DV/Digital8 tape to a DVD-RW (VR mode)

3. Select and edit the scenes you want to dub

Taking advantage of the disc's quick accessibility, you will select the scenes you want from the recorded DVD-RW. You do not have to fast forward or rewind the tape as explained in "Program Edit" (page 79). You can also reset, erase, or change the order of the scenes.

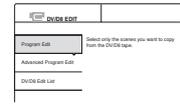
4. Dub the scenes to another disc

After you have selected the scenes, you can dub the selected scenes to another disc of your choice. Or, you can create a Playlist of the selected scenes.



**1** Follow steps 1 to 7 of "Preparing for recording using the DV IN jack" (page 75), then press **SYSTEM MENU**.

**2** Press **↑/↓** to select "DV/D8 EDIT," then press **ENTER**. The DV/D8 Edit menu appears.



**3** Press **↑/↓** to select "Advanced Program Edit," then press **ENTER**. The display asks whether to start recording.



If you want to change the recording mode, press **←/→** to move the cursor, then press **↑/↓** to select the mode.

**4** Press **←/→** to select "Start," then press **ENTER**. The recorder starts recording the tape contents. To quit recording, press **■ REC STOP**.

When recording is finished, the display asks if you want to create scenes within the generated program automatically or manually, or quit editing.

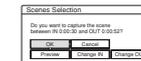


◆ **To create scenes automatically**  
Press **←/→** to select "Auto," then press **ENTER**. The recorder divides the generated program into scenes, and the Scene List menu appears.

◆ **To create scenes manually**  
1 Press **←/→** to select "Manual," then press **ENTER**. The display for setting the IN point appears. The scene starts to play in the background.

2 While watching the playback picture, press **←/→** to search for the IN point, then press **ENTER**. The IN point is set, and the display for setting the OUT point (end of the scene) appears.

3 While watching the playback picture, press **←/→** to search for the OUT point, then press **ENTER**. The OUT point is set, and the display asks whether to add the selected scene to the Scene List menu.



• To preview the scene, select "Preview."  
• To reset either the IN or OUT point, select "Change IN" or "Change OUT."

4 Press **←/→** to select "OK," then press **ENTER**. A new Scene List menu appears with the selected scene.

5 Press **←/→** to select "Add," then press **ENTER**. The display for selecting the scene insertion point appears.

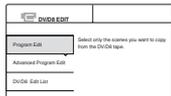
6 Press **←/→** to select the insertion point in the Scene List, then press **ENTER**. The display for setting the IN point (start of the scene) appears.

7 Repeat steps 2 to 6 to create all the scenes you want to add to the Scene List. You can add up to 50 scenes.

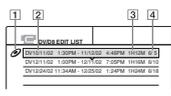
◆ **To quit editing**  
Press **←/→** to select "Cancel," then press **ENTER**.

**8** To edit the Scene List, press **←/→** to select a scene in the Scene List menu and press **ENTER**. When the sub-menu appears, select an edit option you want to apply to the scene.

**2** Press **↑/↓** to select "DV/D8 EDIT," then press **ENTER**. The DV/D8 Edit menu appears.



**3** Press **↑/↓** to select "DV/D8 Edit List," then press **ENTER**. The DV/D8 Edit List menu appears. A disc mark will appear next to the program that corresponds to the inserted disc. You can only edit the programs that display a disc mark (1).



- 1 Disc mark
- 2 Program name
- 3 Total playing time
- 4 Date of editing or recording

**4** Press **↑/↓** to select the program you want to edit, then press **ENTER**. The sub-menu appears.

**5** Press **↑/↓** to select "Edit," then press **ENTER**. The Scene List menu appears with all the scenes the program contains.



◆ **To add a new scene to the Scene List**  
1 Press **←/→** to select "Add," then press **ENTER**. The display for selecting the scene insertion point appears.  
2 Press **←/→** to select the insertion point in the Scene List, then press **ENTER**. The display for setting the IN point (start of the scene) appears.

◆ **To erase the scene**  
1 Press **←/→** to select "Erase," then press **ENTER**.  
2 When the display asks for confirmation, press **←/→** to select "OK," then press **ENTER**.  
◆ **To move the scene**  
1 Press **←/→** to select "Move," then press **ENTER**. The display for selecting the scene insertion point appears.  
2 Press **←/→** to select the point, then press **ENTER**. The scene moves to the selected location.

◆ **To erase the scene**

1 Press **←/→** to select "Erase," then press **ENTER**.

2 When the display asks for confirmation, press **←/→** to select "OK," then press **ENTER**.

◆ **To move the scene**

1 Press **←/→** to select "Move," then press **ENTER**. The display for selecting the scene insertion point appears.

2 Press **←/→** to select the point, then press **ENTER**. The scene moves to the selected location.

◆ **To reset the start or end of the scene**  
Press **←/→** to select "Change IN" or "Change OUT," then press **ENTER**.

◆ **To preview the scene**  
Press **←/→** to select "Preview," then press **ENTER**.

To cancel, press **←/→** to select "Quit" in the Scene List menu, then press **ENTER**.

**6** When you finish creating the Scene List, press **←/→** to select "OK," then press **ENTER**.

The edited program is saved, and the display asks if you want to create a Playlist title. If you select "No," the display returns to the DV/D8 Edit menu. Go to step 9.

**7** Press **←/→** to select "Yes," then press **ENTER**.

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

**8** To use the default name, press **←/→** to select "OK," then press **ENTER**.

A Playlist title of the default title name is created on the same disc, and the display returns to the DV/D8 Edit menu.

You now have a disc containing both the entire contents of the DV/Digital8 format tape and a Playlist of the selected scenes. To edit the Playlist title, see "Advanced Editing (Playlist Edit)" (page 67).

**9** Dub the selected scenes to a disc.

Make copies of the selected scenes to a disc of your choice. Go to step 3 of "Creating a Copy of the Edited Contents (Copy Dubbing)" (page 86).

**Notes**

- The disc may not be recorded as programmed if the tape's time code is not sequential or there are blanks between the recordings on the tape. In this case, follow the instructions of "Recording From Equipment Connected to the LINE IN Jacks" (page 88).
- You cannot set a scene to be shorter than one second.
- The start and end point of a program may be different from what you have set if the source DV/Digital8 format tape is in any of the following conditions:
  - Recording mode was changed during the recording.
  - There is a blank space in the recorded portion.
  - This function may not work with certain digital video cameras. In this case, follow the instructions of "Recording From Equipment Connected to the LINE IN Jacks" (page 88).
- In step 4, the recorder automatically records a blank for five minutes before it stops dubbing. When you press **■ REC STOP**, the recorder stops recording.

**Re-editing the "program" in the DV/D8 Edit List**

**DV/D8 VR**

Each time you dub a DV/Digital8 format tape, the start and stop points of the selected scenes (called a "program") are saved in a DV/D8 Edit List. You can make additional changes to these "programs" if they were created by One Touch Dub or Advanced Program Edit on a DVD-RW (VR mode). You can reset, erase, or change the order of the scenes and then dub the re-edited program to a disc of your choice.

To use this function, you will do the following:

**Connect your digital video camera and prepare for editing**

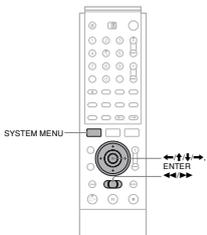
Be sure to use the original DV/Digital8 format tape and the DVD-RW (VR mode) that corresponds to the program in the DV/D8 Edit List.

**Select a program from the DV/D8 Edit List**

**Edit the program in the DV/D8 Edit List**

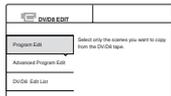
**Dub the selected scenes to a disc**

The recorder will fast forward and rewind the tape automatically and record the scenes to a disc of your choice.

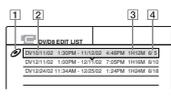


**1** Follow steps 1 to 4 of "Preparing for recording using the DV IN jack" (page 75), then press **SYSTEM MENU**. Be sure to use the original DV/Digital8 format tape and the DVD-RW (VR mode) that corresponds to the program in the DV/D8 Edit List.

**2** Press **↑/↓** to select "DV/D8 EDIT," then press **ENTER**. The DV/D8 Edit menu appears.



**3** Press **↑/↓** to select "DV/D8 Edit List," then press **ENTER**. The DV/D8 Edit List menu appears. A disc mark will appear next to the program that corresponds to the inserted disc. You can only edit the programs that display a disc mark (1).



- 1 Disc mark
- 2 Program name
- 3 Total playing time
- 4 Date of editing or recording

**4** Press **↑/↓** to select the program you want to edit, then press **ENTER**. The sub-menu appears.

**5** Press **↑/↓** to select "Edit," then press **ENTER**. The Scene List menu appears with all the scenes the program contains.



◆ **To add a new scene to the Scene List**  
1 Press **←/→** to select "Add," then press **ENTER**. The display for selecting the scene insertion point appears.  
2 Press **←/→** to select the insertion point in the Scene List, then press **ENTER**. The display for setting the IN point (start of the scene) appears.

◆ **To erase the scene**  
1 Press **←/→** to select "Erase," then press **ENTER**.  
2 When the display asks for confirmation, press **←/→** to select "OK," then press **ENTER**.  
◆ **To move the scene**  
1 Press **←/→** to select "Move," then press **ENTER**. The display for selecting the scene insertion point appears.  
2 Press **←/→** to select the point, then press **ENTER**. The scene moves to the selected location.

◆ **To reset the start or end of the scene**  
Press **←/→** to select "Change IN" or "Change OUT," then press **ENTER**.

◆ **To preview the scene**  
Press **←/→** to select "Preview," then press **ENTER**.

To cancel, press **←/→** to select "Quit" in the Scene List menu, then press **ENTER**.

**8** When you finish editing the Scene List, press **←/→** to select "OK," then press **ENTER**.

The display asks if you want to make a Playlist title. If you select "No," the edited program is saved, and the display returns to the DV/D8 Edit List. Note that the original program will be rewritten.

To dub the selected scenes to a disc, go to step 4 of "Creating a Copy of the Edited Contents (Copy Dubbing)" (page 86).

**9** Press **←/→** to select "Yes," then press **ENTER**.

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

**10** To use the default name, press **←/→** to select "OK," then press **ENTER**. A Playlist title of the default title name is created on the same disc, and the display returns to the DV/D8 Edit List.

You now have a disc containing both the entire contents of the DV/Digital8 format tape and a Playlist of the selected scenes. To edit the Playlist title, see "Advanced Editing (Playlist Edit)" (page 67).

**11** Dub the selected scenes to a disc. Make copies of the selected scenes to a disc of your choice. Go to step 4 of "Creating a Copy of the Edited Contents (Copy Dubbing)" (page 86).

**To preview a program**  
After you edit a program, you can preview the changes you made.

1 While the DV/D8 Edit List is displayed, press **↑/↓** to select the program, then press **ENTER**.

2 Press **←/→** to select "Preview," from the sub-menu, then press **ENTER**.

**To create a Playlist title of the program**  
After you edit a program, you can create a Playlist title of the edited program. The Playlist will be created on the inserted DVD-RW (VR mode).

1 While the DV/D8 Edit List is displayed, press **↑/↓** to select the program, then press **ENTER**.

2 Press **←/→** to select "Make a Playlist," from the sub-menu, then press **ENTER**. The display for entering a Playlist title name appears. To enter a new name, select "Enter," and follow the explanations on page 34.

- 3 To use the default name, press **←/→** to select "OK," then press **ENTER**.

**Notes**

- This camera set a scene to be shorter than one second.
- In order for a One Touch Dub recording to be added to the DV/DS Edit List, "Add to Edit List" in Features Setup must be set to "On" (page 99).

## Creating a Copy of the Edited Contents (Copy Dubbing)



You can make copies of the programs in the DV/DS Edit List. Each time you dub a DV/Digital8 format tape, the start and stop points of the selected scenes (called a "program") are saved in a DV/DS Edit List. You can select a program from the DV/DS Edit List and use this information to copy the same contents onto another disc of your choice.

To use this function, you will do the following:

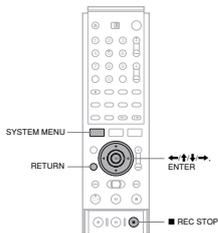
**Connect your digital video camera and prepare for recording**

Be sure to insert the original DV/Digital8 format tape that corresponds to the program in the DV/DS Edit List.

**Select a program from the DV/DS Edit List**

**Dub the selected scenes to a disc**

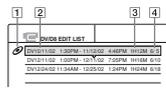
The recorder will fast forward and rewind the tape automatically and record the scenes to a disc of your choice. On a DVD-RW (VR mode), chapter marks are inserted at the start of each scene and where the recordings start on the tape. For other discs, the recorder marks chapters either in 6 or 15 minute intervals depending on the setting in "Auto Chapter" in Features Setup (page 97).



- 1 Follow steps 1 to 7 of "Preparing for recording using the DV IN jack" (page 75), then press **SYSTEM MENU**.  
Be sure to insert the original DV/Digital8 format tape that corresponds to the program in the DV/DS Edit List.

- 2 Press **↑/↓** to select "DV/DS EDIT," then press **ENTER**.  
The DV/DS Edit menu appears.

- 3 Press **↑/↓** to select "DV/DS Edit List," then press **ENTER**.  
The DV/DS Edit List menu appears.



- 1 Disc mark  
2 Program name  
3 Total playing time  
4 Date of editing or recording

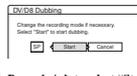
- 4 Press **↑/↓** to select the program you want to record on a disc, then press **ENTER**.  
The sub-menu appears.

- 5 Press **↑/↓** to select "DV Dubbing," then press **ENTER**.  
The display for entering a title name appears.



To enter a new name, select "Enter," and follow the explanations on page 34.

- 6 To use the default name, press **←/→** to select "OK," then press **ENTER**.  
The default title name is fixed, and the display asks whether to start recording. If you want to change the recording mode, press **←/→** to move the cursor then press **↑/↓** to select the mode.



- 7 Press **←/→** to select "Start," then press **ENTER**.  
The recorder starts recording the tape contents as programmed.  
To stop during recording, press **■ REC STOP**.

- 8 When the recording is finished, press **ENTER** to select "Close."  
The display returns to the DV/DS Edit menu.

- 9 Press **RETURN** repeatedly to turn off the display.

**To change the name of a program**

- 1 While the DV/DS Edit List is displayed, press **↑/↓** to select the program name you want to change, then press **ENTER**.  
The display for entering the program name appears.  
2 Press **↑/↓** to select "Rename" from the sub-menu, then press **ENTER**.  
3 Enter a name by following the explanations on page 34.

**To erase a program**

- 1 While the DV/DS Edit List is displayed, press **↑/↓** to select the program you want to erase, then press **ENTER**.  
2 Press **↑/↓** to select "Erase" from the sub-menu, then press **ENTER**.  
3 Press **←/→** to select "OK," then press **ENTER**.

**Hints**

- You can preview the scenes within the program title by selecting "Preview" in step 5.
- On a DVD-RW (VR mode), chapter marks are inserted at the start of each scene and where the recordings start on the tape. For other discs, the recorder marks chapters either in 6 or 15 minute intervals depending on the setting in "Auto Chapter" in Features Setup (page 97).

**Notes**

- If you want to play the disc on other DVD equipment, finalize the disc (page 23).
- In order for a One Touch Dub recording to be added to the DV/DS Edit List, "Add to Edit List" in Features Setup must be set to "On" (page 99).
- Copy dubbing may not work if you have edited sections that do not contain any recorded material.
- This function may not work with certain digital video cameras. In this case, follow the instructions of "Recording From Equipment Connected to the LINE IN Jacks" (page 88).

## Recording From Equipment Connected to the LINE IN Jacks

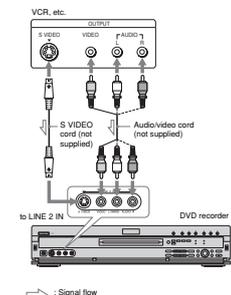


You can connect other equipment (e.g. a VCR or video camera), and output the audio/video signals to the recorder for recording. Use the DV IN jack on the front panel if the equipment has a DV output jack (i.LINK jack).

See also the instruction manual supplied with the connected equipment.

**Connecting other equipment to the LINE 2 IN jacks**

You can monitor the recorded picture with a TV connected to the recording equipment.

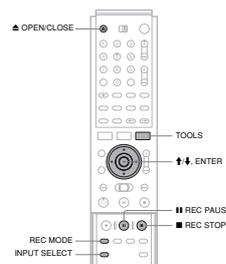


**Hint**  
When the connected equipment outputs only monaural sound, use audio cables that distribute monaural sounds to left/right channels (not supplied).

**Notes**

- Do not connect the yellow LINE IN (VIDEO) jack when using an S-VIDEO cord (not supplied).
- 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. Noise (feedback) may result.
- Pictures containing copy protection signals that prohibit any copying cannot be recorded.

## Recording from connected equipment

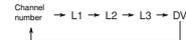


- 1 Turn on your TV and this recorder, then set it to the connected channel ("VIDEO," etc.).

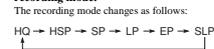
- 2 Press **▲ OPEN/CLOSE**, and place a recordable disc on the tray.

- 3 Press **▲ OPEN/CLOSE** to close the disc tray. Wait until "LOAD" disappears from the front panel display.

- 4 Press **INPUT SELECT** to select an input source according to the connection you made. The front panel display changes as follows:



- 5 Press **REC MODE** repeatedly to select the recording mode.



- 6 Select the audio input using the **TOOLS** menu.

- 1 Press **TOOLS**.  
2 Press **↑/↓** to select "Line Audio Input," then press **ENTER**.  
3 Press **↑/↓** to select the item, then press **ENTER**.  
• Stereo (default)  
• Main/Sub\*

\* When "Main/Sub" is selected, the two different types of sounds are recorded. You can select either sound when playing a disc. Select "Main/Sub" only when using a DVD-RW (VR mode). For other discs, select "Stereo." Only stereo sound is recorded.

- 7 Press **■ REC PAUSE** to set this recorder to record pause.

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

- 9 At the same, press **■ REC PAUSE** on this recorder and the pause or play button on the connected equipment. Recording starts.

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

- If you connect a digital video camera with a DV IN jack (without using the DV Edit functions)
  - Select "DV" in step 4.
  - Select "Stereo1," "Mix," or "Stereo2" from "DV/DS Audio Input" in step 6.

**Hint**  
You can adjust the settings for the recording picture before recording. See "Adjusting the Recording Picture Quality and Size" (page 46).

**Note**

When recording a video game image, the screen may not be clear.

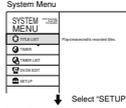
# Settings and Adjustments

The Setup Displays allow you to adjust the recorder to suit your preferences. This section first lists the types of Setup Displays, and then explains how to use the Setup Displays ("Using the Setup Displays").

- About the Setup Display Structure . . . page 90
- Using the Setup Displays . . . . . page 91
- Settings (Basic Settings) . . . . . page 92
- Video Settings . . . . . page 94
- Audio Settings . . . . . page 95
- Features Settings . . . . . page 97
- Options Settings . . . . . page 99
- Easy Setup (Resetting the Recorder) . . . . . page 100

## About the Setup Display Structure

By using the Setup Displays, you can make various adjustments to items such as picture and sound, as well as select a language for the subtitles.

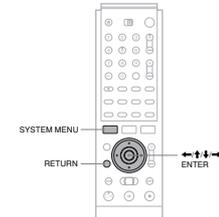


1. "Settings" (page 92)
2. "Video" (page 94)
3. "Audio" (page 95)
4. "Features" (page 97)
5. "Options" (page 99)
6. "Easy Setup" (page 100)

## Using the Setup Displays

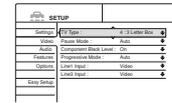
The Setup Displays are used in the following way.

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

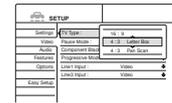


- 1 Press **SYSTEM MENU** while the recorder is stopped. The System Menu appears.
- 2 Press **LEFT** to select "SETUP," then press **ENTER**. The Setup Display appears.

- 3 Press **RIGHT** to select "Settings," "Video," "Audio," "Features," "Options," or "Easy Setup," then press **ENTER**. The selected Setup Display appears. Example: "Video"



- 4 Press **RIGHT** to select the item you want to set up, then press **ENTER**. Available options for the item appear. Example: "TV Type"

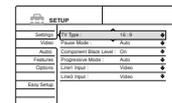


Some items display a dialogue box that provides further detailed settings. Example: The following dialogue box appears when "Parental Control" in Features Setup is selected.



In this case, see "Parental Control" in "Features Settings" (page 97).

- 5 Press **RIGHT** to select an option, then press **ENTER**. The set option is displayed next to the setup item. Example: when "16:9" is set.



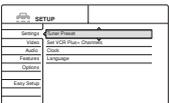
**To turn off the display**  
Press **SYSTEM MENU** repeatedly.

Settings and Adjustments

## Settings (Basic Settings)

The Settings Setup helps you to make fundamental settings for the recorder.

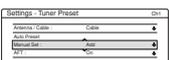
Select "Video" in the Setup Display. To use the display, see "Using the Setup Displays" (page 91). The default settings are underlined.



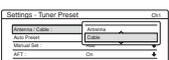
### Tuner Preset

**Auto Preset**  
Automatically presets the receivable channels. The recorder can receive VHF channels 2 to 13, UHF channels 14 to 69, and unscrambled CATV channels 1 to 125. First, we recommend that you preset the receivable channels in your area using automatic presetting methods.

- 1 Follow steps 1 to 3 of "Using the Setup Displays" (page 91) to select "Settings" in the Setup Display.
- 2 Press **RIGHT** to select "Tuner Preset," then press **ENTER**.



- 3 Press **RIGHT** to select "Antenna/Cable," then press **ENTER**.



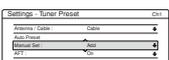
- ◆ To preset cable TV channels  
Press **RIGHT** to select "Cable," then press **ENTER**.
- ◆ To preset VHF and UHF channels  
Press **RIGHT** to select "Antenna," then press **ENTER**.

- 4 Press **RIGHT** to select "Auto Preset," then press **ENTER**. All receivable channels are preset in numerical sequence.

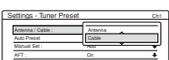


**Manual Set**  
Presents or disables channels manually. If some channels could not be set using the Auto Preset or Easy Setup function, you can set them manually. If there is no sound or if the picture is distorted, the tuner system may not have been preset correctly or completely during Auto Preset or Easy Setup. Set the correct tuner system manually by the steps below.

- 1 Follow steps 1 to 3 of "Using the Setup Displays" (page 91) to select "Settings" in the Setup Display.
- 2 Press **RIGHT** to select "Tuner Preset," then press **ENTER**.

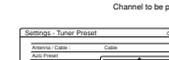


- 3 Press **RIGHT** to select "Antenna/Cable," then press **ENTER**.



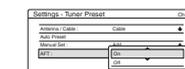
- ◆ To preset cable TV channels  
Press **RIGHT** to select "Cable," then press **ENTER**.
- ◆ To preset VHF and UHF channels  
Press **RIGHT** to select "Antenna," then press **ENTER**.

- 4 Select the channel you want to preset or disable.



- ◆ To preset a channel  
1 Enter the channel number using the number buttons), then press **SET**.
- 2 Press **RIGHT** to select "Manual Set," then press **ENTER**.
- 3 Press **RIGHT** to select "Add," then press **ENTER**.
- ◆ To disable a channel  
1 Press **CH +/-** to select the channel number.
- 2 Press **RIGHT** to select "Manual Set," then press **ENTER**.
- 3 Press **RIGHT** to select "Erase," then press **ENTER**.

- 5 Press **RIGHT** to select "AFT," then press **ENTER**.



- 6 Press **RIGHT** to select "On," then press **ENTER**.

Normally select this.  
Off Allows you to adjust the pictures manually. Select this if the Auto Fine Tuning function does not work effectively.

- ◆ If the picture is not clear  
1 Press **RIGHT** to select "Off," then press **ENTER**. The fine tuning bar appears.



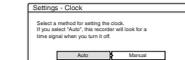
- 2 Press **LEFT** to obtain a clearer picture, the press **ENTER**.

- 7 To preset or disable another channel, repeat steps 3 and 6.

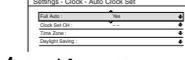
**Set VCR Plus+ Channels**  
Sets up the guide channel number assigned to each channel. You need to set this correctly when you set the timer recording using the VCR Plus+ function. For details, see page 25.

**Clock**  
**Auto (Auto Clock Set)**  
Turns on the Auto Clock Set function when a channel in your local area broadcasts a time signal.

- 1 Follow steps 1 to 3 of "Using the Setup Displays" (page 91) to select "Settings" in the Setup Display.
- 2 Press **RIGHT** to select "Clock," then press **ENTER**.



- 3 Press **RIGHT** to select "Auto," then press **ENTER**.

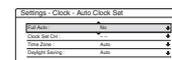


- 4 Press **RIGHT** to select "Full Auto," then press **ENTER**.

- 5 Press **RIGHT** to select "Yes," then press **ENTER**. The recorder automatically sets the clock by searching for a channel that carries a time signal and sets your time zone and Daylight Saving Time (if applicable).

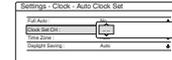
**◆ If the clock does not activate**  
If your clock is set to the wrong time zone or Daylight Saving Time, you can adjust these settings without turning off the Auto Clock Set function.

- 1 Follow steps 1 to 3 of "Using the Setup Displays" (page 91) to select "Settings" in the Setup Display.
- 2 Press **RIGHT** to select "Clock," then press **ENTER**.
- 3 Press **RIGHT** to select "Auto," then press **ENTER**.
- 4 Press **RIGHT** to select "Full Auto," then press **ENTER**.
- 5 Press **RIGHT** to select "No," then press **ENTER**.



- 6 Press **RIGHT** to select the item you want to set and press **ENTER**. Then press **RIGHT** to make the setting and press **ENTER**.

**◆ Clock Set CH**  
Select a channel that carries a time signal using the number buttons.  
Use this option if you know of a channel that carries a time signal. Most PBS member stations broadcast a time signal. For the fastest response select your local PBS station. Leave the setting at "... " to have the recorder automatically search for a channel that carries a time signal. To return to "...", enter "0."



**◆ Time Zone**  
Select the time zone of your area, or select "Auto" to have the recorder automatically set your time zone. The options are:  
Auto ↔ Atlantic ↔ Eastern ↔ Central ↔ Mountain ↔ Pacific ↔ Alaska ↔ Hawaii ↔ Auto

**◆ Daylight Saving**  
Select "On" or "Off" (standard time), or select "Auto" to have the recorder automatically set the daylight saving time.

**◆ Hint**  
If you set "Full Auto" to "Yes," the Auto Clock Set function is activated whenever the recorder is turned off.

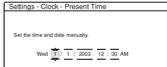
**◆ Manual (Manual Clock Set)**  
If the Auto Clock Set function did not set the clock correctly for your local area, set the clock manually.  
1 Follow steps 1 to 3 of "Using the Setup Displays" (page 91) to select "Settings" in the Setup Display.

Settings and Adjustments

2 Press  $\uparrow/\downarrow$  to select "Clock," then press ENTER.



3 Press  $\leftarrow/\rightarrow$  to select "Manual," then press ENTER.



4 Press  $\uparrow/\downarrow$  to set the month, then press  $\rightarrow$ . Set the day, year, hour, and minutes in sequence. Press  $\leftarrow/\rightarrow$  to select the item to be set, then press  $\uparrow/\downarrow$  to set the numbers. The day of the week is set automatically.

5 Press ENTER to start the clock.

**Hint**

To change the numbers in step 3, press  $\leftarrow$  to return to the item to be changed, and select the numbers by pressing  $\uparrow/\downarrow$ .

**Language**

• **DSD (On-Screen Display)**  
Switches the display language on the screen.

• **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" (page 108) using the number buttons.

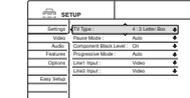
**Note**

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.

**Video Settings**

Choose the settings according to the TV, tuner, or decoder to be connected.

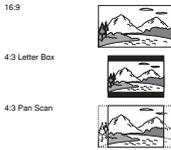
Select "Video" in the Setup Display. To use the display, see "Using the Setup Displays" (page 99). The default settings are underlined.



**TV Type**

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

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 hands 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.



**Note**

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

**Pause Mode (DVDs only)**

Selects the picture in pause mode.

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

**Component Black Level**

Selects the black level (setup level) for the video signals output from the COMPONENT VIDEO OUT jacks (page 51). This setting is not effective when the recorder outputs progressive signal and the PROGRESSIVE indicator lights up on the front panel.

On	Sets the black level of the output signal to the standard level.
Off	Select this when connecting equipment for which the black level (setup level) is set to "0."

**Progressive Mode**

Selects the conversion mode of software when the recorder is set to output video signals in progressive format (page 51).

Auto	Automatically detects if you are playing Film based or Video based software and convert the signal to the appropriate conversion mode. Normally select this.
Video	Selects the conversion mode for Video based software, regardless of the software type that you are playing.

**Line1 Input**

Selects a method of inputting video signals for the LINE IN 1 jack on the rear panel of the recorder.

Video	Inputs video signals.
S Video	Inputs S video signals.

**Line3 Input**

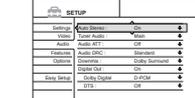
Selects the method of inputting video signals for the LINE IN 3 jack on the rear panel of the recorder.

Video	Inputs video signals.
S Video	Inputs S video signals.

**Audio Settings**

The Audio Setup allows you to set the sound according to the playback and connection conditions.

Select "Audio" in the Setup Display. To use the display, see "Using the Setup Displays" (page 99). The default settings are underlined.



**Auto Stereo**

This function affects only when "Tuner Audio" is set to "Main."

On	Receives stereo programs. Normally select this.
Off	Select this to reduce noise. The sound changes to monaural.

**Tuner Audio**

Selects the sound to be recorded.

Main	Records only main sound.
SAP	Records only the SAP (Second Audio Program) sound.

**Notes**

If no SAP sound is received, the main sound is recorded regardless of the setting.

When "Tuner Audio" is set to "SAP," set "Auto Stereo" to "On."

**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 OUT (AUDIO L/R) 1/2 jacks

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

**Audio DRC (Dynamic Range Control) (DVDs only)**

Makes the sound clear when the volume is turned down when playing a DVD that conforms to "Audio DRC." This affects the output from the following jacks:  
-LINE OUT (AUDIO L/R) 1/2 jacks  
-DIGITAL OUT (OPTICAL or COAXIAL) jack only when "Dolby Digital" is set to "D-PCM" (page 96).

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 "Checking the audio signal format" (page 58). This function affects the output of the following jacks:  
-LINE OUT (AUDIO L/R) 1/2 jacks  
-DIGITAL OUT (OPTICAL or COAXIAL) jack when "Dolby Digital" is set to "D-PCM" (page 96).

Dolby Surround	Normally select this position. Multi-channel audio signals are output to two channels for enjoying surround sounds.
Normal	Multi-channel audio signals are downmixed to two channels for use with your stereo.

**Digital Out**

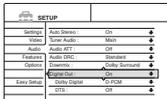
Selects if audio signals are output via the DIGITAL OUT (OPTICAL or COAXIAL) jacks.

On	Normally select this position. When you select "On," see "To set the digital output signal" for further settings.
Off	The influence of the digital circuit upon the analog circuit is minimal.

**To set the digital output signal**

The following setup items switch the method of outputting audio signals when you connect a component such as an amplifier (receiver) or MD deck with a digital input jack.

For connection details, see "Connecting the Audio Cords" (page 19). Select "Dolby Digital" and "DTS" 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.

**Dolby Digital (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. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the "Downmix" item in Audio Setup (page 96).
Dolby Digital	Select this when the recorder is connected to an audio component with a built-in Dolby Digital decoder.

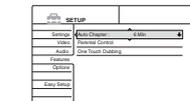
**DTS (DVD VIDEO only)**

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.

**Features Settings**

The Features Setup provides entries to the following features. Select "Audio" in the Setup Display. To use the display, see "Using the Setup Displays" (page 99). The default settings are underlined.



**Auto Chapter**

Automatically divides a recording (a title) into chapters by inserting chapter markings at a specified interval. The markings are made during recording.

Off	No chapter mark is inserted.
6Min	Inserts chapter marks at approximately 6 minute intervals.
15Min	Inserts chapter marks at approximately 15 minute intervals.

**Notes**

Depending upon the size of the recording being made, the actual interval may vary from the interval selected in "Auto Chapter." The selected interval should only be used as an approximation to create chapters.

This function is not available when using DVD-RWs in VR mode with the DV Edits function. Chapter marks are automatically entered where the recordings start on the tape (page 78, 79, 81).

**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. The markings may be blocked or replaced with different scenes.

1 Follow steps 1 to 3 of "Using the Setup Displays" (page 91) to select "Parental Control," then press ENTER.

2 Press  $\uparrow/\downarrow$  to select "Parental Control," then press ENTER.

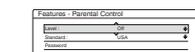
3 If you have not entered a password The display for registering a new password appears.



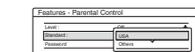
4 When you have already registered a password The display for entering the password appears.



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



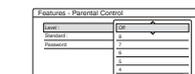
4 Press  $\uparrow/\downarrow$  to select "Standard," then press  $\rightarrow$  or ENTER. The selection items for "Standard" are displayed.



5 Press  $\uparrow/\downarrow$  to select a geographic area as the playback limitation level, then press ENTER. The area is selected.

When you select "Others," press the number buttons to select and enter an area code in the table on page 98. Then select "OK" and press ENTER.

6 Press  $\uparrow/\downarrow$  to select "Level," then press ENTER. The selection items for "Level" are displayed.



7 Select the level you want using  $\uparrow/\downarrow$ , then press ENTER. The lower the value, the stricter the limitation.

Parental Control setting is complete.

The lower the value, the stricter the limitation.

To cancel the Parental Control setting for the disc Set "Level" to "Off" in step 7.

To change the password

1 In step 4, select "Password," then press ENTER.

The display for registering a password appears.

2 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" under "Factory Setup" in Options Setup (page 99).

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. If the Resume Play mode is canceled, the level returns to the previous level.

• Area code

Standard	Code number
Argentina	2044
Australia	2047
Austria	2046
Belgium	2057
Brazil	2070
Canada	2099
Chile	2090
China	2092
Denmark	2115
Finland	2165
France	2174
Germany	2109
India	2248
Indonesia	2238
Italy	2254
Japan	2276
Korea	2304
Malaysia	2363
Mexico	2362
Netherlands	2376
New Zealand	2390
Norway	2379
Pakistan	2427
Philippines	2424
Portugal	2436
Russia	2489
Singapore	2501
Spain	2149
Sweden	2499
Switzerland	2086
Thailand	2528
United Kingdom	2184

**One Touch Dubbing**

Displays the following items.

◆ **Finalize Disc**

Selects whether or not to finalize the disc automatically following One Touch Dub (page 78).

<b>Auto</b>	Automatically finalizes the disc following One Touch Dub.
<b>Manual</b>	Allows you to finalize the disc manually.

◆ **Add to Edit List**

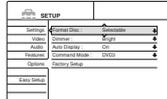
Automatically generates a program in the DV/D8 Edit List during One Touch Dub of DV/Digital8 format tapes. You can use the created program for further editing. For details, see page 78.

<b>On</b>	Automatically generates a program during One Touch Dub of DV/Digital8 format tapes.
<b>Off</b>	No program is generated.

**Options Settings**

The Options Setup allows you to set up other operational settings.

Select "Options" in the Setup Display. To use the display, see "Using the Setup Displays" (page 91). The default settings are underlined.



**Format Disc (DVD-RW only)**

Selects the recording format when formatting a DVD-RW.

<b>VR</b>	Automatically formats the disc in VR mode.
<b>Video</b>	Automatically formats the disc in Video mode.
<b>Selectable</b>	Allows you to select the format before formatting.

**Dimmer**

Adjusts the lighting of the front panel display.

<b>Bright</b>	Bright lighting.
<b>Dark</b>	Low lighting.
<b>Display Off</b>	Turns off the lighting.

**Auto Display**

<b>On</b>	Automatically displays information on the screen when the recorder is turned on, etc.
<b>Off</b>	Displays information only when DISPLAY is pressed.

**Command Mode**

Changes the Command Mode of the recorder if other DVD equipment is assigned the same Command Mode. Be sure to match the Command Mode switch on the remote to the setting made here. For details, see "Preparing the Remote" on page 22.

<b>DVD1</b>	Select this if the default Command Mode conflicts with other DVD equipment.
<b>DVD2</b>	Select this if the default Command Mode conflicts with other DVD equipment.
<b>DVD3</b>	The default Command Mode of the recorder.

**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.

- Follow steps 1 to 3 of "Using the Setup Displays" (page 91) to select "Options" in the Setup Display.
- Press **⇩** to select "Factory Setup," then press **↵** or **ENTER**.  
The display for selecting the group of settings appears.
- Press **⇩/⇧** to select the group of settings you want to return to default from "Settings," "Video," "Audio," "Features," "Options," "Parental Control," and "All," then press **↵** or **ENTER**. The dialogue box appears.
- Press **⇐/⇒** to select "Start," then press **ENTER**. The selected settings return to the default settings.
- Press **ENTER** when "Finish" appears.

**Easy Setup (Resetting the Recorder)**

Select this to restart Easy Setup mode for basic setup.

Select "Easy Setup" in the Setup Display. To use the display, see "Using the Setup Displays" (page 91).



**Easy Setup**

- Follow steps 1 to 3 of "Using the Setup Displays" (page 91) to select "Easy Setup" in the Setup Display.
- Press **⇐/⇒** to select "Start," then press **ENTER**.
- Follow the Easy Setup explanation from step 5 on page 22.

**Additional Information**

- Troubleshooting..... page 101
- Self-diagnosis Function (When letters/numbers appear in the display) ..... page 104
- Specifications..... page 105
- About i.LINK..... page 106
- Glossary..... page 107
- Language Code List..... page 108

**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 AC power cord is connected securely.

**Picture**

- There is no picture.**
- ➔ Re-connect the connecting cord securely.
  - ➔ The connecting cords are damaged.
  - ➔ The Setup Display appears. Press RETURN to turn off the display.
  - ➔ Check the connection to your TV (page 16).
  - ➔ Switch the input selector on your TV (such as to "VCR") so that the signal from the recorder appears on the TV screen.

**Picture noise appears.**

- ➔ The disc is dirty or flawed.
- ➔ 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 programs 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 (the PROGRESSIVE indicator lights up) even though your TV cannot accept the progressive signal. In this case, press the PROGRESSIVE button on the front panel until the progressive indicator turns off.
- ➔ Even if your TV is compatible with progressive format (480p) signals, the image may be affected when you set the recorder to progressive format. In this case, press the PROGRESSIVE button so that the PROGRESSIVE indicator turns off and the recorder is set to normal (interlace) format.

**TV program reception does not fill the screen.**

- ➔ Set the channel manually in "Tuner Preset" in Settings Setup (page 92).
- ➔ Select the correct source using the INPUT SELECT button, or select a channel of any TV program using the CH +/- buttons.

### TV program pictures are distorted.

- Recenter the TV antenna.
- Adjust the pictures (see the TV's instruction manual).
- Place the recorder and TV farther apart.
- Place the TV and any bunched antenna cables farther apart.

### TV channels cannot be changed.

- Switch the input selector to TV.
- Connect the antenna cable correctly (page 16).

### The picture from equipment connected to the recorder's input jack does not fill the screen.

- If the equipment is connected to the LINE IN 1 jack, select "L1" in the front panel display by pressing CH +/- or INPUT SELECT.
- If the equipment is connected to the LINE 2 IN jacks, select "L2" in the front panel display by pressing CH +/- or INPUT SELECT.
- If the equipment is connected to the LINE IN 3 jack, select "L3" in the front panel display by pressing CH +/- 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 CH +/- or INPUT SELECT.

### The playback picture or TV program 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 programs could affect picture quality. Disconnect the playback equipment in question and connect it directly to your TV.

### The picture does not fill the screen, even though the aspect ratio is set in "TV Type" in Video Setup.

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

## Sound

### There is no sound.

- The disc is dirty or flawed.
- Re-connect all connections securely.
- The connecting cord is damaged.
- Check the connections to the amplifier input.
- The input source setting on the amplifier is incorrect.
- The recorder is in pause mode or in Slow-motion Play mode.
- The recorder is in fast forward or fast reverse mode.
- If the audio signal does not come through the DIGITAL OUT (OPTICAL or COAXIAL) jacks, check the Audio Setup settings (page 95).

### Sound distortion occurs.

- Set "Audio ATT" in Audio Setup to "On" (page 95).

### Sound is noisy.

- The disc is dirty or flawed.
- When playing a CD with DTS sound tracks, noise will come from the LINE OUT (AUDIO L/R) 1/2 jacks (page 50).

### The sound volume is low

- The sound volume is low on some DVDs.
- The sound volume may improve if you set "Audio DRC" in Audio Setup to "TV Mode" (page 96).
- Set "Audio ATT" in Audio Setup to "Off" (page 95).

### An alternate audio track cannot be recorded.

- Second Audio Program (SAP) is not available for all programs. A program you are recording does not have a second audio program.
- You have set "Tuner Audio" in Audio Settings to "Main" (page 95). Select "SAP" to record alternate audio programs.

## Playback

### The disc does not play.

- No disc is inserted.
- A blank disc is inserted.
- The disc is upside down.
- Insert the disc with the labeled side facing up.
- The disc is not correctly inserted.
- The recorder cannot play certain discs (such as a CD-ROM) (page 50).
- The region code on the DVD VIDEO does not match the recorder (page 49).
- Moisture has condensed inside the recorder. Remove the disc and leave the recorder turned on for about half an hour until the moisture evaporates (page 2).
- If the disc was recorded on another recorder, the recorder cannot play the disc if it was not finalized (page 23).

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

- Resume play was activated (page 53). During stop, select "Reset Resume" in the TOOLS menu, then press ENTER.
- You have inserted a disc whose Title menu or DVD menu automatically appears on the TV screen when it is first inserted.

### The recorder starts playing the disc automatically.

- The DVD VIDEO features an auto playback function.

### Playback stops automatically.

- While playing discs with 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 disc, 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 VIDEO, DVD-R, DVD+R, DVD-RW, or DVD+RW 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 angles cannot be changed.

- Multi-angles are not recorded on the DVD VIDEO being played.
- You are trying to change the angles when "ANGLE" does not appear on the TV screen (page 59).
- The DVD VIDEO prohibits changing angles.
- Try changing the angle using the DVD VIDEO's menu.

## Recording/Timer recording/Editing

### The channel cannot be changed from the channel you are recording.

- Set the TV's input source to "TV."

### Recording does not start immediately after you press the REC button.

- An unused DVD-RW was inserted. It takes a while for the recorder to automatically format a DVD-RW (VR mode).

### 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 92).
- The channel was disabled after the timer recording is set. (See "Manual Set" on page 92.)
- Disconnect the AC power cord from the AC outlet, and connect it again.
- The program contains copy protection signals that restricts copying.
- The timer setting overlapped with another setting that was set later or has priority (page 43).

### Recording does not stop immediately after you press the REC STOP button.

- It will take a few seconds for the recorder to input disc data before recording can stop.

### Recording does not stop after you press STOP.

- Press: ■ REC STOP.

### Timer recording is not complete or did not start from the beginning.

- There was a power failure during recording. If the power recovers during the time a timer recording is set, the recorder resumes recording.
- Should the power failure continue for more than 1 hour, reset the clock (page 92).
- The timer setting overlapped with another setting that was set later or has priority (page 43).
- Disc space was not enough.

### Contents previously recorded were erased.

- Data that has been recorded on a DVD with a PC will be erased from the disc when the disc is inserted.

### 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 47).
- 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 47).
- 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 47).
- 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 47).

## Display

### The clock has stopped.

- Set the clock again (page 92).
- The clock stopped due to a power failure that lasted for more than 1 hour. Reset the clock (page 92).

### The TIMER REC indicator is flashing.

- The disc does not have enough space or there are more than 99 titles in the disc. Insert a recordable disc.
- There is no recordable disc inside the recorder.

### The recording mode indication is incorrect.

- If you make a recording that is less than three minutes long, the recording mode indication shown during playback may not match the recording mode you selected during recording. Note that the actual recording mode will always match the mode you selected, not the indication during playback.

## Remote commander

### The remote does not function.

- Batteries are weak.
- There are obstacles between the remote and the recorder.
- The remote is too far from the recorder.
- There are no batteries in the remote.
- The remote's manufacturer code returned to the default setting when you replaced the batteries. Reset the code (page 26).
- Turn on the recorder.
- 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 28).

### Other Sony equipment responds to the remote.

- The same command mode is set for both the equipment and recorder. Set a different command mode for the recorder (page 28).

## Others

### The recorder does not operate properly.

- When static electricity, etc., causes the recorder to operate abnormally, unplug the recorder and then plug it in again.

### Nothing appears in the front panel display.

- "Dimmer" in Options Setup is set to "Display Off" (page 99).

### Five numbers or letters are displayed on the front panel display.

- The self-diagnosis function was activated (see the table on page 104).

### The disc tray does not open when you press the OPEN/CLOSE button.

- It may take a few seconds for the disc tray to open after you have recorded or edited a disc. This is because the recorder is adding disc data to the disc.

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

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

### "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.

### Mechanical sound is heard when the recorder is off.

- When the recorder's clock is being adjusted, operational noises (such as the internal fan) may be heard, even when the power is off. This is not malfunction.

## 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., C1350) with a combination of a letter and four numbers appears on the front panel display. In this case, check the following table.

First three characters of the service number	Cause and/or corrective action
C 13	The disc is dirty. → Clean the disc with a soft cloth (page 3).
C 31	The disc 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

## About i.LINK

The DV IN jack on this recorder is an i.LINK-compliant DV IN jack. 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 75. 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 75. 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.

## Glossary

### Chapter (page 55)

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

### CPRM (page 35)

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

### Dolby Digital (page 96)

Digital audio compression technology developed by Dolby Laboratories. This technology conforms to multi-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same discrete channels of high-quality digital audio found in "Dolby Digital" theater surround sound systems. Good channel separation is realized because all of the channel data is recorded discretely and little deterioration occurs because all channel data processing is digital.

### Dolby Surround (Pro Logic) (page 96)

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

### DTS (page 96)

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

### DVD VIDEO (page 49)

A disc that contains up to eight hours of moving pictures even though its diameter is the same as a CD. The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-

sided DVD is 8.5 GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17GB.

The picture data uses the MPEG 2 format, one of the worldwide standards of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in a multi-channel format, such as Dolby Digital, allowing you to enjoy a more real audio presence. Furthermore, various advanced functions such as the multi-angle, multilingual, and Parent Control functions are provided with the DVD.

### DVD-R (page 35)

A DVD-R is a recordable disc that is the same size as a DVD VIDEO. Contents can be recorded only once to a DVD-R, and will have the same format as a DVD VIDEO.

### DVD-RW (page 35)

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

### DVD-RW (plus RW) (page 35)

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

### Film based software, Video based software (page 51)

DVDs can be classified as Film based or Video based software. Film based DVDs contain the same images (24 frames per second) that are shown at movie theaters. Video based DVDs, such as television dramas or sit-coms, display images at 30 frames (or 60 fields) per second.

### Index (page 57)

A number that divides a track into sections to easily locate the point you want on a CD. Depending on the disc, no index may be recorded.

### Interface format (page 51)

Interface format shows every other line of an image as a single "field" and is the standard method for displaying images on television. The even number field shows the even numbered lines of an image, and the odd numbered field shows the odd numbered lines of an image.

### Progressive format (page 51)

Compared to the Interface format that alternately shows every other line of an image (field) to create one frame, the Progressive format shows the entire image at once as a single frame. This means that while the Interface format can show 30 frames/60 fields in one second, the Progressive format can show 60 frames in one second. The overall picture quality increases and still images, text, and horizontal lines appear sharper.

### Title (page 55)

The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album on audio software.

### Track (page 55)

Sections of a music feature on a CD (the length of a song).

## Language Code List

For details, see pages 57, 60, 94. The language spellings conform to the ISO 639-1:1988 (E/F) standard.

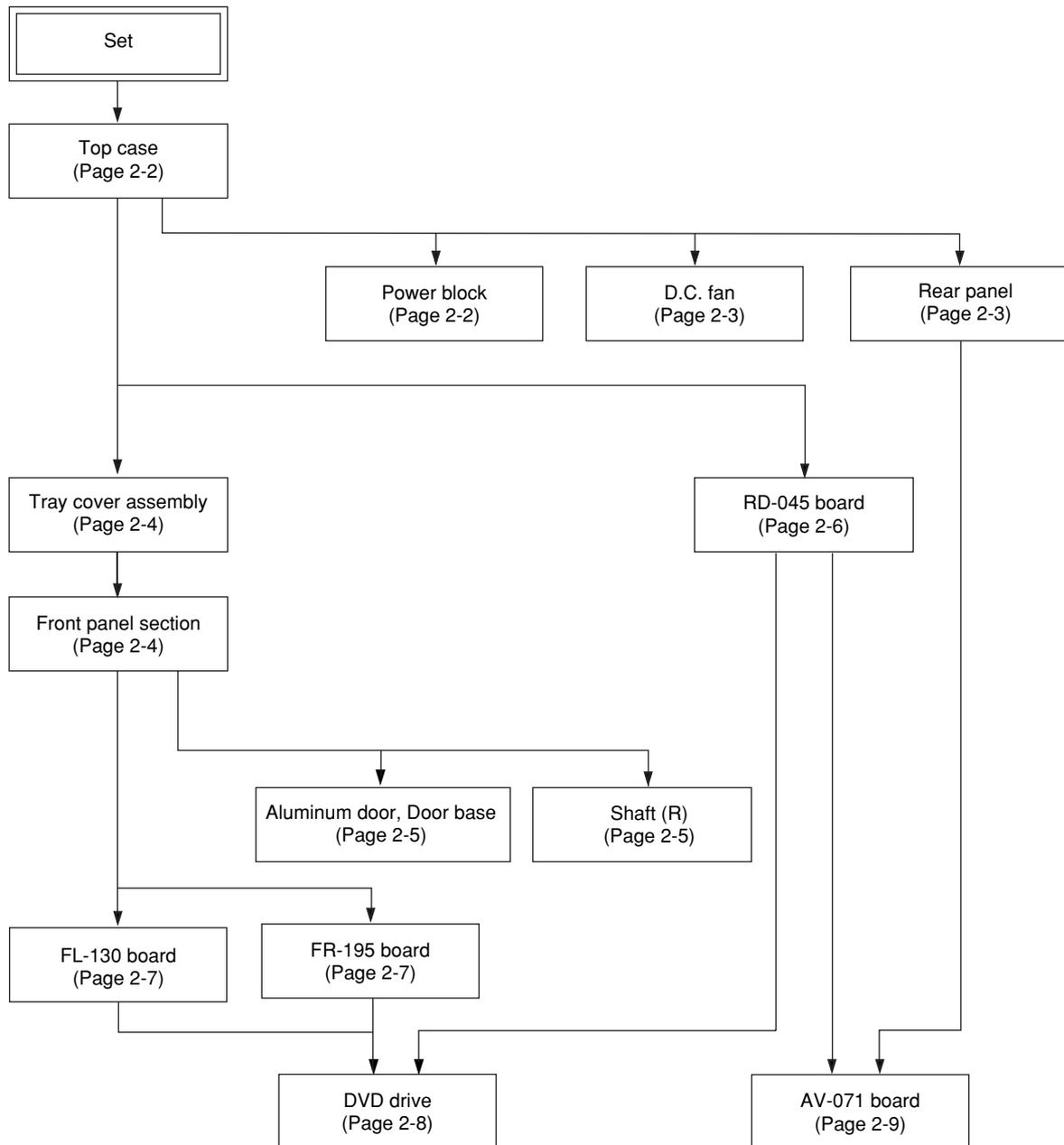
Code	Language
1027	Afaan
1028	Abkhazian
1032	Afrikaans
1039	Ambare
1044	Aztec
1045	Assamese
1051	Ayama
1052	Azerbaijani
1053	Bashkir
1057	Byelorussian
1059	Bulgarian
1060	Bihari
1061	Bislama
1066	Bengali; Bangla
1067	Tibetan
1070	Breton
1079	Catalan
1093	Coriscan
1097	Czech
1103	Welsh
1105	Danish
1109	German
1130	Bhazani
1142	Greek
1144	English
1145	Esperanto
1149	Spanish
1150	Estonian
1151	Basque
1157	Breton
1165	Finnish
1166	Fiji
1171	Finnish
1174	French
1181	Frisian
1183	Irish
1186	Scott Gaelic
1194	Galician
1196	Gujarati
1203	Gujarati
1209	Hausa
1217	Hindi
1226	Croatian
1229	Hungarian
1233	Armenian

Code	Language
1235	Interlingua
1239	Interlingue
1242	Indonesian
1248	Indonesian
1253	Icelandic
1254	Italian
1257	Hebrew
1261	Japanese
1269	Yiddish
1283	Javanese
1287	Georgian
1297	Kazakh
1298	Greenlandic
1299	Cambodian
1300	Kannada
1301	Korean
1305	Kashmiri
1307	Kanish
1311	Kingha
1313	Latin
1326	Lingala
1327	Laotian
1332	Lithuanian
1334	Latvian; Lettish
1345	Malagasy
1347	Maori
1349	Macedonian
1350	Malayalam
1352	Mongolian
1353	Moldavian
1356	Mirafini
1357	Malay
1358	Maltese
1363	Burmese
1365	Nauru
1369	Nepali
1376	Dutch
1379	Norwegian
1393	Occitan
1403	(Afaan)Oromo
1408	Oriya
1417	Punjabi
1428	Polish
1435	Pashto; Pushto
1436	Portuguese
1463	Quechua
1481	Rhaeto-Romanche
1482	Kisindi
1483	Romanian
1489	Russian
1491	Kinyarwanda
1495	Sanskrit
1498	Sindhi
1501	Sangho

Code	Language
1502	Serbo-Croatian
1503	Singhalese
1505	Slovak
1506	Slovenian
1507	Somali
1508	Shona
1511	Albanian
1512	Serbian
1513	Sivati
1514	Seotho
1515	Sundanese
1516	Swedish
1517	Swahili
1521	Tamil
1525	Telugu
1527	Tajik
1528	Thai
1529	Tigrinya
1531	Turkmen
1532	Tagalog
1534	Setswana
1535	Tonga
1538	Turkish
1539	Tsonga
1540	Tatar
1543	Twi
1557	Ukrainian
1564	Ufua
1572	Uzbek
1581	Vietnamese
1587	Volapuk
1613	Wolof
1632	Xhosa
1665	Yoruba
1684	Chinese
1697	Zulu
1703	Not specified

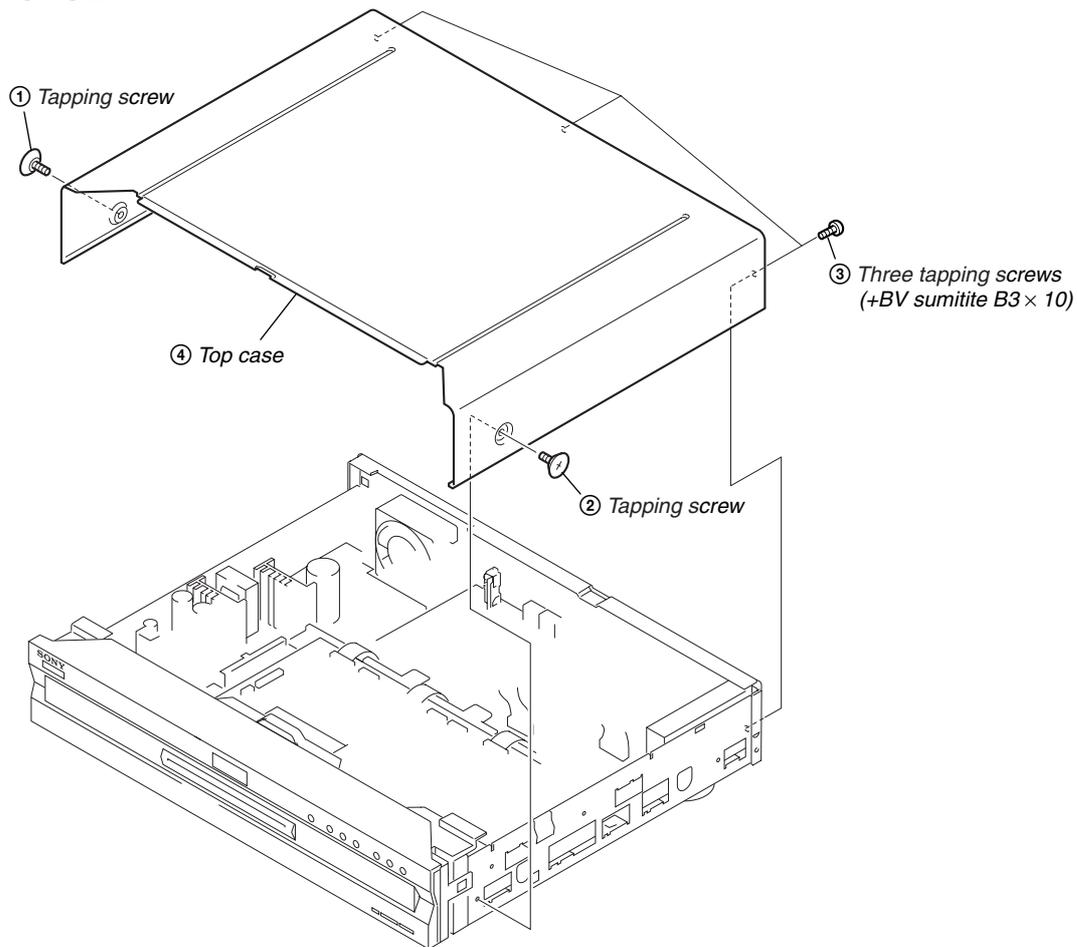
## SECTION 2 DISASSEMBLY

**NOTE:** The following flow chart shows the disassembly procedure.

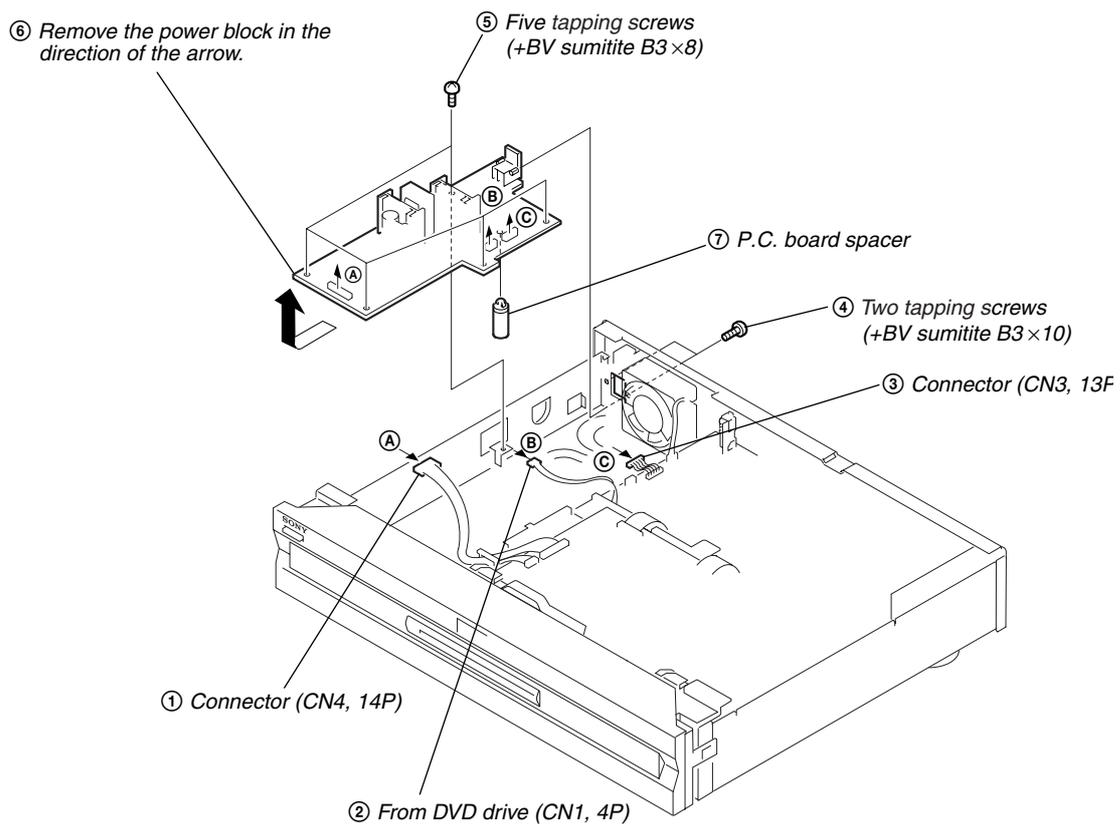


**NOTE:** Follow the disassembly procedure in the numerical order given.

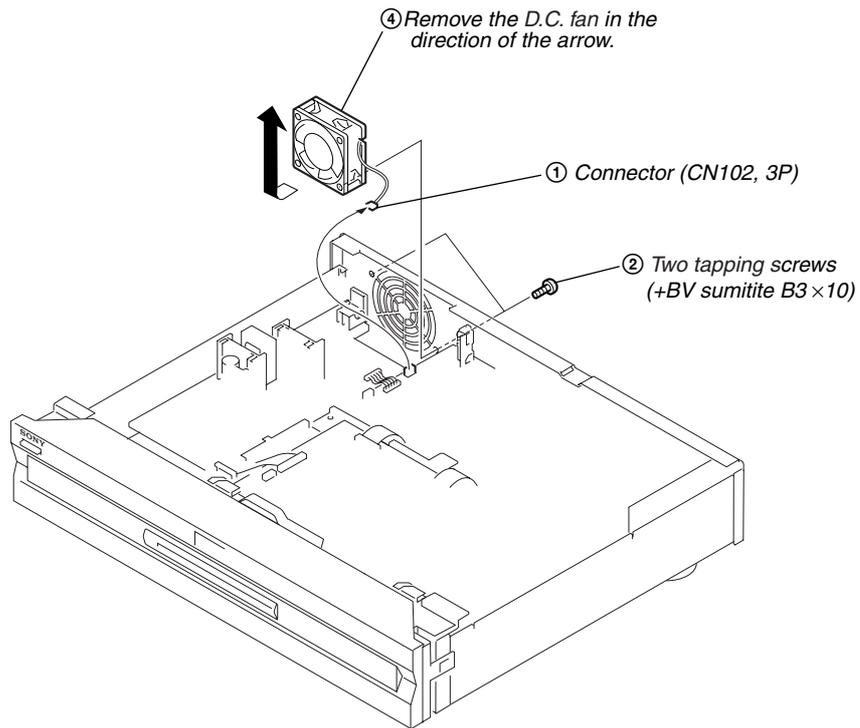
## 2-1. TOP CASE



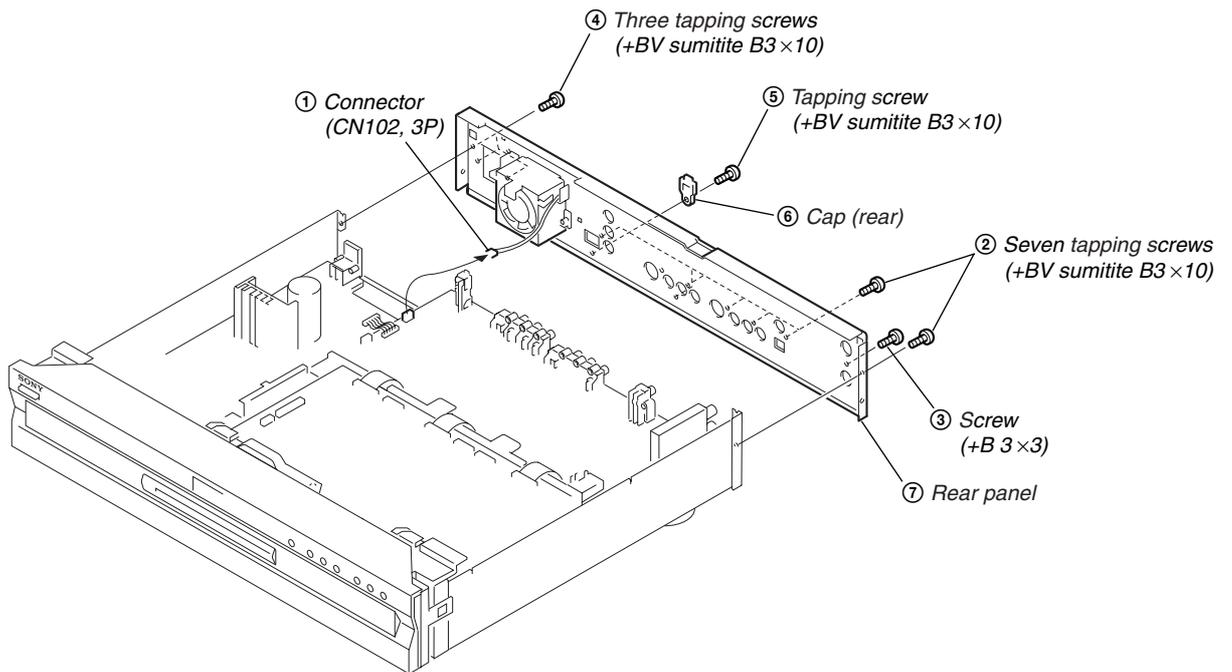
## 2-2. POWER BLOCK



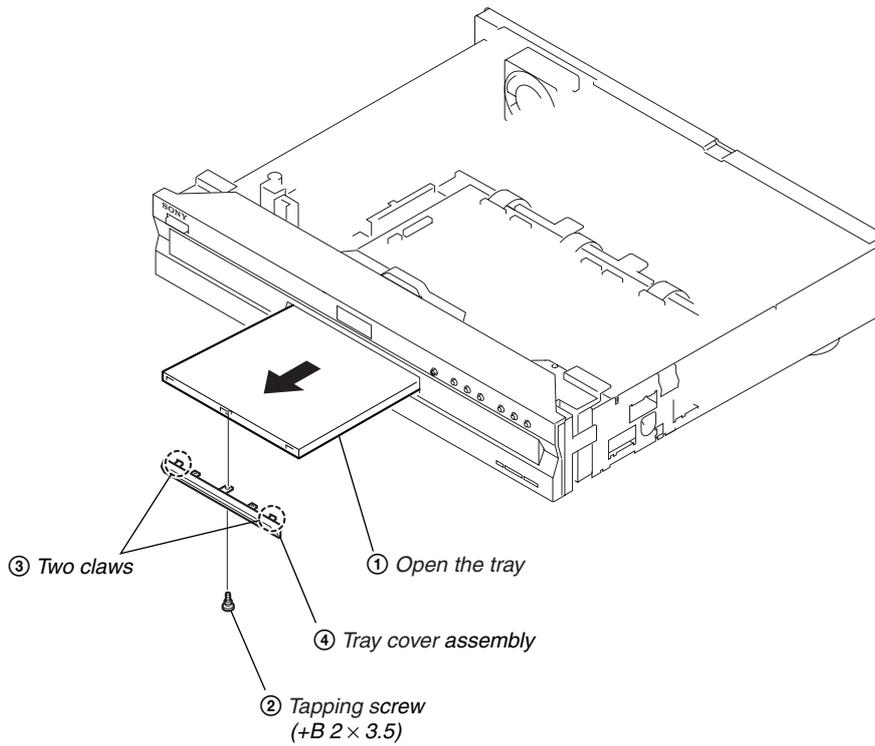
## 2-3. D. C. FAN



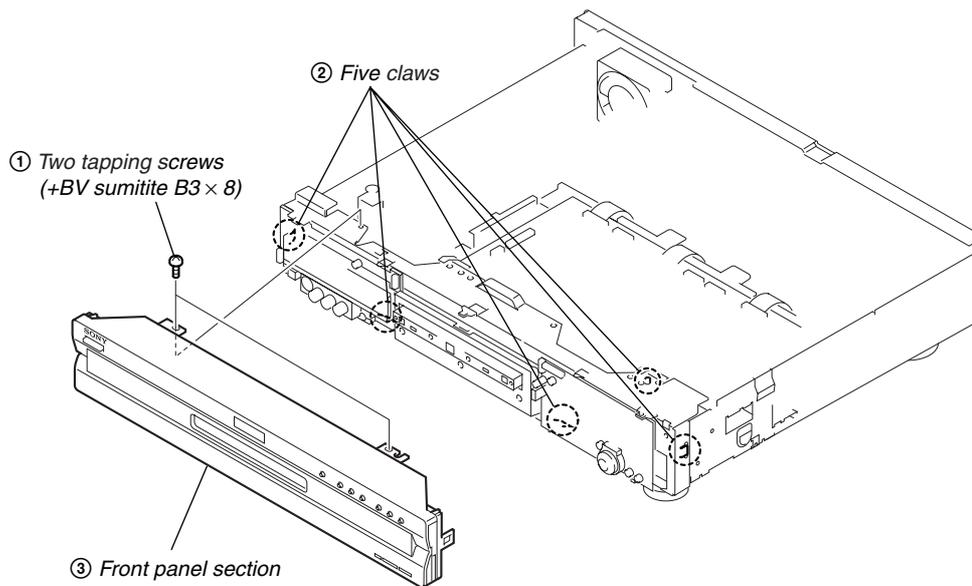
## 2-4. REAR PANEL



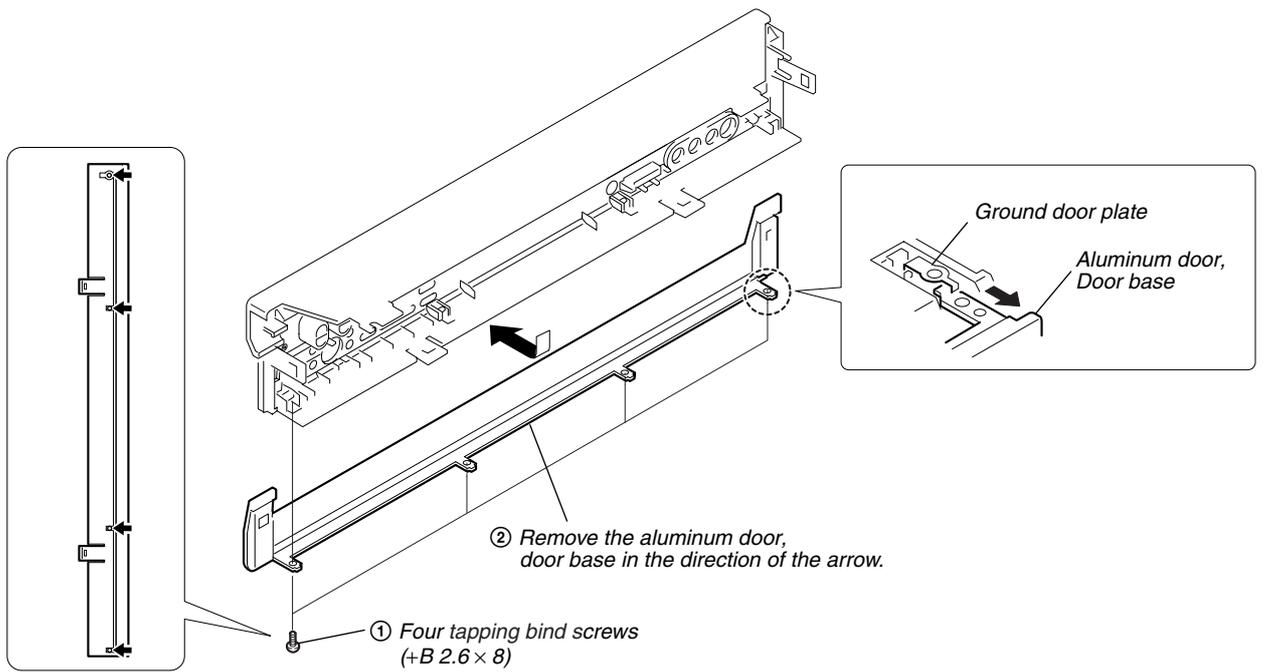
## 2-5. TRAY COVER ASSEMBLY



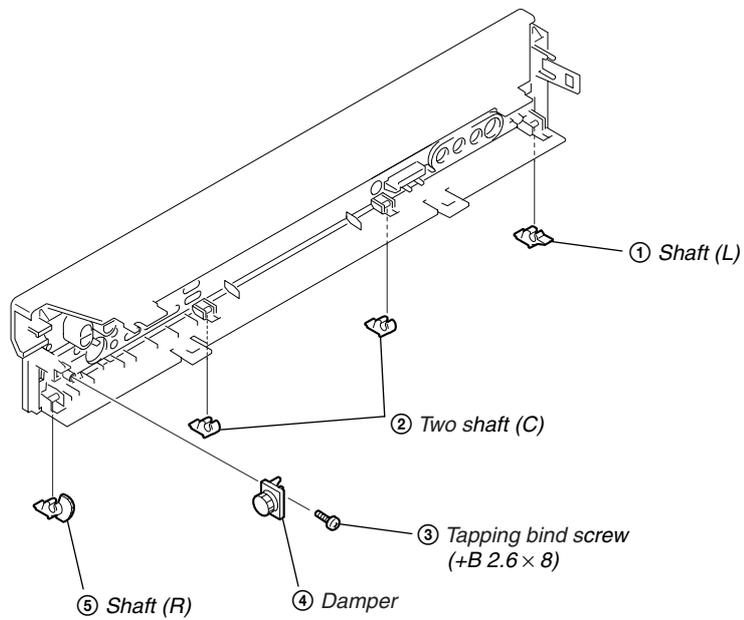
## 2-6. FRONT PANEL SECTION



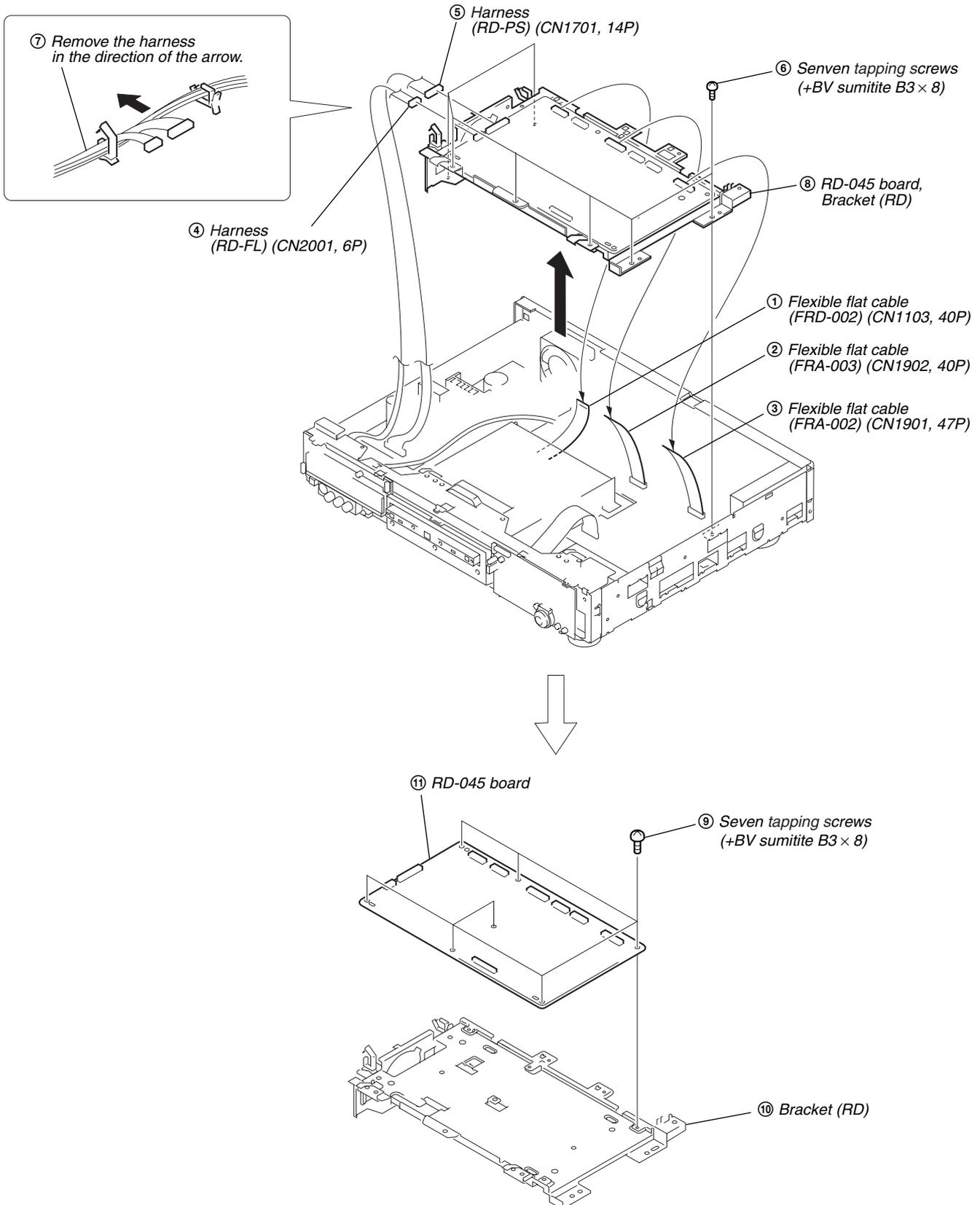
## 2-7. ALUMINUM DOOR, DOOR BASE



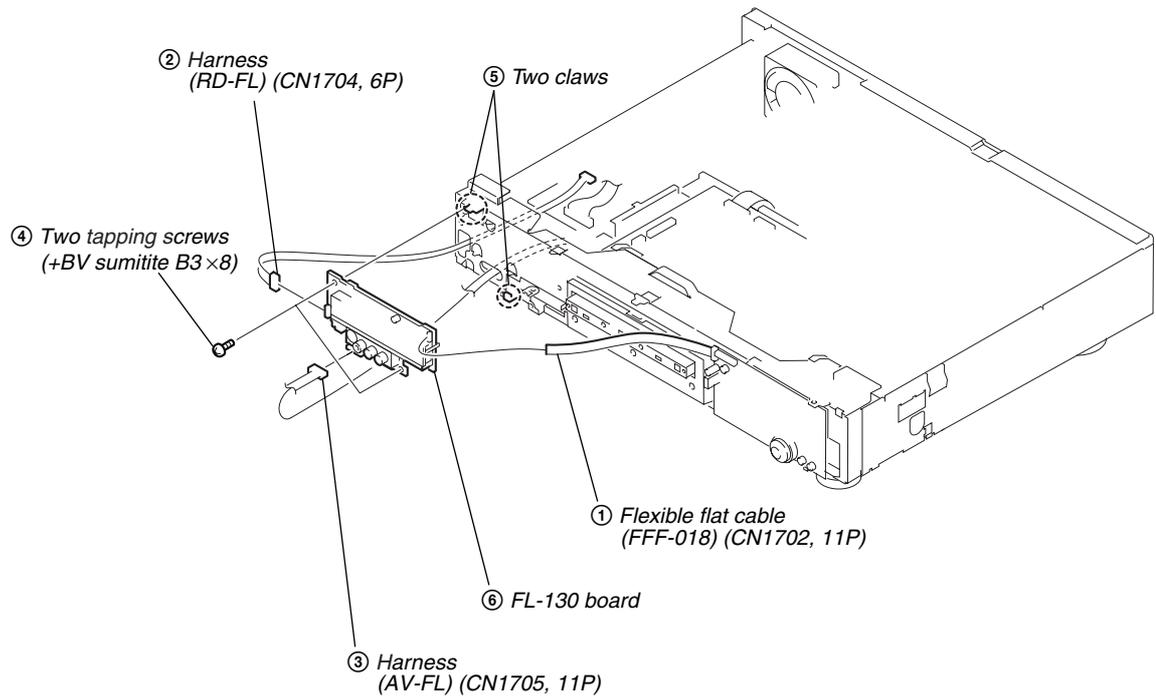
## 2-8. SHAFT (R)



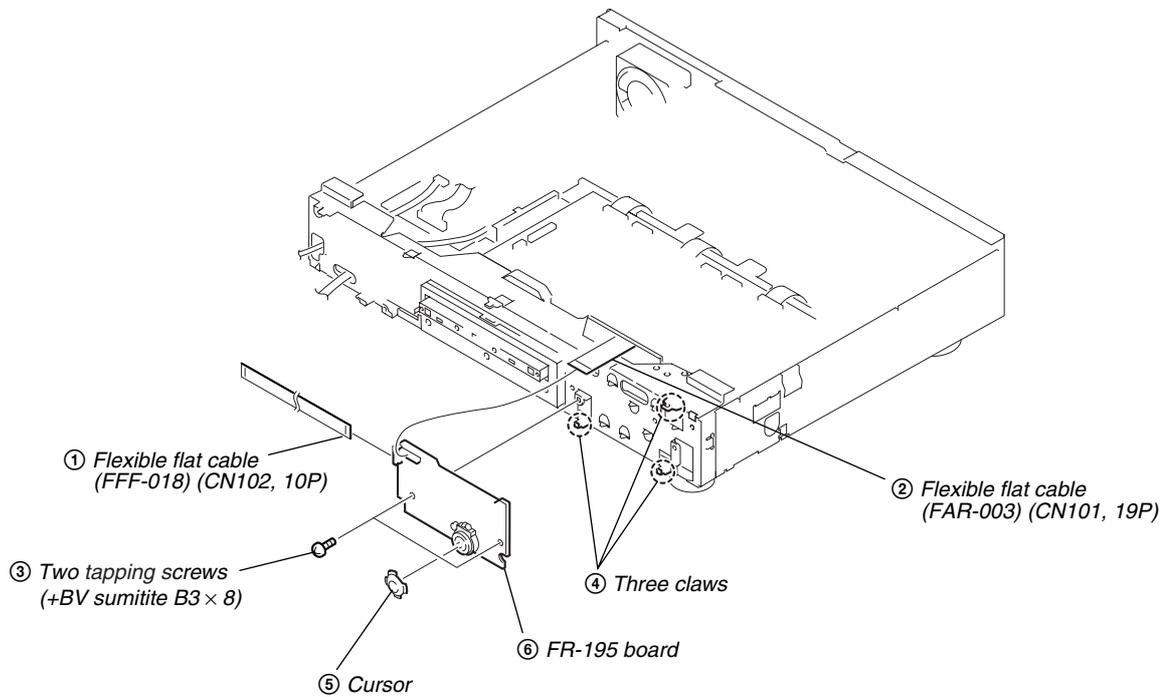
## 2-9. RD-045 BOARD



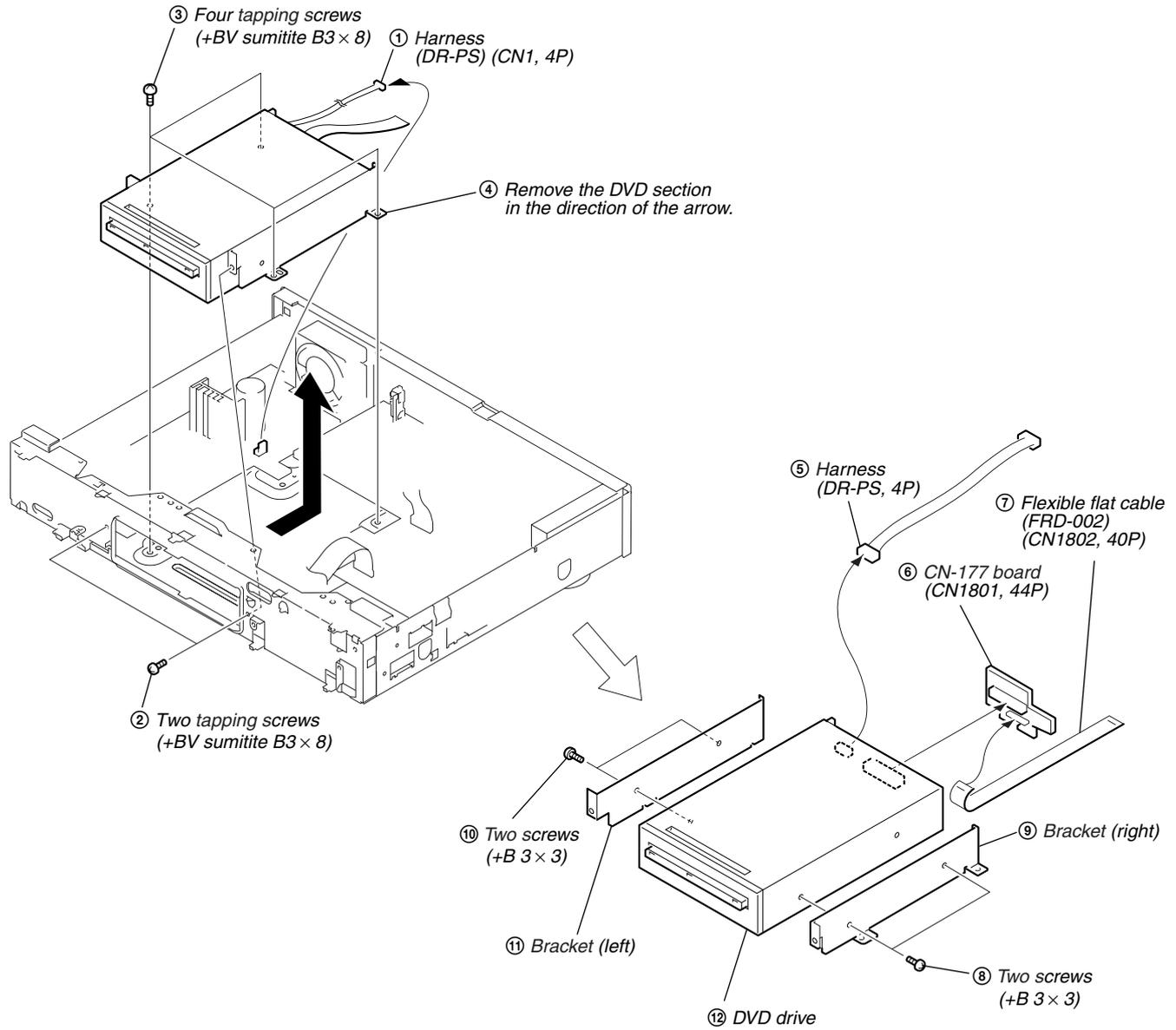
## 2-10.FL-130 BOARD



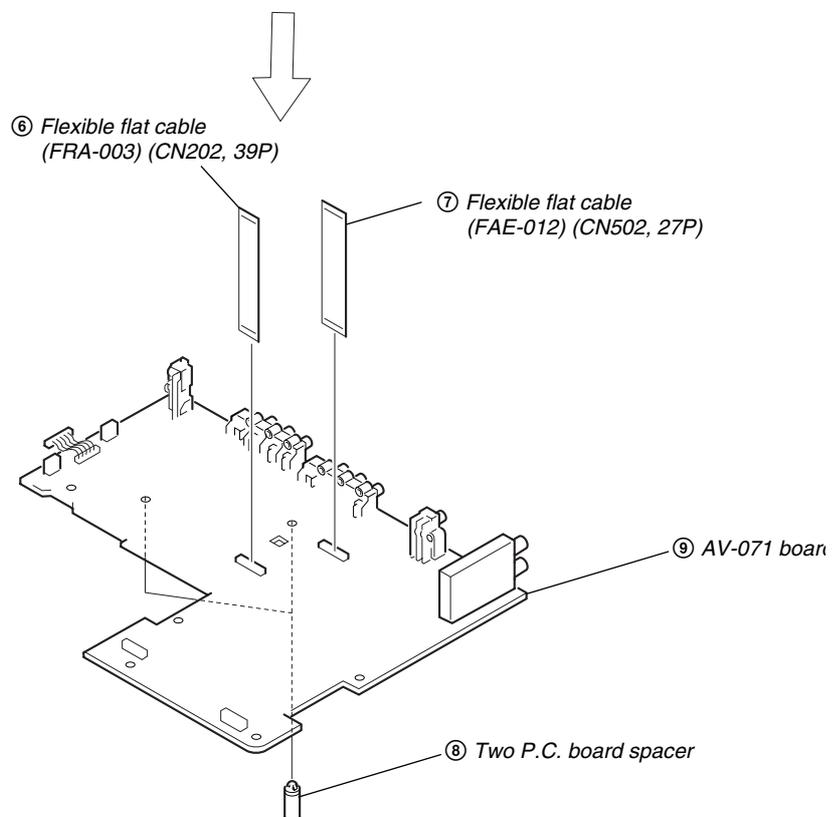
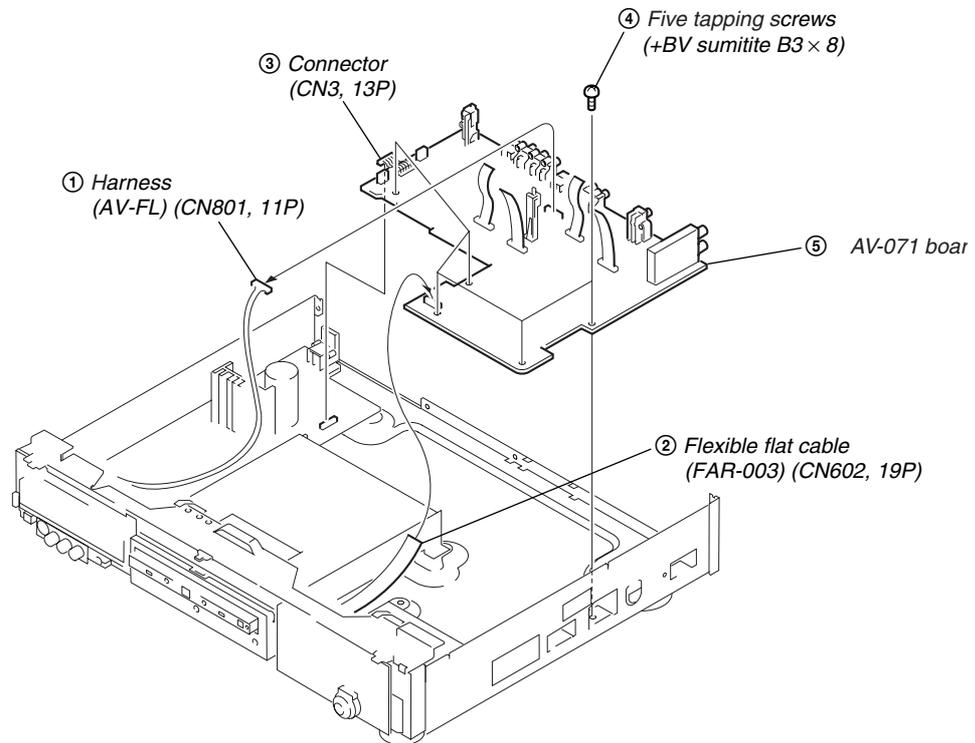
## 2-11.FR-195 BOARD



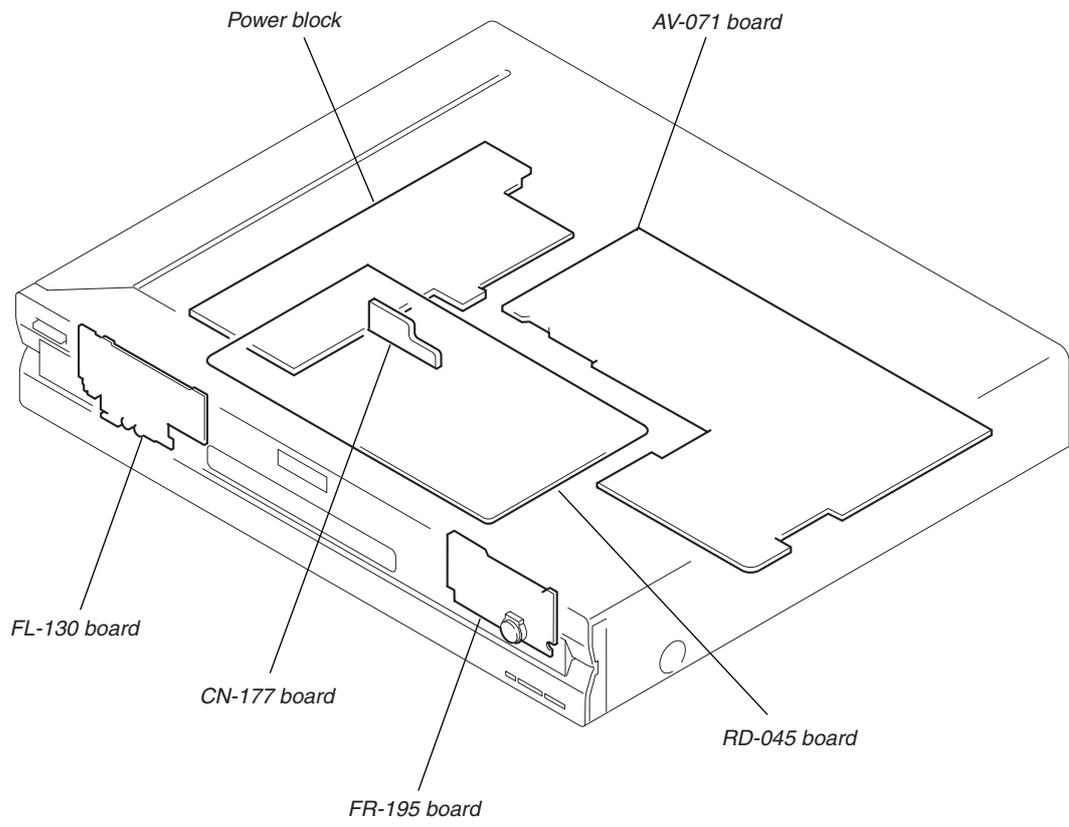
## 2-12. DVD DRIVE



## 2-13.AV-071 BOARD

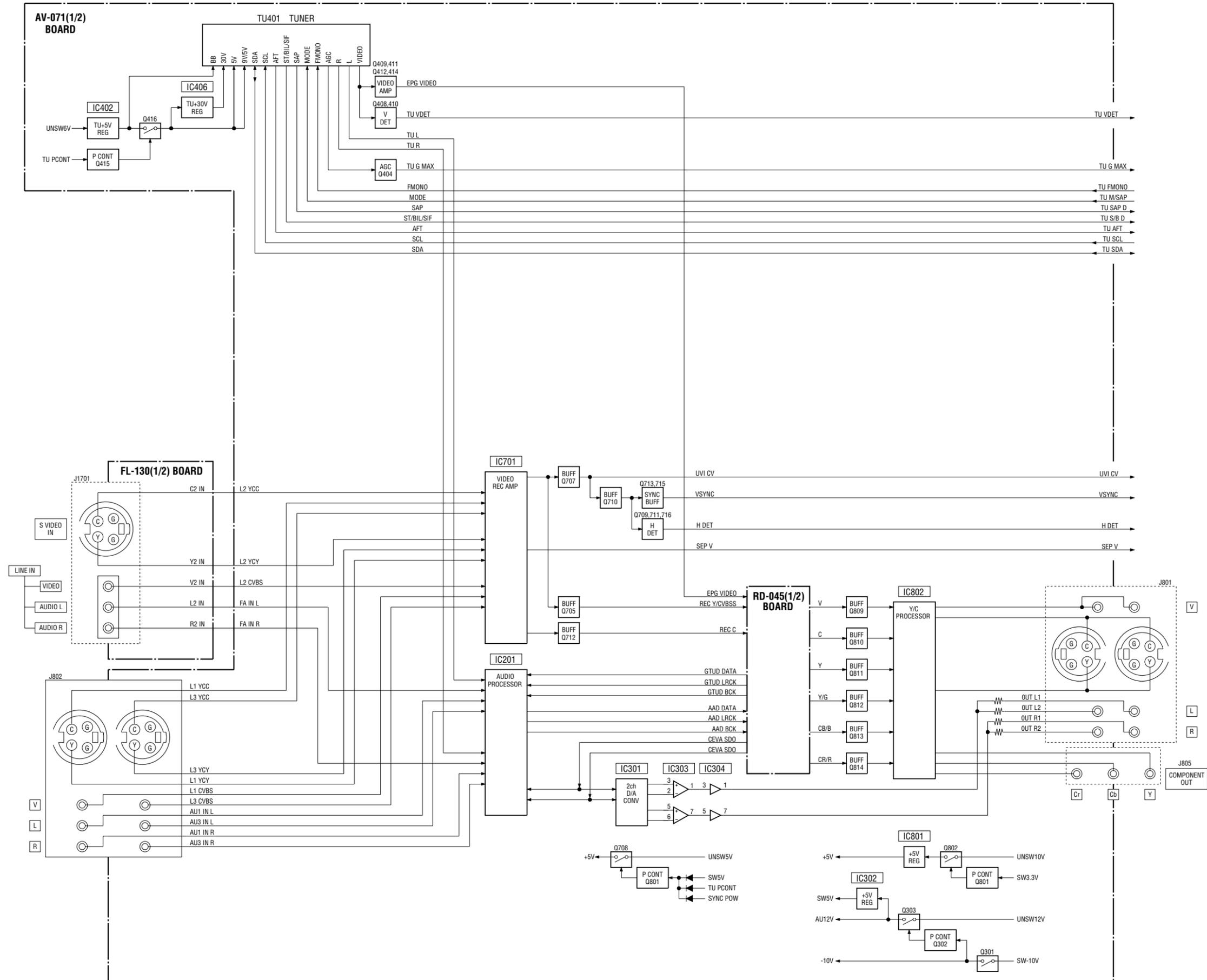


## 2-14. CIRCUIT BOARDS LOCATION

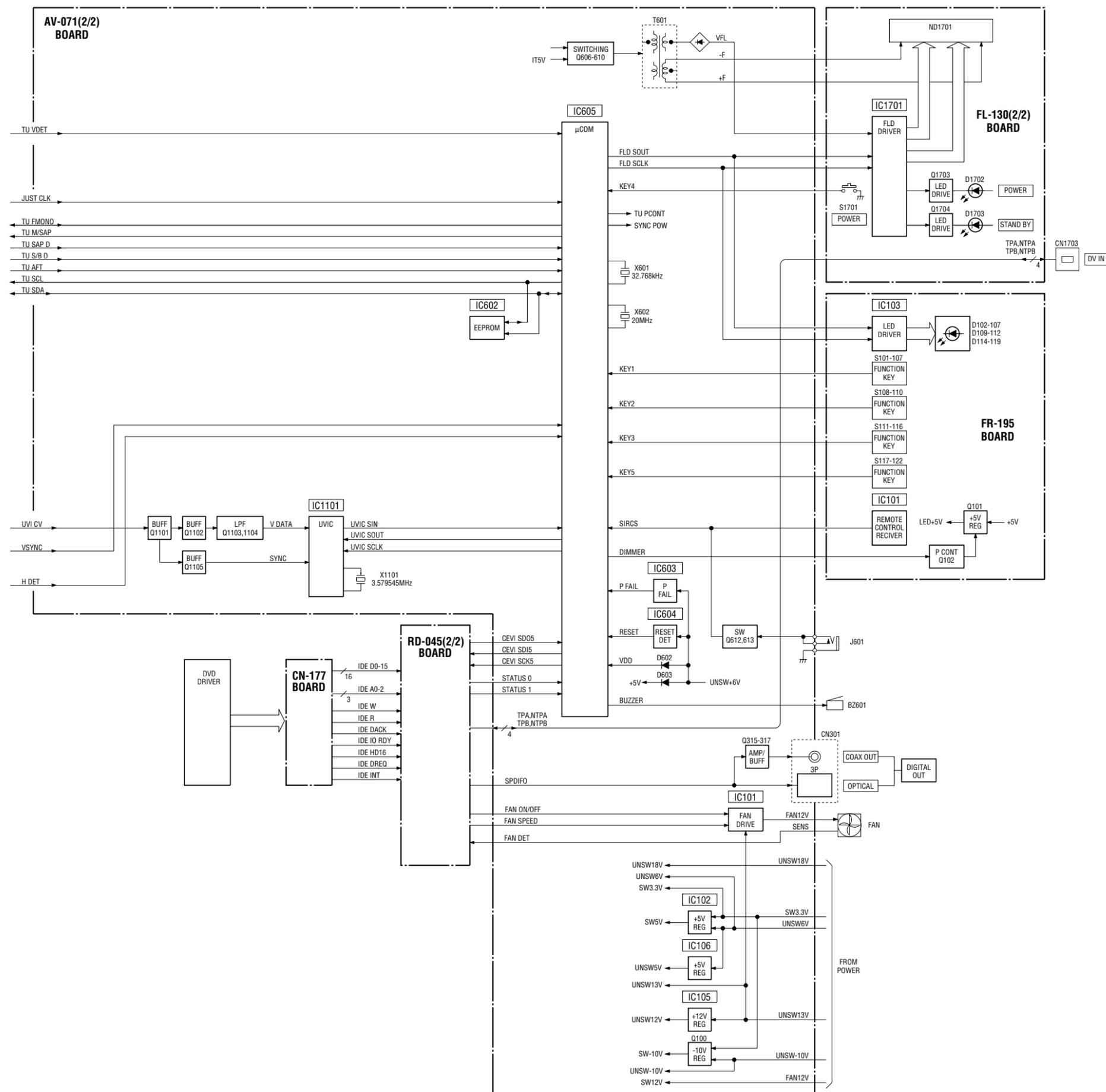


### SECTION 3 BLOCK DIAGRAMS

#### 3-1. OVERALL BLOCK DIAGRAM (1/2)

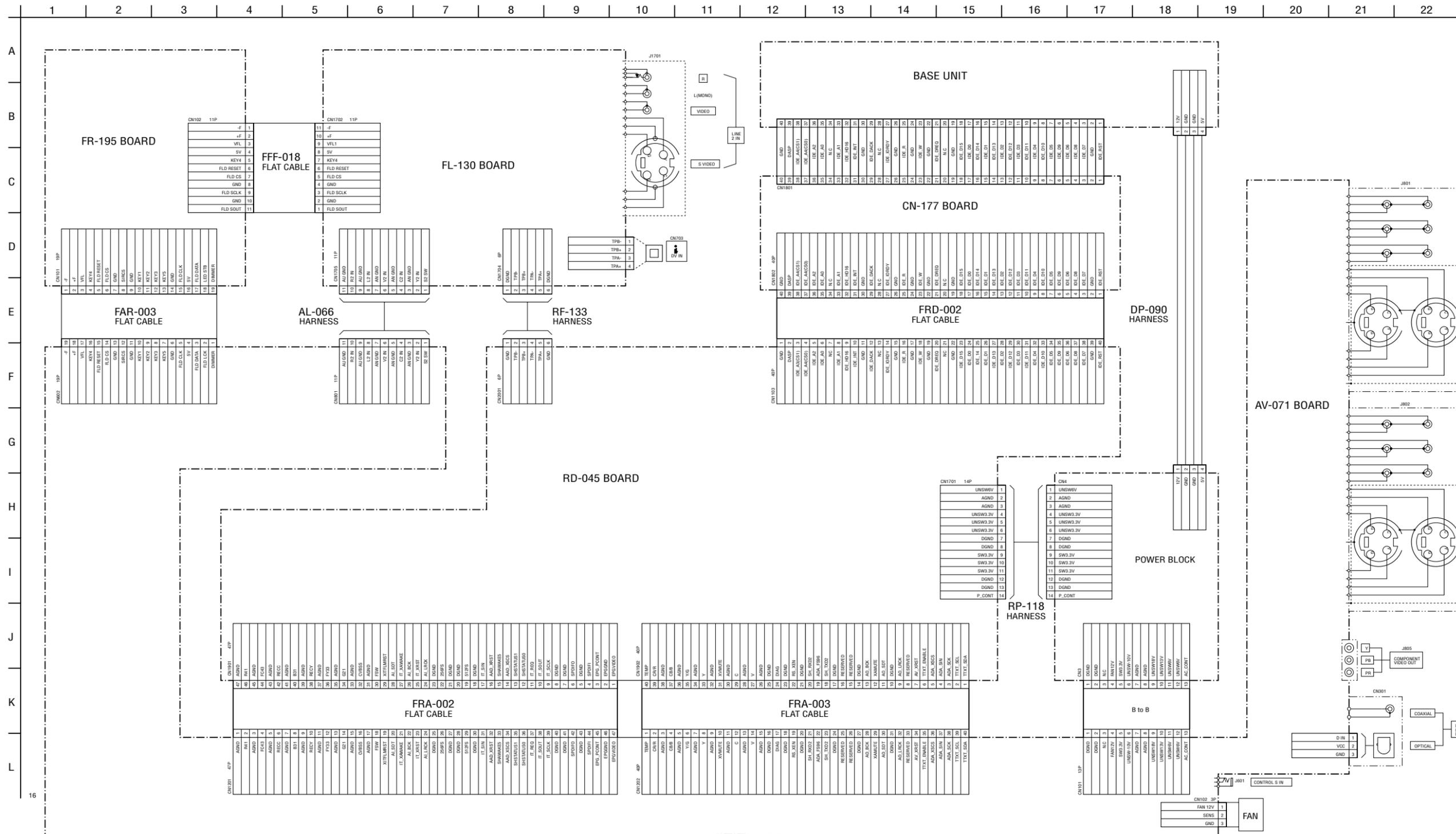


3-2. OVERALL BLOCK DIAGRAM (2/2)



# SECTION 4 PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

## 4-1. FRAME SCHEMATIC DIAGRAM



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

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

**(For printed wiring boards)**

- : indicates a lead wire mounted on the component side.
- : indicates a lead wire mounted on the printed side.
- : Through hole.
- ▨ : Pattern from the side which enables seeing.  
 (The other layers' patterns are not indicated.)

**Caution:**  
 Pattern face side: Parts on the pattern face side seen from (Side B)  
 Parts face side: Parts on the parts face side seen from (Side A)

**(For schematic diagrams)**

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF} : \mu\text{F}$ . 50V or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4 W (Chip resistors : 1 /10 W) unless otherwise specified.  
 $\text{k}\Omega=1000\Omega$ ,  $\text{M}\Omega=1000\text{k}\Omega$ .
- Caution when replacing chip parts. New parts must be attached after removal of chip. Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
-  : non flammable resistor
-  : fusible resistor
-  : panel designation
- $\Delta$  : internal component.
-  : adjustment for repair.
-  : B+ Line
-  : B- Line
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signals on DVD reference disc.
- Readings are taken with a digital multimeter (DC 10MW).
- Voltage variations may be noted due to normal production tolerances.

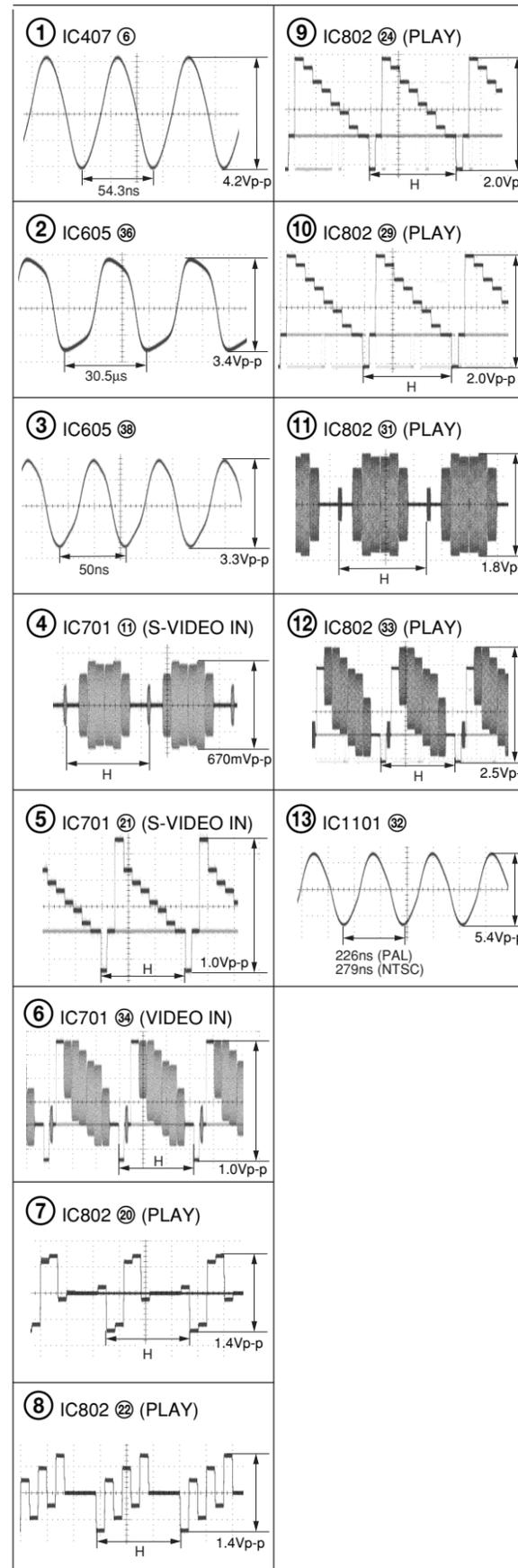
**Note :**  
 The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

**Note :**  
 Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

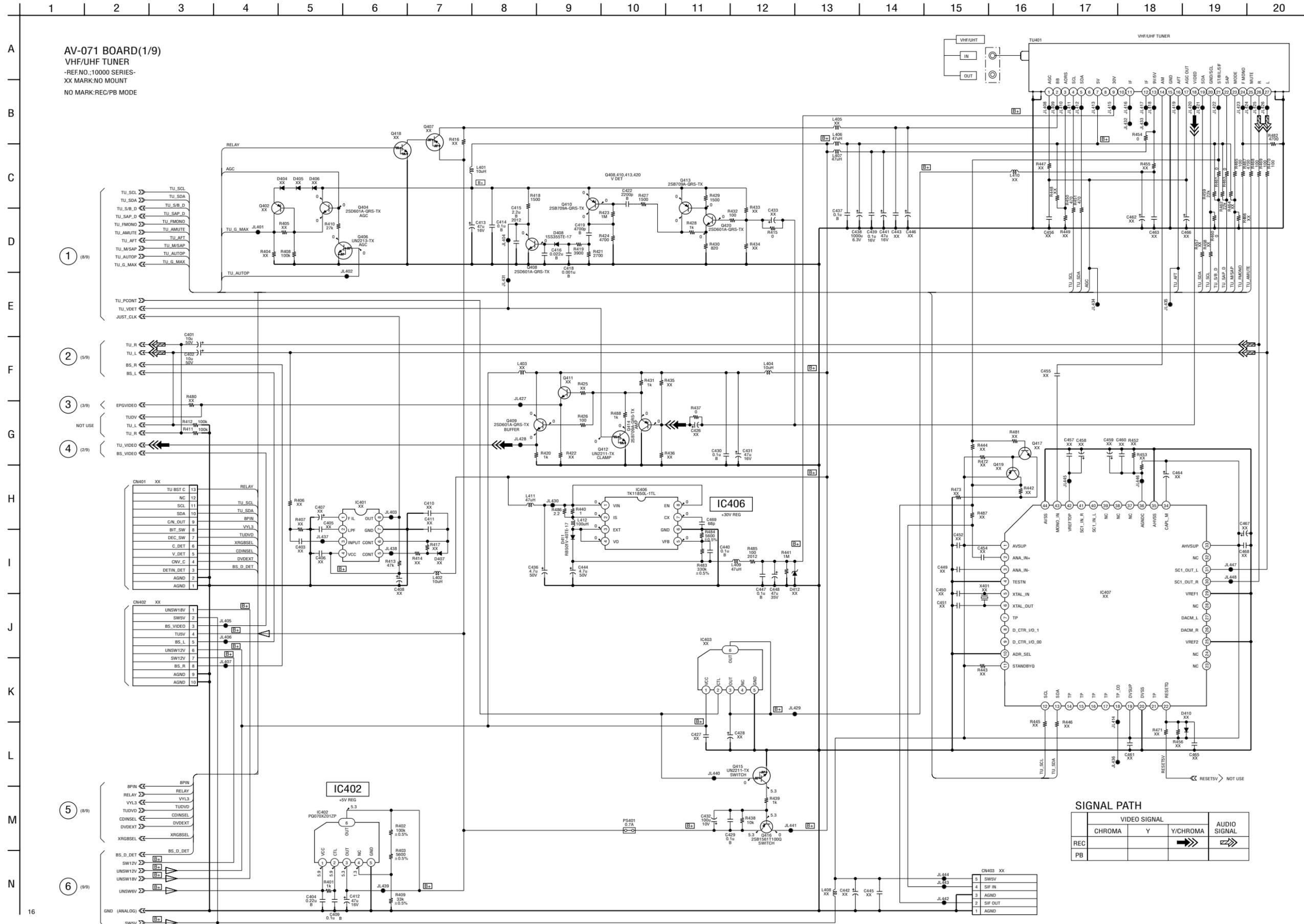
When indicating parts by reference number, please include the board name.

WAVEFORMS

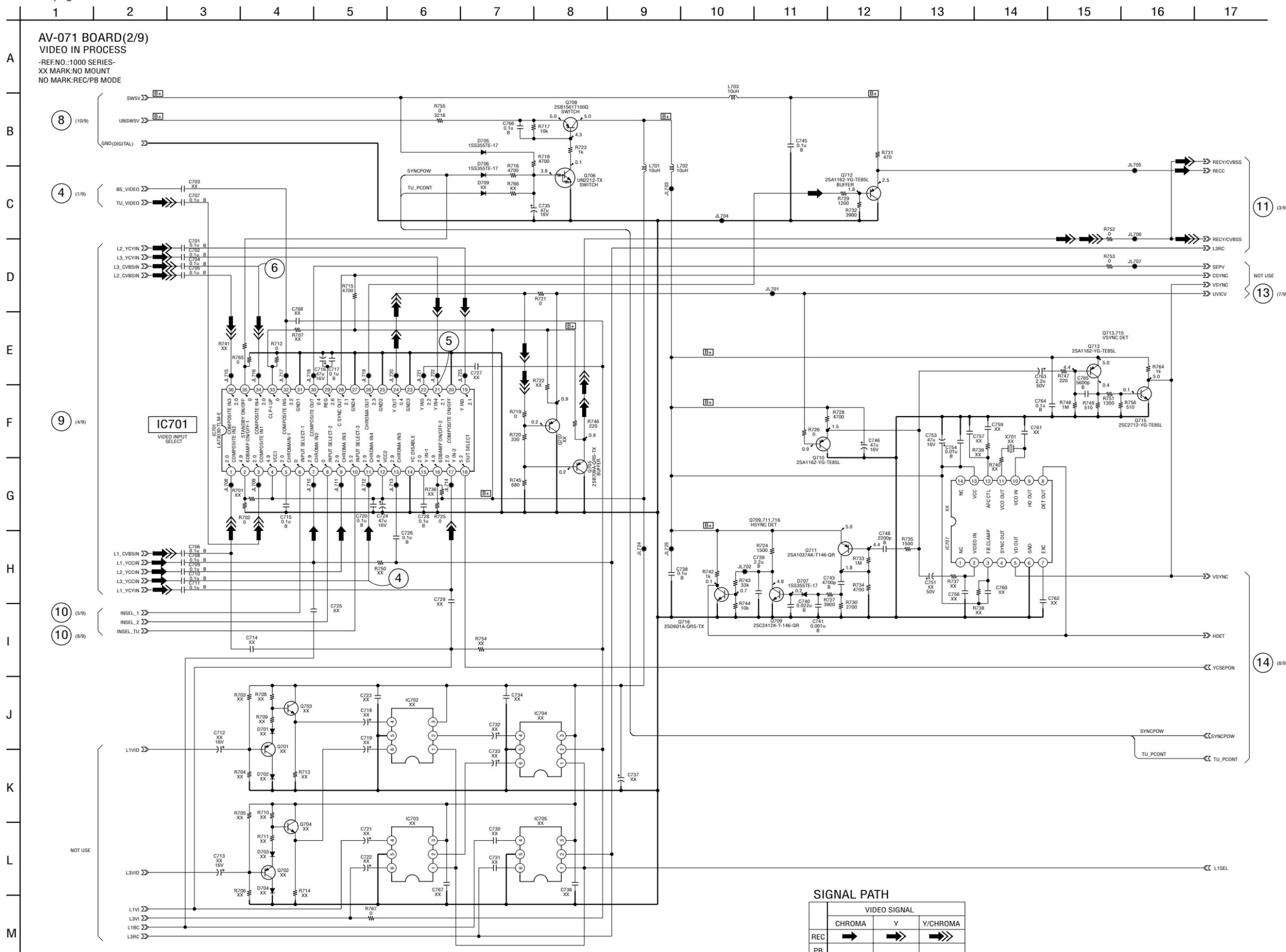
AV-071 BOARD



For Schematic Diagram  
 • Refer to page 4-23 for printed wiring board.

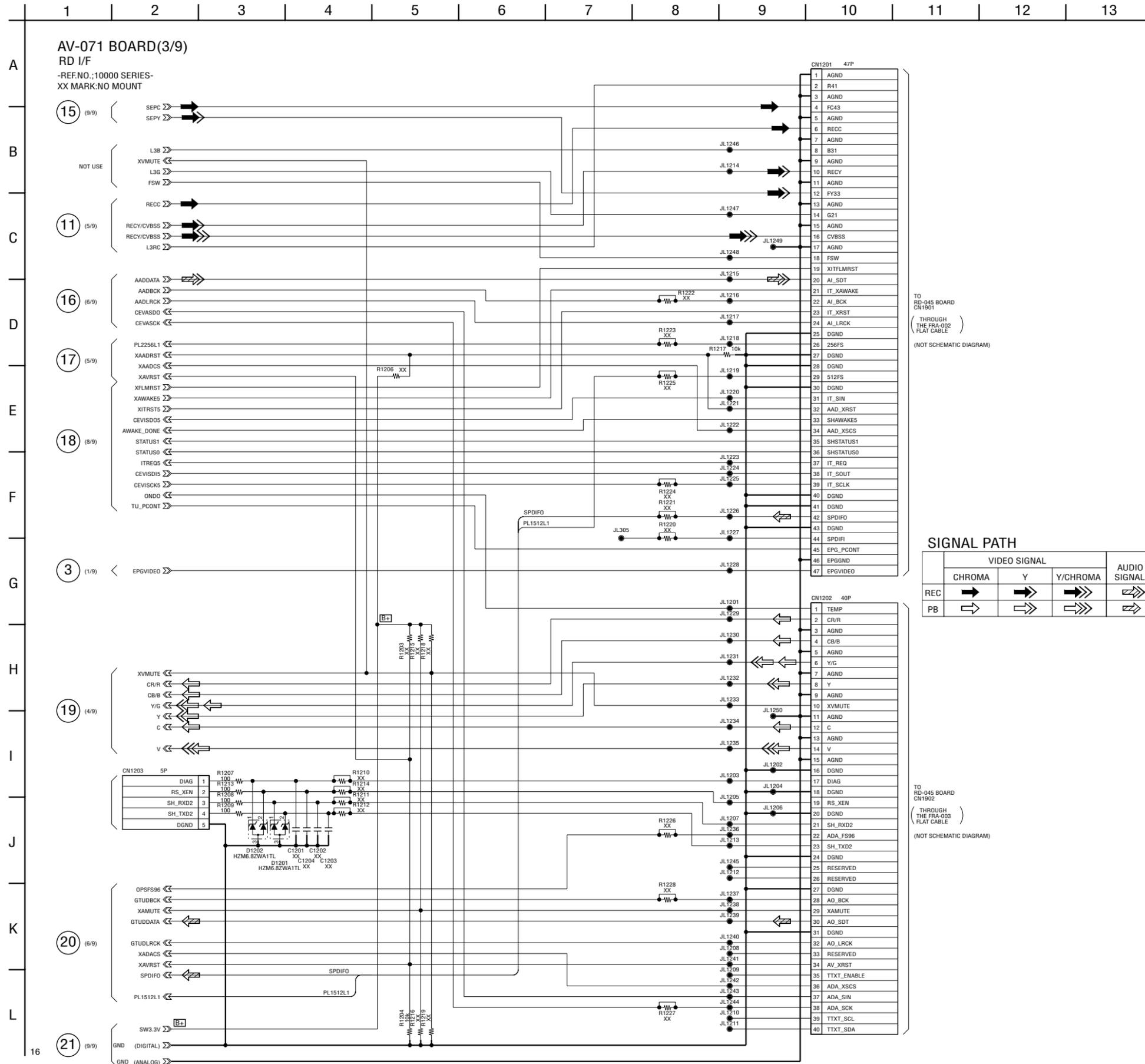


**For Schematic Diagram**  
 • Refer to page 4-23 for printed wiring board.  
 • Refer to page 4-4 for waveforms.



**For Schematic Diagram**

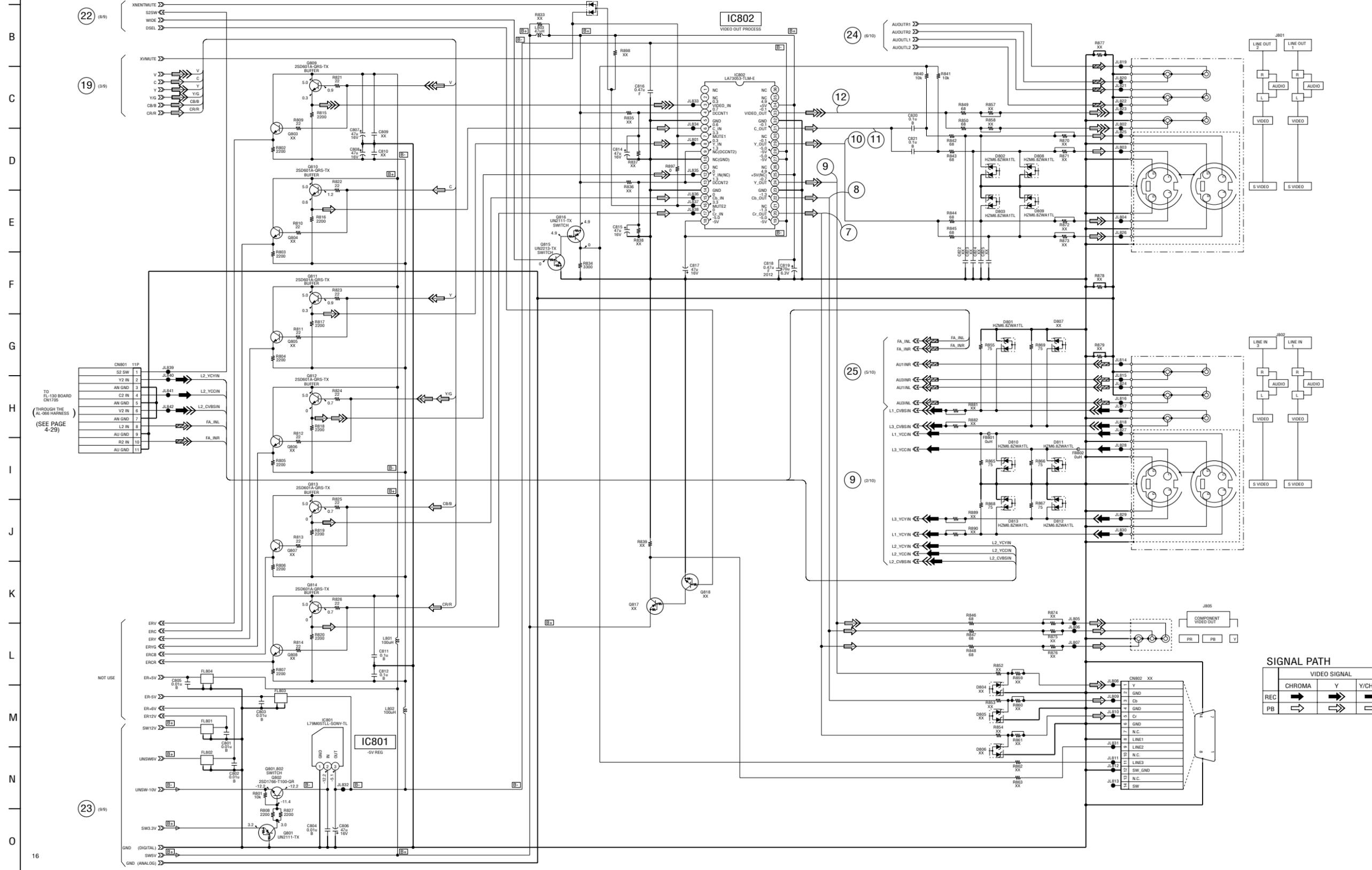
• Refer to page 4-23 for printed wiring board.



For Schematic Diagram  
 • Refer to page 4-23 for printed wiring board.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

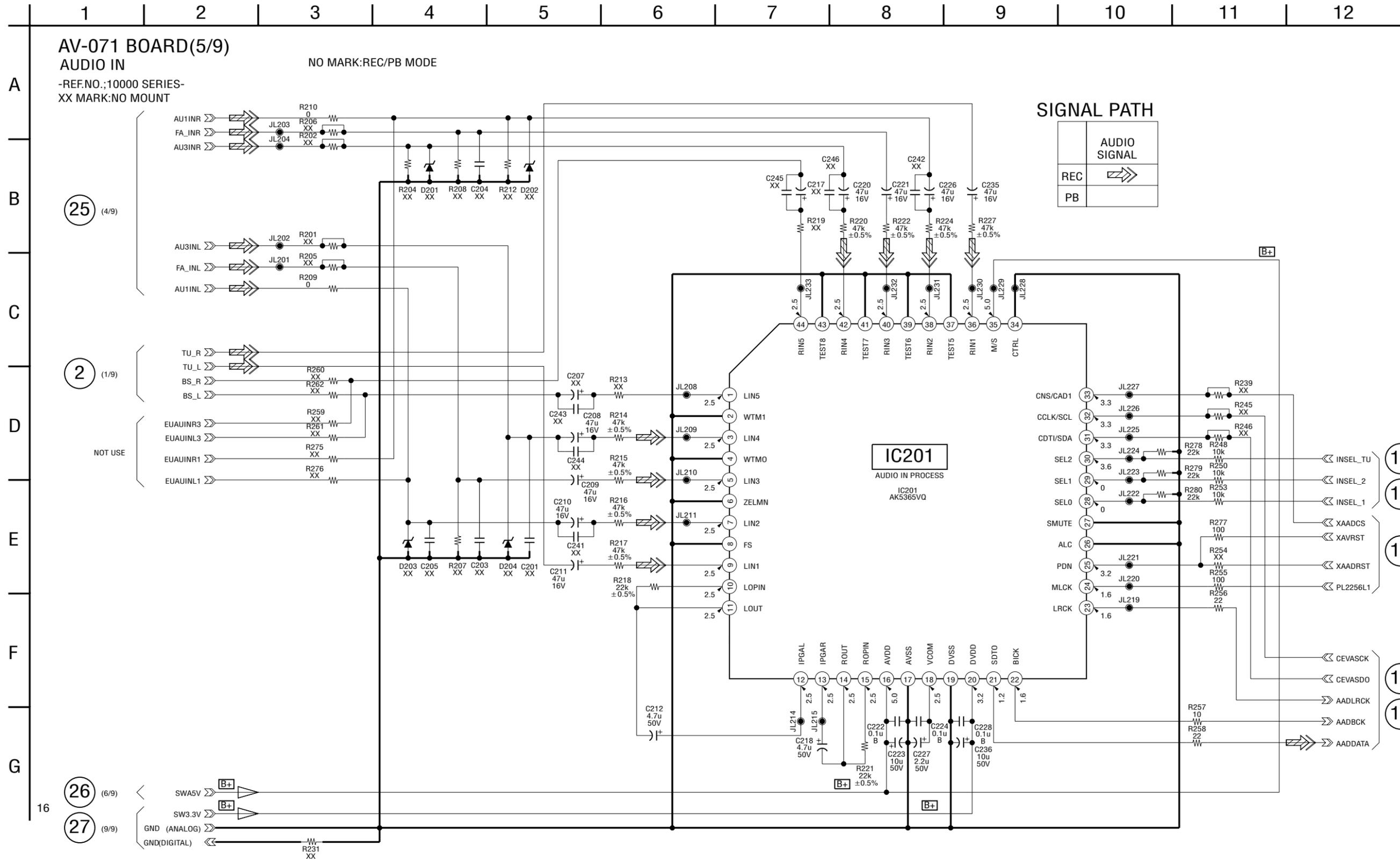
AV-071 BOARD(4/9)  
 A/V IN/OUT TERMINAL  
 -REF.NO.:10000 SERIES-  
 -XX MARK:NO MOUNT  
 -NO MARK:REC/PB MODE



**SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	→	→	→	→
PB	→	→	→	→

For Schematic Diagram  
 • Refer to page 4-23 for printed wiring board.

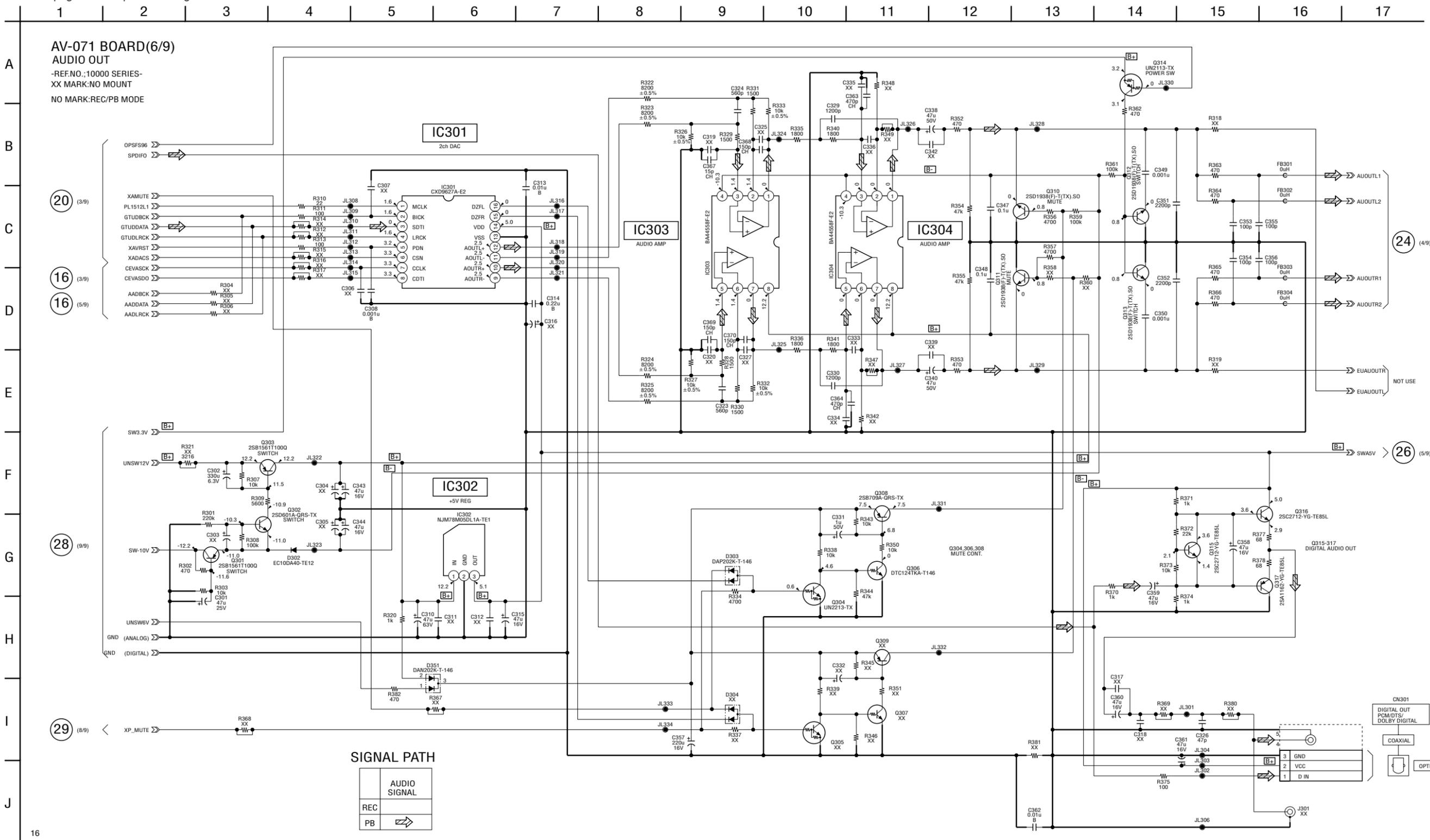


**SIGNAL PATH**

	AUDIO SIGNAL
REC	➡➡➡
PB	➡➡➡

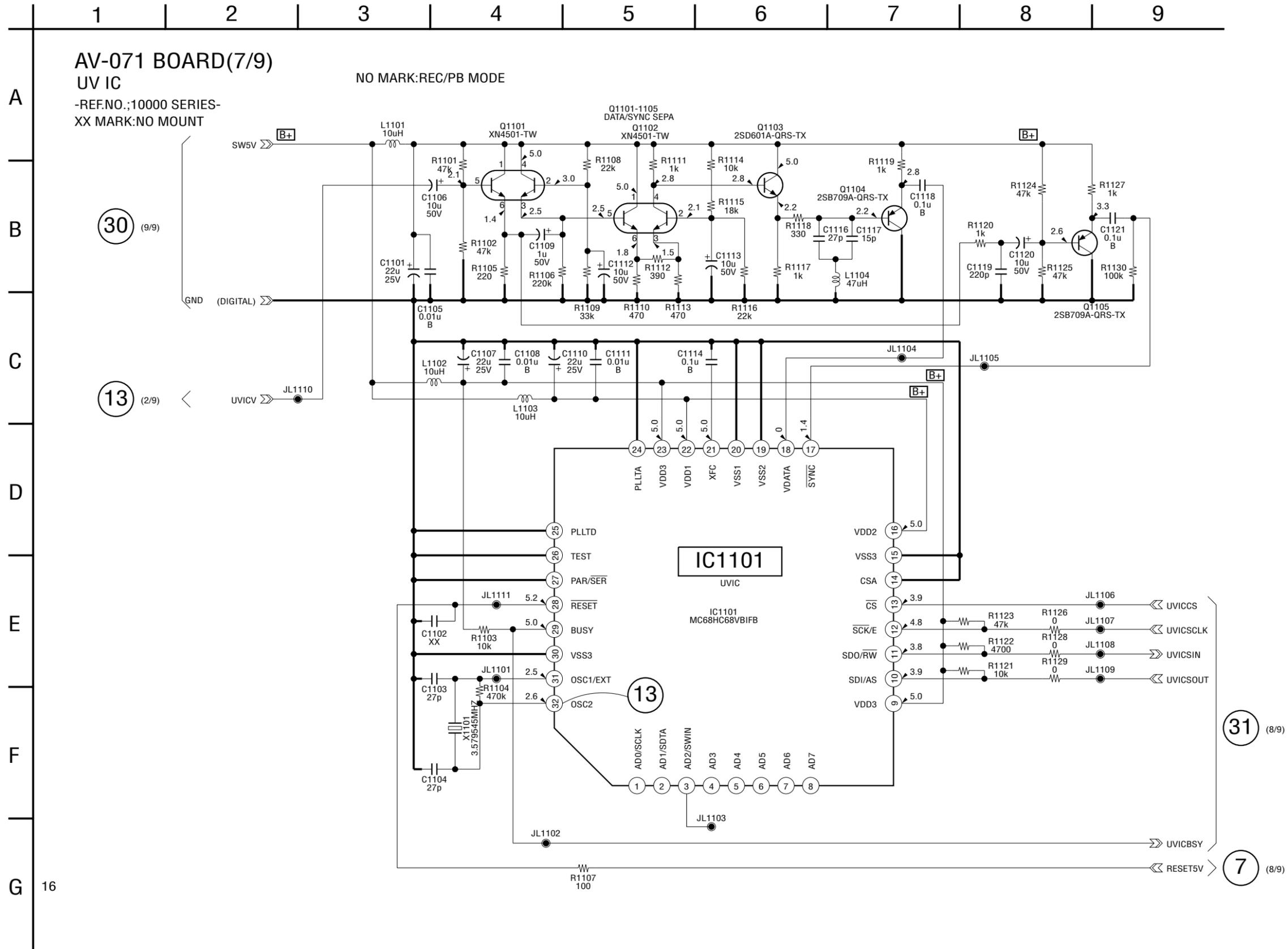
**IC201**  
 AUDIO IN PROCESS  
 IC201 AK5365VQ

For Schematic Diagram  
 Refer to page 4-23 for printed wiring board.



For Schematic Diagram

- Refer to page 4-23 for printed wiring board.
- Refer to page 4-4 for waveforms.





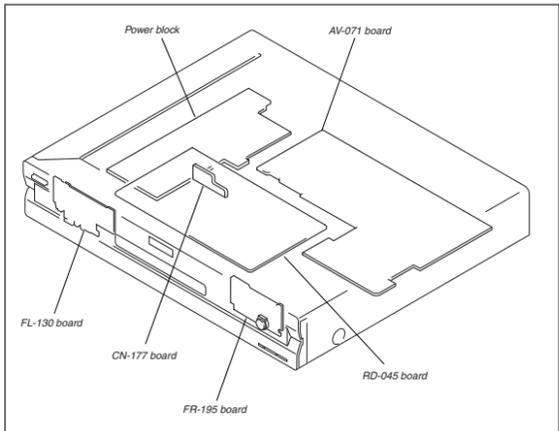
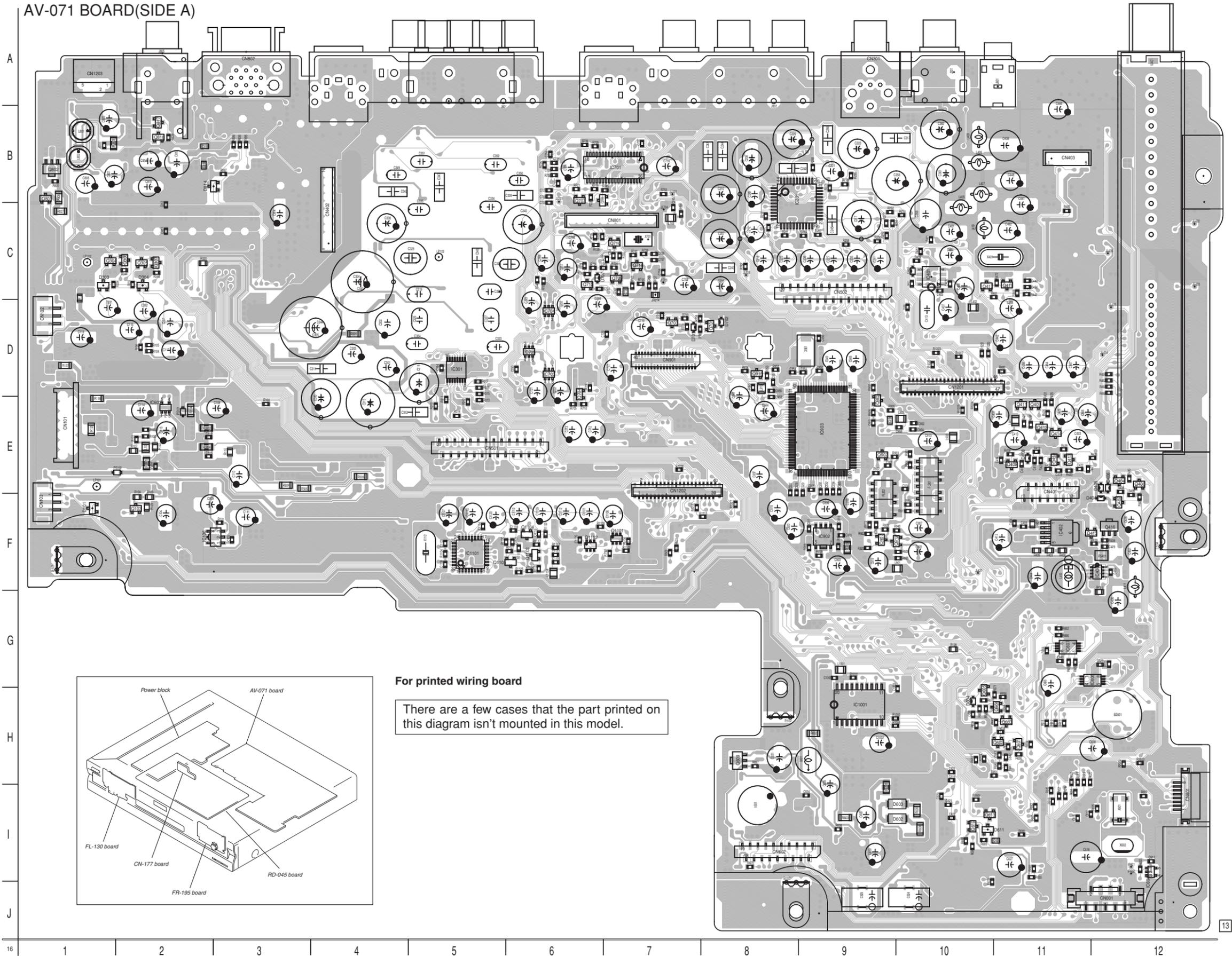


AV-071 (TUNER, VIDEO IN PROCESS, RD I/F, AV IN/OUT, UV IC, SYSTEM CONTROL, PDC, POWER) PRINTED WIRING BOARD

 : Uses unleaded solder.

AV-071 BOARD (SIDE A)

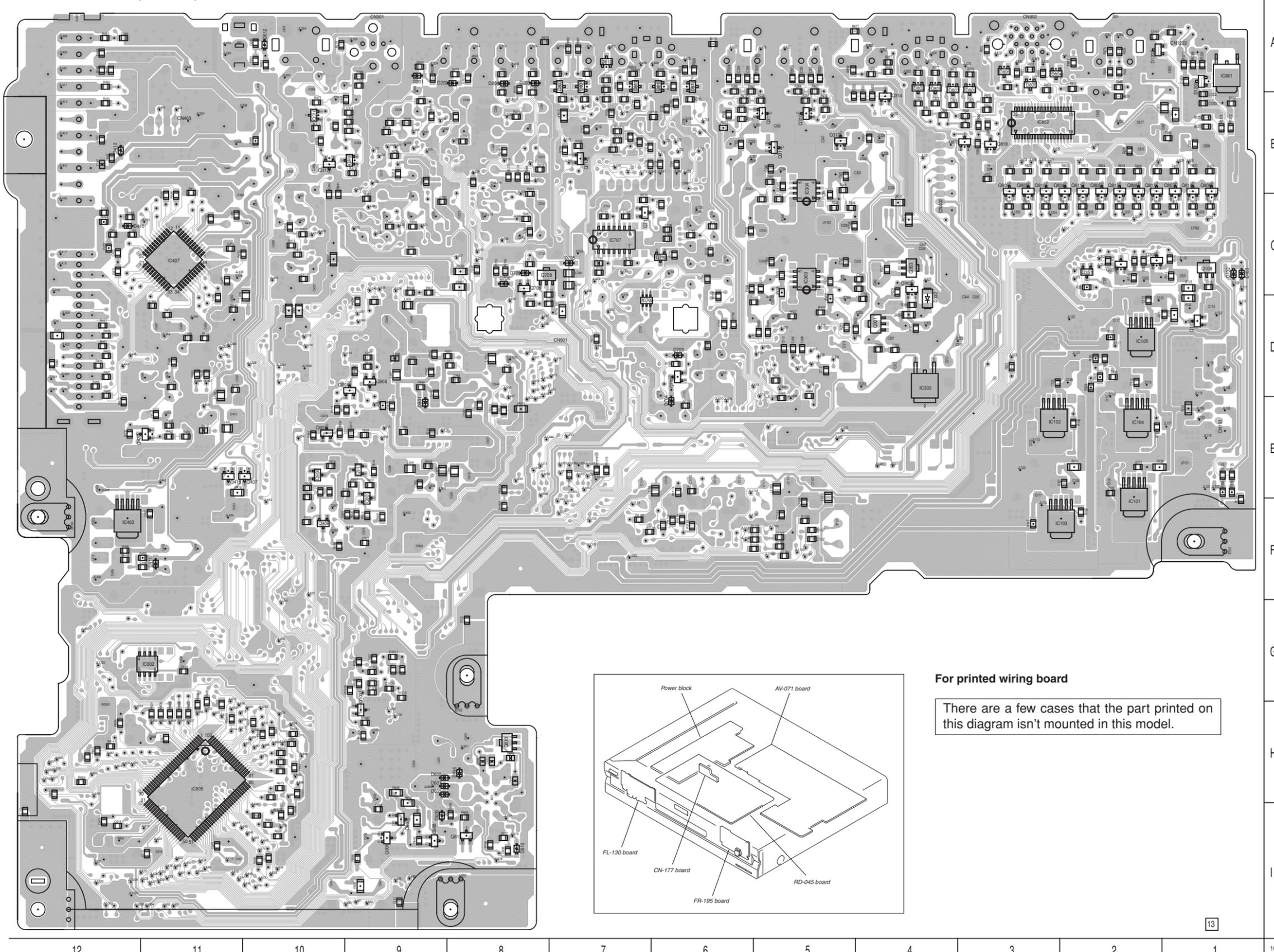
BZ601	H-12	Q304	C-1
		Q306	C-2
CN101	E-1	Q404	E-12
CN102	D-1	Q406	E-12
CN301	A-9	Q408	E-11
CN602	H-8	Q409	E-11
CN801	C-7	Q410	E-11
CN1201	D-10	Q412	E-11
CN1202	E-7	Q413	E-11
CN1203	A-1	Q414	E-11
		Q415	F-11
D303	C-1	Q416	F-12
D408	E-11	Q609	H-8
D602	I-10	Q612	I-10
D603	I-10	Q613	I-10
D611	I-10	Q705	B-6
D707	C-6	Q709	C-7
		Q710	C-7
		Q713	C-6
IC106	F-3	Q716	C-7
IC201	C-8	Q801	B-1
IC301	D-5	Q802	B-1
IC402	F-11	Q1101	F-7
IC406	F-12	Q1102	F-6
IC603	E-2	Q1103	F-6
IC604	I-12	Q1104	F-6
IC701	B-7	Q1104	F-6
IC1101	F-5	Q1105	F-6
PS101	E-2	X601	I-12
PS102	E-2	X602	I-12
PS401	F-12	X1101	F-5
Q103	F-2		



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

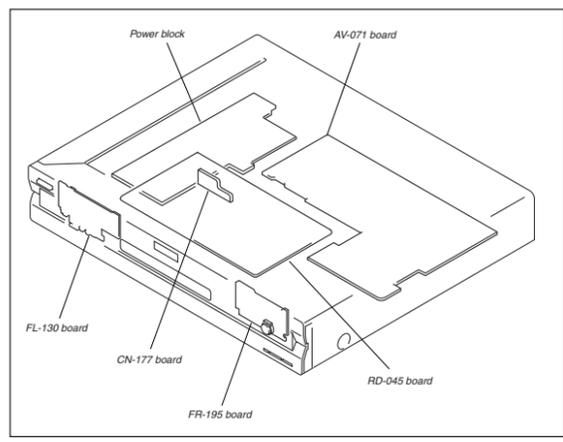
•  : Uses unleaded solder.

AV-071 BOARD(SIDE B)



AV-071 BOARD (SIDE B)

D302	D-4	Q107	D-1
D351	D-2	Q108	D-1
D411	F-11		
D605	I-9	Q301	D-4
D606	H-8	Q302	D-4
D607	I-9	Q303	D-4
D608	I-9	Q308	C-2
D609	I-9	Q310	B-5
D610	I-8	Q311	B-5
D612	A-10	Q312	B-5
D705	C-7	Q313	B-5
D706	D-8	Q314	B-4
D801	B-7	Q315	B-9
D802	B-4	Q316	B-10
D803	B-3	Q317	B-10
D808	B-4	Q420	E-11
D809	B-3	Q606	I-9
D810	A-7	Q607	I-9
D811	B-7	Q608	I-9
D812	B-6	Q610	H-8
D813	B-6	Q611	I-8
D1201	B-1	Q706	D-8
D1202	A-2	Q708	D-7
		Q711	C-7
		Q712	B-7
IC101	F-2	Q715	C-6
IC102	E-3	Q809	C-3
IC105	D-2	Q810	C-3
IC302	E-3	Q811	C-2
IC303	D-5	Q812	C-2
IC304	C-5	Q813	C-2
IC602	G-11	Q814	C-2
IC605	I-11	Q815	B-3
IC801	A-1	Q816	B-3
IC802	B-3		

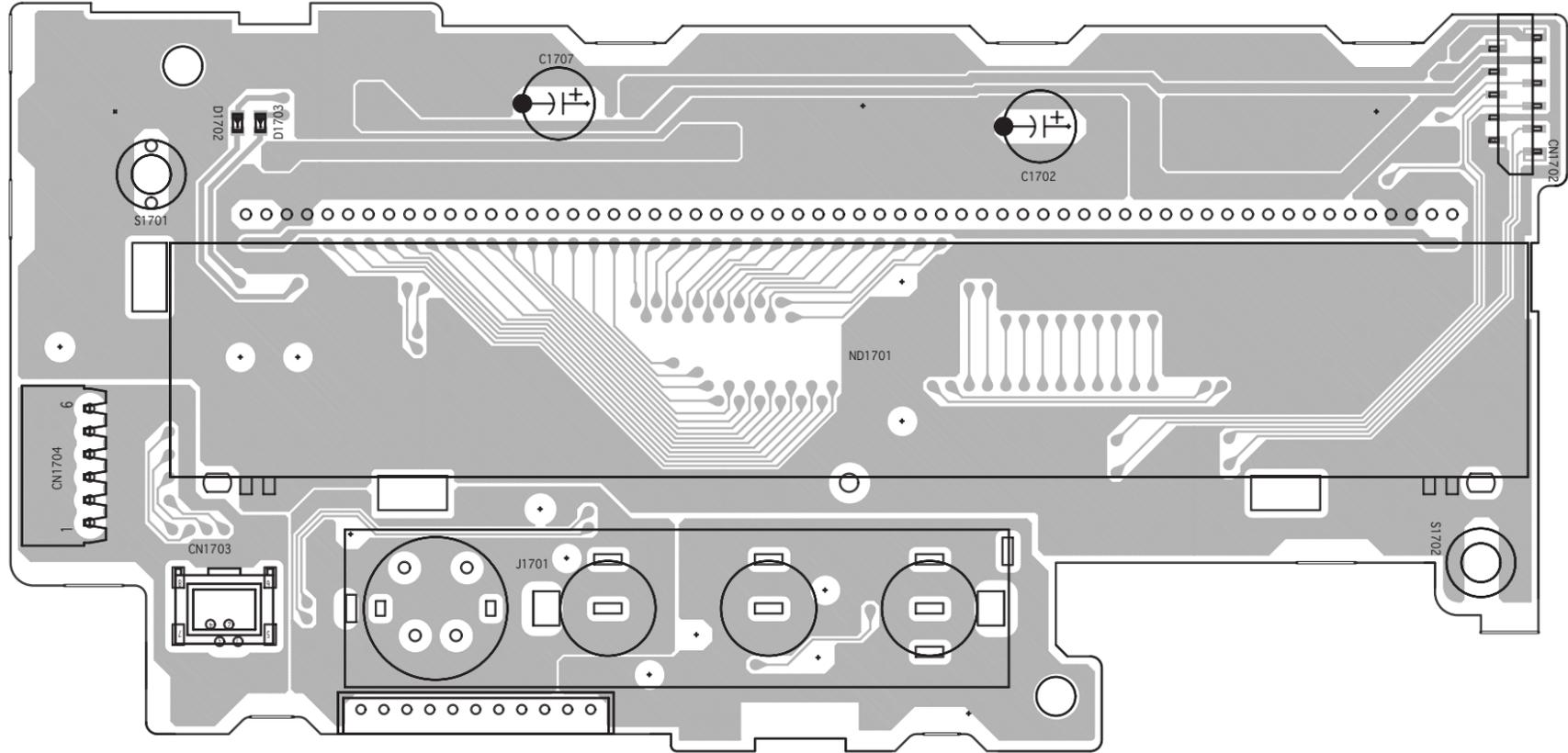


For printed wiring board

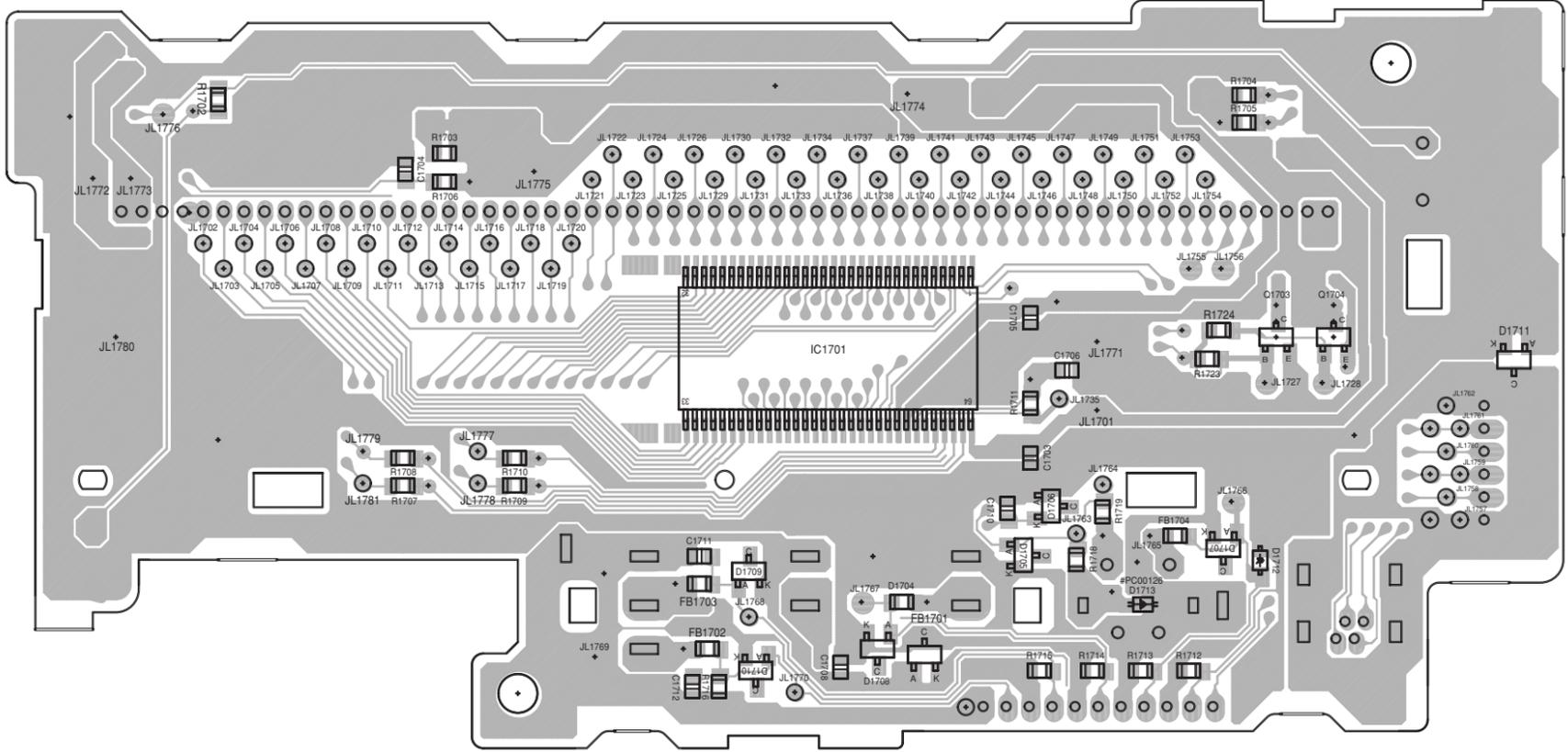
There are a few cases that the part printed on this diagram isn't mounted in this model.

**FL-130 (FL DRIVE) PRINTED WIRING BOARD** •  : Uses unleaded solder.

**FL-130 BOARD (SIDE A)**

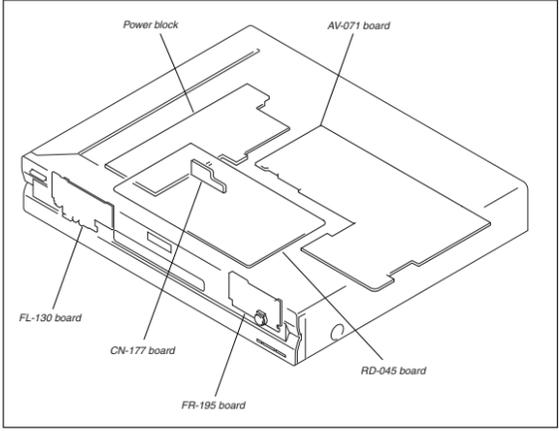


**FL-130 BOARD (SIDE B)**

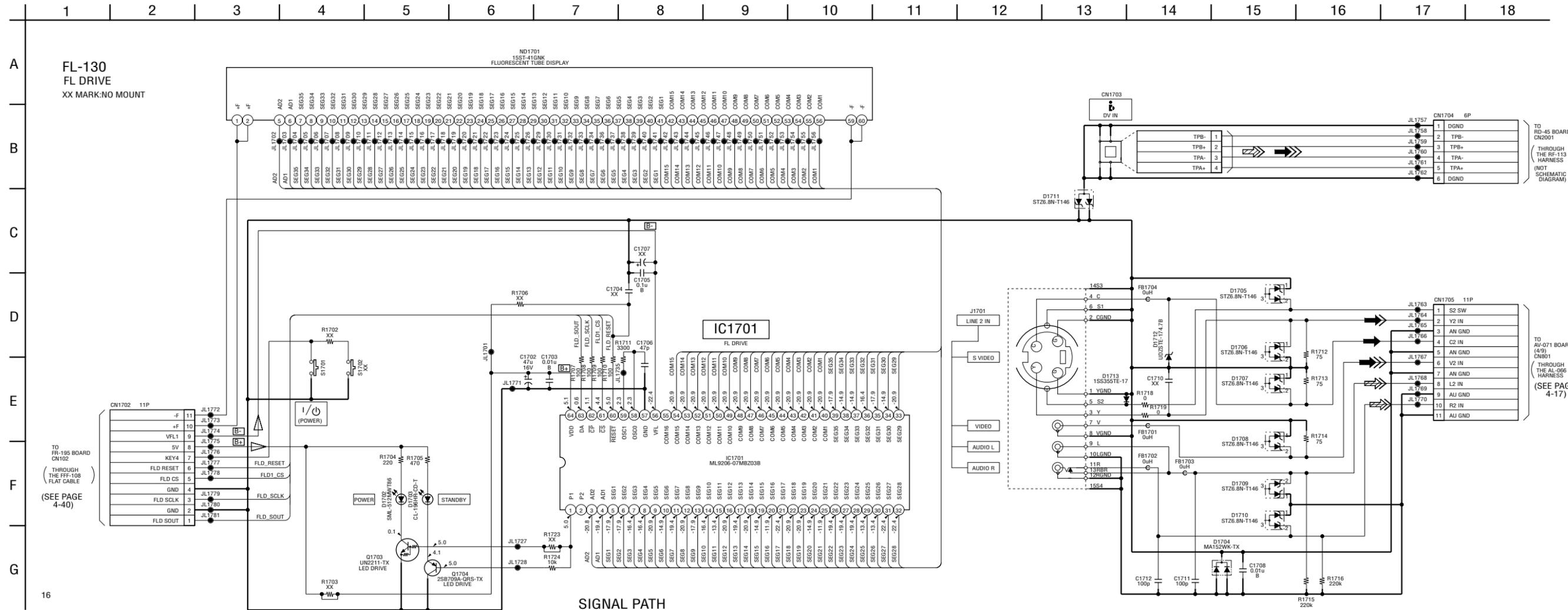


**For printed wiring board**

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



For Schematic Diagram  
 • Refer to page 4-27 for printed wiring board.



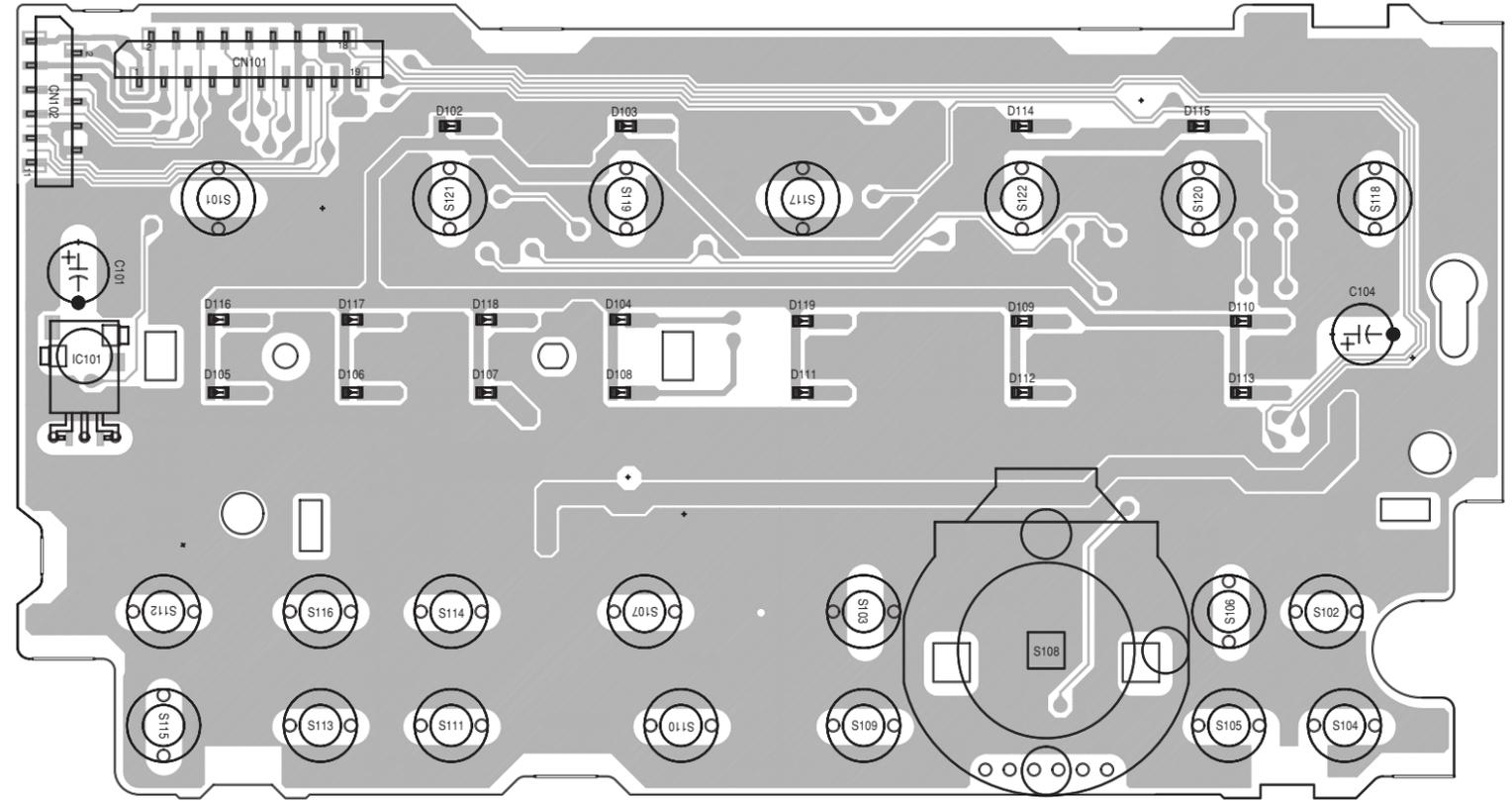
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡➡➡	➡➡
PB			➡➡➡	➡➡

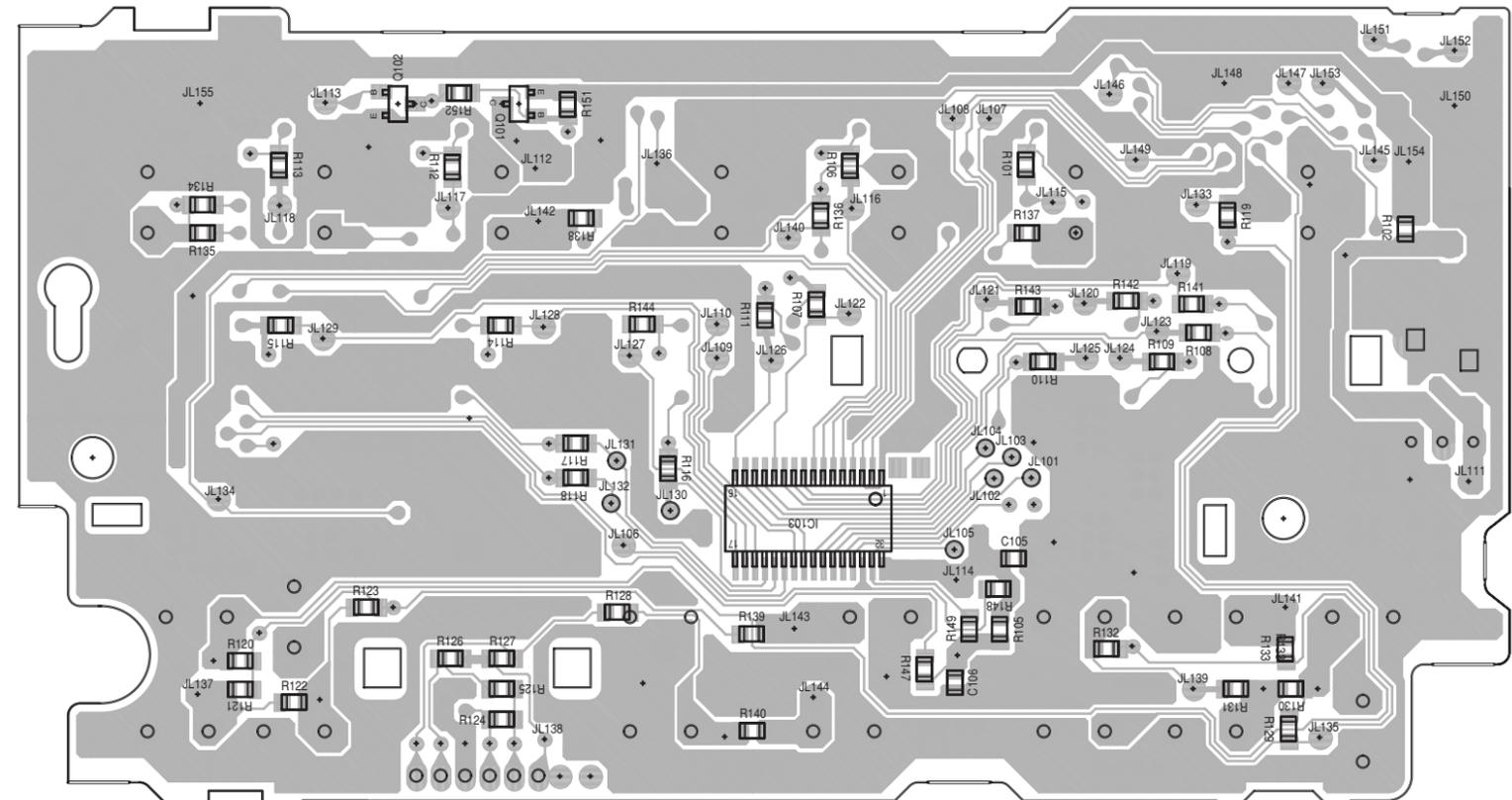
FR-195 (SWITCH, LED) PRINTED WIRING BOARD

 : Uses unleaded solder.

FR-195 BOARD (SIDE A)

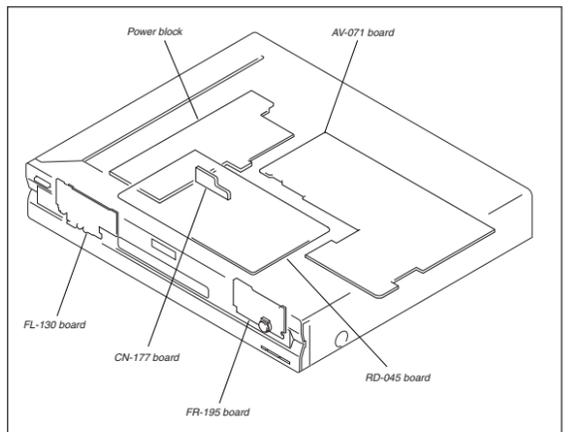


FR-195 BOARD (SIDE B)



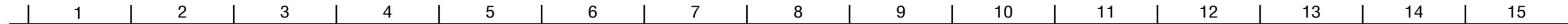
For printed wiring board

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



For Schematic Diagram

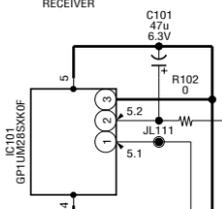
• Refer to page 4-31 for printed wiring board.



**FR-195 BOARD**  
 SWITCH,LED  
 -REF.NO.:20000 SERIES-  
 XX MARK:NO MOUNT  
 NO MARK:REC/PB MODE

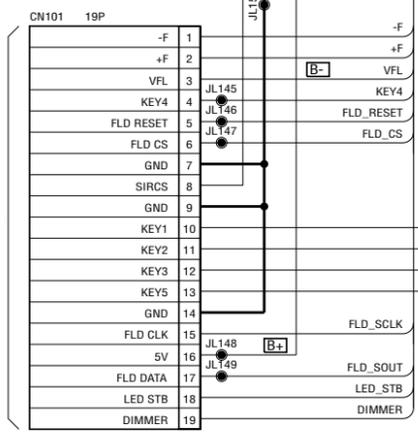
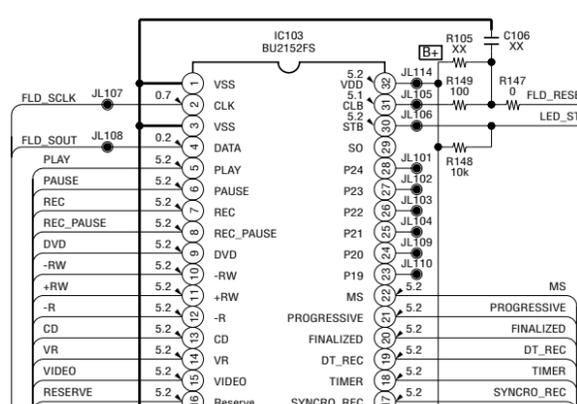
**IC101**

REMOTE CONTROL RECEIVER

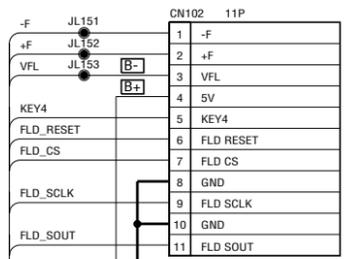


**IC103**

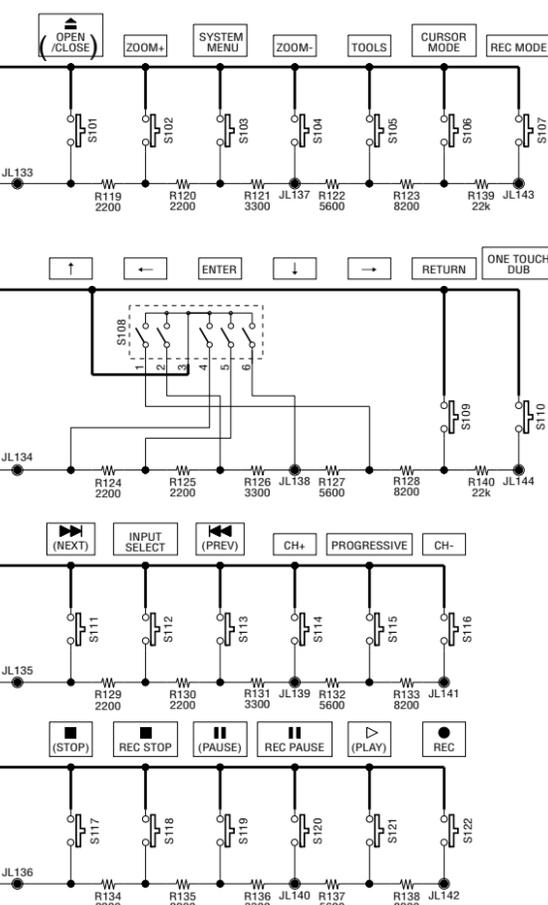
LED DRIVE



TO AV-071 BOARD (8/9) CN602  
 THROUGH THE FAR-003 FLAT CABLE  
 (SEE PAGE 4-26)

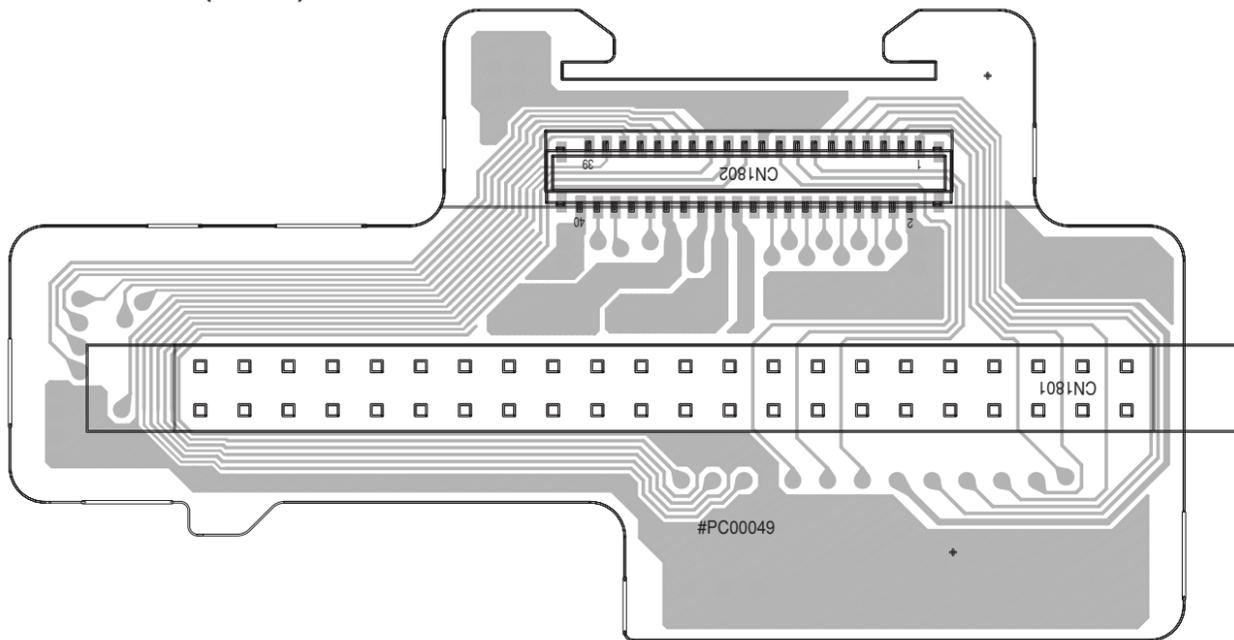


TO FL-130 BOARD CN1702  
 THROUGH THE FFF-018 FLAT CABLE  
 (SEE PAGE 4-33)

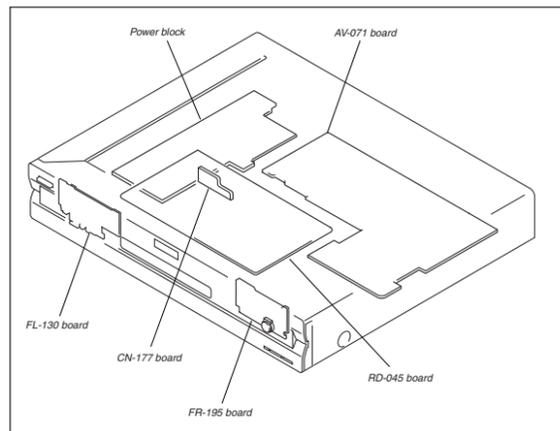
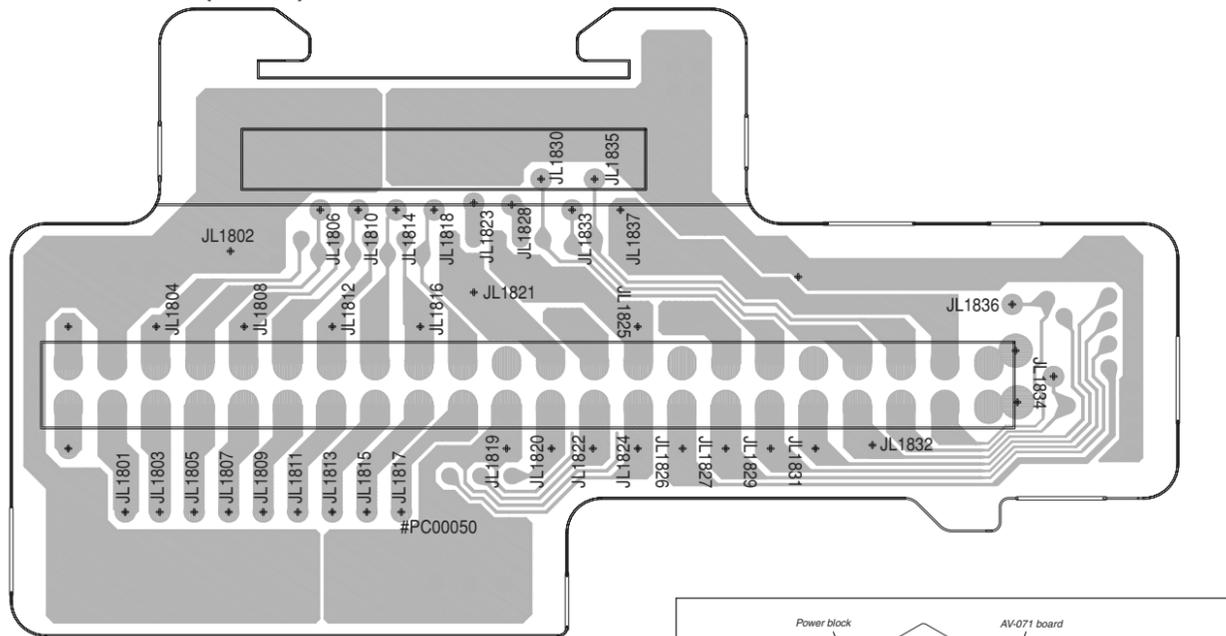


CN-177 (CONNECTOR) PRINTED WIRING BOARD  : Uses unleaded solder.

CN-177 BOARD (SIDE A)



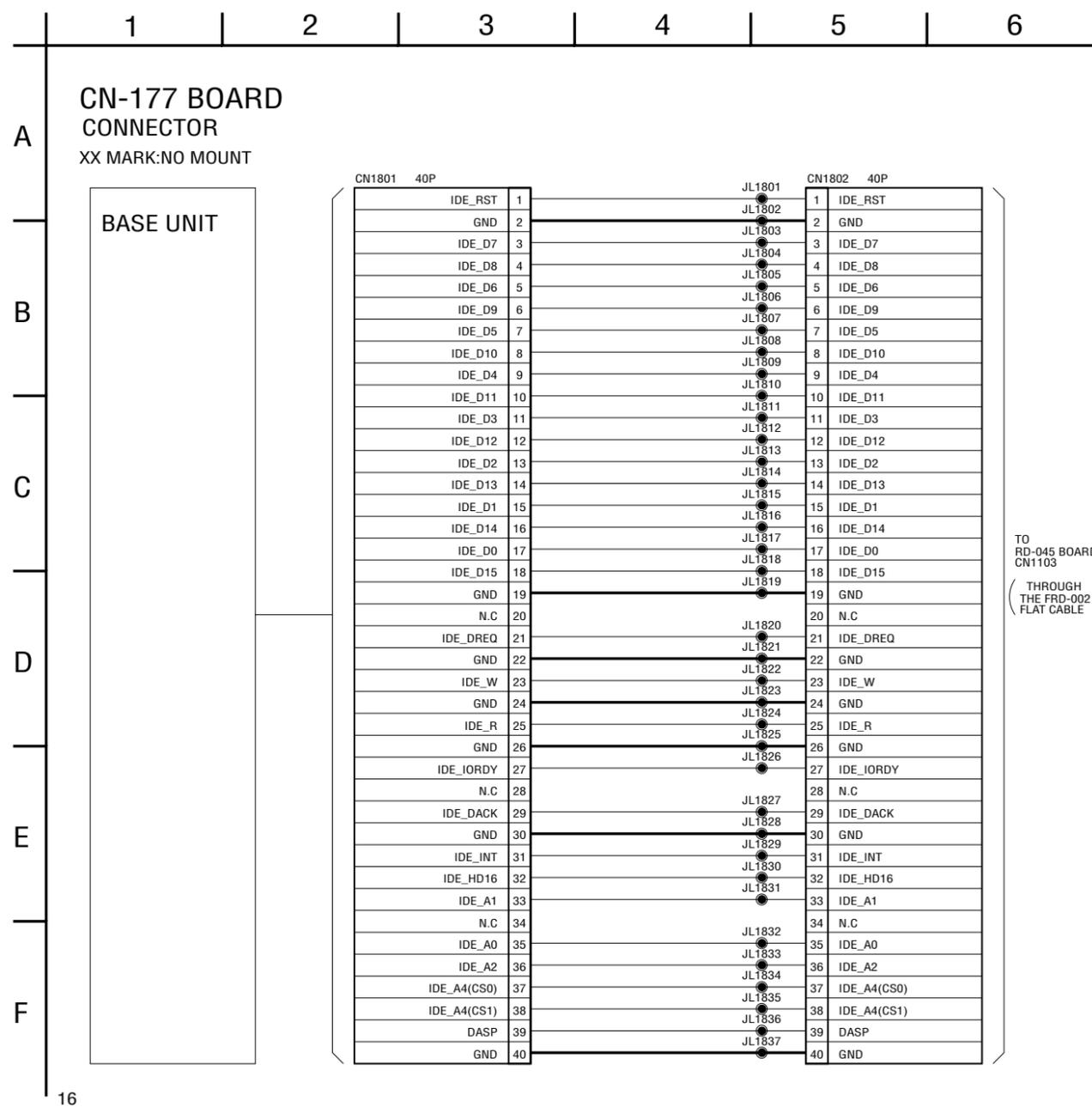
CN-177 BOARD (SIDE B)



For printed wiring board

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

CN-177 BOARD



TO RD-045 BOARD CN1103  
( THROUGH THE FRD-002 FLAT CABLE )

## SECTION 5 IC PIN FUNCTION DESCRIPTION

### 5-1. IT CONTROL IC (IC605: $\mu$ PD703033BYGF-M29-3BA-A (AV-071 BOARD))

Pin No.	Pin Name	I/O	Function
1	SOUT	O	Serial data output
2	SCLK		Serial clock
3	IIC1 SDA	I/O	IIC data input/output
4	IIC SW for GR		IIC bus switch control
5	IIC1 SCL	O	IIC clock output
6	IT SIN	I	Input of Communication data with SH
7	IT SOUT	O	Output of communication data with SH
8	IT SCLK	O	Output of communication clock with SH
9	EVDD	-	
10	EVSS	-	
11	LED LCK	O	LED serial/parallel latch output
12	BUZZER	O	Buzzer output
13	SIRCS in	I	Remote control output
14	FL PCONT		FL power supply ON/OFF
15	FLD IN		
16	FLD DATA		FLD driver data
17	FLD CLK		FLD driver clock
18	FLD XRST		Reset for FLD driver
19	FLD CS		CS for FLD driver
20	F MONO		Switching to monaural
21	VPP	-	
22	AV LINK OUT	O	AVLINK output
23	XL3MUTE		
24	EEP WP		Write protect
25	DIMMER		Dimmer pulse
26	RESET5V	O	Reset output to 5V series LSI
27	UVIC CS		
28	IT XRST	O	Reset output to SH
29	XFLMRST		Flash memory reset
30	STATUS0	I	SH status input
31	STATUS1	I	SH status input
32	AWAKE	O	AWAKE request to SH
33	AWAKE DONE	I	Input of SH wake up state
34	RESET	I	Reset input
35	XT1		Oscillation
36	XT2		Oscillation
37	REGC		
38	X1		
39	X2		
40	VSS		
41	VDD		
42	CLKOUT		
43	XNENTMUTE		Muting components
44	VYL1		L1 terminal V/Y switching
45	VYL3		L3 terminal V/Y switching
46	TUDVD		Tuner/DVD switching
47	XRGBSEL		RGB/YV switching
48	CDINSEL		INSEL switching to C+dec
49	DVDEXT		DVD (this unit)/external
50	RELAY		Relay control

Pin No.	Pin Name	I/O	Function
51	H DET		With sync / no sync
52	DSEL(CMUTE)		Mute of C+ signal
53	Syncro Power		Power supply ON during Syncro standby
54	YC SEP ON		YC sep circuit ON/OFF
55	S2SW		With S PIN input
56	L1 SEL		
57	XP MUTE		Audio mute
58	BDVV		
59	BVSS		
60	MAIN/SAP		Sound multiplex MSP
61	SAP DET		
62	JUST CLK		
63	AUTO PRESET		
64	TA MUTE		
65	TU PCONT		Tuner power supply control
66	TU V DET		With V sync/no V sync
67	INSEL1		Output switching
68	INSEL2		Output switching
69	INSEL TU		Output switching
70	FAN SPEED		Speed switching
71	FAN ONOFF		FAN ON/OFF
72	RELAY CONT		AC relay ON/OFF
73	IDET		With L3 Icont/no L3 Icont
74	AVDD		
75	AVSS		
76	Avref		
77	AREA		Abbreviation
78	FAN DET		FAN stopping detection
79	KEY1		
80	KEY2		
81	KEY3		
82	KEY4		
83	KEY5		
84	TU AFT		
85	EURO 8DET		L3 8PIN input
86	STEREO DET		
87	AGC		Tuner gain
88	ONDO		Temperature detection
89	iMute		Mute ICONT signal
90	P FAIL		AC off detection
91	IT REQ	I	Request input from SH
92	SYNC V	I	V sync input
93	XPDCDAV		PDC data reception OK
94	AV LINK IN	I	AV LINK input
95	UVIC BUSY		
96	TTXT ENABLE		
97	TTXT SDA		TTXT data
98	WIDE		Wide switching
99	TTXT SCL		TTNT clock
100	SIN	I	Serial data input

## SECTION 6 SERVICE MODE

This is the diagnostics to locate the faulty position.

The diagnostics can be executed using the remote commander (Remote Control Mode1) and a monitor.

To execute the diagnostics mode, connect the VIDEO OUT (L2 OUT) connector to a monitor. While pressing INPUT SELECT, REC MODE and STOP of the main unit, connect the AC power cord to the power outlet to start the diagnostics.

Keep pressing INPUT SELECT, REC MODE and STOP of the main unit (about 10 seconds) until the diagnostics screen appears on monitor display.

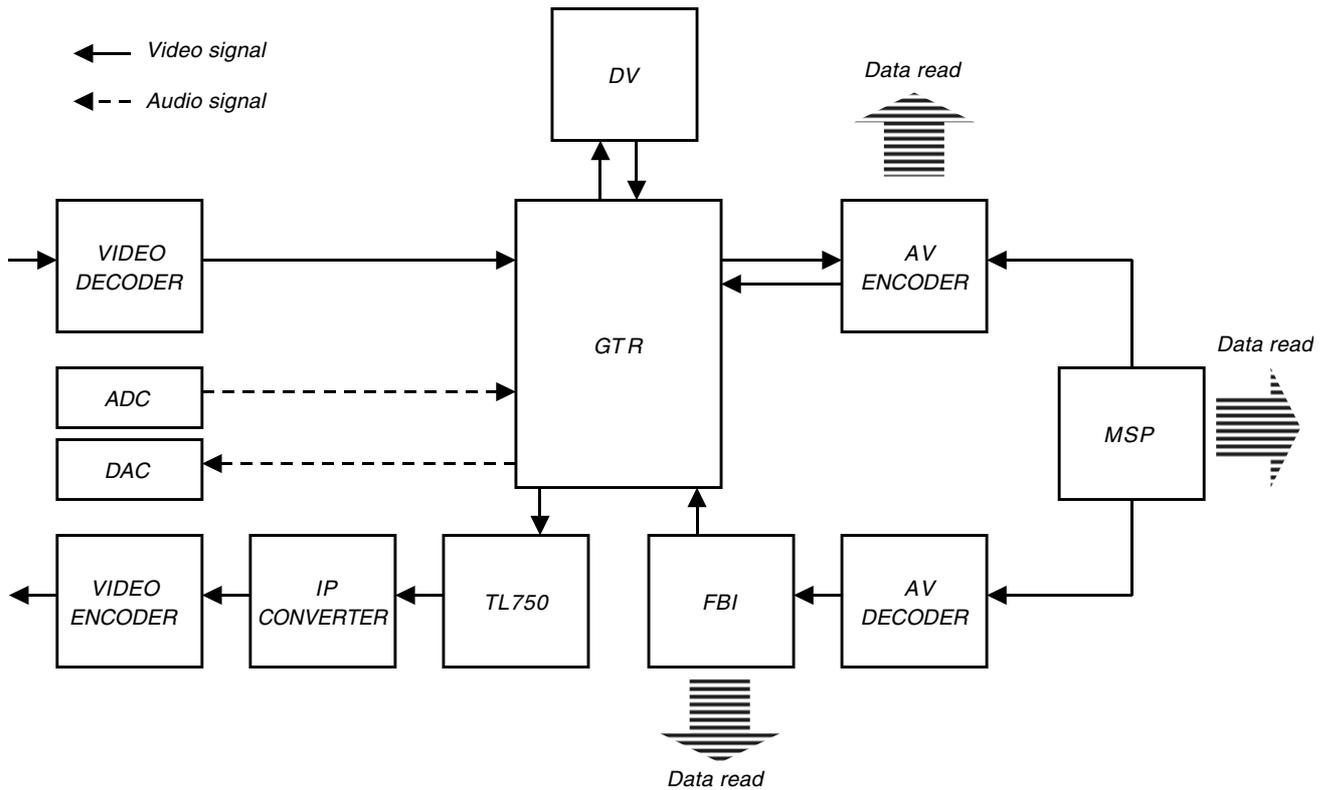
Either "OK" or "NG" appears on the monitor screen while the diagnostics is in progress. You can judge the respective device or its peripheral from the message of either "OK" or "NG" on the monitor screen.

When an abnormality is detected, the diagnostics is stopped at that moment and you can select to proceed the diagnostics or to stop it.

Use the remote commander (DVD1) keys or the keys on the front panel of the main unit to operate the diagnostics.

### 6-1. Device relation diagram.

**Display data (for your reference to check the signal path)**



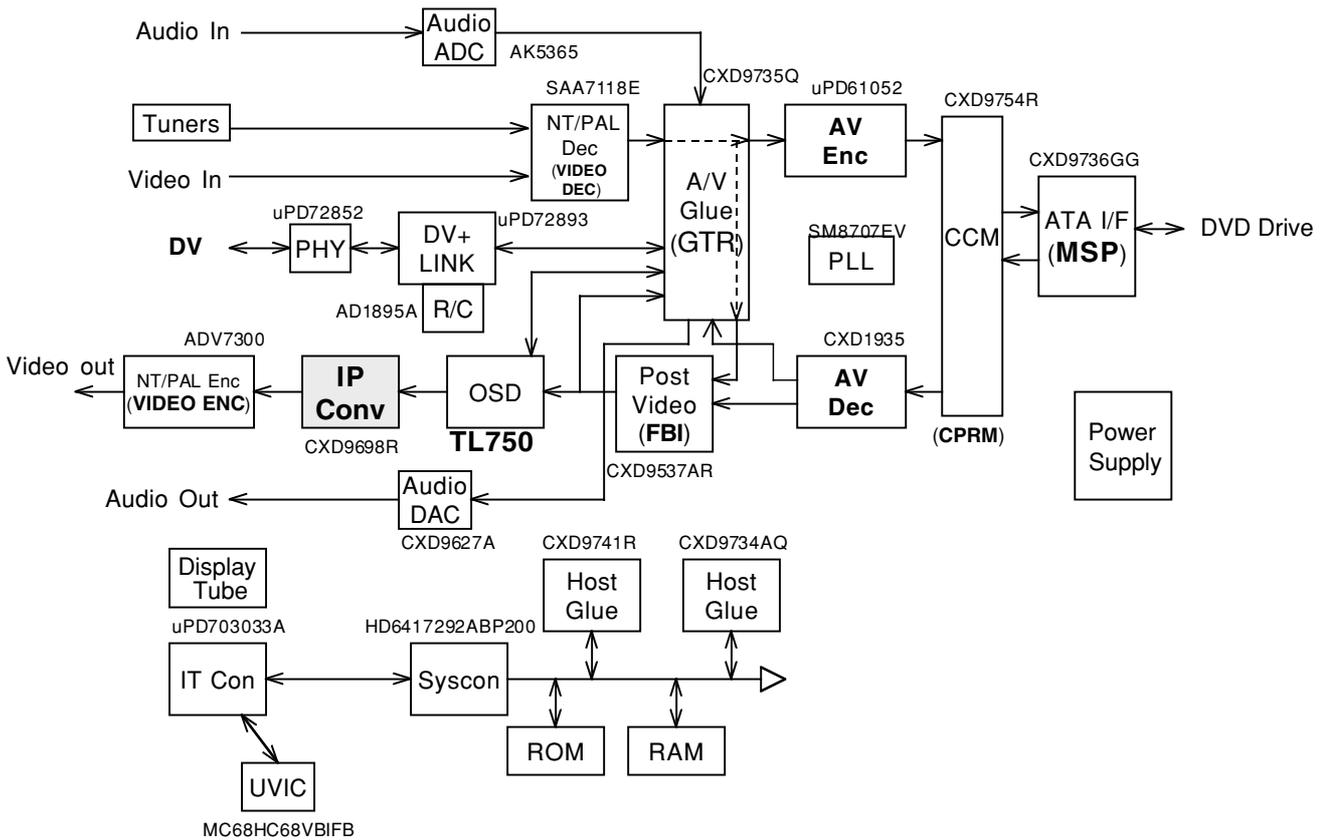
Checking item	IC name	REF
VIDEO ENC	IC ADV7300AKST	IC2303
IP CONV	IC CXD9698R	IC2301
TL750	IC TL750B5	IC1402
GTR	IC CXD9735Q	IC701
FBI	IC CXD9537AR	IC1301
VIDEO DEC	IC SAA7118E/V1.518	IC2202
AVENC	IC UPD61052GD-LML	IC903
MSP	IC CXD9736GG	IC1101
AVDEC	IC CXD1935Q	IC1203
DV	IC UPD72852GB-8EU	IC2001
	IC UPD72893GD-LML	IC2102
CPRM	IC CXD9754R	IC1001
CCM		
EPGLICER	IC TC90A73U	IC1802
GEMSTAR	IC UPD65881GB-072-8ES	IC1807

If NG is displayed as the result of DEVICE test, IC is defective or peripheral of the IC is defective.

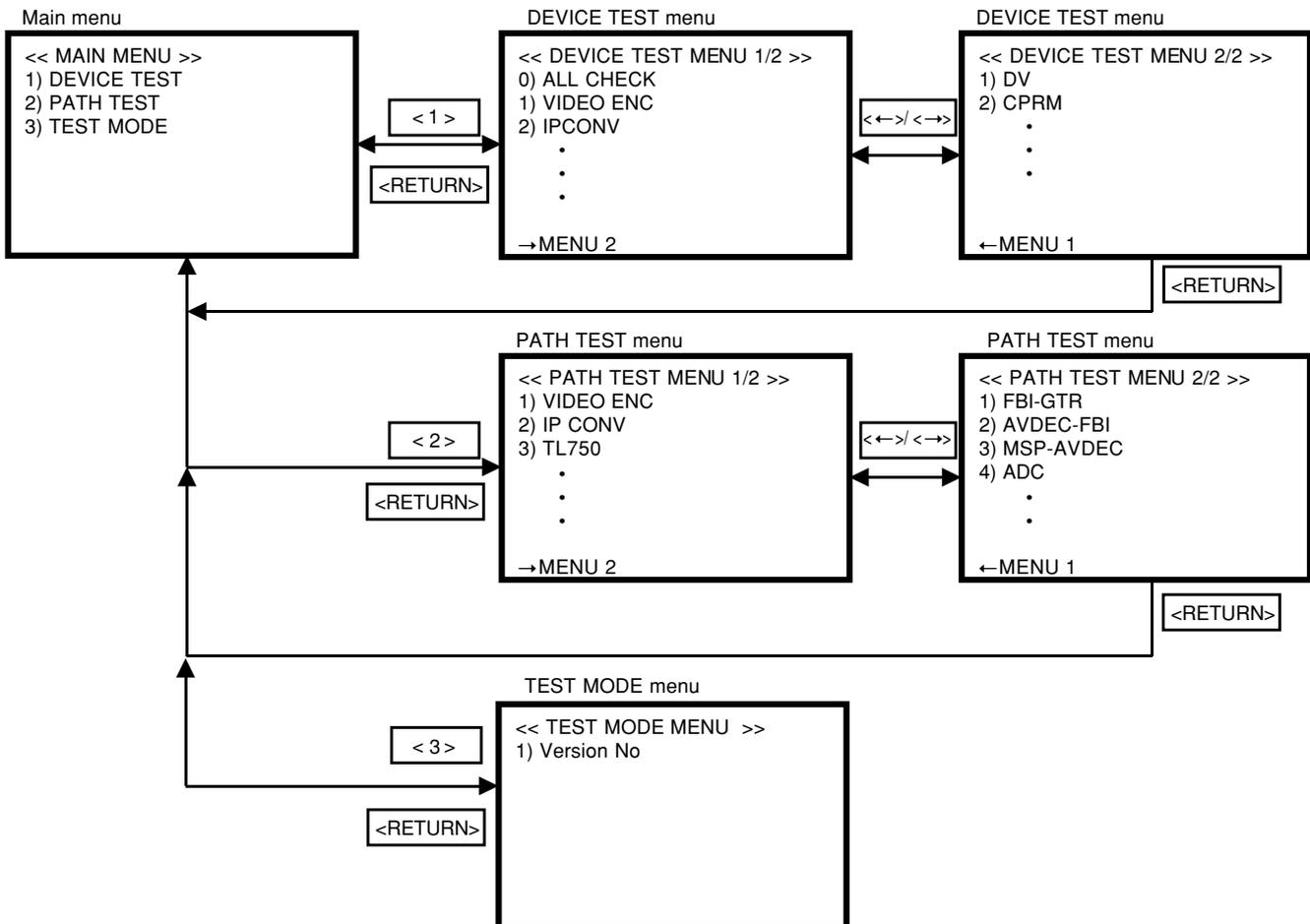
If NG is displayed as the result of "PATH" test, defect exists in between ICs.

All parts are mounted on the RD045M'T assembly.

### 6-2. Block diagram (for your reference to check the devices)



### 6-3. Screen Transition in the Service Mode



#### 6-4. Service Mode. Menu Items and Description

- 1) When the key '1' is pressed down, the monitor display moves to the device check menu screen.
- 2) When the key '2' is pressed down, the monitor display moves to the path check menu screen between devices.
- 3) When the key '3' is pressed down, the monitor display moves to the version check screen.

```
<< MAIN MENU >>
1) DEVICE TEST
2) PATH TEST
3) TEST MODE
```

#### 6-5. Device Check Menu (1/2)

- 0) When the key '0' is pressed down, all devices are checked automatically.
- 1) When the key '1' is pressed down, the VIDEOENC device check will be executed.
- 2) When the key '2' is pressed down, the IPCONV device check will be executed. (This item is not installed in the EURO models, NG is displayed but it is not indicating any default of the main unit.)
- 3) When the key '3' is pressed down, the TL750 device check will be executed.
- 4) When the key '4' is pressed down, the GTR device check will be executed.
- 5) When the key '5' is pressed down, the FBI device check will be executed.
- 6) When the key '6' is pressed down, the VIDEODEC device check will be executed.
- 7) When the key '7' is pressed down, the AVENC device check will be executed.
- 8) When the key '8' is pressed down, the MSP device check will be executed.
- 9) When the key '9' is pressed down, the AVDEC device check will be executed.
- 10) When the key '→' is pressed down, the monitor display moves to the next path check menu screen.

```
<< DEVICE TEST MENU 1/2 >>
0) ALL CHECK
1) VIDEO ENC
2) IPCONV
3) TL750
4) GTR
5) FBI
6) VIDEO DEC
7) AVENC
8) MSP
9) AVDEC

→ MENU 2
```

#### 6-6. Device Check Menu (2/2)

- 1) When the key '1' is pressed down, the DV device check will be executed.
- 2) When the key '2' is pressed down, the CPRM device check will be executed.
- 3) When the key '3' is pressed down, the CCM device check will be executed.
- 4) When the key '4' is pressed down, the EPGSLICER device check will be executed. (This item is not installed in the EURO models, NG is displayed but it is not indicating any default of the main unit.)
- 5) When the key '5' is pressed down, the GEMSTAR device check will be executed. (This item is not installed in the EURO models, NG is displayed but it is not indicating any default of the main unit.)
- 6) When the key '←' is pressed down, the monitor display returns to the previous device check menu screen.

```
<< DEVICE TEST MENU 2/2 >>
1) DV
2) CPRM
3) CCM
4) EPGSLICER
5) GEMSTAR

← MENU 1
```

### 6-7. Path Check Menu (1/2)

- 1) When the key '1' is pressed down, VIDEOENC path check is executed.
- 2) When the key '2' is pressed down, IPCONV path check is executed. (This item is not installed in the EURO models, NG is displayed but it is not indicating any default of the main unit.)
- 3) When the key '3' is pressed down, TL750 path check is executed.
- 4) When the key '4' is pressed down, path check from GTR → AVENC is executed.
- 5) When the key '5' is pressed down, path check from GTR → TL750 is executed.
- 6) When the key '6' is pressed down, path check from GTR → FBI is executed.
- 7) When the key '7' is pressed down, path check from VDEC → GTR is executed.
- 8) When the key '8' is pressed down, path check from AVENC → MSP is executed.
- 9) When the key '9' is pressed down, path check from AVENC → GTR is executed.
- 10) When the key '←' is pressed down, the monitor display moves to the previous device check menu screen.

<< PATH TEST MENU 1/2 >>

- 1) VIDEO ENC
- 2) IPCONV
- 3) TL750
- 4) GTR → AVENC
- 5) GTR → TL750
- 6) GTR → FBI
- 7) VDEC → GTR
- 8) AVENC → MSP
- 9) AVENC → GTR

→ MENU 2

### 6-8. Path Check Menu (2/2)

- 1) When the key '1' is pressed down, path check from FBI→GTR is executed.
- 2) When the key '2' is pressed down, path check from AVDEC → FBI is executed.
- 3) When the key '3' is pressed down, path check from MSP → AVDEC is executed.
- 4) When the key '←' is pressed down, the monitor display returns to the previous path check menu screen.

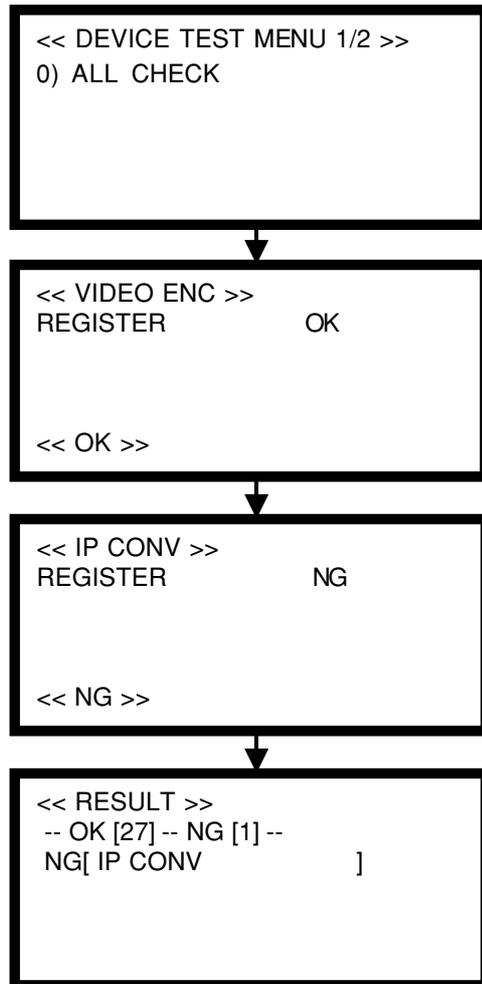
<< PATH TEST MENU 2/2 >>

- 1) FBI→ GTR
- 2) AVDEC→ FBI
- 3) MSP→ AVDEC

← MENU 1

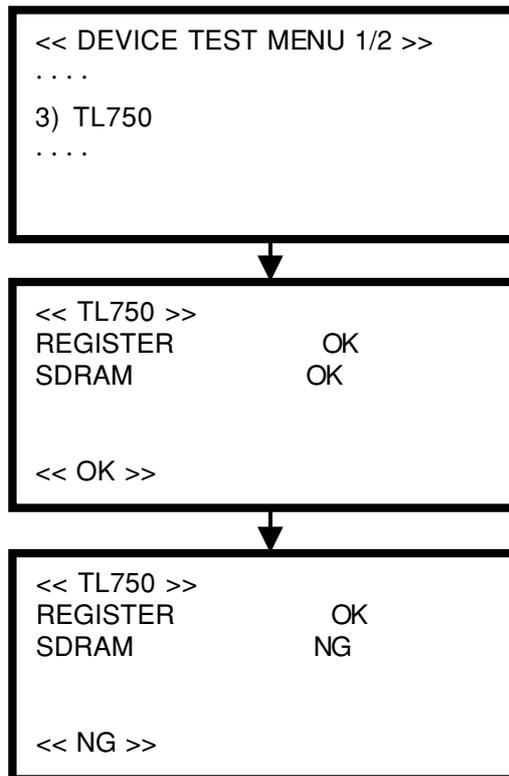
**6-9. Device All Check. Screen Transition**

1. Select the item "ALL CHECK" from the menu.
2. Device check is executed automatically starting from No. 1 one device after another.
3. When all devices are checked, number of OK/NG items and names of the NG devices are displayed as the RESULT.
4. When the ENTER key of the remote commander is pressed, the monitor display returns to the menu screen.



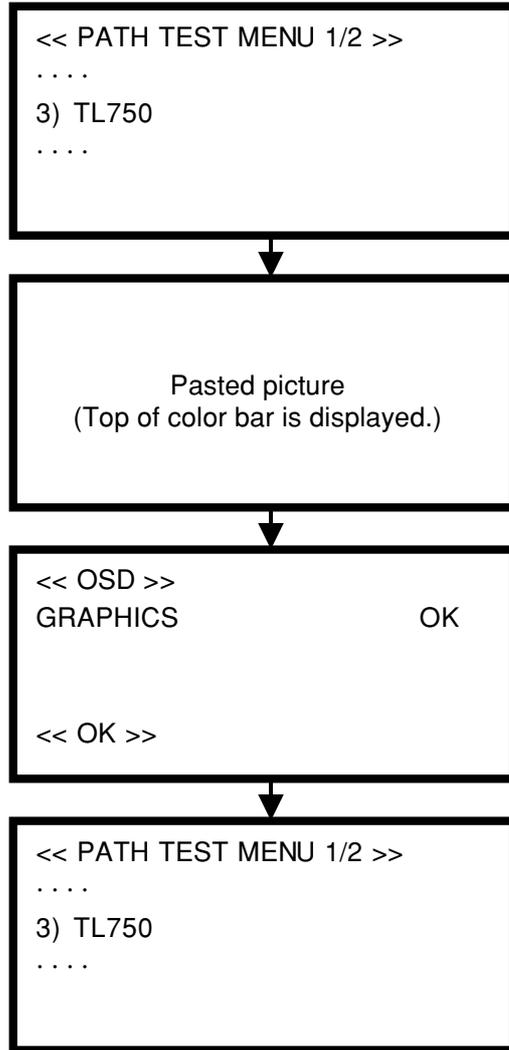
**6-10. Device Individual Check. Screen Transition**

1. Select the TL750 item from the menu.
2. The register read/write that is the first item of the check is executed and its result is displayed.
3. The SDRAM check that is the second item of the check is executed and its result is displayed.
4. When check results of all items are OK, the message OK is displayed. If any one of the check items is found NG, the message NG is displayed.
5. When the ENTER key is pressed, the monitor display moves the to the menu screen.



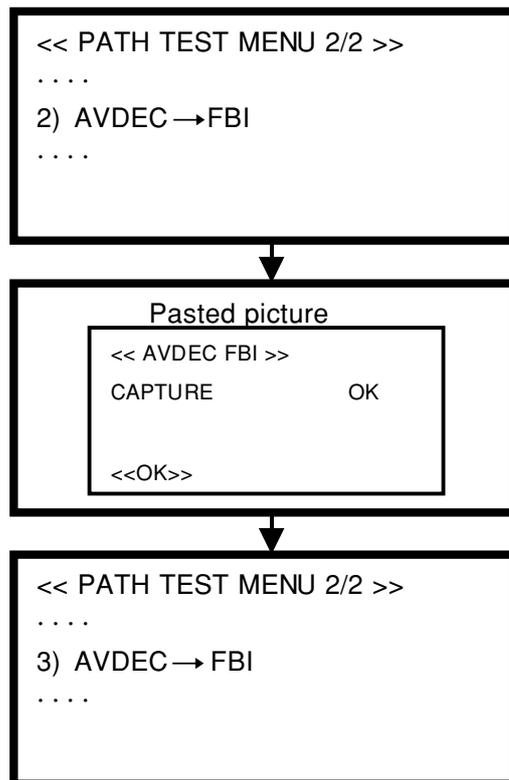
**6-11. Path Individual Check (Pasted Screen Check).  
Screen Transition**

1. Select the TL750 item from the menu.
2. The device pasted screen (top of the color bar) is displayed. (When visual check is required, the display does not move the judgment screen but remains displaying the picture.
3. When the ENTER key is pressed, the monitor display moves the to the judgment screen.
4. When the ENTER key is pressed on the judgment screen again, the monitor display moves the to the menu screen.



**6-12. Path Individual Check  
(Data Check Confirmation).  
Screen Transition**

1. Select the check item "AVDEC → FBI" from the menu.
2. The path check is executed and result of judgment is displayed.
3. When the ENTER key is pressed on the judgment screen again, the monitor display moves the to the menu screen.



## SECTION 7 ADJUSTMENT

### 7-1. VIDEO SYSTEM ADJUSTMENT

**Reference Disk**

HLX-505 (NTSC Single layer disk) J-6090-089-A  
 HLX-504 (NTSC Dual layer disk) J-6090-088-A

#### 1. Video Level Adjustment (RD-045 Board)

**< Purpose >**

This adjustment is made to satisfy the NTSC standard. If it is adjusted incorrectly, brightness will be too bright or too dark.

Mode	Video level adjustment in test mode
Signal	Colour bars
Test point	LINE OUT (VIDEO) connector (terminated in 75Ω)
Instrument	Oscilloscope
Adjusting element	RV2301
Specification	$1.00^{+0.04}_{-0.02}$ Vp-p

**Adjusting method:**

- 1) Insert the reference disk and play back the 100% colour bars.
- 2) Adjust RV2301 for 1.0 Vp-p.



Fig. 7-1

#### 2. Component Video Output Level Adjustment (RD-045 board)

**< Purpose >**

This is the adjustment for component video output. If this adjustment is made incorrectly, brightness of the component signal that is connected to the projector having COMPONENT input will have incorrect brightness.

Mode	Video level adjustment in test mode
Signal	Colour bars
Test point	COMPONENT VIDEO OUT (Y) connector (terminated in 75Ω)
Instrument	Oscilloscope
Adjusting element	RV2302
Specification	$1.00^{+0.04}_{-0.02}$ Vp-p

**Adjusting method:**

- 1) Insert the reference disk and play back the 100% colour bars.
- 2) Check that the Y level is  $1.00^{+0.04}_{-0.02}$  Vp-p.



Fig. 7-2

#### 3. S-Video Output S-Y Level Check

**< Purpose >**

This check confirms that the video output level at the S-video output connector is correct. If this adjustment is made incorrectly, picture will not be displayed correctly when the S-video connector output signal is connected to TV using cable.

Mode	Video level adjustment in test mode
Signal	Colour bars
Test point	S-VIDEO OUT (S-Y) connector (terminated in 75Ω)
Instrument	Oscilloscope
Specification	$1.0 \pm 0.05$ Vp-p

**Adjusting method:**

- 1) Insert the reference disk and play back the 100% colour bars.
- 2) Check that the S-Y level is  $1.0 \pm 0.05$  Vp-p.



Fig. 7-3

#### 4. S-Video Output S-C Check

**< Purpose >**

This check confirms that the S-video output S-C conforms to the NTSC standard. If it is adjusted incorrectly, colour will be too dark or too thin.

Mode	Video level adjustment in test mode
Signal	Colour bars
Test point	S-VIDEO OUT (S-C) connector (terminated in 75Ω)
Instrument	Oscilloscope
Specification	$286 \pm 30$ mVp-p

**Checking method:**

- 1) Insert the reference disk and play back the 100% colour bars.
- 2) Confirm that the burst signal level of S-C is  $300 \pm 30$  mVp-p.



Fig. 7-4

## 5. Component Video Output Y Check

### < Purpose >

This check confirms that the Y signal output is correct. If this signal level is not correct, brightness of video signal will be too bright or too dark when the COMPONENT connector output signal is connected the projector having COMPONENT input.

Mode	Video level adjustment in test mode
Signal	Colour bars
Test point	COMPONENT VIDEO OUT (Y) connector, D1/D2 VIDEO OUT connector, pin-① (terminated in 75Ω)
Instrument	Oscilloscope
Specification	$1.0 \pm 0.05$ Vp-p

### Checking method:

- 1) Insert the reference disk and play back the 100% colour bars.
- 2) Check that the Y level is  $1.0 \pm 0.05$  Vp-p.



Fig. 7-5

## 6. Component Video Output B-Y Check

### < Purpose >

This check confirms that the B-Y signal of the component video output is correct. If this signal level is not correct, colour of the video signal will have different colour when the COMPONENT connector output signal is connected the projector having COMPONENT input.

Mode	Video level adjustment in test mode
Signal	Colour bars
Test point	COMPONENT VIDEO OUT (PB/CB) connector, D1/D2 VIDEO OUT connector, pin-③ (terminated in 75Ω)
Instrument	Oscilloscope
Specification	$700 \pm 50$ mVp-p

### Checking method:

- 1) Insert the reference disk and play back the 100% colour bars.
- 2) Confirm that the B-Y level is  $700 \pm 50$  mVp-p.

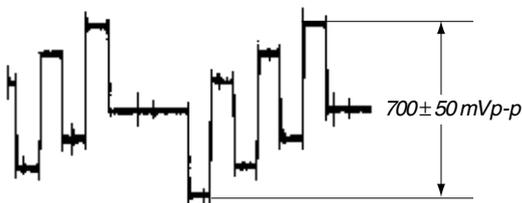


Fig. 7-6

## 7. Component Video Output R-Y Check

### < Purpose >

This check confirms that the R-Y signal of the component video output is correct. If this signal level is not correct, colour of the video signal will have different colour when the COMPONENT connector output signal is connected the projector having COMPONENT input.

Mode	Video level adjustment in test mode
Signal	Colour bars
Test point	COMPONENT VIDEO OUT (PR/CR) connector, D1/D2 VIDEO OUT connector, pin-⑤ (terminated in 75Ω)
Instrument	Oscilloscope
Specification	$700 \pm 50$ mVp-p

### Checking method:

- 1) Insert the reference disk and play back the 100% colour bars.
- 2) Confirm that the R-Y level is  $700 \pm 50$  mVp-p.



Fig. 7-7

## SECTION 8 REPAIR PARTS LIST

### 8-1. EXPLODED VIEWS

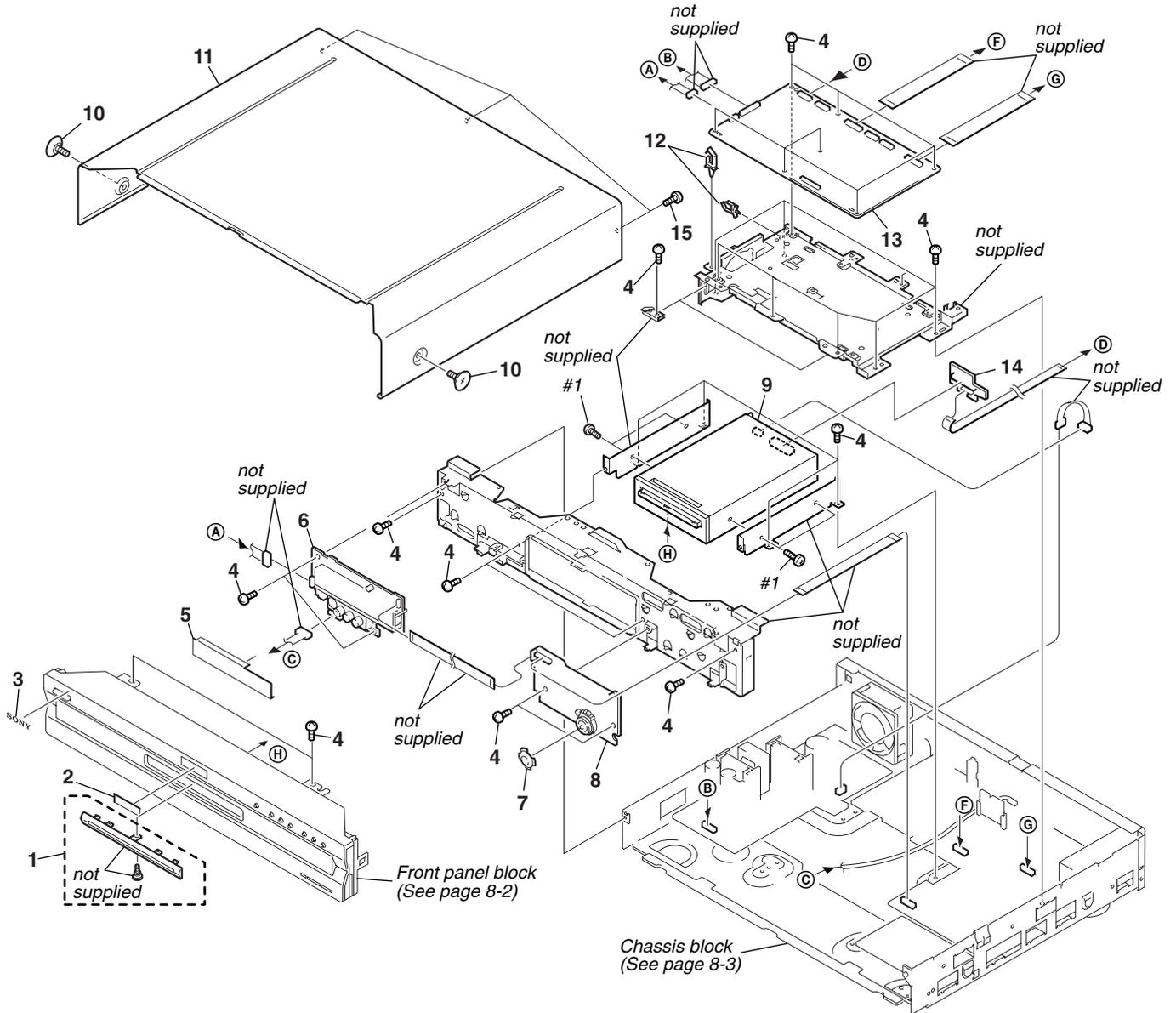
**NOTE:**

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

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

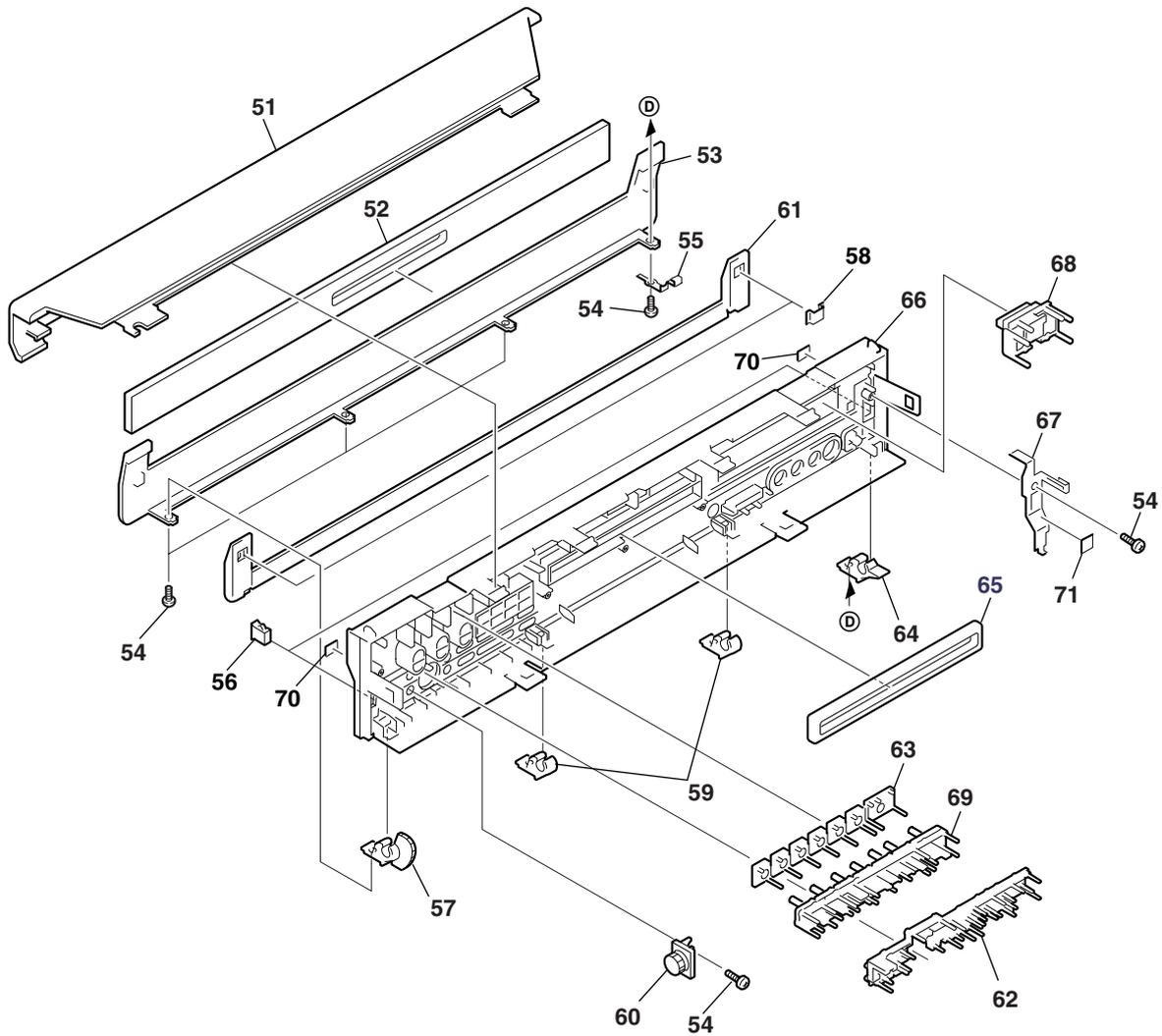
Les composants identifiés par une marque  $\triangle$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

#### 8-1-1. OVERALL



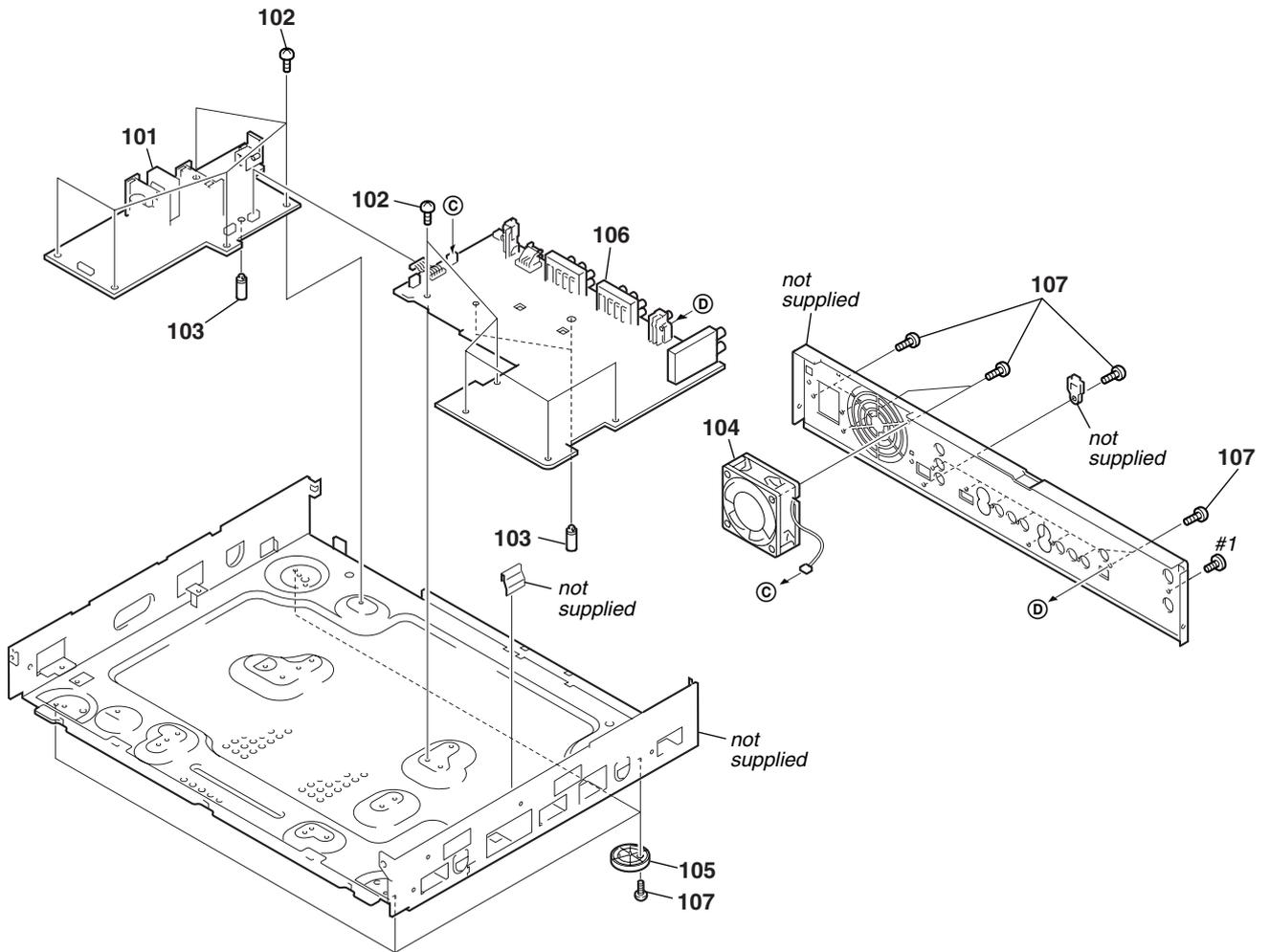
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	X-3953-198-1	COVER ASSY, TRAY		9	8-457-501-00	DRIVE, DVD DW-U11A	
2	3-081-148-01	EMBLEM (DUAL), DVD		10	3-070-883-11	SCREW, TAPPING	
3	4-942-568-61	EMBLEM (NO.5), SONY		11	3-081-139-11	TOP CASE	
4	3-970-608-11	SUMITITE (B3), +BV		* 12	3-632-494-01	RE-USE CLAMP	
5	3-081-120-01	COVER, FL		* 13	A-6071-264-A	RD045 (U) COMPL (SVC)	
* 6	A-6061-470-A	FL130 (E) COMPL		* 14	A-6061-471-A	CN177 (E) COMPL	
7	3-081-137-01	CURSOR		15	3-970-608-51	SUMITITE (B3), +BV	
* 8	A-6071-047-A	FR195 (U) COMPL					

## 8-1-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	3-081-146-02	PANEL, ALUMINUM		62	3-081-117-03	BUTTON, CONTROL	
52	3-081-147-11	WINDOW, INDICATION		63	3-081-118-01	INDICATOR(PLAY)	
53	3-081-126-22	DOOR, ALUMINUM		64	3-081-130-01	SHAFT (L)	
54	4-921-277-11	SCREW (B2.6X8), TAPPING, BIND		65	3-081-156-01	CUSHION, DRIVE	
55	3-081-128-01	PLATE, GROUND DOOR		66	3-080-678-11	PANEL, BASE	
56	3-736-779-71	MAGNET		67	3-081-119-02	SPRING, GROUND	
57	3-081-129-01	SHAFT (R)		68	X-3953-197-1	BUTTON ASSY, POWER	
58	3-081-127-01	RETAINER, MAGNET		69	X-3953-196-1	BUTTON ASSY, PLAY	
59	3-081-131-01	SHAFT (C)		70	3-081-428-01	CUSHION, DOOR	
60	3-047-468-01	DAMPER		71	3-083-631-11	DAMPER, SOUND	
61	3-081-125-01	BASE, DOOR					

### 8-1-3. CHASSIS SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
△ 101	1-468-785-11	POWER BLOCK		105	X-3953-201-1	FOOT ASSY	
102	3-970-608-11	SUMITITE (B3), +BV		* 106	A-6071-051-A	AV071 (U) COMPL	
* 103	3-691-950-01	SPACER, P.C.BOARD		107	3-970-608-51	SUMITITE (B3), +BV	
104	1-787-006-11	FAN, D.C.					

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

## 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

- COILS  
uH: μH
- RESISTORS  
All resistors are in ohms.  
METAL: metal-film resistor  
METAL OXIDE: Metal Oxide-film resistor  
F: nonflammable
- 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 Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

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

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
*	A-6071-051-A	AV-071 (U) BOARD, COMPLETE *****		C340	1-126-947-11	ELECT	47uF 20.00% 16V
		< BUZZER >		C343	1-126-947-11	ELECT	47uF 20.00% 16V
BZ601	1-544-886-11	BUZZER		C344	1-126-947-11	ELECT	47uF 20.00% 16V
		< CAPACITOR >		C347	1-104-987-11	MYLAR	0.001uF 5.00% 200V
C101	1-115-339-11	CERAMIC CHIP	0.1uF 10.00% 50V	C348	1-104-987-11	MYLAR	0.001uF 5.00% 200V
C102	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C349	1-104-987-11	MYLAR	0.001uF 5.00% 50V
C103	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C350	1-104-987-11	MYLAR	0.001uF 5.00% 50V
C104	1-126-964-11	ELECT	10uF 20.00% 50V	C351	1-106-351-00	MYLAR	2200PF 5% 200V
C108	1-126-947-11	ELECT	47uF 20.00% 16V	C352	1-106-351-00	MYLAR	2200PF 5% 200V
C109	1-126-947-11	ELECT	47uF 20.00% 16V	C353	1-162-927-11	CERAMIC CHIP	100PF 5% 50V
C110	1-126-947-11	ELECT	47uF 20.00% 16V	C354	1-162-927-11	CERAMIC CHIP	100PF 5% 50V
C111	1-126-947-11	ELECT	47uF 20.00% 16V	C355	1-162-927-11	CERAMIC CHIP	100PF 5% 50V
C115	1-126-947-11	ELECT	47uF 20.00% 25V	C356	1-162-927-11	CERAMIC CHIP	100PF 5% 50V
C117	1-126-947-11	ELECT	47uF 20.00% 16V	C357	1-126-934-11	ELECT	220uF 20.00% 16V
C208	1-126-947-11	ELECT	47uF 20.00% 16V	C358	1-126-947-11	ELECT	47uF 20.00% 16V
C209	1-126-947-11	ELECT	47uF 20.00% 16V	C359	1-126-947-11	ELECT	47uF 20.00% 16V
C210	1-126-947-11	ELECT	47uF 20.00% 16V	C360	1-126-947-11	ELECT	47uF 20.00% 16V
C211	1-126-947-11	ELECT	47uF 20.00% 16V	C361	1-126-947-11	ELECT	47uF 20.00% 16V
C212	1-126-963-11	ELECT	4.7uF 20.00% 50V	C362	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C218	1-126-963-11	ELECT	4.7uF 20.00% 50V	C363	1-164-315-11	CERAMIC CHIP	470PF 5.00% 50V
C220	1-126-947-11	ELECT	47uF 20.00% 16V	C364	1-164-315-11	CERAMIC CHIP	470PF 5.00% 50V
C221	1-126-947-11	ELECT	47uF 20.00% 16V	C367	1-164-217-11	CERAMIC CHIP	150PF 5.00% 50V
C222	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C368	1-164-217-11	CERAMIC CHIP	150PF 5.00% 50V
C223	1-126-964-11	ELECT	10uF 20.00% 50V	C369	1-164-217-11	CERAMIC CHIP	150PF 5.00% 50V
C224	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C370	1-164-217-11	CERAMIC CHIP	150PF 5.00% 50V
C226	1-126-947-11	ELECT	47uF 20.00% 16V	C401	1-126-964-11	ELECT	10uF 20.00% 50V
C227	1-126-961-11	ELECT	2.2uF 20.00% 50V	C402	1-126-964-11	ELECT	10uF 20.00% 50V
C228	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C404	1-127-715-91	CERAMIC CHIP	0.22uF 10% 16V
C235	1-126-947-11	ELECT	47uF 20.00% 16V	C409	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C236	1-126-964-11	ELECT	10uF 20.00% 50V	C412	1-126-947-11	ELECT	47uF 20.00% 16V
C301	1-126-947-11	ELECT	47uF 20.00% 25V	C413	1-126-947-11	ELECT	47uF 20.00% 16V
C302	1-126-924-11	ELECT	330uF 20.00% 6.3V	C414	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C308	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	C415	1-125-838-11	CERAMIC CHIP	2.2uF 10% 6.3V
C310	1-126-947-11	ELECT	47uF 20.00% 16V	C416	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V
C313	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C418	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C314	1-127-715-91	CERAMIC CHIP	0.22uF 10% 16V	C419	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V
C315	1-126-947-11	ELECT	47uF 20.00% 16V	C422	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V
C323	1-107-737-11	MYLAR	560PF 5.00% 50V	C429	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C324	1-107-737-11	MYLAR	560PF 5.00% 50V	C430	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C326	1-162-923-11	CERAMIC CHIP	47PF 5% 50V	C431	1-126-947-11	ELECT	47uF 20.00% 16V
C329	1-130-472-00	MYLAR	0.0012uF 5% 50V	C432	1-104-665-11	ELECT	100uF 20.00% 10V
C330	1-130-472-00	MYLAR	0.0012uF 5% 50V	C436	1-126-963-11	ELECT	4.7uF 20.00% 50V
C331	1-126-960-11	ELECT	1uF 20.00% 50V	C437	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C338	1-126-947-11	ELECT	47uF 20.00% 16V	C438	1-126-916-11	ELECT	1000uF 20.00% 6.3V
				C439	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C440	1-115-339-11	CERAMIC CHIP	0.1uF 10.00% 50V	C741	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C441	1-126-947-11	ELECT	47uF 20.00% 16V	C743	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V
C444	1-126-963-11	ELECT	4.7uF 20.00% 50V	C745	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C447	1-115-339-11	CERAMIC CHIP	0.1uF 10.00% 50V	C746	1-126-947-11	ELECT	47uF 20.00% 16V
C448	1-126-947-11	ELECT	47uF 20.00% 35V	C748	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V
C469	1-162-925-11	CERAMIC CHIP	68PF 5.00% 50V	C753	1-126-947-11	ELECT	47uF 20.00% 16V
C603	1-126-947-11	ELECT	47uF 20.00% 16V	C754	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C604	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C763	1-126-961-11	ELECT	2.2uF 20.00% 50V
C605	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C764	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C607	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C765	1-164-172-11	CERAMIC CHIP	0.0056uF 10.00% 25V
C608	1-126-935-11	ELECT	470uF 20.00% 6.3V	C766	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C610	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C801	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C611	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C802	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C612	1-165-176-11	CERAMIC CHIP	0.047uF 10.00% 16V	C803	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C613	1-162-919-11	CERAMIC CHIP	22PF 5% 50V	C804	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C614	1-162-919-11	CERAMIC CHIP	22PF 5% 50V	C805	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C615	1-165-908-11	CERAMIC CHIP	1uF 10% 10V	C806	1-126-947-11	ELECT	47uF 20.00% 16V
C616	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C807	1-126-947-11	ELECT	47uF 20.00% 16V
C618	1-126-916-11	ELECT	1000uF 20.00% 6.3V	C808	1-126-947-11	ELECT	47uF 20.00% 16V
C619	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	C811	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C620	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	C812	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C621	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	C814	1-126-947-11	ELECT	47uF 20.00% 16V
C622	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	C815	1-126-947-11	ELECT	47uF 20.00% 16V
C623	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	C816	1-164-005-11	CERAMIC CHIP	0.47uF 25V
C624	1-115-456-21	CAPACITOR	0.22F 5.5V	C817	1-126-947-11	ELECT	47uF 20.00% 16V
C627	1-126-935-11	ELECT	470uF 20.00% 6.3V	C818	1-164-005-11	CERAMIC CHIP	0.47uF 25V
C628	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C819	1-126-935-11	ELECT	470uF 20.00% 6.3V
C631	1-126-934-11	ELECT	220uF 20.00% 16V	C820	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C632	1-163-024-00	CERAMIC CHIP	0.018uF 10.00% 50V	C821	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C633	1-163-024-00	CERAMIC CHIP	0.018uF 10.00% 50V	C1101	1-128-551-11	ELECT	22uF 20.00% 25V
C634	1-100-566-91	CERAMIC CHIP	0.1uF 10.00% 25V	C1103	1-162-920-11	CERAMIC CHIP	27PF 5% 50V
C635	1-126-965-91	ELECT	22uF 20.00% 50V	C1104	1-162-920-11	CERAMIC CHIP	27PF 5% 50V
C636	1-115-339-11	CERAMIC CHIP	0.1uF 10.00% 50V	C1105	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C638	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1106	1-126-964-11	ELECT	10uF 20.00% 50V
C639	1-125-838-11	CERAMIC CHIP	2.2uF 10% 6.3V	C1107	1-128-551-11	ELECT	22uF 20.00% 25V
C640	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	C1108	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C642	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	C1109	1-126-960-11	ELECT	1uF 20.00% 50V
C643	1-163-022-00	CERAMIC CHIP	0.012uF 10% 50V	C1110	1-128-551-11	ELECT	22uF 20.00% 25V
C644	1-163-021-91	CERAMIC CHIP	0.01uF 10.00% 50V	C1111	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C701	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1112	1-126-964-11	ELECT	10uF 20.00% 50V
C702	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1113	1-126-964-11	ELECT	10uF 20.00% 50V
C704	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1114	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C705	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1116	1-162-920-11	CERAMIC CHIP	27PF 5% 50V
C706	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1117	1-162-917-11	CERAMIC CHIP	15PF 5% 50V
C707	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1118	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C708	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1119	1-164-230-11	CERAMIC CHIP	220PF 5.00% 50V
C709	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1120	1-126-964-11	ELECT	10uF 20.00% 50V
C710	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1121	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C711	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V			< CONNECTOR >	
C715	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V				
C716	1-126-947-11	ELECT	47uF 20.00% 16V	CN101	1-778-317-11	CONNECTOR, BOARD TO BOARD 13P	
C717	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	CN102	1-794-509-11	PIN, CONNECTOR (PC BOARD) (3P)	
C720	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	CN602	1-779-937-11	CONNECTOR, FFC/FPC 19P	
C724	1-126-947-11	ELECT	47uF 20.00% 16V	CN801	1-573-489-11	PIN, CONNECTOR (PC BOARD) 11P	
C726	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V			< DIODE >	
C728	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V				
C735	1-126-947-11	ELECT	47uF 20.00% 16V	D302	8-719-075-77	DIODE EC10DA40-TE12	
C738	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	D303	8-719-914-44	DIODE DAP202K-T-146	
C739	1-125-838-11	CERAMIC CHIP	2.2uF 10% 6.3V	D351	8-719-914-43	DIODE DAN202K-T-146	
C740	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	D408	8-719-988-61	DIODE 1SS355TE-17	
				D411	8-719-058-24	DIODE RB501V-40TE-17	

# AV-071

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
D602	8-719-075-77	DIODE EC10DA40-TE12				< JACK >	
D603	8-719-075-77	DIODE EC10DA40-TE12					
D605	8-719-988-61	DIODE 1SS355TE-17		J601	1-764-188-21	JACK (SMALL TYPE) (DIA. 3.5)	
D606	8-719-988-61	DIODE 1SS355TE-17		J801	1-785-535-11	JACK BLOCK, PIN	
D607	8-719-988-61	DIODE 1SS355TE-17		J802	1-785-535-11	JACK BLOCK, PIN	
				J805	1-815-360-11	JACK, PIN 3P (COMPONENT OUT)	
D608	8-719-988-61	DIODE 1SS355TE-17				< JUMPER RESISTOR >	
D609	8-719-083-85	DIODE UDZS-TE17-22B					
D610	8-719-422-62	DIODE MA8062-L-TX					
D611	8-719-914-43	DIODE DAN202K-T-146		JR001	1-216-295-91	SHORT CHIP	0
D612	8-719-017-58	DIODE MA8068-TX		JR002	1-216-296-11	SHORT CHIP	0
				JR003	1-216-296-11	SHORT CHIP	0
D705	8-719-988-61	DIODE 1SS355TE-17		JR004	1-216-296-11	SHORT CHIP	0
D706	8-719-988-61	DIODE 1SS355TE-17		JR005	1-216-295-91	SHORT CHIP	0
D707	8-719-988-61	DIODE 1SS355TE-17					
D801	8-719-071-15	DIODE HZM6.8ZWA1TL		JR006	1-216-295-91	SHORT CHIP	0
D802	8-719-071-15	DIODE HZM6.8ZWA1TL		JR007	1-216-296-11	SHORT CHIP	0
				JR008	1-216-296-11	SHORT CHIP	0
D803	8-719-071-15	DIODE HZM6.8ZWA1TL		JR009	1-216-296-11	SHORT CHIP	0
D807	8-719-071-15	DIODE HZM6.8ZWA1TL		JR010	1-216-296-11	SHORT CHIP	0
D808	8-719-071-15	DIODE HZM6.8ZWA1TL					
D809	8-719-071-15	DIODE HZM6.8ZWA1TL		JR011	1-216-296-11	SHORT CHIP	0
D810	8-719-071-15	DIODE HZM6.8ZWA1TL		JR012	1-216-295-91	SHORT CHIP	0
				JR013	1-216-296-11	SHORT CHIP	0
D811	8-719-071-15	DIODE HZM6.8ZWA1TL		JR014	1-216-295-91	SHORT CHIP	0
D812	8-719-071-15	DIODE HZM6.8ZWA1TL		JR015	1-216-296-11	SHORT CHIP	0
D813	8-719-071-15	DIODE HZM6.8ZWA1TL				< COIL >	
D1201	8-719-071-15	DIODE HZM6.8ZWA1TL					
D1202	8-719-071-15	DIODE HZM6.8ZWA1TL		L401	1-469-967-21	INDUCTOR	10uH
				L402	1-469-967-21	INDUCTOR	10uH
				L404	1-469-967-21	INDUCTOR	10uH
				L406	1-414-187-11	INDUCTOR	47uH
				L407	1-414-187-11	INDUCTOR	47uH
				L409	1-414-187-11	INDUCTOR	47uH
				L411	1-414-187-11	INDUCTOR	47uH
				L412	1-410-431-11	INDUCTOR	100uH
				L601	1-412-755-11	INDUCTOR	47uH
				L701	1-469-967-21	INDUCTOR	10uH
				L702	1-469-967-21	INDUCTOR	10uH
				L703	1-469-967-21	INDUCTOR	10uH
				L801	1-419-387-21	INDUCTOR	100uH
				L802	1-419-387-21	INDUCTOR	100uH
				L803	1-400-145-21	INDUCTOR	47uH
				L1101	1-469-967-21	INDUCTOR	10uH
				L1102	1-469-967-21	INDUCTOR	10uH
				L1103	1-469-967-21	INDUCTOR	10uH
				L1104	1-400-145-21	INDUCTOR	47uH
						< IC LINK >	
				PS101	1-576-509-21	IC LINK	1A 50V
				PS102	1-576-508-21	IC LINK	0.7A 50V
				PS401	1-576-259-11	IC LINK	0.7A 50V
						< TRANSISTOR >	
				Q103	8-729-421-19	TRANSISTOR	UN2213-TX
				Q107	8-729-424-08	TRANSISTOR	UN2111-TX
				Q108	8-729-048-28	TRANSISTOR	2SD1766-T100-QR
				Q301	8-729-045-17	TRANSISTOR	2SB1561T100Q
				Q302	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX
				Q303	8-729-045-17	TRANSISTOR	2SB1561T100Q
				Q304	8-729-421-19	TRANSISTOR	UN2213-TX
				Q306	8-729-027-53	TRANSISTOR	DTC124TKA-T146
				Q308	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
				Q310	8-729-046-97	TRANSISTOR	2SD1938(F)-T(TX).SO
FB301	1-414-766-22	FERRITE 0uH					
FB302	1-414-766-22	FERRITE 0uH					
FB303	1-414-766-22	FERRITE 0uH					
FB304	1-414-766-22	FERRITE 0uH					
FB801	1-414-230-22	FERRITE 0uH					
FB802	1-414-230-22	FERRITE 0uH					
						< FILTER >	
FL601	1-233-893-21	FILTER, CHIP EMI					
FL801	1-233-893-21	FILTER, CHIP EMI					
FL802	1-233-893-21	FILTER, CHIP EMI					
FL803	1-233-893-21	FILTER, CHIP EMI					
FL804	1-233-893-21	FILTER, CHIP EMI					
						< IC >	
IC101	8-759-521-89	IC PQ20WZ5U					
IC102	6-703-758-01	IC PQ050DZ01ZPH					
IC105	8-759-521-89	IC PQ20WZ5U					
IC106	6-703-756-01	IC PQ1L503M2SPQ					
IC201	6-703-503-01	IC AK5365VQ					
IC301	6-701-565-01	IC CXD9627A-E2					
IC302	8-759-052-52	IC NJM78M05DL1A-TE1					
IC303	8-759-909-71	IC BA4558F-E2					
IC304	8-759-909-71	IC BA4558F-E2					
IC402	8-759-712-65	IC PQ070XZ01ZP					
IC406	6-703-750-01	IC TK11850L-1TL					
IC603	6-702-767-01	IC BD4745G-TR					
IC604	6-703-873-01	IC PST3241NL					
IC605	6-704-473-01	IC uPD703033BYGF-M29-3BA-A					
IC701	6-703-155-01	IC LA73030-TLM-E					
IC801	8-759-667-17	IC L79M05TLL-SONY-TL					
IC802	6-701-820-01	IC LA73053-TLM-E					
IC1101	8-759-349-01	IC MC68HC68VBIFB					

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
Q311	8-729-046-97	TRANSISTOR	2SD1938(F)-T(TX).SO	R112	1-216-210-00	RES-CHIP	3.3K 5% 1/8W
Q312	8-729-046-97	TRANSISTOR	2SD1938(F)-T(TX).SO	R113	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q313	8-729-046-97	TRANSISTOR	2SD1938(F)-T(TX).SO	R114	1-216-296-11	SHORT CHIP	0
Q314	8-729-424-18	TRANSISTOR	UN2113-TX	R115	1-216-296-11	SHORT CHIP	0
Q315	8-729-230-49	TRANSISTOR	2SC2712-YG-TE85L	R116	1-216-295-91	SHORT CHIP	0
Q316	8-729-230-49	TRANSISTOR	2SC2712-YG-TE85L	R117	1-216-295-91	SHORT CHIP	0
Q317	8-729-216-22	TRANSISTOR	2SA1162-YG-TE85L	R118	1-216-295-91	SHORT CHIP	0
Q404	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	R120	1-216-296-11	SHORT CHIP	0
Q406	8-729-421-19	TRANSISTOR	UN2213-TX	R121	1-216-295-91	SHORT CHIP	0
Q408	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	R123	1-208-818-11	METAL CHIP	33K 0.5% 1/10W
Q409	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	R124	1-208-808-11	METAL CHIP	12K 0.5% 1/10W
Q410	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX	R125	1-216-665-11	METAL CHIP	3.9K 0.5% 1/10W
Q412	8-729-421-22	TRANSISTOR	UN2211-TX	R126	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q414	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX	R127	1-216-295-91	SHORT CHIP	0
Q415	8-729-421-22	TRANSISTOR	UN2211-TX	R128	1-208-810-11	METAL CHIP	15K 0.5% 1/10W
Q416	8-729-045-17	TRANSISTOR	2SB1561T100Q	R129	1-216-296-11	SHORT CHIP	0
Q420	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	R130	1-216-296-11	SHORT CHIP	0
Q606	8-729-421-22	TRANSISTOR	UN2211-TX	R131	1-216-864-11	METAL CHIP	0 5% 1/16W
Q607	8-729-424-08	TRANSISTOR	UN2111-TX	R132	1-216-210-00	RES-CHIP	3.3K 5% 1/8W
Q608	8-729-921-73	TRANSISTOR	2SD1781K-T146-QR	R135	1-216-296-11	SHORT CHIP	0
Q609	8-729-056-46	TRANSISTOR	2SC5053T100Q	R137	1-216-296-11	SHORT CHIP	0
Q610	8-729-056-46	TRANSISTOR	2SC5053T100Q	R209	1-216-864-11	METAL CHIP	0 5% 1/16W
Q611	8-729-026-49	TRANSISTOR	2SA1037AK-T146-QR	R210	1-216-864-11	METAL CHIP	0 5% 1/16W
Q612	8-729-424-18	TRANSISTOR	UN2113-TX	R214	1-218-887-11	METAL CHIP	47K 0.5% 1/10W
Q613	8-729-421-19	TRANSISTOR	UN2213-TX	R215	1-218-887-11	METAL CHIP	47K 0.5% 1/10W
Q705	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX	R216	1-218-887-11	METAL CHIP	47K 0.5% 1/10W
Q706	8-729-424-59	TRANSISTOR	UN2212-TX	R217	1-218-887-11	METAL CHIP	47K 0.5% 1/10W
Q708	8-729-045-17	TRANSISTOR	2SB1561T100Q	R218	1-218-879-11	METAL CHIP	22K 0.5% 1/10W
Q709	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR	R220	1-218-887-11	METAL CHIP	47K 0.5% 1/10W
Q710	8-729-216-22	TRANSISTOR	2SA1162-YG-TE85L	R221	1-218-879-11	METAL CHIP	22K 0.5% 1/10W
Q711	8-729-026-49	TRANSISTOR	2SA1037AK-T146-QR	R222	1-218-887-11	METAL CHIP	47K 0.5% 1/10W
Q712	8-729-216-22	TRANSISTOR	2SA1162-YG-TE85L	R224	1-218-887-11	METAL CHIP	47K 0.5% 1/10W
Q713	8-729-216-22	TRANSISTOR	2SA1162-YG-TE85L	R227	1-218-887-11	METAL CHIP	47K 0.5% 1/10W
Q715	8-729-230-49	TRANSISTOR	2SC2712-YG-TE85L	R248	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q716	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	R250	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q801	8-729-424-08	TRANSISTOR	UN2111-TX	R253	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q802	8-729-048-28	TRANSISTOR	2SD1766-T100-QR	R255	1-216-809-11	METAL CHIP	100 5% 1/16W
Q809	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	R256	1-216-801-11	METAL CHIP	22 5% 1/16W
Q810	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	R257	1-216-797-11	METAL CHIP	10 5% 1/16W
Q811	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	R258	1-216-801-11	METAL CHIP	22 5% 1/16W
Q812	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	R277	1-216-809-11	METAL CHIP	100 5% 1/16W
Q813	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	R278	1-216-837-11	METAL CHIP	22K 5% 1/16W
Q814	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	R279	1-216-837-11	METAL CHIP	22K 5% 1/16W
Q815	8-729-421-19	TRANSISTOR	UN2213-TX	R280	1-216-837-11	METAL CHIP	22K 5% 1/16W
Q816	8-729-424-08	TRANSISTOR	UN2111-TX	R301	1-216-849-11	METAL CHIP	220K 5% 1/16W
Q1101	8-729-402-81	TRANSISTOR	XN4501-TW	R302	1-216-817-11	METAL CHIP	470 5% 1/16W
Q1102	8-729-402-81	TRANSISTOR	XN4501-TW	R303	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q1103	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX	R307	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q1104	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX	R308	1-216-845-11	METAL CHIP	100K 5% 1/16W
Q1105	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX	R309	1-216-830-11	METAL CHIP	5.6K 5% 1/16W
		< RESISTOR >		R310	1-216-801-11	METAL CHIP	22 5% 1/16W
R104	1-218-857-11	METAL CHIP	2.7K 0.5% 1/16W	R311	1-216-809-11	METAL CHIP	100 5% 1/16W
R105	1-218-849-11	METAL CHIP	1.2K 0.5% 1/16W	R313	1-216-809-11	METAL CHIP	100 5% 1/16W
R106	1-218-849-11	METAL CHIP	1.2K 5% 1/16W	R320	1-216-049-11	RES-CHIP	1K 5% 1/10W
R108	1-216-864-11	METAL CHIP	0 5% 1/16W	R322	1-218-869-11	METAL CHIP	8.2K 0.5% 1/10W
R111	1-216-864-11	METAL CHIP	0 5% 1/16W	R323	1-218-869-11	METAL CHIP	8.2K 0.5% 1/10W
				R324	1-218-869-11	METAL CHIP	8.2K 0.5% 1/10W
				R325	1-218-869-11	METAL CHIP	8.2K 0.5% 1/10W
				R326	1-218-871-11	METAL CHIP	10K 0.5% 1/10W
				R327	1-218-871-11	METAL CHIP	10K 0.5% 1/10W

**AV-071**

Ref. No.	Part No.	Description	Quantity	Unit Price	Remarks	Ref. No.	Part No.	Description	Quantity	Unit Price	Remarks
R328	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R432	1-216-809-11	METAL CHIP	100	5%	1/16W
R329	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R437	1-216-864-11	METAL CHIP	0	5%	1/16W
R330	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R438	1-216-833-11	METAL CHIP	10K	5%	1/16W
R331	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R439	1-216-821-11	METAL CHIP	1K	5%	1/16W
R332	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R440	1-218-446-11	METAL CHIP	1	5%	1/10W
R333	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R441	1-216-857-11	METAL CHIP	1M	5%	1/16W
R334	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R450	1-216-817-11	METAL CHIP	470	5%	1/16W
R335	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	R451	1-216-817-11	METAL CHIP	470	5%	1/16W
R336	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	R454	1-216-295-91	SHORT CHIP	0		
R338	1-216-833-11	METAL CHIP	10K	5%	1/16W	R459	1-216-837-11	METAL CHIP	22K	5%	1/16W
R340	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	R460	1-216-296-11	SHORT CHIP	0		
R341	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	R461	1-216-864-11	METAL CHIP	0	5%	1/16W
R343	1-216-833-11	METAL CHIP	10K	5%	1/16W	R462	1-216-837-11	METAL CHIP	22K	5%	1/16W
R344	1-216-841-11	METAL CHIP	47K	5%	1/16W	R463	1-216-864-11	METAL CHIP	0	5%	1/16W
R350	1-216-833-11	METAL CHIP	10K	5%	1/16W	R465	1-216-809-11	METAL CHIP	100	5%	1/16W
R352	1-216-817-11	METAL CHIP	470	5%	1/16W	R467	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R353	1-216-817-11	METAL CHIP	470	5%	1/16W	R468	1-216-809-11	METAL CHIP	100	5%	1/16W
R354	1-216-841-11	METAL CHIP	47K	5%	1/16W	R469	1-216-809-11	METAL CHIP	100	5%	1/16W
R355	1-216-841-11	METAL CHIP	47K	5%	1/16W	R470	1-216-809-11	METAL CHIP	100	5%	1/16W
R356	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R482	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R357	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R483	1-208-842-11	METAL CHIP	330K	0.5%	1/10W
R359	1-216-845-11	METAL CHIP	100K	5%	1/16W	R484	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W
R361	1-216-845-11	METAL CHIP	100K	5%	1/16W	R485	1-216-025-11	RES-CHIP	100	5%	1/10W
R362	1-216-817-11	METAL CHIP	470	5%	1/16W	R486	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R363	1-216-817-11	METAL CHIP	470	5%	1/16W	R488	1-216-821-11	METAL CHIP	1K	5%	1/16W
R364	1-216-817-11	METAL CHIP	470	5%	1/16W	R509	1-216-864-11	METAL CHIP	0	5%	1/16W
R365	1-216-817-11	METAL CHIP	470	5%	1/16W	R603	1-216-296-11	SHORT CHIP	0		
R366	1-216-817-11	METAL CHIP	470	5%	1/16W	R604	1-208-774-11	METAL CHIP	470	0.5%	1/10W
R370	1-216-821-11	METAL CHIP	1K	5%	1/16W	R605	1-208-774-11	METAL CHIP	470	0.5%	1/10W
R371	1-216-821-11	METAL CHIP	1K	5%	1/16W	R606	1-216-864-11	METAL CHIP	0	5%	1/16W
R372	1-216-837-11	METAL CHIP	22K	5%	1/16W	R608	1-216-296-11	SHORT CHIP	0		
R373	1-216-833-11	METAL CHIP	10K	5%	1/16W	R609	1-216-296-11	SHORT CHIP	0		
R374	1-216-821-11	METAL CHIP	1K	5%	1/16W	R610	1-216-833-11	METAL CHIP	10K	5%	1/16W
R375	1-216-809-11	METAL CHIP	100	5%	1/16W	R611	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R377	1-216-807-11	METAL CHIP	68	5%	1/16W	R612	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R378	1-216-807-11	METAL CHIP	68	5%	1/16W	R613	1-216-833-11	METAL CHIP	10K	5%	1/16W
R382	1-216-041-00	METAL CHIP	470	5%	1/10W	R614	1-216-845-11	METAL CHIP	100K	5%	1/16W
R401	1-216-049-11	RES-CHIP	1K	5%	1/10W	R615	1-216-809-11	METAL CHIP	100	5%	1/16W
R402	1-208-830-11	METAL CHIP	100K	0.5%	1/10W	R616	1-216-809-11	METAL CHIP	100	5%	1/16W
R403	1-208-800-11	METAL CHIP	5.6K	0.5%	1/10W	R617	1-216-809-11	METAL CHIP	100	5%	1/16W
R405	1-216-809-11	METAL CHIP	100	5%	1/16W	R618	1-216-809-11	METAL CHIP	100	5%	1/16W
R408	1-216-845-11	METAL CHIP	100K	5%	1/16W	R619	1-216-809-11	METAL CHIP	100	5%	1/16W
R409	1-208-818-11	METAL CHIP	33K	0.5%	1/10W	R620	1-216-809-11	METAL CHIP	100	5%	1/16W
R410	1-216-838-11	METAL CHIP	27K	5%	1/16W	R621	1-216-809-11	METAL CHIP	100	5%	1/16W
R411	1-216-845-11	METAL CHIP	100K	5%	1/16W	R622	1-216-809-11	METAL CHIP	100	5%	1/16W
R412	1-216-845-11	METAL CHIP	100K	5%	1/16W	R623	1-216-809-11	METAL CHIP	100	5%	1/16W
R413	1-216-841-11	METAL CHIP	47K	5%	1/16W	R624	1-216-809-11	METAL CHIP	100	5%	1/16W
R415	1-216-864-11	METAL CHIP	0	5%	1/16W	R625	1-216-864-11	METAL CHIP	0	5%	1/16W
R418	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R626	1-216-809-11	METAL CHIP	100	5%	1/16W
R419	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	R627	1-216-809-11	METAL CHIP	100	5%	1/16W
R420	1-216-821-11	METAL CHIP	1K	5%	1/16W	R628	1-216-809-11	METAL CHIP	100	5%	1/16W
R421	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	R629	1-216-817-11	METAL CHIP	470	5%	1/16W
R423	1-216-857-11	METAL CHIP	1M	5%	1/16W	R630	1-216-809-11	METAL CHIP	100	5%	1/16W
R424	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R631	1-216-809-11	METAL CHIP	100	5%	1/16W
R426	1-216-809-11	METAL CHIP	100	5%	1/16W	R632	1-216-853-11	METAL CHIP	470K	5%	1/16W
R427	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R633	1-216-849-11	METAL CHIP	220K	5%	1/16W
R428	1-216-864-11	SHORT CHIP	0			R634	1-216-864-11	METAL CHIP	0	5%	1/16W
R429	1-216-864-11	METAL CHIP	1.5K	5%	1/16W	R635	1-216-809-11	METAL CHIP	100	5%	1/16W
R430	1-216-821-11	METAL CHIP	1K	5%	1/16W	R636	1-216-809-11	METAL CHIP	100	5%	1/16W
R431	1-216-821-11	METAL CHIP	1K	5%	1/16W	R637	1-216-817-11	METAL CHIP	470	5%	1/16W

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
R638	1-216-833-11	METAL CHIP	10K	5%	1/16W	R728	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R639	1-216-833-11	METAL CHIP	10K	5%	1/16W	R729	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R640	1-216-864-11	METAL CHIP	0	5%	1/16W	R730	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R641	1-216-864-11	METAL CHIP	0	5%	1/16W	R731	1-216-817-11	METAL CHIP	470	5%	1/16W
R642	1-216-833-11	METAL CHIP	10K	5%	1/16W	R732	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R645	1-216-864-11	METAL CHIP	0	5%	1/16W	R733	1-216-857-11	METAL CHIP	1M	5%	1/16W
R646	1-216-210-00	RES-CHIP	3.3K	5%	1/8W	R734	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R647	1-216-864-11	METAL CHIP	0	5%	1/16W	R735	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R648	1-216-833-11	METAL CHIP	10K	5%	1/16W	R742	1-216-821-11	METAL CHIP	1K	5%	1/16W
R650	1-216-809-11	METAL CHIP	100	5%	1/16W	R743	1-216-839-11	METAL CHIP	33K	5%	1/16W
R651	1-216-864-11	METAL CHIP	0	5%	1/16W	R744	1-216-833-11	METAL CHIP	10K	5%	1/16W
R652	1-216-809-11	METAL CHIP	100	5%	1/16W	R745	1-216-819-11	METAL CHIP	680	5%	1/16W
R653	1-216-864-11	METAL CHIP	0	5%	1/16W	R746	1-216-813-11	METAL CHIP	220	5%	1/16W
R654	1-216-809-11	METAL CHIP	100	5%	1/16W	R747	1-216-813-11	METAL CHIP	220	5%	1/16W
R655	1-216-833-11	METAL CHIP	10K	5%	1/16W	R748	1-216-857-11	METAL CHIP	1M	5%	1/16W
R657	1-216-809-11	METAL CHIP	100	5%	1/16W	R749	1-218-289-11	METAL CHIP	510	5%	1/10W
R658	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	R751	1-218-850-11	METAL CHIP	1.3K	5%	1/10W
R659	1-216-809-11	METAL CHIP	100	5%	1/16W	R752	1-216-864-11	METAL CHIP	0	5%	1/16W
R661	1-216-833-11	METAL CHIP	10K	5%	1/16W	R753	1-216-864-11	METAL CHIP	0	5%	1/16W
R663	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	R755	1-216-296-11	SHORT CHIP	0		
R665	1-216-833-11	METAL CHIP	10K	5%	1/16W	R756	1-218-289-11	METAL CHIP	510	5%	1/10W
R672	1-216-210-00	RES-CHIP	3.3K	5%	1/8W	R764	1-216-821-11	METAL CHIP	1K	5%	1/16W
R673	1-216-809-11	METAL CHIP	100	5%	1/16W	R765	1-216-864-11	METAL CHIP	0	5%	1/16W
R674	1-216-809-11	METAL CHIP	100	5%	1/16W	R767	1-216-864-11	METAL CHIP	0	5%	1/16W
R675	1-216-833-11	METAL CHIP	10K	5%	1/16W	R801	1-216-833-11	METAL CHIP	10K	5%	1/16W
R676	1-216-809-11	METAL CHIP	100	5%	1/16W	R802	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R677	1-216-809-11	METAL CHIP	100	5%	1/16W	R803	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R678	1-216-809-11	METAL CHIP	100	5%	1/16W	R804	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R679	1-216-809-11	METAL CHIP	100	5%	1/16W	R805	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R680	1-216-809-11	METAL CHIP	100	5%	1/16W	R806	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R681	1-216-809-11	METAL CHIP	100	5%	1/16W	R807	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R682	1-216-809-11	METAL CHIP	100	5%	1/16W	R808	1-216-206-00	RES-CHIP	2.2K	5%	1/8W
R683	1-216-809-11	METAL CHIP	100	5%	1/16W	R809	1-216-801-11	METAL CHIP	22	5%	1/16W
R684	1-216-841-11	METAL CHIP	47K	5%	1/16W	R810	1-216-801-11	METAL CHIP	22	5%	1/16W
R685	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R811	1-216-801-11	METAL CHIP	22	5%	1/16W
R687	1-216-833-11	METAL CHIP	10K	5%	1/16W	R812	1-216-801-11	METAL CHIP	22	5%	1/16W
R688	1-216-833-11	METAL CHIP	10K	5%	1/16W	R813	1-216-801-11	METAL CHIP	22	5%	1/16W
R689	1-216-296-11	SHORT CHIP	0			R814	1-216-801-11	METAL CHIP	22	5%	1/16W
R690	1-216-833-11	METAL CHIP	10K	5%	1/16W	R815	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R691	1-216-833-11	METAL CHIP	10K	5%	1/16W	R816	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R694	1-216-833-11	METAL CHIP	10K	5%	1/16W	R817	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R695	1-208-798-11	METAL CHIP	4.7K	0.5%	1/10W	R818	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R697	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R819	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R698	1-216-821-11	METAL CHIP	1K	5%	1/16W	R820	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R699	1-216-208-00	RES-CHIP	2.7K	5%	1/8W	R821	1-216-801-11	METAL CHIP	22	5%	1/16W
R700	1-216-838-11	METAL CHIP	27K	5%	1/16W	R822	1-216-801-11	METAL CHIP	22	5%	1/16W
R702	1-216-864-11	METAL CHIP	0	5%	1/16W	R823	1-216-801-11	METAL CHIP	22	5%	1/16W
R712	1-216-864-11	METAL CHIP	0	5%	1/16W	R824	1-216-801-11	METAL CHIP	22	5%	1/16W
R715	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R825	1-216-801-11	METAL CHIP	22	5%	1/16W
R716	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R826	1-216-801-11	METAL CHIP	22	5%	1/16W
R717	1-216-833-11	METAL CHIP	10K	5%	1/16W	R827	1-216-206-00	RES-CHIP	2.2K	5%	1/8W
R718	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R834	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R719	1-216-864-11	METAL CHIP	0	5%	1/16W	R840	1-216-833-11	METAL CHIP	10K	5%	1/16W
R720	1-216-815-11	METAL CHIP	330	5%	1/16W	R841	1-216-833-11	METAL CHIP	10K	5%	1/16W
R721	1-216-864-11	METAL CHIP	0	5%	1/16W	R842	1-216-807-11	METAL CHIP	68	5%	1/16W
R723	1-216-821-11	METAL CHIP	1K	5%	1/16W	R843	1-216-807-11	METAL CHIP	68	5%	1/16W
R724	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	R844	1-216-807-11	METAL CHIP	68	5%	1/16W
R725	1-216-864-11	METAL CHIP	0	5%	1/16W	R845	1-216-807-11	METAL CHIP	68	5%	1/16W
R726	1-216-864-11	METAL CHIP	0	5%	1/16W	R846	1-216-807-11	METAL CHIP	68	5%	1/16W
R727	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	R847	1-216-807-11	METAL CHIP	68	5%	1/16W

AV-071

CN-177

FL-130

Ref. No.	Part No.	Description	Remarks
R848	1-216-807-11	METAL CHIP	68 5% 1/16W
R849	1-216-807-11	METAL CHIP	68 5% 1/16W
R850	1-216-807-11	METAL CHIP	68 5% 1/16W
R855	1-218-285-11	METAL CHIP	75 5% 1/10W
R865	1-218-285-11	METAL CHIP	75 5% 1/10W
R866	1-218-285-11	METAL CHIP	75 5% 1/10W
R867	1-218-285-11	METAL CHIP	75 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
R897	1-216-864-11	METAL CHIP	0 5% 1/16W
R1101	1-216-841-11	METAL CHIP	47K 5% 1/16W
R1102	1-216-841-11	METAL CHIP	47K 5% 1/16W
R1103	1-216-833-11	METAL CHIP	10K 5% 1/16W
R1104	1-216-853-11	METAL CHIP	470K 5% 1/16W
R1105	1-216-813-11	METAL CHIP	220 5% 1/16W
R1106	1-216-849-11	METAL CHIP	220K 5% 1/16W
R1107	1-216-809-11	METAL CHIP	100 5% 1/16W
R1108	1-216-837-11	METAL CHIP	22K 5% 1/16W
R1109	1-216-839-11	METAL CHIP	33K 5% 1/16W
R1110	1-216-817-11	METAL CHIP	470 5% 1/16W
R1111	1-216-821-11	METAL CHIP	1K 5% 1/16W
R1112	1-216-816-11	METAL CHIP	390 5% 1/16W
R1113	1-216-817-11	METAL CHIP	470 5% 1/16W
R1114	1-216-833-11	METAL CHIP	10K 5% 1/16W
R1115	1-216-836-11	METAL CHIP	18K 5% 1/16W
R1116	1-216-837-11	METAL CHIP	22K 5% 1/16W
R1117	1-216-821-11	METAL CHIP	1K 5% 1/16W
R1118	1-216-815-11	METAL CHIP	330 5% 1/16W
R1119	1-216-821-11	METAL CHIP	1K 5% 1/16W
R1120	1-216-821-11	METAL CHIP	1K 5% 1/16W
R1121	1-216-833-11	METAL CHIP	10K 5% 1/16W
R1122	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R1123	1-216-841-11	METAL CHIP	47K 5% 1/16W
R1124	1-216-841-11	METAL CHIP	47K 5% 1/16W
R1125	1-216-841-11	METAL CHIP	47K 5% 1/16W
R1126	1-216-864-11	METAL CHIP	0 5% 1/16W
R1127	1-216-821-11	METAL CHIP	1K 5% 1/16W
R1128	1-216-864-11	METAL CHIP	0 5% 1/16W
R1129	1-216-864-11	METAL CHIP	0 5% 1/16W
R1130	1-216-845-11	METAL CHIP	100K 5% 1/16W
R1204	1-216-833-11	METAL CHIP	10K 5% 1/16W
R1207	1-216-809-11	METAL CHIP	100 5% 1/16W
R1208	1-216-809-11	METAL CHIP	100 5% 1/16W
R1209	1-216-809-11	METAL CHIP	100 5% 1/16W
R1213	1-216-809-11	METAL CHIP	100 5% 1/16W
R1217	1-216-833-11	METAL CHIP	10K 5% 1/16W
R2601	1-216-833-11	METAL CHIP	10K 5% 1/16W
R2602	1-216-853-11	METAL CHIP	470K 5% 1/16W
R2603	1-216-833-11	METAL CHIP	10K 5% 1/16W
R2604	1-216-833-11	METAL CHIP	10K 5% 1/16W
< TRANSFORMER >			
T601	1-439-651-11	TRANSFORMER, DC-DC CONVERTER	
< TUNER >			
TU401	8-598-612-00	TUNER, FSS BTF-DA401	

Ref. No.	Part No.	Description	Remarks
< VIBRATOR >			
X601	1-781-913-11	VIBRATOR, CRYSTAL (32.768kHz)	
X602	1-795-721-21	VIBRATOR, CERAMIC (20MHz)	
X1101	1-579-041-11	VIBRATOR, CRYSTAL (3.579545MHz)	
*****			
*	A-6061-471-A	CN-177 (E) BOARD, COMPLETE	
*****			
*****			
*	A-6061-470-A	FL-130 (E) BOARD, COMPLETE	
*****			
3-081-222-01	SPACER		
< CAPACITOR >			
C1702	1-124-589-11	ELECT	47uF 20% 16V
C1703	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C1705	1-115-339-11	CERAMIC CHIP	0.1uF 10.00% 50V
C1706	1-162-923-11	CERAMIC CHIP	47PF 5% 50V
C1708	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C1711	1-162-927-11	CERAMIC CHIP	100PF 5% 50V
C1712	1-162-927-11	CERAMIC CHIP	100PF 5% 50V
< CONNECTOR >			
CN1702	1-774-766-11	CONNECTOR, FFC/FPC 11P	
CN1703	1-785-828-21	CONNECTOR, SQUARE TYPE 4P	
* CN1704	1-695-108-11	PIN, CONNECTOR (PC BOARD) 6P	
CN1705	1-573-489-11	PIN, CONNECTOR (PC BOARD) 11P	
< DIODE >			
D1702	6-500-287-01	DIODE SML-512MWT86	
D1703	8-719-077-09	DIODE CL-196HR-CD-T	
D1704	8-719-801-78	DIODE MA152WK-TX	
D1705	8-719-067-40	DIODE STZ6.8N-T146	
D1706	8-719-067-40	DIODE STZ6.8N-T146	
D1707	8-719-067-40	DIODE STZ6.8N-T146	
D1708	8-719-067-40	DIODE STZ6.8N-T146	
D1709	8-719-067-40	DIODE STZ6.8N-T146	
D1710	8-719-067-40	DIODE STZ6.8N-T146	
D1711	8-719-067-40	DIODE STZ6.8N-T146	
D1712	8-719-083-60	DIODE UDZSTE-174.7B	
D1713	8-719-988-61	DIODE 1SS355TE-17	
< FERRITE BEAD >			
FB1701	1-414-233-22	FERRITE	0uH
FB1702	1-414-233-22	FERRITE	0uH
FB1703	1-414-233-22	FERRITE	0uH
FB1704	1-414-230-22	FERRITE	0uH
< IC >			
IC1701	6-703-765-01	IC ML9206-07MBZ03B	
< JACK >			
J1701	1-694-980-21	TERMINAL BOARD (S TERMINAL+3P)	

Ref. No.	Part No.	Description	Remarks
		< FLUORESCENT INDICATOR >	
ND1701	1-518-883-11	TUBE, FLUORESCENT INDICATOR	
		< TRANSISTOR >	
Q1703	8-729-421-22	TRANSISTOR UN2211-TX	
Q1704	8-729-424-02	TRANSISTOR 2SB709A-QRS-TX	
		< RESISTOR >	
R1704	1-216-813-11	METAL CHIP 220 5% 1/16W	
R1705	1-216-817-11	METAL CHIP 470 5% 1/16W	
R1707	1-216-809-11	METAL CHIP 100 5% 1/16W	
R1708	1-216-809-11	METAL CHIP 100 5% 1/16W	
R1709	1-216-809-11	METAL CHIP 100 5% 1/16W	
R1710	1-216-809-11	METAL CHIP 100 5% 1/16W	
R1711	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R1712	1-218-285-11	METAL CHIP 75 5% 1/10W	
R1713	1-218-285-11	METAL CHIP 75 5% 1/10W	
R1714	1-218-285-11	METAL CHIP 75 5% 1/10W	
R1715	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R1716	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R1718	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1719	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1724	1-216-833-11	METAL CHIP 10K 5% 1/16W	
		< SWITCH >	
S1701	1-771-349-21	SWITCH, TACT	
*	A-6071-047-A	FR-195 (U) BOARD, COMPLETE *****	
		< CAPACITOR >	
C101	1-124-589-11	ELECT 47uF 20% 16V	
C104	1-124-589-11	ELECT 47uF 20% 16V	
C105	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
		< CONNECTOR >	
CN101	1-779-937-11	CONNECTOR, FFC/FPC 19P	
CN102	1-774-766-11	CONNECTOR, FFC/FPC 11P	
		< DIODE >	
D102	6-500-287-01	DIODE SML-512MWT86	
D103	6-500-252-01	DIODE SML-512WWT86	
D104	6-500-252-01	DIODE SML-512WWT86	
D105	6-500-252-01	DIODE SML-512WWT86	
D106	6-500-252-01	DIODE SML-512WWT86	
D107	6-500-252-01	DIODE SML-512WWT86	
D109	8-719-077-09	DIODE CL-196HR-CD-T	
D111	6-500-252-01	DIODE SML-512WWT86	
D112	6-500-252-01	DIODE SML-512WWT86	
D114	8-719-077-09	DIODE CL-196HR-CD-T	
D115	6-500-252-01	DIODE SML-512WWT86	
D116	6-500-252-01	DIODE SML-512WWT86	
D117	6-500-252-01	DIODE SML-512WWT86	
D118	6-500-252-01	DIODE SML-512WWT86	
D119	8-719-077-09	DIODE CL-196HR-CD-T	

Ref. No.	Part No.	Description	Remarks
		< IC >	
IC101	6-600-162-01	IC GP1UM28SXK0F	
IC103	6-701-888-01	IC BU2152FS	
		< TRANSISTOR >	
Q101	8-729-049-31	TRANSISTOR 2SB710A-RTX	
Q102	8-729-421-22	TRANSISTOR UN2211-TX	
		< RESISTOR >	
R101	1-216-819-11	METAL CHIP 680 5% 1/16W	
R102	1-216-864-11	METAL CHIP 0 5% 1/16W	
R106	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R107	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R108	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R109	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R110	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R112	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R113	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R114	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R116	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R117	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R119	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R120	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R121	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R122	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R123	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R124	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R125	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R126	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R127	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R128	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R129	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R130	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R131	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R132	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R133	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R134	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R135	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R136	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R137	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R138	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R139	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R140	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R141	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R142	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R143	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R144	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R147	1-216-864-11	METAL CHIP 0 5% 1/16W	
R148	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R149	1-216-809-11	METAL CHIP 100 5% 1/16W	
R151	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R152	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
< SWITCH >							
S101	1-771-349-21	SWITCH, TACT		C408	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S102	1-771-349-21	SWITCH, TACT		C409	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S103	1-771-349-21	SWITCH, TACT		C410	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S104	1-771-349-21	SWITCH, TACT		C411	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S105	1-771-349-21	SWITCH, TACT		C412	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S106	1-771-349-21	SWITCH, TACT		C413	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S107	1-771-349-21	SWITCH, TACT		C414	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S108	1-786-502-11	SWITCH, TACTILE		C415	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S109	1-771-349-21	SWITCH, TACT		C416	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S110	1-771-349-21	SWITCH, TACT		C419	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S111	1-771-349-21	SWITCH, TACT		C420	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S112	1-771-349-21	SWITCH, TACT		C421	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S113	1-771-349-21	SWITCH, TACT		C422	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S114	1-771-349-21	SWITCH, TACT		C423	1-124-779-00	ELECT CHIP 10uF	20% 16V
S115	1-771-349-21	SWITCH, TACT		C424	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S116	1-771-349-21	SWITCH, TACT		C425	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S117	1-771-349-21	SWITCH, TACT		C426	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S118	1-771-349-21	SWITCH, TACT		C427	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S119	1-771-349-21	SWITCH, TACT		C428	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
S120	1-771-349-21	SWITCH, TACT		C601	1-124-779-00	ELECT CHIP 10uF	20% 16V
S121	1-771-349-21	SWITCH, TACT		C602	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
S122	1-771-349-21	SWITCH, TACT		C603	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
A-6071-264-A RD-045 (U) BOARD, COMPLETE (SVC)							
*****							
< CAPACITOR >							
C101	1-126-607-11	ELECT CHIP 47uF	20% 4V	C614	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C102	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C615	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C106	1-162-911-11	CERAMIC CHIP 6PF	0.50PF 50V	C616	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C107	1-162-911-11	CERAMIC CHIP 6PF	0.50PF 50V	C617	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C110	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C618	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C111	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C619	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C113	1-126-607-11	ELECT CHIP 47uF	20% 4V	C620	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C114	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C621	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C117	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C622	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C119	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C701	1-126-607-11	ELECT CHIP 47uF	20% 4V
C120	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C702	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C121	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C703	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C122	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C704	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C123	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C705	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C124	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C706	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C125	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C707	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C126	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C708	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C127	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C709	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C128	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C710	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C129	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C711	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C130	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C712	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C131	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	C713	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C201	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C715	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C202	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C717	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C205	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	C718	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C206	1-126-607-11	ELECT CHIP 47uF	20% 4V	C719	1-126-607-11	ELECT CHIP 47uF	20% 4V
C401	1-124-779-00	ELECT CHIP 10uF	20% 16V	C725	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C402	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C726	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C403	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C727	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V
C406	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V	C728	1-107-826-11	CERAMIC CHIP 0.1uF	10.00% 16V



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Ref. No.	Part No.	Description		Remarks	Ref. No.	Part No.	Description		Remarks
C1243	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2002	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1301	1-126-607-11	ELECT CHIP	47uF	20% 4V	C2003	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1302	1-126-607-11	ELECT CHIP	47uF	20% 4V	C2005	1-126-607-11	ELECT CHIP	47uF	20% 4V
C1303	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V	C2006	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1304	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2007	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1305	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2008	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1306	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2009	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1307	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2010	1-162-913-11	CERAMIC CHIP	8PF	0.50PF 50V
C1308	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2011	1-162-913-11	CERAMIC CHIP	8PF	0.50PF 50V
C1309	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2012	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1310	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2013	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1312	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2014	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1313	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2015	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1314	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2016	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1315	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2019	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1316	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2021	1-125-837-91	CERAMIC CHIP	1uF	10% 6.3V
C1317	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2023	1-164-388-91	CERAMIC CHIP	270PF	5.00% 50V
C1318	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2100	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1319	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2101	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1320	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2102	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1402	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2103	1-104-610-11	ELECT CHIP	47uF	20.00% 4V
C1403	1-126-607-11	ELECT CHIP	47uF	20% 4V	C2105	1-104-610-11	ELECT CHIP	47uF	20.00% 4V
C1406	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2110	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1407	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2111	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1408	1-126-205-11	ELECT CHIP	47uF	20% 6.3V	C2112	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1409	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2113	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1410	1-126-607-11	ELECT CHIP	47uF	20% 4V	C2114	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1411	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2115	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1412	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2116	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1413	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2117	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1414	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2118	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1415	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2119	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1416	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2120	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1417	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2121	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1421	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2122	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1422	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2123	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1423	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2124	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1433	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2125	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1434	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2126	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1605	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2127	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1606	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2128	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1612	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2129	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1613	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2130	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1614	1-162-916-11	CERAMIC CHIP	12PF	5% 50V	C2133	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1615	1-162-916-11	CERAMIC CHIP	12PF	5% 50V	C2134	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1616	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2135	1-126-209-11	ELECT CHIP	100uF	20.00% 4V
C1618	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2137	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1631	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2143	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1632	1-126-607-11	ELECT CHIP	47uF	20% 4V	C2144	1-126-607-11	ELECT CHIP	47uF	20% 4V
C1636	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2201	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1703	1-126-393-11	ELECT CHIP	33uF	20.00% 10V	C2202	1-126-390-11	ELECT CHIP	22uF	20.00% 6.3V
C1704	1-104-609-11	ELECT CHIP	100uF	20.00% 4V	C2203	1-104-609-11	ELECT CHIP	100uF	20.00% 4V
C1705	1-126-393-11	ELECT CHIP	33uF	20.00% 10V	C2204	1-104-609-11	ELECT CHIP	100uF	20.00% 4V
C1708	1-107-725-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2205	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1709	1-107-725-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2206	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C1710	1-107-725-11	CERAMIC CHIP	0.1uF	10.00% 16V	C2207	1-162-927-11	CERAMIC CHIP	100PF	5% 50V
C1722	1-126-393-11	ELECT CHIP	33uF	20.00% 10V	C2208	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1723	1-104-610-11	ELECT CHIP	47uF	20.00% 4V	C2209	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C1725	1-126-393-11	ELECT CHIP	33uF	20.00% 10V	C2210	1-162-915-11	CERAMIC CHIP	10PF	0.5PF 50V
C1728	1-131-661-21	ELECT CHIP	100uF	20% 10V	C2211	1-162-915-11	CERAMIC CHIP	10PF	0.5PF 50V

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C2213	1-119-923-11	CERAMIC CHIP	0.047uF 10.00% 10V	C2330	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2214	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C2331	1-115-414-11	CERAMIC CHIP	820PF 5.00% 25V
C2215	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C2332	1-127-715-91	CERAMIC CHIP	0.22uF 10% 16V
C2216	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C2333	1-126-209-11	ELECT CHIP	100uF 20.00% 4V
C2217	1-165-176-11	CERAMIC CHIP	0.047uF 10.00% 16V	C2334	1-127-715-91	CERAMIC CHIP	0.22uF 10% 16V
C2218	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C2335	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C2219	1-119-923-11	CERAMIC CHIP	0.047uF 10.00% 10V	C2336	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C2220	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C2337	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C2221	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C2338	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C2224	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C2339	1-126-206-11	ELECT CHIP	100uF 20% 6.3V
C2225	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C2340	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C2227	1-165-176-11	CERAMIC CHIP	0.047uF 10.00% 16V	C2341	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C2228	1-165-176-11	CERAMIC CHIP	0.047uF 10.00% 16V	C2342	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C2231	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C2401	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2232	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C2501	1-126-607-11	ELECT CHIP	47uF 20% 4V
C2233	1-165-176-11	CERAMIC CHIP	0.047uF 10.00% 16V	C2502	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C2234	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C2503	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2235	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C2504	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2236	1-165-176-11	CERAMIC CHIP	0.047uF 10.00% 16V	C2505	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2237	1-119-923-11	CERAMIC CHIP	0.047uF 10.00% 10V	C2506	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2238	1-119-923-11	CERAMIC CHIP	0.047uF 10.00% 10V	C2507	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2239	1-119-923-11	CERAMIC CHIP	0.047uF 10.00% 10V	C2508	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2240	1-119-923-11	CERAMIC CHIP	0.047uF 10.00% 10V	C2509	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2241	1-119-923-11	CERAMIC CHIP	0.047uF 10.00% 10V	C2510	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2242	1-119-923-11	CERAMIC CHIP	0.047uF 10.00% 10V	C2511	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2243	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C2512	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2244	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C2513	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2245	1-164-874-11	CERAMIC CHIP	100PF 5.00% 50V	C2601	1-126-607-11	ELECT CHIP	47uF 20% 4V
C2246	1-164-874-11	CERAMIC CHIP	100PF 5.00% 50V	C2602	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2247	1-164-874-11	CERAMIC CHIP	100PF 5.00% 50V	C2603	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C2248	1-164-874-11	CERAMIC CHIP	100PF 5.00% 50V	< CONNECTOR >			
C2249	1-164-874-11	CERAMIC CHIP	100PF 5.00% 50V	* CN102	1-764-177-11	PIN, CONNECTOR (SMD)(1.5MM) 7P	
C2250	1-164-874-11	CERAMIC CHIP	100PF 5.00% 50V	CN1103	1-815-231-11	CONNECTOR, FFC/FPC (ZIF) 40P	
C2251	1-164-874-11	CERAMIC CHIP	100PF 5.00% 50V	CN1701	1-815-889-21	PIN, CONNECTOR (PC BOARD) 14P	
C2252	1-164-874-11	CERAMIC CHIP	100PF 5.00% 50V	CN1902	1-815-231-11	CONNECTOR, FFC/FPC (ZIF) 40P	
C2301	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	CN2001	1-770-161-21	PIN, CONNECTOR (PC BOARD) 6P	
C2303	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	< DIODE >			
C2304	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	D103	8-719-071-15	DIODE HZM6.8ZWA1TL	
C2305	1-126-607-11	ELECT CHIP	47uF 20% 4V	D104	8-719-071-15	DIODE HZM6.8ZWA1TL	
C2306	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	D1601	8-719-056-23	DIODE MA2S111-(K8).SO	
C2307	1-126-607-11	ELECT CHIP	47uF 20% 4V	D1602	8-719-056-23	DIODE MA2S111-(K8).SO	
C2308	1-104-610-11	ELECT CHIP	47uF 20.00% 4V	D2100	8-719-027-95	DIODE HSM88WK-TL	
C2310	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	D2101	8-719-055-86	DIODE KV1470TL1-3	
C2311	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	< FERRITE BEAD >			
C2312	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	FB901	1-469-324-21	FERRITE	0uH
C2313	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	FB1302	1-469-324-21	FERRITE	0uH
C2314	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB1601	1-469-324-21	FERRITE	0uH
C2315	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB1701	1-469-324-21	FERRITE	0uH
C2316	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	FB1702	1-469-324-21	FERRITE	0uH
C2317	1-126-607-11	ELECT CHIP	47uF 20% 4V	FB1703	1-469-324-21	FERRITE	0uH
C2318	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB1704	1-469-324-21	FERRITE	0uH
C2319	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB1705	1-469-324-21	FERRITE	0uH
C2320	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB1706	1-469-324-21	FERRITE	0uH
C2321	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB1707	1-469-324-21	FERRITE	0uH
C2322	1-127-715-91	CERAMIC CHIP	0.22uF 10% 16V	FB1901	1-469-083-21	FERRITE	0uH
C2323	1-127-715-91	CERAMIC CHIP	0.22uF 10% 16V	FB1902	1-469-081-21	FERRITE	0uH
C2324	1-126-209-11	ELECT CHIP	100uF 20.00% 4V				
C2325	1-127-715-91	CERAMIC CHIP	0.22uF 10% 16V				
C2328	1-164-173-11	CERAMIC CHIP	0.0039uF 10% 50V				
C2329	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V				

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Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
< FILTER >							
FL101	1-234-177-21	FERRITE	0uH	IC707	6-703-461-11	IC CY2309ZC-1HT	
FL103	1-234-177-21	FERRITE	0uH	IC708	8-759-679-55	IC SN74LVC08APWR	
FL201	1-234-177-21	FERRITE	0uH	IC903	6-703-412-01	IC uPD61052GD-LML	
FL401	1-234-177-21	FERRITE	0uH	IC906	8-759-589-36	IC MT48LC4M16A2TG-75	
FL402	1-234-177-21	FERRITE	0uH	IC907	8-759-589-36	IC MT48LC4M16A2TG-75	
FL601	1-234-177-21	FERRITE	0uH	IC1001	6-703-504-01	IC CXD9754R	
FL702	1-234-177-21	FERRITE	0uH	IC1002	6-703-434-01	IC CV-VCP102	
FL901	1-234-177-21	FERRITE	0uH	IC1101	6-703-719-01	IC CXD9736GG	
FL902	1-234-177-21	FERRITE	0uH	IC1202	6-702-300-01	IC TK11118CSCL-G	
FL903	1-234-177-21	FERRITE	0uH	IC1203	8-752-416-45	IC XD1935Q	
FL1101	1-234-177-21	FERRITE	0uH	IC1204	6-700-098-01	IC HY57V641620HGT-P-TR-V	
FL1102	1-234-177-21	FERRITE	0uH	IC1205	6-703-461-11	IC CY2309ZC-1HT	
FL1201	1-234-177-21	FERRITE	0uH	IC1301	8-759-694-34	IC CXD9537AR	
FL1202	1-234-177-21	FERRITE	0uH	IC1401	6-700-353-01	IC MT48LC1M16A1TG-6STR	
FL1203	1-234-177-21	FERRITE	0uH	IC1402	6-703-469-01	IC TL751A1-LFC	
FL1301	1-234-177-21	FERRITE	0uH	IC1403	6-700-353-01	IC MT48LC1M16A1TG-6STR	
FL1302	1-234-177-21	FERRITE	0uH	IC1601	6-703-644-01	IC AD1895AYRSRL	
FL1401	1-234-177-21	FERRITE	0uH	IC1603	8-759-679-55	IC SN74LVC08APWR	
FL1402	1-234-177-21	FERRITE	0uH	IC1605	6-701-877-01	IC SM8707EV-G-E2	
FL1403	1-234-177-21	FERRITE	0uH	IC1606	8-759-679-55	IC SN74LVC08APWR	
FL1602	1-234-177-21	FERRITE	0uH	IC1701	6-703-758-01	IC PQ050DZ01ZPH	
FL1701	1-234-177-21	FERRITE	0uH	IC1702	6-703-754-01	IC PQ1L153M2SPQ	
FL1702	1-234-177-21	FERRITE	0uH	IC1707	6-703-756-01	IC PQ1L503M2SPQ	
FL1703	1-234-177-21	FERRITE	0uH	IC1708	6-703-755-01	IC PQ1L183M2SPQ	
FL1704	1-234-177-21	FERRITE	0uH	IC1710	6-703-757-01	IC PQ025EH02ZPH	
FL1705	1-234-177-21	FERRITE	0uH	IC2001	6-703-229-01	IC uPD72852GB-8EU	
FL1706	1-234-177-21	FERRITE	0uH	IC2002	6-702-302-01	IC TK11133CSCL-G	
FL1707	1-234-177-21	FERRITE	0uH	IC2100	8-759-233-64	IC TC74HCU04AF(EL)	
FL2002	1-234-177-21	FERRITE	0uH	IC2102	6-703-230-01	IC uPD72893GD-LML	
FL2101	1-234-177-21	FERRITE	0uH	IC2103	6-701-970-01	IC K4S161622D-UC80T	
FL2102	1-234-177-21	FERRITE	0uH	IC2104	6-703-490-01	IC MBM29LV200BC-70PFTN-SFK	
FL2103	1-234-177-21	FERRITE	0uH	IC2110	6-701-877-01	IC SM8707EV-G-E2	
FL2301	1-234-177-21	FERRITE	0uH	IC2201	8-759-431-14	IC PQ3DZ53U	
FL2601	1-234-177-21	FERRITE	0uH	IC2202	6-701-724-01	IC SAA7118E/V1.518	
< IC >				IC2301	6-701-814-01	IC CXD9698R	
IC104	6-703-446-01	IC HD6417292ABP200		IC2302	8-759-663-74	IC HY57V161610DTC-7TR	
IC105	8-759-573-97	IC SN74LVC541APWR		IC2303	6-701-079-01	IC ADV7300AKST	
IC106	8-759-679-58	IC SN74AHCT541PWR		IC2304	6-702-301-01	IC TK11125CSCL-G	
IC401	6-700-421-01	IC SN74LVCH16245ADGGR		IC2402	8-759-573-97	IC SN74LVC541APWR	
IC402	6-701-025-01	IC SN74LVC16244ADGGR		IC2501	6-703-468-01	IC CXD9741R	
IC404	6-700-421-01	IC SN74LVCH16245ADGGR		< COIL >			
IC405	6-701-025-01	IC SN74LVC16244ADGGR		L2100	1-410-371-41	INDUCTOR	1.5uH
IC406	8-759-392-81	IC SN74LVC16245ADGGR		L2301	1-400-145-21	INDUCTOR	47uH
IC407	6-701-025-01	IC SN74LVC16244ADGGR		< LINE FILTER >			
IC408	6-701-025-01	IC SN74LVC16244ADGGR		LF2001	1-419-370-21	INDUCTOR	0uH
IC409	8-759-392-77	IC SN74LVC245APWR		LF2002	1-419-370-21	INDUCTOR	0uH
IC410	6-701-025-01	IC SN74LVC16244ADGGR		< TRANSISTOR >			
IC411	8-759-392-81	IC SN74LVC16245ADGGR		Q2104	1-801-806-11	TRANSISTOR	DTC144EKA-T146
IC412	6-701-025-01	IC SN74LVC16244ADGGR		Q2301	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
IC601	6-703-896-01	IC K9F2808U0C-YCB0T		Q2302	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
IC602	6-704-288-01	IC CXD9734AQ		Q2303	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
IC701	6-703-425-01	IC CXD9735Q		Q2304	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
IC702	6-700-352-01	IC SN74CBTLV3253PWR		Q2305	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
IC703	6-700-352-01	IC SN74CBTLV3253PWR		Q2306	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX
IC705	8-759-679-55	IC SN74LVC08APWR					

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
< RESISTOR >				R188	1-218-965-11	RES-CHIP	10K 5% 1/16W
R109	1-218-965-11	RES-CHIP	10K 5% 1/16W	R189	1-218-937-11	RES-CHIP	47 5% 1/16W
R111	1-218-965-11	RES-CHIP	10K 5% 1/16W	R190	1-218-937-11	RES-CHIP	47 5% 1/16W
R114	1-218-965-11	RES-CHIP	10K 5% 1/16W	R191	1-218-937-11	RES-CHIP	47 5% 1/16W
R116	1-218-965-11	RES-CHIP	10K 5% 1/16W	R192	1-218-937-11	RES-CHIP	47 5% 1/16W
R118	1-218-965-11	RES-CHIP	10K 5% 1/16W	R193	1-218-937-11	RES-CHIP	47 5% 1/16W
R120	1-218-965-11	RES-CHIP	10K 5% 1/16W	R194	1-218-937-11	RES-CHIP	47 5% 1/16W
R121	1-218-990-11	SHORT CHIP	0	R195	1-218-937-11	RES-CHIP	47 5% 1/16W
R122	1-218-965-11	RES-CHIP	10K 5% 1/16W	R196	1-218-937-11	RES-CHIP	47 5% 1/16W
R124	1-218-935-11	RES-CHIP	33 5% 1/16W	R197	1-218-933-11	RES-CHIP	22 5% 1/16W
R125	1-218-935-11	RES-CHIP	33 5% 1/16W	R198	1-218-935-11	RES-CHIP	33 5% 1/16W
R126	1-218-965-11	RES-CHIP	10K 5% 1/16W	R199	1-218-937-11	RES-CHIP	47 5% 1/16W
R127	1-218-965-11	RES-CHIP	10K 5% 1/16W	R201	1-218-965-11	RES-CHIP	10K 5% 1/16W
R130	1-218-965-11	RES-CHIP	10K 5% 1/16W	R211	1-218-965-11	RES-CHIP	10K 5% 1/16W
R132	1-218-965-11	RES-CHIP	10K 5% 1/16W	R220	1-218-965-11	RES-CHIP	10K 5% 1/16W
R134	1-218-965-11	RES-CHIP	10K 5% 1/16W	R404	1-208-635-11	RES-CHIP	10 5% 1/16W
R136	1-218-955-11	RES-CHIP	1.5K 5% 1/16W	R405	1-218-937-11	RES-CHIP	47 5% 1/16W
R137	1-218-965-11	RES-CHIP	10K 5% 1/16W	R406	1-218-990-11	SHORT CHIP	0
R138	1-218-965-11	RES-CHIP	10K 5% 1/16W	R409	1-218-935-11	RES-CHIP	33 5% 1/16W
R139	1-218-935-11	RES-CHIP	33 5% 1/16W	R412	1-218-937-11	RES-CHIP	47 5% 1/16W
R140	1-218-941-81	RES-CHIP	100 5% 1/16W	R413	1-218-935-11	RES-CHIP	33 5% 1/16W
R141	1-218-937-11	RES-CHIP	47 5% 1/16W	R414	1-218-937-11	RES-CHIP	47 5% 1/16W
R142	1-218-961-11	RES-CHIP	4.7K 5% 1/16W	R415	1-218-937-11	RES-CHIP	47 5% 1/16W
R143	1-218-937-11	RES-CHIP	47 5% 1/16W	R416	1-218-965-11	RES-CHIP	10K 5% 1/16W
R144	1-218-961-11	RES-CHIP	4.7K 5% 1/16W	R417	1-218-965-11	RES-CHIP	10K 5% 1/16W
R145	1-218-937-11	RES-CHIP	47 5% 1/16W	R418	1-218-965-11	RES-CHIP	10K 5% 1/16W
R146	1-218-961-11	RES-CHIP	4.7K 5% 1/16W	R419	1-218-965-11	RES-CHIP	10K 5% 1/16W
R148	1-218-937-11	RES-CHIP	47 5% 1/16W	R420	1-218-965-11	RES-CHIP	10K 5% 1/16W
R149	1-218-961-11	RES-CHIP	4.7K 5% 1/16W	R421	1-218-965-11	RES-CHIP	10K 5% 1/16W
R150	1-218-937-11	RES-CHIP	47 5% 1/16W	R424	1-218-965-11	RES-CHIP	10K 5% 1/16W
R151	1-218-961-11	RES-CHIP	4.7K 5% 1/16W	R425	1-218-933-11	RES-CHIP	22 5% 1/16W
R152	1-218-937-11	RES-CHIP	47 5% 1/16W	R426	1-218-933-11	RES-CHIP	22 5% 1/16W
R153	1-218-961-11	RES-CHIP	4.7K 5% 1/16W	R427	1-218-965-11	RES-CHIP	10K 5% 1/16W
R154	1-218-935-11	RES-CHIP	33 5% 1/16W	R428	1-218-965-11	RES-CHIP	10K 5% 1/16W
R155	1-218-961-11	RES-CHIP	4.7K 5% 1/16W	R429	1-218-935-11	RES-CHIP	33 5% 1/16W
R156	1-218-965-11	RES-CHIP	10K 5% 1/16W	R430	1-218-933-11	RES-CHIP	22 5% 1/16W
R157	1-218-965-11	RES-CHIP	10K 5% 1/16W	R431	1-218-965-11	RES-CHIP	10K 5% 1/16W
R158	1-218-937-11	RES-CHIP	47 5% 1/16W	R435	1-218-935-11	RES-CHIP	33 5% 1/16W
R159	1-218-961-11	RES-CHIP	4.7K 5% 1/16W	R436	1-218-935-11	RES-CHIP	33 5% 1/16W
R160	1-218-965-11	RES-CHIP	10K 5% 1/16W	R438	1-218-933-11	RES-CHIP	22 5% 1/16W
R161	1-218-965-11	RES-CHIP	10K 5% 1/16W	R439	1-218-935-11	RES-CHIP	33 5% 1/16W
R162	1-218-965-11	RES-CHIP	10K 5% 1/16W	R440	1-218-945-11	RES-CHIP	220 5% 1/16W
R164	1-218-965-11	RES-CHIP	10K 5% 1/16W	R441	1-218-937-11	RES-CHIP	47 5% 1/16W
R165	1-218-965-11	RES-CHIP	10K 5% 1/16W	R442	1-218-933-11	RES-CHIP	22 5% 1/16W
R166	1-218-965-11	RES-CHIP	10K 5% 1/16W	R443	1-218-935-11	RES-CHIP	33 5% 1/16W
R167	1-218-965-11	RES-CHIP	10K 5% 1/16W	R444	1-218-937-11	RES-CHIP	47 5% 1/16W
R168	1-218-965-11	RES-CHIP	10K 5% 1/16W	R445	1-218-937-11	RES-CHIP	47 5% 1/16W
R169	1-218-965-11	RES-CHIP	10K 5% 1/16W	R446	1-218-937-11	RES-CHIP	47 5% 1/16W
R170	1-218-965-11	RES-CHIP	10K 5% 1/16W	R447	1-218-935-11	RES-CHIP	33 5% 1/16W
R171	1-218-965-11	RES-CHIP	10K 5% 1/16W	R448	1-218-935-11	RES-CHIP	33 5% 1/16W
R172	1-218-990-11	SHORT CHIP	0	R449	1-218-937-11	RES-CHIP	47 5% 1/16W
R174	1-218-965-11	RES-CHIP	10K 5% 1/16W	R450	1-218-935-11	RES-CHIP	33 5% 1/16W
R183	1-218-965-11	RES-CHIP	10K 5% 1/16W	R451	1-208-635-11	RES-CHIP	10 5% 1/16W
R184	1-218-965-11	RES-CHIP	10K 5% 1/16W	R452	1-218-935-11	RES-CHIP	33 5% 1/16W
R185	1-218-965-11	RES-CHIP	10K 5% 1/16W	R453	1-218-935-11	RES-CHIP	33 5% 1/16W
R186	1-218-965-11	RES-CHIP	10K 5% 1/16W	R454	1-218-935-11	RES-CHIP	33 5% 1/16W
				R455	1-218-935-11	RES-CHIP	33 5% 1/16W
				R456	1-218-935-11	RES-CHIP	33 5% 1/16W
				R457	1-218-933-11	RES-CHIP	22 5% 1/16W
				R458	1-218-933-11	RES-CHIP	22 5% 1/16W



Ref. No.	Part No.	Description	Quantity	Unit	Remarks	Ref. No.	Part No.	Description	Quantity	Unit	Remarks
R916	1-218-990-11	SHORT CHIP	0			R1127	1-218-935-11	RES-CHIP	33	5%	1/16W
R917	1-218-990-11	SHORT CHIP	0			R1128	1-218-933-11	RES-CHIP	22	5%	1/16W
R922	1-218-990-11	SHORT CHIP	0			R1129	1-218-990-11	SHORT CHIP	0		
R923	1-218-990-11	SHORT CHIP	0			R1130	1-218-933-11	RES-CHIP	22	5%	1/16W
R924	1-218-990-11	SHORT CHIP	0			R1131	1-218-990-11	SHORT CHIP	0		
R925	1-218-935-11	RES-CHIP	33	5%	1/16W	R1144	1-218-990-11	SHORT CHIP	0		
R926	1-218-990-11	SHORT CHIP	0			R1150	1-218-990-11	SHORT CHIP	0		
R927	1-218-990-11	SHORT CHIP	0			R1151	1-218-990-11	SHORT CHIP	0		
R928	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1153	1-218-990-11	SHORT CHIP	0		
R929	1-218-990-11	SHORT CHIP	0			R1154	1-218-990-11	SHORT CHIP	0		
R930	1-218-937-11	RES-CHIP	47	5%	1/16W	R1155	1-218-990-11	SHORT CHIP	0		
R931	1-218-937-11	RES-CHIP	47	5%	1/16W	R1156	1-218-990-11	SHORT CHIP	0		
R932	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1157	1-218-990-11	SHORT CHIP	0		
R933	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1158	1-218-990-11	SHORT CHIP	0		
R935	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1159	1-218-965-11	RES-CHIP	10K	5%	1/16W
R936	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1167	1-218-990-11	SHORT CHIP	0		
R945	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1168	1-208-635-11	RES-CHIP	10	5%	1/16W
R946	1-218-990-11	SHORT CHIP	0			R1169	1-218-990-11	SHORT CHIP	0		
R947	1-218-935-11	RES-CHIP	33	5%	1/16W	R1170	1-218-965-11	RES-CHIP	10K	5%	1/16W
R948	1-218-935-11	RES-CHIP	33	5%	1/16W	R1171	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R949	1-218-935-11	RES-CHIP	33	5%	1/16W	R1172	1-218-965-11	RES-CHIP	10K	5%	1/16W
R952	1-218-990-11	SHORT CHIP	0			R1173	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R953	1-218-990-11	SHORT CHIP	0			R1193	1-218-935-11	RES-CHIP	33	5%	1/16W
R954	1-218-990-11	SHORT CHIP	0			R1201	1-218-933-11	RES-CHIP	22	5%	1/16W
R955	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1203	1-218-935-11	RES-CHIP	33	5%	1/16W
R956	1-218-935-11	RES-CHIP	33	5%	1/16W	R1205	1-218-941-81	RES-CHIP	100	5%	1/16W
R957	1-218-935-11	RES-CHIP	33	5%	1/16W	R1208	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R958	1-218-937-11	RES-CHIP	47	5%	1/16W	R1209	1-218-965-11	RES-CHIP	10K	5%	1/16W
R959	1-218-990-11	SHORT CHIP	0			R1212	1-218-935-11	RES-CHIP	33	5%	1/16W
R960	1-218-990-11	SHORT CHIP	0			R1213	1-218-935-11	RES-CHIP	33	5%	1/16W
R961	1-218-990-11	SHORT CHIP	0			R1214	1-218-945-11	RES-CHIP	220	5%	1/16W
R1001	1-218-935-11	RES-CHIP	33	5%	1/16W	R1215	1-218-945-11	RES-CHIP	220	5%	1/16W
R1007	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1216	1-218-945-11	RES-CHIP	220	5%	1/16W
R1008	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1217	1-218-945-11	RES-CHIP	220	5%	1/16W
R1009	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1218	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1010	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1219	1-218-945-11	RES-CHIP	220	5%	1/16W
R1011	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1220	1-218-945-11	RES-CHIP	220	5%	1/16W
R1012	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1222	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R1013	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1224	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R1019	1-218-990-11	SHORT CHIP	0			R1225	1-218-935-11	RES-CHIP	33	5%	1/16W
R1020	1-218-990-11	SHORT CHIP	0			R1233	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1027	1-218-990-11	SHORT CHIP	0			R1235	1-208-635-11	RES-CHIP	10	5%	1/16W
R1028	1-218-935-11	RES-CHIP	33	5%	1/16W	R1236	1-218-935-11	RES-CHIP	33	5%	1/16W
R1029	1-218-935-11	RES-CHIP	33	5%	1/16W	R1237	1-218-935-11	RES-CHIP	33	5%	1/16W
R1030	1-218-935-11	RES-CHIP	33	5%	1/16W	R1238	1-218-933-11	RES-CHIP	22	5%	1/16W
R1031	1-218-935-11	RES-CHIP	33	5%	1/16W	R1239	1-218-935-11	RES-CHIP	33	5%	1/16W
R1033	1-218-990-11	SHORT CHIP	0			R1241	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1040	1-218-990-11	SHORT CHIP	0			R1242	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1041	1-218-990-11	SHORT CHIP	0			R1243	1-218-935-11	RES-CHIP	33	5%	1/16W
R1042	1-218-990-11	SHORT CHIP	0			R1245	1-218-935-11	RES-CHIP	33	5%	1/16W
R1043	1-218-990-11	SHORT CHIP	0			R1246	1-218-935-11	RES-CHIP	33	5%	1/16W
R1044	1-218-990-11	SHORT CHIP	0			R1247	1-218-935-11	RES-CHIP	33	5%	1/16W
R1046	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1256	1-216-864-11	METAL CHIP	0	5%	1/16W
R1048	1-218-990-11	SHORT CHIP	0			R1301	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1055	1-216-864-11	METAL CHIP	0	5%	1/16W	R1302	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1056	1-216-864-11	METAL CHIP	0	5%	1/16W	R1306	1-218-941-81	RES-CHIP	100	5%	1/16W
R1108	1-218-990-11	SHORT CHIP	0			R1328	1-218-935-11	RES-CHIP	33	5%	1/16W
R1109	1-218-990-11	SHORT CHIP	0			R1329	1-218-935-11	RES-CHIP	33	5%	1/16W
R1110	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1330	1-218-935-11	RES-CHIP	33	5%	1/16W
R1122	1-218-990-11	SHORT CHIP	0			R1331	1-218-935-11	RES-CHIP	33	5%	1/16W

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Ref. No.	Part No.	Description		Remarks	Ref. No.	Part No.	Description		Remarks
R1332	1-218-935-11	RES-CHIP	33	5%	1/16W	R1651	1-218-941-81	RES-CHIP	100 5% 1/16W
R1333	1-218-935-11	RES-CHIP	33	5%	1/16W	R1655	1-218-938-11	RES-CHIP	56 5% 1/16W
R1334	1-218-935-11	RES-CHIP	33	5%	1/16W	R1660	1-218-938-11	RES-CHIP	56 5% 1/16W
R1335	1-218-935-11	RES-CHIP	33	5%	1/16W	R1675	1-218-990-11	SHORT CHIP	0
R1404	1-218-990-11	SHORT CHIP	0			R1685	1-218-937-11	RES-CHIP	47 5% 1/16W
R1405	1-218-990-11	SHORT CHIP	0			R1688	1-218-938-11	RES-CHIP	56 5% 1/16W
R1407	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1701	1-216-295-91	SHORT CHIP	0
R1408	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1702	1-216-295-91	SHORT CHIP	0
R1409	1-218-990-11	SHORT CHIP	0			R1703	1-216-295-91	SHORT CHIP	0
R1410	1-218-990-11	SHORT CHIP	0			R1704	1-216-295-91	SHORT CHIP	0
R1411	1-218-990-11	SHORT CHIP	0			R1705	1-216-295-91	SHORT CHIP	0
R1412	1-218-935-11	RES-CHIP	33	5%	1/16W	R1706	1-216-295-91	SHORT CHIP	0
R1413	1-218-935-11	RES-CHIP	33	5%	1/16W	R1707	1-216-295-91	SHORT CHIP	0
R1414	1-218-935-11	RES-CHIP	33	5%	1/16W	R1712	1-216-296-11	SHORT CHIP	0
R1415	1-218-935-11	RES-CHIP	33	5%	1/16W	R1713	1-216-296-11	SHORT CHIP	0
R1416	1-218-935-11	RES-CHIP	33	5%	1/16W	R1718	1-216-295-91	SHORT CHIP	0
R1417	1-218-935-11	RES-CHIP	33	5%	1/16W	R1719	1-216-295-91	SHORT CHIP	0
R1418	1-218-935-11	RES-CHIP	33	5%	1/16W	R1720	1-218-990-11	SHORT CHIP	0
R1419	1-218-935-11	RES-CHIP	33	5%	1/16W	R1721	1-218-990-11	SHORT CHIP	0
R1420	1-218-935-11	RES-CHIP	33	5%	1/16W	R1722	1-216-296-11	SHORT CHIP	0
R1421	1-218-990-11	SHORT CHIP	0			R1726	1-216-296-11	SHORT CHIP	0
R1426	1-218-990-11	SHORT CHIP	0			R1727	1-216-296-11	SHORT CHIP	0
R1427	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1728	1-216-295-91	SHORT CHIP	0
R1428	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1729	1-216-295-91	SHORT CHIP	0
R1429	1-218-937-11	RES-CHIP	47	5%	1/16W	R1730	1-216-295-91	SHORT CHIP	0
R1432	1-218-935-11	RES-CHIP	33	5%	1/16W	R1732	1-216-295-91	SHORT CHIP	0
R1434	1-216-296-11	SHORT CHIP	0			R1733	1-218-990-11	SHORT CHIP	0
R1438	1-218-973-11	RES-CHIP	47K	5%	1/16W	R1734	1-216-295-91	SHORT CHIP	0
R1440	1-218-973-11	RES-CHIP	47K	5%	1/16W	R1735	1-216-295-91	SHORT CHIP	0
R1442	1-218-973-11	RES-CHIP	47K	5%	1/16W	R1736	1-216-295-91	SHORT CHIP	0
R1444	1-218-973-11	RES-CHIP	47K	5%	1/16W	R1826	1-218-990-11	SHORT CHIP	0
R1446	1-218-973-11	RES-CHIP	47K	5%	1/16W	R1837	1-216-296-11	SHORT CHIP	0
R1448	1-218-973-11	RES-CHIP	47K	5%	1/16W	R1839	1-216-295-91	SHORT CHIP	0
R1450	1-218-973-11	RES-CHIP	47K	5%	1/16W	R2003	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1452	1-218-990-11	SHORT CHIP	0			R2004	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1453	1-218-933-11	RES-CHIP	22	5%	1/16W	R2005	1-218-941-81	RES-CHIP	100 5% 1/16W
R1454	1-218-990-11	SHORT CHIP	0			R2006	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1458	1-218-990-11	SHORT CHIP	0			R2007	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1459	1-216-296-11	SHORT CHIP	0			R2008	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1460	1-218-990-11	SHORT CHIP	0			R2009	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1462	1-218-990-11	SHORT CHIP	0			R2010	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1468	1-218-935-11	RES-CHIP	33	5%	1/16W	R2011	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1469	1-218-935-11	RES-CHIP	33	5%	1/16W	R2013	1-208-910-11	METAL CHIP	9.1K 0.5% 1/16W
R1470	1-218-935-11	RES-CHIP	33	5%	1/16W	R2016	1-216-864-11	METAL CHIP	0 5% 1/16W
R1471	1-218-935-11	RES-CHIP	33	5%	1/16W	R2019	1-218-938-11	METAL CHIP	56 0.5% 1/16W
R1472	1-218-935-11	RES-CHIP	33	5%	1/16W	R2021	1-218-938-11	METAL CHIP	56 0.5% 1/16W
R1473	1-218-935-11	RES-CHIP	33	5%	1/16W	R2031	1-218-938-11	METAL CHIP	56 0.5% 1/16W
R1474	1-218-935-11	RES-CHIP	33	5%	1/16W	R2033	1-218-938-11	METAL CHIP	56 0.5% 1/16W
R1475	1-218-935-11	RES-CHIP	33	5%	1/16W	R2034	1-218-864-11	METAL CHIP	5.1K 0.5% 1/16W
R1476	1-218-990-11	SHORT CHIP	0			R2102	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1477	1-218-990-11	SHORT CHIP	0			R2103	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1478	1-218-990-11	SHORT CHIP	0			R2104	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1611	1-218-973-11	RES-CHIP	47K	5%	1/16W	R2105	1-218-990-11	SHORT CHIP	0
R1631	1-218-935-11	RES-CHIP	33	5%	1/16W	R2106	1-218-935-11	RES-CHIP	33 5% 1/16W
R1632	1-218-937-11	RES-CHIP	47	5%	1/16W	R2107	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1633	1-218-952-11	RES-CHIP	820	5%	1/16W	R2108	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1643	1-218-933-11	RES-CHIP	22	5%	1/16W	R2110	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1644	1-208-635-11	RES-CHIP	10	5%	1/16W	R2111	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1645	1-208-635-11	RES-CHIP	10	5%	1/16W	R2112	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1646	1-208-635-11	RES-CHIP	10	5%	1/16W	R2113	1-218-965-11	RES-CHIP	10K 5% 1/16W

Ref. No.	Part No.	Description	Quantity	Unit	Percentage	Remarks	Ref. No.	Part No.	Description	Quantity	Unit	Percentage	Remarks
R2114	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2196	1-218-957-11	RES-CHIP	2.2K		5%	1/16W
R2115	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2201	1-218-953-11	RES-CHIP	1K		5%	1/16W
R2116	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2202	1-216-296-11	SHORT CHIP	0			
R2117	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2205	1-216-296-11	SHORT CHIP	0			
R2118	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2206	1-216-296-11	SHORT CHIP	0			
R2119	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2208	1-218-965-11	RES-CHIP	10K		5%	1/16W
R2120	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2209	1-218-941-81	RES-CHIP	100		5%	1/16W
R2121	1-218-887-11	METAL CHIP	47K		0.5%	1/10W	R2211	1-218-941-81	RES-CHIP	100		5%	1/16W
R2122	1-218-887-11	METAL CHIP	47K		0.5%	1/10W	R2214	1-218-965-11	RES-CHIP	10K		5%	1/16W
R2123	1-218-990-11	SHORT CHIP	0				R2219	1-218-932-11	RES-CHIP	18		5%	1/16W
R2124	1-218-941-81	RES-CHIP	100		5%	1/16W	R2220	1-218-932-11	RES-CHIP	18		5%	1/16W
R2126	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2221	1-218-933-11	RES-CHIP	22		5%	1/16W
R2127	1-218-887-11	METAL CHIP	47K		0.5%	1/10W	R2222	1-218-933-11	RES-CHIP	22		5%	1/16W
R2128	1-216-841-11	METAL CHIP	47K		5%	1/16W	R2223	1-218-933-11	RES-CHIP	22		5%	1/16W
R2129	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2224	1-218-932-11	RES-CHIP	18		5%	1/16W
R2130	1-216-841-11	METAL CHIP	47K		5%	1/16W	R2225	1-218-932-11	RES-CHIP	18		5%	1/16W
R2132	1-218-935-11	RES-CHIP	33		5%	1/16W	R2226	1-218-932-11	RES-CHIP	18		5%	1/16W
R2133	1-218-935-11	RES-CHIP	33		5%	1/16W	R2227	1-218-932-11	RES-CHIP	18		5%	1/16W
R2134	1-218-935-11	RES-CHIP	33		5%	1/16W	R2228	1-218-932-11	RES-CHIP	18		5%	1/16W
R2135	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2229	1-218-932-11	RES-CHIP	18		5%	1/16W
R2136	1-218-935-11	RES-CHIP	33		5%	1/16W	R2231	1-216-864-11	METAL CHIP	0		5%	1/16W
R2137	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2232	1-216-864-11	METAL CHIP	0		5%	1/16W
R2138	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2242	1-218-933-11	RES-CHIP	22		5%	1/16W
R2139	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2243	1-218-933-11	RES-CHIP	22		5%	1/16W
R2140	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2244	1-218-933-11	RES-CHIP	22		5%	1/16W
R2141	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2245	1-218-933-11	RES-CHIP	22		5%	1/16W
R2142	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2301	1-218-941-81	RES-CHIP	100		5%	1/16W
R2143	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2302	1-218-941-81	RES-CHIP	100		5%	1/16W
R2144	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2303	1-218-941-81	RES-CHIP	100		5%	1/16W
R2145	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2304	1-220-169-11	RES-CHIP	75		5%	1/16W
R2146	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2305	1-220-198-11	RES-CHIP	20K		5%	1/16W
R2148	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2306	1-208-635-11	RES-CHIP	10		5%	1/16W
R2149	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2350	1-218-941-81	RES-CHIP	100		5%	1/16W
R2150	1-218-990-11	SHORT CHIP	0				R2352	1-218-941-81	RES-CHIP	100		5%	1/16W
R2151	1-218-937-11	RES-CHIP	47		5%	1/16W	R2360	1-218-951-11	RES-CHIP	680		5%	1/16W
R2152	1-218-990-11	SHORT CHIP	0				R2361	1-218-965-11	RES-CHIP	10K		5%	1/16W
R2153	1-218-990-11	SHORT CHIP	0				R2362	1-218-954-11	RES-CHIP	1.2K		5%	1/16W
R2154	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2363	1-218-954-11	RES-CHIP	1.2K		5%	1/16W
R2158	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2364	1-218-941-81	RES-CHIP	100		5%	1/16W
R2159	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2365	1-208-874-81	METAL CHIP	300		0.5%	1/16W
R2160	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2366	1-208-874-81	METAL CHIP	300		0.5%	1/16W
R2161	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2367	1-208-874-81	METAL CHIP	300		0.5%	1/16W
R2162	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2368	1-208-874-81	METAL CHIP	300		0.5%	1/16W
R2163	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2369	1-208-874-81	METAL CHIP	300		0.5%	1/16W
R2165	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2370	1-208-874-81	METAL CHIP	300		0.5%	1/16W
R2166	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2371	1-218-933-11	RES-CHIP	22		5%	1/16W
R2169	1-216-168-00	RES-CHIP	56		5%	1/8W	R2372	1-218-933-11	RES-CHIP	22		5%	1/16W
R2171	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2373	1-218-933-11	RES-CHIP	22		5%	1/16W
R2172	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2374	1-218-933-11	RES-CHIP	22		5%	1/16W
R2174	1-218-990-11	SHORT CHIP	0				R2375	1-218-933-11	RES-CHIP	22		5%	1/16W
R2175	1-218-990-11	SHORT CHIP	0				R2376	1-218-933-11	RES-CHIP	22		5%	1/16W
R2176	1-218-990-11	SHORT CHIP	0				R2377	1-218-957-11	RES-CHIP	2.2K		5%	1/16W
R2177	1-216-810-11	METAL CHIP	120		5%	1/16W	R2378	1-218-957-11	RES-CHIP	2.2K		5%	1/16W
R2181	1-218-990-11	SHORT CHIP	0				R2379	1-218-957-11	RES-CHIP	2.2K		5%	1/16W
R2182	1-208-950-81	METAL CHIP	430K		0.5%	1/16W	R2380	1-218-957-11	RES-CHIP	2.2K		5%	1/16W
R2183	1-208-943-11	METAL CHIP	220K		0.5%	1/16W	R2381	1-218-957-11	RES-CHIP	2.2K		5%	1/16W
R2190	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2382	1-218-957-11	RES-CHIP	2.2K		5%	1/16W
R2191	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2399	1-218-990-11	SHORT CHIP	0			
R2192	1-218-965-11	RES-CHIP	10K		5%	1/16W	R2411	1-218-990-11	SHORT CHIP	0			
R2193	1-218-935-11	RES-CHIP	33		5%	1/16W	R2412	1-218-990-11	SHORT CHIP	0			

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Ref. No.	Part No.	Description	Quantity	Unit	Remarks	Ref. No.	Part No.	Description	Quantity	Unit	Remarks
R2424	1-218-990-11	SHORT CHIP	0			R3102	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2425	1-218-990-11	SHORT CHIP	0			R3103	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2433	1-218-990-11	SHORT CHIP	0			R3106	1-218-990-11	SHORT CHIP	0		
R2434	1-218-990-11	SHORT CHIP	0			R3107	1-218-990-11	SHORT CHIP	0		
R2441	1-218-990-11	SHORT CHIP	0			R3112	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2442	1-218-990-11	SHORT CHIP	0			R3113	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2449	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3114	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2454	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3120	1-218-990-11	SHORT CHIP	0		
R2455	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3121	1-218-990-11	SHORT CHIP	0		
R2456	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3124	1-218-990-11	SHORT CHIP	0		
R2460	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3125	1-218-990-11	SHORT CHIP	0		
R2468	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3132	1-218-990-11	SHORT CHIP	0		
R2469	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3134	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2470	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3137	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2471	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3139	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2472	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3142	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2473	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3143	1-218-990-11	SHORT CHIP	0		
R2474	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3144	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2485	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3145	1-218-941-81	RES-CHIP	100	5%	1/16W
R2503	1-216-864-11	METAL CHIP	0	5%	1/16W	R3146	1-218-941-81	RES-CHIP	100	5%	1/16W
R2508	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3147	1-218-941-81	RES-CHIP	100	5%	1/16W
R2509	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3148	1-218-941-81	RES-CHIP	100	5%	1/16W
R2511	1-218-959-11	RES-CHIP	3.3K	5%	1/16W	R3150	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2512	1-218-959-11	RES-CHIP	3.3K	5%	1/16W	R3601	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2513	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	R3602	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2514	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	R3604	1-218-990-11	SHORT CHIP	0		
R2515	1-218-941-81	RES-CHIP	100	5%	1/16W	R3605	1-216-864-11	METAL CHIP	0	5%	1/16W
R2517	1-218-959-11	RES-CHIP	3.3K	5%	1/16W	R3608	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2520	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3701	1-218-935-11	RES-CHIP	33	5%	1/16W
R2521	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	R3702	1-218-935-11	RES-CHIP	33	5%	1/16W
R2522	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3703	1-218-935-11	RES-CHIP	33	5%	1/16W
R2523	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	R3704	1-218-935-11	RES-CHIP	33	5%	1/16W
R2525	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3705	1-218-935-11	RES-CHIP	33	5%	1/16W
R2526	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3706	1-218-935-11	RES-CHIP	33	5%	1/16W
R2528	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3707	1-218-935-11	RES-CHIP	33	5%	1/16W
R2530	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3713	1-218-990-11	SHORT CHIP	0		
R2531	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3714	1-218-935-11	RES-CHIP	33	5%	1/16W
R2533	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3715	1-218-935-11	RES-CHIP	33	5%	1/16W
R2536	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3716	1-218-935-11	RES-CHIP	33	5%	1/16W
R2539	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3729	1-218-935-11	RES-CHIP	33	5%	1/16W
R2542	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3730	1-218-945-11	RES-CHIP	220	5%	1/16W
R2543	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3758	1-218-933-11	RES-CHIP	22	5%	1/16W
R2544	1-208-635-11	RES-CHIP	10	5%	1/16W	R3759	1-218-990-11	SHORT CHIP	0		
R2545	1-208-635-11	RES-CHIP	10	5%	1/16W	R3766	1-218-937-11	RES-CHIP	47	5%	1/16W
R2549	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3777	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2550	1-208-635-11	RES-CHIP	10	5%	1/16W	R3778	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2551	1-218-990-11	SHORT CHIP	0			R3782	1-218-935-11	RES-CHIP	33	5%	1/16W
R2552	1-218-990-11	SHORT CHIP	0			R3784	1-208-635-11	RES-CHIP	10	5%	1/16W
R2553	1-218-990-11	SHORT CHIP	0			R3787	1-218-990-11	SHORT CHIP	0		
R2558	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3789	1-216-864-11	METAL CHIP	0	5%	1/16W
R2561	1-218-965-11	RES-CHIP	10K	5%	1/16W	R4104	1-218-940-11	RES-CHIP	82	5%	1/16W
R2562	1-218-965-11	RES-CHIP	10K	5%	1/16W	R4130	1-218-935-11	RES-CHIP	33	5%	1/16W
R2563	1-218-965-11	RES-CHIP	10K	5%	1/16W	R4132	1-218-940-11	RES-CHIP	82	5%	1/16W
R2564	1-218-965-11	RES-CHIP	10K	5%	1/16W	R4133	1-218-933-11	RES-CHIP	22	5%	1/16W
R2565	1-208-635-11	RES-CHIP	10	5%	1/16W	R4134	1-218-940-11	RES-CHIP	82	5%	1/16W
R2566	1-218-965-11	RES-CHIP	10K	5%	1/16W	R4135	1-218-933-11	RES-CHIP	22	5%	1/16W
R2569	1-218-965-11	RES-CHIP	10K	5%	1/16W	R4136	1-218-933-11	RES-CHIP	22	5%	1/16W
R2613	1-218-935-11	RES-CHIP	33	5%	1/16W	R4137	1-218-940-11	RES-CHIP	82	5%	1/16W
R2618	1-218-965-11	RES-CHIP	10K	5%	1/16W	R4151	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3101	1-218-935-11	RES-CHIP	33	5%	1/16W	R4156	1-218-953-11	RES-CHIP	1K	5%	1/16W

Ref. No.	Part No.	Description	Quantity	Unit	Remarks	Ref. No.	Part No.	Description	Quantity	Unit	Remarks
R4163	1-218-990-11	SHORT CHIP	0			RB419	1-242-963-21	RES, NETWORK 33X4	(1005)		
R4164	1-218-965-11	RES-CHIP	10K	5%	1/16W	RB420	1-242-963-21	RES, NETWORK 33X4	(1005)		
R4165	1-218-965-11	RES-CHIP	10K	5%	1/16W	RB421	1-242-963-21	RES, NETWORK 33X4	(1005)		
R4166	1-218-965-11	RES-CHIP	10K	5%	1/16W	RB422	1-242-963-21	RES, NETWORK 33X4	(1005)		
R4168	1-216-296-11	SHORT CHIP	0			RB423	1-242-963-21	RES, NETWORK 33X4	(1005)		
R4169	1-216-296-11	SHORT CHIP	0			RB424	1-242-963-21	RES, NETWORK 33X4	(1005)		
R4610	1-218-938-11	RES-CHIP	56	5%	1/16W	RB425	1-242-963-21	RES, NETWORK 33X4	(1005)		
R5107	1-208-635-11	RES-CHIP	10	5%	1/16W	RB426	1-242-963-21	RES, NETWORK 33X4	(1005)		
R5108	1-218-935-11	RES-CHIP	33	5%	1/16W	RB427	1-233-270-11	NETWORK, RES (8 GANG)	10K		
R5110	1-208-635-11	RES-CHIP	10	5%	1/16W	RB428	1-242-963-21	RES, NETWORK 33X4	(1005)		
R5111	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	RB429	1-242-963-21	RES, NETWORK 33X4	(1005)		
R5112	1-218-990-11	SHORT CHIP	0			RB430	1-242-963-21	RES, NETWORK 33X4	(1005)		
R5121	1-218-935-11	RES-CHIP	33	5%	1/16W	RB431	1-233-270-11	NETWORK, RES (8 GANG)	10K		
R5122	1-218-935-11	RES-CHIP	33	5%	1/16W	RB432	1-242-963-21	RES, NETWORK 33X4	(1005)		
R5123	1-218-935-11	RES-CHIP	33	5%	1/16W	RB433	1-233-270-11	NETWORK, RES (8 GANG)	10K		
R5301	1-216-295-91	SHORT CHIP	0			RB434	1-233-270-11	NETWORK, RES (8 GANG)	10K		
R5302	1-216-295-91	SHORT CHIP	0			RB435	1-233-270-11	NETWORK, RES (8 GANG)	10K		
R5704	1-218-990-11	SHORT CHIP	0			RB436	1-242-963-21	RES, NETWORK 33X4	(1005)		
R5706	1-218-935-11	RES-CHIP	33	5%	1/16W	RB601	1-233-270-11	NETWORK, RES (8 GANG)	10K		
R5707	1-218-939-11	RES-CHIP	68	5%	1/16W	RB602	1-233-270-11	NETWORK, RES (8 GANG)	10K		
R5759	1-218-941-81	RES-CHIP	100	5%	1/16W	RB603	1-233-270-11	NETWORK, RES (8 GANG)	10K		
< COMPOSITION CIRCUIT BLOCK >											
RB101	1-242-963-21	RES, NETWORK 33X4	(1005)			RB604	1-233-270-11	NETWORK, RES (8 GANG)	10K		
RB102	1-242-963-21	RES, NETWORK 33X4	(1005)			RB606	1-233-270-11	NETWORK, RES (8 GANG)	10K		
RB103	1-242-963-21	RES, NETWORK 33X4	(1005)			RB607	1-233-270-11	NETWORK, RES (8 GANG)	10K		
RB104	1-233-270-11	NETWORK, RES (8 GANG)	10K			RB608	1-234-369-21	RES, NETWORK 10X4	(1005)		
RB105	1-242-963-21	RES, NETWORK 33X4	(1005)			RB609	1-234-369-21	RES, NETWORK 10X4	(1005)		
RB106	1-233-663-91	NETWORK, RES (8 GANG)	4.7K			RB610	1-234-369-21	RES, NETWORK 10X4	(1005)		
RB107	1-242-963-21	RES, NETWORK 33X4	(1005)			RB611	1-234-369-21	RES, NETWORK 10X4	(1005)		
RB108	1-233-663-91	NETWORK, RES (8 GANG)	4.7K			RB612	1-234-400-21	CONDUCTOR, NETWORK	(2010)		
RB109	1-242-963-21	RES, NETWORK 33X4	(1005)			RB613	1-234-400-21	CONDUCTOR, NETWORK	(2010)		
RB110	1-242-963-21	RES, NETWORK 33X4	(1005)			RB801	1-234-400-21	CONDUCTOR, NETWORK	(2010)		
RB111	1-242-963-21	RES, NETWORK 33X4	(1005)			RB802	1-234-400-21	CONDUCTOR, NETWORK	(2010)		
RB112	1-233-663-91	NETWORK, RES (8 GANG)	4.7K			RB901	1-234-377-21	RES, NETWORK 4.7KX4	(1005)		
RB113	1-242-963-21	RES, NETWORK 33X4	(1005)			RB902	1-234-400-21	CONDUCTOR, NETWORK	(2010)		
RB114	1-242-963-21	RES, NETWORK 33X4	(1005)			RB903	1-234-400-21	CONDUCTOR, NETWORK	(2010)		
RB115	1-233-663-91	NETWORK, RES (8 GANG)	4.7K			RB904	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB116	1-242-963-21	RES, NETWORK 33X4	(1005)			RB905	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB117	1-242-963-21	RES, NETWORK 33X4	(1005)			RB1005	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB118	1-242-963-21	RES, NETWORK 33X4	(1005)			RB1006	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB119	1-242-963-21	RES, NETWORK 33X4	(1005)			RB1111	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB120	1-242-963-21	RES, NETWORK 33X4	(1005)			RB1112	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB121	1-233-663-91	NETWORK, RES (8 GANG)	4.7K			RB1113	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB403	1-242-963-21	RES, NETWORK 33X4	(1005)			RB1114	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB404	1-242-963-21	RES, NETWORK 33X4	(1005)			RB1115	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB405	1-242-963-21	RES, NETWORK 33X4	(1005)			RB1201	1-234-370-21	RES, NETWORK 22X4	(1005)		
RB406	1-242-963-21	RES, NETWORK 33X4	(1005)			RB1202	1-234-370-21	RES, NETWORK 22X4	(1005)		
RB407	1-242-963-21	RES, NETWORK 33X4	(1005)			RB1501	1-234-400-21	CONDUCTOR, NETWORK	(2010)		
RB408	1-242-963-21	RES, NETWORK 33X4	(1005)			RB1502	1-234-400-21	CONDUCTOR, NETWORK	(2010)		
RB409	1-242-963-21	RES, NETWORK 33X4	(1005)			RB2101	1-233-270-11	NETWORK, RES (8 GANG)	10K		
RB411	1-233-270-11	NETWORK, RES (8 GANG)	10K			RB2102	1-233-270-11	NETWORK, RES (8 GANG)	10K		
RB413	1-242-963-21	RES, NETWORK 33X4	(1005)			RB2103	1-233-270-11	NETWORK, RES (8 GANG)	10K		
RB414	1-242-963-21	RES, NETWORK 33X4	(1005)			RB2104	1-233-270-11	NETWORK, RES (8 GANG)	10K		
RB415	1-242-963-21	RES, NETWORK 33X4	(1005)			RB2105	1-233-270-11	NETWORK, RES (8 GANG)	10K		
RB416	1-242-963-21	RES, NETWORK 33X4	(1005)			RB2106	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB417	1-233-270-11	NETWORK, RES (8 GANG)	10K			RB2107	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB418	1-233-270-11	NETWORK, RES (8 GANG)	10K			RB2201	1-234-370-21	RES, NETWORK 22X4	(1005)		
						RB2202	1-234-370-21	RES, NETWORK 22X4	(1005)		
						RB2501	1-233-270-11	NETWORK, RES (8 GANG)	10K		

Ref. No.	Part No.	Description	Remarks
		< VARIABLE RESISTOR >	
RV2301	1-223-583-11	RES, ADJ, CARBON 1K	
RV2302	1-223-583-11	RES, ADJ, CARBON 1K	
		< THERMISTOR >	
TH1901	1-803-384-11	THERMISTOR (1608)	
		< VIBRATOR >	
X101	1-795-885-21	VIBRATOR, CRYSTAL (SMD) (33MHz)	
X1601	1-781-867-21	VIBRATOR, CRYSTAL (27MHz)	
X2001	1-795-886-21	VIBRATOR, CRYSTAL (SMD) (24.576MHz)	
X2201	1-795-886-21	VIBRATOR, CRYSTAL (SMD) (24.576MHz)	
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△	1-468-785-11	POWER BLOCK	
<hr/>			
MISCELLANEOUS			
*****			
9	8-457-501-00	DRIVE, DVD DW-U11A	
△ 101	1-468-749-11	POWER BLOCK	
104	1-787-006-11	FAN, D.C.	
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Ref. No.	Part No.	Description	Remarks
		ACCESSORIES & PACKING MATERIALS	
		*****	
	1-477-804-31	REMOTE COMMANDER (RMT-D203A)	
	1-751-271-11	CORD, CONNECTION (AV CABLE)	
	1-765-635-71	CORD, CONNECTION (NTSC)	
△	1-823-701-11	CORD, POWER	
	3-071-119-81	LID, CASE BATTERY (FOR RMT-D203A)	
	3-081-195-71	MANUAL, INSTRUCTION (OPERATIONS)	
		(ENGLISH)	
	3-081-195-81	MANUAL, INSTRUCTION (OPERATIONS)	
		(FRENCH) (CANADIAN)	
	3-081-196-41	MANUAL, INSTRUCTION (HOOKUPS)	
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		*****	
		HARDWARE LIST	
		*****	
#1	7-682-544-09	SCREW +B 3X3	

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